Summary Points of Sea Turtle Gross Necropsy Findings for Mississippi and Louisiana (for stranding dates 4/30/2010 through 5/13/2010)

- Sixty-seven turtles have been necropsied to date (65 Kemp's ridleys; 2 Loggerheads). Table 1 below provides a list of samples collected for hydrocarbon analyses and any other indicated diagnostic testing.
- No visible external or internal oil was observed.
- Most turtles were moderately or severely decomposed, indicating that they had likely died within one week of discovery.
- Common findings included good nutritional condition, fish in the digestive tracts, and evidence of sediment aspiration/drowning.
- Sea turtles typically do not prey on live fish, but will scavenge dead fish, most often available as discarded dead bycatch or as a result of fish kills.
- There was no gross evidence of infectious disease or chronic/underlying disease as a cause of the strandings or that may have resulted in secondary sediment aspiration/drowning.
- Based on these findings, primary considerations for the cause of this stranding event are forced submergence or acute toxicosis.
- The only known plausible cause of forced submergence that could explain this event is incidental capture in fishing gear.
- Experts on biotoxins and dispersants are being engaged to obtain necessary environmental information and to identify any indicated toxicological testing.
- The turtles examined and described herein stranded in an area that had not been subjected to aerial dispersant application to our knowledge.

Table 1. Samples collected from dead stranded sea turtles necropsied in Mississippi and Louisiana May 8 through May 14, 2010.

Sample types	Number, species, state
Tissues for histopathology; Samples for hydrocarbon analysis; Complete set of frozen tissues and GI contents in aluminum foil (general toxicology)	1 *L. kempii* (LA)
Samples for hydrocarbon analysis; Complete set of frozen tissues and GI contents in aluminum foil (general toxicology)	3 *L. kempii* (MS)
Complete set of frozen tissues and GI contents in aluminum foil (general toxicology)	18 *L. kempii* (MS)
Frozen GI contents only	23 *L. kempii* (MS); 1 *C. caretta* (MS)

BP Deepwater Horizon Spill Incident: Preliminary report of gross necropsy findings for sea turtles in Mississippi and Louisiana (Activities for 5/8/2010 through 5/14/2010)

Description of activities

Sea turtles that stranded on the shores of Louisiana and Mississippi or that were recovered during on-water activities were transported to the Institute for Marine Mammal Studies (IMMS) (Gulfport, Mississippi) or Audubon Species Survival Center (New Orleans, Louisiana). Dr. Brian Stacy (NOAA, NMFS, Office of Protected Resources) arrived at IMMS on 5/8/2010 to perform necropsies on turtles collected since the stranding aspect of the spill response was initiated (4/30/2010). This first round of necropsies was concluded on 5/14/2010. Examinations were performed on both unfrozen and previously frozen carcasses. The protocols for documentation and sample collection from animals within the response zone were followed as allowed by state of decomposition.

Numbers of sea turtles necropsied, species, cases by state, and postmortem condition

A total of 73 sea turtles were transported to IMMS from 4/30/2010 through 5/13/2010 for further documentation and examination. Seventy-one were *Lepidocheyls kempii* (Kemp's ridley) and 2 were *Caretta caretta* (loggerhead). The straight carapace lengths (nuchal notch to tip) of the *L. kempii* was 25.9 cm to 63.1 cm (mean = 36.6, standard deviation = 10.9), and the two *C. caretta* were 77.1 and 84.5 cm. Necropsies were performed on 66 of 73 turtles, 7 being too decomposed for further assessment. Lisa Belskis (NOAA Southeast Fisheries Science Center) performed necropsies on 11 decomposed stranded sea turtles (all *L. kempii*) on 5/1/2010 and 5/3/2010 prior to the arrival of Dr. Stacy, who performed all of the subsequent examinations (n=55) at IMMS on 5/8/2010 through 5/13/2010. One fresh dead *L. kempii* was transported to Audubon on 5/13/2010 and was subsequently necropsied by Dr. Stacy on 5/14/2010. Thus, a total of 67 sea turtles, including 65 *L. kempii* and 2 *C. caretta*, have been necropsied to date. Two of these turtles were fresh dead, 14 were moderately decomposed, and 51 were severely decomposed.

Necropsy findings

This summary of necropsy findings focuses on the 56 turtles examined by Dr. Stacy with mention of relevant findings documented in 11 turtles by Ms. Belskis. Forty complete carcasses (all *L. kempii*) and 16 incomplete carcasses were examined by Dr. Stacy. Carcasses were incomplete largely due to scavenging and/or decomposition (n=14) and 2 animals had severe perimortem traumatic injuries, as will be subsequently discussed, with extensive loss of body mass and visceral organs. Nutritional condition was assessable in 47 of 56 turtles. All turtles had evident adipose (fat) stores and were in relatively good nutritional condition based on muscle mass and fat. None of the examined turtles had evidence of grossly visible oil externally or internally.

A definitive cause of death could not be determined from gross necropsies, largely due to the decomposed state at the time of recovery. Various degrees of aspiration of black sediment into the respiratory system were observed in 21 of 40 intact carcasses, including two animals that were recovered floating (WLH2010051002 and BXJ2010051201). In most cases various quantities of sediment were present within the glottis and distal trachea. Four *L. kempii* (TTH2010043001, MSB2010050206, ZHS2010051205, WLH2010050301) had extensive aspiration of sediment throughout the lungs and probable drowning was assigned as the preliminary cause of death. Extensive perimortem traumatic injuries that were not consistent with scavenging were documented in 1 intact carcass and 4 partial

carcasses. Findings in three of these cases (MSB2010050204, CLC2010050202, MSB2010050205) consisted of blunt force trauma of unknown cause inflicted to the carapace and plastron. Of the remaining two cases, one had complete transection of the body consistent with a watercraft injury (KMM2010050903) and another had shark bites resulting in bilateral amputation of the front flippers (ZHS2010051203). The latter case had evidence of exsanguination supporting antemortem injury. The completely transected carcass also had evidence of exsanguination; however, postmortem leaching of blood could not be ruled out due the extent of the damage. Injuries were assessed to be perimortem in the other three cases with acute injuries based on lack of any evident vital response and limitations resulting from the state of the carcasses.

Pieces of fish, either bones and/or soft tissues, were recovered from the gastrointestinal tracts of 36 of 40 intact carcasses. One of these animals, a *L. kempii* (MMK2010050801) died with a fish in its esophagus and many turtles had partially digested fish in the stomach. Based on size and morphology, the fish bones were from various sizes and species. Specimens were collected for specific identification. Evidence of fish ingestion was document in 10 of the 11 *L. kempii* examined by Ms. Belskis.

Additional gross findings were limited to mild parasitic lesions that were incidental to the cause of death and relatively minor, completely healed traumatic injuries. There was no gross evidence of any disease process of concern.

Samples collected

Selection of cases for sample collection was dependent on postmortem condition and whether or not carcasses had been previously frozen (limiting factor for histopathology). Numbers and types of samples collected are given in the table below.

Sample types	Number, species, state
Tissues for histopathology; Samples for hydrocarbon analysis; Complete set of frozen tissues and GI contents in aluminum foil (general toxicology)	1 *L. kempii* (LA)
Samples for hydrocarbon analysis; Complete set of frozen tissues and GI contents in aluminum foil (general toxicology)	3 *L. kempii* (MS)
Complete set of frozen tissues and GI contents in aluminum foil (general toxicology)	18 *L. kempii* (MS)
Frozen GI contents only	23 *L. kempii* (MS); 1 *C. caretta* (MS)

Comments

All necropsied dead turtles from Mississippi and the single *L. kempii* from Louisiana that were recovered during the period of 4/30/2010 to 5/14/2010 were in good nutritional condition with no visible internal or external oil. Also, none of the examined turtles had any apparent cutaneous, ocular, or mucus membrane abnormalities suggestive of chemical injury, as may occur with exposure to either petroleum or dispersants. There was no gross evidence of any significant infectious or other underlying disease process as a cause of stranding. Five turtles had severe acute traumatic injuries, only 2 of which had evidence that these injuries may have occurred antemortem (all remaining were documented as perimortem). The most significant findings relevant to investigation of the cause and circumstances of

death were good nutritional condition, ingestion of fish in most turtles, and evidence of sediment aspiration.

Presence of ingested fish is suggestive of feeding upon dead fish, such as discarded bycatch or a fish kill. It is generally regarded that sea turtles are not able to catch fish as a substantial part of their natural diet. Fish comprised the majority of recognizable food items in most of the necropsied sea turtles. Although formal identification of the ingested fish is pending, there clearly were multiple species and a wide range of sizes of fish represented.

Aspiration of sediment can occur under circumstances such as forced submergence (drowning) in sediment-rich ambient conditions, during stranding when debilitated animals aspirate while beached in the surf, or as a terminal/agonal event. The four turtles that had clear evidence of aspiration throughout the lungs were assigned a preliminary immediate cause of death of drowning. Furthermore, drowning and asphyxia from sediment aspiration are primary considerations for the immediate cause of death for almost all animals in which complete examination was possible, with the exception of the five aforementioned cases with traumatic injuries. Investigation of potential underlying causes/circumstances (proximate cause of death) resulting in drowning/sediment aspiration is by exclusion. In the absence of any apparent underlying chronic disease/debilitation (as evidenced by robust nutritional condition) or other visible significant gross findings in an unusual sea turtle mortality event, the primary considerations are forced submergence or drowning/aspiration secondary to acute toxicosis. The most plausible known scenario in which numbers of wild sea turtles would be forcibly submerged is incidental capture in fisheries.

With regard to consideration of acute toxicosis, the best studied example of a toxin resulting in deaths of wild sea turtles is brevetoxin, a biotoxin produced by harmful algae that has been associated with sea turtle morbidity and mortality in Florida. One feature of stranding events associated with brevetoxicosis and other unusual stranding events attributed to natural factors, such as other suspected biotoxins or environmental phenomena (e.g., cold stunning), is that there typically have been an array of cases presenting with dead turtles and live turtles which, over time, include turtles in varying stages of debilitation. The ranges of body condition in these previous events are due to the length of time from exposure to stranding or due to the dose of toxin or cold exposure. Therefore, the absence of live animal strandings and the overall body condition of the turtles examined and described herein make it different from previously investigated sea turtle stranding events suspected to be attributed to toxins or natural phenomena. Complete sets of samples were collected from a subset of animals for any indicated diagnostic testing, such as biotoxin analyses or other potential toxicants of concern.

Prepared by: Brian A Stacy, DVM, PhD, Diplomate American College of Veterinary Pathologists
NOAA/NMFS/Office of Protected Resources
University of Florida, College of Veterinary Medicine

Intake log	STSSN id	sex	cloc	gi contents
D-0028	WLH20100503-03	M	32.3	small gastropods in body cavity- appear
D-0019	MSB20100502-07	U	39.1 est	fish bones in cavity
D-0020	MSB20100502-08	F	50.9	fish bones in gi tract; esophagus contai
D-0021	MSB20100503-01	F	41.1	fish bones
D-0010	KMF20100502-01	F	41	fish bones in cavity
D-0029	CNH20100426-01	F	30.2	Fish bones in gi tract, small bits of crab
D-0030	CNH20100430-01	F	40.7	fish bones in stomach and body cavity,
D-0031	EXP20100430-01	F	41.5 est	gi tract full of fish bones and small amo
D-0032	EXP20100430-02	M	43.9	fish bones found in intestine and body c
D-0033	EXP20100430-03	M	40	fish bones in cavity
D-0034	EXP20100501-01	M	30.2	fish bones in gi tract

one of these three also had pieces of crab; although there was good external documentation and a go

For all other IMMS turtles that were not necropsied no oil was observed externally

comments
no oil observed externally or internally, no significant findings
no oil observed externally or internally, no significant findings
no oil observed externally or internally, no significant findings
no oil observed externally or internally, no significant findings
no oil observed externally or internally, no significant findings
no oil observed externally or internally, no significant findings
no oil observed externally or internally, no significant findings
no oil observed externally or internally, no significant findings
no oil observed externally or internally, no significant findings
no oil observed externally or internally, no significant findings
no oil observed externally or internally, no significant findings

ɔod log of samples collected on the STSSN form and the Chain of custody the recorder was not writing the gi tract

contents, just that samples were taken. If the contents are ever looked at we can determine which this was.

Oiled Sea Turtle

Gross Necropsy Report

Spill Name:	
Animal Log #	
STSSN #	
PIT tag:	Flipper tags: R L
Sex:	**Age:**
Weight:	kg. (estimate/actual)
SON:	emaciated 1 2 3 4 5 6 7 obese
Measurements:	SCL(N-T) cm SW(widest) cm SCL(N-N) cm

Form completed by:	Date:	
Enforcemnent Officer:		
Strand/Capture location:		
Collecters Name:		
Intake date:		Euthanasia
Death date:	Time:	☐ yes
Post mortem date:	Time:	☐ no
Carcass Classification: 1-fresh, 2-fair, 3-poor, 4-mummified	**Frozen**: ☐ yes ☐ no	
Photographs: ☐		
Radiographs: ☐		

Clinical signs/diagnosis	
Antibiotics given	
Pertinent lab results	

GROSS NECROPSY ABNORMALITIES:

HYDROCARBON ANALYSIS SAMPLES		
bile	kidney	fat
blood	muscle	other:
urine	lung	
liver	intestine	

MICROBIOLOGY	**SWABS: other**
Lung ☐	
Liver ☐	
other ☐	

HISTOLOGY SAMPLES

lung	thyroid	ileum	kidney	muscle
trachea	pharynx	colon	oviduct	gonad
heart	tongue	pancreas	urinary bladder	skin
aorta	esophagus	spleen	adrenal	eye (L/R)
pulmonary artery	stomach	liver	whole repro	fat–site:
thymus	duodenum	gall bladder	bone marrow	
salt gland	jejunum	brain	spinal cord	
other:				

FROZEN SAMPLES

stomach contents
intestine contents
feces
lung
liver
spleen
kidney

Cause of death (preliminary diagnosis):

Examiner: Examiner's signature: Date:

NOAA (first_name.last_name@noaa.gov unless noted otherwise)

NOAA, National Marine Fisheries Service, Southeast Fisheries Science Center

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Nancy Evou, sea turtles; cell 850-624-4239

CHAIN OF CUSTODY RECORD

Case Number:

DATE AND TIME OF SEIZURE:	DUTY STATION:	EVIDENCE/PROPERTY SEIZED BY:

SOURCE OF EVIDENCE/PROPERTY (person and/ or location)	DEFENDANT/COMPANY NAME AND REMARKS:
O TAKEN FROM: O RECEIVED FROM: O FOUND AT:	

ITEM NO:	DESCRIPTION OF EVIDENCE/PROPERTY (include Seizure Tag numbers and any serial numbers):

ITEM NO:	FROM: (PRINT NAME, AGENCY)	RELEASE SIGNATURE:	RELEASE DATE:	DELIVERED VIA: O FEDEX O U.S. MAIL O IN PERSON O OTHER:
	TO: (PRINT NAME, AGENCY)	RECEIPT SIGNATURE	RECEIPT DATE:	

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Revised 17 July, 2009 MKM

MARINE MAMMAL HEALTH AND STRANDING RESPONSE PROGRAM

Marine Mammal Oil Spill Response Guidelines

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Office of Protected Resources
Marine Mammal Health and Stranding Response Program

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MARINE MAMMAL HEALTH AND STRANDING RESPONSE PROGRAM

Marine Mammal Oil Spill Response Guidelines

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4. Oiled Marine Mammal Intake Form
5. Oiled Marine Mammal Daily Progress Form
6. Oiled Marine Mammal Evidence Collection Protocol
7. Petroleum Hydrocarbon Tissue Sampling Protocol
8. Oil Spill Response Laboratories and Supplies
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Internet Resources

NOAA Fisheries, Marine Mammal Health and Stranding Response Program
http://www.nmfs.noaa.gov/pr/health/

NOAA, Damage Assessment, Remediation, and Restoration Program (DARRP):
http://www.darrp.noaa.gov/

U.S. Coast Guard Oil Spill Response: http://www.uscg.mil/hq/g-m/nmc/response/index.htm

U.S. Coast Guard Area Contingency Plans: http://www.uscg.mil/vrp/acp/acp.shtml

U.S. National Response Team: http://www.nrt.org/

Wildlife Health Center, UC Davis: http://www.vetmed.ucdavis.edu/whc/

Oiled Wildlife Care Network: http://www.vetmed.ucdavis.edu/owcn/

Introduction

Marine Mammals and Oil: A Brief Overview

In comparison to marine birds, marine mammals are infrequently affected by oil spill incidents. The number of individuals and species affected, as well as the degree of pathological impact of such exposure, will depend on many variables, such as the location and size of the spill, the characteristics of the oil, weather and water conditions, types of habitats affected, the time of year the spill occurs, as well as the behavior and physiology of the marine mammal. Information on the effects of oil on marine mammals is sparse, and is mostly a result of the *Exon Valdez* oil spill in Alaska in 1989 and a limited number of exposure experiments on a narrow range of species exposed to relatively low doses of oil (Geraci and St. Aubin, 1990).

The sensitivity of marine mammals to spilled oil is highly variable and appears to be most directly related to the relative importance of fur and blubber to thermoregulation. In those species with relatively sparse fat stores, direct contact with oil impairs the thermal insulative value of fur thus resulting in hypothermia. External exposure can also result in dermal injury and conjunctivitis. Internal exposure of oil by ingestion (either by direct ingestion or indirect through food and water sources) can result in gastrointestinal ulcers and liver and kidney damage. Inhalation of volatile hydrocarbons can result in central nervous system and pulmonary damage and behavioral abnormalities. Depending upon the extent of external exposure, the toxicity of the petroleum product, the volume ingested or inhaled, the presenting clinical signs, and the species affected, some marine mammals exposed to oil may not need rehabilitation. Oil spill responders must consider that such procedures involving capturing, holding, treating, and releasing the wild animals places stress on the animal, and the consequences of capture and captivity may be a greater risk to its well being than contacting oil. Exceptions may include abandoned or moribund young pups of any species and species that rely on fur for thermal insulation. These animals will most likely require rehabilitation when oiled due to the physical and toxicological effects of petroleum exposure.

Pathological Effects of Petroleum Exposure

Documented clinical and histopathological effects of oil in pinnipeds and sea otters include ambulatory restrictions, thermoregulatory imbalance, central nervous system depression, interstitial pulmonary emphysema, aspiration pneumonia, anemia, conjunctivitis and corneal edema, gastrointestinal irritation, and hepatic and renal tubular necrosis/lipiosis, and adrenal gland dysfunction (Davis and Anderson, 1976; Geraci and Smith, 1976; Engelhardt et al., 1977; Engelhardt, 1985; Geraci and St. Aubin, 1988; Geraci and Williams, 1990; St. Aubin, 1990; Lipscomb et al., 1993). Small laboratory studies on the effects of oil have been conducted on ringed and harp seals (Smith and Geraci, 1975; Geraci and Smith, 1976); however most studies have been unable to correlate the degree of oiling with the type of effect and many of these lesions may be related to captivity stress or other underlying factors. Changes in acute phase proteins and cytokines (e.g. elevated IL-6, haptoglobin and creatine kinase) have been correlated with probable petroleum exposure in river otters (Duffy et al., 1993; Duffy et al., 1994). Oiled sea otters displayed evidence of hepatic and renal dysfunction as well as anemia in their blood parameters (Williams et al., 1995).

Heavy oiling did not appear to interfere with seal locomotion during the *Exxon Valdez* oil spill (Lowry et al., 1994), but in previous spills seal pups encased in oil have drowned due to their inability to swim (Davis and Anderson, 1976). During *Exxon Valdez*, harbor seals were observed exhibiting abnormally tame or lethargic behavior. These observations are most likely explained by midbrain nerve damage found in oiled harbor seals and Steller sea lions (Spraker et al., 1994). In addition to the acute mortalities associated with the loss of thermoregulation and buoyancy, many physiological and behavioral problems have been attributed to internal exposure to petroleum and polycyclic aromatic hydrocarbon (PAH) compounds in sea otters. However, many of these conditions have been difficult to differentiate from lesions attributed to, or compounded by, shock and chronic stress associated with capture and the rehabilitation process (Williams and Davis, 1995). It has become clear that animals captured during oil spill responses undergo additional stressors that may or may not be offset by the medical care they receive.

Background

The purpose of the Marine Mammal Oil Spill Response Guidelines (Guidelines) is to provide a foundation for coordination and communication between the National Marine Mammal Health and Stranding Response Program participants and other state and federal governmental agencies involved in oil spill response and marine mammal conservation and protection. The National Oceanic and Atmospheric Administration (NOAA) Fisheries, Office of Protected Resources, Marine Mammal Health and Stranding Response Program (MMHSRP) enlisted the University of California (UC) Davis, Wildlife Health Center to assist in the development of these Guidelines with input and assistance from NOAA's National Ocean Service, Office of Protected Resources, Damage Assessment, Remediation, and Restoration Program (DARRP) and NOAA Fisheries, Office of Law Enforcement (OLE). The UC Davis, Wildlife Health Center, through its Oiled Wildlife Care Network (OWCN) program is among the world's leading experts on oiled wildlife response methods and standards. The primary purpose of the document is to: outline appropriate standardized data collection techniques for response activities and damage assessment; define chain-of-custody protocols for animal collection, necropsy and sampling; provide recommendations for protection of human health and oil spill safety training for responders; and present guidelines for best achievable care of oiled marine mammals. Standardization of this information between and among oiled marine mammal responders should allow for more accurate collection of data for analysis, which then may yield better information on the effects of oil on marine mammals and further improvements in oil spill response involving marine mammals. These Guidelines by their design do not address overall marine mammal husbandry methods in detail, but are intended to provide basic information on oil spill specific issues (such as search and collection, transport, emergency care and stabilization), and procedures specific to oil spill response. For more information on general marine mammal rescue and rehabilitation, the reader should consult references such as Marine Mammals Ashore (Geraci and Lounsbury, 1993) and the CRC Handbook of Marine Mammal Medicine (Dierauf and Gulland, 2001).

Intended Uses

These Guidelines are intended for use by the NOAA Fisheries MMHSRP, other natural resource management agencies, marine mammal stranding networks and rehabilitators, On-Site Coordinators, and Potentially Responsible Parties (PRPs) as a guide in:

- Developing appropriate sections of Area Contingency Plans (ACPs)
- Stimulating communication and documentation coordination between interested parties
- Caring for oiled marine mammals
- Evaluating marine mammal rehabilitation center capabilities for oil spill response
- Collecting evidence for assessment of impacts on marine mammals
- Making informed choices during spill responses

Responses to spills impacting marine mammal will depend upon factors including the size of the spill, species involved, type of product spilled, time of year, and location. It is important that spill responders and pre-spill planners recognize that the variability in degree of effort and complexity in marine mammal response can be significant when comparing small and large events.

This document is not intended for use as a training manual. Nor is this document an exhaustive list of techniques in this field, in which practical knowledge is being continuously refined and developed. It is to serve as guidance for acquiring the best achievable care and data collection during an oil spill response and should be periodically reviewed and updated.

Organizational Structure

Organizational Structure of Wildlife Response

Actions taken to protect wildlife resources follow an organized and agreed-upon cascade of agency notifications and activities. All activities of the oil spill response are coordinated through the Unified Command (UC) and follow an Incident Command System (ICS) structure as standardized by the National Interagency Incident Management System (NIIMS) and modified for oil and hazardous substance spill response by the National Response Team (Figure 1., NRT 2004). The UC is the governing body ultimately responsible for all decision making processes during the spill response, and is made up of a Federal On-Scene Coordinator (FOSC) (usually a Coast Guard Captain of the Port for the affected area), a State Incident Commander (IC) or On-Scene Coordinator (SOSC), and a qualified individual from the Responsible Party (RP), if known. When appropriate, local government representatives can be included in the UC. The FOSC has the ultimate responsibility for directing the oil spill response if a consensus cannot be reached among the members of the UC. Wildlife response activities usually exist within the Operations Section of the ICS, though some wildlife actions (primarily baseline assessment and planning) also occur with the Environmental Unit of the Planning Section. The Wildlife Branch within the Operations Section coordinates and initiates wildlife response activities. Guidance for dealing with oiled wildlife is not specifically provided in the National Contingency Plan, therefore the Wildlife Branch operational plan is developed uniquely within each Regional and Area Contingency Plan based on the specific resources and agency involvement.

Early but prudent initiation of a wildlife response plan and the previous development of the Wildlife Branch ensure timely mobilization of dedicated staff, equipment, and volunteers. This structure allows for effective lines of communication, making the response effort much more efficient. The degree of the wildlife response effort is designed to be flexible and scalable to the size of the oil spill - only those positions necessary and appropriate for a specific spill incident are filled.

Trustee Organizations

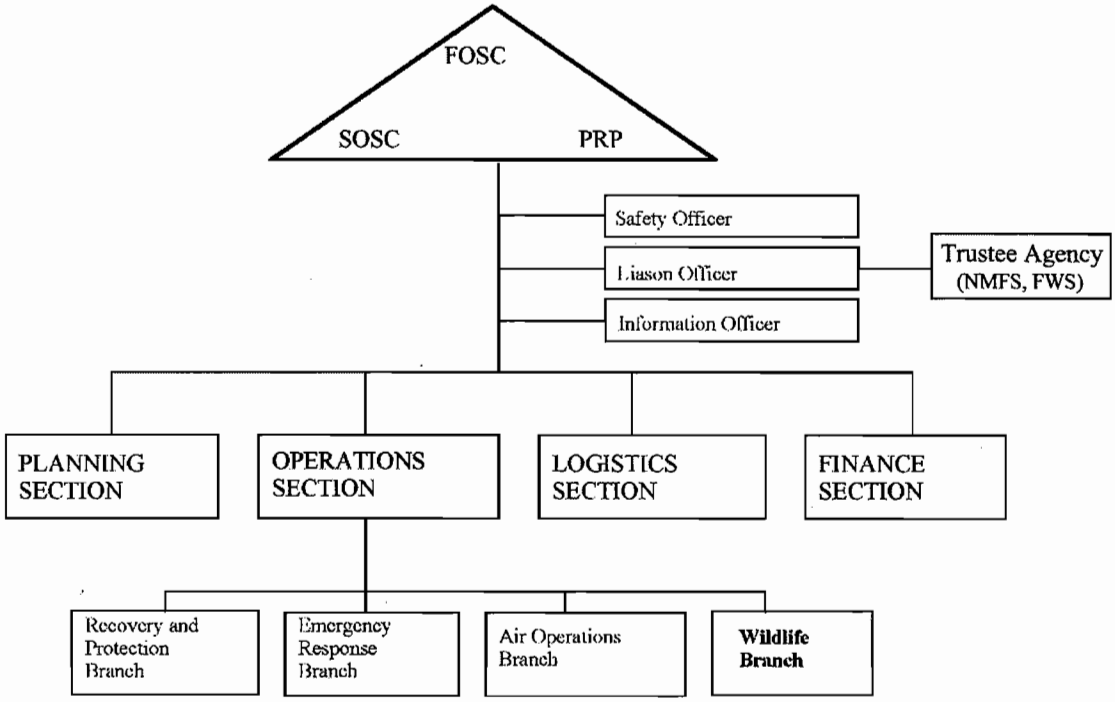
Under federal statutes, NOAA Fisheries, National Marine Fisheries Service (NMFS) has responsibility for managing and protecting all cetaceans and pinnipeds in U.S. waters, except walruses; U.S. Fish and Wildlife Service (FWS) has responsibility for managing and protecting manatees, walruses, sea otters, and polar bears. NOAA Fisheries is responsible for the administration of the Endangered Species Act (ESA) as it applies to certain cetaceans and pinnipeds and the FWS is responsible for the administration of the ESA as it applies to remaining marine mammals and terrestrial mammal and bird species. Following an oil spill, specific information on wildlife resources at risk and appropriate wildlife response actions are made available to the Federal On-Site Coordinator (FOSC) and other members of the Unified Command (UC) through representatives of appropriate wildlife resource managers. Therefore, the UC must immediately consult with FWS or NMFS whenever a response may affect these resources. The Marine Mammal Protection Act (MMPA) prohibits the "take" of sea otters, seals, sea lions, walruses, whales, dolphins, and porpoises, which includes harassing or disturbing these animals as well as actual harming or killing; however, Section 109(h) of the MMPA allows take by

Federal, State, or local governmental officials, during their official duties, provided the take is for the welfare and protection of the animal or public health. Accordingly, the FOSC/UC is authorized to take marine mammals during an oil-spill response if to protect the welfare of the animal. Section 12(c) of the MMPA allows NMFS to enter into cooperative agreements (e.g. Stranding Agreements) that allow stranding network participants marine mammal take in order to carry out the purposes of the MMPA. The ESA and its implementing regulations provide special provisions for consultations during emergencies (such as oil spills) with FWS and/or NMFS for making recommendations to the FOSC to avoid the taking of listed species or to otherwise reduce response-related impacts. In some State statutes, management and protection of wildlife resources are joint responsibilities between NMFS, FWS and the State. Because of these shared trust responsibilities, both federal and state agencies are required to respond to spills, or potential spills, that may impact marine mammals. To facilitate efficient and effective coordination during an oil spill response, federal and state agencies may consider developing Memorandums of Agreement (MOA's) or Memorandums of Understanding (MOU's) that pre-designate regional primary points of contact, establish lead representatives, and define roles for natural resource emergency situations.

In the wake of the *Exxon Valdez* spill, Congress passed the Oil Pollution Act of 1990 (OPA 90). OPA 90 sets forth an extensive liability scheme that is designed to ensure that, in the event of a spill or release of oil or other hazardous substance, the responsible parties are liable for the removal costs and damages that result from the incident. A responsible party may be liable for removal costs and damages to natural resources, real or personal property, subsistence use, revenues, profits and earning capacity, and public services. OPA 90 also set aside a significant trust fund that can be utilized quickly to implement a spill response prior to establishment of liability.

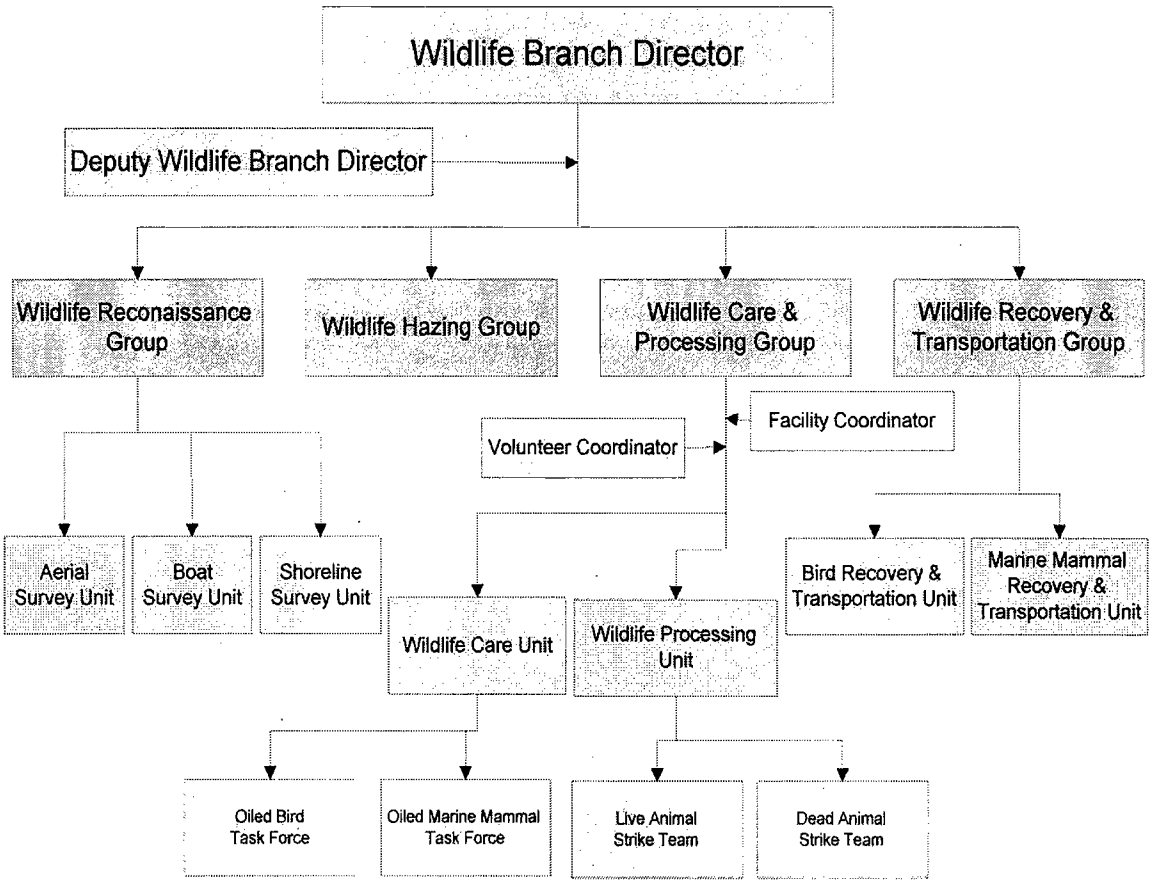
OPA 90 directs the appointed trustees to conduct natural resource damage assessments (NRDAs) and develop and implement plans to restore, rehabilitate, or replace damaged natural resources. Authority to claim damages to natural resources also stems from Clean Water Act (CWA) and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Under the CWA, federal and state agencies with diverse jurisdictions and missions are directed to combine their response and planning efforts in the event of an oil spill or release of another hazardous substance under the aegis of a National Contingency Plan (NPC) or an Area Contingency Plan (ACP). An Area Contingency Plan must provide for efficient, coordinated, and effective action to minimize damage from oil and hazardous substance discharges. In so doing, an ACP assigns duties and responsibilities to various federal and state agencies, provides for maintenance of necessary equipment and supplies, and establishes Coast Guard strike teams with specialized training in oil and hazardous substance control. In addition, an ACP is designed to provide for surveillance and notification systems to detect oil spills as early as possible. Further, an Area Contingency Plan is to provide for a specific fish and wildlife response plan, developed with the advice of expert agencies, to minimize disruptions to fish and wildlife and their habitat. Regional and Area Contingency Plans can be located at the U.S. National Response Team website (www.nrt.org) and the USCG website: (http://www.uscg.mil/vrp/acp/acp.shtml).

Figure 1: Incident Command Structure for Oil Spill Response (NRT 2004)



Once the FOSC activates the Wildlife Branch, several components of oiled wildlife response can be initiated, including reconnaissance to determine species and areas to focus operations, hazing of animals to prevent oiling, search and collection for live and dead animals in the spill area, treatment and rehabilitation of oiled animals, and release and monitoring of recovered animals. The agencies, organizations, and individuals responsible for these functions should be outlined in the Area Contingency Plan. An example of Wildlife Branch organization is shown in Figure 2.

Figure 2: Wildlife Branch Organization (State of California, Wildlife Response Plan, 2004)



Under the direction of the Wildlife Branch Director (WBD), the principal objectives of Wildlife Operations during spill response and cleanup are to:

- Provide the best achievable care to impacted and/or threatened wildlife
- Document for the Unified Command the immediate impacts of the oil spill to wildlife
- Minimize injuries to wildlife
- Protect wildlife and habitats from adverse effects of wildlife recovery

To ensure these objectives are achieved with maximum efficiency, the WBD (in coordination with the Environmental Unit) manages the activities of the federal, state, and local agencies along with commercial and non-profit organizations responsible for wildlife protection and management who fall under the authority of the Unified Command during spill response

Stranding Network and Facility Requirements

Wildlife Operation plans should include (where available and appropriate) properly trained regional Stranding Network Participants because of their experience with live animal stranding response and rehabilitation for the local area. In order for Stranding Network Participants to contribute during wildlife response, they must hold a Stranding Agreement or Letter of Authorization (MMPA, Section 112(c)) with NMFS/FWS and have received specific oil spill training and meet facility requirements for oiled marine mammal rehabilitation. NOAA Fisheries, Office of Protected Resources, may include oil spill response authorization in the Stranding Agreement with the Participant when it is determined that the Stranding Network Participant meets these criteria. Authorized marine mammal rehabilitation organizations should make efforts to become engaged in the development of their Area Contingency Plans to ensure their involvement during oil spill response.

Criteria for Evaluating Marine Mammal Rehabilitation Groups

The following criteria can be used when considering and evaluating marine mammal rehabilitators for conducting oil spill response.

- Holds all necessary permits, Stranding Agreements (NMFS) and Letter of Authorizations (FWS) for marine mammal stranding and response activities.
- Experience in the capture, treatment, and care of oiled marine mammals
- Knowledge of conducting marine mammal response activities within an Incident Command System structure including appropriate communication and notification procedures
- Sufficiently trained (health/safety and animal care), equipped, and experienced supervisory staff
- Ability to train and equip personnel and volunteers for marine mammal response during an emergency oil spill response
- Ability to quickly mobilize to perform marine mammal capture, field evaluation, stabilization and transport (including to remote locations if necessary)
- Access to appropriate facilities for treating and housing oiled marine mammals (including adequate animal care, hazardous waste, and personnel infrastructure)
    - Ability to establish and operate marine mammal intake, holding, and isolation areas within 12-24 hours of wildlife response activation.

  - Ability to establish and operate marine mammal cleaning and pre-release areas within 72 hours of wildlife response activation.

- Agreement with a licensed veterinarian experienced in the treatment of oiled marine mammals to provide necessary medical care

- Use of best practices as outlined in the remainder of this document

Facility Requirements for Marine Mammal Oil Spill Rehabilitation

General Considerations

The size of the spill, its location, and the number and species of animals oiled will help determine the type and location of a facility that can meet the required need. Not all spill responses will be in the vicinity of a permanent rehabilitation facility. Temporary facilities that can care for oiled marine mammals in the short or long-term can be established in local, fixed structures, or mobile units can be brought to a spill location to set up as a temporary facility. However, it is critical that spill responders and pre-spill planners recognize the degree of effort, the unique requirements of oiled wildlife care, and the complexity required to implement and establish an adequate facility. Pre-spill planning is strongly encouraged to achieve wildlife response systems that will adequately address the needs of small as well as large rescue efforts as rapidly as possible during a spill.

There are published standards for the design of facilities housing marine mammals in captivity. In the United States, these standards are published by the Department of Agriculture, Animal and Plant Health Inspection Service (APHIS, www.aphis.usda.gov) and are a requirement for facilities that wish to display animals to the public. They include such items as haul-out requirements, pool size and depth, water quality, number of animals to be kept in a particular environment, and strict standards for food preparation areas and medications. The USDA standards are useful guidelines but may not be appropriate for animals that require constant medical attention and handling, or for facilities that only keep animals for a short period of time. NMFS is in the process of developing specific marine mammal rehabilitation facility guidelines (NMFS/FWS Best Practices for Marine Mammal Stranding Response, Rehabilitation, and Release: Pinniped and Cetacean Rehabilitation Facility Guidelines).

Facility design for rehabilitation centers is an ongoing area of study and no perfect facilities exist to suit all needs for each species and age class of marine mammal. Notwithstanding, certain principles should be kept in mind when designing an oil spill response facility or when attempting to house oiled marine mammals in an existing facility (Davis and Davis, 1995). An ideal facility should include: intake/physical exam/evidence processing area; a veterinary hospital with isolation capabilities; indoor wildlife housing/caging areas; food storage and preparation facilities; animal washing and rinsing areas; drying areas; outdoor pool and pen areas; pathology facilities; volunteer training and eating areas (with restrooms); administrative offices with multiple phone/fax lines and conference space; storage; and access to a large parking area. Minimizing stressors is an important aspect of creating a good rehabilitation environment. Specific animal needs must be taken into account when trying to provide adequate housing for animals during an oil spill. These needs may be affected by such factors as the animal's species, age, physical condition, degree of oiling, and nature of the product with which it was oiled.

Housing Requirements and Considerations

Indoor and outdoor housing should maximize safety to humans and the animals, provide an escape-proof enclosure, and minimize visual stress and human traffic. Within an oil spill response facility, housing should be set up so that there are appropriate areas for holding animals prior to intake, pre-wash assessment and stabilization, post-wash, quarantine, and longer term housing. These areas will differ in the amount of access to the animals that is required, the space that each animal requires, the degree to which the environmental temperature can be controlled, and type (if any) of water requirements (fresh versus salt). Ideally, all of these areas should have separate filtration systems. Separate systems are required for pre- and post-wash animals to prevent oil contamination of animals that have already been washed.

Environmental Control: A finer degree of environmental temperature control is required for newly admitted animals, neonates, and animals that are compromised due to poor nutritional state, greater extent of secondary effects, or underlying disease. Animals that are compromised require easy or limited access to water, haul-out areas, and heat sources such as heating pads and lamps, but may need frequent observation to ensure that severely debilitated animals are able to move away from heat sources to prevent hyperthermia and burns. Some animals may require more frequent handling for monitoring, sample collection, feeding or medicating. Housing should minimize stress but maximize accessibility and ease of monitoring (Tuomi et al., 1995)

Ventilation: Adequate ventilation is an extremely important factor for maintaining marine mammals in captivity and is more important in oil spill situations to protect against the toxic effects of volatile agents and prevent the spread of infectious agents between animals. Ten to fifteen air changes per hour has been recommended as adequate for inside animal holding (NIH, 1985) and these standards should be adhered to if at all possible. Outdoor housing is ideal for maintaining ventilation but drawbacks include lack of environmental control, discomfort for personnel working with the animals, and more challenging access control by staff.

Quarantine: The potential for the spread of disease is an important issue to consider for marine mammals in captivity. Captured animals, staff and volunteers may carry infectious agents without showing signs of disease and could pose a threat to oiled animals. Staff should use effective quarantine protocols including foot baths containing appropriate antimicrobial solutions between housing areas, cleaning/disinfecting or changing protective clothing between animals, designating separate feeding and cleaning equipment for different areas, and minimizing movement of animals and personnel between areas. Extra care must be taken in areas where animals with infectious diseases are kept and when handling immunocompromised animals.

Water Supply: Oiled wildlife care facilities require large quantities of water to provide all areas simultaneously (e.g., wash/rinse area, pool area, laundry). The quantity should be sufficient to provide at a minimum a continuous flow of 4 gallons/minute to all indoor valves and additional supply to fill, operate filtration and ozonation equipment, and provide overflows for pools. Washing and rinsing areas require temperature-controlled hot water (98-108°F) with water hardness of 2-5 grains per gallon at pressure of 40-60 psi.

Waste Water: Facilities must dispose of all oil and animal wastewater in accordance with appropriate Federal, State, and municipal regulations. Oil contaminated water often must be contained in separate holding tanks and not released in normal sewer system.

Data Collection

Data Collection and Chain-of-Custody Procedures

Systematic search and recovery, t ransportation, processing, and treatment of all oil-affected wildlife are critical for guiding response actions and gaining an understanding of the short-term and long-term consequences of oil spills to wildlife populations. In addition, these data can be used after the emergency response for natural resource damage assessment activities. In order to track the samples and collect data during oiled wildlife response, the trustee agencies and response organizations must adhere to pre-established chain-of-custody and animal identification procedures. For tracking purposes, data on oiled animals are compiled on standard data log forms (Appendix 2-3). During large-scale responses, pre-identified wildlife agency personnel or their agents will complete log forms; however, field and rehabilitation responders should be familiar with the forms and their completion for smaller-scale responses and for individual oiled animals that present to participating facilities independent of a spill response. In addition to the tracking of live animal data, all samples (carcasses, samples, photos, records) that may be used in legal cases must be tracked and secured at all times.

Quality assurance (QA) procedures are necessary to ensure that data are collected in a scientifically valid manner. It is important throughout any sampling and analysis program to maintain integrity of the sample from the time of collection, through the point of data reporting, to the final sample disposition. Proper chain-of-custody procedures allow the possession and handling of samples traced from collection to final disposition. Documents needed to maintain proper chain-of-custody include:

Field Logbook: All pertinent information on field activities and sampling efforts should be recorded in a field logbook. The logbook should enable someone else to completely reconstruct the field activity without relying on the memory of the field crew. All entries should be made in indelible ink (preferably ballpoint), with each page signed and dated by the author, and a line drawn through the remainder of any page. All corrections must consist of permanent line-out deletions that are initialed. An example of a Search Effort Log is presented in Appendix 1. For tracking and chain-of-custody purposes, all live and dead animals recovered should be identified (tagged/marked) in the field and the identification noted on the Search Effort Log. Permanent tags will be applied and logged at the processing facility.

Animal Logs: At admittance to a wildlife care and processing facility, the animal must be logged into the Live Marine Mammal Data Log or Dead Marine Mammal Data Log (Appendix 2-3) and all of the boxes on these forms must be completed. All animals collected dead or alive are given a unique log number and identifier (e.g. tag), as well as a Level A data field number, in order to track the individual animals through the capture/collection, processing, and for live animals the rehabilitation and release process.

Sample Collection and Label: It is necessary to collect an oil sample and photo from each individual animal. A detailed protocol for the collection of evidence is provided in Appendix 6.

Each sample must be identified with a waterproof label that is securely attached to the outside of each sample container. Labels must contain the oil spill name, date, species, intake log number and Level A data field number of that animal, animal capture location, and flipper tag color and number and then sealed with evidence tape or custody seals. Custody seals are used to detect unauthorized tampering with the samples. Samples and photo must be properly stored in a secure location that has limited and controlled access.

Intake Form: For live animals, the Oiled Marine Mammal Intake Form (Appendix 4) must be completed for each animal. This form contains important questions about the extent of oiling, location and depth of oiling, as well as a place for documenting physical examination findings. For evidence documentation, a photo of the animal and oil sample must be taken during intake and admission into the wildlife care and processing centers (see Intake and Admission Procedures). During rehabilitation, each animal must have individual records documenting the treatment and care of that animal. Authorization for cleaning and later release must be documented on the Oiled Marine Mammal Intake Form and signed by the authorizing authority (i.e. attending veterinarian). For resource damage assessment purposes, a photo of the animal with identification (i.e. card with animal log number and date) must be taken prior to release.

Chain-of-Custody Forms: A chain-of-custody record (Appendix 10) must accompany every animal/sample collected during response activities. The initiation of the form should start at the first point of transfer of the animal/sample to another individual. Both the person relinquishing custody of the sample(s) and the person receiving the sample(s) must sign the form and ensure that the samples and records are not left unattended unless secured properly. The trustee agency (NMFS, USFWS) that is acquiring custody of samples (such as oil swabs collected from animals during Intake Procedures, page 20) from a rehabilitation center should supply appropriate chain-of-custody forms.

Tissue Sampling: Tissue samples are collected for either chemical or histological analysis. Only after authority is given by the appropriate trustee agency and the Unified Command can necropsies be performed by qualified veterinarians and pathologists to collect tissue samples and determine cause of death on collected carcasses and mortalities that occurred during rehabilitation. Each animal should be photographed prior to sampling and samples collected following the sample collection protocols described in Appendix 6.

Safety and Human Health

Worker health and safety are of primary importance in any oiled marine mammal rescue and rehabilitation effort. The earliest phases of an oil spill are generally the most hazardous to human health and safety. Thus, safe practices during field collection of marine mammals must be a priority. Rescue programs should not be initiated unless personnel can conduct activities safely.

As with all spill response activities, the marine mammal rescue and rehabilitation effort needs to be coordinated and monitored by the spill response command center operations, safety, and medical staffs. A written Site Safety Plan (SSP) must be developed and approved by the spill's Safety Officer for the rehabilitation facility. If field activities are on-going for marine mammal response, the site safety plan needs to be expanded to include these activities including any specialized equipment that will be used. All staff and volunteers working on the spill must be familiar with and sign the SSP prior to work.

Training for Marine Mammal Rescue/Rehabilitation Personnel

In addition to mastering specific marine mammal rescue and rehabilitation tasks, personnel must be trained to recognize and minimize risk of injuries from oil-related and physical hazards associated with oil spill response operations prior to being allowed to participate in on-site activities. Elements of required and recommended training will vary depending on the tasks of the individuals involved in the response. Training-hour requirements and specific courses vary with level of involvement, agency policy, and OSHA and state regulations.

Required Training

Personnel involved in oil spill response activities must comply with all applicable worker health and safety laws and regulations. The primary Federal regulations are the Occupational Safety and Health Administration (OSHA) standards for Hazardous Waste Operations and Emergency Response (HAZWOPER) published by the U.S. Department of Labor in Title 29 of the Code of Federal Regulations (CFR), section 1910.120 (www.osha.gov). Oiled marine mammal responders and rehabilitation centers are not specifically addressed by HAZWOPER and training to address risks associated with marine mammal stranding and oil spill response personnel may fall within the scope and application of the Hazard Communication Standard ("HAZCOM", 29 CFR 1910.1200(h)). The OSHA field compliance or Safety Officer should be contacted to ascertain the worker training requirements and develop an implementation plan to minimize the hazards of exposure to workers involved in cleanup operations. For maximum protection of the environment, OSHA has recognized the need to quickly clean-up spilled oil and has empowered the OSHA Regional Response Team representative to reduce the training requirements for responders engaged in post-emergency response operations as directed by OSHA Instructions CPL 2-2.51 (www.osha.gov). State requirements which are more restrictive will preempt Federal requirements. Marine mammal stranding network participants are responsible for training and certifying their employees and volunteers.

Recommended Training

In addition to the training required by Federal regulations, further training is highly recommended for safe and efficient operations during a spill response. This guidance is considered a minimum

essential training for marine mammal rehabilitators in accordance with the goal of establishing best practices.

Search and collection and transport personnel

- General oil spill response training
- HAZWOPER 24hr training
- Aircraft/boating/ all-terrain vehicle safety
- First aid/CPR
- Local geographical knowledge
- Marine mammal identification and capture techniques

Rehabilitation Facility Management

- Marine mammal oil spill response training
- Incident Command System
- HAZWOPER 24hr training
- Crisis management
- First aid / CPR
- Media relations

Rehabilitation/Stranding Network Facility Workers and Volunteers (Live and Dead Animal Handling)

- General oiled marine mammal training
- HAZCOM - Hazardous Communication training
- First aid / CPR

Personal Protective Equipment

Personal protective equipment (PPE) must be used to protect wildlife response personnel from exposure to hazardous substances and dangers associated with animal care activities. To guard against injury from marine mammals, all workers should wear approved personal protective equipment appropriate to their task.

Recommended PPE

Full eye protection, i.e., goggles, safety glasses, or face shield
Oil resistant rain gear or oil protective clothing (coated Tyvek, Saranex, etc.)
Gloves (neoprene or nitrile) that are oil resistant and waterproof
Non-skid shoes/boots that are oil resistant and waterproof
Ear protection (muff or ear plug type) when using pyrotechnic devices or operating machinery
Personal flotation device when working on or near water

Respiratory protection from organic vapor hazards may also be required for some operations. If respirators are used, training and fit testing are required. All workers must be trained on the proper use and limitations of all personal protective equipment prior to using the equipment.

Hazardous Substances

Rescue and rehabilitation workers may be exposed to spilled oil, and must be so informed. Prior to handling a contaminated marine mammal, the Material Safety Data Sheet (MSDS) for the

spilled material should be reviewed and all recommended precautions followed. Workers and the rehabilitation facility shall be periodically monitored, using calibrated instruments and devices to determine exposure. Ventilation in all work areas should prevent the buildup of airborne contaminants.

A portion of the rehabilitation facility should be designated for the storage of contaminated clothing, equipment, and medical waste until the items can be decontaminated or disposed of properly in accordance with the site safety plan.

Volunteers

Wildlife response programs regularly use volunteers, particularly at the rehabilitation facility. Wildlife response managers need to ensure that volunteers are appropriately trained, supervised, and informed of all hazards. A comprehensive volunteer management program is an essential component of an efficient wildlife response. This management program needs to address, at a minimum, volunteer safety, training, supervision, scheduling, and liability.

Wildlife Recovery and Transportation

Agency Oversight

Wildlife Recovery and Transportation involves the collection/capture of dead and live oiled wildlife and their transport to processing centers. Under the proposed ICS Wildlife Operation structure presented in Figure 2, these activities are performed by the Wildlife Recovery and Transportation Group, in close coordination with the UC and the state and federal trustee agencies. Marine mammal collection by any agency or organization must be done under the direction of the UC and under the agreements/permits from the appropriate management agencies (i.e., NMFS, FWS). Recovery and Transportation usually include personnel from state and federal trustee agencies, approved contractors, and marine mammal stranding network and rehabilitation organizations. Trained, qualified volunteers can be utilized as long as OSHA and other training requirements are met and adhered to.

Search and Collection Guidelines

Rescue Team: Teamwork is essential to safe, efficient collection of oiled marine mammals. Each team should consist of at least two people, and should be outfitted with the resources and equipment necessary to complete its assignment. A plan of action should be developed and discussed among all search and collection personnel and approved by the Wildlife Branch Director prior to entering the search area. Each capture site should be evaluated and strategies developed to suit the terrain and species involved. Capture of affected animals should not be attempted if adverse weather, sea conditions, cliffs, or other physical and chemical hazards in the "hot zone" are present. Communication between the Rescue and Transportation Group and the reconnaissance personnel (within the Operation Section or the Environmental Unit) is important to maximize the success of search effort.

Equipment: Prior to a response, ensure that all equipment is ready and in working condition. Capture materials should include communication equipment (portable phone or radio), specialized vehicles (4-wheel drive with lifting tailgate or crane, adequate floor space, easily cleaned, and good ventilation), boats (capture vessel and support vessel), aircraft (fixed wing or helicopter), SCUBA gear, nets (type varies by species and location of capture), cages and transport boxes (type varies by species), herding boards, personal protection equipment (PPE) and a first aid kit for humans. Any injuries to staff or volunteers should be treated immediately and reported to the site safety officer. In addition to PPE required by the Safety Officer to protect personnel from oil exposure, appropriate attire for capture teams includes closed-toed shoes or boots, long-sleeve shirts, long pants, rain gear, coveralls, and organizational identification (e.g., clothing labeled with insignia or logo).

Procedures: Record the details of the beach search effort on the appropriate Form (Search Effort Log, Appendix 1) and include data on the start and end of a search segment, observations of oiled animals, and detailed info on the stranding and/or collection (location of capture, GPS decimal degree coordinates, reason for capture). If oil or medical samples are collected from the animal prior to reaching the intake facility, make sure they are labeled properly with a unique field

identification number for each animal. For further details on oil sample collection consult Appendix 6, Evidence Collection Protocol. When collected animals or samples are relinquished to another individual, a Chain-of-Custody Form (example in Appendix 10) must be signed by both parties involved and the Form remains with the animal/sample.

Domestic animals should not be permitted near the capture location nor come into contact with marine mammals. Domestic animals are not be allowed in the transport vehicle, and if the vehicle has previously been used to transport domestic animals, it should be disinfected and cleaned prior to transporting marine mammals.

Capture: The potential benefits of capture must outweigh potential negative consequences. In general, no rescue should be initiated on free-swimming or beached pinnipeds in the vicinity of an oil spill unless the animal in question is in obvious distress. Also, no rescue should ever be initiated on free-swimming cetaceans in the vicinity of an oil spill. A decision to capture should consider such factors as sex, age, reproductive state, and size of individual animal, and their location with respect to other marine mammals. Additionally, all captures must be approved by the appropriate trustee agency (NMFS, FWS) prior to initiation.

Capture and transportation of oiled mammals should be performed only by qualified personnel who have received the appropriate safety training as well as marine mammal handling and restraint training. Because recovery and transportation duties vary with each response and may involve more risk than other duties, the Safety Officer will communicate to the Wildlife Branch Director what level of training is appropriate for field response personnel; this training may include a 24-hour HAZWOPER training (Hazardous Waste Operations and Emergency Response), first aid/CPR, water safety, or boat safety courses (see Safety and Human Health).

The method of capture may vary according to species and situation. Captures should generally be considered for isolated individuals on beaches, spits, tide flats or other relatively flat surfaces, using herding boards and nets (brail, breakaway or steel frame pole). Less often, captures may be attempted from rock jetties, piers, docks or even in the water for severely debilitated animals. Long-handled dip nets, floating bag nets, and a net gun have all been used with some success. Depending on the species involved, aquatic captures may use tangle nets, float nets, or Wilson traps.

Unless specifically authorized by appropriate trustee agencies, no non-oiled animals will be collected during spill incidents. Preemptive captures to prevent the oiling of sensitive species may be considered only under dire circumstances at the direction of the UC and trustee agencies and when adequate transport and holding facilities exist. Beached cetaceans should not be pushed back out to sea without first being examined by a NMFS-approved marine mammal veterinarian and the action approved by the NMFS. Prior to being returned to the open ocean, cetaceans should be affixed with a NMFS approved tag or brand.

All wildlife captured during spill responses should if at all possible be retrieved and transported to the wildlife processing and care center(s), regardless of the status and condition (i.e. degree of decomposition, degree of oiling). In addition, all capture-related information (i.e. location, name of captor, GPS decimal degree coordinates, date, and time) must accompany the animal to the facility. The presence of such documentation must be verified when processing centers receive

wildlife from the Wildlife Recovery and Transportation Group. All information necessary to complete either the live or dead mammal log is collected prior to the animal entering the rehabilitation process or storage respectively.

Transport Procedures

Prior to transport, field stabilization techniques may be used if it will be more than one or two hours until the animal reaches the rehabilitation facility. These techniques may involve assessing the animal for hypo- or hyperthermia and treating accordingly; administering oral electrolyte solution and subcutaneous fluids; removing large amounts of oil from the eyes and nares; and administering emergency medications (under the guidance of a veterinarian).

After capture and field stabilization, the oiled animal should be placed in a well-ventilated area on a stretcher or foam (for small cetaceans) or in a transport box, airline kennel, or cage (depending on pinniped species) for transport. Animals should be staged in a quiet, sheltered area or moved directly into the transport vehicle. The cage should be large enough to allow the animal to lie down in a comfortable position. Only one animal per transport cage is recommended for the safety of the animals and to prevent cross-contamination of oil. Females and their pups are most safely transported in separate cages, although they can be positioned so that they can hear, see, and smell each other. Pinnipeds less than 70 kg (145 lbs) can be transported in large airline sky kennels. Aluminum or other lightweight material is recommended to minimize weight of cages designed for larger animals. Each cage must be firmly tied or otherwise secured in the vehicle.

Sea otter transport kennels should be fitted with a raised bottom grate to avoid additional fur fouling. Shaved ice or any other form of fresh water ice (to combat dehydration) and chew toys (to combat tooth damage, e.g. plastic/rubber dental chews manufactured for large breed dogs) are usually provided for sea otters in transport kennels, but food should be offered if transport time is greater than four or five hours.

Animals must be monitored periodically on transports greater than one hour, as directed by a response veterinarian. In most cases, sedation during transport is not recommended. Critical cases (e.g., unstable, hypo- or hyperthermic animals) may require more frequent monitoring. Personnel transporting animals between the field and the rehabilitation center must maintain contact with their supervisor at all times so that departure and arrival times may be anticipated.

Hyperthermic animals may be sprayed gently with water, or ice cubes may be added to the top of the cage and allowed to drip onto the animal as it melts. In order to prevent inhalation and subsequent drowning by unconscious animals, do not allow water to accumulate in the bottom of transport cages. Hypothermic animals should be placed in a sheltered location out of the wind, although good ventilation must be maintained to prevent animals and humans from inhaling petroleum fumes. Keep in mind that oiled, stressed, or injured seals are not able to regulate their body temperature effectively, and their conditions can change within minutes. Animals are generally transported in either a pick-up truck or an enclosed van-type vehicle. Adequate ventilation must be maintained to protect both humans and animals from inhaling fumes emitted by freshly oiled animals. Unless hypothermia is observed or suspected, keep animals damp and cool. The preferred air temperature for pinniped transport is 50-68°F (10-20°C) but should not exceed 59°F (15°C) for sea otters (Geraci and Lounsbury, 1993; Benz and Britton, 1995). Fur seals or sea otters whose coats are oiled or saturated, neonates of all species, and animals with

extensive wounds or severe emaciation may require higher temperatures compared to minimally oiled animals or non-oiled, stranded animals. Keep in mind that human comfort during transport may not be synonymous with or sufficient for the temperature and ventilation needs of the transported marine mammals.

Beached Carcass Removal

Measures must be taken to ensure that dead animals are appropriately collected, identified, documented, and not disposed of until approved by the trustees. In addition, the prompt removal of disabled and dead oiled and unoiled animals from the environment can be critical to minimize the occurrence of secondary oiling, poisoning of predators and scavengers, and decreasing re-identification of carcasses on subsequent days. Since it is not feasible, reliable, or practical to attempt to discriminate between spill-related and non-spill-related casualties while conducting beach surveys, all carcasses must be collected. For example, scavenged carcasses, animals with dark plumage, wet carcasses, or carcasses with oil sheen or small amounts of oil that may be spill related are not always identifiable in the field as such. Because all carcasses found within a spill area are evidence, they must be handled according to established chain of custody protocols in accordance with spill incident-specific instructions (refer to the Data Collection section of this document). Each carcass must be labeled with the date, time, location, species (if known), and collector's name; taken to a designated morgue location; logged into the Dead Marine Mammal Log form and placed in a refrigerated unit until further processing can be accomplished. If a necropsy cannot be performed within 24hrs the carcass should be frozen (see Disposition Section for necropsy details).

Carcass removal, storage, and disposal expenses are considered a response activity cost that should be reimbursed to the Stranding Network Participant. It is the responsibility of the Participant to notify the Unified Command of current and future carcass storage and disposal expenses during the initial cost assessment of the response activity.

Intake Procedures

Initial Intake Procedures

While completing intake procedures, it is important to perform a thorough evaluation, collect all samples and data, be safe, and minimize the animal handling time. All personnel performing intake procedures should wear appropriate PPE including safety goggles, protective clothing, and nitrile gloves (or nitrile gloves inside leather gloves). It is best to work in teams of at least two (handler, examiner) or three (handler, examiner, recorder) in order to perform the intake in an efficient manner. For larger animals, more than one handler may be required. Physical restraint devices such as squeeze cages, otter restraint boxes, and stuff bags may be needed for larger pinnipeds and sea otters (Geraci and Lounsbury, 1993; Williams and Sawyer, 1995). Some animals (e.g., sea otters, adult sea lions) may require chemical restraint for safe handling and examination (Williams and Sawyer, 1995; Haulena and Heath, 2001).

Several different forms must be completed for every animal captured for rehabilitation during an oil spill. First, initiate or receive and sign a **Chain-of-Custody Form** (example in Appendix 10) for the transfer of the animal from the presenting individual to the individual acquiring the animal at the rehabilitation center. The animal must then be logged into a **Live Marine Mammal Data Log** (example in Appendix 2) and all of the boxes on that form must be completed. In addition, an **Oiled Marine Mammal Intake Form** (example in Appendix 4) must be completed for each animal. This form contains important questions about the extent of oiling, location and depth of oiling, as well as a place for documenting physical examination findings. In addition to the Intake Form, the rehabilitation facility's standard forms for stranded marine mammals can be used to record physical exam findings, laboratory values, treatments, and feedings, provided that all information is clearly documented and assigned to the specific animal.

A brief physical examination is performed upon admission of each individual oiled animal (see below). A veterinarian or animal care specialist should conduct the examination and treat any conditions that are considered to be life threatening. The capture, transport, and intake process is extremely stressful and an oiled animal's condition may be very unstable. The intake area should be as dark and quiet as is practical and animals must be monitored closely during the examination and intake process. If an animal's condition deteriorates and a veterinarian is not participating in the examination, seek veterinary advice immediately.

General Intake Procedure for Oiled Marine Mammals

1. Initiate or receive and sign Chain-of-Custody Form
2. Obtain and complete Intake Forms
    - Live Mammal Data Log
    - Oiled Marine Mammal Intake Form
3. Physical examination
4. Flipper tag application
5. Oil sample collection
6. Photograph

Animals need to be identified to species and, when possible, age class (pup, yearling, subadult, adult) and sex determined. Consult charts on age estimation for pinnipeds and seaotters from marine mammal guides such as Geraci and Lounsbury (1993), Reeves et al., (1992) and Ainley et al., (1980) for species and sex identification. All animals need to be tagged or marked for individual identification. This can be done with plastic livestock ear tags (e.g., Rototag, Temptag), by applying hair dye, colored livestock markers, and bleach marks to the pelage, or by clipping a small patch of pelage on the flank in a recognizable pattern (phocids and sea lions only). Dye marking and clipping is not advisable for fur seals or sea otters and may be difficult in other species depending on the location and extent of oiling. Sea otters and possibly other species may be identified using a commercially available pet microchip inserted subcutaneously at the inguinal region.

For legal purposes, it is necessary to collect an oil sample from each individual animal. A detailed protocol for the collection of evidence is provided in Appendix 6. Briefly, visible oil is scraped from the fur with a clean wooden spatula and placed into a chemically cleaned glass jar. For animals with no visible gross oiling, an affected area is rubbed with a 4x4 piece of fiberglass cloth or cotton gauze with forceps or hemostats that have been cleaned with isopropyl alcohol. Precautions must be taken to collect the sample without allowing nitrile gloves to touch the oil sample or the cloth it is collected on. The oil sample is placed in a glass container and labeled appropriately with the following information: the oil spill name, date, species, intake log number of that animal, animal capture location, and flipper tag color and number and then sealed with evidence tape and placed in secure freezer. Sampling supplies (glass jars and cloth) can be obtained through the trustee agencies.

It is also necessary to take a digital or Polaroid photograph of the oiled animal. The photograph needs to include the entire animal, the oiled region, and if possible, show the flipper tag numbers. The enforcement officer of the trustee agency will provide current protocols for securing digital photographs for evidentiary purposes. Copies of digital photographs can be made, but the original images must remain on the original media used to store the photo (i.e. camera flash card). If using a Polaroid photograph, it should be labeled with the same information as the oil sample; the oil spill name, date, species, intake log number of that animal, animal capture location, and flipper tag color and number. The Polaroid photograph or digital media and oil sample are both pieces of evidence and must be securely stored. If samples are to be sent for analysis, a completed Chain-of-Custody form is required and will be provided by the lead trustee agency.

Physical Examination

Animals are to be weighed and measured (standard length and axillary girth, xiphoid girth in sea otters) and their temperature measured with an electronic thermometer with a flexible thermister probe (e.g., Physitemp Model BAT-12 Digital Laboratory Thermometer) inserted 15 cm into the rectum. Standard thermometers can be used in sea otters, but do not accurately measure core temperatures in pinnipeds. Normal core temperature for sea otters is 99.5-100.6 °F (37.5-38.1 °C) and most pinnipeds range from 98-102 °F (Dierauf and Gulland, 2001). If the use of a thermometer is not possible, feel the flippers (e.g., icy cold or dry and hot) and observe the animal's behavior (e.g., shivering, agitation) in order to evaluate abnormally high or low body temperature. If an animal is dry and alert/active prior to the exam, assume it will overheat with handling.

A complete whole body examination should be conducted, making note of the degree and nature of oil contamination. Assess behavior, activity level and alertness; if possible, observe the animal in the transport cage prior to handling to evaluate locomotion and central nervous system status. Evaluate overall body condition and estimate the percent dehydration. Most stranded animals are at least slightly dehydrated (<5%, demonstrated by decreased tear production and subdued behavior). More severely dehydrated animals (5-10%, demonstrated by lack of tear production, thick ocular mucus, "sunken" or crusty eyes, dry mucous membranes, skin tenting in otariids, curling of the vibrissae in harbor seals, and lethargic or depressed behavior) may need to be treated with fluids prior to continuing the examination and intake procedures; however, it is preferable to obtain blood samples prior to hydration treatments.

Due to the risk of being bitten, a thorough oral exam is possible only in anesthetized, dead, comatose, and young animals, but a visual inspection of the oral cavity is often possible during vocalization in alert animals. Palpate the neck and thorax for evidence of subcutaneous emphysema and the musculoskeletal system for fractures, wounds, or swellings. Subcutaneous emphysema is often found in the neck and axillary area in oiled sea otters and is an indicator of severe pulmonary damage. Palpate the abdomen gently to detect masses, pregnancy, or fluid accumulation and observe the urogenital area for urine, feces, or abnormal discharges.

Routine Blood Sampling

Following the general examination, blood samples should be drawn for hematology (collected in an EDTA anticoagulant, lavender-top tube, LTT) and chemistry panels (collected in a serum separator tube, SST, or red-top tube, RTT) and serum banking. In phocids, blood is generally drawn from the epidural sinus or ventral (plantar) interdigital veins (at the apex of the web between the inner digits) of the hind flippers (e.g., harbor seals, elephant seals). In otariids, the caudal gluteal vein and plantar network (dorsal or ventral surface of the hind flipper just medial to the lateral digit or just lateral to the medial digit) are used for blood collection (sea lions and fur seals). In sea otters, blood may be drawn from the popliteal (saphenous) or femoral vein on a non-anesthetized animal using a restraint box and/or stuff bag. Alternatively, the jugular vein can be used on an anesthetized otariid or sea otter.

Blood samples should be collected at least three times during the rehabilitation process: on admission/intake, immediately prior to washing, and prior to release. Repeat sampling may not be necessary for wash or release procedures, if preformed within 48hrs of previous blood sampling or at the discretion of the response veterinarian. At these times, baseline blood work should include a complete blood count and standard serum chemistry tests. Normal blood values for marine mammal species can be found in Bossart et al. (2001).

Standard Blood Tests

Complete Blood Cell counts (CBC): White cell blood count, red cell blood count, hemoglobin, hematocrit, mean corpuscular volume (MCV), mean corpuscular hemoglobin concentration (MCHC), mean corpuscular hemoglobin (MCH), a differential cell count, platelet and reticulocyte counts. One full lavender-top tube (EDTA) (1 or 3 ml) is taken and refrigerated until analysis.

Chemistry Profile: Albumin, alkaline phosphatase, bicarbonate, bilirubin (total and direct), BUN, calcium, chloride, cholesterol, CK, creatinine, globulin, glucose, phosphorus, potassium, total protein, sodium, AST (SGOT), ALT (SGPT), GGT, and ratios of albumin:globulin,

BUN:creatinine, and sodium:potassium. Blood should be placed in a serum separator tube or red top tube, allowed to clot, centrifuged, and refrigerated prior to analysis. Excess serum can be saved and banked (frozen) at the rehabilitation facility.

Special Biomedical Sampling Protocols

At times, additional protocols may be used that require additional blood samples for other tests (e.g., PAH estimation, immune function assays, serum protein electrophoresis, plasma chemistries, serological tests for infectious diseases). Other biomedical samples (e.g., urine sample, fecal sample, microbiological swab, blubber biopsy) may also be collected at the discretion of the response veterinarian.

Post-examination Intake Procedures

Initial Treatment

- Fluid therapy: oral, subcutaneous, intravenous
- Activated charcoal (ToxiBan) tubing if oil ingestion suspected

All animals are assumed to be at least 5% dehydrated. Administer isotonic fluids to animals that appear to have not ingested oil orally at a rate of 10-20 ml/kg once either orally (e.g., Pedialyte) or subcutaneously (lactated Ringer's solution, LRS). If the animal is alert and is likely to have ingested oil (e.g., fur seals during grooming, neonates during nursing), administer activated charcoal slurry (ToxiBan, 6 ml/kg) orally.

Animals that are chemically immobilized for intake procedures or are weak and obtunded should not be given oral fluids. Subcutaneous fluids (e.g., lactated Ringer's solution), may be administered instead at 20-40 ml/kg. If ingestion of oil is suspected, ToxiBan slurry (6ml/kg) can be administered via a stomach tube just prior to anesthetic reversal (Williams and Sawyer, 1995). Extreme care must be taken to prevent gastric reflux and aspiration during this procedure. The risks associated with passing a stomach tube must be weighed against the risks associated with continued exposure to ingested petroleum.

Severely depressed animals may require intravenous fluid administration and other medication in addition to isotonic fluids. Additional fluid therapy (maintenance fluids plus correction of fluid deficits) should be determined by the attending veterinarian, based on an evaluation of blood work, concurrent fluid losses, and continuing assessment of the animal's condition. The fluid deficit is calculated by multiplying an animal's mass in kg x 1000 ml fluid/kg x the percent dehydration (e.g., 5% = .05). This amount should be added to the animal's daily maintenance fluid requirement (at least 40 ml/kg/day) and administered within the first 24 hr if possible.

Monitoring

Animals are regularly monitored during the rehabilitation process. Clinical observations, feeding observations (food consumption and/or preferences), and behavior should be written on the medical records. Body weight should also be monitored repeatedly during rehabilitation and recorded, at a minimum, upon admission, pre-washing, and prior to release. Physical examinations should be performed upon admission, prior to washing, and prior to release with all information recorded on individual medical records. Whenever medications are administered, the name of the drug, dose and route (oral, SQ, IM, IV) should be recorded as well as the initials of the person who administered the medication. Medical records are viewed as potential evidence by the law and must be carefully and completely filled out by animal caretakers.

Animal Washing and Continued Care

General Topics Associated With Cleaning

The facility where oiled animals will be cleaned should be designed to accommodate the variety of species that might be cared for at that facility. Each wash station must have adequate space for the animals, animal handlers, and restraint equipment that might be necessary. Water hardness should be tested before washing animals and adjusted to 3-5 grains of hardness (Clumpner, 1991). Dawn dishwashing liquid is the preferred washing product and has been shown to be safe and effective for removing oil from the coats of sea otters and harbor seals (Rash et al., 1990). Wastewater storage, containment, and removal must meet the requirements of the municipality, city, and county. A minimum team of two or three persons usually wash animals. Fur seals and sea otters may require teams of four or five persons because the density of their fur requires much greater effort. Large animals such as elephant seals may require a washing team with three or four persons to properly restrain the animal. Large animals, aggressive animals, fur seals and sea otters may require sedation and veterinary assistance for washing and cleaning.

General Washing Needs

- Softened water (3-5 gr)
- Temperature controlled warm water (80-98°F, 27-37°C)
- Pressured spray nozzles (30-40 psi)
- Dawn detergent
- Wastewater storage and removal

Pre-Wash Evaluation

Oiled marine mammals will require at least 24 hours of supportive care prior to being washed. Initial care is focused on addressing thermoregulatory problems, rehydration, and providing nutritional sustenance so animals are no longer in a negative metabolic balance. The washing procedure is very stressful; therefore, prior to the procedure, the animal needs to have regained strength. In the case of sea otters, they also need to be able to tolerate anesthesia and start to groom once recovered. A veterinarian should conduct a pre-wash evaluation that includes a physical examination, evaluation of alertness, strength and body condition, and blood parameters. If the animal passes the pre-wash evaluation, it is referred to the washing team.

Removing Tar Patches from Animals

If the oil present on an animal is a tar patch or very weathered, pretreatment may be necessary. This is accomplished by applying warmed (95-98°F or 35°C) olive oil, canola oil, or methyl oleate to the affected region. The pretreatment solution is manually worked into the tarred areas for up to 30 minutes or until the tar loosens and can be wiped off using an absorptive pad or towel. While pretreating the animal, it is important to monitor the animal's body temperature and be prepared to treat the animal for hyperthermia or hypothermia. Tar removal is necessary for furred marine mammals and non-furred marine mammals if the patch(es) are large, potentially

interfering with thermoregulation, or contribute to toxicity and result in clinical symptoms. Clipping away tar patches (with accompanying fur) is not recommended unless molt is imminent because the animal will have a bald patch that could cause reduction of heat retention. This procedure could have serious or life-threatening implications for fur seals, sea otters, or debilitated animals.

Washing Harbor Seals, Elephant Seals, Sea Lions

Sea lions, harbor seals and elephant seals rely on their thick blubber layer for insulation, making them less susceptible to hypothermia when they become externally oiled. These species are washed with Dawn detergent in thermal-neutral (~ 98°F or 37°C) water. Soap is applied and rubbed on the fur until the oil is visibly removed. The detergent can be made into a uniform solution by mixing it with water at a 1:1 ratio prior to applying thus making it easier to work into the hair and oil. Washing pinnipeds takes between 10-30 minutes depending on the extent and type of oil, species and health of the animal, and the proficiency of the staff. An initial quick rinse can be done at the wash station and then completed with the animal unrestrained in its pen using a pressure nozzle. This modified rinse procedure decreases the duration of manual restraint. In general, rinsing should be continued until there is no evidence of oil or detergent in the rinse water. Most pinnipeds are placed directly into their outdoor pens to dry.

General Guidelines for Washing Pinnipeds

1. Thermal neutral water (~ 98°F or 37°C)
2. Dawn detergent rubbed onto fur until oil is removed
3. Pressurized rinse in pen until oil and detergent removed
4. Air dry in pen

Washing Fur Seals

In contrast, fur seals possess a thin subcutaneous fat layer and a thick pelage that thermally insulates these animals (Reidman, 1990). Since they rely more heavily on their fur, fur seals are washed in a similar fashion to otters. Oiling 30% of a fur seal's coat will result in a 50% increase in heat loss (Geraci and St. Aubin, 1990), emphasizing the need for these animals to be closely monitored during the washing procedure. Fur seals are washed using a thermal-neutral (~98°F or 37°C), 5% diluted Dawn dish washing detergent solution. The diluted detergent solution is gently massaged into the fur and, as with other species, the washing duration depends on the extent and type of oil, the strength of the animal, and the proficiency of the staff. Fur seals are rinsed with fresh, soft (3-5 gr) water under moderate pressure (30-40 psi) with a spray nozzle. This process can require up to 40-60 minutes and animals are rinsed until no oil is visible in the rinse water and no petroleum odor is detectable on the fur (Davis and Hunter, 1995). For all pinnipeds, animals may become hyperthermic during washing in which case they may need to be washed and rinsed in cold water.

Fur seals, which depend on their coat for thermoregulation, may need to be placed in a drying enclosure that is warmed with an industrial pet dryer that blows room temperature air (68°F or 20°C). Animals in drying pens must be monitored for dehydration, hyperthermia, hypothermia, and alertness. Once dry and alert, fur seals can be returned to their outdoor pens.

Washing Sea Otters

Sea otters have the densest fur of any mammal, and, unlike most other marine mammals, replace their fur throughout the year instead of undergoing a seasonal molt (Tarasoff, 1974; Williams et al., 1992). Otters have guard hairs and many fine under-hairs that are microscopically interlocked

to trap air, thus providing waterproofing, thermal insulation, and buoyancy. Oil contamination causes fur clumping which leads to a loss of insulation and predisposes otters to hypothermia from the cold ocean water.

General Guidelines for Washing Sea Otters

1. Anesthesia/sedation
2. Diluted Dawn solution
3. Temperature controlled warm water
4. Pressurized rinse (40-60 minutes)
5. Dry with towels and blow dryers
6. Anesthesia reversal

Anesthesia

Due to their aggressive temperament, sea otters generally require sedation or anesthesia to be washed. A variety of anesthetics have been used, however, the current preferred drug combination in adult sea otters for nonsurgical procedures is fentanyl (0.22 mg/kg) and diazepam (0.07 mg/kg) used together intramuscularly. The opioid antagonist naltrexone at 0.44 mg/kg is recommended for reversal, but often 3 - 4 times the total dose of fentanyl administered is needed for complete reversal (Monson et al., 2001). While sedated, supplemental oxygen is routinely provided either via facemask, or, if the sea otter is immobilized enough to tolerate it, via endotracheal tube. During sedation and cleaning, the core temperature of the sea otter must be monitored continuously because otters can become hypothermic or hyperthermic very quickly. Whenever a sea otter is sedated, bags of crushed ice should be readily available and placed under the animal's neck and flippers if hyperthermia occurs.

Washing and Rinsing

Sea otters are washed with multiple applications of diluted (5%) Dawn dishwashing detergent. Ideally, washing tables are equipped with three or four well aerated nozzles dispensing temperature controlled (28-37 °C, 80-98 °F), softened (3-5 gr.) fresh water. The water temperature affects the body temperature and needs to be adjusted according to the otter's body temperature to prevent hyper or hypothermia (Davis and Hunter, 1995; Stoskopf et al., 1997). Four to six people are required per washing table, one (with heavy gloves) specifically to hold the head and forearms. The detergent is gently massaged into the oiled fur and then rinsed off under moderate pressure (30-40 psi) with a spray nozzle. Washing should consist of a wash, rinse, wash, rinse cycle until there is no indication of oil in the rinse water and no petroleum odor on the fur. Depending on the degree of oiling, washing will usually take from 40-60 minutes. A final rinse with a spray nozzle lasting an additional 40 minutes to one hour is essential to thoroughly remove the detergent and restore the furs' water repellency. Otters are initially hand dried with dry, clean, cotton terry cloth towels. Once the bulk of the water has been absorbed, the fur is dried with commercial pet dryers that deliver a high volume of temperature controlled air (Davis and Hunter, 1995). Sea otters become increasingly prone to hyperthermia as their hair is drying and cool (room temperature) air may be necessary for drying as the sea otter's body temperature increases.

Drying

Following drying, each animal is reversed from the anesthetic and placed in a large, slat-floor kennel with a sliding top or other easily accessible dry pen for intensive care monitoring. Animals in dry holding should be closely monitored for hyperthermia and fecal, urine, or food debris must be rinsed away immediately. When fully recovered from anesthesia, otters can be offered small

blocks of ice to chew on and food (Davis and Hunter, 1995). Once the animal is stable and medical conditions allow, it can be moved to a pool with haulout(s) serviced by abundant, clean, chlorine-free salt water (if available). Pools must have high seawater flow rates (e.g. 5 gallons per minute for 150 gallon pool) and drain skimmers at water level to collect debris from the pool. Fecal and food contamination of the pool water can cause fur fouling and prevent restoration of water repellency. Sea otters are not waterproof after washing and drying and must reintroduce trapped air into their fur by grooming.

Post-wash monitoring and care

During rehabilitation, sea otters need to be monitored around-the-clock by qualified personnel familiar with normal sea otter behavior and who are able to recognize clinical signs of distress. Sea otters often develop hypothermia post-wash due to lack of air insulation in washed fur and inadequate grooming. Otters that appear hypothermic, having difficulty hauling out, or experiencing seizures should be immediately removed from the water and evaluated by a veterinarian. As health and fur condition improve, otters may be moved to larger pools and/or floating holding pens. All pools should have abundant haul-out space. It will generally take a minimum of seven to ten days for the fur to recover its water repellency (Tuomi et al., 1995).

Common Problems Encountered While Washing Animals

1. Oil is not coming off with Dawn

- Pretreatment with canola oil, olive oil, or methyl oleate is required.

2. The animal's coat is not clean

- The animal may not have been washed or rinsed adequately. In either case, the animal may need to be re-washed or re-rinsed.
- The wash or rinse water is too hard and mineral deposits are forming on the fur. Water hardness should be rechecked to make sure it is 3-5 grains.
- The holding pool is not clean. Check whether the water is turbid or if there is fish oil or debris floating on the pool surface. Water flow may need to be increased or pool cleaned.

Nutritional Guidelines

The dietary requirements of stranded marine mammals are generally grouped into two categories according to age and nutritional needs: unweaned pups and weaned animals. Pups need special dietary formulas and feeding regimes based on species and age while free-feeding animals are generally fed a diet of good quality fish such as herring. Adult sea otters are usually fed a variety of fish and shellfish depending on their preference. Marine mammals also usually need to receive a supplemental multivitamin, vitamin E, and salt tablets (if housed in fresh water) with amounts based on species and weight. Monitoring fecal production and hydration status is especially important when beginning any formula, switching diets, or weaning animals. Recommended diets change with continued research and experience and stranding network participants should play an important role in the development of dietary protocols for each species and facility. More information can be obtained on marine mammal nutrition and energetics from Worthy (2001), and hand-rearing and artificial milk formulas from Williams and Davis (1995) for sea otters, and Townsend and Gage (2001) and Gage (2002) for pinnipeds.

Disposition

Release

The goal in rehabilitating oiled marine mammals is to release healthy animals back into their natural environment. Rehabilitators, in consultation with designated trustee representatives (NMFS/FWS) must prepare a release plan that is communicated to and authorized by the Unified Command through the Liaison Officer. Certain criteria must be met prior to releasing marine mammals back into wild populations. For those animals that do not meet release criteria, several options are available including additional rehabilitation, euthanasia, or placement in a long-term holding facility.

While little is known about optimal oiled marine mammal release criteria, current recommendations are based on information derived from the *Exxon Valdez* spill and husbandry practices at aquaria and rehabilitation centers in the United States. NMFS and FWS have developed guidance and criteria for release based on optimizing the chances for survival and minimizing the risk to wild populations (Best Practices for Marine Mammal Stranding Response, Rehabilitation, and Release – Standards for Release, http://www.nmfs.noaa.gov/pr/health). The Standards for Release document describes how to characterize and assess animals using several parameters.

Standards for Release

1. Historical Assessment
2. Developmental and Life History Assessment
3. Behavior Assessment and Clearance
4. Medical Assessment and Clearance
5. Release Logistics
6. Post Release Monitoring

Current criteria require that animals show normal species-specific behavior (feeding, swimming, and diving), adequate body weight for age class and species, pelage proven to be in good condition, hematological and serum chemistry values within the normal range, no evidence of infectious diseases, and physical exam findings should be unremarkable. Other ancillary tests (e.g. *Leptospira* titer, morbillivirus titer, microbiological cultures, urinalysis, fecal examinations, etc.) may also be performed on a case-by-case basis depending on individual animal and population level concerns. The Unified Command will decide upon the location of the release with guidance from the trustee agencies

Upon approval for release by UC, an exit photo of each marine mammal must be taken and specifics of the release (location, time, personnel) recorded for Natural Resource Damage Assessment purposes.

Post-release monitoring, if at all possible, should be undertaken during marine mammal releases following oil exposure using radio or satellite telemetry. This effort should focus on survival rates, behavior, and reproductive success following oil contamination and rehabilitation, thus enabling

oiled marine mammal responders to evaluate the efficacy of oiled marine mammal care. Post-release monitoring is not usually considered a response activity expense and must be funded by the stranding network participate, trustee agency or NRDA.

Mortalities

All oiled dead marine mammals should be collected from beaches and taken to a designated morgue. Dead animals are logged in at the morgue using a Dead Marine Mammal Data Log (example in Appendix 3). Under certain circumstances, an oiled animal may need to be humanely euthanized in order to alleviate suffering. Animals that die during an oil spill response must have this disposition information recorded on their individual animal record as well as on the Live Marine Mammal Data Log (Appendix 2). The carcass needs to be identified with a written tag including the species name, date of stranding and/or admission, date of death, and the flipper tag (if a tag was affixed prior to death). If a flipper tag is present, it should remain with the carcass until final disposition of the carcass. The carcass should be refrigerated or kept on ice until a necropsy is performed. If a necropsy cannot be performed within 24 hours of death, the carcass needs to be frozen. Protocols and forms for the collection of samples and tissues from dead animals are provided in Appendices 7-9.

Euthanasia

During an oil spill response, there are circumstances under which it may be necessary to humanely euthanize animals. For each spill where marine mammal rehabilitation is undertaken, the rehabilitator must prepare a written euthanasia plan in consultation with the trustee representative. Euthanasia is appropriate for oiled animals with injuries that will render it unable to survive in the wild or unsuitable for use in captivity. If animals are euthanized in the field, they are collected following the procedures outlined in the Recovery and Transportation section of this document. To prevent secondary contamination or poisoning, euthanized carcasses are never left in the field.

Necropsy

Necropsies may be performed concurrent with response activities to identify cause of death in order to differentiate between a natural versus pollution related mortality. Fatalities to apparently un-oiled wildlife may necessitate necropsies to determine if death was caused by human interactions or if sub-apparent oil exposure or ingested petroleum contributed to the mortality. Additionally, captivity-related diseases may necessitate necropsies be performed on animals that die during rehabilitation to identify potential pathogens or husbandry techniques that are detrimental to recovery.

Prior to performing a necropsy on an oiled marine mammal, specific permission must be obtained from Unified Command and the appropriate NMFS/FWS enforcement officer. The spill response veterinarian-of-record should conduct or supervise all necropsies, in consultation with the designated representative FWS or NMFS enforcement officer. In most cases, a veterinary pathologist with specialized training on marine mammals will be asked to perform the necropsy. Necropsy methods and techniques are diverse, but general procedures for marine mammal necropsies can be found in Rowles et al. (2001), Galloway and Ahlquist (1997), and Geraci and Loundsbury (1993). Specific protocols have also been developed for some marine mammals including phocids (Winchell, 1990), Killer whales (Raverty and Gaydos, 2004), Right whales (McLellan et al., 2004), and Hawaiian Monk seals (Yochem et al., 2004). These species specific procedures should be followed whenever possible in order to maintain consistency with previous data. Prior to conducting a necropsy, the trustee agency and veterinarian should agree on which

forms to use; which samples to collect; how those samples will be prepared (e.g., formalin or frozen), stored, and shipped; and where samples will be analyzed. Specific oil spill necropsy information and forms are detailed in Appendix 7-9. Tissue samples for standard histopathology, disease profiling, and petroleum hydrocarbon analysis should be collected. Sampling for oil exposure, must be performed under specific conditions detailed in Appendix 7, in order to prevent contamination of the sample. Necropsy reports are filed and all samples handled and stored using appropriate chain-of-custody protocols, as discussed previously (Data Collection) and provided by the trustee representative.

Laboratories performing the petroleum analysis must be contacted as soon as possible in order to verify that sampling protocols and sample sizes are consistent with that specific laboratory requirement. Considerations in choosing the lab should include details of forensic capabilities (ability to produce legally defensible results), quality assurance and quality control (QA/QC), and consistency with the analysis of other materials from the spill. Results can vary between labs and data should be comparable between the environmental and tissues of the different species sampled. Appendix 8 lists laboratories with expertise in petroleum hydrocarbon chemistry that can be contacted for oil spill sample collection and analysis information. Petroleum hydrocarbon analysis is a reimbursable response expenses if pre-approved by the UC.

Petroleum and Polycyclic Aromatic Hydrocarbons (PAH) Analysis

In general, all crude oils are mixtures of the same hydrocarbon and non-hydrocarbon compounds, but vary in the percent composition of these compounds. Natural weathering of oil in the environment also results in highly variable compositions. Because of the continual dynamic changes in spilled oil, it can be difficult to identify and quantify all PAHs potentially present in or on an animal in the aftermath of an oil spill. Oil and tissue samples collected from marine mammals can be analyzed to determine the total amount of PAHs in tissues and identify and quantify dangerous PAHs that may have caused clinical and pathological effects. Samples can also be tested to characterize and fingerprint petroleum hydrocarbons to determine their source.

Determining source-dependent petroleum exposure during an oil spill using GC/MS or HPLC techniques on marine mammal tissues requires baseline knowledge of petroleum hydrocarbon levels and composition in the spill area and of the spilled oil. At present there are few data available on PAH levels in marine mammals inhabiting North American coastal waters. Studies have only measured PAH levels in seals and whales from the Eastern Canada (Hellou et al., 1990, Zitko et al., 1998) and Northeastern United States (Lake et al., 1995). Overall, the low concentrations of bioaccumulated PAHs in tissues from these marine mammals are fairly similar to those reported in atmospheric fallout PAHs from combustion sources (Zitko et al., 1998). Alkylated and heterocyclic PAHs are the predominant forms of PAHs in oil and coal products, and can be missed if tissues are tested only for the 16 traditionally-studied, parent PAHs listed as priority pollutants by the Environmental Protection Agency (EPA) and World Health Organization (WHO) (Means 1998). Different members of the isomeric alkylated PAHs exhibit differential toxicity, diffusion, and degradation rates, further emphasizing the importance of compound-specific analysis. With the lack of baseline PAH levels from marine mammals, control samples for comparisons were harvested at the time of *Exxon Valdez* oil spill from animals inhabiting nearby non-oiled areas (Mulcahy and Ballachey, 1994; Frost et al., 1994).

In experimental exposure studies (both immersion and ingestion) involving ringed seals (*Phoca hispida*), differences in detectability of PAHs in various tissues were noted (Engelhardt et al., 1977).

In the immersion experiment, PAHs were highest in urine and bile, less elevated in blood and plasma, and lower in tissues (lowest in lung) at 2 days post-immersion. Tissue sampling in the ingestion study was limited with PAHs highest in blood, and higher in liver and blubber compared to muscle. These studies illuminate the importance of selecting appropriate tissues for PAH analysis. Specific tissue collection techniques are provided in Appendix 7.

Records

The importance of recording information cannot be over-emphasized. Record collection enhances individual animal care, response evaluations, and the ability to accurately characterize the best practices for appropriate care. In-house records are maintained at the rehabilitation facility and copies provided to the trustee agency. Final reports, including chain-of-custody and sample collection records, must be delivered to the trustee agency within 30 days of the date the Federal OSC declares the response closed.

Scientific Records

The following types of records are necessary to preserve vital information for scientific study, natural resource damage assessment, and improved rehabilitation practices and techniques:

- Oiled mammal sighting: records and maps for all reports of oiled mammals
- Search Effort Log
- Live Mammal Log
- Dead Mammal Log
- Marine Mammal Intake Form
- Rehabilitation Records: documents care for each animal, including feedings, treatments, medications, normal/abnormal activities.
- Lab Analyses Report: identifies all samples sent to labs, requested analyses, lab results.
- Marine Mammal Stranding Report - Level A Data (NOAA 89-864, OMB #0648-0178)
- Marine Mammal Rehabilitation Disposition Report (NOAA 89-878, OMB #0648-0178)
- Human Interactions Form
- Necropsy Report

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Appendices

1. Search Effort Log
2. LIVE Marine Mammal Data Log Form

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3. DEAD Marine Mammal Data Log Form

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4. Oiled Marine Mammal Intake Form
5. Oiled Marine Mammal Daily Progress Form
6. Oiled Marine Mammal Evidence Collection Protocol
7. Petroleum Hydrocarbon Tissue Sampling Protocol
8. Oil Spill Response Laboratories and Supplies
9. Oiled Marine Mammal Necropsy Form
10. Chain of Custody Form

10b. Chain of Custody Form, page 2

Appendix 1. Search Effort Log

Search Effort Log

Please record all beaches searched *even if no animals are found.*

Spill Name: _____ **Date:** _____
Searchers: _____

Note: Time should include all time spent on the beach, even when backtracking. North and south endpoints should be GPS pts. If not, please provide a good description of the area covered. For collected animals, put GPS location here.

	Beach Name	Start Time	End Time	North/West Extreme (Lat/Long)	South/East Extreme (Lat/Long)	Total Distance Searched	Method (foot, ATV, scan)	Mammals Collected Note: (live/ dead, GPS, ID #)
A								
B								
C								
D								
E								
F								
G								
H								
I								
J								
K								

Oiled Marine Mammal Data Log: LIVE Animals

Oil Spill Name:				Facility:					
Intake Log Number (L-xxxx)	Date Collected (m/d/y)	Time Coll'ted (24 hr)	First Initial & Last Name of Collector	Beach Search Number	Collection Location (Beach Name)	GPS Coordinates (N) GPS Coordinates (W)	Field Tag #	Date Arrived (m/d/y)	Time Arrived (24 hr)

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Oiled Marine Mammal Data Log: LIVE Animals (continued from front side)

Oil Spill Name:				Facility:								
Intake Log Number	Date Processed (m/d/y)	Time Processed (24 hr)	First Initial & Last Name of Examiner	Species	Level A Field #	Tag Color/#	% Oiled	Sample/ Photo Taken? (Y/N)	Disposition Date (m/d/y)	Disposition Status (R,D,E,T)	Release Tag #	Morgue ID

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Appendix 3. Dead Marine Mammal Data Log

Oiled Marine Mammal Data Log: DEAD Animals

Oil Spill Name:					Facility:								
Intake Log Number (D-xxxx)	Date Collected (m/d/y)	Time Coll'ted (24 hr)	First Initial & Last Name of Collector	Beach Search #	Collection Location (Beach Name)	GPS Coordinates (N) / (W)	Tag # (Field or Temp w/ Color)	Date Arrived (m/d/y)	Time Arrived (24 hr)	Date Proc'ed (m/d/y)	Time Proc'ed (24 hr)	Name of Processor	Species

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Oiled Marine Mammal Data Log: DEAD Animals (continued from front side)

Oil Spill Name: **Facility:**

Intake Log Number (D-xxxx)	Condition	Scavenging	Oiling Signs	% Oiled	Depth Oiled	Sample/ Photo Taken? (Y/N)	Level A Field #	Tag #	Age	Sex	SL (cm)	AG (cm)	Morgue ID	Necropsy (Y/N)	Notes (any other observations, contamination by petroleum products such as plastic or another specimen)

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Oiled Marine Mammal Intake Form

Spill Name:		Log Number:	
CAPTURE	Capture Date/Time:	Capture Location:	
	Field Band:	Collector:	
PROCESSING	Intake Date/Time:	Species:	
	Tag Color/#:	Examiner's Signature:	
EXT. OIL ID	Signs of Oiling	Oil Visible Skin Burns Smell	Area Oiled	Head Body Multiple Entire
	Oil Color	Black Brown Clear Other	Depth of Oiling	Deep Moderate Surface
	% Oiled	<2% 2-25% 26-50% 51-75% 76-100%	Samples	Hair Swab Photo
PHYSICAL EXAM	Weight/Temp.	grams °F	Age	Chick Sub-adult Adult Unknown
	Std Length/Girth	cm cm	Sex	Male Female
	Heart Rate	WNL beats/min.	Body Condition	Normal Thin Emaciated
	Resp. Rate	WNL breaths/min.	Attitude	BAR QAR Nonresponsive Seizing
	Dehydration	None Mild Moderate Severe	CRT/mm color	Sec. / Pink Pale White Purple
	Human Interaction	☐ Yes ☐ No Type: Boat Collision, Shot, Fisheries, Other:		
	Neurologic	NSF Other:		
	Head/Mouth	NSF Other:		
	Eyes/Ears	NSF Other:		
	Heart/Lungs	NSF Other:		
	Gastrointestinal	NSF Other:		
	Musculo-skeletal	NSF Other:		
	Integument	NSF Other:		
	Comments			
TX-DX	Blood taken? HCT LTT RTT GTT	Toxiban: yes no time:		
	Pre-wash Exam: _____ Veterinarian Signature	Date Washed:	Weight:	Bloodwork Attached ☐
DISPOSITION	Disposition Exam: _____ Veterinarian Signature	Exam Date:	Weight:	Bloodwork Attached ☐
	Disposition Date:	Disposition Location:		
	Disposition Status: RELEASED DIED EUTHANIZED TRANSFERRED RETAINED	Necropsied by:		
	Flipper Tag No.:	Location: RF LF RH LH		

TAG #: _____

SPECIES: _____

Appendix 5. Oiled Marine Mammal Daily Progress Form

OILED MARINE MAMMAL DAILY PROGRESS FORM

SpillName _____ Log# _____ Tag Color/# _____ Species _____

Date	Treatment and Progress Notes	Init.

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Appendix 6. Oiled Marine Mammal Evidence Collection Protocol

The photograph and oil sample are both considered to be legal evidence therefore it is important that the following procedures are followed closely.

Photograph Evidence

1. Use a Polaroid or digital camera
2. Photograph should include the entire animal, highlighting the oiled region, and if possible, the tag number.
3. Label the Polaroid photograph with Spill Name, Date, Species, Log #, Capture Location, and Tag # and Color.
4. Digital photos must stay on the original media initially used to store the image; however, it is allowable to make copies of the originals.
5. Lock photographs or digital media in secure location.

Sample Collection Techniques for Visible Oiling

1. Scrape visible oil from fur/skin with wooden spatula (tongue depressor).
2. Place oil covered spatula in solvent-rinsed glass jar with a Teflon-lined lid (e.g. I-Chem) and break off the remaining un-oiled portion, allowing the lid to close. If jar is not available, wrap sample in aluminum foil (dull side to sample).
   Note: Avoid touching /contaminating oil sample with your nitrile gloves.
3. Label the glass jar (use waterproof labels).
   Label must include: Spill Name, Log #, Species, Tag #, Arrival Date, Sampling Date, and Capture Location.
4. Fill out Custody Seal and apply it across the lid of the jar and onto the sides of the glass.
5. Keep sample refrigerated or on ice until it can be stored.
6. Lock sample in a -20°C (or colder) freezer.

Sample Collection Techniques for No Visible Oiling

1. Rub an affected area with a 4x4 fiberglass or cotton cloth (or gauze) with sterile forceps or hemostats that have been cleaned with isopropyl alcohol.
   Note: Do not allow the nitrile gloves to touch the oiled area or the cloth.
2. Place the oiled covered cloth into a solvent-rinsed glass jar with a Teflon-lined lid.
3. Seal and fill out the information on the waterproof label (as above).
4. Fill out the Custody Seal and apply it across the lid of the jar and onto the sides of the glass.
5. Keep sample refrigerated or on ice until it can be stored
6. Lock sample in a -20°C (or colder) freezer.

All evidence should be securely stored and refrigerated/frozen until the Wildlife Branch Director provides further instructions. If samples are to be sent for analysis, a Chain of Custody Form is required.

Appendix 7. Petroleum Hydrocarbon Tissue Sampling Protocol

Supplies for sampling

All instruments used in handling (e.g. scalpels and forceps, cutting boards) or storing (e.g. jars, foil, sheets) samples must be made of a non-contaminating material consisting of stainless steel, glass, Teflon, or aluminum.

- Solvent-rinsed glass containers with Teflon-lined lids for tissues
- Solvent-rinsed Teflon sheets for tissues
- Aluminum foil (if Teflon sheets are not available) sample to the dull side
- Sterile syringes and needles
- Amber glass vials or glass vials covered with foil with Teflon lids (for bile, urine)
- Teflon screw top vials (for blood storage and urine)
- Stainless steel scalpels, knifes, forceps
- Isopropyl alcohol (99.9% pesticide free IPA) to rinse instrument
- Wooden tongue depressors (can be used to handle tissues if necessary)
- Whirl-pak bags or Zip-lock freezer bags
- 10% buffered formalin and appropriate containers for histopathology samples
- Permanent marker or pen
- Evidence/Custody tape and labels
- Sample Log/Chain of Custody forms

Sampling Protocol

Tissues to collect for petroleum hydrocarbon analysis in order of preference:

a. bile
b. urine
c. whole blood
d. stomach and intestinal contents
e. blubber/fat
f. liver
g. kidney
h. lung
i. intestine
j. brain
k. muscle

i. Samples taken for analysis should only be collected from **alive** or **freshly dead animals**. If a necropsy cannot be performed within 24 hrs after death, the carcass should be frozen for later examination.

ii. Recommended **minimum sample size** is **10-20 g of tissues** (approx. 1-2 tablespoons) and **5 ml for fluids** (blood, urine, bile, feces, stomach contents). However, analysis can be performed on as little as 100 μL of bile; therefore collect whatever amount is present.

Appendix 7. Petroleum Hydrocarbon Tissue Sampling Protocol, page 2

iii. Fluids such as blood, urine, and bile should be collected using sterile syringes or pipettes and transferred to Teflon vials (blood) or amber glass vials (bile, urine).

iv. Use powder-free nitrile gloves. Vinyl gloves are an acceptable alternative. Avoid contact of gloves with samples.

v. Scalpels, knifes, and cutting tools used for tissue collection should be cleaned and rinsed with isopropyl alcohol between tissues. If heavily contaminated with oil, instruments can be cleaned with detergent (e.g. Dawn), rinsed with water, and then rinsed with alcohol.

vi. Samples are stored preferably in solvent-rinsed Teflon-lined glass jars, labeled, and secured with evidence tape/custody seal. If glass jars are not available, samples can be placed in Teflon sheets or aluminum foil and stored in whirl-paks/freezer bags.

vii. If samples/tissues have come in contact with a contaminating material (e.g. plastic bag), collect and store a representative example of that material (e.g. plastic bag) using the same method as for collecting tissues.

viii. Collect a representative sample of each tissue (< 1 cm thick) preserved in 10% buffered formalin for histopathology. Duplicate hydrocarbon and histology samples whenever possible.

ix. Each sample must be labeled with **Spill Name, Log #, Level A Field #, Species, Tag#, Arrival Date, Sampling Date, and Capture Location** and securely stored.

x. Samples for PAH analysis should be chilled immediately on ice/refrigeration and then frozen as soon as possible to -20°C or colder in a locked freezer. Histopathology samples are stored at room temperature.

All evidence should be securely stored and refrigerated/frozen until the Wildlife Branch Director provides further instructions. If samples are transferred to a different location or sent for analysis, a Chain-of-Custody form is required. A Chain-of-Custody form can be found in this document, but are often provided by the laboratory.

Shipping:
Ship samples frozen on blue ice or with ~5 lbs dry ice according to laboratory specification using Federal Express (FedEx). FedEx follows IATA regulations for shipping hazardous materials and maintains chain of custody record by tracking packages.
Sampling supplies such as jars, label, and custody seals are often supplied by the analytical laboratory and are produced by:

I-Chem™ Brand, Certified 300 Series jars
Order: 1-800-451-4351, www.ichembrand.com

Appendix 8. Oil Spill Response Laboratories

Laboratories with tissue petroleum hydrocarbon analysis expertise

Alpha Woods Hole Laboratories Peter Kane 375 Paramount Drive Raynham, MA 02767 (508) 822-9300	**TDI-Brooks International** Thomas McDonald 1902 Pinon College Station, TX 77845 (979) 693-3446, (979) 220-3821
Mote Marine Laboratory Dana Wetzel 1600 Ken Thompson Parkway Sarasota, FL 34236 (941) 388-4441, ext. 335	**Geochemical & Environmental Research Group (GERG)** Terry Wade Texas A&M University 833 Graham Road College Station, TX 77845 (979) 862-2323, ext. 134

The laboratory should be able to perform analysis of the 16 traditionally-studied, parent PAHs listed as priority pollutants by the Environmental Protection Agency (EPA) in addition to the 44 alkylated and heterocyclic PAHs and metabolites

Unified Command and Trustee Agencies will make final decision on laboratory use.

Appendix 9. Oiled Marine Mammal Necropsy Form

Oiled Marine Mammal

Gross Necropsy Report

Spill Name:	
Animal Log #	
Level A Field #	**Tag #**
Species:	
Sex:	**Age:**
Weight:	kg. (estimate/actual)
SON:	emaciated 1 2 3 4 5 6 7 obese

Measurements:		Blubber depth	mm
SL cm	AG cm	UG cm	XG cm

Form completed by:	Date:	
Enforcemnent Officer:		
Strand/Capture location:		
Collecters Name:		
Intake date:		Euthanasia
Death date:	Time:	☐ yes
Post mortem date:	Time:	☐ no
Carcass Classification:	**Frozen**: ☐yes ☐no	
2- fresh, 3-fair (organs intact), 4-poor, 5- mummified		
Photographs: ☐		
Radiographs: ☐		

Clinical signs/diagnosis	
Antibiotics given	
Pertinent lab results	

GROSS NECROPSY ABNORMALITIES:

HYDROCARBON ANALYSIS SAMPLES		
bile	kidney	blubber/fat
blood	muscle	other:
urine	lung	
liver	intestine	

MICROBIOLOGY	**SWABS: other**
Lung ☐	
Liver ☐	
other ☐	

HISTOLOGY SAMPLES

lung	thyroid	ileum	kidney	mammary gland	muscle
trachea	tonsil	colon	ureter	adrenal	gonad
heart	tongue	pancreas	urinary bladder	skin	prostate
aorta	esophagus	spleen	urethra	eye (L/R)	uterus
pulmonary artery	stomach	liver	blubber	fat–site:	vagina
thymus	duodenum	gall bladder	bone marrow		cervix
salivary gland	jejunum	brain	spinal cord	whole repro	penis
other:					

LYMPH NODES:	
colonic	gastric
sublumbar	hepatic
inguinal	mediastinal
axillary	submandibular
mesenteric	tracheobronchial

Cause of death (preliminary diagnosis):

Examiner: Examiner's signature: Date:

Appendix 10. Chain of Custody Form

CHAIN OF CUSTODY RECORD

Case Number:

DATE AND TIME OF SEIZURE:	DUTY STATION:	EVIDENCE/PROPERTY SEIZED BY:

SOURCE OF EVIDENCE/PROPERTY (person and/ or location) TAKEN FROM: RECEIVED FROM: FOUND AT:	DEFENDANT/COMPANY NAME AND REMARKS:

ITEM NO:	DESCRIPTION OF EVIDENCE/PROPERTY (include Seizure Tag numbers and any serial numbers):

ITEM NO:	FROM: (PRINT NAME, AGENCY)	RELEASE SIGNATURE:	RELEASE DATE:	DELIVERED VIA: FEDEX U.S. MAIL IN PERSON OTHER:
	TO: (PRINT NAME, AGENCY)	RECEIPT SIGNATURE	RECEIPT DATE:	

ITEM NO:	FROM: (PRINT NAME, AGENCY)	RELEASE SIGNATURE:	RELEASE DATE:	DELIVERED VIA: FEDEX U.S. MAIL IN PERSON OTHER:
	TO: (PRINT NAME, AGENCY)	RECEIPT SIGNATURE:	RECEIPT DATE:	

Appendix 10b. Chain of Custody Form, page 2

ITEM NO:	FROM: (PRINT NAME, AGENCY)	RELEASE SIGNATURE:	RELEASE DATE:	DELIVERED VIA: FEDEX U.S. MAIL IN PERSON OTHER:
	TO: (PRINT NAME, AGENCY)	RECEIPT SIGNATURE	RECEIPT DATE:	
ITEM NO:	FROM: (PRINT NAME, AGENCY)	RELEASE SIGNATURE:	RELEASE DATE:	DELIVERED VIA: FEDEX U.S. MAIL IN PERSON OTHER:
	TO: (PRINT NAME, AGENCY)	RECEIPT SIGNATURE:	RECEIPT DATE:	
ITEM NO:	FROM: (PRINT NAME, AGENCY)	RELEASE SIGNATURE:	RELEASE DATE:	DELIVERED VIA: FEDEX U.S. MAIL IN PERSON OTHER
	TO: (PRINT NAME, AGENCY)	RECEIPT SIGNATURE	RECEIPT DATE:	
ITEM NO:	FROM: (PRINT NAME, AGENCY)	RELEASE SIGNATURE:	RELEASE DATE:	DELIVERED VIA: FEDEX U.S. MAIL IN PERSON OTHER:
	TO: (PRINT NAME, AGENCY)	RECEIPT SIGNATURE:	RECEIPT DATE:	
ITEM NO:	FROM: (PRINT NAME, AGENCY)	RELEASE SIGNATURE:	RELEASE DATE:	DELIVERED VIA: FEDEX U.S. MAIL IN PERSON OTHER:
	TO: (PRINT NAME, AGENCY)	RECEIPT SIGNATURE	RECEIPT DATE:	
ITEM NO:	FROM: (PRINT NAME, AGENCY)	RELEASE SIGNATURE:	RELEASE DATE:	DELIVERED VIA: FEDEX U.S. MAIL IN PERSON OTHER:
	TO: (PRINT NAME, AGENCY)	RECEIPT SIGNATURE:	RECEIPT DATE:	

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Activity	Study Type	Sample Type	Dependent Variables	Independent Variables	NRDA Evidence/Hypotheses
Emergency Response/Recovery	Monitoring locations offshore, nearshore, and on beaches	Oiled turtles: dead or moribund	Count of dead/moribund individuals	•BPH* on animal •BPH in tissue • BPH in gut contents •BPH in local environment •Spill spatial/temporal data	•Direct presumptive evidence of mortality to individuals
		Oiled turtles: Live	Count of injured individuals	•BPH on animal •BPH in blood samples •BPH in local environment •Spill spatial/temporal data	•Direct presumptive evidence of injury to individuals
Sargassum Study	•Cross-Sectional Study (case-control). The 2010 survey areas to include apparent uncontaminated control locations. •Longitudinal Study to assess changes in abundance and species composition over multiple seasons/ years. •Transect locations treated as a random effect variable within the statistical models.	Pelagic juvenile turtles	•Total number of individuals collected per transect •Frequency of dead/moribund animals •Frequency of behavioral or other abnormalities	•BPH on animal •BPH in Sargassum pelegic mat •Environmental characteristics (pelagic mat)used to assess confounding factors •Spill spatial/temporal data	•Direct presumptive evidence of impacts to turtle populations •Association of BPH with increased odds for poor survival, behavioral abnormalities or other indicators of disease measured in the field.
Near Shore Entanglement Net Survey	•Cross-Sectional Study (case-control). The 2010 survey areas to include apparent uncontaminated control locations. • Longitudinal Study to assess changes in abundance, species composition, size/age class, metabolic stress, immune function, and chromosomal damage over multiple season/years •Transect locations treated as a random effect variable within the	Neritic juvenile and subadult turtles	•Total number of individuals, species composition, and size/age class per transect • Blood biochemistry** parameters indicative of metabolic stress, compromised immune function, and chromosomal damage.	•BPH on animal surface swab •BPH in blood samples •BPH present in skin sample •Spill spatial/temporal data •Environmental characteristics (near shore environment) used to assess confounding factors • Species, size/age, and sex used to assess confounding factors	•Direct presumptive evidence of impacts to turtle species abundance. •Presumptive evidence of impacts to ecological services related to fitness of individuals. •Association of BPH with disruption basic metabolic functions of individuals (hemolytic anemia, electrolyte regulation, immune system function, chromosomal damage). •Association of BPH with changes in sea turtle

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	statistical models.				population assemblage over time.
Off shore Trawl Net Survey	. Same as Near Shore Survey	Neritic subadult and adult turtles	Same as Near Shore Survey	Same as Near Shore Survey	Same as Near Shore Survey
Telemetry study	•Cross-Sectional Study (case-control). The 2010 survey areas to include apparent uncontaminated control locations. •Transect locations treated as a random effect variable within the statistical models.	Juvenile, subadult and adult turtles captured and tagged during near shore and offshore surveys	•Determine migration and feeding behavior of tagged sea turtles for six month period	Same as Near Shore Survey & Off shore survey with blood biochemistry (indicative of metabolic stress, compromised immune function, and chromosomal damage) collected from recaptured individuals to be used as independent variables.	•Direct presumptive evidence of lost ecological services through disruption of turtle habitat. •Presumptive evidence of lost ecological services through disruption in the range of turtle migration, foraging behavior and fitness. •Association of BPH and biomarkers of metabolic stress to changes in turtle migration and foraging behavior.
Turtle Nest Study	•Cross-Sectional Study (case-control). The 2010 survey areas to include apparent uncontaminated control locations. •Nest site locations treated as a random effect variable within the statistical models.	Adult female and nest data	Clutch size, hatching success, deformity frequency	•Nest parameters (location, date, time, etc). •blood biochemistry (indicative of metabolic stress and chromosomal damage) •BPH in chorioallantoic-amniotic fluid •BPH in nest site soil (post hatching) •BPH on adult surface swab •BPH in adult blood samples •BPH present in skin sample •Spill spatial/temporal data •Environmental characteristics used to assess confounding factors • Species and size/age used to assess confounding factors	•Direct presumptive evidence of impacts to turtle reproduction •Indirect evidence supporting impacts on turtle abundance. •Association of BPH exposure in adult females with and nesting sites with reproductive success. •Association of adult female basic metabolic stress (hemolytic anemia, electrolyte regulation, immune system function, chromosomal damage) with reproductive success.

* BP specific petroleum hydrocarbon and dispersant ** See attached table for proposed blood chemistry and bioassay measurements

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Blood Chemistry and Bioassay Measurements Reported in Turtles

Injury Duration	Bioassay	End Points	Physiological Response	Long-Term Outcome	Reference
Acute	Blood Biochemistry	Complete blood count (CBC)	Red and white blood cell numbers	Indicators of compromised metabolic function and immunological responses	a
		Chem 7 (sodium, potassium, chloride, bicarbonate, blood urea nitrogen, creatinine, glucose)	Electrolytes, kidney function biomarkers, metabolic function	Systemic electrolyte imbalance due to improper salt gland function, resulting in death	b
Acute & Chronic	Liver Injury Markers	AST, ALP, GGT, CK liver enzymes	Liver damage	Potential irreversable liver damage due to chemical exposures	c
Acute & Chronic	Lymphocyte proliferation	adaptive immune response	T-lymphocyte stimulation B-lymphocyte stimulation	Indicators of compromised adaptive system	d
Acute & Chronic	Phagocytic activity assay	innate immune response	Monocytes Natural killer cells	Indicators of compromised innate immune system (i.e., inability to fight against pathogenic infections)	d
Acute	In vitro red blood cell assay	Methemaglobin	Red blood cell function	Decreased red blood cell function (e.g., anemia), preventing optimal metabolic function, potentially causing sea turtles to remain near surface (i.e., oil slick) to breathe more often than normal	e
Acute & Chronic	Flow cytometry (FCM)	Numerous (e.g., cell proliferation/inhibition, cell death, cell cycle disruption)	Disruption of blood composition and cellular function	Disruption of metabolic function, immunological function	f, g, h, i
Chronic	Micronucleus assay	genotoxicity	chromosomal breakage	Increased potential risk of teratogenic effects	f, j

a Lutcavage et al. (1995) Physiologic and clinicopathologic effects of crude oil on loggerhead sea turtles. Arch. Environ. Contam. Toxicol. 28:417-22.

b Deem et al. (2009) Comparison of blood values in foraging, nesting, and stranded loggerhead turtles (Caretta caretta) along the coast of Georgia, USA. J. Wildl. Dis. 45:41-56.

c Eisenhawer et al. (2008) Relationship between separation time of plasma from heparinized whole blood on plasma biochemical analytes of loggerhead sea turtles (Caretta caretta). J. Zoo. Wildl. Med. 39:208-215.

d Keller et al. (2006) Effects of organochlorine contaminants on loggerhead sea turtle immunity: comparison of a correlative field study and in vitro exposure experiments. Environ. Health Perspect. 114:70-76.

e Couillard and Leighton (1993) In vitro red blood cell assay for oxidant toxicity of petroleum oil. Environ. Tox. Chem. 12:839-845.

f Matson et al. (2005) Chromosomal damage in two species of aquatic turtles (Emys orbicularis and Mauremys caspica) inhabiting contaminated sites in Azerbaijan. Ecotoxicology 14:513-25.

g Rossi et al. (2009) Flow cytometry as a tool in the evaluation of blood leukocyte function in Chelonia mydas (Linnaeus, 1758) (Testudines, Cheloniidae). Braz. J. Biol. 69:899-905.

h Morgan et al. (2009) Cytokine mediated proliferation of cultured sea turtle blood cells: morphologic and functional comparison to human blood cells. Tissue Cell. 41:299-309.

i Hayes and McBee. (2007) Flow cytometric analysis of red-eared slider turtles (Trachemys scripta) from Tar Creek Superfund site. Ecotoxicology. 16:353-61.

j Rowe et al. (2009) Lack of biological effects of water accomidated fractions of chemically- and physically-dispersed oil on molecular, physiological, and behavioral traits of juvenile snapping turtles following embyronic exposure. Sci. Total Environ. 407:5344-5355.

Standard Operating Procedure (SOP)

SOP No.	Standard Operating Procedure
1003	Extraction of Soils and Sediments for Aliphatic, Aromatic and Halogenated Hydrocarbons
1006	Aromatic Hydrocarbon Determination by Selected Ion Monitoring - Gas Chromatography /Mass Spectrometry
1010	Extraction of Biological Tissues for Aliphatic, Aromatic and Halogenated Hydrocarbons
1011	Extraction of Water for Aliphatic, Aromatic, and Chlorinated Hydrocarbons
1012	Preparation of Tissue, Water, Soils, and Sediment for Extraction
1013	Determination of Total Petroleum Hydrocarbon in Extracts of Water, Tissue, and Sediment
1016	Aliphatic Hydrocarbon Determination by Gas Chromatography/Flame Ionization Detection

EXTRACTION OF SOILS AND SEDIMENTS FOR ALIPHATICS, AROMATICS, AND CHLORINATED HYDROCARBONS

This standard operating procedure provides an accurate and precise method for extraction, isolation, and concentration of selected organic compounds from soil and sediment samples. It achieves analyte recoveries equivalent to those from Soxhlet extraction, using less solvent and taking significantly less time than the Soxhlet procedure. Final extracts can be used in the quantitative determination of aromatic, aliphatic, and chlorinated hydrocarbons (including planar PCBs) by chromatographic procedures.

An automated extraction apparatus (Dionex ASE200 Accelerated Solvent Extractor) is used to extract various organics from 2 to 15 g of pre-dried samples. The extractions are performed using 50:50 hexane/methylene chloride solvent mixtures inside stainless-steel extraction cells held at elevated temperature and solvent pressure. The hot solvent containing extracted compounds is passed through beds of activated alumina and copper inside the cells to minimize matrix interference during quantitative determinations. The extracts dissolved in the solvent are then transferred from the heated extraction cells to glass collection vials. Extracts are then concentrated to a final volume of 1 ml using an evaporative solvent reduction apparatus (Zymark TurboVap II). Final extracts are submitted for determination of aliphatic, aromatic, and chlorinated hydrocarbon analytes.

EXTRACTION OF BIOLOGICAL TISSUES FOR ALIPHATICS, AROMATICS, AND CHLORINATED HYDROCARBONS

This standard operating procedure provides an accurate and precise method for extraction, isolation, and concentration of selected organic compounds from biological tissue samples. It achieves analyte recoveries equivalent to those from Soxhlet extraction, or maceration using less solvent and taking significantly less time. Final extracts can be used in the quantitative determination of aromatic, aliphatic, and chlorinated hydrocarbons (including planar PCBs) by chromatographic procedures.

An automated extraction apparatus (Dionex ASE200 Accelerated Solvent Extractor) is used to extract various organics from 1 to 5 g of wet tissue sample. The extractions are performed using a 50:50 hexane/methylene chloride solvent mixture inside stainless-steel extraction cells held at elevated temperature and solvent pressure. The hot solvent containing extracted compounds is passed through a bed of activated alumina inside the cells to minimize matrix interference during quantitative determinations. The extracted compounds dissolved in the solvent are then transferred from the heated extraction cells to glass collection vials (copper granules are added to the collection vials for egg samples). Extracts are then

concentrated to a final volume of 1 ml by evaporative solvent reduction. Final extracts are submitted for determination of aliphatic, aromatic and chlorinated hydrocarbons.

EXTRACTION OF WATER SAMPLES FOR ALIPHATICS, AROMATICS, AND CHLORINATED HYDROCARBONS

This standard operating procedure provides a precise and accurate method to extract hydrocarbons from water samples for the quantitative determination of aromatic, aliphatic, and chlorinated hydrocarbons (including co-planar PCBs). The extraction procedure is modified from EPA Method 3510 (separatory funnel method).

Water samples are serially extracted with methylene chloride in separatory funnels and the extracts are concentrated to a final volume of 1 ml. An optional cleanup step is provided, for use before instrument analysis, to remove possible matrix interference. The protocol is designed for 2-liter water samples, but water samples of other sizes may be collected and extracted by appropriately adjusting the volume of methylene chloride used during the extraction process. The extracts are submitted for determination of aliphatic, aromatic and chlorinated hydrocarbons.

DETERMINATION OF PAHs by GC/MS

This quantitative method is for the determination of polycyclic aromatic hydrocarbons (PAHs) and their alkylated homologues in extracts of water, sediment, and biological tissue. Quantitation is performed by capillary gas chromatography/mass spectrometry (GC/MS) in selected ion monitoring mode (SIM). The gas chromatograph is temperature-programmed and operated in splitless mode. The capillary column is a J&W Scientific DB-5MS (30 m long by 0.25 mm ID and 0.25 μm film thickness). Carrier flow is by electronic pressure control. The autosampler is capable of making 1 to 5 ml injections. The mass spectrometer is capable of scanning from 35 to 500 amu every second or less, utilizing 70 volts electron energy in electron impact ionization mode. The data acquisition system allows continuous acquisition and storage of all data during analysis and capable of displaying ion abundance versus time or scan number.

Calibration solutions are prepared at five concentrations ranging from 0.02 to 1 μg/ml by diluting a commercially available solution containing the analytes of interest. For each analyte of interest, a relative response factor (RRF) is determined for each calibration level. All 5 response factors are then averaged to produce a mean relative response factor for each analyte.

An analytical set consists of standards, samples, and quality control samples. Each extraction batch is analyzed as an analytical set including samples and some or all of the following quality control samples: method blank, matrix spike, duplicate, matrix spike duplicate and standard reference material.

DETERMINATION OF ALIPHATIC HYDROCARBONS BY GC/FID

The quantitative method described in this document is for the determination of aliphatic hydrocarbons in extracts of water, sediment, and biological tissue. Quantitation is performed by high resolution, capillary gas chromatography with flame ionization detection (GC/FID). Normal alkanes with 9 to 40 carbons (C_9 to C_{49}), plus five isoprenoids, the unresolved complex mixture (UCM), and the total resolved peaks are determined with this procedure. The gas chromatograph is temperature-programmed and operated in split mode. The capillary column is a Restek Scientific RTX-1 (30 m long by 0.25 mm ID and 0.25 um film thickness). Carrier flow is by electronic pressure control. The autosampler is capable of making 1 to 5 ml injections. Dual columns and FIDs are used. The data acquisition system is by HP Chemstation software, capable of acquiring and processing GC data.

A calibration curve is established by analyzing each of 5 calibration standards (1.25, 10, 25, 40 and 50 µg/ml), and fitting the data to a straight line using the least square technique. For each analyte of interest, a response factor (RF) is determined for each calibration level. All 5 response factors are then averaged to produce a mean relative response factor for each analyte. If an individual aliphatic hydrocarbon is not in the calibration solutions, a RF is estimated from the average RF of the hydrocarbon eluting immediately before the compound. The RF used to calculate UCM is an average of all response factors for n-alkanes contained in the calibration solutions.

An analytical set consists of standards, samples, and quality control samples. Each extraction batch is analyzed as an analytical set including samples and some or all of the following quality control samples: method blank, matrix spike, duplicate, matrix spike duplicate and standard reference material.

DETERMINATION OF PERCENT MOISTURE IN SOILS, SEDIMENTS, AND TISSUES

Percent moisture (weight/weight basis) is determined in soils, sediments, and biological tissues by measuring the loss in mass of the sample due to drying overnight at 90°C. Typically, between one and two grams of sample are used for the determination. Wet and dried samples are weighed to the nearest milligram.

DETERMINATION OF PERCENT LIPIDS IN BIOLOGICAL TISSUES

The percent lipid content (weight/weight basis) is determined in biological tissue samples by extracting the tissue with a 50:50 hexane:methylene chloride solvent mixture using an automated solvent extraction apparatus (Dionex ASE200 Accelerated Solvent Extractor). The extract volume is reduced to 1.0 ml and a 100-ul aliquot is taken for weighing to the nearest 0.1 mg. The aliquot is dispersed on a pre-weighed filter disk, dried with gentle heat, and weighted with the disk after the solvent has totally evaporated. The resulting lipid mass is used calculate the percent lipids in the original sample. Typically, between one and two grams of tissue sample are used for the determination.

TDI-BI/B&B Laboratories
Polynuclear Aromatic Hydrocarbons
Method Detection Limits

Matrix:	Water	Sediment	Fish Tissue	Fish Tissue	Oyster Tissue	Oyster Tissue	Egg Tissue	Egg Tissue
Amount of Sample:	1 L	15 g	6.1 g	1.4 g	13.1 g	2.1 g	2.1 g	0.52 g
Final Extract Volume:	1 mL	1 mL	0.5 mL	0.5mL	0.5 mL	0.5 mL	.5 mL	.5 mL
MDL (units):	(ng/L)	(ng/dry g)	(ng/wet g)	(ng/dry g)	(ng/wet g)	(ng/dry g)	(ng/wet g)	(ng/dry g)
Decalin(cis/trans)	1.30	0.17	0.52	2.29	0.93	5.90	1.06	4.32
C1-Decalins	2.60	0.35	1.05	4.59	1.85	11.79	2.11	8.64
C2-Decalins	2.60	0.35	1.05	4.59	1.85	11.79	2.11	8.64
C3-Decalins	2.60	0.35	1.05	4.59	1.85	11.79	2.11	8.64
C4-Decalins	2.60	0.35	1.05	4.59	1.85	11.79	2.11	8.64
Naphthalene	3.03	0.17	0.82	3.76	1.39	9.03	4.19	17.13
C1-Naphthalenes	3.67	0.33	1.29	5.73	2.78	18.05	6.39	26.11
C2-Naphthalenes	6.06	0.35	1.64	7.52	2.78	18.05	8.38	34.26
C3-Naphthalenes	6.06	0.35	1.64	7.52	2.78	18.05	8.38	34.26
C4-Naphthalenes	6.06	0.35	1.64	7.52	2.78	18.05	8.38	34.26
Benzothiophene	1.60	0.17	0.88	3.87	0.59	3.94	1.06	4.33
C1-Benzothiophenes	3.21	0.35	1.75	7.75	1.18	7.88	2.12	8.66
C2-Benzothiophenes	3.21	0.35	1.75	7.75	1.18	7.88	2.12	8.66
C3-Benzothiophenes	3.21	0.35	1.75	7.75	1.18	7.88	2.12	8.66
C4-Benzothiophenes	3.21	0.35	1.75	7.75	1.18	7.88	2.12	8.66
Biphenyl	2.12	0.14	0.61	2.55	0.39	2.45	1.49	6.10
Acenaphthylene	1.03	0.19	0.33	1.46	0.38	2.22	0.48	1.95
Acenaphthene	1.30	0.13	0.34	1.45	0.30	2.12	0.83	3.40
Dibenzofuran	1.12	0.20	0.33	1.36	0.39	2.22	0.65	2.64
Fluorene	0.60	0.19	0.34	1.32	0.43	2.48	0.52	2.14
C1-Fluorenes	1.19	0.39	0.68	2.65	0.87	4.96	1.05	4.27
C2-Fluorenes	1.19	0.39	0.68	2.65	0.87	4.96	1.05	4.27
C3-Fluorenes	1.19	0.39	0.68	2.65	0.87	4.96	1.05	4.27
Carbazole	1.81	0.33	0.42	1.20	1.72	11.41	0.70	2.85
Anthracene	0.76	0.19	0.20	0.78	0.18	1.18	0.88	3.59
Phenanthrene	1.34	0.14	0.24	0.81	0.55	3.63	1.14	4.67
C1-Phenanthrene/Anthracenes	2.69	0.29	0.49	1.62	1.10	7.26	2.28	9.33
C2-Phenanthrene/Anthracenes	2.69	0.29	0.49	1.62	1.10	7.26	2.28	9.33
C3-Phenanthrene/Anthracenes	2.69	0.29	0.49	1.62	1.10	7.26	2.28	9.33
C4-Phenanthrene/Anthracenes	2.69	0.29	0.49	1.62	1.10	7.26	2.28	9.33
Dibenzothiophene	0.84	0.15	0.28	0.80	0.26	1.78	0.63	2.57
C1-Dibenzothiophenes	1.68	0.31	0.56	1.60	0.53	3.56	1.26	5.13
C2-Dibenzothiophenes	1.68	0.31	0.56	1.60	0.53	3.56	1.26	5.13
C3-Dibenzothiophenes	1.68	0.31	0.56	1.60	0.53	3.56	1.26	5.13
C4-Dibenzothiophenes	1.68	0.31	0.56	1.60	0.53	3.56	1.26	5.13
Fluoranthene	0.68	0.21	0.25	0.53	1.39	9.02	0.97	3.96
Pyrene	0.93	0.19	0.33	1.26	0.88	5.71	0.94	3.83
C1-Fluoranthenes/Pyrenes	1.35	0.39	0.51	1.05	1.77	18.03	1.94	7.92
C2-Fluoranthenes/Pyrenes	1.35	0.39	0.51	1.05	1.77	18.03	1.94	7.92
C3-Fluoranthenes/Pyrenes	1.35	0.39	0.51	1.05	1.77	18.03	1.94	7.92
C4-Fluoranthenes/Pyrenes	1.35	0.39	0.51	1.05	1.77	18.03	1.94	7.92
Naphthobenzothiophene	1.12	0.20	0.31	0.75	0.47	2.94	1.45	5.93
C1-Naphthobenzothiophenes	2.24	0.41	0.62	1.50	0.94	5.87	2.90	11.87
C2-Naphthobenzothiophenes	2.24	0.41	0.62	1.50	0.94	5.87	2.90	11.87
C3-Naphthobenzothiophenes	2.24	0.41	0.62	1.50	0.94	5.87	2.90	11.87
C4-Naphthobenzothiophenes	2.24	0.41	0.62	1.50	0.94	5.87	2.90	11.87
Benz(a)anthracene	0.89	0.13	0.31	0.81	0.48	3.16	0.42	1.72
Chrysene/Triphenylene	0.78	0.17	0.39	1.21	0.79	5.08	0.44	1.78
C1-Chrysenes	1.57	0.35	0.77	2.43	1.58	10.17	0.87	3.56
C2-Chrysenes	1.57	0.35	0.77	2.43	1.58	10.17	0.87	3.56
C3-Chrysenes	1.57	0.35	0.77	2.43	1.58	10.17	0.87	3.56
C4-Chrysenes	1.57	0.35	0.77	2.43	1.58	10.17	0.87	3.56
Benzo(b)fluoranthene	2.68	0.29	0.27	1.24	0.64	3.83	1.84	7.52
Benzo(j,k)fluoranthene	2.74	0.23	0.34	1.47	0.34	2.82	1.45	5.93
Benzo(a)fluoranthene	2.74	0.23	0.34	1.47	0.34	2.82	1.45	5.93
Benzo(e)pyrene	2.83	0.31	0.39	1.82	0.41	2.68	0.90	3.70
Benzo(a)pyrene	1.71	0.22	0.37	1.63	0.25	1.63	0.72	2.95
Perylene	0.73	1.38	0.53	2.22	0.88	5.35	1.57	6.43
Indeno(1,2,3-c,d)pyrene	1.97	0.28	0.57	2.61	0.52	3.34	0.97	3.96
Dibenzo(a,h)anthracene	1.49	0.15	0.35	1.73	0.38	2.36	0.55	2.26
Benzo(g,h,i)perylene	2.24	0.14	0.44	2.12	0.38	2.39	0.65	2.66
Individual Alkylated Isomers & Hopanes								
2-Methylnaphthalene	2.27	0.20	0.67	3.08	1.37	8.71	3.80	15.54
1-Methylnaphthalene	1.40	0.13	0.62	2.65	0.85	5.29	2.59	10.57
2,6-Dimethylnaphthalene	1.61	0.20	0.54	2.22	0.52	3.53	2.10	8.58
1,6,7-Trimethylnaphthalene	0.97	0.10	0.37	1.86	0.20	0.96	0.83	3.39
4-Methyldibenzothiophene	1.68	0.31	0.56	1.60	0.53	3.56	1.26	5.13
2/3-Methyldibenzothiophene	1.68	0.31	0.56	1.60	0.53	3.56	1.26	5.13
1-Methyldibenzothiophene	1.68	0.31	0.56	1.60	0.53	3.56	1.26	5.13
3-Methylphenanthrene	2.69	0.29	0.49	1.62	1.10	7.26	2.28	9.33
2/4-Methylphenanthrene	2.69	0.29	0.49	1.62	1.10	7.26	2.28	9.33
9-Methylphenanthrene	2.69	0.29	0.49	1.62	1.10	7.26	2.28	9.33
1-Methylphenanthrene	2.69	0.29	0.49	1.62	1.10	7.26	2.28	9.33
2-Methylanthracene	2.69	0.29	0.49	1.62	1.10	7.26	2.28	9.33
Retene	2.69	0.29	0.49	1.62	1.10	7.26	2.28	9.33
Benzo(b)fluorene	1.35	0.39	0.51	1.05	1.77	18.03	1.94	7.92
C29-Hopane	9.58	1.11	1.73	8.19	2.14	12.54	3.38	13.82
18a-Oleanane	9.58	1.11	1.73	8.19	2.14	12.54	3.38	13.82
C30-Hopane	9.58	1.11	1.73	8.19	2.14	12.54	3.38	13.82

NRDA At-sea Response for Sea Turtles associated with the Mississippi Canyon 252 Incident: Recovery, Rescue, and Quantitative Impact Assessment of In-water Sea Turtles within Spill Areas

BACKGROUND

Five sea turtle species are known to inhabit the Gulf of Mexico region potentially impacted by the Mississippi Canyon 252 (MC 252) incident: leatherback turtles (*Dermochelys coriacea*), loggerhead sea turtles (*Caretta caretta*), green turtles (*Chelonia mydas*), Kemp's ridleys (*Lepidochelys kempii*), and hawksbill turtles (*Eretmochelys imbricata*). On 28 April, the NOAA Southeast Fisheries Science Center initiated a series of aerial surveys to assess the marine mammal and sea turtle species occurring within areas likely to be affected by oil from the MC 252 incident. The aerial survey data collected to date has demonstrated the presence of loggerhead, Kemp's ridley, and leatherback sea turtles.

