Stacy,Brian A

From: Wendy Teas [Wendy.Teas@noaa.gov]
Sent: Tuesday, May 04, 2010 2:19 PM
To: Barbara.Schroeder@noaa.gov
Subject: Re: Strandings between 4/20 and 4/29?

Barbara,

I am aware of 1 Kemp's reported in MS on 4/26.
I just spoke w/Jackie in AL and they had 5 Kemp's between 4/20 and 4/29.
I have a call out to Michele Kelley for LA - waiting for a call back.

Wendy

Barbara.Schroeder@noaa.gov wrote:
> Wendy,
> Press is asking through Incident Command -- were there any reported strandings starting April 20th and ending April 29th (our table starts on 4/30).
>
> Urgent, in the area we are reporting from now.
>

2010-00519OPR0000022CJ

Stacy,Brian A

From: Sandy_MacPherson@fws.gov
Sent: Sunday, May 02, 2010 11:41 AM
To: Teri.Rowles@noaa.gov
Cc: Sandy_MacPherson@fws.gov; Barbara.Schroeder@noaa.gov; ann_marie_lauritsen@fws.gov; Brian.Stacy@noaa.gov; Sheryan.Epperly@noaa.gov; Wendy.Teas@noaa.gov
Subject: Re: Sea Turtle Nesting Beach Protocols

Hi Teri,

I've received feedback from a couple of people so far and will get you all a revised document later today. If any of you have comments, please let me know ASAP.

I've also sent it to key folks in Alabama and Mississippi. Hope to get comments from them today.

Sandy

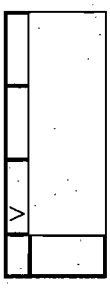
-----Teri.Rowles@noaa.gov wrote: -----

To: Sandy_MacPherson@fws.gov
From: Teri.Rowles@noaa.gov
Date: 05/01/2010 08:02PM
cc: Barbara.Schroeder@noaa.gov, ann_marie_lauritsen@fws.gov, Brian.Stacy@noaa.gov, Sheryan.Epperly@noaa.gov, Wendy.Teas@noaa.gov
Subject: Re: Sea Turtle Nesting Beach Protocols

sandy_macpherson@fws.gov
****

To: Sandy MacPherson/R4/FWS/DOI@FWS
From: Ann Marie Lauritsen/R4/FWS/DOI
Date: 05/01/2010 02:02PM
Subject: Fw: updated nesting beach summary for oil spill response

05/01/2010 01:18 PM



http://www.myfwc.com/

Stacy,Brian A

From: Gary Shigenaka [Gary.Shigenaka@noaa.gov]
Sent: Sunday, May 02, 2010 1:25 PM
To: Teri Rowles; John Foret
Cc: alan.mearns; Nicolle.R.Rutherford
Subject: UNH/CRRC funded studies on turtles

Attachments: Final report 2009.pdf; Rowe et al. Turtle article 2009.pdf

Final report 2009.pdf (234 KB)... Rowe et al. Turtle article 200...

Teri, John,

Here is the final report and the journal article resulting from the terrestrial turtle studies performed under CRRC funding.

gs

Stacy,Brian A

From: Lyndsey Howell [Lyndsey.Howell@noaa.gov]
Sent: Tuesday, June 29, 2010 2:30 PM
To: Ben Higgins; Cain Bustinza; Matt Clark; Roger Zimmerman; Sheryan Epperly; Tom Minello; Rhonda O'Toole; James M Nance; Mark Kinsey; wendy teas; Lisa.Belskis@noaa.gov; Michael.Barnette@noaa.gov
Subject: Sea Turtle Strandings for UTC

Attachments: Strandings and Surveys 2010.xls; lyndsey_howell.vcf

Strandings and Surveys 2010.xl... lyndsey_howell.vcf (361 B)

Hello everyone,
Detailed information is attached on our stranding events and the weekly survey data. Hope everyone has a good week.

Thank you,

Lyndsey

Stacy,Brian A

From: John.Ewald@noaa.gov
Sent: Wednesday, May 05, 2010 7:16 PM
Subject: PRESS RELEASE: NOAA update on sea turtle stranding in the Gulf of Mexico

[DATE: 5/5/2010 @ 5:40 ET; http://www.deepwaterhorizonresponse.com/go/doc/2931/539971/]

NOAA update on sea turtle stranding in the Gulf of Mexico

ROBERT, La. - There have been 38 sea turtle strandings reported from Alabama through the Louisiana delta since April 30. Sea turtle stranding responders working under the guidance of NOAA – who responds to thousands of sea turtle strandings every year – recovered all but one of the turtles. All those recovered were dead except one, which died shortly thereafter. Most of the turtles identified so far are endangered juvenile Kemp's ridley turtles. No evidence of oil was found on the beaches where the strandings occurred.

"Based on careful examination, NOAA scientists do not believe that these sea turtle strandings are related to the oil spill. NOAA and its partners have conducted 10 necropsies so far – none of ten turtles showed evidence of oil, externally or internally," said Barbara Schroeder, NOAA national sea turtle coordinator.

The turtles have been sent to the Institute for Marine Mammal Studies in Gulfport, Miss. to determine, if possible, whether their deaths are linked to oil, or another cause. Based on careful examination, NOAA scientists do not believe that these sea turtle strandings are related to the oil spill. NOAA and its partners have conducted 10 necropsies so far – none of ten turtles showed evidence of oil, externally or internally. At least 15 more necropsies of dead sea turtles are planned in the coming days. While the complete results can take several weeks because of the time needed to analyze tissue, preliminary results are available immediately after the necropsy itself, which takes several hours.

Potential Causes
There are thousands of sea turtle strandings reported every year in the Gulf of Mexico. In recent years, sea turtles in the Gulf of Mexico have shown a pattern of increased stranding during this time of year. NOAA believes the stranding numbers are higher than normal and are working to understand why.

Sea turtles die of natural causes, and are also affected by natural factors such as algal blooms. Primary human causes for sea turtle deaths include being caught in fishing nets, shrimp trawls and vessel strikes.

Monitoring
Overflights of the oil spill area yesterday showed 30-50 sea turtles (species unknown) swimming in or near the oil spill. As weather allows, NOAA will continue to do daily overflights of the slick, which will guide mitigation efforts, such as burning of oil and application of dispersants. NOAA is working on a plan to address large numbers of oiled sea turtles.

There are five sea turtle species in the Gulf of Mexico. Kemp's ridley, leatherback, and green sea turtles are listed as endangered under the Endangered Species Act; loggerhead and hawksbill sea turtles are listed as threatened.

--
John Ewald
Public Affairs Specialist
National Ocean Service
National Oceanic and Atmospheric Administration
1305 East-West Highway, Room 13238
Silver Spring, MD 20910
Office: (301) 713-3066 x191
Mobile: (240) 429-6127

Gulf oil spill containment efforts underway

In the Gulf of Mexico and along the coastline, cleanup and containment efforts continue after the explosion of the Deepwater Horizon oil rig April 20.

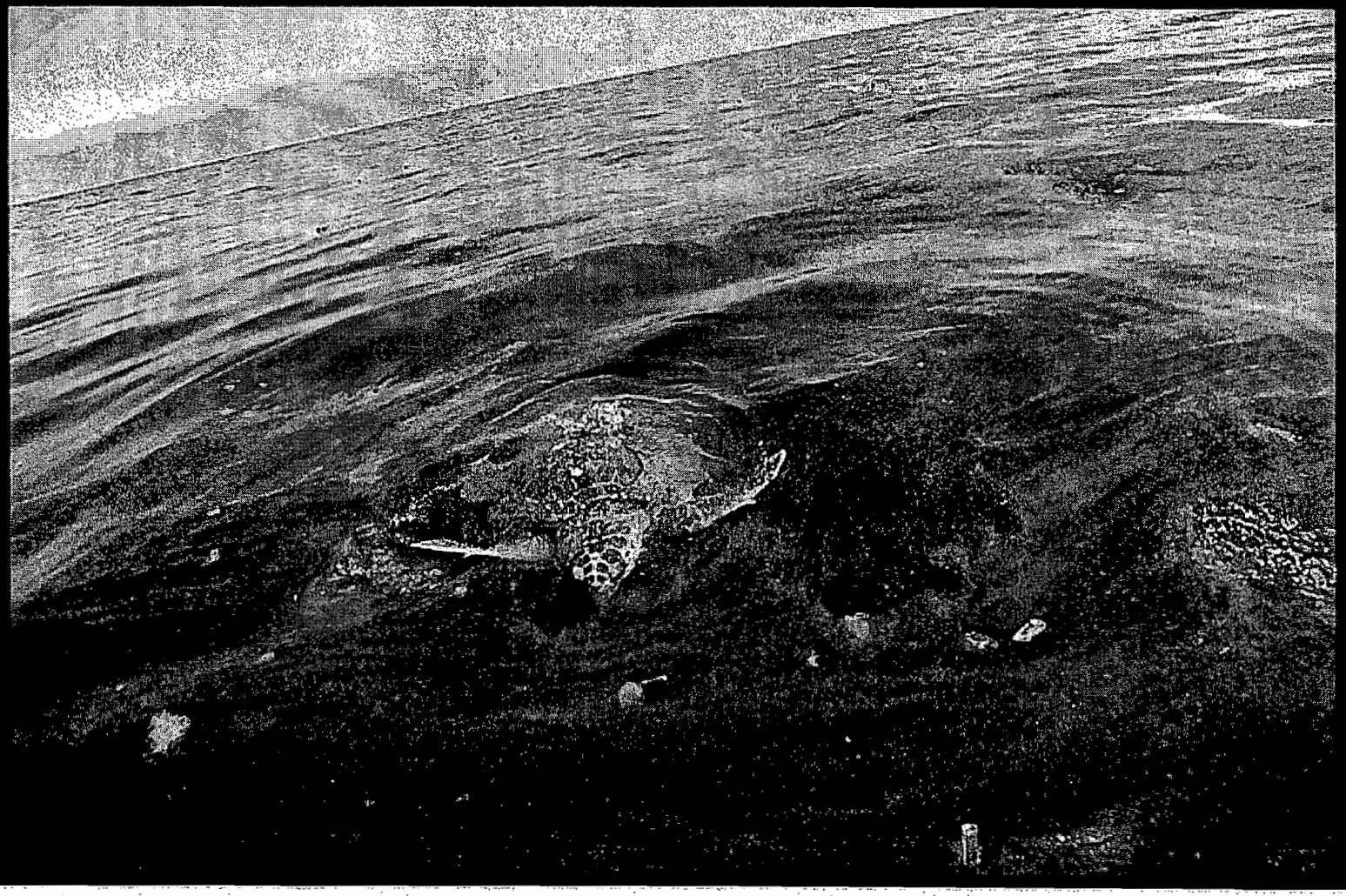
May 5

A sea turtle surfaces to feed on Portuguese Man-O-War, contaminated with oil due to the spill from the Deepwater Horizon rig.

Carol Guzy-The Washington Post

Related Content:

- Gallery: Oil spills throughout history
- Article: Oil rig that had explosion sinks; 11 still missing
- Washington Post Photo Store
- More Photos and Videos



Stacy,Brian A

From: Simeon Hahn [Simeon.Hahn@noaa.gov]
Sent: Thursday, May 20, 2010 10:09 AM
To: Simeon Hahn; Dickerson, Dena D ERDC-EL-MS; Brian Stacy; Blair Witherington; Barbara.Schroeder; Kreitinger, Joseph P ERDC-EL-MS; tom McDonald; Michael Ziccardi; Tony Palagyi; Christopher Plaisted
Subject: [Fwd: Re: Fwd: Sea Turtle Nesting Surveys]

Attachments: Simeon_Hahn.vcf

Simeon_Hahn.vcf
(464 B)

-------- Original Message --------
Subject: Re: Fwd: Sea Turtle Nesting Surveys
Date: Wed, 19 May 2010 15:30:29 -0600
From: Sandy_MacPherson@fws.gov
To: Simeon.Hahn@noaa.gov
CC: mhziccardi@ucdavis.edu, Barbara.Schroeder@noaa.gov
References: <4BF43C48.5060204@noaa.gov>
<FBB4CF76-0161-4759-AE21-B1C16D6A038B@ucdavis.edu>

There are no reports of sea turtle nesting as of yet in Alabama. In the Florida Panhandle, so far there's one suspected Kemp's nest that was laid in Walton County and one loggerhead false crawl on Tyndall Air Force Base.

****
Sandra L. MacPherson
National Sea Turtle Coordinator
U.S. Fish and Wildlife Service
7915 Baymeadows Way, Suite 200
Jacksonville, Florida 32256-7517
USA
904.731.3328 (direct)
904.731.3336 (main)
904.731.3045 or 3048 (fax)
E-mail: sandy_macpherson@fws.gov <mailto:sandy_macpherson@fws.gov>
****

-----Michael Ziccardi <mhziccardi@ucdavis.edu> wrote: -----

To: "Sandy_MacPherson@fws.gov MacPherson" <sandy_macpherson@fws.gov>
From: Michael Ziccardi <mhziccardi@ucdavis.edu>
Date: 05/19/2010 03:53PM
Subject: Fwd: Sea Turtle Nesting Surveys

Sandy-

Would you mind giving a brief update to Simeon? Thx.

Mike

Begin forwarded message:

> *From: *Simeon Hahn <Simeon.Hahn@noaa.gov

> <mailto:Simeon.Hahn@noaa.gov>>
> *Date: *May 19, 2010 2:30:16 PM CDT
> *To: *Michael Ziccardi <mhziccardi@ucdavis.edu
> <mailto:mhziccardi@ucdavis.edu>>
> *Subject: **Sea Turtle Nesting Surveys*
>
> Mike - can you provide an update on the sea turtle nesting surveys
> in FL and AL? Thanks.

****
Michael Ziccardi DVM MPVM PhD
Director, Oiled Wildlife Care Network
Assoc. Professor, Clinical Wildlife Health
Wildlife Health Center
School of Veterinary Medicine
University of California
Davis, CA 95616
O: (530) 754-5701
C: (530) 979-7561
F: (530) 752-3318
E: mhziccardi@ucdavis.edu <mailto:mhziccardi@ucdavis.edu>
www.owcn.org <http://www.owcn.org/>

[attachment "Simeon_Hahn.vcf" removed by Sandy MacPherson/R4/FWS/DOI]

Stacy,Brian A

From: Muller, Jennifer Keene
Sent: Thursday, May 20, 2010 6:17 PM
To: Stacy,Brian A
Subject: MS Turtle Pics

Attachments: MS Turtle Pics 001.jpg; MS Turtle Pics 002.jpg; MS Turtle Pics 003.jpg; MS Turtle Pics 004.jpg

MS Turtle Pics 001.jpg (2 MB) MS Turtle Pics 002.jpg (2 MB) MS Turtle Pics 003.jpg (2 MB) MS Turtle Pics 004.jpg (2 MB)

Here ya go! 4 pics total.

Have fun, be safe, call if you need anything, including someone to provide you with smokes :)

- Jen

Jennifer K. Muller, MS
Biological Scientist
Marine Animal Disease Laboratory
University of Florida

Stacy,Brian A

From: Sheryan Epperly [Sheryan.Epperly@noaa.gov]
Sent: Friday, May 21, 2010 10:39 AM
To: Simeon Hahn
Cc: Dickerson, Dena D ERDC-EL-MS; Brian Stacy; Blair Witherington; Barbara.Schroeder; Kreitinger, Joseph P ERDC-EL-MS; andy landry; Michael Ziccardi; Tony Palagyi; atoline@entrix.com; sandy macpherson; Anne Marie Lauritsen; Meylan, Anne
Subject: Re: nesting turtle response protocol

Attachments: Putman_etal_2010_Integrative_Comp_Biol.pdf

Putman_etal_2010_Integrative_C...

Here's a recent paper just out about the possible foraging grounds of Kemp's hatchlings.

On 5/21/10 10:19 AM, Simeon Hahn wrote:
>

Stacy,Brian A

From: Wendy Teas [Wendy.Teas@noaa.gov]
Sent: Friday, May 21, 2010 6:41 PM
To: Barbara.Schroeder; Michael Ziccardi; Teri Rowles; Sheryan.Epperly; Bonnie Ponwith; Lisa Belskis; Chris Sasso; Brian Stacy; Elizabeth Tuohy-Sheen; Karen.Mitchell; Sarah Wilkin; Jaclyn Taylor; _NMFS SER Emergency Consult
Subject: 5/21 Strandings Update - Non-oiled and Oiled Turtles

Attachments: Stranded Turtles - Non-oiled and Oiled.xls

Stranded Turtles - Non-oiled a...

There were 2 sea turtle strandings verified today:
FL - 1
AL - 1
MS - report not received
LA - no turtles reported

See attached Excel file for details.

In addition, there were 2 late reports added for 5/20 - 1 each in FL and AL.

Unverified reports or sighting information received today:
AL - 2 turtles were reported floating, unable to access to recover; 1 turtle was reported as "in distress" but dove and wasn't seen again.
The turtle reported late yesterday as entangled near a pier was checked and is not entangled - has been seen several times at different locations around pier over past 2 days.
MS - 1 turtle reported to wildlife hotline - awaiting additional information, will be added tomorrow.

Stacy,Brian A

From: Jennifer_Shelby_Walker@nps.gov
Sent: Friday, May 21, 2010 7:27 PM
To: Jennifer_Shelby_Walker@nps.gov
Subject: Texas Sea Turtle Stranding Reports

Attachments: TX2010NARRATIVE.pdf; TX2010ZONETABLES.pdf

TX2010NARRATIVE.pdf (141 KB) TX2010ZONETABLES.pdf (216 KB)

Dear all,

Attached are the updated Texas Zone Tables and Stranding Narratives.

(See attached file: TX2010NARRATIVE.pdf)(See attached file: TX2010ZONETABLES.pdf)

Shelby

****
Jennifer Shelby Walker
Biological Technician
National Park Service=
Padre Island National Seashore
Division of Sea Turtle Science and Recovery http://www.nps.gov/pais/

Address for mail:
Padre Island National Seashore
P.O. Box 181300
Corpus Christi, TX 78480-1300

Address for express mail services:
Padre Island National Seashore
20301 Park Road 22
Corpus Christi, TX 78418

phone: (361) 949-8173, x267
fax: (361) 949-9134
E-mail: jennifer_shelby_walker@nps.gov
****

Jacksonville, Florida 32218
Tel. 904-696-5904
Fax. 904-696-5903
email. allen.foley@myfwc.com
Pager. 1-800-241-4653, ID#274-4867
http://research.myfwc.com/

From: Yablonski, Brian [mailto:Brian.Yablonski@joe.com]
Sent: Friday, May 21, 2010 1:03 PM
To: Foley, Allen
Cc: Frohlich, Kipp; Haubold, Elsa; Wiley, Nick; Trindell, Robbin; Breault, Tim; McRae, Gil; Meylan, Anne
Subject: Re: Sea turtle strandings

Thank you Allen for all your help

From: Foley, Allen
To: Yablonski, Brian
Cc: Frohlich, Kipp ; Haubold, Elsa ; Wiley, Nick ; Trindell, Robbin ; Breault, Tim ; McRae, Gil ; Meylan, Anne
Sent: Fri May 21 12:56:18 2010
Subject: RE: Sea turtle strandings

No problem. Just to cover all the potential bases, I'm preparing information for the Panhandle, the peninsular west coast, the Keys, and the east coast. I'll have that for you shortly.

==========

Allen M. Foley, Ph.D.
Wildlife Biologist
Florida Fish and Wildlife Conservation Commission
Fish and Wildlife Research Institute
Jacksonville Field Laboratory
370 Zoo Parkway
Jacksonville, Florida 32218
Tel. 904-696-5904
Fax. 904-696-5903
email. allen.foley@myfwc.com
Pager. 1-800-241-4653, ID#274-4867
http://research.myfwc.com/

From: Yablonski, Brian [mailto:Brian.Yablonski@joe.com]
Sent: Friday, May 21, 2010 12:24 PM
To: Trindell, Robbin; Breault, Tim
Cc: Frohlich, Kipp; Haubold, Elsa; Wiley, Nick; Foley, Allen
Subject: RE: Sea turtle strandings

Thanks Robbin – just Florida in general, and probably NW Florida given that is the area of focus for now.

From: Trindell, Robbin [mailto:robbin.trindell@MyFWC.com]
Sent: Friday, May 21, 2010 10:42 AM
To: Breault, Tim
Cc: Frohlich, Kipp; Haubold, Elsa; Yablonski, Brian; Wiley, Nick; Foley, Allen
Subject: RE: Sea turtle strandings

Tim,

I am working with Dr. Allen Foley, the FWC Sea Turtle Stranding and Salvage Coordinator to provide this information. Is there a specific geographic area of interest?

Robbin N. Trindell, Ph.D.

Florida Fish and Wildlife Conservation Commission

Imperiled Species Management Section

620 South Meridian Street

Tallahassee, FL 32399

Phone: (850) 922-4330

FAX: (850) 921-6988

http://www.myfwc.com/

From: Breault, Tim
Sent: Friday, May 21, 2010 9:39 AM
To: Trindell, Robbin

Cc: Frohlich, Kipp; Haubold, Elsa; Yablonski, Brian; Wiley, Nick
Subject: Sea turtle strandings

Robbin –

Could you please provide us with a breakdown of sea turtle strandings in Florida by month for the past 3 years? Commissioner Yablonski has asked for this data to better understand if strandings are up this year. Thanks

Tim

Tim Breault, Director

Division of Habitat and Species Conservation

Florida Fish and Wildlife Conservation Commission

620 S. Meridian St., Tallahassee, FL 32399-1600

850-488-3831 FAX 850-921-7793

tim.breault@myfwc.com

"***Habitat for Life***"

Stacy,Brian A

From: Wendy.Teas@noaa.gov
Sent: Saturday, May 22, 2010 7:05 PM
To: Barbara.Schroeder; Michael Ziccardi; Teri Rowles; Sheryan.Epperly; Bonnie Ponwith; Lisa Belskis; Chris Sasso; Brian Stacy; Elizabeth Tuohy-Sheen; Sarah Wilkin; Jaclyn Taylor; Karen.Mitchell; _NMFS SER Emergency Consult
Subject: 5/22 Strandings Update - Non-oiled and Oiled

Attachments: Stranded Turtles - Non-oiled and Oiled.xls

Stranded Turtles - Non-oiled a...

There were 3 strandings verified today:
FG - 0
AL - 2
MS - 0
LA - 1

See attached Excel file for details.

There were 4 additional reports that were not verified - 1 in MS and 3 in AL.

The following changes/corrections were made to the Excel file:
5/21 - 1 late report added for FL
5/7 - 14 reports added (not previously reported - found while mapping strandings)
5/3 - 1 report deleted for LA - this was a turtle reported but never located - not verified
5/5 - 1 species change in LA - CM, not LK (based on mapping info received)

Stacy,Brian A

From: Wendy.Teas@noaa.gov
Sent: Sunday, May 23, 2010 6:34 PM
To: Barbara.Schroeder; Teri Rowles; Michael Ziccardi; Sheryan.Epperly; Bonnie Ponwith; Lisa Belskis; Chris Sasso; Brian Stacy; _NMFS SER Emergency Consult; HoumaICC MMST; Karen.Mitchell
Subject: 5/23 - Strandings Update Non-oiled and Oiled Turtles

Attachments: Stranded Turtles - Non-oiled and Oiled.xls

Stranded Turtles - Non-oiled a...

There was 1 confirmed sea turtle report today:
FL - 0
AL - report not received
MS - 0
LA - 1

See attached Excel file for details.

There was one late report added for MS yesterday (5/22) - a Kemp's ridley incidentally captured on hook and line that was taken to IMMS for hook removal and rehab.

There are 3 unverified reports for today - 2 turtles reported in AL and 1 turtle reported as alive and swimming in oil by a skimmer vessel offshore LA (not recovered)

Stacy,Brian A

From: Sandy_MacPherson@fws.gov
Sent: Monday, May 24, 2010 9:12 AM
To: Simeon Hahn
Cc: Meylan, Anne; Anne Marie Lauritsen; atoline@entrix.com; Barbara.Schroeder; Brian Stacy; Dickerson, Dena D ERDC-EL-MS; Kreitinger, Joseph P ERDC-EL-MS; andy landry; Michael Ziccardi; Sheryan Epperly; Simeon Hahn; Tony Palagyi; Blair Witherington
Subject: Re: nesting turtle response protocol

Attachments: Protocols for Sea Turtle Nesting Beaches 5-10-2010 FINAL.docx

Protocols for Sea Turtle Nesti...

Hi Simeon,

The May 8 version of the Protocols for Sea Turtle Nesting Beaches that you sent out have been replaced by a May 10 version (Mike Ziccardi - can you confirm that the May 10 version which addressed some comments I received from the sea turtle folks in Texas have been accepted by the UC?). Unless Mike says otherwise, the May 8 version of the protocols that are currently in the NRDA Pre-Assessment Plan need to be replaced with the attached May 10 version.

Thanks,
Sandy

****
Sandra L. MacPherson
National Sea Turtle Coordinator
U.S. Fish and Wildlife Service
7915 Baymeadows Way, Suite 200
Jacksonville, Florida 32256-7517
USA
904.731.3328 (direct)
904.731.3336 (main)
904.731.3045 or 3048 (fax)
E-mail: sandy_macpherson@fws.gov
****

Simeon Hahn <Simeon.Hahn@noaa.gov>

05/21/2010 10:19 AM To
Simeon Hahn <Simeon.Hahn@noaa.gov>, "Dickerson, Dena D ERDC-EL-MS" <Dena.D.Dickerson@usace.army.mil>, Brian Stacy <Brian.Stacy@noaa.gov>, Blair Witherington <witherington@cfl.rr.com>, "Barbara.Schroeder" <Barbara.Schroeder@noaa.gov>, "Kreitinger, Joseph P ERDC-EL-MS" <Joseph.P.Kreitinger@usace.army.mil>, andy landry <landrya@tamug.edu>, Michael Ziccardi <mhziccardi@ucdavis.edu>, Tony Palagyi <TPalagyi@entrix.com>, atoline@entrix.com, Sheryan Epperly <Sheryan.Epperly@noaa.gov>, sandy macpherson <Sandy_MacPherson@fws.gov>, Anne Marie Lauritsen <Ann_Marie_Lauritsen@fws.gov>, "Meylan, Anne" <Anne.Meylan@MyFWC.com>

cc
Subject
nesting turtle response protocol

[attachment "Protocols for Sea Turtle Nesting Beaches FINAL DRAFT 5 8.docx" deleted by Sandy MacPherson/R4/FWS/DOI]

Stacy,Brian A

From: Wendy.Teas@noaa.gov
Sent: Monday, May 24, 2010 6:55 PM
To: Barbara.Schroeder; Michael Ziccardi; Teri Rowles; Sheryan.Epperly; Bonnie Ponwith; Lisa Belskis; Chris Sasso; Brian Stacy; HoumaICC MMST; _NMFS SER Emergency Consult; Karen.Mitchell
Subject: 5/24 Strandings Update - Non-oiled and Oiled Turtles

Attachments: Stranded Turtles - Non-oiled and Oiled.xls

Stranded Turtles - Non-oiled a...

There were 6 turtle strandings verified today:

FL - 1
AL - 3
MS - no report received
LA -2

There were also 2 turtles not verified, 1 each in FL and AL. A report of "several" turtles found on Rockefeller NWR will be investigated and turtles documented on Wednesday.

See attached Excel file for details.

Stacy,Brian A

From: Michael Ziccardi [mhziccardi@ucdavis.edu]
Sent: Tuesday, May 25, 2010 4:40 PM
To: Stacy,Brian A
Subject: http://www.reuters.com/article/idUSTRE64N5L020100525

****

Michael Ziccardi DVM MPVM PhD
Director, Oiled Wildlife Care Network
Assoc. Professor, Clinical Wildlife Health
Wildlife Health Center
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University of California
Davis, CA 95616
O: (530) 754-5701
C: (530) 979-7561
F: (530) 752-3318
E: mhziccardi@ucdavis.edu
www.owcn.org

Stacy,Brian A

From: Ann Garrett [Ann.Garrett@noaa.gov]
Sent: Thursday, May 27, 2010 8:51 AM
To: barberd@ufl.edu; GUILLETTE,LOU; dana@mote.org; rich@mote.org; hochoaac@purdue.edu; randg@fiu.edu; cinnis@neaq.org; Allen.Foley@MyFWC.com; jwyneken@fau.edu; milton.levin@uconn.edu; jperrau2@fau.edu; ptp8@cornell.edu; thierry_work@usgs.gov; Barbara.Schroeder@noaa.gov; Brian.Stacy@noaa.gov; Tracy.K.Collier@noaa.gov; Jennifer.Keller@noaa.gov; Teri.Rowles@noaa.gov; Craig.Johnson@noaa.gov; Paige.Doelling@noaa.gov; Gunnar.Lauenstein@noaa.gov; heathersharris@gmail.com; Brian.Bloodworth@noaa.gov; Ron.Dean@noaa.gov; Therese.Conant@noaa.gov; epulster@mote.org; estelle.rousselet@TIEHH.TTU.edu; stephanie@epitracker.com; arthur4@hawaii.edu; greg_masson@fws.gov; joseph_skorupa@fws.gov; debby_crouse@fws.gov
Subject: presentations and website access

Hi all. Once again, I want to thank you for your participation in the sea turtle workshop earlier this month. All presentations are now available on the workshop webpage, which you can access at https://reefshark.nmfs.noaa.gov/pr/sstw/login.cfm using your email address and the password: 2010Jellyfish!

For the few of you who couldn't access the webpage before, those problems should be fixed. If you continue experience difficulties accessing the website, please let me know.
Best regards,
Ann

--
Ann Garrett
Endangered Species Division
Office of Protected Resources
NOAA Fisheries, SSMC3 - F/PR3
1315 East West Highway
Silver Spring, MD 20910
Phone: (301) 713-1401 Ext. 198
Fax: (301) 713-0376

Stacy,Brian A

From: Brown, Catalina [Catalina.Brown@MyFWC.com]
Sent: Thursday, May 27, 2010 1:20 PM
Subject: Fish Kill Hotline Report 5/27/2010

Attachments: Picture (Device Independent Bitmap) 1.jpg

Picture (Device Independent Bi...

5/25/2010

Fleming Island - Clay County - Hotline Call – We received a report of a fish kill in the St. Johns River near Westover Road. FWH staff coordinated with SJRWMD and arranged to have water samples delivered.
Suspected Cause - Unidentified (Call ID: 052510_14951)
Referred the Call to SJRWMD

Boca Raton - Palm Beach County - Hotline Call – We received a report of a fish kill in a private pond near Willow Springs Drive. The caller explained that the HOA association hired a lake maintenance company to conduct an investigation. They suspect an unidentified algal bloom is the cause of the kill.
Suspected Cause - Algal Bloom (Call ID: 052510_14952)
Referred the call to HOA

5/26/2010

Tampa - Hillsborough County - Hotline Call – We received a request for information pertaining to injured animals on private property.
Suspected Cause - Injured (Call ID: 052610_14953)
Referred the call to FWRI Outreach

Youngstown - Bay County - Hotline Call – We received a report of several dead bass and a few dead bream in a drainage ditch near Shannon Circle. The report initiator was concerned that someone might have poisoned the water, resulting in the kill.
Suspected Cause - Pollution—Other Chemical (Call ID: 052610_14954)
Referred the call to Bay County Roads & Bridges

New Port Richey - Pasco County - Hotline Call – We received a request for information pertaining to the removal of armadillos from private property
Suspected Cause - Other (Call ID: 052610_14955)
Referred the call to FWC Lakeland

The following reports were submitted to BP's Horizon call center, a wildlife hotline set up in response to the oil spill. The calls were forwarded to FWH as a courtesy and to other agencies for follow-up. The following is a summary of these reports. FWH staff does not confirm species ID unless samples are received at the FWRI FWH necropsy lab.

5/25/2010

Pensacola - Escambia County - BP Event Horizon Call Center - One dead sea turtle near Navy Blvd.
Suspected Cause - Unidentified (Call ID: 052510_14956)
Referred the call to FWC Sea Turtles

Additional reports from BP's Horizon call center that were not followed up by FWH staff:

5/26/2010

Pensacola, Escambia County: One unidentified oiled bird in Pensacola beach

NOTE: The above summaries are distributed by the Fish and Wildlife Health group (FWH) at the Fish and Wildlife Research Institute of the Florida Fish and Wildlife Conservation Commission. The summaries account for fish and wildlife health-related communications received by FWH via the statewide Marine Fish Kill Hotline (1-800-636-0511), through website reports submitted to the FWRI fish kill web page (http://research.myfwc.com/fishkill/submit.asp , or direct phone/email contact during the specified period. The summary is intended to 1) provide a timely source of information regarding fish and wildlife health events to Florida agency individuals who are responsible for response and 2) facilitate communication among these individuals in order to direct response activity and appropriately address associated public concern. While every practical step has been taken to make the above summary accurate and informative, the need for rapid distribution precludes extensive review. Reports are summarized as they are made to FWH staff with limited interpretation and do not necessarily reflect the observations of scientifically trained individuals.

Unless otherwise specified, FWH has not verified any of the above accounts through direct observation. Questions, corrections, and requests regarding the above summary should be made to the original sender.

Catalina E. Brown
Biological Scientist, M.S.
Fish Kill Hotline Coordinator
Fish & Wildlife Health
Florida Fish and Wildlife Research Institute
100 Eighth Avenue Southeast,
St. Petersburg, Fl 33701-5020
Phone: (727) 896-8626 ext. 3106
Fish Kill Hotline: (800) 636- 0511
Climate Change Communications and Outreach Team
Catalina.Brown@myfwc.com

Please consider the environment before printing this e-mail.

Stacy,Brian A

From: Driscoll, Cindy [CDRISCOLL@dnr.state.md.us]
Sent: Wednesday, June 02, 2010 7:45 PM
To: Stacy,Brian A
Subject: Out of Office: Names and contact information for vet techs with sea turtle experience

I will be out of the office May 26-27, 2010 and June-1-4, 2010. Please contact the Fish and Wildlife Health Program staff at the Cooperative Oxford Lab for fish and wildlife health concerns (410) 226-5193.
*For marine mammal or sea turtle strandings please call the toll-free MD DNR Call Center: 1-800-628-9944.
*For wildlife morbidity or mortality events, nuisance wildlife situations or other general wildlife information please call the MD DNR / USDA Call Center: toll free 1-877-463-6497 or the MD DNR Wildlife & Heritage Service - 410-260-8540 *For a list of MD Wildlife Rehabilitators please visit the MD DNR website www.dnr.state.md.us

Stacy,Brian A

From: Wendy.Teas@noaa.gov
Sent: Wednesday, June 02, 2010 8:22 PM
To: HoumaICC MMST; Sheryan.Epperly; Bonnie Ponwith; Lisa Belskis; Chris Sasso; Brian Stacy; _NMFS SER Emergency Consult; vcornish@mmc.gov; Karen.Mitchell
Subject: 6/2 Strandings and Live Capture Update - Non-oiled and Oiled Turtles - Deepwater Horizon

Attachments: Stranded Turtles - Non-oiled and Oiled.xls

Stranded Turtles - Non-oiled a...

There were no sea turtles strandings reported/verified today.

There was one late report added for 6/1 in FL.

There were two unverified reports of floaters in AL (may have only been one animal) - unable to be located.

See attached Excel file for details.

Stacy,Brian A

From: Boylan, Shane [SBoylan@scaquarium.org]
Sent: Saturday, June 05, 2010 9:46 AM
To: Stacy,Brian A
Subject: another assistant

Brian,

Veterinarian who I know very well. She doesn't have too much sea turtle experience, but she is willing to work as a technician. Smart as they come, good personality, easy to work with, and has time. I'd take her help anyday.
Lauren Feeney [gypsi5.0@gmail.com]

South Carolina Aquarium: This e-mail is intended for the exclusive use by the person(s) mentioned as recipient(s) and may contain confidential or privileged information. If you believe you have received this message in error, please notify the sender and delete the message. You may not, directly or indirectly, use, disclose, distribute, print or copy this e-mail or any part of it if you are not the intended recipient.

Stacy,Brian A

From: Monica Allen [Monica.Allen@noaa.gov]
Sent: Thursday, June 10, 2010 8:55 PM
To: 'barbara.schroeder@noaa.gov'; 'helen.golde@noaa.gov'; 'sara.mcnulty@noaa.gov'; 'elizabeth.crapo@noaa.gov'; 'connie.barclay@noaa.gov'; 'sarah.wilkin@noaa.gov'; 'brian.stacy@noaa.gov'
Subject: Barbara Schroeder at today's press conference on sea turtles' plight

----- Original Message -----
From: Sylvia Wright <swright@ucdavis.edu>
To: Sylvia Wright <swright@ucdavis.edu>
Cc: Michael Ziccardi <mhziccardi@ucdavis.edu>; Christine Patrick <Christine.Patrick@noaa.gov>; Sarah Burnette <sburnette@AudubonInstitute.org>; Meghan Calhoun <mcalhoun@AudubonInstitute.org>; Monica Allen <Monica.Allen@noaa.gov>; Claudia M. Morain <cmmorain@ucdavis.edu>
Sent: Thu Jun 10 20:32:25 2010
Subject: Re: AP from today. W story this time.

Oily sea turtles get dosed with mayo in cleanup JANET McCONNAUGHEY

Rescuing oiled sea turtles is a learn-as-you-go process for veterinarians and other scientists — the Gulf of Mexico oil spill is the first to affect sea turtles in any number.

Treatments may change later, said Robert MacLean, senior veterinarian for Audubon Nature Institute, which houses the center treating 27 oiled sea turtles on New Orleans' west bank.

But for now, one of the first doses the turtles get is a mixture of cod-liver oil and mayonnaise to help break up the heavy oil they've swallowed.

"This stuff is so hard to get rid of — it's very sticky and tacky oil. It's very difficult to wipe off," MacLean said Thursday.

All five sea turtle species in the Gulf of Mexico are threatened or endangered. MacLean, Louisiana sea turtle and marine mammal stranding coordinator Michele Kelley and others at the Aquatic Center are treating 22 young Kemp's ridley turtles, considered the most endangered, two hawksbills, two loggerheads and one green turtle.

Most were caught well offshore in the Gulf of Mexico, with two each captured in Louisiana and Alabama state waters.

They all got an immediate wipe-down with oil-absorbent pads. But there was still plenty to wash off when they arrived at the treatment center, MacLean said. And swabs came up black from their throats. So he knows they've swallowed the stuff.

That's one of the major worries for sea turtles. Young turtles live out on the ocean, in areas where winds and currents drive large amounts of sargassum algae. The sargassum provides shelter from predators and food — small fish, crabs and other invertebrates who live in the algae.

"It's an entire ecosystem, just like forests and marshes. It's just offshore," said Barbara Schroeder, sea turtle coordinator for the National Fisheries Service.

And the same winds and currents that drive the sargassum also drive oil that covers it. So young turtles in oily sargassum will eat oily prey. They may also mistake tarballs for prey — something adult sea turtles are known to do, even when there's no oil spill to create huge numbers of such clumps.

Along with the first oil-mayo treatment, the turtles get the first of 10 antibiotic shots and fluids to help dilute any pollutants and move them out of their bodies.

That is followed about 36 hours later by activated charcoal, just as a person who swallowed poison might be given, and kaolin to protect their guts. A second dose of medicinal salad dressing is given three days after arrival.

They're also force-fed every three days until they'll eat on their own, to keep the gastrointestinal tract working and move out the oil.

Although 279 dead sea turtles have been found along the Gulf Coast since the Deepwater Horizon well blew wild late April 20, none of the 70 or so necropsied so far has had any visible oil, said Barbara Schroeder, sea turtle coordinator for the National Fisheries Service.

Audubon Aquarium spokeswoman Meghan Calhoun said 33 live turtles have been brought to the center. Three Kemp's ridley turtles weren't oiled, and three of those that were oiled have died in the past few days, she said.

The non-oiled turtles got checkups, including blood tests.

None of the turtles is ready to release, and officials don't know when they will be, Schroeder said.

"We don't have much expertise with oiled turtles. Birds have been much more affected by oil spills" in the past, she said.

But the 27 now being treated are all active and eating on their own, said Michael Ziccardi, a veterinarian and oiled wildlife expert at the University of California-Davis, and head of the current spill's sea turtle and marine mammal response.

"I think these individuals have a very good chance of survival on release," he said.

June 10, 2010 07:38 PM EDT

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Sylvia Wright
University Communications
UC Davis
Mobile: 530-219-8849

Sent from my iPhone

On Jun 10, 2010, at 5:56 PM, "Sylvia Wright"
<swright@ucdavis.edu<mailto:swright@ucdavis.edu>> wrote:

Sylvia Wright
University Communications
UC Davis
Mobile: 530-219-8849

Sent from my iPhone

Stacy,Brian A

From: Larkin,Iskande V
Sent: Friday, June 11, 2010 9:37 AM
To: 'AqAnHlthCert@lists.vetmed.ufl.edu'; Alicia; Alicia Windham-Reid; Gopaul,Allison; Kane,Andrew S; Arthur Wong; Ayanna Phillips; Bailey,James E; Bills,Meghan L; Bob Bonde; Chris Niezrecki; Chris Torno; Costidis,Alexander M; DANIEL,HEATHER; Phlips,Edward J; Elsa Haubold; Francis-Floyd,Ruth; Goldbach,Kimberly; GUILLETTE,LOU; Isaza,Ramiro; Joe Gaspard; Sheldon,Julie D; Kane,Andrew S; Kim Pause; Donnelly,Kyle A; Lara Croft; Maggie Kellogg Hunter (mkellogg@usgs.gov); Mark Lowe; Martine De Wit; Mcgee,Jennifer L; Meegan,Jennifer M; Hyatt,Michael Warren; STRIK,NICOLE INDRA; NOLLENS,HENDRIK HANS; Patrick Thompson; Mcguire,Peter M; Anderson,Peter A; Phillips,Ayanna C; Phlips,Edward J; Reep,Roger L; Samuelson,Don A; Sheppard,Barbara J; Stacy,Brian A; Takeuchi,Noel Y; Walsh,Michael T; Yanong,Roy P
Subject: FW: NPR interview on sea turtle rescues

Dr. Stacy interviewed on NPR, see link below.
Cheers,
Iske

Iske V. Larkin, PhD
Research Assistant Professor & Education Coordinator
Aquatic Animal Health Program
Department of Large Animal Clinical Sciences
College of Veterinary Medicine
University of Florida
PO Box 100136
2015 SW 16th Ave
Gainesville, Florida 32610

For packages 32608
*Office phone - 352-294-4095 *NEW #*
Work cell - 352-494-1742
Fax - 352-392-8289
Program web page: http://www.vetmed.ufl.edu/extension/aquatic/

From: Nicole Stacy [mailto:StacyN@vetmed.ufl.edu]
Sent: Friday, June 11, 2010 8:58 AM
To: Larkin,Iskande V
Subject: NPR interview on sea turtle rescues

http://www.npr.org/templates/story/story.php?storyId=127747646

Stacy,Brian A

From: Larkin,Iskande V
Sent: Friday, June 11, 2010 9:37 AM
To: 'AqAnHlthCert@lists.vetmed.ufl.edu'; Alicia; Alicia Windham-Reid; Gopaul,Allison; Kane,Andrew S; Arthur Wong; Ayanna Phillips; Bailey,James E; Bills,Meghan L; Bob Bonde; Chris Niezrecki; Chris Torno; Costidis,Alexander M; DANIEL,HEATHER; Phlips,Edward J; Elsa Haubold; Francis-Floyd,Ruth; Goldbach,Kimberly; GUILLETTE,LOU; Isaza,Ramiro; Joe Gaspard; Sheldon,Julie D; Kane,Andrew S; Kim Pause; Donnelly,Kyle A; Lara Croft; Maggie Kellogg Hunter (mkellogg@usgs.gov); Mark Lowe; Martine De Wit; Mcgee,Jennifer L; Meegan,Jennifer M; Hyatt,Michael Warren; STRIK,NICOLE INDRA; NOLLENS,HENDRIK HANS; Patrick Thompson; Mcguire,Peter M; Anderson,Peter A; Phillips,Ayanna C; Phlips,Edward J; Reep,Roger L; Samuelson,Don A; Sheppard,Barbara J; Stacy,Brian A; Takeuchi,Noel Y; Walsh,Michael T; Yanong,Roy P
Subject: FW: NPR interview on sea turtle rescues

Dr. Stacy interviewed on NPR, see link below.
Cheers,
Iske

Iske V. Larkin, PhD
Research Assistant Professor & Education Coordinator
Aquatic Animal Health Program
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*Office phone - 352-294-4095 *NEW #*
Work cell - 352-494-1742
Fax - 352-392-8289
Program web page: http://www.vetmed.ufl.edu/extension/aquatic/

From: Nicole Stacy [mailto:StacyN@vetmed.ufl.edu]
Sent: Friday, June 11, 2010 8:58 AM
To: Larkin,Iskande V
Subject: NPR interview on sea turtle rescues

http://www.npr.org/templates/story/story.php?storyId=127747646

Stacy,Brian A

From: Sataline, Suzanne [Suzanne.Sataline@wsj.com]
Sent: Thursday, June 17, 2010 1:54 PM
To: Brian.Stacy@noaa.gov
Subject: sea turtle rehab

Doctor,

I'm exploring the rescue and rehab of sea turtles in the Gulf and would like to chat. Please let me know where I may reach you.