This proposal is to provide complementary support to the ongoing aerial and on-shore surveys by conducting at-sea recovery, rescue, and quantitative impact assessments for sea turtles associated with the MC 252 incident. The activities addressed by this proposal include: sargassum surveys, trawl vessel surveys, entanglement netting surveys, biotelemetry monitoring, assessments for chemical biomarkers of hydrocarbon exposure, and toxicological assessments. Figure 1 provides hypothesized spatiotemporal scales for direct and long-term effects from potential oil spill damage to sea turtle life stages following the MC 252 incident. Figure 1 also designates the sea turtle life stages targeted for sampling and evaluation by study components of this NRDA proposal. The study components of this proposal currently focus on the immediate spill impacted areas that are immediately west, south, and east of the Mississippi River Delta (primarily Louisiana and Mississippi) and some locations along Alabama and the Florida Panhandle. The geographic scope of this proposal may need to later be expanded to include downstream impacted areas to potentially include areas along Texas and both coasts of Florida. Figure 1 provides general descriptions of relative abundance for sea turtle species and life stages for each of these geographic regions. Species and life stage composition varies across each of these geographic regions which may influence the sampling methods implemented within each region.

Figure 1. Hypothesized Spatiotemporal Scales for Potential Oil Spill Damage to Sea Turtle Life Stages following the Mississippi Canyon 252 Incident

Sea Turtle Life Stages/Species	Immediate Spill Impacted Areas			Downstream Impacted Areas (Gulf Loop Current & Related Circulations)					
	West, South, & East of the MS River Delta (including Alabama & Florida Panhandle)			Texas Coastal Waters South Texas Beaches			West Florida Shelf Florida Gulf Coast Florida Keys Waters Florida Current Atlantic Coast – Nesting Beaches		
	Relative Abundance	Direct Effects	Longterm Effect	Relative Abundance	Direct Effects	Longterm Effect	Relative Abundance	Direct Effects	Longterm Effect
Nests/eggs	Cc – C Cm – U LK - U	1*	V 2*	Cc – U LK – C/U	1*	V 2*	Cc – A/F Cm – C LK - U	1*	V 2*
Hatchlings (frenzy stage, leaving nests, swimming from beach), through October/November	Cc – C Cm – U LK - U	Cat/S	V 3*	Cc – U LK – C/U	Cat/S	V 3*	Cc – A/F Cm – C LK - U	Cat/S	V 3*
Post-hatchling, young-of-year, through December	Cc – F Cm – U LK - U	Cat/S	V 3*	Cc – U LK - C	Cat/S	V 3*	Cc – F Cm – F LK - U	Cat/S	V 3*
Pelagic Juveniles	Lk – F Cm – F Cc – U Ei - U	S	V 3*	Lk – F Cm – U Cc – F Ei - U	S	V 3*	Lk – U Cm - F/C Cc – F Ei - U	S	V 3*
Neritic/Benthic (large juvenile subadult, adult)	Lk - F/C Cm- C Cc - F/C	S	V 3*	Lk – F/C Cm- C Cc – F/C	S	V 3*	Lk – C Cm- F/C Cc – F/C	S	V 3*
Copulating adult Cc (peak through May)	Cc - U	S	V 3*	Cc - U	S	V 3*	Cc - C/U	S	V 3*
Female adults in inter-nesting habitat nearshore, peak through August/Sept	Cc – C Cm - U	S	V 3*	Cc - U	S	V 3*	A / C Cm–C/U	S	V 3*
Pelagic – Dc (Oceanic foraging)	Dc - F	S / M	V 3*	Dc – F/C	S	V 3*	Dc - F	S / M	V 3*

Red highlight indicates sea turtle life stages and oil spill impacts addressed by NRDA proposal.

<u>Direct effects</u> = acute, physical and chemical effects from oil, mousse, and liquid tar; effects include mortality.

<u>Long-term effects</u> = effects from contact and ingestion of petroleum and dispersants, effects from petroleum and dispersant compounds in dies species.

Relative Abundance Scale: A-abundant; F-frequent; C-Common; U-Uncommon

Effects Magnitude Scale: Cat-catastrophic; S-severe; M-moderate; m-mild; V-variable

Species: Lk = Kemp's ridley (*Lepidochely kempii*); Cm = green (*Chelonia myda*);
Cc = loggerhead (*Caretta caretta*); Ei = Hawksbil (*Eretmochelys imbricatal;*
Dc = Leatherback (*Dermochelys coriacea*)

1* - Nests on Alabama and Florida Panhandle beaches, Texas (principally ridleys, uncommon) and Florida (5 species, uncommon to abundant) beaches (unknown direct effects, hypothesized mild to severe effects from petroleum removal efforts, effects hypothesized to be dependent upon nest identification and protection)

2* - Eggs (unknown effects on hatching rates and hatchling fitness, effects hypothesized to be variable)

3* - Pelagic juveniles (4 species), post-hatchlings (principally loggerheads and green turtles), neritic/benthic stage (including adults) loggerheads and ridleys; hawksbills, pelagic leatherbacks - (contact and ingestion effects hypothesized to be highly likely, unknown effects; diet species hypothesized to carry toxicants; hypothesized changes in prey abundance; overall effects hypothesized to be variable).

METHODS

Sargassum Surveys

Purpose/Objectives:
This proposal is to provide at-sea recovery, rescue, and quantitative impact assessments for sea turtles of five species known to inhabit the region: leatherback turtles (*Dermochelys coriacea*), loggerhead sea turtles (*Caretta caretta*), green turtles (*Chelonia mydas*), Kemp's ridleys (*Lepidochelys kempii*), and hawksbill turtles (*Eretmochelys imbricata*). Habitats include drifting pelagic *Sargassum*, other pelagic drift habitat, and additional surface waters in the expanding spill area.

Needs for action on rescue and recovery are immediate. The spill region is known to contain juvenile, pelagic-stage sea turtles of four species (FWC 2008). These turtles are 25 cm in carapace length or smaller and are not visible from aircraft. These turtles have a close association with pelagic *Sargassum* mats, spend the vast majority of their time at the surface, and are highly vulnerable to surface petroleum due to their size and oceanographic distribution (within frontal zones). Larger sea turtles have been observed from synoptic aerial surveys in the spill area. These turtles are also vulnerable. The lack of oiled sea turtles recovered to date is a reflection of a lack of recovery and rescue efforts for sea turtles.

The proposed work is guided by the hypothesis that 1) sea turtles of five species and multiple life stages are extant within the spill area and its expanding margins, and 2) these turtles are highly vulnerable to petroleum. There is strong evidence for the hypothesis, but empirical data associated with the current event are lacking. Also lacking are efforts to recover dead animals at sea and to rescue live sea turtles. Our proposed objectives are to conduct vessel-based searches for sea turtles in the water, to measure search effort and distance from transect for relative abundance estimates, to recover dead turtles, and to rescue live turtles. All assessments of turtle interaction with petroleum would be made from specimens collected at sea and examined in conjunction with other studies. Specimens, tissue samples, and recorded images would be made widely available to other researchers, with targeted attention to initial necropsy under programs currently underway by NOAA Fisheries. The proposed action would begin immediately and extend for 30 days. A principal objective of the monitoring proposed is to provide quantified

estimates of abundance that could be scaled to affected areas. Rescue actions associated with the proposed actions would apply directly to reduction of injuries associated with the spill incident.

Methods and Data Collection: Searches would be conducted using trained observers aboard two chartered vessels guided in their search by real-time information from aerial surveys. Observers in survey aircraft would be asked to transmit position information on target locations within the spill area. These target locations would include locations with 1) visible lines of convergence containing floating *Sargassum* and petroleum, or 2) visible turtles at the water's surface. During the entire cruise of each vessel, tracks would be recorded using GPS. These tracks would be the basis for estimations of search area. Additional dimensions to the search area would come from measured distances from transect (course line) of observed turtles, modeled to provide estimates of detectability and density.

All observed dead turtles would be collected and placed on ice for transport. Any turtle adjacent to petroleum would be captured using long-handled dip nets and hoop nets. Any turtle judged to be in distress would be similarly captured. Turtles judged to be in need of veterinary aid would be brought to shore. A release plan for healthy turtles would be made with input from Florida FWC, NOAA Fisheries, and veterinary staff currently working in conjunction with spill-response efforts. Overnight search efforts and holding of live turtles would take place only when distance from shore dictates that such an extended cruise would be the best course of action, with input from the vessel captain and veterinary staff.

Workers on search vessels would maintain contact with aerial survey observers, shore veterinary staff, and other incident decision makers. Communication would be by satellite phone.

Data collection would be modified to conform with coordinated data collection and management designed by trustee agencies. For example, the proposed vessel surveys would serve as ground-truth observations to supplement aerial survey observations and estimates of detectability for sea turtles.

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Reference:
Florida Fish and Wildlife Conservation Commission (FWC). 2008. Pelagic Neonate and Juvenile Sea Turtles in Gulf and Atlantic Surface Waters Off Florida: Distribution, Densities, Threats, Habitat Descriptions, and Behavior. A Final Programmatic Report Submitted to the National Marine Fisheries Service for the funded project NA06NMF4720031. 71 pp.

Trawl Vessels Surveys

Purpose/Objectives:

Large-mesh trawl surveys conducted within offshore spill zones will be guided by hypotheses and research objectives similar to and complementing those described for Sargassum surveys, but with the intent to provide data on larger juvenile (≥25 cm carapace length), subadult and adult life stages of the five species vulnerable to petroleum within the spill area and to do so throughout the water column. Integration of trawl surveys into search and rescue operations will expand the recovery of dead, sea turtles and rescue of live cohorts within spill zones, thus providing an additional capture option facilitating collection of tissue samples from a wider array of life history stages prerequisite to impact assessment. Like that for Sargassum surveys used in recovery and rescue operations, trawling effort and associated sea turtle collection will be quantified so as to determine species composition, life history stage and relative abundance of animals that are impacted.

Trawling effort, based on modifications of the USACE's sea turtle relocation program for dredging operations, will be used to assess population structure of sea turtle assemblages within oil impacted and non-impacted areas, with a primary focus on quantifying impact to neritic/demersal life history stages. This effort will complement that for pelagic-stage cohorts characterized during Sargassum surveys. Turtles captured by bottom trawling efforts will be candidates for satellite telemetry operations used for sea turtle behavioral assessments of oil spill-related impacts.

Methods and Data Collection:

Trawling protocol to capture turtles (dead and alive) will use modified approaches to the USACE sea turtle relocation program and concentrate on both surface (search and rescue operations), water column and demersal sampling (neritic population assessments). Large-mesh (8-inch (20.3 cm) stretch mesh) trawls, towed along transects guided by aerial surveys and/or in association with Sargassum surveys, will be used to capture larger juvenile through adult life history stages of sea turtles.

Integration of trawling efforts into recovery and rescue operations will require that nets, otter doors and bridle equipment be modified to enable surface and mid-water tows. Daytime trawl tows will be conducted alongside convergence zones in which oil and floatsum (Sargassum and other drift line materials) are concentrated as well as where aerial surveys have observed turtles on or near the surface. These tows will be of short duration (≤30 minutes) to lessen the risk of debris- and drowning-related mortality to live sea turtles as well as reduce the volume of incidentally-caught debris and its impact on trawl capture efficiency and turtles within the trawl. GPS-facilitated plots of transects/track lines within which trawls are towed will enable quantification of rescue and recovery areas as well as population estimates of impacted turtles. Trawl operations targeting sea turtle recovery and rescue will be scheduled to coincide with Sargassum surveys and involve a minimum of two vessels conducting these tows for up to 30 days. Observers placed aboard recovery and rescue vessels involved in surface and near-surface trawling operations will follow at-sea protocols outlined in the Sargassum survey

section that pertain to the processing and tissue sampling of dead turtles as well as the handling, holding, sampling and eventual transfer (to shore-based rehab facility) of live turtles. On-board tissue sampling protocol and data collection activities deployed by observers will be those mandated by contaminant personnel and regulatory agencies.

Modified dredge relocation trawling techniques deployed along Gulf bottoms of oil impacted and non-impacted zones will be a primary means of capturing neritic life stages of sea turtles, particularly loggerheads and Kemp's ridleys. The goal of this sampling protocol is to provide sufficient sampling effort within impacted and non-impacted areas to adequately characterize species composition, relative abundance and size/age structure of sea turtle assemblages (particularly loggerhead and ridley life stages recruiting to nearshore, neritic foraging grounds) at risk to contamination. Data from the USACE's sea turtle relocation program documents the effectiveness in capturing neritic stage individuals. Capture totals from USACE trawling efforts between the middle Texas coast to the mouth of the Mississippi reveal loggerheads and ridleys dominate catch statistics. The spatial scope across which this methodology is deployed will be much larger than that of recovery and rescue operations. Bottom trawl tows will be deployed along transects within nearshore and offshore areas where oil as well as lack of oil have been documented. There are a sufficient number of areas across the Gulf, including those near and offshore of tidal passes where these two crab-eating species will be foraging at risk of oil contamination, in which bottom trawling efforts can provide opportunities for impact assessment on these two species as well as others.

Eight vessels equipped with large-mesh (8-inch (20.3 cm) stretched mesh), bottom-fishing trawls will be deployed within oil-laden zones (4 vessels) and oil-free control areas east (2 vessels) and west (2 vessels) of oil-laden zones. Trawls will be towed along transects established within the aforementioned impact and control zones. GPS-facilitated plots of tow tracks will be used to quantify trawling effort and produce catch-per-unit effort data prerequisite to impact assessment. Tows will be of short duration ($\leq$ 30 minutes) to negate the possibility of injury and death to sea turtles and reduce clogging the net with debris.

The aforementioned trawling effort will be conducted during four sampling periods that include spring/summer 2010, summer/fall 2010, spring/summer 2011, and spring/fall 2011. These sampling periods coincide with peak sea turtle activity, especially that involving offshore to nearshore movements (at least in the western Gulf) and highest potential for sea turtles to undertake foraging migrations into oil contaminated areas. Sampling across these seasons and years will enable contaminant analysis assessing both acute and chronic contaminant exposure and uptake.

Observers onboard trawlers will follow handling, care and transport protocols (discussed in Sargassum Survey section) for dead and live (oiled and non-oiled) turtles as well as conduct tissue sampling activities mandated by the contaminant group assigned to this project. Quantitative data documenting sampling effort and sea turtle community dynamics plus population structure and relative abundance will be taken according to NOAA collection priorities and protocols. In doing so, all captured sea turtles will be

measured for straight and curved carapace length (SCL and CCL; cm) and examined for oil, injuries, abnormalities, flipper tags/scars and PIT tag evidence of recapture. Releasable, untagged individuals will receive an inconel style 681 tag issued by the NMFS SEFSC-Miami affixed to the trailing edge of each front flipper and a PIT tag embedded under the dorsal surface of the right front flipper prior to release in order to identify subsequent recaptures and enable subsequent data collection describing health, growth, movement, habitat preference and tracking of contaminant loads and impact assessment. Observers also will be equipped to apply satellite tags on selected cohorts.

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Entanglement Netting Surveys

Purpose/Objectives: In-water sampling effort consisting of entanglement netting operations will be used to quantitatively assess population structure of shallow, nearshore sea turtle assemblages within oil impacted and non-impacted areas, with a primary focus on quantifying impact to juvenile and subadult recruits to neritic habitats. This effort will complement that for similar life history stages (and adults) characterized during trawl surveys in open Gulf waters. Live capture information generated by entanglement net operations can also be compared with data taken during stranding surveys conducted on beachfronts and wetland edges. Turtles captured in entanglement nets, like those from trawl surveys, will be candidates for satellite telemetry operations used for sea turtle behavioral assessments of oil spill-related impacts.

Methods and Data Collection: Large-mesh, entanglement netting surveys will be conducted at both oil impacted and control (no spill) sites such as those along the Louisiana coast. These sites will be located primarily in shallow nearshore areas adjacent to tidal passes and estuarine waters known as foraging grounds for Kemp's ridley, loggerhead and green sea turtles. An example of an oil impacted site would be waters adjacent to Grand Isle, LA, including Barataria Pass, which is bordered by the barrier islands of Grand Terre to the east and Grand Isle to the west, and Caminada Pass which is bordered by Grand Isle to the east and Elmers Island to the west. These two passes serve as ingress and egress points to and from Barataria Bay, which may also be impacted by the spread of the oil spill and be included in this sampling area. The control site will consist of nearshore and estuarine waters adjacent to Calcasieu Pass, LA which is located ~ 330 km to the west of Grand Isle and is currently not in the projected trajectory of the spill. Calcasieu Pass is bordered on the east and west by 3 km-long jetties and serves as a

tidal inlet to Calcasieu Lake. This location not only will serve as a non-impacted control site but, having been previously sampled by the Texas A&M University at Galveston from 1993-2002, provides established netting stations both east and west of the pass and at beachfront and jetty locations for historical comparisons of sea turtle abundance, distribution and habitat use patterns.

Directed sea turtle capture will involve large-mesh entanglement nets (91.4 m long and 2.5- to 4.0-m deep, with 12.7-cm bar mesh of #9 twisted nylon) deployed daily during daylight periods for up to 5 days/site-visit in each estuary and adjacent nearshore habitats. Netting operations in both impacted and control study areas will be conducted across four seasonal periods previously mentioned in the trawl section of this proposal that include: early summer (June/mid-July) 2010; late summer (August/September) 2010; and these same periods in 2011, to assess possible seasonal changes in contaminant load and to characterize sea turtle population dynamics during peak periods of abundance in nearshore foraging habitats. Water depth and current will dictate net type used at respective sample sites, most of which will be limited to depths $\leq$3 m. Netting effort at all sites will consist of 2-4 nets set in tandem or perpendicular to one another for 6-12 hours per day. Nets will be checked for sea turtles every 20 minutes or more frequently as splashes or other signs of potential capture dictate, in order to minimize risk of turtles drowning while entangled. Pinger devices emitting high-frequency sounds will be attached to nets to negate incidental capture of bottlenose dolphins (*Tursiops truncatus*). Separate sets of netting gear will be used at oil impacted vs. control sites so as to prevent contamination of non-spill areas.

All captured sea turtles will be measured for straight and curved carapace length (SCL and CCL; cm) and examined for oil, injuries, abnormalities, flipper tags/scars and PIT tag evidence of recapture. Untagged individuals will receive an inconel style 681 tag issued by the NMFS SEFSC-Miami affixed to the trailing edge of each front flipper and a PIT tag embedded under the dorsal surface of the right front flipper prior to release in order to identify subsequent recaptures. Turtles from selected species and life stages taken in entanglement nets will be candidates to receive satellite telemetry designed to provide behavioral indicators of impact assessment.

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Biotelemetry Monitoring

Purpose/Objectives:
The proposed work will support a baseline assessment of hydrocarbon exposure and will develop time-critical data providing the evidence necessary establishing a causal

relationship between population impacts to sea turtles and hydrocarbon toxicity. The proposed data acquisition will provide supporting evidence that links the observed effects on sea turtle populations with a plausible mechanism of hydrocarbon toxicity related to the MC 252 incident.

Methods and Data Collection – Open Gulf Trawling Operations: GPS tags such as Wildlife Computer's Model MK10-AF will be affixed to selected Kemp's ridley, loggerhead and green sea turtles taken during trawling operations that yield quantitative assessments of neritic life stages in impacted and non-impacted areas of the open Gulf. Sea turtle behavior patterns within impacted and oil-free zones will be characterized and compared between these zones, thus providing a biological tool to impact assessment. Behavioral data comprising this impact assessment include a sea turtle's time at the surface, depth and dive duration profiles, time-at-depth, time-at-temperature, depth-temperature profiles, and other timelines that can be compared between oiled and non-oil sea turtles. GPS tags also will provide spatial and temporal insight as to sea turtles that die and strand along Gulf shoreline.

The four seasonal, quantitative trawling operations proposed across Gulf-wide impacted and control areas will provide opportunities to capture all three species whose constituents are comprised of various life history stages that exhibit varying degrees of contaminant exposure. As such, thirty (30) turtles comprised of 10 Kemp's ridleys (5 from impacted and 5 from control sites), 10 loggerheads (5 from impacted and 5 from control sites) and 10 green turtles (5 from impacted and 5 from control sites) will be tracked each sampling period. This experimental design will result in 120 turtles from three species (40 Kemp's ridleys, 40 loggerheads, 40 greens) being satellite tagged and tracked during the 1-year impact assessment. All tagged turtles will be tracked for a minimum of 6 months during which time movement and associated behavior of the aforementioned species will be characterized in relation to their exposure to crude oil or lack thereof.

Methods and Data Collection - Nearshore Entanglement Netting Operations:
Juvenile through adult life stages of Kemp's ridley, loggerhead and green sea turtles taken in nearshore entanglement nets will be affixed with SirTrack Kiwi101 (larger subadults and adults) and Kiwi202 satellite transmitters (juveniles through small subadults) during each of four (4) sampling periods. Both transmitter models will generate data on sea turtle location, water temperature and depth. Results of historical satellite tracking efforts conducted by Texas A&M University at Galveston on the aforementioned species yield a strong fidelity pattern for shallow surf and bay habitats. Water depth across habitats in which these turtles forage during summer and fall is typically >5 to10 m deep, wherein the use of more expensive GPS telemetry (proposed for open Gulf conspecifics) to characterize diving behavior is not warranted as well as may be compromised.

Turtles taken in entanglement nets will receive satellite transmitters during four sampling periods that include spring/summer 2010, summer/fall 2010, spring/summer 2011, and spring/fall 2011. Thirty (30) turtles comprised of 10 Kemp's ridleys (5 from impacted and 5 from control sites), 10 loggerheads (5 from impacted and 5 from control sites) and 10 green

turtles (5 from impacted and 5 from control sites) will be tracked each sampling period. This experimental design will result in 120 turtles from three species (40 Kemp's ridley, 40 loggerhead, 40 green) being satellite tagged and tracked during the 1-year impact assessment. All tagged turtles will be tracked for a minimum of 6 months during which time movement and associated behavior of the aforementioned species will be characterized in relation to their exposure to crude oil or lack thereof.

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Chemical Biomarkers of Hydrocarbon Exposure and Toxicological Assessment

Purpose/Objectives:
Small quantities of oil (5–20 μl) externally applied to bird eggs has been shown to kill bird embryos. Alkyl PAHs, common constituents of petroleum crude oil, have recently been identified as potent inducers of AH receptor mediated toxicity in developing fish embryos with metabolism similar to the genotoxic effects observed from dioxins and furans. Toxicity to crude oils manifests a common suite of developmental defects in bird, fish and turtle embryos exposed to petroleum-derived hydrocarbons. In birds and fish the gross malformations resulting from exposure to polycyclic aromatic hydrocarbons (PAHs) present in heavy oils include pericardial and yolk sac edema, hemorrhaging, deformities and induced levels of CYP1a enzymes. Although the toxicity of hydrocarbons to turtles has been studied in less detail, yolk sac edema, spinal and jaw deformities, and the reduction in growth and recruitment have been reported suggesting that the mechanisms of PAH toxicity are likely to be similar among egg laying vertebrates.

The following study component is to conduct complimentary field survey work designed to support baseline assessment of hydrocarbon exposure and the development of time critical data that provide evidence necessary to establish a causal relationship between population impacts to sea turtles and hydrocarbon toxicity. The proposed data acquisition will provide supporting evidence that links the observed effects on turtle populations with a plausible mechanism of hydrocarbon toxicity.

Additional survey data is expected to provide baseline information on sea turtles occupying the region and provide an initial assessment of their exposure to oil from the MC 252 incident. Changes in the spatial distribution and abundance of turtles will be monitored in response to the oil spill with the goal of providing data in support of NRDA claims. The information developed by the currently planned survey will be leveraged to

help identify sea turtles for collection of data on chemical biomarkers, hydrocarbon exposure, and toxicity.

The causal inference that hydrocarbon exposure has reduced populations of sea turtles will result in a complex legal and scientific review of the supporting survey data. These types of ecological assessments rely in part upon the following criteria used in epidemiological studies to establish causation:

1. Strength of the association: The stronger the association between the abundance of individuals and hydrocarbon exposure in individual geographic subareas the more convincing the causal interpretation.

2. Dose-response effects: The observed frequency of disease in exposed individuals and reduced abundance increases with the level of exposure or dose.

3. Lack of Temporal or Spatial Ambiguity: It is very important to establish that the hydrocarbon exposure preceded the observed harm to the population and that the cohort selected as the unexposed controls do not have potential for exposure to the same or similar hydrocarbon contamination.

4. Biological plausibility: The reduction in sea turtle populations makes sense within the context of our current knowledge regarding the survival and reproductive success of individuals exposed to toxins in petroleum.

5. Coherence of evidence: The findings do not seriously conflict with our understanding of the accepted facts about disease occurrence that may impact populations.

Methods and Data Collection:
Attachment 1 provides summaries of the sources for sea turtle tissue and blood samples to be analyzed, evidence for hypotheses, explanations of dependent and independent variables. Attachment 1 also provides a summary of the blood chemistry and bioassay measurements previously reported for turtles. Attachment 2 provides the Standard Operating Procedures accepted for the toxicological techniques proposed. Attachment 3 provides the list of PAHs to be evaluated.

Toxicological Assessment Strategy:
1) *Hydrocarbon analysis in tissues of exposed and unexposed juvenile through adult sea turtle life stages.*

The presence of petroleum diagnostic compounds (steranes, di- and triterpanes) and toxic aromatic hydrocarbons (alkyl-PAHs and selected PAH metabolites) will be measured in newly collected blood samples and blood samples that have been previously collected and archived along the Gulf of Mexico coast.

2) *Hydrocarbon analysis in tissues of all dead stranded sea turtles.*

The presence of petroleum diagnostic compounds (steranes, di- and triterpanes) and toxic aromatic hydrocarbons (alkyl-PAHs and selected PAH metabolites) will

be measured in ovum tissue samples and gut content samples recovered from necropsies of sea turtles encountered.

3) *Blood biochemistry and immunotoxicity of unexposed and exposed sea turtles.*
Standard blood biochemistries will be measured (e.g., complete blood count [CBC], Chem 7 [i.e., a battery of blood chemistry tests]) to determine hematic homeostasis. Electrolyte balance will be critical since research has shown that the turtle salt gland, which regulates salt content in the body, is negatively affected by hydrocarbons. WBCs are known to be negatively affected by hydrocarbons, so WBCs function (i.e., phagocytic activity of pathogens) will be determined by standard phagocytosis activity methodologies. Furthermore, additional WBC function bioassays can be conducted using flow cytometry (FCM) analysis against several highly-conserved biochemical endpoints (e.g., cell death, cell cycle disruption, etc.).

4) *Chromosomal damage in exposed and unexposed juvenile through adult sea turtle life stages.*
Measurement of chromosomal damage in white blood cells (WBCs) of captured sea turtles would be conducted using flow cytometry (FCM) and micronucleus assay (MN) methods. Analysis would be performed on newly collected samples and from samples that have been collected previously and archived.

5) *Hydrocarbon analysis in eggshells and nest site soil (post hatching).*
The presence of petroleum diagnostic compounds (steranes, di- and triterpanes) and toxic aromatic hydrocarbons (alkyl-PAHs and selected PAH metabolites) will be measured in egg chorioallantoic/amniotic fluid, eggshells, and nest site soil (post hatching).

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SUMMARY OF EXPECTED BUDGET AND REQUESTED RESOURCES

Sargassum Surveys

Blair may need to update this?

Budget Category	Cost Estimate
Charter vessels (2) incl. fuel and crew, 20 days working @ 3500/day (x 2 vessels)	140,000
Per diem for biologists with sea turtle handling experience 2 x 2 vessels x 200/ day x 30 days sea, shore, and travel	24,000
Data workup, transcription, proofing, and analysis 15 staff-days, 1200/day	18,000
Mapping and final report prep 10 staff-days, 600/ day	6000
Capture equipment, GPS receivers (2), cameras, storage media, Sat-phone time, and expendables	7000
TOTAL COSTS PER 30-DAY EFFORT	$ 195,000

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Trawl Vessels Surveys

Budget

TBD upon finalization of methods and scope of effort

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Entanglement Netting Surveys

Budget

TBD upon finalization of methods and scope of effort

Proposing Agencies and Lead Investigators:
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Biotelemetry Monitoring

Budget

TBD upon finalization of methods and scope of effort

Proposing Agencies and Lead Investigators:
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Chemical Biomarkers of Hydrocarbon Exposure and Toxicological Assessment

Budget

TBD once methods and scope of efforts finalized

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NRDA At-sea Response for Sea Turtles associated with the Mississippi Canyon 252 Incident: Recovery, Rescue, and Quantitative Impact Assessment of In-water Sea Turtles within Spill Areas

BACKGROUND

Five sea turtle species are known to inhabit the Gulf of Mexico region potentially impacted by the Mississippi Canyon 252 (MC 252) incident: leatherback turtles (*Dermochelys coriacea*), loggerhead sea turtles (*Caretta caretta*), green turtles (*Chelonia mydas*), Kemp's ridleys (*Lepidochelys kempii*), and hawksbill turtles (*Eretmochelys imbricata*). On 28 April, the NOAA Southeast Fisheries Science Center initiated a series of aerial surveys to assess the marine mammal and sea turtle species occurring within areas likely to be affected by oil from the MC 252 incident. The aerial survey data collected to date has demonstrated the presence of loggerhead, Kemp's ridley, and leatherback sea turtles.

This proposal is to provide complementary support to the ongoing aerial and on-shore surveys by conducting at-sea recovery, rescue, and quantitative impact assessments for sea turtles associated with the MC 252 incident. The activities addressed by this proposal include: sargassum surveys, trawl vessel surveys, entanglement netting surveys, biotelemetry monitoring, assessments for chemical biomarkers of hydrocarbon exposure, and toxicological assessments. Figure 1 provides hypothesized spatiotemporal scales for direct and long-term effects from potential oil spill damage to sea turtle life stages following the MC 252 incident. Figure 1 also designates the sea turtle life stages targeted for sampling and evaluation by study components of this NRDA proposal. The study components of this proposal currently focus on the immediate spill impacted areas that are immediately west, south, and east of the Mississippi River Delta (primarily Louisiana and Mississippi) and some locations along Alabama and the Florida Panhandle. The geographic scope of this proposal may need to later be expanded to include downstream impacted areas to potentially include areas along Texas and both coasts of Florida. Figure 1 provides general descriptions of relative abundance for sea turtle species and life stages for each of these geographic regions. Species and life stage composition varies across each of these geographic regions which may influence the sampling methods implemented within each region.

Figure 1. Hypothesized Spatiotemporal Scales for Potential Oil Spill Damage to Sea Turtle Life Stages following the Mississippi Canyon 252 Incident

Sea Turtle Life Stages/Species	Immediate Spill Impacted Areas			Downstream Impacted Areas (Gulf Loop Current & Related Circulations)					
	West, South, & East of the MS River Delta (including Alabama & Florida Panhandle)			Texas Coastal Waters South Texas Beaches			West Florida Shelf Florida Gulf Coast Florida Keys Waters Florida Current Atlantic Coast – Nesting Beaches		
	Relative Abundance	Direct Effects	Longterm Effect	Relative Abundance	Direct Effects	Longterm Effect	Relative Abundance	Direct Effects	Longterm Effect
Nests/eggs	Cc – C Cm – U LK - U	1*	V 2*	Cc – U LK – C/U	1*	V 2*	Cc – A/F Cm – C LK - U	1*	V 2*
Hatchlings (frenzy stage, leaving nests, swimming from beach), through October/November	Cc – C Cm – U LK - U	Cat/S	V 3*	Cc – U LK – C/U	Cat/S	V 3*	Cc – A/F Cm – C LK - U	Cat/S	V 3*
Post-hatchling, young-of-year, through December	Cc – F Cm – U LK - U	Cat/S	V 3*	Cc – U LK - C	Cat/S	V 3*	Cc – F Cm – F LK - U	Cat/S	V 3*
Pelagic Juveniles	Lk – F Cm – F Cc – U Ei - U	S	V 3*	Lk – F Cm – U Cc – F Ei - U	S	V 3*	Lk – U Cm - F/C Cc – F Ei - U	S	V 3*
Neritic/Benthic (large juvenile subadult, adult)	Lk - F/C Cm- C Cc - F/C	S	V 3*	Lk – F/C Cm- C Cc – F/C	S	V 3*	Lk – C Cm- F/C Cc – F/C	S	V 3*
Copulating adult Cc (peak through May)	Cc - U	S	V 3*	Cc - U	S	V 3*	Cc - C/U	S	V 3*
Female adults in inter-nesting habitat nearshore, peak through August/Sept	Cc – C Cm - U	S	V 3*	Cc - U	S	V 3*	A / C Cm–C/U	S	V 3*
Pelagic – Dc (Oceanic foraging)	Dc - F	S / M	V 3*	Dc – F/C	S	V 3*	Dc - F	S / M	V 3*

Red highlight indicates sea turtle life stages and oil spill impacts addressed by NRDA proposal.

<u>Direct effects</u> = acute, physical and chemical effects from oil, mousse, and liquid tar; effects include mortality.

<u>Long-term effects</u> = effects from contact and ingestion of petroleum and dispersants, effects from petroleum and dispersant compounds in dies species.

Relative Abundance Scale: A-abundant; F-frequent; C-Common; U-Uncommon

Effects Magnitude Scale: Cat-catastrophic; S-severe; M-moderate; m-mild; V-variable

Species: Lk = Kemp's ridley (*Lepidochely kempii*); Cm = green (*Chelonia myda*);
Cc = loggerhead (*Caretta caretta*); Ei = Hawksbil (*Eretmochelys imbricatal;*
Dc = Leatherback (*Dermochelys coriacea*)

1* - Nests on Alabama and Florida Panhandle beaches, Texas (principally ridleys, uncommon) and Florida (5 species, uncommon to abundant) beaches (unknown direct effects, hypothesized mild to severe effects from petroleum removal efforts, effects hypothesized to be dependent upon nest identification and protection)

2* - Eggs (unknown effects on hatching rates and hatchling fitness, effects hypothesized to be variable)

3* - Pelagic juveniles (4 species), post-hatchlings (principally loggerheads and green turtles), neritic/benthic stage (including adults) loggerheads and ridleys; hawksbills, pelagic leatherbacks - (contact and ingestion effects hypothesized to be highly likely, unknown effects; diet species hypothesized to carry toxicants; hypothesized changes in prey abundance; overall effects hypothesized to be variable).

METHODS

Sargassum Surveys

Purpose/Objectives:
This proposal is to provide at-sea recovery, rescue, and quantitative impact assessments for sea turtles of five species known to inhabit the region: leatherback turtles (*Dermochelys coriacea*), loggerhead sea turtles (*Caretta caretta*), green turtles (*Chelonia mydas*), Kemp's ridleys (*Lepidochelys kempii*), and hawksbill turtles (*Eretmochelys imbricata*). Habitats include drifting pelagic *Sargassum*, other pelagic drift habitat, and additional surface waters in the expanding spill area.

Needs for action on rescue and recovery are immediate. The spill region is known to contain juvenile, pelagic-stage sea turtles of four species (FWC 2008). These turtles are 25 cm in carapace length or smaller and are not visible from aircraft. These turtles have a close association with pelagic *Sargassum* mats, spend the vast majority of their time at the surface, and are highly vulnerable to surface petroleum due to their size and oceanographic distribution (within frontal zones). Larger sea turtles have been observed from synoptic aerial surveys in the spill area. These turtles are also vulnerable. The lack of oiled sea turtles recovered to date is a reflection of a lack of recovery and rescue efforts for sea turtles.

The proposed work is guided by the hypothesis that 1) sea turtles of five species and multiple life stages are extant within the spill area and its expanding margins, and 2) these turtles are highly vulnerable to petroleum. There is strong evidence for the hypothesis, but empirical data associated with the current event are lacking. Also lacking are efforts to recover dead animals at sea and to rescue live sea turtles. Our proposed objectives are to conduct vessel-based searches for sea turtles in the water, to measure search effort and distance from transect for relative abundance estimates, to recover dead turtles, and to rescue live turtles. All assessments of turtle interaction with petroleum would be made from specimens collected at sea and examined in conjunction with other studies. Specimens, tissue samples, and recorded images would be made widely available to other researchers, with targeted attention to initial necropsy under programs currently underway by NOAA Fisheries. The proposed action would begin immediately and extend for 30 days. A principal objective of the monitoring proposed is to provide quantified

estimates of abundance that could be scaled to affected areas. Rescue actions associated with the proposed actions would apply directly to reduction of injuries associated with the spill incident.

Methods and Data Collection: Searches would be conducted using trained observers aboard two chartered vessels guided in their search by real-time information from aerial surveys. Observers in survey aircraft would be asked to transmit position information on target locations within the spill area. These target locations would include locations with 1) visible lines of convergence containing floating *Sargassum* and petroleum, or 2) visible turtles at the water's surface. During the entire cruise of each vessel, tracks would be recorded using GPS. These tracks would be the basis for estimations of search area. Additional dimensions to the search area would come from measured distances from transect (course line) of observed turtles, modeled to provide estimates of detectability and density.

All observed dead turtles would be collected and placed on ice for transport. Any turtle adjacent to petroleum would be captured using long-handled dip nets and hoop nets. Any turtle judged to be in distress would be similarly captured. Turtles judged to be in need of veterinary aid would be brought to shore. A release plan for healthy turtles would be made with input from Florida FWC, NOAA Fisheries, and veterinary staff currently working in conjunction with spill-response efforts. Overnight search efforts and holding of live turtles would take place only when distance from shore dictates that such an extended cruise would be the best course of action, with input from the vessel captain and veterinary staff.

Workers on search vessels would maintain contact with aerial survey observers, shore veterinary staff, and other incident decision makers. Communication would be by satellite phone.

Data collection would be modified to conform with coordinated data collection and management designed by trustee agencies. For example, the proposed vessel surveys would serve as ground-truth observations to supplement aerial survey observations and estimates of detectability for sea turtles.

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Reference:
Florida Fish and Wildlife Conservation Commission (FWC). 2008. Pelagic Neonate and Juvenile Sea Turtles in Gulf and Atlantic Surface Waters Off Florida: Distribution, Densities, Threats, Habitat Descriptions, and Behavior. A Final Programmatic Report Submitted to the National Marine Fisheries Service for the funded project NA06NMF4720031. 71 pp.

Trawl Vessels Surveys

Purpose/Objectives:

Large-mesh trawl surveys conducted within offshore spill zones will be guided by hypotheses and research objectives similar to and complementing those described for Sargassum surveys, but with the intent to provide data on larger juvenile (≥25 cm carapace length), subadult and adult life stages of the five species vulnerable to petroleum within the spill area and to do so throughout the water column. Integration of trawl surveys into search and rescue operations will expand the recovery of dead, sea turtles and rescue of live cohorts within spill zones, thus providing an additional capture option facilitating collection of tissue samples from a wider array of life history stages prerequisite to impact assessment. Like that for Sargassum surveys used in recovery and rescue operations, trawling effort and associated sea turtle collection will be quantified so as to determine species composition, life history stage and relative abundance of animals that are impacted.

Trawling effort, based on modifications of the USACE's sea turtle relocation program for dredging operations, will be used to assess population structure of sea turtle assemblages within oil impacted and non-impacted areas, with a primary focus on quantifying impact to neritic/demersal life history stages. This effort will complement that for pelagic-stage cohorts characterized during Sargassum surveys. Turtles captured by bottom trawling efforts will be candidates for satellite telemetry operations used for sea turtle behavioral assessments of oil spill-related impacts.

Methods and Data Collection:

Trawling protocol to capture turtles (dead and alive) will use modified approaches to the USACE sea turtle relocation program and concentrate on both surface (search and rescue operations), water column and demersal sampling (neritic population assessments). Large-mesh (8-inch (20.3 cm) stretch mesh) trawls, towed along transects guided by aerial surveys and/or in association with Sargassum surveys, will be used to capture larger juvenile through adult life history stages of sea turtles.

Integration of trawling efforts into recovery and rescue operations will require that nets, otter doors and bridle equipment be modified to enable surface and mid-water tows. Daytime trawl tows will be conducted alongside convergence zones in which oil and floatsum (Sargassum and other drift line materials) are concentrated as well as where aerial surveys have observed turtles on or near the surface. These tows will be of short duration (≤30 minutes) to lessen the risk of debris- and drowning-related mortality to live sea turtles as well as reduce the volume of incidentally-caught debris and its impact on trawl capture efficiency and turtles within the trawl. GPS-facilitated plots of transects/track lines within which trawls are towed will enable quantification of rescue and recovery areas as well as population estimates of impacted turtles. Trawl operations targeting sea turtle recovery and rescue will be scheduled to coincide with Sargassum surveys and involve a minimum of two vessels conducting these tows for up to 30 days. Observers placed aboard recovery and rescue vessels involved in surface and near-surface trawling operations will follow at-sea protocols outlined in the Sargassum survey

section that pertain to the processing and tissue sampling of dead turtles as well as the handling, holding, sampling and eventual transfer (to shore-based rehab facility) of live turtles. On-board tissue sampling protocol and data collection activities deployed by observers will be those mandated by contaminant personnel and regulatory agencies.

Modified dredge relocation trawling techniques deployed along Gulf bottoms of oil impacted and non-impacted zones will be a primary means of capturing neritic life stages of sea turtles, particularly loggerheads and Kemp's ridleys. The goal of this sampling protocol is to provide sufficient sampling effort within impacted and non-impacted areas to adequately characterize species composition, relative abundance and size/age structure of sea turtle assemblages (particularly loggerhead and ridley life stages recruiting to nearshore, neritic foraging grounds) at risk to contamination. Data from the USACE's sea turtle relocation program documents the effectiveness in capturing neritic stage individuals. Capture totals from USACE trawling efforts between the middle Texas coast to the mouth of the Mississippi reveal loggerheads and ridleys dominate catch statistics. The spatial scope across which this methodology is deployed will be much larger than that of recovery and rescue operations. Bottom trawl tows will be deployed along transects within nearshore and offshore areas where oil as well as lack of oil have been documented. There are a sufficient number of areas across the Gulf, including those near and offshore of tidal passes where these two crab-eating species will be foraging at risk of oil contamination, in which bottom trawling efforts can provide opportunities for impact assessment on these two species as well as others.

Eight vessels equipped with large-mesh (8-inch (20.3 cm) stretched mesh), bottom-fishing trawls will be deployed within oil-laden zones (4 vessels) and oil-free control areas east (2 vessels) and west (2 vessels) of oil-laden zones. Trawls will be towed along transects established within the aforementioned impact and control zones. GPS-facilitated plots of tow tracks will be used to quantify trawling effort and produce catch-per-unit effort data prerequisite to impact assessment. Tows will be of short duration ($\leq$ 30 minutes) to negate the possibility of injury and death to sea turtles and reduce clogging the net with debris.

The aforementioned trawling effort will be conducted during four sampling periods that include spring/summer 2010, summer/fall 2010, spring/summer 2011, and spring/fall 2011. These sampling periods coincide with peak sea turtle activity, especially that involving offshore to nearshore movements (at least in the western Gulf) and highest potential for sea turtles to undertake foraging migrations into oil contaminated areas. Sampling across these seasons and years will enable contaminant analysis assessing both acute and chronic contaminant exposure and uptake.

Observers onboard trawlers will follow handling, care and transport protocols (discussed in Sargassum Survey section) for dead and live (oiled and non-oiled) turtles as well as conduct tissue sampling activities mandated by the contaminant group assigned to this project. Quantitative data documenting sampling effort and sea turtle community dynamics plus population structure and relative abundance will be taken according to NOAA collection priorities and protocols. In doing so, all captured sea turtles will be

measured for straight and curved carapace length (SCL and CCL; cm) and examined for oil, injuries, abnormalities, flipper tags/scars and PIT tag evidence of recapture. Releasable, untagged individuals will receive an inconel style 681 tag issued by the NMFS SEFSC-Miami affixed to the trailing edge of each front flipper and a PIT tag embedded under the dorsal surface of the right front flipper prior to release in order to identify subsequent recaptures and enable subsequent data collection describing health, growth, movement, habitat preference and tracking of contaminant loads and impact assessment. Observers also will be equipped to apply satellite tags on selected cohorts.

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Entanglement Netting Surveys

Purpose/Objectives: In-water sampling effort consisting of entanglement netting operations will be used to quantitatively assess population structure of shallow, nearshore sea turtle assemblages within oil impacted and non-impacted areas, with a primary focus on quantifying impact to juvenile and subadult recruits to neritic habitats. This effort will complement that for similar life history stages (and adults) characterized during trawl surveys in open Gulf waters. Live capture information generated by entanglement net operations can also be compared with data taken during stranding surveys conducted on beachfronts and wetland edges. Turtles captured in entanglement nets, like those from trawl surveys, will be candidates for satellite telemetry operations used for sea turtle behavioral assessments of oil spill-related impacts.

Methods and Data Collection: Large-mesh, entanglement netting surveys will be conducted at both oil impacted and control (no spill) sites such as those along the Louisiana coast. These sites will be located primarily in shallow nearshore areas adjacent to tidal passes and estuarine waters known as foraging grounds for Kemp's ridley, loggerhead and green sea turtles. An example of an oil impacted site would be waters adjacent to Grand Isle, LA, including Barataria Pass, which is bordered by the barrier islands of Grand Terre to the east and Grand Isle to the west, and Caminada Pass which is bordered by Grand Isle to the east and Elmers Island to the west. These two passes serve as ingress and egress points to and from Barataria Bay, which may also be impacted by the spread of the oil spill and be included in this sampling area. The control site will consist of nearshore and estuarine waters adjacent to Calcasieu Pass, LA which is located ~ 330 km to the west of Grand Isle and is currently not in the projected trajectory of the spill. Calcasieu Pass is bordered on the east and west by 3 km-long jetties and serves as a

tidal inlet to Calcasieu Lake. This location not only will serve as a non-impacted control site but, having been previously sampled by the Texas A&M University at Galveston from 1993-2002, provides established netting stations both east and west of the pass and at beachfront and jetty locations for historical comparisons of sea turtle abundance, distribution and habitat use patterns.

Directed sea turtle capture will involve large-mesh entanglement nets (91.4 m long and 2.5- to 4.0-m deep, with 12.7-cm bar mesh of #9 twisted nylon) deployed daily during daylight periods for up to 5 days/site-visit in each estuary and adjacent nearshore habitats. Netting operations in both impacted and control study areas will be conducted across four seasonal periods previously mentioned in the trawl section of this proposal that include: early summer (June/mid-July) 2010; late summer (August/September) 2010; and these same periods in 2011, to assess possible seasonal changes in contaminant load and to characterize sea turtle population dynamics during peak periods of abundance in nearshore foraging habitats. Water depth and current will dictate net type used at respective sample sites, most of which will be limited to depths $\leq$3 m. Netting effort at all sites will consist of 2-4 nets set in tandem or perpendicular to one another for 6-12 hours per day. Nets will be checked for sea turtles every 20 minutes or more frequently as splashes or other signs of potential capture dictate, in order to minimize risk of turtles drowning while entangled. Pinger devices emitting high-frequency sounds will be attached to nets to negate incidental capture of bottlenose dolphins (*Tursiops truncatus*). Separate sets of netting gear will be used at oil impacted vs. control sites so as to prevent contamination of non-spill areas.

All captured sea turtles will be measured for straight and curved carapace length (SCL and CCL; cm) and examined for oil, injuries, abnormalities, flipper tags/scars and PIT tag evidence of recapture. Untagged individuals will receive an inconel style 681 tag issued by the NMFS SEFSC-Miami affixed to the trailing edge of each front flipper and a PIT tag embedded under the dorsal surface of the right front flipper prior to release in order to identify subsequent recaptures. Turtles from selected species and life stages taken in entanglement nets will be candidates to receive satellite telemetry designed to provide behavioral indicators of impact assessment.

Proposing Agencies and Lead Investigators:
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Biotelemetry Monitoring

Purpose/Objectives:
The proposed work will support a baseline assessment of hydrocarbon exposure and will develop time-critical data providing the evidence necessary establishing a causal

relationship between population impacts to sea turtles and hydrocarbon toxicity. The proposed data acquisition will provide supporting evidence that links the observed effects on sea turtle populations with a plausible mechanism of hydrocarbon toxicity related to the MC 252 incident.

Methods and Data Collection – Open Gulf Trawling Operations: GPS tags such as Wildlife Computer's Model MK10-AF will be affixed to selected Kemp's ridley, loggerhead and green sea turtles taken during trawling operations that yield quantitative assessments of neritic life stages in impacted and non-impacted areas of the open Gulf. Sea turtle behavior patterns within impacted and oil-free zones will be characterized and compared between these zones, thus providing a biological tool to impact assessment. Behavioral data comprising this impact assessment include a sea turtle's time at the surface, depth and dive duration profiles, time-at-depth, time-at-temperature, depth-temperature profiles, and other timelines that can be compared between oiled and non-oil sea turtles. GPS tags also will provide spatial and temporal insight as to sea turtles that die and strand along Gulf shoreline.

The four seasonal, quantitative trawling operations proposed across Gulf-wide impacted and control areas will provide opportunities to capture all three species whose constituents are comprised of various life history stages that exhibit varying degrees of contaminant exposure. As such, thirty (30) turtles comprised of 10 Kemp's ridleys (5 from impacted and 5 from control sites), 10 loggerheads (5 from impacted and 5 from control sites) and 10 green turtles (5 from impacted and 5 from control sites) will be tracked each sampling period. This experimental design will result in 120 turtles from three species (40 Kemp's ridleys, 40 loggerheads, 40 greens) being satellite tagged and tracked during the 1-year impact assessment. All tagged turtles will be tracked for a minimum of 6 months during which time movement and associated behavior of the aforementioned species will be characterized in relation to their exposure to crude oil or lack thereof.

Methods and Data Collection - Nearshore Entanglement Netting Operations:
Juvenile through adult life stages of Kemp's ridley, loggerhead and green sea turtles taken in nearshore entanglement nets will be affixed with SirTrack Kiwi101 (larger subadults and adults) and Kiwi202 satellite transmitters (juveniles through small subadults) during each of four (4) sampling periods. Both transmitter models will generate data on sea turtle location, water temperature and depth. Results of historical satellite tracking efforts conducted by Texas A&M University at Galveston on the aforementioned species yield a strong fidelity pattern for shallow surf and bay habitats. Water depth across habitats in which these turtles forage during summer and fall is typically >5 to10 m deep, wherein the use of more expensive GPS telemetry (proposed for open Gulf conspecifics) to characterize diving behavior is not warranted as well as may be compromised.

Turtles taken in entanglement nets will receive satellite transmitters during four sampling periods that include spring/summer 2010, summer/fall 2010, spring/summer 2011, and spring/fall 2011. Thirty (30) turtles comprised of 10 Kemp's ridleys (5 from impacted and 5 from control sites), 10 loggerheads (5 from impacted and 5 from control sites) and 10 green

turtles (5 from impacted and 5 from control sites) will be tracked each sampling period. This experimental design will result in 120 turtles from three species (40 Kemp's ridley, 40 loggerhead, 40 green) being satellite tagged and tracked during the 1-year impact assessment. All tagged turtles will be tracked for a minimum of 6 months during which time movement and associated behavior of the aforementioned species will be characterized in relation to their exposure to crude oil or lack thereof.

Proposing Agencies and Lead Investigators:
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Chemical Biomarkers of Hydrocarbon Exposure and Toxicological Assessment

Purpose/Objectives:
Small quantities of oil (5–20 µl) externally applied to bird eggs has been shown to kill bird embryos. Alkyl PAHs, common constituents of petroleum crude oil, have recently been identified as potent inducers of AH receptor mediated toxicity in developing fish embryos with metabolism similar to the genotoxic effects observed from dioxins and furans. Toxicity to crude oils manifests a common suite of developmental defects in bird, fish and turtle embryos exposed to petroleum-derived hydrocarbons. In birds and fish the gross malformations resulting from exposure to polycyclic aromatic hydrocarbons (PAHs) present in heavy oils include pericardial and yolk sac edema, hemorrhaging, deformities and induced levels of CYP1a enzymes. Although the toxicity of hydrocarbons to turtles has been studied in less detail, yolk sac edema, spinal and jaw deformities, and the reduction in growth and recruitment have been reported suggesting that the mechanisms of PAH toxicity are likely to be similar among egg laying vertebrates.

The following study component is to conduct complimentary field survey work designed to support baseline assessment of hydrocarbon exposure and the development of time critical data that provide evidence necessary to establish a causal relationship between population impacts to sea turtles and hydrocarbon toxicity. The proposed data acquisition will provide supporting evidence that links the observed effects on turtle populations with a plausible mechanism of hydrocarbon toxicity.

Additional survey data is expected to provide baseline information on sea turtles occupying the region and provide an initial assessment of their exposure to oil from the MC 252 incident. Changes in the spatial distribution and abundance of turtles will be monitored in response to the oil spill with the goal of providing data in support of NRDA claims. The information developed by the currently planned survey will be leveraged to

help identify sea turtles for collection of data on chemical biomarkers, hydrocarbon exposure, and toxicity.

The causal inference that hydrocarbon exposure has reduced populations of sea turtles will result in a complex legal and scientific review of the supporting survey data. These types of ecological assessments rely in part upon the following criteria used in epidemiological studies to establish causation:

1. Strength of the association: The stronger the association between the abundance of individuals and hydrocarbon exposure in individual geographic subareas the more convincing the causal interpretation.

2. Dose-response effects: The observed frequency of disease in exposed individuals and reduced abundance increases with the level of exposure or dose.

3. Lack of Temporal or Spatial Ambiguity: It is very important to establish that the hydrocarbon exposure preceded the observed harm to the population and that the cohort selected as the unexposed controls do not have potential for exposure to the same or similar hydrocarbon contamination.

4. Biological plausibility: The reduction in sea turtle populations makes sense within the context of our current knowledge regarding the survival and reproductive success of individuals exposed to toxins in petroleum.

5. Coherence of evidence: The findings do not seriously conflict with our understanding of the accepted facts about disease occurrence that may impact populations.

Methods and Data Collection:
Attachment 1 provides summaries of the sources for sea turtle tissue and blood samples to be analyzed, evidence for hypotheses, explanations of dependent and independent variables. Attachment 1 also provides a summary of the blood chemistry and bioassay measurements previously reported for turtles. Attachment 2 provides the Standard Operating Procedures accepted for the toxicological techniques proposed. Attachment 3 provides the list of PAHs to be evaluated.

Toxicological Assessment Strategy:
1) *Hydrocarbon analysis in tissues of exposed and unexposed juvenile through adult sea turtle life stages.*

The presence of petroleum diagnostic compounds (steranes, di- and triterpanes) and toxic aromatic hydrocarbons (alkyl-PAHs and selected PAH metabolites) will be measured in newly collected blood samples and blood samples that have been previously collected and archived along the Gulf of Mexico coast.

2) *Hydrocarbon analysis in tissues of all dead stranded sea turtles.*

The presence of petroleum diagnostic compounds (steranes, di- and triterpanes) and toxic aromatic hydrocarbons (alkyl-PAHs and selected PAH metabolites) will

be measured in ovum tissue samples and gut content samples recovered from necropsies of sea turtles encountered.

3) *Blood biochemistry and immunotoxicity of unexposed and exposed sea turtles.*
Standard blood biochemistries will be measured (e.g., complete blood count [CBC], Chem 7 [i.e., a battery of blood chemistry tests]) to determine hematic homeostasis. Electrolyte balance will be critical since research has shown that the turtle salt gland, which regulates salt content in the body, is negatively affected by hydrocarbons. WBCs are known to be negatively affected by hydrocarbons, so WBCs function (i.e., phagocytic activity of pathogens) will be determined by standard phagocytosis activity methodologies. Furthermore, additional WBC function bioassays can be conducted using flow cytometry (FCM) analysis against several highly-conserved biochemical endpoints (e.g., cell death, cell cycle disruption, etc.).

4) *Chromosomal damage in exposed and unexposed juvenile through adult sea turtle life stages.*
Measurement of chromosomal damage in white blood cells (WBCs) of captured sea turtles would be conducted using flow cytometry (FCM) and micronucleus assay (MN) methods. Analysis would be performed on newly collected samples and from samples that have been collected previously and archived.

5) *Hydrocarbon analysis in eggshells and nest site soil (post hatching).*
The presence of petroleum diagnostic compounds (steranes, di- and triterpanes) and toxic aromatic hydrocarbons (alkyl-PAHs and selected PAH metabolites) will be measured in egg chorioallantoic/amniotic fluid, eggshells, and nest site soil (post hatching).

Proposing Agencies and Lead Investigators:

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SUMMARY OF EXPECTED BUDGET AND REQUESTED RESOURCES

Sargassum Surveys

Blair may need to update this?

Budget Category	Cost Estimate
Charter vessels (2) incl. fuel and crew, 20 days working @ 3500/day (x 2 vessels)	140,000
Per diem for biologists with sea turtle handling experience 2 x 2 vessels x 200/ day x 30 days sea, shore, and travel	24,000
Data workup, transcription, proofing, and analysis 15 staff-days, 1200/day	18,000
Mapping and final report prep 10 staff-days, 600/ day	6000
Capture equipment, GPS receivers (2), cameras, storage media, Sat-phone time, and expendables	7000
TOTAL COSTS PER 30-DAY EFFORT	$ 195,000

Proposing Agencies and Lead Investigators:
Florida Fish and Wildlife Conservation Commission
Fish and Wildlife Research Institute
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Trawl Vessels Surveys

Budget

TBD upon finalization of methods and scope of effort

Proposing Agencies and Lead Investigators:
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East Coast Observers
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Entanglement Netting Surveys

Budget

TBD upon finalization of methods and scope of effort

Proposing Agencies and Lead Investigators:
Texas A&M University at Galveston, Sea Turtle and Fisheries Ecology Research Lab
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Biotelemetry Monitoring

Budget

TBD upon finalization of methods and scope of effort

Proposing Agencies and Lead Investigators:
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Budget

TBD once methods and scope of efforts finalized

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NRDA At-sea Response for Sea Turtles associated with the Mississippi Canyon 252 Incident: Recovery, Rescue, and Quantitative Impact Assessment of In-water Sea Turtles within Spill Areas

BACKGROUND

Five sea turtle species are known to inhabit the Gulf of Mexico region potentially impacted by the Mississippi Canyon 252 (MC 252) incident: leatherback turtles (*Dermochelys coriacea*), loggerhead sea turtles (*Caretta caretta*), green turtles (*Chelonia mydas*), Kemp's ridleys (*Lepidochelys kempii*), and hawksbill turtles (*Eretmochelys imbricata*). On 28 April, the NOAA Southeast Fisheries Science Center initiated a series of aerial surveys to assess the marine mammal and sea turtle species occurring within areas likely to be affected by oil from the MC 252 incident. The aerial survey data collected to date has demonstrated the presence of loggerhead, Kemp's ridley, and leatherback sea turtles.

This proposal is to provide complementary support to the ongoing aerial and on-shore surveys by conducting at-sea recovery, rescue, and quantitative impact assessments for sea turtles associated with the MC 252 incident. The activities addressed by this proposal include: sargassum surveys (utilizing dip netting), trawl vessel surveys, entanglement netting surveys, biotelemetry monitoring, assessments for chemical biomarkers of hydrocarbon exposure, and toxicological assessments. Figure 1 provides hypothesized spatiotemporal scales for direct and long-term effects from potential oil spill damage to sea turtle life stages following the MC 252 incident. Figure 1 also designates the sea turtle life stages targeted for sampling and evaluation by study components of this NRDA proposal. The study components of this proposal currently focus on the immediate spill impacted areas that are immediately west, south, and east of the Mississippi River Delta (primarily Louisiana and Mississippi) and some locations along Alabama and the Florida Panhandle within the current response area. The geographic scope of this proposal may need to later be expanded to include downstream impacted areas to potentially include areas along Texas and the Florida Gulf Coast, as well as the Atlantic seaboard. Figure 1 provides general descriptions of relative abundance for sea turtle species and life stages for each of these geographic regions. Species and life stage composition varies across each of these geographic regions which may influence the sampling methods implemented within each region.

Figure 1. Hypothesized Spatiotemporal Scales for Potential Oil Spill Damage to Sea Turtle Life Stages following the Mississippi Canyon 252 Incident

Sea Turtle Life Stages/Species	Immediate Spill Impacted Areas			Downstream Impacted Areas (Gulf Loop Current & Related Circulations)					
	West, South, & East of the MS River Delta (including Alabama & Florida Panhandle)			Texas Coastal Waters South Texas Beaches**			West Florida Shelf Florida Gulf Coast Florida Keys Waters Florida Current Atlantic Coast – Nesting Beaches***		
	Relative Abundance	Direct Effects	Longterm Effect	Relative Abundance	Direct Effects	Longterm Effect	Relative Abundance	Direct Effects	Longterm Effect
Nests/eggs	Cc – C Cm – U LK - U	1*	V 2*	Cc – U LK – C/U	1*	V 2*	Cc – A/F Cm – C LK – U Dc – U	1*	V 2*
Hatchlings (frenzy stage, leaving nests, swimming from beach), through October/November	Cc – C Cm – U LK - U	Cat/S	V 3*	Cc – U LK – C/U	Cat/S	V 3*	Cc – A/F Cm – C LK - U	Cat/S	V 3*
Post-hatchling, young-of-year, through December	Cc – F Cm – U LK - U	Cat/S	V 3*	Cc – U LK - C	Cat/S	V 3*	Cc – F Cm – F LK - U	Cat/S	V 3*
Pelagic Juveniles	Lk – F Cm – F Cc – U Ei - U	S	V 3*	Lk – F Cm – U Cc – F Ei - U	S	V 3*	Lk – U Cm - F/C Cc – F Ei - U	S	V 3*
Neritic/Benthic (large juvenile subadult, adult)	Lk - F/C Cm- C Cc - F/C	S	V 3*	Lk – F/C Cm- C Cc – F/C	S	V 3*	Lk – C Cm- F/C Cc – F/C	S	V 3*
Copulating adult Cc (peak through May)	Cc - U	S	V 3*	Cc - U	S	V 3*	Cc - C/U	S	V 3*
Female adults in inter-nesting habitat nearshore, peak through August/Sept	Cc – C Cm - U	S	V 3*	Cc - U	S	V 3*	A / C Cm–C/U	S	V 3*
Pelagic – Dc (Oceanic foraging)	Dc - F	S / M	V 3*	Dc – F/C	S	V 3*	Dc - F	S / M	V 3*

Red highlight indicates sea turtle life stages and oil spill impacts addressed by NRDA proposal.

<u>Direct effects</u> = acute, physical and chemical effects from oil, mousse, and liquid tar; effects include mortality.

<u>Long-term effects</u> = effects from contact and ingestion of petroleum and dispersants, effects from petroleum and dispersant compounds in dies species.

Relative Abundance Scale (relative occurrence of species): A-abundant; F-frequent; C-Common; U-Uncommon

Effects Magnitude Scale: Cat-catastrophic; S-severe; M-moderate; m-mild; V-variable

Species: Lk = Kemp's ridley (*Lepidochely kempii*); Cm = green (*Chelonia myda*);
Cc = loggerhead (*Caretta caretta*); Ei = Hawksbil (*Eretmochelys imbricatal;*
Dc = Leatherback (*Dermochelys coriacea*)

** Table does not include Mexico Gulf Coast states, however, sea turtle species associated with these locations may also experience direct or long-term effects from the MC 252 incident.

***Downstream impacted areas may include locations other than Florida and Texas.

1* - Nests on Alabama and Florida Panhandle beaches, Texas (principally ridleys, uncommon) and Florida (5 species, uncommon to abundant) beaches (unknown direct effects, hypothesized mild to severe effects from petroleum removal efforts, effects hypothesized to be dependent upon nest identification and protection)

2* - Eggs (unknown effects on hatching rates and hatchling fitness, effects hypothesized to be variable)

3* - Pelagic juveniles (4 species), post-hatchlings (principally loggerheads and green turtles), neritic/benthic stage (including adults) loggerheads and ridleys; hawksbills, pelagic leatherbacks - (contact and ingestion effects hypothesized to be highly likely, unknown effects; diet species hypothesized to carry toxicants; hypothesized changes in prey abundance; overall effects hypothesized to be variable).

METHODS

A. Sargassum Surveys

Purpose/Objectives:
This proposal is to provide at-sea recovery, rescue, and quantitative impact assessments for sea turtles of five species known to inhabit the region: leatherback turtles (*Dermochelys coriacea*), loggerhead sea turtles (*Caretta caretta*), green turtles (*Chelonia mydas*), Kemp's ridleys (*Lepidochelys kempii*), and hawksbill turtles (*Eretmochelys imbricata*). Habitats include drifting pelagic *Sargassum*, other pelagic drift habitat, and additional surface waters in the expanding spill area.

Needs for action on rescue and recovery are immediate. The spill region is known to contain juvenile, pelagic-stage sea turtles of four species (FWC 2008). These turtles are 25 cm in carapace length or smaller and are not visible from aircraft. These turtles have a close association with pelagic *Sargassum* mats, spend the vast majority of their time at the surface, and are highly vulnerable to surface petroleum due to their size and oceanographic distribution (within frontal zones). Larger sea turtles have been observed from synoptic aerial surveys in the spill area. These turtles are also vulnerable. The lack of oiled sea turtles recovered to date is a reflection of a lack of recovery and rescue efforts for sea turtles.

The proposed work is guided by the hypothesis that 1) sea turtles of five species and multiple life stages are extant within the spill area and its expanding margins, and 2) these turtles are highly vulnerable to petroleum. There is strong evidence for the hypothesis, but empirical data associated with the current event are lacking. Also lacking are efforts to recover dead animals at sea and to rescue live sea turtles. Our proposed objectives are to conduct vessel-based searches for sea turtles in the water, to measure search effort and distance from transect for relative abundance estimates, to recover dead turtles, and to rescue live turtles. All assessments of turtle interaction with petroleum

would be made from specimens collected at sea and examined in conjunction with other studies. Specimens, tissue samples, and recorded images would be made widely available to other researchers, with targeted attention to initial necropsy under programs currently underway by NOAA Fisheries. The proposed action would begin immediately and extend for 30 days. A principal objective of the monitoring proposed is to provide quantified estimates of abundance that could be scaled to affected areas. Rescue actions associated with the proposed actions would apply directly to reduction of injuries associated with the spill incident.

Methods and Data Collection: Searches would be conducted using trained observers aboard two chartered vessels guided in their search by real-time information from aerial surveys. Observers in survey aircraft would be asked to transmit position information on target locations within the spill area. These target locations would include locations with 1) visible lines of convergence containing floating *Sargassum* and petroleum, or 2) visible turtles at the water's surface. During the entire cruise of each vessel, tracks would be recorded using GPS. These tracks would be the basis for estimations of search area. Additional dimensions to the search area would come from measured distances from transect (course line) of observed turtles, modeled to provide estimates of detectability and density.

All observed dead turtles would be collected and placed on ice for transport. Any turtle adjacent to petroleum would be captured using long-handled dip nets and hoop nets. Any turtle judged to be in distress would be similarly captured. Turtles judged to be in need of veterinary aid would be brought to shore. A release plan for healthy turtles would be made with input from Florida FWC, NOAA Fisheries, and veterinary staff currently working in conjunction with spill-response efforts. Overnight search efforts and holding of live turtles would take place only when distance from shore dictates that such an extended cruise would be the best course of action, with input from the vessel captain and veterinary staff.

Workers on search vessels would maintain contact with aerial survey observers, shore veterinary staff, and other incident decision makers. Communication would be by satellite phone.

Data collection would be modified to conform with coordinated data collection and management designed by trustee agencies. For example, the proposed vessel surveys would serve as ground-truth observations to supplement aerial survey observations and estimates of detectability for sea turtles.

Reference:

Florida Fish and Wildlife Conservation Commission (FWC). 2008. Pelagic Neonate and Juvenile Sea Turtles in Gulf and Atlantic Surface Waters Off Florida: Distribution, Densities, Threats, Habitat Descriptions, and Behavior. A Final Programmatic Report Submitted to the National Marine Fisheries Service for the funded project NA06NMF4720031. 71 pp.

B. Offshore - Trawl Vessels Surveys

Purpose/Objectives:
Large-mesh trawl surveys conducted within offshore spill zones will be guided by hypotheses and research objectives similar to and complementing those described for Sargassum surveys, but with the intent to provide data on larger juvenile (≥25 cm carapace length), subadult and adult life stages of the five species vulnerable to petroleum within the spill response area and to do so throughout the water column. Integration of trawl surveys into search and rescue operations will expand the recovery of dead, sea turtles and rescue of live cohorts within spill response areas, thus providing an additional capture option facilitating collection of tissue samples from a wider array of life history stages prerequisite to impact assessment. Like that for Sargassum surveys used in recovery and rescue operations, trawling effort and associated sea turtle collection will be quantified so as to determine species composition, life history stage and relative abundance (measure of Catch per Unit Effort (CPUE)) of animals that are impacted.

Trawling effort, based on modifications of the USACE's sea turtle relocation program for dredging operations, will be used to assess population structure of sea turtle assemblages within oil impacted and non-impacted areas, with a primary focus on quantifying impact to neritic/demersal life history stages. This effort will complement that for pelagic-stage cohorts characterized during Sargassum surveys. Turtles captured by bottom trawling efforts will be candidates for satellite telemetry operations used for sea turtle behavioral assessments of oil spill-related impacts.

Methods and Data Collection:
Trawling protocol to capture turtles (dead and alive) will use modified approaches to the USACE sea turtle relocation program and concentrate on both surface (search and rescue operations), water column and demersal sampling (neritic population assessments). Large-mesh (8-inch (20.3 cm) stretch mesh) trawls, towed along transects guided by aerial surveys and/or in association with Sargassum surveys, will be used to capture larger juvenile through adult life history stages of sea turtles.

Integration of trawling efforts into recovery and rescue operations will require that nets, otter doors and bridle equipment be modified to enable surface and mid-water tows. Daytime trawl tows will be conducted alongside convergence zones in which oil and floatsum (Sargassum and other drift line materials) are concentrated as well as where aerial surveys have observed turtles on or near the surface. These tows will be of short duration (≤30 minutes) to lessen the risk of debris- and drowning-related mortality to live sea turtles as well as reduce the volume of incidentally-caught debris and its impact on trawl capture efficiency and turtles within the trawl. GPS-facilitated plots of transects/track lines within which trawls are towed will enable quantification of rescue and recovery areas as well as population estimates of impacted turtles. Trawl operations targeting sea turtle recovery and rescue will be scheduled to coincide with Sargassum surveys and involve a minimum of two vessels conducting these tows for up to 30 days. Observers placed aboard recovery and rescue vessels involved in surface and near-surface trawling operations will follow at-sea protocols outlined in the Sargassum survey

section that pertain to the processing and tissue sampling of dead turtles as well as the handling, holding, sampling and eventual transfer (to shore-based rehab facility) of live turtles. On-board tissue sampling protocol and data collection activities deployed by observers will be those mandated by contaminant personnel and regulatory agencies.

Modified dredge relocation trawling techniques deployed along Gulf bottoms of oil impacted and non-impacted zones will be a primary means of capturing neritic life stages of sea turtles, particularly loggerheads and Kemp's ridleys. The goal of this sampling protocol is to provide sufficient sampling effort within impacted and non-impacted areas to adequately characterize species composition, relative abundance and size/age structure of sea turtle assemblages (particularly loggerhead and ridley life stages recruiting to nearshore, neritic foraging grounds) at risk to contamination. Data from the USACE's sea turtle relocation program documents the effectiveness in capturing neritic stage individuals. Capture totals from USACE trawling efforts between the middle Texas coast to the mouth of the Mississippi reveal loggerheads and ridleys dominate catch statistics. The spatial scope across which this methodology is deployed will be much larger than that of recovery and rescue operations. Bottom trawl tows will be deployed along transects within nearshore and offshore areas where oil as well as lack of oil have been documented. There are a sufficient number of areas across the Gulf, including those near and offshore of tidal passes where these two crab-eating species will be foraging at risk of oil contamination, in which bottom trawling efforts can provide opportunities for impact assessment on these two species as well as others.

Eight vessels equipped with large-mesh (8-inch (20.3 cm) stretched mesh), bottom-fishing trawls will be deployed within oil-laden zones (4 vessels) and oil-free control areas east (2 vessels) and west (2 vessels) of oil-laden zones. Trawls will be towed along transects established within the aforementioned impact and control zones. GPS-facilitated plots of tow tracks will be used to quantify trawling effort and produce catch-per-unit effort data prerequisite to impact assessment. Tows will be of short duration ($\leq$ 30 minutes) to negate the possibility of injury and death to sea turtles and reduce clogging the net with debris.

The aforementioned trawling effort will be conducted during four sampling periods that include spring/summer 2010, summer/fall 2010, spring/summer 2011, and spring/fall 2011. These sampling periods coincide with peak sea turtle activity, especially that involving offshore to nearshore movements (at least in the western Gulf) and highest potential for sea turtles to undertake foraging migrations into oil contaminated areas. Sampling across these seasons and years will enable contaminant analysis assessing both acute and chronic contaminant exposure and uptake.

Observers onboard trawlers will follow handling, care and transport protocols (discussed in Sargassum Survey section) for dead and live (oiled and non-oiled) turtles as well as conduct tissue sampling activities mandated by the contaminant group assigned to this project. Quantitative data documenting sampling effort and sea turtle community dynamics plus population structure and relative abundance will be taken according to NOAA collection priorities and protocols. In doing so, all captured sea turtles will be

measured for straight and curved carapace length (SCL and CCL; cm) and examined for oil, injuries, abnormalities, flipper tags/scars and PIT tag evidence of recapture. Releasable, untagged individuals will receive an inconel style 681 tag issued by the NMFS SEFSC-Miami affixed to the trailing edge of each front flipper and a PIT tag embedded under the dorsal surface of the right front flipper prior to release in order to identify subsequent recaptures and enable subsequent data collection describing health, growth, movement, habitat preference and tracking of contaminant loads and impact assessment. Observers also will be equipped to apply satellite tags on selected cohorts. Turtles from selected species and life stages captured with trawl nets will be candidates to receive satellite telemetry designed to provide behavioral indicators of impact assessment.

C. Nearshore - Entanglement Netting Surveys (Western MS River Delta)

Purpose/Objectives: In-water sampling effort consisting of entanglement netting operations will be used to quantitatively assess population structure of shallow, nearshore sea turtle assemblages within oil impacted and non-impacted areas, with a primary focus on quantifying impact to juvenile and subadult recruits to neritic habitats. This effort will complement that for similar life history stages (and adults) characterized during trawl surveys in open Gulf waters. Live capture information generated by entanglement net operations can also be compared with data taken during stranding surveys conducted on beachfronts and wetland edges. Turtles captured in entanglement nets, like those from trawl surveys, will be candidates for satellite telemetry operations used for sea turtle behavioral assessments of oil spill-related impacts.

Methods and Data Collection: Large-mesh, entanglement netting surveys will be conducted at both oil impacted and control (no spill) sites such as those along the Louisiana coast. These sites will be located primarily in shallow nearshore areas adjacent to tidal passes and estuarine waters known as foraging grounds for Kemp's ridley, loggerhead and green sea turtles. An example of an oil impacted site would be waters adjacent to Grand Isle, LA, including Barataria Pass, which is bordered by the barrier islands of Grand Terre to the east and Grand Isle to the west, and Caminada Pass which is bordered by Grand Isle to the east and Elmers Island to the west. These two passes serve as ingress and egress points to and from Barataria Bay, which may also be impacted by the spread of the oil spill and be included in this sampling area. The control site will consist of nearshore and estuarine waters adjacent to Calcasieu Pass, LA which is located ~ 330 km to the west of Grand Isle and is currently not in the projected trajectory of the spill. Calcasieu Pass is bordered on the east and west by 3 km-long jetties and serves as a tidal inlet to Calcasieu Lake. This location not only will serve as a non-impacted control site but, having been previously sampled by the Texas A&M University at Galveston from 1993-2002, provides established netting stations both east and west of the pass and at beachfront and jetty locations for historical comparisons of sea turtle abundance, distribution and habitat use patterns.

Directed sea turtle capture will involve large-mesh entanglement nets (91.4 m long and 2.5- to 4.0-m deep, with 12.7-cm bar mesh of #9 twisted nylon) deployed daily during daylight periods for up to 5 days/site-visit in each estuary and adjacent nearshore habitats. Netting operations in both impacted and control study areas will be conducted across four seasonal periods previously mentioned in the trawl section of this proposal that include: early summer (June/mid-July) 2010; late summer (August/September) 2010; and these same periods in 2011, to assess possible seasonal changes in contaminant load and to characterize sea turtle population dynamics during peak periods of abundance in nearshore foraging habitats. Water depth and current will dictate net type used at respective sample sites, most of which will be limited to depths $\leq$3 m. Netting effort at all sites will consist of 2-4 nets set in tandem or perpendicular to one another for 6-12 hours per day. Nets will be checked for sea turtles every 20 minutes or more frequently as splashes or other signs of potential capture dictate, in order to minimize risk of turtles drowning while entangled. Pinger devices emitting high-frequency sounds will be attached to nets to negate incidental capture of bottlenose dolphins (*Tursiops truncatus*). Separate sets of netting gear will be used at oil impacted vs. control sites so as to prevent contamination of non-spill areas.

All captured sea turtles will be measured for straight and curved carapace length (SCL and CCL; cm) and examined for oil, injuries, abnormalities, flipper tags/scars and PIT tag evidence of recapture. Untagged individuals will receive an inconel style 681 tag issued by the NMFS SEFSC-Miami affixed to the trailing edge of each front flipper and a PIT tag embedded under the dorsal surface of the right front flipper prior to release in order to identify subsequent recaptures. Turtles from selected species and life stages taken in entanglement nets will be candidates to receive satellite telemetry designed to provide behavioral indicators of impact assessment.

D. Nearshore - Entanglement, Strike, and Dip Netting Surveys (Northeastern Gulf of Mexico)

Purpose/Objectives: Entanglement netting surveys will be conducted in the northeastern Gulf of Mexico to complement the entanglement netting surveys described above for the western region of the MS River Delta. Comparisons of abundance (measured as CPUE), species composition, and blood toxicity will occur between the two regions. In-water sampling effort consisting of entanglement and opportunistic netting operations will be used to quantitatively assess population structure of shallow, nearshore sea turtle assemblages, with a primary focus on quantifying impact to juvenile and subadult recruits to neritic habitats. This effort will complement that for similar life history stages (and adults) characterized during trawl surveys in open Gulf waters. Live capture information generated by entanglement and opportunistic netting operations can also be compared with data taken during stranding surveys conducted on beachfronts and wetland edges. Turtles captured in nets, like those from trawl surveys, will be candidates for satellite telemetry operations to assess sea turtle use of oil spill-related impacted habitats.

Methods and Data Collection: Entanglement and opportunistic netting surveys east of the MS River Delta will occur in St. Joseph Bay, a coastal embayment with known year-round habitat for green, Kemp's ridley and loggerhead turtles. In January 2010, more than 1,700 juvenile turtles stranded here when water temperatures dropped significantly below normal. This area is approximately 330 nm east of the oil spill site and will serve as a comparison to sites west of the MS River Delta and to offshore sites. St. Joseph Bay encompasses just under 30,000 hectares and opens north to the Gulf of Mexico. It has a mean depth of 7 m, with the greatest depth (13 m) in the northern end and the shallowest (1 m) in the southern end. Sea grass beds cover approximately one-sixth of the Bay and are most abundant in the shallow southern end. Five species of seagrass are known to inhabit St. Joe Bay, with *Thalassia testudinum* dominating.

Netting will occur over seagrass meadows in two regions of St. Joseph Bay: the extreme southern portion and the west and northwest section. Netting in the southern portion of the Bay occurred from 2001-2005 which resulted in capture of more than 150 Kemp's ridley, green and loggerhead turtles. These proposed surveys will allow comparison of species assemblage, size classes and abundance (measured as CPUE) to that previous study and will allow assessment of oil spill impacts. Additional netting along the west and northwestern shore will expand upon the previous study by providing more detailed information on population structure and demographics within the entire Bay and providing detailed monitoring of possible oil incursion and progression through the Bay. Because this Bay opens to the north and generally undergoes little mixing, oil at the entrance to the Bay may affect turtles foraging in the northern end and the seagrass meadows there moreso than in the southernmost portion of the Bay. Netting in both areas will occur year-round to allow for seasonal comparisons in abundance, species composition and demographics, and to assess changes in oil-impacts over this time span.

Turtles will be captured using standard strike-netting techniques, set-netting techniques or dip netting from a boat or canoe 5 days a week through November 2010, then twice a week from December 2010 to March 2011, and resuming 5 days a week from April through November 2011. While strike netting, turtles are spotted from a 17-foot Boston Whaler with a 90-hp outboard motor. When a turtle is observed a 150 m x 2.4 m net (mesh = 20.3 cm x 20.3 cm) is used to encircle the target animal, which is then brought onboard and removed from the net. During set netting, the same net is allowed to hang loosely in the water in a straight line, catching turtles as they swim into the net and became entangled. The net is inspected every 15 minutes or more frequently as signs of potential entanglement occur, and all turtles and non-target species are removed. Dip netting occurs when turtles are spotted from the boat or canoe and then scooped from the water directly into the vessel.

All captured sea turtles will be measured for straight and curved carapace length (SCL and CCL; cm) and examined for oil, injuries, abnormalities, flipper tags/scars and PIT tag evidence of recapture. Untagged individuals will receive an inconel flipper tag issued by the NMFS SEFSC-Miami affixed to the trailing edge of each front flipper and a PIT tag embedded under the dorsal surface of the right front flipper prior to release in order to identify subsequent recaptures. In addition, a blood sample will be removed from each

captured turtle. Turtles from selected species and life stages will be candidates to receive satellite telemetry designed to provide behavioral indicators of impact assessment.

Proposing Agencies and Lead Investigators:

Florida Cooperative Fish and Wildlife Research Unit, University of Florida: Raymond Carthy (352-846-0545/352-213-5851; ngosi@ufl.edu) and Margaret Lamont (352-209-4306; mmlamont@mindspring.com)

Budget

Salary	
MS student .33 FTE (includes 8.8% fringe for health insurance)	$17,500
Research Manager: 1 year @ 22.50/hour	$45,000
Subtotal	**$62,500**
Equipment	
Satellite tags (10 @ $7,000 each)	$70,000
Includes Argos satellite time	
Subtotal	**$70,000**
Operating Expenses	
Tuition for MS Student (includes fringe)	$8,500
Boat Fuel	$5,000
Tagging and Field Supplies	$5,000
Nets and netting supplies	$8,000
Subtotal	**$26,000**
Overall Subtotal	**$158,500**
UFL Overhead (15%)	$ 23,775
Subtotal	$182,275
USGS Overhead (6%)	$10,937
GRAND TOTAL	**$193,212**

E. Biotelemetry Monitoring

Purpose/Objectives:
The proposed work will support a baseline assessment of hydrocarbon exposure and will develop time-critical data providing the evidence necessary establishing a causal relationship between population impacts to sea turtles and hydrocarbon toxicity. The proposed data acquisition will provide supporting evidence that links the observed effects on sea turtle populations with a plausible mechanism of hydrocarbon toxicity related to the MC 252 incident.

Methods and Data Collection – Open Gulf Trawling Operations: GPS tags such as Wildlife Computer's Model MK10-AF will be affixed to selected Kemp's ridley, loggerhead and green sea turtles captured in other aspects of this assessment in impacted and non-impacted areas of the open Gulf. Sea turtle behavior patterns within impacted and oil-free zones will be characterized and compared between these zones, thus providing a biological tool to impact assessment. Behavioral data to be collected include a sea turtle's time at the surface, depth and dive duration profiles, time-at-depth, time-at-temperature, depth-temperature profiles, and other timelines that can be compared between oiled and non-oil sea turtles. Animals (oiled and non-oiled) will be released in accordance with approved protocols and directives from USFWS and NOAA.
The four seasonal, quantitative trawling operations proposed across Gulf-wide impacted and control areas will provide opportunities to capture all three species whose constituents comprise various life history stages that exhibit varying degrees of contaminant exposure. As such, thirty (30) turtles comprised of 10 Kemp's ridleys (5 from impacted (if available) and 5 from control sites), 10 loggerheads (5 from impacted and 5 from control sites) and 10 green turtles (5 from impacted and 5 from control sites) will be tracked each sampling period. This experimental design will result in 120 turtles from three species (40 Kemp's ridleys, 40 loggerheads, 40 greens) being satellite tagged and tracked during the 1-year impact assessment for the entanglement netting region east of the Mississippi River Delta.. All tagged turtles will be tracked for a minimum of 12 months during which time movement and associated behavior of the aforementioned species will be characterized in relation to their exposure to crude oil or lack thereof.

Methods and Data Collection - Nearshore Entanglement Netting Operations for Western MS River Delta: Juvenile through adult life stages of Kemp's ridley, loggerhead and green sea turtles taken in nearshore entanglement nets will be affixed with SirTrack Kiwi101 (larger subadults and adults) and Kiwi202 satellite transmitters (juveniles through small subadults) during each of four (4) sampling periods. Both transmitter models will generate data on sea turtle location, water temperature and depth. Results of historical satellite tracking efforts conducted by Texas A&M University at Galveston on the aforementioned species yield a strong fidelity pattern for shallow surf and bay habitats. Water depth across habitats in which these turtles forage during summer and fall is typically >5 to10 m deep, wherein the use of more expensive GPS telemetry (proposed for open Gulf conspecifics) to characterize diving behavior is not warranted as well as may be compromised.

Turtles taken in entanglement nets will receive satellite transmitters during four sampling periods that include spring/summer 2010, summer/fall 2010, spring/summer 2011, and spring/fall 2011. Thirty (30) turtles comprised of 10 Kemp's ridleys (5 from impacted and 5 from control sites), 10 loggerheads (5 from impacted and 5 from control sites) and 10 green turtles (5 from impacted and 5 from control sites) will be tracked each sampling period. This experimental design will result in 120 turtles from three species (40 Kemp's ridley, 40 loggerhead, 40 green) being satellite tagged and tracked during the 1-year impact assessment. All tagged turtles will be tracked for a minimum of 6 months during which time movement and associated behavior of the aforementioned species will be characterized in relation to their exposure to crude oil or lack thereof.

Methods and Data Collection – Nearshore, Strike, and Dip Netting Operations for Northeastern Gulf of Mexico: Biotelemetry tagging of sea turtles will be conducted during the nearshore entanglement, strike, and dip netting surveys on the Northeastern region of the Gulf of Mexico, and in conjunction with the western MS River Delta study, will provide effective monitoring and comparative data the northern Gulf of Mexico.

Juvenile through adult life stages of Kemp's ridley, loggerhead and green turtles taken in nearshore entanglement, strike and dip nets will be affixed with SirTrack Kiwi101 (larger subadults and adults) and Kiwi202 satellite transmitters (juveniles through small subadults) during each of four (4) sampling periods. Both transmitter models will generate data on sea turtle location, water temperature and depth. Results of previous satellite tracking efforts conducted by the Florida Cooperative Fish and Wildlife Research Unit at the University of Florida on the aforementioned species indicate that turtles remain within the shallow waters of St. Joseph Bay year-round. Water depth across habitats in which these turtles forage during summer and fall is typically < 10 m deep, therefore the use of more expensive GPS telemetry (proposed for open Gulf conspecifics) to characterize diving behavior is not warranted.

Turtles captured during this study will receive satellite transmitters in each of the four seasons. Eighteen (18) turtles comprised of 4 Kemp's ridleys (2 from the northern and 2 from the southern site), 4 loggerheads (2 from the northern and 2 from the southern site) and 10 green turtles (5 from the northern and 5 from the southern site) will be tracked each season. This experimental design will result in 72 turtles from three species (16 Kemp's ridley, 16 loggerhead, 40 green) being satellite tagged and tracked during the 1-year impact assessment. All tagged turtles will be tracked for a minimum of 6 months during which time movement and associated behavior of the aforementioned species will be characterized in relation to their exposure to crude oil or lack thereof.

F. Chemical Biomarkers of Hydrocarbon Exposure and Toxicological Assessment

Small quantities of oil (5–20 μl) externally applied to bird eggs has been shown to kill bird embryos. Alkyl PAHs, common constituents of petroleum crude oil, have recently been identified as potent inducers of AH receptor mediated toxicity in developing fish embryos with metabolism similar to the genotoxic effects observed from dioxins and furans. Toxicity to crude oils manifests a common suite of developmental defects in bird, fish and turtle embryos exposed to petroleum-derived hydrocarbons. In birds and fish the gross malformations resulting from exposure to polycyclic aromatic hydrocarbons (PAHs) present in heavy oils include pericardial and yolk sac edema, hemorrhaging, deformities and induced levels of CYP1a enzymes. Although the toxicity of hydrocarbons to turtles has been studied in less detail, yolk sac edema, spinal and jaw deformities, and the reduction in growth and recruitment have been reported suggesting that the mechanisms of PAH toxicity are likely to be similar among egg laying vertebrates.

The Sea Turtle NRDA study design includes collection and testing of turtle blood samples to help establish the mechanistic basis of hydrocarbon toxicity and injury. The proposed testing will provide insight into whether exposure of petroleum hydrocarbons may result in hemolytic anemia, salt gland dysfunction, immunosuppression, or genetic mutations in field exposure turtles. These data cannot be created experimentally and will be invaluable in the future. The only other way to collect similar biological data on the mechanistic basis of petroleum toxicity to sea turtles requires the use of in vitro laboratory tests using cloned cell lines.

Attachment 1 provides summaries of the sources for sea turtle tissue and blood samples to be analyzed, evidence for hypotheses, explanations of dependent and independent variables in risk model, and a summary of the blood chemistry and bioassay measurements that have previously reported for turtles.

The toxicological assessment strategy consists of the following:

1) *Hydrocarbon analysis in tissues of exposed and unexposed juvenile through adult sea turtle life stages.*

   The presence of petroleum diagnostic compounds (steranes, di- and triterpanes) and toxic aromatic hydrocarbons (alkyl-PAHs and selected PAH metabolites) will be measured in newly collected blood samples and blood samples that have been previously collected and archived along the Gulf of Mexico coast.

2) *Hydrocarbon analysis in tissues of all dead stranded sea turtles.*

   The presence of petroleum diagnostic compounds (steranes, di- and triterpanes) and toxic aromatic hydrocarbons (alkyl-PAHs and selected PAH metabolites) will be measured in ovum tissue samples and gut content samples recovered from necropsies of sea turtles encountered.

3) *Blood biochemistry and immunotoxicity of unexposed and exposed sea turtles.*

Standard blood biochemistries will be measured (e.g., complete blood count [CBC], Chem 7 [i.e., a battery of blood chemistry tests]) to determine hematic homeostasis. Electrolyte balance will be critical since research has shown that the turtle salt gland, which regulates salt content in the body, is negatively affected by hydrocarbons. WBCs are known to be negatively affected by hydrocarbons, so WBCs function (i.e., phagocytic activity of pathogens) will be determined by standard phagocytosis activity methodologies. Furthermore, additional WBC function bioassays can be conducted using flow cytometry (FCM) analysis against several highly-conserved biochemical endpoints (e.g., cell death, cell cycle disruption, etc.).

4) *Chromosomal damage in exposed and unexposed juvenile through adult sea turtle life stages.*

Measurement of chromosomal damage in white blood cells (WBCs) of captured sea turtles would be conducted using flow cytometry (FCM) and micronucleus assay (MN) methods. Analysis would be performed on newly collected samples and from samples that have been collected previously and archived.

5) *Hydrocarbon analysis in eggshells and nest site soil (post hatching).*

The presence of petroleum diagnostic compounds (steranes, di- and triterpanes) and toxic aromatic hydrocarbons (alkyl-PAHs and selected PAH metabolites) will be measured in egg chorioallantoic/amniotic fluid, eggshells, and nest site soil (post hatching).

G. Integration of laboratory testing, project quality assurance, and data management among field survey teams.

The Sea Turtle NRDA is anticipating that field and laboratory data will be collected from multiple surveys that will be conducted by multiple organizations over the next several years. The anticipated matrix of organizations performing this work, survey types, and the samples and data to be collected are summarized in part in the following table.

Organizations	Survey Types	Sample Types	Data Types

• US Army Corps of Engineers -ERDC • US Fish & Wildlife Service • NOAA, National Marine Fisheries Service • Texas A&M Univ. – Galveston • Univ of Florida • Florida Fish and Wildlife Conservation Commission • Various Emergency Response & Recovery Organizations	• Response & Recovery • Sargassum/ Pelagic Nets • Near Shore Entangleme nt Nets • Off Shore Trawl Nets • Beach Nest Sites	• Dead Individuals and Embryos • Necropsy Tissue • Necropsy Gut Contents • Live Animal Skin Punches, Blood, and Shell Swabs • Egg and Chorioallantoic Fluid • Environmental including Beach Sand, Nest Materials, and Sargassum	• Field - Turtle Data • Field –Environ. Conditions • Field - Sample Collection • Field – Time & GeoSpatial Coordinates • Lab Necropsy Reports • Lab Hydrocarbon Reports • Lab Toxicological Reports

Scope of Work

Strategic planning and integration of standard sample collection procedures, laboratory testing, NOAA project quality assurance procedures, and data management among the participating field survey teams will be supported by the USACE-ERDC Environmental Laboratory team. Examples of the strategic planning and integration activities will include:

- Sample collection procedures – Indentifying and providing standard operating procedures to the survey teams for the collection, identification, preservation, transport, and chain-of-custody procedures for habitat, nest material, shell swab, blood, and skin tissue samples. This work will include locating SOPs already created by NOAA and responding to questions and challenges encountered by the survey teams.
- Laboratory Testing – Coordinating the analysis of environmental, tissue and necropsy samples collected during surveys with the testing laboratories selected by NOAA. This will include finalizing the proposed testing panel or turtle blood samples in coordination with NOAA technical staff, identifying laboratories that meet NRDA data quality objectives, and providing recommendations on laboratories for conducting this testing.
- NOAA Project Quality Assurance Procedures – Identify and disseminate project management and data handling quality assurance and quality control procedures to the field survey teams.
- Data management – Initiate the development of procedures and database systems for field data management, sample tracking, laboratory data tracking, and uploading of the Sea turtle NRDA data into NOAA's ERMA data base system.

SUMMARY OF EXPECTED BUDGET AND REQUESTED RESOURCES

A. Sargassum Surveys

Budget

TBD upon finalization of methods and scope of effort

Proposing Agencies and Lead Investigators:
Florida Fish and Wildlife Conservation Commission
Fish and Wildlife Research Institute
Blair Witherington, 727-224-3020; witherington@cfl.rr.com and blair.witherington@myFWC.com

B. Offshore - Trawl Vessels Surveys

Budget

TBD upon finalization of methods and scope of effort

Proposing Agencies and Lead Investigators:
USACE Engineer Research and Development Center-Environmental Laboratory
Dena Dickerson (601-922-9277 and 601-940-0293; Dena.Dickerson@usace.army.mil), Chuck Dickerson

Texas A&M University at Galveston, Sea Turtle and Fisheries Ecology Research Lab
Tasha Metz (409-740-4431; 409-457-6044; metzt@tamug.edu), Kim Reich, and Andre Landry

East Coast Observers
Trish Bargo, 757-880-7636; tbargo@eastcoastobservers.com

Coastwise Consulting, Inc
Chris Slay, 706-543-6859 and 706-540-6655; cslay@att.net

C. Nearshore – Entanglement Netting Surveys (Western MS River Delta)

Budget

TBD upon finalization of methods and scope of effort

Proposing Agencies and Lead Investigators:

Texas A&M University at Galveston, Sea Turtle and Fisheries Ecology Research Lab
Tasha Metz (409-740-4431; 409-457-6044; metzt@tamug.edu), Kim Reich, and Andre Landry

USACE Engineer Research and Development Center-Environmental Laboratory
Dena Dickerson (601-922-9277 and 601-940-0293; Dena.Dickerson@usace.army.mil), Chuck Dickerson

D. Nearshore - Entanglement, Strike, and Dip Netting Surveys (Eastern MS River Delta)

Budget

TBD upon finalization of methods and scope of effort

Proposing Agencies and Lead Investigators:
University of Florida at Gainsville, Florida Cooperative Fish and Wildlife Research Unit
Ray Carthy (352-846-0545, ngosi@ufl.edu), Meg Lamont

NOAA, National Marine Fisheries Service, Southeast Fisheries Science Center.
Chris Sasso, 305-361-4279; chris.sasso@noaa.gov

E. Biotelemetry Monitoring

Budget

TBD upon finalization of methods and scope of effort

Satellite telemetry tags and ARGOS data agreements to be purchased directly by British Petroleum or other funding sources representing British Petroleum.

Proposing Agencies and Lead Investigators:
Texas A&M University at Galveston, Sea Turtle and Fisheries Ecology Research Lab
Tasha Metz (409-740-4431; 409-457-6044; metzt@tamug.edu), Kim Reich, and Andre Landry

USACE Engineer Research and Development Center-Environmental Laboratory
Dena Dickerson (601-922-9277 and 601-940-0293; Dena.Dickerson@usace.army.mil), Chuck Dickerson

University of Florida at Gainsville, Florida Cooperative Fish and Wildlife Research Unit

Ray Carthy (352-846-0545, ngosi@ufl.edu), Meg Lamont

NOAA, National Marine Fisheries Service, Southeast Fisheries Science Center.
Chris Sasso, 305-361-4279; chris.sasso@noaa.gov

F. Chemical Biomarkers of Hydrocarbon Exposure and Toxicological Assessment

Budget

TBD upon finalization of methods, scope of effort and selection of hydrocarbon chemistry and blood biochemistry testing labs.

G. Integration of laboratory testing, project quality assurance, and data management among field survey teams.

Budget

$_____ for 6 months

Proposing Agencies and Lead Investigators:
USACE Engineer Research and Development Center-Environmental Laboratory
Dr. Joe Kreitinger (USACE/ERDC) (607-266-0217; 607-229-9615; Joseph.P.Kreitinger@usace.army.mil). Joe is an Environmental Toxicologist/ Risk Assessor with 30 years of research and consulting experience in the environmental fate, transport, exposure, and toxicity of hydrocarbons in the environment. Dr. Kreitinger will act as the ERDC Environmental Lab Team task manager and provide expert support for strategic planning, study design, statistical data analysis, and interpretation of hydrocarbon exposure data.

Dr. Dave Johnson-USACE/ERDC. Dave is an Environmental Toxicologist will provide expert support for final selection of methods and laboratories for testing of turtle blood samples for metabolic, immunologic, and genetic measurement endpoints of hydrocarbon exposure and injury.

Dr. Peter Hodson – Queens University. Peter is an Environmental Toxicologist and Professor at Queens University specializing in the molecular toxicity of alkyl PAHs in petroleum to embryogenesis of eggs. Dr. Hodson will provide senior review on the selection and interpretation of toxicological test results and expert consulting support for the identification mechanisms responsible for hydrocarbon toxicity to turtle eggs.

Dr. Burton Suedel – USACE/ERDC. Burton will support Joe Kreitinger with strategic planning and on-site coordination at the Houma, LA Incident Command Center.

Ms. Dana Derrick May – USACE/ERDC. Dana will provide on-site field coordination and data management.

Internesting movements of female turtles in the eastern Gulf of Mexico

Purpose/Objectives

Tracking of adult nesting turtles during the internesting interval will be used to determine habitat use by nesting turtles during this life-stage. These data will provide an assessment of exposure of nesting female turtles to oil while at sea during the internesting phase, and their potential for indirect exposure during this period. Although not covered with oil, turtles may ingest oil-soaked foods or become exposed to oil in a variety of indirect ways, thereby affecting their long-term health and influencing egg production. This monitoring effort will provide information that can link interesting habitat use with any observed hydrocarbon contamination/toxicity in deposited eggs.

Methods and Data Collection

Surveys for nesting loggerhead turtles will be conducted nightly along 17-km of beach on the St. Joseph Peninsula, Florida throughout the sea turtle nesting season from May 1 through August 15. All nesting turtles encountered will be fitted with metal Inconel flipper tags and a Passive Integrated Transponder (PIT) tag will be inserted under the skin in the left shoulder. In addition, blood will be collected from each individual. Turtles will be measured and any abnormalities recorded. Nests will be marked with wooden stakes and flagging, and observed throughout the nesting and hatching season. Three days after hatchling emergence or after 90 days incubation, nests will be excavated and reproductive success determined. Success will be defined as the number of hatchlings that emerged from the nest divided by the total number of eggs deposited in the nest following Johnson et al. (1996).

Ten loggerhead turtles located within the study site will be fitted with a satellite tag capable of transmitting GPS positions (Wildlife Computers; Redmond, WA; http://wildlifecomputers.com/). Once the turtle has completed egg deposition, she will be restrained using four interconnected wooden barriers (an uncovered box). Tags will be attached to the highest part of the carapace along the second vertebral scute using a two-part epoxy and resin adhesive following Mitchell (2000). Once tagging is complete, the box will be lifted and the turtle will continue back to the ocean. The tag will provide data on turtle location, water depth and temperature, day and time that the turtle's location is recorded, and probability of location accuracy. All tagged turtles will be tracked for a minimum of 6 months during which time movement and associated behavior will be characterized in relation to exposure to oil impacted areas or the lack thereof.

Proposing Agencies and Lead Investigators:

Florida Cooperative Fish and Wildlife Research Unit, University of Florida: Raymond Carthy (352-846-0545/352-213-5851; ngosi@ufl.edu) and Margaret Lamont (352-209-4306; mmlamont@mindspring.com)

Budget

Salary	
MS student .33 FTE (includes 8.8% fringe for health insurance)	$17,500
Research Manager: 6 mo. @ $22.50/hour	$22,500
Interns: 2 @ $1,000/mo for 5 months	$10,000
Subtotal	**$50,000**
Equipment	
Adult satellite tags (10 @ $7,000 each)	$70,000
Includes Argos satellite time	
Subtotal	**$70,000**
Operating Expenses	
Tuition for MS Student (includes fringe)	$8,500
ATV Fuel	$5,000
Tagging Supplies	$8,000
Bloodwork analyses	$10,000
Subtotal	**$31,500**
Overall Subtotal	**$151,500**
UFL Overhead (15%)	$ 22,725
Subtotal	**$174,225**
USGS Overhead (6%)	$10,454
GRAND TOTAL	**$184,679**

NRDA At-sea Response for Sea Turtles associated with the Mississippi Canyon 252 Incident: Recovery, Rescue, and Quantitative Impact Assessment of In-water Sea Turtles within Spill Areas

BACKGROUND

Five sea turtle species are known to inhabit the Gulf of Mexico region potentially impacted by the Mississippi Canyon 252 (MC 252) incident: leatherback turtles (*Dermochelys coriacea*), loggerhead sea turtles (*Caretta caretta*), green turtles (*Chelonia mydas*), Kemp's ridleys (*Lepidochelys kempii*), and hawksbill turtles (*Eretmochelys imbricata*). On 28 April, the NOAA Southeast Fisheries Science Center initiated a series of aerial surveys to assess the marine mammal and sea turtle species occurring within areas likely to be affected by oil from the MC 252 incident. The aerial survey data collected to date has demonstrated the presence of loggerhead, Kemp's ridley, and leatherback sea turtles.

This proposal is to provide complementary support to the ongoing aerial and on-shore surveys by conducting at-sea recovery, rescue, and quantitative impact assessments for sea turtles associated with the MC 252 incident. The activities addressed by this proposal include: sargassum surveys (utilizing dip netting), trawl vessel surveys, entanglement netting surveys, biotelemetry monitoring, assessments for chemical biomarkers of hydrocarbon exposure, and toxicological assessments. Figure 1 provides hypothesized spatiotemporal scales for direct and long-term effects from potential oil spill damage to sea turtle life stages following the MC 252 incident. Figure 1 also designates the sea turtle life stages targeted for sampling and evaluation by study components of this NRDA proposal. The study components of this proposal currently focus on the immediate spill impacted areas that are immediately west, south, and east of the Mississippi River Delta (primarily Louisiana and Mississippi) and some locations along Alabama and the Florida Panhandle within the current response area. The geographic scope of this proposal may need to later be expanded to include downstream impacted areas to potentially include areas along Texas and the Florida Gulf Coast, as well as the Atlantic seaboard. Figure 1 provides general descriptions of relative abundance for sea turtle species and life stages for each of these geographic regions. Species and life stage composition varies across each of these geographic regions which may influence the sampling methods implemented within each region.

Figure 1. Hypothesized Spatiotemporal Scales for Potential Oil Spill Damage to Sea Turtle Life Stages following the Mississippi Canyon 252 Incident

Sea Turtle Life Stages/Species	Immediate Spill Impacted Areas			Downstream Impacted Areas (Gulf Loop Current & Related Circulations)					
	West, South, & East of the MS River Delta (including Alabama & Florida Panhandle)			Texas Coastal Waters South Texas Beaches**			West Florida Shelf Florida Gulf Coast Florida Keys Waters Florida Current Atlantic Coast – Nesting Beaches***		
	Relative Abundance	Direct Effects	Longterm Effect	Relative Abundance	Direct Effects	Longterm Effect	Relative Abundance	Direct Effects	Longterm Effect
Nests/eggs	Cc – C Cm – U LK - U	1*	V 2*	Cc – U LK – C/U	1*	V 2*	Cc – A/F Cm – C LK – U Dc – U	1*	V 2*
Hatchlings (frenzy stage, leaving nests, swimming from beach), through October/November	Cc – C Cm – U LK - U	Cat/S	V 3*	Cc – U LK – C/U	Cat/S	V 3*	Cc – A/F Cm – C LK - U	Cat/S	V 3*
Post-hatchling, young-of-year, through December	Cc – F Cm – U LK - U	Cat/S	V 3*	Cc – U LK - C	Cat/S	V 3*	Cc – F Cm – F LK - U	Cat/S	V 3*
Pelagic Juveniles	Lk – F Cm – F Cc – U Ei - U	S	V 3*	Lk – F Cm – U Cc – F Ei - U	S	V 3*	Lk – U Cm - F/C Cc – F Ei - U	S	V 3*
Neritic/Benthic (large juvenile subadult, adult)	Lk - F/C Cm- C Cc - F/C	S	V 3*	Lk – F/C Cm- C Cc – F/C	S	V 3*	Lk – C Cm- F/C Cc – F/C	S	V 3*
Copulating adult Cc (peak through May)	Cc - U	S	V 3*	Cc - U	S	V 3*	Cc - C/U	S	V 3*
Female adults in inter-nesting habitat nearshore, peak through August/Sept	Cc – C Cm - U	S	V 3*	Cc - U	S	V 3*	A / C Cm–C/U	S	V 3*
Pelagic – Dc (Oceanic foraging)	Dc - F	S / M	V 3*	Dc – F/C	S	V 3*	Dc - F	S / M	V 3*

Red highlight indicates sea turtle life stages and oil spill impacts addressed by NRDA proposal.

<u>Direct effects</u> = acute, physical and chemical effects from oil, mousse, and liquid tar; effects include mortality.

<u>Long-term effects</u> = effects from contact and ingestion of petroleum and dispersants, effects from petroleum and dispersant compounds in dies species.

Relative Abundance Scale (relative occurrence of species): A-abundant; F-frequent; C-Common; U-Uncommon

Effects Magnitude Scale: Cat-catastrophic; S-severe; M-moderate; m-mild; V-variable

Species: Lk = Kemp's ridley (*Lepidochely kempii*); Cm = green (*Chelonia myda*);
Cc = loggerhead (*Caretta caretta*); Ei = Hawksbil (*Eretmochelys imbricatal;*
Dc = Leatherback (*Dermochelys coriacea*)

** Table does not include Mexico Gulf Coast states, however, sea turtle species associated with these locations may also experience direct or long-term effects from the MC 252 incident.

***Downstream impacted areas may include locations other than Florida and Texas.

1* - Nests on Alabama and Florida Panhandle beaches, Texas (principally ridleys, uncommon) and Florida (5 species, uncommon to abundant) beaches (unknown direct effects, hypothesized mild to severe effects from petroleum removal efforts, effects hypothesized to be dependent upon nest identification and protection)

2* - Eggs (unknown effects on hatching rates and hatchling fitness, effects hypothesized to be variable)

3* - Pelagic juveniles (4 species), post-hatchlings (principally loggerheads and green turtles), neritic/benthic stage (including adults) loggerheads and ridleys; hawksbills, pelagic leatherbacks - (contact and ingestion effects hypothesized to be highly likely, unknown effects; diet species hypothesized to carry toxicants; hypothesized changes in prey abundance; overall effects hypothesized to be variable).

METHODS

A. Sargassum Surveys

Purpose/Objectives:
This proposal is to provide at-sea recovery, rescue, and quantitative impact assessments for sea turtles of five species known to inhabit the region: leatherback turtles (*Dermochelys coriacea*), loggerhead sea turtles (*Caretta caretta*), green turtles (*Chelonia mydas*), Kemp's ridleys (*Lepidochelys kempii*), and hawksbill turtles (*Eretmochelys imbricata*). Habitats include drifting pelagic *Sargassum*, other pelagic drift habitat, and additional surface waters in the expanding spill area.

Needs for action on rescue and recovery are immediate. The spill region is known to contain juvenile, pelagic-stage sea turtles of four species (FWC 2008). These turtles are 25 cm in carapace length or smaller and are not visible from aircraft. These turtles have a close association with pelagic *Sargassum* mats, spend the vast majority of their time at the surface, and are highly vulnerable to surface petroleum due to their size and oceanographic distribution (within frontal zones). Larger sea turtles have been observed from synoptic aerial surveys in the spill area. These turtles are also vulnerable. The lack of oiled sea turtles recovered to date is a reflection of a lack of recovery and rescue efforts for sea turtles.

The proposed work is guided by the hypothesis that 1) sea turtles of five species and multiple life stages are extant within the spill area and its expanding margins, and 2) these turtles are highly vulnerable to petroleum. There is strong evidence for the hypothesis, but empirical data associated with the current event are lacking. Also lacking are efforts to recover dead animals at sea and to rescue live sea turtles. Our proposed objectives are to conduct vessel-based searches for sea turtles in the water, to measure search effort and distance from transect for relative abundance estimates, to recover dead turtles, and to rescue live turtles. All assessments of turtle interaction with petroleum

would be made from specimens collected at sea and examined in conjunction with other studies. Specimens, tissue samples, and recorded images would be made widely available to other researchers, with targeted attention to initial necropsy under programs currently underway by NOAA Fisheries. The proposed action would begin immediately and extend for 30 days. A principal objective of the monitoring proposed is to provide quantified estimates of abundance that could be scaled to affected areas. Rescue actions associated with the proposed actions would apply directly to reduction of injuries associated with the spill incident.

Methods and Data Collection: Searches would be conducted using trained observers aboard two chartered vessels guided in their search by real-time information from aerial surveys. Observers in survey aircraft would be asked to transmit position information on target locations within the spill area. These target locations would include locations with 1) visible lines of convergence containing floating *Sargassum* and petroleum, or 2) visible turtles at the water's surface. During the entire cruise of each vessel, tracks would be recorded using GPS. These tracks would be the basis for estimations of search area. Additional dimensions to the search area would come from measured distances from transect (course line) of observed turtles, modeled to provide estimates of detectability and density.

All observed dead turtles would be collected and placed on ice for transport. Any turtle adjacent to petroleum would be captured using long-handled dip nets and hoop nets. Any turtle judged to be in distress would be similarly captured. Turtles judged to be in need of veterinary aid would be brought to shore. A release plan for healthy turtles would be made with input from Florida FWC, NOAA Fisheries, and veterinary staff currently working in conjunction with spill-response efforts. Overnight search efforts and holding of live turtles would take place only when distance from shore dictates that such an extended cruise would be the best course of action, with input from the vessel captain and veterinary staff.

Workers on search vessels would maintain contact with aerial survey observers, shore veterinary staff, and other incident decision makers. Communication would be by satellite phone.

Data collection would be modified to conform with coordinated data collection and management designed by trustee agencies. For example, the proposed vessel surveys would serve as ground-truth observations to supplement aerial survey observations and estimates of detectability for sea turtles.

Reference:

Florida Fish and Wildlife Conservation Commission (FWC). 2008. Pelagic Neonate and Juvenile Sea Turtles in Gulf and Atlantic Surface Waters Off Florida: Distribution, Densities, Threats, Habitat Descriptions, and Behavior. A Final Programmatic Report Submitted to the National Marine Fisheries Service for the funded project NA06NMF4720031. 71 pp.

B. Offshore - Trawl Vessels Surveys

Purpose/Objectives:
Large-mesh trawl surveys conducted within offshore spill zones will be guided by hypotheses and research objectives similar to and complementing those described for Sargassum surveys, but with the intent to provide data on larger juvenile (≥25 cm carapace length), subadult and adult life stages of the five species vulnerable to petroleum within the spill response area and to do so throughout the water column. Integration of trawl surveys into search and rescue operations will expand the recovery of dead, sea turtles and rescue of live cohorts within spill response areas, thus providing an additional capture option facilitating collection of tissue samples from a wider array of life history stages prerequisite to impact assessment. Like that for Sargassum surveys used in recovery and rescue operations, trawling effort and associated sea turtle collection will be quantified so as to determine species composition, life history stage and relative abundance (measure of Catch per Unit Effort (CPUE)) of animals that are impacted.

Trawling effort, based on modifications of the USACE's sea turtle relocation program for dredging operations, will be used to assess population structure of sea turtle assemblages within oil impacted and non-impacted areas, with a primary focus on quantifying impact to neritic/demersal life history stages. This effort will complement that for pelagic-stage cohorts characterized during Sargassum surveys. Turtles captured by bottom trawling efforts will be candidates for satellite telemetry operations used for sea turtle behavioral assessments of oil spill-related impacts.

Methods and Data Collection:
Trawling protocol to capture turtles (dead and alive) will use modified approaches to the USACE sea turtle relocation program and concentrate on both surface (search and rescue operations), water column and demersal sampling (neritic population assessments). Large-mesh (8-inch (20.3 cm) stretch mesh) trawls, towed along transects guided by aerial surveys and/or in association with Sargassum surveys, will be used to capture larger juvenile through adult life history stages of sea turtles.

Integration of trawling efforts into recovery and rescue operations will require that nets, otter doors and bridle equipment be modified to enable surface and mid-water tows. Daytime trawl tows will be conducted alongside convergence zones in which oil and floatsum (Sargassum and other drift line materials) are concentrated as well as where aerial surveys have observed turtles on or near the surface. These tows will be of short duration (≤30 minutes) to lessen the risk of debris- and drowning-related mortality to live sea turtles as well as reduce the volume of incidentally-caught debris and its impact on trawl capture efficiency and turtles within the trawl. GPS-facilitated plots of transects/track lines within which trawls are towed will enable quantification of rescue and recovery areas as well as population estimates of impacted turtles. Trawl operations targeting sea turtle recovery and rescue will be scheduled to coincide with Sargassum surveys and involve a minimum of two vessels conducting these tows for up to 30 days. Observers placed aboard recovery and rescue vessels involved in surface and near-surface trawling operations will follow at-sea protocols outlined in the Sargassum survey

section that pertain to the processing and tissue sampling of dead turtles as well as the handling, holding, sampling and eventual transfer (to shore-based rehab facility) of live turtles. On-board tissue sampling protocol and data collection activities deployed by observers will be those mandated by contaminant personnel and regulatory agencies.

Modified dredge relocation trawling techniques deployed along Gulf bottoms of oil impacted and non-impacted zones will be a primary means of capturing neritic life stages of sea turtles, particularly loggerheads and Kemp's ridleys. The goal of this sampling protocol is to provide sufficient sampling effort within impacted and non-impacted areas to adequately characterize species composition, relative abundance and size/age structure of sea turtle assemblages (particularly loggerhead and ridley life stages recruiting to nearshore, neritic foraging grounds) at risk to contamination. Data from the USACE's sea turtle relocation program documents the effectiveness in capturing neritic stage individuals. Capture totals from USACE trawling efforts between the middle Texas coast to the mouth of the Mississippi reveal loggerheads and ridleys dominate catch statistics. The spatial scope across which this methodology is deployed will be much larger than that of recovery and rescue operations. Bottom trawl tows will be deployed along transects within nearshore and offshore areas where oil as well as lack of oil have been documented. There are a sufficient number of areas across the Gulf, including those near and offshore of tidal passes where these two crab-eating species will be foraging at risk of oil contamination, in which bottom trawling efforts can provide opportunities for impact assessment on these two species as well as others.

Eight vessels equipped with large-mesh (8-inch (20.3 cm) stretched mesh), bottom-fishing trawls will be deployed within oil-laden zones (4 vessels) and oil-free control areas east (2 vessels) and west (2 vessels) of oil-laden zones. Trawls will be towed along transects established within the aforementioned impact and control zones. GPS-facilitated plots of tow tracks will be used to quantify trawling effort and produce catch-per-unit effort data prerequisite to impact assessment. Tows will be of short duration ($\leq$ 30 minutes) to negate the possibility of injury and death to sea turtles and reduce clogging the net with debris.

The aforementioned trawling effort will be conducted during four sampling periods that include spring/summer 2010, summer/fall 2010, spring/summer 2011, and spring/fall 2011. These sampling periods coincide with peak sea turtle activity, especially that involving offshore to nearshore movements (at least in the western Gulf) and highest potential for sea turtles to undertake foraging migrations into oil contaminated areas. Sampling across these seasons and years will enable contaminant analysis assessing both acute and chronic contaminant exposure and uptake.

Observers onboard trawlers will follow handling, care and transport protocols (discussed in Sargassum Survey section) for dead and live (oiled and non-oiled) turtles as well as conduct tissue sampling activities mandated by the contaminant group assigned to this project. Quantitative data documenting sampling effort and sea turtle community dynamics plus population structure and relative abundance will be taken according to NOAA collection priorities and protocols. In doing so, all captured sea turtles will be

measured for straight and curved carapace length (SCL and CCL; cm) and examined for oil, injuries, abnormalities, flipper tags/scars and PIT tag evidence of recapture. Releasable, untagged individuals will receive an inconel style 681 tag issued by the NMFS SEFSC-Miami affixed to the trailing edge of each front flipper and a PIT tag embedded under the dorsal surface of the right front flipper prior to release in order to identify subsequent recaptures and enable subsequent data collection describing health, growth, movement, habitat preference and tracking of contaminant loads and impact assessment. Observers also will be equipped to apply satellite tags on selected cohorts. Turtles from selected species and life stages captured with trawl nets will be candidates to receive satellite telemetry designed to provide behavioral indicators of impact assessment.

C. Nearshore - Entanglement Netting Surveys (Western MS River Delta)

Purpose/Objectives: In-water sampling effort consisting of entanglement netting operations will be used to quantitatively assess population structure of shallow, nearshore sea turtle assemblages within oil impacted and non-impacted areas, with a primary focus on quantifying impact to juvenile and subadult recruits to neritic habitats. This effort will complement that for similar life history stages (and adults) characterized during trawl surveys in open Gulf waters. Live capture information generated by entanglement net operations can also be compared with data taken during stranding surveys conducted on beachfronts and wetland edges. Turtles captured in entanglement nets, like those from trawl surveys, will be candidates for satellite telemetry operations used for sea turtle behavioral assessments of oil spill-related impacts.

Methods and Data Collection: Large-mesh, entanglement netting surveys will be conducted at both oil impacted and control (no spill) sites such as those along the Louisiana coast. These sites will be located primarily in shallow nearshore areas adjacent to tidal passes and estuarine waters known as foraging grounds for Kemp's ridley, loggerhead and green sea turtles. An example of an oil impacted site would be waters adjacent to Grand Isle, LA, including Barataria Pass, which is bordered by the barrier islands of Grand Terre to the east and Grand Isle to the west, and Caminada Pass which is bordered by Grand Isle to the east and Elmers Island to the west. These two passes serve as ingress and egress points to and from Barataria Bay, which may also be impacted by the spread of the oil spill and be included in this sampling area. The control site will consist of nearshore and estuarine waters adjacent to Calcasieu Pass, LA which is located ~ 330 km to the west of Grand Isle and is currently not in the projected trajectory of the spill. Calcasieu Pass is bordered on the east and west by 3 km-long jetties and serves as a tidal inlet to Calcasieu Lake. This location not only will serve as a non-impacted control site but, having been previously sampled by the Texas A&M University at Galveston from 1993-2002, provides established netting stations both east and west of the pass and at beachfront and jetty locations for historical comparisons of sea turtle abundance, distribution and habitat use patterns.

Directed sea turtle capture will involve large-mesh entanglement nets (91.4 m long and 2.5- to 4.0-m deep, with 12.7-cm bar mesh of #9 twisted nylon) deployed daily during daylight periods for up to 5 days/site-visit in each estuary and adjacent nearshore habitats. Netting operations in both impacted and control study areas will be conducted across four seasonal periods previously mentioned in the trawl section of this proposal that include: early summer (June/mid-July) 2010; late summer (August/September) 2010; and these same periods in 2011, to assess possible seasonal changes in contaminant load and to characterize sea turtle population dynamics during peak periods of abundance in nearshore foraging habitats. Water depth and current will dictate net type used at respective sample sites, most of which will be limited to depths $\leq$3 m. Netting effort at all sites will consist of 2-4 nets set in tandem or perpendicular to one another for 6-12 hours per day. Nets will be checked for sea turtles every 20 minutes or more frequently as splashes or other signs of potential capture dictate, in order to minimize risk of turtles drowning while entangled. Pinger devices emitting high-frequency sounds will be attached to nets to negate incidental capture of bottlenose dolphins (*Tursiops truncatus*). Separate sets of netting gear will be used at oil impacted vs. control sites so as to prevent contamination of non-spill areas.

All captured sea turtles will be measured for straight and curved carapace length (SCL and CCL; cm) and examined for oil, injuries, abnormalities, flipper tags/scars and PIT tag evidence of recapture. Untagged individuals will receive an inconel style 681 tag issued by the NMFS SEFSC-Miami affixed to the trailing edge of each front flipper and a PIT tag embedded under the dorsal surface of the right front flipper prior to release in order to identify subsequent recaptures. Turtles from selected species and life stages taken in entanglement nets will be candidates to receive satellite telemetry designed to provide behavioral indicators of impact assessment.

D. Nearshore - Entanglement, Strike, and Dip Netting Surveys (Northeastern Gulf of Mexico)

Purpose/Objectives: Entanglement netting surveys will be conducted in the northeastern Gulf of Mexico to complement the entanglement netting surveys described above for the western region of the MS River Delta. Comparisons of abundance (measured as CPUE), species composition, and blood toxicity will occur between the two regions. In-water sampling effort consisting of entanglement and opportunistic netting operations will be used to quantitatively assess population structure of shallow, nearshore sea turtle assemblages, with a primary focus on quantifying impact to juvenile and subadult recruits to neritic habitats. This effort will complement that for similar life history stages (and adults) characterized during trawl surveys in open Gulf waters. Live capture information generated by entanglement and opportunistic netting operations can also be compared with data taken during stranding surveys conducted on beachfronts and wetland edges. Turtles captured in nets, like those from trawl surveys, will be candidates for satellite telemetry operations to assess sea turtle use of oil spill-related impacted habitats.

Methods and Data Collection: Entanglement and opportunistic netting surveys east of the MS River Delta will occur in St. Joseph Bay, a coastal embayment with known year-round habitat for green, Kemp's ridley and loggerhead turtles. In January 2010, more than 1,700 juvenile turtles stranded here when water temperatures dropped significantly below normal. This area is approximately 330 nm east of the oil spill site and will serve as a comparison to sites west of the MS River Delta and to offshore sites. St. Joseph Bay encompasses just under 30,000 hectares and opens north to the Gulf of Mexico. It has a mean depth of 7 m, with the greatest depth (13 m) in the northern end and the shallowest (1 m) in the southern end. Sea grass beds cover approximately one-sixth of the Bay and are most abundant in the shallow southern end. Five species of seagrass are known to inhabit St. Joe Bay, with *Thalassia testudinum* dominating.

Netting will occur over seagrass meadows in two regions of St. Joseph Bay: the extreme southern portion and the west and northwest section. Netting in the southern portion of the Bay occurred from 2001-2005 which resulted in capture of more than 150 Kemp's ridley, green and loggerhead turtles. These proposed surveys will allow comparison of species assemblage, size classes and abundance (measured as CPUE) to that previous study and will allow assessment of oil spill impacts. Additional netting along the west and northwestern shore will expand upon the previous study by providing more detailed information on population structure and demographics within the entire Bay and providing detailed monitoring of possible oil incursion and progression through the Bay. Because this Bay opens to the north and generally undergoes little mixing, oil at the entrance to the Bay may affect turtles foraging in the northern end and the seagrass meadows there moreso than in the southernmost portion of the Bay. Netting in both areas will occur year-round to allow for seasonal comparisons in abundance, species composition and demographics, and to assess changes in oil-impacts over this time span.

Turtles will be captured using standard strike-netting techniques, set-netting techniques or dip netting from a boat or canoe 5 days a week through November 2010, then twice a week from December 2010 to March 2011, and resuming 5 days a week from April through November 2011. While strike netting, turtles are spotted from a 17-foot Boston Whaler with a 90-hp outboard motor. When a turtle is observed a 150 m x 2.4 m net (mesh = 20.3 cm x 20.3 cm) is used to encircle the target animal, which is then brought onboard and removed from the net. During set netting, the same net is allowed to hang loosely in the water in a straight line, catching turtles as they swim into the net and became entangled. The net is inspected every 15 minutes or more frequently as signs of potential entanglement occur, and all turtles and non-target species are removed. Dip netting occurs when turtles are spotted from the boat or canoe and then scooped from the water directly into the vessel.

All captured sea turtles will be measured for straight and curved carapace length (SCL and CCL; cm) and examined for oil, injuries, abnormalities, flipper tags/scars and PIT tag evidence of recapture. Untagged individuals will receive an inconel flipper tag issued by the NMFS SEFSC-Miami affixed to the trailing edge of each front flipper and a PIT tag embedded under the dorsal surface of the right front flipper prior to release in order to identify subsequent recaptures. In addition, a blood sample will be removed from each

captured turtle. Turtles from selected species and life stages will be candidates to receive satellite telemetry designed to provide behavioral indicators of impact assessment.

Proposing Agencies and Lead Investigators:

Florida Cooperative Fish and Wildlife Research Unit, University of Florida: Raymond Carthy (352-846-0545/352-213-5851; ngosi@ufl.edu) and Margaret Lamont (352-209-4306; mmlamont@mindspring.com)

Budget

Salary	
MS student .33 FTE (includes 8.8% fringe for health insurance)	$17,500
Research Manager: 1 year @ 22.50/hour	$45,000
Subtotal	**$62,500**
Equipment	
Satellite tags (10 @ $7,000 each)	$70,000
Includes Argos satellite time	
Subtotal	**$70,000**
Operating Expenses	
Tuition for MS Student (includes fringe)	$8,500
Boat Fuel	$5,000
Tagging and Field Supplies	$5,000
Nets and netting supplies	$8,000
Subtotal	**$26,000**
Overall Subtotal	**$158,500**
UFL Overhead (15%)	$ 23,775
Subtotal	$182,275
USGS Overhead (6%)	$10,937
GRAND TOTAL	**$193,212**

E. Biotelemetry Monitoring

Purpose/Objectives:
The proposed work will support a baseline assessment of hydrocarbon exposure and will develop time-critical data providing the evidence necessary establishing a causal relationship between population impacts to sea turtles and hydrocarbon toxicity. The proposed data acquisition will provide supporting evidence that links the observed effects on sea turtle populations with a plausible mechanism of hydrocarbon toxicity related to the MC 252 incident.

Methods and Data Collection – Open Gulf Trawling Operations: GPS tags such as Wildlife Computer's Model MK10-AF will be affixed to selected Kemp's ridley, loggerhead and green sea turtles captured in other aspects of this assessment in impacted and non-impacted areas of the open Gulf. Sea turtle behavior patterns within impacted and oil-free zones will be characterized and compared between these zones, thus providing a biological tool to impact assessment. Behavioral data to be collected include a sea turtle's time at the surface, depth and dive duration profiles, time-at-depth, time-at-temperature, depth-temperature profiles, and other timelines that can be compared between oiled and non-oil sea turtles. Animals (oiled and non-oiled) will be released in accordance with approved protocols and directives from USFWS and NOAA.
The four seasonal, quantitative trawling operations proposed across Gulf-wide impacted and control areas will provide opportunities to capture all three species whose constituents comprise various life history stages that exhibit varying degrees of contaminant exposure. As such, thirty (30) turtles comprised of 10 Kemp's ridleys (5 from impacted (if available) and 5 from control sites), 10 loggerheads (5 from impacted and 5 from control sites) and 10 green turtles (5 from impacted and 5 from control sites) will be tracked each sampling period. This experimental design will result in 120 turtles from three species (40 Kemp's ridleys, 40 loggerheads, 40 greens) being satellite tagged and tracked during the 1-year impact assessment for the entanglement netting region east of the Mississippi River Delta.. All tagged turtles will be tracked for a minimum of 12 months during which time movement and associated behavior of the aforementioned species will be characterized in relation to their exposure to crude oil or lack thereof.

Methods and Data Collection - Nearshore Entanglement Netting Operations for Western MS River Delta: Juvenile through adult life stages of Kemp's ridley, loggerhead and green sea turtles taken in nearshore entanglement nets will be affixed with SirTrack Kiwi101 (larger subadults and adults) and Kiwi202 satellite transmitters (juveniles through small subadults) during each of four (4) sampling periods. Both transmitter models will generate data on sea turtle location, water temperature and depth. Results of historical satellite tracking efforts conducted by Texas A&M University at Galveston on the aforementioned species yield a strong fidelity pattern for shallow surf and bay habitats. Water depth across habitats in which these turtles forage during summer and fall is typically >5 to10 m deep, wherein the use of more expensive GPS telemetry (proposed for open Gulf conspecifics) to characterize diving behavior is not warranted as well as may be compromised.

Turtles taken in entanglement nets will receive satellite transmitters during four sampling periods that include spring/summer 2010, summer/fall 2010, spring/summer 2011, and spring/fall 2011. Thirty (30) turtles comprised of 10 Kemp's ridleys (5 from impacted and 5 from control sites), 10 loggerheads (5 from impacted and 5 from control sites) and 10 green turtles (5 from impacted and 5 from control sites) will be tracked each sampling period. This experimental design will result in 120 turtles from three species (40 Kemp's ridley, 40 loggerhead, 40 green) being satellite tagged and tracked during the 1-year impact assessment. All tagged turtles will be tracked for a minimum of 6 months during which time movement and associated behavior of the aforementioned species will be characterized in relation to their exposure to crude oil or lack thereof.

Methods and Data Collection – Nearshore, Strike, and Dip Netting Operations for Northeastern Gulf of Mexico: Biotelemetry tagging of sea turtles will be conducted during the nearshore entanglement, strike, and dip netting surveys on the Northeastern region of the Gulf of Mexico, and in conjunction with the western MS River Delta study, will provide effective monitoring and comparative data the northern Gulf of Mexico.

Juvenile through adult life stages of Kemp's ridley, loggerhead and green turtles taken in nearshore entanglement, strike and dip nets will be affixed with SirTrack Kiwi101 (larger subadults and adults) and Kiwi202 satellite transmitters (juveniles through small subadults) during each of four (4) sampling periods. Both transmitter models will generate data on sea turtle location, water temperature and depth. Results of previous satellite tracking efforts conducted by the Florida Cooperative Fish and Wildlife Research Unit at the University of Florida on the aforementioned species indicate that turtles remain within the shallow waters of St. Joseph Bay year-round. Water depth across habitats in which these turtles forage during summer and fall is typically < 10 m deep, therefore the use of more expensive GPS telemetry (proposed for open Gulf conspecifics) to characterize diving behavior is not warranted.

Turtles captured during this study will receive satellite transmitters in each of the four seasons. Eighteen (18) turtles comprised of 4 Kemp's ridleys (2 from the northern and 2 from the southern site), 4 loggerheads (2 from the northern and 2 from the southern site) and 10 green turtles (5 from the northern and 5 from the southern site) will be tracked each season. This experimental design will result in 72 turtles from three species (16 Kemp's ridley, 16 loggerhead, 40 green) being satellite tagged and tracked during the 1-year impact assessment. All tagged turtles will be tracked for a minimum of 6 months during which time movement and associated behavior of the aforementioned species will be characterized in relation to their exposure to crude oil or lack thereof.

F. Chemical Biomarkers of Hydrocarbon Exposure and Toxicological Assessment

Small quantities of oil (5–20 μl) externally applied to bird eggs has been shown to kill bird embryos. Alkyl PAHs, common constituents of petroleum crude oil, have recently been identified as potent inducers of AH receptor mediated toxicity in developing fish embryos with metabolism similar to the genotoxic effects observed from dioxins and furans. Toxicity to crude oils manifests a common suite of developmental defects in bird, fish and turtle embryos exposed to petroleum-derived hydrocarbons. In birds and fish the gross malformations resulting from exposure to polycyclic aromatic hydrocarbons (PAHs) present in heavy oils include pericardial and yolk sac edema, hemorrhaging, deformities and induced levels of CYP1a enzymes. Although the toxicity of hydrocarbons to turtles has been studied in less detail, yolk sac edema, spinal and jaw deformities, and the reduction in growth and recruitment have been reported suggesting that the mechanisms of PAH toxicity are likely to be similar among egg laying vertebrates.

The Sea Turtle NRDA study design includes collection and testing of turtle blood samples to help establish the mechanistic basis of hydrocarbon toxicity and injury. The proposed testing will provide insight into whether exposure of petroleum hydrocarbons may result in hemolytic anemia, salt gland dysfunction, immunosuppression, or genetic mutations in field exposure turtles. These data cannot be created experimentally and will be invaluable in the future. The only other way to collect similar biological data on the mechanistic basis of petroleum toxicity to sea turtles requires the use of in vitro laboratory tests using cloned cell lines.

Attachment 1 provides summaries of the sources for sea turtle tissue and blood samples to be analyzed, evidence for hypotheses, explanations of dependent and independent variables in risk model, and a summary of the blood chemistry and bioassay measurements that have previously reported for turtles.

The toxicological assessment strategy consists of the following:

1) *Hydrocarbon analysis in tissues of exposed and unexposed juvenile through adult sea turtle life stages.*

   The presence of petroleum diagnostic compounds (steranes, di- and triterpanes) and toxic aromatic hydrocarbons (alkyl-PAHs and selected PAH metabolites) will be measured in newly collected blood samples and blood samples that have been previously collected and archived along the Gulf of Mexico coast.

2) *Hydrocarbon analysis in tissues of all dead stranded sea turtles.*

   The presence of petroleum diagnostic compounds (steranes, di- and triterpanes) and toxic aromatic hydrocarbons (alkyl-PAHs and selected PAH metabolites) will be measured in ovum tissue samples and gut content samples recovered from necropsies of sea turtles encountered.

3) *Blood biochemistry and immunotoxicity of unexposed and exposed sea turtles.*

Standard blood biochemistries will be measured (e.g., complete blood count [CBC], Chem 7 [i.e., a battery of blood chemistry tests]) to determine hematic homeostasis. Electrolyte balance will be critical since research has shown that the turtle salt gland, which regulates salt content in the body, is negatively affected by hydrocarbons. WBCs are known to be negatively affected by hydrocarbons, so WBCs function (i.e., phagocytic activity of pathogens) will be determined by standard phagocytosis activity methodologies. Furthermore, additional WBC function bioassays can be conducted using flow cytometry (FCM) analysis against several highly-conserved biochemical endpoints (e.g., cell death, cell cycle disruption, etc.).

4) *Chromosomal damage in exposed and unexposed juvenile through adult sea turtle life stages.*

Measurement of chromosomal damage in white blood cells (WBCs) of captured sea turtles would be conducted using flow cytometry (FCM) and micronucleus assay (MN) methods. Analysis would be performed on newly collected samples and from samples that have been collected previously and archived.

5) *Hydrocarbon analysis in eggshells and nest site soil (post hatching).*

The presence of petroleum diagnostic compounds (steranes, di- and triterpanes) and toxic aromatic hydrocarbons (alkyl-PAHs and selected PAH metabolites) will be measured in egg chorioallantoic/amniotic fluid, eggshells, and nest site soil (post hatching).

G. Integration of laboratory testing, project quality assurance, and data management among field survey teams.

The Sea Turtle NRDA is anticipating that field and laboratory data will be collected from multiple surveys that will be conducted by multiple organizations over the next several years. The anticipated matrix of organizations performing this work, survey types, and the samples and data to be collected are summarized in part in the following table.