Thank you.

Suzanne Sataline

Staff Reporter

THE WALL STREET JOURNAL

1211 Avenue of the Americas

New York, NY 10036

suzanne.sataline@wsj.com

(212) 416- 2527

(617) 416-2090 cell

Stacy,Brian A

From: Eric Ruder [ERuder@indecon.com]
Sent: Saturday, June 19, 2010 1:24 AM
To: witherington@cfl.rr.com; AToline@entrix.com; TPalagyi@entrix.com; Ann_Marie_Lauritsen@fws.gov; Craig_Giggleman@fws.gov; marty_tuegel@fws.gov; Sandy_MacPherson@fws.gov; Tom_Shearer@fws.gov; david.parmer@glo.state.tx.us; dana.d.may.erdc@gmail.com; Eric Ruder; Michael Huguenin; Lamont,Margaret M; Deborah.Epperson@mms.gov; Anne.Meylan@MyFWC.com; robbin.trindell@MyFWC.com; Alexis.Gutierrez@noaa.gov; Barbara.Schroeder@noaa.gov; Brian.Stacy@noaa.gov; Chris.Sasso@noaa.gov; Daphne.Macfarlan@noaa.gov; Kyle.Baker@noaa.gov; LESLEY.STOKES@noaa.gov; Paul.Richards@noaa.gov; Robert.Hoffman@noaa.gov; Sheila.O'Brien@noaa.gov; Sheryan.Epperly@noaa.gov; Simeon.Hahn@noaa.gov; Teri.Rowles@noaa.gov; Wendy.Teas@noaa.gov; Donna_shaver@nps.gov; elaine_leslie@nps.gov; Jenny_Powers@nps.gov; peter.hodson@queensu.ca; landrya@tamug.edu; Metzt@tamug.edu; reichk@tamug.edu; celine.godard-codding@tiehh.ttu.edu; mhziccardi@ucdavis.edu; Carthy, Dr. Raymond R.; burton.suedel@usace.army.mil; david.r.johnson@usace.army.mil; Dena.D.Dickerson@usace.army.mil; Joseph.P.Kreitinger@usace.army.mil; kristen_hart@usgs.gov; mhooper@usgs.gov; tmcdonald@west-inc.com; glester@wlf.la.gov; rbourgeois@wlf.la.gov; hfinley@wlf.louisiana.gov
Subject: Loggerhead nesting beach study for review and comment

Attachments: Loggerhead Nesting beach study for NRDA_June 18.docx

Loggerhead Nesting beach study...

Hi all,

I'm attaching a draft of the Loggerhead Nesting Beach Study for sites in Florida. Please review this draft and provide comments by COB on June 22nd. Send your comments to Meg Lamont, Simeon Hahn, Sheila O'Brien and me.

Eric

****

Eric Ruder
Industrial Economics, Incorporated
2067 Massachusetts Avenue
Cambridge, MA 02140
tel: (617) 354-0074
fax:(617) 354-0463
eruder@indecon.com

Stacy,Brian A

From: DWHNRDA [dwhnrda@gmail.com]
Sent: Monday, June 21, 2010 10:55 AM
To: sandy_macpherson@fws.gov; elaine_leslie@nps.gov; Timothy_Pinion@nps.gov; Mike.Buchman@noaa.gov; John.Foret@noaa.gov; Simeon.Hahn@noaa.gov; Jenny.Litz@noaa.gov; Teri.Rowles@noaa.gov; Barbara.Schroeder@noaa.gov; Lori.Schwacke@noaa.gov; Gary.Shigenaka@noaa.gov; John.R.Wilson@noaa.gov; Janet.Whaley@noaa.gov; Ronald.Wooten@noaa.gov; Christopher.Plaisted@noaa.gov; kelly.brinkman@dcnr.alabama.gov; Keith.Gauldin@dcnr.alabama.gov; rbourgeois@wlf.la.gov; lcarver@wlf.la.gov; hfinley@wlf.la.gov; Mike_Beiser@deq.state.ms.us; Dena.D.Dickerson@usace.army.mil; lisa.toussaint@sol.doi.gov; mhziccardi@ucdavis.edu; wkicklighter@entrix.com; jwakefield@entrix.com; kevin_castle@nps.gov; karolien.debusschere@la.gov; allen.foley@myfwc.com; bill.turner@myfwc.com; leslie.ward@myfwc.com; gina.saizan@la.gov; wlf252@wlf.la.gov; tpalagyi@entrix.com; sfinger@usgs.gov; Lance.Garrison@noaa.gov; mhooper@usgs.gov; anne.meylan@myfwc.com; Brian.Stacy@noaa.gov; ann_marie_lauritsen@fws.gov; witherington@cfl.rr.com; Sarah.Wilkin@noaa.gov; jeff.gore@myfwc.com; john.himes@myfwc.com; Heath_Rauschenberger@fws.gov; Jenny_Powers@nps.gov; Jane_Tutton@fws.gov; bgregory@wlf.la.gov; glester@wlf.la.gov; Jan.Landsberg@myfwc.com; Trevor.Spradlin@noaa.gov; Nicole_Adimey@fws.gov; MikeHuguenin@indecon.com; kristen_hart@usgs.gov; Ryan_Monello@nps.gov; eruder@indecon.com; Lynne.Barre@noaa.gov; Sheila.O'Brien@noaa.gov; david.parmer@glo.state.tx.us; Kyle.Baker@noaa.gov; vlfpgulf@comcast.net; Donna_Shaver@nps.gov; Daphne.Macfarlan@noaa.gov; vcornish@mmc.gov; laura.dias@noaa.gov; krice@usgs.gov; sarah_allen@nps.gov; kwalsh@wlf.la.gov
Subject: Fwd: TWG zip files on FTP]

Attachments: Simeon_Hahn.vcf

Simeon_Hahn.vcf
(464 B)

From Simeon Hahn:

Hello Simeon and Lynne -

I'm hoping that you can pass the word to the marine mammal/turtle TWG that any zip files they load onto the FTP site needs to have their name in the zip file and some sort of field log about what data is in the zip. Someone(s) is loading zip files of GPS data with no supplemental information like who/what/why and no name. I've given this guidance to anyone I've been in touch with, but others are evading me. :)

It would be very helpful - actually pretty necessary - for the current zip files on the FTP to have something else uploaded so we know their origin.

Thanks and take care,
Jill

Stacy,Brian A

From: Eric Ruder [ERuder@indecon.com]
Sent: Monday, June 21, 2010 12:22 PM
To: witherington@cfl.rr.com; AToline@entrix.com; TPalagyi@entrix.com; Ann_Marie_Lauritsen@fws.gov; Craig_Giggleman@fws.gov; marty_tuegel@fws.gov; Sandy_MacPherson@fws.gov; Tom_Shearer@fws.gov; david.parmer@glo.state.tx.us; dana.d.may.erdc@gmail.com; Eric Ruder; Michael Huguenin; Lamont,Margaret M; Deborah.Epperson@mms.gov; Anne.Meylan@MyFWC.com; robbin.trindell@MyFWC.com; Alexis.Gutierrez@noaa.gov; Barbara.Schroeder@noaa.gov; Brian.Stacy@noaa.gov; Chris.Sasso@noaa.gov; Daphne.Macfarlan@noaa.gov; Kyle.Baker@noaa.gov; LESLEY.STOKES@noaa.gov; Paul.Richards@noaa.gov; Robert.Hoffman@noaa.gov; Sheila.O'Brien@noaa.gov; Sheryan.Epperly@noaa.gov; Simeon.Hahn@noaa.gov; Teri.Rowles@noaa.gov; Wendy.Teas@noaa.gov; Donna_shaver@nps.gov; elaine_leslie@nps.gov; Jenny_Powers@nps.gov; peter.hodson@queensu.ca; landrya@tamug.edu; metzt@tamug.edu; reichk@tamug.edu; celine.godard-codding@tiehh.ttu.edu; mhziccardi@ucdavis.edu; Carthy, Dr. Raymond R.; burton.suedel@usace.army.mil; david.r.johnson@usace.army.mil; Dena.D.Dickerson@usace.army.mil; Joseph.P.Kreitinger@usace.army.mil; kristen_hart@usgs.gov; mhooper@usgs.gov; tmcdonald@west-inc.com; glester@wlf.la.gov; rbourgeois@wlf.la.gov; hfinley@wlf.louisiana.gov
Subject: Update on Loggerhead Nesting Beach study from June 18th

Hi All,

I just spoke to Meg Lamont about the Loggerhead Nesting Beach study that was sent out over the weekend. It turns out that she's received some early feedback and the investigators are working to revise the plan today. In particular, there will be more information included about activities in surveys beginning in year two of the study added to the plan.

If you have already completed your review of the plan, please go ahead and submit your comments today to Meg, Simeon, Sheila and me. If you have not yet reviewed it, please wait until you receive the revised version that will be sent out early in the day on June 22nd.

Thanks for your ongoing efforts on the subgroup and apologies if this causes any confusion. Please feel free to contact me with questions.

Eric

****

Eric Ruder
Industrial Economics, Incorporated
2067 Massachusetts Avenue
Cambridge, MA 02140
tel: (617) 354-0074
fax:(617) 354-0463
eruder@indecon.com

Stacy,Brian A

From: Peter Hodson [peter.hodson@queensu.ca]
Sent: Monday, June 21, 2010 5:28 PM
To: Eric Ruder; witherington@cfl.rr.com; AToline@entrix.com; TPalagyi@entrix.com; Ann_Marie_Lauritsen@fws.gov; Craig_Giggleman@fws.gov; marty_tuegel@fws.gov; Sandy_MacPherson@fws.gov; Tom_Shearer@fws.gov; david.parmer@glo.state.tx.us; dana.d.may.erdc@gmail.com; Eric Ruder; Michael Huguenin; Lamont,Margaret M; Deborah.Epperson@mms.gov; Anne.Meylan@MyFWC.com; robbin.trindell@MyFWC.com; Alexis.Gutierrez@noaa.gov; Barbara.Schroeder@noaa.gov; Brian.Stacy@noaa.gov; Chris.Sasso@noaa.gov; Daphne.Macfarlan@noaa.gov; Kyle.Baker@noaa.gov; LESLEY.STOKES@noaa.gov; Paul.Richards@noaa.gov; Robert.Hoffman@noaa.gov; Sheila.O'Brien@noaa.gov; Sheryan.Epperly@noaa.gov; Simeon.Hahn@noaa.gov; Teri.Rowles@noaa.gov; Wendy.Teas@noaa.gov; Donna_shaver@nps.gov; elaine_leslie@nps.gov; Jenny_Powers@nps.gov; landrya@tamug.edu; Metzt@tamug.edu; reichk@tamug.edu; celine.godard-codding@tiehh.ttu.edu; mhziccardi@ucdavis.edu; Carthy, Dr. Raymond R.; burton.suedel@usace.army.mil; david.r.johnson@usace.army.mil; Dena.D.Dickerson@usace.army.mil; Joseph.P.Kreitinger@usace.army.mil; kristen_hart@usgs.gov; mhooper@usgs.gov; tmcdonald@west-inc.com; glester@wlf.la.gov; rbourgeois@wlf.la.gov; hfinley@wlf.louisiana.gov
Subject: Re: Loggerhead nesting beach study for review and comment

Eric

The proposal is well described.

However, Except for some notes in the appendices, the main body of the proposal concerns primarily the emergence of adults to nest and does not seem to include an assessment of the the final stage of reproduction (i.e. the success of hatching and any impairments of hatching success, capacity of hatchlings to migrate to water, deformities or behavioral abnormalities). Will there be a separate proposal on hatchlings?

peter

At 01:24 AM 6/19/2010, Eric Ruder wrote:
>Hi all,
>
>I'm attaching a draft of the Loggerhead Nesting Beach Study for
>sites in Florida. Please review this draft and provide comments by
>COB on June 22nd. Send your comments to Meg Lamont, Simeon Hahn,
>Sheila O'Brien and me.
>
> Eric
>
>
>**********
>Eric Ruder
>Industrial Economics, Incorporated
>2067 Massachusetts Avenue
>Cambridge, MA 02140
>tel: (617) 354-0074
>fax:(617) 354-0463
>eruder@indecon.com

Peter V. Hodson
Department of Biology and School of Environmental Studies,
Queen's University
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(613) 533-6129
(613) 533-6090 (FAX)
peter.hodson@queensu.ca
http://biology.queensu.ca/%7Ehodsonp/

Stacy,Brian A

From: Eric Ruder [ERuder@indecon.com]
Sent: Tuesday, June 22, 2010 9:39 AM
To: eruder@indecon.com; witherington@cfl.rr.com; ARedmond@entrix.com; AToline@entrix.com; TPalagyi@entrix.com; Ann_Marie_Lauritsen@fws.gov; Craig_Giggleman@fws.gov; marty_tuegel@fws.gov; Sandy_MacPherson@fws.gov; Tom_Shearer@fws.gov; david.parmer@glo.state.tx.us; dana.d.may.erdc@gmail.com; Michael Huguenin; Lamont,Margaret M; Deborah.Epperson@mms.gov; Anne.Meylan@MyFWC.com; robbin.trindell@MyFWC.com; Alexis.Gutierrez@noaa.gov; Barbara.Schroeder@noaa.gov; Brian.Stacy@noaa.gov; Chris.Sasso@noaa.gov; Daphne.Macfarlan@noaa.gov; Kyle.Baker@noaa.gov; LESLEY.STOKES@noaa.gov; Paul.Richards@noaa.gov; Robert.Hoffman@noaa.gov; Sheila.O'Brien@noaa.gov; Sheryan.Epperly@noaa.gov; Simeon.Hahn@noaa.gov; Teri.Rowles@noaa.gov; Wendy.Teas@noaa.gov; Donna_shaver@nps.gov; elaine_leslie@nps.gov; Jenny_Powers@nps.gov; peter.hodson@queensu.ca; landrya@tamug.edu; metzt@tamug.edu; reichk@tamug.edu; celine.godard-codding@tiehh.ttu.edu; mhziccardi@ucdavis.edu; Carthy, Dr. Raymond R.; burton.suedel@usace.army.mil; david.r.johnson@usace.army.mil; Dena.D.Dickerson@usace.army.mil; Joseph.P.Kreitinger@usace.army.mil; kristen_hart@usgs.gov; mhooper@usgs.gov; tmcdonald@west-inc.com; glester@wlf.la.gov; rbourgeois@wlf.la.gov; hfinley@wlf.louisiana.gov
Subject: Draft Turtle Entanglement Net Study Plan for Louisiana

Attachments: NRDA Turtle Enganglement Proposal DRAFT 22 June 2010.doc

NRDA Turtle nganglement Propo

The draft plan for the Turtle Entanglement Net Study in Louisiana is attached. Please review this and send any comments to Tasha Metz, Simeon Hahn, Sheila O'Brien and me by COB on Thursday June 24th.

Eric

****

Eric Ruder
Industrial Economics, Incorporated
2067 Massachusetts Avenue
Cambridge, MA 02140
tel: (617) 354-0074
fax:(617) 354-0463
eruder@indecon.com

Stacy,Brian A

From: Monica Allen [Monica.Allen@noaa.gov]
Sent: Tuesday, June 22, 2010 3:36 PM
To: Stacy,Brian A
Subject: stories are out in the press about the mississippi skimmer regulation

Biloxi, Mississippi - The Mississippi Department of Marine Resources has ordered the immediate reduction of maximum trawling times for shrimping vessels using skimmer trawls to 30 minutes.

Officials say the tow time reduction from 55 minutes to 30 minutes for skimmer trawls was ordered because of reports of high numbers of endangered sea turtles in the Mississippi Sound.

The tow time requirement is measured from the time the cod end of the trawl enters the water until the cod end is removed from the water.

All other shrimping regulations will remain in full force and effect, and waters east of the Biloxi Ship Channel remain closed to shrimping.

Stacy,Brian A wrote:
>
> Test email
>
> Brian A Stacy, DVM, PhD, DACVP
> NOAA/NMFS/Protected Resources
> Marine Animal Disease Laboratory
> University of Florida, College of Veterinary Medicine
> Aquatic Animal Health Program
>

--
Monica Allen
NOAA Communications & External Affairs
National Marine Fisheries Service
U.S. Department of Commerce
1315 East West Highway
Room 14502
Silver Spring, Md. 20910
Tel.: (301) 713-2370
Fax: (301) 713-1452
Cell: (202) 379-6693
E-mail monica.allen@noaa.gov
Join us on Facebook: www.facebook.com/noaa.lubchenco

Stacy,Brian A

From: Monica Allen [Monica.Allen@noaa.gov]
Sent: Tuesday, June 22, 2010 3:54 PM
To: Stacy,Brian A
Subject: Mississippi rule and email

Attachments: Turtle Tow Reduction.pdf

Turtle Tow
:eduction.pdf (91 B..

-------- Original Message --------
Subject: FW: MS tow time limits
Date: Fri, 18 Jun 2010 18:19:52 -0400
From: Mark Kinsey <Mark.Kinsey@noaa.gov>
To: 'Wendy Teas' <Wendy.Teas@noaa.gov>

FYI.....

From: David Bernhart [mailto:David.Bernhart@noaa.gov]
Sent: Friday, June 18, 2010 6:09 PM
To: Roy Crabtree; Buck Sutter; Kim Amendola; Heather Blough; Duane Smith; Cheryl Scannell; Michael Barnette; Robert Hoffman; Tracy Dunn; Hal Robbins; Steve Campbell; Mark Kinsey; Bonnie Ponwith
Subject: MS tow time limits

FYI. MSDMR is putting out a requirement to shorten the maximum towtime for skimmer trawls from the current 55 minutes to 30 minutes in response to the elevated sea turtle strandings. The new requirement goes into effect at 12:01 Sunday morning.

Also, MSDMR is going to place observers to monitor turtle captures beginning on Monday. They intend to have two observers, one on a skimmer trawl, one on a traditional trawler.

Last, a DMR overflight of Miss. Sound documented 41 rigged trawlers (both types) out on the sound. They consider this very low shrimp effort for this time of year, possibly because many shrimpers have contracted out to BP.

-------- Original Message --------

*Subject: *

FW: Tow

*Date: *

Fri, 18 Jun 2010 16:22:45 -0500

*From: *

Dale Diaz <Dale.Diaz@dmr.ms.gov> <mailto:Dale.Diaz@dmr.ms.gov>

*To: *

David.Bernhart <David.Bernhart@noaa.gov> <mailto:David.Bernhart@noaa.gov>

Legal notice.

Dale Diaz

Director, Office of Marine Fisheries

Mississippi Dept. of Marine Resources

1141 Bayview Avenue

Biloxi, Mississippi 39530

(228)523-4064

From: Joe Jewell
Sent: Friday, June 18, 2010 4:18 PM
To: Dale Diaz
Subject: Tow

Joe Jewell

Office of Marine Fisheries

MS Dept. of Marine Resources

1141 Bayview Avenue

Biloxi, MS 39530

Stacy,Brian A wrote:
>
> Test email
>
> Brian A Stacy, DVM, PhD, DACVP
> NOAA/NMFS/Protected Resources
> Marine Animal Disease Laboratory
> University of Florida, College of Veterinary Medicine Aquatic Animal
> Health Program
>

--
Monica Allen
NOAA Communications & External Affairs
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Fax: (301) 713-1452
Cell: (202) 379-6693
E-mail monica.allen@noaa.gov
Join us on Facebook: www.facebook.com/noaa.lubchenco

Stacy,Brian A

From: Monica Allen [Monica.Allen@noaa.gov]
Sent: Tuesday, June 22, 2010 4:19 PM
To: Stacy,Brian A
Subject: Re: Test

Attachments: Turtle Tow Reduction-3.pdf

Turtle Tow
:eduction-3.pdf (27..

Great job! Here's the turtle tow rule.

Stacy,Brian A wrote:
>
> Test email
>
> Brian A Stacy, DVM, PhD, DACVP
> NOAA/NMFS/Protected Resources
> Marine Animal Disease Laboratory
> University of Florida, College of Veterinary Medicine Aquatic Animal
> Health Program
>

--
Monica Allen
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E-mail monica.allen@noaa.gov
Join us on Facebook: www.facebook.com/noaa.lubchenco

Stacy,Brian A

From: Blair Witherington [witherington@cfl.rr.com]
Sent: Wednesday, June 23, 2010 10:19 AM
To: Stacy,Brian A
Subject: RE: Today

Thanks Brian I'm in touch with Dave Clark each day on target points and helicopter coordination. Today's target is farther west and hopefully closer to blue water. Weather is no better.

Blair- 727-224-3020
Tomo- 727-224-3093

-----Original Message-----
From: Stacy,Brian A [mailto:bstacy@ufl.edu]
Sent: Wednesday, June 23, 2010 9:28 AM
To: Blair Witherington
Subject: FW: Today

Update from Kate if you have not already received. Can you please send me your and Tomo's cell phone numbers - I lost them when my phone was damaged.
Thank you.