Organizations	Survey Types	Sample Types	Data Types

• US Army Corps of Engineers -ERDC • US Fish & Wildlife Service • NOAA, National Marine Fisheries Service • Texas A&M Univ. – Galveston • Univ of Florida • Florida Fish and Wildlife Conservation Commission • Various Emergency Response & Recovery Organizations	• Response & Recovery • Sargassum/ Pelagic Nets • Near Shore Entangleme nt Nets • Off Shore Trawl Nets • Beach Nest Sites	• Dead Individuals and Embryos • Necropsy Tissue • Necropsy Gut Contents • Live Animal Skin Punches, Blood, and Shell Swabs • Egg and Chorioallantoic Fluid • Environmental including Beach Sand, Nest Materials, and Sargassum	• Field - Turtle Data • Field –Environ. Conditions • Field - Sample Collection • Field – Time & GeoSpatial Coordinates • Lab Necropsy Reports • Lab Hydrocarbon Reports • Lab Toxicological Reports

Scope of Work

Strategic planning and integration of standard sample collection procedures, laboratory testing, NOAA project quality assurance procedures, and data management among the participating field survey teams will be supported by the USACE-ERDC Environmental Laboratory team. Examples of the strategic planning and integration activities will include:

- Sample collection procedures – Indentifying and providing standard operating procedures to the survey teams for the collection, identification, preservation, transport, and chain-of-custody procedures for habitat, nest material, shell swab, blood, and skin tissue samples. This work will include locating SOPs already created by NOAA and responding to questions and challenges encountered by the survey teams.
- Laboratory Testing – Coordinating the analysis of environmental, tissue and necropsy samples collected during surveys with the testing laboratories selected by NOAA. This will include finalizing the proposed testing panel or turtle blood samples in coordination with NOAA technical staff, identifying laboratories that meet NRDA data quality objectives, and providing recommendations on laboratories for conducting this testing.
- NOAA Project Quality Assurance Procedures – Identify and disseminate project management and data handling quality assurance and quality control procedures to the field survey teams.
- Data management – Initiate the development of procedures and database systems for field data management, sample tracking, laboratory data tracking, and uploading of the Sea turtle NRDA data into NOAA's ERMA data base system.

SUMMARY OF EXPECTED BUDGET AND REQUESTED RESOURCES

A. Sargassum Surveys

Budget

TBD upon finalization of methods and scope of effort

Proposing Agencies and Lead Investigators:
Florida Fish and Wildlife Conservation Commission
Fish and Wildlife Research Institute
Blair Witherington, 727-224-3020; witherington@cfl.rr.com and blair.witherington@myFWC.com

B. Offshore - Trawl Vessels Surveys

Budget

TBD upon finalization of methods and scope of effort

Proposing Agencies and Lead Investigators:
USACE Engineer Research and Development Center-Environmental Laboratory
Dena Dickerson (601-922-9277 and 601-940-0293; Dena.Dickerson@usace.army.mil), Chuck Dickerson

Texas A&M University at Galveston, Sea Turtle and Fisheries Ecology Research Lab
Tasha Metz (409-740-4431; 409-457-6044; metzt@tamug.edu), Kim Reich, and Andre Landry

East Coast Observers
Trish Bargo, 757-880-7636; tbargo@eastcoastobservers.com

Coastwise Consulting, Inc
Chris Slay, 706-543-6859 and 706-540-6655; cslay@att.net

C. Nearshore – Entanglement Netting Surveys (Western MS River Delta)

Budget

TBD upon finalization of methods and scope of effort

Proposing Agencies and Lead Investigators:

Texas A&M University at Galveston, Sea Turtle and Fisheries Ecology Research Lab
Tasha Metz (409-740-4431; 409-457-6044; metzt@tamug.edu), Kim Reich, and Andre Landry

USACE Engineer Research and Development Center-Environmental Laboratory
Dena Dickerson (601-922-9277 and 601-940-0293; Dena.Dickerson@usace.army.mil), Chuck Dickerson

D. Nearshore - Entanglement, Strike, and Dip Netting Surveys (Eastern MS River Delta)

Budget

TBD upon finalization of methods and scope of effort

Proposing Agencies and Lead Investigators:
University of Florida at Gainsville, Florida Cooperative Fish and Wildlife Research Unit
Ray Carthy (352-846-0545, ngosi@ufl.edu), Meg Lamont

NOAA, National Marine Fisheries Service, Southeast Fisheries Science Center.
Chris Sasso, 305-361-4279; chris.sasso@noaa.gov

E. Biotelemetry Monitoring

Budget

TBD upon finalization of methods and scope of effort

Satellite telemetry tags and ARGOS data agreements to be purchased directly by British Petroleum or other funding sources representing British Petroleum.

Proposing Agencies and Lead Investigators:
Texas A&M University at Galveston, Sea Turtle and Fisheries Ecology Research Lab
Tasha Metz (409-740-4431; 409-457-6044; metzt@tamug.edu), Kim Reich, and Andre Landry

USACE Engineer Research and Development Center-Environmental Laboratory
Dena Dickerson (601-922-9277 and 601-940-0293; Dena.Dickerson@usace.army.mil), Chuck Dickerson

University of Florida at Gainsville, Florida Cooperative Fish and Wildlife Research Unit

Ray Carthy (352-846-0545, ngosi@ufl.edu), Meg Lamont

NOAA, National Marine Fisheries Service, Southeast Fisheries Science Center.
Chris Sasso, 305-361-4279; chris.sasso@noaa.gov

F. Chemical Biomarkers of Hydrocarbon Exposure and Toxicological Assessment

Budget

TBD upon finalization of methods, scope of effort and selection of hydrocarbon chemistry and blood biochemistry testing labs.

G. Integration of laboratory testing, project quality assurance, and data management among field survey teams.

Budget

$_____ for 6 months

Proposing Agencies and Lead Investigators:
USACE Engineer Research and Development Center-Environmental Laboratory
Dr. Joe Kreitinger (USACE/ERDC) (607-266-0217; 607-229-9615; Joseph.P.Kreitinger@usace.army.mil). Joe is an Environmental Toxicologist/ Risk Assessor with 30 years of research and consulting experience in the environmental fate, transport, exposure, and toxicity of hydrocarbons in the environment. Dr. Kreitinger will act as the ERDC Environmental Lab Team task manager and provide expert support for strategic planning, study design, statistical data analysis, and interpretation of hydrocarbon exposure data.

Dr. Dave Johnson-USACE/ERDC. Dave is an Environmental Toxicologist will provide expert support for final selection of methods and laboratories for testing of turtle blood samples for metabolic, immunologic, and genetic measurement endpoints of hydrocarbon exposure and injury.

Dr. Peter Hodson – Queens University. Peter is an Environmental Toxicologist and Professor at Queens University specializing in the molecular toxicity of alkyl PAHs in petroleum to embryogenesis of eggs. Dr. Hodson will provide senior review on the selection and interpretation of toxicological test results and expert consulting support for the identification mechanisms responsible for hydrocarbon toxicity to turtle eggs.

Dr. Burton Suedel – USACE/ERDC. Burton will support Joe Kreitinger with strategic planning and on-site coordination at the Houma, LA Incident Command Center.

Ms. Dana Derrick May – USACE/ERDC. Dana will provide on-site field coordination and data management.

Internesting movements of female turtles in the eastern Gulf of Mexico

Purpose/Objectives

Tracking of adult nesting turtles during the internesting interval will be used to determine habitat use by nesting turtles during this life-stage. These data will provide an assessment of exposure of nesting female turtles to oil while at sea during the internesting phase, and their potential for indirect exposure during this period. Although not covered with oil, turtles may ingest oil-soaked foods or become exposed to oil in a variety of indirect ways, thereby affecting their long-term health and influencing egg production. This monitoring effort will provide information that can link interesting habitat use with any observed hydrocarbon contamination/toxicity in deposited eggs.

Methods and Data Collection

Surveys for nesting loggerhead turtles will be conducted nightly along 17-km of beach on the St. Joseph Peninsula, Florida throughout the sea turtle nesting season from May 1 through August 15. All nesting turtles encountered will be fitted with metal Inconel flipper tags and a Passive Integrated Transponder (PIT) tag will be inserted under the skin in the left shoulder. In addition, blood will be collected from each individual. Turtles will be measured and any abnormalities recorded. Nests will be marked with wooden stakes and flagging, and observed throughout the nesting and hatching season. Three days after hatchling emergence or after 90 days incubation, nests will be excavated and reproductive success determined. Success will be defined as the number of hatchlings that emerged from the nest divided by the total number of eggs deposited in the nest following Johnson et al. (1996).

Ten loggerhead turtles located within the study site will be fitted with a satellite tag capable of transmitting GPS positions (Wildlife Computers; Redmond, WA; http://wildlifecomputers.com/). Once the turtle has completed egg deposition, she will be restrained using four interconnected wooden barriers (an uncovered box). Tags will be attached to the highest part of the carapace along the second vertebral scute using a two-part epoxy and resin adhesive following Mitchell (2000). Once tagging is complete, the box will be lifted and the turtle will continue back to the ocean. The tag will provide data on turtle location, water depth and temperature, day and time that the turtle's location is recorded, and probability of location accuracy. All tagged turtles will be tracked for a minimum of 6 months during which time movement and associated behavior will be characterized in relation to exposure to oil impacted areas or the lack thereof.

Proposing Agencies and Lead Investigators:

Florida Cooperative Fish and Wildlife Research Unit, University of Florida: Raymond Carthy (352-846-0545/352-213-5851; ngosi@ufl.edu) and Margaret Lamont (352-209-4306; mmlamont@mindspring.com)

Budget

Salary	
MS student .33 FTE (includes 8.8% fringe for health insurance)	$17,500
Research Manager: 6 mo. @ $22.50/hour	$22,500
Interns: 2 @ $1,000/mo for 5 months	$10,000
Subtotal	**$50,000**
Equipment	
Adult satellite tags (10 @ $7,000 each)	$70,000
Includes Argos satellite time	
Subtotal	**$70,000**
Operating Expenses	
Tuition for MS Student (includes fringe)	$8,500
ATV Fuel	$5,000
Tagging Supplies	$8,000
Bloodwork analyses	$10,000
Subtotal	**$31,500**
Overall Subtotal	**$151,500**
UFL Overhead (15%)	$ 22,725
Subtotal	**$174,225**
USGS Overhead (6%)	$10,454
GRAND TOTAL	**$184,679**

** Table does not include Mexico Gulf Coast states, however, sea turtle species associated with these locations may also experience direct or long-term effects from the MC 252 incident.

***Downstream impacted areas may include locations other than Florida and Texas.

1* - Nests on Alabama and Florida Panhandle beaches, Texas (principally ridleys, uncommon) and Florida (5 species, uncommon to abundant) beaches (unknown direct effects, hypothesized mild to severe effects from petroleum removal efforts, effects hypothesized to be dependent upon nest identification and protection)

2* - Eggs (unknown effects on hatching rates and hatchling fitness, effects hypothesized to be variable)

3* - Pelagic juveniles (4 species), post-hatchlings (principally loggerheads and green turtles), neritic/benthic stage (including adults) loggerheads and ridleys; hawksbills, pelagic leatherbacks - (contact and ingestion effects hypothesized to be highly likely, unknown effects; diet species hypothesized to carry toxicants; hypothesized changes in prey abundance; overall effects hypothesized to be variable).

METHODS

A. Sargassum Surveys

Purpose/Objectives:
This proposal is to provide at-sea recovery, rescue, and quantitative impact assessments for sea turtles of five species known to inhabit the region: leatherback turtles (*Dermochelys coriacea*), loggerhead sea turtles (*Caretta caretta*), green turtles (*Chelonia mydas*), Kemp's ridleys (*Lepidochelys kempii*), and hawksbill turtles (*Eretmochelys imbricata*). Habitats include drifting pelagic *Sargassum*, other pelagic drift habitat, and additional surface waters in the expanding spill area.

Comment [bas4]: How will the quantitative impact assessment be made?

Needs for action on rescue and recovery are immediate. The spill region is known to contain juvenile, pelagic-stage sea turtles of four species (FWC 2008). These turtles are 25 cm in carapace length or smaller and are not visible from aircraft. These turtles have a close association with pelagic *Sargassum* mats, spend the vast majority of their time at the surface, and are highly vulnerable to surface petroleum due to their size and oceanographic distribution (within frontal zones). Larger sea turtles have been observed from synoptic aerial surveys in the spill area. These turtles are also vulnerable. The lack of oiled sea turtles recovered to date is a reflection of a lack of recovery and rescue efforts for sea turtles.

The proposed work is guided by the hypothesis that 1) sea turtles of five species and multiple life stages are extant within the spill area and its expanding margins, and 2) these turtles are highly vulnerable to petroleum. There is strong evidence for the hypothesis, but empirical data associated with the current event are lacking. Also lacking are efforts to recover dead animals at sea and to rescue live sea turtles. Our proposed objectives are to conduct vessel-based searches for sea turtles in the water, to measure search effort and distance from transect for relative abundance estimates, to recover dead turtles, and to rescue live turtles. All assessments of turtle interaction with petroleum

would be made from specimens collected at sea and examined in conjunction with other studies. Specimens, tissue samples, and recorded images would be made widely available to other researchers, with targeted attention to initial necropsy under programs currently underway by NOAA Fisheries. The proposed action would begin immediately and extend for 30 days. A principal objective of the monitoring proposed is to provide quantified estimates of abundance that could be scaled to affected areas. Rescue actions associated with the proposed actions would apply directly to reduction of injuries associated with the spill incident.

Methods and Data Collection: Searches would be conducted using trained observers aboard two chartered vessels guided in their search by real-time information from aerial surveys. Observers in survey aircraft would be asked to transmit position information on target locations within the spill area. These target locations would include locations with 1) visible lines of convergence containing floating *Sargassum* and petroleum, or 2) visible turtles at the water's surface. During the entire cruise of each vessel, tracks would be recorded using GPS. These tracks would be the basis for estimations of search area. Additional dimensions to the search area would come from measured distances from transect (course line) of observed turtles, modeled to provide estimates of detectability and density.

All observed dead turtles would be collected and placed on ice for transport. Any turtle adjacent to petroleum would be captured using long-handled dip nets and hoop nets. Any turtle judged to be in distress would be similarly captured. Turtles judged to be in need of veterinary aid would be brought to shore. A release plan for healthy turtles would be made with input from Florida FWC, NOAA Fisheries, and veterinary staff currently working in conjunction with spill-response efforts. Overnight search efforts and holding of live turtles would take place only when distance from shore dictates that such an extended cruise would be the best course of action, with input from the vessel captain and veterinary staff.

Workers on search vessels would maintain contact with aerial survey observers, shore veterinary staff, and other incident decision makers. Communication would be by satellite phone.

Data collection would be modified to conform with coordinated data collection and management designed by trustee agencies. For example, the proposed vessel surveys would serve as ground-truth observations to supplement aerial survey observations and estimates of detectability for sea turtles.

Reference:

Florida Fish and Wildlife Conservation Commission (FWC). 2008. Pelagic Neonate and Juvenile Sea Turtles in Gulf and Atlantic Surface Waters Off Florida: Distribution, Densities, Threats, Habitat Descriptions, and Behavior. A Final Programmatic Report Submitted to the National Marine Fisheries Service for the funded project NA06NMF4720031. 71 pp.

B. Offshore - Trawl Vessels Surveys

Purpose/Objectives:
Large-mesh trawl surveys conducted within offshore spill zones will be guided by hypotheses and research objectives similar to and complementing those described for Sargassum surveys, but with the intent to provide data on larger juvenile (≥25 cm carapace length), subadult and adult life stages of the five species vulnerable to petroleum within the spill response area and to do so throughout the water column. Integration of trawl surveys into search and rescue operations will expand the recovery of dead, sea turtles and rescue of live cohorts within spill response areas, thus providing an additional capture option facilitating collection of tissue samples from a wider array of life history stages prerequisite to impact assessment. Like that for Sargassum surveys used in recovery and rescue operations, trawling effort and associated sea turtle collection will be quantified so as to determine species composition, life history stage and relative abundance (measure of Catch per Unit Effort (CPUE)) of animals that are impacted.

Comment [bas5]: The explicit hypotheses and research objectives need to be clearly stated and fleshed out.

Trawling effort, based on modifications of the USACE's sea turtle relocation program for dredging operations, will be used to assess population structure of sea turtle assemblages within oil impacted and non-impacted areas, with a primary focus on quantifying impact to neritic/demersal life history stages. This effort will complement that for pelagic-stage cohorts characterized during Sargassum surveys. Turtles captured by bottom trawling efforts will be candidates for satellite telemetry operations used for sea turtle behavioral assessments of oil spill-related impacts.

Comment [BAS6]: How? How we will define turtles that were oiled or not oiled if the trawls are in oil? How will we define whether turtles were dead when they entered or if they died in the trawl? How will we prove they were oiled before we gathered them in the trawl? How will you 'quantify impact' – is this a count of oiled vs unoiled turtles?, some historical comparsion of some previously measured parameter(s) in the same area(s)?, some comparison to other assumed similar area(s)?

Methods and Data Collection:
Trawling protocol to capture turtles (dead and alive) will use modified approaches to the USACE sea turtle relocation program and concentrate on both surface (search and rescue operations), water column and demersal sampling (neritic population assessments). Large-mesh (8-inch (20.3 cm) stretch mesh) trawls, towed along transects guided by aerial surveys and/or in association with Sargassum surveys, will be used to capture larger juvenile through adult life history stages of sea turtles.

Integration of trawling efforts into recovery and rescue operations will require that nets, otter doors and bridle equipment be modified to enable surface and mid-water tows. Daytime trawl tows will be conducted alongside convergence zones in which oil and floatsum (Sargassum and other drift line materials) are concentrated as well as where aerial surveys have observed turtles on or near the surface. These tows will be of short duration (≤30 minutes) to lessen the risk of debris- and drowning-related mortality to live sea turtles as well as reduce the volume of incidentally-caught debris and its impact on trawl capture efficiency and turtles within the trawl. GPS-facilitated plots of transects/track lines within which trawls are towed will enable quantification of rescue and recovery areas as well as population estimates of impacted turtles. Trawl operations targeting sea turtle recovery and rescue will be scheduled to coincide with Sargassum surveys and involve a minimum of two vessels conducting these tows for up to 30 days. Observers placed aboard recovery and rescue vessels involved in surface and near-surface trawling operations will follow at-sea protocols outlined in the Sargassum survey

section that pertain to the processing and tissue sampling of dead turtles as well as the handling, holding, sampling and eventual transfer (to shore-based rehab facility) of live turtles. On-board tissue sampling protocol and data collection activities deployed by observers will be those mandated by contaminant personnel and regulatory agencies.

Modified dredge relocation trawling techniques deployed along Gulf bottoms of oil impacted and non-impacted zones will be a primary means of capturing neritic life stages of sea turtles, particularly loggerheads and Kemp's ridleys. The goal of this sampling protocol is to provide sufficient sampling effort within impacted and non-impacted areas to adequately characterize species composition, relative abundance and size/age structure of sea turtle assemblages (particularly loggerhead and ridley life stages recruiting to nearshore, neritic foraging grounds) at risk to contamination. Data from the USACE's sea turtle relocation program documents the effectiveness in capturing neritic stage individuals. Capture totals from USACE trawling efforts between the middle Texas coast to the mouth of the Mississippi reveal loggerheads and ridleys dominate catch statistics. The spatial scope across which this methodology is deployed will be much larger than that of recovery and rescue operations. Bottom trawl tows will be deployed along transects within nearshore and offshore areas where oil as well as lack of oil have been documented. There are a sufficient number of areas across the Gulf, including those near and offshore of tidal passes where these two crab-eating species will be foraging at risk of oil contamination, in which bottom trawling efforts can provide opportunities for impact assessment on these two species as well as others.

Comment [bas7]: What impacts are being assessed, explicitly through this proposed work. What are you measuring other than species composition and demographic parameters, or is the main focus to handle animals for rescue, or for tissue collection for the contaminant analyses, or other?

Eight vessels equipped with large-mesh (8-inch (20.3 cm) stretched mesh), bottom-fishing trawls will be deployed within oil-laden zones (4 vessels) and oil-free control areas east (2 vessels) and west (2 vessels) of oil-laden zones. Trawls will be towed along transects established within the aforementioned impact and control zones. GPS-facilitated plots of tow tracks will be used to quantify trawling effort and produce catch-per-unit effort data prerequisite to impact assessment. Tows will be of short duration ($\leq$ 30 minutes) to negate the possibility of injury and death to sea turtles and reduce clogging the net with debris.

The aforementioned trawling effort will be conducted during four sampling periods that include spring/summer 2010, summer/fall 2010, spring/summer 2011, and spring/fall 2011. These sampling periods coincide with peak sea turtle activity, especially that involving offshore to nearshore movements (at least in the western Gulf) and highest potential for sea turtles to undertake foraging migrations into oil contaminated areas. Sampling across these seasons and years will enable contaminant analysis assessing both acute and chronic contaminant exposure and uptake.

Observers onboard trawlers will follow handling, care and transport protocols (discussed in Sargassum Survey section) for dead and live (oiled and non-oiled) turtles as well as conduct tissue sampling activities mandated by the contaminant group assigned to this project. Quantitative data documenting sampling effort and sea turtle community dynamics plus population structure and relative abundance will be taken according to NOAA collection priorities and protocols. In doing so, all captured sea turtles will be

measured for straight and curved carapace length (SCL and CCL; cm) and examined for oil, injuries, abnormalities, flipper tags/scars and PIT tag evidence of recapture. Releasable, untagged individuals will receive an inconel style 681 tag issued by the NMFS SEFSC-Miami affixed to the trailing edge of each front flipper and a PIT tag embedded under the dorsal surface of the right front flipper prior to release in order to identify subsequent recaptures and enable subsequent data collection describing health, growth, movement, habitat preference and tracking of contaminant loads and impact assessment. Observers also will be equipped to apply satellite tags on selected cohorts. Turtles from selected species and life stages captured with trawl nets will be candidates to receive satellite telemetry designed to provide behavioral indicators of impact assessment.

Comment [BAS8]: What are the behavioral indicators? How will this be measured, what is the control? What is the non-control? What is the question?

C. Nearshore - Entanglement Netting Surveys (Western MS River Delta)

Purpose/Objectives: In-water sampling effort consisting of entanglement netting operations will be used to quantitatively assess population structure of shallow, nearshore sea turtle assemblages within oil impacted and non-impacted areas, with a primary focus on quantifying impact to juvenile and subadult recruits to neritic habitats. This effort will complement that for similar life history stages (and adults) characterized during trawl surveys in open Gulf waters. Live capture information generated by entanglement net operations can also be compared with data taken during stranding surveys conducted on beachfronts and wetland edges. Turtles captured in entanglement nets, like those from trawl surveys, will be candidates for satellite telemetry operations used for sea turtle behavioral assessments of oil spill-related impacts.

Comment [bas9]: How will the impact be quantified?

Comment [bas10]: How will this inform the damage assessment? What is contemplated here in terms of what you are measuring or evaluating?

Comment [BAS11]: See comments above on research question for the telemetry studies.

Methods and Data Collection: Large-mesh, entanglement netting surveys will be conducted at both oil impacted and control (no spill) sites such as those along the Louisiana coast. These sites will be located primarily in shallow nearshore areas adjacent to tidal passes and estuarine waters known as foraging grounds for Kemp's ridley, loggerhead and green sea turtles. An example of an oil impacted site would be waters adjacent to Grand Isle, LA, including Barataria Pass, which is bordered by the barrier islands of Grand Terre to the east and Grand Isle to the west, and Caminada Pass which is bordered by Grand Isle to the east and Elmers Island to the west. These two passes serve as ingress and egress points to and from Barataria Bay, which may also be impacted by the spread of the oil spill and be included in this sampling area. The control site will consist of nearshore and estuarine waters adjacent to Calcasieu Pass, LA which is located ~ 330 km to the west of Grand Isle and is currently not in the projected trajectory of the spill. Calcasieu Pass is bordered on the east and west by 3 km-long jetties and serves as a tidal inlet to Calcasieu Lake. This location not only will serve as a non-impacted control site but, having been previously sampled by the Texas A&M University at Galveston from 1993-2002, provides established netting stations both east and west of the pass and at beachfront and jetty locations for historical comparisons of sea turtle abundance, distribution and habitat use patterns.

Comment [BAS12]: "such as those along the LA coast" – these are 'no spill' sites or 'oil impacted sites'? or both?

Comment [BAS13]: What are the historical or prior-years data that you are comparing to for the objective of population structure?

Comment [BAS14]: So the within site comparison is non-oiled to non-oiled?

Directed sea turtle capture will involve large-mesh entanglement nets (91.4 m long and 2.5- to 4.0-m deep, with 12.7-cm bar mesh of #9 twisted nylon) deployed daily during daylight periods for up to 5 days/site-visit in each estuary and adjacent nearshore habitats. Netting operations in both impacted and control study areas will be conducted across four seasonal periods previously mentioned in the trawl section of this proposal that include: early summer (June/mid-July) 2010; late summer (August/September) 2010; and these same periods in 2011, to assess possible seasonal changes in contaminant load and to characterize sea turtle population dynamics during peak periods of abundance in nearshore foraging habitats. Water depth and current will dictate net type used at respective sample sites, most of which will be limited to depths ≤3 m. Netting effort at all sites will consist of 2-4 nets set in tandem or perpendicular to one another for 6-12 hours per day. Nets will be checked for sea turtles every 20 minutes or more frequently as splashes or other signs of potential capture dictate, in order to minimize risk of turtles drowning while entangled. Pinger devices emitting high-frequency sounds will be attached to nets to negate incidental capture of bottlenose dolphins (*Tursiops truncatus*). Separate sets of netting gear will be used at oil impacted vs. control sites so as to prevent contamination of non-spill areas.

Comment [BAS15]: What will this be compared to as a control?

All captured sea turtles will be measured for straight and curved carapace length (SCL and CCL; cm) and examined for oil, injuries, abnormalities, flipper tags/scars and PIT tag evidence of recapture. Untagged individuals will receive an inconel style 681 tag issued by the NMFS SEFSC-Miami affixed to the trailing edge of each front flipper and a PIT tag embedded under the dorsal surface of the right front flipper prior to release in order to identify subsequent recaptures. Turtles from selected species and life stages taken in entanglement nets will be candidates to receive satellite telemetry designed to provide behavioral indicators of impact assessment.

Comment [BAS16]: See comments above on telemetry study purposes.

D. Nearshore - Entanglement, Strike, and Dip Netting Surveys (Northeastern Gulf of Mexico)

Purpose/Objectives: Entanglement netting surveys will be conducted in the northeastern Gulf of Mexico to complement the entanglement netting surveys described above for the western region of the MS River Delta. Comparisons of abundance (measured as CPUE), species composition, and blood toxicity will occur between the two regions. In-water sampling effort consisting of entanglement and opportunistic netting operations will be used to quantitatively assess population structure of shallow, nearshore sea turtle assemblages, with a primary focus on quantifying impact to juvenile and subadult recruits to neritic habitats. This effort will complement that for similar life history stages (and adults) characterized during trawl surveys in open Gulf waters. Live capture information generated by entanglement and opportunistic netting operations can also be compared with data taken during stranding surveys conducted on beachfronts and wetland edges. Turtles captured in nets, like those from trawl surveys, will be candidates for satellite telemetry operations to assess sea turtle use of oil spill-related impacted habitats.

Comment [BAS17]: How will this inform damage assessment? What is the non-oiled area baseline? Do you have that?

Comment [BAS18]: What are you comparing?

Comment [BAS19]: See above comment/questions on telemetry purpose/questions.

Methods and Data Collection: Entanglement and opportunistic netting surveys east of the MS River Delta will occur in St. Joseph Bay, a coastal embayment with known year-round habitat for green, Kemp's ridley and loggerhead turtles. In January 2010, more than 1,700 juvenile turtles stranded here when water temperatures dropped significantly below normal. This area is approximately 330 nm east of the oil spill site and will serve as a comparison to sites west of the MS River Delta and to offshore sites. St. Joseph Bay encompasses just under 30,000 hectares and opens north to the Gulf of Mexico. It has a mean depth of 7 m, with the greatest depth (13 m) in the northern end and the shallowest (1 m) in the southern end. Sea grass beds cover approximately one-sixth of the Bay and are most abundant in the shallow southern end. Five species of seagrass are known to inhabit St. Joe Bay, with *Thalassia testudinum* dominating.

Comment [bas20]: What explicitly will be compared?

Netting will occur over seagrass meadows in two regions of St. Joseph Bay: the extreme southern portion and the west and northwest section. Netting in the southern portion of the Bay occurred from 2001-2005 which resulted in capture of more than 150 Kemp's ridley, green and loggerhead turtles. These proposed surveys will allow comparison of species assemblage, size classes and abundance (measured as CPUE) to that previous study and will allow assessment of oil spill impacts. Additional netting along the west and northwestern shore will expand upon the previous study by providing more detailed information on population structure and demographics within the entire Bay and providing detailed monitoring of possible oil incursion and progression through the Bay. Because this Bay opens to the north and generally undergoes little mixing, oil at the entrance to the Bay may affect turtles foraging in the northern end and the seagrass meadows there moreso than in the southernmost portion of the Bay. Netting in both areas will occur year-round to allow for seasonal comparisons in abundance, species composition and demographics, and to assess changes in oil-impacts over this time span.

Comment [bas21]: How will we measure/assess whether oil is in these areas?

Comment [bas22]: As measured by _____? Contaminant load? Comparison to a baseline of X parameter values?

Turtles will be captured using standard strike-netting techniques, set-netting techniques or dip netting from a boat or canoe 5 days a week through November 2010, then twice a week from December 2010 to March 2011, and resuming 5 days a week from April through November 2011. While strike netting, turtles are spotted from a 17-foot Boston Whaler with a 90-hp outboard motor. When a turtle is observed a 150 m x 2.4 m net (mesh = 20.3 cm x 20.3 cm) is used to encircle the target animal, which is then brought onboard and removed from the net. During set netting, the same net is allowed to hang loosely in the water in a straight line, catching turtles as they swim into the net and became entangled. The net is inspected every 15 minutes or more frequently as signs of potential entanglement occur, and all turtles and non-target species are removed. Dip netting occurs when turtles are spotted from the boat or canoe and then scooped from the water directly into the vessel.

All captured sea turtles will be measured for straight and curved carapace length (SCL and CCL; cm) and examined for oil, injuries, abnormalities, flipper tags/scars and PIT tag evidence of recapture. Untagged individuals will receive an inconel flipper tag issued by the NMFS SEFSC-Miami affixed to the trailing edge of each front flipper and a PIT tag embedded under the dorsal surface of the right front flipper prior to release in order to identify subsequent recaptures. In addition, a blood sample will be removed from each

captured turtle. Turtles from selected species and life stages will be candidates to receive satellite telemetry designed to provide behavioral indicators of impact assessment.

Comment [bas23]: See comments above regarding purpose/questions on satellite telemetry.

Proposing Agencies and Lead Investigators:

Florida Cooperative Fish and Wildlife Research Unit, University of Florida: Raymond Carthy (352-846-0545/352-213-5851; ngosi@ufl.edu) and Margaret Lamont (352-209-4306; mmlamont@mindspring.com)

Budget

Salary	
MS student .33 FTE (includes 8.8% fringe for health insurance)	$17,500
Research Manager: 1 year @ 22.50/hour	$45,000
Subtotal	**$62,500**
Equipment	
Satellite tags (10 @ $7,000 each)	$70,000
Includes Argos satellite time	
Subtotal	**$70,000**
Operating Expenses	
Tuition for MS Student (includes fringe)	$8,500
Boat Fuel	$5,000
Tagging and Field Supplies	$5,000
Nets and netting supplies	$8,000
Subtotal	**$26,000**
Overall Subtotal	**$158,500**
UFL Overhead (15%)	$ 23,775
Subtotal	$182,275
USGS Overhead (6%)	$10,937
GRAND TOTAL	**$193,212**

E. Biotelemetry Monitoring

Purpose/Objectives:
The proposed work will support a baseline assessment of hydrocarbon exposure and will develop time-critical data providing the evidence necessary establishing a causal relationship between population impacts to sea turtles and hydrocarbon toxicity. The proposed data acquisition will provide supporting evidence that links the observed effects on sea turtle populations with a plausible mechanism of hydrocarbon toxicity related to the MC 252 incident.

Methods and Data Collection – Open Gulf Trawling Operations: GPS tags such as Wildlife Computer's Model MK10-AF will be affixed to selected Kemp's ridley, loggerhead and green sea turtles captured in other aspects of this assessment in impacted and non-impacted areas of the open Gulf. Sea turtle behavior patterns within impacted and oil-free zones will be characterized and compared between these zones, thus providing a biological tool to impact assessment. Behavioral data to be collected include a sea turtle's time at the surface, depth and dive duration profiles, time-at-depth, time-at-temperature, depth-temperature profiles, and other timelines that can be compared between oiled and non-oil sea turtles. Animals (oiled and non-oiled) will be released in accordance with approved protocols and directives from USFWS and NOAA.
The four seasonal, quantitative trawling operations proposed across Gulf-wide impacted and control areas will provide opportunities to capture all three species whose constituents comprise various life history stages that exhibit varying degrees of contaminant exposure. As such, thirty (30) turtles comprised of 10 Kemp's ridleys (5 from impacted (if available) and 5 from control sites), 10 loggerheads (5 from impacted and 5 from control sites) and 10 green turtles (5 from impacted and 5 from control sites) will be tracked each sampling period. This experimental design will result in 120 turtles from three species (40 Kemp's ridleys, 40 loggerheads, 40 greens) being satellite tagged and tracked during the 1-year impact assessment for the entanglement netting region east of the Mississippi River Delta.. All tagged turtles will be tracked for a minimum of 12 months during which time movement and associated behavior of the aforementioned species will be characterized in relation to their exposure to crude oil or lack thereof.

Comment [bas24]: So this proposal would put satellite tags on oiled turtles and release them? How will a satellite tag attach to an oiled carapace? Beyond that, is this suggesting that we return oiled turtles to the water and not rehab them once they are in hand?

Comment [bas25]: See above comment, are these oiled turtles and unoiled turtles? Or all unoiled turtles but some are in places where there is oil at the time of collection or we will monitor it to determine when oil enters? If so, how will we do this?

Methods and Data Collection - Nearshore Entanglement Netting Operations for Western MS River Delta: Juvenile through adult life stages of Kemp's ridley, loggerhead and green sea turtles taken in nearshore entanglement nets will be affixed with SirTrack Kiwi101 (larger subadults and adults) and Kiwi202 satellite transmitters (juveniles through small subadults) during each of four (4) sampling periods. Both transmitter models will generate data on sea turtle location, water temperature and depth. Results of historical satellite tracking efforts conducted by Texas A&M University at Galveston on the aforementioned species yield a strong fidelity pattern for shallow surf and bay habitats. Water depth across habitats in which these turtles forage during summer and fall is typically >5 to10 m deep, wherein the use of more expensive GPS telemetry (proposed for open Gulf conspecifics) to characterize diving behavior is not warranted as well as may be compromised.

Turtles taken in entanglement nets will receive satellite transmitters during four sampling periods that include spring/summer 2010, summer/fall 2010, spring/summer 2011, and spring/fall 2011. Thirty (30) turtles comprised of 10 Kemp's ridleys (5 from impacted and 5 from control sites), 10 loggerheads (5 from impacted and 5 from control sites) and 10 green turtles (5 from impacted and 5 from control sites) will be tracked each sampling period. This experimental design will result in 120 turtles from three species (40 Kemp's ridley, 40 loggerhead, 40 green) being satellite tagged and tracked during the 1-year impact assessment. All tagged turtles will be tracked for a minimum of 6 months during which time movement and associated behavior of the aforementioned species will be characterized in relation to their exposure to crude oil or lack thereof.

Comment [bas26]: How will you measure / quantify their 'exposure to crude oil or lack thereof'?

Methods and Data Collection – Nearshore, Strike, and Dip Netting Operations for Northeastern Gulf of Mexico: Biotelemetry tagging of sea turtles will be conducted during the nearshore entanglement, strike, and dip netting surveys on the Northeastern region of the Gulf of Mexico, and in conjunction with the western MS River Delta study, will provide effective monitoring and comparative data the northern Gulf of Mexico.

Juvenile through adult life stages of Kemp's ridley, loggerhead and green turtles taken in nearshore entanglement, strike and dip nets will be affixed with SirTrack Kiwi101 (larger subadults and adults) and Kiwi202 satellite transmitters (juveniles through small subadults) during each of four (4) sampling periods. Both transmitter models will generate data on sea turtle location, water temperature and depth. Results of previous satellite tracking efforts conducted by the Florida Cooperative Fish and Wildlife Research Unit at the University of Florida on the aforementioned species indicate that turtles remain within the shallow waters of St. Joseph Bay year-round. Water depth across habitats in which these turtles forage during summer and fall is typically < 10 m deep, therefore the use of more expensive GPS telemetry (proposed for open Gulf conspecifics) to characterize diving behavior is not warranted.

Turtles captured during this study will receive satellite transmitters in each of the four seasons. Eighteen (18) turtles comprised of 4 Kemp's ridleys (2 from the northern and 2 from the southern site), 4 loggerheads (2 from the northern and 2 from the southern site) and 10 green turtles (5 from the northern and 5 from the southern site) will be tracked each season. This experimental design will result in 72 turtles from three species (16 Kemp's ridley, 16 loggerhead, 40 green) being satellite tagged and tracked during the 1-year impact assessment. All tagged turtles will be tracked for a minimum of 6 months during which time movement and associated behavior of the aforementioned species will be characterized in relation to their exposure to crude oil or lack thereof.

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Small quantities of oil (5–20 µl) externally applied to bird eggs has been shown to kill bird embryos. Alkyl PAHs, common constituents of petroleum crude oil, have recently been identified as potent inducers of AH receptor mediated toxicity in developing fish embryos with metabolism similar to the genotoxic effects observed from dioxins and furans. Toxicity to crude oils manifests a common suite of developmental defects in bird, fish and turtle embryos exposed to petroleum-derived hydrocarbons. In birds and fish the gross malformations resulting from exposure to polycyclic aromatic hydrocarbons (PAHs) present in heavy oils include pericardial and yolk sac edema, hemorrhaging, deformities and induced levels of CYP1a enzymes. Although the toxicity of hydrocarbons to turtles has been studied in less detail, yolk sac edema, spinal and jaw deformities, and the reduction in growth and recruitment have been reported suggesting that the mechanisms of PAH toxicity are likely to be similar among egg laying vertebrates.

The Sea Turtle NRDA study design includes collection and testing of turtle blood samples to help establish the mechanistic basis of hydrocarbon toxicity and injury. The proposed testing will provide insight into whether exposure of petroleum hydrocarbons may result in hemolytic anemia, salt gland dysfunction, immunosuppression, or genetic mutations in field exposure turtles. These data cannot be created experimentally and will be invaluable in the future. The only other way to collect similar biological data on the mechanistic basis of petroleum toxicity to sea turtles requires the use of in vitro laboratory tests using cloned cell lines.

Attachment 1 provides summaries of the sources for sea turtle tissue and blood samples to be analyzed, evidence for hypotheses, explanations of dependent and independent variables in risk model, and a summary of the blood chemistry and bioassay measurements that have previously reported for turtles.

The toxicological assessment strategy consists of the following:

1) *Hydrocarbon analysis in tissues of exposed and unexposed juvenile through adult sea turtle life stages.*
   The presence of petroleum diagnostic compounds (steranes, di- and triterpanes) and toxic aromatic hydrocarbons (alkyl-PAHs and selected PAH metabolites) will be measured in newly collected blood samples and blood samples that have been previously collected and archived along the Gulf of Mexico coast.
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3) *Blood biochemistry and immunotoxicity of unexposed and exposed sea turtles.*

Standard blood biochemistries will be measured (e.g., complete blood count [CBC], Chem 7 [i.e., a battery of blood chemistry tests]) to determine hematic homeostasis. Electrolyte balance will be critical since research has shown that the turtle salt gland, which regulates salt content in the body, is negatively affected by hydrocarbons. WBCs are known to be negatively affected by hydrocarbons, so WBCs function (i.e., phagocytic activity of pathogens) will be determined by standard phagocytosis activity methodologies. Furthermore, additional WBC function bioassays can be conducted using flow cytometry (FCM) analysis against several highly-conserved biochemical endpoints (e.g., cell death, cell cycle disruption, etc.).

4) *Chromosomal damage in exposed and unexposed juvenile through adult sea turtle life stages.*

Measurement of chromosomal damage in white blood cells (WBCs) of captured sea turtles would be conducted using flow cytometry (FCM) and micronucleus assay (MN) methods. Analysis would be performed on newly collected samples and from samples that have been collected previously and archived.

5) *Hydrocarbon analysis in eggshells and nest site soil (post hatching).*

The presence of petroleum diagnostic compounds (steranes, di- and triterpanes) and toxic aromatic hydrocarbons (alkyl-PAHs and selected PAH metabolites) will be measured in egg chorioallantoic/amniotic fluid, eggshells, and nest site soil (post hatching).

G. Integration of laboratory testing, project quality assurance, and data management among field survey teams.

The Sea Turtle NRDA is anticipating that field and laboratory data will be collected from multiple surveys that will be conducted by multiple organizations over the next several years. The anticipated matrix of organizations performing this work, survey types, and the samples and data to be collected are summarized in part in the following table.

Organizations	Survey Types	Sample Types	Data Types

• US Army Corps of Engineers -ERDC • US Fish & Wildlife Service • NOAA, National Marine Fisheries Service • Texas A&M Univ. – Galveston • Univ of Florida • Florida Fish and Wildlife Conservation Commission • Various Emergency Response & Recovery Organizations	• Response & Recovery • Sargassum/ Pelagic Nets • Near Shore Entangleme nt Nets • Off Shore Trawl Nets • Beach Nest Sites	• Dead Individuals and Embryos • Necropsy Tissue • Necropsy Gut Contents • Live Animal Skin Punches, Blood, and Shell Swabs • Egg and Chorioallantoic Fluid • Environmental including Beach Sand, Nest Materials, and Sargassum	• Field - Turtle Data • Field –Environ. Conditions • Field - Sample Collection • Field – Time & GeoSpatial Coordinates • Lab Necropsy Reports • Lab Hydrocarbon Reports • Lab Toxicological Reports

Scope of Work

Strategic planning and integration of standard sample collection procedures, laboratory testing, NOAA project quality assurance procedures, and data management among the participating field survey teams will be supported by the USACE-ERDC Environmental Laboratory team. Examples of the strategic planning and integration activities will include:

- Sample collection procedures – Indentifying and providing standard operating procedures to the survey teams for the collection, identification, preservation, transport, and chain-of-custody procedures for habitat, nest material, shell swab, blood, and skin tissue samples. This work will include locating SOPs already created by NOAA and responding to questions and challenges encountered by the survey teams.
- Laboratory Testing – Coordinating the analysis of environmental, tissue and necropsy samples collected during surveys with the testing laboratories selected by NOAA. This will include finalizing the proposed testing panel or turtle blood samples in coordination with NOAA technical staff, identifying laboratories that meet NRDA data quality objectives, and providing recommendations on laboratories for conducting this testing.
- NOAA Project Quality Assurance Procedures – Identify and disseminate project management and data handling quality assurance and quality control procedures to the field survey teams.
- Data management – Initiate the development of procedures and database systems for field data management, sample tracking, laboratory data tracking, and uploading of the Sea turtle NRDA data into NOAA's ERMA data base system.

SUMMARY OF EXPECTED BUDGET AND REQUESTED RESOURCES

A. Sargassum Surveys

Budget

TBD upon finalization of methods and scope of effort

Proposing Agencies and Lead Investigators:
Florida Fish and Wildlife Conservation Commission
Fish and Wildlife Research Institute
Blair Witherington, 727-224-3020; witherington@cfl.rr.com and blair.witherington@myFWC.com

B. Offshore - Trawl Vessels Surveys

Budget

TBD upon finalization of methods and scope of effort

Proposing Agencies and Lead Investigators:
USACE Engineer Research and Development Center-Environmental Laboratory
Dena Dickerson (601-922-9277 and 601-940-0293; Dena.Dickerson@usace.army.mil), Chuck Dickerson

Texas A&M University at Galveston, Sea Turtle and Fisheries Ecology Research Lab
Tasha Metz (409-740-4431; 409-457-6044; metzt@tamug.edu), Kim Reich, and Andre Landry

East Coast Observers
Trish Bargo, 757-880-7636; tbargo@eastcoastobservers.com

Coastwise Consulting, Inc
Chris Slay, 706-543-6859 and 706-540-6655; cslay@att.net

C. Nearshore – Entanglement Netting Surveys (Western MS River Delta)

Budget

TBD upon finalization of methods and scope of effort

Proposing Agencies and Lead Investigators:

Texas A&M University at Galveston, Sea Turtle and Fisheries Ecology Research Lab
Tasha Metz (409-740-4431; 409-457-6044; metzt@tamug.edu), Kim Reich, and Andre Landry

USACE Engineer Research and Development Center-Environmental Laboratory
Dena Dickerson (601-922-9277 and 601-940-0293; Dena.Dickerson@usace.army.mil), Chuck Dickerson

D. Nearshore - Entanglement, Strike, and Dip Netting Surveys (Eastern MS River Delta)

Budget

TBD upon finalization of methods and scope of effort

Proposing Agencies and Lead Investigators:
University of Florida at Gainsville, Florida Cooperative Fish and Wildlife Research Unit
Ray Carthy (352-846-0545, ngosi@ufl.edu), Meg Lamont

NOAA, National Marine Fisheries Service, Southeast Fisheries Science Center.
Chris Sasso, 305-361-4279; chris.sasso@noaa.gov

E. Biotelemetry Monitoring

Budget

TBD upon finalization of methods and scope of effort

Satellite telemetry tags and ARGOS data agreements to be purchased directly by British Petroleum or other funding sources representing British Petroleum.

Proposing Agencies and Lead Investigators:
Texas A&M University at Galveston, Sea Turtle and Fisheries Ecology Research Lab
Tasha Metz (409-740-4431; 409-457-6044; metzt@tamug.edu), Kim Reich, and Andre Landry

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F. Chemical Biomarkers of Hydrocarbon Exposure and Toxicological Assessment

Budget

TBD upon finalization of methods, scope of effort and selection of hydrocarbon chemistry and blood biochemistry testing labs.

G. Integration of laboratory testing, project quality assurance, and data management among field survey teams.

Budget

$_____ for 6 months

Proposing Agencies and Lead Investigators:
USACE Engineer Research and Development Center-Environmental Laboratory
Dr. Joe Kreitinger (USACE/ERDC) (607-266-0217; 607-229-9615; Joseph.P.Kreitinger@usace.army.mil). Joe is an Environmental Toxicologist/ Risk Assessor with 30 years of research and consulting experience in the environmental fate, transport, exposure, and toxicity of hydrocarbons in the environment. Dr. Kreitinger will act as the ERDC Environmental Lab Team task manager and provide expert support for strategic planning, study design, statistical data analysis, and interpretation of hydrocarbon exposure data.

Dr. Dave Johnson-USACE/ERDC. Dave is an Environmental Toxicologist will provide expert support for final selection of methods and laboratories for testing of turtle blood samples for metabolic, immunologic, and genetic measurement endpoints of hydrocarbon exposure and injury.

Dr. Peter Hodson – Queens University. Peter is an Environmental Toxicologist and Professor at Queens University specializing in the molecular toxicity of alkyl PAHs in petroleum to embryogenesis of eggs. Dr. Hodson will provide senior review on the selection and interpretation of toxicological test results and expert consulting support for the identification mechanisms responsible for hydrocarbon toxicity to turtle eggs.

Dr. Burton Suedel – USACE/ERDC. Burton will support Joe Kreitinger with strategic planning and on-site coordination at the Houma, LA Incident Command Center.

Ms. Dana Derrick May – USACE/ERDC. Dana will provide on-site field coordination and data management.

Internesting movements of female turtles in the eastern Gulf of Mexico

Purpose/Objectives

Tracking of adult nesting turtles during the internesting interval will be used to determine habitat use by nesting turtles during this life-stage. These data will provide an assessment of exposure of nesting female turtles to oil while at sea during the internesting phase, and their potential for indirect exposure during this period. Although not covered with oil, turtles may ingest oil-soaked foods or become exposed to oil in a variety of indirect ways, thereby affecting their long-term health and influencing egg production. This monitoring effort will provide information that can link interesting habitat use with any observed hydrocarbon contamination/toxicity in deposited eggs.

Comment [bas28]: How will the 'exposure of nesting female turtles to oil while at sea" be measured?

Comment [bas29]: How will that link be made?

Methods and Data Collection

Surveys for nesting loggerhead turtles will be conducted nightly along 17-km of beach on the St. Joseph Peninsula, Florida throughout the sea turtle nesting season from May 1 through August 15. All nesting turtles encountered will be fitted with metal Inconel flipper tags and a Passive Integrated Transponder (PIT) tag will be inserted under the skin in the left shoulder. In addition, blood will be collected from each individual. Turtles will be measured and any abnormalities recorded. Nests will be marked with wooden stakes and flagging, and observed throughout the nesting and hatching season. Three days after hatchling emergence or after 90 days incubation, nests will be excavated and reproductive success determined. Success will be defined as the number of hatchlings that emerged from the nest divided by the total number of eggs deposited in the nest following Johnson et al. (1996).

Ten loggerhead turtles located within the study site will be fitted with a satellite tag capable of transmitting GPS positions (Wildlife Computers; Redmond, WA; http://wildlifecomputers.com/). Once the turtle has completed egg deposition, she will be restrained using four interconnected wooden barriers (an uncovered box). Tags will be attached to the highest part of the carapace along the second vertebral scute using a two-part epoxy and resin adhesive following Mitchell (2000). Once tagging is complete, the box will be lifted and the turtle will continue back to the ocean. The tag will provide data on turtle location, water depth and temperature, day and time that the turtle's location is recorded, and probability of location accuracy. All tagged turtles will be tracked for a minimum of 6 months during which time movement and associated behavior will be characterized in relation to exposure to oil impacted areas or the lack thereof.

Comment [bas30]: How will you measure the turtles' "exposure to oil impacted areas or the lack thereof"?

Proposing Agencies and Lead Investigators:

Florida Cooperative Fish and Wildlife Research Unit, University of Florida: Raymond Carthy (352-846-0545/352-213-5851; ngosi@ufl.edu) and Margaret Lamont (352-209-4306; mmlamont@mindspring.com)

Budget

Salary	
MS student .33 FTE (includes 8.8% fringe for health insurance)	$17,500
Research Manager: 6 mo. @ $22.50/hour	$22,500
Interns: 2 @ $1,000/mo for 5 months	$10,000
Subtotal	**$50,000**
Equipment	
Adult satellite tags (10 @ $7,000 each)	$70,000
Includes Argos satellite time	
Subtotal	**$70,000**
Operating Expenses	
Tuition for MS Student (includes fringe)	$8,500
ATV Fuel	$5,000
Tagging Supplies	$8,000
Bloodwork analyses	$10,000
Subtotal	**$31,500**
Overall Subtotal	**$151,500**
UFL Overhead (15%)	$ 22,725
Subtotal	**$174,225**
USGS Overhead (6%)	$10,454
GRAND TOTAL	**$184,679**

Methods and Data Collection: Entanglement and opportunistic netting surveys east of the MS River Delta will occur in St. Joseph Bay, a coastal embayment with known year-round habitat for green, Kemp's ridley and loggerhead turtles. In January 2010, more than 1,700 juvenile turtles stranded here when water temperatures dropped significantly below normal. This area is approximately 330 nm east of the oil spill site and will serve as a comparison to sites west of the MS River Delta and to offshore sites. St. Joseph Bay encompasses just under 30,000 hectares and opens north to the Gulf of Mexico. It has a mean depth of 7 m, with the greatest depth (13 m) in the northern end and the shallowest (1 m) in the southern end. Sea grass beds cover approximately one-sixth of the Bay and are most abundant in the shallow southern end. Five species of seagrass are known to inhabit St. Joe Bay, with *Thalassia testudinum* dominating.

Comment [bas20]: What explicitly will be compared?

Netting will occur over seagrass meadows in two regions of St. Joseph Bay: the extreme southern portion and the west and northwest section. Netting in the southern portion of the Bay occurred from 2001-2005 which resulted in capture of more than 150 Kemp's ridley, green and loggerhead turtles. These proposed surveys will allow comparison of species assemblage, size classes and abundance (measured as CPUE) to that previous study and will allow assessment of oil spill impacts. Additional netting along the west and northwestern shore will expand upon the previous study by providing more detailed information on population structure and demographics within the entire Bay and providing detailed monitoring of possible oil incursion and progression through the Bay. Because this Bay opens to the north and generally undergoes little mixing, oil at the entrance to the Bay may affect turtles foraging in the northern end and the seagrass meadows there moreso than in the southernmost portion of the Bay. Netting in both areas will occur year-round to allow for seasonal comparisons in abundance, species composition and demographics, and to assess changes in oil-impacts over this time span.

Comment [bas21]: How will we measure/assess whether oil is in these areas?

Comment [bas22]: As measured by _____? Contaminant load? Comparison to a baseline of X parameter values?

Turtles will be captured using standard strike-netting techniques, set-netting techniques or dip netting from a boat or canoe 5 days a week through November 2010, then twice a week from December 2010 to March 2011, and resuming 5 days a week from April through November 2011. While strike netting, turtles are spotted from a 17-foot Boston Whaler with a 90-hp outboard motor. When a turtle is observed a 150 m x 2.4 m net (mesh = 20.3 cm x 20.3 cm) is used to encircle the target animal, which is then brought onboard and removed from the net. During set netting, the same net is allowed to hang loosely in the water in a straight line, catching turtles as they swim into the net and became entangled. The net is inspected every 15 minutes or more frequently as signs of potential entanglement occur, and all turtles and non-target species are removed. Dip netting occurs when turtles are spotted from the boat or canoe and then scooped from the water directly into the vessel.

All captured sea turtles will be measured for straight and curved carapace length (SCL and CCL; cm) and examined for oil, injuries, abnormalities, flipper tags/scars and PIT tag evidence of recapture. Untagged individuals will receive an inconel flipper tag issued by the NMFS SEFSC-Miami affixed to the trailing edge of each front flipper and a PIT tag embedded under the dorsal surface of the right front flipper prior to release in order to identify subsequent recaptures. In addition, a blood sample will be removed from each

captured turtle. Turtles from selected species and life stages will be candidates to receive satellite telemetry designed to provide behavioral indicators of impact assessment.

Comment [bas23]: See comments above regarding purpose/questions on satellite telemetry.

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Budget

Salary	
MS student .33 FTE (includes 8.8% fringe for health insurance)	$17,500
Research Manager: 1 year @ 22.50/hour	$45,000
Subtotal	**$62,500**
Equipment	
Satellite tags (10 @ $7,000 each)	$70,000
Includes Argos satellite time	
Subtotal	**$70,000**
Operating Expenses	
Tuition for MS Student (includes fringe)	$8,500
Boat Fuel	$5,000
Tagging and Field Supplies	$5,000
Nets and netting supplies	$8,000
Subtotal	**$26,000**
Overall Subtotal	**$158,500**
UFL Overhead (15%)	$ 23,775
Subtotal	$182,275
USGS Overhead (6%)	$10,937
GRAND TOTAL	**$193,212**

E. Biotelemetry Monitoring

Purpose/Objectives:
The proposed work will support a baseline assessment of hydrocarbon exposure and will develop time-critical data providing the evidence necessary establishing a causal relationship between population impacts to sea turtles and hydrocarbon toxicity. The proposed data acquisition will provide supporting evidence that links the observed effects on sea turtle populations with a plausible mechanism of hydrocarbon toxicity related to the MC 252 incident.

Methods and Data Collection – Open Gulf Trawling Operations: GPS tags such as Wildlife Computer's Model MK10-AF will be affixed to selected Kemp's ridley, loggerhead and green sea turtles captured in other aspects of this assessment in impacted and non-impacted areas of the open Gulf. Sea turtle behavior patterns within impacted and oil-free zones will be characterized and compared between these zones, thus providing a biological tool to impact assessment. Behavioral data to be collected include a sea turtle's time at the surface, depth and dive duration profiles, time-at-depth, time-at-temperature, depth-temperature profiles, and other timelines that can be compared between oiled and non-oil sea turtles. Animals (oiled and non-oiled) will be released in accordance with approved protocols and directives from USFWS and NOAA.
The four seasonal, quantitative trawling operations proposed across Gulf-wide impacted and control areas will provide opportunities to capture all three species whose constituents comprise various life history stages that exhibit varying degrees of contaminant exposure. As such, thirty (30) turtles comprised of 10 Kemp's ridleys (5 from impacted (if available) and 5 from control sites), 10 loggerheads (5 from impacted and 5 from control sites) and 10 green turtles (5 from impacted and 5 from control sites) will be tracked each sampling period. This experimental design will result in 120 turtles from three species (40 Kemp's ridleys, 40 loggerheads, 40 greens) being satellite tagged and tracked during the 1-year impact assessment for the entanglement netting region east of the Mississippi River Delta.. All tagged turtles will be tracked for a minimum of 12 months during which time movement and associated behavior of the aforementioned species will be characterized in relation to their exposure to crude oil or lack thereof.

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3) *Blood biochemistry and immunotoxicity of unexposed and exposed sea turtles.*

Standard blood biochemistries will be measured (e.g., complete blood count [CBC], Chem 7 [i.e., a battery of blood chemistry tests]) to determine hematic homeostasis. Electrolyte balance will be critical since research has shown that the turtle salt gland, which regulates salt content in the body, is negatively affected by hydrocarbons. WBCs are known to be negatively affected by hydrocarbons, so WBCs function (i.e., phagocytic activity of pathogens) will be determined by standard phagocytosis activity methodologies. Furthermore, additional WBC function bioassays can be conducted using flow cytometry (FCM) analysis against several highly-conserved biochemical endpoints (e.g., cell death, cell cycle disruption, etc.).

4) *Chromosomal damage in exposed and unexposed juvenile through adult sea turtle life stages.*

Measurement of chromosomal damage in white blood cells (WBCs) of captured sea turtles would be conducted using flow cytometry (FCM) and micronucleus assay (MN) methods. Analysis would be performed on newly collected samples and from samples that have been collected previously and archived.

5) *Hydrocarbon analysis in eggshells and nest site soil (post hatching).*

The presence of petroleum diagnostic compounds (steranes, di- and triterpanes) and toxic aromatic hydrocarbons (alkyl-PAHs and selected PAH metabolites) will be measured in egg chorioallantoic/amniotic fluid, eggshells, and nest site soil (post hatching).

G. Integration of laboratory testing, project quality assurance, and data management among field survey teams.

The Sea Turtle NRDA is anticipating that field and laboratory data will be collected from multiple surveys that will be conducted by multiple organizations over the next several years. The anticipated matrix of organizations performing this work, survey types, and the samples and data to be collected are summarized in part in the following table.

Organizations	Survey Types	Sample Types	Data Types

• US Army Corps of Engineers -ERDC • US Fish & Wildlife Service • NOAA, National Marine Fisheries Service • Texas A&M Univ. – Galveston • Univ of Florida • Florida Fish and Wildlife Conservation Commission • Various Emergency Response & Recovery Organizations	• Response & Recovery • Sargassum/ Pelagic Nets • Near Shore Entangleme nt Nets • Off Shore Trawl Nets • Beach Nest Sites	• Dead Individuals and Embryos • Necropsy Tissue • Necropsy Gut Contents • Live Animal Skin Punches, Blood, and Shell Swabs • Egg and Chorioallantoic Fluid • Environmental including Beach Sand, Nest Materials, and Sargassum	• Field - Turtle Data • Field –Environ. Conditions • Field - Sample Collection • Field – Time & GeoSpatial Coordinates • Lab Necropsy Reports • Lab Hydrocarbon Reports • Lab Toxicological Reports

Scope of Work

Strategic planning and integration of standard sample collection procedures, laboratory testing, NOAA project quality assurance procedures, and data management among the participating field survey teams will be supported by the USACE-ERDC Environmental Laboratory team. Examples of the strategic planning and integration activities will include:

- Sample collection procedures – Indentifying and providing standard operating procedures to the survey teams for the collection, identification, preservation, transport, and chain-of-custody procedures for habitat, nest material, shell swab, blood, and skin tissue samples. This work will include locating SOPs already created by NOAA and responding to questions and challenges encountered by the survey teams.
- Laboratory Testing – Coordinating the analysis of environmental, tissue and necropsy samples collected during surveys with the testing laboratories selected by NOAA. This will include finalizing the proposed testing panel or turtle blood samples in coordination with NOAA technical staff, identifying laboratories that meet NRDA data quality objectives, and providing recommendations on laboratories for conducting this testing.
- NOAA Project Quality Assurance Procedures – Identify and disseminate project management and data handling quality assurance and quality control procedures to the field survey teams.
- Data management – Initiate the development of procedures and database systems for field data management, sample tracking, laboratory data tracking, and uploading of the Sea turtle NRDA data into NOAA's ERMA data base system.

SUMMARY OF EXPECTED BUDGET AND REQUESTED RESOURCES

A. Sargassum Surveys

Budget

TBD upon finalization of methods and scope of effort

Proposing Agencies and Lead Investigators:
Florida Fish and Wildlife Conservation Commission
Fish and Wildlife Research Institute
Blair Witherington, 727-224-3020; witherington@cfl.rr.com and blair.witherington@myFWC.com

B. Offshore - Trawl Vessels Surveys

Budget

TBD upon finalization of methods and scope of effort

Proposing Agencies and Lead Investigators:
USACE Engineer Research and Development Center-Environmental Laboratory
Dena Dickerson (601-922-9277 and 601-940-0293; Dena.Dickerson@usace.army.mil), Chuck Dickerson

Texas A&M University at Galveston, Sea Turtle and Fisheries Ecology Research Lab
Tasha Metz (409-740-4431; 409-457-6044; metzt@tamug.edu), Kim Reich, and Andre Landry

East Coast Observers
Trish Bargo, 757-880-7636; tbargo@eastcoastobservers.com

Coastwise Consulting, Inc
Chris Slay, 706-543-6859 and 706-540-6655; cslay@att.net

C. Nearshore – Entanglement Netting Surveys (Western MS River Delta)

Budget

TBD upon finalization of methods and scope of effort

Proposing Agencies and Lead Investigators:

Texas A&M University at Galveston, Sea Turtle and Fisheries Ecology Research Lab
Tasha Metz (409-740-4431; 409-457-6044; metzt@tamug.edu), Kim Reich, and Andre Landry

USACE Engineer Research and Development Center-Environmental Laboratory
Dena Dickerson (601-922-9277 and 601-940-0293; Dena.Dickerson@usace.army.mil), Chuck Dickerson

D. Nearshore - Entanglement, Strike, and Dip Netting Surveys (Eastern MS River Delta)

Budget

TBD upon finalization of methods and scope of effort

Proposing Agencies and Lead Investigators:
University of Florida at Gainsville, Florida Cooperative Fish and Wildlife Research Unit
Ray Carthy (352-846-0545, ngosi@ufl.edu), Meg Lamont

NOAA, National Marine Fisheries Service, Southeast Fisheries Science Center.
Chris Sasso, 305-361-4279; chris.sasso@noaa.gov

E. Biotelemetry Monitoring

Budget

TBD upon finalization of methods and scope of effort

Satellite telemetry tags and ARGOS data agreements to be purchased directly by British Petroleum or other funding sources representing British Petroleum.

Proposing Agencies and Lead Investigators:
Texas A&M University at Galveston, Sea Turtle and Fisheries Ecology Research Lab
Tasha Metz (409-740-4431; 409-457-6044; metzt@tamug.edu), Kim Reich, and Andre Landry

USACE Engineer Research and Development Center-Environmental Laboratory
Dena Dickerson (601-922-9277 and 601-940-0293; Dena.Dickerson@usace.army.mil), Chuck Dickerson

University of Florida at Gainsville, Florida Cooperative Fish and Wildlife Research Unit

Ray Carthy (352-846-0545, ngosi@ufl.edu), Meg Lamont

NOAA, National Marine Fisheries Service, Southeast Fisheries Science Center.
Chris Sasso, 305-361-4279; chris.sasso@noaa.gov

F. Chemical Biomarkers of Hydrocarbon Exposure and Toxicological Assessment

Budget

TBD upon finalization of methods, scope of effort and selection of hydrocarbon chemistry and blood biochemistry testing labs.

G. Integration of laboratory testing, project quality assurance, and data management among field survey teams.

Budget

$_____ for 6 months

Proposing Agencies and Lead Investigators:
USACE Engineer Research and Development Center-Environmental Laboratory
Dr. Joe Kreitinger (USACE/ERDC) (607-266-0217; 607-229-9615; Joseph.P.Kreitinger@usace.army.mil). Joe is an Environmental Toxicologist/ Risk Assessor with 30 years of research and consulting experience in the environmental fate, transport, exposure, and toxicity of hydrocarbons in the environment. Dr. Kreitinger will act as the ERDC Environmental Lab Team task manager and provide expert support for strategic planning, study design, statistical data analysis, and interpretation of hydrocarbon exposure data.

Dr. Dave Johnson-USACE/ERDC. Dave is an Environmental Toxicologist will provide expert support for final selection of methods and laboratories for testing of turtle blood samples for metabolic, immunologic, and genetic measurement endpoints of hydrocarbon exposure and injury.

Dr. Peter Hodson – Queens University. Peter is an Environmental Toxicologist and Professor at Queens University specializing in the molecular toxicity of alkyl PAHs in petroleum to embryogenesis of eggs. Dr. Hodson will provide senior review on the selection and interpretation of toxicological test results and expert consulting support for the identification mechanisms responsible for hydrocarbon toxicity to turtle eggs.

Dr. Burton Suedel – USACE/ERDC. Burton will support Joe Kreitinger with strategic planning and on-site coordination at the Houma, LA Incident Command Center.

Ms. Dana Derrick May – USACE/ERDC. Dana will provide on-site field coordination and data management.

Internesting movements of female turtles in the eastern Gulf of Mexico

Purpose/Objectives

Tracking of adult nesting turtles during the internesting interval will be used to determine habitat use by nesting turtles during this life-stage. These data will provide an assessment of exposure of nesting female turtles to oil while at sea during the internesting phase, and their potential for indirect exposure during this period. Although not covered with oil, turtles may ingest oil-soaked foods or become exposed to oil in a variety of indirect ways, thereby affecting their long-term health and influencing egg production. This monitoring effort will provide information that can link interesting habitat use with any observed hydrocarbon contamination/toxicity in deposited eggs.

Comment [bas28]: How will the 'exposure of nesting female turtles to oil while at sea" be measured?

Comment [bas29]: How will that link be made?

Methods and Data Collection

Surveys for nesting loggerhead turtles will be conducted nightly along 17-km of beach on the St. Joseph Peninsula, Florida throughout the sea turtle nesting season from May 1 through August 15. All nesting turtles encountered will be fitted with metal Inconel flipper tags and a Passive Integrated Transponder (PIT) tag will be inserted under the skin in the left shoulder. In addition, blood will be collected from each individual. Turtles will be measured and any abnormalities recorded. Nests will be marked with wooden stakes and flagging, and observed throughout the nesting and hatching season. Three days after hatchling emergence or after 90 days incubation, nests will be excavated and reproductive success determined. Success will be defined as the number of hatchlings that emerged from the nest divided by the total number of eggs deposited in the nest following Johnson et al. (1996).

Ten loggerhead turtles located within the study site will be fitted with a satellite tag capable of transmitting GPS positions (Wildlife Computers; Redmond, WA; http://wildlifecomputers.com/). Once the turtle has completed egg deposition, she will be restrained using four interconnected wooden barriers (an uncovered box). Tags will be attached to the highest part of the carapace along the second vertebral scute using a two-part epoxy and resin adhesive following Mitchell (2000). Once tagging is complete, the box will be lifted and the turtle will continue back to the ocean. The tag will provide data on turtle location, water depth and temperature, day and time that the turtle's location is recorded, and probability of location accuracy. All tagged turtles will be tracked for a minimum of 6 months during which time movement and associated behavior will be characterized in relation to exposure to oil impacted areas or the lack thereof.

Comment [bas30]: How will you measure the turtles' "exposure to oil impacted areas or the lack thereof"?

Proposing Agencies and Lead Investigators:

Florida Cooperative Fish and Wildlife Research Unit, University of Florida: Raymond Carthy (352-846-0545/352-213-5851; ngosi@ufl.edu) and Margaret Lamont (352-209-4306; mmlamont@mindspring.com)

Budget

Salary	
MS student .33 FTE (includes 8.8% fringe for health insurance)	$17,500
Research Manager: 6 mo. @ $22.50/hour	$22,500
Interns: 2 @ $1,000/mo for 5 months	$10,000
Subtotal	**$50,000**
Equipment	
Adult satellite tags (10 @ $7,000 each)	$70,000
Includes Argos satellite time	
Subtotal	**$70,000**
Operating Expenses	
Tuition for MS Student (includes fringe)	$8,500
ATV Fuel	$5,000
Tagging Supplies	$8,000
Bloodwork analyses	$10,000
Subtotal	**$31,500**
Overall Subtotal	**$151,500**
UFL Overhead (15%)	$ 22,725
Subtotal	**$174,225**
USGS Overhead (6%)	$10,454
GRAND TOTAL	**$184,679**

Dead Animals

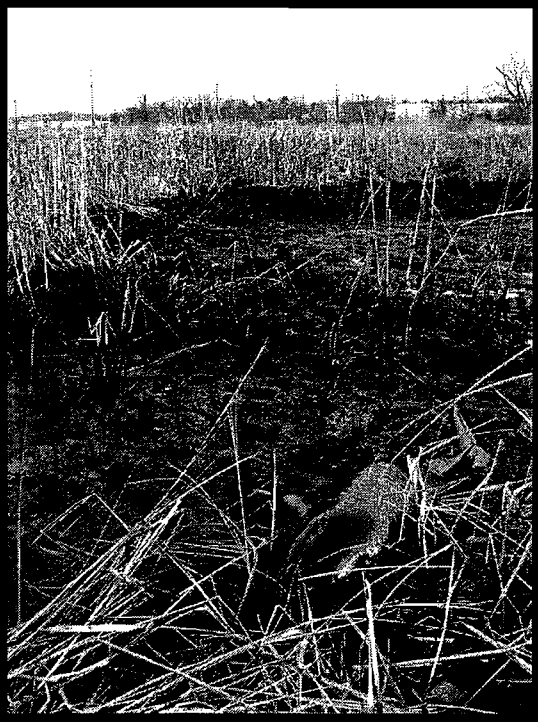
Processing/Necropsy/Sampling

Oiled Wildlife Care Network

NOAA

Dead Animal Processing

- Identify carcass
  - Species, date of stranding, date of death, tag and/or other I.D.
  - External Exam
- DEAD Animal Intake Log
- External oil sample collection
- Photograph
- Request necropsy authorization from trustee agency
- Chill/Refrigerate carcass
  - freeze if timely (<24 hrs) necropsy not possible/desired



Dead Animal Log

Oiled Marine Mammal Data Log: DEAD Animals

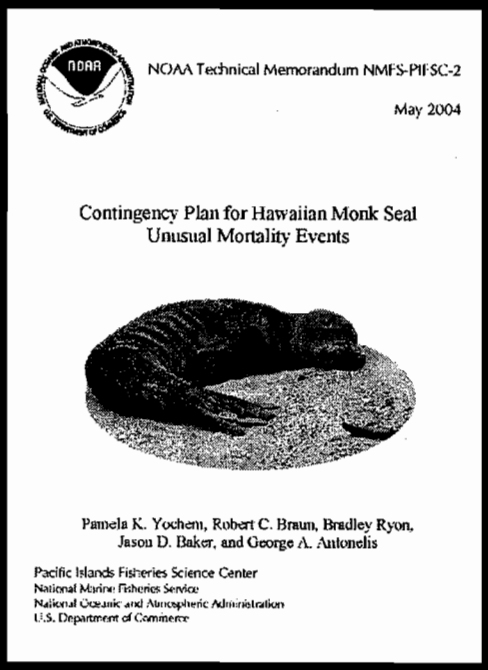
Oil Spill Name:					Facility:								
Intake Log Number (D-xxxx)	Date Collected (m/d/y)	Time Coll'ted (24 hr)	First Initial & Last Name of Collector	Beach Search #	Collection Location (Beach Name)	GPS Coordinates (N) / (W)	Tag # (Field or Temp w/ Color)	Date Arrived (m/d/y)	Time Arrived (24 hr)	Date Proc'ed (m/d/y)	Time Proc'ed (24 hr)	Name of Processor	Species

Front Side of Page _____ of _____

Appendix 3. Dead Marine Mammal Data Log

Necropsy

- Perform Fresh (< 24 hrs) or Freeze
- Qualified Veterinarian/Pathologist
  - Marine mammal experience
- Necropsy Protocols
  - Follow species specific protocols
    - *Contingency Plan for Hawaiian Monk Seal Unusual Mortality Events* Yochem, et al. 2004
    - *Right Whale Necropsy Protocol* McLellan, et al. 2004



NOAA Technical Memorandum NMFS-PIFSC-2

May 2004

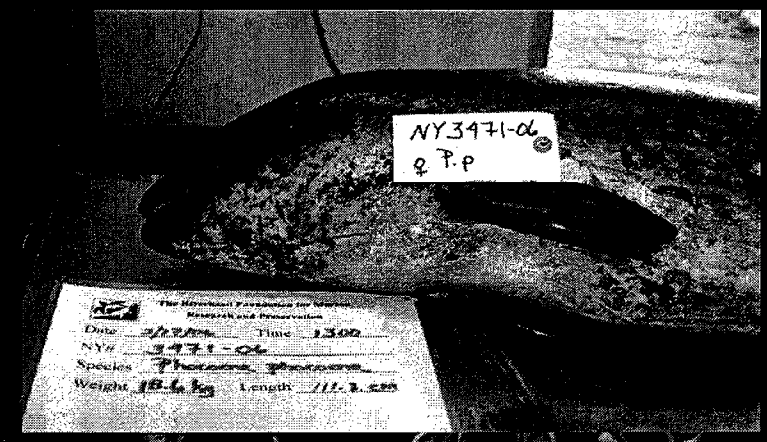
Contingency Plan for Hawaiian Monk Seal Unusual Mortality Events

Pamela K. Yochem, Robert C. Braun, Bradley Ryon, Jason D. Baker, and George A. Antonelis

Pacific Islands Fisheries Science Center
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
U.S. Department of Commerce

General Necropsy Protocols

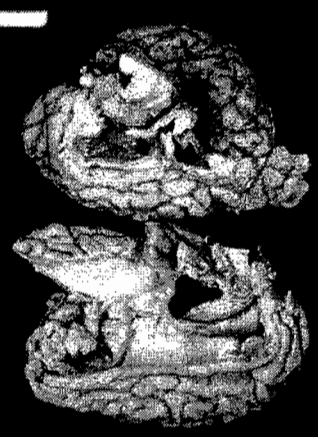
- *CRC Handbook of Marine Mammal Medicine*
- *Field Manual for Phocid Necropsies (specifically Monachus schauinslandi)* Winchell, 1990



Oil Spill Necropsy Protocols

Marine Mammal Oil Spill Guidelines

- Tissue collection protocols for
  - Hydrocarbon analysis
  - Histopathology
- Necropsy Form
- Evidence Collection
  - Sample Logs
  - Photographs
  - Video



Tissue collection protocols

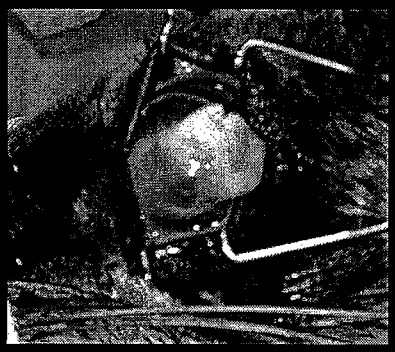
- Supplies and Equipment
  - Non-contaminating material consisting of stainless steel, glass, Teflon, or aluminum
  - Alcohol to rinse instruments
- Containers:
  - Solvent-rinsed glass containers with Teflon-lined lids
  - Teflon sheets and Whirl-Paks
  - Aluminum foil
  - Glass or Teflon vials for fluids
- Avoid contamination with plastic or petroleum-derived products
- 10% buffered formalin
  - Container for 10:1 ratio formalin to tissue

Tissue collection protocols

- Tissues
  - bile
  - urine
  - whole blood
  - stomach and intestinal contents
  - blubber/fat
  - liver
  - kidney
  - lung
  - intestine
  - brain
  - muscle
- Minimum sample size
  - 10-20 g of tissues
  - 5 ml for fluids
- Matching and Duplicate Samples
- Samples are evidence
  - Proper labeling and control
  - Chain of Custody Procedures

Evidence of Oiling

- External visible oil or smell
- No external oil?
  - Examine for presence of oil in:
    - Ear canals
    - Perianal area
    - Trachea
    - Gastrointestinal tract
  - Ocular membrane inflammation
    - Conjunctivitis, corneal ulceration
- Collect:
  - Samples for chemical analysis
  - Samples for microscopic evaluation



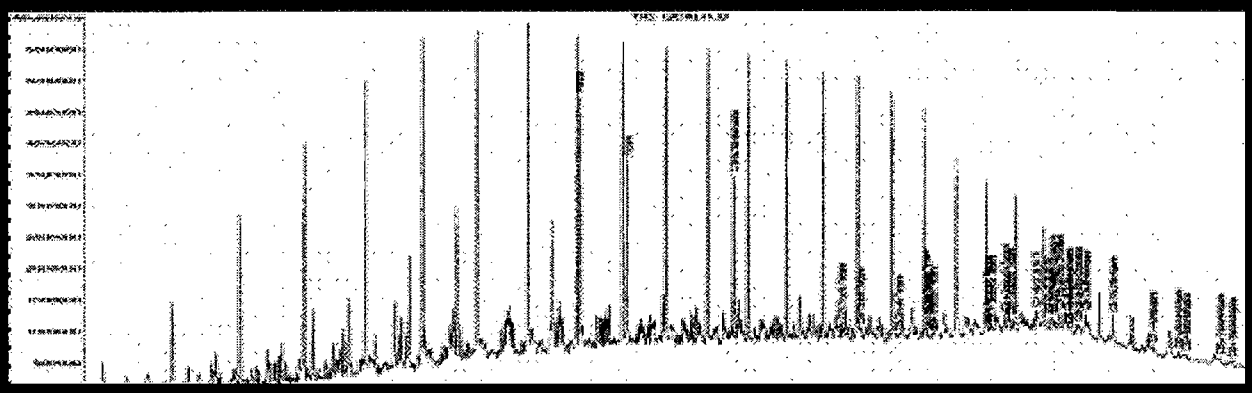
Pathologic Evidence of Oiling from Exxon Valdez Spill

- No gross or microscopic lesions characteristic or diagnostic of the toxic effects of oil
  - Lesions found in acutely oiled sea otters
    - Interstitial pulmonary emphysema (66%)
    - Gastric erosions, hemorrhage (55%)
    - Hepatic necrosis and hepatic lipidosis (42%)
    - Renal tubular lipidosis (25%)
  - Harbor seals
    - Neuronal necrosis, axonal degeneration, edema of thalamus and spinal cord (27 animals)
- No other lesions were attributed to oil toxicity in other species examined

Hydrocarbon analysis

- External exposure
  - Hair/skin contaminated with oil

GC/MS: "Finger Print" Oil



Hydrocarbon analysis

- Internal Exposure: Tissue hydrocarbon analysis
  - Petroleum hydrocarbons and metabolites
    - 16, parent PAHs listed as priority pollutants by the EPA
    - 44 alkylated and heterocyclic PAHs
- Disadvantages:
    - Expensive, time consuming, often ambiguous results
    - Little baseline data – need controls
    - Tissue PAH results did not correlate with degree of external oiling or histopathological findings in sea otters during EVOS
  - Blood/Bile analysis may be useful for acute oil exposure determination

Example of PAH Tissue Analysis Report

Alkylated Polynuclear Aromatic Hydrocarbons

ALPHA WOODS HOLE LABS

Client: **Wild Life Health Center UNICAL-Davis**
Project: **Katrina - Dolphin**
Client ID: **Shelly - Serum**
Case: **N/A** SDG: **N/A**
Matrix: **Blood**

Lab Code: **MA00030**
ETR: **0510086**
Lab ID: **0510086-03**
Associated Blank: **SB110205B14**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
09/20/05	09/28/05	11/02/05	11/23/05	100	1.01	1	1	NLJr

Parameter	Result	Parameter	Result
Decalin	9.9 U	Phenanthrene	9.9 U
C1-Decalins	9.9 U	C1-Phenanthrenes/Anthracenes	9.9 U
C2-Decalins	9.9 U	C2-Phenanthrenes/Anthracenes	9.9 U
C3-Decalins	9.9 U	C3-Phenanthrenes/Anthracenes	12
C4-Decalins	9.9 U	C4-Phenanthrenes/Anthracenes	9.9 U
Naphthalene	9.9 U	Fluoranthene	9.9 U
C1-Naphthalenes	9.9 U	Pyrene	9.9 U
C2-Naphthalenes	9.9 U	C1-Fluoranthenes/Pyrenes	9.9 U
C3-Naphthalenes	9.9 U	C2-Fluoranthenes/Pyrenes	9.9 U
C4-Naphthalenes	9.9 U	C3-Fluoranthenes/Pyrenes	9.9 U
2-Methylnaphthalene	9.9 U	C4-Fluoranthenes/Pyrenes	9.9 U
1-Methylnaphthalene	9.9 U	Naphthobenzothiophene	9.9 U
Benzothiophene	9.9 U	C1-Naphthobenzothiophenes	9.9 U
Biphenyl	9.9 U	C2-Naphthobenzothiophenes	9.9 U
2,6-Dimethylnaphthalene	9.9 U	C3-Naphthobenzothiophenes	9.9 U
Dibenzofuran	9.9 U	Benz[a]anthracene	9.9 U
Acenaphthylene	9.9 U	Chrysene	9.9 U
Acenaphthene	9.9 U	C1-Chrysenes	9.9 U
2,3,5-Trimethylnaphthalene	9.9 U	C2-Chrysenes	9.9 U
Fluorene	9.9 U	C3-Chrysenes	9.9 U
C1-Fluorenes	9.9 U	C4-Chrysenes	9.9 U
C2-Fluorenes	9.9 U	Benzo[b]fluoranthene	9.9 U
C3-Fluorenes	9.9 U	Benzo[k]fluoranthene	9.9 U
Dibenzothiophene	9.9 U	Benzo[e]pyrene	9.9 U
C1-Dibenzothiophenes	9.9 U	Benzo[a]pyrene	9.9 U
C2-Dibenzothiophenes	9.9 U	Perylene	9.9 U
C3-Dibenzothiophenes	9.9 U	Indeno[1,2,3-cd]pyrene	9.9 U
C4-Dibenzothiophenes	9.9 U	Dibenz[a,h]anthracene	9.9 U
Anthracene	9.9 U	Benzo[g,h,i]perylene ,	9.9 U
1-Methylphenanthrene	9.9 U	17a(H),21B(H)-hopane - C30H52	9.9 U
		Carbazole	9.9 U

(C2-Dibenzothiophenes) / (C2-Phenanthrenes/Anthracenes)	N/A
(C3-Dibenzothiophenes) / (C3-Phenanthrenes/Anthracenes)	N/A
(C2-Dibenzothiophenes) / (C2-Chrysenes)	N/A
(C3-Dibenzothiophenes) / (C3-Chrysenes)	N/A
Total Polynuclear Aromatic Hydrocarbons	12

Surrogate	% Recovery	Acceptance Range (%)
2-Methylnaphthalene-d10	56	30-150
Pyrene-d10	68	30-150
Benzo[b]fluoranthene-d12	64	30-150

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

Laboratories with tissue PAH analysis expertise:

Northwest Fisheries Science Center
2725 Montlake Boulevard East
Seattle, WA 98112-2097
Jon Buzitis, (206) 860-3309
Gina Ylitalo, (206) 860-3325

Petroleum Chemistry Laboratory
Office of Spill Prevention and Response
California Department of Fish and Game
1995 Nimbus Rd
Rancho Cordova, CA 95670
(916) 358-2803

Alpha Woods Hole Laboratories
375 Paramount Drive
Raynham, MA 02767
Peter Kane, (508) 822-9300

Mote Marine Laboratory
1600 Ken Thompson Parkway
Sarasota, Florida 34236
(941) 388-4312
Dana Wetzel, (941) 388-4441

Alaska Fisheries Science Center
Auke Bay Laboratory
11305 Glacier Highway
Juneau, Alaska 99801-8626
Jeep Rice, (907) 789-6020

TDI-Brooks International
1902 Pinon
College Station, TX 77845
(979) 693-3446
Thomas McDonald, (979) 220-3821

Zymax Forensics
71 Zaca Lane
San Luis Obispo, CA 93401
(805) 544-4696
Alan Jeffrey, (805) 546-4693

Geochemical & Environmental Research Group (GERG)
Texas A&M University
833 Graham Road
College Station, Texas 77845
(979) 862-2323

Definitive Diagnosis of Oil Exposure Mortality

Often not possible!

Reasonable suspicion:

- Oil in environment, external oil exposure
- Postmortem examination reveals no other cause of death
- Pathologic lesions consistent with exposure to oil and/or stress
- Tissue hydrocarbon residues

Name	Organization
Jacqueline Bort	College of the Atlantic (ME)
Kathleen Prunier (vet	College of the Atlantic (ME)
Rosemary Seton	College of the Atlantic (ME)
Sean Todd	College of the Atlantic (ME)
CT Harry	IFAW (MA)
Jane Hoppe	IFAW (MA)
Katie Moore	IFAW (MA)
Misty Neimeyer	IFAW (MA)
Sarah Sharp	IFAW (MA)
Cindy Driscoll (vet)	Maryland DNR
Jamie Schofield	MD DNR
Janelle Schuh	Mystic Aquarium (CT)
Jen Dittmar	National Aquarium in Baltimore (MD)
Brian Moore	National Marine Life Center (MA)
Joanne Nicholson	National Marine Life Center (MA)
Kathy Zagzebski	National Marine Life Center (MA)
Adam Kennedy	New England Aquarium (MA)
Charles Innis (vet)	New England Aquarium (MA)
Connie Merigo	New England Aquarium (MA)
Julie Cavin (vet)	New England Aquarium (MA)
Kerry McNally	New England Aquarium (MA)
Brian Sharp	Provincetown Center for Coastal Studies (MA)
Allison Chaillet	Riverhead Foundation (NY)
Gretchen Kowalik	Riverhead Foundation (NY)
Julika Wocial	Riverhead Foundation (NY)
Kimberly Durham	Riverhead Foundation (NY)
Robert DiGiovanni	Riverhead Foundation (NY)
Charlie Potter	Smithsonian Institute
Ashley Simpson	UNE Marine Animal Rehabilitation Center (ME)
Emily Mercker	UNE Marine Animal Rehabilitation Center (ME)
Keith Matassa	UNE Marine Animal Rehabilitation Center (ME)
Kristen Patchett	UNE Marine Animal Rehabilitation Center (ME)
Shannon Prendiville	UNE Marine Animal Rehabilitation Center (ME)
Susan Barco	Virginia Aquarium Stranding Program
Christina Trapani	Virginia Aquarium Stranding Program
Kristy Volker	Virginia Aquarium Stranding Program
Maggie Cook	Virginia Aquarium Stranding Program
Mark Swingle	Virginia Aquarium Stranding Program

Sarah Mallette Virginia Aquarium Stranding Program
Shannon Davis Virginia Aquarium Stranding Program

Status	Telephone Number(s)	HAZWOPER
	207-667-6617	
	207-288-5015 x256	
	207-801-5725	
		X
	410-226-5193 x138	
	410-570-1536 (c)	X
	410-226-5193 x132	
	860-572-5955 x154	
		X
	508-743-9888	
	508-743-9888 (o)	
	774-313-8850 (c)	
	617-226-2251 (o)	
	617-872-8103 (c)	
	617-226-2151 (o)	
	617-877-5415 (c)	
	617-226-2102 (o)	
	617-875-6777 (c)	
	617-973-0227 (o)	
	919-219-0988 (c)	
	617-226-2114 (o)	
	617-733-0319 (c)	
	508-487-3623 x104 (o)	
	508-250-2640 (c)	
Put on 24 hour notice	631-369-9840	X (40 hr)
Put on 24 hour notice	631-369-9840	X (40 hr)
Put on 24 hour notice	631-369-9840	X (40 hr)
Put on 24 hour notice	631-369-9840	X (40 hr)
Put on 24 hour notice	631-369-9840	X (40 hr)
	202-633-1260 x102	
	207-602-2670 (o)	
	207-468-9364 (c)	X (40 hr)
		X
	207-602-2750	
One staff member (likely Sue B) req.ed by Blaire M for field response	757-437-7765 (o)	

Date	Able to Travel for 2010 event	Oil Spill Response (Tristate or other)	Date	ICS	
	Y	X	Oct-09		100
	Y	X	Oct-09		
	Y	X	Oct-09		100
	Y	X	Oct-09		100
	N			Thru 300, 700	
	N			Thru 300, 700	
	N	X		Thru 300	
	N			Thru 300, 700	
2006	N			Thru 300, 700	
2001	B/w May 10-28 or After June 7	X	Oct-09		
	Prob not	X			100
	Y	X	Mar-08		
expired	N	X		Thru 400	
	N	X	Mar-08		100
	Y	X	2003		
	Y	X	Mar-06		
	Y- Thru July				
	After May 14				
	Y	X	Mar-08	X	
	After May 14				
	Y				
	N	X	Apr-03		100
current	Y			Thru 400	
current	Y			Thru 300	
current	Y			Thru 400	
current	Y			Thru 400	
current	Y			Thru 400	
	Y				
		X	Apr-08		
emailed for date	Y	X			
2005		X			
	Y	X	2006		
	Y (see Sue B comments)	X	Mar-08	100, 200, 700, 800	
	Y (see Sue B comments)				
	Y (see Sue B comments)				
	Y (see Sue B comments)				
	Y (see Sue B comments)				

Y (see Sue B comments)
Y (see Sue B comments)

Turtle Experience	Marine Mammal Experience
Yes- field experience	Yes- field experience
Yes- field experience	Yes- field experience
Yes- field experience	Yes- field experience
Yes- field experience	Yes- field experience
Clinical at VAQS	Yes- field experience
No	Yes- field experience
No	Yes- field experience
No	Yes- field experience
No	Yes- field experience
Yes	Yes
No live animal	No live animal
Yes- some clinical experience	Yes- clinical and field
Yes- clinical experience	
Yes- clinical experience	
Yes- clinical experience	Yes- field experience
Yes- clinical experience	Yes- clinical and field
Yes- clinical and field	Yes- clinical and field
Yes- clinical and field	Yes- clinical and field
Yes- clinical and field	Yes- clinical and field
Yes- clinical experience	Yes- clinical experience
Yes- clinical experience	Yes- clinical and field
Yes- field experience	Yes- field experience
Yes- clinical and field	Yes- clinical and field
Yes- clinical and field	Yes- clinical and field
Yes- clinical and field	Yes- clinical and field
Yes- clinical and field	Yes- clinical and field
Yes- clinical and field	Yes- clinical and field
Yes- clinical experience	Yes- clinical and field
Yes- clinical experience	Yes- clinical experience
Yes- clinical and field	Yes- clinical and field
Yes- clinical and field	Yes- clinical and field
Yes- clinical experience	Yes- clinical experience
Yes- clinical and field	Necro, disentanglement
Yes- clinical and field	Necro, disentanglement
Yes- clinical and field	Necro, disentanglement
Yes- clinical and field	Necro, disentanglement
Yes- clinical and field	Necro, disentanglement

Yes- clinical and field	Necro, disentanglement
Yes- clinical and field	Necro, disentanglement

Comments

I'm assuming her oil spill response was Mar 2008- we had it as part of a NERS conference

Has been a vet in the stranding community for many years
Little to no experience with live animals

Oiled Wildlife Certification

experience with oiled birds

4hr Hazcom training; advanced supervisor training through Oiled Wildlife Care Network, CA Dept Fish Game; expe

8 years experience

8hr oil spill response lab at AAZV; head vet at NEAq

16 years experience with marine mammals and sea turtles

With NEAq for almost 1 year, worked with GA Aquarium previously

Worked with Naval marine mammal program, sea turtle and marine mammal experience for approx. 1.5 years in r

experience with one oil spill response
Riverhead Foundation staff are available in shifts of two staff at a time
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Sue offered 1-2 staff per week for either turtle or mammal response- all have dolphin and whale necropsy, disentai

erience with oiled birds; worked with Marine Mammal Center in CA

escue/rehab setting

iff
nglement, photo ID experience, plus sea turtle response and rehab

Name	Organization	Status
Jacqueline Bort	College of the Atlantic (ME)	
Kathleen Prunier (vet	College of the Atlantic (ME)	
Rosemary Seton	College of the Atlantic (ME)	
Sean Todd	College of the Atlantic (ME)	
CT Harry	IFAW (MA)	
Jane Hoppe	IFAW (MA)	
Katie Moore	IFAW (MA)	
Misty Neimeyer	IFAW (MA)	
Sarah Sharp	IFAW (MA)	
Cindy Driscoll (vet)	Maryland DNR	
Jamie Schofield	MD DNR	
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Allison Tuttle (vet)	Mystic Aquarium (CT)	
Gayle Sirpenski	Mystic Aquarium (CT)	
Jen Dittmar	National Aquarium in Baltimore (MD)	
Brian Moore	National Marine Life Center (MA)	
Joanne Nicholson	National Marine Life Center (MA)	
Kathy Zagzebski	National Marine Life Center (MA)	
Adam Kennedy	New England Aquarium (MA)	
Charles Innis (vet)	New England Aquarium (MA)	
Connie Merigo	New England Aquarium (MA)	
Julie Cavin (vet)	New England Aquarium (MA)	
Kerry McNally	New England Aquarium (MA)	
Brian Sharp	Provincetown Center for Coastal Studies (MA)	
Allison Chaillet	Riverhead Foundation (NY)	Put on 24 hour notice
Gretchen Kowalik	Riverhead Foundation (NY)	Put on 24 hour notice
Julika Wocial	Riverhead Foundation (NY)	Put on 24 hour notice
Kimberly Durham	Riverhead Foundation (NY)	Put on 24 hour notice
Robert DiGiovanni	Riverhead Foundation (NY)	Put on 24 hour notice
Charlie Potter	Smithsonian Institute	
Ashley Simpson	UNE Marine Animal Rehabilitation Center (ME)	
Emily Mercker	UNE Marine Animal Rehabilitation Center (ME)	
Keith Matassa	UNE Marine Animal Rehabilitation Center (ME)	
Kristen Patchett	UNE Marine Animal Rehabilitation Center (ME)	
Shannon Prendiville	UNE Marine Animal Rehabilitation Center (ME)	
Susan Barco	Virginia Aquarium Stranding Program	
Christina Trapani	Virginia Aquarium Stranding Program	

Kristy Volker	Virginia Aquarium Stranding Program
Maggie Cook	Virginia Aquarium Stranding Program
Mark Swingle	Virginia Aquarium Stranding Program
Sarah Mallette	Virginia Aquarium Stranding Program
Shannon Davis	Virginia Aquarium Stranding Program

Telephone Number(s)	HAZWOPER	Date	Able to Travel for 2010 event	Oil Spill Response (Tristate or other)	Date
			Y	X	Oct-09
207-667-6617			Y	X	Oct-09
207-288-5015 x256			Y	X	Oct-09
207-801-5725			Y	X	Oct-09
			N		
			N		
			N	X	
			N		
	X	2006	N		
410-226-5193 x138			B/w May 10-28 or After		
410-570-1536 (c)	X (40 hr)	2010	June 7	X	Oct-09
410-226-5193 x132			Prob not	X	
860-572-5955 x154			until mid July	X	Mar-08
			until mid July		
			until mid July		
			until mid July		
	X	expired	N	X	
			N	X	Mar-08
508-743-9888			Y	X	2003
508-743-9888 (o)					
774-313-8850 (c)			Y	X	Mar-06
617-226-2251 (o)					
617-872-8103 (c)			Y- Thru July		
617-226-2151 (o)					
617-877-5415 (c)			After May 14		
617-226-2102 (o)					
617-875-6777 (c)			Y	X	Mar-08
617-973-0227 (o)					
919-219-0988 (c)			After May 14		
617-226-2114 (o)					
617-733-0319 (c)			Y		
508-487-3623 x104 (o)					
508-250-2640 (c)			N	X	Apr-03
631-369-9840	X (40 hr)	current	Y		
631-369-9840	X (40 hr)	current	Y		
631-369-9840	X (40 hr)	current	Y		
631-369-9840	X (40 hr)	current	Y		
631-369-9840	X (40 hr)	current	Y		
202-633-1260 x102			Y		
				X	Apr-08
207-602-2670 (o)					
207-468-9364 (c)	X (40 hr)	2000 or 2001	Y	X	
	X	2005		X	
207-602-2750			Y	X	2006
757-437-7765 (o)			Y (see Sue B comments)	X	Mar-08
			Y (see Sue B comments)		

Y (see Sue B comments)
Y (see Sue B comments)
Y (see Sue B comments)
Y (see Sue B comments)
Y (see Sue B comments)

ICS		Turtle Experience
	100	Yes- field experience
		Yes- field experience
	100	Yes- field experience
	100	Yes- field experience
Thru 300, 700		Yes- clinical at VAQS, necro
Thru 300, 700		No
Thru 300		No
Thru 300, 700		No
Thru 300, 700		No
		Yes- necro, field
	100	Necro only- no live animal
		Yes- minimal clinical experience
		No
		Yes- clinical experience
		No
Thru 400		Yes- clinical experience
	100	Yes- clinical experience
		Yes- clinical experience
		Yes- clinical experience
		Yes- clinical and field, necro
		Yes- clinical and field, necro
X		Yes- clinical and field, necro
		Yes- clinical, necro
		Yes- clinical, necro
	100	Yes- field experience
Thru 400		Yes- clinical and field, necro
Thru 300		Yes- clinical and field, necro
Thru 400		Yes- clinical and field, necro
Thru 400		Yes- clinical and field, necro
Thru 400		Yes- clinical and field, necro
		Yes- clinical experience, necro
		Yes- clinical experience, necro
		Yes- clinical experience, necro
		Yes- clinical experience, necro
		Yes- clinical experience, necro
100, 200, 700, 800		Yes- clinical and field
		Yes- clinical and field

Yes- clinical and field
Yes- clinical and field
Yes- clinical and field
Yes- clinical and field
Yes- clinical and field

Marine Mammal Experience
Yes- field experience, necro
Yes- field experience, necro
Yes- field experience, necro
Yes- field experience, necro
Yes- field experience, necro
Yes- field experience, necro
Yes- field experience, necro
Yes- field experience, necro
Yes- field experience, necro

Yes- necro, field
Necro only- no live animal
Yes- pinniped clinical and field, minimal cetacean restraint
Yes- pinniped clinical and field, minimal cetacean restraint
Yes- clinical experience both pinnipeds and cetaceans
Yes- pinniped restraint
Yes- clinical experience
Yes- clinical experience
Yes- field experience

Yes- clinical and field

Yes- clinical and field, necro

Yes- clinical and field, necro

Yes- clinical and field, necro

Yes- clinical experience, necro

Yes- clinical and field, necro

Yes- field experience
Yes- clinical and field, necro
Yes- clinical and field, necro
Yes- clinical and field, necro
Yes- clinical and field, necro
Yes- clinical and field, necro

Yes- clinical and field, necro
Yes- clinical and field, necro

Yes- clinical and field, necro
Yes- clinical and field, necro
Yes- clinical experience, necro
Necro, disentanglement
Necro, disentanglement

Necro, disentanglement
Necro, disentanglement
Necro, disentanglement
Necro, disentanglement
Necro, disentanglement

Comments

I'm assuming her oil spill response was Mar 2008- we had it as part of a NERS conference

Has been a vet in the stranding community for many years
Little to no experience with live animals

Also experience with birds
Also has bird restraint experience
Oiled Wildlife Certification

experience with oiled birds

4hr Hazcom training; advanced supervisor training through Oiled Wildlife Care Network, CA Dept Fish Game; expe

8 years experience

8hr oil spill response lab at AAZV; head vet at NEAq

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escue/rehab setting

iff
nglement, photo ID experience, plus sea turtle response and rehab

Name	Organization	Telephone Number(s)	HAZWOPER
Susan Barco	Virginia Aquarium Stranding Program	757-437-7765 (o)	
Christina Trapani	Virginia Aquarium Stranding Program		
Kristy Volker	Virginia Aquarium Stranding Program		
Maggie Cook	Virginia Aquarium Stranding Program		
Mark Swingle	Virginia Aquarium Stranding Program		
Sarah Mallette	Virginia Aquarium Stranding Program		
Shannon Davis	Virginia Aquarium Stranding Program		
Jacqueline Bort	College of the Atlantic (ME)		
Kathleen Prunier (vet	College of the Atlantic (ME)	207-667-6617	
Rosemary Seton	College of the Atlantic (ME)	207-288-5015 x256	
Sean Todd	College of the Atlantic (ME)	207-801-5725	
		410-226-5193 x138	
Cindy Driscoll (vet)	Maryland DNR	410-570-1536 (c)	X (40 hr)
		410-986-2377(o)	
Jen Dittmar	National Aquarium in Baltimore (MD)	443-604-6597 (c)	X
Leigh Clayton (vet)	National Aquarium in Baltimore (MD)		
Joanne Nicholson	National Marine Life Center (MA)	508-743-9888	
		508-743-9888 (o)	
Kathy Zagzebski	National Marine Life Center (MA)	774-313-8850 (c)	
		617-226-2251 (o)	
Adam Kennedy	New England Aquarium (MA)	617-872-8103 (c)	
		617-226-2151 (o)	
Charles Innis (vet)	New England Aquarium (MA)	617-877-5415 (c)	
		617-973-0227 (o)	
Julie Cavin (vet)	New England Aquarium (MA)	919-219-0988 (c)	
		617-226-2102 (o)	
Connie Merigo	New England Aquarium (MA)	617-875-6777 (c)	
		617-226-2114 (o)	
Kerry McNally	New England Aquarium (MA)	617-733-0319 (c)	
Allison Chaillet	Riverhead Foundation (NY)	631-369-9840	X (40 hr)
Gretchen Kowalik	Riverhead Foundation (NY)	631-369-9840	X (40 hr)
Julika Wocial	Riverhead Foundation (NY)	631-369-9840	X (40 hr)
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Robert DiGiovanni	Riverhead Foundation (NY)	631-369-9840	X (40 hr)
Charlie Potter	Smithsonian Institute	202-633-1260 x102	
		207-602-2670 (o)	
Keith Matassa	UNE Marine Animal Rehabilitation Center (I	207-468-9364 (c)	X (40 hr)
Shannon Prendiville	UNE Marine Animal Rehabilitation Center (I	207-602-2750	
Ashley Simpson	UNE Marine Animal Rehabilitation Center (ME)		
Emily Mercker	UNE Marine Animal Rehabilitation Center (ME)		
Kristen Patchett	UNE Marine Animal Rehabilitation Center (ME)		X
Janelle Schuh	Mystic Aquarium (CT)	860-572-5955 x154	
Walter (Skip) Graf	Mystic Aquarium (CT)		
Allison Tuttle (vet)	Mystic Aquarium (CT)		
Gayle Sirpenski	Mystic Aquarium (CT)		

Jamie Schofield	MD DNR	410-226-5193 x132	
CT Harry	IFAW (MA)		
Jane Hoppe	IFAW (MA)		
Katie Moore	IFAW (MA)		
Misty Neimeyer	IFAW (MA)		
Sarah Sharp	IFAW (MA)		X
		508-487-3623 x104 (o)	
Brian Sharp	Provincetown Center for Coastal Studies (M	508-250-2640 (c)	

Date	Able to Travel for 2010 event	Oil Spill Response (Tristate or other)	Date	ICS
	Y (see Sue B comments)	X	Mar-08	100, 200, 700, 800
	Y (see Sue B comments)			
	Y (see Sue B comments)			
	Y (see Sue B comments)			
	Y (see Sue B comments)			
	Y (see Sue B comments)			
	Y (see Sue B comments)			
	Y	X	Oct-09	100
	Y	X	Oct-09	
	Y	X	Oct-09	100
	Y	X	Oct-09	100
2010	Y	X	Oct-09	
expired	Y**	X		Thru 400
	Y			
	Y	X	2003	
	Y	X	Mar-06	
	Y- thru July			
	Y			
	Y			
	Y	X	Mar-08	X
	Y			
current	Y			Thru 400
current	Y			Thru 300
current	Y			Thru 400
current	Y			Thru 400
current	Y			Thru 400
	Y			
2000 or 2001	Y	X		
	Y	X	2006	
	Y	X	Apr-08	
	Y			
2005	Y	X		
	until mid July	X	Mar-08	
	until mid July			
	until mid July			
	until mid July			

	Prob not	X			100
	N			Thru 300, 700	
	N			Thru 300, 700	
	N	X		Thru 300	
	N			Thru 300, 700	
2006	N			Thru 300, 700	
	N	X	Apr-03		100

Turtle Experience	Marine Mammal Experience
Yes- clinical and field	Necro, disentanglement
Yes- clinical and field	Necro, disentanglement
Yes- clinical and field	Necro, disentanglement
Yes- clinical and field	Necro, disentanglement
Yes- clinical and field	Necro, disentanglement
Yes- clinical and field	Necro, disentanglement
Yes- clinical and field	Necro, disentanglement
Yes- field experience	Yes- field experience, necro
Yes- field experience	Yes- field experience, necro
Yes- field experience	Yes- field experience, necro
Yes- field experience	Yes- field experience, necro
Yes- necro, field	Yes- necro, field
Yes- clinical experience	Yes- clinical experience
Yes- clinical experience	Yes- clinical experience
Yes- clinical experience	Yes- field experience
Yes- clinical experience	Yes- clinical and field
Yes- clinical and field, necro	Yes- clinical and field, necro
Yes- clinical and field, necro	Yes- clinical and field, necro
Yes- clinical, necro	Yes- clinical experience, necro
Yes- clinical and field, necro	Yes- clinical and field, necro
Yes- clinical, necro	Yes- clinical and field, necro
Yes- clinical and field, necro	Yes- clinical and field, necro
Yes- clinical and field, necro	Yes- clinical and field, necro
Yes- clinical and field, necro	Yes- clinical and field, necro
Yes- clinical and field, necro	Yes- clinical and field, necro
Yes- clinical and field, necro	Yes- clinical and field, necro
Yes- clinical experience, necro	Yes- clinical and field, necro
Yes- clinical experience, necro	Yes- clinical experience, necro
Yes- clinical experience, necro	Yes- clinical and field, necro
Yes- clinical experience, necro	Yes- clinical and field, necro
Yes- clinical experience, necro	Yes- clinical and field, necro
Yes- minimal clinical experience	Yes- pinniped clinical and field, minimal cetacean restraint
No	Yes- pinniped clinical and field, minimal cetacean restraint
Yes- clinical experience	Yes- clinical experience both pinnipeds and cetaceans
No	Yes- pinniped restraint

Necro only- no live animal	Necro only- no live animal
Yes- clinical at VAQS, necro	Yes- field experience, necro
No	Yes- field experience, necro
No	Yes- field experience, necro
No	Yes- field experience, necro
No	Yes- field experience, necro
Yes- field experience	Yes- field experience

Comments
Sue offered 1-2 staff per week for either turtle or mammal response- all have dolphin and whale necropsy, disentai

Has been a vet in the stranding community for many years

Oiled Wildlife Certification, ** Jen said that they would also be able to send down an experienced tech or veterinari

experience with oiled birds

4hr Hazcom training; advanced supervisor training through Oiled Wildlife Care Network, CA Dept Fish Game; expe

8 years experience

8hr oil spill response lab at AAZV; head vet at NEAq

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ıff

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OIL SPILL EXPERT CLEARANCE/ TALKING POINTS
Subject: Marine mammal/sea turtle necropsies and sampling for forensics

Expert 1 name: David Rotstein
Title: NOAA veterinary marine mammal pathologist of record, BP oil spill
Cell phone: 865 406 9464
Email: Dave.Rotstein@noaa.gov

Expert 2 name: Brian Stacy
Title: NOAA veterinary sea turtle pathologist of record, BP oil spill
Cell phone: 352-283-3370
Email: bstacy@ufl.edu

Top 3 news questions you expect to be asked:

How many marine mammals and sea turtles have been affected by the oil spill?
There isn't an exact number, but we can get an indication from the numbers of animals that strand and show evidence of contact with oil, which is why we are performing these necropsies, Stranding information is posted daily on NOAA's website with other updates on NOAA oil spill activities.. (Should be updated if necessary with info on a specific event if it is occurring at the time an interview is given).)

What can a pathologist learn from examining dead animals?
In this case we are especially looking for samples we can use to determine if the animal has been in contact with oil and if that contributed to the animal's death.

In addition, veterinary pathologists look for anything that differs from a normal, healthy condition and that might tell us something about cause of death, the health of the population as a whole, or conditions in the marine environment that could affect human health—the presence of harmful algae, for example.

What kinds of samples are taken, what kinds of tests will be performed on them, how long will it take to get results back and where can I get them?
In terms of oil effects, the most useful samples are XXXX from animals that have not been dead very long. These will be sent to the (NOAA Marine Forensics Laboratory?), which specializes in examining biological samples from marine life, including mammals and turtles. Indicators that oil may be factor include Xxxxx Yyyyy Zzzzz. Results are generally available XX to YY weeks (days?) after testing begins. (Should be updated for a specific event if it is occurring at the time an interview is given.) A summary of necropsy results will be posted as soon as possible on NOAA's website with other updates on NOAA oil spill activities.

Background questions which won't change:

What is a necropsy?
A necropsy is the examination of a dead animal, usually to gather biological samples that can tell us more about the health, life history, and physical condition of the animal prior to death. In many cases necropsies also seek the cause of death.

Where is a marine mammal or sea turtle necropsy done?
It varies, depending on the situation. Sometimes it's done right where the animal stranded and sometimes we can move it to a laboratory.

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How long does it take to do a necropsy?
It depends on the size and condition of the animal, and what level of detail we are seeking. Generally larger, very recently dead animals take longer than smaller, more decomposed animals.

How many do you participate in a year & are there more because of this spill?
???

What happens to the remains?
Right now, we are retaining all sea turtle carcasses. Because most of the marine mammal sampling has taken in the field, carcasses have been disposed of locally after samples are taken.

What kind of samples do you take and how does that differ among species?
Other kinds of samples we typically hope to retrieve are those that will tell us about the overall health of the particular animal, its age, any indications of disease or injury, what it has been eating, and its reproductive state. These include length, weight, blubber depth and composition (in the case of mammals) For endangered animals in particular, this is often a rich source of data that help us better understand the life history of these animals

Who tests the samples and what are they looking for?

What would a person see on the outside of a stranded animal affect by oil?
You may or may not see oil. The harmful effects can be external and internal, caused by direct contact, inhaling, eating or absorbing oil or components of oil.

What should I do if I see a stranded marine mammal or sea turtle?

The Wildlife Branch of the Unified Command has organized trained wildlife care providers and investigators to assist sea birds, marine mammals and sea turtles that will be impacted by the Deepwater Horizon Oil Spill. If you find an oiled, injured or dead marine mammal, sea turtle, or bird, please contact the Wildlife Hotline at:
866-557-1401
Please do not touch or try to approach the animal. Handling oiled wildlife may pose a serious health and safety risk to both you and the animal you are trying to rescue. The chemicals in oil are toxic. We have people with appropriate protective gear, training, and equipment ready to handle and treat oiled animals.

Standing instructions for NOAA personnel doing interviews:

- Use cleared facts / don't break news; NOAA and federal government must be informed first. *(Example: necropsy results.)*
- Don't speculate
- Don't offer opinions on political questions
- Defer to others if question is outside of your subject
- Realize your comments are not only NOAA's official response, but the official federal government response. Consider potential political sensitivities (constituents, other agencies)

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OIL SPILL EXPERT CLEARANCE/ TALKING POINTS
Subject: Marine mammal/sea turtle necropsies and sampling for forensics

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In this case we are especially looking for samples we can use to determine if the animal has been in contact with oil and if that contributed to the animal's death.

In addition, veterinary pathologists look for anything that differs from a normal, healthy condition and that might tell us something about cause of death, the health of the population as a whole, or conditions in the marine environment that could affect human health—the presence of harmful algae, for example.

What kinds of samples are taken, what kinds of tests will be performed on them, how long will it take to get results back and where can I get them?
In terms of oil effects, the most useful samples are XXXX from animals that have not been dead very long. These will be sent to the (NOAA Marine Forensics Laboratory?), which specializes in examining biological samples from marine life, including mammals and turtles. Indicators that oil may be factor include Xxxxx Yyyyy Zzzzz. Results are generally available XX to YY weeks (days?) after testing begins. (Should be updated for a specific event if it is occurring at the time an interview is given.) A summary of necropsy results will be posted as soon as possible on NOAA's website with other updates on NOAA oil spill activities.

Background questions which won't change:

What is a necropsy?
A necropsy is the examination of a dead animal, usually to gather biological samples that can tell us more about the health, life history, and physical condition of the animal prior to death. In many cases necropsies also seek the cause of death.

Where is a marine mammal or sea turtle necropsy done?
It varies, depending on the situation. Sometimes it's done right where the animal stranded and sometimes we can move it to a laboratory.

For internal use: not for distribution

How long does it take to do a necropsy?
It depends on the size and condition of the animal, and what level of detail we are seeking. Generally larger, very recently dead animals take longer than smaller, more decomposed animals.

How many do you participate in a year & are there more because of this spill?
???

What happens to the remains?
Right now, we are retaining all sea turtle carcasses. Because most of the marine mammal sampling has taken in the field, carcasses have been disposed of locally after samples are taken.

What kind of samples do you take and how does that differ among species?
Other kinds of samples we typically hope to retrieve are those that will tell us about the overall health of the particular animal, its age, any indications of disease or injury, what it has been eating, and its reproductive state. These include length, weight, blubber depth and composition (in the case of mammals) For endangered animals in particular, this is often a rich source of data that help us better understand the life history of these animals

Who tests the samples and what are they looking for?

What would a person see on the outside of a stranded animal affect by oil?
You may or may not see oil. The harmful effects can be external and internal, caused by direct contact, inhaling, eating or absorbing oil or components of oil.

What should I do if I see a stranded marine mammal or sea turtle?

The Wildlife Branch of the Unified Command has organized trained wildlife care providers and investigators to assist sea birds, marine mammals and sea turtles that will be impacted by the Deepwater Horizon Oil Spill. If you find an oiled, injured or dead marine mammal, sea turtle, or bird, please contact the Wildlife Hotline at:
866-557-1401
Please do not touch or try to approach the animal. Handling oiled wildlife may pose a serious health and safety risk to both you and the animal you are trying to rescue. The chemicals in oil are toxic. We have people with appropriate protective gear, training, and equipment ready to handle and treat oiled animals.

Standing instructions for NOAA personnel doing interviews:

- Use cleared facts / don't break news; NOAA and federal government must be informed first. *(Example: necropsy results.)*
- Don't speculate
- Don't offer opinions on political questions
- Defer to others if question is outside of your subject
- Realize your comments are not only NOAA's official response, but the official federal government response. Consider potential political sensitivities (constituents, other agencies)

SUMMARY:

The way the unified command structure is set up, there is a team assigned to deal with each species and a team leader and point of contact for each team. Right now we have three people from the UF CVM who are associated with different teams and the only species we are not actively involved in dealing with at this point is birds.

Currently the National Marine Fisheries is having Sea World help in identifying and contracting veterinarians with experience in marine mammal and sea turtles to provide support for facilities along the Gulf who will be taking in animals affected by the oil spill. Here at the UF veterinary college, we are trying to work out a contract with BP to be able to supply funds to pay these contracted veterinarians for their relief work. At this point we are doing a lot of worst-case scenario preparation.

Two main points:

1) One thing many members of the public don't understand is that there's nothing that has happened yet where we have to jump in, but it could happen at any time. There has been something of an expectation that we should be out there rescuing all the dolphins but at this point there is no evidence that we need to. What do you do with the thousands of whales and dolphins that are out in the "Gulf? What about those species of whales and dolphins that are nearer the shoreline?

2) There's a limited number of options for dealing with these animals, so we need to respond when it's necessary, not because people are suggesting it.

WHO IS DOING WHAT?

SEA TURTLES:
Dr. Brian Stacy, clinical assistant professor with the Aquatic Animal Helath program, works with sea turtles as a contract veterinarian with the Office of Protected Resources (National Marine Fisheries Service.) Brian has been very involved with the sea turtle response and has made several trips to the Gulf. Most recently he has been doing open water captures. It's nesting season for turtles, so right now they are going to be in the water (vs. the beach) and due to the sheer scope of the spill and the large areas of surface oil, we know that large numbers of turtles have been exposed to the oil. Many turtles have been observed in the spill area by boats and by plane.

Brian and the team he is working with are going to areas where they expect turtles to be present, where there is also oil, and if they see animals struggling to stay at the surface – turtles that don't respond to the approach by the team, when the normal response would be to swim away – the animal will most likely be captured and brought to land where they will receive medical treatment.

Five types of very rare or endangered sea turtles live in the Gulf, the most of the more than 300 turtles found dead or covered in oil since the BP spill have been Kemp's ridleys, the rarest of them all.
Stacy thinks it's very possible that many of the rescued turtles will survive, but without intervention, he doesn't think so.

Stacy also has taken dead sea turtles back to land to perform necropsies – animal autopsies – on them in

order to ascertain the cause of death. Bodies of dead animals are evidence the government will use when deciding how much BP should pay for the disaster.

Early next week (June 21) the bodies of several dead sea turtles will be arriving at UF so that Dr. Stacy can conduct necropsies on them (why are they coming here? Haven't they been doing the other necropsies other places up to now, or is it a function of the sheer numbers at this point?)

MANATEES:
Dr. Mike Walsh is one of two people on contract with BP (through the U.S. Fish and Wildlife Service, which is the team in charge of manatees) to respond to manatees in the gulf, along with ex-Lowry park veterinarian Dr. Dave Murphy.

WHALES:
In addition, Dr. Walsh and one of our graduate students, **Alex Costidis** have been contracted with by the National Marine Fisheries Service (the team for whales, dolphins and sea turtles) to help with whale issues. (Alex is working on his Ph.D. but has a background in marine science and has received a number of awards from state and federal wildlife agencies for his work. His research involves cause of death determination in large whales, so he has a lot of experience with necropsies of marine mammals.)

Other:
Dr. Steve Roberts, professor and director of UF's Center for Environmental and Human Toxicology, now has a contract with the Florida Department of Health to evaluate the toxicological risks of people swimming in seas with varying amounts of crude oil contamination and likewise for seafood contaminated with varying amounts of crude oil.

Oiled Sea Turtle Evidence Collection Protocol

The photograph and oil sample are both considered to be legal evidence therefore it is important that the following procedures are followed closely.

Photograph Evidence

1. Use a Polaroid or digital camera
2. Photograph should include the entire animal, highlighting the oiled region, and if possible, the tag number.
3. Label the Polaroid photograph with Spill Name, Date, Species, Log #, Capture Location, and Tag # and Color.
4. Digital photos must stay on the original media initially used to store the image; however, it is allowable to make copies of the originals.
5. Lock photographs or digital media in secure location.

Sample Collection Techniques for Visible Oiling

1. Scrape visible oil from scutes/skin with wooden spatula (tongue depressor).
2. Place oil covered spatula in solvent-rinsed glass jar with a Teflon-lined lid (e.g. I-Chem) and break off the remaining un-oiled portion, allowing the lid to close. If jar is not available, wrap sample in aluminum foil (dull side to sample).
   Note: Avoid touching /contaminating oil sample with your nitrile gloves.
3. Label the glass jar (use waterproof labels).
   Label must include: Spill Name, Log #, Species, Tag #, Arrival Date, Sampling Date, and Capture Location.
4. Fill out Custody Seal and apply it across the lid of the jar and onto the sides of the glass.
5. Keep sample refrigerated or on ice until it can be stored.
6. Lock sample in a -20°C (or colder) freezer.

Sample Collection Techniques for No Visible Oiling

1. Rub an affected area with a 4x4 fiberglass or cotton cloth (or gauze) with sterile forceps or hemostats that have been cleaned with isopropyl alcohol.
   Note: Do not allow the nitrile gloves to touch the oiled area or the cloth.
2. Place the oiled covered cloth into a solvent-rinsed glass jar with a Teflon-lined lid.
3. Seal and fill out the information on the waterproof label (as above).
4. Fill out the Custody Seal and apply it across the lid of the jar and onto the sides of the glass.
5. Keep sample refrigerated or on ice until it can be stored
6. Lock sample in a -20°C (or colder) freezer.

All evidence should be securely stored and refrigerated/frozen until the Wildlife Branch Director provides further instructions. If samples are to be sent for analysis, a Chain of Custody Form is required.

Petroleum Hydrocarbon Tissue Sampling Protocol

Supplies for sampling

All instruments used in handling (e.g. scalpels and forceps, cutting boards) or storing (e.g. jars, foil, sheets) samples must be made of a non-contaminating material consisting of stainless steel, glass, Teflon, or aluminum.

- Solvent-rinsed glass containers with Teflon-lined lids for tissues
- Solvent-rinsed Teflon sheets for tissues
- Aluminum foil (if Teflon sheets are not available) sample to the dull side
- Sterile syringes and needles
- Amber glass vials or glass vials covered with foil with Teflon lids (for bile, urine)
- Teflon screw top vials (for blood storage and urine)
- Stainless steel scalpels, knifes, forceps
- Isopropyl alcohol (99.9% pesticide free IPA) to rinse instrument
- Wooden tongue depressors (can be used to handle tissues if necessary)
- Whirl-pak bags or Zip-lock freezer bags
- 10% buffered formalin and appropriate containers for histopathology samples
- Permanent marker or pen
- Evidence/Custody tape and labels
- Sample Log/Chain of Custody forms

Sampling Protocol

Tissues to collect for petroleum hydrocarbon analysis in order of preference:

a. bile
b. urine
c. whole blood
d. stomach and intestinal contents
e. blubber/fat
f. liver
g. kidney
h. lung
i. intestine
j. brain
k. muscle

i. Samples taken for analysis should only be collected from **alive** or **freshly dead animals**. If a necropsy cannot be performed within 24 hrs after death, the carcass should be frozen for later examination.

ii. Recommended **minimum sample size** is **10-20 g of tissues** (approx. 1-2 tablespoons) and **5 ml for fluids** (blood, urine, bile, feces, stomach contents). However, analysis can be performed on as little as 100 µL of bile; therefore collect whatever amount is present.

Petroleum Hydrocarbon Tissue Sampling Protocol, page 2

iii. Fluids such as blood, urine, and bile should be collected using sterile syringes or pipettes and transferred to Teflon vials (blood) or amber glass vials (bile, urine).

iv. Use powder-free nitrile gloves. Vinyl gloves are an acceptable alternative. Avoid contact of gloves with samples.

v. Scalpels, knifes, and cutting tools used for tissue collection should be cleaned and rinsed with isopropyl alcohol between tissues. If heavily contaminated with oil, instruments can be cleaned with detergent (e.g. Dawn), rinsed with water, and then rinsed with alcohol.

vi. Samples are stored preferably in solvent-rinsed Teflon-lined glass jars, labeled, and secured with evidence tape/custody seal. If glass jars are not available, samples can be placed in Teflon sheets or aluminum foil and stored in whirl-paks/freezer bags.

vii. If samples/tissues have come in contact with a contaminating material (e.g. plastic bag), collect and store a representative example of that material (e.g. plastic bag) using the same method as for collecting tissues.

viii. Collect a representative sample of each tissue (< 1 cm thick) preserved in 10% buffered formalin for histopathology. Duplicate hydrocarbon and histology samples whenever possible.

ix. Each sample must be labeled with **Spill Name, Log #, Level A Field #, Species, Tag#, Arrival Date, Sampling Date, and Capture Location** and securely stored.

x. Samples for PAH analysis should be chilled immediately on ice/refrigeration and then frozen as soon as possible to -20°C or colder in a locked freezer. Histopathology samples are stored at room temperature.

All evidence should be securely stored and refrigerated/frozen until the Wildlife Branch Director provides further instructions. If samples are transferred to a different location or sent for analysis, a Chain-of-Custody form is required. A Chain-of-Custody form can be found in this document, but are often provided by the laboratory.

Shipping:
Ship samples frozen on blue ice or with ~5 lbs dry ice according to laboratory specification using Federal Express (FedEx). FedEx follows IATA regulations for shipping hazardous materials and maintains chain of custody record by tracking packages.
Sampling supplies such as jars, label, and custody seals are often supplied by the analytical laboratory and are produced by:

I-Chem™ Brand, Certified 300 Series jars
Order: 1-800-451-4351, www.ichembrand.com

Search Number: _____

Beach Search Effort Log - Turtles

Please record all beaches searched *even if no turtles are found.*

Spill Name: _____ **Date:** _____

Searchers: _____

Note: Time should include all time spent on the beach, even when backtracking. North and south endpoints should be GPS pts. If not, please provide a good description of the area covered. For collected turtles, put GPS location here and on Chain of Custody form.

	Beach Name	Start Time	End Time	North Extreme of Area Searched (Lat / Long DD.DDDD)	South Extreme of Area Searched (Lat / Long DD.DDDD)	Total Distance Searched	Method (foot, ATV, scan, etc.)	Turtles Collected (live & dead, GPS, ID #)
A								
B								
C								
D								
F								
G								
H								
I								
J								
K								
L								

Search Number: _____

Beach Search Effort Log - Turtles

Please record all beaches searched *even if no turtles are found.*

Spill Name: _____ **Date:** _____

Searchers: _____

Note: Time should include all time spent on the beach, even when backtracking. North and south endpoints should be GPS pts. If not, please provide a good description of the area covered. For collected turtles, put GPS location here and on Chain of Custody form.

	Beach Name	Start Time	End Time	North Extreme of Area Searched (Lat / Long DD.DDDD)	South Extreme of Area Searched (Lat / Long DD.DDDD)	Total Distance Searched	Method (foot, ATV, scan, etc.)	Turtles Collected (live & dead, GPS, ID #)
A								
B								
C								
D								
F								
G								
H								
I								
J								
K								
L								

OILED SEA TURLE INTAKE FORM

Spill Name:		Log Number:	
CAPTURE	Capture Date/Time:	Capture Location:	
	Field Band:	Collector:	
PROCESSING	Intake Date/Time:	Species:	
	Tag Color/#:	Examiner's Signature:	
EXT. OIL ID	Signs of Oiling	Oil Visible Skin Burns Smell	Area Oiled: Head Body Multiple Entire
	Oil Color	Black Brown Clear Other	Samples: Swab Photo
	% Oiled	<2% 2-25% 26-50% 51-75% 76-100%	
PHYSICAL EXAM	Weight	kg	Size class: Hatchling Immature Adult
	Carapace length	Notch to tip cm / Notch to notch cm	Sex: Male Female Undetermined
			Body Condition: Normal Thin Emaciated
	Resp. Rate	WNL breaths/min.	Attitude: BAR QAR Nonresponsive
	Human Interaction	☐ Yes ☐ No Type: Boat Collision, Shot, Fisheries, Other:	
	Neurologic	NSF Other:	
	Head/Mouth	NSF Other:	
	Eyes/Ears	NSF Other:	
	Heart/Lungs	NSF Other:	
	Gastrointestinal	NSF Other:	
	Musculo-skeletal	NSF Other:	
	Integument	NSF Other:	
	Comments		
TX-DX	Blood taken? LHT RTT	Toxiban: yes no time:	
	Pre-wash Exam: _____ Veterinarian Signature	Date Washed: Weight:	Bloodwork Attached ☐
DISPOSITION	Disposition Exam: _____ Veterinarian Signature	Exam Date: Weight:	Bloodwork Attached ☐
	Disposition Date:	Disposition Location:	
	Disposition Status: RELEASED DIED EUTHANIZED TRANSFERRED RETAINED	Necropsied by:	
	PIT tag #:	Location: RF LF	Flipper tag R: Flipper tag L:

TAG #: _____ SPECIES: _____

Oiled Sea Turtle

Gross Necropsy Report

Spill Name:	
Animal Log #	
STSSN #	
PIT tag:	Flipper tags: R L
Sex:	**Age:**
Weight:	kg. (estimate/actual)
SON:	emaciated 1 2 3 4 5 6 7 obese
Measurements:	SCL(N-T) cm SW(widest) cm SCL(N-N) cm

Form completed by:	Date:	
Enforcemnent Officer:		
Strand/Capture location:		
Collecters Name:		
Intake date:		Euthanasia
Death date:	Time:	☐ yes
Post mortem date:	Time:	☐ no
Carcass Classification: 1-fresh, 2-fair, 3-poor, 4-mummified	**Frozen**: ☐ yes ☐ no	
Photographs: ☐		
Radiographs: ☐		

Clinical signs/diagnosis	
Antibiotics given	
Pertinent lab results	

GROSS NECROPSY ABNORMALITIES:

HYDROCARBON ANALYSIS SAMPLES		
bile	kidney	fat
blood	muscle	other:
urine	lung	
liver	intestine	

MICROBIOLOGY	**SWABS: other**
Lung ☐	
Liver ☐	
other ☐	

HISTOLOGY SAMPLES

lung	thyroid	ileum	kidney	muscle
trachea	pharynx	colon	oviduct	gonad
heart	tongue	pancreas	urinary bladder	skin
aorta	esophagus	spleen	adrenal	eye (L/R)
pulmonary artery	stomach	liver	whole repro	fat--site:
thymus	duodenum	gall bladder	bone marrow	
salt gland	jejunum	brain	spinal cord	
other:				

FROZEN SAMPLES

stomach contents
intestine contents
feces
lung
liver
spleen
kidney

Cause of death (preliminary diagnosis):

Examiner: Examiner's signature: Date:

Oiled Sea Turtle

Gross Necropsy Report

Spill Name:	
Animal Log #	
STSSN #	
PIT tag:	Flipper tags: R L
Sex:	**Age:**
Weight:	kg. (estimate/actual)
SON:	emaciated 1 2 3 4 5 6 7 obese
Measurements:	SCL(N-T) cm SW(widest) cm SCL(N-N) cm

Form completed by:	Date:	
Enforcemnent Officer:		
Strand/Capture location:		
Collecters Name:		
Intake date:		Euthanasia
Death date:	Time:	☐ yes
Post mortem date:	Time:	☐ no
Carcass Classification:	**Frozen**: ☐ yes ☐ no	
1-fresh, 2-fair, 3-poor, 4-mummified		
Photographs: ☐		
Radiographs: ☐		

Clinical signs/diagnosis	
Antibiotics given	
Pertinent lab results	

GROSS NECROPSY ABNORMALITIES:

HYDROCARBON ANALYSIS SAMPLES		
bile	kidney	fat
blood	muscle	other:
urine	lung	
liver	intestine	

MICROBIOLOGY	**SWABS: other**
Lung ☐	
Liver ☐	
other ☐	

HISTOLOGY SAMPLES

lung	thyroid	ileum	kidney	muscle
trachea	pharynx	colon	oviduct	gonad
heart	tongue	pancreas	urinary bladder	skin
aorta	esophagus	spleen	adrenal	eye (L/R)
pulmonary artery	stomach	liver	whole repro	fat–site:
thymus	duodenum	gall bladder	bone marrow	
salt gland	jejunum	brain	spinal cord	
other:				

FROZEN SAMPLES

stomach contents
intestine contents
feces
lung
liver
spleen
kidney

Cause of death (preliminary diagnosis):

Examiner: Examiner's signature: Date:

SUMMARY:

The College of Veterinary Medicine faculty, under the administration of UF's Institute of Food and Agricultural Sciences, are providing assistance through contracts with the National Marine Fisheries Service's Office of Protected Resources. A Unified Area Command structure links the organizations responding to specific incidents, and teams have been assigned to deal with each species. There is a team leader and point of contact for each team. Right now we have four people from the UF CVM who are associated with different teams. We are involved in the teams dealing with sea turtles, manatees, dolphins and large whales. The only species we are not actively involved in dealing with at this point is birds.

At this time, none of our people are in the Gulf of Mexico but we are working administratively to prepare a short-term animal rescue and rehabilitation plan. Thus far, the short-term plan has involved assisting the federal government in identifying additional qualified veterinarians who will supplement existing staff support at the Audobon Zoo in New Orleans and Gulf World Marine Park in Panama City. We also provide the veterinary services for the Clearwater Marine Aquarium, which has received a handful of sea turtles with medical problems that could be related to the oil spill.

Longer term, college researchers will be analyzing the toxicological risks associated with both swimming in potentially contaminated water and the consumption of seafood. We also will be investigating other opportunities to conduct research relating to possible new diseases of humans and animals that could emerge as the result of the oil spill.

FREQUENTLY ASKED QUESTIONS:

1) WHY HASN'T THE UF VET SCHOOL BEEN MORE INVOLVED IN THE ANIMAL RELIEF EFFORT?

Certain college faculty and staff have actually been very involved in the animal relief effort, albeit for the most part, behind the scenes. Our expertise in Aquatic Animal Health was recognized by the Unified Command early on, and individuals with specific expertise have been tapped to assist in the relief effort.

One thing many members of the public may not understand is that aside from the four individuals associated with our Aquatic Animal Health program who have been contributing as requested by the Unified Command teams, nothing that has happened yet where the college has been asked to jump in with a broader response, nor is there any evidence to date that we need to. There are a limited number of options for dealing with animals affected by the spill, so we need to respond when it's necessary, not because people are suggesting it.

Administratively, we are currently working with the Unified Command to identify veterinary resources, people and facilities, who could be tapped to help closer to the front lines should animals begin needing care closer to Florida shores.

2) WHO IS DOING WHAT AT THE UF CVM?

Dr. Brian Stacy, clinical assistant professor with the Aquatic Animal Health program, works with sea

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NEW METHODS OF OBTAINING BLOOD AND CEREBROSPINAL FLUID FROM MARINE TURTLES

DAVID WM. OWENS AND GEORGITA J. RUIZ

ABSTRACT: New methods are described for taking blood and cerebrospinal fluid from marine turtles. The blood is obtained via the paired dorsal cervical sinuses while the cerebrospinal fluid sampling procedure requires the insertion of a needle through the foramen magnum into the brain's 4th ventricle. Both methods have been extensively employed by the authors and have been found to cause little stress or damage to the animals.

Key words: Reptilia; Testudines; Marine turtles; Blood; Cerebrospinal fluid; Sampling

PREVIOUS hematological studies have utilized the following methods for obtaining blood from marine turtles.

1. Cardiac puncture is the most common method and involves inserting a needle through the proximal part of the hind limb (Frair, 1977*a*) or the plastral seam directly over the heart (Dozy et al., 1964; Frair, 1964; Frair, 1977*b*; Frair and Prol, 1970). This technique, however, has the disadvantage of possible contamination with pericardial fluid which, as Frair (1977*a*) has pointed out, is abundant in turtles. The approach to the heart through the hind limb requires long needles that are adapted to connect to vacuum tubes. Furthermore, this technique requires considerable experience or extensive probing in order to locate the heart. We have noted that some hatchlings die immediately after heart puncture, presumably due to damage to the sinoatrial node or other nervous structures. Also, many individuals experience hemorrhaging into the pericardial sac with subsequent clot formation.

2. Blood collection directly from the carotid artery has been referred to by Berkson (1966). Although he does not fully describe the technique, we assume it would involve a complex procedure.

3. Decapitation and post-sacrificial bleeding (Dozy et al., 1964) have also been employed. This technique necessitates killing the animal which should be avoided when endangered or threatened species are sampled. Euthanasia also eliminates the option of obtaining repeated samples from an individual. Two further problems are associated with decapitation. First, it is necessary to work quickly to prevent the blood from clotting. Second, the fluid obtained may be adulterated, as the esophagus, pericardium, lungs, spinal cavities, cranial cavities, and extravascular fluid spaces may also drain.

These considerations led us to utilize an alternative bleeding technique for marine turtles which would not harm the animal and which would be quick and easy. The dorsal cervical sinus bleeding technique was developed by Edward Scura and associates at Cayman Turtle Farm, Ltd., Grand Cayman Island, British West Indies. The technique is simple, works well under field conditions, and is easily adapted to various situations.