Brian

-----Original Message-----
From: Kate Sampson [mailto:Kate.Sampson@noaa.gov]
Sent: Tuesday, June 22, 2010 5:46 PM
To: Stacy,Brian A
Subject: Today

Probably by now you have heard of our unfortunate day on the water. Not an officious beginning for the new team or for team capt Kate. The weather sucked with rough seas and squalls on and off. The heli put us on a pretty useless oil line and then had to run for land due to weather. We ran a lot of territory including around the wreck site, areas that Kevin had heard there were lines yesterday and the Elf area where we've had luck in the past. Blue water was really far out and Kevin thought that the sargassum might have just been really far out and we didn't find it. Had one small area of weed, saw one turtle and lost it in the weed. On top of it all, one of the engines overheated for a bit and required some at sea maintenance.
Overall, not the best.

Sorry I don't have a better report. Can you pass this along to Blair? I don't have his email on my BB. Hopefully better luck tomorrow but it sounds like at least fri thru sun will be out due to weather- maybe even thurs. Oh mother nature...

I'll look for your package when we get back. K

Ps- sara mentioned that you were worried that you didn't hear from us earlier in the day. Should we call folks mid day even if we don't have turtles? I called the transport and AOA once we headed for the barn with no turtles aboard. Thx, K

Stacy,Brian A

From: Tom_Shearer@fws.gov
Sent: Wednesday, June 23, 2010 10:21 AM
To: Eric Ruder
Cc: Alexis.Gutierrez@noaa.gov; Anne.Meylan@MyFWC.com; Ann_Marie_Lauritsen@fws.gov; ARedmond@entrix.com; AToline@entrix.com; Barbara.Schroeder@noaa.gov; Brian.Stacy@noaa.gov; burton.suedel@usace.army.mil; celine.godard-codding@tiehh.ttu.edu; Chris.Sasso@noaa.gov; Craig_Giggleman@fws.gov; dana.d.may.erdc@gmail.com; Daphne.Macfarlan@noaa.gov; david.parmer@glo.state.tx.us; david.r.johnson@usace.army.mil; Deborah.Epperson@mms.gov; Dena.D.Dickerson@usace.army.mil; Donna_shaver@nps.gov; elaine_leslie@nps.gov; glester@wlf.la.gov; hfinley@wlf.louisiana.gov; Jenny_Powers@nps.gov; Joseph.P.Kreitinger@usace.army.mil; kristen_hart@usgs.gov; Kyle.Baker@noaa.gov; landrya@tamug.edu; LESLEY.STOKES@noaa.gov; marty_tuegel@fws.gov; metzt@tamug.edu; mhooper@usgs.gov; mhziccardi@ucdavis.edu; Michael Huguenin; Lamont,Margaret M; Carthy, Dr. Raymond R.; Paul.Richards@noaa.gov; peter.hodson@queensu.ca; eruder@indecon.com; rbourgeois@wlf.la.gov; reichk@tamug.edu; robbin.trindell@MyFWC.com; Robert.Hoffman@noaa.gov; Sandy_MacPherson@fws.gov; Sheila.O'Brien@noaa.gov; Sheryan.Epperly@noaa.gov; Simeon.Hahn@noaa.gov; Teri.Rowles@noaa.gov; tmcdonald@west-inc.com; TPalagyi@entrix.com; Wendy.Teas@noaa.gov; witherington@cfl.rr.com
Subject: Kemp's ridley satellite track

There are several differents species that are being tracked on the seaturtle.org page. The Michael Coyne is the executive director of seaturtle.org.

Of interest are two tagged Kemp's ridleys tagged at PINS in south Texas that appear to have turned away from the oiled area for now.

Take a look at 47519 (YYA949) and 47562 (YYA562)

http://www.seaturtle.org/tracking/index.shtml?project_id=495
or

LiNk

Kristen Hart's tagged turtles from the Dry Tortugas are there too.

LiNk

Really incredible!

Tom Shearer
Wildlife Biologist

Mail: USFWS/TAMUCC Unit 5837
6300 Ocean Drive
Corpus Christi, Texas 78412-5837

Delivery: USFWS/TAMUCC
CW CESS BLDG RM 118
6300 Ocean Drive
Corpus Christi, Texas 78412-5837

Phone (361) 994-9005

Fax (361) 994-8262

Stacy,Brian A

From: Monica Allen [Monica.Allen@noaa.gov]
Sent: Thursday, June 24, 2010 5:03 PM
To: Barbara Schroeder; Helen Golde; David Cottingham
Cc: Stacy,Brian A
Subject: FYI AP story on turtle necropsies showing fishing link

Biologist: Many turtles probably died in nets

By JANET McCONNAUGHEY

Associated Press Writer

NEW ORLEANS -- More than half the endangered sea turtles dissected after being found dead in Mississippi - 21 of 40 - had sediment in their lungs, indicating they probably drowned in trawl nets near the sea floor, a federal biologist said Thursday.

The bodies are still being tested for toxins, especially those from algae blooms, but that's unlikely as a cause of death, said Brian Stacey of the National Oceanographic and Atmospheric Administration.

The numbers make other causes of drowning unlikely, Stacey said.

"We do get sporadic entrapment in wrecks, or entanglements in nets," but not nearly that many, he said.

Authorities have said they were investigating whether turtles might have drowned in shrimp nets.

All five species of sea turtles in the Gulf of Mexico are threatened or endangered; federal law requires escape hatches called turtle excluder devices on shrimp nets, which are towed along the bottom where shrimp congregate.

Most of the 411 dead and 128 live turtles found since April 30, when collections began, have been Kemp's Ridley sea turtles, the smallest and most endangered.

According to figures compiled by the U.S. Fish and Wildlife Service, 210 dead turtles were found in Mississippi, 88 in Louisiana, 66 in Alabama,
43 in Florida and four in the Gulf of Mexico. Only five turtles found dead on the shore had oil on them.

Collections started a day after Louisiana opened an emergency season to let shrimpers harvest a crop ahead of the oil spill.

There has been an influx of sea turtles into Mississippi Sound, and experts believe they are seeking clear water, said Lauren Thompson, spokeswoman for the Mississippi Department of Marine Resources.

On Monday, Mississippi authorities ordered shrimpers trawling in the Mississippi Sound to pull up their nets every 30 minutes rather than every 55 minutes, to reduce the chance of drowning turtles.

Turtle strandings are common along the Gulf of Mexico, but this year's numbers are higher than usual, Stacey said.

He spoke by phone from Gainesville, Fla., where he was about to resume necropsies - animal autopsies - on sea turtles.

He said the 67 necropsied so far included 26 too decomposed for detailed study.

More than 120 live sea turtles, 84 of them found covered in oil, are in rehabilitation centers. They include 76 found swimming in oil out in the Gulf of Mexico, two caught in oil skimming operations, and two each found in Alabama, Florida and Louisiana waters.

Another 42 rescued turtles did not have any visible oil on them, and two have not been classified. At least four were released.

The BP-operated rig Deepwater Horizon exploded April 20 and sank two days later, generating the massive oil spill.

Associated Press writer Hohlbrook Mohr in Jackson, Miss., contributed to this story.

Read more:
http://www.miamiherald.com/2010/06/24/1698352/biologist-many-turtles-probably.html#ixzz0ro4TRIj9

--
Monica Allen
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Stacy,Brian A

From: Eric Ruder [ERuder@indecon.com]
Sent: Saturday, June 26, 2010 2:32 PM
To: George.Green@aporter.com; eruder@indecon.com; witherington@cfl.rr.com; ARedmond@entrix.com; AToline@entrix.com; TPalagyi@entrix.com; Ann_Marie_Lauritsen@fws.gov; Craig_Giggleman@fws.gov; marty_tuegel@fws.gov; Sandy_MacPherson@fws.gov; Tom_Shearer@fws.gov; david.parmer@glo.state.tx.us; dana.d.may.erdc@gmail.com; Michael Huguenin; Lamont,Margaret M; Deborah.Epperson@mms.gov; Anne.Meylan@MyFWC.com; robbin.trindell@MyFWC.com; Alexis.Gutierrez@noaa.gov; Barbara.Schroeder@noaa.gov; Brian.Stacy@noaa.gov; Chris.Sasso@noaa.gov; Daphne.Macfarlan@noaa.gov; Dennis.Klemm@noaa.gov; Kyle.Baker@noaa.gov; LESLEY.STOKES@noaa.gov; Lynne.Barre@noaa.gov; Paul.Richards@noaa.gov; Robert.Hoffman@noaa.gov; Sheila.O'Brien@noaa.gov; Sheryan.Epperly@noaa.gov; Simeon.Hahn@noaa.gov; Teri.Rowles@noaa.gov; Wendy.Teas@noaa.gov; Donna_shaver@nps.gov; elaine_leslie@nps.gov; Jenny_Powers@nps.gov; peter.hodson@queensu.ca; landrya@tamug.edu; metzt@tamug.edu; reichk@tamug.edu; celine.godard-codding@tiehh.ttu.edu; mhziccardi@ucdavis.edu; Carthy, Dr. Raymond R.; burton.suedel@usace.army.mil; david.r.johnson@usace.army.mil; Dena.D.Dickerson@usace.army.mil; Joseph.P.Kreitinger@usace.army.mil; kristen_hart@usgs.gov; mhooper@usgs.gov; tmcdonald@west-inc.com; glester@wlf.la.gov; rbourgeois@wlf.la.gov; hfinley@wlf.louisiana.gov
Subject: Notes from discussion of Historical Data on Turtles

Attachments: Notes from 6_22_2010 Historical Data discussion.doc; GOM bibliography.doc

Notes from _22_2010 Historica.doc (259 k

GOM liography.doc

Hi all,

I compiled some brief notes and list of action items from the June 22nd turtle subgroup call on historical data. A key action item is for subgroup members to review a draft bibliography of published and grey literature compiled by Lesley Stokes and send her additional data sources that should be added to it. I've attached both the notes and Lesley's bibliography to this email.

Please let me know if I've left off any key information or action items from the call.

Thanks,

Eric

****

Eric Ruder
Industrial Economics, Incorporated
2067 Massachusetts Avenue
Cambridge, MA 02140
tel: (617) 354-0074
fax:(617) 354-0463
eruder@indecon.com

Stacy,Brian A

From: Sheila O'Brien [Sheila.O'Brien@noaa.gov]
Sent: Saturday, June 26, 2010 2:37 PM
To: 'ERuder@indecon.com'; 'George.Green@aporter.com'; 'r-156524-79324@bcast.boston.com'; 'witherington@cfl.rr.com'; 'ARedmond@entrix.com'; 'AToline@entrix.com'; 'TPalagyi@entrix.com'; 'Ann_Marie_Lauritsen@fws.gov'; 'Craig_Giggleman@fws.gov'; 'marty_tuegel@fws.gov'; 'Sandy_MacPherson@fws.gov'; 'Tom_Shearer@fws.gov'; 'david.parmer@glo.state.tx.us'; 'dana.d.may.erdc@gmail.com'; 'MikeHuguenin@indecon.com'; Lamont,Margaret M; 'Deborah.Epperson@mms.gov'; 'Anne.Meylan@MyFWC.com'; 'robbin.trindell@MyFWC.com'; 'Alexis.Gutierrez@noaa.gov'; 'Barbara.Schroeder@noaa.gov'; 'Brian.Stacy@noaa.gov'; 'Chris.Sasso@noaa.gov'; 'Daphne.Macfarlan@noaa.gov'; 'Dennis.Klemm@noaa.gov'; 'kyle.baker@noaa.gov'; 'lesley.stokes@noaa.gov'; 'lynne.barre@noaa.gov'; 'Paul.Richards@noaa.gov'; 'Robert.Hoffman@noaa.gov'; 'Sheila.O'Brien@noaa.gov'; 'Sheryan.Epperly@noaa.gov'; 'Simeon.Hahn@noaa.gov'
Subject: Re: Notes from discussion of Historical Data on Turtles

Michael Coyne has responded positively to our request for assistance. I will set up a call with him to discuss contractual opportunities, and anyone else who would like to be involved in scoping out the work with him, maybe would like to participate? Sometime next week -- although maybe the workshop will preclude this.

From: Eric Ruder <ERuder@indecon.com>
To: George.Green@aporter.com <George.Green@aporter.com>; eruder@indecon.com <r-156524-79324 @bcast.boston.com>; witherington@cfl.rr.com <witherington@cfl.rr.com>; ARedmond@entrix.com <ARedmond@entrix.com>; AToline@entrix.com <AToline@entrix.com>; TPalagyi@entrix.com <TPalagyi@entrix.com>; Ann_Marie_Lauritsen@fws.gov <Ann_Marie_Lauritsen@fws.gov>; Craig_Giggleman@fws.gov <Craig_Giggleman@fws.gov>; marty_tuegel@fws.gov <marty_tuegel@fws.gov>; Sandy_MacPherson@fws.gov <Sandy_MacPherson@fws.gov>; Tom_Shearer@fws.gov <Tom_Shearer@fws.gov>; david.parmer@glo.state.tx.us <david.parmer@glo.state.tx.us>; dana.d.may.erdc@gmail.com <dana.d.may.erdc@gmail.com>; Michael Huguenin <MikeHuguenin@indecon.com>; mmlamont@mindspring.com <mmlamont@mindspring.com>; Deborah.Epperson@mms.gov <Deborah.Epperson@mms.gov>; Anne.Meylan@MyFWC.com <Anne.Meylan@MyFWC.com>; robbin.trindell@MyFWC.com <robbin.trindell@MyFWC.com>; Alexis.Gutierrez@noaa.gov <Alexis.Gutierrez@noaa.gov>; Barbara.Schroeder@noaa.gov <Barbara.Schroeder@noaa.gov>; Brian.Stacy@noaa.gov <Brian.Stacy@noaa.gov>; Chris.Sasso@noaa.gov <Chris.Sasso@noaa.gov>; Daphne.Macfarlan@noaa.gov <Daphne.Macfarlan@noaa.gov>; Dennis.Klemm@noaa.gov <Dennis.Klemm@noaa.gov>; kyle.baker@noaa.gov <kyle.baker@noaa.gov>; lesley.stokes@noaa.gov <lesley.stokes@noaa.gov>; lynne.barre@noaa.gov <lynne.barre@noaa.gov>; Paul.Richards@noaa.gov <Paul.Richards@noaa.gov>; Robert.Hoffman@noaa.gov <Robert.Hoffman@noaa.gov>; Sheila.O'Brien@noaa.gov <Sheila.O'Brien@noaa.gov>; Sheryan.Epperly@noaa.gov <Sheryan.Epperly@noaa.gov>; Simeon.Hahn@noaa.gov <Simeon.Hahn@noaa.gov>; Teri.Rowles@noaa.gov <Teri.Rowles@noaa.gov>; wendy.teas@noaa.gov <wendy.teas@noaa.gov>; Donna_shaver@nps.gov <Donna_shaver@nps.gov>; elaine_leslie@nps.gov <elaine_leslie@nps.gov>; Jenny_Powers@nps.gov <Jenny_Powers@nps.gov>; peter.hodson@queensu.ca <peter.hodson@queensu.ca>; landrya@tamug.edu <landrya@tamug.edu>; metzt@tamug.edu <metzt@tamug.edu>; reichk@tamug.edu <reichk@tamug.edu>; celine.godard-codding@tiehh.ttu.edu <celine.godard-codding@tiehh.ttu.edu>; mhziccardi@ucdavis.edu <mhziccardi@ucdavis.edu>; ngosi@ufl.edu <ngosi@ufl.edu>; burton.suedel@usace.army.mil <burton.suedel@usace.army.mil>; david.r.johnson@usace.army.mil <david.r.johnson@usace.army.mil>; Dena.D.Dickerson@usace.army.mil <Dena.D.Dickerson@usace.army.mil>; Joseph.P.Kreitinger@usace.army.mil <Joseph.P.Kreitinger@usace.army.mil>; kristen_hart@usgs.gov <kristen_hart@usgs.gov>; mhooper@usgs.gov <mhooper@usgs.gov>; tmcdonald@west-inc.com <tmcdonald@west-inc.com>; glester@wlf.la.gov <glester@wlf.la.gov>; rbourgeois@wlf.la.gov <rbourgeois@wlf.la.gov>; hfinley@wlf.louisiana.gov <hfinley@wlf.louisiana.gov>
Sent: Sat Jun 26 14:32:23 2010
Subject: Notes from discussion of Historical Data on Turtles

Hi all,

I compiled some brief notes and list of action items from the June 22nd turtle subgroup call on historical data. A key action item is for subgroup members to review a draft bibliography of published and grey literature compiled by Lesley Stokes and send her additional data sources that should be added to it. I've attached both the notes and Lesley's bibliography to this email.

Please let me know if I've left off any key information or action items from the call.

Thanks,

Eric

****

Eric Ruder
Industrial Economics, Incorporated
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Cambridge, MA 02140
tel: (617) 354-0074
fax:(617) 354-0463
eruder@indecon.com

Stacy,Brian A

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Sent: Saturday, June 26, 2010 5:39 PM
To: Stacy,Brian A; Barbara Schroeder; Helen Golde; Teri Rowles; David Cottingham; Eric Schwaab; Gloria Thompson; John Oliver; Rebecca Chiampi; Samuel Rauch; Deb Lambert; Steve Murawski; Beth Lumsden; Justin Kenney; Scott Smullen; Gilson, Shannon; Teri Frady; kim amendola; 'connie.barclay@noaa.gov'; Christine Patrick; Lesli Bales-Sherrod; Monica Allen; Brian Gorman; Elizabeth.Crapo@noaa.gov; Sara McNulty
Subject: FYI - Times story on turtle necropsies and Mississippi law enforcement

June 25, 2010

Turtle Deaths Called Result of Shrimping, Not Oil Spill

By SHAILA DEWAN

<http://topics.nytimes.com/top/reference/timestopics/people/d/shaila_dewan/index.html?inline=nyt-per>

A National Oceanic and Atmospheric Administration scientist says he believes most of the dead turtles that have been examined since the Gulf of Mexico oil spill <http://topics.nytimes.com/top/reference/timestopics/subjects/o/oil_spills/gulf_of_mexico_2010/index.html?inline=nyt-classifier> died not from the oil or the chemical dispersants put into the water after the disaster, but from being caught in shrimping nets, though further testing may show otherwise.

Dr. Brian Stacy, a veterinary pathologist who specializes in reptiles, said that more than half the turtles dissected so far, most of which were found shortly after the spill, had sediment in their lungs or airways, which indicated they might have been caught in nets and drowned.

"The only plausible scenario where you would have high numbers of animals forcibly submerged would be fishery interaction," he said. "That is the primary consideration for this event."

Many times the usual number of turtles have been found stranded this year, but NOAA has cautioned from the beginning that the oil spill is not necessarily to blame.

Shrimp boats are the chief commercial fishing danger for turtles because they tow their nets underwater for long distances, and turtles trapped in them are unable to come up for air. Shrimpers are supposed to equip their nets with turtle excluder devices, which help turtles escape. But environmentalists have complained that some shrimpers disregard the law or do not install the devices properly.

"I'm not surprised at all that shrimp fishing is causing a lot of turtle deaths right now, it happens every year and it's a chronic problem that the federal government has refused to address," said Todd Steiner, the executive director of the Turtle Island Restoration Network <http://www.tirn.net/> in Marin County, Calif., which works to protect sea turtles around the world. He said there was not enough enforcement of the law requiring the excluder devices, though turtle deaths spike every year when shrimp season begins.

After a rash of turtle deaths in Texas in April, before the oil spill, NOAA and Texas authorities inspected 10 boats and cited 4 of them for improperly installed devices, according to news reports.

More than half of the 417 dead sea turtles collected since the spill have been found in Mississippi. Full or partial necropsies were conducted on 67 of them in the second week in May. Many were badly decomposed, but of those that could be fully analyzed, more than half had sediment.

Dr. Stacy said tissue from the turtles would still be tested for hydrocarbons and other toxic substances. But he said poisoning would generally leave some turtles alive but sick, whereas the turtles found along the Mississippi coast were all dead. He said that while sediment might enter the airway of a turtle after death, some of the dissected turtles that were recovered in sandy areas had dark, bottom sediment in their airways.

The federal shrimping season began before the oil spill, but state authorities have also responded to the autopsy findings. The Mississippi Marine Patrol did a full inspection of shrimping boats in state waters when the state's shrimping season began on June 3, said Lisa Damiano Jones, a spokeswoman for the state's Department of Marine Resources <http://www.dmr.state.ms.us/>. No violations were found, she said.

On Monday, the department reduced the maximum tow time for skimmer trawls to 30 minutes from 55 because of an unusually high number of turtles in the area. "The reason for the smaller drag times is to increase the survival rate" for a trapped turtle, Ms. Jones said.

This article has been revised to reflect the following correction:

Correction: June 26, 2010

An earlier version of this article misstated the name of the devices that help turtles escape nets. They are excluder, not extruder, devices.