With regard to the cerebrospinal fluid (CSF) sampling technique, we know of no published methods for obtaining CSF from live chelonians.

PROCEDURES

In experiments conducted at Cayman Turtle Farm, Ltd., Puerto Angel, Mexico, and Colorado State University, more than 500 green turtles (*Chelonia mydas*) from 200 g

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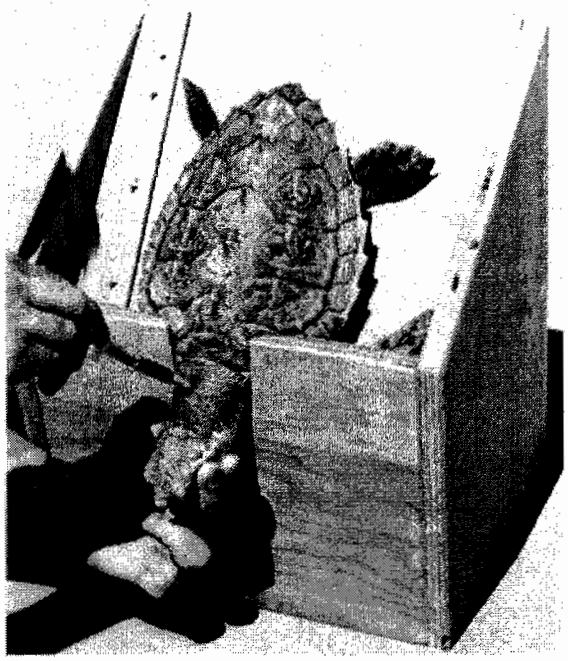

FIG. 1.—Method of taking blood from *Caretta caretta* using a restraining table.

to 250 kg were sampled via the bilaterally located cervical sinus. The same procedure was used to sample loggerheads (*Caretta caretta*) weighing 1–15 kg, Pacific ridleys (*Lepidochelys olivacea*) weighing approximately 20 kg, and hawksbills (*Eretmochelys imbricata*) weighing approximately 10 kg. William Rainey (pers. comm.) has sampled the leatherback (*Dermochelys coriacea*) using the same method.

The only essential equipment is a syringe and needle of appropriate size (i.e., ⅝ inch 25 gauge for a 200 g turtle, or 1.5 inch 21 gauge for a 200 kg turtle). An optional item which facilitates sampling is an angled table designed to restrain the turtle (Fig. 1). The table permits a single investigator to do the sampling. In addition, evacuated blood collecting tubes (Vacutainers R: Becton, Dickinson and Co.) with multiple sample needles will facilitate taking more than one sample from an individual.

Blood sampling.—The turtle is restrained in the holding table or on the ground with the sand removed from under the animal's head. The head is pulled gently forward and downward until the neck is fully outstretched. Such positioning is important as it presumably facilitates filling of the bilateral cervical sinus. The needle is inserted one cm from the dorsal-cervical midline on either side of the line's midpoint. When sampling smaller turtles, needle insertion may be as colse as 0.5 cm to the cervical midline. The angle of entry is perpendicular to the dorsal surface of the neck. It is important to insert the needle lateral to the midline to avoid the possibility of striking the vertebral column.

When the needle is in place, a small amount of suction is applied using the plunger. As the blood starts to flow, the apparatus is held still until a sufficient sample is obtained. It may be necessary to search for the sinus by adjusting the depth of the needle between 1–3 cm, while continuing gentle suction. Searching for the sinus by rotating the needle should be avoided to minimize internal damage. If the sinus is not located initially, the needle should be removed and the procedure repeated in a more lateral (occasionally slightly medial) position. If further attempts to obtain blood are unsuccessful, the opposite side of the neck should be tried.

The most common cause of failure is poor positioning of the animal. If at all possible, the turtle's head should extend below the level of the plastron. In turtles that continue to struggle, the animal's head should be released so that it can breathe in the usual head-lifted position. Following this manipulation a blood sample may be more readily obtained.

Cerebrospinal fluid sampling.—The turtle is placed in the same position as discussed for the cervical sinus blood sampling procedure. For turtles of about 1 kg a 1 inch 25 gauge needle is used, whereas a 25 gauge 2 to 3 inch needle is needed for turtles of 20–40 kg body weight. We have sampled 50 animals using this procedure. However, the technique has not been attempted on individuals larger than 50 kg.

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With the turtle's head firmly restrained in the fully-extended, downward position, the needle is inserted in the neck just posterior to the skull's supraoccipital protrusion at an angle of approximately 135° to the dorsal surface of the turtle's head. The insertion point must be exactly midsagittal in order for the needle to pass directly over the atlas, through the foramen magnum, and into the 4th ventricle. If bone is struck with the needle, the syringe should be removed immediately and reinserted following a careful recheck of the entry angle. Occasionally the needle penetrates a small amount of cartilagenous-like material immediately prior to entry into the 4th ventricle.

The depth the needle is inserted depends on the size of the animal. For example, a 30 kg turtle requires penetration to 5–6 cm. Using gentle suction on the syringe the sample is rapidly withdrawn. Initially a small amount of blood may enter the syringe. This may be eliminated by replacing the syringe while maintaining the position of the inserted needle. If more than 0.25 cm^3 of blood contamination is evident, the CSF sample is rejected because the needle has not adequately penetrated the 4th ventricle. If there is a small amount of contamination, centrifugation is used to remove blood cells from the CSF. An estimate of the degree of contamination can then be made. We have successfully withdrawn a 2–3 cm^3 sample of CSF without apparent detriment to the animal. In the case of a good entry into the 4th ventricle the turtle appears to experience a spinal block type of anesthesia.

Harvesting serum.—Samples were routinely transported on ice in the field. Serum may be harvested by allowing the whole blood to clot at 21–25°C for one hour followed by centrifugation. Extensive refrigeration prior to serum harvesting often results in hemolysis. Plasma may be obtained by use of heparinized syringes. We prefer to use serum because the heparinized plasma tends to clot erratically after freezing and subsequent thawing.

Discussion

The dorsal cervical sinus blood sampling technique is a considerable improvement over other sampling procedures for marine turtles. The technique reduces stress and risk of permanent injury, requires minimal equipment, is readily learned by a novice, and produces a pure blood sample.

We had the opportunity of sampling several marine turtle species ranging from 200 g to 250 kg. In one instance, a group of 120 individuals weighing approximately 40 kg were each sampled twice with complete success (Owens et al., 1978). Similarly, in Puerto Angel, Mexico numerous individuals of two species were sampled with minimal difficulty. In a few specimens (particularly males) the sinus could not be located and sampling by this technique was not accomplished. Hatchlings of less than 100 g also proved difficult to sample. Thus in small turtles cardiac puncture is the technique of choice because of the ease in penetrating the plastron with the sampling needle.

The CSF sampling procedure was particularly successful with immature *C. mydas* at Cayman Turtle Farm. For example, in a group of 40 animals of approximately 30 kg body weight we obtained samples from all but five individuals. None of the animals on which this technique has been attempted have shown any immediate abnormalities. Groups of four animals were also observed for 24 h and 48 h after sampling with no signs of motor difficulties. A 1.6 kg loggerhead showed no ill effects and continued to grow and behave normally more than one yr after CSF sampling.

Acknowledgments.—We thank G. Ulrich, W. Gern, J. Hendrickson, J. Wood, B. Firth, and W. Frair for commenting on the MS. We also thank M. Owens who took many sea turtle blood samples. Development of the CSF sampling procedure was supported by NIH grant NS 12257 to C. Ralph, Dept. of Zoology and Entomology, Colorado State University.

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TEMPERATURE RELATIONSHIPS AND MOVEMENTS OF SNAKES (*ELAPHE OBSOLETA, COLUBER CONSTRICTOR*) IN A CAVE HIBERNACULUM

Owen J. Sexton and Sue R. Hunt

Abstract: A cave hibernaculum in western Missouri, USA, was used by *Elaphe obsoleta* and *Coluber constrictor*. Thermal characteristics of the hibernaculum were recorded over 4 hibernation seasons. Air and surface temperatures near the entry of the hibernaculum were higher than at the rear of the den during early fall and spring but the thermal gradient was reversed in winter. Locations of snakes were correlated with these thermal clines. Our data support the hypothesis that entry into and exit from dens by snakes are dependent on reversals in the thermal gradient between surface and subsurface.

Key words: Reptilia; Serpentes; Colubridae; *Coluber*; *Elaphe*; Hibernation; Missouri; Thermal gradient

Hibernation dens or hibernacula of snakes have long attracted field studies on species composition (e.g., Hirth and King, 1968; Parker and Brown, 1973; Woodbury et al., 1951) and seasonal movements to and from dens (e.g., Brown and Parker, 1976; Fitch, 1958; Hirth et al., 1969; Viitanen, 1967). Thermal characteristics of hibernacula relative to location and activity of hibernating snakes have received less attention. Drda (1968) recorded long-term activities of unconfined snakes in a cave, and Brown et al. (1974) reported short-term thermal observations of snakes in a subsurface soil hibernaculum. Two investigators (Aleksiuk, 1970; Viitanen, 1967), have suggested that entry into and emergence from hibernation are related to seasonal reversals in thermal gradients between deep ground and surface temperatures. The present study reports on activities of two species of colubrid snakes, the rat snake (*Elaphe obsoleta*) and the racer (*Coluber constrictor*), relative to thermal characteristics of a cave hibernaculum. We wished to test the hypothesis that annual entry into and exit from

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Observer	Year	Month	Day	No_By_Day	Orig Loc	Cur Loc	Lat	Long
NME	2010	5	8	1	Gulf World	PC Freezer Trailer	30.2442	85.93718
NME	2010	5	8	2	Gulf World	PC Freezer Trailer	30.1965	85.84358
NME	2010	5	8	3	Gulf World	PC Freezer Trailer	30.16782	85.794
MEM	2010	5	10	1	PC Freezer Trailer	PC Freezer Trailer	30.21513	85.87758
MAN	2010	5	11	1	Gulfarium	PC Freezer Trailer	30.32588	87.17209
JWM	2010	5	12	1	PC Freezer Trailer	PC Freezer Trailer	29.77851	85.40833
AVH	2010	5	13	1	Gulfarium	PC Freezer Trailer	30.28801	87.47814
MEC	2010	5	14	1	Gulfarium	PC Freezer Trailer	30.36423	87.12724
VEL	2010	5	14	1	Gulf World	Gulf World	30.2724	86.00381
NME	2010	5	14	1	PC Freezer Trailer	PC Freezer Trailer	30.08165	85.62992
MAN	2010	5	17	1	Gulfarium	PC Freezer Trailer	30.30349	87.39394
MAN	2010	5	17	2	Gulfarium	PC Freezer Trailer	30.3549	87.01418
SSM	2010	5	17	1	Gulf World	Gulf World	30.3717	86.3496
NME	2010	5	17	1	PC Freezer Trailer	PC Freezer Trailer	30.18925	85.83112
CTS	2010	5	18	1	Gulf World	Gulf World	30.3406	86.2148
JRJ	2010	5	18	1	PC Freezer Trailer	PC Freezer Trailer	30.02786	85.56911
WAJ	2010	5	18	1	PC Freezer Trailer	PC Freezer Trailer	29.95664	85.47378
MAN	2010	5	19	1	Gulfarium	Gulfarium	30.33619	87.11075
NME	2010	5	19	1	PC Freezer Trailer	PC Freezer Trailer	30.26268	85.97958
NME	2010	5	19	2	PC Freezer Trailer	PC Freezer Trailer	30.1425	85.6492
MAN	2010	5	20	1	Gulfarium	PC Freezer Trailer	30.36074	87.14003
BAE	2010	5	20	1	PC Freezer Trailer	PC Freezer Trailer	29.90192	85.36683
WAJ	2010	5	20	1	Gulf World	Gulf World	29.95634	85.45734
MAN	2010	5	21	1	Gulfarium	Gulfarium	30.29619	87.42647
JIB	2010	5	21	1	Gulf World	Gulf World	30.2752	86.0112
NME	2010	5	24	1	PC Freezer Trailer	PC Freezer Trailer	30.14352	85.72778
GWG	2010	5	24	1	washed out	washed out	30.3759	86.8876
NME	2010	5	25	1	PC Freezer Trailer	PC Freezer Trailer	30.16385	85.68565
MJH	2010	5	27	1	buried	buried	30.33185	87.3404
VXW	2010	5	28	1	buried	buried	30.31245	87.49712
NAD	2010	5	30	1	PC Freezer Trailer	PC Freezer Trailer	29.68224	85.31182
NME	2010	6	1	1	PC Freezer Trailer	PC Freezer Trailer	30.18415	85.73263
NME	2010	6	7	1	PC Freezer Trailer	PC Freezer Trailer	30.17795	85.72493
NAD	2010	6	7	1	PC Freezer Trailer	PC Freezer Trailer	29.6759	85.21767
RAB	2010	6	9	1	released	released	30.41365	87.19165
SXH	2010	6	10	1	Gulf World	Dr. Stacy	30.26026	85.97423
DER	2010	6	11	1	PC Freezer Trailer	PC Freezer Trailer	30.37133	86.34411
MAN	2010	6	11	1	Gulfarium	Gulfarium	30.32925	87.13639
KEG	2010	6	12	1	Gulfarium	PC Freezer Trailer	30.38592	86.81038
PRG	2010	6	12	1	Gulfarium	Gulfarium	30.37235	86.5685
KLA	2010	6	13	1	Gulfarium	PC Freezer Trailer	30.38205	86.84565
KEG	2010	6	14	1	Gulfarium	PC Freezer Trailer	30.39141	86.76035
MAN	2010	6	14	1	buried	buried	30.32829	87.13712
MEC	2010	6	15	1	PC Freezer Trailer	PC Freezer Trailer	30.34718	87.05418
PRG	2010	6	16	1	Gulfarium	Gulfarium	30.21966	86.33411

Species	Cond	County	SCL	CCL	External Oil Apparent
CC	1	Bay	90.3	96.7	No
CC	0	Bay	76.3	83.2	No
LK	3	Bay	52.3	54.5	No
CC	2	Bay	96.5	101.3	No
CM	3	Escambia		70.7	No
CC	2	Gulf	95	101	No
CC	2	Escambia	71		No
LK	1	Santa Rosa		44.5	No
CC	0	Walton	72.4	77.4	No
CC	4	Bay	69.5	74	No
LK	3	Escambia		62.2	No
CC	3	Escambia		99.8	No
CM	2	Walton	31.5	36.8	No
CM	2	Bay	49.5	51	No
CC	3	Walton		66	No
CC	3	Bay	74.9	81	No
CC	3	Bay	73.7	79.5	No
CC	0	Escambia	28.4		No
CC	2	Bay	77.1	87.2	No
LK	3	Bay	39.9	41.5	No
LK	3	Santa Rosa	53.7		No
CC	3	Gulf	73.9	77	No
LK	2	Bay	47.5	49	No
LK	0	Escambia	33.9		No
LK	2	Walton	28.5	30	No
CC	2	Bay			No
CC	3	Santa Rosa		99	No
CM	3	Bay	47.1	50.5	No
CC	2	Escambia	71	81	No
CM	3	Escambia	54		No
CC	3	Gulf		76.3	No
LK	2	Bay	29.6	30.3	No
LK	4	Bay			No
CC	3	Franklin		84	No
LK	0	Escambia			No
EI	0	Walton		13.1	?
CC	1	Walton		88	No
LK	0	Escambia	31.5		Yes
LK	2	Santa Rosa		30.5	No
LK	0	Okaloosa	28.9	29.7	Yes
CM	1	Santa Rosa		50.9	No
CC	2	Okaloosa		79	No
CC	3	Escambia			No
CC	3	Escambia		69.3	No
CC	0	Okaloosa	67.3	74.5	No

stranding network is operated under the guidance of a National Coordinator at the Southeast Fisheries Science Center, Miami, FL. The marine mammal stranding network has established ~~There are also~~ NMFS regional coordinators. ~~for both the marine mammal and sea turtle networks.~~

Reports of stranded animals may be called in by the general public, by resource managers, or during the spill response, by one of the many field operations teams. Normally most strandings are reported through a passive system in that the public observes an event and calls it in to the local network. During this oil spill response, a more active surveillance system is in place. Currently calls are made either directly to the facilities, to another network contact, such as the State or Regional Coordinators), or to the wildlife hotline established for the oil spill response (1-866-557-1401). From any of these avenues, information is relayed to the appropriate response group, which conducts field operations to confirm the report and take appropriate action - ~~which may be~~ either rescuing a live animal~~,~~ or collecting a carcass or appropriate samples from a dead animal. Responders consist of biologists or veterinarians trained in rescue operations and field necropsy/sample collection utilizing standardized protocols. Each rehabilitation facility has an attending veterinarian who oversees the medical care and treatment of the animal while it is in rehabilitation.

Comment [BAS3]: Not the case for STSSN – this is problematic trying to combine both networks as they have some similarities but many differences. For STSSN, responders are STSSN participants, which include biologists and trained volunteers (who may or may not be biologists).

All reports of distressed or stranded marine mammals or sea turtles are responded to as rapidly as possible. ~~Currently, the network organizations conduct field operations to confirm every report called in regarding a distressed or stranded marine mammal or sea turtle.~~ Although the aim is for these responses to be conducted the same ~~during the~~ day the report is received, ~~in which the report is made, everyone recognizes that some~~ delays may occur due to weather or logistics of accessing more remote areas~~getting to a responase area~~. ~~Occasionally, weather or other constraints will delay the response for a few days.~~

For cetaceans, we are conducting necropsies either in the field or in the laboratory when the animal is verified and whenever possible. Sea turtles ~~have been collected and frozen allowing~~ necropsies ~~to be~~ have been conducted to date~~on batches of animals. To date, all turtle necropsies have been conducted~~ by Dr. Brian Stacy (NMFS and University of Florida School of Veterinary Medicine ~~sea turtle veterinarian~~). For the majority of dolphins that have been reported during this response, ~~a field~~ necropsies and ~~y/~~sampling haves been conducted in the field because the animals have been decomposed, and the logistics of retrieving carcasses has been difficult. Of the 11 confirmed cetaceans, one (1) animal was fresh enough for a complete necropsy, six (6) animals received partial field necropsies, and the remaining four animals were sampled for external oil but were deemed too decomposed to be further examined. No stranded manatees have been reported to date, but ~~our~~ protocols call for their collection and transport to pre-existing centers for necropsy, under the authorization of USFWS.

Comment [BAS4]: Needs editing, not clear as written.

Comment [BAS5]: Isn't this in the table spreadsheet? If so, I don't see why we are reporting it here and not turtles.

At the current rate of strandings and carcass condition, the network has the needed capacity to verify and examine all stranded animals. However given the expected length of this event, additional resources may be needed to supplement existing capacity.~~sought to allow everyone to get some rest.~~ Should stranding rates increase and additional necropsy and pathology support be necessary, several other pathologists and biologists have been identified and are currently on standby to assist if requested. No large whales have stranded to date but the MMHSRP has a large whale necropsy manual and a few operational teams for response. All large whale necropsies would be conducted in the field. Due to the specialized experience required, there are only a few identified Large Whale Necropsy Team leaders, all ~~of whom~~ are on standby and can travel to the Gulf coast if needed. The local stranding network responders would secure the carcass, and the necropsy could begin the next morning after the team was assembled.

Currently, ~~For live stranded sea turtles,~~ four facilities are prepared to receive and care for live, distressed sea turtles: ~~are currently identified to conduct turtle rehabilitation:~~ Audubon Aquarium of the Americas in New Orleans, LA, Institue of Marine Mammal Studies in Gulfport, MS, Gulfarium in Fort Walton Beach, FL, and Gulf World Marine Park in Panama City, FL. Three of these facilities (Audubon Aquarium, IMMS, and Gulf World) are also prepared to rehabilitate live stranded small cetaceans. These facilities were identified for the projected geographic area where marine mammals and sea turtles impacted by the oil spill may strand. Should the operations area change, the plan will be revised. All facilities have been augmented through the Unified Command for an expected moderate increase in stranding rates, and have been provided with the necessary equipment and supplies to collect samples according to the standardized protocols.

For more information on the facilities involved in the Marine Mammal Stranding Network in the Gulf Coast region (LA-FL), see the attached Directory.

Question 4: Are the deaths and strandings investigated for causes other than oil? Specifically, does the necropsy provide for testing other than oil, including dispersant?

~~Full necropsy investigations do examine the animals, the circumstances and the samples to determine whenever possible the cause of stranding.~~ The full necropsy investigations~~evaluation of these~~of stranded marine mammals and sea turtles ~~animals~~ is not limited to detection of oil, oil exposure, or oil-associated injury but includes examination of human interactions, HAB-associated biotoxicosis, infectious agents and other causes. Environmental information, circumstances of stranding, and other potential mortality factors in an area are all considered during assessment. An inevitable limitation of necropsy is that many stranded animals are recovered in a decomposed state, which makes determination of a definitive cause of death difficult or impossible in many instances and impairs toxicological testing, such as PAH analysis. Microscopic examination (histopathology) is possible on very few stranded

animals due to decomposition. The specific chemical composition of the dispersants have not been made available to those advising on the toxicological and medical aspects of the response, thus specific considerations relevant to detection of the dispersant or exposure are unknown. The protocol in place includes collection of samples suitable for a broad array of diagnostic testing and a suite of samples that may be useful for any forthcoming considerations related to dispersants.

Question 5: NOAA is still waiting for the historical data and trends on strandings in this area at this time of year for baseline understanding of what we are seeing now, what is the status of getting this report/data?

Please see the two attached documents which contain historical data and trends for ~~the Sea Turtle Stranding and Salvage Network and the Marine Mammal Stranding Network.~~sea turtle and marine mammal strandings in the northern Gulf of Mexico.

Question 1: NOAA asked that the report on marine mammals and turtles – be clearer regarding how many are deceased due to oil and what is not known; share a total each day (ORR/ICC reports).

Given the circumstances of this spill event and the exposure and effects that may be expected for marine mammals and sea turtles, the expression of external oiling may not be a viable assessment of impact or injury in these species. For birds this may make sense in that the principle cause of acute morbidity and mortality is from external oiling. That is likely not the case for marine mammals and sea turtles. Therefore for complete assessment of the role that this event (oil and dispersant) in morbidity and mortality would entail full necropsies with sample collection, analyses, and assessment. All animals to date have not been externally oiled. Animals will be placed in the pending category while this in-depth assessment is going on even when they have no gross evidence of oil. In some cases the cause of stranding may never be known particularly if the carcass is decomposed when found. Therefore t~~Response: T~~his information can be found in the text of the report as well as a new "Summary Totals" tab in the daily Excel spreadsheet.

Comment [BAS1]: I'm not really sure what they are asking and if this is responsive to what they want. Discuss further?

Question 2: NOAA requested to create daily chart showing mortality in relation to: #of total dead turtles, # sent for necropsies, # necropsies completed, and # dead due to oil.

~~Response:~~ We have added a new table~~chart~~ (E~~e~~xcel spreadsheet tab "Necropsy Status") to show this in the daily Excel spreadsheet.

Question 3: We were asked to assess capacity to conduct necropsy work needed – request to review this and if more people are needed (marine mammal stranding, necropsy processing, etc). Where do these animals go for processing or rehabilitation? Who does the necropsy and rehabilitation. NOAA would benefit from a fuller explanation of how the stranding networks work. Main point here is are we anticipating what we need, and if we think we need more we should be asking for help.

~~Response:~~ Pre-existing stranding networks have been~~are~~ established for both marine mammals and sea turtles throughout the United States for decades prior to this event. In the Gulf of Mexico states (TX, LA, MS, AL, FL), there are numerous organizations authorized to respond to stranded or distressed marine animals (authorization is through agreements issued under the Marine Mammal Protection Act for marine mammals, and under the XXX for sea turtles, and any applicable state laws). Each state has a designated coordinator for sea turtle and a coordinator for marine mammal strandings. There are also NMFS regional coordinators for both the marine mammal and sea turtle networks.

Comment [TR2]: Is this true for all the gulf states for marine mammals

Reports of stranded animals may be called in by the general public, by resource managers, or during the spill response, by one of the many field operations teams. Normally most strandings are reported through a passive system in that the public observes an event and calls it in to the local network. During this oil spill response, a more active surveillance system is in place. Currently c~~C~~alls are made either directly to the facilities, to another network contact, such as the Regional Coordinator), or to the wildlife hotline established for the oil spill response (1-866-557-1401). From any of these avenues, i~~I~~nformation is relayed to the appropriate response group, which conducts field operations to confirm the report and take appropriate action which may be either rescuing~~e~~ a live animal, or collecting a ~~ct the~~ carcass or appropriate samples from a dead animal. Responders consist of biologists or veterinarians trained in rescue operations and ~~ue,~~ field necropsy/sample collection utilizing~~following~~ standardized protocols. Each rehabilitation facility has an attending veterinarian who oversees the medical care and treatment of the animal while it is in rehabilitation.
Currently, the network organizations conduct field operations to confirm every report called in regarding a distressed or stranded marine mammal or sea turtle. Although the aim is for these responses to~~We aim for these operations to~~ be conducted during the day in which the report is made, everyone recognizes that some delay may occur due to weather or logistics of getting to a responase area. ~~or at most by 24 hours afterward.~~ Occasionally, weather or other constraints will delay the response for a few days.

~~Currently~~ For cetaceans, we are conducting necropsies either in the field or in the laboratory when the animal is verified and whenever possible. ~~.~~ Sea turtles have been collected and frozen allowing~~n, and then~~ necropsies to be conducted on batches of animals. To date, all turtle necropsies have been conducted by Dr. Brian Stacy (NMFS sea turtle veterinarian). For the majority of dolphins that have been reported during this response, a field necropsy/sampling~~y~~ has been conducted because the animals have been ~~highly~~ decomposed, and the logistics of retrieving carcasses has been difficult. Of the 11 confirmed cetaceans, one (1) animal was fresh enough for a complete necropsy, six (6) animals received partial field necropsies, and the remaining four animals were sampled for external oil but were deemed too decomposed to be further examined. ~~in batches of animals as they are collected~~No stranded manatees have been reported to date, but our protocols call for their collection and transport to pre-existing centers for necropsy.

At the current rate of strandings and carcass condition, the network has the needed capacity to verify and examine all stranded animals. However given the expected length of this event, additional resources may be sought to allow everyone to get some rest. Should stranding rates increase and ~~Should~~ additional necropsy and pathology support be necessary, ~~there are~~ several other pathologists and biologists ~~that~~ have been identified and are currently on standby to~~contacted that can~~ assist if requested. No large whales have stranded to date but the MMHSRP has a large whale necropsy manual and a few operational teams for response. All large whale

necropsies would be conducted in the field. Due to the specialized experience required, there are only a few identified Large Whale Necropsy Team leaders, all of whom are on standby and can travel to the Gulf coast if needed. The local stranding network responders would secure the carcass, and the necropsy could begin the next morning after the team was assembled.~~They are currently on standby.~~

~~To date all turtle necropsies have beenconducted by Dr. Brian Stacy (NMFS sea turtle veterinarian) at the four primary care facilities established, small cetacea necropsies (only X conducted to date) will be conducted by X at these same facilities or in the field, and large cetacea necropsies will be done in the field by X.~~ For live stranded sea turtles~~Regarding rehabilitation~~, four facilities are currently identified ~~for~~ to conduct turtle rehabilitation:~~—~~ Audubon Aquarium of the Americas in New Orleans, LA, Institue of Marine Mammal Studies in Gulfport, MS, Gulfarium in Fort Walton Beach, FL, and Gulf World Marine Park in Panama City, FL. Three of these facilities (Audubon Aquarium, IMMS, and Gulf World) are also prepared to rehabilitate live stranded small cetaceans. These facilities were identified for the projected geographic area where marine mammals and sea turtles impacted by the oil spill may strand. Should the operations area change, the plan will be revised. All facilities have been augmented through the Unified Command for an expected moderate increase in stranding rates, and have been provided with the necessary equipment and supplies to collect samples according to the standardized protocols.

For more information on the facilities involved in the Marine Mammal Stranding Network in the Gulf Coast region (LA-FL), see the attached Directory.

Question 4: Are the deaths and strandings investigated for causes other than oil? Specifically, does the necropsy provide for testing other than oil, including dispersant?

Full n~~Response: N~~ecropsy investigations do examine the animals, the circumstances and the samples to determine whenever possible the cause of ~~investigates other causes of mortality~~stranding. The evaluation of these animals ~~and~~ is not limited to detection of oil, oil exposure, or oil-associated injury but include examination of human interactions, HAB associated biotoxicosis, infectious agents and other causes. Environmental information, circumstances of stranding, and other potential mortality factors in an area are all considered during assessment. An inevitable limitation of necropsy is that many stranded animals are recovered in a decomposed state, which makes determination of a definitive cause of death difficult or impossible in many instances and impairs toxicological testing, such as PAH analysis. Microscopic examination (histopathology) is possible on very few stranded animals due to decomposition. The specific chemical composition of the dispersants have not been made available to those advising on the toxicological and medical aspects of the response, thus specific considerations relevant to detection of the dispersant or exposure are unknown. The protocol in place includes collection of samples suitable

for a broad array of diagnostic testing ~~, such as biotoxins and disease,~~ and a suite of samples that may be useful for any forthcoming considerations related to dispersants.

Question 5: NOAA is still waiting for the historical data and trends on strandings in this area at this time of year for baseline understanding of what we are seeing now, what is the status of getting this report/data?

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~~Response: We are completing data compilation and verification and the information will be provided by end of the day on 5/16/10.~~Please see the two attached documents which contain historical data and trends for the Sea Turtle Stranding and Salvage Network and the Marine Mammal Stranding Network.

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NOAA Fisheries Office of Law Enforcement

Photograph Log

Camera Type	Film Type	Photographer Name	Date

Photo #	Time	Description

Version. 1.1 - October 2008, OLE Form - Photolog

Photographer's Initials: _____ Page _____ *of* _____ Pages

"RECOMMENDED" STANDARD CHECKLIST TO DETERMINE RELEASE CATEGORY OF ALL NMFS REHABILITATED PINNIPEDS

Yes = true statement, No= untrue statement (shaded areas may not be applicable)

	Release Determination Assessment (within 2 weeks of release)		Pre-Release Assessment (within 72 hours of release)	
History	**Yes**	**No**	**Yes**	**No**
1. The release candidate has NOT previously stranded				
2. Stranding was NOT associated with a Marine Mammal Unusual Mortality Event or ongoing epidemic				
3. Stranding was NOT associated with anthropogenic environmental accident (e.g., hazardous waste spill, acoustic insult)				
4. Stranding was NOT associated with an environmental event of NMFS concern (e.g., harmful algal bloom, fish kill, etc.)				
5. Stranding was NOT associated with an El Niño event				
6. There is NO evidence that the release candidate was exposed to terrestrial wild or domestic animals prior to and during rehabilitation				
7. The release candidate is NOT known to have inflicted a bite on human(s)				
8. The animal is NOT evidence or part of a human interaction or criminal case				
9. The animal was NOT part of a "permitted" research project				
Developmental Stage				
10. The release candidate is weaned, and has a proven ability to feed itself				
11. The release candidate is sufficiently robust, having adequate reserves to survive readjustment in the wild				
12. The release candidate shows no sign of molt				
Behavioral Clearance				
13. The release candidate demonstrates appropriate breathing, swimming, diving, and locomotion on land				
14. The release candidate demonstrates an absence of aberrant behavior including attraction to or desensitization to the presence of humans				
15. The release candidate does NOT exhibit auditory or visual dysfunction				

	Release Determination Assessment (within 2 weeks of release)		Pre-Release Assessment (within 72 hours of release)	
Behavioral Clearance (continued)	**Yes**	**No**	**Yes**	**No**
16. The release candidate demonstrates a capacity to chase and capture live prey				
Medical Clearance				
17. The attending veterinarian has reviewed the release candidate's history and medical records, including records from other facilities that have previously held the animal.				
18. The attending veterinarian has examined the release candidate within two weeks of release				
19. The required health screen and assessments were conducted with good results				
20. Hands-on physical exam to be performed by attending veterinarian within 72 hours of release				
21. NO congenital defects				
22. NO nonfunctional or damaged appendages				
23. NO defects in vision				
24. CBC compatible with good health				
25. Chemistry profile compatible with good health				
26. Serum banked upon admission and prior to release (3 ml)				
27. Additional testing requested and reviewed by NMFS and no apparent concerns				
28. Free of drugs (exclusive of sedatives used for transport) minimum of 2 weeks prior to release				
29. Veterinarian's signature on health statement				

Health Statement

I have examined the pinniped (Species and ID#)_____ on (Date) _____ and have determined that the animal is medically and behaviorally suitable for release in accordance with the release criteria in that the animal will not pose a risk to the wild population and is likely to survive upon reintroduction to the wild.

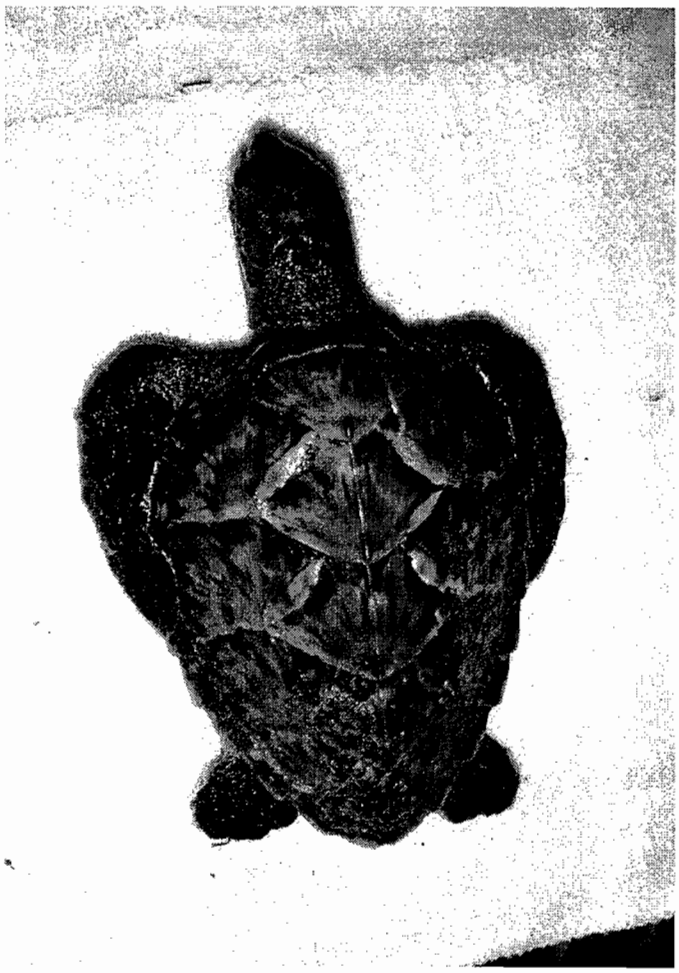
_____ *Signature of the Attending Veterinarian*

_____ *Printed Name of the Attending Veterinarian*

_____ *Signature of the Authorized Representative*

_____ *Printed Name of the Authorized Representative*

OPR001383MO



United States Department of the Interior

FISH AND WILDLIFE SERVICE
7915 Baymeadows Way
Suite 200
Jacksonville, FL 32256-7517

IN REPLY REFER TO:
FWS/R4/ES-JAFL

June 22, 2010

Institute for Marine Mammal Studies
10801 Dolphin Lane
Gulfport, MS 39503

Under the authority of the Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq.),* and in accordance with 50 CFR 17.22 and 17.32, on May 12, 2010, the U.S. Fish and Wildlife Service issued a Recovery Permit (TE12392A-0) to the Institute for Marine Mammal Studies (IMMS) in order to possess, rehabilitate, and transport loggerhead (*Caretta caretta*), green (*Chelonia mydas*), leatherback (*Dermochelys coriacea*), hawksbill (*Eretmochelys imbricata*), and Kemp's ridley (*Lepidochelys kempii*) sea turtles in accordance with the conditions and authorizations within their permit.

This letter provides supplemental instructions to Condition E of the permit for disposition of sea turtle carcasses. This letters serves as authorization for your facility or a representative of your facility to transfer carcasses of loggerhead, green, leatherback, hawksbill, and Kemp's ridley sea turtles, which were found stranded within the response area of the Deepwater Horizon Oil Spill and collected as suspected oiled turtles, to the University of Florida in Gainesville, Florida, for necropsy by Dr. Brian Stacy. Evidentiary procedures established for the oil spill response shall be followed.

A copy of this letter shall accompany turtle carcasses during transport from across state lines.

If any of the sea turtle carcasses should become lost, stolen, or unintentionally damaged, written notice must be provided to this office within 10 days.

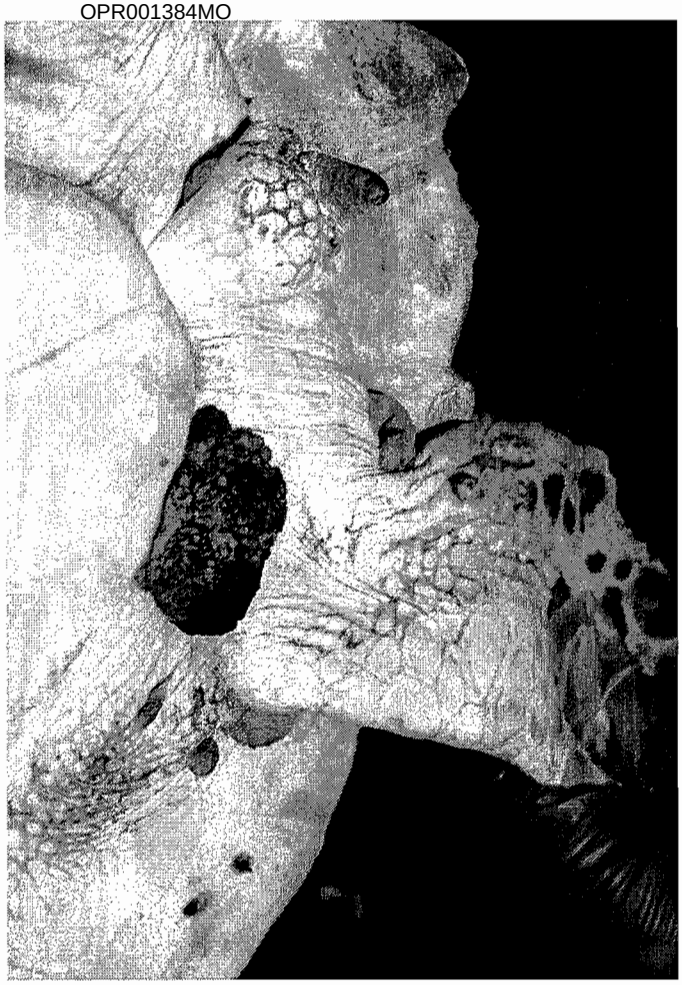
Please contact me at (904) 525-0661 if you have any questions.

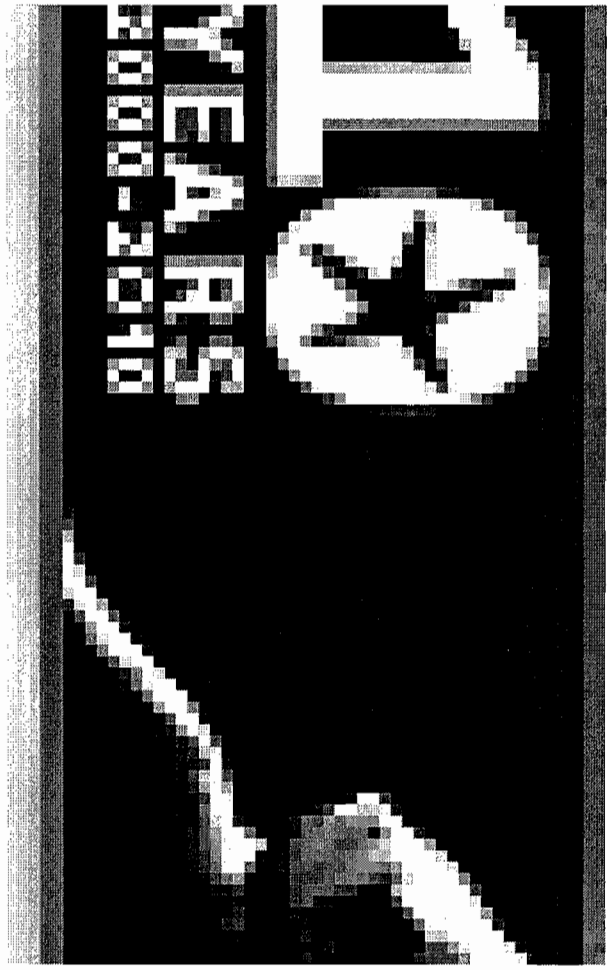
Sincerely,

Ann Marie Lauritsen

Ann Marie Lauritsen
Fish and Wildlife Service Biologist

OPR001384MO





STANDARDIZED PROTOCOLS FOR EVALUATING DEBILITATED LOGGERHEAD SEA TURTLES (*Caretta caretta*)

I. BACKGROUND AND RATIONALE

In 2003, there was a perceived increased occurrence of emaciated and barnacle-laden loggerhead turtles (*Caretta caretta)* found stranded (both dead and moribund) along the southeastern US Atlantic coast. To investigate this situation further, the Wildlife Conservation Society's St. Catherines Island (SCI) Wildlife Survival Center (WSC) and the Georgia Department of Natural Resources organized a workshop on SCI in November of 2003. Fifteen people attended including: turtle biologists from Florida, Georgia, South Carolina, and North Carolina, veterinarians, toxicologists, immunologists, and representatives from the National Oceanic and Atmospheric Administration (NOAA).

The group determined that there was an increasing trend in strandings of debilitated sea turtles from 1992-2002 (approximately 11% annual increase). The number of debilitated turtles appeared to increase substantially in 2003 (NC 3%, SC 22%, GA 10%, and FL 22% of the total turtle strandings). The species composition of debilitated sea turtle strandings was primarily loggerheads, but a few green (*Chelonia mydas*), Kemp's ridley (*Lepidochelys kempii*) and possibly in Florida, a hawksbill (*Eretmochelys imbricata*) turtles were affected. Temporally, the stranding of debilitated turtles occurred all year in Florida; however, strandings were found to be concentrated in the spring and summer (April through July) in the other states. Spatially, debilitated sea turtles were stranded across the southeastern US coastal region, however, there were areas of high stranding density in the southern part of North Carolina, the northern part of South Carolina (Georgetown and Horry Counties) and around Cape Canaveral in Florida (Brevard County). Many explanations for stranding patterns were discussed including ocean currents, winds, and cold-stunning events.

A debilitated turtle was defined as emaciated with small barnacles covering the skin. The flippers may also have lesions or may be necrotic. While heavy epibiota can be a normal finding on the carapace and plastron of healthy loggerhead sea turtles, the skin is generally free of these commensals. Health assessment and necropsy data from these cases indicated the turtles were being affected by a wide range of secondary bacterial and parasitic infections with the primary cause still to be determined. Seven debilitated turtles showed significantly higher blood levels of polychlorinated biphenyls (PCBs) and organochlorine pesticides compared to 47 apparently healthy turtles. In a separate study, mercury concentrations in blood and scutes were 2 to 3 times higher in dead stranded turtles compared to live, apparently healthy turtles although the sample size was small. It is still unclear at what levels these compounds become toxic to sea turtles. The high contaminant levels could be a secondary effect as debilitated turtles use up their fat reserves, causing organic contaminants to become concentrated in blood.

The group determined several areas that need to be addressed in 2004. First, a complete statistical analysis of debilitated sea turtle stranding trends (NMFS-Sea Turtle Stranding and Salvage Network Database) is needed to better define the extent of the problem. This analysis will assist in determining if there was a substantial and statistically significant increase of stranded debilitated turtles in 2003. Possibly the strandings correlate with overall increases in offshore populations. Ongoing studies at the St. Lucie Power Plant in Florida, indicate a significant increase in loggerhead sea turtle populations. The average annual captures of this species from 1992 to 2002 was 275 turtles, while in 2003, 538 turtles were captured. Stranding reporting protocols will be reviewed to ensure that debilitated turtle strandings can be accurately assessed. In the past, not all strandings were examined for signs of debilitation. Thus the percentage of debilitated turtles should be expressed as a proportion of turtles examined, not total strandings. A second goal of this project is to standardize the health assessment performed on all of these turtles and store the data in a central location. And, thirdly, this study will further address contaminant and health data throughout the recovery of these debilitated turtles.

II. INTRODUCTION TO PROTOCOLS

In order to provide consistent, standardized documentation on debilitated turtles that strand in 2005, we have developed the following protocols which include: visual assessment, physical examination, morphometrics, clinical pathology, contaminant analysis, immune function tests, gross necropsy and histopathology. The accumulation and comparison of standardized health parameters will be critical in evaluating debilitated loggerhead sea turtles (*Caretta caretta)* and the cause(s) of their stranding.

Data may not be immediately available from banked samples or samples for contaminant analysis, because funding has not been allocated to this project and some of these analyses are extremely labor-intensive and costly (~$1000/sample). The samples will be stored properly by Jennifer Keller at NIST in expectation of future funding.

Introduction to Kit numbers and Datasheets:

Kits for **live** debilitated turtles will be labeled as follows. For example, **DT-SC-R-1A** will be a debilitated turtle (DT) stranded in South Carolina (SC) that is alive (going to R for rehabilitation) and is the first live turtle sampled for this project (1). The A denotes the initial sampling event for that turtle. Kits DT-SC-R-1**B**, DT-SC-R-1**C**, and DT-SC-R-1**D** will be provided to the rehabilitation center for follow-up sampling.

Kits for sampling turtles during **necropsy** will be labeled similarly. For example, **DT-SC-N-1** will be a debilitated turtle (DT) from South Carolina (SC) that is sampled during necropsy (N) and is the first dead turtle (1) sampled for this project.

Please follow this protocol. Once you are familiar with the details, you may find that the flow charts are helpful. Please fill out datasheets completely which are included in each kit.

Outline of protocols

Subsection	Page
Shipping and contact information	3
Case definition and documentation	4
Live debilitated turtle protocols	5-9
Supplied materials	5
Initial sampling procedures	6-9
Blood protocol	6-7
Blood collection	6
Blood contingency protocol	7
Blood handling	7
Blood shipping	7
Scute scraping	8
Fecal sampling	8
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Biopsy lesions/masses	8
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Follow-up sampling procedures	9
Recovering sampling	9
Recovered sampling	9
Necropsy protocol for debilitated and control turtles	10-32
Necropsy sites	10
Toxicology sampling procedures	11-13
Gross necropsy protocol	13-14
Parasitology sampling	14-15
Epibiota sampling	15
Genetic sampling	16
Necropsy Report	16-33

III. SHIPPING AND CONTACT INFORMATION FOR BIOMATERIALS COLLECTION

Immunology:
Margie Peden-Adams, PhD
Marine Biomedicine and Environmental Science Center (MBES)
NOAA/NOS Bldg. Room 248
219 Ft. Johnson Rd.
Charleston, SC 29412
Cell: 843-568-8814
Lab: 843-762-8551
Home: 843-216-1062
Email: pedenada@musc.edu

Blood samples must be shipped out on the same day as collected and arrive within 24-36 hours after collection. Please contact Margie to make arrangements.
This is **especially important** for shipping samples out on Fridays.

Toxicology-Mercury (RD) and organochlorines (JK):

Jennifer Keller, PhD or Rusty Day	**JK**	**RD**
NIST-Charleston Laboratory	Office: 843-762-8863	843-762-8904
Hollings Marine Laboratory	Lab: 843-762-8883	843-762-8916
331 Ft. Johnson Rd.	Cell 1: 843-442-2188	843-817-7791
Charleston, SC 29412	Cell 2: 843-343-9908	
	Jennifer.keller@noaa.gov	Russell.day@noaa.gov

Parasitolology:
Dr. Ellis Greiner, PhD
Dept of Pathobiology
2015 SW 16 th Ave.
Building 1017, Rm V3-240
College of Veterinary Medicine
University of Florida
Gainesville, Fl 32608
E-mail (**greinere@mail.vetmed.ufl.edu**)
(352-392-4700x5861)

Terry M. Norton, DVM, Diplomate ACZM
Wildlife Conservation Society
St. Catherines Island Wildlife Survival Center
182 Camellia Road
Midway, GA 31320
W: 912-884-5005
H: 912-554-1618
Cell: 912-270-1180
Email: tnorton@wcs.org and tnmynahvet@aol.com (send to both for quickest response)

Al Segars, DVM
South Carolina Department of Natural Resources
Marine Division
32 Fiddler Drive
Beaufort, SC 29907
Office: 843-770-9908
Cell: 843-252-4244
Email: alsegars@hargray.com

Craig Harms, DVM, PhD, Diplomate ACZM
North Carolina State University
Center for Marine Science and Technology
303 College Circle
Morehead City, NC 28557
Office: 252-222-6339
Cell: 252-646-4141
craig_harms@ncsu.edu

IV. Case definition for debilitated loggerhead sea turtles stranded live and dead.

Current terminology includes "barnacle bill," "living dead," and "severely debilitated." These terms include turtles that are emaciated, barnacle encrusted (carapace, plastron and skin), lethargic/non-responsive, and/or have skin/shell/underlying muscle necrosis and sloughing. Nonspecific terminology may encompass multiple syndromes, or represent a common end stage of multiple initiators, making comparisons between regions and years problematic. A broad case definition must be used initially, but linked with collection of data that can refine case definition in future investigations.

Minimum criteria:

- Grossly apparent emaciation--concave junction between neck and nuchal carapace with neck extended
- Concave plastron
- Sunken eyes
- May include severe edema (fluid accumulation under the skin) or ascites/anasarca (fluid accumulation in the coelomic cavity) masking signs of emaciation.

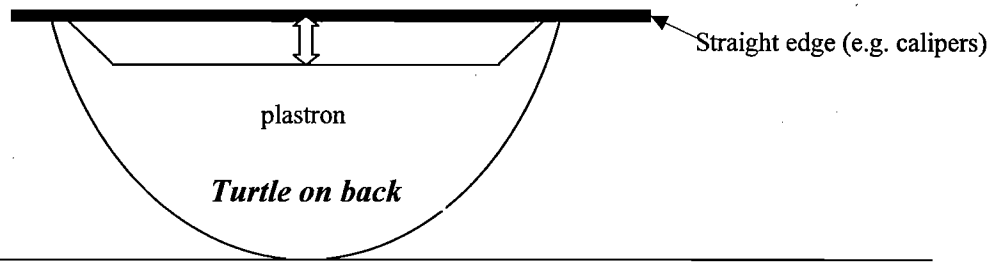
Accessory criteria:

- Extensive barnacle and other epibiota coverage and distribution
- Necropsy findings supportive of failure to feed (empty gastrointestinal tract, full gall bladder, fat depletion, serous atrophy of fat)
- Clinical pathology findings supportive of failure to feed may include some or all of the following: hypoproteinemia, hypoalbuminemia, low blood urea nitrogen (BUN), low blood glucose, and/or anemia.

Photos and Morphometrics:

- Because degree of emaciation and epibiota coverage are subjective judgements that could vary between observers, means to make objective comparisons must be pursued. Standardized digital photographs should be taken and collected centrally to assess epibiota load, degree of emaciation, and degree of skin sloughing if present. Use the provided **index card** to identify the turtle and include the following views:
    - **perpendicular views of:**
        - **entire carapace (dorsal-ventral)**
        - **entire plastron (ventral-dorsal)**
        - **head/foreflippers/cranial carapace (dorsal-ventral)**
    - **45 degree angle view of:**
        - **midsagittal craniocaudal view of head, neck and cranial carapace**
    - **lateral perpendicular view of side of head (right side for standardization)**
- **Send digital images to Dr. Terry Norton** at the email or mail address provided. Please use regular sized CD when sending images.
- Standardized morphometrics (SCL, CCL, SCW, CCW, depth/height, weight) should be taken to define the degree of emaciation objectively. Body weight and depth should be obtained whenever possible, as they are essential to any calculation of condition index. In addition to these measurements, please take a plastron concavity measurement. With turtle on back, measure distance from straight edge resting on widest point of ventral carapace to midpoint of sunken plastron (see diagram below). **Measurements to be taken can found on the datasheet provided.**

Plastron Concavity Measurement:



V. DEBILITATED LOGGERHEAD: LIVE ANIMAL PROTOCOL (Protocols 1&2 on flow charts)

The following diagnostic tools are recommended in all living loggerhead sea turtles encountered that fit the case definition of a debilitated turtle (page 4). If rehabilitation is the goal, then the clinician or rehabilitator responsible for the initial care of the animal will need to decide which samples can be safely taken without compromising the turtle's overall condition. **If the turtle can withstand 39 mL of blood collection, follow this protocol. If not, then please follow the "Blood Contingency Protocol (CP)".** If the turtle is to be euthanized, then please follow the blood sampling protocol described in this live animal protocol prior to administering euthanasia, and then continue with the necropsy protocol.

We would like to receive data on the following parameters, some of which will be performed "in house" or at your preferred laboratory and others will be sent to laboratories specified in the protocols: complete blood counts, plasma chemistry profiles, bacterial blood culture, plasma banking, genetics, immune assays, contaminant analysis, fecal parasite analysis, and biopsy and histopathology of suspicious lesions or masses. In addition, perform a complete physical examination and morphometric measurements, record current/relevant environmental conditions and trends in prey availability/ lack thereof in your region using the data collection form provided. Contaminants to be measured in certain samples are listed in Table 1 on a subsequent page.

Supplied Materials:
A sampling kit will be provided containing the following for each turtle and for each time point. The kit contents will include:

1. Alcohol swabs (2)
2. Vacutainer double-ended needles (3)
3. Blood collection tubes (7 pre-labeled and numbered by collection order)
4. Blood culture tube (1) – some kits will not have this tube, if not, please **request blood culture tubes directly from Antech so that you have the tubes prior to any debilitated turtle stranding.**
5. Slides for making blood smears (4)
6. Slide holders (1 for Antech, 1 for Al Segars)
7. Pipettes (3)
8. Cryovials for plasma from tube #5 ("BV", "BAPE", "BANK", "TEST") and tube #6 (plasma= "CHEM"; whole blood= "heparinized whole blood")
9. Vial containing lysis buffer for blood from tube #7 (1)
10. Bubble wrap
11. Disposable stai nless steel biopsy punch (2)
12. Pre -labeled polyethylene sample bag for scute scraping
13. Pre -labeled ziploc bags for fecal sampling (3)
14. Pre -labeled vials with formalin for epibiota samples (3)
15. Data Sheet
16. Pre -labeled index cards to use in photos for turtle ID
17. Shippin g containers with return FedEx labels to Margie Peden-Adams (1), Antech (2), and Ellis Greiner (1)

A kit to be used between animals will also be provided and will contain:

1. Sharpie markers
2. Plastic scrubbing pad and plastic scraper (clean with 10% bleach or another appropriate disinfectant between each turtle)
3. Cleanroom wipers
4. Squirt bottle with high purity isopropanol
5. Squirt bottle with high purity water
6. Vials with formalin for lesion/mass biopsy
7. Shipping container with return FedEx label to Al Segars and Terry Norton for end of season samples
8. Antech forms with "Test Express" and proper tests selected – when funding becomes available
9. Gel packs (5 per turtle) – ***FREEZE THESE UPON RECEIVING KITS***

Initial Sampling (Kit A): Please follow the protocols described below for blood collection, scute scrapings, fecal sampling, biopsies, and epibiota sampling. Also, please fill out a datasheet. **Blood sampling from Kit A *should also* be performed on debilitated turtles prior to euthanasia.**

Blood: Blood should be drawn as soon as practical and prior to any therapy. Blood should be drawn through a **double-ended needle** directly into the blood tubes ***in the order in which they are labeled***. The order is important to minimize stress-related effects on immune function and trace element contamination.

Performing a complete blood count (CBC) and a plasma chemistry panel at this time is recommended. Packed cell volume, total protein, blood glucose, and any other abnormal parameters found on the initial sample should be performed once weekly. For consistency, we request that you use the following protocol and submit your samples to Antech Diagnostic Laboratory. You have been sent submission forms and the charges will be billed to the project account. If you use your own institutional forms, the charges will be billed to your institution. Antech samples must be shipped by FedEx, and not by your local courier. Antech provides prepaid shipping containers and labels. If you use an alternative lab (not the preferred method), please note on the datasheet the lab being utilized and methodology used. We request that your blood analysis include: CBC, total protein, albumin, globulin, uric acid, BUN, Glucose, CPK, AST, Calcium, and Phosphorous.

Blood Collection:

1. Disinfect the neck first with betadine and then alcohol, beginning at venipuncture site and working outward. Allow the site to dry.
2. Collect blood using a double-ended needle in this order, gently inverting each tube five times after collection:

   7mL Green-top tube #1: Full 7mL (immune function, metal analysis; LiHeparin 2005)
   5mL Green-top tube #2: Full 5mL (metal analysis)
   5mL Green-top tube #3: Full 5mL (OC analysis)
   5mL Green-top tube #4: Full 5mL or disregard if it will compromise the animal (OCs)
   5mL Green-top tube #5: Full 5 mL (bile acids, plasma protein electrophoresis, biliverdin, bank, metal analysis)
   5mL Green-top tube #6: Full 5 ml (blood count, plasma chemistries, testosterone, metal analysis)
   3mL Red top tube #7: At least 0.5-1 mL unless a skin biopsy is taken (genetics)

Collect blood for bacterial culture prior to starting antibiotics. The blood culture tube (#8) should be sent to Antech. If not using Antech, check with your diagnostic lab for specific protocols (this will not be paid for by the project). Specimens for bacterial blood culture require collection into tubes provided containing growth medium (BBL, Septi-Chek TSB, Trypticase Soy Broth with SPS and CO_2). These tubes are available through Antech. Antech will process 1 tube for both aerobic and anaerobic organisms.

Blood culture collection procedure:

- A separate venipuncture site than above should be disinfected twice with an iodine preparation and then alcohol, beginning at venipuncture site and working outward. Allow the site to dry.
- Disinfect the rubber stopper of blood culture tube with alcohol.
- Collect 3 ml of blood into culture tube (vacuum in tube should fill to this level). Hold culture tube at room temperature (or up to 37 °C) until transported/ shipped to lab.

Blood Contingency Protocol (CP) Collection:

If the turtle cannot withstand 39 mL of blood collection, then at the minimum collect the following tubes using a double-ended needle in this order and gently invert each tube 5 times after collection:

7mL Green-top tube #1: Full 7mL (immune function, OC analysis, metal analysis; LiHeparin 2005)

5mL Green-top tube #2: Full 5 mL – to replace tubes #2,5,&6 (bile acids, plasma protein electrophoresis, biliverdin, testosterone, bank, metal analysis, blood count, plasma chemistries)

Blood culture tube #8: After disinfecting new prep site.

Blood Handling:

1. Before blood clots, transfer whole blood from tube #7 (if collected) into a vial of lysis buffer via clean, unused pipette. Gently invert this vial several times.
2. Record approximate volumes collected in each tube on datasheet.
3. Store tube #8 at room temperature.
4. Keep all other tubes cool in a refrigerator or on wet ice until processed. If using wet ice, wrap tubes in bubble wrap or use another barrier (i.e. a styrofoam cup) to keep them from directly touching the ice in order to minimize hemolysis.
5. Gently invert tube #6 (or tube #2 in CP) five times. Make 4 blood slides: 2 for Antech and 2 for Al Segars. Allow slides to dry and store in slide holders and label holders with the date.
6. Transfer 0.3 mL whole blood from tube #6 (tube #2 in CP) via clean, unused pipette to cryovial labeled "heparinized whole blood". Recap tube #6 (tube #2 in CP). Label cryovial with date and refrigerate.
7. Centrifuge remaining blood in tube #6 and tube #5 (or only tube #2 in CP) for 5 minutes. Label the 5+ cryovials with the date.
8. Transfer 0.6 mL plasma from tube #6 (tube #2 in CP) via clean, unused pipette to cryovial labeled "CHEM." Transfer remaining plasma to cryovials "TEST" and "BANK." Ensure that all plasma is removed, recap tube #6 and refrigerate remaining red blood cells.
9. Transfer plasma of tube #5 (tube #2 in CP) via pipette to 3+ labeled cryovials:
   0.5 ml into "BAPE" (bile acids and protein electrophoresis)
   0.2 ml into "BV" (biliverdin)
   remainder into cryovials labeled "BANK" (banking) – fill equally
10. Ens ure that all plasma is removed from the red cells in tube #5, recap tube #5, and refrigerate remaining red cells.

Storage prior to shipping:

11. Refri gerate: tube #1-4; remaining red cells in tube #5-6; blood lysis vial; cryovials labeled "heparinized whole blood," "CHEM," "BAPE," "BV," "TEST," and "BANK."
12. Roo m temperature: blood slides, blood culture tube #8.

Shipping (same day):

13. Contact **Margie Peden-Adams** on the same day of collection. Place plasma cryovials ("BAPE," "BV," "TEST," "BANK"); scute scrapings (see protocol below); and blood lysis vial or skin biopsy at the bottom of the shipping container. Place frozen gel packs directly on top of these samples. Wrap blood tubes #1-6 in bubble wrap so that tubes are not touching each other and place them on top of the gel packs. Place 2 of the blood slides "Al Segars" at the top of the container. Ship by FedEx overnight to Margie Peden-Adams.
14. Ship t he cryovials labeled "heparinized whole blood" and "CHEM" and 2 blood slides with a frozen gel pack by FedEx overnight to **Antech**.
15. Ship blood culture tube #8 at room temperature to **Antech**.

Scute scrapings: The scute scraping should be performed as soon after the blood collection as is practical. The scute scraping should be collected, stored, and shipped with the initial blood sample and will only be taken at the initial sampling phase (kit A only). The scute sample must be collected from the outermost edge of the eight most posterior marginal scutes of the carapace. Scutes free of fouling organisms/epibiota should be targeted for sampling.

1. Scrub 2 cm or more of carapace dorsal and ventral to the edge of these scutes vigorously with plastic scrubbing pad to remove sloughing keratin. If there are no areas free of epibiota, use the plastic scraper to clear the target area as thoroughly as possible prior to scrubbing.
2. Rinse the scrubbed area with high purity distilled water and isopropanol provided in the kit.
3. Remove remaining foreign matter and debris using clean room wipers, distilled water and isopropanol.
4. Hold a polyethylene sample bag under the prepared area.
5. Remove the lateral edge of the prepared marginal scutes by moving a disposable stainless steel biopsy tool parallel to the edge being sampled, allowing the shavings to fall directly into the polyethylene sample bag. Typically the posterior lateral corner of each scute will yield the thickest sample without penetrating the keratin and contaminating the sample with untargeted tissue. This should yield small shavings or splinters of keratin ~ 1 mm in thickness totaling 0.2-0.5 g. (Target approximately 4 inches or 10 cm total of 1 mm thick shavings).
6. Label the outside of the bag with the date.
7. Keep this sample cool in a refrigerator or on wet ice and ship with the blood samples on frozen gel packs.

***Fecal samples*:** A fecal sample for parasitology should be taken opportunistically prior to deworming (kit A) and at the end of rehabilitation prior to release (kit D).

1. Collect small amount feces (~one tablespoon) and place in a Ziploc bag. It is appropriate to collect feces from the water if there is still some consistency to it.
2. Double-bag sample and label both Ziploc bags with the date.
3. Place fecal sample in cooler on ice or in refrigerator (do not freeze!).
4. Ship sample with frozen gel packs (place the double-bagged sample into a 3rd Ziploc bag that contains the ice pack) via FedEx 2 day mail to Dr. Ellis Greiner within 7 days.

Epibiota samples:

1. Collect representative species and samples of epibiota from plastron, carapace, and skin.
2. Place in 3 separate vials (one for each location: plastron, carapace, skin) with 95% ethanol (preferred) or isopropyl alcohol and store at room temperature.
3. Ship to Terry Norton at the end of the season (November).

***Biopsy/histopath of suspicious lesion or mass*:**

1. Label formalin vial with identification number of turtle and specific location of mass/lesion. Please obtain photograph (preferably digital, labeled with animal ID, date, and stranding location) of lesion/ mass/biopsy.
2. Provide a brief description of lesion on the datasheet and other pertinent history of case should accompany sample to lab.
3. Representative tissue samples should be less than ¼ inch thick to ensure proper fixation. Proper fixation is important in preserving specimens for histopathologic evaluation. Ideally, tissue should be fixed in a volume of formalin solution 10 times the volume of the tissue for adequate fixation.
4. Send digital images and biopsy specimens to Dr. Terry Norton via regular mail (not paid for by project funds). These samples will be forwarded to Dr. Nancy Stedman for histopathological evaluation. Results will be available to clinician in a timely fashion.

***Skin sample for genetics*:**

1. If blood tube #7 was not collected for genetics, collect a tissue sample from trailing edge of flipper via a fresh disposable biopsy punch.
2. This can be done when the turtle is more stable.
3. Store tissue in 95% ethanol in a refrigerator and label vial with "DT genetics", turtle ID, date, and stranding location.
4. Ship samples with frozen gel packs to Al Segars at the end of the season (November), who will forward them to Joe Quattro at University of SC for analysis.

Follow-up sampling of live debilitated turtles in rehab (Kits B-D):

"Recovering Turtle" Samples (Kits B and C): Blood sampling should be repeated two times during the recovering phase of the animal. Ideally the chosen time points will capture the rate of maximum improvement, not after the animal has substantially improved.

B. The second samples (kit B) should be taken approximately one week after the turtle ***begins to eat*** food on its own.
C. The third samples (kit C) should be taken ***within 10 weeks of the second sample and after a small observable improvement*** in weight, body condition, behaviors, and clinical data parameters. Do not wait until the animal has fully recovered.

Use the kits labeled B and C with the turtle's original kit ID number. Follow the blood protocol described above to collect blood tubes #1-6. If the turtle cannot withstand 32 mL of blood collection, then follow the blood contingency protocol described above. Process and ship all samples as described above. No scute, fecal, blood culture, epibiota, or "TEST" samples are requested at these time points (supplies for those purposes are not included in kits B and C). Please fill out a datasheet at each sampling event and include in the shipment of samples. We realize that the second time point is vague and subjective, therefore recording weights, measurements, behavioral observations, and clinical data (i.e. PCV, TP, and other plasma chemistries) throughout the recovering phase will be very important. Please use and keep the "Major Milestones and Clinical Records" datasheet throughout treatment of the animal and include only in the final shipment of samples.

"Recovered" Sample: Just prior to release of the animal, repeat the blood, blood culture, and fecal sample collection. Use the kit labeled D with the turtle's original kit ID number to collect blood (tubes #1-6; 8) and fecal samples. Process and ship all samples as described above utilizing supplies in the kit, including "TEST". Please send copies of the "Major Milestones and Clinical Records" datasheet to Margie Peden-Adams, as well as any other available information, such as medical treatment and feeding schedules, and records of measurements, behavioral observations, and clinical data.

If the turtle dies during rehabilitation, follow the necropsy protocol – page 10.

VI. DEBILITATED LOGGERHEAD: NECROPSY PROTOCOL (Protocols 3&4 on flow charts)

1) Primary Gross Necropsy Sites:

a) Turtles found in **North Carolina** and **northern South Carolina** (Georgetown and Horry counties) may be transported to:

- Dr. Craig Harms
  North Carolina State University
  Center for Marine Science and Technology, C Mast
  303 College Circle
  Morehead City, NC 28557
  Cell: 252-222-6300 (or 252-646-4141), Office: 252-222-6339
  Email: craig_harms@ncsu.edu
  Or
- Dr. Greg Lewbart or Shane Christian
  Department of Clinical Sciences
  North Carolina State University
  College of Veterinary Medicine
  4700 Hillsborough Street
  Raleigh, NC 27606
  Office: 919-513-6439
  Fax: 919-513-6336
  Email: Greg_Lewbart@ncsu.edu

  Note: a total of 4 turtles will be necropsied from North Carolina. Dr. Harms will also assist on necropsies from South Carolina where a total of 4 turtles will be necropsied.

b) Turtles found in **southern South Carolina** (Charleston, Beaufort and Colleton) and **Georgia** will be transported to the Georgia Department of Natural Resources in Brunswick, GA or arrangements can be made through Dr. Terry Norton to drop off the turtle at St. Catherines Island Wildlife Survival Center dock in Midway, GA. Please contact either:

- Mark Dodd
  Georgia Department of Natural Resources
  Direct: 912-280-6892, Secretary: 912-264-7218
  Email: Mark_Dodd@dnr.state.ga.us
  Or
- Dr. Terry Norton
  St. Catherines Island Wildlife Survival Center
  Office: 912-884-5005, 912-884-5006
  Cell: 912-270-1180
  Home: 912-554-1618
  Email: tnorton@wcs.org and tnmynahvet@aol.com (send to both for quickest response)

  Note: a total of 4 turtles will be necropsied from Georgia. Dr. Norton will also assist on necropsies from South Carolina where a total of 4 turtles will be necropsied.

c) For turtles found in **Florida**, contact Terry Norton to discuss appropriate necropsy sites.

2010000512

2) Toxicology Protocol for Collection of Tissues at Necropsy (Protocols 3&4 on flow charts)

Strategy: Contaminants to be measured in certain samples are listed in Table 1. Tissue samples will be collected from fresh dead (code 1) or euthanized debilitated turtles during necropsy (Protocol 3 on flow chart). If the debilitated turtle is to be euthanized, then blood samples should be taken using a live turtle Kit A prior to administering euthanasia, and additional blood collected during the necropsy will not be needed. Blood sampling from kit A will need to be processed and shipped out on the same day. If these blood samples were not collected, please collect blood during the necropsy as described below.

We are also in need of samples from **control** turtles: code 1 or euthanized **acute mortalities** (boat strike, entanglement) that appear to be otherwise "**healthy**" turtles (Protocol 4 on flow chart). If the control turtle will be euthanized, collect blood from the dorsocervical sinus using the supplies in the necropsy kit (not kit A). Blood does not need to be sent overnight. Follow the necropsy protocol and collect all tissues, including those for hitopathology. Target 3-4 control turtles per state.

Supplied Materials:
A sampling kit will be provided containing the following for each dead stranded animal:

Blood collection tubes (4 pre-labeled and numbered by collection order)
Vacutainer double-ended needles (2)
Stainless steel biopsy punch (disposable)
3 Pre-labeled polyethylene sample bags for scute, liver, and brain samples
2 pieces of pre-cleaned aluminum foil for fat and liver samples in separate Ziploc baggies
1 50 mL tube for additional liver (PFOS) sample
3 hexane-rinsed, foil wrapped scalpel handles and forceps
1 set of "No Teflon" handles and forceps for the additional liver (PFOS) sample
Scalpel blades (4)
Datasheet

A kit to be used between animals will include:
Plastic scrubbing pad (clean with 10% bleach or another appropriate disinfectant between each turtle)
Cleanroom wipers
Squirt bottle with high purity isopropanol
Squirt bottle with high purity water

Sampling: Blood, scute, fat, liver, and brain will be collected using the following protocols. Please collect these samples ***prior to removing organs or sampling for other purposes***. Samples should be collected ***in the order described*** to reduce contamination from other tissue types and external sources. Keep all samples cool in a refrigerator or on wet ice until they can be frozen. Freezing immediately is preferred. Please record all turtle ID information, all sampling problems, and storage locations on the provided datasheet.

Scute scrapings: The scute sample must be collected from the outermost edge of the eight most posterior marginal scutes of the carapace. Target scutes within this area that are free of fouling organisms.

1. Scrub 2 cm of carapace dorsal and ventral to the edge of these scutes vigorously with the plastic scrubbing pad to remove sloughing keratin. If there are no areas free of epibiota, use the plastic scraper to clear the target area as thoroughly as possible prior to scrubbing.
2. Rinse the scrubbed area with high purity distilled water and isopropanol.
3. Remove remaining foreign matter and debris using clean room wipers, distilled water and isopropanol.
4. Hold a polyethylene sample bag under the prepared area.
5. Remove the lateral edge of the prepared marginal scutes by moving a disposable stainless steel biopsy tool parallel to the edge being sampled, allowing the shavings to fall directly into the polyethylene sample bag. Typically the posterior lateral corner of each scute will yield the thickest sample without penetrating the keratin and contaminating the sample with untargeted tissue. This should yield small shavings or splinters of keratin ~ 1 mm in thickness totaling 0.2-0.5 g. (Target approximately 4 inches or 10 cm total of 1 mm thick shavings).

6. Label the outside of the pre-labeled bag with the necropsy date. Place the bagged sample inside a second outer bag and include a pre-labeled paper label inside the outer bag.
7. Freeze this sample at -20 °C or below.

Fat: Fat may not be available on these debilitated turtles. Occasionally, you may see black flaccid tissue in the inguinal regions where the fat is usually present. This is thought to be remnants of fatty tissue, please sample this if nothing else is available.

1) Open a pre-cleaned piece of foil completely, keeping the cleaned inside surface facing up.
2) Immediately after removing the plastron, use the provided scalpel blade, hexane-rinsed scalpel handle, and hexane-rinsed forceps to remove a 2 g to 5 g piece of fat from the **left inguinal region**. If little fat is available, take from other areas but note these locations on the datasheet.
3) Using the forceps, transfer the fat to the center of the pre-cleaned piece of aluminum foil.
4) Fold the foil in half over the tissue and make a closed pouch by folding over the 3 open edges several times onto themselves.
5) Place the sample inside a pre-labeled plastic Ziploc bag and label the outside with the necropsy date.
6) Freeze this sample at -20 °C or below.

*****Do not reuse this blade, handle or forceps to collect the liver sample.***

Liver: Three samples of liver will be collected for different purposes, therefore they must be collected and stored differently. *****Please don't puncture the gallbladder before taking these samples. And, do not touch the liver surface with plastic gloves or any object before taking these samples.***

1. Open a hexane-rinsed piece of foil completely, keeping the cleaned inside surface facing up.
2. Immediately after removing the plastron, use a fresh, provided scalpel blade, hexane-rinsed scalpel handle, and hexane-rinsed forceps to remove a one inch cube of liver from the **posterior marginal edge of the right lobe**.
3. Using the forceps, transfer the liver to the middle of the opened piece of aluminum foil (liver sample #1, foil).
4. Fold the foil in half over the sample and make a closed pouch by folding the 3 open edges several times onto themselves.
5. Place the foiled sample inside a pre-labeled Ziploc bag.
6. Using the same instruments, collect another one inch cube of liver from near the same location as the first sample.
7. Using the same forceps transfer the tissue to a pre-labeled polyethylene sample bag and seal the bag (liver sample #2, polyethylene bag).
8. Label the outside of both pre-labeled bags with the necropsy date.
9. Using a new scalpel blade with the handle and forceps labeled "No Teflon," collect a one inch cube of liver from the **posterior marginal edge of the left lobe**.
10. Place this sa mple into the 50 mL tube labeled "PFOS liver" (liver sample #3, 50 mL tube).
11. Freeze all 3 sa mples at -20 °C or below.

*****Do not reuse these blades, handles or forceps to collect the brain sample.***

Blood: If the turtle was euthanized, blood should have already been collected. If not, and the heart is still beating, then:

1. Place one end of the **double-ended needle** into the heart.
2. Collect tubes #1 and #2 (5mL green-top tubes for organic contaminants) followed by tubes #3 and #4 (5mL green-top tubes for metal analysis).
3. Try to get at least 5mL total for each of the two contaminant analyses.
4. Label tubes with necropsy date.
5. Keep tubes on ice until frozen standing upright in a -20 °C freezer as soon as possible.

Brain:

1. Open the brain cavity carefully to avoid touching the tissue with your instruments.
2. With a fresh, provided scalpel blade, hexane-rinsed scalpel handle, and hexane-rinsed forceps, cut the brain in half laterally. Transfer one half directly to a polyethylene sample bag. The other half of the brain should be saved in formalin for histopathology.

3. Label the outside of the pre-labeled bag with the necropsy date. Place the bagged sample inside a second outer bag and include a pre-labeled paper label inside the outer bag
4. Freeze the sample at -20 °C or below.

Storage and shipping:
Store all toxicology samples frozen. Blood tubes cannot be stored at temperatures below -20 °C or they will break. Toxicology samples and datasheets collected at necropsy should be shipped ***on dry ice*** to Jennifer Keller at the end of the season (November).

Table 1. List of contaminants targeted for analysis in certain tissues.

Total Mercury
IN:
brain
blood
scute
liver

PFCs
PFOS
PFOA
IN:
liver
plasma

Other organohalogens				
PCB congeners			**Organochlorine pesticides**	**PBDE congeners**
PCB 1	PCB 114	PCB 177	alpha-HCH	PBDE 17
PCB 8	PCB 118	PCB 178	beta-HCH	PBDE 25
PCB 18	PCB 119	PCB 180	gamma-HCH	PBDE 28
PCB 28	PCB 121	PCB 183	HCB	PBDE 30
PCB 29	PCB 126	PCB 185	aldrin	PBDE 33
PCB 31	PCB 127	PCB 187	dieldrin	PBDE 47
PCB 44	PCB 128	PCB 188	endrin	PBDE 49
PCB 45	PCB 130	PCB 189	mirex	PBDE 66
PCB 49	PCB 132	PCB 191	*cis*-chlordane	PBDE 71
PCB 50	PCB 137	PCB 193	*trans*-chlordane	PBDE 75
PCB 52	PCB 138	PCB 194	*cis*-nonachlor	PBDE 85
PCB 56	PCB 146	PCB 195	*trans*-nonachlor	PBDE 99
PCB 63	PCB 149	PCB 196	heptachlor	PBDE 100
PCB 66	PCB 151	PCB 197	heptachlor epoxide	PBDE 116
PCB 70	PCB 153	PCB 199	oxychlordane	PBDE 119
PCB 74	PCB 154	PCB 200		PBDE 138
PCB 77	PCB 156	PCB 201	4,4'-DDT	PBDE 153
PCB 79	PCB 157	PCB 202	2,4'-DDT	PBDE 154
PCB 82	PCB 158	PCB 203	4,4'-DDE	PBDE 155
PCB 87	PCB 159	PCB 205	2,4'-DDE	PBDE 156
PCB 92	PCB 163	PCB 206	4,4'-DDD	PBDE 181
PCB 95	PCB 165	PCB 207	2,4'-DDD	PBDE 183
PCB 99	PCB 166	PCB 208	endosulfan I	PBDE 190
PCB 101	PCB 167	PCB 209	endosulfan II	PBDE 191
PCB 104	PCB 169		endosulfan sulfate	PBDE 203
PCB 105	PCB 170	*IN:*		PBDE 205
PCB 106	PCB 172	***fat***	**Other organochlorines**	PBDE 206
PCB 107	PCB 174	***liver***	octachlorostyrene	PBDE 209
PCB 110	PCB 175	***plasma***	pentachlorobenzene	
PCB 112	PCB 176			

3) Gross Necropsy Protocol

Please follow the necropsy form provided below that contains ***reminder boxes*** for collecting the toxicology and other samples; however, the original form can be downloaded from the following website:

http://www.vetmed.ufl.edu/sacs/wildlife/seaturtletechniques/necropsy

Use this form and follow it as closely as possible. The protocol is cumbersome, but forces the person doing the necropsy to evaluate all systems. The order of organ systems on the original form has been changed here to more closely match the order in which the necropsy is performed. Aerobic and anaerobic bacterial and fungal cultures should be performed when appropriate (not paid for but we would appreciate any results). Minimally, affected tissues should be frozen for future culture. A set

of representative tissues (thin sections) from all major organ systems listed on the necropsy datasheet should be collected and placed in 10% buffered formalin and a separate set frozen for future infectious disease cultures at -20°C or below. A set of formalinized tissues, paraffin blocks, or representative slides should be sent to Dr. Terry Norton from each case. Please send the address where the final histopathology report should be sent. The frozen set of tissues should also be sent to Dr. Norton.

Dr. Terry Norton will submit the formalinized tissues to Dr. Nancy Stedman at Athens Diagnostic Laboratory, University of Georgia College of Veterinary Medicine. Dr. Stedman will evaluate all of the sets of tissues histologically. This will allow for more standardized results. Clinicians should feel free to submit another set of tissues to your pathologist of choice.

Supplied Materials:
Tissue cassettes labeled for each organ for tissues in formalin
Specimen cups to store tissue cassettes in formalin (3)
Plastic tubes labeled for each organ for frozen tissue
Plastic baggie to combine all frozen samples into (1)
4 microscope slides 2 slide holders for marrow impression smears
Syringe with a 20 gauge needle and 50 mL tube for bile collection
Overnight FedEx label for shipment of bile to Tom Sheridan
Formalin, because it cannot be shipped, and necropsy knives/chisels are not supplied

Special attention/instructions:

- When collecting gastrointestinal tract samples, take care to not touch the mucosa (inner lining) with anything (gloves, forceps, etc). Mucosa needs to be intact.
- Bone marrow is needed to further define the anemia that is observed in these turtles. To collect this, chisel between a marginal and lateral scute on the carapace. Remove a piece of trabecular (spongy looking, either red or yellow) bone within the lateral scute and place it in formalin. Record the color of the trabecular bone on the datasheet. Take another piece of this bone to make four marrow impression smears on four microscope slides by gently pressing the spongy material onto the slides. Don't be too rough with the slides or the cells will lyse. Allow slides to air dry and replace them in the cardboard slide holders. Place marrow smears inside multiple sealed baggies so that formalin does not come in contact with them. Send the formalinized sample and smears to Dr. Terry Norton with the other formalinized samples. Store another piece of bone in a plastic tube frozen for future infectious disease cultures and ship these along with the frozen set to Dr. Norton.
- For necropsies occurring in South Carolina only: Bile should be collected after the liver toxicology samples have been collected. Draw as much as possible into the provided plastic syringe and transfer bile into 50 mL tube. Refrigerate sample (do NOT freeze) and deliver same day with frozen gel packs to Tom Sheridan, Folly Road Animal Hospital, 1038 Folly Road, Charleston, SC 29412 phone: 843-762-4944. This sample will be used to identify possible indicators that can further define the anemia that is observed in these turtles.

Storage and shipping:
Store all formalinized tissues in formalin, keep the marrow smears away from formalin, and keep the frozen set at -20 °C or below. Send all samples to Dr. Terry Norton at the end of the season (November). The formalinized tissues and smears can be shipped together as long as the smears are bagged in waterproof baggies. The frozen samples should be shipped ***on dry ice*** overnight.

4) Parasitology:

Supplied Materials:
50 mL tubes for parasite collection (3)
2-day FedEx label to ship samples to Ellis Griener (don't use this on a Friday)

Always keep the collected parasite specimens wet immersed in water, saline or fixative. Place worms from different organs into different labeled containers initially in physiological saline (0.85% NaCl). Each label

should indicate host species, accession or necropsy number, organ from which worm was removed, and collector's name. If there are many specimens, provide many specimens. Roundworm infection may be mixed and you are trying to provide both sexes of as many species as are present. Fluke infections also may be a mixture of species. If you provide a large number of specimens, the chances you provided specimens in good condition will increase. Also, depending upon the case and the species of the host will determine how detailed you might need the identification, i.e., to superfamily, genus, species.

Trematodes and Cestodes should be placed in a dish containing either tap water or physiological saline and allowed to relax for 30-60 minutes. They should then be fixed in AFA (85ml of 85% ethanol. 10ml commercial formalin, 5ml glacial acetic acid). Specimens may be stored and sent to the parasitologist in this solution. It is best to allow large tapeworms to flatten as much as possible and not pack them too tightly, as representative sections need to be mounted flat to see structures necessary for identification. Be sure you have included scoleces with tapeworms as these structures are often lost resulting in nonidentification in most cases. Flukes need to be flattened as well and this can be accomplished by fixing specimens between glass slides with small pressure applied to the upper slide.

Nematodes should be dipped in concentrated glacial acetic acid or hot 70% ethanol to fix them in as straight a posture as possible. After they have stopped writhing, transfer them into glycerin-alcohol (90ml 70% ethanol, 10ml glycerin). They may be stored indefinitely in this solution.

5) Epibiota collection:

Supplied Materials:
50 mL tubes for epibiota collection (3)

- Collect representative species and samples of epibiota from plastron, carapace, and skin.
- Place in 3 separate pre-labeled 50 mL tubes (one for each location: plastron, carapace, skin) with ethyl alcohol (preferred) or isopropyl alcohol and store at room temperature.
- Label tubes with date.
- Ship to Terry Norton at the end of the season (November).

7) Genetic sampling

1. Disinfect cutting board/surface with dilute bleach solution (1:10). Place a flipper on clean cutting board/surface.
2. Press the biopsy punch firmly into the flesh as close as possible to the posterior edge of the flipper and rotate one complete turn, cutting through the flesh of flipper. Alternatively use a sterile scalpel blade to remove a small plug of tissue.
3. Push out the tissue plug by inserting a wooden skewer or wire through the hollow end of the biopsy punch and place the tissue plug into a labeled (turtle number) vial with 95% EtOH.
4. Repeat 1-3 for an additional sample.
5. Do not reuse biopsy punch, wooden skewer or scalpel blade on another animal; disinfect wire skewer with bleach solution or another appropriate disinfectant if reusing.
6. Refrigerate samples and ship at the end of the season to Al Segars on frozen gel packs.

Persons performing necropsy: _____

Turtle ID#_____
(Stranding Reference)

Sea Turtle Necropsy Report

---------- EXTERNAL EXAM ----------

Ab=Abnormal NF=No Findings NE=Not Examined

Descriptions-include color, number, size, distribution, texture of lesions

Carapace Ab NF NE

Trauma

Propeller wound Puncture wounds Missing scutes Bites Tumors

Description/additional comments:

Collect scute scraping

Carapace Epibiota Ab NF NE

Epibiota types
Sponges
Barnacle
Polychaetes

Goose barnacles
Leeches
Amphipod

Bryozoans
Other _____

Collect representative samples of epibiota from carapace

Collect bone marrow from lateral scute – store in formalin, frozen, and make smears

Description/additional comments:

Plastron Ab NF NE

Trauma

Propeller wound Puncture wounds Missing scutes Bites Tumors

Plastron Marrow Ab NF NE

Description/additional comments:

Plastron Epibiota Ab NF NE

Epibiota types
Sponges

Collect representative samples of epibiota from plastron

Barnacle
Polychaetes
Goose barnacles
Leeches
Amphipod

Bryozoans
Other _____

Description/additional comments

Integument (Skin) **Ab** **NF** **NE**

Collect skin sample for genetics

Trauma

Sloughing
Necrosis
Net wounds
Fishing line/rope
Tumors

Propeller wounds
Other _____

Region: **Head** **Neck** **Front Flippers** **Rear flippers** **Tail**

Description/additional comments:

Integument Epibiota **Ab** **NF** **NE**

Collect representative samples of epibiota from skin

Epibiota types
Sponges
Barnacle
Polychaetes

Goose barnacles
Leeches
Amphipod

Bryozoans
Other _____

Description/additional comments

Eyes Ab NF NE
Location Right Left Both

Description/additional comments:

Discharge Ab NF NE Location: Ocular Nasal Oral

For ocular: Right Left Bilateral
Color:_____
Description/additional comments:

Cloaca Ab NF NE

Swollen Prolapsed Mucosal pseudomembrane
Feces color:_____

Check for sex
cloaca beyond carapace
yes
no

Glans penis
yes
no

Description/additional comments:

Code 1 Only

MUSCULOSKELETAL SYSTEM

Skeleton and joints Ab NF NE
Joint/synovial fluid: Color_____

Characteristics:
Blood tinged
Cloudy/flocculent material
Plaques

Other_____
Viscosity:_____

Fractures
No
Yes,
where? _____

Dislocation
No

Yes,
where? _____

Deformities
No
Yes,
where? _____

Description/additional comments:

Collect fat sample from left inguinal area

Musculature Ab NF NE

Characteristics:

Abcesses
Clotted blood
Pale

Gelatinized
Necrosis
Parasites
Cysts
Other (Specify) _____

Description/additional comments:

Coelomic cavity Ab NF NE

Fluid amount: _____ ml

Color:_____ Viscosity:_____

Characteristics:

Clear
Cloudy/flocculent material
Blood tinged
Hemorrhage

Blood clots
Adhesions
Plaques
Gritty material (hard)

Peritoneum:

Characteristics:

Tumors
Abcesses /granulomas
Congested

Hemorrhage
Clotted blood

¨ Parasites (trematodes in mesenteric arteries)-SAVE_____Number

Description/additional comments:

CARDIOVASCULAR SYSTEM

Pericardial sac Ab NF NE
Fluid amount: _____ ml
Color:_____ Viscosity:_____

Collect blood samples if the heart is still beating

Characteristics:

Clear
Cloudy/flocculent material
Blood tinged
Hemorrhage

Blood clots
Adhesions
Plaques
Caseous material

Description/additional comments:

Pulmonary arteries Ab NF NE & Aorta

Characteristics:

Thrombi
Plaques
Ruptures

Parasites (Trematodes--SAVE) _____ Number, _____ Size

Description/additional comments:

Atria Ab NF NE
Left Right Both

Characteristics:

Flaccid
Stiff
Thickened
Dilated

Hemorrhage
Pale areas
Parasites

Dimensions (cm (l) x cm (w) x cm (h)): _____left, _____ right
Thickness of wall: right _____cm, left _____cm
Color: Surface:_____ Lumen:_____
Description/additional comments:

Ventricle Ab NF NE
Characteristics:
Dimensions:_____ cm (l) x cm (w) x cm (h)
Thickness of wall_____cm
Weight_____gm
Abscess/granulomas
Masses
Scars (fibrosis)
Friable

Color:_____
Description/additional comments:

GASTROINTESTINAL SYSTEM

Liver Ab NF NE

Characteristics:
Dimensions:_____ cm (l) x cm (w) x cm (h)
Weight: _____gm (or lbs/oz)
Color:_____

Types of Lesions:
Abcesses/granulomas
Cysts
Masses

Congestion

Collect 2 liver samples from right lobe with hexane-rinsed instruments #1 into foil; #2 into bag

Collect one liver sample (#3) with "No Teflon" instruments from left lobe into 50 mL tube

Fibrosis
Necrosis

Severity of Lesions:
Slight
Mild
Moderate
Severe

Other:
Fatty (greasy)
Friable
Cirrhotic
Fractured

Parasites (SAVE): _____Number

Description/additional comments:

Gall Bladder Ab NF NE
Bile: amount_____ml
Characteristics: thick thin
Color: serosa:_____mucosa:_____bile:_____
Diameter _____cm

Types of Lesions:
Abcesses/granulomas
Cysts
Masses

Congestion
Fibrosis
Necrosis

Other:
Friable
Stones
Gritty material

Parasites (SAVE): _____Number
Description/additional comments:

Oral Cavity & Pharynx Ab NF NE

Characteristics:

South Carolina only: After liver samples are taken, collect bile with syringe and store in 50 mL tube

Ulcers
Fluid
Vomitus

Congestion
Parasites
Barnacles

Broken beak
Mandible
Maxilla

Foreign bodies _____

Description/additional comments:

Esophagus Ab NF NE

Characteristics:

Dilated
Constricted
Perforated

Fluid filled
Foreign bodies_____(SAVE)

Parasites (SAVE)_____Number

Other _____

Mucosa:
Congested
Hemorrhagic
Ulcers

Necrosis
Thickened
Blunted papilla

Film on surface of mucosa

Color: mucosa:_____serosa:_____
*Common in green sea turtles

Description/additional comments:

Stomach Ab NF NE

Characteristics:

Clotted blood
Thickened
Ruptures/laceration

Volvulus (twist)
Erosions

Ulcers:
Mild
Moderate
Severe

Focal
Multifocal
Focally-extensive

Extensive

Color: mucosa_____serosa:_____contents:_____

Contents:
Empty
Fluid
Dilated with gas

Mucus
Sand
Rocks

Other:_____
Foreign bodies_____(SAVE)

Food:
Fish
Bivalves
Crustaceans

Cephalopods
Gastropods
Other_____

Undigested
Partially digested
Digested

Parasites:
Yes
No

<50
>50

Description/additional comments:

Mesentery Ab NF NE

Characteristics:

Hemorrhage
Clotted blood
Masses

Parasites (trematodes in mesenteric arteries)-SAVE_____Number

Description/additional comments:

Pancreas Ab NF NE
Characteristics:
Loss of lobulation Necrotic Edema Inflamed
Color: _____
Description/additional comments:

Small Intestine Ab NF NE

Characteristics:
Empty
Bile

Digesta

Other _____
Foreign bodies_____(SAVE)

Parasites (SAVE): _____Number

Color: mucosa_____serosa:_____contents:_____

Torsion/volvulus
Perforation
Masses
Abcesses

Constrictions
Diverticula
Ulcers (#)_____

Pseudomembrane

Description/additional comments:

Colon Ab NF NE

Characteristics:

Collect feces from colon and other noticeable parasites for parasitology

Torsion/volvulus
Perforation
Masses
Abcesses

Constrictions
Empty
Feces

Fresh blood
Tarry
Other _____

Ulcers (#)_____

Pseudomembrane

Parasites (SAVE): _____Number

Color: mucosa_____serosa:_____contents:_____
Description/additional comments:

LYMPHOID SYSTEM

Spleen Ab NF NE

Characteristics: Enlarged Atrophied Friable
Dimensions: _____ cm (l) x cm (w) x cm (h)
Weight: _____gm

Abscess/granulomas
Masses
Scars (fibrosis)
Friable

Color:_____

Description/additional comments:

Thymus Ab NF NE
Characteristics: Enlarged Atrophied Friable
Color:_____
Description/additional comments:

ENDOCRINE SYSTEM

Thyroid Ab NF NE

Characteristics: Normal Enlarged Atrophied Friable
Dimensions: _____ cm (l) x cm (w) x cm (h)
Weight: _____gm
Description/additional comments

Parathyroid(s) Ab NF NE

If unable to find, save lining over left thymus
Characteristics: Normal Enlarged Atrophied
Dimension(s): _____ cm (l) x cm (w) x cm (h)
Weight: _____gm
Description/additional comments:

Adrenal gland(s) Ab NF NE

Normal Enlarged Atrophied

Dimensions: _____ cm (l) x cm (w) x cm (h)
Weight:_____gm

Description/additional comments:

RESPIRATORY SYSTEM

Trachea/Bronchi Ab NF NE

Abnormal Tissue:
Trachea
Bronchi

Characteristics:

Mucosa:
White
Vessels congested with blood

Hemorrhage
Ulcers

Trauma:
Punctures
Lacerations

Fluid:
Serous
Mucoid
Purulent

Fluid or foam:
Color:_____
Parasites (SAVE): _____ Number
Description/additional comments:

Lungs Ab NF NE

Characteristics:

Color:

Lesion location:
Left
Right
Both

Cranial
Caudal
Dorsal

Ventral
Middle

Distribution:
Diffuse
Focal
Multifocal

Severity
Mild
Moderate
Severe

Description/additional comments:

URINARY TRACT

Kidneys Ab NF NE
Characteristics:
Dimensions R_____ cm (l) x cm (w) x cm (h)
Dimensions L_____ cm (l) x cm (w) x cm (h)
Cortex color:_____
Medulla color:_____

Lesions:
Dialated with blood
Hemorrhage
Clotted blood

Abcesses/granulomas
Parasites
Cysts

Dialated with urine

Masses
Calculi

Congestion
Necrosis (focal, multifocal, diffuse)

Left weight_____gm_____
Right weight_____gm_____
Description/additional comments:

Ureters Ab NF NE
Characteristics:
Dilated Strictures Granulomas Calculi (SAVE)
Bilaterally symmetrical: Yes No
Description/additional comments:

Urethra Ab NF NE
Characteristics:
Patent: Yes No
Lesion: Ulcers Calculi Strictures
Description/additional comments:

Urinary bladder Ab NF NE

Characteristics:

Empty
Dilated
Thickened
Tumors

Color: mucosa:_____urine:_____

Mucosa:
Hemorrhagic
Ulcerated

Masses
Plaques
Necrotic

Urine: amount _____ml Consistency:_____

Gritty material
Clear
Cloudy/flocculent material
Blood tinged

Parasites:
Yes(SAVE)

No

<5
5-20
>20

urinalysis strip (dip stick):

Description/additional comments:

REPRODUCTIVE

Gonads Ab NF NE

Characteristics:

Sex:
Male
Female

Maturity:
Mature
Immature

Enlarged
Involuted
Masses
Follicles

Necrotic

Description/additional comments:

Oviduct Ab NF NE
Characteristics:
¨ Enlarged ¨ Dilated with fluid ¨ Hemorrhagic ¨ Friable
¨ Tumors ¨ Masses ¨ Mucus ¨ Eggs
Description/additional comments:

NERVOUS SYSTEM

Dura mater and Inside calvarium **Ab NF NE**

Section brain laterally.

Collect ½ brain with hexane-rinsed instruments into bag.

Collect other ½ into formalin for histopathology.

Characteristics:
Hemorrhage Clotted blood Abcesses/Granulomas
Description/additional comments:

Central Nervous System Ab NF NE
Cerebral Spinal Fluid (CSF): _____ml color:_____
Spinal Cord Fluid (SCF):_____ml color:_____

Characteristics: (denote location of change in comments)

Distended red vessels
Abcesses/Granulomas
Clotted blood

Hemorrhage
Asymmetry
Edema
Black nodules

Lesions:
Brain
Spinal Cord _____(location)
Pituitary
Meninges

Weight: brain_____gm pituitary_____gm

Description/additional comments:

Other:
Internal Auditory Meatus: Ab NF NE

Other information or description continuation page:

_____

_____

_____

_____

_____

B

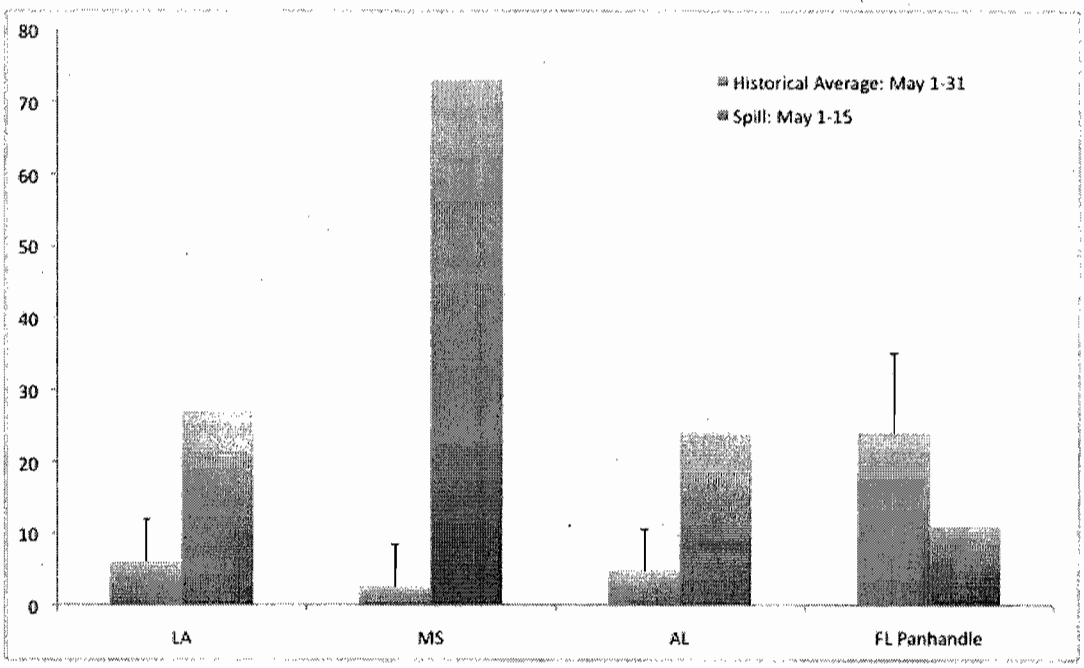
Summary of Recent Sea Turtle Stranding Data in the Northern Gulf of Mexico

- Table 1 below provides the 5-year average sea turtle strandings and associated summary statistics, by month (April through August) and state for the northern Gulf of Mexico (LA, MS, AL, FL panhandle). The most recent available and validated 5 year time periods for each state were used.
- Sea turtle stranding coverage in the northern Gulf of Mexico, outside of Florida, has been incomplete in recent years. In LA, MS, and AL the majority of reported strandings are primarily opportunistic due to more remote coastlines and limited dedicated stranding surveys.
- Louisiana Data - Systematic surveys, funded by NOAA, were conducted over approximately 30 miles of western Louisiana beaches in 2005, 2006, 2007 and through August 2008. The majority of strandings reported during those survey years are from the western beaches where dedicated surveys were conducted.
- Due to the oil spill response, survey effort and human presence/awareness (aerial and ground) is higher than previous years and we believe that some portion (unquantifiable) of the increased stranding reports now are likely a direct result of the increase in survey effort and human presence/awareness.

Table 1. Five-year stranding averages and summary statistics for LA through the FL panhandle. All species are combined. LA, MS, AL data for 2005 - 2009; Florida data for 2003-2007.

Louisiana (2005 - 2009)				
April	**May**	**June**	**July**	**August**
5-Yr Avg = 6.0 Range = 0-14 SD = 5.2	5-Yr Avg = 6.0 Range = 1-15 SD = 5.9	5-Yr Avg = 1.2 Range = 0-3 SD = 1.3	5-Yr Avg = 1.2 Range = 0-3 SD = 1.3	5-Yr Avg = 1.0 Range = 0-3 SD = 1.2
Mississippi (2005 - 2009)				
April	**May**	**June**	**July**	**August**
5-Yr Avg = 2.4 Range = 0-10 SD = 4.3	5-Yr Avg = 2.6 Range = 0-13 SD = 5.8	5-Yr Avg = 0.4 Range = 0-1 SD = 0.5	5-Yr Avg = 1.6 Range = 0-8 SD = 3.6	5-Yr Avg = 0.2 Range = 0-1 SD = 0.4
Alabama (2005 - 2009)				
April	**May**	**June**	**July**	**August**
5-Yr Avg = 4.0 Range = 0-8 SD = 3.5	5-Yr Avg = 4.8 Range = 1-15 SD = 5.8	5-Yr Avg = 1.4 Range = 0-4 SD = 1.7	5-Yr Avg = 2.2 Range = 1-4 SD = 1.1	5-Yr Avg = 1.8 Range = 1-4 SD = 1.3
Florida Panhandle (Escambia County - Wakulla County) (2003 - 2007)				
April	**May**	**June**	**July**	**August**
5-Yr Avg = 17 Range = 13-22 SD = 3.6	5-Yr Avg = 24 Range = 13-37 SD = 11.1	5-Yr Avg = 12 Range = 5-17 SD = 4.4	5-Yr Avg = 14 Range = 7-29 SD = 8.6	5-Yr Avg = 5 Range - 1-10 SD = 3.5

Figure 1. Comparison between the historical averages (error bars represent standard deviation) for reports from May 1-31 in the years 2003-2007 (FL) or 2005-2009 (LA, MS, AL), and the number of confirmed sea turtle stranding reports in 2010 in the four Gulf Coast states for time period of May 1-15.



Recommended Definitions for Data Categories on Reporting Tables and Narratives:

Visibly Oiled = oil (or oil derivative) visible with the naked eye on external (for live and dead animals) or internal (for dead animals) gross examination. Animals will be assessed as appropriate by condition code; internal examination may not be possible or informative for highly decomposed animals. Presence of oil does not necessarily mean that oil exposure was the cause of the stranding.

Not Visibly Oiled = no oil (or oil derivative) visible by naked eye on external (for live and dead animals) and internal (for dead animals) gross examination. Absence of visible oil does not imply that animal was not exposed to or ~~impacted~~affected by oil. Where possible, ~~s~~Samples are taken ~~from every animal that will be examined as part of the damage assessment process to determine the true impacts of the oil spill on stranded animals~~for PAH and dispersant analysis as guided by the NRDA process.

Pending = Live or dead ~~Stranded~~ animals that have been verified but have not yet been fully assessed ~~to the appropriate level (based upon carcass condition) or by the appropriate personnel~~ to determine presence or absence of visible oil.

Comment [BAS1]: What is meant by carcass condition here? Are we saying some animals may remain in pending due to carcass condition? E.g., If we have a severely decomposed animal that is not necropsied (externally examined then buried on beach) but no visible oil was seen externally or internally if the carcass was split open by decomp, do we move it to not visibly oiled? Remains in pending? Goes to some new category "unable to fully assess externally due to decomp state?"

The Incident Action Plan and protocols established for marine mammal and sea turtle response call for (1)~~a~~ complete external exam of all live and dead ~~every~~ animals and(2) ~~-~~internal exam and collection and analysis of tissue samples, as possible based on carcass condition, for all dead animals reported in the designated spill area. ~~(samples collected will depend on animal condition)~~. Dependent on carcass condition, tissues will be collected and analyzed~~Analyses will be done~~ to inform ~~determine~~the investigation regarding the animal's health status (which includes but is not limited to assessing exposure to oil) and potential cause(s) of death. For reporting purposes, animals that have been recovered and verified but are pending necropsy are categorized in the *Pending* status to allow for thorough internal gross examination of the carcass to help categorize the exposure status.

FINAL

POLICIES AND BEST PRACTICES

MARINE MAMMAL STRANDING RESPONSE, REHABILITATION, AND RELEASE

STANDARDS FOR REHABILITATION FACILITIES

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Standards for Rehabilitation Facilities

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Introduction

As part of the National Marine Fisheries Service (NMFS) Stranding Agreements, the Agency will require that all rehabilitation facilities meet the Minimum Standards presented in this document. The goal of this document is to set **MINIMUM** facility, husbandry, and veterinary standards for rehabilitating marine mammals in order to meet the prescribed NMFS Best Practices Marine Mammal Stranding Response, Rehabilitation, and Release - Standards for Release. Likewise some of the standards put forth in this document are based on the U.S. Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS) Animal Welfare Act (AWA) regulations which define minimum standards for permanent captive marine mammals. However, there are some differences between the two documents in that these standards were developed for temporary care and all age groups. **RECOMMENDED** Standards are included in some sections, and consist of facility design and operational suggestions for optimizing the rehabilitation success rate. Meeting or exceeding the recommended standards may be considered a goal to strive towards when upgrading existing, or designing new facilities or protocols.

It is the intent of NMFS to provide a reasonable process for facilities to be upgraded to meet the minimum standards set forth in this document. Substandard facilities may be improved using funds that may be available through the John H. Prescott Rescue Assistance Grant Program (Prescott Grant). Likewise Prescott Grant funds may also be used to improve facilities that meet minimum standards with the goal to achieve or exceed the recommended standards.

Health and safety practices are highly stressed in this document. NMFS expects that all personnel and volunteers to be trained to the HIGHEST LEVEL of responsibility they are assigned. Rehabilitation facilities are encouraged to comply with Occupational Safety and Health Administration regulations.

Purpose

The purpose of rehabilitation is to provide humane care for stranded marine mammals and to optimize the success of releasing the animals back to the wild. Defining a successful release encompasses many factors. As mandated by Title IV Section 402 (a) of the Marine Mammal Protection Act, NMFS has developed guidance and criteria for release based on optimizing the chances for survival and minimizing the risk to wild populations *(NMFS/FWS BEST PRACTICES for Marine Mammal Stranding Response, Rehabilitation, and Release – Standards for Release*). These facility standards have been developed to achieve the goals set forth by the Standards for Release.

This document is organized by taxa similar to the Standards for Release. While many aspects of rehabilitating cetaceans and pinnipeds that are the same, there are likewise many significant differences. Water quality, pool space and design, and handling debilitated animals are examples of the bigger differences between facility design and equipment required for rehabilitation of these animals. Rehabilitation of cetaceans requires more expensive facilities, as there must be larger, deeper pools available, salt water systems, and more elaborate filtration in closed system situations. While some facilities have adequate equipment and personnel to rehabilitate pinnipeds, they may not meet the standards required for the rehabilitation of cetaceans. Having two sets of guidelines allows NMFS the flexibility of issuing agreements specific to the types of animals that may be rehabilitated at each facility.

1. Standards for Cetacean Rehabilitation Facilities

1.1 Facilities, Housing, and Space

Pools for stranded cetaceans must be appropriate for the basic needs of the animal including keeping the skin moist, to providing buoyancy, and aiding thermoregulation. Debilitated cetaceans often cannot swim and may require assistance when first introduced to a rehabilitation pool. Cetaceans arriving in a debilitated condition may have needs requiring smaller pools than those that are able to swim and dive upon arrival. Choice of pool size may be important and is case specific. Although chances of survival may be improved if animals capable of swimming are given larger space, deeper pools may make it more difficult and stressful to catch an animal for feeding, hydration, and treatment. Likewise with multiple strandings, grouping animals by size, ability to swim, species, and health status may improve overall survival rates. Placing the larger, more robust animals in separate pools or swimming areas away from the smaller, less dominant and/or more debilitated animals may enhance the success of the rehabilitation efforts for the weaker animals. Species of cetaceans known to be social in nature should be housed with other compatible species. Social compatibility should be considered an important part of appropriate housing. Animals should be closely monitored when introduced to a pool and carefully evaluated for social compatibility.

It is up to the attending veterinarian, as defined in Section 1.7, and experienced rehabilitation staff, to decide how to house the animal most appropriately based on their observations and physical examination.

Each animal admitted to a rehabilitation center should be placed in a quarantine holding area and have a full health evaluation performed by the attending veterinarian. Sufficient quarantine time should be allowed for results from tests and cultures to be evaluated before the animal is placed with animals that are apparently disease free. Cetaceans with evidence of infectious disease must be quarantined (See Section 1.4 Quarantine).

During multiple or unusual stranding situations such as hazardous waste spills, catastrophic weather events, toxic algal blooms, or other events leading to unusually high morbidity, rehabilitation center personnel may need to adjust the number of animals that would be normally housed in each pool, bay or ocean pen. The attending veterinarian is responsible for assuring that the number of animals housed in one pool or pen will be appropriate based on the situation. The number of animals housed should be determined not only by the amount of pool space and size of the animals, but also by the number of qualified personnel available on a per animal basis. The recommended number of

personnel to animals less than 250 kg is 3:1 for critical care cetaceans; 2: 1 - 4 once stabilized, and 1:4 when animals are eating regularly and no longer require regular handing. Larger critical care cetaceans will require more personnel per animal.

Unweaned neonate cetaceans shall not be admitted for rehabilitation without prior approval of NMFS. Unweaned cetaceans, once rehabilitated, are frequently not suitable for release or require stringent release criteria to ensure humane treatment and a successful outcome. A rehabilitation facility needs to thoughtfully consider these types of cases when developing overall facility goals and objectives. If the facility aims to rehabilitate neonatal and/or unweaned calves, then they need to discuss and seek concurrence with NMFS options for final disposition since most of these cases will be nonreleasable. These issues need to be researched, outlined and NMFS approved prior to admitting any cases. The plan should include options and criteria for release if appropriate (e.g., release with mother), considerations for permanent care, and euthanasia.

NMFS Regulation, U.S.C. 50 CFR 216.27(c)(5) states that marine mammals undergoing rehabilitation shall not be subject to public display. The definition of public display under U.S.C. 50 CFR "is an activity that provides opportunity for the public to view living marine mammals at a facility holding marine mammals captive." (See Section 1.13 Viewing).

1.1.1 Space Requirements for Pool, Bay, or Ocean Pens

MINIMUM STANDARD

- All pools or pens must be deep enough for animal(s) to float and submerge and shall be available for all rehabilitating cetaceans. The diameter and depth of the pool for critical care animals is at the discretion of the attending veterinarian.
- Pool depth for non-critical animals (animals able to swim unassisted) must equal one-half the body length or 0.9 meters (3 feet), whichever is greater.
- Pools shall have a minimum horizontal dimension (MHD) of 7.3 meters (24 feet) or two times the actual length of the largest species housed in the pool, whichever is greater.
- Animals housed longer than 6 months must be provided with pools at least 1.5 meters (5 feet) deep and must meet the USDA, APHIS AWA MHD standards unless otherwise directed by the attending veterinarian. This should be documented and justified with a signed veterinary statement in the medical records.

RECOMMENDED

- Pools shall have a depth equal to the body length or 1.8 meters (6 feet), whichever is greater.
- Pools shall have a minimum horizontal dimension of 9.0 meters (30 feet) or two times the average adult length of the largest species in the pool, whichever is greater.

1.1.2 Pool or Pen Design

Pools or pens designed to maximize the ease of handling, and to limit the amount of time the cetacean spends out of water for husbandry or veterinary procedures may help to decrease the stress of handling. Pools designed with a deep and a shallow end work well because the cetaceans may stay in the deep end while the pool level is dropped. The animal requiring treatment may be moved to the shallow end and immediately placed back in the deep end when the treatment has been completed. Pools equipped with a false bottom that can be lifted are ideal because the animal can be caught quickly without dropping the level of the pool water and the animal may be immediately returned to the pool once treatments have been completed. False bottoms in bay or ocean pens will facilitate capture, since there is no convenient way to drop the water level in those situations. Pools equipped with lift-bottoms and/or multi-level pools are recommended, however lift bottoms must be carefully designed when being retrofitted to existing pools.

Scoop-net or trampoline methods may also be used for capture, where a net is placed on the pool or pen bottom under the swimming animal and it is lifted by multiple personnel using tag lines. While this method is an inexpensive alternative to a false floor it may not be suitable for multiple or large animals.

New rehabilitation pools should be designed and constructed to minimize introduction of anthropogenic noise from life-support equipment or other sources. This can be accomplished through sloping of walls, insulation with soil or other materials around the sides of the pool and/or through isolation of noise-generating equipment. Existing pools that do not meet these specifications may be allowed, or a retrofit may be requested if the pools are substandard to the point of becoming an animal welfare issue.

MINIMUM STANDARD

- Any shape pool that meets minimum space standard
- Construction materials
  - Open water pens shall optimally be constructed of plastic or other rigid netting.

- If cotton or nylon netting material is used it must be small enough gage to prevent entanglement.

RECOMMENDED

- Pools with long axes that provide relief from constant turning while swimming
- Pools designed to promote good water circulation and to minimize anthropogenic noise.
- Single depth pool with false bottom that can be lifted

  OR
- Pool with a sloping bottom where the water level may be dropped in the shallow end to facilitate treatment

  OR
- Single or multi-depth pool with an adjoining "med pool' with a false bottom that can be lifted

  OR
- Ability to drop a pool in less than 2 hours and refill it to a "swimming level" in less than 30 minutes

1.1.3 Shelter, Shading, and Lighting

Rehabilitation facilities located where there is inclement weather need to provide shelter to rehabilitating animals that may be exposed to extreme heat or cold. Cetaceans held in rehabilitation facilities may not have normal activity levels and thin animals may be unable to thermoregulate properly. These animals may require shade structures to protect them from direct sunlight and extreme heat, or shelter to protect them from extreme cold.

Animals held in indoor facilities should be provided with appropriate light and dark photoperiods which mimic actual seasonal conditions. Light provided in indoor facilities shall be of sufficient intensity to clearly illuminate the pool.

MINIMUM STANDARD

- Shade structures or shelters must be provided to animals when local climatic conditions could compromise the health of the animal noting that some cetaceans undergoing rehabilitation may be unable to swim, dive, or thermoregulate, thus requiring either shelter from the elements or shade.
- Shade structures, where necessary, shall be large enough to provide shade to at least 50% of the MHD surface area determined for the species held in the pool. MHD is defined as 7.3 meters (24 feet) or two times the actual length of the largest species housed in the pool, whichever is greater.

- Lighting should be appropriate for the species.

RECOMMENDED

- Full spectrum lights or a natural source of lighting for animals housed indoors.
- Removable or adjustable shade structures in pens that are easily cleaned and that provide more natural sunlight to animals that are swimming and diving normally.

1.1.4 Critical Care Animals and Calves

Debilitated and ill cetaceans are often sedentary and tend to float at the surface for long periods of time. Some are unable to swim and dive. Some may require support in order to stay afloat enough to breathe regularly. Young calves may be weak and require assistance. Support may be provided by floatation devices attached to the animal or rehabilitation personnel supporting the animal utilizing a variety of methods. A shallow area that allows the animal to rest on the bottom while keeping its blowhole above the surface may also suffice. This shallow resting shelf must be of sufficient depth for larger animals (over 50 kg) to provide adequate buoyancy to prevent organ-crushing. Small cetaceans may also be supported in a stretcher that is hung within an open aluminum frame while maintaining the water depth at the midline of the animal. These animals must be protected from sun-related skin damage by providing them with shade or covering their exposed skin with an appropriate, non-desiccating sun block that allows proper thermoregulation. Exposed skin may be protected from desiccation with the use of emollients applied to the skin or a water spray.

MINIMUM STANDARD

- Ensure support is available via floatation devices, a shallow resting shelf, sloping beach, suspended stretcher system, or other support for critically ill or neonatal cetaceans that are weak and/or cannot swim normally.
- Monitor animals requiring support.
- Provide sufficient shade.
- Provide a water spray or method for keeping skin moist for cetaceans that cannot swim or dive.
- Control air temperature above the pool to facilitate recovery, protect rehabilitating animals from heat or cold extremes, and prevent discomfort. This may be achieved by heating or cooling the water appropriately for the species and condition of the animal and/or providing shelter from the elements.

1.1.5 Number of Animals Housed in Each Pool/Pen

During multiple or unusual mortality event (UME) strandings the number of cetaceans received by the facility is limited not only by the number and size of the holding pools or pens, but the number of qualified trained rehabilitation staff members available to care for the animals. Due to the intensive 24 hour assistance required for critical care cetaceans, a minimum of two qualified trained staff members are necessary for each and every dependent cetacean on the premises. The maximum number of animals maintained in each pool and onsite at the facility shall be determined by the attending veterinarian and dictated by the number of qualified staff available to care for the animals.

MINIMUM STANDARD

- Provide enough pool space for each animal to swim, dive, and maintain an individual distance of one body length from other animals housed in the same pool.
- Provide 2 qualified trained rehabilitation staff members for every critical care or dependent cetacean weighing less than 250 kg. Larger critical care cetaceans will require more personnel to handle each animal.
- Staff must be available on a 24-hour basis for critical animal care.
- Provide one trained staff member for every 3-4 cetaceans undergoing less critical periods of rehabilitation; during reconditioning or during counter-conditioning if training or desensitization was used for feeding stations, medical procedure desensitization or transport approximations.
- Provide one trained staff member for every five cetaceans that are eating regularly and do not require handling.

RECOMMENDED

- Provide enough pools or pool space to house multiple animals in accordance with the calculated space outlined in the APHIS AWA standards for captive cetaceans.
- Provide three qualified trained rehabilitation staff members for every critical care or dependent cetacean.
- Provide two trained staff members for every 1 – 4 cetaceans undergoing less critical periods of rehabilitation; during reconditioning; or prior to reintroduction.

1.1.6 Housekeeping

MINIMUM STANDARD

- Keep support buildings and grounds as well as areas surrounding rehabilitation pools clean and in good repair.
- Maintain perimeter fences in good repair, and ensure they are an adequate height and construction to keep people, animals, and pests out.
- Ensure primary enclosures housing marine mammals do not have any loose objects, sharp projections, and/or edges which may cause injury or trauma to the marine mammals contained therein.
- Objects introduced as environmental enrichment must be too large to swallow and made of non porous cleanable material that is able to be disinfected. Likewise items such as rub ropes shall be secured to prevent entanglement.
- All drains and overflows must have screened covers.
- Ensure there are no holes or gaps larger than ½ the size of the head diameter of the calf of the smallest species to be housed.

RECOMMENDED

- Coat all pool and haul-out surfaces with a non-porous, non-toxic, non-degradable cleanable material that is able to be disinfected.

1.1.7 Pest Control

MINIMUM STANDARD

- Establish and maintain a safe and effective program for the control of insects, avian and mammalian pests. This should include physical barriers to prevent feral and/or wild animals from contact with the rehabilitating animals.
- Insecticides or other such chemical agents shall not be applied in a primary enclosure housing marine mammals or a food preparation area except as authorized in writing by the attending veterinarian.
- If applied, all appropriate measures must be taken to prevent direct contact with the insecticide/pesticide, whether airborne or waterborne, by the animal.

1.1.8 Security for Facility

Stranded marine mammals often attract public attention and must be protected from excessive commotion and public contact. Ensuring a quiet stress-free environment for rehabilitating animals may improve their chance to recover and survive. Public viewing of marine mammals is discussed in Section 1.13 of this document.

MINIMUM STANDARD

- Locate rehabilitation facilities at sites that have the ability to be secured from the public.
- Prevent direct public contact with the rehabilitating animals but utilizing appropriate fencing, staff and security personnel.

RECOMMENDED

- Maintain 24- hour monitoring when animals are present or maintain a secure perimeter fence with the ability to lock the area off to the public when staff is not present.

1.2 Water Quality

Water quality is an essential part of keeping cetaceans healthy. Sick or debilitated cetaceans should be housed in pools filled with clean, appropriately treated saltwater to facilitate their recovery.

There are four basic types of water systems:

- Pools with filtration systems (closed systems)
- Pools without filtration systems (dump and fill systems)
- Pools with periodic influx of natural seawater (semi-open systems)
- Open water systems (flow-through pools, bay or sea pens)

There are a number of variables which will affect water quality. The number and size of cetaceans utilizing each pool will vary throughout the year at most rehabilitation facilities. During unusual stranding events the number of cetaceans utilizing one pool may increase dramatically, creating a heavier load of waste which must be handled by the filtration system in closed systems and by the amount of water flow-through in semi-open and open systems.

Filtration or life support systems are essential to maintaining clean water for animals held in closed or semi-closed systems. Life support systems have three basic parts; mechanical filters that remove solids, biological filters or baffles to remove or detoxify chemicals in the water, and disinfecting

methods to control or remove pathogens. In addition to maintaining clean water in the animal pools, these systems may be needed to treat waste water, depending on waste water disposal requirements. If a temporary increase in waste production overwhelms part or all of the life support system, a good water quality control program will require alternative options.

The source of water used in closed systems generally is fresh water obtained from municipal sources whereas water in open and semi-open systems comes from a bay or sea source. Municipal fresh water must have salt added to increase the salinity to appropriate levels to maintain cetaceans. Water in closed systems must be regularly filtered through sand and gravel filters to remove particulate matter, and disinfectants such as chlorine or bromine are added at appropriate levels to eliminate pathogens. More elaborate systems utilize ozone to oxidize pathogens in the water. The source should be independent of other rehabilitation and captive animal areas.

Factors that affect water quality are:

- Size of pool or pen
- Efficiency of filtration system or water flow-through rate (tides)
- Water turnover rate
- Number, size and species of animals housed in pool or pen
- Nature and amount of food consumed by animals in pool or pen
- Nature of bottom substrate
- Frequency of cleaning the pool
- Types, amounts, and the frequency with which chemicals are added to the system
- Temperature of the water
- Pathogens in the water
- Biotoxins in open water pens or in pools where the source water comes from the ocean or bay
- Contaminants (oil, pesticides, etc.) in open water pens
- Hazardous waste spills
- Inclement weather
- Sunlight contributing to algae production on pool surfaces, which in turn can support bacteria.

1.2.1 Source and Disposal of Water

The water source for cetaceans housed in closed or semi-closed systems may be municipal water, well water, or water brought into the facility from an adjacent body of water or estuary. The source should be independent of other rehabilitation and captive animal areas.

MINIMUM STANDARD

- Salt water must be readily available to fill pools housing rehabilitating cetaceans unless otherwise directed by the attending veterinarian.
- Fresh water must be available to clean and wash down surrounding areas.
- For pools without adequate filtration systems, drain water from pools daily or as often as necessary to keep the pool water quality within acceptable limits.
- Discharge wastewater in accordance with state or local regulations. Facility managers must seek appropriate authorization to dispose of waste water. Documents of authorization or necessary permits must be kept on site as part of the administrative record and may be requested by NMFS as part of the NMFS Stranding Agreement.
- Chemicals, when necessary, shall be added in appropriate amounts to disinfect the water or adjust the pH, but not added in a manner that could cause harm or discomfort to the animals.
- Have contingency protocols describing how water quality will be maintained during periods of peak animal use.

RECOMMENDED

- Enough salt water must be available to completely fill pools within two hours of draining.
- Maintain a filtration system designed to optimize water quality in each holding pool and decrease water waste.

1.3 Water Quality Testing

It is important to test the water in which the animals live on a regular basis. Coliform bacterial counts are used to monitor the efficiency of the filtration system to eliminate potentially harmful bacteria. Coliform counts should be done at least once per week and more frequently if there are very large or multiple animals utilizing the pool. While coliform numbers may be described as Most Probable Number (MPN) per 100 ml, a more accurate method of measuring coliforms is to determine the total coliform count, or the fecal coliform count.

Temperature of the water is especially important if the animal lacks the ability to thermoregulate. Water may require heating or chilling to aid debilitated animals in their ability to maintain optimal body temperature. Water temperature regulation is not feasible in open water pens, but keeping track of the water temperature in sea pens may aid the staff in making husbandry decisions.

If coliform counts or the water temperature become too high in any system, measures must be taken to correct the problem in a timely manner. A partial-to-total water change may be necessary to correct the problem in a closed or semi-closed system. If the coliform counts are considered too high in sea or bay pens, efforts should be made to circulate clean sea water through the pens using pumps, paddles or other methods of moving water.

Chemicals added to the water may damage eyes and skin, therefore levels must be monitored daily. Emergency chemicals should be on hand such as sodium thiosulfate in case of the accidental hyperchlorination of a system. Salinity may also have an impact on the health of the skin and eyes, as well as the comfort level of the animal, and should be monitored regularly.

1.3.1 Water Quality Tests

MINIMUM STANDARD

- Measure coliform growth weekly.
- Total coliform counts must not exceed 500 per 100 ml or a MPN of 1000 coliform bacteria per 100 ml water. Fecal coliform counts are not to exceed 400 per 100 ml.
- If the above tests yield results that exceed the allowable bacterial count, then two subsequent samples must be taken to repeat the test(s) where the level(s) is/are exceeded. The second sample is to be taken immediately after the initial test result, while the third sample would be taken within 48 hours of the initial test.
- If the averaged value of the three test results still exceeds the allowable bacterial counts, the condition must be corrected immediately or the animals must be moved to a contingency facility.
- Maintain pH between 6.5 and 8.5.
- Maintain salinity between 24 - 35 ppt.
- Maintain the temperature of the water so that it falls within parameters appropriate for the species.
- Measure oxidant levels in systems which require use of a chemical disinfectant and/or ozone in the system (for closed systems).

RECOMMENDED

- Maintain pH between 7.2 and 8.2.
- Total Coliforms with blanks and controls, fecal Coliform, fecal Strep, and yeast count performed at least weekly.

1.3.2 Frequency of Testing in Closed, Semi-Open, or Open Systems

MINIMUM STANDARD

- Measure water temperature, pH, salinity, chemical additives (if applicable) daily in all pools.
- Measure coliform counts weekly; and more frequently at the discretion of the attending veterinarian.

RECOMMENDED

- If ozone systems are used, measure ozone levels regularly in the animal pools. Ozone levels shall not exceed 0.02 mg/liter.
- Test source and discharge water at least once per day or more frequently for "flow through" systems.
- Maintain records for tests with time, level and results – reviewed and signed monthly by the attending veterinarian or the animal care supervisor.

1.3.3 Chemical Additives

Total chlorine = Free chlorine + Combined chlorine.

MINIMUM STANDARD

- Maintain total chlorine below 1.5 ppm, where the combined chlorine shall not exceed 50% of the total chlorine
- All additives must be recorded
- pH may be adjusted chemically – for example – pH may be raised with sodium carbonate, or soda ash; or lowered with HCl or CO2; but not added in a manner that could cause harm or discomfort to the animals.
- Maintain Material Safety Data Sheet (MSDS) information and signage as well as appropriate handling equipment for the addition of chemicals.

1.3.4 Water Circulation

The amount of water turnover through the filtration system in a closed or semi-open system is important to maintain water quality by removing organic waste and particulate matter. Likewise the amount of water movement through an open water pen is also important in the maintenance of water quality. Generally, adequate tidal action will result in the equivalent of two complete water changes per day.

MINIMUM STANDARD

- Maintain sufficient turnover of water through the filtration system in closed or semi-open systems to keep the water quality at or above acceptable limits, with a minimum of two complete water changes per day.
- Ensure methods for moving water (water paddles, pumps, spray devices) are available to aerate and move water in open water pens with insufficient flow of tides or water through the enclosures. These methods should be sufficient to provide the equivalent of two water changes per day.

RECOMMENDED

- A minimum full water turnover rate of every four hours for each pool in closed or semi-open systems.

1.3.5 Salinity

Acceptable salinity levels are dependant on the species and condition of the cetacean and the duration of the stay. Most species of cetaceans require a salinity level greater than 24 ppt in order to maintain healthy skin and eyes. Occasionally the attending veterinarian may chose to house the cetacean in fresh or nearly fresh water for a period not exceeding 3 days. Reasons for maintaining cetaceans in fresh or brackish water should be noted in the veterinary record and signed by the veterinarian. Some species of cetacean are better adapted to live in brackish water and may do well in lower salinity levels than other species.

MINIMUM STANDARD

- Maintain salinity levels over 24 ppt unless a written veterinary plan calls for lower salinity levels, or if the animals are housed in sea pens nearby their resident range.

RECOMMENDED

- Ideal salinity levels should approach natural ocean salinity levels (30 – 33 ppt) but acceptable industry standards suggest maintaining cetaceans in water with salinity levels over 24 ppt.

1.3.6 pH

MINIMUM STANDARD

- Maintain pH in a range between 6.5 to 8.5.

RECOMMENDED

- Maintain pH between 7.2 –8.2.

1.3.7 Water Temperature

Many species of cetaceans are adapted to maintain normal body temperatures when living in a broad range of water temperatures. Healthy *Tursiops* have been housed successfully in water ranging from 50° to 80° F. Atlantic white-sided dolphins fail to thrive in water over 80° F and North Atlantic harbor porpoise do best in 45 to 65° F. Some warmer water species, such as a Vaquita, will require consistent warm water environments. It is therefore important to know if the species being rehabilitated comes from a polar, temperate or tropical climate. It is of equal importance to know the temperature range of water in their primary habitat. Young, underweight, and debilitated animals may also require warmer water than found in their primary habitat.

Cetaceans such as bottlenose dolphins adjust their blubber thickness seasonally in response to water temperature. This must be considered when readying rehabilitated animals for release. Therefore animals should be acclimated to an appropriate seasonal water temperature prior to release.

MINIMUM STANDARD

- Hold water temperatures within the normal seasonal habitat temperature range for the species under rehabilitation unless otherwise authorized by the attending veterinarian in writing.
- Provide methods to heat and maintain warm water environments for species that require it, or for debilitated individuals that are incapable of maintaining appropriate body temperature.
- Monitor the temperature of water being heated or cooled.
- Design water systems to minimize the chance of rehabilitating cetaceans from becoming hyperthermic or hypothermic.

RECOMMENDED

- Monitor blubber thickness ultrasonically.

1.4 Quarantine

Cetaceans brought to a rehabilitation facility have no medical history and may carry diseases communicable to other marine mammals, other animals, or humans. Likewise, these animals are often debilitated and may suffer from a variety of illnesses which may compromise their immune systems making them susceptible to diseases from other animals and/or the rehabilitation environment. Quarantine areas must be available and proper biosecurity protocols must be in place for all incoming animals at rehabilitation facilities.

Direct contact between the general public and cetaceans undergoing rehabilitation should be avoided because of the zoonotic risk from pathogens carried by marine mammals. There have been documented cases of B rucella, Erysipelothrix, and Blastomyces being passed from cetaceans to humans.

Listed on the following website are numerous other potentially zoonotic marine mammal pathogens (see http://www.vetmed.ucdavis.edu/whc/mmz/). See also: *2004 UC Davis Wildlife Health Center Report for the Marine Mammal Commission – Assessment of the Risk of Zoonotic Disease Transmission to Marine Mammal Workers and the Public: Survey of Occupational Risks.*

MINIMUM STANDARD

Maintain sufficient quarantine facilities and space for appropriate quarantine of incoming animals or for holding animals with contagious diseases.

1.4.1 Prevention of Animal to Animal Transmission of Diseases

- Quarantine all new animals in a separate dedicated quarantine area and provide pools that can be isolated with the use of dividers, tarps, or physical space from the rest of the animal housing areas.
- Have separate filtration and water flow systems for pools in quarantine/isolation areas.
- Use dedicated protective clothing for personnel.
- Use foot baths, glove baths, and methods to disinfect clothing, wet suits, or exposure suits between handling animals within quarantine area and outside of quarantine area.
- Maintain equipment and tools strictly dedicated to the quarantine areas.

- Provide dividers between pens and pools that prevent washdown or splash from moving from one pool to another.
- Provide sufficient space; ideally greater than 20 feet or 6 meters; or solid barriers between animal enclosures to prevent direct contact – including splashed pool water and airborne disease transmission.
- Ensure sufficient air turnover in indoor facilities to prevent transmission of disease. Air turnover should be enough to prevent build-up of heat or chemical fumes and provide a method of bringing fresh air into the facility. There should be sufficient venting or openings to allow movement of air throughout the facility.
- Implement specific quarantine and sanitation procedures to prevent transmission of disease through fomites (personnel, clothing, equipment).
- Thoroughly clean and disinfect buckets, hoses, scales, transport equipment, and cleaning equipment that is moved between animal areas to prevent transmission of pathogens via fomites.
- Place open water pens so effluent is not near water intake.
- Require evaluation and written veterinary approval before placing animals together after quarantine period has been met.

RECOMMENDED

- Provide separate air handling system in indoor facilities.
- Clean and disinfect quarantine pools between uses.

1.4.2 Prevention of Domestic Animal to Marine Mammal Transmission of Disease

- Ensure appropriate fencing and placement of holding pens prevents direct contact between rehabilitating cetaceans and domestic animals.
- Prohibit personal pets from entering the facility and facility grounds. Pets must stay outside the perimeter fence at all times.
- Place foot baths at the entry and exit of animal areas.
- Require quarantine and sanitation protocols are followed to prevent transmission of disease through fomites such as wet suits and equipment.

1.4.3 Prevention of Wild Animal to Marine Mammal Transmission of Disease

- Ensure perimeter fencing will prevent wildlife from entering the rehabilitation premises.
- Provide appropriate rodent and bird control on the premises. Ensure net pens and lagoon areas have sufficient secondary fencing to keep wildlife from coming in direct contact with the animals housed in the net pens.

1.4.4 Prevention of Marine Mammal to Domestic Animal Transmission of Disease

- Provide appropriate perimeter fencing.
- Require animal personnel to change contaminated clothing and/or disinfect before leaving the rehabilitation premises.
- Require that specific quarantine and sanitation procedures are taken to prevent transmission of disease through fomites such as clothing and equipment.

1.4.5 Prevention of Stranded Marine Mammal to Captive Marine Mammal Transmission of Disease

- Train volunteers and staff to follow appropriate quarantine protocols.
- Establish quarantine protocols that take into consideration the changing status of the stranded animal.
- Establish traffic flow so that volunteers or staff working with stranded animals do not inadvertently travel into a collection animal area.
- Establish decontamination protocols before volunteers or staff members exposed to stranded animals may enter a collection animal area.
- Establish separate restrooms, showers, changing rooms, food preparation areas, etc. for staff and volunteers working with rehabilitating vs. collection animals. Food for rehabilitating animals may be prepared in the collection animal kitchen and taken to the rehabilitation animal area, however any bucket, feed implement or other item must be thoroughly disinfected before it may return to the collection animal area.

1.4.6 Methods to Reduce Spread of Disease from Animals Housed in Open Sea/Bay Pen Systems

- Consideration of substrate, water depth and public access when selecting a site for a sea or bay pen.
- Placement of pens in a secluded area where wild animals and marine mammals are unlikely to come into direct contact with the animals housed in the sea/bay pens; nets should be sufficiently rigid to prevent entanglement by mammals or fish.
- Placing a second set of perimeter nets 10 meters from the sea/bay pens to prevent direct contact with wild marine mammals.
- Do not place sea/bay pens within 1000 meters of any major outflow of storm drains or sewage treatment plants and consider the flow direction or current from these major outflows.
- Place the sea/bay pens over 500 meters and downstream from water intake pipes that bring water into facilities that house marine mammals.
- Place pens in an area where there is ample flow-through of tides/currents.
- Ensure the pens are of sufficient size to minimize biomatter build-up. Each cetacean should be housed in a pen that has a minimum depth of half of their body length, and a minimum horizontal dimension of 24 feet or two full body lengths, whichever is greater.
- Avoid overcrowded pens. Animals may fight with each other when housed too closely together. Likewise they must be able to swim and dive normally to maintain optimal muscle condition.
- Have equipment to pump or aerate the water in pens that do not have sufficient tidal action to ensure a minimum of two complete water changes per day.
- Place pens in areas where there is sufficient depth to enhance water circulation and reduce pathogen build-up. Daily coliform testing will determine if pathogen build-up exists.
- Place quarantine pens such that tidal action or underwater currents will not flow through sea pens housing healthy animals.