Stacy,Brian A

From: Lynne Barre [Lynne.Barre@noaa.gov]
Sent: Sunday, June 27, 2010 5:03 PM
To: Eric Ruder
Cc: George.Green@aporter.com; eruder@indecon.com; witherington@cfl.rr.com; ARedmond@entrix.com; AToline@entrix.com; TPalagyi@entrix.com; Ann_Marie_Lauritsen@fws.gov; Craig_Giggleman@fws.gov; marty_tuegel@fws.gov; Sandy_MacPherson@fws.gov; Tom_Shearer@fws.gov; david.parmer@glo.state.tx.us; dana.d.may.erdc@gmail.com; Michael Huguenin; Lamont,Margaret M; Deborah.Epperson@mms.gov; Anne.Meylan@MyFWC.com; robbin.trindell@MyFWC.com; Alexis.Gutierrez@noaa.gov; Barbara.Schroeder@noaa.gov; Brian.Stacy@noaa.gov; Chris.Sasso@noaa.gov; Daphne.Macfarlan@noaa.gov; Dennis.Klemm@noaa.gov; Kyle.Baker@noaa.gov; LESLEY.STOKES@noaa.gov; Paul.Richards@noaa.gov; Robert.Hoffman@noaa.gov; Sheila.O'Brien@noaa.gov; Sheryan.Epperly@noaa.gov; Simeon.Hahn@noaa.gov; Teri.Rowles@noaa.gov; Wendy.Teas@noaa.gov; Donna_shaver@nps.gov; elaine_leslie@nps.gov; Jenny_Powers@nps.gov; peter.hodson@queensu.ca; landrya@tamug.edu; metzt@tamug.edu; reichk@tamug.edu; celine.godard-codding@tiehh.ttu.edu; mhziccardi@ucdavis.edu; Carthy, Dr. Raymond R.; burton.suedel@usace.army.mil; david.r.johnson@usace.army.mil; Dena.D.Dickerson@usace.army.mil; Joseph.P.Kreitinger@usace.army.mil; kristen_hart@usgs.gov; mhooper@usgs.gov; tmcdonald@west-inc.com; glester@wlf.la.gov; rbourgeois@wlf.la.gov; hfinley@wlf.louisiana.gov
Subject: Re: Turtle Subgroup Call Monday 6-28 at 9:00 am Central

Attachments: DRAFT AGENDA FOR THE MARINE MAMMAL AND SEA TURTLE DWH MEETING - v9.doc; lynne_barre.vcf

DRAFT AGENDA ›R THE MARINE MA lynne_barre.vcf (222 B)

Hi all,
I just wanted to provide an updated agenda for the meeting next week.
Thanks,
Lynne

Eric Ruder wrote the following:

> Hi all,
>
> Our next Turtle Subgroup cal is scheduled for Monday 6-28 at 9:00 am Central. Our primary focus will be to discuss the workshop scheduled for June 30/July 1 in New Orleans. I've attached the most recent version of the draft agenda that I have (it was sent out to the full TWG earlier today); though I'm sure it will be evolving over the weekend.
>
> I'm also proposing that we get brief updates on the status of the various study plans that are currently under review or being drafted. This will also allow us to determine if there is a need to schedule separate opportunities to talk about comments received on specific plans. As a reminder, three study plans have been sent out to the group for comment:
>
> - Trawling Study- sent out on 6-18
> - Entanglement Net Surveys - sent out on 6-22
> - Loggerhead Nesting Beach Study - sent out on 6-23
>
> When we talk on Monday we can determine the schedule for any other Subgroup calls for the

week.

Call in information:

866-720-1374
access code: 7141801#

Eric

****

Eric Ruder
Industrial Economics, Incorporated
2067 Massachusetts Avenue
Cambridge, MA 02140
tel: (617) 354-0074
fax:(617) 354-0463
eruder@indecon.com

Stacy,Brian A

From: Connie Barclay [Connie.Barclay@noaa.gov]
Sent: Tuesday, June 29, 2010 7:35 AM
To: Barbara Schroeder; Therese Conant; Bob Hoffman; Brian Stacy
Subject: [Fwd: Experts come up with risky plan to save sea turtle hatchlings from gulf oil spill]

Attachments: ATT00001..gif; ATT00002..gif

ATT00001..gif (5 KB) ATT00002..gif (1 KB)

-------- Original Message --------
Subject: Experts come up with risky plan to save sea turtle hatchlings from gulf oil spill
Date: Tue, 29 Jun 2010 07:11:51 -0400
From: Chuck_Underwood@fws.gov
To: Angelia_Menchan@fws.gov, Ann_Marie_Lauritsen@fws.gov, Annie_Dziergowski@fws.gov, Billy_Brooks@fws.gov, Candace_Martino@fws.gov, Chuck_Underwood@fws.gov, Dave_Hankla@fws.gov, Dawn_Jennings@fws.gov, Erin_Gawera@fws.gov, Heath_Rauschenberger@fws.gov, Jane_Monaghan@fws.gov, Jim_Valade@fws.gov, John_Milio@fws.gov, Joshua_Foster@fws.gov, Linda_D_Walker@fws.gov, Linda_White@fws.gov, Michael_Jennings@fws.gov, Nicole_Adimey@fws.gov, Sandy_MacPherson@fws.gov, Sophia_McBride@fws.gov, Stan_Simpkins@fws.gov, Stefanie_Scheetz@fws.gov, Stephanie.Rousso@MyFWC.com, Teresa_Calleson@fws.gov, Todd_Mecklenborg@fws.gov
CC: jeffrey_m_fleming@fws.gov, Chris_Tollefson@fws.gov, christine_eustis@fws.gov, Elizabeth_Stevens@fws.gov, leith_edgar@fws.gov, denise_rowell@fws.gov, Connie.Barclay@noaa.gov, kim.amendola@noaa.gov, Stacy_Shelton@fws.gov, Diana_Weaver@fws.gov, ken_warren@fws.gov, Tom_MacKenzie@fws.gov, kristi_watkins@fws.gov

Source: http://www.tampabay.com/news/environment/wildlife/article1105596.ece

June 28, 2010

Experts come up with risky plan to save sea turtle hatchlings from gulf oil spill

By Craig Pittman, Times Staff Writer

Nests will be dug up and sent to Florida's east coast to avoid the oil spill in the gulf.

To save a generation of sea turtles from being wiped out by the Deepwater Horizon disaster, state and federal biologists have hatched a daring but risky plan.

They plan to excavate the 800 or so nests that the turtles have dug along Florida's Panhandle beaches and the Alabama coast, and carefully move all the eggs about 500 miles to the east - most likely to a climate-controlled warehouse at Kennedy Space Center.

Any turtles that survive the move and hatch would then be released into the Atlantic Ocean, which so far has not been polluted by the oil spill.

Although thousands of turtle hatchlings could die from being moved, "This is the least of the worst case scenarios," said Chuck Underwood, a spokesman for the U.S. Fish and Wildlife Service. "Even if what we're doing isn't a great thing, it's better than doing nothing."

If the biologists left the nests where they are now, he said, 50,000 turtle hatchlings "will go out into the gulf and get into the oil, and there's a high degree of certainty that that would be fatal."

The first nest to be moved, full of endangered Kemp's ridley turtle eggs, was dug up Saturday, according to Underwood. The nests are being flagged now, and the egg moving is likely to begin in earnest next month.

Normally this is the kind of thing that an environmental group like the Sea Turtle Conservancy would protest. But not now.

"We think this is really necessary to save this year's whole hatchling class," said David Godfrey of the conservancy. "It's pretty much a last ditch effort to save tens of thousands of hatchlings from swimming out to their doom."

Biologists from state and federal agencies began working back in May on what to do about the sea turtles that nest along the northern Gulf Coast. They debated the pros and cons of relocating the nests to various places, and finally drew up a nine-page plan.

"The activities identified in these protocols are extraordinary measures being taken in direct response to an unprecedented human-caused disaster," the plan states.

No one could say how much the effort will cost, but the assumption is that BP will pay for it.

Turtle eggs hatch after about 55 days. So when the nests are at least 51 days old, then it will be time to start digging the eggs out. The plan requires excavating the nests by hand and then putting eggs into foam containers "that are soaked, washed with water, allowed to completely dry, and drilled with appropriate air circulation holes before eggs are placed in them."

The plan warns that "a 3-inch layer of moist sand from the nest cavity or vicinity of the nest site should be placed into the bottom of each Styrofoam box," and then when the eggs are packed in it, "a 2- to 3-inch layer of moist sand should be placed on top of the eggs."

The plan commands the crews moving the nests to "take extreme care not to rotate the eggs in any way during handling," and it also says, "Styrofoam boxes must not be tilted for any reason."

Initially the plan called for flying the boxes to the other coast, but Underwood said biologists worried about changing air pressure, engine vibrations and tilting the boxes on takeoff and landing. So instead the eggs will get a truck ride to the coast, which could take six to eight hours.

Once the boxes reach the Atlantic coast, they will be stored in a "designated incubation facility" where they will be monitored until the eggs hatch. Underwood said there have been discussions about using a Kennedy Space Center warehouse, but no contracts have been signed yet.

While in the warehouse, the sand-covered eggs must be "lightly sprinkled with water from a watering can as needed to keep sand moist, but not wet," the plan says.

If any hatchlings emerge, they will be collected each night and released on one of several east Florida beaches to make their way to the ocean. Releasing the hatchlings into the Atlantic makes sense because, based on tracking prior migrations from the gulf, that's where they would have headed anyway, said Henry Cabbage, a spokesman for the state Fish and Wildlife Conservation Commission.

"We're just giving them a ride," he joked.

However, one of the unknowns about this turtle migration is what it will do to their internal navigational systems. Sea turtles use their orientation with the earth's magnetic fields to swim back to the beach where they were born to lay new eggs. No one knows if moving the eggs right before they hatch will alter the hatchlings' ability to find their way back home someday.

"Potentially you could be messing with that process a little bit," Godfrey said. "But at least they'd still be on a Florida beach."

This isn't the first time humans have had to rescue sea turtles this year. During the January cold snap, about 2,000 were so stunned by the low temperatures that biologists captured and rehabilitated them.

So far, more than 100 sea turtles coated in oil have been pulled from the gulf, according to figures released Sunday by the Coast Guard and BP. Nine were already dead.

Craig Pittman can be reached at craig@sptimes.com or (727) 893-8530.
St. Petersburg Times

2010 St. Petersburg Times.

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--
Connie Barclay
Director, NOAA Fisheries Communications
NOAA Communications & External Affairs
(301)713-2370 work/(202)441-2398 cell
Join us on Facebook: www.facebook.com/noaa.lubchenco

Stacy,Brian A

From: Connie Barclay [Connie.Barclay@noaa.gov]
Sent: Wednesday, June 30, 2010 11:34 AM
To: Brian Stacy; Barbara Schroeder; Robert Hoffman
Subject: short turtle story

Attachments: OilSpillTurtleStory.docx

OilSpillTurtleStory.docx (13 K...

I have inserted quotes from you in this short turtle story. We are hoping to get this up on the NOAA Website in time for the 4th of July weekend. Please get your comments back to me ASAP. Thanks, Connie

--
Connie Barclay
Director, NOAA Fisheries Communications
NOAA Communications & External Affairs
(301)713-2370 work/(202)441-2398 cell
Join us on Facebook: www.facebook.com/noaa.lubchenco

Stacy,Brian A

From: Robert Hoffman [Robert.Hoffman@noaa.gov]
Sent: Wednesday, June 30, 2010 11:54 AM
To: Connie Barclay
Cc: Brian Stacy; Barbara Schroeder
Subject: Re: short turtle story

This looks ok to me, didn't know I was so eloquent :)

Connie Barclay wrote:
> I have inserted quotes from you in this short turtle story. We are
> hoping to get this up on the NOAA Website in time for the 4th of July
> weekend. Please get your comments back to me ASAP. Thanks, Connie
>

Stacy,Brian A

From: Barbara.Schroeder@noaa.gov
Sent: Wednesday, June 30, 2010 12:00 PM
To: Connie Barclay
Cc: Brian Stacy; Robert Hoffman
Subject: Re: short turtle story

Hi Connie,
Brian and I are in the middle of a 2-day NRDA meeting. I scanned this and will have significant suggested edits. I can get to it tonight sometime.
Barbara

----- Original Message -----
From: Connie Barclay <Connie.Barclay@noaa.gov>
Date: Wednesday, June 30, 2010 11:34 am
Subject: short turtle story
To: Brian Stacy <Brian.Stacy@noaa.gov>, Barbara Schroeder <Barbara.Schroeder@noaa.gov>, Robert Hoffman <Robert.Hoffman@noaa.gov>

> I have inserted quotes from you in this short turtle story. We are
> hoping to get this up on the NOAA Website in time for the 4th of July
> weekend. Please get your comments back to me ASAP. Thanks,
>
> Connie
>
> --
> Connie Barclay
> Director, NOAA Fisheries Communications NOAA Communications & External
> Affairs (301)713-2370 work/(202)441-2398 cell Join us on Facebook:
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Stacy,Brian A

From: Eric Schwaab [Eric.Schwaab@noaa.gov]
Sent: Friday, July 02, 2010 5:27 PM
To: _NMFS All Hands; Jane Chalmers; Madelyn Appelbaum; dickschaef; mhk; Mary Glackin; Mary Beth Ward; Cheryl Oliver; Scott Smullen; Janet.E.Ward@noaa.gov; Connie Barclay; Monica Allen; jboreman@nc.rr.com; Jane Lubchenco; Amrit Mehra; Monica Medina; Justin kenney; Margaret Spring; Amy Holman; Lynn Maximuk; Bethany A Hale; Jennifer Day; Jeff LaDouce; Jeff Payne; Geno Olmi; Timi Vann; Andrew Winer; Tanya Dobrzynski; Stephanie Hunt; Jessica Kondel; John Gray; Sally Yozell; Laura Hamilton; Laura Furgione; Lisa Iwahara; Michelle Schmidt; Vicki Schwantes; Kate Balet; steve.bortone@gulfcouncil.org
Subject: Weekly Update

Attachments: clip_image001.jpg; F Video Notes.doc; Upcoming Events.doc; DWH_BP_OilSpill_FisheryClosureMap_062810.pdf; Eric_Schwaab.vcf

clip_image001.jpg (5 KB) F Video Notes.doc (32 KB) Upcoming Events.doc (95 KB) DWH_BP_OilSpill_Fisheryclosure... Eric_Schwaab.vcf (309 B)

MEMORANDUM FOR ALL NOAA FISHERIES EMPLOYEES

FROM: Eric C. Schwaab
Assistant Administrator for Fisheries

SUBJECT: Weekly Update for Week Ending July 2, 2010

Federal Fisheries Closure Update
On Monday, June 28th, the fishery closed area was modified by adjusting the eastern boundary slightly to the east to encompass oil that moved outside the existing boundary according to initialization data. The closure measures 80,228 sq mi (207,790 sq km) and covers about 33% of the Gulf of Mexico EEZ, compared to the June 23 closure comprising 78,597 sq mi (203,564 sq km); also about 33% of the GOM EEZ. The revised closure map is attached. Link on http://sero.nmfs.noaa.gov to keep updated on modifications to the closed area. Tuesday through Friday, there were no further modifications to the closed area.

FedEx Helping Turtles
The National Fish and Wildlife Foundation has engaged Federal Express on behalf of NOAA Fisheries and the U.S. Fish and Wildlife Service (FWS) to protect sea turtles nests and eggs in the northern Gulf of Mexico from potential impacts of the Deepwater Horizon MC252 oil spill. FedEx is donating air-ride, temperature control trucks to transport hundreds of nests containing thousands of eggs to Florida's Atlantic Coast. The relocation efforts are scheduled to begin mid-July and continue through the hatching season. We are working closely with the FWS and FedEx to ensure the safest transportation solution for this relocation effort. I appreciate the efforts of Sam Rauch and the Office of Protected Resources staff, especially Barbara Schroeder, Sara McNulty, Teri Rowles and Alexis Gutierrez (PR) and Bob Hoffman (SE Region) for their extraordinary work in the Gulf to ensure sea turtle survival.

Weekly Highlights
I've been in Juneau, Alaska, this week chairing the Marine Fisheries Advisory Committee Meeting (MAFAC). I am no stranger to MAFAC having served on the Committee for 5 years prior to my appointment as the Assistant Administrator. It was good to spend time with the MAFAC members this week. The first day was dedicated to discussions on the Deepwater Horizon MC252 oil spill and

NOAA's all encompassing responsibilities. Other major topics included an overview of our Protected Resources Program, updates on the NOAA Catch Shares and Aquaculture Policies, outcomes from the April 16-17 Recreational Fishing Summit and budget updates. Thanks to Robert Wolotira (NOAA Restoration Center) and Dr. Jeep Rice (Alaska Fisheries Science Center) for their presentations on oil spill Natural Resource Damage Assessments and on lessons learned from the Exxon Valdez oil spill. Also, thanks to Mark Holliday, Heidi Lovett and Kari MacLauchlin for organizing and running this meeting.

While I was in Juneau, Jim Balsiger (Alaska Regional Administrator) and I had the opportunity to meet with constituents from Oceana regarding a number of important regional issues, including steller sea lions and Arctic oil and gas exploration and the Halibut Coalition on the timing of catch share program implementation. I also met with Admiral Colvin with the U.S. Coast Guard to discuss fisheries enforcement and related issues.

Crimes Against Marine Life
The Offices of Protected Resources and Law Enforcement have teamed up with the National Aquarium and the Museum of Crime and Punishment on a temporary exhibit entitled "Crimes Against Marine Life" to raise awareness of crimes again marine wildlife. A special thanks to Laura Gutierrez, Jennifer Skidmore (PR) and Adam Tager (EN) for pulling this together. Great job! Click on the links to learn more about the exhibit and view the press release.
http://www.crimemuseum.org/Crimes_Against_Marine_Life
http://www.crimemuseum.org/documents/MarinePR.pdf (press release)

Thanks everyone for your hard work this week. Take a moment this weekend while you are celebrating the 4th of July to think about the many NOAA employees that are continuing their efforts in the Gulf of Mexico in response to the oil spill. Have a safe and enjoyable weekend.

Attachments
F Video Notes
Upcoming Events
Gulf Closure Map

View Details

Stacy,Brian A

From: Monica Allen [Monica.Allen@noaa.gov]
Sent: Saturday, July 03, 2010 12:24 PM
To: Robert Hoffman; Barbara Schroeder; Alexis Gutierrez; Teri Frady; Teri Rowles; Helen Golde; Stacy,Brian A; witherington@cfl.rr.com; Michael Ziccardi; 'connie.barclay@noaa.gov'; Elizabeth Crapo; kim amendola; Christine Patrick; Eric Schwaab; Gloria Thompson; John Oliver; Rebecca Chiampi; Steve Murawski; Beth Lumsden; Samuel Rauch; Deb Lambert; Monica Allen
Subject: Turtle stories -- lawsuit and extensive Huffington Post story on overall tragedy for sea turtles with NOAA quotes

NEW ORLEANS TIMES-PICAYUNE

Burning off the oil may carry its own hazards

Some question safety, efficiency of practice

Saturday, July 03, 2010

By Aimee Miles

Staff writer

With controlled burns temporarily suspended on account of tempestuous weather, Gulf waters have had a reprieve lately from the roaring fires and billowing smoke plumes that, since late April, have come to overwhelm the oily seascape.

But as fire teams prepare to resume their work, the burning and flaring of oil is attracting growing criticism from environmentalists who worry about the hazards it poses to wildlife and Gulf Coast communities. Some say that BP isn't investing enough energy in other methods of cleaning up the roughly 2.2 million to 4.2 million barrels of oil that have spewed into the Gulf as of June 29, according to the latest estimates.

As oil continues to pour into the Gulf, the question of how to optimize cleanup while minimizing environmental risks is still up for debate. Even comparing the efficiency of different methods of cleanup is difficult.

About 670,000 barrels of oily water have been skimmed as of July 1, BP said, but there's no telling what proportion of that is oil.

By comparison, controlled burns, also known as in-situ burns, have collectively removed 238,000 barrels of oil from the water's surface since they were initiated by the Coast Guard in late April. The burning has cleared up an estimated 6 percent to 11 percent of the total spill volume -- an amount that exceeds the generally accepted estimate for the total amount of oil spilled during the 1989 Exxon Valdez incident.

But burning is fraught with complications. The crude that litters the Gulf is highly emulsified and depleted in hydrogen, which means it doesn't burn readily. In many cases, it's easier to skim it off the surface. For the oil to sustain a fire, it needs to be condensed to several millimeters' thickness -- a task accomplished by retrofitted fishing vessels that work in pairs, dragging a 500-foot line of fireproof boom between them in a narrow U-shaped arc.

On any given day, as many as 10 fire teams are on the water, corralling oil and setting it alight. As the fishing vessels move in tandem at a speed of less than 1 mph, oil at the water's surface pools at the apex of the U. When about one-third of the area encased by the boom -- anywhere from 500 to 1,000 barrels of oil in volume -- is filled, an igniter boat releases a flare to set fire to a plastic container of gelled fuel, which floats toward the pooled oil and eventually burns it.

The ships stay in motion as the fire blazes; slowing down would allow the oil to thin out and eventually extinguish the fire. They try to tow into the wind so the smoke blows away from the vessels, but they're not always able to.

Oil occasionally escapes beyond the boom and creates smaller fires outside the contained area, but the slicks die off themselves within minutes. The fire inside the boom burns 2 to 3 millimeters of oil every 60 seconds, rising as high as 100 feet and generating massive plumes of smoke in its wake.

The National Institute for Occupational Safety and Health, which has been monitoring air quality aboard responder vessels, has recommended that respirators be made available to all burn crew members. As it stands, not all fire team vessels are fully equipped, and crew members head inside the ship's cabin if the smoke gets too heavy.

"Based on the air monitoring we've done to date, we haven't had any situations where respirators have been required," said BP consultant Alan Allen. "We're in the process of determining the best way to [distribute respirators] so that they have the option to wear masks."

Gulf Coast residents have requested that controlled burns only be conducted when the wind blows out, according to environmental consultant Wilma Subra, who works with the Louisiana Environmental Action Network. Allen says that hasn't been necessary because the in-situ burns occur 40 to 50 miles from the shore.

"If we were to do burns within 10 miles or so, we would activate the Smart protocols," he said, referring to a monitoring program for burns and dispersants designed cooperatively by four federal agencies.

Data from the U.S. Environmental Protection Agency show that concentrations of airborne particles from controlled burns are higher than normal at two or more monitoring stations along the Louisiana coast. The agency is also monitoring concentrations of volatile organic compounds evaporating from the oil on the water's surface. It has classified the air quality along the coastline as "unhealthy for sensitive groups," at worst.

But some residents have complained about nausea, sore throats, burning eyes and respiratory problems, and some try to avoid outdoor activity when the wind blows in. Some of the health complaints may not stem from oil burning but from the oil's propensity to be churned by wind and waves into an aerosol that can blow onshore.

Subra says BP should cut back on in-situ burns and focus on skimming.

"If they can surround it by a boom, they should be able to skim it rather than burn it," she said.