1.4.7 Evaluation Requirements Before Placing Marine Mammals Together

- Complete blood count (CBC)/Chemistries, appropriate cultures, physical examination before moving animals out of quarantine area.
- Review current NMFS recommendations on diseases of concern (i.e. Morbillivirus) and reportable disease (i.e. Brucella and West Nile virus).

- Consider screening for morbillivirus, herpes virus, Brucella, Leptospira, and Toxoplasma utilizing the most current diagnostic tests available.
- If animals are part of a UME, then screening for diseases must be more thorough and in direct coordination with NMFS and through UME coordinators.
- Have contingency plan for animals that are carriers of or actively infected with reportable disease such as brucellosis, herpes virus, leptospirosis, toxoplasmosis, and morbillivirus.

1.4.8 Zoonotic Considerations

- Restrict public access and direct contact with cetaceans due to zoonosis potential and public health hazard of non-trained individuals interacting with sick and injured marine mammals.
- Train staff and personnel about how to prevent contracting zoonotic diseases (*Occupational and Safety Information for Marine Mammal Workers* http://www.vetmed.ucdavis.edu/whc/mmz/).
- Train staff and personnel working directly with stranded cetaceans how to recognize symptoms of zoonotic disease.
- Provide safety equipment such as protective clothing, eye protection and face masks.
- Provide eye flushing stations as used with hazardous materials (HAZMAT) or normal saline bottles to irrigate the eyes.
- Staff with open wounds shall not enter the pool of animals carrying potentially infectious diseases.
- Persons with disabilities, respiratory conditions, infectious diseases or infectious skin conditions shall not enter pools with rehabilitating cetaceans.
- Train staff the basics of sanitation and properly handling contaminated equipment.

1.4.9 Pre-Release Guidelines

- Pre-release health screens and serologic requirements are directed by the NMFS Regional Stranding Coordinator, in coordination with Marine Mammal Health and Stranding Response Program.

1.5 Sanitation

MINIMUM STANDARD

1.5.1 Primary Enclosure Sanitation

- Remove animal and food waste in areas other than the rehabilitation pool from the rehabilitation enclosure at least daily, and more often when necessary to prevent contamination of the marine mammals contained therein and to minimize disease hazards.
- Remove particulate animal and food waste from rehabilitation/exercise pools at least once daily, but as often as necessary to maintain water quality and to prevent increased health hazards to the marine mammals that use the pools.
- Remove trash and debris from pools as soon as it is noticed, to preclude ingestion or other harm to the animals.
- Clean the walls and bottom surfaces of the rehabilitation/exercise pools as often as necessary to maintain proper water quality.
- Prevent animals from coming in direct contact with disinfectants or aerosolized disinfectants from spray or cleaning hoses.

RECOMMENDED

- Empty and allow pools to dry once each year but dry and hyperchlorine pool bottoms and walls after each use by sick cetaceans.

1.5.2 Sanitation of Food Preparation Areas and Food Receptacles

- Use separate food preparation areas and supplies for rehabilitation vs. collection animals.
- Clean food containers such as buckets, tubs, and tanks, as well as utensils, such as knives and cutting boards, or any other equipment which has been used for holding, thawing or preparing food for marine mammals after each feeding with detergent and hot water and sanitize with an appropriate disinfectant approved for use in food areas at least once a day.
- Clean kitchens and other food handling areas where animal food is prepared after every use, and sanitize at least once weekly using standard accepted sanitation practices.
- Store substances such as cleaning and sanitizing agents, pesticides and other potentially toxic agents in properly labeled containers away from food preparation areas.
- Post MSDS "right to know" documents for staff utilizing cleaning and animal treatment chemicals and drugs.

1.6 Food, Handling, and Preparation

During rehabilitation food for marine mammals shall be wholesome, palatable, free from contamination, and of sufficient quantity and nutritive value to allow the recovery of the animals to a state of good health. Live fish may be fed during rehabilitation but preferences should be given to native prey species. Live fish may contain parasites which could infect compromised animals. Feeding regimens should simulate natural patterns in terms of frequency and quantity to the extent possible while following a prescribed course of medical treatment. Most cetaceans feed repeatedly during a given day.

1.6.1 Diets and Food Preparation

MINIMUM STANDARD

- Prepare the diets with consideration for age, species, condition, and size of marine mammals being fed.
- Feed cetaceans a minimum of three times a day, except as directed by a qualified veterinarian or when following professionally accepted practices.
- Diets reviewed by a nutritionist, attending veterinarian, or the animal care supervisor.
- Train staff to recognize good and bad fish quality.
- Feeding live fish may be required for release determination. See *NMFS /FWS Best Practices for Marine Mammal Stranding Response, Rehabilitation, and Release – Standards for Release* for more information regarding feeding live fish.
- Food receptacles should be cleaned and sanitized after each use. Food preparation and handling should be conducted so as to minimize bacterial or chemical contamination and to ensure the wholesomeness and nutritive value of the food.

RECOMMENDED

- Feeding patterns should simulate natural patterns in terms of frequency and quantity which may require food to be offered 5 – 10 times daily.

1.6.2 Food Storage and Thawing

MINIMUM STANDARD

- Frozen fish or other frozen food shall be stored in freezers which are maintained at a maximum temperature of 0° F (-18°C).

- The length of time food is stored and the method of storage, as well as the thawing of frozen food should be conducted in a manner which will minimize contamination and which will assure that the food retains optimal nutritive value and wholesome quality until the time of feeding.
- Freezers should only contain fish for animal consumption. Human food or specimens should not be placed in the fish freezer.
- Experienced staff should inspect fish upon arrival to ensure there are no signs of previous thawing and re-freezing, and check temperature monitoring devices in the transport container. The fish shipment should be refused or the fish discarded if temperature fluctuations occurred during transport.
- Freezers shall be of sufficient size to allow for proper stock rotation.
- All foods shall be fed to the marine mammals within 24 hours following the removal of such foods from the freezers for thawing.
- If the food has been thawed under refrigeration it must be fed to marine mammals within 12 hours of complete thawing.
- When fish is thawed in standing or running water, the coldest available running water must be used to prevent excess bacterial growth.
- To ensure optimal quality of the fish, and to prevent bacterial overgrowth, do not allow fish to reach room temperature or sit in direct sunlight.
- The thawed fish shall be kept iced or refrigerated until a reasonable time before feeding. This time will vary with ambient temperature.
- Prepared formula should be fed immediately or refrigerated and fed to the marine mammals within 24 hours of preparation. Formula, once heated to an appropriate temperature for a feed, shall be discarded if it is not consumed within one hour.

RECOMMENDED

- Calculate kilocalories of each type of fish or food items fed to each animal daily.
- Conduct food analysis for protein, fat and water content of each lot of fish used.
- Culture the slime layer from the fish lot prior to thawing for *Erysipelothrix*.

1.6.3 Supplements

MINIMUM STANDARD

- Each animal shall receive appropriate vitamin supplementation which is sufficient and approved in writing by the attending veterinarian.

1.6.4 Feeding

MINIMUM STANDARD

- Food, when given to each marine mammal individually or in groups, must be given by personnel who have the necessary training and knowledge to assure that each marine mammal receives and eats an adequate quantity of food to maximize its recovery or maintain good health. Such personnel is required to recognize deviations in each animal being rehabilitated such that intake can be adjusted and/or supplemented accordingly.

1.6.5 Public Feeding

MINIMUM STANDARD

- Public feeding of animals that are being rehabilitated is **strictly** prohibited.
- Feeding must be conducted only by qualified, trained personnel.

1.6.6 Feed Records

MINIMUM STANDARD

- Maintain feed records on each individual animal noting the actual (not an estimate) individual daily consumption for each animal by specific food type.
- If non-critical animals are housed in groups and are broadcast-fed, then daily individual food consumption estimates are acceptable
- Weigh food before and after each feeding and the record the amount consumed.
- Obtain body weight or girth measurements at least weekly from debilitated easily-handled animals. Girth measurements are taken at the level of the axilla and the anterior insertion of the dorsal fin. Girth measurements are generally less stressful to obtain than weighing the animal.
- Girth measurements or body weight should be obtained as often as practical in the later stages of rehabilitation without causing undue stress to the animal.

1.7 Veterinary Medical Care

All rehabilitation facilities shall have an attending veterinarian. The attending veterinarian is critically involved in making decisions regarding medical care as well as housing and husbandry of resident and newly admitted patients.

1.7.1 Veterinary Experience

MINIMUM STANDARD

The attending veterinarian shall:

- Assume responsibility for diagnosis, treatment, and medical clearance for release or transport of marine mammals in rehabilitation (50 CFR 216.27).
- Ability to provide a schedule of veterinary care that includes a review of husbandry records, visual and physical examinations of all the marine mammals in rehabilitation, and a periodic visual inspection of the facilities and records.
- Be available to examine animals on a regular schedule and emergency basis; daily if necessary.
- Be available to answer veterinary questions on a 24 hour basis.
- Have marine mammal experience or be in regular consultation with a veterinarian who has marine mammal experience and have access to a list of expert veterinarians to contact for assistance.
- Have an active veterinary license in the United States (means a person who has graduated from a veterinary school accredited by the American Veterinary Medical Association Council on Education, or has a certificate issued by the American Veterinary Graduates Association's Education Commission for Foreign Veterinary Graduates), or has received equivalent formal education as determined by NMFS Administrator (adapted from the Animal Welfare Act Regulations 9 CFR Ch. 1).
- Have the skills to be able to draw blood from, and give injections to the species most commonly encountered at the rehabilitation center.
- Be available to examine animals immediately upon admittance to a facility.
- Be available to assess animals during a mass stranding directly or indirectly through trained and qualified primary responders.
- Have contingency plan for veterinary backup.
- Have the appropriate registrations and licenses (e.g., registered with the Drug Enforcement Administration for handling controlled substances) to obtain the necessary medications for the animals housed at that rehabilitation facility.
- Be able to conduct a full post-mortem examination on all species of cetaceans treated at the facility.
- Be knowledgeable and able to perform cetacean euthanasia.
- Be knowledgeable about species-specific pharmacology.

- Must certify in writing that animals are fit for transport.
- Ability to write and submit timely disposition recommendations for marine mammals in rehabilitation.
- Be knowledgeable of marine mammal zoonotic diseases.

RECOMMENDED

All of the above plus:

- Membership in the International Association for Aquatic Animal Medicine.
- Have access to a current version of the CRC "Handbook of Marine Mammal Medicine"
- Complete a course that offers basic medical training with marine mammals such as Seavet, Aquavet, or MARVET.
- Have a minimum of one year of clinical veterinary experience post graduation.
- Have at least one year clinical experience working with the marine mammal type(s) most frequently admitted to the rehabilitation facility
- Be full time employees or contracted veterinarian experienced in cetacean medicine at facilities managing an average of 5 live cetacean cases per year.

1.7.2 Veterinary Program

MINIMUM STANDARD

- Veterinary care for the animals must conform with any State Veterinary Practice Act or other laws governing veterinary medicine which applies to the state in which the facility is located.
- Standard operating procedures should be reviewed and initialed by the attending veterinarian or the animal care supervisor annually and/or whenever the document is changed or updated. This document may be reviewed by NMFS as part of the NMFS Stranding Agreement or as part of inspections.
- Staff caring for animals should be sufficiently trained to assist with veterinary procedures under the direction of the veterinarian and the rehabilitation facility should maintain at least one **Animal Care Supervisor** who is responsible for overseeing prescribed treatments, maintaining hospital equipment, and controlling drug supplies. The person should be adequately trained to deal with emergencies until the veterinarian arrives, be able to direct the restraint of the animals, be responsible for administration of post-surgical care, and be skilled in maintaining appropriate medical records. It is important that the animal care supervisor should communicate frequently

and directly with the attending veterinarian to ensure that there is a timely transfer of accurate information about medical issues.

- Veterinary decisions shall be based on "best practices" (i.e., based on informed opinions and expertise of veterinarians practicing marine mammal medicine).
- A schedule of veterinary care which includes a review of husbandry records, visual and physical examinations of the animals, and a visual inspection of the facilities should be implemented.
- A health and safety plan for the staff shall be written and accessible at all times. It shall be reviewed by the attending veterinarian or the animal care supervisor annually or as prescribed by the NMFS Stranding Agreement. Also, it may be beneficial to consult with an occupational health medical professional when developing these plans. All animal care staff will be familiar with the plan. The plan shall include protocols for managing bite wounds.

The following reports may be requested annually by NMFS as required under the NMFS Stranding Agreement or as a part of inspections:

- Standard Operating Procedure (SOP) reviews
- Health and Safety Plan reviews
- Animal acquisitions and dispositions
- National Oceanic and Atmospheric Administration (NOAA) Form 89864, Office of Management and Budget (OMB) #0648-0178 (Level A data)
- NOAA Form 89878, OMB#0648-0178 (Marine Mammal Rehabilitation Disposition Report)
- Case summaries for any rehabilitation performed at a facility, including narrative descriptions of the cases as well as spreadsheets of treatments, blood values, etc.

1.8 Laboratory Tests and Frequency of Testing

Specific requirements for tests will be issued by the NMFS stranding coordinator (or UME Onsite Coordinator) in each region as outlined in the Marine Mammal Health and Stranding Response Program for release determinations, surveillance programs and UME investigations. Routine diagnostic sampling and testing protocols will be determined by the attending veterinarian. NMFS must be provided adequate time and information including a veterinary certificate of health before an animal is released as directed in 50 CFR 216.27 (see *NMFS/FWS Best Practices for Marine Mammal Stranding Response, Rehabilitation, and Release – Standards for Release*).

1.8.1 Laboratory Testing

MINIMUM STANDARD

- CBC/Serum Chemistry- For most cases, all animals shall have a minimum of two blood samples drawn for CBC with differential and serum chemistry; upon admission and prior to release (see *NMFS/FWS Best Practices for Marine Mammal Stranding Response, Rehabilitation, and Release – Standards for Release*). If duration of rehabilitation is shorter than a week, one blood workup may suffice and is at the attending veterinarian's discretion.
- Fecal analysis for parasites - Fecal tests for parasites shall be run upon admission of each animal at the discretion of the attending veterinarian.
- Serology as necessary for release determination based on direction of the NMFS stranding coordinator and the Marine Mammal Health and Stranding Program and for additional clinical diagnosis as deemed appropriate by the attending veterinarian.
- The administration of drugs with potential adverse side-effects may require additional testing. For example, the use of ototoxic antibiotics may require subsequent testing of hearing abilities of the animal prior to consideration for release.
- The attending veterinarian or a trained staff member shall perform a necropsy on every animal that dies within 24 hours of death if feasible. If necropsy is to be performed at a later date (ideally no longer than 72 hours postmortem), the carcass should be stored appropriately to delay tissue decomposition.
- Carcass disposal shall be handled in a manner consistent with local and state regulations.
- Perform histopathology on select tissues from each animal that dies at the discretion of the attending veterinarian. A complete set of all major tissues should be evaluated if the animal dies of an apparent infectious disease process.
- Culture and other diagnostic sampling shall be conducted as directed by the attending veterinarian to determine the cause of stranding or death.
- Contact NMFS for additional laboratory test requirements in all cases of unusual mortality outbreaks or disease outbreaks. More complete testing may be required for diseases of concern.
- For cases involving release decisions, unusual mortality investigations, or surveillance programs, serologic assays may only go to labs that have validated tests approved by NMFS, especially for release decisions or determinations. Guidance will be provided by the NMFS Stranding Coordinators or UME Onsite Coordinator.

- Notify the NMFS Stranding Coordinator of learning of any diseases of concern (e.g., emerging, reportable, and/or zoonotic diseases) that are detected and/or confirmed that could be a potential hazard for public health or animal health (NMFS will provide guidance on reportable diseases as it becomes available).
- NMFS must be provided adequate time and information (including veterinary certificate of health) before the animal is released in all cases as directed in 50 CFR 216.27 (see NMFS Standards for Release). This information is required under 50 CFR 216.27(a) and must be submitted 15 days prior to release unless advanced notice is waived by the NMFS Regional Administrator. Guidance on the waivers is provided in the *NMFS/FWS Best Practices for Marine Mammal Stranding Response, Rehabilitation, and Release – Standards for Release.*

RECOMMENDED

- Complete necropsy performed by the attending veterinarian or a pathologist within 24 hours of death.
- Full histopathology done on tissues from each animal that dies of apparent infectious disease.
- Bank 1cc of serum per blood draw in –80° F freezer.
- Bank heparinized plasma (green top) tube in –80° F one per animal.
- Reproductive status shall be evaluated upon admission and prior to release through analysis of serum progesterone and estrogen levels in females, and testosterone in males. Elevated hormone values in females upon admission will require re-sampling within the first two weeks to assess pregnancy. Monitoring by means of monthly blood sample collection and analysis through the course of rehabilitation is strongly advised. If possible, sampling will be done in conjunction with ultrasonic examination of reproductive tracts.

1.9 Record Keeping and Data Collection

Record keeping is an essential part of the rehabilitation process. Not only do accurate and complete medical records for each stranded cetacean allow the staff to provide consistent and optimal care for each animal, but retrospective records help scientists and veterinarians to make better evaluations on how to treat individuals.

1.9.1 Record Keeping

MINIMUM STANDARD

- Record and report the "Marine Mammal Stranding Report - Level "A".

- Complete the require NMFS Marine Mammal Rehabilitation Disposition Report NOAA 89-878, OMB #0648-0178.as in accordance with the NMFS Stranding Agreement
- Maintain and update individual medical records daily on each animal at the rehabilitation center.
- Individually identify each animal with unique field number.
- Keep an accurate description of the animal, including identification/tag number, date and location of stranding, sex, weight, and length at stranding.
- Subjective, objective, assessment and plan (SOAP) based records are preferred.
- Include food intake and medication administered to each animal in the daily records.
- Weight
  a. Recorded weekly for underweight cetacean calves or as authorized in writing by the attending veterinarian.
  b. Taken as often as possible for underweight animals without causing undue stress to the animal.
  c. Recorded on admission and prior to release for larger cetaceans.
- Measure body weight, girths (axilla and anterior insertion of the dorsal fin) and standard straight-line and length upon admission, and within one week of release/placement.
- Measure blubber thickness (ultrasonically) at standard sites upon admission, and monitor monthly throughout the course of rehabilitation, with a goal of matching blubber to seasonal water temperatures.
- Weigh the animal as practical, keeping in mind that obtaining the weight of the animal may be stressful.
- Record all treatments, blood work, test and results and daily observations in the medical records.
- Maintain individual medical records for each animal. Medical records remain on site where the animal is housed and are available for NMFS on site review upon request as stated in the NMFS Stranding Agreement.
- Maintain medical records in an accessible format on site for a minimum of 15 years.
- Maintain up to date water quality records for a minimum of two years.
- Maintain life support system maintenance records.
- Maintain records of water quality additives.

RECOMMENDED

- Full set of standard morphometrics prior to release.
- Photographic documentation, identifying marks, lesions.

- Caloric value of daily food intake calculated and recorded for each animal each day
- Daily weight of calves or emaciated animals at the discretion of the attending veterinarian.
- Maintain food acquisition and analysis records.
- Maintain "paper copy" archive of required NMFS records.

1.9.2 Data Collection

MINIMUM STANDARD

- Written documentation of the medical history, food and observation records must be kept.
- NMFS Required Forms to be completed in writing or submitted electronically in the NMFS National Marine Mammal Stranding Database as prescribed in the NMFS Stranding Agreement:
  a. Marine Mammal Stranding Report – Level A (NOAA 89-864, OMB #0648-0178)
  b. Marine Mammal Rehabilitation Disposition Report (NOAA 89-878, OMB #0648-0178)

RECOMMENDED

- Computerized documentation with hard copies.
- Ability to network with other institutions.
- Maintain real-time accessible compiled comparative data.

1.10 Euthanasia Protocols

MINIMUM STANDARD

- Each institution must have a written euthanasia protocol signed by the attending veterinarian.
- Persons administering the euthanasia must be knowledgeable and trained to perform the procedure.
- Maintain a list of individuals authorized to perform euthanasia signed by the veterinarian.
- Euthanasia shall be performed in a way to minimize distress in the animal.
- Refer to resources such as the American Veterinary Medical Association Panel Report on Euthanasia, the CRC Press Handbook of Marine Mammal Medicine and American Association for Zoo Veterinarians Guidelines for Euthanasia of Nondomestic Animals.
- Appropriate drugs for euthanasia in appropriate amounts for the largest species admitted to the facility shall be maintained in stock on site in an appropriate lockbox or under the control of a licensed veterinarian with a current Drug Enforcement Administration (DEA) license.
- Drugs for euthanasia shall be kept with an accurate inventory system in place.

- DEA laws and regulations and any applicable State Veterinary Practice Acts must be followed when using controlled drugs.
- NMFS may request this information (protocols and DEA number) as part of the NMFS Stranding Agreement.

1.11 Health and Safety Plans for Personnel

There shall be a health and safety plan on site at each rehabilitation facility that identifies all health and safety issues that may be factors when working closely with wild marine mammals. The plan should identify all potential zoonotic diseases as well as including safety plans for the direct handling of all species and sizes of cetaceans seen at that facility. Rehabilitation facilities are encouraged to comply with Occupational Safety and Health Administration regulations.

MINIMUM STANDARD

- Identify all potential zoonotic diseases in a written document available to all personnel.
- Include safety plans for the direct handling of all species and sizes of cetaceans seen at that facility.
- Include safety plan for dealing with handling any untreated discharge water.

1.12 Contingency Plans

Contingency plans shall be in place at each facility and may be required by NMFS as part of the NMFS Stranding Agreement. NMFS may require approved variances or waivers prior to planned projects such as construction, and NMFS may not allow rehabilitation efforts to occur under some circumstances. These plans should addresses in detail the operation of the facility and care of the animals under the following conditions:

- Inclement weather plan, including a hurricane/big storm plans where appropriate.
- Construction in the vicinity of the animal rehabilitation pools recognizing the potential and documented adverse impacts of construction on cetaceans, and including specific reference to how noise, dust, debris, and construction worker access will be controlled, how and how frequently animal health will be monitored, and specific criteria for when construction shall be halted or the animals will be moved to another site out of the construction area if the animals appear to be adversely impacted.
- Power outages, including plans of how to maintain frozen fish stores and life support systems.

- Water shortages.
- "Acts of God" plan which may include floods, earthquakes, hurricanes or other unpredictable problems known to occur on occasion in the region where the facility is located.

1.13 Viewing

NMFS Regulation, U.S.C. 50 CFR 216.2(c)(5) states that marine mammals undergoing rehabilitation shall not be subject to public display. The definition of public display under U.S.C. 50 CFR is "an activity that provides opportunity for the public to view living marine mammals at a facility holding marine mammals captive". Only remote public viewing or distance viewing should be allowed and only when there is no possible impact of the public viewing on the animals being rehabilitated. There is a regulatory requirement for a variance or waiver by NMFS for facilities planning to offer public viewing of any marine mammal undergoing rehabilitation.

1.14 Training and Deconditioning Behaviors

Basic behavioral conditioning of wild cetaceans for husbandry and medical procedure may be warranted during rehabilitation as long as every effort is made to limit reinforced contact with humans. Such conditioning may reduce stress for the animal during exams and acquisition of biological samples. Conditioning may assist with appetite assessment and ensuring that each animal in a group receives the appropriate amount and type of diet and medications.

In some cases, extensive contact with humans, including training, may benefit resolution of the medical case by providing mental stimulation and behavioral enrichment, and may facilitate medical procedures. The relative costs and benefits of training should be evaluated by the attending veterinarian and animal care supervisor and the likelihood of contact with humans following release should be considered. Seeking advice from a qualified cetacean behaviorist (with at least 3 years of experience) may be beneficial.

Behavioral conditioning of cetaceans must be done for the shortest time necessary to achieve rehabilitation goals and is to be eliminated prior to release such that association of food rewards with humans is diminished. If an animal has become accustomed to hand-feeding or boat-following, the animal may approach humans after release. Therefore, these behaviors should be deconditioned or counter-conditioned before the animals can be considered for release. Most behaviors will extinguish through lack of reinforcement, but some may require more concentrated efforts.

Training for research that is above and beyond the scope of normal rehabilitation practices can be approved on a case-by case basis under a NMFS scientific research permit. An exception can be made if the attending veterinarian, facility, and NMFS officials all agree that the research will not be detrimental to the animals' health and welfare and will not impede their ability to be successfully released back to the wild.

2. Standards for Pinniped Rehabilitation Facilities

2.1 Facilities, Housing, and Space

Pools for stranded pinnipeds must be appropriate for the basic needs of the animal including buoyancy and thermoregulation. Debilitated pinnipeds often cannot swim and will avoid water if offered, preferring a haul-out space to a pool. Pinnipeds arriving in a debilitated condition have different needs and may not require pools initially. If no pool is provided to the animal, means of keeping it wet and protected from direct sunlight is essential. The upper critical temperature of California sea lions is lower than most land-dwelling mammals at 24°C (75°F) and with limited thermoregulatory ability, they have special habitat needs in captivity. While dry sea lion coats absorb about 74% and wet California sea lion coats absorb almost 92% of all types of shortwave radiation respectively, a California sea lion with a wet coat exposed to direct sunlight could easily overheat on a hot day if there were no other method to cool the animal. (Langman *et al.*, 1996).

Social compatibility should be considered as a part of appropriate housing. Pinnipeds known to be social should be housed with compatible species whenever possible. Placing larger, more robust animals in separate pens, away from the smaller, weaker, or less dominant animals may enhance the success of the rehabilitation efforts for the weaker animals.

It is up to the attending veterinarian and experienced rehabilitation staff, to decide how to house the animal most appropriately based on their experience, observations, and physical examination.

Each animal admitted to a rehabilitation center should be placed in a quarantine holding area and have a full health evaluation performed by the attending veterinarian, Sufficient quarantine time should be allowed for results from tests and cultures to be evaluated before the animal is placed with animals that are apparently disease free. Pinnipeds with evidence of infectious disease must be held in separate areas from other rehabilitating animals to prevent transmission of disease. There should be sufficient isolation areas to accommodate incoming animals with evidence of disease utilizing methods to control aerosol and water-borne exposure to other on-site animals. (See Section 2.4 Quarantine).

During multiple or unusual stranding situations such as hazardous waste spills, catastrophic weather events, toxic algal blooms, or other events leading to unusually high morbidity or mortality, rehabilitation centers may need to adjust the number of animals that would be normally housed in each pen, pool, or bay or ocean pen. The attending veterinarian will be responsible for assuring that

numbers of animals housed in one pool or pen will be appropriate based on the situation. The number of qualified animal care personnel available to care for the animals could be a limiting factor on how many animals may be housed at each facility.

Care should be taken when hand rearing neonatal otariids, as some species frequently imprint on their caregivers rendering them unsuitable for release. A plan for placing animals in a permanent captive environment should be in place in advance for pinniped pups that are ultimately deemed unreleasable.

NMFS Regulation, U.S.C. 50 CFR 216.2(c)(5) states that marine mammals undergoing rehabilitation shall not be subject to public display. The definition of public display under U.S.C. 50 CFR is "an activity that provides opportunity for the public to view living marine mammals at a facility holding marine mammals captive" (See Section 2.13 Viewing).

2.1.1 Pool Requirements

MINIMUM STANDARD

- Pools shall be available for all pinnipeds under rehabilitation. Critical care animals may be temporarily held without water access at the discretion of the attending veterinarian.
- Critically ill animals or young pups are to be housed appropriately, with the pool size and depth as well as the dry resting area determined by the discretion of the attending veterinarian.
- Pools shall be deep enough for each animal to completely submerge, and shall be at least 0.76 meters or 2.5 feet deep. An exception to this would be temporary pools for young pups or debilitated animals.
- Pools shall be large enough in diameter to allow each animal housed therein to swim.

RECOMMENDED

- Pools shall have a MHD of 1 meter or 1.5 x the length of the largest animal utilizing the pool, whichever is larger.
- The minimum surface area of the pool for non-critical animals shall be at least equal to the dry resting area required by USDA, APHIS AWA standards, but using the actual length of the largest animal in the enclosure instead of the average adult length.
- The pool shall be at least 0.91 meters deep or one-half the actual length of the longest species contained therein, whichever is greater.

- If adult pinnipeds are commonly rehabilitated, facilities should be designed to accommodate the average number of adult-sized animals that strand each year, and have at least one pool and haul-out area that meet USDA APHIS AWA standards.

2.1.2 Dry Resting Area

MINIMUM STANDARD

- One non-critical animal; area of dry resting area = 1.2 x (length of the animal)^2.
- Two non-critical animals; area of dry resting area = 1.5 x (length of the longest animal)^2.
- Three or more animals in the same enclosure require the minimum space for two animals and, in addition, enough space for the animals to lay separately with at least one body length from one another, to turn around completely, and to move at least two body lengths in one direction.
- The facility must have a plan to manage adult males.
- Animals may be temporarily housed in smaller areas at the discretion of the veterinarian. The attending veterinarian should determine the minimum space which will be most appropriate for the age or medical condition of the animal.
- Critical care animals and young pups may be temporarily supplied smaller pools and less dry resting area.

RECOMMENDED

- One to two animals: 2 x (length of longest animal)^2
- Three or more animals in the same enclosure: (length of each animal)^2 x number of animals in enclosure = number of square feet of required dry resting area (DRA).

2.1.3 Pool or Pen Design

New rehabilitation pools should be designed and constructed to minimize introduction of anthropogenic noise from life-support equipment or other sources. This can be accomplished through sloping of walls, insulation with soil or other materials around the sides of the pool and/or through isolation of noise-generating equipment. A special exception may be granted by NMFS if existing pools do not meet these specifications and a retrofit is not feasible as long as animal welfare is maintained.

MINIMUM STANDARD

- Pools or pens shall be designed for ease of cleaning and handling the animals.

- Open water pens shall optimally be constructed of plastic or other rigid netting.
- If cotton or nylon netting material is used it must be small enough gage to prevent entanglement.

RECOMMENDED

- Pools designed to promote good water circulation and to minimize anthropogenic noise.
- Ability to drop a pool in less than 2 hours and refill it to a "swimming level" in less than 30 minutes or a false bottom or other method utilized for ease of capturing and treating pinnipeds.

2.1.4 Length of Stay and How it Affects Space

Facilities which handle adult animals that are kept for periods longer than six months but less than one year should meet USDA APHIS AWA standards. However the actual length of each animal may be used for each DRA calculation rather than the adult length. After one year, holding space must meet APHIS standards.

2.1.5 Shelter, Shading, and Lighting

Animals housed at rehabilitation facilities must be provided with shelter to provide refuge from extreme heat or cold. Pinnipeds held in rehabilitation facilities may not have normal activity levels and thin animals may be unable to thermoregulate properly. These animals may require shade structures to protect them from direct sunlight and extreme heat, or shelter to protect them from cold temperatures or inclement weather. Animals held in indoor facilities should be provided with appropriate light and dark photoperiods which mimic actual seasonal conditions. At the discretion of the attending veterinarian an exception to refuge from extreme cold during the pre-release conditioning phase may be made. Pinnipeds should be protected at all times from extreme heat.

MINIMUM STANDARD

- Provide shade structures or shelters to animals to aid thermoregulation when local climatic conditions could compromise the health of the animal.
- Provide shade and/or water spray to all pinnipeds that cannot swim and are housed in areas where ambient air temperatures reach > 80° F (26.6° C).
- Lighting in indoor facilities shall be appropriate for the species and shall clearly illuminate the DRA and pool during daylight hours.

RECOMMENDED

- All of the above and a source of natural or full spectrum light for animals housed indoors.
- Removable or adjustable shade structures that may be sanitized regularly in pens to provide more natural sunlight to animals that are swimming and diving normally.

2.1.6 Air Temperature

MINIMUM STANDARD

- Attention to ambient air temperature and humidity should be considered to facilitate recovery, protect rehabilitating animals from extremes of heat or cold, and to prevent discomfort.
- Method to raise or lower air temperature, as appropriate to maintain proper body temperature should be available. Access to full shade, constant water sprays and fans may be used for animals that have no access to pools during times when the ambient temperature exceeds 85°F (29.4°C). Likewise radiant heating devices or waterproof heating pads may be utilized when ambient temperatures fall below the comfort level of the animal, which will be determined by the species, age, medical condition, and body condition of the animal.
- Animals should be able to move away from point source heaters. If animals are too debilitated to move, temperature of heaters can not exceed the safe range of 60-80°F at skin surface or animals must be monitored every 2 hours.
- Large fans or "swamp coolers" available to move air across animals with no access to pools when ambient temperatures reach over 85°F (29.4°C).

RECOMMENDED

- Provide temperature-controlled shelter or holding space for critical care animals or pups.
- Monitor temperature of additional heaters such as heating pads infrared heaters and heat lamps.

2.1.7 HOUSING FOR CRITICAL CARE ANIMALS

Debilitated and ill pinnipeds are often sedentary and haul out or float at the surface of a pool for long periods of time. Young pups may be weak and require assistance moving in and out of pools. A shallow area that allows the animal to rest on the bottom with gradually sloping sides or a ramp equipped with a gripping surface to allow ease in entering and exiting the pool are considered optimal.

MINIMUM STANDARD

- Individual dry haul out space or individual enclosures shall be large enough to accommodate the most common species of pinnipeds rehabilitated routinely at the facility.
- Housing for critically ill animals that will provide shelter from the extremes of heat or cold, and will provide heat as appropriate for animals held in cold climates.
- Access to shallow water and/or water spray for all pinnipeds as advised by the attending veterinarian.
- Barriers sufficient to isolate incoming animals until the attending veterinarian determines them to be free from contagious disease (See Section 2.4 Quarantine).

RECOMMENDED

All of the above minimum standards, plus:

- Individual enclosures for each critical care animal where the dry resting area = (length of the animal)^2.
- Housing which provides optimal temperature control for critically ill animals (heating and/or air conditioning).

2.1.7 Housing of Pups

Pups of all species have special housing and management needs and require careful monitoring when introducing them to pools. Premature pups may require more time than full-term pups before introducing them to water.

MINIMUM STANDARD

Phocids less than 1 week old:

- Individual housing with fully supervised access to shallow water (< 0.5 meters deep) pools. Full supervision may stop when animals demonstrate ability to swim and haul out.

Otariids less than 3 weeks old:

- Individual housing or housing with similarly sized pups with fully supervised access to shallow water pools (<0.5 meters deep) Full supervision may stop when animals demonstrate ability to swim and haul out.

- Access to raised platforms in dry resting areas for pups of all ages at the discretion of the veterinarian. Critical or debilitated pups should not be required to lay on concrete or other hard/cold surfaces. Platforms must be low enough for easy access yet high enough to allow the floor to dry under platform. Platforms should be made of material with a sealed cleanable surface and designed to allow for waste to pass through.

RECOMMENDED

- All of the above and with pools designed with a gently sloping side/beach area with "gripping surface" to allow pups to easily haul out without assistance.

2.1.8 Housing of Older Pups

Full term phocids greater than 1 week old and otariids greater than three weeks old

MINIMUM STANDARD

- House pups with similar conspecific age group.
- House pups as individuals or groups with frequent or constant access to deeper water (> 0.5 meters deep).
- Provide a platform or shallow shelf in each pool that allows pups to easily haul out on their own.
- Provide platforms in dry resting areas allowing critical or debilitated pups an alternative to laying on concrete or other hard/cold surfaces (as above).

RECOMMENDED

- Provide a pool designed with a gently sloping side leading to a level beach area that allows pups to easily haul out.

2.1.9 Number of Animals Housed in Each Pen/Pool

During UME strandings, the number of pinnipeds received by the facility is limited not only by the number and size of the holding pools or pens, but the number of qualified trained rehabilitation staff members available to care for the animals. The maximum number of animals maintained in each pool and onsite at the facility shall be determined by the attending veterinarian and dictated by the number of qualified staff available to care for the animals.

MINIMUM STANDARD

- Provide a minimum of three qualified trained rehabilitation staff members on site for the first 25 pinnipeds housed at the facility, and two more trained rehabilitation staff members for every additional 25 pinnipeds. More staff will be required when animals are housed simultaneously in quarantine holding and recovering animal holding areas. Dependant pups are more labor intensive and require more staffing. Staff must be available on a 24-hour basis for critical animal care.

2.1.10 Housekeeping

MINIMUM STANDARD

- Keep support buildings and grounds as well as areas surrounding rehabilitation pools clean and in good repair.
- Maintain perimeter fences in good repair, and ensure they are an adequate height and construction to keep people and animals and pests out.
- Ensure primary enclosures housing marine mammals do not have any loose objects, sharp projections, and/or edges which may cause injury or trauma to the marine mammals contained therein.
- No holes or gaps larger than ½ the size of the head diameter of the pup of the smallest species to be housed.
- All drains and overflows must have screened covers.
- Objects introduced as environmental enrichment must be too large to swallow and made of non porous cleanable material.

RECOMMENDED

- Coat all pool and haul-out surfaces with a non-porous, non-toxic, non-degradable cleanable material that is able to be disinfected.

2.1.11 Pest Control

MINIMUM STANDARD

- Establish and maintain a safe and effective program for the control of insects, avian and mammalian pests. This should include physical barriers to help to prevent feral and/or wild animals from contact with the rehabilitating animals.

- Insecticides or other such chemical agents shall not be applied in a primary enclosure housing marine mammals or a food preparation area except as authorized in writing by the attending veterinarian.
- If applied, all appropriate measures must be taken to prevent direct contact with the insecticide/pesticide, whether airborne or waterborne, by the animal.

2.1.12 Security for Facility

Stranded marine mammals often attract public attention and must be protected from excessive commotion and public contact. Ensuring a quiet stress-free environment for rehabilitating animals may improve their chance to recover and survive. Public viewing of marine mammals is discussed in Section 2.13 of this document.

MINIMUM STANDARD

- Locate rehabilitation facilities at sites that are able to be secured from the public.
- Prevent direct public contact with the rehabilitating animals by utilizing appropriate fencing, staff and security personnel.

RECOMMENDED

- Maintain 24- hour monitoring when animals are present or maintain a secure perimeter fence with the ability to lock the area off to the public when staff is not present.

2.2 Water Quality

There are four basic types of water systems:

- Pools with filtration systems (closed systems)
- Pools without filtration systems (dump and fill systems)
- Pools with periodic influx of natural seawater (semi-open systems)
- Open water systems (Bay or sea pens).

There are a number of variables which will affect water quality. The number and size of pinnipeds utilizing each pool will vary throughout the year at most rehabilitation institutions. During the busy season or during unusual stranding events, the number of pinnipeds utilizing one pool may increase dramatically creating a heavier load of waste which must be handled by the filtration system in closed systems and by the amount of water flow-through in semi-open and open systems. A life support

system is used as one tool in a program of water quality maintenance to provide safe and clean water to the animals.

Filtration or life support systems are essential to maintaining clean water for animals held in closed or semi-closed systems. Life support systems have three basic parts; mechanical filters that remove solids, biological filters or baffles to remove or detoxify chemicals in the water, and disinfecting methods to control or remove pathogens. In addition to maintaining clean water in the animal pools, these systems may be needed to treat waste water, depending on waste water disposal requirements. If a temporary increase in waste production overwhelms part or all of the life support system, a good water quality control program will require alternative options.

Water used in closed systems generally is fresh water obtained from municipal sources, whereas water in open and semi-open systems comes from a bay or sea source. Water in closed systems must be regularly filtered through sand and gravel filters to remove particulate matter, and disinfectants such as chlorine or bromine may be added to eliminate pathogens. More elaborate systems utilize ozone to oxidize pathogens in the water. The source should be independent of other rehabilitation and captive animal areas.

Factors that affect water quality are:

- Size of pool or pen
- Efficiency of filtration system or water flow-through rate (tides)
- Water turnover rate
- Number, size and species of animals housed in pool or pen
- Type and amount of food consumed by animals in pool or pen
- Nature of bottom substrate
- Frequency of cleaning the pool
- Types, amounts, method and the frequency with which chemicals are added to the system
- Temperature of the water
- Pathogens in the water
- Biotoxins in open water pens or in pools where the source water comes from the ocean or bay
- Contaminants (oil, pesticides, etc.) in open water pens
- Hazardous waste spills
- Inclement weather
- Sunlight contributing to algae production on pool surfaces, which in turn can support bacteria.

2.2.1 Water Source and Disposal

The water source for pinnipeds housed in closed or semi-closed systems may be municipal water, well water, or water brought into the facility from an adjacent body of water or estuary. The source should be independent of other rehabilitation and captive animal areas.

MINIMUM STANDARD

- Fresh or salt water must be readily available to fill pools, and fresh water to clean and wash down holding pens daily.
- Drain water as often as necessary to keep the pool water quality within acceptable limits.
- Discharge waste water in accordance with state or local regulations. Facility managers must seek appropriate authorization to dispose of waste water. Documents of authorization or necessary permits must be kept on site as part of the administrative record and may be requested by NMFS as part of the NMFS Stranding Agreement.
- Chemicals, when necessary, shall be added in appropriate amounts to disinfect the water or adjust the pH, but not added in a manner that could cause harm or discomfort to the animals.
- Have contingency protocols describing how water quality will be maintained during periods of peak animal use.
- Water will be clear enough to see animals and bottom of pool and free from obvious solid waste and noxious odors.

RECOMMENDED

- Fresh or ideally salt water must be available to fill pools within two hours of draining.
- Maintain a filtration system designed to optimize water quality in each holding pool and decrease water waste.
- Ability to dechlorinate fresh water for species which require this (i.e., fur seals).
- Protocols in place for maintenance of water quality throughout the year.
- Testing of source and discharge water.

2.3 Water Quality Testing

It is important to test the water in which the animals live on a regular basis. Coliform bacterial counts are used to monitor the efficiency of the filtration system to eliminate potentially harmful bacteria. Coliform counts should be done at least once per week and more frequently if there are very large or multiple animals utilizing the pool. While coliform numbers may be described as Most Probable

Number (MPN) per 100 ml, a more accurate method of measuring coliforms is to determine the total coliform count, or the fecal coliform count.

Temperature of the water is especially important if the animal lacks the ability to thermoregulate. Water may require heating or chilling to aid debilitated animals in their ability to maintain optimal body temperature, although debilitated pinnipeds are likely to haul out, in such case the water temperature becomes less important. Water temperature regulation is not feasible in open water pens, but keeping track of the water temperature in sea pens may aid the staff in making husbandry decisions. If coliform numbers or the water temperature becomes too high in any system, measures must be taken to correct the problem in a timely manner. A partial-to-total water change may be necessary to correct the problem in a closed or semi-closed system. If the coliform counts are considered too high in sea or bay pens, efforts should be made to circulate clean sea water through the pens using pumps, paddles or other methods of moving water.

Chemicals added to the water may damage eyes and skin and must be monitored daily. Salinity, when utilized for rehabilitating pinnipeds, may also have an impact on the health of the skin and eyes, as well as the comfort level of the animal, and should be monitored regularly. Emergency chemicals should be on hand such as sodium thiosulfate in case of the accidental hyperchlorination of a system.

2.3.1 Water Quality Tests

MINIMUM STANDARD

- Measure coliform growth weekly, unless pools are dumped and filled daily.
- Total coliform counts must not exceed 500 per 100 ml or a MPN of 1000 coliform bacteria per 100 ml water. Fecal coliform counts are not to exceed 400 per 100 ml.
- If the above tests yield results that exceed the allowable bacterial count, then two subsequent samples must be taken to repeat the test(s) where the level(s) is/are exceeded. The second sample is to be taken immediately after the initial test result, while the third sample would be taken within 48 hours of the initial test.
- If the averaged value of the three test results still exceeds the allowable bacterial counts, the condition must be corrected immediately or the animals moved to a contingency facility.
- Maintain pH between 6.5 and 8.5.
- Maintain the temperature of the water so that it falls within parameters appropriate for the species, generally between 50-80°F.

- Measure oxidant levels in systems which require use of a chemical disinfectant and/or ozone in the system (for closed systems).

RECOMMENDED

- Maintain pH between 7.2 to 8.2.
- Total Coliforms with blanks and controls, fecal Coliform, fecal Strep, and yeast count performed weekly or as needed.

2.3.2 Frequency of Testing in Closed, Semi-open, or Open Systems

MINIMUM STANDARD

- Measure water temperature, pH, salinity (if applicable), chemical additives (if applicable) daily in all pools.
- Measure coliform counts weekly; and more frequently at the discretion of the attending veterinarian.

RECOMMENDED

- If ozone systems are used, measure ozone levels regularly in the animal pools. Ozone levels shall not exceed 0.02 mg/liter.
- Test source and discharge water at least once per day (more frequently for "flow through" systems).
- Maintain records for tests with time, level and results – reviewed and signed monthly by the attending veterinarian or animal care supervisor.

2.3.3 Chemical Additives

Total chlorine = Free chlorine + combined chlorine.

MINIMUM STANDARD

- Maintain total chlorine below 1.5 ppm, where the combined chlorine shall not exceed 50% of the total chlorine.
- All additives must be recorded.
- pH may be adjusted chemically – for example – pH may be raised with sodium carbonate, or soda ash; or lowered with HCl or CO2; but not added in a manner that could cause harm or discomfort to the animals.

- Maintain MSDS information and signage as well as appropriate handling equipment for the addition of chemicals.

2.3.4 Water Circulation

The amount of water turnover through the filtration system in a closed or semi-open system is important to maintain water quality by removing organic waste and particulate matter. Likewise the amount of water movement through an open water pen is also important in the maintenance of water quality. Generally, adequate tidal action will result in the equivalent of two complete water changes per day.

MINIMUM STANDARD

- Maintain sufficient turnover of water through the filtration system in closed or semi-open systems to keep the water quality at or above acceptable limits, with a minimum of two complete water changes per day.
- Ensure methods for moving water (water paddles, pumps, spray devices) are available to aerate and move water in open water pens with insufficient flow of tides or water through the enclosures. These methods should be sufficient to provide the equivalent of two water changes per day.

RECOMMENDED

- A minimum full water turnover rate of every four hours for each pool in closed or semi-open systems.

2.3.5 Salinity

Pinnipeds under rehabilitation may be housed in fresh water. However salinity may play a part in eye health, may enhance wound healing, or may be desirable in some other instances. In some cases animals will drink fresh water which may aid in rehydration. Placing animals in water of appropriate salinity shall be left to the discretion of the animal care supervisor and staff in consultation with the attending veterinarian.

2.3.6 pH

MINIMUM STANDARD

- pH shall be held in a range between 6.5 to 8.5.

RECOMMENDED

- Maintain pH between 7.2 to 8.2.

2.3.7 Water Temperature

MINIMUM STANDARD

- Hold water temperatures within the normal habitat temperature range for the species under rehabilitation or as authorized in writing by the attending veterinarian.
- Provide methods to heat and maintain warm water environments for species that require it, or for debilitated or critically ill individuals that are incapable of maintaining appropriate body temperature.
- Monitor temperature of water being heated or cooled.

2.4 Quarantine

Pinnipeds brought to a rehabilitation facility have no medical history and may carry diseases communicable to other marine mammals, other animals, or humans. Likewise, these animals are often debilitated and may suffer from a variety of illnesses which may compromise their immune systems making them susceptible to diseases from other animals. Quarantine areas must be available and proper biosecurity protocols must be in place for all incoming animals at rehabilitation facilities.

Direct contact between the general public and pinnipeds undergoing rehabilitation should be avoided because of the zoonotic risk of some organisms carried by marine mammals. There have been documented cases of Brucella, Leptospira, Mycoplasma (Seal Finger), San Miguel Sea Lion Virus, Influenza A, and Sealpox, being passed from pinnipeds to humans.

Listed on the following website are numerous other potentially zoonotic marine mammal pathogens (see *http://www.vetmed.ucdavis.edu/whc/mmz/)*. See also: *2004 UC Davis Wildlife Health Center Report for the Marine Mammal Commission – Assessment of the Risk of Zoonotic Disease Transmission to Marine Mammal Workers and the Public: Survey of Occupational Risks.*

2.4.1 Prevention of Animal to Animal Transmission of Diseases

MINIMUM STANDARD

- Quarantine all new animals in a separate dedicated quarantine area and provide pens/pools that can be isolated with the use of dividers, tarps, or physical space from the rest of the animal housing areas. Animals that are admitted in groups may be quarantined together.
- Provide dividers between pens and pools that prevent washdown or splash from moving from one pool or pen to another.
- Use dedicated protective clothing for personnel- including gloves, eye shields, safety glasses, and/or eye wash stations.
- Use foot baths, glove baths, and methods to disinfect clothing between handling animals within quarantine area and outside of quarantine area.
- Maintain equipment and tools strictly dedicated to the quarantine area or thoroughly disinfect.
- Provide sufficient space or solid-surfaced barriers between animal enclosures to prevent direct contact between animals.
- Provide sufficient air turnover in indoor facilities to prevent transmission of disease. Air turnover should be enough to prevent build-up of heat and provide a method of bringing fresh air into the facility. There should be sufficient venting or openings to allow movement of air throughout the facility.
- Implement specific quarantine and sanitation procedures to prevent transmission of disease through fomites (e.g., clothing, equipment):
    - Thoroughly clean and disinfect buckets, hoses, scales, transport equipment, and cleaning equipment that is moved between animal areas to prevent transmission of pathogens via fomites.
- Place open water pens so effluent is not near water intake.
- Require evaluation and written veterinary approval before placing animals together after quarantine period has been met.

RECOMMENDED

- Provide separate air handling system in indoor facilities.
- Separate entries to quarantine areas with no crossover with the rest of the facility.
- Clean and disinfect quarantine areas between uses.

2.4.2 Prevention of Domestic Animal to Marine Mammal Transmission of Disease

- Ensure appropriate fencing and placement of holding pens to prevent direct contact between rehabilitating pinnipeds and domestic animals.
- Prohibit personal pets within outermost perimeter of facility.
- Require that specific quarantine and sanitation procedures are taken to prevent transmission of disease through fomites such as clothing and equipment.
- Use dedicated carriers for pinnipeds – carriers should not be used for other mammals or birds unless they are thoroughly scrubbed and disinfected between uses.

2.4.3 Prevention of Wild Animal to Marine Mammal Transmission of Disease

- Ensure perimeter fencing will deter wildlife from entering the rehabilitation premises.
- Provide rodent control on the premises.
- Ensure net pens and lagoon areas have sufficient secondary fencing to keep wild mammals from coming in direct contact with the animals housed in the net pens.

2.4.4 Prevention of Marine Mammal to Domestic Animal Transmission of Disease

- Provide appropriate perimeter fencing.
- Require animal personnel to change contaminated clothing and/or disinfect before leaving the rehabilitation premises.
- Require that specific quarantine and sanitation procedures are taken to prevent transmission of disease through fomites such as clothing and equipment.
- Follow appropriate release guidelines.

2.4.5 Prevention of Stranded Marine Mammal to Captive Marine Mammal Transmission of Disease

- Train volunteers and staff to follow appropriate quarantine protocols.
- Establish quarantine protocols that take into consideration the changing status of the stranded animal.
- Establish traffic flow so that volunteers or staff working with stranded animals do not inadvertently travel into a collection animal area.

- Establish decontamination protocols before volunteers or staff members exposed to stranded animals may enter a collection animal area.
- Establish separate restrooms, showers, changing rooms, food preparation areas, etc. for staff and volunteers working with rehabilitating vs. collection animals. Food for rehabilitating animals may be prepared in the collection animal kitchen and taken to the rehabilitation animal area, however any bucket, feed implement or other item must be thoroughly disinfected before it may return to the collection animal area.

2.4.6 Methods to Reduce Spread of Disease from Animals Housed in Open Sea/Bay Pen Systems

- Place pens in a secluded area where wild animals and marine mammals are unlikely to come into direct contact with the animals housed in the sea/bay pens.
- Place a second set of perimeter nets 30 feet from the sea/bay pens to prevent direct contact with wild marine mammals. Nets should be sufficiently rigid to prevent entanglement by mammals or fish.
- Do not place sea/bay pens within 1000 meters any major outflow sewage treatment plants and consider the flow direction or current from these major outflows.
- Place the sea/bay pens 500 meters and downstream from water intake pipes that bring water into facilities that house marine mammals.
- Place pens in an area where there is ample flow-through of tides/currents.
- Ensure the pens are of sufficient size to minimize biomatter build-up. Each pinniped should be housed in a pen that has a minimum depth of half of their body length, and a minimum horizontal dimension of two full body lengths.
- Avoid overcrowded pens. Animals may fight with each other when housed too closely together.
- Have equipment to pump or aerate the water in pens that do not have sufficient tidal action to ensure a minimum of two complete water changes per day.
- Place pens in areas where there is sufficient depth to enhance water circulation and reduce pathogen build-up. Weekly coliform testing will determine if pathogen build-up exists. Water circulation may be enhanced using water paddles.
- Place quarantine pens such that tidal action or underwater currents will not flow from quarantine pens through sea pens housing healthy animals.

2.4.7 Evaluation Requirements before Placing Marine Mammals Together

- CBC/Chemistries, appropriate cultures, physical examination before moving animals out of quarantine area and at the discretion of the attending veterinarian.
- Review current NMFS recommendations on diseases of concern and reportable disease such as morbillivirus.
- Consider screening for morbillivirus, herpes virus, brucellosis, leptospirosis, and toxoplasmosis utilizing the most current diagnostic tests available and at the discretion of the attending veterinarian.
- If animals are part of a UME, then screening for diseases must be more thorough and in direct coordination with NMFS and the UME On-site Coordinators.
- Have contingency plan for animals that are actively infected with or carriers of a reportable disease such as brucellosis, leptospirosis, toxoplasmosis, herpes virus, and morbillivirus.

2.4.8 Zoonotic Considerations

- Restrict public access and direct contact with pinnipeds due to zoonosis potential and public health hazard of untrained individuals interacting with sick and injured marine mammals.
- Train staff and personnel about how to prevent contracting zoonotic diseases (*Occupational and Safety Information for Marine Mammal Workers* http://www.vetmed.ucdavis.edu/whc/mmz/).
- Train staff and personnel working directly with stranded pinnipeds how to recognize symptoms of zoonotic disease.
- Train staff the basics of sanitation and properly handling contaminated equipment.
- Provide appropriate safety equipment, as reasonable, such as protective clothing, eye protection and face masks to all staff who may be exposed to zoonotic diseases.
- Provide eye flushing stations as used with HAZMAT or normal saline bottles to irrigate the eyes.
- Staff with open wounds shall not handle animals carrying potentially infectious diseases without appropriate precautions to protect their wound(s).

2.4.9 Pre-Release Guidelines

- Pre-release health screens and serologic requirements are determined by the NMFS Regional Stranding Coordinator and the Marine Mammal Health and Stranding Response Program (see *NMFS/FWS Best Practices for Marine Mammal Stranding Response, Rehabilitation, and Release – Standards for Release*).

2.5 Sanitation

2.5.1 Primary Enclosure Sanitation

MINIMUM STANDARD

- Remove animal and food waste in areas other than the rehabilitation pool from the rehabilitation enclosure at least daily, and more often when necessary to prevent contamination of the marine mammals contained therein and to minimize disease hazards.
- Remove particulate animal and food waste, trash, or debris that enter rehabilitation/exercise pens or pools at least once daily, but as often as necessary to maintain water quality and to prevent increased health hazards to the marine mammals that use the pools.
- Remove trash and debris from pools as soon as it is noticed, to preclude ingestion or other harm to the animals.
- Clean the walls and bottom surfaces of the rehabilitation/exercise pens and pools as often as necessary to maintain a clean environment and proper water quality.
- Ensure appropriate disinfectants mixed to recommended dilutions are utilized to clean pens, equipment, utensils, and feed receptacles and to place in foot baths. These disinfectants should have both bacteriocidal and virocidal qualities.
- Rotate disinfectants on a regular basis to prevent bacterial resistance.
- Prevent animals from coming in direct contact with disinfectants or aerosol from spray or cleaning hoses (i.e., water splashed from floor).

RECOMMENDED

- Empty and allow pools to dry once each year but dry and hyperchlorinate pool bottoms and walls and haul-out areas after each use by sick pinnipeds.

2.5.2 Sanitation of Food Preparation Areas and Food Receptacles

- Use separate food preparation areas and supplies for rehabilitation vs. collection animals.
- Clean food containers such as buckets, tubs, and tanks, as well as utensils, such as knives and cutting boards, or any other equipment which has been used for holding, thawing or preparing food for marine mammals after each feeding, and sanitize at least once a day. Equipment should be cleaned with detergent and hot water, sanitized and dried before reuse.
- Clean kitchens and other food handling areas where animal food is prepared after every use, and sanitize at least once weekly using standard accepted sanitation practices.

- Store substances such as cleaning and sanitizing agents, pesticides and other potentially toxic agents in properly labeled containers away from food preparation areas.
- Post MSDS "right to know" documents for staff utilizing cleaning and animal treatment chemicals and drugs.

2.6 Food, Handling, and Preparation

During rehabilitation food for marine mammals shall be wholesome, palatable, free from contamination, and of sufficient quantity and nutritive value to allow the recovery of the animals to a state of good health. Live fish may be fed during rehabilitation but preferences should be given to native prey species. Live fish may contain parasites which could infect compromised animals. Feeding regimens should be tailored to enhance weight gain for underweight animals or growing pups, and should simulate natural patterns in terms of frequency and quantity to the extent possible while following a prescribed course of medical treatment. Most pinnipeds feed several times during a given day

2.6.1 Diets and Food Preparation

MINIMUM STANDARD

- Prepare the diets with consideration for age, species, condition, and size of marine mammals being fed.
- Feed pinnipeds a minimum of twice a day, except as directed by a qualified veterinarian or when following professionally accepted practices.
- Diets reviewed by a nutritionist, attending veterinarian, or the animal care supervisor.
- Train staff to recognize good and bad fish quality.
- Feeding live fish may be required for release determination. See *NMFS /FWS Best Practices for Marine Mammal Stranding Response, Rehabilitation, and Release – Standards for Release* for more information regarding feeding live fish.
- Food receptacles should be cleaned and sanitized after each use. Food preparation and handling should be conducted so as to minimize bacterial or chemical contamination and to ensure the wholesomeness and nutritive value of the food.

2.6.2 Food Storage and Thawing

- Frozen fish or other frozen food shall be stored in freezers which are maintained at a maximum temperature of 0° F (-18° C).

- The length of time food is stored and the method of storage, as well as the thawing of frozen food should be conducted in a manner which will minimize contamination and which will assure that the food retains optimal nutritive value and wholesome quality until the time of feeding.
- Freezers should only contain fish for animal consumption. Human food or specimens should not be placed in the fish freezer.
- Experienced staff should inspect fish upon arrival to ensure there are no signs of previous thawing and re-freezing, and check temperature monitoring devices in the transport container. The fish shipment should be refused, or fish should be discarded if temperature fluctuations occurred during transport.
- Freezers shall be of sufficient size to allow for proper stock rotation.
- All foods shall be fed to the marine mammals within 24 hours following the removal of such foods from the freezers for thawing.
- If the food has been thawed under refrigeration it must be fed to marine mammals within 12 hours of complete thawing.
- When fish is thawed in standing or running water, the coldest available running water must be used to prevent excess bacterial growth.
- To ensure optimal quality of the fish, and to prevent bacterial overgrowth, do not allow fish to reach room temperature or sit in direct sunlight.
- The thawed fish shall be kept iced or refrigerated until a reasonable time before feeding. This time will vary with ambient temperature.
- Prepared formula should be fed immediately or refrigerated and fed to the marine mammals within 24 hours of preparation. Formula, once heated to an appropriate temperature for a feed, shall be discarded if it is not consumed within one hour.

RECOMMENDED

- Calculate kilocalories of each type of fish or food items fed to each animal daily.
- Conduct food analysis for protein, fat and water content of each lot of fish used. Analysis from fish supplier may be used, and a copy should be maintained on site.
- Calculate composition of each diet routinely used.

2.6.3 Supplements

MINIMUM STANDARD

- Each animal shall receive appropriate vitamin supplementation which is sufficient and approved in writing by the attending veterinarian.
- Salt supplements shall be given to pinnipeds housed in fresh water as necessary and as approved by the attending veterinarian.

2.6.4 Feeding

Food, when given to each marine mammal individually or in groups, must be given by an employee or trained personnel who has the necessary training and knowledge to assure that each marine mammal receives an adequate quantity of food to maximize its recovery or maintain good health. Such personnel are required to recognize deviations in each animal being rehabilitated such that food intake can be adjusted accordingly.

2.6.5 Public Feeding

MINIMUM STANDARD

- Public feeding is not allowed for animals that are being rehabilitated.
- Feeding must be conducted only by qualified, trained rehabilitation staff members.

2.6.6 Feed Records

MINIMUM STANDARD

- Maintain feed records for each individual animal noting the individual (not an estimate) daily consumption by specific food type.
- If animals are fed in groups then group feed records shall be maintained and together with daily husbandry notes and weekly weight records ensure evidence of sufficient feed intake.
- Weigh food before and after each feeding individuals and groups and the record the amount consumed.
- Weigh the animal as practical, keeping in mind that obtaining the weight of the animal may stressful.
- If weighing the animal is not an option, obtain the girth measurement at the level of the axilla if possible.

2.7 Veterinary Medical Care

All rehabilitation facilities shall have an attending veterinarian. The attending veterinarian is critically involved in making decisions regarding medical care as well as housing and husbandry of resident and newly admitted patients.

2.7.1 Veterinary Experience

MINIMUM STANDARD

The attending veterinarian shall:

- Assume responsibility for diagnosis, treatment, and medical clearance for release or transport of marine mammals in rehabilitation (50 CFR 216.27).
- Ability to provide a schedule of veterinary care that includes a review of husbandry records, visual and physical examinations of all the marine mammals in rehabilitation, and a periodic visual inspection of the facilities and records.
- Be available to examine animals on a regular schedule and emergency basis.
- Be available to answer veterinary questions on a 24 hour basis.
- Have marine mammal experience or be in regular consultation with a veterinarian who has marine mammal experience and have access to a list of expert veterinarians to contact for assistance.
- Have an active veterinary license in the United States (means a person who has graduated from a veterinary school accredited by the American Veterinary Medical Association Council on Education, or has a certificate issued by the American Veterinary Graduates Association's Education Commission for Foreign Veterinary Graduates), or has received equivalent formal education as determined by NMFS Administrator (adapted from the Animal Welfare Act Regulations 9 CFR Ch. 1).
- Have the skills to be able to draw blood and give injections to the species most commonly encountered at the rehabilitation center.
- Facility management should have contingency plan for veterinary backup.
- Have the appropriate registrations and licenses (e.g., registered with the Drug Enforcement Administration for handling controlled substances) to obtain the necessary medications for the animals housed at that rehabilitation facility.
- Be able to conduct a full post-mortem exam on all species of pinnipeds treated at the facility.
- Be knowledgeable and able to perform pinniped euthanasia.

- Be knowledgeable about species-specific pharmacology.
- Must certify in writing that animals are fit for transport.
- Ability to write and submit timely disposition recommendations for marine mammals in rehabilitation.
- Be knowledgeable of marine mammal zoonotic diseases.

RECOMMENDED

All of the above plus:

- Membership in the International Association for Aquatic Animal Medicine.
- Complete a course which offers basic medical training with marine mammals such as Seavet, Aquavet, or MARVET.
- Have at least one year of clinical experience outside of veterinary school.
- Have access to a current version of the "Handbook of Marine Mammal Medicine" Have basic hands-on veterinary experience with the species most frequently rehabilitated at the facility.
- Be full time employee or the contract veterinarian of record at facilities managing over 50 pinniped cases per year (i.e., live and dead).

2.7.2 Veterinary Program

MINIMUM STANDARD

- Veterinary care for the animals must conform with any State Veterinary Practice Act or other laws governing veterinary medicine which applies to the state in which the facility is located.
- Standard operating procedures should be reviewed and initialed by the attending veterinarian or the animal care supervisor annually and/or whenever the document is changed or updated. This document may be reviewed by NMFS as part of the NMFS Stranding Agreement or as part of inspections.
- Staff caring for animals should be sufficiently trained to assist with veterinary procedures under the direction of the veterinarian and the rehabilitation facility should maintain at least one **Animal Care Supervisor** who is responsible for overseeing prescribed treatments, maintaining hospital equipment, and controlling drug supplies. The person should be adequately trained to deal with emergencies until the veterinarian arrives, be able to direct the restraint of the animals, be responsible for administration of post-surgical care, and be skilled in maintaining appropriate medical records. It is important that the animal care supervisor should communicate frequently

and directly with the attending veterinarian to ensure that there is a timely transfer of accurate information about medical issues.

- Veterinary decisions shall be based on "best practices" (i.e., based on informed opinions and expertise of veterinarians practicing marine mammal medicine).
- A schedule of veterinary care which includes a review of husbandry records, visual and physical examinations of the animals, and a visual inspection of the facilities should be implemented
- A health and safety plan for the staff shall be written and accessible at all times. It shall be reviewed by the attending veterinarian or the animal care supervisor annually or as prescribed by the NMFS Stranding Agreement. Also, it may be beneficial to consult with an occupational health medical professional when developing these plans. All animal care staff will be familiar with the plan. The plan shall include protocols for managing bite wounds.

The following reports may be requested annually by NMFS as required under the NMFS Stranding Agreement or as a part of inspections

- SOP reviews
- Health and Safety Plan reviews
- Animal acquisitions and dispositions
- NOAA Form 89864, OMB#0648-0178 (Level A data)
- NOAA Form 89878, OMB#0648-0178 (Marine Mammal Rehabilitation Disposition Report)
- Case summaries for any rehabilitation performed at a facility, including narrative descriptions of the cases as well as spreadsheets of treatments, blood values, etc.

2.8 Laboratory Tests and Frequency of Testing

Specific requirements for tests will be issued by the NMFS stranding coordinator (or UME Onsite Coordinator) in each region as outlined in the Marine Mammal Health and Stranding Response Program for release determinations, surveillance programs and UME investigations. Routine diagnostic sampling and testing protocols will be determined by the attending veterinarian. NMFS must be provided adequate time and information including a veterinary certificate of health before an animal is released as directed in 50 CFR 216.27 (see NMFS/FWS BEST PRACTICES for Marine Mammal Stranding Response, Rehabilitation, and Release – Standards for Release).

MINIMUM LABORATORY TESTING

- CBC/Serum Chemistry- For most cases, all animals shall have a minimum of two blood samples drawn for CBC with differential and serum chemistry; upon admission and prior to release (see *NMFS/FWS Best Practices for Marine Mammal Stranding Response, Rehabilitation, and Release – Standards for Release*). If duration of rehabilitation is shorter than a week, one blood workup may suffice and is at the attending veterinarian's discretion.
- Fecal analysis for parasites- Fecal tests for parasites shall be run upon admission of each animal at the discretion of the attending veterinarian.
- Serology as necessary for release determination based on direction of the NMFS stranding coordinator and the Marine Mammal Health and Stranding Program each year and for additional clinical diagnosis as deemed appropriate by the attending veterinarian.
- If serology is positive for pathogens of concern NMFS must give final sign off before animal is released.
- Measure body weight, and length upon admission, and within one week of release/placement. Measure girth when possible, or whenever a scale is not available to measure weight.
- The attending veterinarian or a trained staff member shall perform a necropsy on every animal that dies within 24 hours of death if feasible. If necropsy is to be performed at a later date (ideally no longer than 72 hours postmortem), the carcass should be stored appropriately to delay tissue decomposition.
- Carcass disposal shall be handled in a manner consistent with local and state regulations.
- Perform histopathology on select tissues from each animal that dies at the discretion of the attending veterinarian. A complete set of all major tissues should be evaluated if the animal dies of an apparent infectious disease process.
- Culture and other diagnostic sampling shall be conducted as directed by the attending veterinarian to determine the cause of stranding or death.
- Contact NMFS for additional laboratory test requirements in all cases of unusual mortality outbreaks or disease outbreaks. More complete testing may be required for diseases of concern.
- For cases involving release decisions, unusual mortality investigations, or surveillance programs, serologic assays may only go to labs that have validated tests approved by NMFS, especially for release decisions or determinations. Guidance will be provided by the NMFS Stranding Coordinators or UME Onsite Coordinator.
- Notify the NMFS Stranding Coordinator of learning of any diseases of concern (e.g., emerging, reportable, and/or zoonotic diseases) that are detected and/or confirmed that could be a potential

hazard for public health or animal health (NMFS will provide guidance on reportable diseases as it becomes available).

- NMFS must be provided adequate time and information (including veterinary certificate of health) before the animal is released in all cases as directed in 50 CFR 216.27 (see NMFS Standards for Release). This information is required under 50 CFR 216.27(a) and must be submitted 15 days prior to release unless advanced notice is waived by the NMFS Regional Administrator. Guidance on the waivers is provided in the *NMFS/FWS Best Practices for Marine Mammal Stranding Response, Rehabilitation, and Release – Standards for Release.*

RECOMMENDED

- CBC/Serum Chemistry with electrolytes on admission, within the week prior to release, and every other week during rehabilitation if restraint for sampling is not detrimental to the health of the animal.
- More frequent blood sampling at the discretion of the veterinarian.
- Weight measured on admission, just before release, and weekly for growing pups and underweight animals.
- Weights should be measured monthly for all animals unless the stress of capturing the animal to weigh it outweighs the benefits of the data.
- Complete necropsy performed by a veterinarian or a pathologist within 24 hours of death.
- Full histopathology done on tissues from each animal that dies of apparent infectious disease.
- Bank 1cc of serum per blood draw in –80°F freezer.

2.9 Record Keeping and Data Collection

Record keeping is an essential part of the rehabilitation process. Not only do accurate and complete medical records for each stranded pinniped allow the staff to provide consistent and optimal care for each animal, but retrospective records help scientists and veterinarians make better evaluations on how to treat individuals.

Record Keeping

MINIMUM RECORDS

- Record and report "Level A", and disposition reports as advised by Regional Coordinator and Marine Mammal Rehabilitation Disposition Report (NOAA 89-878, OMB #0648-0178) as in accordance with the NMFS Stranding Agreement.
- Maintain and update individual medical records daily on each animal at the rehabilitation center.
- Individually identify each animal with unique identifier
- Keep an accurate description of the animal, including identification/tag number, date and location of stranding, sex, weight, and length at stranding.
- Subjective, objective, assessment and plan (SOAP) based records are preferred
- Include food intake and medication administered to each animal in the records each day.
- Weight
  a. Recorded weekly for underweight pinnipeds or pups, and more often if the attending veterinarian feels it is necessary to properly care for the animal.
  b. Recorded on admission and release for larger pinnipeds.
- Record all treatments, blood work, test and results and daily observations in the medical records.
- Maintain individual medical records for each animal. Medical records remain on site where the animal is housed and are available for NMFS review upon request as stated in the NMFS Stranding Agreement.
- Hold medical records for a minimum of 15 years on site.
- Maintain up to date water quality records.
- Maintain life support system maintenance records.
- Maintain records of water quality additives.

RECOMMENDED RECORD KEEPING

All of the above plus:

- Full set of standard morphometrics prior to release.
- Photographic documentation of animals with significant lesions, identifying marks.
- Caloric value of daily food intake calculated and recorded for each animal.
- Daily weight of underweight pups. Larger species, where pups exceed 50 kg, may require obtaining weights less frequently.

- Monthly weights of larger pinnipeds (where the stress of capture to weigh does not adversely affect the rehabilitation efforts).
- Maintain food acquisition and analysis records.
- Maintain "paper copy" archive of required NMFS records.

2.9.1 Data Collection

MINIMUM STANDARD

- Written documentation of the medical history, food and observation records must be kept.
- NMFS Required Forms to be completed in writing or submitted electronically in the NMFS National Marine Mammal Stranding Database as prescribed in the NMFS Stranding Agreement:
  a. NOAA Form 89864, OMB#0648-0178 (Level A data)
  b. NOAA Form 89878, OMB#0648-0178 (Marine Mammal Rehabilitation Disposition Report).

RECOMMENDED

- Computerized documentation with hard copies.
- Ability to network with other institutions.
- Maintain real-time accessible compiled comparative data.

2.10 Euthanasia

- Each institution must have a written euthanasia protocol signed by the attending veterinarian.
- Persons administering the euthanasia must be knowledgeable and trained to perform the procedure.
- Maintain a list of individuals authorized to perform euthanasia signed by the veterinarian.
- Euthanasia shall be performed in a way to minimize distress in the animal.
- Refer to resources such as the American Veterinary Medical Association Panel Report on Euthanasia, the CRC Press Handbook of Marine Mammal Medicine and American Association for Zoo Veterinarians Guidelines for Euthanasia of Nondomestic Animals.
- Appropriate drugs for euthanasia in appropriate amounts for the largest species admitted to the facility shall be maintained in stock on site in an appropriate lockbox or under the control of a licensed veterinarian with a current DEA license.
- Drugs for euthanasia shall be kept with an accurate inventory system in place.
- DEA laws and regulations and State Veterinary Practice Acts must be followed when using controlled drugs

- NMFS may request this information (protocols and DEA number) as part of the NMFS Stranding Agreement.

2.11 Health and Safety for Personnel

There shall be a health and safety plan on site at each rehabilitation facility that identifies all health and safety issues that may be factors when working closely with wild marine mammals. The plan should identify all potential zoonotic diseases as well as including safety plans for the direct handling of all species and sizes of pinnipeds seen at that facility. Rehabilitation facilities are encouraged to comply with Occupational Safety and Health Administration regulations.

MINIMUM STANDARD

- Identify all potential zoonotic diseases in a written document available to all personnel.
- Include safety plans for the direct handling of all species and sizes of pinnipeds seen at that facility.
- Include safety plan for dealing with handling any untreated discharge water.

2.12 Contingency Plans

Contingency plans shall be in place at each facility and may be required by NMFS as part of the NMFS Stranding Agreement. NMFS may require approved variances or waivers prior to planned projects such as construction. These plans should address in detail the operation of the facility and care of the animals under the following conditions:

- Inclement weather plan, including a hurricane/big storm plans where appropriate.
- Construction in the vicinity of the animal rehabilitation pens or pools.
- Power outages, including plans of how to maintain frozen fish stores and life support systems.
- Water shortages.
- "Acts of God" plan which may include floods, earthquakes or other unpredictable problems known to occur on occasion in the region where the facility is located.

2.13 Viewing

NMFS Regulation, U.S.C. 50 CFR 216.2(c)(5) states that marine mammals undergoing rehabilitation shall not be subject to public display. The definition of public display under U.S.C. 50 CFR is "an activity that provides opportunity for the public to view living marine mammals at a facility holding

marine mammals captive". Only remote public viewing or distance viewing should be allowed and only when there is no possible impact of the public viewing on the animals being rehabilitated. There is a regulatory requirement for a variance or waiver by NMFS for facilities planning to offer public viewing of any marine mammal undergoing rehabilitation.

2.14 Training and Deconditioning Behaviors

Basic behavioral conditioning of wild pinnipeds for husbandry and medical procedure may be warranted during rehabilitation as long as every effort is made to limit reinforced contact with humans. Such conditioning may reduce stress for the animal during exams and acquisition of biological samples. Conditioning may assist with appetite assessment and ensuring that e each animal in a group receives the appropriate amount and type of diet and medications. In some cases, extensive contact with humans, including training, may benefit resolution of the medical case by providing mental stimulation and behavioral enrichment, and may facilitate medical procedures. The relative costs and benefits of training should be evaluated by the staff veterinarian, and the likelihood of contact with humans following release should be considered.

Behavioral conditioning of pinnipeds must be done for the shortest time necessary to achieve rehabilitation goals and is to be eliminated prior to release such that association of food rewards with humans is diminished. If an animal has become accustomed to hand-feeding the animal may approach humans after release. Therefore, these behaviors should be deconditioned before the animals can be considered for release. Most behaviors will extinguish through lack of reinforcement, but some may require more concentrated efforts.

Training for research that is above and beyond the scope of normal rehabilitation practices can be approved on a case-by case basis under a NMFS scientific research permit. An exception can be made if the attending veterinarian, facility, and NMFS officials all agree that the research will not be detrimental to the animals' health and welfare and will not impede their ability to be successfully released back to the wild.

2.15 References

Langman VA, Rowe M, Forthman D, Whitton B, Langman N, Roberts T, Kuston K, Boling C, and Maloney D. 1996. Thermal Assessment of Zoological Exhibits I: Sea Lion Enclosure at the Audubon Zoo. Zoo Biology 15:403-411.

3. Frequently Asked Questions

Why are there two sets of standards, "minimum" and "recommended", in the facilities guidelines?

The thought behind the two sets of guidelines was to establish a bare minimum standard which every facility should have to meet in order to rehabilitate either pinnipeds or cetaceans. The "recommended" standards are standards considered more ideal to help maximize the success of the rehabilitation effort, and to minimize the potential spread of disease. Many facilities exceed the recommended standard.

Facilities that just meet the minimum standards may wish to improve their facility over time. The Facilities Guidelines could serve as a method of justifying and helping to secure Prescott Funds or other funding to make improvements to bring a facility up to the recommended standards.

Why are there separate standards for pinnipeds and cetaceans?

While many aspects of rehabilitating cetaceans and pinnipeds that are the same, there are likewise many significant differences. Water quality, pool space and design, and handling debilitated animals are examples of the bigger differences between facility design and equipment required for rehabilitation of these animals. Rehabilitation of cetaceans requires more expensive facilities, as there must be larger, deeper pools available, salt water systems, and more elaborate filtration in closed system situations. While some facilities have adequate equipment and personnel to rehabilitate pinnipeds, they may not meet the standards required for the rehabilitation of cetaceans. Having two sets of guidelines allows NMFS the flexibility of issuing agreements specific to the types of animals that may be rehabilitated at each facility.

Many of the standards listed appear to be directly from the AWA standards. Why don't you just state that the facilities will meet all of the AWA regulations? What if the AWA regulations change?

AWA regulations have specific engineering standards to cover captive marine mammals. These standards for pool size and depth are based on captive adult-sized animals. The majority of pinnipeds admitted to most rehabilitation facilities are pups, juveniles, and sub-adults, and because they are not going to be permanent members of a collection, pool size may be smaller than the minimum sizes

stated in the AWA regulations. Cetacean facility guidelines minimum pool sizes are closer to the AWA regulations in pool size, but not identical, as these animals are not considered to be permanent residents.

AWA regulations may change, however these Facilities Guidelines were created with the consideration that animals being rehabilitated are not permanent residents of the facility. Therefore even if AWA regulations change, it is likely, the Stranding Network Facilities Guidelines will remain the same. Facilities Guidelines apply to the wild animals held by participants of the stranding network, whereas the AWA regulations refer to captive animals owned by the licensees.

Under Water Quality, no mention is made regarding protecting staff and public from discharged water.

This is covered by the statement that "All water must be discharged according to State and Local Regulations". Since state and local regulations vary, it is up to each institution to ensure their discharge policy conforms to the regulations in their area. These regulations should take into consideration the public exposure to the discharged water from the rehabilitation facility. Likewise all rehabilitation facilities should have Standard Operating Procedures in place to protect their staff from hazards which may be posed by the rehabilitation of marine mammals.

APPENDIX A

Chronology of Development of the Release Criteria

1977 1st Workshop on Marine Mammal Strandings; sponsored by the Marine Mammal Commission - Geraci, J.R. and D. J. St Aubin (eds.) 1979. Biology of marine mammals: Insights through strandings. Marine Mammal Commission. Report. No. MMC-77/13. U.S. Department of Commerce, NTIS Doc. PB 293 890, 343 p. (August 1977- Athens, GA).

One of the workshop objectives was to provide recommendations regarding the handling, care, and disposition of live-stranded animals. A relevant finding that came from this workshop and was published in the proceedings included that if live-stranded animals are rescued and rehabilitated, decisions whether these animals should be released or maintained in captivity must take into account the possibility that the animals may have lost their natural capacity to locate and capture appropriate prey species, avoid predators, and interact normally with other members of the species.

1987 2nd Workshop on Marine Mammal Strandings; sponsored by the Marine Mammal Commission and the National Marine Fisheries Service - Reynolds, J.E. and D.K. Odell (eds.) 1991. Marine mammal strandings in the United States: proceedings of the second marine mammal stranding workshop; 3-5 December 1987, Miami, FL. U.S. Department of Commerce., NOAA Technical Report. NMFS 1998.

A recommendation that came from this workshop and was published in the proceedings was a call to establish guidelines and procedures for determining whether and how live-stranded animals should be marked and returned to the sea, transported to a holding facility, rehabilitated, and subsequently released or maintained in captivity, or euthanized to avoid further pain and suffering.

1991 Workshop on rescue, rehabilitation, and release of marine mammals; sponsored by the Marine Mammal Commission and the National Marine Fisheries Service - St. Aubin, D.J., J.R. Geraci, and V.J. Lounsbury (eds.) 1996. Rescue, rehabilitation, and release of marine mammals: an analysis of current views and practices. Proceedings of a workshop December 3-5, 1991, Des Plaines, IL. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-OPR-8, 65 p.

The participants were charged to address five critical questions as well as discuss other outstanding and relative issues. They made several recommendations to include the assembly a panel of medical and behavioral specialists to recommend criteria for assuring that released animals will prosper humanely and pose no undesirable risk to the wild population. The guidelines should include a recommended set of medical determinations by species, with appropriate reference ranges for blood constituents and other clinical measures, morphometric limits (weight at length and age), a checklist for physical examination, and a means of scoring behavioral attributes that would influence survival in the wild. Minimum values should be set for each of these criteria, such that no animal failing any measure would be released. The panel

would incorporate the recommendations of the group considering the risks associated with specific pathogens, particularly for "carriers" that are otherwise normal and healthy. The participants also made recommendations on disease transmission and monitoring.

1992 Amendment of MMPA Title IV - 16 U.S.C. 1421a, Sec. 402. (a) DETERMINATION FOR RELEASE. The Secretary shall, in consultation with the Secretary of the Interior, the Marine Mammal Commission, and individuals with knowledge and experience in marine science, marine mammal science, marine mammal veterinary and husbandry practices, and marine conservation, including stranding network participants, develop objective criteria, after an opportunity for public review and comment, to provide guidance for determining at what point a rehabilitated marine mammal is releasable to the wild. Sec 402 (b) COLLECTION - The Secretary shall, in consultation with the Secretary of the Interior, collect and update, periodically, existing information on – (1) procedures and practices for – (A) rescuing and rehabilitating stranded marine mammals, including criteria used by stranding network participants, on a species-by-species basis, for determining at what point a marine mammal undergoing rescue and rehabilitation is returnable to the wild.

1994 Expert Panel on Behavior, Life History, and Natural History Criteria for Release of Rehabilitated Marine Mammals

Acting on the findings of the 1991 workshop entitled "Workshop on rescue, rehabilitation, and release of marine mammal," NMFS consulted with the Working Group on Unusual Marine Mammal Mortality Events to develop draft criteria. An expert panel of 12 biologists, veterinarians, and animal care professionals was queried by Dr. Randall Wells of the Chicago Zoological Society in August 1994 to address 12 specific questions on marine mammal behavior, life history, and natural history relative to release. Dr. Wells submitted a report summarizing the panel's responses to NMFS in November 1994, and reported the findings at the annual meeting of the Marine Mammal Commission in November 1994. This report included recommendations for release criteria, preparations for release, release, follow-up monitoring, and dissemination of findings. These recommendations were included in the draft document.

1994 Model for Marine Mammal Medical Criteria for Introduction to the Wild

In 1994, Dr. Gregory Bossart of the University of Miami, School of Medicine established a committee of seven nationally-recognized marine mammal veterinarians to formulate a draft of medical criteria that would act as guidelines for the re-introduction of wild marine mammal species. Marine mammal species included in this draft were cetaceans, pinnipeds, sea otters, and manatees. This draft was submitted to NMFS and became the working template for the present NMFS draft release medical guidelines.

1996 Final Rule NMFS 50 CFR Sec. 216.27(a) require release of a marine mammal held for rehabilitation within six months of capture unless "…the attending veterinarian determines that: (i) The marine mammal might adversely affect marine mammals in the wild (ii) Release of the marine mammal to the wild will not likely be successful given the physical condition and behavior of the marine mammal; or (iii) More time is needed to determine whether the release of the marine mammal in the wild will likely be successful…"

<u>1991-1997</u> Working Group of Marine Mammal Unusual Mortality Events – This group established under Title IV of the Marine Mammal Protection Act closely guided the development of the first draft that was published in 1998.

<u>1998</u> FR Notice Draft NOAA Technical Memorandum - NMFS and FWS Release for Stranded Marine Mammals to the Wild: Background, Preparation, and Release Criteria Vol.63, No. 67/ Wed, April 8, 1998

A notice of availability and request for comments was published in the Federal Register.

<u>2001</u> April 24, 2001 Summary of Public Comments on Draft NOAA Technical Memorandum - NMFS and FWS Release for Stranded Marine Mammals to the Wild: Background, Preparation, and Release Criteria

NMFS received official responses from 20 individuals or organizations. There were several outstanding issues that required more development and clarification. NMFS decided to convene special working groups to address the comments.

<u>2001</u> Working groups on pinnipeds and cetaceans

Three working groups were assembled by NMFS and FWS to address outstanding issues noted during the public comment period. Their recommendations have been incorporated into the current document.

APPENDIX B

Key Legislation: Marine Mammal Rescue, Rehabilitation, and Release to the Wild

- **Marine Mammal Protection Act (MMPA) of 1972**
  - Title I. - Conservation and Protection of Marine Mammals
    - Section 109 (h) - Taking of Marine Mammals as Part of Official Duties
    - Section 112 (c) - Contracts, Leases, and Cooperative Agreements
  - Title IV. - Marine Mammal Health and Stranding Response
    - Sec. 402 (a) - Determination for Release
      (b) (1) – Procedures and Practices

- **Endangered Species Act of 1973, as amended**

- **Code of Federal Regulations, Title 50, part 216 – Regulations governing the taking and importing of marine mammals**
  - Section 22 – Taking by the State or Local Government Officials
  - Section 27 - Release, Non- Releasability, and Disposition Under Special Exception Permits for Rehabilitated Marine Mammals
    - (a) Release Requirements, (b) Non-releasability and postponed determinations, (c) Disposition for special exceptions purposes, (d) Reporting
  - Subpart D – Special Exceptions for Threatened and Endangered Marine Mammals
    - Marine Mammal Health and Stranding Response Program Enhancement Permit

- **Code of Federal Regulations, Title 50, part 18 – Marine Mammals**
  - Section 22 – Taking by Federal, State, and Local Government Officials
  - Section 31 – Scientific Research Permits and Public Display Permits

- **Code of Federal Regulations, Title 50, part 17 – Endangered and Threatened Wildlife and Plants**
  - Section 21 (c)(3) – Endangered Wildlife Prohibitions – Take
  - Section 31 (b) – Threatened Wildlife Prohibitions
  - Section 22 – Endangered Wildlife Permits for Scientific Purposes, Enhancement of Propagation of Survival, or for Incidental Taking
  - Section 32 – Threatened Wildlife Permits - General

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APPENDIX C

REQUIRED REPORTING AND DOCUMENTATION

Marine Mammal Stranding Report - Level A Data (NOAA 89-864, OMB #0648-0178)

Marine Mammal Rehabilitation Disposition Report (NOAA 89-878, OMB #0648-0178)

Manatee Rescue, Rehabilitation and Release Report

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Manatee Rescue, Rehabilitation, and Release Report Fields

Rescue: Reporting Requirements	Release: Request Information	Transfer: Request Information	Death: Reporting Requirements	Captive Birth: Reporting Requirements
Name of Reporting Organization Date Report Filed Date Event Occurred Type of Rescue Identification ▪ Name (if any) ▪ Studbook Number ▪ Identification Numbers (in the case of multiple numbers, all numbers should be entered) PIT Tag ▪ Right (identifying number) ▪ Left (identifying number) Freeze Brand (yes/no) ▪ Number Sex Weight (lbs/kg) ▪ Actual/estimated Length (cm/inches) ▪ Actual/estimated Ultrasound (yes/no) County Nearest Town/Community Waterbody Latitude/Longitude Probable Cause for Rescue ▪ (Drop down list includes various common causes; additional information is required for entangled animals) Health Status at Time of Report Rehabilitation Facility (if any) Veterinarian Facility Supervisor Rescue Participants Name of Reporter Telephone Number	Name of Requesting Organization Date Request Filed Date Event Proposed Identification ▪ Name (if any) ▪ Studbook Number ▪ Identification Numbers (in the case of multiple numbers, all numbers should be entered) PIT Tag ▪ Right (identifying number) ▪ Left (identifying number) Freeze Brand (yes/no) ▪ Number Other Tags Name of Tracker/Affiliation Tracker Telephone Number Sex Weight (lbs/kg) ▪ Actual ▪ Date Taken Length (cm/inches) ▪ Actual ▪ Date Taken Peduncle Girth (cm) ▪ Date Taken Ultrasound (yes/no) County Where Rescued Nearest Town/Community Waterbody Latitude/Longitude Date of Rescue Weight at Time of Rescue Length at Time of Rescue Proposed Date of Release Actual Date of Release County Where Released Nearest Town/Community Where Released Waterbody Where Released Veterinarian Facility Supervisor Release Participants Name of Reporter Telephone Number	Name of Requesting Organization Date Request Filed Date Event Proposed Identification ▪ Name (if any) ▪ Studbook Number ▪ Identification Numbers (in the case of multiple numbers, all numbers should be entered) Sex Weight (lbs/kg) ▪ Actual ▪ Date Taken Length (cm/inches) ▪ Actual ▪ Date Taken Date Brought Into Captivity Date of Proposed Transfer Actual Date of Transfer Veterinarian Facility Supervisor Release Participants Name of Reporter Telephone Number	Name of Reporting Organization Date Report Filed Date Died Identification ▪ Name (if any) ▪ Studbook Number ▪ Identification Numbers (in the case of multiple numbers, all numbers should be entered) Sex Date Rescued Probable Cause of Death (or Euthanized) Disposition of Carcass Veterinarian Facility Supervisor Name of Reporter Telephone Number	Name of Reporting Organization Date Report Filed Date Born Identification ▪ Name (if any) ▪ Studbook Number ▪ Identification Numbers (in the case of multiple numbers, all numbers should be entered) Sex Weight (lbs/kg) ▪ Actual ▪ Date Taken Length (cm/inches) ▪ Actual ▪ Date Taken Present Health Status Origin of Dam Circumstances of Birth Dam Identification ▪ Name (if any) ▪ Studbook Number (if any) ▪ Identification Numbers (in the case of multiple numbers, all numbers should be entered) Sire Identification ▪ Name (if any) ▪ Studbook Number (if any) ▪ Identification Numbers (in the case of multiple numbers, all numbers should be entered)

APPENDIX D

DISEASES OF CURRENT CONCERN FOR CETACEANS

The diseases listed below are of current concern for cetaceans. Numerous additional diseases exist among cetaceans and should also be considered during diagnostic work-ups. Testing for specific diseases of cetaceans is not required at this time. However, thorough diagnostic testing of rehabilitated cetaceans is strongly recommended as warranted by their history and clinical signs of illness. Clinicians are particularly encouraged to test cetaceans for brucellosis and morbillivirus. NMFS may require disease testing for specific individuals prior to release if concern for the health of wild marine mammals exists or concern exists regarding the animal's likelihood of survival in the wild. Contact the NMFS coordinator for information regarding the appropriate diagnostic laboratories.

A good resource to obtain updated literature on diseases of marine mammals is through the Animal Welfare Information Center (http://awic.nal.usda.gov), part of the United States Department of Agriculture National Agriculture Library.

BACTERIAL DISEASES	COMMENTS
Brucellosis	Serologic evidence or isolation of this bacterium has been made several species of cetaceans as well as those in captivity. Different serovar than terrestrial species. Current limited understanding of pathophysiology and significance. May cause reproductive illness, isolated from an aborted captive bottlenose dolphin fetus. Zoonotic. Human case followed handling of marine mammal tissues. (Dunn et.al., 2001; Brew et al., 1999; Clavareau, 1998; Miller, et.al., 1999).
Erysipelothrix	Has caused acute septicemia or generalized dermatitis in several cetacean species including wild orca. Believed to be acquired from ingestion of fish contaminated with the organism. Zoonotic, causes dermatitis, arthritis, pneumonia, or septicemia in humans. (Dunn et.al., 2001; Young et.al., 1997; Cowan et.al., 2001.)
Respiratory Illness	Respiratory illness is common among both captive and wild cetaceans. Such disease often involves bacterial pathogens and is frequently fatal. *Staphylococcus areus* and *Pseudomonas aeruginosa* as well as Gram negative bacterial organisms are often involved. Pulmonary parasitism may contribute to development of bacterial respiratory disease. (Dunn et.al., 2001; Howard et.al.1983; Kinoshita et al. 1994).

VIRAL DISEASES

Morbillivirus	Has caused major epizootics with high mortalities in bottlenose dolphins, common dolphins, and striped dolphins. Has also infected other cetacean species. Testing for cetacean morbillivirus is strongly recommended for all cetaceans in rehabilitation centers. (Kennedy-Stoskopf, 2001; Kennedy, 1998; Duigan, 1999).
Poxvirus	Common infection of captive and wild cetaceans characterized by skin lesions. Not known to cause systemic infection. Appearance of lesions may correlate with weaning, poor general health, and/or compromised environmental conditions. (Kennedy-Stoskopf, 2001; Van Bressem and Van Waerebeek ,1996; Geraci et.al. 1979).
Papillomavirus	Has caused lesions of the skin, genital area, stomach ,and tongue of several cetacean species. Sometimes referred to as benign tumors. Genital lesions may be transmitted venereally and may interfere with copulation. (Kennedy-Stoskopf, 2001; Deguise et.al., 1994; Van Bressem et al., 1996).

PARASITIC DISEASES

Toxoplasmosis gondii	Protozoan parasite which has caused serious disease and death in cetacean species. Source of infection not clearly defined. (Dailey, 2001; Migaki, 1990.)
Anasakid nematodes	Family of nematodes which parasitize the cetacean gastrointestinal tract. Infections may cause gastritis and ulceration. (Dailey, 2001; Smith, 1989).
Hepatic trematodes	Heavy infection may cause serious liver disease associated with weight loss, increased susceptibility to bacterial infection. May result in death. (Dailey, 2001; Zam et.al, 1971.)
Nasitrema sp.	Nematode parasite which infects nervous systems of cetaceans. May be a significant cause of stranding in odontocetes. Causes eighth cranial neuropathy, encephalitis, and cerebral necrosis. (Dailey, 2001).
Lungworms	Includes nematode genera such as *Halocercus* which may cause severe respiratory disease and may cause death, depending on severity of infection. (Dailey,2001; Measures, 2001; Moser and Rhinehart, 1993).

NONINFECTIOUS DISEASES

Anthropogenic trauma

Entanglement in debris such as fishing nets and lines, collisions with boats, and underwater detonation of explosives may injure or kill cetaceans. The number of animals affected relative to total population may cause particular concern for some species (i.e. right whales and boat collisions, small odontocetes and fisheries by-catch). (Gulland et al. 2001, Kraus, 1990, Perrin et.al., 1994).

Biotoxins

Toxins naturally produced from dinoflagellates and diatoms have been associated with illness and death in cetaceans. Brevetoxin was a possible cause of bottlenose dolphin mortality in 1946-47 and 1987-1988. Humpback whale mortality was associated with consumption of mackerel containing saxitoxin. (Gunter et.al., 1948; Geraci, et.al., 1989).

Neoplasia

Belugas of the St. Lawrence River have had a concerning rate of neoplasia. Other cases of neoplasia have been reported in several species. Etiology of cetacean tumors is not known. Interplay of physical, chemical, and/or infectious agents with host factors such as age, sex, and genetic make-up likely involved with tumorigenesis. (Gulland et.al., 2001; De Guise et.al., 1994).

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APPENDIX E

DISEASES OF CURRENT CONCERN FOR PINNIPEDS

The diseases listed below are of current concern for pinnipeds. Numerous additional diseases exist among pinnipeds and should also be considered during diagnostic work-ups. Testing for specific diseases of pinnipeds is not required at this time. However, thorough diagnostic testing is strongly recommended for pinnipeds as warranted by their history and clinical signs of illness. NMFS, or in the case of walrus the FWS, may require disease testing for specific individuals prior to release if concern for the health of wild marine mammals exists or if there is significant concern regarding the animal's likelihood of survival in the wild. Contact the NMFS coordinator, or the FWS in the case of walrus, for information regarding appropriate diagnostic laboratories.

A good resource to obtain updated literature on marine mammal diseases is through the Animal Welfare Information Center (http://awic.nal.usda.gov), part of the United States Department of Agriculture, National Agriculture Library.

BACTERIAL DISEASES	COMMENTS
Brucellosis	Serologic evidence or isolation of this organism has been obtained for phocids and walrus. Different serovar than terrestrial species. Current limited understanding of pathophysiology and significance. May cause reproductive illness. Zoonotic. Human case followed handling of marine mammal tissues. (Dunn et.al., 2001; Garner et. al., 1997).
Leptospirosis	Severe systemic illness that frequently affects California sea lions and northern fur seals. Infection may be obtained at sea, in rookeries, or via contact with fresh water sources contaminated by infected terrestrial mammals via contamination of water sources. May be treated with antibiotics. Zoonotic. (Dunn et.al., 2001; Schoenwald et. al., 1971; Gulland et.al., 1996, Stamper et al., 1998).
Mycobacterial Disease	Illness characterized primarily by skin or pulmonary lesions diagnosed in several pinniped species. Caused by organisms which include those responsible for tuberculosis. Recently diagnosed in wild subantarctic fur seals. Zoonotic. (Dunn et. al., 2001, Cousins et.al., 1993, Bastida et.al., 1999).

VIRAL DISEASES

Adenovirus

Caused fatal hepatitis in California sea lions. Source of virus unknown, but may be related to canine adenovirus. (Kennedy-Stoskopf, 2001; Dierauf et.al., 1981).

Calicivirus

Several pinniped species susceptible. Causes skin lesions in California sea lions. Numerous animal species may be infected by calicivirus including fish, reptiles, mammals. Transmission from marine mammals to terrestrial animals and vice versa possible. Unconfirmed as zoonotic but possibility exists. (Kennedy-Stoskopf, 2001; Smith and Boyt, 1990; Gage, et.al., 1990; Barlough et.al., 1998).

Herpes Virus

May infect several pinniped species including walrus. Causes fatal disease in neonatal Pacific harbor seals characterized by severe adrenal gland and liver pathology. (Kennedy-Stoskopf, 2001; Gulland et.al., 1997).

Influenza

Caused high mortality among Atlantic harbor seals. Endemic among this population. Changes in virulence may cause disease outbreaks. Related to avian influenza. Zoonotic. Has caused severe conjunctivitis among humans. (Kennedy-Stoskopf, 2001; Webster et.al., 1981).

Morbillivirus

Endemic in several phocid species. May cause high morbidity and mortality. Seals have been infected by the canine morbillivirus as well as a morbillivirus specific for phocids. (Kennedy-Stoskopf, 2001; Kennedy, 1998; Duignan, 1999).

Pox

Causes skin lesions in several pinniped species. Outbreaks may be associated with stress as with postweanling animals recently introduced to captivity. Zoonotic. May cause skin lesions on humans. (Kennedy-Stoskopf, 2001; Hicks and Worthy, 1987).

PARASITIC DISEASES

Helminths

A variety of nematode, trematode, and cestode parasites infect pinnipeds, causing varying degrees of clinical disease. For instance, the nematode *Contracaecum corderoi* has caused gastrointestinal perforations and fatal peritonitis in California sea lions. (Dailey, 2001; Fletcher, 1998.)

Cryptosporidiosis	Protozoan gastrointestinal parasite recently isolated from several pinniped species. Limited current knowledge of pathophysiology in pinnipeds. Zoonotic. (Miller, et.al., 2001; Deng, et.al., 2000).
Giardia	Protozoan gastrointestinal parasite identified in phocids and the California sea lion. Incidence and severity of clinical illness not fully understood. Zoonotic. (Miller, et.al., 2001; Measures and Olson, 1999.)
Sarcocystis	Protozoan parasite that may cause severe neurologic disease and death. Important cause of mortality among Pacific harbor seals. Organism may be found in waste from humans or their activities. (Miller, et. al., 2001; LaPointe, et.al., 1998).

NONINFECTIOUS DISEASES

Anthropogenic trauma	Gunshot, underwater detonation of explosives, and entanglement in debris such as fishing nets and lines cause morbidity and mortality among pinnipeds. (Gulland, et.al., 2001).
Biotoxins	Harmful algal blooms producing domoic acid have caused significant sea lion mortality. (Gulland, 2000; Schoelin, et.al. 2000).
Neoplasia	Carcinoma, an aggressive tumor often associated with the urogenital system is common in California sea lions. May be linked to viral infections and/or exposure to environmental contaminants. (Buckles, et.al., 1996, Gulland, et.al., 1996, Lipscomb, et.al., 2000).

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APPENDIX F

DISEASES AND ISSUES OF CURRENT CONCERN FOR MANATEES

The diseases and issues listed below are of current concern for manatees. Other diseases exist among manatees and should also be considered during diagnostic work-ups. Testing for specific diseases of manatees is not required at this time. However, thorough diagnostic testing of rehabilitated manatees is strongly recommended as warranted by their history and clinical signs of illness. FWS may require disease testing for specific individuals prior to release if concern for the health of wild marine mammals exists or concern exists regarding the animal's likelihood of survival in the wild. Contact the FWS stranding support staff for information regarding the appropriate diagnostic laboratories.

A good resource to obtain updated literature on marine mammal diseases is through the Animal Welfare Information Center (http://awic.nal.usda.gov), part of the United States Department of Agriculture National Agriculture Library.

BACTERIAL DISEASES	COMMENTS
Brucellosis	Antibodies to *Brucella* spp. have been reported in Florida manatees, although lesions consistent with brucellosis have not been observed (Geraci et al., 1999).
Other	Systemic mycobacteriosis due to *Mycobacterium marinum* and *M. chelonei (Boever et al., 1976),* and mycotic dermatitis (Dilbone, 1965; Tabuchi et al., 1974), have been reported in adult manatees.
VIRAL DISEASES	
Cutaneous papillomatosis	Recently described in a captive population of manatees. PCR analyses has demonstrated a virus consistent with Type I bovine papilloma virus. (Bossart et al., 1998a)
Morbillivirus	Serologic evidence of morbillivirus has been demonstrated in manatees, although signs of clinical disease or active infection has not been observed (Duignan et al., 1995).
Other	Pseudorabies, San Miguel sea lion virus Type I, and eastern, western, and Venezuelan equine encephalitis have been reported in Florida manatees (Geraci et al., 1999). While these are serologically evident, no signs of clinical disease or active infection have been observed.

PARASITIC DISEASES

Meningoencephalitis *Toxoplasma gondii* has caused the death(s) of Florida manatees (Buerguelt and Bonde, 1983).

Other Endoparasites are commonly found in manatees; however, pathological signs or clinical disease are rare (Bossart 2001).

NONINFECTIOUS DISEASES

Anthropogenic trauma Collisions with boats, entanglement in fishing gear (monofilament fishing line, crab float lines, etc.), crushing in water control structures, etc., are sources of injury and mortality

Biotoxins Brevetoxins associated with *Kerenia brevi* and possibly other dinoflagellates have killed dozens of Florida manatees. Suspected vectors include ingestion of toxin-containing ascidians and sea grasses and inhalation of aerosolized toxicants (Bossart 2001).

Cold stress syndrome Exposure to cold for extended periods of time initiates clinical signs and disease processes that characterize manatee cold stress syndrome. Effects include lethargy, anorexia, and terminal hypothermia. Numerous significant cold fronts extending the length of the Florida peninsula have caused deaths and cold stress in dozens of manatees aver the past few decades (Bossart 2001).

APPENDIX G

DISEASES OF CURRENT CONCERN FOR SEA OTTERS

The diseases listed below are of current concern for sea otters. Numerous additional diseases exist among sea otters and should also be considered during diagnostic work-ups. Testing for specific diseases of sea otters is not required at this time. However, thorough diagnostic testing is strongly recommended for sea otters as warranted by their history and clinical signs of illness. FWS may require disease testing for specific individuals prior to release if concern for the health of wild marine mammals exists or if there is significant concern regarding the animal's likelihood of survival in the wild. Contact the FWS coordinator for information regarding appropriate diagnostic laboratories.

A good resource to obtain updated literature on marine mammal diseases is through the Animal Welfare Information Center (http://awic.nal.usda.gov), part of the United States Department of Agriculture, National Agriculture Library.

BACTERIAL DISEASES	COMMENTS
Septicemias	Overwhelming bacterial infections, sometimes from infected wounds, dental problems, and intestinal infections, are a common cause of mortality in southern sea otters, often secondary to infectional perforation by acanthocephalans (California Department of Fish and Game (CDFG) unpublished data), and a significant cause of mortality in northern sea otters in Alaska (FWS unpublished data). Connections with sewage or animal wastes are suspected in some infections; however, for northern sea otters, the source of this infection is often unknown.
Valvular endocarditis	This a sporadic disease secondary to chronic bacterial seeding from a primary source of infection such as a bite wound or tooth abscess. However, northern sea otters in Alaska have been diagnosed with VE without a primary source (FWS unpublished data). These animals have tested positive for the *Streptococcus bovis/equinus* complex. In human cases, there is an association between *S.bovis* endocarditis cases and a malignancy of the GI tract.
Brucellosis	One culture and PCR-confirmed case in a California sea otter with a chronic toe joint infection and low-level systemic disease (CDFG unpublished data). Fastidious in culture and easily missed. Marine Brucellae have demonstrated zoonotic potential, so caution is advised when handling fetal tissues, or live or dead animals with infected joints and wounds.

Dental disease Dental disease is common, particularly in older animals and can lead to systemic bacterial infections.

Leptospirosis Problem common in sea lions (see above pinniped section). Positive serologic titers in southern sea otters (Hanni *et al.* 2003). Cases reported in northern sea otters in Washington State. No clinical case identified in southern sea otters to date, although seropositive animals are observed. No cases reported for northern sea otters in Alaska.

FUNGAL DISEASES

Coccidiomycosis Low levels of infections (less than 1 percent) in southern sea otters, mostly off the San Luis Obispo county coast around the mouth of the Santa Maria River. Cases always fatal. Not reported in northern sea otters. Biohazard for people handling dead sea otters.

VIRAL DISEASES

Morbillivirus Conflicting evidence on whether exposure is relatively common or not in southern sea otters. Canine distemper has been diagnosed in a river otter in coastal British Columbia (Mos *et al.* 2003) and positive serologic titers have been noted in northern sea otters in Washington State. Care must be taken in moving otters if this virus is present in some populations and not others. Seropositivity to both canine and phocine distemper has been identified in northern sea otters in Washington and Alaska (FWS unpublished data).

Papillomavirus Some evidence of this type of viral infection occurs, significance probably not great. Typically presents as small, raised variably pigmented plaques on the lips, tongue, or buccal mucosa. Occurrence often episodic and invariably incidental in southern sea otters (CDFG unpublished data).

Herpesvirus Associated with corneal, oral, and esophageal ulcers, often in debilitated animals in California and Alaska.

PARASITIC DISEASES

Toxoplasma gondii	Protozoan parasite which can cause serious disease and death in southern sea otters (Miller *et al.* 2004) and northern sea otters in Washington State. High prevalence of exposure in California with moderate mortality rate. There is evidence of wide exposure in California and Washington State (Lindsay *et al.* 2001; Miller *et al.* 2002; Dubey *et al.* 2003; Conrad *et al.* 2005). Northern sea otters in Alaska rarely test positive (FWS unpublished data). Source of infection not clearly defined but hypothesized to be associated with freshwater inputs to the ocean in California (Miller *et al.* 2002; Dailey 2001; Migaki 1990).
Sarcocystis neurona	Protozoan parasite that may cause severe neurologic disease and death. Important cause of mortality among southern sea otters and northern sea otters in Washington State. Infections appear to progress more quickly than *T. gondii* (Miller *et al.* 2001; Miller 2006). No evidence of this in northern sea otters in Alaska.
Helminths	A variety of nematode, trematode, and cestode parasites infect sea otters, causing varying degrees of clinical disease. Acanthocephalan thorny headed worms, particularly the *Profilicollis* spp. may be pathogenic when overwhelming infestations occur, particularly in young animals (Mayer *et al.* 2003).
Mites	Nasal mite infestations are uncommon in wild animals, but heavy infections may occur in captive and rehabilitated animals. Heavy infections can result in secondary bacterial nasopharyngitis and pneumonia.
Giardia	Some live, captive northern sea otters in Alaska have tested positive (FWS unpublished data).

NONINFECTIOUS DISEASES

Anthropogenic trauma	Gunshot, boatstrike, oil spills, and entanglement in debris such as fishing nets, fishing lines, and hooks cause morbidity and mortality among sea otters. Alaskan otters have died from impactions with fish bones when feeding at cannery outfalls (FWS unpublished data).
Biotoxins	Harmful algal blooms particularly those producing domoic acid have caused some morbidity and mortality of sea otters in California (Gulland 2000; Jessup *et al.* 2004).

Persistent Organic Pollutants	Levels in southern sea otters and northern sea otters in Alaska adjacent to known military dump sites are high (50-100 times control populations). Potential effects on endocrine and immune functions are a cause for concern, but evidence for this or for acute toxicity are lacking.
Predation	White shark predation on southern sea otters is well documented. Some cases may be secondary to brain infections or intoxications that render otters helpless. Killer whale predation is hypothesized to be very significant in the decline of certain northern sea otter populations in Alaska.
Neoplasia	A number of types of neoplasia have been documented in northern sea otters (FWS unpublished data).
Intestinal Disease	Sea otters have been known to suffer from intestinal intussusceptions, torsions, and impactions not caused by human related causes.
Conspecific Trauma	Territorial males will often attack other male or pups. Males may also injure females during mating.

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APPENDIX H

Contact Information for NMFS and FWS National and Regional Stranding Support Staff

National Marine Fisheries Service

OFFICE	ADDRESS	PHONE
Headquarters	Office of Protected Resources Marine Mammal Health and Stranding Response Program 1315 East-West Highway Silver Spring, MD 20910	Phone: (301) 713-2322 Fax: (301) 427-2522
Northeast Region	Administrator, Northeast Region One Blackburn Drive Gloucester, MA 01930-2298	Phone: (978) 281-9250 Fax: (978) 281-9207
Southeast Region	Administrator, Southeast Region 263 13th Ave. South St. Petersburg, FL 33701	Phone: (727) 824-5301 Fax: (727) 824-5320
Northwest Region	Administrator, Northwest Region 7600 Sand Point Way, NE Bin C 15700, Bldg. 1 Seattle, WA 98115-0070	Phone: (206) 526-6150 Fax: (206) 526-6426
Southwest Region	Administrator, Southwest Region 501 West Ocean Blvd. Suite 4200 Long Beach, CA 90802-4213	Phone: (562) 980-4001 Fax: (562) 980-4018
Alaska Region	Administrator, Alaska Region P.O. Box 21668 Juneau, AK 99802-1668	Phone: (907) 586-7221 Fax: (907) 586-7249
Pacific Islands Region	Administrator, Pacific Islands Region 1601 Kapiolani Blvd., Suite 1110 Honolulu, HI 96814	Phone: (808) 944-2280 Fax: (808) 973-2941

U.S. Fish and Wildlife Service

OFFICE	ADDRESS	PHONE
Headquarters	Division of Habitat and Resource Conservation 4401 N. Fairfax Drive, Room 400 Arlington, VA 22203	Phone: (703) 358-2161 Fax: (703) 258-1869
LOAs and Permits	Division of Management Authority 4401 N. Fairfax Drive, Room 700 Arlington, VA 22203	Phone: (703) 358-2104 Fax: (703) 358-2281
Manatees	Jacksonville Field Office 6620 Southpoint Drive South, Suite 310 Jacksonville, FL 32216	Phone: (904) 232-2580 Fax: (904) 232-2404
Southern Sea Otters in California	Ventura Field Office 2493 Portola Road, Suite B Ventura, CA 93004	Phone: (805) 644-1766 Fax: (805) 644-3958
Northern Sea Otters in Washington	Washington Field Office 510 Desmond Drive SE, Suite 102 Lacey, WA	Phone: (360) 753-9440 Fax: (360) 753-9518
Polar Bears, Pacific Walrus, and Northern Sea Otters in Alaska	Marine Mammals Management Office 1011 E. Tudor Road Anchorage, AK 99503	Phone: (907) 786-3800 Fax: (907) 786-3816

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APPENDIX I

Cetacean – Species Specific Developmental Stages (Age-Length) and Social Dynamics

Scientific Name	Common Name	Approx Length at Birth (cm)	Approx "NEONATE" length (cm)	Approx Length at 1 Year of Age (cm)	Approx Length at 2 Years of Age (cm)	Approx. Age at Weaning (yrs)	Approx Length at Weaning (cm)	Approx. Adult Length (cm)	Typical Group Size	Freq. of Occur. Single Individuals
Delphinapterus leucas	Beluga Whale	160	130-160	216	250	2	250	300-400 F 400-450 M	up to hundreds	uncommon
Delphinus capensis	Long-beaked Saddleback Dolphin	< 100							up to thousands	uncommon
Delphinus delphis	Common Dolphin	80-90	80-100				110-120	230-250	up to thousands	uncommon
Feresa attenuata	Pygmy Killer Whale	80						240-270	1-70	occasional
Globicephala macrorhynchus	Short-finned Pilot Whale	140-185	150			2-3		400-500 F 500-600 M	up to several hundred	rare
Globicephala melas	Long-finned Pilot Whale	177	160-200			2-3	240	450-500 F 450-600 M	up to several hundred	rare
Grampus griseus	Risso's Dolphin	110-150	120-160					300-400	single to several hundred	occasional
Kogia breviceps	Pygmy Sperm Whale	120	100-120			1		300 - 370	1-6	not uncommon
Kogia sima	Dwarf Sperm Whale	95	100			1		210-270	1-10	not uncommon
Lagenodelphis hosei	Fraser's Dolphins	100	100					240	100-1000	uncommon
Lagenorhynchus acutus	Atlantic White-sided Dolphin	108-122	100-130	142-156	176-190	1.5	180	240-270	2-500	uncommon
Lagenorhynchus albirostris	White Beaked Dolphin	110-120	110-130					300-320	1-100 (to 1500)	occasional
Lagenorhynhchus obliquidens	Pacific White-sided Dolphin	92	80-100					220-230	tens to thousands	uncommon
Lissodelphis borealis	Northern Right Whale Dolphin	80-100	80-100					220-230 F 260-300 M	100-200	occasional
Mesoplodon densirostris	Blainville's Beaked Whale	200						450-470	1-7	occasional
Mesoplodon europaeus	Gervais' Beaked Whale	210	210					450-520	small groups	uncommon
Orcinus orca	Killer Whale	183-228	210-250			1.5-2.0	400	700-800 F 800-950 M	2-100	infrequent - adult males
Peponocephala electra	Melon-Headed Whale	100						270	150-1500	uncommon
Phocoena phocoena	Harbor Porpoise	70	70-90	110-135	115-155	0.3 - 1.0	100 - 110	140-170	small groups	not uncommon

Scientific Name	Common Name	Approx Length at Birth (cm)	Approx "NEONATE" length (cm)	Approx Length at 1 Year of Age (cm)	Approx Length at 2 Years of Age (cm)	Approx. Age at Weaning (yrs)	Approx Length at Weaning (cm)	Aprox. Adult Length (cm)	Typical Group Size	Freq. of Occur. Single Individuals
Phocoenoides dalli	Dall's Porpoise	100	100			0.3-2.0		180-220	2-12	uncommon
Physeter macrocephalus	Sperm Whale	400	350-500		670	2+	670	1100-1300 F 1500-1800 M	20-40 (50)	adult males
Pseudorca crassidens	False Killer Whale	160	170-200			1.5-2.0		500 F 550-600 M	10-20+	rare
Stenella attenuata	Pantropical Spotted Dolphin	85	80-100	129-142		1-2	140	120	<100 to thousands	uncommon
Stenella clymene	Clymene Dolphin							180-200	1-50	occasional
Stenella coeruleoalba	Striped Dolphin	93-100	100	166	180		170	220-260	10-100s	uncommon
Stenella frontalis	Atlantic Spotted Dolphin	100	80-120				140	200-230	1-15	uncommon
Stenella longirostris	Spinner Dolphin	76-77	70-80	133-137		1-2		180-220	up to thousands	uncommon
Steno bredanensis	Rough-toothed Dolphin	100						240-270	10-20	uncommon
Tursiops truncatus	Bottlenose Dolphin	117	100-130	170-200	170-225	1.5-2.0	225	220-300 (coastal) 250-650 (offshore)	2-15	occasional
Ziphius cavirostris	Cuvier's Beaked Whale	270	200-300					670 - 700	1-7	not uncommon

Pinniped – Species Specific Developmental Stages (Age-Length) and Pupping Information

Scientific Name	Common Name	Approx Length at Birth (cm)	Approx "NEONATE" length (cm)	Approx. Age at Weaning	Approx Length at Weaning (cm)	Approx. Adult Length (cm)	Pups Born	Peak of Pupping
Arctocephalus townsendi	Guadalupe Fur Seal	60	60	9-11 months		140-170 F 180-240 M	June	June
Callorhinus ursinus	Northern Fur Seal	60-65	60	3-4 months		100-150 F 190-230 M	June-July	June-July
Cystophora cristata	Hooded Seal	90-100	90-110	4-12 days		200-230 F 230-290 M	Late March	Late March
Erignathus barbatus	Bearded Seal	130	130	12-18 days	150	210-250	Mid-October to Mid-November	End of October
Eumetopias jubatus	Steller Sea Lion	100	100	Within 1 yr	180	220-290 F 240-330 M	Mid-May to Mid-June	Mid-June
Halichoerus grypus	Gray Seal	90-110	80-110	16-21 days	110	180-210 F 220-250 M	January-February	January
Histriophoca fasciata	Ribbon Seal	80-90	80-90	3-4 weeks	90-110	150-180	April-May	Early April
Mirounga angustirostris	Northern Elephant Seal	125	120-140	28 days	150	200-320 F 380-410 M	January	End of January
Monachus schauinslandi	Hawaiian Monk Seal	100	100	3-7 weeks	100	230-240 F 210-220 M	December-August	March- May
Odobenus rosmarus	Walrus	100-120	100-140	2+ years	200	230-260 F 270-320 M	April-June	May
Pagophilus groenlandicus	Harp Seal	85	80-110	12 days	100	160-190	February-March	March
Phoca larga	Spotted Seal	77-92	80-90	4-6 weeks	110	160-170	Early April-Early May	Early April
Phoca vitulina	Harbor Seal	70-100	70-90	3-6 weeks	90	150-190	May-June	May
Pusa hispida	Ringed Seal	60-65	60-70	6-8 weeks	80	120-150	Mid-March to Mid-April	Early April
Zalophus californianus	California Sea Lion	75	70	10-12 months		150-200 F 200-240 M	June	June

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APPENDIX J

"Recommended" Standard Checklist to Determine Release Category of all Rehabilitated Cetaceans

Yes = true statement, No= untrue statement (shaded areas may not be applicable)

	Release Determination Assessment (within 2 weeks of release)		Pre-Release Assessment (within 72 hours of release)	
	Yes	No	Yes	No
History				
1. The release candidate has NOT previously stranded				
2. Stranding was NOT associated with a Marine Mammal Unusual Mortality Event or ongoing epidemic				
3. Stranding was NOT associated with anthropogenic environmental accident (e.g., hazardous waste spill, acoustic insult)				
4. Stranding was NOT associated with an environmental event of NMFS concern (e.g., harmful algal bloom, fish kill, etc.)				
5. Stranding was NOT associated with an El Niño event				
6. The animal is NOT evidence or part of a human interaction or criminal case				
7. Stranding was NOT associated with a mass stranding				
8. The animal was NOT part of a "permitted" research project				
Developmental Stage				
9. The release candidate is of sufficient size and age to be nutritionally dependent				
10. The release candidate is NOT a female with calf				
11. The release candidate is NOT a geriatric animal and is NOT compromised due to age related conditions.				
12. There is NO evidence that the release candidate was exposed to terrestrial wild or domestic animals prior to and during rehabilitation				
Behavioral Clearance				
13. The release candidate demonstrates appropriate breathing, swimming, and diving				
14. The release candidate does NOT exhibit aberrant behavior including attraction to or desensitization to the presence of humans				
15. The release candidate does NOT exhibit auditory or visual dysfunction				
16. The release candidate demonstrates appropriate foraging ability				
17. The release candidate did NOT strand as a direct result of a failure to avoid predators				

	Release Determination Assessment (within 2 weeks of release)		Pre-Release Assessment (within 72 hours of release)	
Behavioral Clearance (continued)	**Yes**	**No**	**Yes**	**No**
18. The release candidate did NOT strand as a result of taking food from humans in the wild				
19. The release candidate did NOT strand as a direct result of a demonstrated inability to obtain sufficient food in the wild				
20. The release candidate did NOT strand as a direct result of a conspecifics injury				
Medical Clearance				
21. The attending veterinarian has reviewed the release candidate's history and medical records, including records from other facilities that have previously held the animal.				
22. The attending veterinarian has examined the release candidate within two weeks of release				
23. The required health screen and assessments were conducted with good results				
24. Hands-on physical exam to be performed by attending veterinarian within 72 hours of release				
25. NO congenital defects				
26. CBC compatible with good health				
27. Chemistry profile compatible with good health				
28. Serum banked upon admission and prior to release (3 ml)				
29. Additional testing requested and reviewed by NMFS and no apparent concerns				
30. Free of drugs (exclusive of sedatives used for transport) minimum of 2 weeks prior to release				
31. Veterinarian's signature on health statement				

Health Statement

I have examined the cetacean (Species and ID#)_____ on (Date) _____ and have determined that the animal is medically and behaviorally suitable for release in accordance with the release criteria in that the animal will not pose a risk to the wild population and is likely to survive upon reintroduction to the wild.

_____ *Signature of the Attending Veterinarian*

_____ *Printed Name of the Attending Veterinarian*

_____ *Signature of the Authorized Representative*

_____ *Printed Name of the Authorized Representative*

"Recommended" Standard Checklist to Determine Release Category of all Rehabilitated Pinnipeds (except walrus)

Yes = true statement, No= untrue statement (shaded areas may not be applicable)

	Release Determination Assessment (within 2 weeks of release)		Pre-Release Assessment (within 72 hours of release)	
History	**Yes**	**No**	**Yes**	**No**
1. The release candidate has NOT previously stranded				
2. Stranding was NOT associated with a Marine Mammal Unusual Mortality Event or ongoing epidemic				
3. Stranding was NOT associated with anthropogenic environmental accident (e.g., hazardous waste spill, acoustic insult)				
4. Stranding was NOT associated with an environmental event of NMFS concern (e.g., harmful algal bloom, fish kill, etc.)				
5. Stranding was NOT associated with an El Niño event				
6. There is NO evidence that the release candidate was exposed to terrestrial wild or domestic animals prior to and during rehabilitation				
7. The release candidate is NOT known to have inflicted a bite on human(s)				
8. The animal is NOT evidence or part of a human interaction or criminal case				
9. The animal was NOT part of a "permitted" research project				
Developmental Stage				
10. The release candidate is weaned, and has a proven ability to feed itself				
11. The release candidate is sufficiently robust, having adequate reserves to survive readjustment in the wild				
12. The release candidate shows no sign of molt				
Behavioral Clearance				
13. The release candidate demonstrates appropriate breathing, swimming, diving, and locomotion on land				
14. The release candidate demonstrates an absence of aberrant behavior including attraction to or desensitization to the presence of humans				
15. The release candidate does NOT exhibit auditory or visual dysfunction				

	Release Determination Assessment (within 2 weeks of release)		Pre-Release Assessment (within 72 hours of release)	
Behavioral Clearance (continued)	**Yes**	**No**	**Yes**	**No**
16. The release candidate demonstrates a capacity to chase and capture live prey				
Medical Clearance				
17. The attending veterinarian has reviewed the release candidate's history and medical records, including records from other facilities that have previously held the animal.				
18. The attending veterinarian has examined the release candidate within two weeks of release				
19. The required health screen and assessments were conducted with good results				
20. Hands-on physical exam to be performed by attending veterinarian within 72 hours of release				
21. NO congenital defects				
22. NO nonfunctional or damaged appendages				
23. NO defects in vision				
24. CBC compatible with good health				
25. Chemistry profile compatible with good health				
26. Serum banked upon admission and prior to release (3 ml)				
27. Additional testing requested and reviewed by NMFS and no apparent concerns				
28. Free of drugs (exclusive of sedatives used for transport) minimum of 2 weeks prior to release				
29. Veterinarian's signature on health statement				

Health Statement

I have examined the pinniped (Species and ID#)_____ on (Date) _____ and have determined that the animal is medically and behaviorally suitable for release in accordance with the release criteria in that the animal will not pose a risk to the wild population and is likely to survive upon reintroduction to the wild.

_____ *Signature of the Attending Veterinarian*

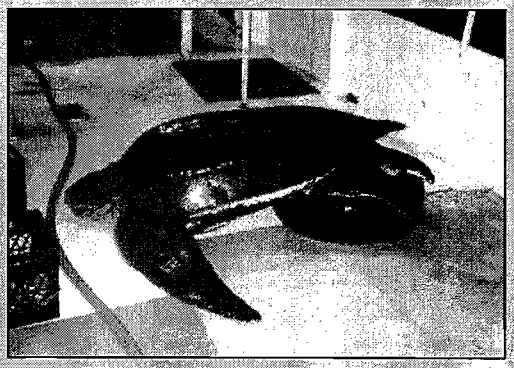
_____ *Printed Name of the Attending Veterinarian*

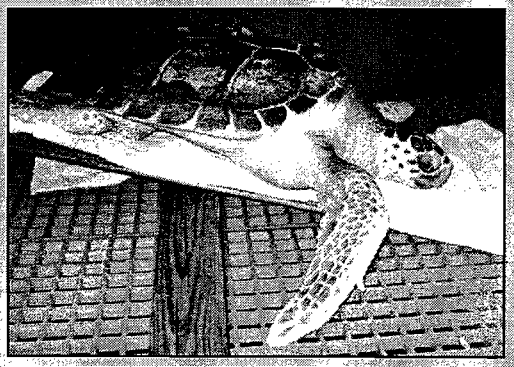
_____ *Signature of the Authorized Representative*

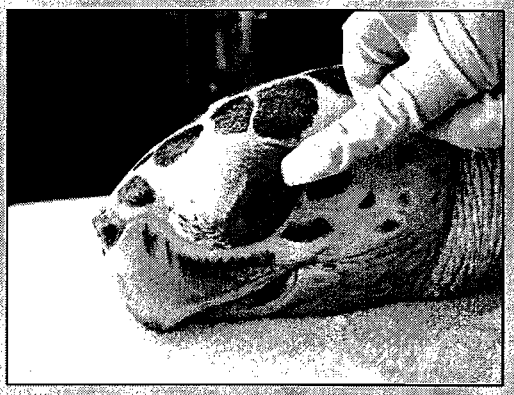
_____ *Printed Name of the Authorized Representative*

Sea Turtle Resuscitation Guidelines

If a turtle appears to be unconscious or comatose, attempt to revive it before release. Turtles can withstand lengthy periods without breathing; a living comatose sea turtle may not move, breathe voluntarily, or show reflex responses or other signs of life. In other cases, a lightly comatose turtle may show shallow breathing or reflexes such as eyelid or tail movement when touched. Use the following method of resuscitation in the field if veterinary attention is not immediately available:







NMFS/SEFSC Photos

- **Place the turtle on its plastron (lower shell) and elevate the hindquarters approximately 15 - 30 degrees to permit the lungs to drain off water for a period of 4 up to 24 hours. A board, tire or boat cushion, etc. can be used for elevation.**

- **Periodically, rock the turtle gently left to right and right to left by holding the outer edge of the carapace and lifting one side about 3 inches, then alternate to the other side.**

- **Keep the turtle in the shade, at a temperature similar to water temperature at capture. Keep the skin (especially the eyes) moist while the turtle is on deck by covering the animal's body with a wet towel, periodically spraying it with water, or by applying petroleum jelly to its skin and carapace. Do not put the turtle into a container with water.**

- **Do not put the turtle on its carapace (top shell) and pump the plastron (breastplate) or try to compress the turtle to force water out, as this is dangerous to the turtle and may do more harm than good.**

- **Periodically, gently touch the corner of the eye or eyelid and pinch the tail near the vent (reflex tests) to monitor consciousness.**

- **Sea turtles may take some time to revive; do not give up too quickly. Turtles that are successfully resuscitated benefit from being held on deck as long as possible (up to 24 hours) to fully recover from the stress of accidental forced submergence.**

- **Release successfully resuscitated turtles over the stern of the boat, when fishing or scientific collection gear is not in use, the engine is in neutral, and in areas where they are unlikely to be recaptured or injured by vessels. A turtle that has shown no sign of life after 24 hours on deck may be considered dead and returned to the water in the same manner.**

References:

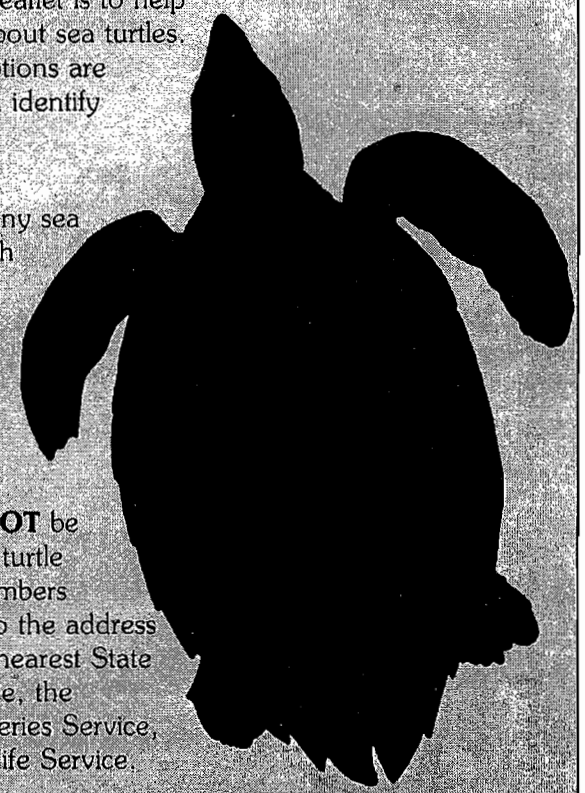
Federal Register, December 31, 2001. Government Printing Office, Washington DC 66 (250), pp. 67495- 67496.

July 2009

OPR000791MO

The 5 Sea Turtle Species of the Atlantic and Gulf Coast of the United States.

The purpose of this leaflet is to help gather information about sea turtles. The pictures and captions are designed to help you identify the different species.

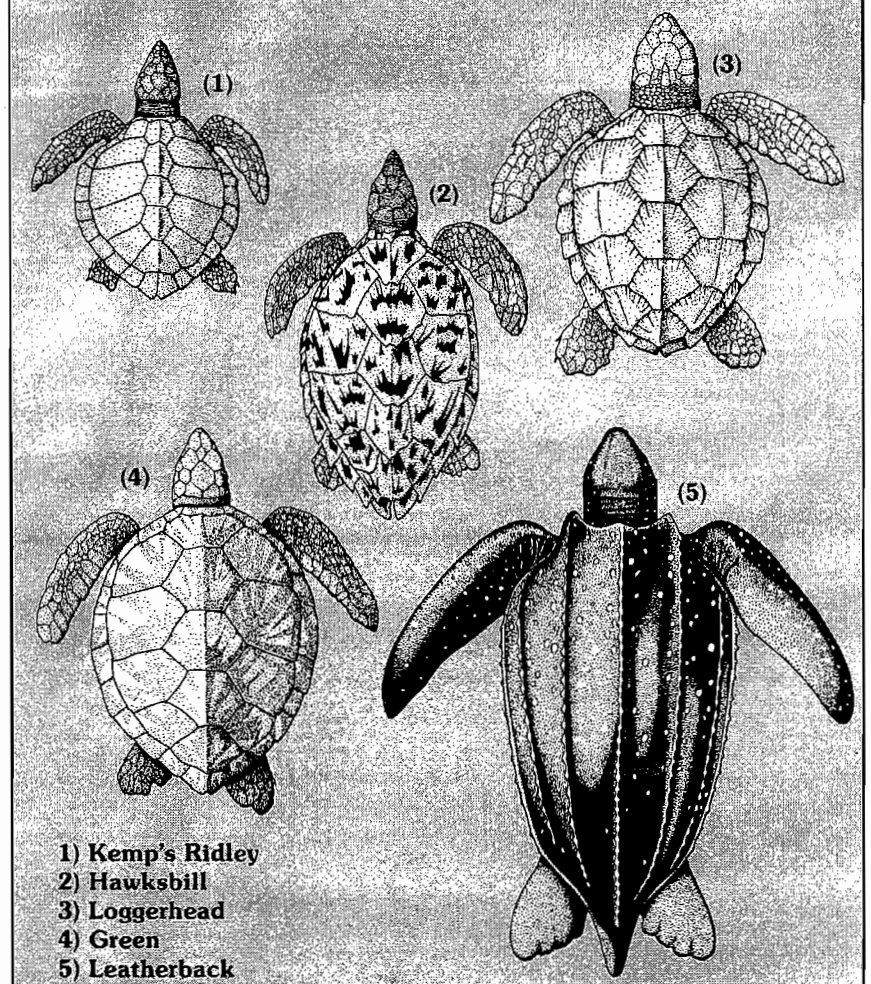


WHAT TO DO: Many sea turtles are tagged with metal or plastic tags usually on the inside edge of the front flippers but sometimes on the rear flippers or even the shell. If you see a tag it should **NOT** be removed (unless the turtle is dead). The tag numbers should be reported to the address on the tag or to the nearest State Marine Fisheries office, the National Marine Fisheries Service, or the Fish and Wildlife Service.

WARNING: Sea turtles are protected by the U.S. Endangered Species Act, international agreement, and many state laws. Under these laws the unauthorized taking or harassment of sea turtles dead or alive, or taking their eggs or disturbing their nests is prohibited and can carry fines up to $20,000.

There is a reward of up to $2,500 for information leading to the conviction of violators. To report a violation, contact a Federal, State, or local law enforcement officer.

QUICK REFERENCE ILLUSTRATIONS



1) Kemp's Ridley
2) Hawksbill
3) Loggerhead
4) Green
5) Leatherback

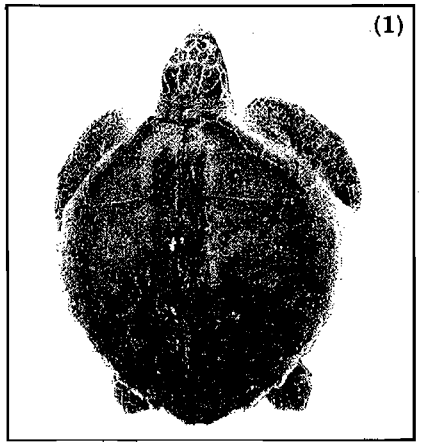
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NOAA
U.S. DEPARTMENT OF COMMERCE

U. S. FISH & WILDLIFE SERVICE
DEPARTMENT OF THE INTERIOR

☆ U.S. GOVERNMENT PRINTING OFFICE: 1991—557-736

2010-00512

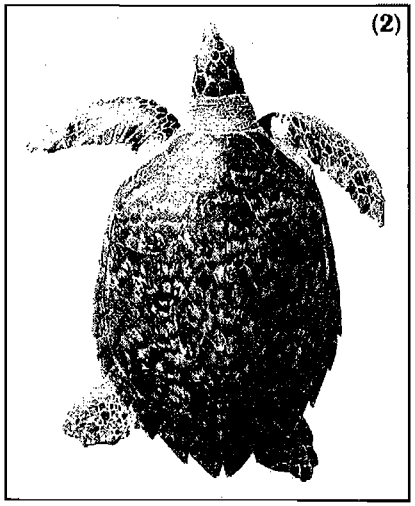
SEA TURTLES of the ATLANTIC and GULF COAST of the UNITED STATES and their status under the ENDANGERED SPECIES ACT (ESA)



KEMP'S RIDLEY SEA TURTLE (1)
(Lepidochelys kempi)

Smallest of the sea turtles. Adults do not exceed 30 inches in shell length and range in weight from 80-100 pounds. The broadly oval shaped shell is usually olive gray, but young are black. Found in the coastal waters and bays of the Gulf of Mexico and Atlantic where they forage predominantly on crabs. Only a few hundred females nest in the state of Tamaulipas, Mexico, each year.