Critics also note burning can imperil wildlife. Last week, the Center for Biological Diversity filed suit against BP under the Clean Water Act, charging the company with burning endangered sea turtles alive in the course of its cleanup efforts. In response, the National Oceanic and Atmospheric Administration's National Marine Fisheries Service announced it would place a NOAA observer with each fire team to inspect oil corrals before they are ignited.

"You can't help but recognize, if we're collecting oil along the convergence line, the oil will be ideal for collecting but that may also be an area where there's a potential for turtles to gather," Allen said. "We go to great lengths ... to try to avoid including that in our burn."

Some oil is being burned using another method: flaring.

Only one of the two rigs collecting oil from the leaking well has the capacity to process and store the crude oil it captures. That ship, the Discoverer Enterprise, is connected to a cap that contains some of the gushing crude and feeds it to the rig through a riser. The Enterprise is able to isolate and burn the gas, then store the oil and pump the leftover water back into the ocean.

Its cohort, the Q4000, can't process or store the crude oil it collects. So the vessel burns both oil and gas through an "EverGreen" burner, said to provide a relatively clean burn by eliminating visible smoke emissions. Since it went into operation on June 16, the Q4000 has burned an average of 8,556 barrels of oil per day, totaling 119,780 barrels as of June 29 -- about half the oil burned thus far.

Burning oil aboard the Q4000 isn't harmless, says Subra, but it's far preferable to burning it off the water's surface. Gas flaring, meanwhile, is a waste of potentially usable energy, and further burdens the atmosphere with unnecessary greenhouse gas emissions, according to NOAA.

Together the Q4000 and the Discoverer Enterprise have flared more than 1 billion cubic feet of gas -- eight times the volume of the Louisiana Superdome. That's a significant amount -- it's more than 1 percent of the total amount of gas flared in the entire United States in 2008, according to satellite data collected by NOAA's Earth Observation Group.

BP plans to deploy a third containment vessel, the Helix Producer, but has thus far been foiled by the weather. Like the Enterprise, the Helix Producer would separate oil, water, and gas and flare off the gas. The Producer, scheduled to deploy Tuesday, is expected to increase oil collection by 25,000 barrels per day.

That can't come soon enough for critics of burning oil in-situ and aboard the Q4000.

"At least they're getting that material off of the slick and out of the water column," Subra said. "But there's still a long way to go before they recover all oil that's coming out of that well head."

. . . . . .

Aimee Miles can be reached at amiles@timespicayune.com or 504.826.3318.

Times-Picayune, New Orleans, Louisiana.

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HUFFINGTON POST — *Blog*

Dan Froomkin

froomkin@huffingtonpost.com | HuffPost Reporting

Gulf Oil Spill: The Plight of the Sea Turtles

First Posted: 07- 2-10 03:41 PM | Updated: 07- 2-10 04:21 PM

Read More: BP Oil Spill, Gulf Oil Spill, Oil Spill, Oil Spill Impact, Oil Spill Response, Oil Spill Sea Turtles, Sea Turtles, Slidepollajax, Green News

The seemingly endless oil disaster in the Gulf of Mexico is killing countless sea animals and sea birds, large and small. But there is no story as tragic as the plight of the sea turtles.

These magnificent, graceful, creatures are particularly vulnerable to the effects of oil in the water, which weakens their eggs, chokes and poisons their young, and leaves adults addled and starving.

In the case of the most endangered species, the Kemp's ridley turtle, hatchlings leaving their nests in Mexico this season are swimming right into the heart of the spill area, where their instinct to seek shelter and prey among floating vegetation is betraying them by leading them straight to thick clots of oil and oil-soaked seaweed.

There, instead of finding security and food, they are getting poisoned, trapped and asphyxiated.

And if that weren't tragic enough, it turns out that shrimp boats hired by BP to corral floating oil with booms and set it on fire have been burning hundreds if not thousands of the young turtles alive.

A GLIMPSE INTO THE UNSEEN

Despite the heart-wrenching photos of oil-covered animals along the Gulf Coast shoreline, marine scientists say the greater carnage remains offshore and, as yet, largely unnoticed.

Due to the extraordinary depth of the blown-out well and the unprecedented application of 1.6 million gallons of dispersants, much if not most of the oil (and gas, as well) still lurks unseen in the water column -- out of sight, but potentially wiping out vast populations of plankton, fish, and even larger marine animals.

The images of dead and suffering sea turtles (see the slideshow, below) are a rare, visible example of that offshore and underwater devastation.

Their plight offers a glimpse of what is happening where we can't see.

ABOUT THE SEA TURTLES

Sea turtles are long-lived animals, often with lifespans of three decades or more, and as a species have been swimming the oceans for more than 100 million years.

All five of the sea turtle species that make their home in the Gulf are listed as either "endangered" or "threatened". Several approached the brink of extinction, primarily due to the destruction of their nesting areas and the use of indiscriminate fishing nets.

For three decades, scientist and environmentalists and volunteers have successfully fought to protect sea turtles --- and have dramatically reversed the declines in population. It's been one of the great environmental success stories of.our time.

But this oil spill is killing them in potentially catastrophic numbers.

Sarah L. Milton, a sea-turtle physiologist at Florida Atlantic University, and co-author of a 2003 NOAA report on oil toxicity and its impacts on sea turtles, told the Huffington Post it couldn't have happened at a worse time.

"The adults, both males and females, will be just offshore for breeding," she explained. "Oil on the beaches will affect females going ashore to nest. Studies have shown that oil on the eggs leads to reduced nest success and increased deformities. Hatchlings that emerge will have to cross the oiled beaches to get to the water, and then swim through what is out there.

"Proportionately, the oil is likely to have a much greater effect on the hatchlings, just due to their smaller size -- swallowing a tar ball will do far worse damage to a tiny gut than a large one."

Adults are far from immune, however. At all ages, for instance, turtles are indiscriminate eaters, and they inhale deeply before diving for food, two behaviors that increase their risk of fatal exposure. Many of them right now are foraging for food along the Northern Gulf coast, where the oil is currently concentrated.

A new report from the environmental group Oceana identifies some other risks:

*\Oil or dispersants on the sea turtle's skin and body can cause skin irritation, chemical burns,and infections. Oil exposure for just 4 days can cause sea turtles' skin to continually fall off in sheets. This condition persists even after they are removed and treated from the exposure.

* Inhalation of volatile petroleum compounds or dispersants can damage the respiratory tract and lead to diseases such as pneumonia.

* Ingesting oil or dispersants may cause injury to the gastrointestinal tract, which may affect the animals' ability to absorb or digest foods....

* Chemicals that are inhaled or ingested may damage liver, kidney, and brain function, cause anemia and immune suppression, or lead to reproductive failure or death.

Moby Solangi, director of the Institute for Marine Mammal Studies in Gulfport, Miss., told Huffpost that more than 200 dead turtles have been recovered along the Mississippi coast since the spill.

Many of them, oddly enough, had fish-hooks in their mouths and guts. But that, Solangi said, is a clue to how dramatically their behavior has changed due to the oil spill.

"As the spill started to escalate, these animals started moving closer to the shoreline," he said. Out of their normal habitats, they lunged for anything that looked like food -- including fishing bait.

And now, with the oil having arrived on Mississippi's coasts, even the turtles that had avoided it so far are suffering from its direct effects.

Oil, Solangi said, disrupts sea turtles' chemoreceptors -- in other words, their senses.

"It affects their ability to find prey," Solangi said. "It affects their ability to identify where their habitat is, or to understand movement."

Solangi concluded: "They're confused and they're hungry."

NOAA'S RESPONSE

As of the end of June, the federal government's National Oceanic and Atmospheric Administration (NOAA) reported that 583 sea turtles had been found in the spill area thus far. The great majority were either found dead or died soon after, leaving 136 to be taken to rehabilitation centers.

The biggest success story has been NOAA's turtle-rescue vessels, which have captured about 90 live turtles -- most of them Kemp ridleys. But the rescue effort is dwarfed by the scale of the disaster.

First of all, NOAA didn't even get its turtle rescue boats out onto the Gulf until late May, a month or so after the BP well first started spewing millions of gallons of oil a day into the pristine waters. And even now, there are only three such boats being deployed.

Blair Witherington, a sea turtle research scientist for Florida's Fish and Wildlife Conservation Commission -- who's been working on one of those boats -- told the Huffington Post that he recently

charted all the areas where NOAA boats have been working, and "it's just a group of little squiggles off in one tiny area of the spill zone."

Witherington said dozens of vessels should be out every day. But, he said, "I'm coming to realize that there are so many logistical and bureaucratic roadblocks between the people who want to get things done and getting those things done."

Many of those roadblocks, he said, "are not understandable to me."

And then there is the matter of the burning.

In mid-June, public reports started to emerge that the "controlled burns" BP was using to remove oil from the surface of the Gulf were also incinerating untold numbers of young turtles.

NOAA scientists at the time were rescuing turtles -- dozens of them -- from precisely the same kinds of floating "oil lines" and "weed lines" that BP-hired shrimp boats were corralling with boom and then setting on fire.

In a June 13 YouTube video, Louisiana charter boat captain Mike Ellis told marine biologist Catherine Craig about how his boat, carrying NOAA turtle rescuers, was turned away from what's become known as the "burn box" -- the section of the Gulf designated for burning on a given day.

"They kept trying to ran us out of there and then they shut us down, they would not let us get back in there. In the meantime, how many turtles got caught up in there and just burned?" Ellis asked.

"They drag a boom between two boats, and whatever's caught up, they circle it together and catch it on fire. Once the turtles are in it, they can't get out. I mean they come up, it looks, they look like they're chocolate covered. "

Ellis also submitted a declaration for a lawsuit filed June 30, in which three animal-welfare groups asked a federal district judge in New Orleans judge to put an immediate stop to the burns.

"[B]ased on my years of experience in the Gulf of Mexico, it is almost certain that endangered turtles were present in the burn boxes that I observed on the same oil line where our rescue team saved ten endangered turtles, and that these turtles will continue to be present in similar burn boxes that

continue to be used by BP as part of its practice of controlled burns," Ellis declared.

Bob Hoffman, the endangered species branch chief for NOAA's Southeast regional office, told the Huffington Post on Wednesday that the burns had been temporarily curtailed because of high seas, and that when they resume, NOAA will now make sure each "burn team" -- made up of two shrimp boats hauling booms and an "igniter" boat -- includes a trained observer who will be able to rescue turtles before they are incinerated.

The animal-welfare groups declared themselves satisfied on Friday, withdrawing their request for an immediate restraining order. "BP and the Coast Guard have further agreed to establish a standard operating protocol for the burns, and to convene a group of scientists to determine the necessary elements of the protocol to ensure the safety of the turtles," the groups announced Friday.

The first NOAA observer actually went out with a burn team last week, and reported seeing no turtles at all. But, Hoffman said: "I think that there were turtles in the area that were being burned. I'm not going to deny that.... When they pop up into the thick oil, it's like a fly on flypaper, they just can't get out of it."

Hoffman said there have been more than 200 controlled burns since the oil well blew up in late April. And no one knows how many turtles that could have been saved instead were cremated alive.

But based on the data the observers collect going forward, Hoffman said, an estimate of how many turtles were killed by fire "will be part of what we do when we do the biological opinion at the end of this project." That's the Natural Resource Damage Assessment that NOAA is compiling, and that will be used to make sure that the responsible party -- in this case, BP -- pays what is required to compensate the public for its losses.

DESPERATE MEASURES

Most Kemp ridley turtles nest in Mexico, but many of the other Gulf of Mexico turtles nest along the U.S. coastline. And rather than watch a whole generation of hatchlings hurtle into the muck and die, a consortium of federal and state wildlife groups on June 26 announced a plan to collect about 70,000 mostly loggerhead turtle eggs in up to 800 nests buried in the sand across Florida Panhandle and Alabama beaches -- and release the hatchlings along Florida's central Atlantic coast.

It's a radical move, and one for which many marine scientists have only modest hopes.

"In developing this plan we realized early on that our expectations for success needed to be realistic," U.S. Fish and Wildlife Service national sea turtle coordinator Sandy MacPherson said in a statement. "On the one hand the activities identified in the protocols are extraordinary and would never be supportable under normal conditions. However, taking no action would likely result in the loss of all of this year's Northern Gulf of Mexico hatchlings."

Milton, the turtle physiologist from FAU, said similar, smaller scale moves have resulted in "reduced hatching success." But, she told HuffPost: "reduced hatch success is better than sending hatchlings into the Gulf."

Institute director Solangi is similarly sober about his expectations. "This is the only thing that is left to do," he said. Putting animals in new habitats is a risky proposition. But, he said, "the option is between death -- or give them a chance."

THE PROGNOSIS

Carole Allen is Gulf office director for the Sea Turtle Restoration Project. She's been working to save turtles since 1982.

"They've been around since the dinosaurs, and I feel we have a moral responsibility not to kill things that were on the earth long before we were," she said. "They're a wonderful animal, and they have survived so many threats."

The effects of the spill are "worse probably than anybody dreamed, particularly for the Kemp's ridleys," she said. "It is a tremendous setback. It's just really unbelievable. I can't believe that just a few months ago, the news was so encouraging, and the government was predicting that the Kemp's ridleys could be downlisted from endangered to threatened in five years."

The immediate dangers are horrible enough, she said. "But what is the long-term effect on the Gulf of Mexico if all this oil goes to the bottom?.. The food supply of these turtles is right where the oil is sinking into the estuaries and the marshes," she said.

"When they plug that well, it's going to help. But it's certainly not going to go away. And we may not know for years just how profound the effect is."

Milton, the FAU turtle expert, shared Allen's concerns. "There are two long term effects that worry me because they are unknown, which are oil in the foodchain and the potential effects of the dispersants, which is likely to effect the first problem," she told HuffPost.

"The potential for toxic buildup of oil byproducts in the foodchain is likely to be quite large, and we don't know enough about turtle physiology to know what the long term effects of bioaccumulation will be. And we know nothing about the dispersants at all, except that by busting the oil up into smaller bits and making it sink, it' s all the more likely to enter the foodchain at the level of invertebrate prey."

One thing that's clear to marine scientists is that the turtle casualties we've seen so far only represent a small fraction of the toll these noble creatures are suffering -- both now and for years to come.

Solangi, for instance, notes that the hundreds of dead turtles in Mississippi were all retrieved from beaches -- and most of the state's shoreline consists of inaccessible marshes, estuaries, and barrier islands. For each turtle retrieved, he said, there are several times as many that remain undiscovered.

The Oceana reports notes that many dead and injured turtles will never be found by search crews, "because currents often carry the carcasses out to sea or carcasses can sink or be eaten by predators."

And yet none of the scientists or turtle rescuers interviewed by the Huffington Post has given up hope.

"I've got to be optimistic about it," said Allen, the 28-year veteran of turtle advocacy. "The Gulf is big and I'm hoping that there are some places where the turtles are where they can stay out of trouble."

"I would say turtles probably have been hit the worst of the endangered species," said NOAA's Hoffman. "But I don't think it's going to nullify the whole recovery. I'm keeping my fingers crossed, anyway."

"I'm a scientist. I try to remain objective," said Witherington, the Florida Fish and Wildlife turtle expert. "Sometimes I start to dwell on the tragedy, and then I realize I'm just getting depressed," he said. "And I understand the job at hand, and that is to rescue these turtles."

For years, Witherington has been studying the juvenile phase of the sea-turtles' lives, watching them as they travel the open ocean, congregating around floating seaweed and other debris -- the very behavior that's now killing them.

"They live in a beautiful place," Witherington said. "The animals are interesting; the place where they live is interesting. It's beautiful. And now all that has changed."

****

Dan Froomkin is senior Washington correspondent for the Huffington Post. You can send him an e-mail, bookmark his page; subscribe to his RSS feed, follow him on Twitter, friend him on Facebook, and/or become a fan and get e-mail alerts when he writes.

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Stacy,Brian A

From: Lynne Barre [Lynne.Barre@noaa.gov]
Sent: Thursday, July 08, 2010 1:06 PM
To: rbonde@usgs.gov; Laura.Engleby@noaa.gov; Robert.Haddad@noaa.gov; david.r.johnson@usace.army.mil; joseph.P.Kreitinger@usace.army.mil; Daphne.Macfarlan@noaa.gov; Patricia.Rosel@noaa.gov; Dave.Rotstein@noaa.gov; Lori.Schwacke@noaa.gov; Lance Garrison; Brian.Stacy@noaa.gov; Barbara.Schroeder@noaa.gov; leslie.ward@myfwc.com; Dennis.Klemm@noaa.gov; mhziccardi; Gina Ylitalo
Cc: Teri Rowles; Simeon Hahn
Subject: sharing presentations from New Orleans workshop June 30/July1

Attachments: lynne_barre.vcf

lynne_barre.vcf
(222 B)

Thanks to all of you for providing such valuable presentations at the Marine Mammal and Sea Turtle Workshop last week. We appreciate you participation, especially those of you that pulled information together on short notice.
At the meeting we had requests to make the powerpoint presentations available. Several of you have already let me know that you are comfortable with us posting or sharing your presentations. If any of you have concerns or would prefer that we not share your presentation, please let me know by COB July 15th.
Thanks again for helping make the meeting a success.
Lynne

Stacy,Brian A

From: Crabbe, Nathan [Nathan.Crabbe@gvillesun.com]
Sent: Thursday, July 08, 2010 2:21 PM
To: 'StacyB@vetmed.ufl.edu'
Subject: story on moving of turtle eggs

Dr. Stacy,

I'm writing a story on the moving of turtle eggs from the Panhandle to the East Coast. Are you involved at all with that effort? I'm planning to go to the Panhandle next week to do some reporting and wanted to see if you or any other UF folks were going to be there. Please let me know by e-mail, or if you have a chance give me a call at 338-3176.

Thanks,

Nate Crabbe

Nathan Crabbe

University of Florida reporter

Gainesville Sun

Phone: (352) 338-3176

Stacy,Brian A

From: Hoover,Aaron H [ahoover@UFL.EDU]
Sent: Thursday, July 08, 2010 3:24 PM
To: StacyB@vetmed.ufl.edu; brian.stacy@noaa.gov
Cc: Carey,Sarah K
Subject: Seeking interview for UF magazine about your work in the Gulf

Hi, Dr. Stacy,

I am Aaron Hoover, a writer for the UF News Bureau. I am writing an article about UF faculty and graduate students working on oil spill response for UF's alumni magazine, Today. A couple of people have mentioned your name, and I have seen you quoted in news articles, and I would very much like to interview you about your experiences and work with sea turtles for my story.

I know you are extremely busy and may receive this email in the field. Is there a day/time when I might call you in the next week or so? Or, if you are in Gainesville, meet you for an in person interview? After hours are OK, and weekends a possibility.

Thank you much for your consideration. I look forward to hearing from you.

Sincerely,

Aaron

Aaron Hoover

Speechwriter/Science Writer

University of Florida News Bureau

(352) 392-0186

Stacy,Brian A

From: The Turtle Hospital [shane@turtlehospital.ccsend.com] on behalf of The Turtle Hospital [theturtlehospital@yahoo.com]
Sent: Friday, July 09, 2010 10:57 AM
To: stacyb@vetmed.ufl.edu
Subject: The Turtle Hospital July Newsletter

This is a monthly newsletter from The Turtle Hospital in Marathon, Florida. If you would like to continue receiving this newsletter, please confirm your continued interest. If you wish to unsubscribe, you may do so by clicking 'Unsubscribe' at the bottom. Thank you for your interest!

You may unsubscribe if you no longer wish to receive our emails.

Banner

The Turtle Hospital Newsletter

The Turtle Hospital, Marathon, Florida Keys

July, 2010 - Vol 2, Issue 12

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Marathon Veterinary Clinic

Karen Beasley Sea Turtle Rescue and Rehab Center

Seaturtle.org

Georgia Sea Turtle Center

Seafood Watch

Dear Friend

Young Joey
Welcome to this month's Turtle Hospital e-newsletter!

All the latest news and events going on at the Hospital and in the world of sea turtle conservation in your in-box! Keep up on all the new and interesting patients currently under treatment at the Hospital, and find out when your favorite turtle is released back into the wild!

To read more on the stories and turtles featured in this newsletter, visit our website.

www.TurtleHospital.org

The Turtle Hospital is a non-profit organization that relies on the generosity of people like you. By purchasing sea turtle merchandise through our website, you are helping to ensure that the Hospital operates at the highest possible caliber. Together we can save sea turtles in the Florida Keys and around the world.

www.TurtleHospitalStore.com

Thanks for all your interest and support!!

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BP Oil Spill Update

Turtle Hospital staff continues to monitor the BP oil spill and remains in contact with Department of Environmental Protection (DEP), British Petroleum (BP) and Florida Fish and Wildlife (FWC). The Coast Guard continues to assure residents of The Florida Keys that the only potential threat in our near future would come in the form of tar balls reaching our coastline. There are currently NO reported signs of oil in our waters or sea turtles that have been contaminated by oil in the keys. The Turtle Hospital does not have any patients in treatment currently due to oil.

To continue our preparations several new tanks will be installed on the property for oil contamination clean up. These tanks, ranging in size from 36,000 gallons to 650 gallons can be used to house sea turtles that may have come in contact with oil. The larger tanks can house these sea turtles for longer periods of time until it would be safe to release them back into the wild. In addition, Florida Fish and Wildlife has suggested a new treatment for sea turtles and donated several bottles of bio solve to help clean oil from sea turtles.

Currently as we prepare our facility, we continue to keep our thoughts with the wildlife that is being affected by this disaster in the gulf.

For now we encourage travelers to visit the beautiful Florida Keys and we continue to offer our daily guided educational programs of The Turtle Hospital at 10am, 1pm and 4pm daily.

Visit Keys Spill for more on how you can become a certified oil-spill clean-up volunteer and stay updated on current information as it becomes available.

For more information and for daily trajectories visit: NOAA

Murray The Loggerhead

On Friday June 24th, local resident Sam Sutton was working on a boat at Murray's Marina on Stock Island when he noticed a Loggerhead struggling to dive. He immediately called The Turtle Hospital and administrator Ryan Butts responded.

Upon arrival they easily located the 85 pound Loggerhead listlessly swimming in the shallow marina struggling to dive. Luckily they were able to rescue the injured turtle and she was taken back to The Turtle Hospital for evaluation.

Murray Rescue

(Pictured above Sam Sutton and Hospital Administrator Ryan Butts with Murray the sea turtle)

Staff quickly noticed a deep propeller wound to the back of her carapace (shell). Although the injury appeared to be several months old, the open wound may have gotten infected while healing. Luckily, x-ray's revealed no internal damage or foreign object ingestion. Treatment will include antibiotics, vitamins and rest. Staff expects a speedy recovery!

2010 Wing Eating Contest for Turtles!

Each year Captain Hook's Marina & Dive Center hosts a wing eating contest to benefit The Turtle Hospital. Last year, the event consisted of 13 teams and raised nearly $1,500! This year the contest is being held at the Sunset Bar and Grille in Marathon on July 16th at 7:00pm. Teams consist of 4 people (at least two of which need to be 21 or older) who need to consume 75 wings, 15 sliders and 2 pitchers of beer in the quickest time. Entry is a $100 donation per team to The Turtle Hospital. The event will also include a DJ Contest, live music, prizes and more!

Burgers and Wings

If you live in the keys or are planning on visiting the area on Friday, July 16th and are interested in joining in the festivities please contact Ryan at Captain Hook's at 1-800-CPT-HOOK. Or for more contact information visit: Captain Hooks.

Even if you're not ready to compete you can always meet us by the pool to enjoy the fun!

Sunset Bar and Grille
7 Knights Key Blvd
Marathon, FL 33050
(Just North of the 7 mile bridge at mile marker 48, oceanside)

We hope to see you there!

Sea Turtle In The News

70,000 Eggs to Be Relocated, Hatched, Released Away From Oil

Original Article May Be Viewed at Huffington Post

hatchling - beach

PENSACOLA BEACH, Fla. (AP)-- An effort to save thousands of sea turtle hatchlings from dying in the oily Gulf of Mexico will begin in the coming weeks in a desperate attempt to keep an entire generation of threatened species from vanishing.

The U.S. Fish and Wildlife Service will coordinate the plan, which calls for collecting about 70,000 turtle eggs in up to 800 nests buried in the sand across Florida Panhandle and Alabama beaches.
It's never been done on such a massive scale. But doing nothing, experts say, could lead to unprecedented deaths. There are fears the turtles would be coated in oil and poisoned by crude-soaked food.

"This is an extraordinary effort under extraordinary conditions, but if we can save some of the hatchlings, it will be worth it as opposed to losing all of them," said Chuck Underwood of the U.S. Fish and Wildlife Service.

"We have a much higher degree of certainty that if we do nothing and we allow these turtles to emerge and go into the Gulf and into the oil ... that we could in fact lose most of them, if not all of them," he added. "There's a chance of losing a whole generation."

Dozens of workers are fanned out across the coast marking turtle nests, most of them threatened loggerheads, which nest largely along Florida Panhandle and Alabama beaches.

In about 10 days, they will begin the arduous process of excavating the nests, mostly by hand. The digging must be slow and delicate -- aside from making sure the shells don't crack, the eggs can't be rolled around or repositioned to protect the embryo inside.

Then the eggs will be carefully placed in specially designed Styrofoam containers, like coolers, along with sand and moisture to mimic the natural nest. The containers will then be trucked about 500 miles east to a temperature-controlled warehouse at Florida's Kennedy Space Center.

There, the eggs will remain until hatchlings emerge, and they will be placed one-by-one on Florida's east coast, where the turtles can swim oil-free into the Atlantic Ocean.

"There's a whole lot of unknowns in what we're doing," Underwood acknowledged, noting many of the hatchlings could die anyway because of the stressful moving process.

All of the sea turtles that venture into Gulf waters have already suffered because of commercial fishing and habitat loss. Endangered Kemp's ridleys, which are nesting on beaches in Mexico and Texas, have washed up by the dozens dead along Gulf beaches since the April 20 Deepwater Horizon rig explosion that has gushed up to 130 million gallons of oil into the sea.

While some have been found oiled, it remains unclear how many of them died because of it. Tests are ongoing. The Kemp's ridleys aren't in as immediate of danger because oil hasn't been washing ashore yet in their nesting places in the western Gulf. But some fear those hatchlings also could eventually make it into the crude.

Threatened loggerheads, which are currently being considered for the added protection of endangered status, also have been found oiled and dead since the spill started, along with leatherbacks and green turtles.

David Godfrey, executive director of the Gainesville, Fla.-based Sea Turtle Conservancy, agrees this plan is the only option to save as many turtles as possible.

He said if left alone, the turtles will soon begin emerging from their nests and heading straight out to sea to feed in masses of oil-soaked seaweed.

Even more unusual, in a field that typically sees division between government entities and conservationists, there is agreement on what to do. Teri Shore, program director with the California-based Sea Turtle Restoration Project, said she thought the plan was good given the circumstances.

"If those sea turtles swim out to the Gulf, they're going to face a massive oil slick which will cause them to perish or at least significantly decrease their chances of survival," she said.

Godfrey said he agreed with the strategy and called it a "pretty amazing plan" because conservationists rarely support

relocating sea turtle nests. They often push for a change in human behaviors, such as dimming lights along beaches at night to avoid disorienting them.
But no one can control the oil, he noted.

"We're talking about allowing the entire year's class of hatchlings to emerge and swim to their certain doom, and are we just going to sit back and let that happen?" he said. "We just can't."

Join us on Facebook & Twitter

The Turtle Hospital is now on Facebook! You can now add us as a friend or join our group to stay updated on what's happening here at The Turtle Hospital.

Click the following link: Facebook Group to join The Turtle Hospital Group
Click the following link: Facebook Page to add us as a friend!
Click the following link: Twitter to follow us on Twitter!

Post blogs, join discussions and share photos and videos online with us. See you on the web!

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We hope you enjoyed this month's newsletter!

Be sure to visit our website, www.turtlehospital.org, for more stories, news and updates on your favorite turtles! Thanks again for all the interest and support! Remember, we couldn't do it without you!

Best Regards,
The Turtle Hospital Staff

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The Turtle Hospital | 2396 Overseas Highway | Marathon | FL | 33050
http://r20.rs6.net/on.jsp?t=1103519284605.0.1102176382645.3258&ts=S0503
&o=http://ui.constantcontact.com/images1/s.gif

Stacy,Brian A

From: Barbara.Schroeder [Barbara.Schroeder@noaa.gov]
Sent: Saturday, July 10, 2010 6:28 PM
To: Michael Ziccardi; Alexis Gutierrez; Teri Rowles; Brian Stacy
Subject: jeff Corwin at Audubon

Why is Jeff Corwin being permitted to handle turtles? Also, please note the blood sampling attempts. Why is this being put on national news?
Who is controlling media - is the JIC approving all of this or are Audubon and LDWF doing as they please?

http://www.msnbc.msn.com/id/21134540/vp/38181443#38181443

Stacy,Brian A

From: Peter Smith [peterandreysmith@gmail.com]
Sent: Monday, July 12, 2010 6:52 PM
To: Brian.Stacy@noaa.gov
Subject: Sea turtle question

Hi Brian,

I write a weekly column for GOOD magazine online and I saw your work with sea turtles mentioned in the New York Times. I was curious about where the data about the 417 dead sea turtles found in Mississippi came from; is that public information that I could find online somewhere?

Best,
Peter
--
peterandreysmith.com
207.450.8868

Stacy,Brian A

From: Liesl O'Dell [lodell@uff.ufl.edu]
Sent: Tuesday, July 13, 2010 11:04 AM
To: Brian.Stacy@noaa.gov
Subject: UF - oil spill

Hello Dr. Stacy,
I work with the UF Foundation. We're in the midst of a project to compile information about how UF has been involved with the oil spill.
I understand that you have been the College of Veterinary Medicine's key faculty member in terms of involvement in the oil spill.
I also understand that the majority of your post is funded by NOAA.

We are in need of photos to accompany the materials we are putting together. (Sarah Carey was kind enough to provide a couple photos from the college - one was of you holding an oil-covered sea turtle - but we need more photos.) Is there any chance we could team up with you - the next time you go out to the Gulf?
Or, might you recommend any colleagues of yours who are also working in the Gulf periodically?

We could certainly stay out of your way - in terms of not inhibiting your work.

What do you think?
Are you planning to go out anytime soon?

Thanks very much,
Liesl O'Dell
392-5491
UFF Publications Dept.
Box 14425
CAMPUS

Documents made or received by anyone acting for or on behalf of the UF Foundation are confidential and exempt from F.S. 119.07(1) pursuant to F.S. 1004.28(5) and in accordance with the UF Foundation policy on confidentiality of Foundation documents.

Stacy,Brian A

From: Monica Allen [Monica.Allen@noaa.gov]
Sent: Wednesday, July 14, 2010 3:06 PM
To: Stacy,Brian A; Barbara Schroeder; Helen Golde; Teri Rowles
Subject: New York Times story has just posted on Dr. Stacy and necropsies

http://www.nytimes.com/2010/07/15/science/earth/15necropsy.html?_r=1&hp

--
Monica Allen
NOAA Communications & External Affairs
National Marine Fisheries Service
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E-mail monica.allen@noaa.gov
Join us on Facebook: www.facebook.com/noaa.lubchenco

Stacy,Brian A

From: Patrick Thompson [ThompsonP@vetmed.ufl.edu]
Sent: Wednesday, July 14, 2010 3:20 PM
To: Nicole Stacy; Stacy,Brian A
Subject: New York Times

Thought you would want to see this

http://www.nytimes.com/2010/07/15/science/earth/15necropsy.html

Stacy,Brian A

From: Carey,Sarah K
Sent: Wednesday, July 14, 2010 3:59 PM
To: Stacy,Brian A
Subject: RE: Help reaching Brian Stacy?

Understood, Brian, that sounds reasonable. I appreciate your response and will let Aaron know.
By the way, Monica just told me that the NY Times interview is now online, and that NOAA also has a similar story they just posted.
Here's the Times story:

http://www.nytimes.com/2010/07/15/science/earth/15necropsy.html?_r=1&hp

Thanks,

Sarah

From: Stacy,Brian A
Sent: Wednesday, July 14, 2010 3:54 PM
To: Carey,Sarah K
Subject: RE: Help reaching Brian Stacy?

Hi Sarah,

I am under many demands at the moment. As per my bosses in NOAA - I have to be protective of my time. I can arrange an interview with Aaron, but it will not be until we finish our necropsies Friday afternoon. I would prefer to call Aaron myself.

Brian

Brian A Stacy, DVM, PhD, DACVP
NOAA/NMFS/Protected Resources
Marine Animal Disease Laboratory
University of Florida, College of Veterinary Medicine
Aquatic Animal Health Program

From: Carey,Sarah K
Sent: Wednesday, July 14, 2010 3:28 PM
To: Stacy,Brian A
Cc: Francis-Floyd,Ruth; Pastor,John D; Courtney,Charles H,III
Subject: FW: Help reaching Brian Stacy?

Hi, Brian –

Thanks for working with John Pastor (my back-up from the UF HSC) – I'm grateful he was available to help with the Times interview, and Monica and I are trading phone calls today to catch up. She indicated in a voice message that the Times story could appear as early as tonight online, and said we should talk about how to handle media calls that may emanate from that. So, between her and me, I'm sure you'll be hearing something soon. Guess I would like to know what your availability is to take calls and give interviews, should they start coming in.

Secondly and in the meantime, Aaron Hoover, a writer for the main campus news office, would very much like to speak to you for his UF alumni magazine story. I offered him mine (thanks for getting back to John on that, since I'll use the revised version in my pubs) – but Aaron wants to do his own interview. It would be good exposure for you, if you can do it. He would feature you prominently in the article. Can I ask him to call you? Or could you call him directly if it's easier for you? His number is below, 392-0186.

Many thanks in advance for your help,

Sarah

From: Hoover,Aaron H
Sent: Tuesday, July 13, 2010 8:50 AM
To: Carey,Sarah K
Subject: Help reaching Brian Stacy?

Hey, Sarah,

I know you are still on vacation, but when you get back tomorrow, I would really appreciate whatever help you can give me in reaching Brian Stacy.

I am hoping to talk to him for my alumni magazine story because it appears he is UF's most (or at least one of the most) "on the ground" researchers actually working directly with the spill and its consequences. We have at least 30 faculty working on oil related projects, but most seem to be research/study as opposed to direct response. Brian's experience would be really good for the lede of my story, especially if we have a photo.

The thing is, I need to talk to Brian this week, if at all possible. Anyway I know you can't guarantee it but whatever help you could give me would be wonderful.

Thanks for everything,

Aaron

Aaron Hoover

Speechwriter/Science Writer

University of Florida News Bureau

(352) 392-0186

Stacy,Brian A

From: Mark C. Wilson [mcwilson@mediaworks.co.nz]
Sent: Wednesday, July 14, 2010 5:52 PM
To: Brian.Stacy@noaa.gov; Stacy,Brian A
Subject: Radio Live New Zealand - interview request

Attachments: image002.jpg

image002.jpg (10 KB)

Hello Brian

I produce a daily news and current affairs radio show in New Zealand. I have just read a New York Times story regarding the animal autopsies underway in the Gulf region. It would be good to speak with you about your work on this in relation to the oil spill and whether there's anything unusual in the animals death.

I expect you're on EST which is a slight nuisance for us to get an interview with you. The earliest time we could do a pre-record is at 10.30pm EST this evening (Wednesday July 14).

The host of the show is Maggie Barry and we would need five minutes of your time.

If you can join us, please let me know the best number to call you on at that time.

Kind regards
Mark Wilson

Mark Wilson I Producer I Drive Show, RadioLive

tel: + 64 9 360 0330 I mobile: 021 998 949

web: www.radiolive.co.nz I freephone:0800RADIOLIVE

Mon - Fri 4 - 6pm

Attention:
The information contained in this message and/or attachments is intended only for the person or entity to which it is addressed and may contain confidential and/or privileged material. Any review, retransmission, dissemination or other use of, or taking of any action in reliance upon, this information by persons or entities other than the intended recipient is prohibited. If you received this in error, please contact the sender, and delete the material from any system and destroy any copies.

This e-mail has been virus scanned and cleared by the MediaWorks NZ Ltd IT Department.

Thank you.

Stacy,Brian A

From: Jessica Brann [jesse.brann@gmail.com]
Sent: Wednesday, July 14, 2010 7:45 PM
To: Stacy,Brian A; Brian.Stacy@noaa.gov
Subject: tissue samples from sea turtle necropsy?

Dr. Stacy,

Today I read the NY Times article (http://www.nytimes.com/2010/07/15/science/earth/15necropsy.html) discussing the possible role of the recent oil spill in the Gulf in the death of wildlife, including turtles. It discussed your examination of the Kemp's Ridley sea turtle.

I am a neurobiologist at Columbia University, and I'm interested in how extensive exposure to oil might be affecting neuronal epithelia in the noses of these turtles. As these animals use their olfactory epithelia for food finding, mating, and navigation, oil-associated damage would have a significant impact upon their survival. I have extensive experience in this field, and would be quite interested in obtaining tissue samples from you following necropsy should they be available.

Thank you for your help and I look forward to discussing this further with you.

--
Jessica Brann, Ph.D.
Department of Biological Sciences
Columbia University
1212 Amsterdam Ave, MC 2439
New York, NY 10027
(212) 854-4539
http://www.columbia.edu/~jb2602

Stacy,Brian A

From: Hoover,Aaron H [ahoover@ufl.edu]
Sent: Thursday, July 15, 2010 8:17 AM
To: StacyB@vetmed.ufl.edu
Cc: Carey,Sarah K
Subject: Interview Friday afternoon, weekend, or early next weeek

Brian, thanks for your note to Sarah below. I understand how busy you must be, and I really appreciate your willingness to spend a little time talking with me. I would love to meet you in person, but if that's not possible, I would be glad to interview you by phone.

I could arrange Friday afternoon, sometime over the weekend, or sometime early next week...Whenever you can squeeze me in. Feel free to email, call my office at 2-0186, or my cell at 328-4340. Thanks again, and I look forward to hearing from you,

Aaron

From: Carey,Sarah K
Sent: Wednesday, July 14, 2010 4:36 PM
To: Hoover,Aaron H
Subject: FW: Help reaching Brian Stacy?

From: Stacy,Brian A
Sent: Wednesday, July 14, 2010 3:54 PM
To: Carey,Sarah K
Subject: RE: Help reaching Brian Stacy?

Hi Sarah,

I am under many demands at the moment. As per my bosses in NOAA - I have to be protective of my time. I can arrange an interview with Aaron, but it will not be until we finish our necropsies Friday afternoon. I would prefer to call Aaron myself.

Brian

Brian A Stacy, DVM, PhD, DACVP
NOAA/NMFS/Protected Resources
Marine Animal Disease Laboratory
University of Florida, College of Veterinary Medicine
Aquatic Animal Health Program

FYI, if you can wait til Friday, Brian says he will call you. If you do not hear from him by mid-afternoon, give me a buzz and I will try to locate him.

Thanks,

Sarah

From: Carey,Sarah K
Sent: Wednesday, July 14, 2010 3:28 PM
To: Stacy,Brian A
Cc: Francis-Floyd,Ruth; Pastor,John D; Courtney,Charles H,III
Subject: FW: Help reaching Brian Stacy?

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Aaron

Aaron Hoover

Speechwriter/Science Writer

University of Florida News Bureau

(352) 392-0186

Stacy,Brian A

From: Carey,Sarah K
Sent: Thursday, July 15, 2010 8:45 AM
To: Stacy,Brian A
Subject: Re: Help reaching Brian Stacy?

I sure will. And you still want to call him, right?

From: Stacy,Brian A
To: Carey,Sarah K
Sent: Thu Jul 15 07:33:51 2010
Subject: RE: Help reaching Brian Stacy?

Hi Sarah,

I don't have Aaron's email and will be tied up with necropsy all day. Can you please tell him that I will be available at 3PM or 4PM Friday for an interview.

Brian

Brian A Stacy, DVM, PhD, DACVP
NOAA/NMFS/Protected Resources
Marine Animal Disease Laboratory
University of Florida, College of Veterinary Medicine
Aquatic Animal Health Program

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Aquatic Animal Health Program

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Thanks for everything,

Aaron

Aaron Hoover

Speechwriter/Science Writer

University of Florida News Bureau

(352) 392-0186

Stacy,Brian A

From: Smith,Melodi V [melodivsmith@ufl.edu]
Sent: Thursday, July 15, 2010 8:41 AM
To: Brian.Stacy@noaa.gov
Subject: Requesting an interview on findings from autopsies in Gulf Oil Spill animals

Dr. Stacy,

My name is Melodi Smith and I am a student reporter for AM 850 News on the University of FLorida campus. I am doing a story on the effects the Gulf Oil Spill has had on wildlife and your findings in the autopsies conducted on sea turtles and other marnie wildlife. If you have a few minutes could you please give me a call at the station at 352-392-6397.

Melodi Smith

--
Smith,Melodi V

Stacy,Brian A

From: Monica Allen [Monica.Allen@noaa.gov]
Sent: Thursday, July 15, 2010 9:44 AM
To: Stacy,Brian A
Subject: Re: FW: Gulf animal necropsies

Hi Brian,
Thanks for sending the media inquiries my way.
I hope you were happy with Shaila's story. I really thought it was well done, well reported and very nuanced. I also thought that Brent's video took the story to a great visual level -- loved the shrimp moment. Thank you again for all the time you spent with the journalists and the way you showed them your work in such an understated, impressive way.

I am going to talk with Sarah Carey of UF today and I have some ideas, but I also want to gauge your appetite for doing interviews, press conference and at some time even a narrated necropsy.

We are in luck that Barbara Schroeder is going to be doing a media event in New Orleans at Audubon that reporters can call in for on Friday and she'll probably get questions about necropsies so we can direct some reporters that way.

I'll get back to you after I talk with Sarah Carey with some ideas for you to consider.

Thanks,
Monica

Stacy,Brian A wrote:
> I am forwarding requests to you Monica.
>
> ----------
> --
> *From:* Frank Powers [mailto:fpowers@wjxt.com]
> *Sent:* Wednesday, July 14, 2010 5:31 PM
> *To:* Brian.Stacy@noaa.gov
> *Cc:* Maureen Baker
> *Subject:* Gulf animal necropsies
>
> Dr Stacy—
>
> We were wondering if you or one of your staff might be available to
> talk about the mystery surrounding why Gulf animals are dying, as
> reported by the NY Times. Would it be possible to meet with a reporter
> Thursday?
>
>
> *Frank Powers
> *Assignment Manager
> WJXT Channel 4, The Local Station
> 4 Broadcast Place | Jacksonville, Florida 32207
> Office: 904-393-9844 | Fax: 904-393-9822
> fpowers@wjxt.com <mailto:fpowers@wjxt.com>
> <http://www.news4jax.com> <http://www.latv.com>
>
> wjxt Post-Newsweek

--
Monica Allen
NOAA Communications & External Affairs
National Marine Fisheries Service
U.S. Department of Commerce
1315 East West Highway

Room 14502
Silver Spring, Md. 20910
Tel.: (301) 713-2370
Fax: (301) 713-1452
Cell: (202) 379-6693
E-mail monica.allen@noaa.gov
Join us on Facebook: www.facebook.com/noaa.lubchenco

Stacy,Brian A

From: Lundgren,Anna M
Sent: Thursday, July 15, 2010 12:17 PM
To: Stacy,Brian A
Subject: New York Times

Hi Brian,

Nice article about the work you are doing with the turtles from the Gulf in the New York Times!

Anna

Dr. Barbet's lab

Stacy,Brian A

From: Monica Allen [Monica.Allen@noaa.gov]
Sent: Thursday, July 15, 2010 12:39 PM
To: Stacy,Brian A
Subject: [Fwd: FW: Gulf animal necropsies]

Here's the local TV

-------- Original Message --------
Subject: FW: Gulf animal necropsies
Date: Thu, 15 Jul 2010 07:30:17 -0400
From: Stacy,Brian A <bstacy@ufl.edu>
To: Monica Allen <Monica.Allen@noaa.gov>

I am forwarding requests to you Monica.