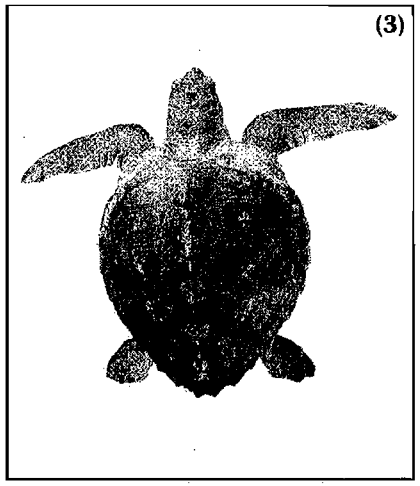
ESA Status: **ENDANGERED**



HAWKSBILL SEA TURTLE (2)
(Eretmochelys imbricata)

Small to medium sea turtles with a very attractively colored shell of thick, overlapping scales...the source of "tortoise shell". Has distinct hawk-like beak. Adults range in size from 30-36 inches shell length and weigh 100-200 pounds. A shy tropical reef dwelling species where it forages primarily on sponges.

ESA Status: **ENDANGERED**



LOGGERHEAD SEA TURTLE (3)
(Caretta caretta)

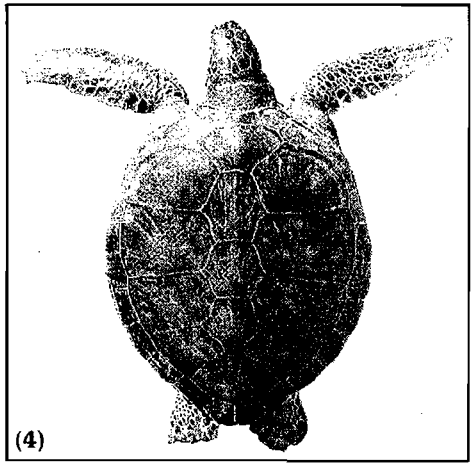
A large reddish-brown sea turtle with a disproportionately large head. Adults range in size from 33-40 inches shell length and weigh 150-400 pounds. This is the most common sea turtle encountered in the southeastern United States. Frequently observed around wrecks, underwater structures, and reefs where it forages on a variety of crabs, jellyfish, and mollusks.

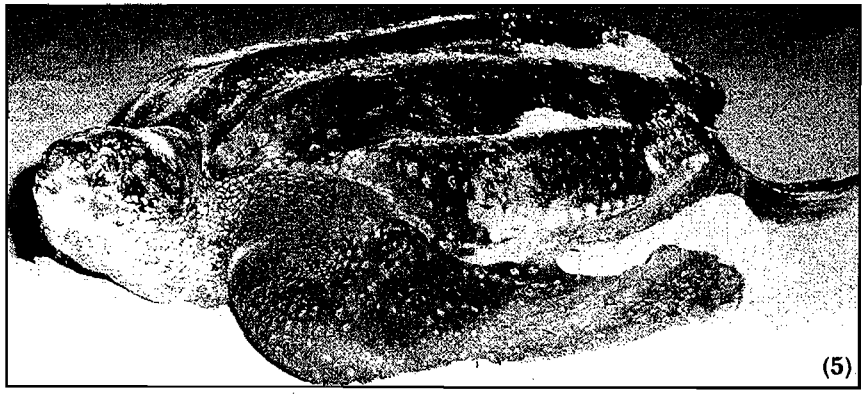
ESA Status: **THREATENED**

GREEN SEA TURTLE (4)
(Chelonia mydas)

A medium to large brownish sea turtle with a radiating or mottled pattern of markings on the shell. The head is small in comparison to other sea turtles and the biting edge of the lower jaw is serrated. Adult shell lengths range in size from 36-43 inches and weights average 200-300 pounds. Primarily a tropical herbivorous species, the juveniles frequently occur in Florida waters, especially in areas abundant in sea grasses.

ESA Status: **ENDANGERED** for Florida and east Pacific breeding populations; **THREATENED** everywhere else.





LEATHERBACK SEA TURTLE (5) ***(Dermochelys coriacea)***

The largest sea turtle. Can attain a shell length of six feet and weights of 1,400 pounds. Black with white blotches, the shell lacks scales and is covered by a firm, rubbery skin with seven longitudinal ridges or keels. A highly migratory turtle that nests in the tropics and ranges as far north as Canada and the northern Pacific. Feeds primarily on jellyfish.

ESA Status: **ENDANGERED**

To report sightings or data on sea turtles, contact:

SEA TURTLE PROGRAM
SOUTHEAST FISHERIES CENTER
75 Virginia Beach Drive
Miami, Florida 33149
Telephone: 305/361-4200

OPR000792MO
2010-00512

Sea Turtle Retrieval

All dead and debilitated turtles (includes oiled turtles) should be retrieved and taken to an onshore facility for cleaning and rehabilitation or salvage/necropsy. Animals can be netted at the surface using dipnets or other hoists. Once onboard, they need to be handled and transported to shore in accordance with NMFS guidance. Turtles should be brought in as soon as possible.

1. Bring turtle on board (dipnets are useful for small turtles less than ~3 ft carapace length). Do not pick up turtles by their flippers, but rather, lift them by grasping both sides of the carapace. See Chapter 3 and Appendix A3 of Careful Release Protocols Manual for equipment and holding details.

2. Determine health status (live or unresponsive [defined as no bilateral reflexes]). Resuscitation should be attempted on all unresponsive turtles that are "fresh" (see Resuscitation Placard).

3. Determine position at sea (latitude/longitude coordinates as DD.DDDD).

4. Complete the yellow-colored sections of the strandings form. Provide your full name and contact information, including a phone number. Record any relevant information about oil conditions at the capture site.

5. Contact the appropriate Sea Turtle Stranding and Salvage Network state coordinator for instructions (see list of STSSN contacts).

6. If a camera is available, take a few photographs of the animal to document its condition at the time of recovery.

7. Keep the turtle out of the sun and on a cushioned surface. Keep it moist with towels or wet it frequently. Do not put it in water. See details in Chapter 3 of Careful Release Protocols Manual.

8. Dead turtles (unresponsive after 24 hr) should be kept cool (with ice, refrigerator, freezer, shade) until transferred to the Response Center.

9. Deliver the animal to the designated Response Center. Transport turtles in individual containers. Be sure to keep the forms with the appropriate turtle and present the form along with the turtle to the Response Center.

10. If a debilitated or dead turtle cannot be retrieved, complete 2-6 above, completing the entire form, and submit the form to the state coordinator. Please attempt to identify the turtle (see Identification Placard)

REFERENCES

National Marine Fisheries Service Southeast Fisheries Science Center. 2008. Careful release protocols for sea turtle release with minimal injury. NOAA Technical Memorandum NMFS-SEFSC-580, 130p. Available from http://www.sefsc.noaa.gov/seaturtletechmemos.jsp

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10. If a debilitated or dead turtle cannot be retrieved, complete 2-6 above, completing the entire form, and submit the form to the state coordinator. Please attempt to identify the turtle (see Identification Placard). If possible, evidence collection protocol should be followed with chain of custody form completed and accompanying evidence collected.

REFERENCES

National Marine Fisheries Service Southeast Fisheries Science Center. 2008. Careful release protocols for sea turtle release with minimal injury. NOAA Technical Memorandum NMFS-SEFSC-580, 130p. Available from http://www.sefsc.noaa.gov/seaturtletechmemos.jsp

Date	Stranding Reference	Species	ReportType	Condition	Disposition	Status	State
5/2/2010	MRC20100502-01	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/2/2010	MRC20100502-02	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/3/2010	SNW20100503-01	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/3/2010	JMI20100503-01	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/3/2010	MPW20100503-01	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/4/2010	SNW20100504-01	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/4/2010	SNW20100504-02	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/4/2010	FXM20100504-01	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/5/2010	MPW20100505-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	AL
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5/6/2010	MPW20100506-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	AL
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5/13/2010	MPW20100513-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	AL
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5/13/2010	MRC20100513-01	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-GV	AL
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5/22/2010	JMI20100522-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	AL
5/23/2010	JMI20100523-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	AL
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6/23/2010	20100623	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	AL
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5/14/2010	VEL20100514-01	Caretta caretta	Stranding	Alive	Rehab-Died	Frozen-GV	FL
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5/19/2010	NME20100519-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	FL
5/19/2010	MAN20100519-01	Caretta caretta	Stranding	Alive	Rehab	Rehab-Gulfarium	FL
5/20/2010	WAJ20100520-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	FL
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5/20/2010	MAN20100520-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	FL
5/21/2010	MAN20100521-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-Gulfarium	FL
5/24/2010	NME20100524-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-GV	FL
5/24/2010	GWG20100524-01	Caretta caretta	Stranding	Dead	Left on beach		FL
5/25/2010	NME20100525-01	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-GV	FL
5/27/2010	MJH20100527-01	Caretta caretta	Stranding	Dead	Buried		FL
5/28/2010	VXW20100528-01	Chelonia mydas	Stranding	Dead	Buried		FL
5/30/2010	NAD20100530-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-GV	FL
6/1/2010	NME20100601-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	FL
6/6/2010	20100606	Caretta caretta	Stranding	Dead	Salvaged	Frozen-GV	FL
6/7/2010	NAD20100607-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-GV	FL
6/7/2010	NME20100607-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	FL
6/9/2010	RAB20100609-01	Lepidochelys kempii	Stranding	Alive	Released		FL
6/10/2010	20100610	Eretmochelys imbricata	Stranding	Alive	Rehab	Rehab-GulfWorld	FL
6/11/2010	20100611	Caretta caretta	Stranding	Dead	Salvaged	Frozen-GV	FL
6/11/2010	20100611	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-Gulfarium	FL
6/12/2010	20100612	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-GV	FL
6/12/2010	20100612	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-Gulfarium	FL
6/12/2010	20100612	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	FL
6/13/2010	20100613	Caretta caretta	Stranding	Dead	Salvaged	Frozen-GV	FL
6/14/2010	20100614	Caretta caretta	Stranding	Dead	Buried		FL
6/15/2010	20100615	Caretta caretta	Stranding	Dead	Salvaged	Frozen-GV	FL
6/16/2010	20100616	Caretta caretta	Stranding	Alive	Rehab	Rehab-Gulfarium	FL
6/17/2010	20100617	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	FL
6/18/2010	20100618	Caretta caretta	Stranding	Dead	Salvaged	Frozen-GV	FL
6/20/2010	20100620	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-GulfWorld	FL
6/22/2010	KEG20100622-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Gulfarium	FL
6/22/2010	NME20100622-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-GV	FL
6/22/2010	NME20100622-02	Caretta caretta	Stranding	Dead	Salvaged	Frozen-GV	FL
6/22/2010	20100622	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Gulfarium	FL
6/24/2010	20100624	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-Gulfarium	FL
6/27/2010	20100627	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	FL
6/28/2010	SXH20100628-01	Chelonia mydas	Stranding	Alive	Rehab	Rehab-GulfWorld	
5/1/2010	MJF20100504-01	Unknown	Stranding	Dead	Left on beach		LA

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5/1/2010	MJF20100504-02	Unknown	Stranding	Dead	Left on beach		LA
5/3/2010	XXX20100503-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/3/2010	20100503	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/5/2010	JAL20100505-01	Chelonia mydas	Stranding	Dead	Salvaged	Frozen	LA
5/7/2010	MXC20100507-01	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-02	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-03	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-04	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-05	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-06	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-07	Caretta caretta	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-08	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-09	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-10	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-11	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-12	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-13	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-14	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	GXP20100507-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	LA
5/10/2010	CSE20100510-01	Unknown	Stranding	Dead	Salvaged	Frozen	LA
5/10/2010	CSE20100510-02	Unknown	Stranding	Dead	Salvaged	Frozen	LA
5/10/2010	MXC20100510-01	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/10/2010	MXC20100510-02	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/10/2010	MXC20100510-03	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/10/2010	MXC20100510-04	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/10/2010	MXC20100510-05	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/10/2010	MXC20100510-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	LA
5/11/2010	20100511-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/11/2010	20100511-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/12/2010	MXC20100512-01	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/12/2010	MXC20100512-02	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/12/2010	MXC20100512-03	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-AOA	LA
5/12/2010	MXC20100512-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/13/2010	MXT20100513-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA

5/13/2010	JEB20100513-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/13/2010	MXC20100513-01	Eretmochelys imbricata	Stranding	Dead	Left on beach		LA
5/13/2010	MXC20100513-02	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/13/2010	20100513	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/14/2010	MXC20100514-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-AOA	LA
5/16/2010	MXH20100516-01	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-02	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-03	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-04	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-05	Caretta caretta	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-06	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-07	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-08	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-09	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/17/2010	MXT20100517-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/17/2010	AXL20100517-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/18/2010	SDD20100518-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/19/2010	20100519	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/20/2010	NXX20100520-01	Unknown	Stranding	Dead	Salvaged	Frozen	LA
5/22/2010	20100522	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/22/2010	20100522	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/23/2010	20100523	Unknown	Stranding	Dead	Salvaged	Frozen	LA
5/24/2010	20100524	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/24/2010	20100524	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/25/2010	20100525	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/25/2010	20100525	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/25/2010	20100525	Unknown	Stranding	Dead	Salvaged	Frozen	LA
5/26/2010	20100526	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/26/2010	20100526	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/26/2010	20100526	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/27/2010	20100527	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/28/2010	20100528	Lepidochelys kempii	Skimmer	Alive	Rehab	Rehab-AOA	LA
5/29/2010	20100529	Unknown	Stranding	Dead	Salvaged	Frozen	LA
5/31/2010	20100531	Lepidochelys kempii	Skimmer	Alive	Rehab	Rehab-AOA	LA

6/5/2010	20100605	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/5/2010	20100605	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	LA
6/6/2010	20100606	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/6/2010	20100606	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/6/2010	20100606	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/7/2010	20100607	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/7/2010	20100607	Unknown	Stranding	Dead	Salvaged	Frozen	LA
6/8/2010	20100608	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/9/2010	20100609	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	LA
6/9/2010	20100609	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-AOA	LA
6/10/2010	20100610	Unknown	Stranding	Dead	Salvaged	Frozen	LA
6/12/2010	20100612	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-AOA	LA
6/13/2010	20100613	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/13/2010	20100613	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/13/2010	20100613	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/13/2010	20100613	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/14/2010	20100614	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/15/2010	20100615	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/15/2010	20100615	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
6/17/2010	20100617	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/17/2010	20100617	Chelonia mydas	Stranding	Dead	Salvaged	Frozen	LA
6/18/2010	20100618	Chelonia mydas	Stranding	Dead	Salvaged	Frozen	LA
6/18/2010	20100618	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/19/2010	20100619	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/21/2010	20100621	Caretta caretta	Stranding	Dead	Salvaged	Frozen	LA
6/24/2010	20100624	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/25/2010	20100625	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-AOA	LA
6/26/2010	20100626	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-will be trai	LA
6/26/2010	20100626	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-will be trai	LA
6/27/2010	20100627	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-AOA	LA
6/27/2010	20100627	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-will be trai	LA
6/27/2010	20100627	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-will be trai	LA
4/26/2010	CNH20100426-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
4/30/2010	CNH20100430-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS

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4/30/2010	EXP20100430-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
4/30/2010	EXP20100430-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
4/30/2010	EXP20100430-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
4/30/2010	TTH20100430-01	Lepidochelys kempii	Stranding	Alive	Rehab-Died	Necropsied	MS
5/1/2010	KMF20100501-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/1/2010	KMF20100501-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/1/2010	KMF20100501-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/1/2010	KMF20100501-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/1/2010	KMF20100501-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/1/2010	KMF20100501-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/1/2010	EXP20100501-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	CLC20100502-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	CLC20100502-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	CLC20100502-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	KMF20100502-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	KMF20100502-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	KMF20100502-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-07	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-08	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	MSB20100503-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	MSB20100503-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	MSB20100503-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	MSB20100503-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	MSB20100503-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	WLH20100503-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	WLH20100503-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	WLH20100503-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/4/2010	EXP20100504-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS

5/4/2010	CLC20100504-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/4/2010	CLC20100504-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/4/2010	CLC20100504-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/5/2010	WLH20100505-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/5/2010	DKV20100505-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/6/2010	EXJ20100506-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/6/2010	EXJ20100506-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/6/2010	EXJ20100506-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/6/2010	SXC20100506-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	JNF20100507-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	JNF20100507-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	JBT20100507-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	CLM20100507-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	JNF20100507-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	JBT20100507-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	JNF20100507-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	MMK20100508-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	SAH20100508-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	JKM20100508-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	SAH20100508-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	JNF20100508-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	JNF20100508-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	JKM20100508-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	WLH20100510-01	Caretta caretta	Stranding	Dead	Salvaged	Necropsied	MS
5/9/2010	KMM20100509-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/9/2010	KMM20100509-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/9/2010	KMM20100509-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/9/2010	KMM20100509-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/10/2010	WLH20100510-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/10/2010	ZHS20100510-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/11/2010	BTN20100511-01	Caretta caretta	Stranding	Dead	Salvaged	Necropsied	MS
5/12/2010	ZHS20100512-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/12/2010	ZHS20100512-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/12/2010	ZHS20100512-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS

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5/12/2010	ZHS20100512-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/12/2010	ZHS20100512-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/13/2010	JXS20100513-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/13/2010	CNH20100514-01	Caretta caretta	Stranding	Dead	Left on beach		MS
5/14/2010	JNF20100514-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
5/14/2010	JNF20100514-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
5/14/2010	SAH20100514-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/15/2010	LMJ20100515-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
5/15/2010	LMJ20100515-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
5/15/2010	JKM20100515-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/15/2010	JKM20100515-02	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/15/2010	KMM20100515-01	Unknown	Stranding	Dead	Salvaged	Frozen-GV	MS
5/16/2010	EXJ20100516-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
5/18/2010	KPB20100518-01	Unknown	Stranding	Dead	Salvaged	Frozen-GV	MS
5/18/2010	KPB20100518-02	Caretta caretta	Stranding	Dead	Salvaged	Frozen-GV	MS
5/18/2010	WLH20100518-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
5/19/2010	MDH20100519-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
5/19/2010	MDH20100519-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
5/20/2010	TTH20100520-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/20/2010	JNF20100520-02	Unknown	Stranding	Dead	Salvaged	Frozen-GV	MS
5/20/2010	JNF20100520-01	Unknown	Stranding	Dead	Salvaged	Frozen-GV	MS
5/21/2010	RDS20100521-01	Caretta caretta	Stranding	Dead	Left on beach		MS
5/21/2010	JNF20100521-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
5/21/2010	JNF20100521-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
5/22/2010	TTH20100522-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/24/2010	WLH20100524-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
5/24/2010	AJD20100524-01	Unknown	Stranding	Dead	Salvaged	Frozen-GV	MS
5/26/2010	JXB20100526-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
5/26/2010	CNH20100526-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
5/26/2010	WLH20100526-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
5/27/2010	JBT20100527-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/27/2010	JKM20100527-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/27/2010	MJB20100527-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/28/2010	JNF20100528-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS

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5/28/2010	RAW20100528-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/3/2010	CNH20100603-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/4/2010	DKV20100604-01	Unknown	Stranding	Dead	Salvaged	Frozen-GV	MS
6/5/2010	JNF20100605-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/5/2010	JNF20100605-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/5/2010	JNF20100605-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/6/2010	KMM20100606-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/6/2010	MJK20100606-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/6/2010	MJK20100606-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/6/2010	MJK20100606-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/6/2010	MJK20100606-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/6/2010	MJK20100606-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/6/2010	JBT20100606-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/6/2010	JBT20100606-02	Unknown	Stranding	Dead	Salvaged	Frozen-GV	MS
6/6/2010	JBT20100606-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/6/2010	JBT20100606-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/6/2010	JBT20100606-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/6/2010	JBT20100606-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/7/2010	JRS20100608-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/7/2010	WLH20100607-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/7/2010	KMH20100607-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-GV	MS
6/8/2010	WLH20100608-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/8/2010	WLH20100608-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/9/2010	WLH20100609-01	Unknown	Stranding	Dead	Salvaged	Frozen-GV	MS
6/9/2010	WLH20100609-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/9/2010	JBT20100609-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/9/2010	JBT20100609-02	Unknown	Stranding	Dead	Salvaged	Frozen-GV	MS
6/9/2010	JBT20100609-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/10/2010	SLE20100610-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/10/2010	SLE20100610-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/10/2010	SLE20100610-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/10/2010	SLE20100610-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/10/2010	SLE20100610-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/10/2010	RAW20100610-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS

6/10/2010	RAW20100610-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/10/2010	RAW20100610-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/10/2010	RAW20100610-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/10/2010	RAW20100610-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/10/2010	RAW20100610-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/10/2010	KMH20100610-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/10/2010	KMH20100610-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/10/2010	KMH20100610-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/10/2010	KMH20100610-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/10/2010	KMH20100610-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/10/2010	KMH20100610-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/10/2010	WLH20100610-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/10/2010	WLH20100610-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/11/2010	TTH20100611-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/11/2010	KMH20100611-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/11/2010	WLH20100611-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/11/2010	WLH20100611-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/11/2010	WLH20100611-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/11/2010	WLH20100611-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/11/2010	WLH20100611-07	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/11/2010	WLH20100611-08	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/11/2010	WLH20100611-09	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/11/2010	WLH20100611-10	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/11/2010	WLH20100611-11	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/11/2010	WLH20100611-12	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/11/2010	WLH20100611-13	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/11/2010	JBT20100611-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/11/2010	JBT20100611-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/11/2010	JBT20100611-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/11/2010	JBT20100611-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/11/2010	CRS20100611-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/12/2010	WLH20100612-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/12/2010	WLH20100612-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/12/2010	WLH20100612-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS

6/12/2010	WLH20100612-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/12/2010	WLH20100612-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/12/2010	WLH20100612-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/12/2010	RCL20100612-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/12/2010	CRS20100612-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-GV	MS
6/12/2010	JKM20100612-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/13/2010	CRS20100613-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/13/2010	CRS20100613-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/13/2010	CRS20100613-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/13/2010	LCB20100613-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/13/2010	LCB20100613-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/13/2010	JKM20100613-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/13/2010	JKM20100613-02	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/13/2010	JKM20100613-03	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/13/2010	JKM20100613-04	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/14/2010	WLH20100614-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/15/2010	LCB20100615-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/16/2010	20100616	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/16/2010	20100616	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/16/2010	20100616	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/16/2010	20100616	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/16/2010	20100616	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/17/2010	20100617	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/17/2010	20100617	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/17/2010	20100617	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/17/2010	20100617	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/17/2010	20100617	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/17/2010	20100617	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/18/2010	20100618	Unknown	Stranding	Dead	Salvaged	Frozen-GV	MS
6/18/2010	20100618	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/18/2010	20100618	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/18/2010	20100618	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/19/2010	20100619	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/19/2010	20100619	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS

6/19/2010	20100619	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/19/2010	20100619	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/19/2010	20100619	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/20/2010	20100620	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/20/2010	20100620	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/20/2010	20100620	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/20/2010	20100620	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/20/2010	20100620	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/20/2010	20100620	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/20/2010	20100620	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/21/2010	SKM20100621-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/21/2010	SKM20100621-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/21/2010	SKM20100621-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/21/2010	SKM20100621-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/21/2010	SKM20100621-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/21/2010	SKM20100621-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/21/2010	SKM20100621-07	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/21/2010	SKM20100621-08	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/21/2010	SKM20100621-09	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/21/2010	SKM20100621-10	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/22/2010	TTJ20100622-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/22/2010	TTJ20100622-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/22/2010	SKM20100622-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/23/2010	YBS20100623-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/23/2010	YBS20100623-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/23/2010	YBS20100623-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GV	MS
6/24/2010	SKM20100624-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/24/2010	SKM20100624-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/24/2010	TTJ20100624-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/25/2010	TTJ20100625-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/25/2010	SKM20100625-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/25/2010	SKM20100625-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/26/2010	SKM20100626-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/26/2010	SKM20100626-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS

6/26/2010	SKM20100626-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/28/2010	SKM20100628-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-IMMS	
6/28/2010	SKM20100628-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	
6/29/2010	20100629	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	
6/29/2010	20100629	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	
6/29/2010	20100629	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	
5/18/2010	BXW20100518-01	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
5/20/2010	MXT20100520-01	Caretta caretta	Directed Capture	Alive	Rehab	Rehab-AOA	
5/20/2010	MXT20100520-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
5/31/2010	BAS20100531-01	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
5/31/2010	BAS20100531-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
5/31/2010	BAS20100531-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
5/31/2010	BAS20100531-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
5/31/2010	BAS20100531-05	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
5/31/2010	BAS20100531-06	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
5/31/2010	BAS20100531-07	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	BAS20100601-01	Lepidochelys kempii	Directed Capture	Alive	Rehab-Died?	Necropsied?	
6/1/2010	BAS20100601-02	Lepidochelys kempii	Directed Capture	Alive	Rehab-Died?	Necropsied?	
6/1/2010	BAS20100601-03	Lepidochelys kempii	Directed Capture	Alive	Rehab-Died?	Necropsied?	
6/1/2010	BAS20100601-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	BAS20100601-05	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	BAS20100601-06	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	BAS20100601-07	Caretta caretta	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	BAS20100601-08	Eretmochelys imbricata	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	BAS20100601-09	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	BAS20100601-10	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	XXX20100601-01	Lepidochelys kempii	Directed Capture	Dead	Salvaged	Necropsied	
6/1/2010	XXX20100601-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	XXX20100601-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	XXX20100601-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	XXX20100601-05	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/6/2010	BAS20100606-01	Eretmochelys imbricata	Directed Capture	Alive	Rehab	Rehab-AOA	
6/6/2010	BAS20100606-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/6/2010	BAS20100606-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	

6/6/2010	BAS20100606-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/6/2010	BAS20100606-05	Lepidochelys kempii	Directed Capture	Dead	Salvaged	Necropsied
6/10/2010	BAS20100610-01	Lepidochelys kempii	Directed Capture	Dead	Salvaged	Necropsied
6/10/2010	BAS20100610-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/10/2010	BAS20100610-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/10/2010	BAS20100610-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/12/2010	BAS20100612-01	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/12/2010	BAS20100612-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/12/2010	BAS20100612-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/13/2010	BAS20100613-01	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/13/2010	BAS20100613-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/13/2010	BAS20100613-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/13/2010	BAS20100613-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/13/2010	BAS20100613-05	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/13/2010	BAS20100613-06	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/13/2010	BAS20100613-07	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/13/2010	BAS20100613-08	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/13/2010	BAS20100613-09	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/13/2010	20100613	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/13/2010	20100613	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-01	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-05	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-06	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-07	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-08	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-09	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-10	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-11	Caretta caretta	Directed Capture	Alive	Rehab	Rehab-AOA
6/15/2010	BAS20100615-01	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/15/2010	BAS20100615-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/15/2010	BAS20100615-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA

6/15/2010	BAS20100615-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/15/2010	BAS20100615-05	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/15/2010	BAS20100615-06	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/15/2010	BAS20100615-07	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/16/2010	BAS20100616-01	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/16/2010	BAS20100616-02	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/16/2010	BAS20100616-03	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/16/2010	BAS20100616-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/16/2010	BAS20100616-05	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/16/2010	BAS20100616-06	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/18/2010	20100618	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/19/2010	20100619	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/19/2010	20100619	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/19/2010	20100619	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/19/2010	20100619	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/19/2010	20100619	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/19/2010	20100619	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/20/2010	20100620	Chelonia mydas	Directed Capture	Dead	Salvaged	Frozen
6/21/2010	MCT20100621-01	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/21/2010	MCT20100621-02	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/21/2010	MCT20100621-03	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/21/2010	MCT20100621-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/21/2010	MCT20100621-05	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/21/2010	MCT20100621-06	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/21/2010	MCT20100621-07	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/21/2010	MCT20100621-08	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/21/2010	MCT20100621-09	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/21/2010	MCT20100621-10	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/24/2010	BAS20100624-01	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/24/2010	BAS20100624-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/24/2010	BAS20100624-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/25/2010	BAS20100625-01	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-Audubon
6/26/2010	BAS20100626-01	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-Audubon
6/26/2010	BAS20100626-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-Audubon

6/26/2010	BAS20100626-03	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-Audubon	
6/26/2010	BAS20100626-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-Audubon	
6/27/2010	BAS20100627-01	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-Audubon	
6/27/2010	BAS20100627-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-Audubon	
6/27/2010	BAS20100627-03	Caretta caretta	Directed Capture	Alive	Rehab	Rehab-Audubon	
6/27/2010	BAS20100627-04	Caretta caretta	Directed Capture	Alive	Rehab	Rehab-Audubon	
6/27/2010	BAS20100627-05	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-Audubon	
6/27/2010	BAS20100627-06	Caretta caretta	Directed Capture	Alive	Rehab	Rehab-Audubon	
6/27/2010	BAS20100627-07	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-Audubon	
6/26/2010	JKM20100626-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/27/2010	JKM20100627-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/27/2010	JKM20100627-02	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/28/2010	JKM20100628-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/29/2010	20100629	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/30/2010	20100630	Unknown	Stranding	Dead	Salvaged	Frozen-Gulfarium	FL
6/30/2010	20100630	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-NOAA	FL
6/30/2010	20100630	Chelonia mydas	Stranding	Alive	Rehab	Rehab-IMMS	AL

Descriptive Location	Latitude	Longitude	External oil?	TempLocation	Stranding	New	Alive
"Lots of Sand Dunes" Condo, Baldwin Co	30.232019	-87.936861	N	No	Yes	No	N
eastern point of Dauphin Island	30.250125	-88.075553	N	No	Yes	No	N
Dauphin Island	30.248253	-88.125822	N	No	Yes	No	N
floating 2 miles North of Fort Gaines	30.268880	-88.071720	N	No	Yes	No	N
Dauphin Island	30.332274	-88.132595	N	No	Yes	No	N
Dauphin Island	30.248253	-88.125822	N	No	Yes	No	N
Mobile Bay, 4 miles south of Fowl River	30.395431	-88.107261	N	No	Yes	No	N
Mobile Bay, 7287 Bay Rd	30.552467	-88.123317	N	No	Yes	No	N
floating off of Bayou La Batre	30.368167	-88.278317	N	No	Yes	No	N
Coden	30.445639	-88.109028	N	No	Yes	No	N
Dauphin Island	30.250164	-88.162886	N	No	Yes	No	N
Donnie Grace, bay side	30.249856	-88.202100	N	No	Yes	No	N
outside Weeks Bay toward Fish River Reef	30.367914	-87.839833	N	No	Yes	No	N
18261 Scenic Hwy 98	30.492133	-87.929833	N	No	Yes	No	N
Dauphin Island	30.249450	-88.172633	N	No	Yes	No	N
Gulf Shores	30.253417	-87.823317	N	No	Yes	No	N
Bayou La Batre	30.381033	-88.267233	N	No	Yes	No	N
pier across from Fort Morgan Museum	30.230283	-88.023694	N	No	Yes	No	N
Baldwin Co	30.250570	-87.828960	N	No	Yes	No	N
Baldwin Co	30.228430	-87.861390	N	No	Yes	No	N
Baldwin Co	30.231160	-87.928990	N	No	Yes	No	N
200 yds SE of city pier	30.245610	-88.124230	N	No	Yes	No	N
Hwy 193 past Hwy 188, Mobile Co	30.370900	-88.109670	N	No	Yes	No	N
east of Dauphin Is public fishing pier on Sand Is	30.247186	-88.125303	N	No	Yes	No	N
Little Dauphin Is, north side	30.274270	-88.111150	N	No	Yes	No	N
Audubon Place beach	30.243830	-88.092890	N	No	Yes	No	N
bay side of Sand Island	30.227653	-88.113175	N	No	Yes	No	N
Coden	30.377883	-88.241517	N	No	Yes	No	N
Mobile Bay, 1 mile south of Fowl River	30.425728	-88.103975	N	No	Yes	No	N
Hwy 98 on county rd 1, near Pelican Island	30.378320	-87.851020	N	No	Yes	No	N
Dauphin Island	30.247530	-88.124480	N	No	Yes	No	N
mouth of Bayou La Batre, Mobile Bay	30.375000	-88.285000	N	No	Yes	No	Y
Dauphin Island, west end	30.386400	-88.560983	N	No	Yes	No	N

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Dauphin Island, west end	30.386400	-88.560983	N	No	Yes	No	N
Coden	30.006272	-88.004007	N	No	Yes	No	N
Dauphin Island	30.244817	-88.114433	N	No	Yes	No	N
Bayou La Batre	30.381586	-88.257034	N	No	Yes	No	Y
floating near Bayou La Batre	30.376750	-88.258480	N	No	Yes	No	N
Mobile Bay	30.591497	-88.063306	N	No	Yes	No	N
Shore Rd of CR12	30.358870	-87.832670	N	No	Yes	No	N
Plash Island	30.282700	-87.751230	N	No	Yes	No	N
Dauphin Island	30.250000	-88.200000	N	Yes	Yes	No	N
Dauphin Island	30.270000	-88.150000	N	Yes	Yes	No	N
Mobile Bay	30.400000	-88.100000	N	Yes	Yes	No	N
Mobile Bay	30.500000	-88.100000	N	Yes	Yes	No	N
Mobile Bay	30.300000	-87.750000	N	Yes	Yes	No	N
west end of Dauphin Island	30.220000	-88.330000	N	Yes	Yes	No	N
Dauphin Island, bayside	30.260000	-88.110000	N	Yes	Yes	No	N
Mobile Bay	30.300000	-87.970000	N	Yes	Yes	No	N
floating in MS Sound near Coden Bayou	30.350000	-88.220000	N	Yes	Yes	No	N
floating in Perdido Pass near Orange Beach	30.278471	-87.555537	Y	No	Yes	No	Y
floating south of Coden	30.374000	-88.240000	N	Yes	Yes	No	N
East Beach, Baldwin County	30.248301	-87.676815	Y	No	Yes	No	Y
Bon Secour Bay	30.300000	-87.875000	N	Yes	Yes	No	N
W Dauphin Island	30.250000	-88.060000	N	Yes	Yes	No	N
floating off of Bayou La Batre	30.340000	-88.310000	N	Yes	Yes	No	N
Mobile Bay, east side	30.450000	-87.930000	N	Yes	Yes	No	N
Mobile Bay, west side	30.450000	-88.090000	N	Yes	Yes	No	N
Gulf Shores	30.251060	-87.653670	N	No	Yes	No	N
Bayou La Batre	30.366460	-88.244330	N	No	Yes	No	N
~100 ft from Fairhope Municipal Pier	30.525780	-87.917040	N	No	Yes	No	N
Orange Beach	30.260000	-87.570000	Y	Yes	Yes	No	N
floating in Mobile Bay, Mobile side of bay	30.600000	-87.980000	N	Yes	Yes	No	N
floating in Bon Secour Bay	30.267240	-87.787240	N	No	Yes	No	N
floating in Bon Secour Bay	30.280430	-87.766780	N	No	Yes	No	N
floating in Mobile Bay, SE of Gaillard Island	30.371770	-88.065410	N	No	Yes	No	N
floating in Mobile Bay, NE of Dauphin Is. Bridge	30.332983	-88.130400	N	No	Yes	No	N

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floating in Mobile Bay, btwn Dog River Bridge and (	30.531760	-88.022900	N	No	Yes	No	N
floating in Mobile Bay, NE of Fort Morgan	30.298020	-87.997720	N	No	Yes	No	N
northern part of Mobile Bay	30.590000	-88.000000	N	Yes	Yes	No	N
Mobile Bay, west side near Dog River	30.530000	-88.070000	N	Yes	Yes	No	N
Orange Beach	30.260000	-87.580000	Y	Yes	Yes	No	N
Bon Secour Bay	30.25917	-87.86152	N	No	Yes	No	N
Bayou La Batre	30.370583	-88.2809	N	No	Yes	No	N
a bay 2mi N. of Dauphin Island (part of Mobile Bay)	30.290183	-88.208166	N	No	Yes	No	N
Bon Secour Bay	30.27595	-87.76513	N	No	Yes	No	N
200 yds off of Gilliard Island in Mobile Bay	30.49744	-88.04932	N	No	Yes	No	N
Secador industrial west in Mobile bay	30.50712	-88.0789	Y	No	Yes	No	N
Panama City Beach	30.19650	-85.84358	N	No	Yes	No	N
Panama City Beach	30.2442	-85.93718	N	No	Yes	No	Y
Panama City Beach	30.16782	-85.794	N	No	Yes	No	N
Panama City Beach	30.21513	-85.87758	N	No	Yes	No	N
Pensacola Beach	30.32589	-87.17208	N	No	Yes	No	N
St. Joseph Peninsula State Park	29.77851	-85.40833	N	No	Yes	No	N
Perdido Key State Park	30.28801	-87.47814	N	No	Yes	No	N
East Walton County Beach, Orange St access	30.2724	-86.00381	N	No	Yes	No	Y
Naval Live Oaks (Headquarters), GUIS	30.36422	-87.12725	N	No	Yes	No	N
Tyndall AFB, Archery Rd beach, east of marina	30.08165	-85.62992	N	No	Yes	No	N
Panama City Beach	30.18925	-85.83112	N	No	Yes	No	N
Perdido Key area of Gulf Islands NS	30.30350	-87.39394	N	No	Yes	No	N
Santa Rosa area of Gulf Islands NS	30.35489	-87.01419	N	No	Yes	No	N
west Walton County	30.37170	-86.34960	N	No	Yes	No	N
Crooked Island east, Tyndall AFB	29.95664	-85.47378	N	No	Yes	No	N
Crooked Island west, Tyndall AFB	30.02786	-85.56911	N	No	Yes	No	N
Walton County, east of Draper Lake	30.34060	-86.21480	N	No	Yes	No	N
Panama City Beach	30.26268	-85.97958	N	No	Yes	No	N
St. Andrews Bay, Bunkers Cove at yacht club	30.14250	-85.64920	N	No	Yes	No	N
Pensacola Beach	30.33619	-87.11075	N	No	Yes	No	Y
Tyndall AFB, Crooked Island east at boardwalk	29.95634	-85.45734	N	No	Yes	No	N
St. Joe Beach	29.90192	-85.36683	N	No	Yes	No	N
Rosemary Beach, Walton County	30.28000	-86.03000	N	Yes	Yes	No	N

Naval Live Oaks, south beach on Santa Rosa sound	30.36074	-87.14003	N	No	Yes	No	N
Perdido Key	30.29619	-87.42647	N	No	Yes	No	Y
Panama City, Baypoint Marina Yacht Club	30.14352	-85.72778	N	No	Yes	No	N
Navarre Beach	30.37590	-86.88760	N	No	Yes	No	N
St. Andrews Bay	30.16385	-85.68565	N	No	Yes	No	N
Pensacola Naval Air Station, Trout Point Beach	30.33185	-87.34040	N	No	Yes	No	N
W Escambia County, inshore, floating	30.31250	-87.49710	N	No	Yes	No	N
Cape San Blas	29.68224	-85.31182	N	No	Yes	No	N
St. Andrews Bay, Sun Harbor Marina, Panama City	30.18415	-85.73262	N	No	Yes	No	N
Panama City Beach	30.16000	-85.81000	N	Yes	Yes	No	N
St. Vincent NWR	29.67590	-85.21767	N	No	Yes	No	N
Port of Panama City	30.17795	-85.72493	N	No	Yes	No	N
Pensacola	30.29000	-87.25000	N	Yes	Yes	No	Y
Panama City, Inlet Beach	30.19000	-85.87000	N	Yes	Yes	No	Y
West Miramar Beach	30.37000	-86.40000	N	Yes	Yes	No	N
Pensacola	30.30000	-87.30000	N	Yes	Yes	No	Y
Navarre Beach	30.37000	-86.85000	N	Yes	Yes	No	N
approx 1 mile off of Pensacola Beach	30.28000	-87.18000	Y	Yes	Yes	No	Y
Eglin AFB, just east of Navarre Beach	30.37000	-86.86000	N	Yes	Yes	No	N
Pensacola Beach	30.25000	-87.20000	N	Yes	Yes	No	N
Pensacola Beach	30.30000	-87.20000	N	Yes	Yes	No	N
Pensacola Beach	30.27000	-87.45000	N	Yes	Yes	No	N
approx 1 mile off of Destin	30.35800	-86.49900	N	Yes	Yes	No	Y
Port St. Joe, Mexico Beach	29.90475	-85.36946	N	No	Yes	No	N
Tyndall AFB	30.06000	-85.62000	N	Yes	Yes	No	N
floating in St. Joe Bay	29.80000	-85.35000	N	Yes	Yes	No	Y
Eglin AFB, 100 yds east of A-11	30.39469	-86.71058	N	No	Yes	No	N
Panama City, access 59 west of city pier	30.21607	-85.87965	N	No	Yes	No	N
Panama City, Navy base behind the dive school	30.17280	-85.75803	N	No	Yes	No	N
Pensacola	30.30000	-87.20000	N	Yes	Yes	No	N
offshore Destin area	30.32000	-86.47000	N	Yes	Yes	No	Y
St. Andrews Bay	30.14	-85.7	N	Yes	Yes	No	N
Panama City area	30.23488	-85.90698	Y	No	Yes	No	Y
Elmers Island	29.17027	-90.08316	N	No	Yes	No	N

Elmers Island	29.18166	-90.06428	N	No	Yes	No	N
Slidell area, Lake Borgne	30.13447	-89.50054	N	No	Yes	No	N
Grand Isle	29.24	-89.98	N	Yes	Yes	No	N
Elmers Island	29.17235	-90.07981	N	No	Yes	No	N
Rutherford Beach	29.76692	-93.16193	N	No	Yes	No	N
Rutherford Beach	29.76879	-93.17164	N	No	Yes	No	N
Rutherford Beach	29.76972	-93.17667	N	No	Yes	No	N
Rutherford Beach	29.77171	-93.18671	N	No	Yes	No	N
Rutherford Beach	29.7732	-93.19467	N	No	Yes	No	N
Rutherford Beach	29.77341	-93.19683	N	No	Yes	No	N
Rutherford Beach	29.77354	-93.19756	N	No	Yes	No	N
Rutherford Beach	29.77576	-93.21589	N	No	Yes	No	N
Rutherford Beach	29.77738	-93.2461	N	No	Yes	No	N
Rutherford Beach	29.77728	-93.25497	N	No	Yes	No	N
Rutherford Beach	29.77728	-93.25497	N	No	Yes	No	N
Rutherford Beach	29.76578	-93.15643	N	No	Yes	No	N
Rutherford Beach	29.76119	-93.13665	N	No	Yes	No	N
Rutherford Beach	29.75513	-93.11017	N	No	Yes	No	N
floating near Slidell - Rigolets Pass	30.1588	-89.6505	N	No	Yes	No	N
Elmers Island	29.18184	-90.06364	N	No	Yes	No	N
Grand Isle	29.20786	-90.03112	N	No	Yes	No	N
Holly Beach	29.76897	-93.4392	N	No	Yes	No	N
Holly Beach	29.76879	-93.43438	N	No	Yes	No	N
Holly Beach	29.76922	-93.45638	N	No	Yes	No	N
Holly Beach	29.76897	-93.48772	N	No	Yes	No	N
Holly Beach	29.76771	-93.50714	N	No	Yes	No	N
Constance Beach	29.76031	-93.56936	N	No	Yes	No	N
Fourchon Beach	29.11	-90.18	N	Yes	Yes	No	N
Fourchon Beach	29.11	-90.18	N	Yes	Yes	No	N
Mae's Beach	29.74595	-93.68512	N	No	Yes	No	N
Mae's Beach	29.74582	-93.68592	N	No	Yes	No	N
Mae's Beach	29.7423	-93.70653	N	No	Yes	No	Y
Grand Isle	30.1086	-89.3545	N	No	Yes	No	N
Grand Terre	29.209166	-90.029166	N	No	Yes	No	N

Grand Isle	29.28435	-89.92149	N	No	Yes	No	N
Holly Beach	29.74232	-93.7065	N	No	Yes	No	N
Holly Beach	29.76391	-93.36438	N	No	Yes	No	N
found floating, location?	29.23	-89.99	N	Yes	Yes	No	N
Mae's Beach	29.7424	-93.7062	N	No	Yes	No	Y
Long Beach	29.7534	-93.6293	N	No	Yes	No	N
Long Beach	29.7509	-93.6492	N	No	Yes	No	N
Mae's Beach	29.7396	-93.7208	N	No	Yes	No	N
Constance Beach	29.7605	-93.5674	N	No	Yes	No	N
Holly Beach	29.7683	-93.5018	N	No	Yes	No	N
Holly Beach	29.7689	-93.441	N	No	Yes	No	N
Rutherford Beach	29.7555	-93.1114	N	No	Yes	No	N
Rutherford Beach	29.7513	-93.0941	N	No	Yes	No	N
Rutherford Beach	29.7498	-93.0873	N	No	Yes	No	N
Bayou Rigaud, floating	29.14436	-89.59246	N	No	Yes	No	N
Lake Pontchartrain, floating	30.205	-90.11194	N	No	Yes	No	N
Fourchon Beach	29.09	-90.21566	N	No	Yes	No	N
near Cocodrie	29.24	-90.66	N	Yes	Yes	No	N
4 mi NE of Fishing Smack Bay	30.003805	-89.20633	N	No	Yes	No	N
Grand Isle Beach	29.24	-89.99	N	Yes	Yes	No	N
Empire Jetty Beach	29.25412	-89.60345	N	No	Yes	No	N
Grand Terre	29.28	-89.92	N	Yes	Yes	No	N
Bayou Terrebonne by Bayou La Fleur	29.26	-90.64	N	Yes	Yes	No	N
Lake Chien	29.33	-90.44	N	Yes	Yes	No	N
Bayou Trove	29.2386	-89.53792	N	No	Yes	No	N
Grand Isle State Park	29.24	-89.97	Y	Yes	Yes	No	N
Queen Bess Island	29.3	-89.96	N	Yes	Yes	No	N
Lake Felicity, North of Timbalier Island	29.26	-90.4	N	Yes	Yes	No	N
Lake Felicity, North of Timbalier Island	29.26	-90.47	N	Yes	Yes	No	N
Lake Felicity, North of Timbalier Island	29.28	-90.42	N	Yes	Yes	No	N
Grand Isle Beach	29.2	-90.04	N	Yes	Yes	No	N
skimmer found ~50 mi S of Louisiana coastline, bro	28.4375	-89.8958	Y	No	Skimmer	No	Y
Cameron Parish beach	29.76	-93.34	N	Yes	Yes	No	N
skimmer found ~17 mi offshore Grand Isle	28.9932	-89.8412	Y	No	Skimmer	No	Y

Timbalier Island	29.04	-90.47	N	Yes	Yes	No	N
floating just offshore western LA beaches	29.76	-93.46	N	Yes	Yes	No	N
western Louisiana beaches	29.74	-93.42	N	Yes	Yes	No	N
western Louisiana beaches	29.74	-93.44	N	Yes	Yes	No	N
western Louisiana beaches	29.74	-93.46	N	Yes	Yes	No	N
Coup A Bel Pass	29.3	-89.9	Y	Yes	Yes	No	N
Marsh Island	29.5	-91.9	N	Yes	Yes	No	N
Barataria Bay	29.4	-89.94	Y	Yes	Yes	No	N
north Barataria Bay	29.43308	-89.88585	Y	No	Yes	No	N
western Louisiana, nearshore waters	29.7	-93	N	Yes	Yes	No	Y
Fourchon Beach	29.08	-90.14	N	Yes	Yes	No	N
no location info - est location in Chandeleur Sound	29.8	-89.1	N	Yes	Yes	No	Y
Rutherford Beach	29.74	-93.22	N	Yes	Yes	No	N
Rutherford Beach	29.72	-93.15	N	Yes	Yes	No	N
Rutherford Beach	29.72	-93.07	N	Yes	Yes	No	N
Fourchon Beach	29.1	-90.1	N	Yes	Yes	No	N
Slidell area	30.13	-89.57	N	Yes	Yes	No	N
Rollover Bayou (W LA near Rockefeller Refuge)	29.59	-92.7	N	Yes	Yes	No	N
Rollover Bayou (W LA near Rockefeller Refuge)	29.6	-92.6	N	Yes	Yes	No	N
Whiskey Island chain, south of Cocodrie	29.03	-90.75	N	Yes	Yes	No	N
Timbalier Island area - floating?	29.05	-90.47	N	Yes	Yes	No	N
west of Bayou La Fourche, north of jetties at Port F	29.1	-90.18	N	Yes	Yes	No	N
Timbalier Bay	29.1	-90.4	N	Yes	Yes	No	N
Lake Borgne	30.1	-89.6	N	Yes	Yes	No	N
floating in Terrebonne Bay, ~4-5 mi S of Cocodrie	29.15	-90.6	N	Yes	Yes	No	N
floating in Houma navigational channel	29.33	-90.73	N	Yes	Yes	No	N
Fourchon Beach	29.09139	-90.22365	N	No	Yes	No	N
Racoon Island	29.06263	-90.94988	N	No	Yes	No	N
Racoon Island	29.0624	-90.94663	N	No	Yes	No	N
off shore S.E. Of Port Fourchon	29.01988	-90.11865	Y	No	Yes	No	Y
Grand Isle Beach	29.19899	-90.04115	N	No	Yes	No	N
Grand Isle Beach	29.22781	-90.00005	N	No	Yes	No	N
Bay St. Louis	30.30880	-89.32590	N	No	Yes	No	N
Bay St. Louis	30.29410	-89.34320	N	No	Yes	No	N

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Waveland	30.26410	-89.39200	N	No	Yes	No	N
Waveland	30.27260	-89.37750	N	No	Yes	No	N
Waveland	30.27360	-89.37640	N	No	Yes	No	N
Long Beach	30.34780	-89.13900	N	No	Yes	No	Y
Pass Christian	30.31481	-89.24207	N	No	Yes	No	N
Pass Christian	30.31071	-89.25556	N	No	Yes	No	N
Pass Christian	30.31460	-89.24252	N	No	Yes	No	N
Pass Christian	30.31080	-89.25728	N	No	Yes	No	N
Pass Christian	30.31295	-89.24477	N	No	Yes	No	N
Pass Christian	30.31082	-89.25535	N	No	Yes	No	N
Ocean Springs	30.40980	-88.84080	N	No	Yes	No	N
Bay St. Louis	30.31900	-89.32230	N	No	Yes	No	N
Waveland	30.28830	-89.36000	N	No	Yes	No	N
Waveland	30.28680	-89.36260	N	No	Yes	No	N
Pass Christian	30.30650	-89.26858	N	No	Yes	No	N
Pass Christian	30.30725	-89.26653	N	No	Yes	No	N
Bay St. Louis	30.30562	-89.32865	N	No	Yes	No	N
Pass Christian	30.32834	-89.19923	N	No	Yes	No	N
Pass Christian	30.30529	-89.27249	N	No	Yes	No	N
Pass Christian	30.32620	-89.20892	N	No	Yes	No	N
Pass Christian	30.32460	-89.21450	N	No	Yes	No	N
Biloxi	30.39289	-88.94716	N	No	Yes	No	N
Waveland	30.28865	-89.35290	N	No	Yes	No	N
Pass Christian	30.32824	-89.19985	N	No	Yes	No	N
Pass Christian	30.33144	-89.18568	N	No	Yes	No	N
Pass Christian	30.32144	-89.22351	N	No	Yes	No	N
Pass Christian	30.30750	-89.26659	N	No	Yes	No	N
Bay St. Louis	30.31558	-89.29004	N	No	Yes	No	N
Pass Christian	30.30525	-89.27421	N	No	Yes	No	N
Pass Christian	30.30989	-89.25963	N	No	Yes	No	N
Waveland	30.26362	-89.39346	N	No	Yes	No	N
Waveland	30.28670	-89.36321	N	No	Yes	No	N
Gulfport	30.35567	-89.11807	N	No	Yes	No	N
Waveland	30.24120	-89.42470	N	No	Yes	No	N

Gulfport	30.36948	-89.07825	N	No	Yes	No	N
Biloxi	30.39169	-88.95027	N	No	Yes	No	N
Biloxi	30.39271	-88.87608	N	No	Yes	No	N
Waveland	30.27834	-89.37222	N	No	Yes	No	N
Gulfport	30.37689	-89.04778	N	No	Yes	No	N
Waveland	30.27006	-89.38032	N	No	Yes	No	N
Bay St. Louis	30.30022	-89.33346	N	No	Yes	No	N
Pass Christian	30.32762	-89.20251	N	No	Yes	No	N
floating N of Ship Island	30.25080	-88.94120	N	No	Yes	No	N
Waveland	30.25685	-89.41499	N	No	Yes	No	N
Waveland	30.26483	-89.39040	N	No	Yes	No	N
Waveland	30.26471	-89.39070	N	No	Yes	No	N
Pass Christian, floating by Henderson Point	30.30320	-89.29570	N	No	Yes	No	N
Waveland	30.28749	-89.36136	N	No	Yes	No	N
Waveland	30.28790	-89.36065	N	No	Yes	No	N
Gulfport	30.36129	-89.10089	N	No	Yes	No	N
Long Beach	30.33749	-89.16818	N	No	Yes	No	N
Pass Christian	30.32775	-89.20048	N	No	Yes	No	N
Pass Christian	30.31166	-89.25018	N	No	Yes	No	N
Pass Christian	30.30335	-89.28335	N	No	Yes	No	N
Waveland	30.28267	-89.36761	N	No	Yes	No	N
Biloxi	30.39147	-88.95452	N	No	Yes	No	N
Biloxi	30.39385	-88.91407	N	No	Yes	No	N
Horn Island	30.22831	-88.64799	N	No	Yes	No	N
Pass Christian	30.31300	-89.24830	N	No	Yes	No	N
Pass Christian	30.31190	-89.29050	N	No	Yes	No	N
Gulfport	30.38250	-89.02280	N	No	Yes	No	N
Gulfport	30.38150	-89.02610	N	No	Yes	No	N
floating ~1/2 mile south of Biloxi bridge	30.38960	-88.84190	N	No	Yes	No	N
Waveland Beach at Nicholson Ave	30.29410	-89.35910	N	No	Yes	No	N
Pass Christian	30.32320	-89.21840	N	No	Yes	No	N
Gulfport Beach	30.35582	-89.11698	N	No	Yes	No	N
Gulfport Beach	30.33215	-89.18207	N	No	Yes	No	N
Lakeshore/Waveland	30.25117	-89.42138	N	No	Yes	No	N

Bay St. Louis	30.29545	-89.34080	N	No	Yes	No	N
Waveland	30.26715	-89.38553	N	No	Yes	No	N
Bay St. Louis	30.30980	-89.32553	N	No	Yes	No	N
West Ship Island	30.2115	-88.98480	N	No	Yes	No	N
Waveland	30.28248	-89.36733	N	No	Yes	No	N
Pass Christian	30.31406	-89.24347	N	No	Yes	No	N
Gulfport	30.37421	-89.04382	N	No	Yes	No	Y
Bay St. Louis	30.30883	-89.32583	N	No	Yes	No	N
Waveland	30.27683	-89.37367	N	No	Yes	No	N
Waveland	30.28064	-89.36495	N	No	Yes	No	Y
Waveland	30.28127	-89.36557	N	No	Yes	No	Y
Pascagoula Beach	30.3433	-88.55500	N	No	Yes	No	N
Waveland	30.27234	-89.37753	N	No	Yes	No	N
SE Horn Island	30.2207	-88.59330	N	No	Yes	No	N
southside Cat Island	30.2283	-89.07330	N	No	Yes	No	N
Pass Christian	30.31352	-89.24396	N	No	Yes	No	N
Bellefontaine Beach	30.3433	-88.70330	N	No	Yes	No	N
water south of Cadet Point, Biloxi	30.3877	-88.85890	N	No	Yes	No	N
Waveland	30.28063	-89.36495	N	No	Yes	No	Y
Biloxi Bay	30.40980	-88.86906	N	No	Yes	No	N
Biloxi Bay	30.40980	-88.86906	N	No	Yes	No	N
Horn Island, ~3000' from W end	30.2398	-88.76870	N	No	Yes	No	N
Waveland	30.28655	-89.36330	N	No	Yes	No	N
Pass Christian	30.30725	-89.26660	N	No	Yes	No	N
Waveland	30.28063	-89.36495	N	No	Yes	No	Y
Long Beach	30.33743	-89.16837	N	No	Yes	No	N
Biloxi Beach	30.39154	-88.95600	N	No	Yes	No	N
north side of Horn Island	30.22307	-88.62952	N	No	Yes	No	N
Bangs Lake off of Pascagoula	30.3588	-88.47300	N	No	Yes	No	N
Biloxi, Back Bay	30.40079	-88.85896	N	No	Yes	No	N
Ocean Springs, McPherson Pier	30.40397	-88.83031	N	No	Yes	No	Y
Waveland	30.28063	-89.36495	N	No	Yes	No	Y
Ocean Springs	30.40397	-88.83031	N	No	Yes	No	Y
Biloxi, near Palace Casino	30.3959	-88.85830	N	No	Yes	No	N

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Ocean Springs	30.40397	-88.83031	N	No	Yes	No	Y
Ocean Springs	30.4075	-88.83540	N	No	Yes	No	N
Gulfport	30.35487	-89.12191	N	No	Yes	No	N
Waveland	30.26605	-89.38722	N	No	Yes	No	N
Long Beach	30.34084	-89.15894	N	No	Yes	No	N
Biloxi, near harbor	30.39268	-88.88209	N	No	Yes	No	N
Gautier / Belle Fontaine Beach	30.3457	-88.74080	N	No	Yes	No	N
Biloxi	30.39158	-88.94994	N	No	Yes	No	N
Biloxi	30.39184	-88.94596	N	No	Yes	No	N
Biloxi	30.39183	-88.94596	N	No	Yes	No	N
Biloxi	30.39184	-88.94576	N	No	Yes	No	N
Biloxi	30.39262	-88.93246	N	No	Yes	No	N
Biloxi Beach	30.3932	-88.90645	N	No	Yes	No	N
Biloxi Beach	30.39353	-88.92310	N	No	Yes	No	N
Biloxi Beach	30.39382	-88.91889	N	No	Yes	No	N
Biloxi Beach	30.39375	-88.92016	N	No	Yes	No	N
Biloxi Beach	30.39108	-88.96432	N	No	Yes	No	N
Biloxi Beach	30.38968	-88.97850	N	No	Yes	No	N
Ocean Springs / Belle Fontaine Beach	30.34316	-88.72950	N	No	Yes	No	N
Gulfport Beach	30.3597	-89.10686	N	No	Yes	No	N
Biloxi Beach	30.3938	-88.91200	N	No	Yes	No	N
Gulfport Beach	30.37834	-89.04083	N	No	Yes	No	N
Gulfport Beach	30.38538	-89.01003	N	No	Yes	No	N
Gulfport Beach	30.37825	-89.04118	N	No	Yes	No	N
Gulfport Beach	30.3844	-89.01535	N	No	Yes	No	N
Biloxi Beach	30.38942	-88.98023	N	No	Yes	No	N
Biloxi Beach	30.39028	-88.97433	N	No	Yes	No	N
Biloxi Beach	30.39357	-88.89623	N	No	Yes	No	N
Gulfport Beach	30.3831	-89.0192	N	No	Yes	No	N
Biloxi Beach	30.3914	-89.0069	N	No	Yes	No	N
Biloxi Beach	30.39	-88.9756	N	No	Yes	No	N
Biloxi Beach	30.3875	-88.9942	N	No	Yes	No	N
Biloxi Beach	30.3889	-88.9847	N	No	Yes	No	N
Gulfport Beach	30.37058	-89.0742	N	No	Yes	No	N

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Gulfport Beach	30.3706	-89.07417	N	No	Yes	No	N
Gulfport Beach	30.37131	-89.07161	N	No	Yes	No	N
Gulfport Beach	30.37158	-89.07066	N	No	Yes	No	N
Gulfport Beach	30.3768	-89.07045	N	No	Yes	No	N
Gulfport Beach	30.37262	-89.06721	N	No	Yes	No	N
Gulfport	30.38075	-89.02951	N	No	Yes	No	N
Gulfport	30.38097	-89.02944	N	No	Yes	No	N
Gulfport	30.38048	-89.03049	N	No	Yes	No	N
Gulfport	30.38016	-89.03156	N	No	Yes	No	N
Biloxi	30.3799	-89.03266	N	No	Yes	No	N
Biloxi	30.38032	-89.03104	N	No	Yes	No	N
Gulfport Beach	30.37746	-89.0433	N	No	Yes	No	N
Gulfport Beach	30.37819	-89.0416	N	No	Yes	No	N
Waveland	30.2806	-89.3449	N	No	Yes	No	Y
Biloxi, Acadia Ave	30.39277	-88.9312	N	No	Yes	No	Y
Gulfport Beach	30.37819	-89.0416	N	No	Yes	No	N
Gulfport Beach	30.37819	-89.0416	N	No	Yes	No	N
Gulfport Beach	30.37843	-89.0413	N	No	Yes	No	N
Gulfport Beach	30.37837	-89.04101	N	No	Yes	No	N
Gulfport Beach	30.37457	-89.0563	N	No	Yes	No	N
Gulfport Beach	30.37456	-89.05634	N	No	Yes	No	N
Biloxi Beach	30.3887	-88.98878	N	No	Yes	No	N
Biloxi Beach	30.38877	-88.98797	N	No	Yes	No	N
Biloxi Beach	30.38877	-88.98797	N	No	Yes	No	N
Biloxi Beach	30.38886	-88.9741	N	No	Yes	No	N
Biloxi Beach	30.38886	-88.98734	N	No	Yes	No	N
Pass Christian Beach	30.32762	-89.20251	N	No	Yes	No	N
Gulfport Beach	30.38188	-89.02495	N	No	Yes	No	N
Gulfport Beach	30.38393	-89.01701	N	No	Yes	No	N
Gulfport Beach	30.38583	-89.00827	N	No	Yes	No	N
Biloxi Beach	30.39357	-88.89818	N	No	Yes	No	N
Biloxi Beach	30.39182	-88.94774	N	No	Yes	No	N
Biloxi Beach	30.39328	-88.92583	N	No	Yes	No	N
Biloxi Beach	30.37561	-89.09052	N	No	Yes	No	N

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Biloxi Beach	30.37571	-89.05148	N	No	Yes	No	N
Biloxi Beach	30.38738	-89	N	No	Yes	No	N
Biloxi Beach	30.38746	-88.99895	N	No	Yes	No	N
near Horn Island - floating?	30.2333	-88.53093	N	No	Yes	No	N
floating off of Gulfport	30.32007	-89.17917	N	No	Yes	No	N
Waveland Pier	30.2806	-89.3449	N	No	Yes	No	Y
Biloxi Beach	30.39383	-88.91076	N	No	Yes	No	N
Biloxi Beach	30.39167	-88.89817	N	No	Yes	No	N
Biloxi Beach	30.39383	-88.91895	N	No	Yes	No	N
Gulfport Beach	30.37125	-89.07175	N	No	Yes	No	N
west side of Deer Island, Biloxi	30.26278	-88.89885	N	No	Yes	No	N
Waveland Pier	30.2806	-89.3449	N	No	Yes	No	Y
Waveland Pier	30.2806	-89.3449	N	No	Yes	No	Y
Waveland Pier	30.2806	-89.3449	N	No	Yes	No	Y
Waveland Pier	30.28063	-89.36495	N	No	Yes	No	Y
Biloxi Beach	30.38722	-89.00137	N	No	Yes	No	N
Ocean Springs	30.3603	-88.7642	N	No	Yes	No	N
Ocean Springs	30.369965	-88.779549	N	No	Yes	No	N
Biloxi	30.392	-88.87	N	No	Yes	No	N
Long Beach	30.35226	-89.12932	N	No	Yes	No	N
Long Beach, Jeff Davis Ave	30.3437	-89.1498	N	No	Yes	No	N
Long Beach	30.3397	-89.94848	N	No	Yes	No	N
Waveland Pier	30.28063	-89.36495	N	No	Yes	No	Y
Waveland Pier	30.28063	-89.36495	N	No	Yes	No	Y
Waveland Pier	30.28063	-89.36495	N	No	Yes	No	Y
3 Oaks Bayou (Bayou Caddy), outside Waveland	30.24575	-89.43206	N	No	Yes	No	N
Pass Christian	30.32465	-89.2142	N	No	Yes	No	N
Long Beach	30.33843	-89.16594	N	No	Yes	No	N
Long Beach	30.34897	-89.13697	N	No	Yes	No	N
floating off of NE corner of Ship Island	30.22236	-88.94848	N	No	Yes	No	N
floating off NE coast of Cat Island	30.2596	-89.037	N	No	Yes	No	N
floating east Cat Island	30.2211	-89.0336	N	No	Yes	No	N
in MS Sound ~2 mi offshore Biloxi, brought in to Oc	30.368	-88.958	N	No	Yes	No	Y
Deer Island, Biloxi Harbor	30.21851	-88.48135	N	No	Yes	No	N

Biloxi Harbor	30.19418	-88.52193	N	No	Yes	No	N
Biloxi Harbor, NW end Horn Island	30.16057	-88.44111	N	No	Yes	No	N
Gulfport Harbor	30.1523	-89.0633	N	No	Yes	No	N
Waveland Pier	30.28063	-89.36495	N	No	Yes	No	Y
Waveland Pier	30.28063	-89.36495	N	No	Yes	No	Y
Waveland Pier	30.28063	-89.36495	N	No	Yes	No	Y
floating off of Biloxi	30.37	-88.92	N	Yes	Yes	No	N
floating off of Biloxi	30.365	-88.89	N	Yes	Yes	No	N
floating off of Biloxi	30.36	-88.86	N	Yes	Yes	No	N
floating off of Biloxi	30.35	-88.84	N	Yes	Yes	No	N
floating off of Biloxi Beach	30.3505	-88.9066	N	No	Yes	No	N
floating off of Biloxi Beach	30.389	-88.8865	N	No	Yes	No	N
floating off of Biloxi Beach	30.3531	-88.937	N	No	Yes	No	N
floating off of Biloxi Beach	30.3379	-88.9542	N	No	Yes	No	N
floating off of Cat Island, Long Beach	30.2736	-89.0744	N	No	Yes	No	N
floating off of Biloxi Beach	30.3498	-88.892	N	No	Yes	No	N
floating off of Biloxi Beach	30.3651	-88.8896	N	No	Yes	No	N
floating off of Biloxi Beach	30.3667	-88.8944	N	No	Yes	No	N
floating off of Biloxi Beach	30.356	-88.9961	N	No	Yes	No	N
floating off of Biloxi Beach	30.356	-88.898	N	No	Yes	No	N
Biloxi Beach	30.38757	-88.99525	N	No	Yes	No	N
Gulfport Beach	30.37807	-89.04175	N	No	Yes	No	N
Ocean Springs	30.40376	-88.82699	N	No	Yes	No	N
Long Beach	30.34	-89.16059	N	No	Yes	No	N
Gulfport	30.37314	-89.0655	N	No	Yes	No	N
Biloxi Beach	30.38498	-89.01112	N	No	Yes	No	N
floating off of Long Beach	30.32185	-89.1497	N	No	Yes	No	N
floating in Back Bay of Biloxi	30.41678	-88.86855	N	No	Yes	No	N
Bay St. Louis, on beach, Lakeshore area	30.24835	-89.42323	N	No	Yes	No	N
Biloxi Beach	30.38	-88.89	N	Yes	Yes	No	N
floating off of Jackson County	30.3	-88.7	N	Yes	Yes	No	N
Ocean Springs Pier, Jackson County	30.40398	-88.82962	N	No	Yes	No	Y
Harrison County	30.37537	-88.81745	N	No	Yes	No	N
Harrison County	30.37762	-88.1543	N	No	Yes	No	N

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Jackson County	30.40048	-88.84228	N	No	Yes	No	N
Pass Christian	30.34114	-89.15825	N	No	Yes	No	N
Long Beach	30.32659	-89.2067	N	No	Yes	No	N
Bay St. Louis	30.3	-89.3	N	Yes	Yes	No	N
Long Beach	30.33	-89.16	N	Yes	Yes	No	N
Long Beach	30.345	-89.1	N	Yes	Yes	No	N
Directed Capture	28.4665	-88.46116	Y	No	No	No	Y
Directed Capture	28.96778	-88.79333	Y	No	No	No	Y
Directed Capture	28.90722	-88.80167	Y	No	No	No	Y
Directed Capture	28.9597	-88.5342	Y	No	No	No	Y
Directed Capture	28.9182	-88.5552	Y	No	No	No	Y
Directed Capture	28.865	-88.5658	Y	No	No	No	Y
Directed Capture	28.8538	-88.5617	Y	No	No	No	Y
Directed Capture	28.847	-88.5588	Y	No	No	No	Y
Directed Capture	28.8405	-88.5557	Y	No	No	No	Y
Directed Capture	28.6573	-88.4313	Y	No	No	No	Y
Directed Capture	28.8045	-88.4771	Y	No	No	No	Y
Directed Capture	28.804483	-88.4771	Y	No	No	No	Y
Directed Capture	28.80725	-88.47808	Y	No	No	No	Y
Directed Capture	28.813483	-88.480383	Y	No	No	No	Y
Directed Capture	28.81535	-88.479233	Y	No	No	No	Y
Directed Capture	28.81669	-88.47803	Y	No	No	No	Y
Directed Capture	28.828083	-88.37115	Y	No	No	No	Y
Directed Capture	28.829617	-88.471267	Y	No	No	No	Y
Directed Capture	28.826867	-88.464933	Y	No	No	No	Y
Directed Capture	28.834317	-88.42455	Y	No	No	No	Y
Directed Capture - LDWF	29.09	-89.78	Y	No	No	No	N
Directed Capture - LDWF	29.0919	-89.7781	Y	No	No	No	Y
Directed Capture - LDWF	29.0932	-89.7747	Y	No	No	No	Y
Directed Capture - LDWF	29.0998	-89.7574	Y	No	No	No	Y
Directed Capture - LDWF	29.1065	-89.748	Y	No	No	No	Y
Directed Capture	29.01025	-88.26369	Y	No	No	No	Y
Directed Capture	29.01025	-88.26369	Y	No	No	No	Y
Directed Capture	29.01025	-88.26369	Y	No	No	No	Y

Directed Capture	29.02569	-88.25586	Y	No	No	No	Y
Directed Capture	29.17372	-88.16519	Y	No	No	No	N
Directed Capture	28.7538	-88.85602	Y	No	No	No	N
Directed Capture	28.75114	-88.84875	Y	No	No	No	Y
Directed Capture	28.62252	-88.55688	Y	No	No	No	Y
Directed Capture	28.76398	-88.82482	Y	No	No	No	Y
Directed Capture	28.66965	-88.49193	Y	No	No	No	Y
Directed Capture	28.91208	-88.68748	Y	No	No	No	Y
Directed Capture	28.70114	-88.53979	Y	No	No	No	Y
Directed Capture	28.92108	-88.7991	Y	No	No	No	Y
Directed Capture	28.92094	-88.79822	Y	No	No	No	Y
Directed Capture	28.92891	-88.77321	Y	No	No	No	Y
Directed Capture	28.928	-88.7701	Y	No	No	No	Y
Directed Capture	28.92558	-88.74215	Y	No	No	No	Y
Directed Capture	28.93916	-88.71402	Y	No	No	No	Y
Directed Capture	28.94739	-88.70053	Y	No	No	No	Y
Directed Capture	28.96491	-88.67766	Y	No	No	No	Y
Directed Capture	28.98004	-88.65568	Y	No	No	No	Y
Directed Capture - LDWF	28.72474	-88.55243	Y	No	No	No	Y
Directed Capture - LDWF	28.81743	-88.63998	Y	No	No	No	Y
Directed Capture	28.62361	-88.54351	Y	No	No	No	Y
Directed Capture	28.60264	-88.49568	Y	No	No	No	Y
Directed Capture	28.59733	-88.49236	Y	No	No	No	Y
Directed Capture	28.59501	-88.49054	Y	No	No	No	Y
Directed Capture	28.57604	-88.49573	Y	No	No	No	Y
Directed Capture	28.57271	-88.49434	Y	No	No	No	Y
Directed Capture	28.56876	-88.49416	Y	No	No	No	Y
Directed Capture	28.52956	-88.51617	Y	No	No	No	Y
Directed Capture	28.50794	-88.54434	Y	No	No	No	Y
Directed Capture	28.53647	-88.60338	Y	No	No	No	Y
Directed Capture	28.69822	-88.79404	Y	No	No	No	Y
Directed Capture	28.90896	-88.72726	Y	No	No	No	Y
Directed Capture	28.6881	-88.84448	Y	No	No	No	Y
Directed Capture	28.67472	-88.88646	Y	No	No	No	Y

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Directed Capture	28.68382	-88.88902	Y	No	No	No	Y
Directed Capture	28.8945	-88.72223	Y	No	No	No	Y
Directed Capture	28.6575	-88.87042	Y	No	No	No	Y
Directed Capture	28.65178	-88.86879	Y	No	No	No	Y
Directed Capture	28.6833	-88.64572	Y	No	No	No	Y
Directed Capture	28.74405	-88.2535	Y	No	No	No	Y
Directed Capture	28.7637	-88.23549	Y	No	No	No	Y
Directed Capture	28.7666	-88.23471	Y	No	No	No	Y
Directed Capture	28.78214	-88.23679	Y	No	No	No	Y
Directed Capture	28.87021	-88.50445	Y	No	No	No	Y
Directed Capture - LDWF	28.67327	-88.29708	Y	No	No	No	Y
Directed Capture - LDWF, 42 mi SW Grand Isle	28.71517	-89.80517	Y	No	No	No	Y
Directed Capture - LDWF, 42 mi SW Grand Isle	28.714	-89.806	Y	No	No	No	Y
Directed Capture - LDWF, 42 mi SW Grand Isle	28.714	-89.806	Y	No	No	No	Y
Directed Capture - LDWF, 42 mi SW Grand Isle	28.709	-89.80267	Y	No	No	No	Y
Directed Capture - LDWF, 42 mi SW Grand Isle	28.70783	-89.80433	Y	No	No	No	Y
Directed Capture - LDWF, 42 mi SW Grand Isle	28.70783	-89.80433	Y	No	No	No	Y
Directed Capture - LDWF, floating ~50 miles offsho	28.62647	-90.18168	N	No	No	No	N
Directed Capture - LDWF, floating ~35 miles offsho	28.78182	-89.7506	N	No	No	No	Y
Directed Capture - LDWF, floating ~35 miles offsho	28.77712	-89.74897	N	No	No	No	Y
Directed Capture - LDWF, floating ~35 miles offsho	28.77405	-89.74953	N	No	No	No	Y
Directed Capture - LDWF, floating ~35 miles offsho	28.76734	-89.747	N	No	No	No	Y
Directed Capture - LDWF, floating ~35 miles offsho	28.76683	-89.7453	N	No	No	No	Y
Directed Capture - LDWF, floating ~35 miles offsho	28.76467	-89.74487	N	No	No	No	Y
Directed Capture - LDWF, floating ~35 miles offsho	28.76212	-89.74383	Y	No	No	No	Y
Directed Capture - LDWF, floating ~35 miles offsho	28.75873	-89.74536	N	No	No	No	Y
Directed Capture - LDWF, floating ~35 miles offsho	28.75897	-89.74525	N	No	No	No	Y
Directed Capture - LDWF, floating ~35 miles offsho	28.7489	-89.75946	Y	No	No	No	Y
Directed Capture	28.92028	-88.40833	Y	No	No	No	Y
Directed Capture	28.98478	-88.35519	Y	No	No	No	Y
Directed Capture	29.02858	-88.30956	Y	No	No	No	Y
Directed Capture	28.95217	-88.37383	Y	No	No	No	Y
Directed Capture	29.00767	-88.90133	Y	No	No	No	Y
Directed Capture	29.00914	-88.88017	Y	No	No	No	Y

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Directed Capture	29.05264	-88.79911	Y	No	No	No	Y
Directed Capture	29.13067	-88.76469	Y	No	No	No	Y
Directed Capture	28.97922	-89.06208	Y	No	No	No	Y
Directed Capture	28.98544	-89.05781	Y	No	No	No	Y
Directed Capture	28.98914	-89.05772	Y	No	No	No	Y
Directed Capture	28.99314	-89.05647	Y	No	No	No	Y
Directed Capture	28.99411	-89.05583	Y	No	No	No	Y
Directed Capture	28.99439	-89.05569	Y	No	No	No	Y
Directed Capture	29.01933	-88.94467	Y	No	No	No	Y
Waveland Pier	30.28063	-89.36495	N	No	Yes	Yes	Y
Waveland Pier	30.28063	-89.36495	N	No	Yes	Yes	Y
Waveland Pier	30.28063	-89.36495	N	No	Yes	Yes	Y
Waveland Pier	30.28063	-89.36495	N	No	Yes	Yes	Y
Waveland Pier	30.28063	-89.36495	N	No	Yes	Yes	Y
Perdido Key			Y	Yes	Yes	Yes	N
St. Andrews State Park	30.1297	-85.7242	N	No	Yes	Yes	N
Dauphin Island			Y	Yes	Yes	Yes	Y

Symbol	Log #	Comments
C		outside of area of concern
C		outside of area of concern
C		outside of area of concern
C		outside of area of concern
C		outside of area of concern
C		outside of area of concern
C		outside of area of concern
C		outside of area of concern
C	D-0002 BSNWR	
C	D-0001 BSNWR	
C	D-0003 BSNWR	
C	D-0004 BSNWR	
C	D-0005 BSNWR	
C	D-0006 BSNWR	
C	D-0007 BSNWR	
C	D-0008 BSNWR	
C	D-0009 BSNWR	
C	D-0010 BSNWR	
C	D-0015 BSNWR	
C	D-0014 BSNWR	
C	D-0011 BSNWR	
C	D-0012 BSNWR	
C	D-0013 BSNWR	
C	D-0016 BSNWR	
C	D-0017 BSNWR	dried carcass
C	D-0018 BSNWR	
C	D-0019 BSNWR	
C	D-0020 BSNWR	
C	D-0021 BSNWR	
C	D-0023 BSNWR	
C	D-0022 BSNWR	
C	L-0001 BSNWR	
C	D-0024 BSNWR	

C	D-0025 BSNWR	
C	D-0026 BSNWR	
C	D-0027 BSNWR	
C	L-0007 IMMS	emaciated; taken to IMMS for rehab; died 5/25, shipped to UF for necropsy
C	D-0028 BSNWR	
C	D-0029 BSNWR	
C	D-0030 BSNWR	
C	D-0031 BSNWR	
U		
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C	L-0012 IMMS	found floating next to boom; externally oiled turtle; taken to IMMS for rehab
U		
C	L-0013 IMMS	externally oiled turtle; taken to IMMS for rehab
U		
U		too decomposed for necropsy
U		
U		
U		
C		parts only - head, guts and 1 flipper
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C	
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C	
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C	
C	
C	only back flippers and a bit of carapace
C	
C	very emaciated, missing part of RRF
C	very emaciated; taken to Gulf World, died soon after recovery
C	no head, flippers or internal organs
C	brown algae on carapace; some small barnacles on skin; adult female
C	prop damage to right side of carapace
C	no wounds; barnacles and algae on carapace; adult male
C	missing notch from right side carapace; barnacle and algae growth
C	barnacles on carapace and flippers; taken to Gulf World, died same day
C	apparent piece of metal in ventral LFF near insertion
C	dried carcass; little skin remaining, bones visible
C	no head or front flippers, shark bites
C	missing both front flippers and lrf
C	carapace completely covered w/barnacles and algae; adult female
C	emaciated, lots of barnacles, damage to base of front flippers and neck
C	
C	
C	in pieces, decomposed
C	carapace broken, pieces missing
C	skin and scutes peeling
C	numerous barnacles and light algae on carapace; taken to Gulfarium
C	old wound to posterior marginals; scutes peeling
C	posterior carapace gone; plastron missing; falling apart, nasty
U	

C	apparent skeg/prop damage to center carapace
C	caught on hook and line, hook in throat; taken to Gulfarium
C	prop wounds to right posterior carapace; heavy barnacles,small barnacles on skin
C	2 apparent prop wounds across carapace
C	skin and scutes peeling, very decomposed
C	fishing line entangled around neck
C	no head or flippers; damage to carapace - likely prop
C	missing skull; carapace bones disarticulating due to decomp
C	missing head and LFF, possible shark bites; gashes on plastron
U	
C	carapace bones disarticulating due to decomp
C	dried carcass; carapace broken across posterior; portions missing
U	caught on hook and line, hook removed and turtle released
U	
U	
U	
U	
U	caught by relocation trawler; ~50% coverage of thin oil sheen, also sheen in mouth
U	
U	
U	in pieces due to decomp, unable to salvage
U	
U	caught by relocation trawler; observer thought oiled, Gulfarium said algae
C	
U	
U	
C	wound/damage to throat area
C	
C	
U	
U	caught by relocation trawler; Gulfarium said not oiled
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C	parts only
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U	
C	swab sample taken
C	swab sample taken
C	taken to AOA for rehab
C	
C	

C	
C	swab sample taken
C	swab sample taken
U	
C	taken to AOA for rehab
C	swab sample taken
C	swab sample taken
C	swab sample taken
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C	swab sample taken
C	swab sample taken
C	swab sample taken
C	swab sample taken
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U	partial carcass, pieces only
U	
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C		Severely decomposed, on beach
C		Severely decomposed, on beach
C		
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C		
C	D-0029 IMMS	
C	D-0030 IMMS	

C	D-0031 IMMS	
C	D-0032 IMMS	
C	D-0033 IMMS	
C	L-0001 IMMS	taken to IMMS, died in rehab, frozen for necropsy
C	D-0001 IMMS	
C	D-0002 IMMS	
C	D-0003 IMMS	
C	D-0004 IMMS	
C	D-0005 IMMS	
C	D-0006 IMMS	
C	D-0034 IMMS	
C	D-0007 IMMS	
C	D-0008 IMMS	
C	D-0009 IMMS	
C	D-0010 IMMS	
C	D-0011 IMMS	
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C	D-0022 IMMS	
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C	D-0025 IMMS	
C	D-0026 IMMS	
C	D-0027 IMMS	
C	D-0028 IMMS	
C	D-0035 IMMS	

C	D-0036 IMMS	
C	D-0037 IMMS	
C	D-0038 IMMS	
C	D-0039 IMMS	
C	D-0040 IMMS	
C	D-0041 IMMS	
C	D-0042 IMMS	
C	D-0043 IMMS	
C	D-0044 IMMS	
C	D-0045 IMMS	
C	D-0046 IMMS	
C	D-0047 IMMS	carcass in two pieces
C	D-0048 IMMS	
C	D-0049 IMMS	
C	D-0050 IMMS	
C	D-0051 IMMS	
C	D-0052 IMMS	
C	D-0053 IMMS	
C	D-0054 IMMS	
C	D-0055 IMMS	
C	D-0056 IMMS	
C	D-0057 IMMS	
C	D-0058 IMMS	
C	D-0063 IMMS	Decapitated, missing portions of flippers due to decomp; first reported on 5/8
C	D-0059 IMMS	
C	D-0060 IMMS	
C	D-0061 IMMS	
C	D-0062 IMMS	
C	D-0064 IMMS	
C	D-0065 IMMS	
C	D-0066 IMMS	
C	D-0067 IMMS	
C	D-0068 IMMS	
C	D-0069 IMMS	

C	D-0070 IMMS	
C	D-0071 IMMS	
C	D-0072 IMMS	
C	D-0085 IMMS	field necropsy on beach; damaged LFF, carapace covered in barnacles; first rep 5/13
C	D-0073 IMMS	
C	D-0074 IMMS	
C	L-0002 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0075 IMMS	
C	D-0076 IMMS	carapace cracked/broken
C	L-0003 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	L-0004 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0086 IMMS	"chopped up", likely prop wounds to carapace
C	D-0077 IMMS	red slimy substance covering carapace
C	D-0087 IMMS	skeletal remains
C	D-0088 IMMS	skeletal remains
C	D-0078 IMMS	
C	D-0089 IMMS	
C	D-0090 IMMS	floating, picked up by NPS
C	L-0005 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0079 IMMS	carapace only
C	D-0080 IMMS	carapace only
C	D-0091 IMMS	sample taken and logged, carcass painted and left on beach
C	D-0081 IMMS	
C	D-0082 IMMS	
C	L-0006 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0083 IMMS	
C	D-0092 IMMS	possible loggerhead, unsure of species ID
C	D-0093 IMMS	
C	D-0094 IMMS	carcass in plastic bag before oil swab taken
C	D-0084 IMMS	rear portion of carcass missing
C	L-0008 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	L-0009 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	L-0010 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0095 IMMS	carcass in plastic bag before oil swab taken; severe prop damage

C	L-0011 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0161 IMMS	
C	D-0096 IMMS	mangled caudal half of carcass
C	D-0097 IMMS	
C	D-0098 IMMS	
C	D-0099 IMMS	old injury to edge of carapace
C	D-0162 IMMS	
C	D-0100 IMMS	
C	D-0101 IMMS	
C	D-0102 IMMS	
C	D-0103 IMMS	
C	D-0104 IMMS	
C	D-0105 IMMS	scrapes along plastron
C	D-0106 IMMS	missing right edge of carapace, advanced decomp
C	D-0107 IMMS	
C	D-0108 IMMS	extra costal scute on L side
C	D-0109 IMMS	edges of marginal scutes broken, postmortem
C	D-0110 IMMS	extra vertebral scute
C	D-0163 IMMS	
C	D-0112 IMMS	
C	D-0111 IMMS	
C	D-0113 IMMS	
C	D-0114 IMMS	
C	D-0118 IMMS	severely mangled, no accurate meas possible
C	D-0119 IMMS	black substance in mouth
C	D-0115 IMMS	
C	D-0116 IMMS	
C	D-0117 IMMS	
C	D-0120 IMMS	
C	D-0121 IMMS	
C	D-0122 IMMS	
C	D-0123 IMMS	
C	D-0124 IMMS	
C	D-0125 IMMS	

C	D-0126 IMMS	
C	D-0127 IMMS	
C	D-0128 IMMS	
C	D-0129 IMMS	
C	D-0130 IMMS	
C	D-0164 IMMS	
C	D-0165 IMMS	
C	D-0166 IMMS	
C	D-0167 IMMS	
C	D-0168 IMMS	
C	D-0169 IMMS	
C	D-0131 IMMS	
C	D-0132 IMMS	
C	L-0015 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	L-0014 IMMS	washed ashore alive
C	D-0133 IMMS	
C	D-0134 IMMS	
C	D-0135 IMMS	
C	D-0136 IMMS	
C	D-0137 IMMS	
C	D-0138 IMMS	
C	D-0139 IMMS	
C	D-0140 IMMS	
C	D-0141 IMMS	
C	D-0142 IMMS	
C	D-0143 IMMS	
C	D-0144 IMMS	
C	D-0145 IMMS	
C	D-0146 IMMS	
C	D-0147 IMMS	
C	D-0155 IMMS	
C	D-0148 IMMS	
C	D-0149 IMMS	
C	D-0150 IMMS	

C	D-0151 IMMS	
C	D-0152 IMMS	
C	D-0153 IMMS	
C	D-0154 IMMS	
C	D-0172 IMMS	
C	L-0016 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0156 IMMS	
C	D-0157 IMMS	
C	D-0158 IMMS	
C	D-0159 IMMS	
C	D-0170 IMMS	
C	L-0017 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	L-0018 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	L-0019 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	L-0020 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0160 IMMS	
C	D-0171 IMMS	
C		
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C		incidentally captured on hook and line; taken to IMMS for rehab
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incidentally captured on hook and line; taken to IMMS for rehab, hook ingested

OPR0000847MO

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	Stranding Reference	Species	ReportType	Condition	Disposition	Status	State
5/2/2010	MRC20100502-01	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/2/2010	MRC20100502-02	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/3/2010	SNW20100503-01	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/3/2010	JMI20100503-01	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/3/2010	MPW20100503-01	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/4/2010	SNW20100504-01	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/4/2010	SNW20100504-02	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/4/2010	FXM20100504-01	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/5/2010	MPW20100505-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/5/2010	MRC20100505-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/6/2010	MPW20100506-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/6/2010	MPW20100506-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/7/2010	MPW20100507-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/7/2010	MPW20100507-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/8/2010	ANR20100508-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/8/2010	JMI20100508-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/10/2010	JMI20100510-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/11/2010	MPW20100511-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/13/2010	MPW20100513-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/13/2010	MPW20100513-02	Caretta caretta	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/13/2010	MRC20100513-01	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/13/2010	MRC20100513-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/13/2010	MRC20100513-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/14/2010	LAJ20100514-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/16/2010	LAJ20100516-01	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/17/2010	MRC20100517-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/18/2010	MPW20100518-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/18/2010	MPW20100518-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/18/2010	MPW20100518-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/18/2010	MRC20100518-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/19/2010	LAJ20100519-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/19/2010	JMI20100519-01	Lepidochelys kempii	Stranding	Alive	Released		AL
5/20/2010	LAJ20100520-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL

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5/20/2010	LAJ20100520-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/20/2010	LAJ20100520-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/21/2010	MPW20100521-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/22/2010	RLR20100522-01	Lepidochelys kempii	Stranding	Alive	Rehab-Died	Necropsied	AL
5/22/2010	JMI20100522-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/22/2010	JMI20100522-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/23/2010	JMI20100523-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/23/2010	JMI20100523-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/24/2010	20100524	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/24/2010	20100524	Unknown	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/24/2010	20100524	Unknown	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/24/2010	20100524	Unknown	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/26/2010	20100526	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/27/2010	20100527	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/27/2010	20100527	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/28/2010	20100528	Unknown	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/29/2010	20100529	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/3/2010	JMI20100603-01	Caretta caretta	Stranding	Alive	Rehab	Rehab-IMMS	AL
6/4/2010	20100604	Unknown	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/5/2010	RLR20100605-01	Eretmochelys imbricata	Stranding	Alive	Rehab	Rehab-IMMS	AL
6/5/2010	20100605	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/6/2010	20100606	Unknown	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/6/2010	20100606	Unknown	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/7/2010	20100607	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/9/2010	20100609	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/11/2010	20100611	Caretta caretta	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/13/2010	20100613	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/13/2010	20100613	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/8/2010	NME20100508-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
5/8/2010	NME20100508-02	Caretta caretta	Stranding	Live	Rehab-Died	Frozen	FL
5/8/2010	NME20100508-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	FL
5/10/2010	MEM20100510-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
5/11/2010	MAN20100511-01	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-Gulfarium	FL
5/12/2010	JWM20100512-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL

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5/13/2010	AVH20100513-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
5/14/2010	VEL20100514-01	Caretta caretta	Stranding	Live	Rehab-Died	Frozen	FL
5/14/2010	MEC20100514-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Gulfarium	FL
5/15/2010	NME20100515-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-NOAA	FL
5/17/2010	NME20100517-01	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-NOAA	FL
5/17/2010	MAN20100517-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Gulfarium	FL
5/17/2010	MAN20100517-02	Caretta caretta	Stranding	Dead	Salvaged	Frozen-Gulfarium	FL
5/17/2010	SSM20100517-01	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-GulfWorld	FL
5/18/2010	WAJ20100518-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
5/18/2010	JRJ20100518-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
5/18/2010	CTS20100518-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
5/19/2010	NME20100519-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-NOAA	FL
5/19/2010	NME20100519-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-NOAA	FL
5/19/2010	MAN20100519-01	Caretta caretta	Stranding	Live	Rehab	Rehab-Gulfarium	FL
5/20/2010	WAJ20100520-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GulfWorld	FL
5/20/2010	BAE20100520-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-NOAA	FL
5/20/2010	20100520	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GulfWorld	FL
5/20/2010	MAN20100520-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Gulfarium	FL
5/21/2010	MAN20100521-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-Gulfarium	FL
5/24/2010	NME20100524-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-NOAA	FL
5/24/2010	GWG20100524-01	Caretta caretta	Stranding	Dead	Left on beach		FL
5/25/2010	NME20100525-01	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-NOAA	FL
5/27/2010	MJH20100527-01	Caretta caretta	Stranding	Dead	Buried		FL
5/28/2010	VXW20100528-01	Chelonia mydas	Stranding	Dead	Buried		FL
5/30/2010	NAD20100530-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
6/1/2010	NME20100601-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-NOAA	FL
6/6/2010	20100606	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
6/7/2010	NAD20100607-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-USFWS	FL
6/7/2010	NME20100607-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-NOAA	FL
6/9/2010	RAB20100609-01	Lepidochelys kempii	Stranding	Alive	Released		FL
6/10/2010	20100610	Eretmochelys imbricata	Stranding	Alive	Rehab	Rehab-GulfWorld	FL
6/11/2010	20100611	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
6/11/2010	20100611	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-Gulfarium	FL
6/12/2010	20100612	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-Gulfarium	FL

6/12/2010	20100612	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Gulfarium	FL
6/12/2010	20100612	Chelonia mydas	Stranding	Dead	Salvaged	Frozen	FL
6/13/2010	20100613	Caretta caretta	Stranding	Dead	Salvaged	Frozen-Gulfarium	FL
6/14/2010	20100614	Caretta caretta	Stranding	Dead	Buried		FL
5/1/2010	MJF20100504-01	Unknown	Stranding	Dead	Left on beach		LA
5/1/2010	MJF20100504-02	Unknown	Stranding	Dead	Left on beach		LA
5/3/2010	XXX20100503-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/3/2010	20100503	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/5/2010	JAL20100505-01	Chelonia mydas	Stranding	Dead	Salvaged	Frozen	LA
5/7/2010	MXC20100507-01	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-02	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-03	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-04	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-05	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-06	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-07	Caretta caretta	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-08	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-09	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-10	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-11	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-12	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-13	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-14	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	GXP20100507-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	LA
5/10/2010	CSE20100510-01	Unknown	Stranding	Dead	Salvaged	Frozen	LA
5/10/2010	CSE20100510-02	Unknown	Stranding	Dead	Salvaged	Frozen	LA
5/10/2010	MXC20100510-01	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/10/2010	MXC20100510-02	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/10/2010	MXC20100510-03	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/10/2010	MXC20100510-04	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/10/2010	MXC20100510-05	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/10/2010	MXC20100510-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	LA
5/11/2010	20100511-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/11/2010	20100511-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA

5/12/2010	MXC20100512-01	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/12/2010	MXC20100512-02	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/12/2010	MXC20100512-03	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-AOA	LA
5/12/2010	MXC20100512-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/13/2010	MXT20100513-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/13/2010	JEB20100513-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/13/2010	MXC20100513-01	Eretmochelys imbricata	Stranding	Dead	Left on beach		LA
5/13/2010	MXC20100513-02	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/13/2010	20100513	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/14/2010	MXC20100514-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-AOA	LA
5/16/2010	MXH20100516-01	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-02	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-03	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-04	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-05	Caretta caretta	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-06	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-07	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-08	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-09	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/17/2010	MXT20100517-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/17/2010	AXL20100517-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/18/2010	SDD20100518-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/19/2010	20100519	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/20/2010	NXX20100520-01	Unknown	Stranding	Dead	Salvaged	Frozen	LA
5/22/2010	20100522	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/22/2010	20100522	Unknown	Stranding	Dead	Salvaged	Frozen	LA
5/23/2010	20100523	Unknown	Stranding	Dead	Salvaged	Frozen	LA
5/24/2010	20100524	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/24/2010	20100524	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/25/2010	20100525	Unknown	Stranding	Dead	Salvaged	Frozen	LA
5/25/2010	20100525	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/25/2010	20100525	Unknown	Stranding	Dead	Salvaged	Frozen	LA
5/26/2010	20100526	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/26/2010	20100526	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA

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5/26/2010	20100526	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/27/2010	20100527	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/28/2010	20100528	Lepidochelys kempii	Skimmer	Alive	Rehab	Rehab-AOA	LA
5/29/2010	20100529	Unknown	Stranding	Dead	Salvaged	Frozen	LA
5/31/2010	20100531	Lepidochelys kempii	Skimmer	Alive	Rehab	Rehab-AOA	LA
6/5/2010	20100605	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/5/2010	20100605	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	LA
6/6/2010	20100606	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/6/2010	20100606	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/6/2010	20100606	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/7/2010	20100607	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/7/2010	20100607	Unknown	Stranding	Dead	Salvaged	Frozen	LA
6/8/2010	20100608	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/9/2010	20100609	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	LA
6/9/2010	20100609	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-AOA	LA
6/10/2010	20100610	Unknown	Stranding	Dead	Salvaged	Frozen	LA
6/12/2010	20100612	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-AOA	LA
6/13/2010	20100613	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/13/2010	20100613	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/13/2010	20100613	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/13/2010	20100613	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/14/2010	20100614	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
4/26/2010	CNH20100426-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
4/30/2010	CNH20100430-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
4/30/2010	EXP20100430-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
4/30/2010	EXP20100430-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
4/30/2010	EXP20100430-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
4/30/2010	TTH20100430-01	Lepidochelys kempii	Stranding	Alive	Rehab-Died	Necropsied	MS
5/1/2010	KMF20100501-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/1/2010	KMF20100501-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/1/2010	KMF20100501-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/1/2010	KMF20100501-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/1/2010	KMF20100501-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/1/2010	KMF20100501-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS

5/1/2010	EXP20100501-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	CLC20100502-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	CLC20100502-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	CLC20100502-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	KMF20100502-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	KMF20100502-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	KMF20100502-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-07	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-08	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	MSB20100503-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	MSB20100503-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	MSB20100503-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	MSB20100503-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	MSB20100503-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	WLH20100503-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	WLH20100503-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	WLH20100503-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/4/2010	EXP20100504-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/4/2010	CLC20100504-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/4/2010	CLC20100504-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/4/2010	CLC20100504-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/5/2010	WLH20100505-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/5/2010	DKV20100505-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/6/2010	EXJ20100506-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/6/2010	EXJ20100506-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/6/2010	EXJ20100506-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/6/2010	SXC20100506-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	JNF20100507-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS

5/7/2010	JNF20100507-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	JBT20100507-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	CLM20100507-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	JNF20100507-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	JBT20100507-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	JNF20100507-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	MMK20100508-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	SAH20100508-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	JKM20100508-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	SAH20100508-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	JNF20100508-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	JNF20100508-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	JKM20100508-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	WLH20100510-01	Caretta caretta	Stranding	Dead	Salvaged	Necropsied	MS
5/9/2010	KMM20100509-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/9/2010	KMM20100509-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/9/2010	KMM20100509-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/9/2010	KMM20100509-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/10/2010	WLH20100510-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/10/2010	ZHS20100510-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/11/2010	BTN20100511-01	Caretta caretta	Stranding	Dead	Salvaged	Necropsied	MS
5/12/2010	ZHS20100512-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied?	MS
5/12/2010	ZHS20100512-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied?	MS
5/12/2010	ZHS20100512-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied?	MS
5/12/2010	ZHS20100512-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied?	MS
5/12/2010	ZHS20100512-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied?	MS
5/13/2010	JXS20100513-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS?	MS
5/13/2010	CNH20100514-01	Caretta caretta	Stranding	Dead	Left on beach		MS
5/14/2010	JNF20100514-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS?	MS
5/14/2010	JNF20100514-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS?	MS
5/14/2010	SAH20100514-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/15/2010	LMJ20100515-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/15/2010	LMJ20100515-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/15/2010	JKM20100515-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS

5/15/2010	JKM20100515-02	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/15/2010	KMM20100515-01	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/16/2010	EXJ20100516-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/18/2010	KPB20100518-01	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/18/2010	KPB20100518-02	Caretta caretta	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/18/2010	WLH20100518-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/19/2010	MDH20100519-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/19/2010	MDH20100519-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/20/2010	TTH20100520-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/20/2010	JNF20100520-02	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/20/2010	JNF20100520-01	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/21/2010	RDS20100521-01	Caretta caretta	Stranding	Dead	Left on beach		MS
5/21/2010	JNF20100521-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/21/2010	JNF20100521-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/22/2010	TTH20100522-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/24/2010	WLH20100524-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/24/2010	AJD20100524-01	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/26/2010	JXB20100526-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/26/2010	CNH20100526-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/26/2010	WLH20100526-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/27/2010	JBT20100527-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/27/2010	JKM20100527-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/27/2010	MJB20100527-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/28/2010	JNF20100528-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/28/2010	RAW20100528-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/3/2010	20100603	Unknown	Stranding	Dead	Salvaged	Frozen-Pasc	MS
6/4/2010	DKV20100604-01	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/5/2010	JNF20100605-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/5/2010	JNF20100605-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/5/2010	JNF20100605-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	20100606	Unknown	Stranding	Dead	Salvaged	Frozen-Pasc	MS
6/6/2010	MJK20100606-01	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	MJK20100606-02	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	MJK20100606-03	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS

6/6/2010	MJK20100606-04	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	MJK20100606-05	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	JBT20100606-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	JBT20100606-02	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	JBT20100606-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	JBT20100606-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	JBT20100606-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	JBT20100606-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/7/2010	20100607	Unknown	Stranding	Dead	Salvaged	Frozen-Pasc	MS
6/7/2010	WLH20100607-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/7/2010	KMH20100607-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/8/2010	WLH20100608-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/8/2010	WLH20100608-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/9/2010	WLH20100609-01	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/9/2010	WLH20100609-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/9/2010	JBT20100609-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/9/2010	JBT20100609-02	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/9/2010	JBT20100609-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	SLE20100610-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	SLE20100610-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	SLE20100610-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	SLE20100610-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	SLE20100610-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	RAW20100610-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	RAW20100610-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	RAW20100610-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	RAW20100610-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	RAW20100610-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	RAW20100610-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	20100610	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Pasc?	MS
6/10/2010	20100610	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Pasc?	MS
6/10/2010	20100610	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Pasc?	MS
6/10/2010	20100610	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Pasc?	MS
6/10/2010	WLH20100610-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS

6/10/2010	WLH20100610-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	20100611	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/11/2010	20100611	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/11/2010	WLH20100611-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-07	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-08	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-09	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-10	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-11	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-12	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-13	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	JBT20100611-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	JBT20100611-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	JBT20100611-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	JBT20100611-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	WLH20100612-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	WLH20100612-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	WLH20100612-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	WLH20100612-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	WLH20100612-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	WLH20100612-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	RCL20100612-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	20100612	Caretta caretta	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	20100612	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/13/2010	20100613	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/13/2010	20100613	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/13/2010	20100613	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/13/2010	20100613	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/13/2010	20100613	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/13/2010	20100613	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/13/2010	20100613	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS

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6/13/2010	LAB20100613-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Pasc?	MS
6/14/2010	20100614	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/18/2010	BXW20100518-01	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
5/20/2010	MXT20100520-01	Caretta caretta	Directed Capture	Alive	Rehab	Rehab-AOA	
5/20/2010	MXT20100520-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
5/31/2010	BAS20100531-01	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
5/31/2010	BAS20100531-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
5/31/2010	BAS20100531-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
5/31/2010	BAS20100531-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
5/31/2010	BAS20100531-05	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
5/31/2010	BAS20100531-06	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
5/31/2010	BAS20100531-07	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	BAS20100601-01	Lepidochelys kempii	Directed Capture	Alive	Rehab-Died?	Necropsied?	
6/1/2010	BAS20100601-02	Lepidochelys kempii	Directed Capture	Alive	Rehab-Died?	Necropsied?	
6/1/2010	BAS20100601-03	Lepidochelys kempii	Directed Capture	Alive	Rehab-Died?	Necropsied?	
6/1/2010	BAS20100601-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	BAS20100601-05	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	BAS20100601-06	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	BAS20100601-07	Caretta caretta	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	BAS20100601-08	Eretmochelys imbricata	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	BAS20100601-09	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	BAS20100601-10	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	XXX20100601-01	Lepidochelys kempii	Directed Capture	Dead	Salvaged	Necropsied	
6/1/2010	XXX20100601-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	XXX20100601-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	XXX20100601-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	XXX20100601-05	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/6/2010	BAS20100606-01	Eretmochelys imbricata	Directed Capture	Alive	Rehab	Rehab-AOA	
6/6/2010	BAS20100606-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/6/2010	BAS20100606-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/6/2010	BAS20100606-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/6/2010	BAS20100606-05	Lepidochelys kempii	Directed Capture	Dead	Salvaged	Necropsied	
6/10/2010	BAS20100610-01	Lepidochelys kempii	Directed Capture	Dead	Salvaged	Necropsied	
6/10/2010	BAS20100610-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	

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6/10/2010	BAS20100610-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/10/2010	BAS20100610-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/12/2010	BAS20100612-01	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/12/2010	BAS20100612-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/12/2010	BAS20100612-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/13/2010	BAS20100613-01	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/13/2010	BAS20100613-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/13/2010	BAS20100613-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/13/2010	BAS20100613-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/13/2010	BAS20100613-05	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/13/2010	BAS20100613-06	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/13/2010	BAS20100613-07	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/13/2010	BAS20100613-08	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/13/2010	BAS20100613-09	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/13/2010	20100613	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/13/2010	20100613	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-01	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-05	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-06	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-07	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-08	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-09	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-10	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-11	Caretta caretta	Directed Capture	Alive	Rehab	Rehab-AOA

Descriptive Location	Latitude	Longitude	External oil?	TempLocation	Stranding	New	Alive
"Lots of Sand Dunes" Condo, Baldwin Co	30.232019	-87.936861	N	No	Yes	No	N
eastern point of Dauphin Island	30.250125	-88.075553	N	No	Yes	No	N
Dauphin Island	30.248253	-88.125822	N	No	Yes	No	N
floating 2 miles North of Fort Gaines	30.268880	-88.071720	N	No	Yes	No	N
Dauphin Island	30.332274	-88.132595	N	No	Yes	No	N
Dauphin Island	30.248253	-88.125822	N	No	Yes	No	N
Mobile Bay, 4 miles south of Fowl River	30.395431	-88.107261	N	No	Yes	No	N
Mobile Bay, 7287 Bay Rd	30.552467	-88.123317	N	No	Yes	No	N
floating off of Bayou La Batre	30.368167	-88.278317	N	No	Yes	No	N
Coden	30.445639	-88.109028	N	No	Yes	No	N
Dauphin Island	30.250164	-88.162886	N	No	Yes	No	N
Donnie Grace, bay side	30.249856	-88.202100	N	No	Yes	No	N
outside Weeks Bay toward Fish River Reef	30.367914	-87.839833	N	No	Yes	No	N
18261 Scenic Hwy 98	30.492133	-87.929833	N	No	Yes	No	N
Dauphin Island	30.249450	-88.172633	N	No	Yes	No	N
Gulf Shores	30.253417	-87.823317	N	No	Yes	No	N
Bayou La Batre	30.381033	-88.267233	N	No	Yes	No	N
pier across from Fort Morgan Museum	30.230283	-88.023694	N	No	Yes	No	N
Baldwin Co	30.250570	-87.828960	N	No	Yes	No	N
Baldwin Co	30.228430	-87.861390	N	No	Yes	No	N
Baldwin Co	30.231160	-87.928990	N	No	Yes	No	N
200 yds SE of city pier	30.245610	-88.124230	N	No	Yes	No	N
Hwy 193 past Hwy 188, Mobile Co	30.370900	-88.109670	N	No	Yes	No	N
east of Dauphin Is public fishing pier on Sand Is	30.247186	-88.125303	N	No	Yes	No	N
Little Dauphin Is, north side	30.274270	-88.111150	N	No	Yes	No	N
Audubon Place beach	30.243830	-88.092890	N	No	Yes	No	N
bay side of Sand Island	30.227653	-88.113175	N	No	Yes	No	N
Coden	30.377883	-88.241517	N	No	Yes	No	N
Mobile Bay, 1 mile south of Fowl River	30.425728	-88.103975	N	No	Yes	No	N
Hwy 98 on county rd 1, near Pelican Island	30.378320	-87.851020	N	No	Yes	No	N
Dauphin Island	30.247530	-88.124480	N	No	Yes	No	N
mouth of Bayou La Batre, Mobile Bay	30.375000	-88.285000	N	No	Yes	No	Y
Dauphin Island, west end	30.386400	-88.560983	N	No	Yes	No	N

Dauphin Island, west end	30.386400	-88.560983	N	No	Yes	No	N
Coden	30.006272	-88.004007	N	No	Yes	No	N
Dauphin Island	30.244817	-88.114433	N	No	Yes	No	N
Bayou La Batre	30.381586	-88.257034	N	No	Yes	No	Y
floating near Bayou La Batre	30.376750	-88.258480	N	No	Yes	No	N
Mobile Bay	30.591497	-88.063306	N	No	Yes	No	N
Shore Rd of CR12	30.358870	-87.832670	N	No	Yes	No	N
Plash Island	30.282700	-87.751230	N	No	Yes	No	N
Dauphin Island	30.250000	-88.200000	N	Yes	Yes	No	N
Dauphin Island	30.270000	-88.150000	N	Yes	Yes	No	N
Mobile Bay	30.400000	-88.100000	N	Yes	Yes	No	N
Mobile Bay	30.500000	-88.100000	N	Yes	Yes	No	N
Mobile Bay	30.300000	-87.750000	N	Yes	Yes	No	N
west end of Dauphin Island	30.220000	-88.330000	N	Yes	Yes	No	N
Dauphin Island, bayside	30.260000	-88.110000	N	Yes	Yes	No	N
Mobile Bay	30.300000	-87.970000	N	Yes	Yes	No	N
floating in MS Sound near Coden Bayou	30.350000	-88.220000	N	Yes	Yes	No	N
floating in Perdido Pass near Orange Beach	30.278471	-87.555537	Y	No	Yes	No	Y
floating south of Coden	30.374000	-88.240000	N	Yes	Yes	No	N
East Beach, Baldwin County	30.248301	-87.676815	Y	No	Yes	No	Y
Bon Secour Bay	30.300000	-87.875000	N	Yes	Yes	No	N
W Dauphin Island	30.250000	-88.060000	N	Yes	Yes	No	N
floating off of Bayou La Batre	30.340000	-88.310000	N	Yes	Yes	No	N
Mobile Bay, east side	30.450000	-87.930000	N	Yes	Yes	No	N
Mobile Bay, west side	30.450000	-88.090000	N	Yes	Yes	No	N
Gulf Shores	30.251060	-87.653670	N	No	Yes	No	N
Bayou La Batre	30.366460	-88.244330	N	No	Yes	No	N
~100 ft from Fairhope Municipal Pier	30.525780	-88.917040	N	No	Yes	No	N
Panama City Beach	30.19650	-85.84358	N	No	Yes	No	N
Panama City Beach	30.2442	-85.93718	N	No	Yes	No	Y
Panama City Beach	30.16782	-85.794	N	No	Yes	No	N
Panama City Beach	30.21513	-85.87758	N	No	Yes	No	N
Pensacola Beach	30.32589	-87.17208	N	No	Yes	No	N
St. Joseph Peninsula State Park	29.77851	-85.40833	N	No	Yes	No	N

Perdido Key State Park	30.28801	-87.47814	N	No	Yes	No	N
East Walton County Beach, Orange St access	30.2724	-86.00381	N	No	Yes	No	Y
Naval Live Oaks (Headquarters), GUIS	30.36422	-87.12725	N	No	Yes	No	N
Tyndall AFB, Archery Rd beach, east of marina	30.08165	-85.62992	N	No	Yes	No	N
Panama City Beach	30.18925	-85.83112	N	No	Yes	No	N
Perdido Key area of Gulf Islands NS	30.30350	-87.39394	N	No	Yes	No	N
Santa Rosa area of Gulf Islands NS	30.35489	-87.01419	N	No	Yes	No	N
west Walton County	30.37170	-86.34960	N	No	Yes	No	N
Crooked Island east, Tyndall AFB	29.95664	-85.47378	N	No	Yes	No	N
Crooked Island west, Tyndall AFB	30.02786	-85.56911	N	No	Yes	No	N
Walton County, east of Draper Lake	30.34060	-86.21480	N	No	Yes	No	N
Panama City Beach	30.26268	-85.97958	N	No	Yes	No	N
St. Andrews Bay, Bunkers Cove at yacht club	30.14250	-85.64920	N	No	Yes	No	N
Pensacola Beach	30.33619	-87.11075	N	No	Yes	No	Y
Tyndall AFB, Crooked Island east at boardwalk	29.95634	-85.45734	N	No	Yes	No	N
St. Joe Beach	29.90192	-85.36683	N	No	Yes	No	N
Rosemary Beach, Walton County	30.28000	-86.03000	N	Yes	Yes	No	N
Naval Live Oaks, south beach on Santa Rosa sound	30.36074	-87.14003	N	No	Yes	No	N
Perdido Key	30.29619	-87.42647	N	No	Yes	No	Y
Panama City, Baypoint Marina Yacht Club	30.14352	-85.72778	N	No	Yes	No	N
Navarre Beach	30.37590	-86.88760	N	No	Yes	No	N
St. Andrews Bay	30.16385	-85.68565	N	No	Yes	No	N
Pensacola Naval Air Station, Trout Point Beach	30.33185	-87.34040	N	No	Yes	No	N
W Escambia County, inshore, floating	30.31250	-87.49710	N	No	Yes	No	N
Cape San Blas	29.68224	-85.31182	N	No	Yes	No	N
St. Andrews Bay, Sun Harbor Marina, Panama City	30.18415	-85.73262	N	No	Yes	No	N
Panama City Beach	30.16000	-85.81000	N	Yes	Yes	No	N
St. Vincent NWR	29.67590	-85.21767	N	No	Yes	No	N
Port of Panama City	30.17795	-85.72493	N	No	Yes	No	N
Pensacola	30.29000	-87.25000	N	Yes	Yes	No	Y
Panama City, Inlet Beach	30.19000	-85.87000	N	Yes	Yes	No	Y
West Miramar Beach	30.37000	-86.40000	N	Yes	Yes	No	N
Pensacola	30.30000	-87.30000	N	Yes	Yes	No	Y
approx 1 mile off of Pensacola Beach	30.28000	-87.18000	Y	Yes	Yes	No	Y

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Eglin AFB, just east of Navarre Beach	30.37000	-86.86000	N	Yes	Yes	No	N
Navarre Beach			N	Yes	Yes	Yes	N
Pensacola Beach			N	Yes	Yes	No	N
Pensacola Beach			N	Yes	Yes	Yes	N
Elmers Island	29.17027	-90.08316	N	No	Yes	No	N
Elmers Island	29.18166	-90.06428	N	No	Yes	No	N
Slidell area, Lake Borgne	30.13447	-89.50054	N	No	Yes	No	N
Grand Isle	29.24	-89.98	N	Yes	Yes	No	N
Elmers Island	29.17235	-90.07981	N	No	Yes	No	N
Rutherford Beach	29.76692	-93.16193	N	No	Yes	No	N
Rutherford Beach	29.76879	-93.17164	N	No	Yes	No	N
Rutherford Beach	29.76972	-93.17667	N	No	Yes	No	N
Rutherford Beach	29.77171	-93.18671	N	No	Yes	No	N
Rutherford Beach	29.7732	-93.19467	N	No	Yes	No	N
Rutherford Beach	29.77341	-93.19683	N	No	Yes	No	N
Rutherford Beach	29.77354	-93.19756	N	No	Yes	No	N
Rutherford Beach	29.77576	-93.21589	N	No	Yes	No	N
Rutherford Beach	29.77738	-93.2461	N	No	Yes	No	N
Rutherford Beach	29.77728	-93.25497	N	No	Yes	No	N
Rutherford Beach	29.77728	-93.25497	N	No	Yes	No	N
Rutherford Beach	29.76578	-93.15643	N	No	Yes	No	N
Rutherford Beach	29.76119	-93.13665	N	No	Yes	No	N
Rutherford Beach	29.75513	-93.11017	N	No	Yes	No	N
floating near Slidell - Rigolets Pass	30.1588	-89.6505	N	No	Yes	No	N
Elmers Island	29.18184	-90.06364	N	No	Yes	No	N
Grand Isle	29.20786	-90.03112	N	No	Yes	No	N
Holly Beach	29.76897	-93.4392	N	No	Yes	No	N
Holly Beach	29.76879	-93.43438	N	No	Yes	No	N
Holly Beach	29.76922	-93.45638	N	No	Yes	No	N
Holly Beach	29.76897	-93.48772	N	No	Yes	No	N
Holly Beach	29.76771	-93.50714	N	No	Yes	No	N
Constance Beach	29.76031	-93.56936	N	No	Yes	No	N
Fourchon Beach	29.11	-90.18	N	Yes	Yes	No	N
Fourchon Beach	29.11	-90.18	N	Yes	Yes	No	N

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Mae's Beach	29.74595	-93.68512	N	No	Yes	No	N
Mae's Beach	29.74582	-93.68592	N	No	Yes	No	N
Mae's Beach	29.7423	-93.70653	N	No	Yes	No	Y
Grand Isle	30.1086	-89.3545	N	No	Yes	No	N
Grand Terre	29.209166	-90.029166	N	No	Yes	No	N
Grand Isle	29.28435	-89.92149	N	No	Yes	No	N
Holly Beach	29.74232	-93.7065	N	No	Yes	No	N
Holly Beach	29.76391	-93.36438	N	No	Yes	No	N
found floating, location?	29.23	-89.99	N	Yes	Yes	No	N
Mae's Beach	29.7424	-93.7062	N	No	Yes	No	Y
Long Beach	29.7534	-93.6293	N	No	Yes	No	N
Long Beach	29.7509	-93.6492	N	No	Yes	No	N
Mae's Beach	29.7396	-93.7208	N	No	Yes	No	N
Constance Beach	29.7605	-93.5674	N	No	Yes	No	N
Holly Beach	29.7683	-93.5018	N	No	Yes	No	N
Holly Beach	29.7689	-93.441	N	No	Yes	No	N
Rutherford Beach	29.7555	-93.1114	N	No	Yes	No	N
Rutherford Beach	29.7513	-93.0941	N	No	Yes	No	N
Rutherford Beach	29.7498	-93.0873	N	No	Yes	No	N
Bayou Rigaud, floating	29.14436	-89.59246	N	No	Yes	No	N
Lake Pontchartrain, floating	30.205	-90.11194	N	No	Yes	No	N
Fourchon Beach	29.09	-90.21566	N	No	Yes	No	N
near Cocodrie	29.24	-90.66	N	Yes	Yes	No	N
4 mi NE of Fishing Smack Bay	30.003805	-89.20633	N	No	Yes	No	N
Grand Isle Beach	29.24	-89.99	N	Yes	Yes	No	N
Empire Jetty Beach	29.25412	-89.60345	N	No	Yes	No	N
Grand Terre	29.28	-89.92	N	Yes	Yes	No	N
Bayou Terrebonne by Bayou La Fleur	29.26	-90.64	N	Yes	Yes	No	N
Lake Chien	29.33	-90.44	N	Yes	Yes	No	N
Bayou Trove	29.2386	-89.53792	N	No	Yes	No	N
Grand Isle State Park	29.24	-89.97	Y	Yes	Yes	No	N
Queen Bess Island	29.3	-89.96	N	Yes	Yes	No	N
Lake Felicity, North of Timbalier Island	29.26	-90.4	N	Yes	Yes	No	N
Lake Felicity, North of Timbalier Island	29.26	-90.47	N	Yes	Yes	No	N

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Lake Felicity, North of Timbalier Island	29.28	-90.42	N	Yes	Yes	No	N
Grand Isle Beach	29.2	-90.04	N	Yes	Yes	No	N
skimmer found ~50 mi S of Louisiana coastline, brou	28.4375	-89.8958	Y	No	Skimmer	No	Y
Cameron Parish beach	29.76	-93.34	N	Yes	Yes	No	N
skimmer found ~17 mi offshore Grand Isle	28.9932	-89.8412	Y	No	Skimmer	No	Y
Timbalier Island	29.04	-90.47	N	Yes	Yes	No	N
floating just offshore western LA beaches	29.76	-93.46	N	Yes	Yes	No	N
western Louisiana beaches	29.74	-93.42	N	Yes	Yes	No	N
western Louisiana beaches	29.74	-93.44	N	Yes	Yes	No	N
western Louisiana beaches	29.74	-93.46	N	Yes	Yes	No	N
Coup A Bel Pass	29.3	-89.9	Y	Yes	Yes	No	N
Marsh Island	29.5	-91.9	N	Yes	Yes	No	N
Barataria Bay	29.4	-89.94	Y	Yes	Yes	No	N
north Barataria Bay	29.43308	-89.88585	Y	No	Yes	No	N
western Louisiana, nearshore waters	29.7	-93	N	Yes	Yes	No	Y
Fourchon Beach	29.08	-90.14	N	Yes	Yes	No	N
no location info - est location in Chandeleur Sound			N	Yes	Yes	No	Y
Fourchon Beach			N	Yes	Yes	No	N
Rutherford Beach			N	Yes	Yes	Yes	N
Rutherford Beach			N	Yes	Yes	Yes	N
Rutherford Beach			N	Yes	Yes	Yes	N
Slidell area			N	Yes	Yes	Yes	N
Bay St. Louis	30.30880	-89.32590	N	No	Yes	No	N
Bay St. Louis	30.29410	-89.34320	N	No	Yes	No	N
Waveland	30.26410	-89.39200	N	No	Yes	No	N
Waveland	30.27260	-89.37750	N	No	Yes	No	N
Waveland	30.27360	-89.37640	N	No	Yes	No	N
Long Beach	30.34780	-89.13900	N	No	Yes	No	Y
Pass Christian	30.31481	-89.24207	N	No	Yes	No	N
Pass Christian	30.31071	-89.25556	N	No	Yes	No	N
Pass Christian	30.31460	-89.24252	N	No	Yes	No	N
Pass Christian	30.31080	-89.25728	N	No	Yes	No	N
Pass Christian	30.31295	-89.24477	N	No	Yes	No	N
Pass Christian	30.31082	-89.25535	N	No	Yes	No	N

Ocean Springs	30.40980	-88.84080	N	No	Yes	No	N
Bay St. Louis	30.31900	-89.32230	N	No	Yes	No	N
Waveland	30.28830	-89.36000	N	No	Yes	No	N
Waveland	30.28680	-89.36260	N	No	Yes	No	N
Pass Christian	30.30650	-89.26858	N	No	Yes	No	N
Pass Christian	30.30725	-89.26653	N	No	Yes	No	N
Bay St. Louis	30.30562	-89.32865	N	No	Yes	No	N
Pass Christian	30.32834	-89.19923	N	No	Yes	No	N
Pass Christian	30.30529	-89.27249	N	No	Yes	No	N
Pass Christian	30.32620	-89.20892	N	No	Yes	No	N
Pass Christian	30.32460	-89.21450	N	No	Yes	No	N
Biloxi	30.39289	-88.94716	N	No	Yes	No	N
Waveland	30.28865	-89.35290	N	No	Yes	No	N
Pass Christian	30.32824	-89.19985	N	No	Yes	No	N
Pass Christian	30.33144	-89.18568	N	No	Yes	No	N
Pass Christian	30.32144	-89.22351	N	No	Yes	No	N
Pass Christian	30.30750	-89.26659	N	No	Yes	No	N
Bay St. Louis	30.31558	-89.29004	N	No	Yes	No	N
Pass Christian	30.30525	-89.27421	N	No	Yes	No	N
Pass Christian	30.30989	-89.25963	N	No	Yes	No	N
Waveland	30.26362	-89.39346	N	No	Yes	No	N
Waveland	30.28670	-89.36321	N	No	Yes	No	N
Gulfport	30.35567	-89.11807	N	No	Yes	No	N
Waveland	30.24120	-89.42470	N	No	Yes	No	N
Gulfport	30.36948	-89.07825	N	No	Yes	No	N
Biloxi	30.39169	-88.95027	N	No	Yes	No	N
Biloxi	30.39271	-88.87608	N	No	Yes	No	N
Waveland	30.27834	-89.37222	N	No	Yes	No	N
Gulfport	30.37689	-89.04778	N	No	Yes	No	N
Waveland	30.27006	-89.38032	N	No	Yes	No	N
Bay St. Louis	30.30022	-89.33346	N	No	Yes	No	N
Pass Christian	30.32762	-89.20251	N	No	Yes	No	N
floating N of Ship Island	30.25080	-88.94120	N	No	Yes	No	N
Waveland	30.25685	-89.41499	N	No	Yes	No	N

Waveland	30.26483	-89.39040	N	No	Yes	No	N
Waveland	30.26471	-89.39070	N	No	Yes	No	N
Pass Christian, floating by Henderson Point	30.30320	-89.29570	N	No	Yes	No	N
Waveland	30.28749	-89.36136	N	No	Yes	No	N
Waveland	30.28790	-89.36065	N	No	Yes	No	N
Gulfport	30.36129	-89.10089	N	No	Yes	No	N
Long Beach	30.33749	-89.16818	N	No	Yes	No	N
Pass Christian	30.32775	-89.20048	N	No	Yes	No	N
Pass Christian	30.31166	-89.25018	N	No	Yes	No	N
Pass Christian	30.30335	-89.28335	N	No	Yes	No	N
Waveland	30.28267	-89.36761	N	No	Yes	No	N
Biloxi	30.39147	-88.95452	N	No	Yes	No	N
Biloxi	30.39385	-88.91407	N	No	Yes	No	N
Horn Island	30.22831	-88.64799	N	No	Yes	No	N
Pass Christian	30.31300	-89.24830	N	No	Yes	No	N
Pass Christian	30.31190	-89.29050	N	No	Yes	No	N
Gulfport	30.38250	-89.02280	N	No	Yes	No	N
Gulfport	30.38150	-89.02610	N	No	Yes	No	N
floating ~1/2 mile south of Biloxi bridge	30.38960	-88.84190	N	No	Yes	No	N
Waveland Beach at Nicholson Ave	30.29410	-89.35910	N	No	Yes	No	N
Pass Christian	30.32320	-89.21840	N	No	Yes	No	N
Gulfport Beach	30.35582	-89.11698	N	No	Yes	No	N
Gulfport Beach	30.33215	-89.18207	N	No	Yes	No	N
Lakeshore/Waveland	30.25117	-89.42138	N	No	Yes	No	N
Bay St. Louis	30.29545	-89.34080	N	No	Yes	No	N
Waveland	30.26715	-89.38553	N	No	Yes	No	N
Bay St. Louis	30.30980	-89.32553	N	No	Yes	No	N
West Ship Island	30.2115	-88.98480	N	No	Yes	No	N
Waveland	30.28248	-89.36733	N	No	Yes	No	N
Pass Christian	30.31406	-89.24347	N	No	Yes	No	N
Gulfport	30.37421	-89.04382	N	No	Yes	No	Y
Bay St. Louis	30.30883	-89.32583	N	No	Yes	No	N
Waveland	30.27683	-89.37367	N	No	Yes	No	N
Waveland	30.28064	-89.36495	N	No	Yes	No	Y

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Waveland	30.28127	-89.36557	N	No	Yes	No	Y
Pascagoula Beach	30.3433	-88.55500	N	No	Yes	No	N
Waveland	30.27234	-89.37753	N	No	Yes	No	N
SE Horn Island	30.2207	-88.59330	N	No	Yes	No	N
southside Cat Island	30.2283	-89.07330	N	No	Yes	No	N
Pass Christian	30.31352	-89.24396	N	No	Yes	No	N
Bellefontaine Beach	30.3433	-88.70330	N	No	Yes	No	N
water south of Cadet Point, Biloxi	30.3877	-88.85890	N	No	Yes	No	N
Waveland	30.28063	-89.36495	N	No	Yes	No	Y
Biloxi Bay	30.40980	-88.86906	N	No	Yes	No	N
Biloxi Bay	30.40980	-88.86906	N	No	Yes	No	N
Horn Island, ~3000' from W end	30.2398	-88.76870	N	No	Yes	No	N
Waveland	30.28655	-89.36330	N	No	Yes	No	N
Pass Christian	30.30725	-89.26660	N	No	Yes	No	N
Waveland	30.28063	-89.36495	N	No	Yes	No	Y
Long Beach	30.33743	-89.16837	N	No	Yes	No	N
Biloxi Beach	30.39154	-88.95600	N	No	Yes	No	N
north side of Horn Island	30.22307	-88.62952	N	No	Yes	No	N
Bangs Lake off of Pascagoula	30.3588	-88.47300	N	No	Yes	No	N
Biloxi, Back Bay	30.40079	-88.85896	N	No	Yes	No	N
Ocean Springs, McPherson Pier	30.40397	-88.83031	N	No	Yes	No	Y
Waveland	30.28063	-89.36495	N	No	Yes	No	Y
Ocean Springs	30.40397	-88.83031	N	No	Yes	No	Y
Biloxi, near Palace Casino	30.3959	-88.85830	N	No	Yes	No	N
Ocean Springs	30.40397	-88.83031	N	No	Yes	No	Y
Ocean Springs	30.41	-88.83500	N	Yes	Yes	No	N
Gulfport	30.35487	-89.12191	N	No	Yes	No	N
Waveland	30.26605	-89.38722	N	No	Yes	No	N
Long Beach	30.34084	-89.15894	N	No	Yes	No	N
Biloxi, near harbor	30.39268	-88.88209	N	No	Yes	No	N
Gautier	30.34	-88.64000	N	Yes	Yes	No	N
Biloxi	30.39158	-88.94994	N	No	Yes	No	N
Biloxi	30.39184	-88.94596	N	No	Yes	No	N
Biloxi	30.39183	-88.94596	N	No	Yes	No	N

Biloxi	30.39184	-88.94576	N	No	Yes	No	N
Biloxi	30.39262	-88.93246	N	No	Yes	No	N
Biloxi Beach	30.3932	-88.90645	N	No	Yes	No	N
Biloxi Beach	30.39353	-88.92310	N	No	Yes	No	N
Biloxi Beach	30.39382	-88.91889	N	No	Yes	No	N
Biloxi Beach	30.39375	-88.92016	N	No	Yes	No	N
Biloxi Beach	30.39108	-88.96432	N	No	Yes	No	N
Biloxi Beach	30.38968	-88.97850	N	No	Yes	No	N
Ocean Springs	30.31	-88.70000	N	Yes	Yes	No	N
Gulfport Beach	30.3597	-89.10686	N	No	Yes	No	N
Biloxi Beach	30.3938	-88.91200	N	No	Yes	No	N
Gulfport Beach	30.37834	-89.04083	N	No	Yes	No	N
Gulfport Beach	30.38538	-89.01003	N	No	Yes	No	N
Gulfport Beach	30.37825	-89.04118	N	No	Yes	No	N
Gulfport Beach	30.3844	-89.01535	N	No	Yes	No	N
Biloxi Beach	30.38942	-88.98023	N	No	Yes	No	N
Biloxi Beach	30.39028	-88.97433	N	No	Yes	No	N
Biloxi Beach	30.39357	-88.89623	N	No	Yes	No	N
Gulfport Beach	30.3831	-89.0192	N	No	Yes	No	N
Biloxi Beach	30.3914	-89.0069	N	No	Yes	No	N
Biloxi Beach	30.39	-88.9756	N	No	Yes	No	N
Biloxi Beach	30.3875	-88.9942	N	No	Yes	No	N
Biloxi Beach	30.3889	-88.9847	N	No	Yes	No	N
Gulfport Beach	30.37058	-89.0742	N	No	Yes	No	N
Gulfport Beach	30.3706	-89.07417	N	No	Yes	No	N
Gulfport Beach	30.37131	-89.07161	N	No	Yes	No	N
Gulfport Beach	30.37158	-89.07066	N	No	Yes	No	N
Gulfport Beach	30.3768	-89.07045	N	No	Yes	No	N
Gulfport Beach	30.37262	-89.06721	N	No	Yes	No	N
Biloxi-Gulfport area	30.38	-89	N	Yes	Yes	No	N
Biloxi-Gulfport area	30.385	-88.98	N	Yes	Yes	No	N
Biloxi-Gulfport area	30.37	-89.04	N	Yes	Yes	No	N
Biloxi-Gulfport area	30.39	-88.94	N	Yes	Yes	No	N
Gulfport Beach	30.37746	-89.0433	N	No	Yes	No	N

Gulfport Beach	30.37819	-89.0416	N	No	Yes	No	N
Waveland	30.28	-89.36	N	Yes	Yes	No	Y
Biloxi	30.38	-88.88	N	Yes	Yes	No	Y
Gulfport Beach	30.37819	-89.0416	N	No	Yes	No	N
Gulfport Beach	30.37819	-89.0416	N	No	Yes	No	N
Gulfport Beach	30.37843	-89.0413	N	No	Yes	No	N
Gulfport Beach	30.37837	-89.04101	N	No	Yes	No	N
Gulfport Beach	30.37457	-89.0563	N	No	Yes	No	N
Gulfport Beach	30.37456	-89.05634	N	No	Yes	No	N
Biloxi Beach	30.3887	-88.98878	N	No	Yes	No	N
Biloxi Beach	30.38877	-88.98797	N	No	Yes	No	N
Biloxi Beach	30.38877	-88.98797	N	No	Yes	No	N
Biloxi Beach	30.38886	-88.9741	N	No	Yes	No	N
Biloxi Beach	30.38886	-88.98734	N	No	Yes	No	N
Pass Christian Beach	30.32762	-89.20251	N	No	Yes	No	N
Gulfport Beach	30.38188	-89.02495	N	No	Yes	No	N
Gulfport Beach	30.38393	-89.01701	N	No	Yes	No	N
Gulfport Beach	30.38583	-89.00827	N	No	Yes	No	N
Biloxi Beach	30.39182	-88.94774	N	No	Yes	No	N
Biloxi Beach	30.39328	-88.92583	N	No	Yes	No	N
Biloxi Beach	30.37561	-89.09052	N	No	Yes	No	N
Biloxi Beach	30.37571	-89.05148	N	No	Yes	No	N
Biloxi Beach	30.38738	-89	N	No	Yes	No	N
Biloxi Beach	30.38746	-88.99895	N	No	Yes	No	N
near Horn Island - floating?	30.2333	-88.53093	N	No	Yes	No	N
floating off of Gulfport	30.32007	-89.17917	N	No	Yes	No	N
Biloxi-Gulfport area			N	Yes	Yes	No	N
Biloxi-Gulfport area			N	Yes	Yes	No	N
Biloxi-Gulfport area			N	Yes	Yes	No	N
Biloxi-Gulfport area			N	Yes	Yes	No	N
Biloxi-Gulfport area			N	Yes	Yes	No	N
Waveland Pier	30.2806	-89.3449	N	No	Yes	No	Y
Waveland Pier	30.2806	-89.3449	N	No	Yes	No	Y
Waveland Pier	30.2806	-89.3449	N	No	Yes	No	Y

west side of Deer Island			N	Yes	Yes	Yes	N
Biloxi			N	Yes	Yes	Yes	N
Directed Capture	28.4665	-88.46116	Y	No	No	No	Y
Directed Capture	28.96778	-88.79333	Y	No	No	No	Y
Directed Capture	28.90722	-88.80167	Y	No	No	No	Y
Directed Capture	28.9597	-88.5342	Y	No	No	No	Y
Directed Capture	28.9182	-88.5552	Y	No	No	No	Y
Directed Capture	28.865	-88.5658	Y	No	No	No	Y
Directed Capture	28.8538	-88.5617	Y	No	No	No	Y
Directed Capture	28.847	-88.5588	Y	No	No	No	Y
Directed Capture	28.8405	-88.5557	Y	No	No	No	Y
Directed Capture	28.6573	-88.4313	Y	No	No	No	Y
Directed Capture	28.8045	-88.4771	Y	No	No	No	Y
Directed Capture	28.804483	-88.4771	Y	No	No	No	Y
Directed Capture	28.80725	-88.47808	Y	No	No	No	Y
Directed Capture	28.813483	-88.480383	Y	No	No	No	Y
Directed Capture	28.81535	-88.479233	Y	No	No	No	Y
Directed Capture	28.81669	-88.47803	Y	No	No	No	Y
Directed Capture	28.828083	-88.37115	Y	No	No	No	Y
Directed Capture	28.829617	-88.471267	Y	No	No	No	Y
Directed Capture	28.826867	-88.464933	Y	No	No	No	Y
Directed Capture	28.834317	-88.42455	Y	No	No	No	Y
Directed Capture - LDWF	29.09	-89.78	Y	No	No	No	N
Directed Capture - LDWF	29.0919	-89.7781	Y	No	No	No	Y
Directed Capture - LDWF	29.0932	-89.7747	Y	No	No	No	Y
Directed Capture - LDWF	29.0998	-89.7574	Y	No	No	No	Y
Directed Capture - LDWF	29.1065	-89.748	Y	No	No	No	Y
Directed Capture	29.01025	-88.26369	Y	No	No	No	Y
Directed Capture	29.01025	-88.26369	Y	No	No	No	Y
Directed Capture	29.01025	-88.26369	Y	No	No	No	Y
Directed Capture	29.02569	-88.25586	Y	No	No	No	Y
Directed Capture	29.17372	-88.16519	Y	No	No	No	N
Directed Capture	28.7538	-88.85602	Y	No	No	No	N
Directed Capture	28.75114	-88.84875	Y	No	No	No	Y

Directed Capture	28.62252	-88.55688	Y	No	No	No	Y
Directed Capture	28.76398	-88.82482	Y	No	No	No	Y
Directed Capture	28.66965	-88.49193	Y	No	No	No	Y
Directed Capture	28.91208	-88.68748	Y	No	No	No	Y
Directed Capture	28.70114	-88.53979	Y	No	No	No	Y
Directed Capture	28.92108	-88.7991	Y	No	No	No	Y
Directed Capture	28.92094	-88.79822	Y	No	No	No	Y
Directed Capture	28.92891	-88.77321	Y	No	No	No	Y
Directed Capture	28.928	-88.7701	Y	No	No	No	Y
Directed Capture	28.92558	-88.74215	Y	No	No	No	Y
Directed Capture	28.93916	-88.71402	Y	No	No	No	Y
Directed Capture	28.94739	-88.70053	Y	No	No	No	Y
Directed Capture	28.96491	-88.67766	Y	No	No	No	Y
Directed Capture	28.98004	-88.65568	Y	No	No	No	Y
Directed Capture - LDWF	28.72474	-88.55243	Y	No	No	No	Y
Directed Capture - LDWF	28.81743	-88.63998	Y	No	No	No	Y
Directed Capture			Y		No	Yes	Y
Directed Capture			Y		No	Yes	Y
Directed Capture			Y		No	Yes	Y
Directed Capture			Y		No	Yes	Y
Directed Capture			Y		No	Yes	Y
Directed Capture			Y		No	Yes	Y
Directed Capture			Y		No	Yes	Y
Directed Capture			Y		No	Yes	Y
Directed Capture			Y		No	Yes	Y
Directed Capture			Y		No	Yes	Y
Directed Capture			Y		No	Yes	Y

Symbol	Log #	Comments
C		outside of area of concern
C		outside of area of concern
C		outside of area of concern
C		outside of area of concern
C		outside of area of concern
C		outside of area of concern
C		outside of area of concern
C		outside of area of concern
C	D-0002 BSNWR	
C	D-0001 BSNWR	
C	D-0003 BSNWR	
C	D-0004 BSNWR	
C	D-0005 BSNWR	
C	D-0006 BSNWR	
C	D-0007 BSNWR	
C	D-0008 BSNWR	
C	D-0009 BSNWR	
C	D-0010 BSNWR	
C	D-0015 BSNWR	
C	D-0014 BSNWR	
C	D-0011 BSNWR	
C	D-0012 BSNWR	
C	D-0013 BSNWR	
C	D-0016 BSNWR	
C	D-0017 BSNWR	dried carcass
C	D-0018 BSNWR	
C	D-0019 BSNWR	
C	D-0020 BSNWR	
C	D-0021 BSNWR	
C	D-0023 BSNWR	
C	D-0022 BSNWR	
C	L-0001 BSNWR	
C	D-0024 BSNWR	

C	D-0025 BSNWR	
C	D-0026 BSNWR	
C	D-0027 BSNWR	
C	L-0007 IMMS	emaciated; taken to IMMS for rehab; died 5/25, shipped to UF for necropsy
C	D-0028 BSNWR	
C	D-0029 BSNWR	
C	D-0030 BSNWR	
C	D-0031 BSNWR	
U		
U		
U		
U		
U		
U		
U		
U		
U		
C	L-0012 IMMS	found floating next to boom; externally oiled turtle; taken to IMMS for rehab
U		
C	L-0013 IMMS	externally oiled turtle; taken to IMMS for rehab
U		
U		too decomposed for necropsy
U		
U		
U		
C		parts only - head, guts and 1 flipper
C		
C		
C		very emaciated, missing part of RRF
C		very emaciated; taken to Gulf World, died soon after recovery
C		no head, flippers or internal organs
C		brown algae on carapace; some small barnacles on skin; adult female
C		prop damage to right side of carapace
C		no wounds; barnacles and algae on carapace; adult male

C	missing notch from right side carapace; barnacle and algae growth
C	barnacles on carapace and flippers; taken to Gulf World, died same day
C	apparent piece of metal in ventral LFF near insertion
C	dried carcass; little skin remaining, bones visible
C	no head or front flippers, shark bites
C	missing both front flippers and lrf
C	carapace completely covered w/barnacles and algae; adult female
C	emaciated, lots of barnacles, damage to base of front flippers and neck
C	
C	
C	in pieces, decomposed
C	carapace broken, pieces missing
C	skin and scutes peeling
C	numerous barnacles and light algae on carapace; taken to Gulfarium
C	old wound to posterior marginals; scutes peeling
C	posterior carapace gone; plastron missing; falling apart, nasty
U	
C	apparent skeg/prop damage to center carapace
C	caught on hook and line, hook in throat; taken to Gulfarium
C	prop wounds to right posterior carapace; heavy barnacles,small barnacles on skin
C	2 apparent prop wounds across carapace
C	skin and scutes peeling, very decomposed
C	fishing line entangled around neck
C	no head or flippers; damage to carapace - likely prop
C	missing skull; carapace bones disarticulating due to decomp
C	missing head and LFF, possible shark bites; gashes on plastron
U	
C	carapace bones disarticulating due to decomp
C	dried carcass; carapace broken across posterior; portions missing
U	caught on hook and line, hook removed and turtle released
U	
U	
U	
U	caught by relocation trawler; ~50% coverage of thin oil sheen, also sheen in mouth

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U	
N	
U	
N	in pieces due to decomp, unable to salvage
C	
C	
C	
U	
C	
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C	
C	
C	
C	
C	
C	
C	
C	
C	
C	
C	
C	
C	
C	
C	parts only
C	
C	
C	
C	
C	
C	
C	
U	
U	

2010-00512

C	swab sample taken
C	swab sample taken
C	taken to AOA for rehab
C	
C	
C	
C	swab sample taken
C	swab sample taken
U	
C	taken to AOA for rehab
C	swab sample taken
C	swab sample taken
C	swab sample taken
C	swab sample taken
C	swab sample taken
C	swab sample taken
C	swab sample taken
C	swab sample taken
C	swab sample taken
C	
C	
C	
U	
C	
U	
C	
U	
U	
U	
C	
U	
U	partial carcass, pieces only
U	
U	

U		
U		
C		
U		
C		
U		
U		
U		
U		
U		
U		
U		
C		
U		
U		
U		
U		
N		
N		
N		
N		
C	D-0029 IMMS	
C	D-0030 IMMS	
C	D-0031 IMMS	
C	D-0032 IMMS	
C	D-0033 IMMS	
C	L-0001 IMMS	taken to IMMS, died in rehab, frozen for necropsy
C	D-0001 IMMS	
C	D-0002 IMMS	
C	D-0003 IMMS	
C	D-0004 IMMS	
C	D-0005 IMMS	
C	D-0006 IMMS	

C	D-0034 IMMS
C	D-0007 IMMS
C	D-0008 IMMS
C	D-0009 IMMS
C	D-0010 IMMS
C	D-0011 IMMS
C	D-0012 IMMS
C	D-0013 IMMS
C	D-0014 IMMS
C	D-0015 IMMS
C	D-0016 IMMS
C	D-0017 IMMS
C	D-0018 IMMS
C	D-0019 IMMS
C	D-0020 IMMS
C	D-0021 IMMS
C	D-0022 IMMS
C	D-0023 IMMS
C	D-0024 IMMS
C	D-0025 IMMS
C	D-0026 IMMS
C	D-0027 IMMS
C	D-0028 IMMS
C	D-0035 IMMS
C	D-0036 IMMS
C	D-0037 IMMS
C	D-0038 IMMS
C	D-0039 IMMS
C	D-0040 IMMS
C	D-0041 IMMS
C	D-0042 IMMS
C	D-0043 IMMS
C	D-0044 IMMS
C	D-0045 IMMS

C	D-0046 IMMS	
C	D-0047 IMMS	carcass in two pieces
C	D-0048 IMMS	
C	D-0049 IMMS	
C	D-0050 IMMS	
C	D-0051 IMMS	
C	D-0052 IMMS	
C	D-0053 IMMS	
C	D-0054 IMMS	
C	D-0055 IMMS	
C	D-0056 IMMS	
C	D-0057 IMMS	
C	D-0058 IMMS	
C	D-0063 IMMS	Decapitated, missing portions of flippers due to decomp; first reported on 5/8
C	D-0059 IMMS	
C	D-0060 IMMS	
C	D-0061 IMMS	
C	D-0062 IMMS	
C	D-0064 IMMS	
C	D-0065 IMMS	
C	D-0066 IMMS	
C	D-0067 IMMS	
C	D-0068 IMMS	
C	D-0069 IMMS	
C	D-0070 IMMS	
C	D-0071 IMMS	
C	D-0072 IMMS	
C	D-0085 IMMS	field necropsy on beach; damaged LFF, carapace covered in barnacles; first rep 5/13
C	D-0073 IMMS	
C	D-0074 IMMS	
C	L-0002 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0075 IMMS	
C	D-0076 IMMS	carapace cracked/broken
C	L-0003 IMMS	incidentally captured on hook and line; taken to IMMS for rehab

C	L-0004 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0086 IMMS	"chopped up", likely prop wounds to carapace
C	D-0077 IMMS	red slimy substance covering carapace
C	D-0087 IMMS	skeletal remains
C	D-0088 IMMS	skeletal remains
C	D-0078 IMMS	
C	D-0089 IMMS	
C	D-0090 IMMS	floating, picked up by NPS
C	L-0005 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0079 IMMS	carapace only
C	D-0080 IMMS	carapace only
C	D-0091 IMMS	sample taken and logged, carcass painted and left on beach
C	D-0081 IMMS	
C	D-0082 IMMS	
C	L-0006 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0083 IMMS	
C	D-0092 IMMS	possible loggerhead, unsure of species ID
C	D-0093 IMMS	
C	D-0094 IMMS	carcass in plastic bag before oil swab taken
C	D-0084 IMMS	rear portion of carcass missing
C	L-0008 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	L-0009 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	L-0010 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0095 IMMS	carcass in plastic bag before oil swab taken; severe prop damage
C	L-0011 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
U		
C	D-0096 IMMS	mangled caudal half of carcass
C	D-0097 IMMS	
C	D-0098 IMMS	
C	D-0099 IMMS	old injury to edge of carapace
U		
C	D-0100 IMMS	
C	D-0101 IMMS	
C	D-0102 IMMS	

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C	D-0103 IMMS	
C	D-0104 IMMS	
C	D-0105 IMMS	scrapes along plastron
C	D-0106 IMMS	missing right edge of carapace, advanced decomp
C	D-0107 IMMS	
C	D-0108 IMMS	extra costal scute on L side
C	D-0109 IMMS	edges of marginal scutes broken, postmortem
C	D-0110 IMMS	extra vertebral scute
U		
C	D-0112 IMMS	
C	D-0111 IMMS	
C	D-0113 IMMS	
C	D-0114 IMMS	
C	D-0118 IMMS	severely mangled, no accurate meas possible
C	D-0119 IMMS	black substance in mouth
C	D-0115 IMMS	
C	D-0116 IMMS	
C	D-0117 IMMS	
C	D-0120 IMMS	
C	D-0121 IMMS	
C	D-0122 IMMS	
C	D-0123 IMMS	
C	D-0124 IMMS	
C	D-0125 IMMS	
C	D-0126 IMMS	
C	D-0127 IMMS	
C	D-0128 IMMS	
C	D-0129 IMMS	
C	D-0130 IMMS	
U		
U		
U		
U		
C	D-0131 IMMS	

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C	D-0132 IMMS
U	
U	
C	D-0133 IMMS
C	D-0134 IMMS
C	D-0135 IMMS
C	D-0136 IMMS
C	D-0137 IMMS
C	D-0138 IMMS
C	D-0139 IMMS
C	D-0140 IMMS
C	D-0141 IMMS
C	D-0142 IMMS
C	D-0143 IMMS
C	D-0144 IMMS
C	D-0145 IMMS
C	D-0146 IMMS
C	D-0147 IMMS
C	D-0148 IMMS
C	D-0149 IMMS
C	D-0150 IMMS
C	D-0151 IMMS
C	D-0152 IMMS
C	D-0153 IMMS
C	D-0154 IMMS
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Date	Stranding Reference	Species	ReportType	Condition	Disposition	Status	State
5/20/2010	MXT20100520-01	Caretta caretta	Directed Capture	Alive	Rehab	Rehab-AOA	
5/20/2010	MXT20100520-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
5/31/2010	BAS20100531-01	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
5/31/2010	BAS20100531-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
5/31/2010	BAS20100531-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
5/31/2010	BAS20100531-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
5/31/2010	BAS20100531-05	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
5/31/2010	BAS20100531-06	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
5/31/2010	BAS20100531-07	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	BAS20100601-01	Lepidochelys kempii	Directed Capture	Alive	Rehab-Died?	Necropsied?	
6/1/2010	BAS20100601-02	Lepidochelys kempii	Directed Capture	Alive	Rehab-Died?	Necropsied?	
6/1/2010	BAS20100601-03	Lepidochelys kempii	Directed Capture	Alive	Rehab-Died?	Necropsied?	
6/1/2010	BAS20100601-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	BAS20100601-05	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	BAS20100601-06	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	BAS20100601-07	Caretta caretta	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	BAS20100601-08	Eretmochelys imbricata	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	BAS20100601-09	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	BAS20100601-10	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	XXX20100601-01	Lepidochelys kempii	Directed Capture	Dead	Salvaged	Necropsied	
6/1/2010	XXX20100601-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	XXX20100601-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	XXX20100601-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	XXX20100601-05	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/6/2010	BAS20100606-01	Eretmochelys imbricata	Directed Capture	Alive	Rehab	Rehab-AOA	
6/6/2010	BAS20100606-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/6/2010	BAS20100606-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/6/2010	BAS20100606-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/6/2010	BAS20100606-05	Lepidochelys kempii	Directed Capture	Dead	Salvaged	Necropsied	
6/10/2010	BAS20100610-01	Lepidochelys kempii	Directed Capture	Dead	Salvaged	Necropsied	
6/10/2010	BAS20100610-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/10/2010	BAS20100610-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/10/2010	BAS20100610-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	

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5/2/2010	MRC20100502-01	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/2/2010	MRC20100502-02	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/3/2010	SNW20100503-01	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/3/2010	JMI20100503-01	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/3/2010	MPW20100503-01	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/4/2010	SNW20100504-01	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/4/2010	SNW20100504-02	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/4/2010	FXM20100504-01	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/5/2010	MPW20100505-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/5/2010	MRC20100505-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/6/2010	MPW20100506-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/6/2010	MPW20100506-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/7/2010	MPW20100507-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/7/2010	MPW20100507-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/8/2010	ANR20100508-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/8/2010	JMI20100508-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/10/2010	JMI20100510-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/11/2010	MPW20100511-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/13/2010	MPW20100513-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/13/2010	MPW20100513-02	Caretta caretta	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/13/2010	MRC20100513-01	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/13/2010	MRC20100513-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/13/2010	MRC20100513-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/14/2010	LAJ20100514-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/16/2010	LAJ20100516-01	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/17/2010	MRC20100517-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/18/2010	MPW20100518-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/18/2010	MPW20100518-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/18/2010	MPW20100518-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/18/2010	MRC20100518-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/19/2010	LAJ20100519-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/19/2010	JMI20100519-01	Lepidochelys kempii	Stranding	Alive	Released		AL
5/20/2010	LAJ20100520-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/20/2010	LAJ20100520-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL

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5/20/2010	LAJ20100520-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/21/2010	MPW20100521-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/22/2010	RLR20100522-01	Lepidochelys kempii	Stranding	Alive	Rehab-Died	Necropsied	AL
5/22/2010	JMI20100522-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/22/2010	JMI20100522-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/23/2010	JMI20100523-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/23/2010	JMI20100523-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/24/2010	20100524	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/24/2010	20100524	Unknown	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/24/2010	20100524	Unknown	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/24/2010	20100524	Unknown	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/26/2010	20100526	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/27/2010	20100527	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/27/2010	20100527	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/28/2010	20100528	Unknown	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/29/2010	20100529	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/3/2010	JMI20100603-01	Caretta caretta	Stranding	Alive	Rehab	Rehab-IMMS	AL
6/4/2010	20100604	Unknown	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/5/2010	RLR20100605-01	Eretmochelys imbricata	Stranding	Alive	Rehab	Rehab-IMMS	AL
6/5/2010	20100605	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/6/2010	20100606	Unknown	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/6/2010	20100606	Unknown	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/7/2010	20100607	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/9/2010	20100609	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/11/2010	20100611	Caretta caretta	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/13/2010	20100613	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/13/2010	20100613	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/8/2010	NME20100508-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
5/8/2010	NME20100508-02	Caretta caretta	Stranding	Live	Rehab-Died	Frozen	FL
5/8/2010	NME20100508-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	FL
5/10/2010	MEM20100510-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
5/11/2010	MAN20100511-01	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-Gulfarium	FL
5/12/2010	JWM20100512-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
5/13/2010	AVH20100513-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL

5/14/2010	VEL20100514-01	Caretta caretta	Stranding	Live	Rehab-Died	Frozen	FL
5/14/2010	MEC20100514-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Gulfarium	FL
5/15/2010	NME20100515-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-NOAA	FL
5/17/2010	NME20100517-01	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-NOAA	FL
5/17/2010	MAN20100517-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Gulfarium	FL
5/17/2010	MAN20100517-02	Caretta caretta	Stranding	Dead	Salvaged	Frozen-Gulfarium	FL
5/17/2010	SSM20100517-01	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-GulfWorld	FL
5/18/2010	WAJ20100518-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
5/18/2010	JRJ20100518-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
5/18/2010	CTS20100518-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
5/19/2010	NME20100519-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-NOAA	FL
5/19/2010	NME20100519-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-NOAA	FL
5/19/2010	MAN20100519-01	Caretta caretta	Stranding	Live	Rehab	Rehab-Gulfarium	FL
5/20/2010	WAJ20100520-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GulfWorld	FL
5/20/2010	BAE20100520-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-NOAA	FL
5/20/2010	20100520	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GulfWorld	FL
5/20/2010	MAN20100520-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Gulfarium	FL
5/21/2010	MAN20100521-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-Gulfarium	FL
5/24/2010	NME20100524-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-NOAA	FL
5/24/2010	GWG20100524-01	Caretta caretta	Stranding	Dead	Left on beach		FL
5/25/2010	NME20100525-01	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-NOAA	FL
5/27/2010	MJH20100527-01	Caretta caretta	Stranding	Dead	Buried		FL
5/28/2010	VXW20100528-01	Chelonia mydas	Stranding	Dead	Buried		FL
5/30/2010	NAD20100530-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
6/1/2010	NME20100601-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-NOAA	FL
6/6/2010	20100606	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
6/7/2010	NAD20100607-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-USFWS	FL
6/7/2010	NME20100607-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-NOAA	FL
6/9/2010	RAB20100609-01	Lepidochelys kempii	Stranding	Alive	Released		FL
6/10/2010	20100610	Eretmochelys imbricata	Stranding	Alive	Rehab	Rehab-GulfWorld	FL
6/11/2010	20100611	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
6/11/2010	20100611	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-Gulfarium	FL
6/12/2010	20100612	Chelonia mydas	Stranding	Dead	Salvaged	Frozen	FL
6/12/2010	20100612	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-Gulfarium	FL

6/12/2010	20100612	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Gulfarium	FL
6/13/2010	20100613	Caretta caretta	Stranding	Dead	Salvaged	Frozen-Gulfarium	FL
6/14/2010	20100614	Caretta caretta	Stranding	Dead	Buried		FL
6/15/2010	20100615	Unknown	Stranding	Dead	Salvaged	Frozen	FL
5/1/2010	MJF20100504-01	Unknown	Stranding	Dead	Left on beach		LA
5/1/2010	MJF20100504-02	Unknown	Stranding	Dead	Left on beach		LA
5/3/2010	XXX20100503-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/3/2010	20100503	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/5/2010	JAL20100505-01	Chelonia mydas	Stranding	Dead	Salvaged	Frozen	LA
5/7/2010	MXC20100507-01	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-02	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-03	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-04	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-05	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-06	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-07	Caretta caretta	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-08	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-09	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-10	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-11	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-12	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-13	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-14	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	GXP20100507-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	LA
5/10/2010	CSE20100510-01	Unknown	Stranding	Dead	Salvaged	Frozen	LA
5/10/2010	CSE20100510-02	Unknown	Stranding	Dead	Salvaged	Frozen	LA
5/10/2010	MXC20100510-01	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/10/2010	MXC20100510-02	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/10/2010	MXC20100510-03	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/10/2010	MXC20100510-04	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/10/2010	MXC20100510-05	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/10/2010	MXC20100510-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	LA
5/11/2010	20100511-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/11/2010	20100511-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA

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5/12/2010	MXC20100512-01	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/12/2010	MXC20100512-02	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/12/2010	MXC20100512-03	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-AOA	LA
5/12/2010	MXC20100512-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/13/2010	MXT20100513-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/13/2010	JEB20100513-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/13/2010	MXC20100513-01	Eretmochelys imbricata	Stranding	Dead	Left on beach		LA
5/13/2010	MXC20100513-02	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/13/2010	20100513	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/14/2010	MXC20100514-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-AOA	LA
5/16/2010	MXH20100516-01	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-02	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-03	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-04	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-05	Caretta caretta	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-06	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-07	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-08	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-09	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/17/2010	MXT20100517-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/17/2010	AXL20100517-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/18/2010	SDD20100518-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/19/2010	20100519	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/20/2010	NXX20100520-01	Unknown	Stranding	Dead	Salvaged	Frozen	LA
5/22/2010	20100522	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/22/2010	20100522	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/23/2010	20100523	Unknown	Stranding	Dead	Salvaged	Frozen	LA
5/24/2010	20100524	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/24/2010	20100524	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/25/2010	20100525	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/25/2010	20100525	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/25/2010	20100525	Unknown	Stranding	Dead	Salvaged	Frozen	LA
5/26/2010	20100526	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/26/2010	20100526	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA

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5/26/2010	20100526	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/27/2010	20100527	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/28/2010	20100528	Lepidochelys kempii	Skimmer	Alive	Rehab	Rehab-AOA	LA
5/29/2010	20100529	Unknown	Stranding	Dead	Salvaged	Frozen	LA
5/31/2010	20100531	Lepidochelys kempii	Skimmer	Alive	Rehab	Rehab-AOA	LA
6/5/2010	20100605	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/5/2010	20100605	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	LA
6/6/2010	20100606	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/6/2010	20100606	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/6/2010	20100606	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/7/2010	20100607	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/7/2010	20100607	Unknown	Stranding	Dead	Salvaged	Frozen	LA
6/8/2010	20100608	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/9/2010	20100609	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	LA
6/9/2010	20100609	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-AOA	LA
6/10/2010	20100610	Unknown	Stranding	Dead	Salvaged	Frozen	LA
6/12/2010	20100612	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-AOA	LA
6/13/2010	20100613	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/13/2010	20100613	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/13/2010	20100613	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/13/2010	20100613	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/14/2010	20100614	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/15/2010	20100615	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/15/2010	20100615	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
4/26/2010	CNH20100426-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
4/30/2010	CNH20100430-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
4/30/2010	EXP20100430-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
4/30/2010	EXP20100430-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
4/30/2010	EXP20100430-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
4/30/2010	TTH20100430-01	Lepidochelys kempii	Stranding	Alive	Rehab-Died	Necropsied	MS
5/1/2010	KMF20100501-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/1/2010	KMF20100501-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/1/2010	KMF20100501-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/1/2010	KMF20100501-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS

5/1/2010	KMF20100501-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/1/2010	KMF20100501-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/1/2010	EXP20100501-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	CLC20100502-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	CLC20100502-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	CLC20100502-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	KMF20100502-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	KMF20100502-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	KMF20100502-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-07	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-08	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	MSB20100503-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	MSB20100503-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	MSB20100503-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	MSB20100503-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	MSB20100503-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	WLH20100503-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	WLH20100503-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	WLH20100503-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/4/2010	EXP20100504-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/4/2010	CLC20100504-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/4/2010	CLC20100504-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/4/2010	CLC20100504-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/5/2010	WLH20100505-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/5/2010	DKV20100505-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/6/2010	EXJ20100506-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/6/2010	EXJ20100506-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/6/2010	EXJ20100506-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS

5/6/2010	SXC20100506-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	JNF20100507-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	JNF20100507-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	JBT20100507-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	CLM20100507-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	JNF20100507-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	JBT20100507-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	JNF20100507-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	MMK20100508-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	SAH20100508-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	JKM20100508-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	SAH20100508-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	JNF20100508-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	JNF20100508-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	JKM20100508-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	WLH20100510-01	Caretta caretta	Stranding	Dead	Salvaged	Necropsied	MS
5/9/2010	KMM20100509-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/9/2010	KMM20100509-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/9/2010	KMM20100509-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/9/2010	KMM20100509-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/10/2010	WLH20100510-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/10/2010	ZHS20100510-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/11/2010	BTN20100511-01	Caretta caretta	Stranding	Dead	Salvaged	Necropsied	MS
5/12/2010	ZHS20100512-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied?	MS
5/12/2010	ZHS20100512-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied?	MS
5/12/2010	ZHS20100512-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied?	MS
5/12/2010	ZHS20100512-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied?	MS
5/12/2010	ZHS20100512-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied?	MS
5/13/2010	JXS20100513-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS?	MS
5/13/2010	CNH20100514-01	Caretta caretta	Stranding	Dead	Left on beach		MS
5/14/2010	JNF20100514-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS?	MS
5/14/2010	JNF20100514-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS?	MS
5/14/2010	SAH20100514-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/15/2010	LMJ20100515-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS

5/15/2010	LMJ20100515-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/15/2010	JKM20100515-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/15/2010	JKM20100515-02	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/15/2010	KMM20100515-01	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/16/2010	EXJ20100516-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/18/2010	KPB20100518-01	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/18/2010	KPB20100518-02	Caretta caretta	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/18/2010	WLH20100518-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/19/2010	MDH20100519-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/19/2010	MDH20100519-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/20/2010	TTH20100520-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/20/2010	JNF20100520-02	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/20/2010	JNF20100520-01	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/21/2010	RDS20100521-01	Caretta caretta	Stranding	Dead	Left on beach		MS
5/21/2010	JNF20100521-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/21/2010	JNF20100521-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/22/2010	TTH20100522-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/24/2010	WLH20100524-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/24/2010	AJD20100524-01	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/26/2010	JXB20100526-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/26/2010	CNH20100526-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/26/2010	WLH20100526-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/27/2010	JBT20100527-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/27/2010	JKM20100527-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/27/2010	MJB20100527-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/28/2010	JNF20100528-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/28/2010	RAW20100528-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/3/2010	CNH20100603-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/4/2010	DKV20100604-01	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/5/2010	JNF20100605-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/5/2010	JNF20100605-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/5/2010	JNF20100605-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	KMM20100606-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	MJK20100606-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS

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6/6/2010	MJK20100606-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	MJK20100606-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	MJK20100606-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	MJK20100606-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	JBT20100606-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	JBT20100606-02	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	JBT20100606-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	JBT20100606-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	JBT20100606-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	JBT20100606-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/7/2010	JRS20100608-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS+G3	MS
6/7/2010	WLH20100607-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/7/2010	KMH20100607-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/8/2010	WLH20100608-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/8/2010	WLH20100608-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/9/2010	WLH20100609-01	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/9/2010	WLH20100609-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/9/2010	JBT20100609-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/9/2010	JBT20100609-02	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/9/2010	JBT20100609-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	SLE20100610-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	SLE20100610-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	SLE20100610-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	SLE20100610-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	SLE20100610-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	RAW20100610-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	RAW20100610-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	RAW20100610-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	RAW20100610-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	RAW20100610-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	RAW20100610-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	KMH20100610-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	KMH20100610-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	KMH20100610-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS

6/10/2010	KMH20100610-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	KMH20100610-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	KMH20100610-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	WLH20100610-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	WLH20100610-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	TTH20100611-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/11/2010	KMH20100611-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/11/2010	WLH20100611-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-07	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-08	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-09	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-10	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-11	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-12	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-13	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	JBT20100611-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	JBT20100611-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	JBT20100611-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	JBT20100611-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	CRS20100611-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	WLH20100612-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	WLH20100612-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	WLH20100612-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	WLH20100612-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	WLH20100612-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	WLH20100612-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	RCL20100612-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	CRS20100612-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	JKM20100612-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/13/2010	CRS20100613-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/13/2010	CRS20100613-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS

6/13/2010	CRS20100613-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/13/2010	LCV20100613-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/13/2010	LCB20100613-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Pasc?	MS
6/13/2010	JKM20100613-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/13/2010	JKM20100613-02	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/13/2010	JKM20100613-03	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/13/2010	JKM20100613-04	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/14/2010	WLH20100614-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/15/2010	LCB20100615-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/18/2010	BXW20100518-01	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/12/2010	BAS20100612-01	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/12/2010	BAS20100612-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/12/2010	BAS20100612-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/13/2010	BAS20100613-01	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/13/2010	BAS20100613-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/13/2010	BAS20100613-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/13/2010	BAS20100613-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/13/2010	BAS20100613-05	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/13/2010	BAS20100613-06	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/13/2010	BAS20100613-07	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/13/2010	BAS20100613-08	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/13/2010	BAS20100613-09	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA	
6/13/2010	20100613	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/13/2010	20100613	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/14/2010	BAS20100614-01	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/14/2010	BAS20100614-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/14/2010	BAS20100614-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/14/2010	BAS20100614-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/14/2010	BAS20100614-05	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/14/2010	BAS20100614-06	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/14/2010	BAS20100614-07	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/14/2010	BAS20100614-08	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/14/2010	BAS20100614-09	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/14/2010	BAS20100614-10	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	

6/14/2010	BAS20100614-11	Caretta caretta	Directed Capture	Alive	Rehab	Rehab-AOA
6/15/2010	BAS20100615-01	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/15/2010	BAS20100615-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/15/2010	BAS20100615-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/15/2010	BAS20100615-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/15/2010	BAS20100615-05	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/15/2010	BAS20100615-06	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/15/2010	BAS20100615-07	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA

Descriptive Location	Latitude	Longitude	External oil?	TempLocation	Stranding	New	Alive
Directed Capture	28.96778	-88.79333	Y	No	No	No	Y
Directed Capture	28.90722	-88.80167	Y	No	No	No	Y
Directed Capture	28.9597	-88.5342	Y	No	No	No	Y
Directed Capture	28.9182	-88.5552	Y	No	No	No	Y
Directed Capture	28.865	-88.5658	Y	No	No	No	Y
Directed Capture	28.8538	-88.5617	Y	No	No	No	Y
Directed Capture	28.847	-88.5588	Y	No	No	No	Y
Directed Capture	28.8405	-88.5557	Y	No	No	No	Y
Directed Capture	28.6573	-88.4313	Y	No	No	No	Y
Directed Capture	28.8045	-88.4771	Y	No	No	No	Y
Directed Capture	28.804483	-88.4771	Y	No	No	No	Y
Directed Capture	28.80725	-88.47808	Y	No	No	No	Y
Directed Capture	28.813483	-88.480383	Y	No	No	No	Y
Directed Capture	28.81535	-88.479233	Y	No	No	No	Y
Directed Capture	28.81669	-88.47803	Y	No	No	No	Y
Directed Capture	28.828083	-88.37115	Y	No	No	No	Y
Directed Capture	28.829617	-88.471267	Y	No	No	No	Y
Directed Capture	28.826867	-88.464933	Y	No	No	No	Y
Directed Capture	28.834317	-88.42455	Y	No	No	No	Y
Directed Capture - LDWF	29.09	-89.78	Y	No	No	No	N
Directed Capture - LDWF	29.0919	-89.7781	Y	No	No	No	Y
Directed Capture - LDWF	29.0932	-89.7747	Y	No	No	No	Y
Directed Capture - LDWF	29.0998	-89.7574	Y	No	No	No	Y
Directed Capture - LDWF	29.1065	-89.748	Y	No	No	No	Y
Directed Capture	29.01025	-88.26369	Y	No	No	No	Y
Directed Capture	29.01025	-88.26369	Y	No	No	No	Y
Directed Capture	29.01025	-88.26369	Y	No	No	No	Y
Directed Capture	29.02569	-88.25586	Y	No	No	No	Y
Directed Capture	29.17372	-88.16519	Y	No	No	No	N
Directed Capture	28.7538	-88.85602	Y	No	No	No	N
Directed Capture	28.75114	-88.84875	Y	No	No	No	Y
Directed Capture	28.62252	-88.55688	Y	No	No	No	Y
Directed Capture	28.76398	-88.82482	Y	No	No	No	Y

"Lots of Sand Dunes" Condo, Baldwin Co	30.232019	-87.936861	N	No	Yes	No	N
eastern point of Dauphin Island	30.250125	-88.075553	N	No	Yes	No	N
Dauphin Island	30.248253	-88.125822	N	No	Yes	No	N
floating 2 miles North of Fort Gaines	30.268880	-88.071720	N	No	Yes	No	N
Dauphin Island	30.332274	-88.132595	N	No	Yes	No	N
Dauphin Island	30.248253	-88.125822	N	No	Yes	No	N
Mobile Bay, 4 miles south of Fowl River	30.395431	-88.107261	N	No	Yes	No	N
Mobile Bay, 7287 Bay Rd	30.552467	-88.123317	N	No	Yes	No	N
floating off of Bayou La Batre	30.368167	-88.278317	N	No	Yes	No	N
Coden	30.445639	-88.109028	N	No	Yes	No	N
Dauphin Island	30.250164	-88.162886	N	No	Yes	No	N
Donnie Grace, bay side	30.249856	-88.202100	N	No	Yes	No	N
outside Weeks Bay toward Fish River Reef	30.367914	-87.839833	N	No	Yes	No	N
18261 Scenic Hwy 98	30.492133	-87.929833	N	No	Yes	No	N
Dauphin Island	30.249450	-88.172633	N	No	Yes	No	N
Gulf Shores	30.253417	-87.823317	N	No	Yes	No	N
Bayou La Batre	30.381033	-88.267233	N	No	Yes	No	N
pier across from Fort Morgan Museum	30.230283	-88.023694	N	No	Yes	No	N
Baldwin Co	30.250570	-87.828960	N	No	Yes	No	N
Baldwin Co	30.228430	-87.861390	N	No	Yes	No	N
Baldwin Co	30.231160	-87.928990	N	No	Yes	No	N
200 yds SE of city pier	30.245610	-88.124230	N	No	Yes	No	N
Hwy 193 past Hwy 188, Mobile Co	30.370900	-88.109670	N	No	Yes	No	N
east of Dauphin Is public fishing pier on Sand Is	30.247186	-88.125303	N	No	Yes	No	N
Little Dauphin Is, north side	30.274270	-88.111150	N	No	Yes	No	N
Audubon Place beach	30.243830	-88.092890	N	No	Yes	No	N
bay side of Sand Island	30.227653	-88.113175	N	No	Yes	No	N
Coden	30.377883	-88.241517	N	No	Yes	No	N
Mobile Bay, 1 mile south of Fowl River	30.425728	-88.103975	N	No	Yes	No	N
Hwy 98 on county rd 1, near Pelican Island	30.378320	-87.851020	N	No	Yes	No	N
Dauphin Island	30.247530	-88.124480	N	No	Yes	No	N
mouth of Bayou La Batre, Mobile Bay	30.375000	-88.285000	N	No	Yes	No	Y
Dauphin Island, west end	30.386400	-88.560983	N	No	Yes	No	N
Dauphin Island, west end	30.386400	-88.560983	N	No	Yes	No	N

Coden	30.006272	-88.004007	N	No	Yes	No	N
Dauphin Island	30.244817	-88.114433	N	No	Yes	No	N
Bayou La Batre	30.381586	-88.257034	N	No	Yes	No	Y
floating near Bayou La Batre	30.376750	-88.258480	N	No	Yes	No	N
Mobile Bay	30.591497	-88.063306	N	No	Yes	No	N
Shore Rd of CR12	30.358870	-87.832670	N	No	Yes	No	N
Plash Island	30.282700	-87.751230	N	No	Yes	No	N
Dauphin Island	30.250000	-88.200000	N	Yes	Yes	No	N
Dauphin Island	30.270000	-88.150000	N	Yes	Yes	No	N
Mobile Bay	30.400000	-88.100000	N	Yes	Yes	No	N
Mobile Bay	30.500000	-88.100000	N	Yes	Yes	No	N
Mobile Bay	30.300000	-87.750000	N	Yes	Yes	No	N
west end of Dauphin Island	30.220000	-88.330000	N	Yes	Yes	No	N
Dauphin Island, bayside	30.260000	-88.110000	N	Yes	Yes	No	N
Mobile Bay	30.300000	-87.970000	N	Yes	Yes	No	N
floating in MS Sound near Coden Bayou	30.350000	-88.220000	N	Yes	Yes	No	N
floating in Perdido Pass near Orange Beach	30.278471	-87.555537	Y	No	Yes	No	Y
floating south of Coden	30.374000	-88.240000	N	Yes	Yes	No	N
East Beach, Baldwin County	30.248301	-87.676815	Y	No	Yes	No	Y
Bon Secour Bay	30.300000	-87.875000	N	Yes	Yes	No	N
W Dauphin Island	30.250000	-88.060000	N	Yes	Yes	No	N
floating off of Bayou La Batre	30.340000	-88.310000	N	Yes	Yes	No	N
Mobile Bay, east side	30.450000	-87.930000	N	Yes	Yes	No	N
Mobile Bay, west side	30.450000	-88.090000	N	Yes	Yes	No	N
Gulf Shores	30.251060	-87.653670	N	No	Yes	No	N
Bayou La Batre	30.366460	-88.244330	N	No	Yes	No	N
~100 ft from Fairhope Municipal Pier	30.525780	-87.917040	N	No	Yes	No	N
Panama City Beach	30.19650	-85.84358	N	No	Yes	No	N
Panama City Beach	30.2442	-85.93718	N	No	Yes	No	Y
Panama City Beach	30.16782	-85.794	N	No	Yes	No	N
Panama City Beach	30.21513	-85.87758	N	No	Yes	No	N
Pensacola Beach	30.32589	-87.17208	N	No	Yes	No	N
St. Joseph Peninsula State Park	29.77851	-85.40833	N	No	Yes	No	N
Perdido Key State Park	30.28801	-87.47814	N	No	Yes	No	N

East Walton County Beach, Orange St access	30.2724	-86.00381	N	No	Yes	No	Y
Naval Live Oaks (Headquarters), GUIS	30.36422	-87.12725	N	No	Yes	No	N
Tyndall AFB, Archery Rd beach, east of marina	30.08165	-85.62992	N	No	Yes	No	N
Panama City Beach	30.18925	-85.83112	N	No	Yes	No	N
Perdido Key area of Gulf Islands NS	30.30350	-87.39394	N	No	Yes	No	N
Santa Rosa area of Gulf Islands NS	30.35489	-87.01419	N	No	Yes	No	N
west Walton County	30.37170	-86.34960	N	No	Yes	No	N
Crooked Island east, Tyndall AFB	29.95664	-85.47378	N	No	Yes	No	N
Crooked Island west, Tyndall AFB	30.02786	-85.56911	N	No	Yes	No	N
Walton County, east of Draper Lake	30.34060	-86.21480	N	No	Yes	No	N
Panama City Beach	30.26268	-85.97958	N	No	Yes	No	N
St. Andrews Bay, Bunkers Cove at yacht club	30.14250	-85.64920	N	No	Yes	No	N
Pensacola Beach	30.33619	-87.11075	N	No	Yes	No	Y
Tyndall AFB, Crooked Island east at boardwalk	29.95634	-85.45734	N	No	Yes	No	N
St. Joe Beach	29.90192	-85.36683	N	No	Yes	No	N
Rosemary Beach, Walton County	30.28000	-86.03000	N	Yes	Yes	No	N
Naval Live Oaks, south beach on Santa Rosa sound	30.36074	-87.14003	N	No	Yes	No	N
Perdido Key	30.29619	-87.42647	N	No	Yes	No	Y
Panama City, Baypoint Marina Yacht Club	30.14352	-85.72778	N	No	Yes	No	N
Navarre Beach	30.37590	-86.88760	N	No	Yes	No	N
St. Andrews Bay	30.16385	-85.68565	N	No	Yes	No	N
Pensacola Naval Air Station, Trout Point Beach	30.33185	-87.34040	N	No	Yes	No	N
W Escambia County, inshore, floating	30.31250	-87.49710	N	No	Yes	No	N
Cape San Blas	29.68224	-85.31182	N	No	Yes	No	N
St. Andrews Bay, Sun Harbor Marina, Panama City	30.18415	-85.73262	N	No	Yes	No	N
Panama City Beach	30.16000	-85.81000	N	Yes	Yes	No	N
St. Vincent NWR	29.67590	-85.21767	N	No	Yes	No	N
Port of Panama City	30.17795	-85.72493	N	No	Yes	No	N
Pensacola	30.29000	-87.25000	N	Yes	Yes	No	Y
Panama City, Inlet Beach	30.19000	-85.87000	N	Yes	Yes	No	Y
West Miramar Beach	30.37000	-86.40000	N	Yes	Yes	No	N
Pensacola	30.30000	-87.30000	N	Yes	Yes	No	Y
Navarre Beach	30.37000	-86.85000	N	Yes	Yes	No	N
approx 1 mile off of Pensacola Beach	30.28000	-87.18000	Y	Yes	Yes	No	Y

Eglin AFB, just east of Navarre Beach	30.37000	-86.86000	N	Yes	Yes	No	N
Pensacola Beach	30.25000	-87.20000	N	Yes	Yes	No	N
Pensacola Beach	30.30000	-87.20000	N	Yes	Yes	No	N
Pensacola Beach			N	Yes	Yes	Yes	N
Elmers Island	29.17027	-90.08316	N	No	Yes	No	N
Elmers Island	29.18166	-90.06428	N	No	Yes	No	N
Slidell area, Lake Borgne	30.13447	-89.50054	N	No	Yes	No	N
Grand Isle	29.24	-89.98	N	Yes	Yes	No	N
Elmers Island	29.17235	-90.07981	N	No	Yes	No	N
Rutherford Beach	29.76692	-93.16193	N	No	Yes	No	N
Rutherford Beach	29.76879	-93.17164	N	No	Yes	No	N
Rutherford Beach	29.76972	-93.17667	N	No	Yes	No	N
Rutherford Beach	29.77171	-93.18671	N	No	Yes	No	N
Rutherford Beach	29.7732	-93.19467	N	No	Yes	No	N
Rutherford Beach	29.77341	-93.19683	N	No	Yes	No	N
Rutherford Beach	29.77354	-93.19756	N	No	Yes	No	N
Rutherford Beach	29.77576	-93.21589	N	No	Yes	No	N
Rutherford Beach	29.77738	-93.2461	N	No	Yes	No	N
Rutherford Beach	29.77728	-93.25497	N	No	Yes	No	N
Rutherford Beach	29.77728	-93.25497	N	No	Yes	No	N
Rutherford Beach	29.76578	-93.15643	N	No	Yes	No	N
Rutherford Beach	29.76119	-93.13665	N	No	Yes	No	N
Rutherford Beach	29.75513	-93.11017	N	No	Yes	No	N
floating near Slidell - Rigolets Pass	30.1588	-89.6505	N	No	Yes	No	N
Elmers Island	29.18184	-90.06364	N	No	Yes	No	N
Grand Isle	29.20786	-90.03112	N	No	Yes	No	N
Holly Beach	29.76897	-93.4392	N	No	Yes	No	N
Holly Beach	29.76879	-93.43438	N	No	Yes	No	N
Holly Beach	29.76922	-93.45638	N	No	Yes	No	N
Holly Beach	29.76897	-93.48772	N	No	Yes	No	N
Holly Beach	29.76771	-93.50714	N	No	Yes	No	N
Constance Beach	29.76031	-93.56936	N	No	Yes	No	N
Fourchon Beach	29.11	-90.18	N	Yes	Yes	No	N
Fourchon Beach	29.11	-90.18	N	Yes	Yes	No	N

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Mae's Beach	29.74595	-93.68512	N	No	Yes	No	N
Mae's Beach	29.74582	-93.68592	N	No	Yes	No	N
Mae's Beach	29.7423	-93.70653	N	No	Yes	No	Y
Grand Isle	30.1086	-89.3545	N	No	Yes	No	N
Grand Terre	29.209166	-90.029166	N	No	Yes	No	N
Grand Isle	29.28435	-89.92149	N	No	Yes	No	N
Holly Beach	29.74232	-93.7065	N	No	Yes	No	N
Holly Beach	29.76391	-93.36438	N	No	Yes	No	N
found floating, location?	29.23	-89.99	N	Yes	Yes	No	N
Mae's Beach	29.7424	-93.7062	N	No	Yes	No	Y
Long Beach	29.7534	-93.6293	N	No	Yes	No	N
Long Beach	29.7509	-93.6492	N	No	Yes	No	N
Mae's Beach	29.7396	-93.7208	N	No	Yes	No	N
Constance Beach	29.7605	-93.5674	N	No	Yes	No	N
Holly Beach	29.7683	-93.5018	N	No	Yes	No	N
Holly Beach	29.7689	-93.441	N	No	Yes	No	N
Rutherford Beach	29.7555	-93.1114	N	No	Yes	No	N
Rutherford Beach	29.7513	-93.0941	N	No	Yes	No	N
Rutherford Beach	29.7498	-93.0873	N	No	Yes	No	N
Bayou Rigaud, floating	29.14436	-89.59246	N	No	Yes	No	N
Lake Pontchartrain, floating	30.205	-90.11194	N	No	Yes	No	N
Fourchon Beach	29.09	-90.21566	N	No	Yes	No	N
near Cocodrie	29.24	-90.66	N	Yes	Yes	No	N
4 mi NE of Fishing Smack Bay	30.003805	-89.20633	N	No	Yes	No	N
Grand Isle Beach	29.24	-89.99	N	Yes	Yes	No	N
Empire Jetty Beach	29.25412	-89.60345	N	No	Yes	No	N
Grand Terre	29.28	-89.92	N	Yes	Yes	No	N
Bayou Terrebonne by Bayou La Fleur	29.26	-90.64	N	Yes	Yes	No	N
Lake Chien	29.33	-90.44	N	Yes	Yes	No	N
Bayou Trove	29.2386	-89.53792	N	No	Yes	No	N
Grand Isle State Park	29.24	-89.97	Y	Yes	Yes	No	N
Queen Bess Island	29.3	-89.96	N	Yes	Yes	No	N
Lake Felicity, North of Timbalier Island	29.26	-90.4	N	Yes	Yes	No	N
Lake Felicity, North of Timbalier Island	29.26	-90.47	N	Yes	Yes	No	N

Lake Felicity, North of Timbalier Island	29.28	-90.42	N	Yes	Yes	No	N
Grand Isle Beach	29.2	-90.04	N	Yes	Yes	No	N
skimmer found ~50 mi S of Louisiana coastline, brou	28.4375	-89.8958	Y	No	Skimmer	No	Y
Cameron Parish beach	29.76	-93.34	N	Yes	Yes	No	N
skimmer found ~17 mi offshore Grand Isle	28.9932	-89.8412	Y	No	Skimmer	No	Y
Timbalier Island	29.04	-90.47	N	Yes	Yes	No	N
floating just offshore western LA beaches	29.76	-93.46	N	Yes	Yes	No	N
western Louisiana beaches	29.74	-93.42	N	Yes	Yes	No	N
western Louisiana beaches	29.74	-93.44	N	Yes	Yes	No	N
western Louisiana beaches	29.74	-93.46	N	Yes	Yes	No	N
Coup A Bel Pass	29.3	-89.9	Y	Yes	Yes	No	N
Marsh Island	29.5	-91.9	N	Yes	Yes	No	N
Barataria Bay	29.4	-89.94	Y	Yes	Yes	No	N
north Barataria Bay	29.43308	-89.88585	Y	No	Yes	No	N
western Louisiana, nearshore waters	29.7	-93	N	Yes	Yes	No	Y
Fourchon Beach	29.08	-90.14	N	Yes	Yes	No	N
no location info - est location in Chandeleur Sound	29.8	-89.1	N	Yes	Yes	No	Y
Rutherford Beach	29.74	-93.22	N	Yes	Yes	No	N
Rutherford Beach	29.72	-93.15	N	Yes	Yes	No	N
Rutherford Beach	29.72	-93.07	N	Yes	Yes	No	N
Fourchon Beach	29.1	-90.1	N	Yes	Yes	No	N
Slidell area	30.13	-89.57	N	Yes	Yes	No	N
Rollover Bayou (W LA near Rockefeller Refuge)			N	Yes	Yes	Yes	N
Rollover Bayou (W LA near Rockefeller Refuge)			N	Yes	Yes	Yes	N
Bay St. Louis	30.30880	-89.32590	N	No	Yes	No	N
Bay St. Louis	30.29410	-89.34320	N	No	Yes	No	N
Waveland	30.26410	-89.39200	N	No	Yes	No	N
Waveland	30.27260	-89.37750	N	No	Yes	No	N
Waveland	30.27360	-89.37640	N	No	Yes	No	N
Long Beach	30.34780	-89.13900	N	No	Yes	No	Y
Pass Christian	30.31481	-89.24207	N	No	Yes	No	N
Pass Christian	30.31071	-89.25556	N	No	Yes	No	N
Pass Christian	30.31460	-89.24252	N	No	Yes	No	N
Pass Christian	30.31080	-89.25728	N	No	Yes	No	N

Pass Christian	30.31295	-89.24477	N	No	Yes	No	N
Pass Christian	30.31082	-89.25535	N	No	Yes	No	N
Ocean Springs	30.40980	-88.84080	N	No	Yes	No	N
Bay St. Louis	30.31900	-89.32230	N	No	Yes	No	N
Waveland	30.28830	-89.36000	N	No	Yes	No	N
Waveland	30.28680	-89.36260	N	No	Yes	No	N
Pass Christian	30.30650	-89.26858	N	No	Yes	No	N
Pass Christian	30.30725	-89.26653	N	No	Yes	No	N
Bay St. Louis	30.30562	-89.32865	N	No	Yes	No	N
Pass Christian	30.32834	-89.19923	N	No	Yes	No	N
Pass Christian	30.30529	-89.27249	N	No	Yes	No	N
Pass Christian	30.32620	-89.20892	N	No	Yes	No	N
Pass Christian	30.32460	-89.21450	N	No	Yes	No	N
Biloxi	30.39289	-88.94716	N	No	Yes	No	N
Waveland	30.28865	-89.35290	N	No	Yes	No	N
Pass Christian	30.32824	-89.19985	N	No	Yes	No	N
Pass Christian	30.33144	-89.18568	N	No	Yes	No	N
Pass Christian	30.32144	-89.22351	N	No	Yes	No	N
Pass Christian	30.30750	-89.26659	N	No	Yes	No	N
Bay St. Louis	30.31558	-89.29004	N	No	Yes	No	N
Pass Christian	30.30525	-89.27421	N	No	Yes	No	N
Pass Christian	30.30989	-89.25963	N	No	Yes	No	N
Waveland	30.26362	-89.39346	N	No	Yes	No	N
Waveland	30.28670	-89.36321	N	No	Yes	No	N
Gulfport	30.35567	-89.11807	N	No	Yes	No	N
Waveland	30.24120	-89.42470	N	No	Yes	No	N
Gulfport	30.36948	-89.07825	N	No	Yes	No	N
Biloxi	30.39169	-88.95027	N	No	Yes	No	N
Biloxi	30.39271	-88.87608	N	No	Yes	No	N
Waveland	30.27834	-89.37222	N	No	Yes	No	N
Gulfport	30.37689	-89.04778	N	No	Yes	No	N
Waveland	30.27006	-89.38032	N	No	Yes	No	N
Bay St. Louis	30.30022	-89.33346	N	No	Yes	No	N
Pass Christian	30.32762	-89.20251	N	No	Yes	No	N

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floating N of Ship Island	30.25080	-88.94120	N	No	Yes	No	N
Waveland	30.25685	-89.41499	N	No	Yes	No	N
Waveland	30.26483	-89.39040	N	No	Yes	No	N
Waveland	30.26471	-89.39070	N	No	Yes	No	N
Pass Christian, floating by Henderson Point	30.30320	-89.29570	N	No	Yes	No	N
Waveland	30.28749	-89.36136	N	No	Yes	No	N
Waveland	30.28790	-89.36065	N	No	Yes	No	N
Gulfport	30.36129	-89.10089	N	No	Yes	No	N
Long Beach	30.33749	-89.16818	N	No	Yes	No	N
Pass Christian	30.32775	-89.20048	N	No	Yes	No	N
Pass Christian	30.31166	-89.25018	N	No	Yes	No	N
Pass Christian	30.30335	-89.28335	N	No	Yes	No	N
Waveland	30.28267	-89.36761	N	No	Yes	No	N
Biloxi	30.39147	-88.95452	N	No	Yes	No	N
Biloxi	30.39385	-88.91407	N	No	Yes	No	N
Horn Island	30.22831	-88.64799	N	No	Yes	No	N
Pass Christian	30.31300	-89.24830	N	No	Yes	No	N
Pass Christian	30.31190	-89.29050	N	No	Yes	No	N
Gulfport	30.38250	-89.02280	N	No	Yes	No	N
Gulfport	30.38150	-89.02610	N	No	Yes	No	N
floating ~1/2 mile south of Biloxi bridge	30.38960	-88.84190	N	No	Yes	No	N
Waveland Beach at Nicholson Ave	30.29410	-89.35910	N	No	Yes	No	N
Pass Christian	30.32320	-89.21840	N	No	Yes	No	N
Gulfport Beach	30.35582	-89.11698	N	No	Yes	No	N
Gulfport Beach	30.33215	-89.18207	N	No	Yes	No	N
Lakeshore/Waveland	30.25117	-89.42138	N	No	Yes	No	N
Bay St. Louis	30.29545	-89.34080	N	No	Yes	No	N
Waveland	30.26715	-89.38553	N	No	Yes	No	N
Bay St. Louis	30.30980	-89.32553	N	No	Yes	No	N
West Ship Island	30.2115	-88.98480	N	No	Yes	No	N
Waveland	30.28248	-89.36733	N	No	Yes	No	N
Pass Christian	30.31406	-89.24347	N	No	Yes	No	N
Gulfport	30.37421	-89.04382	N	No	Yes	No	Y
Bay St. Louis	30.30883	-89.32583	N	No	Yes	No	N

Waveland	30.27683	-89.37367	N	No	Yes	No	N
Waveland	30.28064	-89.36495	N	No	Yes	No	Y
Waveland	30.28127	-89.36557	N	No	Yes	No	Y
Pascagoula Beach	30.3433	-88.55500	N	No	Yes	No	N
Waveland	30.27234	-89.37753	N	No	Yes	No	N
SE Horn Island	30.2207	-88.59330	N	No	Yes	No	N
southside Cat Island	30.2283	-89.07330	N	No	Yes	No	N
Pass Christian	30.31352	-89.24396	N	No	Yes	No	N
Bellefontaine Beach	30.3433	-88.70330	N	No	Yes	No	N
water south of Cadet Point, Biloxi	30.3877	-88.85890	N	No	Yes	No	N
Waveland	30.28063	-89.36495	N	No	Yes	No	Y
Biloxi Bay	30.40980	-88.86906	N	No	Yes	No	N
Biloxi Bay	30.40980	-88.86906	N	No	Yes	No	N
Horn Island, ~3000' from W end	30.2398	-88.76870	N	No	Yes	No	N
Waveland	30.28655	-89.36330	N	No	Yes	No	N
Pass Christian	30.30725	-89.26660	N	No	Yes	No	N
Waveland	30.28063	-89.36495	N	No	Yes	No	Y
Long Beach	30.33743	-89.16837	N	No	Yes	No	N
Biloxi Beach	30.39154	-88.95600	N	No	Yes	No	N
north side of Horn Island	30.22307	-88.62952	N	No	Yes	No	N
Bangs Lake off of Pascagoula	30.3588	-88.47300	N	No	Yes	No	N
Biloxi, Back Bay	30.40079	-88.85896	N	No	Yes	No	N
Ocean Springs, McPherson Pier	30.40397	-88.83031	N	No	Yes	No	Y
Waveland	30.28063	-89.36495	N	No	Yes	No	Y
Ocean Springs	30.40397	-88.83031	N	No	Yes	No	Y
Biloxi, near Palace Casino	30.3959	-88.85830	N	No	Yes	No	N
Ocean Springs	30.40397	-88.83031	N	No	Yes	No	Y
Ocean Springs	30.4075	-88.83540	N	No	Yes	No	N
Gulfport	30.35487	-89.12191	N	No	Yes	No	N
Waveland	30.26605	-89.38722	N	No	Yes	No	N
Long Beach	30.34084	-89.15894	N	No	Yes	No	N
Biloxi, near harbor	30.39268	-88.88209	N	No	Yes	No	N
Gautier / Belle Fontaine Beach	30.3457	-88.74080	N	No	Yes	No	N
Biloxi	30.39158	-88.94994	N	No	Yes	No	N

Biloxi	30.39184	-88.94596	N	No	Yes	No	N
Biloxi	30.39183	-88.94596	N	No	Yes	No	N
Biloxi	30.39184	-88.94576	N	No	Yes	No	N
Biloxi	30.39262	-88.93246	N	No	Yes	No	N
Biloxi Beach	30.3932	-88.90645	N	No	Yes	No	N
Biloxi Beach	30.39353	-88.92310	N	No	Yes	No	N
Biloxi Beach	30.39382	-88.91889	N	No	Yes	No	N
Biloxi Beach	30.39375	-88.92016	N	No	Yes	No	N
Biloxi Beach	30.39108	-88.96432	N	No	Yes	No	N
Biloxi Beach	30.38968	-88.97850	N	No	Yes	No	N
Ocean Springs / Belle Fontaine Beach	30.34316	-88.72950	N	No	Yes	No	N
Gulfport Beach	30.3597	-89.10686	N	No	Yes	No	N
Biloxi Beach	30.3938	-88.91200	N	No	Yes	No	N
Gulfport Beach	30.37834	-89.04083	N	No	Yes	No	N
Gulfport Beach	30.38538	-89.01003	N	No	Yes	No	N
Gulfport Beach	30.37825	-89.04118	N	No	Yes	No	N
Gulfport Beach	30.3844	-89.01535	N	No	Yes	No	N
Biloxi Beach	30.38942	-88.98023	N	No	Yes	No	N
Biloxi Beach	30.39028	-88.97433	N	No	Yes	No	N
Biloxi Beach	30.39357	-88.89623	N	No	Yes	No	N
Gulfport Beach	30.3831	-89.0192	N	No	Yes	No	N
Biloxi Beach	30.3914	-89.0069	N	No	Yes	No	N
Biloxi Beach	30.39	-88.9756	N	No	Yes	No	N
Biloxi Beach	30.3875	-88.9942	N	No	Yes	No	N
Biloxi Beach	30.3889	-88.9847	N	No	Yes	No	N
Gulfport Beach	30.37058	-89.0742	N	No	Yes	No	N
Gulfport Beach	30.3706	-89.07417	N	No	Yes	No	N
Gulfport Beach	30.37131	-89.07161	N	No	Yes	No	N
Gulfport Beach	30.37158	-89.07066	N	No	Yes	No	N
Gulfport Beach	30.3768	-89.07045	N	No	Yes	No	N
Gulfport Beach	30.37262	-89.06721	N	No	Yes	No	N
Gulfport	30.38075	-89.02951	N	No	Yes	No	N
Gulfport	30.38097	-89.02944	N	No	Yes	No	N
Gulfport	30.38048	-89.03049	N	No	Yes	No	N

Gulfport	30.38016	-89.03156	N	No	Yes	No	N
Biloxi	30.3799	-89.03266	N	No	Yes	Yes	N
Biloxi	30.38032	-89.03104	N	No	Yes	Yes	N
Gulfport Beach	30.37746	-89.0433	N	No	Yes	No	N
Gulfport Beach	30.37819	-89.0416	N	No	Yes	No	N
Waveland	30.2806	-89.3449	N	No	Yes	No	Y
Biloxi, Acadia Ave	30.39277	-88.9312	N	No	Yes	No	Y
Gulfport Beach	30.37819	-89.0416	N	No	Yes	No	N
Gulfport Beach	30.37819	-89.0416	N	No	Yes	No	N
Gulfport Beach	30.37843	-89.0413	N	No	Yes	No	N
Gulfport Beach	30.37837	-89.04101	N	No	Yes	No	N
Gulfport Beach	30.37457	-89.0563	N	No	Yes	No	N
Gulfport Beach	30.37456	-89.05634	N	No	Yes	No	N
Biloxi Beach	30.3887	-88.98878	N	No	Yes	No	N
Biloxi Beach	30.38877	-88.98797	N	No	Yes	No	N
Biloxi Beach	30.38877	-88.98797	N	No	Yes	No	N
Biloxi Beach	30.38886	-88.9741	N	No	Yes	No	N
Biloxi Beach	30.38886	-88.98734	N	No	Yes	No	N
Pass Christian Beach	30.32762	-89.20251	N	No	Yes	No	N
Gulfport Beach	30.38188	-89.02495	N	No	Yes	No	N
Gulfport Beach	30.38393	-89.01701	N	No	Yes	No	N
Gulfport Beach	30.38583	-89.00827	N	No	Yes	No	N
Biloxi Beach	30.39357	-88.89818	N	No	Yes	No	N
Biloxi Beach	30.39182	-88.94774	N	No	Yes	No	N
Biloxi Beach	30.39328	-88.92583	N	No	Yes	No	N
Biloxi Beach	30.37561	-89.09052	N	No	Yes	No	N
Biloxi Beach	30.37571	-89.05148	N	No	Yes	No	N
Biloxi Beach	30.38738	-89	N	No	Yes	No	N
Biloxi Beach	30.38746	-88.99895	N	No	Yes	No	N
near Horn Island - floating?	30.2333	-88.53093	N	No	Yes	No	N
floating off of Gulfport	30.32007	-89.17917	N	No	Yes	No	N
Waveland Pier	30.2806	-89.3449	N	No	Yes	Yes	Y
Biloxi Beach	30.39383	-88.91076	N	No	Yes	No	N
Biloxi Beach	30.39167	-88.89817	N	No	Yes	No	N

Biloxi Beach	30.39383	-88.91895	N	No	Yes	No	N
Gulfport Beach	30.37125	-89.07175	N	No	Yes	No	N
west side of Deer Island	30.37	-88.85	N	Yes	Yes	No	N
Waveland Pier	30.2806	-89.3449	N	No	Yes	No	Y
Waveland Pier	30.2806	-89.3449	N	No	Yes	No	Y
Waveland Pier	30.2806	-89.3449	N	No	Yes	No	Y
Waveland Pier	30.28063	-89.36495	N	No	Yes	Yes	Y
Biloxi Beach	30.38722	-89.00137	N	No	Yes	No	N
Ocean Springs	30.3603	-88.7642	N	No	Yes	Yes	N
Directed Capture	28.4665	-88.46116	Y	No	No	No	Y
Directed Capture	28.66965	-88.49193	Y	No	No	No	Y
Directed Capture	28.91208	-88.68748	Y	No	No	No	Y
Directed Capture	28.70114	-88.53979	Y	No	No	No	Y
Directed Capture	28.92108	-88.7991	Y	No	No	No	Y
Directed Capture	28.92094	-88.79822	Y	No	No	No	Y
Directed Capture	28.92891	-88.77321	Y	No	No	No	Y
Directed Capture	28.928	-88.7701	Y	No	No	No	Y
Directed Capture	28.92558	-88.74215	Y	No	No	No	Y
Directed Capture	28.93916	-88.71402	Y	No	No	No	Y
Directed Capture	28.94739	-88.70053	Y	No	No	No	Y
Directed Capture	28.96491	-88.67766	Y	No	No	No	Y
Directed Capture	28.98004	-88.65568	Y	No	No	No	Y
Directed Capture - LDWF	28.72474	-88.55243	Y	No	No	No	Y
Directed Capture - LDWF	28.81743	-88.63998	Y	No	No	No	Y
Directed Capture	29.2	-88.5	Y	Yes	No	No	Y
Directed Capture	29.185	-88.52	Y	Yes	No	No	Y
Directed Capture	29.17	-88.54	Y	Yes	No	No	Y
Directed Capture	29.155	-88.56	Y	Yes	No	No	Y
Directed Capture	29.13	-88.58	Y	Yes	No	No	Y
Directed Capture	29.105	-88.6	Y	Yes	No	No	Y
Directed Capture	29.09	-88.62	Y	Yes	No	No	Y
Directed Capture	29.075	-88.64	Y	Yes	No	No	Y
Directed Capture	29.06	-88.66	Y	Yes	No	No	Y
Directed Capture	29.045	-88.68	Y	Yes	No	No	Y

Directed Capture	29.03	-88.7	Y	Yes	No	No	Y
Directed Capture			Y	Yes	No	Yes	Y
Directed Capture			Y	Yes	No	Yes	Y
Directed Capture			Y	Yes	No	Yes	Y
Directed Capture			Y	Yes	No	Yes	Y
Directed Capture			Y	Yes	No	Yes	Y
Directed Capture			Y	Yes	No	Yes	Y
Directed Capture			Y	Yes	No	Yes	Y

Symbol	Log #	Comments
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C	D-0002 BSNWR	
C	D-0001 BSNWR	
C	D-0003 BSNWR	
C	D-0004 BSNWR	
C	D-0005 BSNWR	
C	D-0006 BSNWR	
C	D-0007 BSNWR	
C	D-0008 BSNWR	
C	D-0009 BSNWR	
C	D-0010 BSNWR	
C	D-0015 BSNWR	
C	D-0014 BSNWR	
C	D-0011 BSNWR	
C	D-0012 BSNWR	
C	D-0013 BSNWR	
C	D-0016 BSNWR	
C	D-0017 BSNWR	dried carcass
C	D-0018 BSNWR	
C	D-0019 BSNWR	
C	D-0020 BSNWR	
C	D-0021 BSNWR	
C	D-0023 BSNWR	
C	D-0022 BSNWR	
C	L-0001 BSNWR	
C	D-0024 BSNWR	
C	D-0025 BSNWR	

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C	D-0026 BSNWR	
C	D-0027 BSNWR	
C	L-0007 IMMS	emaciated; taken to IMMS for rehab; died 5/25, shipped to UF for necropsy
C	D-0028 BSNWR	
C	D-0029 BSNWR	
C	D-0030 BSNWR	
C	D-0031 BSNWR	
U		
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C	L-0012 IMMS	found floating next to boom; externally oiled turtle; taken to IMMS for rehab
U		
C	L-0013 IMMS	externally oiled turtle; taken to IMMS for rehab
U		
U		too decomposed for necropsy
U		
U		
U		
C		parts only - head, guts and 1 flipper
C		
C		
C		very emaciated, missing part of RRF
C		very emaciated; taken to Gulf World, died soon after recovery
C		no head, flippers or internal organs
C		brown algae on carapace; some small barnacles on skin; adult female
C		prop damage to right side of carapace
C		no wounds; barnacles and algae on carapace; adult male
C		missing notch from right side carapace; barnacle and algae growth

C	barnacles on carapace and flippers; taken to Gulf World, died same day
C	apparent piece of metal in ventral LFF near insertion
C	dried carcass; little skin remaining, bones visible
C	no head or front flippers, shark bites
C	missing both front flippers and lrf
C	carapace completely covered w/barnacles and algae; adult female
C	emaciated, lots of barnacles, damage to base of front flippers and neck
C	
C	
C	in pieces, decomposed
C	carapace broken, pieces missing
C	skin and scutes peeling
C	numerous barnacles and light algae on carapace; taken to Gulfarium
C	old wound to posterior marginals; scutes peeling
C	posterior carapace gone; plastron missing; falling apart, nasty
U	
C	apparent skeg/prop damage to center carapace
C	caught on hook and line; hook in throat; taken to Gulfarium
C	prop wounds to right posterior carapace; heavy barnacles,small barnacles on skin
C	2 apparent prop wounds across carapace
C	skin and scutes peeling, very decomposed
C	fishing line entangled around neck
C	no head or flippers; damage to carapace - likely prop
C	missing skull; carapace bones disarticulating due to decomp
C	missing head and LFF, possible shark bites; gashes on plastron
U	
C	carapace bones disarticulating due to decomp
C	dried carcass; carapace broken across posterior; portions missing
U	caught on hook and line, hook removed and turtle released
U	
U	
U	
U	
U	caught by relocation trawler; ~50% coverage of thin oil sheen, also sheen in mouth

U	
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U	in pieces due to decomp, unable to salvage
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C	parts only
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C	swab sample taken
C	swab sample taken
C	taken to AOA for rehab
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C	swab sample taken
C	swab sample taken
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C	taken to AOA for rehab
C	swab sample taken
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C	swab sample taken
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U	partial carcass, pieces only
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C	D-0029 IMMS	
C	D-0030 IMMS	
C	D-0031 IMMS	
C	D-0032 IMMS	
C	D-0033 IMMS	
C	L-0001 IMMS	taken to IMMS, died in rehab, frozen for necropsy
C	D-0001 IMMS	
C	D-0002 IMMS	
C	D-0003 IMMS	
C	D-0004 IMMS	

C	D-0005 IMMS
C	D-0006 IMMS
C	D-0034 IMMS
C	D-0007 IMMS
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C	D-0038 IMMS
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C	D-0040 IMMS
C	D-0041 IMMS
C	D-0042 IMMS
C	D-0043 IMMS

C	D-0044 IMMS	
C	D-0045 IMMS	
C	D-0046 IMMS	
C	D-0047 IMMS	carcass in two pieces
C	D-0048 IMMS	
C	D-0049 IMMS	
C	D-0050 IMMS	
C	D-0051 IMMS	
C	D-0052 IMMS	
C	D-0053 IMMS	
C	D-0054 IMMS	
C	D-0055 IMMS	
C	D-0056 IMMS	
C	D-0057 IMMS	
C	D-0058 IMMS	
C	D-0063 IMMS	Decapitated, missing portions of flippers due to decomp; first reported on 5/8
C	D-0059 IMMS	
C	D-0060 IMMS	
C	D-0061 IMMS	
C	D-0062 IMMS	
C	D-0064 IMMS	
C	D-0065 IMMS	
C	D-0066 IMMS	
C	D-0067 IMMS	
C	D-0068 IMMS	
C	D-0069 IMMS	
C	D-0070 IMMS	
C	D-0071 IMMS	
C	D-0072 IMMS	
C	D-0085 IMMS	field necropsy on beach; damaged LFF, carapace covered in barnacles; first rep 5/13
C	D-0073 IMMS	
C	D-0074 IMMS	
C	L-0002 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0075 IMMS	

C	D-0076 IMMS	carapace cracked/broken
C	L-0003 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	L-0004 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0086 IMMS	"chopped up", likely prop wounds to carapace
C	D-0077 IMMS	red slimy substance covering carapace
C	D-0087 IMMS	skeletal remains
C	D-0088 IMMS	skeletal remains
C	D-0078 IMMS	
C	D-0089 IMMS	
C	D-0090 IMMS	floating, picked up by NPS
C	L-0005 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0079 IMMS	carapace only
C	D-0080 IMMS	carapace only
C	D-0091 IMMS	sample taken and logged, carcass painted and left on beach
C	D-0081 IMMS	
C	D-0082 IMMS	
C	L-0006 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0083 IMMS	
C	D-0092 IMMS	possible loggerhead, unsure of species ID
C	D-0093 IMMS	
C	D-0094 IMMS	carcass in plastic bag before oil swab taken
C	D-0084 IMMS	rear portion of carcass missing
C	L-0008 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	L-0009 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	L-0010 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0095 IMMS	carcass in plastic bag before oil swab taken; severe prop damage
C	L-0011 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0161 IMMS	
C	D-0096 IMMS	mangled caudal half of carcass
C	D-0097 IMMS	
C	D-0098 IMMS	
C	D-0099 IMMS	old injury to edge of carapace
C	D-0162 IMMS	
C	D-0100 IMMS	

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C	D-0101 IMMS	
C	D-0102 IMMS	
C	D-0103 IMMS	
C	D-0104 IMMS	
C	D-0105 IMMS	scrapes along plastron
C	D-0106 IMMS	missing right edge of carapace, advanced decomp
C	D-0107 IMMS	
C	D-0108 IMMS	extra costal scute on L side
C	D-0109 IMMS	edges of marginal scutes broken, postmortem
C	D-0110 IMMS	extra vertebral scute
C	D-0163 IMMS	
C	D-0112 IMMS	
C	D-0111 IMMS	
C	D-0113 IMMS	
C	D-0114 IMMS	
C	D-0118 IMMS	severely mangled, no accurate meas possible
C	D-0119 IMMS	black substance in mouth
C	D-0115 IMMS	
C	D-0116 IMMS	
C	D-0117 IMMS	
C	D-0120 IMMS	
C	D-0121 IMMS	
C	D-0122 IMMS	
C	D-0123 IMMS	
C	D-0124 IMMS	
C	D-0125 IMMS	
C	D-0126 IMMS	
C	D-0127 IMMS	
C	D-0128 IMMS	
C	D-0129 IMMS	
C	D-0130 IMMS	
C	D-0164 IMMS	
C	D-0165 IMMS	
C	D-0166 IMMS	

C	D-0167 IMMS	
N	D-0168 IMMS	
N	D-0169 IMMS	
C	D-0131 IMMS	
C	D-0132 IMMS	
C	L-0015 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	L-0014 IMMS	washed ashore alive
C	D-0133 IMMS	
C	D-0134 IMMS	
C	D-0135 IMMS	
C	D-0136 IMMS	
C	D-0137 IMMS	
C	D-0138 IMMS	
C	D-0139 IMMS	
C	D-0140 IMMS	
C	D-0141 IMMS	
C	D-0142 IMMS	
C	D-0143 IMMS	
C	D-0144 IMMS	
C	D-0145 IMMS	
C	D-0146 IMMS	
C	D-0147 IMMS	
C	D-0155 IMMS	
C	D-0148 IMMS	
C	D-0149 IMMS	
C	D-0150 IMMS	
C	D-0151 IMMS	
C	D-0152 IMMS	
C	D-0153 IMMS	
C	D-0154 IMMS	
C	D-0172 IMMS	
N	L-0016 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0156 IMMS	
C	D-0157 IMMS	

C	D-0158 IMMS	
C	D-0159 IMMS	
U		
C	L-0017 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	L-0018 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	L-0019 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
N	L-0020 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0160 IMMS	
N	D-0171 IMMS	
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Date	Stranding Reference	Species	ReportType	Condition	Disposition	Status	State
5/20/2010	MXT20100520-01	Caretta caretta	Directed Capture	Alive	Rehab	Rehab-AOA	
5/20/2010	MXT20100520-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
5/31/2010	BAS20100531-01	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
5/31/2010	BAS20100531-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
5/31/2010	BAS20100531-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
5/31/2010	BAS20100531-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
5/31/2010	BAS20100531-05	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
5/31/2010	BAS20100531-06	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
5/31/2010	BAS20100531-07	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	BAS20100601-01	Lepidochelys kempii	Directed Capture	Alive	Rehab-Died?	Necropsied?	
6/1/2010	BAS20100601-02	Lepidochelys kempii	Directed Capture	Alive	Rehab-Died?	Necropsied?	
6/1/2010	BAS20100601-03	Lepidochelys kempii	Directed Capture	Alive	Rehab-Died?	Necropsied?	
6/1/2010	BAS20100601-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	BAS20100601-05	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	BAS20100601-06	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	BAS20100601-07	Caretta caretta	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	BAS20100601-08	Eretmochelys imbricata	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	BAS20100601-09	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	BAS20100601-10	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	XXX20100601-01	Lepidochelys kempii	Directed Capture	Dead	Salvaged	Necropsied	
6/1/2010	XXX20100601-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	XXX20100601-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	XXX20100601-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	XXX20100601-05	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/6/2010	BAS20100606-01	Eretmochelys imbricata	Directed Capture	Alive	Rehab	Rehab-AOA	
6/6/2010	BAS20100606-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/6/2010	BAS20100606-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/6/2010	BAS20100606-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/6/2010	BAS20100606-05	Lepidochelys kempii	Directed Capture	Dead	Salvaged	Necropsied	
6/10/2010	BAS20100610-01	Lepidochelys kempii	Directed Capture	Dead	Salvaged	Necropsied	
6/10/2010	BAS20100610-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/10/2010	BAS20100610-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/10/2010	BAS20100610-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	

5/2/2010	MRC20100502-01	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/2/2010	MRC20100502-02	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/3/2010	SNW20100503-01	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/3/2010	JMI20100503-01	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/3/2010	MPW20100503-01	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/4/2010	SNW20100504-01	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/4/2010	SNW20100504-02	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/4/2010	FXM20100504-01	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/5/2010	MPW20100505-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/5/2010	MRC20100505-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/6/2010	MPW20100506-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/6/2010	MPW20100506-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/7/2010	MPW20100507-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/7/2010	MPW20100507-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/8/2010	ANR20100508-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/8/2010	JMI20100508-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/10/2010	JMI20100510-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/11/2010	MPW20100511-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/13/2010	MPW20100513-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/13/2010	MPW20100513-02	Caretta caretta	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/13/2010	MRC20100513-01	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/13/2010	MRC20100513-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/13/2010	MRC20100513-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/14/2010	LAJ20100514-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/16/2010	LAJ20100516-01	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/17/2010	MRC20100517-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/18/2010	MPW20100518-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/18/2010	MPW20100518-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/18/2010	MPW20100518-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/18/2010	MRC20100518-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/19/2010	LAJ20100519-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/19/2010	JMI20100519-01	Lepidochelys kempii	Stranding	Alive	Released		AL
5/20/2010	LAJ20100520-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/20/2010	LAJ20100520-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL

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5/20/2010	LAJ20100520-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/21/2010	MPW20100521-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/22/2010	RLR20100522-01	Lepidochelys kempii	Stranding	Alive	Rehab-Died	Necropsied	AL
5/22/2010	JMI20100522-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/22/2010	JMI20100522-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/23/2010	JMI20100523-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/23/2010	JMI20100523-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/24/2010	20100524	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/24/2010	20100524	Unknown	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/24/2010	20100524	Unknown	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/24/2010	20100524	Unknown	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/26/2010	20100526	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/27/2010	20100527	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/27/2010	20100527	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/28/2010	20100528	Unknown	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/29/2010	20100529	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/3/2010	JMI20100603-01	Caretta caretta	Stranding	Alive	Rehab	Rehab-IMMS	AL
6/4/2010	20100604	Unknown	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/5/2010	RLR20100605-01	Eretmochelys imbricata	Stranding	Alive	Rehab	Rehab-IMMS	AL
6/5/2010	20100605	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/6/2010	20100606	Unknown	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/6/2010	20100606	Unknown	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/7/2010	20100607	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/9/2010	20100609	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/11/2010	20100611	Caretta caretta	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/13/2010	20100613	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/13/2010	20100613	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/8/2010	NME20100508-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
5/8/2010	NME20100508-02	Caretta caretta	Stranding	Alive	Rehab-Died	Frozen	FL
5/8/2010	NME20100508-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	FL
5/10/2010	MEM20100510-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
5/11/2010	MAN20100511-01	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-Gulfarium	FL
5/12/2010	JWM20100512-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
5/13/2010	AVH20100513-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL

5/14/2010	VEL20100514-01	Caretta caretta	Stranding	Alive	Rehab-Died	Frozen	FL
5/14/2010	MEC20100514-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Gulfarium	FL
5/15/2010	NME20100515-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-NOAA	FL
5/17/2010	NME20100517-01	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-NOAA	FL
5/17/2010	MAN20100517-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Gulfarium	FL
5/17/2010	MAN20100517-02	Caretta caretta	Stranding	Dead	Salvaged	Frozen-Gulfarium	FL
5/17/2010	SSM20100517-01	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-GulfWorld	FL
5/18/2010	WAJ20100518-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
5/18/2010	JRJ20100518-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
5/18/2010	CTS20100518-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
5/19/2010	NME20100519-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-NOAA	FL
5/19/2010	NME20100519-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-NOAA	FL
5/19/2010	MAN20100519-01	Caretta caretta	Stranding	Alive	Rehab	Rehab-Gulfarium	FL
5/20/2010	WAJ20100520-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GulfWorld	FL
5/20/2010	BAE20100520-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-NOAA	FL
5/20/2010	20100520	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GulfWorld	FL
5/20/2010	MAN20100520-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Gulfarium	FL
5/21/2010	MAN20100521-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-Gulfarium	FL
5/24/2010	NME20100524-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-NOAA	FL
5/24/2010	GWG20100524-01	Caretta caretta	Stranding	Dead	Left on beach		FL
5/25/2010	NME20100525-01	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-NOAA	FL
5/27/2010	MJH20100527-01	Caretta caretta	Stranding	Dead	Buried		FL
5/28/2010	VXW20100528-01	Chelonia mydas	Stranding	Dead	Buried		FL
5/30/2010	NAD20100530-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
6/1/2010	NME20100601-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-NOAA	FL
6/6/2010	20100606	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
6/7/2010	NAD20100607-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-USFWS	FL
6/7/2010	NME20100607-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-NOAA	FL
6/9/2010	RAB20100609-01	Lepidochelys kempii	Stranding	Alive	Released		FL
6/10/2010	20100610	Eretmochelys imbricata	Stranding	Alive	Rehab	Rehab-GulfWorld	FL
6/11/2010	20100611	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
6/11/2010	20100611	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-Gulfarium	FL
6/12/2010	20100612	Chelonia mydas	Stranding	Dead	Salvaged	Frozen	FL
6/12/2010	20100612	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-Gulfarium	FL

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6/12/2010	20100612	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Gulfarium	FL
6/13/2010	20100613	Caretta caretta	Stranding	Dead	Salvaged	Frozen-Gulfarium	FL
6/14/2010	20100614	Caretta caretta	Stranding	Dead	Buried		FL
6/15/2010	20100615	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
6/16/2010	20100616	Caretta caretta	Stranding	Alive	Rehab	Rehab-Gulfarium	FL
5/1/2010	MJF20100504-01	Unknown	Stranding	Dead	Left on beach		LA
5/1/2010	MJF20100504-02	Unknown	Stranding	Dead	Left on beach		LA
5/3/2010	XXX20100503-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/3/2010	20100503	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/5/2010	JAL20100505-01	Chelonia mydas	Stranding	Dead	Salvaged	Frozen	LA
5/7/2010	MXC20100507-01	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-02	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-03	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-04	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-05	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-06	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-07	Caretta caretta	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-08	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-09	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-10	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-11	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-12	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-13	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-14	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	GXP20100507-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	LA
5/10/2010	CSE20100510-01	Unknown	Stranding	Dead	Salvaged	Frozen	LA
5/10/2010	CSE20100510-02	Unknown	Stranding	Dead	Salvaged	Frozen	LA
5/10/2010	MXC20100510-01	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/10/2010	MXC20100510-02	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/10/2010	MXC20100510-03	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/10/2010	MXC20100510-04	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/10/2010	MXC20100510-05	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/10/2010	MXC20100510-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	LA
5/11/2010	20100511-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA

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5/11/2010	20100511-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/12/2010	MXC20100512-01	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/12/2010	MXC20100512-02	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/12/2010	MXC20100512-03	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-AOA	LA
5/12/2010	MXC20100512-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/13/2010	MXT20100513-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/13/2010	JEB20100513-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/13/2010	MXC20100513-01	Eretmochelys imbricata	Stranding	Dead	Left on beach		LA
5/13/2010	MXC20100513-02	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/13/2010	20100513	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/14/2010	MXC20100514-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-AOA	LA
5/16/2010	MXH20100516-01	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-02	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-03	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-04	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-05	Caretta caretta	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-06	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-07	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-08	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-09	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/17/2010	MXT20100517-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/17/2010	AXL20100517-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/18/2010	SDD20100518-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/19/2010	20100519	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/20/2010	NXX20100520-01	Unknown	Stranding	Dead	Salvaged	Frozen	LA
5/22/2010	20100522	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/22/2010	20100522	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/23/2010	20100523	Unknown	Stranding	Dead	Salvaged	Frozen	LA
5/24/2010	20100524	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/24/2010	20100524	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/25/2010	20100525	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/25/2010	20100525	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/25/2010	20100525	Unknown	Stranding	Dead	Salvaged	Frozen	LA
5/26/2010	20100526	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA

5/26/2010	20100526	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/26/2010	20100526	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/27/2010	20100527	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/28/2010	20100528	Lepidochelys kempii	Skimmer	Alive	Rehab	Rehab-AOA	LA
5/29/2010	20100529	Unknown	Stranding	Dead	Salvaged	Frozen	LA
5/31/2010	20100531	Lepidochelys kempii	Skimmer	Alive	Rehab	Rehab-AOA	LA
6/5/2010	20100605	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/5/2010	20100605	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	LA
6/6/2010	20100606	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/6/2010	20100606	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/6/2010	20100606	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/7/2010	20100607	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/7/2010	20100607	Unknown	Stranding	Dead	Salvaged	Frozen	LA
6/8/2010	20100608	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/9/2010	20100609	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	LA
6/9/2010	20100609	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-AOA	LA
6/10/2010	20100610	Unknown	Stranding	Dead	Salvaged	Frozen	LA
6/12/2010	20100612	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-AOA	LA
6/13/2010	20100613	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/13/2010	20100613	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/13/2010	20100613	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/13/2010	20100613	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/14/2010	20100614	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/15/2010	20100615	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/15/2010	20100615	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
4/26/2010	CNH20100426-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
4/30/2010	CNH20100430-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
4/30/2010	EXP20100430-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
4/30/2010	EXP20100430-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
4/30/2010	EXP20100430-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
4/30/2010	TTH20100430-01	Lepidochelys kempii	Stranding	Alive	Rehab-Died	Necropsied	MS
5/1/2010	KMF20100501-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/1/2010	KMF20100501-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/1/2010	KMF20100501-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS

5/1/2010	KMF20100501-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/1/2010	KMF20100501-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/1/2010	KMF20100501-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/1/2010	EXP20100501-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	CLC20100502-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	CLC20100502-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	CLC20100502-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	KMF20100502-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	KMF20100502-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	KMF20100502-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-07	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-08	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	MSB20100503-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	MSB20100503-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	MSB20100503-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	MSB20100503-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	MSB20100503-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	WLH20100503-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	WLH20100503-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	WLH20100503-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/4/2010	EXP20100504-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/4/2010	CLC20100504-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/4/2010	CLC20100504-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/4/2010	CLC20100504-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/5/2010	WLH20100505-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/5/2010	DKV20100505-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/6/2010	EXJ20100506-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/6/2010	EXJ20100506-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS

5/6/2010	EXJ20100506-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/6/2010	SXC20100506-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	JNF20100507-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	JNF20100507-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	JBT20100507-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	CLM20100507-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	JNF20100507-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	JBT20100507-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	JNF20100507-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	MMK20100508-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	SAH20100508-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	JKM20100508-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	SAH20100508-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	JNF20100508-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	JNF20100508-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	JKM20100508-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	WLH20100510-01	Caretta caretta	Stranding	Dead	Salvaged	Necropsied	MS
5/9/2010	KMM20100509-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/9/2010	KMM20100509-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/9/2010	KMM20100509-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/9/2010	KMM20100509-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/10/2010	WLH20100510-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/10/2010	ZHS20100510-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/11/2010	BTN20100511-01	Caretta caretta	Stranding	Dead	Salvaged	Necropsied	MS
5/12/2010	ZHS20100512-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied?	MS
5/12/2010	ZHS20100512-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied?	MS
5/12/2010	ZHS20100512-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied?	MS
5/12/2010	ZHS20100512-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied?	MS
5/12/2010	ZHS20100512-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied?	MS
5/13/2010	JXS20100513-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS?	MS
5/13/2010	CNH20100514-01	Caretta caretta	Stranding	Dead	Left on beach		MS
5/14/2010	JNF20100514-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS?	MS
5/14/2010	JNF20100514-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS?	MS
5/14/2010	SAH20100514-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS

5/15/2010	LMJ20100515-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/15/2010	LMJ20100515-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/15/2010	JKM20100515-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/15/2010	JKM20100515-02	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/15/2010	KMM20100515-01	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/16/2010	EXJ20100516-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/18/2010	KPB20100518-01	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/18/2010	KPB20100518-02	Caretta caretta	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/18/2010	WLH20100518-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/19/2010	MDH20100519-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/19/2010	MDH20100519-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/20/2010	TTH20100520-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/20/2010	JNF20100520-02	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/20/2010	JNF20100520-01	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/21/2010	RDS20100521-01	Caretta caretta	Stranding	Dead	Left on beach		MS
5/21/2010	JNF20100521-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/21/2010	JNF20100521-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/22/2010	TTH20100522-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/24/2010	WLH20100524-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/24/2010	AJD20100524-01	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/26/2010	JXB20100526-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/26/2010	CNH20100526-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/26/2010	WLH20100526-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/27/2010	JBT20100527-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/27/2010	JKM20100527-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/27/2010	MJB20100527-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/28/2010	JNF20100528-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/28/2010	RAW20100528-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/3/2010	CNH20100603-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/4/2010	DKV20100604-01	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/5/2010	JNF20100605-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/5/2010	JNF20100605-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/5/2010	JNF20100605-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	KMM20100606-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS

6/6/2010	MJK20100606-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	MJK20100606-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	MJK20100606-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	MJK20100606-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	MJK20100606-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	JBT20100606-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	JBT20100606-02	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	JBT20100606-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	JBT20100606-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	JBT20100606-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	JBT20100606-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/7/2010	JRS20100608-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS+G3	MS
6/7/2010	WLH20100607-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/7/2010	KMH20100607-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/8/2010	WLH20100608-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/8/2010	WLH20100608-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/9/2010	WLH20100609-01	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/9/2010	WLH20100609-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/9/2010	JBT20100609-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/9/2010	JBT20100609-02	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/9/2010	JBT20100609-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	SLE20100610-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	SLE20100610-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	SLE20100610-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	SLE20100610-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	SLE20100610-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	RAW20100610-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	RAW20100610-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	RAW20100610-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	RAW20100610-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	RAW20100610-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	RAW20100610-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	KMH20100610-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	KMH20100610-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS

6/10/2010	KMH20100610-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	KMH20100610-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	KMH20100610-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	KMH20100610-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	WLH20100610-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	WLH20100610-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	TTH20100611-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/11/2010	KMH20100611-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/11/2010	WLH20100611-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-07	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-08	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-09	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-10	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-11	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-12	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-13	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	JBT20100611-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	JBT20100611-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	JBT20100611-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	JBT20100611-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	CRS20100611-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	WLH20100612-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	WLH20100612-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	WLH20100612-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	WLH20100612-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	WLH20100612-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	WLH20100612-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	RCL20100612-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	CRS20100612-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	JKM20100612-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/13/2010	CRS20100613-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS

6/13/2010	CRS20100613-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/13/2010	CRS20100613-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/13/2010	LCB20100613-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/13/2010	LCB20100613-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/13/2010	JKM20100613-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/13/2010	JKM20100613-02	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/13/2010	JKM20100613-03	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/13/2010	JKM20100613-04	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/14/2010	WLH20100614-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/15/2010	LCB20100615-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/16/2010	20100616	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Pasc	MS
6/16/2010	20100616	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Pasc	MS
6/16/2010	20100616	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Pasc	MS
6/16/2010	20100616	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Pasc	MS
6/16/2010	20100616	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Pasc	MS
5/18/2010	BXW20100518-01	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/12/2010	BAS20100612-01	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/12/2010	BAS20100612-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/12/2010	BAS20100612-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/13/2010	BAS20100613-01	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/13/2010	BAS20100613-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/13/2010	BAS20100613-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/13/2010	BAS20100613-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/13/2010	BAS20100613-05	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/13/2010	BAS20100613-06	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/13/2010	BAS20100613-07	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/13/2010	BAS20100613-08	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/13/2010	BAS20100613-09	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA	
6/13/2010	20100613	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/13/2010	20100613	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/14/2010	BAS20100614-01	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/14/2010	BAS20100614-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/14/2010	BAS20100614-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/14/2010	BAS20100614-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	

6/14/2010	BAS20100614-05	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-06	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-07	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-08	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-09	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-10	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-11	Caretta caretta	Directed Capture	Alive	Rehab	Rehab-AOA
6/15/2010	BAS20100615-01	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/15/2010	BAS20100615-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/15/2010	BAS20100615-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/15/2010	BAS20100615-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/15/2010	BAS20100615-05	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/15/2010	BAS20100615-06	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/15/2010	BAS20100615-07	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/16/2010	BAS20100616-01	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/16/2010	BAS20100616-02	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/16/2010	BAS20100616-03	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/16/2010	BAS20100616-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/16/2010	BAS20100616-05	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/16/2010	BAS20100616-06	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA

Descriptive Location	Latitude	Longitude	External oil?	TempLocation	Stranding	New	Alive
Directed Capture	28.96778	-88.79333	Y	No	No	No	Y
Directed Capture	28.90722	-88.80167	Y	No	No	No	Y
Directed Capture	28.9597	-88.5342	Y	No	No	No	Y
Directed Capture	28.9182	-88.5552	Y	No	No	No	Y
Directed Capture	28.865	-88.5658	Y	No	No	No	Y
Directed Capture	28.8538	-88.5617	Y	No	No	No	Y
Directed Capture	28.847	-88.5588	Y	No	No	No	Y
Directed Capture	28.8405	-88.5557	Y	No	No	No	Y
Directed Capture	28.6573	-88.4313	Y	No	No	No	Y
Directed Capture	28.8045	-88.4771	Y	No	No	No	Y
Directed Capture	28.804483	-88.4771	Y	No	No	No	Y
Directed Capture	28.80725	-88.47808	Y	No	No	No	Y
Directed Capture	28.813483	-88.480383	Y	No	No	No	Y
Directed Capture	28.81535	-88.479233	Y	No	No	No	Y
Directed Capture	28.81669	-88.47803	Y	No	No	No	Y
Directed Capture	28.828083	-88.37115	Y	No	No	No	Y
Directed Capture	28.829617	-88.471267	Y	No	No	No	Y
Directed Capture	28.826867	-88.464933	Y	No	No	No	Y
Directed Capture	28.834317	-88.42455	Y	No	No	No	Y
Directed Capture - LDWF	29.09	-89.78	Y	No	No	No	N
Directed Capture - LDWF	29.0919	-89.7781	Y	No	No	No	Y
Directed Capture - LDWF	29.0932	-89.7747	Y	No	No	No	Y
Directed Capture - LDWF	29.0998	-89.7574	Y	No	No	No	Y
Directed Capture - LDWF	29.1065	-89.748	Y	No	No	No	Y
Directed Capture	29.01025	-88.26369	Y	No	No	No	Y
Directed Capture	29.01025	-88.26369	Y	No	No	No	Y
Directed Capture	29.01025	-88.26369	Y	No	No	No	Y
Directed Capture	29.02569	-88.25586	Y	No	No	No	Y
Directed Capture	29.17372	-88.16519	Y	No	No	No	N
Directed Capture	28.7538	-88.85602	Y	No	No	No	N
Directed Capture	28.75114	-88.84875	Y	No	No	No	Y
Directed Capture	28.62252	-88.55688	Y	No	No	No	Y
Directed Capture	28.76398	-88.82482	Y	No	No	No	Y

"Lots of Sand Dunes" Condo, Baldwin Co	30.232019	-87.936861	N	No	Yes	No	N
eastern point of Dauphin Island	30.250125	-88.075553	N	No	Yes	No	N
Dauphin Island	30.248253	-88.125822	N	No	Yes	No	N
floating 2 miles North of Fort Gaines	30.268880	-88.071720	N	No	Yes	No	N
Dauphin Island	30.332274	-88.132595	N	No	Yes	No	N
Dauphin Island	30.248253	-88.125822	N	No	Yes	No	N
Mobile Bay, 4 miles south of Fowl River	30.395431	-88.107261	N	No	Yes	No	N
Mobile Bay, 7287 Bay Rd	30.552467	-88.123317	N	No	Yes	No	N
floating off of Bayou La Batre	30.368167	-88.278317	N	No	Yes	No	N
Coden	30.445639	-88.109028	N	No	Yes	No	N
Dauphin Island	30.250164	-88.162886	N	No	Yes	No	N
Donnie Grace, bay side	30.249856	-88.202100	N	No	Yes	No	N
outside Weeks Bay toward Fish River Reef	30.367914	-87.839833	N	No	Yes	No	N
18261 Scenic Hwy 98	30.492133	-87.929833	N	No	Yes	No	N
Dauphin Island	30.249450	-88.172633	N	No	Yes	No	N
Gulf Shores	30.253417	-87.823317	N	No	Yes	No	N
Bayou La Batre	30.381033	-88.267233	N	No	Yes	No	N
pier across from Fort Morgan Museum	30.230283	-88.023694	N	No	Yes	No	N
Baldwin Co	30.250570	-87.828960	N	No	Yes	No	N
Baldwin Co	30.228430	-87.861390	N	No	Yes	No	N
Baldwin Co	30.231160	-87.928990	N	No	Yes	No	N
200 yds SE of city pier	30.245610	-88.124230	N	No	Yes	No	N
Hwy 193 past Hwy 188, Mobile Co	30.370900	-88.109670	N	No	Yes	No	N
east of Dauphin Is public fishing pier on Sand Is	30.247186	-88.125303	N	No	Yes	No	N
Little Dauphin Is, north side	30.274270	-88.111150	N	No	Yes	No	N
Audubon Place beach	30.243830	-88.092890	N	No	Yes	No	N
bay side of Sand Island	30.227653	-88.113175	N	No	Yes	No	N
Coden	30.377883	-88.241517	N	No	Yes	No	N
Mobile Bay, 1 mile south of Fowl River	30.425728	-88.103975	N	No	Yes	No	N
Hwy 98 on county rd 1, near Pelican Island	30.378320	-87.851020	N	No	Yes	No	N
Dauphin Island	30.247530	-88.124480	N	No	Yes	No	N
mouth of Bayou La Batre, Mobile Bay	30.375000	-88.285000	N	No	Yes	No	Y
Dauphin Island, west end	30.386400	-88.560983	N	No	Yes	No	N
Dauphin Island, west end	30.386400	-88.560983	N	No	Yes	No	N

Coden	30.006272	-88.004007	N	No	Yes	No	N
Dauphin Island	30.244817	-88.114433	N	No	Yes	No	N
Bayou La Batre	30.381586	-88.257034	N	No	Yes	No	Y
floating near Bayou La Batre	30.376750	-88.258480	N	No	Yes	No	N
Mobile Bay	30.591497	-88.063306	N	No	Yes	No	N
Shore Rd of CR12	30.358870	-87.832670	N	No	Yes	No	N
Plash Island	30.282700	-87.751230	N	No	Yes	No	N
Dauphin Island	30.250000	-88.200000	N	Yes	Yes	No	N
Dauphin Island	30.270000	-88.150000	N	Yes	Yes	No	N
Mobile Bay	30.400000	-88.100000	N	Yes	Yes	No	N
Mobile Bay	30.500000	-88.100000	N	Yes	Yes	No	N
Mobile Bay	30.300000	-87.750000	N	Yes	Yes	No	N
west end of Dauphin Island	30.220000	-88.330000	N	Yes	Yes	No	N
Dauphin Island, bayside	30.260000	-88.110000	N	Yes	Yes	No	N
Mobile Bay	30.300000	-87.970000	N	Yes	Yes	No	N
floating in MS Sound near Coden Bayou	30.350000	-88.220000	N	Yes	Yes	No	N
floating in Perdido Pass near Orange Beach	30.278471	-87.555537	Y	No	Yes	No	Y
floating south of Coden	30.374000	-88.240000	N	Yes	Yes	No	N
East Beach, Baldwin County	30.248301	-87.676815	Y	No	Yes	No	Y
Bon Secour Bay	30.300000	-87.875000	N	Yes	Yes	No	N
W Dauphin Island	30.250000	-88.060000	N	Yes	Yes	No	N
floating off of Bayou La Batre	30.340000	-88.310000	N	Yes	Yes	No	N
Mobile Bay, east side	30.450000	-87.930000	N	Yes	Yes	No	N
Mobile Bay, west side	30.450000	-88.090000	N	Yes	Yes	No	N
Gulf Shores	30.251060	-87.653670	N	No	Yes	No	N
Bayou La Batre	30.366460	-88.244330	N	No	Yes	No	N
~100 ft from Fairhope Municipal Pier	30.525780	-87.917040	N	No	Yes	No	N
Panama City Beach	30.19650	-85.84358	N	No	Yes	No	N
Panama City Beach	30.2442	-85.93718	N	No	Yes	No	Y
Panama City Beach	30.16782	-85.794	N	No	Yes	No	N
Panama City Beach	30.21513	-85.87758	N	No	Yes	No	N
Pensacola Beach	30.32589	-87.17208	N	No	Yes	No	N
St. Joseph Peninsula State Park	29.77851	-85.40833	N	No	Yes	No	N
Perdido Key State Park	30.28801	-87.47814	N	No	Yes	No	N

East Walton County Beach, Orange St access	30.2724	-86.00381	N	No	Yes	No	Y
Naval Live Oaks (Headquarters), GUIS	30.36422	-87.12725	N	No	Yes	No	N
Tyndall AFB, Archery Rd beach, east of marina	30.08165	-85.62992	N	No	Yes	No	N
Panama City Beach	30.18925	-85.83112	N	No	Yes	No	N
Perdido Key area of Gulf Islands NS	30.30350	-87.39394	N	No	Yes	No	N
Santa Rosa area of Gulf Islands NS	30.35489	-87.01419	N	No	Yes	No	N
west Walton County	30.37170	-86.34960	N	No	Yes	No	N
Crooked Island east, Tyndall AFB	29.95664	-85.47378	N	No	Yes	No	N
Crooked Island west, Tyndall AFB	30.02786	-85.56911	N	No	Yes	No	N
Walton County, east of Draper Lake	30.34060	-86.21480	N	No	Yes	No	N
Panama City Beach	30.26268	-85.97958	N	No	Yes	No	N
St. Andrews Bay, Bunkers Cove at yacht club	30.14250	-85.64920	N	No	Yes	No	N
Pensacola Beach	30.33619	-87.11075	N	No	Yes	No	Y
Tyndall AFB, Crooked Island east at boardwalk	29.95634	-85.45734	N	No	Yes	No	N
St. Joe Beach	29.90192	-85.36683	N	No	Yes	No	N
Rosemary Beach, Walton County	30.28000	-86.03000	N	Yes	Yes	No	N
Naval Live Oaks, south beach on Santa Rosa sound	30.36074	-87.14003	N	No	Yes	No	N
Perdido Key	30.29619	-87.42647	N	No	Yes	No	Y
Panama City, Baypoint Marina Yacht Club	30.14352	-85.72778	N	No	Yes	No	N
Navarre Beach	30.37590	-86.88760	N	No	Yes	No	N
St. Andrews Bay	30.16385	-85.68565	N	No	Yes	No	N
Pensacola Naval Air Station, Trout Point Beach	30.33185	-87.34040	N	No	Yes	No	N
W Escambia County, inshore, floating	30.31250	-87.49710	N	No	Yes	No	N
Cape San Blas	29.68224	-85.31182	N	No	Yes	No	N
St. Andrews Bay, Sun Harbor Marina, Panama City	30.18415	-85.73262	N	No	Yes	No	N
Panama City Beach	30.16000	-85.81000	N	Yes	Yes	No	N
St. Vincent NWR	29.67590	-85.21767	N	No	Yes	No	N
Port of Panama City	30.17795	-85.72493	N	No	Yes	No	N
Pensacola	30.29000	-87.25000	N	Yes	Yes	No	Y
Panama City, Inlet Beach	30.19000	-85.87000	N	Yes	Yes	No	Y
West Miramar Beach	30.37000	-86.40000	N	Yes	Yes	No	N
Pensacola	30.30000	-87.30000	N	Yes	Yes	No	Y
Navarre Beach	30.37000	-86.85000	N	Yes	Yes	No	N
approx 1 mile off of Pensacola Beach	30.28000	-87.18000	Y	Yes	Yes	No	Y

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Eglin AFB, just east of Navarre Beach	30.37000	-86.86000	N	Yes	Yes	No	N
Pensacola Beach	30.25000	-87.20000	N	Yes	Yes	No	N
Pensacola Beach	30.30000	-87.20000	N	Yes	Yes	No	N
Pensacola Beach	30.27000	-87.45000	N	Yes	Yes	No	N
off of Destin			Y	Yes	Yes	Yes	Y
Elmers Island	29.17027	-90.08316	N	No	Yes	No	N
Elmers Island	29.18166	-90.06428	N	No	Yes	No	N
Slidell area, Lake Borgne	30.13447	-89.50054	N	No	Yes	No	N
Grand Isle	29.24	-89.98	N	Yes	Yes	No	N
Elmers Island	29.17235	-90.07981	N	No	Yes	No	N
Rutherford Beach	29.76692	-93.16193	N	No	Yes	No	N
Rutherford Beach	29.76879	-93.17164	N	No	Yes	No	N
Rutherford Beach	29.76972	-93.17667	N	No	Yes	No	N
Rutherford Beach	29.77171	-93.18671	N	No	Yes	No	N
Rutherford Beach	29.7732	-93.19467	N	No	Yes	No	N
Rutherford Beach	29.77341	-93.19683	N	No	Yes	No	N
Rutherford Beach	29.77354	-93.19756	N	No	Yes	No	N
Rutherford Beach	29.77576	-93.21589	N	No	Yes	No	N
Rutherford Beach	29.77738	-93.2461	N	No	Yes	No	N
Rutherford Beach	29.77728	-93.25497	N	No	Yes	No	N
Rutherford Beach	29.77728	-93.25497	N	No	Yes	No	N
Rutherford Beach	29.76578	-93.15643	N	No	Yes	No	N
Rutherford Beach	29.76119	-93.13665	N	No	Yes	No	N
Rutherford Beach	29.75513	-93.11017	N	No	Yes	No	N
floating near Slidell - Rigolets Pass	30.1588	-89.6505	N	No	Yes	No	N
Elmers Island	29.18184	-90.06364	N	No	Yes	No	N
Grand Isle	29.20786	-90.03112	N	No	Yes	No	N
Holly Beach	29.76897	-93.4392	N	No	Yes	No	N
Holly Beach	29.76879	-93.43438	N	No	Yes	No	N
Holly Beach	29.76922	-93.45638	N	No	Yes	No	N
Holly Beach	29.76897	-93.48772	N	No	Yes	No	N
Holly Beach	29.76771	-93.50714	N	No	Yes	No	N
Constance Beach	29.76031	-93.56936	N	No	Yes	No	N
Fourchon Beach	29.11	-90.18	N	Yes	Yes	No	N

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Fourchon Beach	29.11	-90.18	N	Yes	Yes	No	N
Mae's Beach	29.74595	-93.68512	N	No	Yes	No	N
Mae's Beach	29.74582	-93.68592	N	No	Yes	No	N
Mae's Beach	29.7423	-93.70653	N	No	Yes	No	Y
Grand Isle	30.1086	-89.3545	N	No	Yes	No	N
Grand Terre	29.209166	-90.029166	N	No	Yes	No	N
Grand Isle	29.28435	-89.92149	N	No	Yes	No	N
Holly Beach	29.74232	-93.7065	N	No	Yes	No	N
Holly Beach	29.76391	-93.36438	N	No	Yes	No	N
found floating, location?	29.23	-89.99	N	Yes	Yes	No	N
Mae's Beach	29.7424	-93.7062	N	No	Yes	No	Y
Long Beach	29.7534	-93.6293	N	No	Yes	No	N
Long Beach	29.7509	-93.6492	N	No	Yes	No	N
Mae's Beach	29.7396	-93.7208	N	No	Yes	No	N
Constance Beach	29.7605	-93.5674	N	No	Yes	No	N
Holly Beach	29.7683	-93.5018	N	No	Yes	No	N
Holly Beach	29.7689	-93.441	N	No	Yes	No	N
Rutherford Beach	29.7555	-93.1114	N	No	Yes	No	N
Rutherford Beach	29.7513	-93.0941	N	No	Yes	No	N
Rutherford Beach	29.7498	-93.0873	N	No	Yes	No	N
Bayou Rigaud, floating	29.14436	-89.59246	N	No	Yes	No	N
Lake Pontchartrain, floating	30.205	-90.11194	N	No	Yes	No	N
Fourchon Beach	29.09	-90.21566	N	No	Yes	No	N
near Cocodrie	29.24	-90.66	N	Yes	Yes	No	N
4 mi NE of Fishing Smack Bay	30.003805	-89.20633	N	No	Yes	No	N
Grand Isle Beach	29.24	-89.99	N	Yes	Yes	No	N
Empire Jetty Beach	29.25412	-89.60345	N	No	Yes	No	N
Grand Terre	29.28	-89.92	N	Yes	Yes	No	N
Bayou Terrebonne by Bayou La Fleur	29.26	-90.64	N	Yes	Yes	No	N
Lake Chien	29.33	-90.44	N	Yes	Yes	No	N
Bayou Trove	29.2386	-89.53792	N	No	Yes	No	N
Grand Isle State Park	29.24	-89.97	Y	Yes	Yes	No	N
Queen Bess Island	29.3	-89.96	N	Yes	Yes	No	N
Lake Felicity, North of Timbalier Island	29.26	-90.4	N	Yes	Yes	No	N

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Lake Felicity, North of Timbalier Island	29.26	-90.47	N	Yes	Yes	No	N
Lake Felicity, North of Timbalier Island	29.28	-90.42	N	Yes	Yes	No	N
Grand Isle Beach	29.2	-90.04	N	Yes	Yes	No	N
skimmer found ~50 mi S of Louisiana coastline, brou	28.4375	-89.8958	Y	No	Skimmer	No	Y
Cameron Parish beach	29.76	-93.34	N	Yes	Yes	No	N
skimmer found ~17 mi offshore Grand Isle	28.9932	-89.8412	Y	No	Skimmer	No	Y
Timbalier Island	29.04	-90.47	N	Yes	Yes	No	N
floating just offshore western LA beaches	29.76	-93.46	N	Yes	Yes	No	N
western Louisiana beaches	29.74	-93.42	N	Yes	Yes	No	N
western Louisiana beaches	29.74	-93.44	N	Yes	Yes	No	N
western Louisiana beaches	29.74	-93.46	N	Yes	Yes	No	N
Coup A Bel Pass	29.3	-89.9	Y	Yes	Yes	No	N
Marsh Island	29.5	-91.9	N	Yes	Yes	No	N
Barataria Bay	29.4	-89.94	Y	Yes	Yes	No	N
north Barataria Bay	29.43308	-89.88585	Y	No	Yes	No	N
western Louisiana, nearshore waters	29.7	-93	N	Yes	Yes	No	Y
Fourchon Beach	29.08	-90.14	N	Yes	Yes	No	N
no location info - est location in Chandeleur Sound	29.8	-89.1	N	Yes	Yes	No	Y
Rutherford Beach	29.74	-93.22	N	Yes	Yes	No	N
Rutherford Beach	29.72	-93.15	N	Yes	Yes	No	N
Rutherford Beach	29.72	-93.07	N	Yes	Yes	No	N
Fourchon Beach	29.1	-90.1	N	Yes	Yes	No	N
Slidell area	30.13	-89.57	N	Yes	Yes	No	N
Rollover Bayou (W LA near Rockefeller Refuge)	29.59	-92.7	N	Yes	Yes	No	N
Rollover Bayou (W LA near Rockefeller Refuge)	29.6	-92.6	N	Yes	Yes	No	N
Bay St. Louis	30.30880	-89.32590	N	No	Yes	No	N
Bay St. Louis	30.29410	-89.34320	N	No	Yes	No	N
Waveland	30.26410	-89.39200	N	No	Yes	No	N
Waveland	30.27260	-89.37750	N	No	Yes	No	N
Waveland	30.27360	-89.37640	N	No	Yes	No	N
Long Beach	30.34780	-89.13900	N	No	Yes	No	Y
Pass Christian	30.31481	-89.24207	N	No	Yes	No	N
Pass Christian	30.31071	-89.25556	N	No	Yes	No	N
Pass Christian	30.31460	-89.24252	N	No	Yes	No	N

Pass Christian	30.31080	-89.25728	N	No	Yes	No	N
Pass Christian	30.31295	-89.24477	N	No	Yes	No	N
Pass Christian	30.31082	-89.25535	N	No	Yes	No	N
Ocean Springs	30.40980	-88.84080	N	No	Yes	No	N
Bay St. Louis	30.31900	-89.32230	N	No	Yes	No	N
Waveland	30.28830	-89.36000	N	No	Yes	No	N
Waveland	30.28680	-89.36260	N	No	Yes	No	N
Pass Christian	30.30650	-89.26858	N	No	Yes	No	N
Pass Christian	30.30725	-89.26653	N	No	Yes	No	N
Bay St. Louis	30.30562	-89.32865	N	No	Yes	No	N
Pass Christian	30.32834	-89.19923	N	No	Yes	No	N
Pass Christian	30.30529	-89.27249	N	No	Yes	No	N
Pass Christian	30.32620	-89.20892	N	No	Yes	No	N
Pass Christian	30.32460	-89.21450	N	No	Yes	No	N
Biloxi	30.39289	-88.94716	N	No	Yes	No	N
Waveland	30.28865	-89.35290	N	No	Yes	No	N
Pass Christian	30.32824	-89.19985	N	No	Yes	No	N
Pass Christian	30.33144	-89.18568	N	No	Yes	No	N
Pass Christian	30.32144	-89.22351	N	No	Yes	No	N
Pass Christian	30.30750	-89.26659	N	No	Yes	No	N
Bay St. Louis	30.31558	-89.29004	N	No	Yes	No	N
Pass Christian	30.30525	-89.27421	N	No	Yes	No	N
Pass Christian	30.30989	-89.25963	N	No	Yes	No	N
Waveland	30.26362	-89.39346	N	No	Yes	No	N
Waveland	30.28670	-89.36321	N	No	Yes	No	N
Gulfport	30.35567	-89.11807	N	No	Yes	No	N
Waveland	30.24120	-89.42470	N	No	Yes	No	N
Gulfport	30.36948	-89.07825	N	No	Yes	No	N
Biloxi	30.39169	-88.95027	N	No	Yes	No	N
Biloxi	30.39271	-88.87608	N	No	Yes	No	N
Waveland	30.27834	-89.37222	N	No	Yes	No	N
Gulfport	30.37689	-89.04778	N	No	Yes	No	N
Waveland	30.27006	-89.38032	N	No	Yes	No	N
Bay St. Louis	30.30022	-89.33346	N	No	Yes	No	N

Pass Christian	30.32762	-89.20251	N	No	Yes	No	N
floating N of Ship Island	30.25080	-88.94120	N	No	Yes	No	N
Waveland	30.25685	-89.41499	N	No	Yes	No	N
Waveland	30.26483	-89.39040	N	No	Yes	No	N
Waveland	30.26471	-89.39070	N	No	Yes	No	N
Pass Christian, floating by Henderson Point	30.30320	-89.29570	N	No	Yes	No	N
Waveland	30.28749	-89.36136	N	No	Yes	No	N
Waveland	30.28790	-89.36065	N	No	Yes	No	N
Gulfport	30.36129	-89.10089	N	No	Yes	No	N
Long Beach	30.33749	-89.16818	N	No	Yes	No	N
Pass Christian	30.32775	-89.20048	N	No	Yes	No	N
Pass Christian	30.31166	-89.25018	N	No	Yes	No	N
Pass Christian	30.30335	-89.28335	N	No	Yes	No	N
Waveland	30.28267	-89.36761	N	No	Yes	No	N
Biloxi	30.39147	-88.95452	N	No	Yes	No	N
Biloxi	30.39385	-88.91407	N	No	Yes	No	N
Horn Island	30.22831	-88.64799	N	No	Yes	No	N
Pass Christian	30.31300	-89.24830	N	No	Yes	No	N
Pass Christian	30.31190	-89.29050	N	No	Yes	No	N
Gulfport	30.38250	-89.02280	N	No	Yes	No	N
Gulfport	30.38150	-89.02610	N	No	Yes	No	N
floating ~1/2 mile south of Biloxi bridge	30.38960	-88.84190	N	No	Yes	No	N
Waveland Beach at Nicholson Ave	30.29410	-89.35910	N	No	Yes	No	N
Pass Christian	30.32320	-89.21840	N	No	Yes	No	N
Gulfport Beach	30.35582	-89.11698	N	No	Yes	No	N
Gulfport Beach	30.33215	-89.18207	N	No	Yes	No	N
Lakeshore/Waveland	30.25117	-89.42138	N	No	Yes	No	N
Bay St. Louis	30.29545	-89.34080	N	No	Yes	No	N
Waveland	30.26715	-89.38553	N	No	Yes	No	N
Bay St. Louis	30.30980	-89.32553	N	No	Yes	No	N
West Ship Island	30.2115	-88.98480	N	No	Yes	No	N
Waveland	30.28248	-89.36733	N	No	Yes	No	N
Pass Christian	30.31406	-89.24347	N	No	Yes	No	N
Gulfport	30.37421	-89.04382	N	No	Yes	No	Y

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Bay St. Louis	30.30883	-89.32583	N	No	Yes	No	N
Waveland	30.27683	-89.37367	N	No	Yes	No	N
Waveland	30.28064	-89.36495	N	No	Yes	No	Y
Waveland	30.28127	-89.36557	N	No	Yes	No	Y
Pascagoula Beach	30.3433	-88.55500	N	No	Yes	No	N
Waveland	30.27234	-89.37753	N	No	Yes	No	N
SE Horn Island	30.2207	-88.59330	N	No	Yes	No	N
southside Cat Island	30.2283	-89.07330	N	No	Yes	No	N
Pass Christian	30.31352	-89.24396	N	No	Yes	No	N
Bellefontaine Beach	30.3433	-88.70330	N	No	Yes	No	N
water south of Cadet Point, Biloxi	30.3877	-88.85890	N	No	Yes	No	N
Waveland	30.28063	-89.36495	N	No	Yes	No	Y
Biloxi Bay	30.40980	-88.86906	N	No	Yes	No	N
Biloxi Bay	30.40980	-88.86906	N	No	Yes	No	N
Horn Island, ~3000' from W end	30.2398	-88.76870	N	No	Yes	No	N
Waveland	30.28655	-89.36330	N	No	Yes	No	N
Pass Christian	30.30725	-89.26660	N	No	Yes	No	N
Waveland	30.28063	-89.36495	N	No	Yes	No	Y
Long Beach	30.33743	-89.16837	N	No	Yes	No	N
Biloxi Beach	30.39154	-88.95600	N	No	Yes	No	N
north side of Horn Island	30.22307	-88.62952	N	No	Yes	No	N
Bangs Lake off of Pascagoula	30.3588	-88.47300	N	No	Yes	No	N
Biloxi, Back Bay	30.40079	-88.85896	N	No	Yes	No	N
Ocean Springs, McPherson Pier	30.40397	-88.83031	N	No	Yes	No	Y
Waveland	30.28063	-89.36495	N	No	Yes	No	Y
Ocean Springs	30.40397	-88.83031	N	No	Yes	No	Y
Biloxi, near Palace Casino	30.3959	-88.85830	N	No	Yes	No	N
Ocean Springs	30.40397	-88.83031	N	No	Yes	No	Y
Ocean Springs	30.4075	-88.83540	N	No	Yes	No	N
Gulfport	30.35487	-89.12191	N	No	Yes	No	N
Waveland	30.26605	-89.38722	N	No	Yes	No	N
Long Beach	30.34084	-89.15894	N	No	Yes	No	N
Biloxi, near harbor	30.39268	-88.88209	N	No	Yes	No	N
Gautier / Belle Fontaine Beach	30.3457	-88.74080	N	No	Yes	No	N

Biloxi	30.39158	-88.94994	N	No	Yes	No	N
Biloxi	30.39184	-88.94596	N	No	Yes	No	N
Biloxi	30.39183	-88.94596	N	No	Yes	No	N
Biloxi	30.39184	-88.94576	N	No	Yes	No	N
Biloxi	30.39262	-88.93246	N	No	Yes	No	N
Biloxi Beach	30.3932	-88.90645	N	No	Yes	No	N
Biloxi Beach	30.39353	-88.92310	N	No	Yes	No	N
Biloxi Beach	30.39382	-88.91889	N	No	Yes	No	N
Biloxi Beach	30.39375	-88.92016	N	No	Yes	No	N
Biloxi Beach	30.39108	-88.96432	N	No	Yes	No	N
Biloxi Beach	30.38968	-88.97850	N	No	Yes	No	N
Ocean Springs / Belle Fontaine Beach	30.34316	-88.72950	N	No	Yes	No	N
Gulfport Beach	30.3597	-89.10686	N	No	Yes	No	N
Biloxi Beach	30.3938	-88.91200	N	No	Yes	No	N
Gulfport Beach	30.37834	-89.04083	N	No	Yes	No	N
Gulfport Beach	30.38538	-89.01003	N	No	Yes	No	N
Gulfport Beach	30.37825	-89.04118	N	No	Yes	No	N
Gulfport Beach	30.3844	-89.01535	N	No	Yes	No	N
Biloxi Beach	30.38942	-88.98023	N	No	Yes	No	N
Biloxi Beach	30.39028	-88.97433	N	No	Yes	No	N
Biloxi Beach	30.39357	-88.89623	N	No	Yes	No	N
Gulfport Beach	30.3831	-89.0192	N	No	Yes	No	N
Biloxi Beach	30.3914	-89.0069	N	No	Yes	No	N
Biloxi Beach	30.39	-88.9756	N	No	Yes	No	N
Biloxi Beach	30.3875	-88.9942	N	No	Yes	No	N
Biloxi Beach	30.3889	-88.9847	N	No	Yes	No	N
Gulfport Beach	30.37058	-89.0742	N	No	Yes	No	N
Gulfport Beach	30.3706	-89.07417	N	No	Yes	No	N
Gulfport Beach	30.37131	-89.07161	N	No	Yes	No	N
Gulfport Beach	30.37158	-89.07066	N	No	Yes	No	N
Gulfport Beach	30.3768	-89.07045	N	No	Yes	No	N
Gulfport Beach	30.37262	-89.06721	N	No	Yes	No	N
Gulfport	30.38075	-89.02951	N	No	Yes	No	N
Gulfport	30.38097	-89.02944	N	No	Yes	No	N

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Gulfport	30.38048	-89.03049	N	No	Yes	No	N
Gulfport	30.38016	-89.03156	N	No	Yes	No	N
Biloxi	30.3799	-89.03266	N	No	Yes	No	N
Biloxi	30.38032	-89.03104	N	No	Yes	No	N
Gulfport Beach	30.37746	-89.0433	N	No	Yes	No	N
Gulfport Beach	30.37819	-89.0416	N	No	Yes	No	N
Waveland	30.2806	-89.3449	N	No	Yes	No	Y
Biloxi, Acadia Ave	30.39277	-88.9312	N	No	Yes	No	Y
Gulfport Beach	30.37819	-89.0416	N	No	Yes	No	N
Gulfport Beach	30.37819	-89.0416	N	No	Yes	No	N
Gulfport Beach	30.37843	-89.0413	N	No	Yes	No	N
Gulfport Beach	30.37837	-89.04101	N	No	Yes	No	N
Gulfport Beach	30.37457	-89.0563	N	No	Yes	No	N
Gulfport Beach	30.37456	-89.05634	N	No	Yes	No	N
Biloxi Beach	30.3887	-88.98878	N	No	Yes	No	N
Biloxi Beach	30.38877	-88.98797	N	No	Yes	No	N
Biloxi Beach	30.38877	-88.98797	N	No	Yes	No	N
Biloxi Beach	30.38886	-88.9741	N	No	Yes	No	N
Biloxi Beach	30.38886	-88.98734	N	No	Yes	No	N
Pass Christian Beach	30.32762	-89.20251	N	No	Yes	No	N
Gulfport Beach	30.38188	-89.02495	N	No	Yes	No	N
Gulfport Beach	30.38393	-89.01701	N	No	Yes	No	N
Gulfport Beach	30.38583	-89.00827	N	No	Yes	No	N
Biloxi Beach	30.39357	-88.89818	N	No	Yes	No	N
Biloxi Beach	30.39182	-88.94774	N	No	Yes	No	N
Biloxi Beach	30.39328	-88.92583	N	No	Yes	No	N
Biloxi Beach	30.37561	-89.09052	N	No	Yes	No	N
Biloxi Beach	30.37571	-89.05148	N	No	Yes	No	N
Biloxi Beach	30.38738	-89	N	No	Yes	No	N
Biloxi Beach	30.38746	-88.99895	N	No	Yes	No	N
near Horn Island - floating?	30.2333	-88.53093	N	No	Yes	No	N
floating off of Gulfport	30.32007	-89.17917	N	No	Yes	No	N
Waveland Pier	30.2806	-89.3449	N	No	Yes	No	Y
Biloxi Beach	30.39383	-88.91076	N	No	Yes	No	N

Biloxi Beach	30.39167	-88.89817	N	No	Yes	No	N
Biloxi Beach	30.39383	-88.91895	N	No	Yes	No	N
Gulfport Beach	30.37125	-89.07175	N	No	Yes	No	N
west side of Deer Island, Biloxi	30.26278	-88.89885	N	No	Yes	No	N
Waveland Pier	30.2806	-89.3449	N	No	Yes	No	Y
Waveland Pier	30.2806	-89.3449	N	No	Yes	No	Y
Waveland Pier	30.2806	-89.3449	N	No	Yes	No	Y
Waveland Pier	30.28063	-89.36495	N	No	Yes	No	Y
Biloxi Beach	30.38722	-89.00137	N	No	Yes	No	N
Ocean Springs	30.3603	-88.7642	N	No	Yes	No	N
Ocean Springs			N	Yes	Yes	Yes	N
Biloxi			N	Yes	Yes	Yes	N
Long Beach			N	Yes	Yes	Yes	N
Long Beach			N	Yes	Yes	Yes	N
Long Beach			N	Yes	Yes	Yes	N
Directed Capture	28.4665	-88.46116	Y	No	No	No	Y
Directed Capture	28.66965	-88.49193	Y	No	No	No	Y
Directed Capture	28.91208	-88.68748	Y	No	No	No	Y
Directed Capture	28.70114	-88.53979	Y	No	No	No	Y
Directed Capture	28.92108	-88.7991	Y	No	No	No	Y
Directed Capture	28.92094	-88.79822	Y	No	No	No	Y
Directed Capture	28.92891	-88.77321	Y	No	No	No	Y
Directed Capture	28.928	-88.7701	Y	No	No	No	Y
Directed Capture	28.92558	-88.74215	Y	No	No	No	Y
Directed Capture	28.93916	-88.71402	Y	No	No	No	Y
Directed Capture	28.94739	-88.70053	Y	No	No	No	Y
Directed Capture	28.96491	-88.67766	Y	No	No	No	Y
Directed Capture	28.98004	-88.65568	Y	No	No	No	Y
Directed Capture - LDWF	28.72474	-88.55243	Y	No	No	No	Y
Directed Capture - LDWF	28.81743	-88.63998	Y	No	No	No	Y
Directed Capture	29.2	-88.5	Y	Yes	No	No	Y
Directed Capture	29.185	-88.52	Y	Yes	No	No	Y
Directed Capture	29.17	-88.54	Y	Yes	No	No	Y
Directed Capture	29.155	-88.56	Y	Yes	No	No	Y

Directed Capture	29.13	-88.58	Y	Yes	No	No	Y
Directed Capture	29.105	-88.6	Y	Yes	No	No	Y
Directed Capture	29.09	-88.62	Y	Yes	No	No	Y
Directed Capture	29.075	-88.64	Y	Yes	No	No	Y
Directed Capture	29.06	-88.66	Y	Yes	No	No	Y
Directed Capture	29.045	-88.68	Y	Yes	No	No	Y
Directed Capture	29.03	-88.7	Y	Yes	No	No	Y
Directed Capture	28.75	-88.72	Y	Yes	No	No	Y
Directed Capture	28.69	-88.76	Y	Yes	No	No	Y
Directed Capture	28.7	-88.65	Y	Yes	No	No	Y
Directed Capture	28.66	-88.71	Y	Yes	No	No	Y
Directed Capture	28.64	-88.78	Y	Yes	No	No	Y
Directed Capture	28.62	-88.72	Y	Yes	No	No	Y
Directed Capture	28.58	-88.67	Y	Yes	No	No	Y
Directed Capture			Y	Yes	No	Yes	Y
Directed Capture			Y	Yes	No	Yes	Y
Directed Capture			Y	Yes	No	Yes	Y
Directed Capture			Y	Yes	No	Yes	Y
Directed Capture			Y	Yes	No	Yes	Y
Directed Capture			Y	Yes	No	Yes	Y

Symbol	Log #	Comments

C		outside of area of concern
C		outside of area of concern
C		outside of area of concern
C		outside of area of concern
C		outside of area of concern
C		outside of area of concern
C		outside of area of concern
C		outside of area of concern
C	D-0002 BSNWR	
C	D-0001 BSNWR	
C	D-0003 BSNWR	
C	D-0004 BSNWR	
C	D-0005 BSNWR	
C	D-0006 BSNWR	
C	D-0007 BSNWR	
C	D-0008 BSNWR	
C	D-0009 BSNWR	
C	D-0010 BSNWR	
C	D-0015 BSNWR	
C	D-0014 BSNWR	
C	D-0011 BSNWR	
C	D-0012 BSNWR	
C	D-0013 BSNWR	
C	D-0016 BSNWR	
C	D-0017 BSNWR	dried carcass
C	D-0018 BSNWR	
C	D-0019 BSNWR	
C	D-0020 BSNWR	
C	D-0021 BSNWR	
C	D-0023 BSNWR	
C	D-0022 BSNWR	
C	L-0001 BSNWR	
C	D-0024 BSNWR	
C	D-0025 BSNWR	

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C	D-0026 BSNWR	
C	D-0027 BSNWR	
C	L-0007 IMMS	emaciated; taken to IMMS for rehab; died 5/25, shipped to UF for necropsy
C	D-0028 BSNWR	
C	D-0029 BSNWR	
C	D-0030 BSNWR	
C	D-0031 BSNWR	
U		
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U		
C	L-0012 IMMS	found floating next to boom; externally oiled turtle; taken to IMMS for rehab
U		
C	L-0013 IMMS	externally oiled turtle; taken to IMMS for rehab
U		
U		too decomposed for necropsy
U		
U		
U		
C		parts only - head, guts and 1 flipper
C		
C		
C		very emaciated, missing part of RRF
C		very emaciated; taken to Gulf World, died soon after recovery
C		no head, flippers or internal organs
C		brown algae on carapace; some small barnacles on skin; adult female
C		prop damage to right side of carapace
C		no wounds; barnacles and algae on carapace; adult male
C		missing notch from right side carapace; barnacle and algae growth

C	barnacles on carapace and flippers; taken to Gulf World, died same day
C	apparent piece of metal in ventral LFF near insertion
C	dried carcass; little skin remaining, bones visible
C	no head or front flippers, shark bites
C	missing both front flippers and lrf
C	carapace completely covered w/barnacles and algae; adult female
C	emaciated, lots of barnacles, damage to base of front flippers and neck
C	
C	
C	in pieces, decomposed
C	carapace broken, pieces missing
C	skin and scutes peeling
C	numerous barnacles and light algae on carapace; taken to Gulfarium
C	old wound to posterior marginals; scutes peeling
C	posterior carapace gone; plastron missing; falling apart, nasty
U	
C	apparent skeg/prop damage to center carapace
C	caught on hook and line, hook in throat; taken to Gulfarium
C	prop wounds to right posterior carapace; heavy barnacles,small barnacles on skin
C	2 apparent prop wounds across carapace
C	skin and scutes peeling, very decomposed
C	fishing line entangled around neck
C	no head or flippers; damage to carapace - likely prop
C	missing skull; carapace bones disarticulating due to decomp
C	missing head and LFF, possible shark bites; gashes on plastron
U	
C	carapace bones disarticulating due to decomp
C	dried carcass; carapace broken across posterior; portions missing
U	caught on hook and line, hook removed and turtle released
U	
U	
U	
U	
U	caught by relocation trawler; ~50% coverage of thin oil sheen, also sheen in mouth

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U	
U	
U	in pieces due to decomp, unable to salvage
U	
N	caught by relocation trawler; apparent oil on turtle; taken to Gulfarium
C	
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C	parts only
C	
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U	

U	
C	swab sample taken
C	swab sample taken
C	taken to AOA for rehab
C	
C	
C	
C	swab sample taken
C	swab sample taken
U	
C	taken to AOA for rehab
C	swab sample taken
C	swab sample taken
C	swab sample taken
C	swab sample taken
C	swab sample taken
C	swab sample taken
C	swab sample taken
C	swab sample taken
C	swab sample taken
C	
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U	partial carcass, pieces only
U	

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C	D-0029 IMMS	
C	D-0030 IMMS	
C	D-0031 IMMS	
C	D-0032 IMMS	
C	D-0033 IMMS	
C	L-0001 IMMS	taken to IMMS, died in rehab, frozen for necropsy
C	D-0001 IMMS	
C	D-0002 IMMS	
C	D-0003 IMMS	

C	D-0004 IMMS
C	D-0005 IMMS
C	D-0006 IMMS
C	D-0034 IMMS
C	D-0007 IMMS
C	D-0008 IMMS
C	D-0009 IMMS
C	D-0010 IMMS
C	D-0011 IMMS
C	D-0012 IMMS
C	D-0013 IMMS
C	D-0014 IMMS
C	D-0015 IMMS
C	D-0016 IMMS
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C	D-0019 IMMS
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C	D-0025 IMMS
C	D-0026 IMMS
C	D-0027 IMMS
C	D-0028 IMMS
C	D-0035 IMMS
C	D-0036 IMMS
C	D-0037 IMMS
C	D-0038 IMMS
C	D-0039 IMMS
C	D-0040 IMMS
C	D-0041 IMMS
C	D-0042 IMMS

C	D-0043 IMMS	
C	D-0044 IMMS	
C	D-0045 IMMS	
C	D-0046 IMMS	
C	D-0047 IMMS	carcass in two pieces
C	D-0048 IMMS	
C	D-0049 IMMS	
C	D-0050 IMMS	
C	D-0051 IMMS	
C	D-0052 IMMS	
C	D-0053 IMMS	
C	D-0054 IMMS	
C	D-0055 IMMS	
C	D-0056 IMMS	
C	D-0057 IMMS	
C	D-0058 IMMS	
C	D-0063 IMMS	Decapitated, missing portions of flippers due to decomp; first reported on 5/8
C	D-0059 IMMS	
C	D-0060 IMMS	
C	D-0061 IMMS	
C	D-0062 IMMS	
C	D-0064 IMMS	
C	D-0065 IMMS	
C	D-0066 IMMS	
C	D-0067 IMMS	
C	D-0068 IMMS	
C	D-0069 IMMS	
C	D-0070 IMMS	
C	D-0071 IMMS	
C	D-0072 IMMS	
C	D-0085 IMMS	field necropsy on beach; damaged LFF, carapace covered in barnacles; first rep 5/13
C	D-0073 IMMS	
C	D-0074 IMMS	
C	L-0002 IMMS	incidentally captured on hook and line; taken to IMMS for rehab

C	D-0075 IMMS	
C	D-0076 IMMS	carapace cracked/broken
C	L-0003 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	L-0004 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0086 IMMS	"chopped up", likely prop wounds to carapace
C	D-0077 IMMS	red slimy substance covering carapace
C	D-0087 IMMS	skeletal remains
C	D-0088 IMMS	skeletal remains
C	D-0078 IMMS	
C	D-0089 IMMS	
C	D-0090 IMMS	floating, picked up by NPS
C	L-0005 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0079 IMMS	carapace only
C	D-0080 IMMS	carapace only
C	D-0091 IMMS	sample taken and logged, carcass painted and left on beach
C	D-0081 IMMS	
C	D-0082 IMMS	
C	L-0006 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0083 IMMS	
C	D-0092 IMMS	possible loggerhead, unsure of species ID
C	D-0093 IMMS	
C	D-0094 IMMS	carcass in plastic bag before oil swab taken
C	D-0084 IMMS	rear portion of carcass missing
C	L-0008 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	L-0009 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	L-0010 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0095 IMMS	carcass in plastic bag before oil swab taken; severe prop damage
C	L-0011 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0161 IMMS	
C	D-0096 IMMS	mangled caudal half of carcass
C	D-0097 IMMS	
C	D-0098 IMMS	
C	D-0099 IMMS	old injury to edge of carapace
C	D-0162 IMMS	

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C	D-0100 IMMS	
C	D-0101 IMMS	
C	D-0102 IMMS	
C	D-0103 IMMS	
C	D-0104 IMMS	
C	D-0105 IMMS	scrapes along plastron
C	D-0106 IMMS	missing right edge of carapace, advanced decomp
C	D-0107 IMMS	
C	D-0108 IMMS	extra costal scute on L side
C	D-0109 IMMS	edges of marginal scutes broken, postmortem
C	D-0110 IMMS	extra vertebral scute
C	D-0163 IMMS	
C	D-0112 IMMS	
C	D-0111 IMMS	
C	D-0113 IMMS	
C	D-0114 IMMS	
C	D-0118 IMMS	severely mangled, no accurate meas possible
C	D-0119 IMMS	black substance in mouth
C	D-0115 IMMS	
C	D-0116 IMMS	
C	D-0117 IMMS	
C	D-0120 IMMS	
C	D-0121 IMMS	
C	D-0122 IMMS	
C	D-0123 IMMS	
C	D-0124 IMMS	
C	D-0125 IMMS	
C	D-0126 IMMS	
C	D-0127 IMMS	
C	D-0128 IMMS	
C	D-0129 IMMS	
C	D-0130 IMMS	
C	D-0164 IMMS	
C	D-0165 IMMS	

C	D-0166 IMMS	
C	D-0167 IMMS	
C	D-0168 IMMS	
C	D-0169 IMMS	
C	D-0131 IMMS	
C	D-0132 IMMS	
C	L-0015 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	L-0014 IMMS	washed ashore alive
C	D-0133 IMMS	
C	D-0134 IMMS	
C	D-0135 IMMS	
C	D-0136 IMMS	
C	D-0137 IMMS	
C	D-0138 IMMS	
C	D-0139 IMMS	
C	D-0140 IMMS	
C	D-0141 IMMS	
C	D-0142 IMMS	
C	D-0143 IMMS	
C	D-0144 IMMS	
C	D-0145 IMMS	
C	D-0146 IMMS	
C	D-0147 IMMS	
C	D-0155 IMMS	
C	D-0148 IMMS	
C	D-0149 IMMS	
C	D-0150 IMMS	
C	D-0151 IMMS	
C	D-0152 IMMS	
C	D-0153 IMMS	
C	D-0154 IMMS	
C	D-0172 IMMS	
C	L-0016 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0156 IMMS	

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C	D-0157 IMMS	
C	D-0158 IMMS	
C	D-0159 IMMS	
C	D-0170 IMMS	
C	L-0017 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	L-0018 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	L-0019 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	L-0020 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0160 IMMS	
C	D-0171 IMMS	
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Date	Stranding Reference	Species	ReportType	Condition	Disposition	Status	State
5/20/2010	MXT20100520-01	Caretta caretta	Directed Capture	Alive	Rehab	Rehab-AOA	
5/20/2010	MXT20100520-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
5/31/2010	BAS20100531-01	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
5/31/2010	BAS20100531-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
5/31/2010	BAS20100531-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
5/31/2010	BAS20100531-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
5/31/2010	BAS20100531-05	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
5/31/2010	BAS20100531-06	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
5/31/2010	BAS20100531-07	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	BAS20100601-01	Lepidochelys kempii	Directed Capture	Alive	Rehab-Died?	Necropsied?	
6/1/2010	BAS20100601-02	Lepidochelys kempii	Directed Capture	Alive	Rehab-Died?	Necropsied?	
6/1/2010	BAS20100601-03	Lepidochelys kempii	Directed Capture	Alive	Rehab-Died?	Necropsied?	
6/1/2010	BAS20100601-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	BAS20100601-05	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	BAS20100601-06	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	BAS20100601-07	Caretta caretta	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	BAS20100601-08	Eretmochelys imbricata	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	BAS20100601-09	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	BAS20100601-10	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	XXX20100601-01	Lepidochelys kempii	Directed Capture	Dead	Salvaged	Necropsied	
6/1/2010	XXX20100601-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	XXX20100601-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	XXX20100601-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/1/2010	XXX20100601-05	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/6/2010	BAS20100606-01	Eretmochelys imbricata	Directed Capture	Alive	Rehab	Rehab-AOA	
6/6/2010	BAS20100606-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/6/2010	BAS20100606-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/6/2010	BAS20100606-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/6/2010	BAS20100606-05	Lepidochelys kempii	Directed Capture	Dead	Salvaged	Necropsied	
6/10/2010	BAS20100610-01	Lepidochelys kempii	Directed Capture	Dead	Salvaged	Necropsied	
6/10/2010	BAS20100610-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/10/2010	BAS20100610-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/10/2010	BAS20100610-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	

5/2/2010	MRC20100502-01	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/2/2010	MRC20100502-02	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/3/2010	SNW20100503-01	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/3/2010	JMI20100503-01	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/3/2010	MPW20100503-01	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/4/2010	SNW20100504-01	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/4/2010	SNW20100504-02	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/4/2010	FXM20100504-01	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/5/2010	MPW20100505-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/5/2010	MRC20100505-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/6/2010	MPW20100506-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/6/2010	MPW20100506-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/7/2010	MPW20100507-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/7/2010	MPW20100507-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/8/2010	ANR20100508-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/8/2010	JMI20100508-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/10/2010	JMI20100510-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/11/2010	MPW20100511-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/13/2010	MPW20100513-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/13/2010	MPW20100513-02	Caretta caretta	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/13/2010	MRC20100513-01	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/13/2010	MRC20100513-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/13/2010	MRC20100513-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/14/2010	LAJ20100514-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/16/2010	LAJ20100516-01	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/17/2010	MRC20100517-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/18/2010	MPW20100518-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/18/2010	MPW20100518-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/18/2010	MPW20100518-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/18/2010	MRC20100518-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/19/2010	LAJ20100519-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/19/2010	JMI20100519-01	Lepidochelys kempii	Stranding	Alive	Released		AL
5/20/2010	LAJ20100520-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/20/2010	LAJ20100520-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL

5/20/2010	LAJ20100520-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/21/2010	MPW20100521-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/22/2010	RLR20100522-01	Lepidochelys kempii	Stranding	Alive	Rehab-Died	Necropsied	AL
5/22/2010	JMI20100522-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/22/2010	JMI20100522-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/23/2010	JMI20100523-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/23/2010	JMI20100523-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/24/2010	20100524	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/24/2010	20100524	Unknown	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/24/2010	20100524	Unknown	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/24/2010	20100524	Unknown	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/26/2010	20100526	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/27/2010	20100527	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/27/2010	20100527	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/28/2010	20100528	Unknown	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/29/2010	20100529	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/3/2010	JMI20100603-01	Caretta caretta	Stranding	Alive	Rehab	Rehab-IMMS	AL
6/4/2010	20100604	Unknown	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/5/2010	RLR20100605-01	Eretmochelys imbricata	Stranding	Alive	Rehab	Rehab-IMMS	AL
6/5/2010	20100605	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/6/2010	20100606	Unknown	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/6/2010	20100606	Unknown	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/7/2010	20100607	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/9/2010	20100609	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/11/2010	20100611	Caretta caretta	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/13/2010	20100613	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/13/2010	20100613	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/16/2010	20100616	Caretta caretta	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/8/2010	NME20100508-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
5/8/2010	NME20100508-02	Caretta caretta	Stranding	Alive	Rehab-Died	Frozen	FL
5/8/2010	NME20100508-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	FL
5/10/2010	MEM20100510-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
5/11/2010	MAN20100511-01	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-Gulfarium	FL
5/12/2010	JWM20100512-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL

5/13/2010	AVH20100513-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
5/14/2010	VEL20100514-01	Caretta caretta	Stranding	Alive	Rehab-Died	Frozen	FL
5/14/2010	MEC20100514-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Gulfarium	FL
5/15/2010	NME20100515-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-NOAA	FL
5/17/2010	NME20100517-01	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-NOAA	FL
5/17/2010	MAN20100517-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Gulfarium	FL
5/17/2010	MAN20100517-02	Caretta caretta	Stranding	Dead	Salvaged	Frozen-Gulfarium	FL
5/17/2010	SSM20100517-01	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-GulfWorld	FL
5/18/2010	WAJ20100518-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
5/18/2010	JRJ20100518-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
5/18/2010	CTS20100518-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
5/19/2010	NME20100519-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-NOAA	FL
5/19/2010	NME20100519-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-NOAA	FL
5/19/2010	MAN20100519-01	Caretta caretta	Stranding	Alive	Rehab	Rehab-Gulfarium	FL
5/20/2010	WAJ20100520-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GulfWorld	FL
5/20/2010	BAE20100520-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-NOAA	FL
5/20/2010	20100520	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GulfWorld	FL
5/20/2010	MAN20100520-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Gulfarium	FL
5/21/2010	MAN20100521-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-Gulfarium	FL
5/24/2010	NME20100524-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-NOAA	FL
5/24/2010	GWG20100524-01	Caretta caretta	Stranding	Dead	Left on beach		FL
5/25/2010	NME20100525-01	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-NOAA	FL
5/27/2010	MJH20100527-01	Caretta caretta	Stranding	Dead	Buried		FL
5/28/2010	VXW20100528-01	Chelonia mydas	Stranding	Dead	Buried		FL
5/30/2010	NAD20100530-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
6/1/2010	NME20100601-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-NOAA	FL
6/6/2010	20100606	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
6/7/2010	NAD20100607-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-USFWS	FL
6/7/2010	NME20100607-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-NOAA	FL
6/9/2010	RAB20100609-01	Lepidochelys kempii	Stranding	Alive	Released		FL
6/10/2010	20100610	Eretmochelys imbricata	Stranding	Alive	Rehab	Rehab-GulfWorld	FL
6/11/2010	20100611	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
6/11/2010	20100611	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-Gulfarium	FL
6/12/2010	20100612	Chelonia mydas	Stranding	Dead	Salvaged	Frozen	FL

6/12/2010	20100612	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-Gulfarium	FL
6/12/2010	20100612	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Gulfarium	FL
6/13/2010	20100613	Caretta caretta	Stranding	Dead	Salvaged	Frozen-Gulfarium	FL
6/14/2010	20100614	Caretta caretta	Stranding	Dead	Buried		FL
6/15/2010	20100615	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
6/16/2010	20100616	Caretta caretta	Stranding	Alive	Rehab	Rehab-Gulfarium	FL
5/1/2010	MJF20100504-01	Unknown	Stranding	Dead	Left on beach		LA
5/1/2010	MJF20100504-02	Unknown	Stranding	Dead	Left on beach		LA
5/3/2010	XXX20100503-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/3/2010	20100503	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/5/2010	JAL20100505-01	Chelonia mydas	Stranding	Dead	Salvaged	Frozen	LA
5/7/2010	MXC20100507-01	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-02	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-03	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-04	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-05	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-06	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-07	Caretta caretta	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-08	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-09	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-10	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-11	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-12	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-13	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-14	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	GXP20100507-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	LA
5/10/2010	CSE20100510-01	Unknown	Stranding	Dead	Salvaged	Frozen	LA
5/10/2010	CSE20100510-02	Unknown	Stranding	Dead	Salvaged	Frozen	LA
5/10/2010	MXC20100510-01	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/10/2010	MXC20100510-02	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/10/2010	MXC20100510-03	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/10/2010	MXC20100510-04	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/10/2010	MXC20100510-05	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/10/2010	MXC20100510-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	LA

5/11/2010	20100511-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/11/2010	20100511-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/12/2010	MXC20100512-01	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/12/2010	MXC20100512-02	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/12/2010	MXC20100512-03	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-AOA	LA
5/12/2010	MXC20100512-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/13/2010	MXT20100513-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/13/2010	JEB20100513-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/13/2010	MXC20100513-01	Eretmochelys imbricata	Stranding	Dead	Left on beach		LA
5/13/2010	MXC20100513-02	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/13/2010	20100513	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/14/2010	MXC20100514-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-AOA	LA
5/16/2010	MXH20100516-01	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-02	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-03	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-04	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-05	Caretta caretta	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-06	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-07	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-08	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-09	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/17/2010	MXT20100517-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/17/2010	AXL20100517-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/18/2010	SDD20100518-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/19/2010	20100519	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/20/2010	NXX20100520-01	Unknown	Stranding	Dead	Salvaged	Frozen	LA
5/22/2010	20100522	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/22/2010	20100522	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/23/2010	20100523	Unknown	Stranding	Dead	Salvaged	Frozen	LA
5/24/2010	20100524	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/24/2010	20100524	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/25/2010	20100525	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/25/2010	20100525	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/25/2010	20100525	Unknown	Stranding	Dead	Salvaged	Frozen	LA

5/26/2010	20100526	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/26/2010	20100526	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/26/2010	20100526	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/27/2010	20100527	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/28/2010	20100528	Lepidochelys kempii	Skimmer	Alive	Rehab	Rehab-AOA	LA
5/29/2010	20100529	Unknown	Stranding	Dead	Salvaged	Frozen	LA
5/31/2010	20100531	Lepidochelys kempii	Skimmer	Alive	Rehab	Rehab-AOA	LA
6/5/2010	20100605	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/5/2010	20100605	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	LA
6/6/2010	20100606	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/6/2010	20100606	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/6/2010	20100606	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/7/2010	20100607	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/7/2010	20100607	Unknown	Stranding	Dead	Salvaged	Frozen	LA
6/8/2010	20100608	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/9/2010	20100609	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	LA
6/9/2010	20100609	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-AOA	LA
6/10/2010	20100610	Unknown	Stranding	Dead	Salvaged	Frozen	LA
6/12/2010	20100612	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-AOA	LA
6/13/2010	20100613	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/13/2010	20100613	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/13/2010	20100613	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/13/2010	20100613	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/14/2010	20100614	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/15/2010	20100615	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/15/2010	20100615	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
6/17/2010	20100617	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
4/26/2010	CNH20100426-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
4/30/2010	CNH20100430-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
4/30/2010	EXP20100430-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
4/30/2010	EXP20100430-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
4/30/2010	EXP20100430-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
4/30/2010	TTH20100430-01	Lepidochelys kempii	Stranding	Alive	Rehab-Died	Necropsied	MS
5/1/2010	KMF20100501-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS

5/1/2010	KMF20100501-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/1/2010	KMF20100501-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/1/2010	KMF20100501-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/1/2010	KMF20100501-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/1/2010	KMF20100501-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/1/2010	EXP20100501-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	CLC20100502-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	CLC20100502-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	CLC20100502-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	KMF20100502-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	KMF20100502-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	KMF20100502-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-07	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-08	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	MSB20100503-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	MSB20100503-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	MSB20100503-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	MSB20100503-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	MSB20100503-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	WLH20100503-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	WLH20100503-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	WLH20100503-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/4/2010	EXP20100504-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/4/2010	CLC20100504-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/4/2010	CLC20100504-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/4/2010	CLC20100504-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/5/2010	WLH20100505-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/5/2010	DKV20100505-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS

5/6/2010	EXJ20100506-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/6/2010	EXJ20100506-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/6/2010	EXJ20100506-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/6/2010	SXC20100506-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	JNF20100507-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	JNF20100507-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	JBT20100507-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	CLM20100507-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	JNF20100507-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	JBT20100507-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	JNF20100507-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	MMK20100508-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	SAH20100508-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	JKM20100508-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	SAH20100508-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	JNF20100508-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	JNF20100508-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	JKM20100508-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	WLH20100510-01	Caretta caretta	Stranding	Dead	Salvaged	Necropsied	MS
5/9/2010	KMM20100509-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/9/2010	KMM20100509-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/9/2010	KMM20100509-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/9/2010	KMM20100509-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/10/2010	WLH20100510-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/10/2010	ZHS20100510-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/11/2010	BTN20100511-01	Caretta caretta	Stranding	Dead	Salvaged	Necropsied	MS
5/12/2010	ZHS20100512-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied?	MS
5/12/2010	ZHS20100512-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied?	MS
5/12/2010	ZHS20100512-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied?	MS
5/12/2010	ZHS20100512-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied?	MS
5/12/2010	ZHS20100512-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied?	MS
5/13/2010	JXS20100513-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS?	MS
5/13/2010	CNH20100514-01	Caretta caretta	Stranding	Dead	Left on beach		MS
5/14/2010	JNF20100514-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS?	MS

5/14/2010	JNF20100514-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS?	MS
5/14/2010	SAH20100514-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/15/2010	LMJ20100515-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/15/2010	LMJ20100515-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/15/2010	JKM20100515-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/15/2010	JKM20100515-02	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/15/2010	KMM20100515-01	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/16/2010	EXJ20100516-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/18/2010	KPB20100518-01	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/18/2010	KPB20100518-02	Caretta caretta	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/18/2010	WLH20100518-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/19/2010	MDH20100519-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/19/2010	MDH20100519-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/20/2010	TTH20100520-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/20/2010	JNF20100520-02	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/20/2010	JNF20100520-01	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/21/2010	RDS20100521-01	Caretta caretta	Stranding	Dead	Left on beach		MS
5/21/2010	JNF20100521-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/21/2010	JNF20100521-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/22/2010	TTH20100522-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/24/2010	WLH20100524-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/24/2010	AJD20100524-01	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/26/2010	JXB20100526-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/26/2010	CNH20100526-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/26/2010	WLH20100526-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/27/2010	JBT20100527-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/27/2010	JKM20100527-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/27/2010	MJB20100527-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/28/2010	JNF20100528-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/28/2010	RAW20100528-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/3/2010	CNH20100603-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/4/2010	DKV20100604-01	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/5/2010	JNF20100605-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/5/2010	JNF20100605-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS

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6/5/2010	JNF20100605-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	KMM20100606-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	MJK20100606-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	MJK20100606-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	MJK20100606-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	MJK20100606-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	MJK20100606-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	JBT20100606-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	JBT20100606-02	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	JBT20100606-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	JBT20100606-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	JBT20100606-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	JBT20100606-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/7/2010	JRS20100608-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS+G3	MS
6/7/2010	WLH20100607-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/7/2010	KMH20100607-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/8/2010	WLH20100608-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/8/2010	WLH20100608-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/9/2010	WLH20100609-01	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/9/2010	WLH20100609-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/9/2010	JBT20100609-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/9/2010	JBT20100609-02	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/9/2010	JBT20100609-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	SLE20100610-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	SLE20100610-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	SLE20100610-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	SLE20100610-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	SLE20100610-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	RAW20100610-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	RAW20100610-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	RAW20100610-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	RAW20100610-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	RAW20100610-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	RAW20100610-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS

6/10/2010	KMH20100610-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	KMH20100610-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	KMH20100610-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	KMH20100610-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	KMH20100610-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	KMH20100610-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	WLH20100610-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	WLH20100610-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	TTH20100611-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/11/2010	KMH20100611-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/11/2010	WLH20100611-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-07	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-08	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-09	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-10	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-11	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-12	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-13	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	JBT20100611-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	JBT20100611-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	JBT20100611-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	JBT20100611-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	CRS20100611-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	WLH20100612-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	WLH20100612-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	WLH20100612-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	WLH20100612-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	WLH20100612-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	WLH20100612-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	RCL20100612-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	CRS20100612-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-IMMS	MS

6/12/2010	JKM20100612-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/13/2010	CRS20100613-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/13/2010	CRS20100613-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/13/2010	CRS20100613-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/13/2010	LCB20100613-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/13/2010	LCB20100613-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/13/2010	JKM20100613-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/13/2010	JKM20100613-02	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/13/2010	JKM20100613-03	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/13/2010	JKM20100613-04	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/14/2010	WLH20100614-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/15/2010	LCB20100615-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/16/2010	20100616	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Pasc	MS
6/16/2010	20100616	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Pasc	MS
6/16/2010	20100616	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Pasc	MS
6/16/2010	20100616	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Pasc	MS
6/16/2010	20100616	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Pasc	MS
6/17/2010	20100617	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/17/2010	20100617	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/17/2010	20100617	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/17/2010	20100617	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/17/2010	20100617	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/17/2010	20100617	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/18/2010	BXW20100518-01	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/12/2010	BAS20100612-01	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/12/2010	BAS20100612-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/12/2010	BAS20100612-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/13/2010	BAS20100613-01	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/13/2010	BAS20100613-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/13/2010	BAS20100613-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/13/2010	BAS20100613-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/13/2010	BAS20100613-05	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/13/2010	BAS20100613-06	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	
6/13/2010	BAS20100613-07	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA	

6/13/2010	BAS20100613-08	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/13/2010	BAS20100613-09	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/13/2010	20100613	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/13/2010	20100613	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-01	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-05	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-06	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-07	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-08	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-09	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-10	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-11	Caretta caretta	Directed Capture	Alive	Rehab	Rehab-AOA
6/15/2010	BAS20100615-01	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/15/2010	BAS20100615-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/15/2010	BAS20100615-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/15/2010	BAS20100615-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/15/2010	BAS20100615-05	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/15/2010	BAS20100615-06	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/15/2010	BAS20100615-07	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/16/2010	BAS20100616-01	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/16/2010	BAS20100616-02	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/16/2010	BAS20100616-03	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/16/2010	BAS20100616-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/16/2010	BAS20100616-05	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/16/2010	BAS20100616-06	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA

Descriptive Location	Latitude	Longitude	External oil?	TempLocation	Stranding	New	Alive
Directed Capture	28.96778	-88.79333	Y	No	No	No	Y
Directed Capture	28.90722	-88.80167	Y	No	No	No	Y
Directed Capture	28.9597	-88.5342	Y	No	No	No	Y
Directed Capture	28.9182	-88.5552	Y	No	No	No	Y
Directed Capture	28.865	-88.5658	Y	No	No	No	Y
Directed Capture	28.8538	-88.5617	Y	No	No	No	Y
Directed Capture	28.847	-88.5588	Y	No	No	No	Y
Directed Capture	28.8405	-88.5557	Y	No	No	No	Y
Directed Capture	28.6573	-88.4313	Y	No	No	No	Y
Directed Capture	28.8045	-88.4771	Y	No	No	No	Y
Directed Capture	28.804483	-88.4771	Y	No	No	No	Y
Directed Capture	28.80725	-88.47808	Y	No	No	No	Y
Directed Capture	28.813483	-88.480383	Y	No	No	No	Y
Directed Capture	28.81535	-88.479233	Y	No	No	No	Y
Directed Capture	28.81669	-88.47803	Y	No	No	No	Y
Directed Capture	28.828083	-88.37115	Y	No	No	No	Y
Directed Capture	28.829617	-88.471267	Y	No	No	No	Y
Directed Capture	28.826867	-88.464933	Y	No	No	No	Y
Directed Capture	28.834317	-88.42455	Y	No	No	No	Y
Directed Capture - LDWF	29.09	-89.78	Y	No	No	No	N
Directed Capture - LDWF	29.0919	-89.7781	Y	No	No	No	Y
Directed Capture - LDWF	29.0932	-89.7747	Y	No	No	No	Y
Directed Capture - LDWF	29.0998	-89.7574	Y	No	No	No	Y
Directed Capture - LDWF	29.1065	-89.748	Y	No	No	No	Y
Directed Capture	29.01025	-88.26369	Y	No	No	No	Y
Directed Capture	29.01025	-88.26369	Y	No	No	No	Y
Directed Capture	29.01025	-88.26369	Y	No	No	No	Y
Directed Capture	29.02569	-88.25586	Y	No	No	No	Y
Directed Capture	29.17372	-88.16519	Y	No	No	No	N
Directed Capture	28.7538	-88.85602	Y	No	No	No	N
Directed Capture	28.75114	-88.84875	Y	No	No	No	Y
Directed Capture	28.62252	-88.55688	Y	No	No	No	Y
Directed Capture	28.76398	-88.82482	Y	No	No	No	Y

"Lots of Sand Dunes" Condo, Baldwin Co	30.232019	-87.936861	N	No	Yes	No	N
eastern point of Dauphin Island	30.250125	-88.075553	N	No	Yes	No	N
Dauphin Island	30.248253	-88.125822	N	No	Yes	No	N
floating 2 miles North of Fort Gaines	30.268880	-88.071720	N	No	Yes	No	N
Dauphin Island	30.332274	-88.132595	N	No	Yes	No	N
Dauphin Island	30.248253	-88.125822	N	No	Yes	No	N
Mobile Bay, 4 miles south of Fowl River	30.395431	-88.107261	N	No	Yes	No	N
Mobile Bay, 7287 Bay Rd	30.552467	-88.123317	N	No	Yes	No	N
floating off of Bayou La Batre	30.368167	-88.278317	N	No	Yes	No	N
Coden	30.445639	-88.109028	N	No	Yes	No	N
Dauphin Island	30.250164	-88.162886	N	No	Yes	No	N
Donnie Grace, bay side	30.249856	-88.202100	N	No	Yes	No	N
outside Weeks Bay toward Fish River Reef	30.367914	-87.839833	N	No	Yes	No	N
18261 Scenic Hwy 98	30.492133	-87.929833	N	No	Yes	No	N
Dauphin Island	30.249450	-88.172633	N	No	Yes	No	N
Gulf Shores	30.253417	-87.823317	N	No	Yes	No	N
Bayou La Batre	30.381033	-88.267233	N	No	Yes	No	N
pier across from Fort Morgan Museum	30.230283	-88.023694	N	No	Yes	No	N
Baldwin Co	30.250570	-87.828960	N	No	Yes	No	N
Baldwin Co	30.228430	-87.861390	N	No	Yes	No	N
Baldwin Co	30.231160	-87.928990	N	No	Yes	No	N
200 yds SE of city pier	30.245610	-88.124230	N	No	Yes	No	N
Hwy 193 past Hwy 188, Mobile Co	30.370900	-88.109670	N	No	Yes	No	N
east of Dauphin Is public fishing pier on Sand Is	30.247186	-88.125303	N	No	Yes	No	N
Little Dauphin Is, north side	30.274270	-88.111150	N	No	Yes	No	N
Audubon Place beach	30.243830	-88.092890	N	No	Yes	No	N
bay side of Sand Island	30.227653	-88.113175	N	No	Yes	No	N
Coden	30.377883	-88.241517	N	No	Yes	No	N
Mobile Bay, 1 mile south of Fowl River	30.425728	-88.103975	N	No	Yes	No	N
Hwy 98 on county rd 1, near Pelican Island	30.378320	-87.851020	N	No	Yes	No	N
Dauphin Island	30.247530	-88.124480	N	No	Yes	No	N
mouth of Bayou La Batre, Mobile Bay	30.375000	-88.285000	N	No	Yes	No	Y
Dauphin Island, west end	30.386400	-88.560983	N	No	Yes	No	N
Dauphin Island, west end	30.386400	-88.560983	N	No	Yes	No	N

Coden	30.006272	-88.004007	N	No	Yes	No	N
Dauphin Island	30.244817	-88.114433	N	No	Yes	No	N
Bayou La Batre	30.381586	-88.257034	N	No	Yes	No	Y
floating near Bayou La Batre	30.376750	-88.258480	N	No	Yes	No	N
Mobile Bay	30.591497	-88.063306	N	No	Yes	No	N
Shore Rd of CR12	30.358870	-87.832670	N	No	Yes	No	N
Plash Island	30.282700	-87.751230	N	No	Yes	No	N
Dauphin Island	30.250000	-88.200000	N	Yes	Yes	No	N
Dauphin Island	30.270000	-88.150000	N	Yes	Yes	No	N
Mobile Bay	30.400000	-88.100000	N	Yes	Yes	No	N
Mobile Bay	30.500000	-88.100000	N	Yes	Yes	No	N
Mobile Bay	30.300000	-87.750000	N	Yes	Yes	No	N
west end of Dauphin Island	30.220000	-88.330000	N	Yes	Yes	No	N
Dauphin Island, bayside	30.260000	-88.110000	N	Yes	Yes	No	N
Mobile Bay	30.300000	-87.970000	N	Yes	Yes	No	N
floating in MS Sound near Coden Bayou	30.350000	-88.220000	N	Yes	Yes	No	N
floating in Perdido Pass near Orange Beach	30.278471	-87.555537	Y	No	Yes	No	Y
floating south of Coden	30.374000	-88.240000	N	Yes	Yes	No	N
East Beach, Baldwin County	30.248301	-87.676815	Y	No	Yes	No	Y
Bon Secour Bay	30.300000	-87.875000	N	Yes	Yes	No	N
W Dauphin Island	30.250000	-88.060000	N	Yes	Yes	No	N
floating off of Bayou La Batre	30.340000	-88.310000	N	Yes	Yes	No	N
Mobile Bay, east side	30.450000	-87.930000	N	Yes	Yes	No	N
Mobile Bay, west side	30.450000	-88.090000	N	Yes	Yes	No	N
Gulf Shores	30.251060	-87.653670	N	No	Yes	No	N
Bayou La Batre	30.366460	-88.244330	N	No	Yes	No	N
~100 ft from Fairhope Municipal Pier	30.525780	-87.917040	N	No	Yes	No	N
Orange Beach			Y	Yes	Yes	Yes	N
Panama City Beach	30.19650	-85.84358	N	No	Yes	No	N
Panama City Beach	30.2442	-85.93718	N	No	Yes	No	Y
Panama City Beach	30.16782	-85.794	N	No	Yes	No	N
Panama City Beach	30.21513	-85.87758	N	No	Yes	No	N
Pensacola Beach	30.32589	-87.17208	N	No	Yes	No	N
St. Joseph Peninsula State Park	29.77851	-85.40833	N	No	Yes	No	N

Perdido Key State Park	30.28801	-87.47814	N	No	Yes	No	N
East Walton County Beach, Orange St access	30.2724	-86.00381	N	No	Yes	No	Y
Naval Live Oaks (Headquarters), GUIS	30.36422	-87.12725	N	No	Yes	No	N
Tyndall AFB, Archery Rd beach, east of marina	30.08165	-85.62992	N	No	Yes	No	N
Panama City Beach	30.18925	-85.83112	N	No	Yes	No	N
Perdido Key area of Gulf Islands NS	30.30350	-87.39394	N	No	Yes	No	N
Santa Rosa area of Gulf Islands NS	30.35489	-87.01419	N	No	Yes	No	N
west Walton County	30.37170	-86.34960	N	No	Yes	No	N
Crooked Island east, Tyndall AFB	29.95664	-85.47378	N	No	Yes	No	N
Crooked Island west, Tyndall AFB	30.02786	-85.56911	N	No	Yes	No	N
Walton County, east of Draper Lake	30.34060	-86.21480	N	No	Yes	No	N
Panama City Beach	30.26268	-85.97958	N	No	Yes	No	N
St. Andrews Bay, Bunkers Cove at yacht club	30.14250	-85.64920	N	No	Yes	No	N
Pensacola Beach	30.33619	-87.11075	N	No	Yes	No	Y
Tyndall AFB, Crooked Island east at boardwalk	29.95634	-85.45734	N	No	Yes	No	N
St. Joe Beach	29.90192	-85.36683	N	No	Yes	No	N
Rosemary Beach, Walton County	30.28000	-86.03000	N	Yes	Yes	No	N
Naval Live Oaks, south beach on Santa Rosa sound	30.36074	-87.14003	N	No	Yes	No	N
Perdido Key	30.29619	-87.42647	N	No	Yes	No	Y
Panama City, Baypoint Marina Yacht Club	30.14352	-85.72778	N	No	Yes	No	N
Navarre Beach	30.37590	-86.88760	N	No	Yes	No	N
St. Andrews Bay	30.16385	-85.68565	N	No	Yes	No	N
Pensacola Naval Air Station, Trout Point Beach	30.33185	-87.34040	N	No	Yes	No	N
W Escambia County, inshore, floating	30.31250	-87.49710	N	No	Yes	No	N
Cape San Blas	29.68224	-85.31182	N	No	Yes	No	N
St. Andrews Bay, Sun Harbor Marina, Panama City	30.18415	-85.73262	N	No	Yes	No	N
Panama City Beach	30.16000	-85.81000	N	Yes	Yes	No	N
St. Vincent NWR	29.67590	-85.21767	N	No	Yes	No	N
Port of Panama City	30.17795	-85.72493	N	No	Yes	No	N
Pensacola	30.29000	-87.25000	N	Yes	Yes	No	Y
Panama City, Inlet Beach	30.19000	-85.87000	N	Yes	Yes	No	Y
West Miramar Beach	30.37000	-86.40000	N	Yes	Yes	No	N
Pensacola	30.30000	-87.30000	N	Yes	Yes	No	Y
Navarre Beach	30.37000	-86.85000	N	Yes	Yes	No	N

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approx 1 mile off of Pensacola Beach	30.28000	-87.18000	Y	Yes	Yes	No	Y
Eglin AFB, just east of Navarre Beach	30.37000	-86.86000	N	Yes	Yes	No	N
Pensacola Beach	30.25000	-87.20000	N	Yes	Yes	No	N
Pensacola Beach	30.30000	-87.20000	N	Yes	Yes	No	N
Pensacola Beach	30.27000	-87.45000	N	Yes	Yes	No	N
approx 1 mile off of Destin	30.35800	-86.49900	N	Yes	Yes	No	Y
Elmers Island	29.17027	-90.08316	N	No	Yes	No	N
Elmers Island	29.18166	-90.06428	N	No	Yes	No	N
Slidell area, Lake Borgne	30.13447	-89.50054	N	No	Yes	No	N
Grand Isle	29.24	-89.98	N	Yes	Yes	No	N
Elmers Island	29.17235	-90.07981	N	No	Yes	No	N
Rutherford Beach	29.76692	-93.16193	N	No	Yes	No	N
Rutherford Beach	29.76879	-93.17164	N	No	Yes	No	N
Rutherford Beach	29.76972	-93.17667	N	No	Yes	No	N
Rutherford Beach	29.77171	-93.18671	N	No	Yes	No	N
Rutherford Beach	29.7732	-93.19467	N	No	Yes	No	N
Rutherford Beach	29.77341	-93.19683	N	No	Yes	No	N
Rutherford Beach	29.77354	-93.19756	N	No	Yes	No	N
Rutherford Beach	29.77576	-93.21589	N	No	Yes	No	N
Rutherford Beach	29.77738	-93.2461	N	No	Yes	No	N
Rutherford Beach	29.77728	-93.25497	N	No	Yes	No	N
Rutherford Beach	29.77728	-93.25497	N	No	Yes	No	N
Rutherford Beach	29.76578	-93.15643	N	No	Yes	No	N
Rutherford Beach	29.76119	-93.13665	N	No	Yes	No	N
Rutherford Beach	29.75513	-93.11017	N	No	Yes	No	N
floating near Slidell - Rigolets Pass	30.1588	-89.6505	N	No	Yes	No	N
Elmers Island	29.18184	-90.06364	N	No	Yes	No	N
Grand Isle	29.20786	-90.03112	N	No	Yes	No	N
Holly Beach	29.76897	-93.4392	N	No	Yes	No	N
Holly Beach	29.76879	-93.43438	N	No	Yes	No	N
Holly Beach	29.76922	-93.45638	N	No	Yes	No	N
Holly Beach	29.76897	-93.48772	N	No	Yes	No	N
Holly Beach	29.76771	-93.50714	N	No	Yes	No	N
Constance Beach	29.76031	-93.56936	N	No	Yes	No	N

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Fourchon Beach	29.11	-90.18	N	Yes	Yes	No	N
Fourchon Beach	29.11	-90.18	N	Yes	Yes	No	N
Mae's Beach	29.74595	-93.68512	N	No	Yes	No	N
Mae's Beach	29.74582	-93.68592	N	No	Yes	No	N
Mae's Beach	29.7423	-93.70653	N	No	Yes	No	Y
Grand Isle	30.1086	-89.3545	N	No	Yes	No	N
Grand Terre	29.209166	-90.029166	N	No	Yes	No	N
Grand Isle	29.28435	-89.92149	N	No	Yes	No	N
Holly Beach	29.74232	-93.7065	N	No	Yes	No	N
Holly Beach	29.76391	-93.36438	N	No	Yes	No	N
found floating, location?	29.23	-89.99	N	Yes	Yes	No	N
Mae's Beach	29.7424	-93.7062	N	No	Yes	No	Y
Long Beach	29.7534	-93.6293	N	No	Yes	No	N
Long Beach	29.7509	-93.6492	N	No	Yes	No	N
Mae's Beach	29.7396	-93.7208	N	No	Yes	No	N
Constance Beach	29.7605	-93.5674	N	No	Yes	No	N
Holly Beach	29.7683	-93.5018	N	No	Yes	No	N
Holly Beach	29.7689	-93.441	N	No	Yes	No	N
Rutherford Beach	29.7555	-93.1114	N	No	Yes	No	N
Rutherford Beach	29.7513	-93.0941	N	No	Yes	No	N
Rutherford Beach	29.7498	-93.0873	N	No	Yes	No	N
Bayou Rigaud, floating	29.14436	-89.59246	N	No	Yes	No	N
Lake Pontchartrain, floating	30.205	-90.11194	N	No	Yes	No	N
Fourchon Beach	29.09	-90.21566	N	No	Yes	No	N
near Cocodrie	29.24	-90.66	N	Yes	Yes	No	N
4 mi NE of Fishing Smack Bay	30.003805	-89.20633	N	No	Yes	No	N
Grand Isle Beach	29.24	-89.99	N	Yes	Yes	No	N
Empire Jetty Beach	29.25412	-89.60345	N	No	Yes	No	N
Grand Terre	29.28	-89.92	N	Yes	Yes	No	N
Bayou Terrebonne by Bayou La Fleur	29.26	-90.64	N	Yes	Yes	No	N
Lake Chien	29.33	-90.44	N	Yes	Yes	No	N
Bayou Trove	29.2386	-89.53792	N	No	Yes	No	N
Grand Isle State Park	29.24	-89.97	Y	Yes	Yes	No	N
Queen Bess Island	29.3	-89.96	N	Yes	Yes	No	N

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Lake Felicity, North of Timbalier Island	29.26	-90.4	N	Yes	Yes	No	N
Lake Felicity, North of Timbalier Island	29.26	-90.47	N	Yes	Yes	No	N
Lake Felicity, North of Timbalier Island	29.28	-90.42	N	Yes	Yes	No	N
Grand Isle Beach	29.2	-90.04	N	Yes	Yes	No	N
skimmer found ~50 mi S of Louisiana coastline, brou	28.4375	-89.8958	Y	No	Skimmer	No	Y
Cameron Parish beach	29.76	-93.34	N	Yes	Yes	No	N
skimmer found ~17 mi offshore Grand Isle	28.9932	-89.8412	Y	No	Skimmer	No	Y
Timbalier Island	29.04	-90.47	N	Yes	Yes	No	N
floating just offshore western LA beaches	29.76	-93.46	N	Yes	Yes	No	N
western Louisiana beaches	29.74	-93.42	N	Yes	Yes	No	N
western Louisiana beaches	29.74	-93.44	N	Yes	Yes	No	N
western Louisiana beaches	29.74	-93.46	N	Yes	Yes	No	N
Coup A Bel Pass	29.3	-89.9	Y	Yes	Yes	No	N
Marsh Island	29.5	-91.9	N	Yes	Yes	No	N
Barataria Bay	29.4	-89.94	Y	Yes	Yes	No	N
north Barataria Bay	29.43308	-89.88585	Y	No	Yes	No	N
western Louisiana, nearshore waters	29.7	-93	N	Yes	Yes	No	Y
Fourchon Beach	29.08	-90.14	N	Yes	Yes	No	N
no location info - est location in Chandeleur Sound	29.8	-89.1	N	Yes	Yes	No	Y
Rutherford Beach	29.74	-93.22	N	Yes	Yes	No	N
Rutherford Beach	29.72	-93.15	N	Yes	Yes	No	N
Rutherford Beach	29.72	-93.07	N	Yes	Yes	No	N
Fourchon Beach	29.1	-90.1	N	Yes	Yes	No	N
Slidell area	30.13	-89.57	N	Yes	Yes	No	N
Rollover Bayou (W LA near Rockefeller Refuge)	29.59	-92.7	N	Yes	Yes	No	N
Rollover Bayou (W LA near Rockefeller Refuge)	29.6	-92.6	N	Yes	Yes	No	N
Whiskey Island chain, south of Cocodrie			N	Yes	Yes	Yes	N
Bay St. Louis	30.30880	-89.32590	N	No	Yes	No	N
Bay St. Louis	30.29410	-89.34320	N	No	Yes	No	N
Waveland	30.26410	-89.39200	N	No	Yes	No	N
Waveland	30.27260	-89.37750	N	No	Yes	No	N
Waveland	30.27360	-89.37640	N	No	Yes	No	N
Long Beach	30.34780	-89.13900	N	No	Yes	No	Y
Pass Christian	30.31481	-89.24207	N	No	Yes	No	N

Pass Christian	30.31071	-89.25556	N	No	Yes	No	N
Pass Christian	30.31460	-89.24252	N	No	Yes	No	N
Pass Christian	30.31080	-89.25728	N	No	Yes	No	N
Pass Christian	30.31295	-89.24477	N	No	Yes	No	N
Pass Christian	30.31082	-89.25535	N	No	Yes	No	N
Ocean Springs	30.40980	-88.84080	N	No	Yes	No	N
Bay St. Louis	30.31900	-89.32230	N	No	Yes	No	N
Waveland	30.28830	-89.36000	N	No	Yes	No	N
Waveland	30.28680	-89.36260	N	No	Yes	No	N
Pass Christian	30.30650	-89.26858	N	No	Yes	No	N
Pass Christian	30.30725	-89.26653	N	No	Yes	No	N
Bay St. Louis	30.30562	-89.32865	N	No	Yes	No	N
Pass Christian	30.32834	-89.19923	N	No	Yes	No	N
Pass Christian	30.30529	-89.27249	N	No	Yes	No	N
Pass Christian	30.32620	-89.20892	N	No	Yes	No	N
Pass Christian	30.32460	-89.21450	N	No	Yes	No	N
Biloxi	30.39289	-88.94716	N	No	Yes	No	N
Waveland	30.28865	-89.35290	N	No	Yes	No	N
Pass Christian	30.32824	-89.19985	N	No	Yes	No	N
Pass Christian	30.33144	-89.18568	N	No	Yes	No	N
Pass Christian	30.32144	-89.22351	N	No	Yes	No	N
Pass Christian	30.30750	-89.26659	N	No	Yes	No	N
Bay St. Louis	30.31558	-89.29004	N	No	Yes	No	N
Pass Christian	30.30525	-89.27421	N	No	Yes	No	N
Pass Christian	30.30989	-89.25963	N	No	Yes	No	N
Waveland	30.26362	-89.39346	N	No	Yes	No	N
Waveland	30.28670	-89.36321	N	No	Yes	No	N
Gulfport	30.35567	-89.11807	N	No	Yes	No	N
Waveland	30.24120	-89.42470	N	No	Yes	No	N
Gulfport	30.36948	-89.07825	N	No	Yes	No	N
Biloxi	30.39169	-88.95027	N	No	Yes	No	N
Biloxi	30.39271	-88.87608	N	No	Yes	No	N
Waveland	30.27834	-89.37222	N	No	Yes	No	N
Gulfport	30.37689	-89.04778	N	No	Yes	No	N

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Waveland	30.27006	-89.38032	N	No	Yes	No	N
Bay St. Louis	30.30022	-89.33346	N	No	Yes	No	N
Pass Christian	30.32762	-89.20251	N	No	Yes	No	N
floating N of Ship Island	30.25080	-88.94120	N	No	Yes	No	N
Waveland	30.25685	-89.41499	N	No	Yes	No	N
Waveland	30.26483	-89.39040	N	No	Yes	No	N
Waveland	30.26471	-89.39070	N	No	Yes	No	N
Pass Christian, floating by Henderson Point	30.30320	-89.29570	N	No	Yes	No	N
Waveland	30.28749	-89.36136	N	No	Yes	No	N
Waveland	30.28790	-89.36065	N	No	Yes	No	N
Gulfport	30.36129	-89.10089	N	No	Yes	No	N
Long Beach	30.33749	-89.16818	N	No	Yes	No	N
Pass Christian	30.32775	-89.20048	N	No	Yes	No	N
Pass Christian	30.31166	-89.25018	N	No	Yes	No	N
Pass Christian	30.30335	-89.28335	N	No	Yes	No	N
Waveland	30.28267	-89.36761	N	No	Yes	No	N
Biloxi	30.39147	-88.95452	N	No	Yes	No	N
Biloxi	30.39385	-88.91407	N	No	Yes	No	N
Horn Island	30.22831	-88.64799	N	No	Yes	No	N
Pass Christian	30.31300	-89.24830	N	No	Yes	No	N
Pass Christian	30.31190	-89.29050	N	No	Yes	No	N
Gulfport	30.38250	-89.02280	N	No	Yes	No	N
Gulfport	30.38150	-89.02610	N	No	Yes	No	N
floating ~1/2 mile south of Biloxi bridge	30.38960	-88.84190	N	No	Yes	No	N
Waveland Beach at Nicholson Ave	30.29410	-89.35910	N	No	Yes	No	N
Pass Christian	30.32320	-89.21840	N	No	Yes	No	N
Gulfport Beach	30.35582	-89.11698	N	No	Yes	No	N
Gulfport Beach	30.33215	-89.18207	N	No	Yes	No	N
Lakeshore/Waveland	30.25117	-89.42138	N	No	Yes	No	N
Bay St. Louis	30.29545	-89.34080	N	No	Yes	No	N
Waveland	30.26715	-89.38553	N	No	Yes	No	N
Bay St. Louis	30.30980	-89.32553	N	No	Yes	No	N
West Ship Island	30.2115	-88.98480	N	No	Yes	No	N
Waveland	30.28248	-89.36733	N	No	Yes	No	N

Pass Christian	30.31406	-89.24347	N	No	Yes	No	N
Gulfport	30.37421	-89.04382	N	No	Yes	No	Y
Bay St. Louis	30.30883	-89.32583	N	No	Yes	No	N
Waveland	30.27683	-89.37367	N	No	Yes	No	N
Waveland	30.28064	-89.36495	N	No	Yes	No	Y
Waveland	30.28127	-89.36557	N	No	Yes	No	Y
Pascagoula Beach	30.3433	-88.55500	N	No	Yes	No	N
Waveland	30.27234	-89.37753	N	No	Yes	No	N
SE Horn Island	30.2207	-88.59330	N	No	Yes	No	N
southside Cat Island	30.2283	-89.07330	N	No	Yes	No	N
Pass Christian	30.31352	-89.24396	N	No	Yes	No	N
Bellefontaine Beach	30.3433	-88.70330	N	No	Yes	No	N
water south of Cadet Point, Biloxi	30.3877	-88.85890	N	No	Yes	No	N
Waveland	30.28063	-89.36495	N	No	Yes	No	Y
Biloxi Bay	30.40980	-88.86906	N	No	Yes	No	N
Biloxi Bay	30.40980	-88.86906	N	No	Yes	No	N
Horn Island, ~3000' from W end	30.2398	-88.76870	N	No	Yes	No	N
Waveland	30.28655	-89.36330	N	No	Yes	No	N
Pass Christian	30.30725	-89.26660	N	No	Yes	No	N
Waveland	30.28063	-89.36495	N	No	Yes	No	Y
Long Beach	30.33743	-89.16837	N	No	Yes	No	N
Biloxi Beach	30.39154	-88.95600	N	No	Yes	No	N
north side of Horn Island	30.22307	-88.62952	N	No	Yes	No	N
Bangs Lake off of Pascagoula	30.3588	-88.47300	N	No	Yes	No	N
Biloxi, Back Bay	30.40079	-88.85896	N	No	Yes	No	N
Ocean Springs, McPherson Pier	30.40397	-88.83031	N	No	Yes	No	Y
Waveland	30.28063	-89.36495	N	No	Yes	No	Y
Ocean Springs	30.40397	-88.83031	N	No	Yes	No	Y
Biloxi, near Palace Casino	30.3959	-88.85830	N	No	Yes	No	N
Ocean Springs	30.40397	-88.83031	N	No	Yes	No	Y
Ocean Springs	30.4075	-88.83540	N	No	Yes	No	N
Gulfport	30.35487	-89.12191	N	No	Yes	No	N
Waveland	30.26605	-89.38722	N	No	Yes	No	N
Long Beach	30.34084	-89.15894	N	No	Yes	No	N

Biloxi, near harbor	30.39268	-88.88209	N	No	Yes	No	N
Gautier / Belle Fontaine Beach	30.3457	-88.74080	N	No	Yes	No	N
Biloxi	30.39158	-88.94994	N	No	Yes	No	N
Biloxi	30.39184	-88.94596	N	No	Yes	No	N
Biloxi	30.39183	-88.94596	N	No	Yes	No	N
Biloxi	30.39184	-88.94576	N	No	Yes	No	N
Biloxi	30.39262	-88.93246	N	No	Yes	No	N
Biloxi Beach	30.3932	-88.90645	N	No	Yes	No	N
Biloxi Beach	30.39353	-88.92310	N	No	Yes	No	N
Biloxi Beach	30.39382	-88.91889	N	No	Yes	No	N
Biloxi Beach	30.39375	-88.92016	N	No	Yes	No	N
Biloxi Beach	30.39108	-88.96432	N	No	Yes	No	N
Biloxi Beach	30.38968	-88.97850	N	No	Yes	No	N
Ocean Springs / Belle Fontaine Beach	30.34316	-88.72950	N	No	Yes	No	N
Gulfport Beach	30.3597	-89.10686	N	No	Yes	No	N
Biloxi Beach	30.3938	-88.91200	N	No	Yes	No	N
Gulfport Beach	30.37834	-89.04083	N	No	Yes	No	N
Gulfport Beach	30.38538	-89.01003	N	No	Yes	No	N
Gulfport Beach	30.37825	-89.04118	N	No	Yes	No	N
Gulfport Beach	30.3844	-89.01535	N	No	Yes	No	N
Biloxi Beach	30.38942	-88.98023	N	No	Yes	No	N
Biloxi Beach	30.39028	-88.97433	N	No	Yes	No	N
Biloxi Beach	30.39357	-88.89623	N	No	Yes	No	N
Gulfport Beach	30.3831	-89.0192	N	No	Yes	No	N
Biloxi Beach	30.3914	-89.0069	N	No	Yes	No	N
Biloxi Beach	30.39	-88.9756	N	No	Yes	No	N
Biloxi Beach	30.3875	-88.9942	N	No	Yes	No	N
Biloxi Beach	30.3889	-88.9847	N	No	Yes	No	N
Gulfport Beach	30.37058	-89.0742	N	No	Yes	No	N
Gulfport Beach	30.3706	-89.07417	N	No	Yes	No	N
Gulfport Beach	30.37131	-89.07161	N	No	Yes	No	N
Gulfport Beach	30.37158	-89.07066	N	No	Yes	No	N
Gulfport Beach	30.3768	-89.07045	N	No	Yes	No	N
Gulfport Beach	30.37262	-89.06721	N	No	Yes	No	N

Gulfport	30.38075	-89.02951	N	No	Yes	No	N
Gulfport	30.38097	-89.02944	N	No	Yes	No	N
Gulfport	30.38048	-89.03049	N	No	Yes	No	N
Gulfport	30.38016	-89.03156	N	No	Yes	No	N
Biloxi	30.3799	-89.03266	N	No	Yes	No	N
Biloxi	30.38032	-89.03104	N	No	Yes	No	N
Gulfport Beach	30.37746	-89.0433	N	No	Yes	No	N
Gulfport Beach	30.37819	-89.0416	N	No	Yes	No	N
Waveland	30.2806	-89.3449	N	No	Yes	No	Y
Biloxi, Acadia Ave	30.39277	-88.9312	N	No	Yes	No	Y
Gulfport Beach	30.37819	-89.0416	N	No	Yes	No	N
Gulfport Beach	30.37819	-89.0416	N	No	Yes	No	N
Gulfport Beach	30.37843	-89.0413	N	No	Yes	No	N
Gulfport Beach	30.37837	-89.04101	N	No	Yes	No	N
Gulfport Beach	30.37457	-89.0563	N	No	Yes	No	N
Gulfport Beach	30.37456	-89.05634	N	No	Yes	No	N
Biloxi Beach	30.3887	-88.98878	N	No	Yes	No	N
Biloxi Beach	30.38877	-88.98797	N	No	Yes	No	N
Biloxi Beach	30.38877	-88.98797	N	No	Yes	No	N
Biloxi Beach	30.38886	-88.9741	N	No	Yes	No	N
Biloxi Beach	30.38886	-88.98734	N	No	Yes	No	N
Pass Christian Beach	30.32762	-89.20251	N	No	Yes	No	N
Gulfport Beach	30.38188	-89.02495	N	No	Yes	No	N
Gulfport Beach	30.38393	-89.01701	N	No	Yes	No	N
Gulfport Beach	30.38583	-89.00827	N	No	Yes	No	N
Biloxi Beach	30.39357	-88.89818	N	No	Yes	No	N
Biloxi Beach	30.39182	-88.94774	N	No	Yes	No	N
Biloxi Beach	30.39328	-88.92583	N	No	Yes	No	N
Biloxi Beach	30.37561	-89.09052	N	No	Yes	No	N
Biloxi Beach	30.37571	-89.05148	N	No	Yes	No	N
Biloxi Beach	30.38738	-89	N	No	Yes	No	N
Biloxi Beach	30.38746	-88.99895	N	No	Yes	No	N
near Horn Island - floating?	30.2333	-88.53093	N	No	Yes	No	N
floating off of Gulfport	30.32007	-89.17917	N	No	Yes	No	N

Waveland Pier	30.2806	-89.3449	N	No	Yes	No	Y
Biloxi Beach	30.39383	-88.91076	N	No	Yes	No	N
Biloxi Beach	30.39167	-88.89817	N	No	Yes	No	N
Biloxi Beach	30.39383	-88.91895	N	No	Yes	No	N
Gulfport Beach	30.37125	-89.07175	N	No	Yes	No	N
west side of Deer Island, Biloxi	30.26278	-88.89885	N	No	Yes	No	N
Waveland Pier	30.2806	-89.3449	N	No	Yes	No	Y
Waveland Pier	30.2806	-89.3449	N	No	Yes	No	Y
Waveland Pier	30.2806	-89.3449	N	No	Yes	No	Y
Waveland Pier	30.28063	-89.36495	N	No	Yes	No	Y
Biloxi Beach	30.38722	-89.00137	N	No	Yes	No	N
Ocean Springs	30.3603	-88.7642	N	No	Yes	No	N
Ocean Springs	30.405	-88.83	N	No	Yes	No	N
Biloxi	30.394	-88.913	N	No	Yes	No	N
Long Beach	30.35	-89.13	N	No	Yes	No	N
Long Beach	30.34	-89.15	N	No	Yes	No	N
Long Beach	30.33	-89.18	N	No	Yes	No	N
Waveland Pier	30.28063	-89.36495	N	No	Yes	Yes	Y
Waveland Pier	30.28063	-89.36495	N	No	Yes	Yes	Y
Waveland Pier	30.28063	-89.36495	N	No	Yes	Yes	Y
3 Oaks Bayou (Bayou Caddy), outside Waveland			N	No	Yes	Yes	N
Pass Christian			N	No	Yes	Yes	N
Long Beach			N	No	Yes	Yes	N
Directed Capture	28.4665	-88.46116	Y	No	No	No	Y
Directed Capture	28.66965	-88.49193	Y	No	No	No	Y
Directed Capture	28.91208	-88.68748	Y	No	No	No	Y
Directed Capture	28.70114	-88.53979	Y	No	No	No	Y
Directed Capture	28.92108	-88.7991	Y	No	No	No	Y
Directed Capture	28.92094	-88.79822	Y	No	No	No	Y
Directed Capture	28.92891	-88.77321	Y	No	No	No	Y
Directed Capture	28.928	-88.7701	Y	No	No	No	Y
Directed Capture	28.92558	-88.74215	Y	No	No	No	Y
Directed Capture	28.93916	-88.71402	Y	No	No	No	Y
Directed Capture	28.94739	-88.70053	Y	No	No	No	Y

Directed Capture	28.96491	-88.67766	Y	No	No	No	Y
Directed Capture	28.98004	-88.65568	Y	No	No	No	Y
Directed Capture - LDWF	28.72474	-88.55243	Y	No	No	No	Y
Directed Capture - LDWF	28.81743	-88.63998	Y	No	No	No	Y
Directed Capture	28.62361	-88.54351	Y	No	No	No	Y
Directed Capture	28.60264	-88.49568	Y	No	No	No	Y
Directed Capture	28.59733	-88.49236	Y	No	No	No	Y
Directed Capture	28.59501	-88.49054	Y	No	No	No	Y
Directed Capture	28.57604	-88.49573	Y	No	No	No	Y
Directed Capture	28.57271	-88.49434	Y	No	No	No	Y
Directed Capture	28.56876	-88.49416	Y	No	No	No	Y
Directed Capture	28.52956	-88.51617	Y	No	No	No	Y
Directed Capture	28.50794	-88.54434	Y	No	No	No	Y
Directed Capture	28.53647	-88.60338	Y	No	No	No	Y
Directed Capture	28.69822	-88.79404	Y	No	No	No	Y
Directed Capture	28.90896	-88.72726	Y	No	No	No	Y
Directed Capture	28.6881	-88.84448	Y	No	No	No	Y
Directed Capture	28.67472	-88.88646	Y	No	No	No	Y
Directed Capture	28.68382	-88.88902	Y	No	No	No	Y
Directed Capture	28.8945	-88.72223	Y	No	No	No	Y
Directed Capture	28.6575	-88.87042	Y	No	No	No	Y
Directed Capture	28.65178	-88.86879	Y	No	No	No	Y
Directed Capture	28.6833	-88.64572	Y	No	No	No	Y
Directed Capture	28.74405	-88.2535	Y	No	No	No	Y
Directed Capture	28.7637	-88.23549	Y	No	No	No	Y
Directed Capture	28.7666	-88.23471	Y	No	No	No	Y
Directed Capture	28.78214	-88.23679	Y	No	No	No	Y
Directed Capture	28.87021	-88.50445	Y	No	No	No	Y

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2010-00512

Symbol	Log #	Comments
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C		outside of area of concern
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C		outside of area of concern
C	D-0002 BSNWR	
C	D-0001 BSNWR	
C	D-0003 BSNWR	
C	D-0004 BSNWR	
C	D-0005 BSNWR	
C	D-0006 BSNWR	
C	D-0007 BSNWR	
C	D-0008 BSNWR	
C	D-0009 BSNWR	
C	D-0010 BSNWR	
C	D-0015 BSNWR	
C	D-0014 BSNWR	
C	D-0011 BSNWR	
C	D-0012 BSNWR	
C	D-0013 BSNWR	
C	D-0016 BSNWR	
C	D-0017 BSNWR	dried carcass
C	D-0018 BSNWR	
C	D-0019 BSNWR	
C	D-0020 BSNWR	
C	D-0021 BSNWR	
C	D-0023 BSNWR	
C	D-0022 BSNWR	
C	L-0001 BSNWR	
C	D-0024 BSNWR	
C	D-0025 BSNWR	

C	D-0026 BSNWR	
C	D-0027 BSNWR	
C	L-0007 IMMS	emaciated; taken to IMMS for rehab; died 5/25, shipped to UF for necropsy
C	D-0028 BSNWR	
C	D-0029 BSNWR	
C	D-0030 BSNWR	
C	D-0031 BSNWR	
U		
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C	L-0012 IMMS	found floating next to boom; externally oiled turtle; taken to IMMS for rehab
U		
C	L-0013 IMMS	externally oiled turtle; taken to IMMS for rehab
U		
U		too decomposed for necropsy
U		
U		
U		
C		parts only - head, guts and 1 flipper
C		
C		
N		
C		very emaciated, missing part of RRF
C		very emaciated; taken to Gulf World, died soon after recovery
C		no head, flippers or internal organs
C		brown algae on carapace; some small barnacles on skin; adult female
C		prop damage to right side of carapace
C		no wounds; barnacles and algae on carapace; adult male

C	missing notch from right side carapace; barnacle and algae growth
C	barnacles on carapace and flippers; taken to Gulf World, died same day
C	apparent piece of metal in ventral LFF near insertion
C	dried carcass; little skin remaining, bones visible
C	no head or front flippers, shark bites
C	missing both front flippers and lrf
C	carapace completely covered w/barnacles and algae; adult female
C	emaciated, lots of barnacles, damage to base of front flippers and neck
C	
C	
C	in pieces, decomposed
C	carapace broken, pieces missing
C	skin and scutes peeling
C	numerous barnacles and light algae on carapace; taken to Gulfarium
C	old wound to posterior marginals; scutes peeling
C	posterior carapace gone; plastron missing; falling apart, nasty
U	
C	apparent skeg/prop damage to center carapace
C	caught on hook and line, hook in throat; taken to Gulfarium
C	prop wounds to right posterior carapace; heavy barnacles,small barnacles on skin
C	2 apparent prop wounds across carapace
C	skin and scutes peeling, very decomposed
C	fishing line entangled around neck
C	no head or flippers; damage to carapace - likely prop
C	missing skull; carapace bones disarticulating due to decomp
C	missing head and LFF, possible shark bites; gashes on plastron
U	
C	carapace bones disarticulating due to decomp
C	dried carcass; carapace broken across posterior; portions missing
U	caught on hook and line, hook removed and turtle released
U	
U	
U	
U	

U	caught by relocation trawler; ~50% coverage of thin oil sheen, also sheen in mouth
U	
U	
U	in pieces due to decomp, unable to salvage
U	
U	caught by relocation trawler; observer thought oiled, Gulfarium said algae
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C	parts only
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C	swab sample taken
C	swab sample taken
C	taken to AOA for rehab
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C	swab sample taken
C	swab sample taken
U	
C	taken to AOA for rehab
C	swab sample taken
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C	swab sample taken
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U	partial carcass, pieces only

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C	D-0029 IMMS	
C	D-0030 IMMS	
C	D-0031 IMMS	
C	D-0032 IMMS	
C	D-0033 IMMS	
C	L-0001 IMMS	taken to IMMS, died in rehab, frozen for necropsy
C	D-0001 IMMS	

C	D-0002 IMMS
C	D-0003 IMMS
C	D-0004 IMMS
C	D-0005 IMMS
C	D-0006 IMMS
C	D-0034 IMMS
C	D-0007 IMMS
C	D-0008 IMMS
C	D-0009 IMMS
C	D-0010 IMMS
C	D-0011 IMMS
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C	D-0028 IMMS
C	D-0035 IMMS
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C	D-0038 IMMS
C	D-0039 IMMS
C	D-0040 IMMS

C	D-0041 IMMS	
C	D-0042 IMMS	
C	D-0043 IMMS	
C	D-0044 IMMS	
C	D-0045 IMMS	
C	D-0046 IMMS	
C	D-0047 IMMS	carcass in two pieces
C	D-0048 IMMS	
C	D-0049 IMMS	
C	D-0050 IMMS	
C	D-0051 IMMS	
C	D-0052 IMMS	
C	D-0053 IMMS	
C	D-0054 IMMS	
C	D-0055 IMMS	
C	D-0056 IMMS	
C	D-0057 IMMS	
C	D-0058 IMMS	
C	D-0063 IMMS	Decapitated, missing portions of flippers due to decomp; first reported on 5/8
C	D-0059 IMMS	
C	D-0060 IMMS	
C	D-0061 IMMS	
C	D-0062 IMMS	
C	D-0064 IMMS	
C	D-0065 IMMS	
C	D-0066 IMMS	
C	D-0067 IMMS	
C	D-0068 IMMS	
C	D-0069 IMMS	
C	D-0070 IMMS	
C	D-0071 IMMS	
C	D-0072 IMMS	
C	D-0085 IMMS	field necropsy on beach; damaged LFF, carapace covered in barnacles; first rep 5/13
C	D-0073 IMMS	

C	D-0074 IMMS	
C	L-0002 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0075 IMMS	
C	D-0076 IMMS	carapace cracked/broken
C	L-0003 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	L-0004 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0086 IMMS	"chopped up", likely prop wounds to carapace
C	D-0077 IMMS	red slimy substance covering carapace
C	D-0087 IMMS	skeletal remains
C	D-0088 IMMS	skeletal remains
C	D-0078 IMMS	
C	D-0089 IMMS	
C	D-0090 IMMS	floating, picked up by NPS
C	L-0005 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0079 IMMS	carapace only
C	D-0080 IMMS	carapace only
C	D-0091 IMMS	sample taken and logged, carcass painted and left on beach
C	D-0081 IMMS	
C	D-0082 IMMS	
C	L-0006 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0083 IMMS	
C	D-0092 IMMS	possible loggerhead, unsure of species ID
C	D-0093 IMMS	
C	D-0094 IMMS	carcass in plastic bag before oil swab taken
C	D-0084 IMMS	rear portion of carcass missing
C	L-0008 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	L-0009 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	L-0010 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0095 IMMS	carcass in plastic bag before oil swab taken; severe prop damage
C	L-0011 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0161 IMMS	
C	D-0096 IMMS	mangled caudal half of carcass
C	D-0097 IMMS	
C	D-0098 IMMS	

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C	D-0099 IMMS	old injury to edge of carapace
C	D-0162 IMMS	
C	D-0100 IMMS	
C	D-0101 IMMS	
C	D-0102 IMMS	
C	D-0103 IMMS	
C	D-0104 IMMS	
C	D-0105 IMMS	scrapes along plastron
C	D-0106 IMMS	missing right edge of carapace, advanced decomp
C	D-0107 IMMS	
C	D-0108 IMMS	extra costal scute on L side
C	D-0109 IMMS	edges of marginal scutes broken, postmortem
C	D-0110 IMMS	extra vertebral scute
C	D-0163 IMMS	
C	D-0112 IMMS	
C	D-0111 IMMS	
C	D-0113 IMMS	
C	D-0114 IMMS	
C	D-0118 IMMS	severely mangled, no accurate meas possible
C	D-0119 IMMS	black substance in mouth
C	D-0115 IMMS	
C	D-0116 IMMS	
C	D-0117 IMMS	
C	D-0120 IMMS	
C	D-0121 IMMS	
C	D-0122 IMMS	
C	D-0123 IMMS	
C	D-0124 IMMS	
C	D-0125 IMMS	
C	D-0126 IMMS	
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C	D-0128 IMMS	
C	D-0129 IMMS	
C	D-0130 IMMS	

C	D-0164 IMMS	
C	D-0165 IMMS	
C	D-0166 IMMS	
C	D-0167 IMMS	
C	D-0168 IMMS	
C	D-0169 IMMS	
C	D-0131 IMMS	
C	D-0132 IMMS	
C	L-0015 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	L-0014 IMMS	washed ashore alive
C	D-0133 IMMS	
C	D-0134 IMMS	
C	D-0135 IMMS	
C	D-0136 IMMS	
C	D-0137 IMMS	
C	D-0138 IMMS	
C	D-0139 IMMS	
C	D-0140 IMMS	
C	D-0141 IMMS	
C	D-0142 IMMS	
C	D-0143 IMMS	
C	D-0144 IMMS	
C	D-0145 IMMS	
C	D-0146 IMMS	
C	D-0147 IMMS	
C	D-0155 IMMS	
C	D-0148 IMMS	
C	D-0149 IMMS	
C	D-0150 IMMS	
C	D-0151 IMMS	
C	D-0152 IMMS	
C	D-0153 IMMS	
C	D-0154 IMMS	
C	D-0172 IMMS	

C	L-0016 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0156 IMMS	
C	D-0157 IMMS	
C	D-0158 IMMS	
C	D-0159 IMMS	
C	D-0170 IMMS	
C	L-0017 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	L-0018 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	L-0019 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	L-0020 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0160 IMMS	
C	D-0171 IMMS	
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N		incidentally captured on hook and line; taken to IMMS for rehab
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Date	Stranding Reference	Species	ReportType	Condition	Disposition	Status	State
5/2/2010	MRC20100502-01	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/2/2010	MRC20100502-02	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/3/2010	SNW20100503-01	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/3/2010	JMI20100503-01	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/3/2010	MPW20100503-01	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/4/2010	SNW20100504-01	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/4/2010	SNW20100504-02	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/4/2010	FXM20100504-01	Lepidochelys kempii	Stranding	Dead	Buried		AL
5/5/2010	MPW20100505-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/5/2010	MRC20100505-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/6/2010	MPW20100506-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/6/2010	MPW20100506-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/7/2010	MPW20100507-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/7/2010	MPW20100507-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/8/2010	ANR20100508-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/8/2010	JMI20100508-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/10/2010	JMI20100510-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/11/2010	MPW20100511-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/13/2010	MPW20100513-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/13/2010	MPW20100513-02	Caretta caretta	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/13/2010	MRC20100513-01	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/13/2010	MRC20100513-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/13/2010	MRC20100513-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/14/2010	LAJ20100514-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/16/2010	LAJ20100516-01	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/17/2010	MRC20100517-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/18/2010	MPW20100518-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/18/2010	MPW20100518-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/18/2010	MPW20100518-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/18/2010	MRC20100518-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/19/2010	LAJ20100519-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/19/2010	JMI20100519-01	Lepidochelys kempii	Stranding	Alive	Released		AL
5/20/2010	LAJ20100520-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL

5/20/2010	LAJ20100520-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/20/2010	LAJ20100520-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/21/2010	MPW20100521-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/22/2010	RLR20100522-01	Lepidochelys kempii	Stranding	Alive	Rehab-Died	Necropsied	AL
5/22/2010	JMI20100522-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/22/2010	JMI20100522-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/23/2010	JMI20100523-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/23/2010	JMI20100523-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/24/2010	20100524	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/24/2010	20100524	Unknown	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/24/2010	20100524	Unknown	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/24/2010	20100524	Unknown	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/26/2010	20100526	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/27/2010	20100527	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/27/2010	20100527	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/28/2010	20100528	Unknown	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/29/2010	20100529	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/3/2010	JMI20100603-01	Caretta caretta	Stranding	Alive	Rehab	Rehab-IMMS	AL
6/4/2010	20100604	Unknown	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/5/2010	RLR20100605-01	Eretmochelys imbricata	Stranding	Alive	Rehab	Rehab-IMMS	AL
6/5/2010	20100605	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/6/2010	20100606	Unknown	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/6/2010	20100606	Unknown	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/7/2010	20100607	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/9/2010	20100609	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/11/2010	20100611	Caretta caretta	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/13/2010	20100613	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/13/2010	20100613	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/16/2010	20100616	Caretta caretta	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
6/18/2010	20100618	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-BSNWR	AL
5/8/2010	NME20100508-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
5/8/2010	NME20100508-02	Caretta caretta	Stranding	Alive	Rehab-Died	Frozen	FL
5/8/2010	NME20100508-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	FL
5/10/2010	MEM20100510-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL

5/11/2010	MAN20100511-01	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-Gulfarium	FL
5/12/2010	JWM20100512-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
5/13/2010	AVH20100513-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
5/14/2010	VEL20100514-01	Caretta caretta	Stranding	Alive	Rehab-Died	Frozen	FL
5/14/2010	MEC20100514-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Gulfarium	FL
5/15/2010	NME20100515-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-NOAA	FL
5/17/2010	NME20100517-01	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-NOAA	FL
5/17/2010	MAN20100517-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Gulfarium	FL
5/17/2010	MAN20100517-02	Caretta caretta	Stranding	Dead	Salvaged	Frozen-Gulfarium	FL
5/17/2010	SSM20100517-01	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-GulfWorld	FL
5/18/2010	WAJ20100518-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
5/18/2010	JRJ20100518-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
5/18/2010	CTS20100518-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
5/19/2010	NME20100519-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-NOAA	FL
5/19/2010	NME20100519-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-NOAA	FL
5/19/2010	MAN20100519-01	Caretta caretta	Stranding	Alive	Rehab	Rehab-Gulfarium	FL
5/20/2010	WAJ20100520-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GulfWorld	FL
5/20/2010	BAE20100520-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-NOAA	FL
5/20/2010	20100520	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-GulfWorld	FL
5/20/2010	MAN20100520-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Gulfarium	FL
5/21/2010	MAN20100521-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-Gulfarium	FL
5/24/2010	NME20100524-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-NOAA	FL
5/24/2010	GWG20100524-01	Caretta caretta	Stranding	Dead	Left on beach		FL
5/25/2010	NME20100525-01	Chelonia mydas	Stranding	Dead	Salvaged	Frozen-NOAA	FL
5/27/2010	MJH20100527-01	Caretta caretta	Stranding	Dead	Buried		FL
5/28/2010	VXW20100528-01	Chelonia mydas	Stranding	Dead	Buried		FL
5/30/2010	NAD20100530-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
6/1/2010	NME20100601-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-NOAA	FL
6/6/2010	20100606	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
6/7/2010	NAD20100607-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-USFWS	FL
6/7/2010	NME20100607-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-NOAA	FL
6/9/2010	RAB20100609-01	Lepidochelys kempii	Stranding	Alive	Released		FL
6/10/2010	20100610	Eretmochelys imbricata	Stranding	Alive	Rehab	Rehab-GulfWorld	FL
6/11/2010	20100611	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL

6/11/2010	20100611	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-Gulfarium	FL
6/12/2010	20100612	Chelonia mydas	Stranding	Dead	Salvaged	Frozen	FL
6/12/2010	20100612	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-Gulfarium	FL
6/12/2010	20100612	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Gulfarium	FL
6/13/2010	20100613	Caretta caretta	Stranding	Dead	Salvaged	Frozen-Gulfarium	FL
6/14/2010	20100614	Caretta caretta	Stranding	Dead	Buried		FL
6/15/2010	20100615	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
6/16/2010	20100616	Caretta caretta	Stranding	Alive	Rehab	Rehab-Gulfarium	FL
6/17/2010	20100617	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	FL
6/18/2010	20100618	Caretta caretta	Stranding	Dead	Salvaged	Frozen	FL
5/1/2010	MJF20100504-01	Unknown	Stranding	Dead	Left on beach		LA
5/1/2010	MJF20100504-02	Unknown	Stranding	Dead	Left on beach		LA
5/3/2010	XXX20100503-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/3/2010	20100503	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/5/2010	JAL20100505-01	Chelonia mydas	Stranding	Dead	Salvaged	Frozen	LA
5/7/2010	MXC20100507-01	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-02	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-03	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-04	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-05	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-06	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-07	Caretta caretta	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-08	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-09	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-10	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-11	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-12	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-13	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	MXC20100507-14	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/7/2010	GXP20100507-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen	LA
5/10/2010	CSE20100510-01	Unknown	Stranding	Dead	Salvaged	Frozen	LA
5/10/2010	CSE20100510-02	Unknown	Stranding	Dead	Salvaged	Frozen	LA
5/10/2010	MXC20100510-01	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/10/2010	MXC20100510-02	Lepidochelys kempii	Stranding	Dead	Left on beach		LA

5/10/2010	MXC20100510-03	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/10/2010	MXC20100510-04	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/10/2010	MXC20100510-05	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/10/2010	MXC20100510-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	LA
5/11/2010	20100511-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/11/2010	20100511-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/12/2010	MXC20100512-01	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/12/2010	MXC20100512-02	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/12/2010	MXC20100512-03	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-AOA	LA
5/12/2010	MXC20100512-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/13/2010	MXT20100513-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/13/2010	JEB20100513-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/13/2010	MXC20100513-01	Eretmochelys imbricata	Stranding	Dead	Left on beach		LA
5/13/2010	MXC20100513-02	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/13/2010	20100513	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/14/2010	MXC20100514-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-AOA	LA
5/16/2010	MXH20100516-01	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-02	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-03	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-04	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-05	Caretta caretta	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-06	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-07	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-08	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/16/2010	MXH20100516-09	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
5/17/2010	MXT20100517-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/17/2010	AXL20100517-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/18/2010	SDD20100518-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/19/2010	20100519	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/20/2010	NXX20100520-01	Unknown	Stranding	Dead	Salvaged	Frozen	LA
5/22/2010	20100522	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/22/2010	20100522	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/23/2010	20100523	Unknown	Stranding	Dead	Salvaged	Frozen	LA
5/24/2010	20100524	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA

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5/24/2010	20100524	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/25/2010	20100525	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/25/2010	20100525	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/25/2010	20100525	Unknown	Stranding	Dead	Salvaged	Frozen	LA
5/26/2010	20100526	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/26/2010	20100526	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/26/2010	20100526	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/27/2010	20100527	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
5/28/2010	20100528	Lepidochelys kempii	Skimmer	Alive	Rehab	Rehab-AOA	LA
5/29/2010	20100529	Unknown	Stranding	Dead	Salvaged	Frozen	LA
5/31/2010	20100531	Lepidochelys kempii	Skimmer	Alive	Rehab	Rehab-AOA	LA
6/5/2010	20100605	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/5/2010	20100605	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	LA
6/6/2010	20100606	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/6/2010	20100606	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/6/2010	20100606	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/7/2010	20100607	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/7/2010	20100607	Unknown	Stranding	Dead	Salvaged	Frozen	LA
6/8/2010	20100608	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/9/2010	20100609	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	LA
6/9/2010	20100609	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-AOA	LA
6/10/2010	20100610	Unknown	Stranding	Dead	Salvaged	Frozen	LA
6/12/2010	20100612	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-AOA	LA
6/13/2010	20100613	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/13/2010	20100613	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/13/2010	20100613	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/13/2010	20100613	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/14/2010	20100614	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/15/2010	20100615	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/15/2010	20100615	Lepidochelys kempii	Stranding	Dead	Left on beach		LA
6/17/2010	20100617	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA
6/17/2010	20100617	Chelonia mydas	Stranding	Dead	Salvaged	Frozen	LA
6/18/2010	20100618	Chelonia mydas	Stranding	Dead	Salvaged	Frozen	LA
6/18/2010	20100618	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen	LA

4/26/2010	CNH20100426-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
4/30/2010	CNH20100430-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
4/30/2010	EXP20100430-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
4/30/2010	EXP20100430-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
4/30/2010	EXP20100430-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
4/30/2010	TTH20100430-01	Lepidochelys kempii	Stranding	Alive	Rehab-Died	Necropsied	MS
5/1/2010	KMF20100501-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/1/2010	KMF20100501-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/1/2010	KMF20100501-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/1/2010	KMF20100501-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/1/2010	KMF20100501-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/1/2010	KMF20100501-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/1/2010	EXP20100501-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	CLC20100502-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	CLC20100502-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	CLC20100502-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	KMF20100502-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	KMF20100502-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	KMF20100502-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-07	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/2/2010	MSB20100502-08	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	MSB20100503-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	MSB20100503-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	MSB20100503-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	MSB20100503-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	MSB20100503-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	WLH20100503-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/3/2010	WLH20100503-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS

5/3/2010	WLH20100503-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/4/2010	EXP20100504-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/4/2010	CLC20100504-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/4/2010	CLC20100504-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/4/2010	CLC20100504-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/5/2010	WLH20100505-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/5/2010	DKV20100505-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/6/2010	EXJ20100506-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/6/2010	EXJ20100506-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/6/2010	EXJ20100506-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/6/2010	SXC20100506-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	JNF20100507-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	JNF20100507-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	JBT20100507-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	CLM20100507-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	JNF20100507-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	JBT20100507-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/7/2010	JNF20100507-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	MMK20100508-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	SAH20100508-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	JKM20100508-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	SAH20100508-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	JNF20100508-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	JNF20100508-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	JKM20100508-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/8/2010	WLH20100510-01	Caretta caretta	Stranding	Dead	Salvaged	Necropsied	MS
5/9/2010	KMM20100509-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/9/2010	KMM20100509-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/9/2010	KMM20100509-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/9/2010	KMM20100509-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/10/2010	WLH20100510-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/10/2010	ZHS20100510-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied	MS
5/11/2010	BTN20100511-01	Caretta caretta	Stranding	Dead	Salvaged	Necropsied	MS
5/12/2010	ZHS20100512-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied?	MS

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5/12/2010	ZHS20100512-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied?	MS
5/12/2010	ZHS20100512-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied?	MS
5/12/2010	ZHS20100512-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied?	MS
5/12/2010	ZHS20100512-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Necropsied?	MS
5/13/2010	JXS20100513-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS?	MS
5/13/2010	CNH20100514-01	Caretta caretta	Stranding	Dead	Left on beach		MS
5/14/2010	JNF20100514-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS?	MS
5/14/2010	JNF20100514-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS?	MS
5/14/2010	SAH20100514-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/15/2010	LMJ20100515-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/15/2010	LMJ20100515-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/15/2010	JKM20100515-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/15/2010	JKM20100515-02	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/15/2010	KMM20100515-01	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/16/2010	EXJ20100516-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/18/2010	KPB20100518-01	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/18/2010	KPB20100518-02	Caretta caretta	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/18/2010	WLH20100518-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/19/2010	MDH20100519-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/19/2010	MDH20100519-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/20/2010	TTH20100520-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/20/2010	JNF20100520-02	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/20/2010	JNF20100520-01	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/21/2010	RDS20100521-01	Caretta caretta	Stranding	Dead	Left on beach		MS
5/21/2010	JNF20100521-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/21/2010	JNF20100521-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/22/2010	TTH20100522-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/24/2010	WLH20100524-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/24/2010	AJD20100524-01	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/26/2010	JXB20100526-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/26/2010	CNH20100526-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/26/2010	WLH20100526-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/27/2010	JBT20100527-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/27/2010	JKM20100527-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS

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5/27/2010	MJB20100527-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
5/28/2010	JNF20100528-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
5/28/2010	RAW20100528-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/3/2010	CNH20100603-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/4/2010	DKV20100604-01	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/5/2010	JNF20100605-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/5/2010	JNF20100605-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/5/2010	JNF20100605-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	KMM20100606-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	MJK20100606-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	MJK20100606-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	MJK20100606-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	MJK20100606-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	MJK20100606-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	JBT20100606-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	JBT20100606-02	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	JBT20100606-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	JBT20100606-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	JBT20100606-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/6/2010	JBT20100606-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/7/2010	JRS20100608-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS+G3	MS
6/7/2010	WLH20100607-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/7/2010	KMH20100607-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/8/2010	WLH20100608-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/8/2010	WLH20100608-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/9/2010	WLH20100609-01	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/9/2010	WLH20100609-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/9/2010	JBT20100609-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/9/2010	JBT20100609-02	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/9/2010	JBT20100609-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	SLE20100610-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	SLE20100610-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	SLE20100610-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	SLE20100610-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS

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6/10/2010	SLE20100610-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	RAW20100610-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	RAW20100610-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	RAW20100610-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	RAW20100610-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	RAW20100610-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	RAW20100610-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	KMH20100610-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	KMH20100610-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	KMH20100610-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	KMH20100610-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	KMH20100610-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	KMH20100610-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	WLH20100610-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/10/2010	WLH20100610-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	TTH20100611-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/11/2010	KMH20100611-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/11/2010	WLH20100611-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-07	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-08	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-09	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-10	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-11	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-12	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	WLH20100611-13	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	JBT20100611-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	JBT20100611-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	JBT20100611-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	JBT20100611-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/11/2010	CRS20100611-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	WLH20100612-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS

6/12/2010	WLH20100612-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	WLH20100612-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	WLH20100612-04	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	WLH20100612-05	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	WLH20100612-06	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	RCL20100612-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	CRS20100612-01	Caretta caretta	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/12/2010	JKM20100612-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/13/2010	CRS20100613-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/13/2010	CRS20100613-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/13/2010	CRS20100613-03	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/13/2010	LCB20100613-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/13/2010	LCB20100613-02	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/13/2010	JKM20100613-01	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/13/2010	JKM20100613-02	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/13/2010	JKM20100613-03	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/13/2010	JKM20100613-04	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/14/2010	WLH20100614-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/15/2010	LCB20100615-01	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/16/2010	20100616	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Pasc	MS
6/16/2010	20100616	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Pasc	MS
6/16/2010	20100616	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Pasc	MS
6/16/2010	20100616	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Pasc	MS
6/16/2010	20100616	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-Pasc	MS
6/17/2010	20100617	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/17/2010	20100617	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/17/2010	20100617	Lepidochelys kempii	Stranding	Alive	Rehab	Rehab-IMMS	MS
6/17/2010	20100617	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/17/2010	20100617	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/17/2010	20100617	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/18/2010	20100618	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/18/2010	20100618	Unknown	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/18/2010	20100618	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS
6/18/2010	20100618	Lepidochelys kempii	Stranding	Dead	Salvaged	Frozen-IMMS	MS

5/18/2010	BXW20100518-01	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
5/20/2010	MXT20100520-01	Caretta caretta	Directed Capture	Alive	Rehab	Rehab-AOA
5/20/2010	MXT20100520-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
5/31/2010	BAS20100531-01	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
5/31/2010	BAS20100531-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
5/31/2010	BAS20100531-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
5/31/2010	BAS20100531-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
5/31/2010	BAS20100531-05	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
5/31/2010	BAS20100531-06	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
5/31/2010	BAS20100531-07	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/1/2010	BAS20100601-01	Lepidochelys kempii	Directed Capture	Alive	Rehab-Died?	Necropsied?
6/1/2010	BAS20100601-02	Lepidochelys kempii	Directed Capture	Alive	Rehab-Died?	Necropsied?
6/1/2010	BAS20100601-03	Lepidochelys kempii	Directed Capture	Alive	Rehab-Died?	Necropsied?
6/1/2010	BAS20100601-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/1/2010	BAS20100601-05	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/1/2010	BAS20100601-06	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/1/2010	BAS20100601-07	Caretta caretta	Directed Capture	Alive	Rehab	Rehab-AOA
6/1/2010	BAS20100601-08	Eretmochelys imbricata	Directed Capture	Alive	Rehab	Rehab-AOA
6/1/2010	BAS20100601-09	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/1/2010	BAS20100601-10	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/1/2010	XXX20100601-01	Lepidochelys kempii	Directed Capture	Dead	Salvaged	Necropsied
6/1/2010	XXX20100601-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/1/2010	XXX20100601-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/1/2010	XXX20100601-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/1/2010	XXX20100601-05	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/6/2010	BAS20100606-01	Eretmochelys imbricata	Directed Capture	Alive	Rehab	Rehab-AOA
6/6/2010	BAS20100606-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/6/2010	BAS20100606-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/6/2010	BAS20100606-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/6/2010	BAS20100606-05	Lepidochelys kempii	Directed Capture	Dead	Salvaged	Necropsied
6/10/2010	BAS20100610-01	Lepidochelys kempii	Directed Capture	Dead	Salvaged	Necropsied
6/10/2010	BAS20100610-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/10/2010	BAS20100610-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/10/2010	BAS20100610-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA

6/12/2010	BAS20100612-01	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/12/2010	BAS20100612-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/12/2010	BAS20100612-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/13/2010	BAS20100613-01	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/13/2010	BAS20100613-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/13/2010	BAS20100613-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/13/2010	BAS20100613-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/13/2010	BAS20100613-05	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/13/2010	BAS20100613-06	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/13/2010	BAS20100613-07	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/13/2010	BAS20100613-08	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/13/2010	BAS20100613-09	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/13/2010	20100613	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/13/2010	20100613	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-01	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-05	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-06	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-07	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-08	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-09	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-10	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/14/2010	BAS20100614-11	Caretta caretta	Directed Capture	Alive	Rehab	Rehab-AOA
6/15/2010	BAS20100615-01	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/15/2010	BAS20100615-02	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/15/2010	BAS20100615-03	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/15/2010	BAS20100615-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/15/2010	BAS20100615-05	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/15/2010	BAS20100615-06	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/15/2010	BAS20100615-07	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/16/2010	BAS20100616-01	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/16/2010	BAS20100616-02	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA

6/16/2010	BAS20100616-03	Chelonia mydas	Directed Capture	Alive	Rehab	Rehab-AOA
6/16/2010	BAS20100616-04	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/16/2010	BAS20100616-05	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/16/2010	BAS20100616-06	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA
6/18/2010	20100618	Lepidochelys kempii	Directed Capture	Alive	Rehab	Rehab-AOA

Descriptive Location	Latitude	Longitude	External oil?	TempLocation	Stranding	New	Alive
"Lots of Sand Dunes" Condo, Baldwin Co	30.232019	-87.936861	N	No	Yes	No	N
eastern point of Dauphin Island	30.250125	-88.075553	N	No	Yes	No	N
Dauphin Island	30.248253	-88.125822	N	No	Yes	No	N
floating 2 miles North of Fort Gaines	30.268880	-88.071720	N	No	Yes	No	N
Dauphin Island	30.332274	-88.132595	N	No	Yes	No	N
Dauphin Island	30.248253	-88.125822	N	No	Yes	No	N
Mobile Bay, 4 miles south of Fowl River	30.395431	-88.107261	N	No	Yes	No	N
Mobile Bay, 7287 Bay Rd	30.552467	-88.123317	N	No	Yes	No	N
floating off of Bayou La Batre	30.368167	-88.278317	N	No	Yes	No	N
Coden	30.445639	-88.109028	N	No	Yes	No	N
Dauphin Island	30.250164	-88.162886	N	No	Yes	No	N
Donnie Grace, bay side	30.249856	-88.202100	N	No	Yes	No	N
outside Weeks Bay toward Fish River Reef	30.367914	-87.839833	N	No	Yes	No	N
18261 Scenic Hwy 98	30.492133	-87.929833	N	No	Yes	No	N
Dauphin Island	30.249450	-88.172633	N	No	Yes	No	N
Gulf Shores	30.253417	-87.823317	N	No	Yes	No	N
Bayou La Batre	30.381033	-88.267233	N	No	Yes	No	N
pier across from Fort Morgan Museum	30.230283	-88.023694	N	No	Yes	No	N
Baldwin Co	30.250570	-87.828960	N	No	Yes	No	N
Baldwin Co	30.228430	-87.861390	N	No	Yes	No	N
Baldwin Co	30.231160	-87.928990	N	No	Yes	No	N
200 yds SE of city pier	30.245610	-88.124230	N	No	Yes	No	N
Hwy 193 past Hwy 188, Mobile Co	30.370900	-88.109670	N	No	Yes	No	N
east of Dauphin Is public fishing pier on Sand Is	30.247186	-88.125303	N	No	Yes	No	N
Little Dauphin Is, north side	30.274270	-88.111150	N	No	Yes	No	N
Audubon Place beach	30.243830	-88.092890	N	No	Yes	No	N
bay side of Sand Island	30.227653	-88.113175	N	No	Yes	No	N
Coden	30.377883	-88.241517	N	No	Yes	No	N
Mobile Bay, 1 mile south of Fowl River	30.425728	-88.103975	N	No	Yes	No	N
Hwy 98 on county rd 1, near Pelican Island	30.378320	-87.851020	N	No	Yes	No	N
Dauphin Island	30.247530	-88.124480	N	No	Yes	No	N
mouth of Bayou La Batre, Mobile Bay	30.375000	-88.285000	N	No	Yes	No	Y
Dauphin Island, west end	30.386400	-88.560983	N	No	Yes	No	N

Dauphin Island, west end	30.386400	-88.560983	N	No	Yes	No	N
Coden	30.006272	-88.004007	N	No	Yes	No	N
Dauphin Island	30.244817	-88.114433	N	No	Yes	No	N
Bayou La Batre	30.381586	-88.257034	N	No	Yes	No	Y
floating near Bayou La Batre	30.376750	-88.258480	N	No	Yes	No	N
Mobile Bay	30.591497	-88.063306	N	No	Yes	No	N
Shore Rd of CR12	30.358870	-87.832670	N	No	Yes	No	N
Plash Island	30.282700	-87.751230	N	No	Yes	No	N
Dauphin Island	30.250000	-88.200000	N	Yes	Yes	No	N
Dauphin Island	30.270000	-88.150000	N	Yes	Yes	No	N
Mobile Bay	30.400000	-88.100000	N	Yes	Yes	No	N
Mobile Bay	30.500000	-88.100000	N	Yes	Yes	No	N
Mobile Bay	30.300000	-87.750000	N	Yes	Yes	No	N
west end of Dauphin Island	30.220000	-88.330000	N	Yes	Yes	No	N
Dauphin Island, bayside	30.260000	-88.110000	N	Yes	Yes	No	N
Mobile Bay	30.300000	-87.970000	N	Yes	Yes	No	N
floating in MS Sound near Coden Bayou	30.350000	-88.220000	N	Yes	Yes	No	N
floating in Perdido Pass near Orange Beach	30.278471	-87.555537	Y	No	Yes	No	Y
floating south of Coden	30.374000	-88.240000	N	Yes	Yes	No	N
East Beach, Baldwin County	30.248301	-87.676815	Y	No	Yes	No	Y
Bon Secour Bay	30.300000	-87.875000	N	Yes	Yes	No	N
W Dauphin Island	30.250000	-88.060000	N	Yes	Yes	No	N
floating off of Bayou La Batre	30.340000	-88.310000	N	Yes	Yes	No	N
Mobile Bay, east side	30.450000	-87.930000	N	Yes	Yes	No	N
Mobile Bay, west side	30.450000	-88.090000	N	Yes	Yes	No	N
Gulf Shores	30.251060	-87.653670	N	No	Yes	No	N
Bayou La Batre	30.366460	-88.244330	N	No	Yes	No	N
~100 ft from Fairhope Municipal Pier	30.525780	-87.917040	N	No	Yes	No	N
Orange Beach	30.260000	-87.570000	Y	Yes	Yes	No	N
floating in Mobile Bay, Mobile side of bay			N	Yes	Yes	Yes	N
Panama City Beach	30.19650	-85.84358	N	No	Yes	No	N
Panama City Beach	30.2442	-85.93718	N	No	Yes	No	Y
Panama City Beach	30.16782	-85.794	N	No	Yes	No	N
Panama City Beach	30.21513	-85.87758	N	No	Yes	No	N

Pensacola Beach	30.32589	-87.17208	N	No	Yes	No	N
St. Joseph Peninsula State Park	29.77851	-85.40833	N	No	Yes	No	N
Perdido Key State Park	30.28801	-87.47814	N	No	Yes	No	N
East Walton County Beach, Orange St access	30.2724	-86.00381	N	No	Yes	No	Y
Naval Live Oaks (Headquarters), GUIS	30.36422	-87.12725	N	No	Yes	No	N
Tyndall AFB, Archery Rd beach, east of marina	30.08165	-85.62992	N	No	Yes	No	N
Panama City Beach	30.18925	-85.83112	N	No	Yes	No	N
Perdido Key area of Gulf Islands NS	30.30350	-87.39394	N	No	Yes	No	N
Santa Rosa area of Gulf Islands NS	30.35489	-87.01419	N	No	Yes	No	N
west Walton County	30.37170	-86.34960	N	No	Yes	No	N
Crooked Island east, Tyndall AFB	29.95664	-85.47378	N	No	Yes	No	N
Crooked Island west, Tyndall AFB	30.02786	-85.56911	N	No	Yes	No	N
Walton County, east of Draper Lake	30.34060	-86.21480	N	No	Yes	No	N
Panama City Beach	30.26268	-85.97958	N	No	Yes	No	N
St. Andrews Bay, Bunkers Cove at yacht club	30.14250	-85.64920	N	No	Yes	No	N
Pensacola Beach	30.33619	-87.11075	N	No	Yes	No	Y
Tyndall AFB, Crooked Island east at boardwalk	29.95634	-85.45734	N	No	Yes	No	N
St. Joe Beach	29.90192	-85.36683	N	No	Yes	No	N
Rosemary Beach, Walton County	30.28000	-86.03000	N	Yes	Yes	No	N
Naval Live Oaks, south beach on Santa Rosa sound	30.36074	-87.14003	N	No	Yes	No	N
Perdido Key	30.29619	-87.42647	N	No	Yes	No	Y
Panama City, Baypoint Marina Yacht Club	30.14352	-85.72778	N	No	Yes	No	N
Navarre Beach	30.37590	-86.88760	N	No	Yes	No	N
St. Andrews Bay	30.16385	-85.68565	N	No	Yes	No	N
Pensacola Naval Air Station, Trout Point Beach	30.33185	-87.34040	N	No	Yes	No	N
W Escambia County, inshore, floating	30.31250	-87.49710	N	No	Yes	No	N
Cape San Blas	29.68224	-85.31182	N	No	Yes	No	N
St. Andrews Bay, Sun Harbor Marina, Panama City	30.18415	-85.73262	N	No	Yes	No	N
Panama City Beach	30.16000	-85.81000	N	Yes	Yes	No	N
St. Vincent NWR	29.67590	-85.21767	N	No	Yes	No	N
Port of Panama City	30.17795	-85.72493	N	No	Yes	No	N
Pensacola	30.29000	-87.25000	N	Yes	Yes	No	Y
Panama City, Inlet Beach	30.19000	-85.87000	N	Yes	Yes	No	Y
West Miramar Beach	30.37000	-86.40000	N	Yes	Yes	No	N

Pensacola	30.30000	-87.30000	N	Yes	Yes	No	Y
Navarre Beach	30.37000	-86.85000	N	Yes	Yes	No	N
approx 1 mile off of Pensacola Beach	30.28000	-87.18000	Y	Yes	Yes	No	Y
Eglin AFB, just east of Navarre Beach	30.37000	-86.86000	N	Yes	Yes	No	N
Pensacola Beach	30.25000	-87.20000	N	Yes	Yes	No	N
Pensacola Beach	30.30000	-87.20000	N	Yes	Yes	No	N
Pensacola Beach	30.27000	-87.45000	N	Yes	Yes	No	N
approx 1 mile off of Destin	30.35800	-86.49900	N	Yes	Yes	No	Y
Port St. Joe, Mexico Beach			N	Yes	Yes	Yes	N
Tyndall AFB			N	Yes	Yes	Yes	N
Elmers Island	29.17027	-90.08316	N	No	Yes	No	N
Elmers Island	29.18166	-90.06428	N	No	Yes	No	N
Slidell area, Lake Borgne	30.13447	-89.50054	N	No	Yes	No	N
Grand Isle	29.24	-89.98	N	Yes	Yes	No	N
Elmers Island	29.17235	-90.07981	N	No	Yes	No	N
Rutherford Beach	29.76692	-93.16193	N	No	Yes	No	N
Rutherford Beach	29.76879	-93.17164	N	No	Yes	No	N
Rutherford Beach	29.76972	-93.17667	N	No	Yes	No	N
Rutherford Beach	29.77171	-93.18671	N	No	Yes	No	N
Rutherford Beach	29.7732	-93.19467	N	No	Yes	No	N
Rutherford Beach	29.77341	-93.19683	N	No	Yes	No	N
Rutherford Beach	29.77354	-93.19756	N	No	Yes	No	N
Rutherford Beach	29.77576	-93.21589	N	No	Yes	No	N
Rutherford Beach	29.77738	-93.2461	N	No	Yes	No	N
Rutherford Beach	29.77728	-93.25497	N	No	Yes	No	N
Rutherford Beach	29.77728	-93.25497	N	No	Yes	No	N
Rutherford Beach	29.76578	-93.15643	N	No	Yes	No	N
Rutherford Beach	29.76119	-93.13665	N	No	Yes	No	N
Rutherford Beach	29.75513	-93.11017	N	No	Yes	No	N
floating near Slidell - Rigolets Pass	30.1588	-89.6505	N	No	Yes	No	N
Elmers Island	29.18184	-90.06364	N	No	Yes	No	N
Grand Isle	29.20786	-90.03112	N	No	Yes	No	N
Holly Beach	29.76897	-93.4392	N	No	Yes	No	N
Holly Beach	29.76879	-93.43438	N	No	Yes	No	N

Holly Beach	29.76922	-93.45638	N	No	Yes	No	N
Holly Beach	29.76897	-93.48772	N	No	Yes	No	N
Holly Beach	29.76771	-93.50714	N	No	Yes	No	N
Constance Beach	29.76031	-93.56936	N	No	Yes	No	N
Fourchon Beach	29.11	-90.18	N	Yes	Yes	No	N
Fourchon Beach	29.11	-90.18	N	Yes	Yes	No	N
Mae's Beach	29.74595	-93.68512	N	No	Yes	No	N
Mae's Beach	29.74582	-93.68592	N	No	Yes	No	N
Mae's Beach	29.7423	-93.70653	N	No	Yes	No	Y
Grand Isle	30.1086	-89.3545	N	No	Yes	No	N
Grand Terre	29.209166	-90.029166	N	No	Yes	No	N
Grand Isle	29.28435	-89.92149	N	No	Yes	No	N
Holly Beach	29.74232	-93.7065	N	No	Yes	No	N
Holly Beach	29.76391	-93.36438	N	No	Yes	No	N
found floating, location?	29.23	-89.99	N	Yes	Yes	No	N
Mae's Beach	29.7424	-93.7062	N	No	Yes	No	Y
Long Beach	29.7534	-93.6293	N	No	Yes	No	N
Long Beach	29.7509	-93.6492	N	No	Yes	No	N
Mae's Beach	29.7396	-93.7208	N	No	Yes	No	N
Constance Beach	29.7605	-93.5674	N	No	Yes	No	N
Holly Beach	29.7683	-93.5018	N	No	Yes	No	N
Holly Beach	29.7689	-93.441	N	No	Yes	No	N
Rutherford Beach	29.7555	-93.1114	N	No	Yes	No	N
Rutherford Beach	29.7513	-93.0941	N	No	Yes	No	N
Rutherford Beach	29.7498	-93.0873	N	No	Yes	No	N
Bayou Rigaud, floating	29.14436	-89.59246	N	No	Yes	No	N
Lake Pontchartrain, floating	30.205	-90.11194	N	No	Yes	No	N
Fourchon Beach	29.09	-90.21566	N	No	Yes	No	N
near Cocodrie	29.24	-90.66	N	Yes	Yes	No	N
4 mi NE of Fishing Smack Bay	30.003805	-89.20633	N	No	Yes	No	N
Grand Isle Beach	29.24	-89.99	N	Yes	Yes	No	N
Empire Jetty Beach	29.25412	-89.60345	N	No	Yes	No	N
Grand Terre	29.28	-89.92	N	Yes	Yes	No	N
Bayou Terrebonne by Bayou La Fleur	29.26	-90.64	N	Yes	Yes	No	N

Lake Chien	29.33	-90.44	N	Yes	Yes	No	N
Bayou Trove	29.2386	-89.53792	N	No	Yes	No	N
Grand Isle State Park	29.24	-89.97	Y	Yes	Yes	No	N
Queen Bess Island	29.3	-89.96	N	Yes	Yes	No	N
Lake Felicity, North of Timbalier Island	29.26	-90.4	N	Yes	Yes	No	N
Lake Felicity, North of Timbalier Island	29.26	-90.47	N	Yes	Yes	No	N
Lake Felicity, North of Timbalier Island	29.28	-90.42	N	Yes	Yes	No	N
Grand Isle Beach	29.2	-90.04	N	Yes	Yes	No	N
skimmer found ~50 mi S of Louisiana coastline, bro	28.4375	-89.8958	Y	No	Skimmer	No	Y
Cameron Parish beach	29.76	-93.34	N	Yes	Yes	No	N
skimmer found ~17 mi offshore Grand Isle	28.9932	-89.8412	Y	No	Skimmer	No	Y
Timbalier Island	29.04	-90.47	N	Yes	Yes	No	N
floating just offshore western LA beaches	29.76	-93.46	N	Yes	Yes	No	N
western Louisiana beaches	29.74	-93.42	N	Yes	Yes	No	N
western Louisiana beaches	29.74	-93.44	N	Yes	Yes	No	N
western Louisiana beaches	29.74	-93.46	N	Yes	Yes	No	N
Coup A Bel Pass	29.3	-89.9	Y	Yes	Yes	No	N
Marsh Island	29.5	-91.9	N	Yes	Yes	No	N
Barataria Bay	29.4	-89.94	Y	Yes	Yes	No	N
north Barataria Bay	29.43308	-89.88585	Y	No	Yes	No	N
western Louisiana, nearshore waters	29.7	-93	N	Yes	Yes	No	Y
Fourchon Beach	29.08	-90.14	N	Yes	Yes	No	N
no location info - est location in Chandeleur Sound	29.8	-89.1	N	Yes	Yes	No	Y
Rutherford Beach	29.74	-93.22	N	Yes	Yes	No	N
Rutherford Beach	29.72	-93.15	N	Yes	Yes	No	N
Rutherford Beach	29.72	-93.07	N	Yes	Yes	No	N
Fourchon Beach	29.1	-90.1	N	Yes	Yes	No	N
Slidell area	30.13	-89.57	N	Yes	Yes	No	N
Rollover Bayou (W LA near Rockefeller Refuge)	29.59	-92.7	N	Yes	Yes	No	N
Rollover Bayou (W LA near Rockefeller Refuge)	29.6	-92.6	N	Yes	Yes	No	N
Whiskey Island chain, south of Cocodrie	29.03	-90.75	N	Yes	Yes	No	N
Timbalier Island area - floating?			N	Yes	Yes	Yes	N
west of Bayou La Fourche, north of jetties at Port Fourchon			N	Yes	Yes	Yes	N
Timbalier Bay			N	Yes	Yes	Yes	N

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2010-00512

Bay St. Louis	30.30880	-89.32590	N	No	Yes	No	N
Bay St. Louis	30.29410	-89.34320	N	No	Yes	No	N
Waveland	30.26410	-89.39200	N	No	Yes	No	N
Waveland	30.27260	-89.37750	N	No	Yes	No	N
Waveland	30.27360	-89.37640	N	No	Yes	No	N
Long Beach	30.34780	-89.13900	N	No	Yes	No	Y
Pass Christian	30.31481	-89.24207	N	No	Yes	No	N
Pass Christian	30.31071	-89.25556	N	No	Yes	No	N
Pass Christian	30.31460	-89.24252	N	No	Yes	No	N
Pass Christian	30.31080	-89.25728	N	No	Yes	No	N
Pass Christian	30.31295	-89.24477	N	No	Yes	No	N
Pass Christian	30.31082	-89.25535	N	No	Yes	No	N
Ocean Springs	30.40980	-88.84080	N	No	Yes	No	N
Bay St. Louis	30.31900	-89.32230	N	No	Yes	No	N
Waveland	30.28830	-89.36000	N	No	Yes	No	N
Waveland	30.28680	-89.36260	N	No	Yes	No	N
Pass Christian	30.30650	-89.26858	N	No	Yes	No	N
Pass Christian	30.30725	-89.26653	N	No	Yes	No	N
Bay St. Louis	30.30562	-89.32865	N	No	Yes	No	N
Pass Christian	30.32834	-89.19923	N	No	Yes	No	N
Pass Christian	30.30529	-89.27249	N	No	Yes	No	N
Pass Christian	30.32620	-89.20892	N	No	Yes	No	N
Pass Christian	30.32460	-89.21450	N	No	Yes	No	N
Biloxi	30.39289	-88.94716	N	No	Yes	No	N
Waveland	30.28865	-89.35290	N	No	Yes	No	N
Pass Christian	30.32824	-89.19985	N	No	Yes	No	N
Pass Christian	30.33144	-89.18568	N	No	Yes	No	N
Pass Christian	30.32144	-89.22351	N	No	Yes	No	N
Pass Christian	30.30750	-89.26659	N	No	Yes	No	N
Bay St. Louis	30.31558	-89.29004	N	No	Yes	No	N
Pass Christian	30.30525	-89.27421	N	No	Yes	No	N
Pass Christian	30.30989	-89.25963	N	No	Yes	No	N
Waveland	30.26362	-89.39346	N	No	Yes	No	N
Waveland	30.28670	-89.36321	N	No	Yes	No	N

Gulfport	30.35567	-89.11807	N	No	Yes	No	N
Waveland	30.24120	-89.42470	N	No	Yes	No	N
Gulfport	30.36948	-89.07825	N	No	Yes	No	N
Biloxi	30.39169	-88.95027	N	No	Yes	No	N
Biloxi	30.39271	-88.87608	N	No	Yes	No	N
Waveland	30.27834	-89.37222	N	No	Yes	No	N
Gulfport	30.37689	-89.04778	N	No	Yes	No	N
Waveland	30.27006	-89.38032	N	No	Yes	No	N
Bay St. Louis	30.30022	-89.33346	N	No	Yes	No	N
Pass Christian	30.32762	-89.20251	N	No	Yes	No	N
floating N of Ship Island	30.25080	-88.94120	N	No	Yes	No	N
Waveland	30.25685	-89.41499	N	No	Yes	No	N
Waveland	30.26483	-89.39040	N	No	Yes	No	N
Waveland	30.26471	-89.39070	N	No	Yes	No	N
Pass Christian, floating by Henderson Point	30.30320	-89.29570	N	No	Yes	No	N
Waveland	30.28749	-89.36136	N	No	Yes	No	N
Waveland	30.28790	-89.36065	N	No	Yes	No	N
Gulfport	30.36129	-89.10089	N	No	Yes	No	N
Long Beach	30.33749	-89.16818	N	No	Yes	No	N
Pass Christian	30.32775	-89.20048	N	No	Yes	No	N
Pass Christian	30.31166	-89.25018	N	No	Yes	No	N
Pass Christian	30.30335	-89.28335	N	No	Yes	No	N
Waveland	30.28267	-89.36761	N	No	Yes	No	N
Biloxi	30.39147	-88.95452	N	No	Yes	No	N
Biloxi	30.39385	-88.91407	N	No	Yes	No	N
Horn Island	30.22831	-88.64799	N	No	Yes	No	N
Pass Christian	30.31300	-89.24830	N	No	Yes	No	N
Pass Christian	30.31190	-89.29050	N	No	Yes	No	N
Gulfport	30.38250	-89.02280	N	No	Yes	No	N
Gulfport	30.38150	-89.02610	N	No	Yes	No	N
floating ~1/2 mile south of Biloxi bridge	30.38960	-88.84190	N	No	Yes	No	N
Waveland Beach at Nicholson Ave	30.29410	-89.35910	N	No	Yes	No	N
Pass Christian	30.32320	-89.21840	N	No	Yes	No	N
Gulfport Beach	30.35582	-89.11698	N	No	Yes	No	N

Gulfport Beach	30.33215	-89.18207	N	No	Yes	No	N
Lakeshore/Waveland	30.25117	-89.42138	N	No	Yes	No	N
Bay St. Louis	30.29545	-89.34080	N	No	Yes	No	N
Waveland	30.26715	-89.38553	N	No	Yes	No	N
Bay St. Louis	30.30980	-89.32553	N	No	Yes	No	N
West Ship Island	30.2115	-88.98480	N	No	Yes	No	N
Waveland	30.28248	-89.36733	N	No	Yes	No	N
Pass Christian	30.31406	-89.24347	N	No	Yes	No	N
Gulfport	30.37421	-89.04382	N	No	Yes	No	Y
Bay St. Louis	30.30883	-89.32583	N	No	Yes	No	N
Waveland	30.27683	-89.37367	N	No	Yes	No	N
Waveland	30.28064	-89.36495	N	No	Yes	No	Y
Waveland	30.28127	-89.36557	N	No	Yes	No	Y
Pascagoula Beach	30.3433	-88.55500	N	No	Yes	No	N
Waveland	30.27234	-89.37753	N	No	Yes	No	N
SE Horn Island	30.2207	-88.59330	N	No	Yes	No	N
southside Cat Island	30.2283	-89.07330	N	No	Yes	No	N
Pass Christian	30.31352	-89.24396	N	No	Yes	No	N
Bellefontaine Beach	30.3433	-88.70330	N	No	Yes	No	N
water south of Cadet Point, Biloxi	30.3877	-88.85890	N	No	Yes	No	N
Waveland	30.28063	-89.36495	N	No	Yes	No	Y
Biloxi Bay	30.40980	-88.86906	N	No	Yes	No	N
Biloxi Bay	30.40980	-88.86906	N	No	Yes	No	N
Horn Island, ~3000' from W end	30.2398	-88.76870	N	No	Yes	No	N
Waveland	30.28655	-89.36330	N	No	Yes	No	N
Pass Christian	30.30725	-89.26660	N	No	Yes	No	N
Waveland	30.28063	-89.36495	N	No	Yes	No	Y
Long Beach	30.33743	-89.16837	N	No	Yes	No	N
Biloxi Beach	30.39154	-88.95600	N	No	Yes	No	N
north side of Horn Island	30.22307	-88.62952	N	No	Yes	No	N
Bangs Lake off of Pascagoula	30.3588	-88.47300	N	No	Yes	No	N
Biloxi, Back Bay	30.40079	-88.85896	N	No	Yes	No	N
Ocean Springs, McPherson Pier	30.40397	-88.83031	N	No	Yes	No	Y
Waveland	30.28063	-89.36495	N	No	Yes	No	Y

Ocean Springs	30.40397	-88.83031	N	No	Yes	No	Y
Biloxi, near Palace Casino	30.3959	-88.85830	N	No	Yes	No	N
Ocean Springs	30.40397	-88.83031	N	No	Yes	No	Y
Ocean Springs	30.4075	-88.83540	N	No	Yes	No	N
Gulfport	30.35487	-89.12191	N	No	Yes	No	N
Waveland	30.26605	-89.38722	N	No	Yes	No	N
Long Beach	30.34084	-89.15894	N	No	Yes	No	N
Biloxi, near harbor	30.39268	-88.88209	N	No	Yes	No	N
Gautier / Belle Fontaine Beach	30.3457	-88.74080	N	No	Yes	No	N
Biloxi	30.39158	-88.94994	N	No	Yes	No	N
Biloxi	30.39184	-88.94596	N	No	Yes	No	N
Biloxi	30.39183	-88.94596	N	No	Yes	No	N
Biloxi	30.39184	-88.94576	N	No	Yes	No	N
Biloxi	30.39262	-88.93246	N	No	Yes	No	N
Biloxi Beach	30.3932	-88.90645	N	No	Yes	No	N
Biloxi Beach	30.39353	-88.92310	N	No	Yes	No	N
Biloxi Beach	30.39382	-88.91889	N	No	Yes	No	N
Biloxi Beach	30.39375	-88.92016	N	No	Yes	No	N
Biloxi Beach	30.39108	-88.96432	N	No	Yes	No	N
Biloxi Beach	30.38968	-88.97850	N	No	Yes	No	N
Ocean Springs / Belle Fontaine Beach	30.34316	-88.72950	N	No	Yes	No	N
Gulfport Beach	30.3597	-89.10686	N	No	Yes	No	N
Biloxi Beach	30.3938	-88.91200	N	No	Yes	No	N
Gulfport Beach	30.37834	-89.04083	N	No	Yes	No	N
Gulfport Beach	30.38538	-89.01003	N	No	Yes	No	N
Gulfport Beach	30.37825	-89.04118	N	No	Yes	No	N
Gulfport Beach	30.3844	-89.01535	N	No	Yes	No	N
Biloxi Beach	30.38942	-88.98023	N	No	Yes	No	N
Biloxi Beach	30.39028	-88.97433	N	No	Yes	No	N
Biloxi Beach	30.39357	-88.89623	N	No	Yes	No	N
Gulfport Beach	30.3831	-89.0192	N	No	Yes	No	N
Biloxi Beach	30.3914	-89.0069	N	No	Yes	No	N
Biloxi Beach	30.39	-88.9756	N	No	Yes	No	N
Biloxi Beach	30.3875	-88.9942	N	No	Yes	No	N

Biloxi Beach	30.3889	-88.9847	N	No	Yes	No	N
Gulfport Beach	30.37058	-89.0742	N	No	Yes	No	N
Gulfport Beach	30.3706	-89.07417	N	No	Yes	No	N
Gulfport Beach	30.37131	-89.07161	N	No	Yes	No	N
Gulfport Beach	30.37158	-89.07066	N	No	Yes	No	N
Gulfport Beach	30.3768	-89.07045	N	No	Yes	No	N
Gulfport Beach	30.37262	-89.06721	N	No	Yes	No	N
Gulfport	30.38075	-89.02951	N	No	Yes	No	N
Gulfport	30.38097	-89.02944	N	No	Yes	No	N
Gulfport	30.38048	-89.03049	N	No	Yes	No	N
Gulfport	30.38016	-89.03156	N	No	Yes	No	N
Biloxi	30.3799	-89.03266	N	No	Yes	No	N
Biloxi	30.38032	-89.03104	N	No	Yes	No	N
Gulfport Beach	30.37746	-89.0433	N	No	Yes	No	N
Gulfport Beach	30.37819	-89.0416	N	No	Yes	No	N
Waveland	30.2806	-89.3449	N	No	Yes	No	Y
Biloxi, Acadia Ave	30.39277	-88.9312	N	No	Yes	No	Y
Gulfport Beach	30.37819	-89.0416	N	No	Yes	No	N
Gulfport Beach	30.37819	-89.0416	N	No	Yes	No	N
Gulfport Beach	30.37843	-89.0413	N	No	Yes	No	N
Gulfport Beach	30.37837	-89.04101	N	No	Yes	No	N
Gulfport Beach	30.37457	-89.0563	N	No	Yes	No	N
Gulfport Beach	30.37456	-89.05634	N	No	Yes	No	N
Biloxi Beach	30.3887	-88.98878	N	No	Yes	No	N
Biloxi Beach	30.38877	-88.98797	N	No	Yes	No	N
Biloxi Beach	30.38877	-88.98797	N	No	Yes	No	N
Biloxi Beach	30.38886	-88.9741	N	No	Yes	No	N
Biloxi Beach	30.38886	-88.98734	N	No	Yes	No	N
Pass Christian Beach	30.32762	-89.20251	N	No	Yes	No	N
Gulfport Beach	30.38188	-89.02495	N	No	Yes	No	N
Gulfport Beach	30.38393	-89.01701	N	No	Yes	No	N
Gulfport Beach	30.38583	-89.00827	N	No	Yes	No	N
Biloxi Beach	30.39357	-88.89818	N	No	Yes	No	N
Biloxi Beach	30.39182	-88.94774	N	No	Yes	No	N

Biloxi Beach	30.39328	-88.92583	N	No	Yes	No	N
Biloxi Beach	30.37561	-89.09052	N	No	Yes	No	N
Biloxi Beach	30.37571	-89.05148	N	No	Yes	No	N
Biloxi Beach	30.38738	-89	N	No	Yes	No	N
Biloxi Beach	30.38746	-88.99895	N	No	Yes	No	N
near Horn Island - floating?	30.2333	-88.53093	N	No	Yes	No	N
floating off of Gulfport	30.32007	-89.17917	N	No	Yes	No	N
Waveland Pier	30.2806	-89.3449	N	No	Yes	No	Y
Biloxi Beach	30.39383	-88.91076	N	No	Yes	No	N
Biloxi Beach	30.39167	-88.89817	N	No	Yes	No	N
Biloxi Beach	30.39383	-88.91895	N	No	Yes	No	N
Gulfport Beach	30.37125	-89.07175	N	No	Yes	No	N
west side of Deer Island, Biloxi	30.26278	-88.89885	N	No	Yes	No	N
Waveland Pier	30.2806	-89.3449	N	No	Yes	No	Y
Waveland Pier	30.2806	-89.3449	N	No	Yes	No	Y
Waveland Pier	30.2806	-89.3449	N	No	Yes	No	Y
Waveland Pier	30.28063	-89.36495	N	No	Yes	No	Y
Biloxi Beach	30.38722	-89.00137	N	No	Yes	No	N
Ocean Springs	30.3603	-88.7642	N	No	Yes	No	N
Ocean Springs	30.405	-88.83	N	No	Yes	No	N
Biloxi	30.394	-88.913	N	No	Yes	No	N
Long Beach	30.35	-89.13	N	No	Yes	No	N
Long Beach	30.34	-89.15	N	No	Yes	No	N
Long Beach	30.33	-89.18	N	No	Yes	No	N
Waveland Pier	30.28063	-89.36495	N	No	Yes	No	Y
Waveland Pier	30.28063	-89.36495	N	No	Yes	No	Y
Waveland Pier	30.28063	-89.36495	N	No	Yes	No	Y
3 Oaks Bayou (Bayou Caddy), outside Waveland	30.24575	-89.43206	N	No	Yes	No	N
Pass Christian	30.32465	-89.2142	N	No	Yes	No	N
Long Beach	30.33843	-89.16594	N	No	Yes	No	N
floating off of NE corner of Ship Island			N	No	Yes	Yes	N
Long Beach			N	No	Yes	Yes	N
off NE coast of Cat Island			N	No	Yes	Yes	N
off east Cat Island			N	No	Yes	Yes	N

Directed Capture	28.4665	-88.46116	Y	No	No	No	Y
Directed Capture	28.96778	-88.79333	Y	No	No	No	Y
Directed Capture	28.90722	-88.80167	Y	No	No	No	Y
Directed Capture	28.9597	-88.5342	Y	No	No	No	Y
Directed Capture	28.9182	-88.5552	Y	No	No	No	Y
Directed Capture	28.865	-88.5658	Y	No	No	No	Y
Directed Capture	28.8538	-88.5617	Y	No	No	No	Y
Directed Capture	28.847	-88.5588	Y	No	No	No	Y
Directed Capture	28.8405	-88.5557	Y	No	No	No	Y
Directed Capture	28.6573	-88.4313	Y	No	No	No	Y
Directed Capture	28.8045	-88.4771	Y	No	No	No	Y
Directed Capture	28.804483	-88.4771	Y	No	No	No	Y
Directed Capture	28.80725	-88.47808	Y	No	No	No	Y
Directed Capture	28.813483	-88.480383	Y	No	No	No	Y
Directed Capture	28.81535	-88.479233	Y	No	No	No	Y
Directed Capture	28.81669	-88.47803	Y	No	No	No	Y
Directed Capture	28.828083	-88.37115	Y	No	No	No	Y
Directed Capture	28.829617	-88.471267	Y	No	No	No	Y
Directed Capture	28.826867	-88.464933	Y	No	No	No	Y
Directed Capture	28.834317	-88.42455	Y	No	No	No	Y
Directed Capture - LDWF	29.09	-89.78	Y	No	No	No	N
Directed Capture - LDWF	29.0919	-89.7781	Y	No	No	No	Y
Directed Capture - LDWF	29.0932	-89.7747	Y	No	No	No	Y
Directed Capture - LDWF	29.0998	-89.7574	Y	No	No	No	Y
Directed Capture - LDWF	29.1065	-89.748	Y	No	No	No	Y
Directed Capture	29.01025	-88.26369	Y	No	No	No	Y
Directed Capture	29.01025	-88.26369	Y	No	No	No	Y
Directed Capture	29.01025	-88.26369	Y	No	No	No	Y
Directed Capture	29.02569	-88.25586	Y	No	No	No	Y
Directed Capture	29.17372	-88.16519	Y	No	No	No	N
Directed Capture	28.7538	-88.85602	Y	No	No	No	N
Directed Capture	28.75114	-88.84875	Y	No	No	No	Y
Directed Capture	28.62252	-88.55688	Y	No	No	No	Y
Directed Capture	28.76398	-88.82482	Y	No	No	No	Y

Directed Capture	28.66965	-88.49193	Y	No	No	No	Y
Directed Capture	28.91208	-88.68748	Y	No	No	No	Y
Directed Capture	28.70114	-88.53979	Y	No	No	No	Y
Directed Capture	28.92108	-88.7991	Y	No	No	No	Y
Directed Capture	28.92094	-88.79822	Y	No	No	No	Y
Directed Capture	28.92891	-88.77321	Y	No	No	No	Y
Directed Capture	28.928	-88.7701	Y	No	No	No	Y
Directed Capture	28.92558	-88.74215	Y	No	No	No	Y
Directed Capture	28.93916	-88.71402	Y	No	No	No	Y
Directed Capture	28.94739	-88.70053	Y	No	No	No	Y
Directed Capture	28.96491	-88.67766	Y	No	No	No	Y
Directed Capture	28.98004	-88.65568	Y	No	No	No	Y
Directed Capture - LDWF	28.72474	-88.55243	Y	No	No	No	Y
Directed Capture - LDWF	28.81743	-88.63998	Y	No	No	No	Y
Directed Capture	28.62361	-88.54351	Y	No	No	No	Y
Directed Capture	28.60264	-88.49568	Y	No	No	No	Y
Directed Capture	28.59733	-88.49236	Y	No	No	No	Y
Directed Capture	28.59501	-88.49054	Y	No	No	No	Y
Directed Capture	28.57604	-88.49573	Y	No	No	No	Y
Directed Capture	28.57271	-88.49434	Y	No	No	No	Y
Directed Capture	28.56876	-88.49416	Y	No	No	No	Y
Directed Capture	28.52956	-88.51617	Y	No	No	No	Y
Directed Capture	28.50794	-88.54434	Y	No	No	No	Y
Directed Capture	28.53647	-88.60338	Y	No	No	No	Y
Directed Capture	28.69822	-88.79404	Y	No	No	No	Y
Directed Capture	28.90896	-88.72726	Y	No	No	No	Y
Directed Capture	28.6881	-88.84448	Y	No	No	No	Y
Directed Capture	28.67472	-88.88646	Y	No	No	No	Y
Directed Capture	28.68382	-88.88902	Y	No	No	No	Y
Directed Capture	28.8945	-88.72223	Y	No	No	No	Y
Directed Capture	28.6575	-88.87042	Y	No	No	No	Y
Directed Capture	28.65178	-88.86879	Y	No	No	No	Y
Directed Capture	28.6833	-88.64572	Y	No	No	No	Y
Directed Capture	28.74405	-88.2535	Y	No	No	No	Y

Directed Capture	28.7637	-88.23549	Y	No	No	No	Y
Directed Capture	28.7666	-88.23471	Y	No	No	No	Y
Directed Capture	28.78214	-88.23679	Y	No	No	No	Y
Directed Capture	28.87021	-88.50445	Y	No	No	No	Y
Directed Capture	28.67327	-88.29708	Y	No	No	Yes	Y

Symbol	Log #	Comments
C		outside of area of concern
C		outside of area of concern
C		outside of area of concern
C		outside of area of concern
C		outside of area of concern
C		outside of area of concern
C		outside of area of concern
C		outside of area of concern
C	D-0002 BSNWR	
C	D-0001 BSNWR	
C	D-0003 BSNWR	
C	D-0004 BSNWR	
C	D-0005 BSNWR	
C	D-0006 BSNWR	
C	D-0007 BSNWR	
C	D-0008 BSNWR	
C	D-0009 BSNWR	
C	D-0010 BSNWR	
C	D-0015 BSNWR	
C	D-0014 BSNWR	
C	D-0011 BSNWR	
C	D-0012 BSNWR	
C	D-0013 BSNWR	
C	D-0016 BSNWR	
C	D-0017 BSNWR	dried carcass
C	D-0018 BSNWR	
C	D-0019 BSNWR	
C	D-0020 BSNWR	
C	D-0021 BSNWR	
C	D-0023 BSNWR	
C	D-0022 BSNWR	
C	L-0001 BSNWR	
C	D-0024 BSNWR	

C	D-0025 BSNWR	
C	D-0026 BSNWR	
C	D-0027 BSNWR	
C	L-0007 IMMS	emaciated; taken to IMMS for rehab; died 5/25, shipped to UF for necropsy
C	D-0028 BSNWR	
C	D-0029 BSNWR	
C	D-0030 BSNWR	
C	D-0031 BSNWR	
U		
U		
U		
U		
U		
U		
U		
U		
U		
C	L-0012 IMMS	found floating next to boom; externally oiled turtle; taken to IMMS for rehab
U		
C	L-0013 IMMS	externally oiled turtle; taken to IMMS for rehab
U		
U		too decomposed for necropsy
U		
U		
U		
C		parts only - head, guts and 1 flipper
C		
C		
U		
N		
C		very emaciated, missing part of RRF
C		very emaciated; taken to Gulf World, died soon after recovery
C		no head, flippers or internal organs
C		brown algae on carapace; some small barnacles on skin; adult female

C	prop damage to right side of carapace
C	no wounds; barnacles and algae on carapace; adult male
C	missing notch from right side carapace; barnacle and algae growth
C	barnacles on carapace and flippers; taken to Gulf World, died same day
C	apparent piece of metal in ventral LFF near insertion
C	dried carcass; little skin remaining, bones visible
C	no head or front flippers, shark bites
C	missing both front flippers and lrf
C	carapace completely covered w/barnacles and algae; adult female
C	emaciated, lots of barnacles, damage to base of front flippers and neck
C	
C	
C	in pieces, decomposed
C	carapace broken, pieces missing
C	skin and scutes peeling
C	numerous barnacles and light algae on carapace; taken to Gulfarium
C	old wound to posterior marginals; scutes peeling
C	posterior carapace gone; plastron missing; falling apart, nasty
U	
C	apparent skeg/prop damage to center carapace
C	caught on hook and line, hook in throat; taken to Gulfarium
C	prop wounds to right posterior carapace; heavy barnacles,small barnacles on skin
C	2 apparent prop wounds across carapace
C	skin and scutes peeling, very decomposed
C	fishing line entangled around neck
C	no head or flippers; damage to carapace - likely prop
C	missing skull; carapace bones disarticulating due to decomp
C	missing head and LFF, possible shark bites; gashes on plastron
U	
C	carapace bones disarticulating due to decomp
C	dried carcass; carapace broken across posterior; portions missing
U	caught on hook and line, hook removed and turtle released
U	
U	

U	
U	
U	caught by relocation trawler; ~50% coverage of thin oil sheen, also sheen in mouth
U	
U	
U	in pieces due to decomp, unable to salvage
U	
U	caught by relocation trawler; observer thought oiled, Gulfarium said algae
N	
N	
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C	
C	parts only
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C	
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C	

C	
C	
C	
C	
U	
U	
C	swab sample taken
C	swab sample taken
C	taken to AOA for rehab
C	
C	
C	
C	swab sample taken
C	swab sample taken
U	
C	taken to AOA for rehab
C	swab sample taken
C	swab sample taken
C	swab sample taken
C	swab sample taken
C	swab sample taken
C	swab sample taken
C	swab sample taken
C	swab sample taken
C	swab sample taken
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partial carcass, pieces only

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C
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C	D-0029 IMMS	
C	D-0030 IMMS	
C	D-0031 IMMS	
C	D-0032 IMMS	
C	D-0033 IMMS	
C	L-0001 IMMS	taken to IMMS, died in rehab, frozen for necropsy
C	D-0001 IMMS	
C	D-0002 IMMS	
C	D-0003 IMMS	
C	D-0004 IMMS	
C	D-0005 IMMS	
C	D-0006 IMMS	
C	D-0034 IMMS	
C	D-0007 IMMS	
C	D-0008 IMMS	
C	D-0009 IMMS	
C	D-0010 IMMS	
C	D-0011 IMMS	
C	D-0012 IMMS	
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C	D-0019 IMMS	
C	D-0020 IMMS	
C	D-0021 IMMS	
C	D-0022 IMMS	
C	D-0023 IMMS	
C	D-0024 IMMS	
C	D-0025 IMMS	
C	D-0026 IMMS	
C	D-0027 IMMS	

C	D-0028 IMMS	
C	D-0035 IMMS	
C	D-0036 IMMS	
C	D-0037 IMMS	
C	D-0038 IMMS	
C	D-0039 IMMS	
C	D-0040 IMMS	
C	D-0041 IMMS	
C	D-0042 IMMS	
C	D-0043 IMMS	
C	D-0044 IMMS	
C	D-0045 IMMS	
C	D-0046 IMMS	
C	D-0047 IMMS	carcass in two pieces
C	D-0048 IMMS	
C	D-0049 IMMS	
C	D-0050 IMMS	
C	D-0051 IMMS	
C	D-0052 IMMS	
C	D-0053 IMMS	
C	D-0054 IMMS	
C	D-0055 IMMS	
C	D-0056 IMMS	
C	D-0057 IMMS	
C	D-0058 IMMS	
C	D-0063 IMMS	Decapitated, missing portions of flippers due to decomp; first reported on 5/8
C	D-0059 IMMS	
C	D-0060 IMMS	
C	D-0061 IMMS	
C	D-0062 IMMS	
C	D-0064 IMMS	
C	D-0065 IMMS	
C	D-0066 IMMS	
C	D-0067 IMMS	

C	D-0068 IMMS	
C	D-0069 IMMS	
C	D-0070 IMMS	
C	D-0071 IMMS	
C	D-0072 IMMS	
C	D-0085 IMMS	field necropsy on beach; damaged LFF, carapace covered in barnacles; first rep 5/13
C	D-0073 IMMS	
C	D-0074 IMMS	
C	L-0002 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0075 IMMS	
C	D-0076 IMMS	carapace cracked/broken
C	L-0003 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	L-0004 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0086 IMMS	"chopped up", likely prop wounds to carapace
C	D-0077 IMMS	red slimy substance covering carapace
C	D-0087 IMMS	skeletal remains
C	D-0088 IMMS	skeletal remains
C	D-0078 IMMS	
C	D-0089 IMMS	
C	D-0090 IMMS	floating, picked up by NPS
C	L-0005 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0079 IMMS	carapace only
C	D-0080 IMMS	carapace only
C	D-0091 IMMS	sample taken and logged, carcass painted and left on beach
C	D-0081 IMMS	
C	D-0082 IMMS	
C	L-0006 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0083 IMMS	
C	D-0092 IMMS	possible loggerhead, unsure of species ID
C	D-0093 IMMS	
C	D-0094 IMMS	carcass in plastic bag before oil swab taken
C	D-0084 IMMS	rear portion of carcass missing
C	L-0008 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	L-0009 IMMS	incidentally captured on hook and line; taken to IMMS for rehab

C	L-0010 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0095 IMMS	carcass in plastic bag before oil swab taken; severe prop damage
C	L-0011 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0161 IMMS	
C	D-0096 IMMS	mangled caudal half of carcass
C	D-0097 IMMS	
C	D-0098 IMMS	
C	D-0099 IMMS	old injury to edge of carapace
C	D-0162 IMMS	
C	D-0100 IMMS	
C	D-0101 IMMS	
C	D-0102 IMMS	
C	D-0103 IMMS	
C	D-0104 IMMS	
C	D-0105 IMMS	scrapes along plastron
C	D-0106 IMMS	missing right edge of carapace, advanced decomp
C	D-0107 IMMS	
C	D-0108 IMMS	extra costal scute on L side
C	D-0109 IMMS	edges of marginal scutes broken, postmortem
C	D-0110 IMMS	extra vertebral scute
C	D-0163 IMMS	
C	D-0112 IMMS	
C	D-0111 IMMS	
C	D-0113 IMMS	
C	D-0114 IMMS	
C	D-0118 IMMS	severely mangled, no accurate meas possible
C	D-0119 IMMS	black substance in mouth
C	D-0115 IMMS	
C	D-0116 IMMS	
C	D-0117 IMMS	
C	D-0120 IMMS	
C	D-0121 IMMS	
C	D-0122 IMMS	
C	D-0123 IMMS	

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C	D-0124 IMMS	
C	D-0125 IMMS	
C	D-0126 IMMS	
C	D-0127 IMMS	
C	D-0128 IMMS	
C	D-0129 IMMS	
C	D-0130 IMMS	
C	D-0164 IMMS	
C	D-0165 IMMS	
C	D-0166 IMMS	
C	D-0167 IMMS	
C	D-0168 IMMS	
C	D-0169 IMMS	
C	D-0131 IMMS	
C	D-0132 IMMS	
C	L-0015 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	L-0014 IMMS	washed ashore alive
C	D-0133 IMMS	
C	D-0134 IMMS	
C	D-0135 IMMS	
C	D-0136 IMMS	
C	D-0137 IMMS	
C	D-0138 IMMS	
C	D-0139 IMMS	
C	D-0140 IMMS	
C	D-0141 IMMS	
C	D-0142 IMMS	
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C	D-0146 IMMS	
C	D-0147 IMMS	
C	D-0155 IMMS	
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C	D-0149 IMMS	
C	D-0150 IMMS	
C	D-0151 IMMS	
C	D-0152 IMMS	
C	D-0153 IMMS	
C	D-0154 IMMS	
C	D-0172 IMMS	
C	L-0016 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0156 IMMS	
C	D-0157 IMMS	
C	D-0158 IMMS	
C	D-0159 IMMS	
C	D-0170 IMMS	
C	L-0017 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	L-0018 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	L-0019 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	L-0020 IMMS	incidentally captured on hook and line; taken to IMMS for rehab
C	D-0160 IMMS	
C	D-0171 IMMS	
C		
C		
C		
C		
C		
C		incidentally captured on hook and line; taken to IMMS for rehab
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