From: Frank Powers [mailto:fpowers@wjxt.com]
Sent: Wednesday, July 14, 2010 5:31 PM
To: Brian.Stacy@noaa.gov
Cc: Maureen Baker
Subject: Gulf animal necropsies

Dr Stacy—

We were wondering if you or one of your staff might be available to talk about the mystery surrounding why Gulf animals are dying, as reported by the NY Times. Would it be possible to meet with a reporter Thursday?

*Frank Powers
*Assignment Manager
WJXT Channel 4, The Local Station
4 Broadcast Place | Jacksonville, Florida 32207
Office: 904-393-9844 | Fax: 904-393-9822
fpowers@wjxt.com <mailto:fpowers@wjxt.com>
<http://www.news4jax.com> <http://www.latv.com>

wjxt Post-Newsweek

--
Monica Allen
NOAA Communications & External Affairs
National Marine Fisheries Service
U.S. Department of Commerce
1315 East West Highway
Room 14502
Silver Spring, Md. 20910
Tel.: (301) 713-2370
Fax: (301) 713-1452
Cell: (202) 379-6693
E-mail monica.allen@noaa.gov
Join us on Facebook: www.facebook.com/noaa.lubchenco

Stacy,Brian A

From: Jonathan Shannon [Jonathan.Shannon@noaa.gov]
Sent: Friday, July 16, 2010 10:18 AM
To: _NMFS HQ PR ALL
Subject: Turtle Talk Webcast, today at 12pm

Attachments: MEDIA ADVISORY: Unified Area Command and Audubon Nature Institute Co-host"Turtle Talk" Roundtable TODAY.eml; Jonathan_Shannon.vcf

MEDIA ADVISORY: Unified Area C... Jonathan_Shannon .vcf (462 B)

Good Morning PR,

Please see attached News Release regarding a Turtle Talk Webcast with our own Barbara Schroeder, starting today at 12pm.

Best Regards,

Jonathan Shannon

Stacy,Brian A

From: Jonathan Shannon [Jonathan.Shannon@noaa.gov]
Sent: Friday, July 16, 2010 11:11 AM
To: _NMFS HQ PR ALL
Subject: Re: Turtle Talk Webcast, today at 12pm

Attachments: ATT00001..jpg; Jonathan_Shannon.vcf

ATT00001..jpg (12 KB) Jonathan_Shannon.vcf (462 B)

Good Morning PR,

A clarification, there are 2 opportunities to catch the broadcast, a media session from 12-1pm EDT and a public session from 3-4pm EDT both at the same website.

Best Regards,

Jonathan Shannon

Jonathan Shannon wrote:

> Good Morning PR,
>
> Please see attached News Release regarding a Turtle Talk Webcast with our own Barbara Schroeder, starting today at 12pm.
>
> Best Regards,
>
> Jonathan Shannon

Subject:
MEDIA ADVISORY: Unified Area Command and Audubon Nature Institute Co-host "Turtle Talk" Roundtable TODAY
From:
NOAA Communications <Press.Releases@noaa.gov>
Date:
Fri, 16 Jul 2010 09:34:15 -0400
To:
Internalpa.distribution@noaa.gov
To:
Internalpa.distribution@noaa.gov

head_banner.jpg

Contact: Connie Barclay

202-441-2398 (cell)

FOR IMMEDIATE RELEASE

July 16, 2010

MEDIA ADVISORY: Unified Area Command and Audubon Nature Institute Co-host "Turtle Talk" Roundtable TODAY

Discussion for News and Online Media -
First Event Bringing Together Major Agencies Involved in Sea Turtle Protection

WHAT: "Turtle Talk" is the first event to bring together the lead agencies involved in turtle protection efforts in one forum to discuss the status of sea turtles affected by the Deepwater Horizon oil spill. The Unified Area Command is co-hosting Turtle Talk with Audubon Nature Institute, bringing together sea turtle experts from NOAA, the U.S. Fish and Wildlife Service and the National Park Service for a roundtable discussion. Additionally, wildlife expert Jeff Corwin will provide a video introduction to the event, sharing his concern for sea turtles.

Media will be able to join the discussion virtually, having the option to ask questions via conference line or participate via a live webcast enabled with a chat function.

WHO: NOAA's national sea turtle coordinator, Barbara Schroeder, National Park Service chief of science and resource management Rick Clark, Fish and Wildlife Service sea turtle expert, Dr. Debby Crouse

Moderated by Karyn Kearney, senior vice president and managing director of Audubon Nature Institute's Audubon Aquarium of the Americas

Video introduction provided by wildlife biologist and NBC and MSNBC's science and environmental expert, Jeff Corwin

WHEN: ***TODAY***, Friday, July 16, 11 a.m. – 12 p.m. CDT

WHERE: This event will take place online at http://turtletalk.deepwaterhorizonresponse.com

Dial-in at (866) 304-5784 domestic and (706) 643-1612 and use passcode # 88759207 or use the live chat function within the Turtle Talk web page to pose questions to our panel.

The event will be streamed live from the Audubon Nature Institute's Audubon Aquarium of the Americas in New Orleans. Audubon serves as coordinator for the Louisiana Marine Mammal and Sea Turtle Rescue Program and is responsible for rescuing and rehabilitating sea turtles and marine mammals stranded in Louisiana.

The Unified Command will be live tweeting the event at @Oil_Spill_2010, in addition to posting

updates on the Deepwater Horizon Response Facebook page.

- 30 -

Stacy,Brian A

From: Rogers, Kara [krogers@eb.com]
Sent: Friday, July 16, 2010 11:28 AM
To: Stacy,Brian A
Cc: Brian.Stacy@noaa.gov
Subject: Encyclopaedia Britannica: Turtles in the Gulf

Dear Dr. Stacy,

I am a senior editor in the sciences and homepage and blog editor at *Encyclopaedia Britannica.* Given your knowledge of marine turtle conservation and your involvement in researching the deaths of turtles in the Gulf of Mexico, I was wondering if you would be interested in participating in a special question and answer segment for the Britannica Blog (http://www.britannica.com/blogs/). We periodically ask experts on various subjects to answer five questions on a topic of political, social, scientific, or cultural interest. The Q&A sessions are relatively straightforward and include a brief introduction followed by five questions and answers on a topic. In your case, we are looking to direct the Q&A session to questions about the state of marine turtle conservation in the Gulf, the significance of the oil spill on turtle conservation, and, of course, the mysteries surrounding the ongoing turtle die-off. (I'd be more than happy to forward a formalized list of the 5 questions.)

Below are some links to Q&A sessions we've featured on the blog in the past. You'll see that the length of the answers provided to Britannica's questions in these pieces is quite variable. (Some people get a bit carried away. I realize that you are quite busy, and each answer really need only address the questions sufficiently, which might mean just three or four sentences.) We also run a site called Advocacy for Animals (http://advocacy.britannica.com/blog/advocacy/). The Britannica Blog and the Advocacy site often exchange content, so your Q&A segment, since it would retain a focus on animals/animal conservation, would also run on the Advocacy site.

Please let me know if you are interested. I look forward to hearing from you.

Sincerely,

Kara

Links to past Q&A sessions on the Britannica Blog:

http://www.britannica.com/blogs/2009/02/5-questions-for-adam-gopnik-writer-and-britannica-contributor-on-lincoln-darwin-and-their-age/
http://www.britannica.com/blogs/2009/02/an-interview-with-james-mcpherson-pulitzer-prize-winning-historian-britannica-contributor-on-abraham-lincoln-his-legacy/
http://www.britannica.com/blogs/2009/02/an-interview-with-francisco-ayala-evolutionary-biologist-britannica-contributor-on-charles-darwin-his-legacy/
http://www.britannica.com/blogs/2009/01/an-interview-with-david-mendell-obama-biographer-britannica-contributor/

Kara E. Rogers, Ph.D.
Senior Editor, Biomedical Sciences
Encyclopaedia Britannica, Inc.
331 N. LaSalle Street
Chicago, IL 60654-2682
Phone: (312) 347-7089
Fax: (312) 294-2162
krogers@eb.com

Stacy,Brian A

From: . UR UF News Desk [newsdesk@ufl.edu]
Sent: Friday, July 16, 2010 1:41 PM
Subject: DATELINE: UF in the news

UF News Desk
101 Tigert Hall
352-392-0186, Fax: 392-3358
newsdesk@ufl.edu
University of Florida

The Foundation for the Gator Nation

"Dateline Florida: UF in the News" can be found at: http://news.ufl.edu/uf-in-the-news/.

New York Times: Brian Stacy

Veterinary pathologist Brian Stacy was quoted in a July 15 New York Times story about efforts to determine the exact cause of death for sea turtles and other animals in the Gulf of Mexico since the Deepwater Horizon oil spill.

http://www.nytimes.com/2010/07/15/science/earth/15necropsy.html?pagewanted=1&_r=2&ref=science

St. Petersburg Times: Daniel A. Smith

An op-ed column by political science professor on the Fair Elections Now Act was published in the July 14 St. Petersburg Times. The legislation would allow congressional candidates to receive limited funds in exchange for rejecting large dollar contributions. The column was edited and pitched by the News Bureau's Op-Ed News Service (http://www.urel.ufl.edu/newsBureau/oped.html).

http://www.tampabay.com/opinion/columns/voters-need-to-push-back-against-corporate-cash/1108654

Palm Beach Post: Bill Mahan

Bill Mahan, agriculture extension director in Franklin County, was quoted in a July 12 Palm Beach Post story about the government's effort to train people to sniff out seafood tainted because of the Gulf oil spill. The story was the result of an IFAS news release.

http://www.palmbeachpost.com/news/officials-trained-to-develop-a-nose-for-crude-799061.html?cxtype=rss_news

"The nose knows: UF to help train experts in sniffing out oil spill-contaminated seafood"

http://news.ufl.edu/2010/05/12/something-smells/

Miami Herald: Mark Mossler, Mike Annable

Pesticide expert Mark Mossler and environmental engineering professor Mike Annable were quoted in a July 11 Palm Beach Post story about the discovery of pesticides in wells in South Miami-Dade homes. The quotes were the results of referrals from the UF News Bureau.

http://www.miamiherald.com/2010/07/08/1721919/pesticide-found-in-more-private.html

United Press International: Andrew M. Gordon

English professor Andrew M. Gordon was quoted in a July 11 UPI story about the 50th anniversary of the publication of the book "To Kill a Mockingbird." The quote was the result of a News Bureau Tip Sheet.

http://www.upi.com/Entertainment_News/2010/07/11/To-Kill-A-Mockingbird-going-strong-at-50/UPI-74071278889591/

"UF experts can talk about the 50th anniversary of 'To Kill a Mockingbird'"

http://news.ufl.edu/2010/07/08/mockingbird-50-tip/

Tampa Tribune: Jonathan Day

Medical entomologist Jonathan Day was quoted in a July 9 Tampa Tribune story about a jump this year in mosquito-borne diseases such as West Nile virus and Eastern equine encephalitis. The story was the result of an IFAS news release.

http://www2.tbo.com/content/2010/jul/09/bay-area-could-see-more-cases-mosquito-borne-disea/life/

"UF experts urge wariness of mosquito-borne diseases this summer"

http://news.ufl.edu/2010/07/01/skeeter2010/

USA Today: Kathleen Long

Kathleen Long, dean of the College of Nursing, was quoted in a July 9 USA Today story about the current job market for recent nursing graduates.

http://www.usatoday.com/news/health/2010-07-09-1Anurses09_ST_N.htm

Tampa Tribune: Jim Price, Marina D'Abreau

Entomologist Jim Price and Hillsborough County Extension Agent Marina D'Abreau were quoted in a July 6 Tampa Tribune story about the threat from the spotted wing drosophila fly for strawberries and blueberries. The story was the result of an IFAS news release.

http://www2.tbo.com/content/2010/jul/06/tiny-fly-could-pose-threat-berry-crops/

"UF experts: Spotted wing drosophila is pest for region's berry growers, but manageable"

http://news.ufl.edu/2010/07/06/blueberry-fly/

****

The University of Florida is one of the nation's largest public universities. A member of the Association of American Universities, UF receives more than $550 million annually in sponsored research funding. Through its research and other activities, UF contributes more than $6 billion a year to Florida's economy and is responsible for generating more than 77,000 jobs statewide. www.ufl.edu. University of Florida Research; Working for Florida.

Stacy,Brian A

From: Barbara Schroeder [Barbara.Schroeder@noaa.gov]
Sent: Monday, July 19, 2010 11:11 AM
To: Brian Stacy
Subject: [Fwd: Turtles in MS]

-------- Original Message --------
Subject: Turtles in MS
Date: Mon, 19 Jul 2010 11:06:32 -0400
From: Elizabeth Tuohy-sheen <Elizabeth.Tuohy-Sheen@noaa.gov>
To: Wendy Teas <Wendy.Teas@noaa.gov>, Barbara Schroeder <Barbara.Schroeder@noaa.gov>, Sarah Wilkin <Sarah.Wilkin@noaa.gov>, '"mhziccardi@ucdavis.edu"' <mhziccardi@ucdavis.edu>, Sara McNulty <Sara.McNulty@noaa.gov>, '"Alexis.Gutierrez@noaa.gov"' <Alexis.Gutierrez@noaa.gov>, '"Teri.Rowles@noaa.gov"' <Teri.Rowles@noaa.gov>

Hey everyone,
This is just a heads up that today we're getting a lot of MS turtle calls, five calls already this morning, though two calls are likely duplicates, leaving us with 3 calls that may be for 5 animals (2 of the calls were for 2 animals each). With luck, this pace won't keep up through the morning. Let me know if you have any questions,
Liz

--

Barbara Schroeder
National Sea Turtle Coordinator
National Oceanic and Atmospheric Administration - NMFS

email: barbara.schroeder@noaa.gov
Phone: 301-713-2322

To cherish what remains of the earth, and to foster its renewal, is our only legitimate hope. Wendell Berry

Stacy,Brian A

From: Carey,Sarah K
Sent: Tuesday, July 20, 2010 3:46 PM
To: Harvey,John W; Hoffsis,Glen F; Courtney,Charles H,III; Francis-Floyd,Ruth; Stacy,Brian A; Burrows,Colin F; Freeman,David E; Zimmel,Dana N; 'Monica Allen'; Hoffsis,Glen F; 'david.miller@noaa.gov'; Pastor,John D
Subject: Story on Dr. Stacy on HSC News Page

Greetings, all,

Thought you might like to know that my previously-approved story (which most of you have seen) was just posted to the UF Health Science Center Web site. It's here: http://news.health.ufl.edu/

More updated and detailed stories will be appearing in the next few days, I'm sure, as a result of our "Media Day" event this morning, during which I'm happy to report all went well. Dr. Stacy handled all of the interviews with great patience, answering every question (...and some more than once.) So it goes. We are so fortunate to have Brian with us and I'm grateful that thanks to his willingness to carve out this time, we were able to offer this wonderful window of opportunity, not just to the national network (CBS Evening News) but also to our major local news organizations, TV 20 and the Gainesville Sun, to learn more about Dr. Stacy's and NOAA's work relating to sea turtles in the aftermath of the oil spill. There were more requests to be present today than slots available, but we hope to accommodate additional requests for footage and photos through b-roll NOAA's videographer was able to obtain. NOAA has graciously offered to provide us with whatever we might need for our purposes as well.

I will share the additional press when I become aware of it, but I'm sure news will be appearing locally tonight and tomorrow. We are not yet certain when the CBS piece will air.

Best,

Sarah

Stacy,Brian A

From: Monica Allen [Monica.Allen@noaa.gov]
Sent: Tuesday, July 20, 2010 3:56 PM
To: Carey,Sarah K
Cc: Harvey,John W; Hoffsis,Glen F; Courtney,Charles H,III; Francis-Floyd,Ruth; Stacy,Brian A; Burrows,Colin F; Freeman,David E; Zimmel,Dana N; 'david.miller@noaa.gov'; Pastor,John D
Subject: Re: Story on Dr. Stacy on HSC News Page

Hi Sarah,
Your story is great. I'll share it with folks here at NOAA. Thank you and all your colleagues at the University again for hosting the successful media morning with Dr. Stacy today. We at NOAA look forward to continued collaboration as we work with UF to help tell this important science story to the public.
Warm regards,
Monica

Carey,Sarah K wrote:
>
> Greetings, all,
>
> Thought you might like to know that my previously-approved story
> (which most of you have seen) was just posted to the UF Health Science
> Center Web site. It's here: http://news.health.ufl.edu/
>
> More updated and detailed stories will be appearing in the next few
> days, I'm sure, as a result of our "Media Day" event this morning,
> during which I'm happy to report all went well. Dr. Stacy handled all
> of the interviews with great patience, answering every question (…and
> some more than once.) So it goes. We are so fortunate to have Brian
> with us and I'm grateful that thanks to his willingness to carve out
> this time, we were able to offer this wonderful window of opportunity,
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> in the aftermath of the oil spill. There were more requests to be
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>
> I will share the additional press when I become aware of it, but I'm
> sure news will be appearing locally tonight and tomorrow. We are not
> yet certain when the CBS piece will air.
>
> Best,
>
> Sarah
>

--
Monica Allen
NOAA Communications & External Affairs
National Marine Fisheries Service
U.S. Department of Commerce
1315 East West Highway
Room 14502
Silver Spring, Md. 20910
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Fax: (301) 713-1452
Cell: (202) 379-6693
E-mail monica.allen@noaa.gov
Join us on Facebook: www.facebook.com/noaa.lubchenco

Stacy,Brian A

From: Connie Barclay [Connie.Barclay@noaa.gov]
Sent: Wednesday, July 21, 2010 7:06 AM
To: Jim Milbury '; Brian Stacy; Barbara Schroeder; Tomo Eguchi; Todd Jones; Alexis Gutierrez; Helen Golde; Monica Allen; Elizabeth Crapo
Subject: Article -- A dark day for turtles

http://www.ocala.com/article/20100720/ARTICLES/100729984/-1/news?Title=-A-dark-year-for-sea-turtles-

--
Connie Barclay
Director, NOAA Fisheries Communications
NOAA Communications & External Affairs
(301)713-2370 work/(202)441-2398 cell
Join us on Facebook: www.facebook.com/noaa.lubchenco

Stacy,Brian A

From: Monica Allen [Monica.Allen@noaa.gov]
Sent: Wednesday, July 21, 2010 9:45 AM
To: Stacy,Brian A; Barbara Schroeder; Alexis.Gutierrez; Connie Barclay; Helen Golde
Subject: Louisiana column talks about laxity of Louisiana state law on TEDS

http://www.lsureveille.com/opinion/fanning-the-flames-louisiana-must-enforce-regulations-to-save-sea-turtles-1.2281015

Fanning the Flames: Louisiana must enforce regulations to save sea turtles

By Trevor Fanning </search?q=%22Trevor%20Fanning%22>

Columnist

*Published: *Monday, July 19, 2010

*Updated: *Monday, July 19, 2010

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<http://www.addthis.com/bookmark.php?v=250&pub=collegepublisher>

Kemp's Ridleys, an endangered species of sea turtles, are washing up dead in record numbers on the Mississippi coast — but most of them are not displaying obvious signs of oil-contamination.

Dr. Brian Stacy, a veterinarian pathologist employed by the National Oceanic and Atmospheric Association, conducts necropsies on the dead sea turtles found on beaches after the BP oil spill. Oil is not the direct killer for many of the dead sea turtles, but fisheries interaction is a culprit.
Marine turtles are air-breathing reptiles that must periodically surface from the sea for oxygen. "Drowning is a concern, as is acute exposure to a toxin," Stacey told The New York Times. By July 12, more than 460 dead marine turtles had been reported to the Unified Area Command, which is overseeing the Deepwater Horizon spill response.

Wildlife mortality statistics are liable to be inflated this year because of the high volume of oil spill respondents tagging, collecting and sending animal carcasses to Stacy's Gainesville, Fla., laboratory for necropsies. Nevertheless, the spike in fish and wildlife fatalities this season is indirectly attributable to the rig blowout and oil spill.

The Kemp's Ridley sea turtles washing up in Mississippi are dying incidentally from the oil spill; the turtles' shells, underbellies and mouths may be clean of oil, but pieces of shrimp found lodged in a turtle's esophagus, or traces of sediment found in its lungs, send up red flags that the turtle was entrapped by a shrimper's net and drowned.

Marine sea turtles are thought to be migrating further inland to escape the massive slicks of oil pooling in the Gulf, in the meantime skirting the pathways of commercial fishermen. The peril is all the greater when Mississippian shrimpers, taking advantage of the Coast Guard's preoccupation with spill cleanup, neglect to use their trawling nets' federally required Turtle Excluder Devices.

The T.E.D. is a modification on shrimping nets that serves as an escape hatch for sea turtles caught in commercial shrimpers' nets.

A shrimp net's T.E.D. consists of "a grid of bars with an opening either at the top or

bottom of the trawl net," according to the NOAA Fisheries Office of Protected Resources.

The T.E.D. acts as a filter for shrimp and small fish to pass into the trawl net but excludes incidental catches, freeing larger animals such as sharks or sea turtles from being caught in the shrimp nets.

An adult sea turtle can normally hold its breath for several hours underwater, but a turtle that is entangled in a shrimping net may panic, and deplete its oxygen reserves rapidly in distress. Since shrimpers trawl with their nets beneath the surface for long periods of time, any sea turtles that are unable to surface for air may drown in the shrimpers' nets.

Louisiana shrimpers are especially prone to incidentally catching sea turtles, since the laws on T.E.D. regulations in the state are lax — Wildlife and Fisheries Enforcement agents in Louisiana are prohibited from enforcing T.E.D. regulations.

Sea turtles are protected by the federal government under the Endangered Species Act.

Wildlife and Fisheries Enforcement agents patrol the Gulf of Mexico to check that commercial fishers and shrimpers are abiding by federal regulations to ensure the sea turtles' safety, but three days after Mississippi's shrimping season began, 12 dead turtles were found on Mississippi beaches.

Mississippi, nevertheless, has taken the initiative to reduce the allowable towing-times for shrimpers to drag their nets underwater, and the Mississippi Department of Marine Resources has distributed pamphlets to commercial fishermen with instructions on resuscitating unconscious turtles.

Louisiana, too, must take progressive steps to enforce T.E.D. regulations for commercial fishermen, so that endangered marine turtles, like the Kemp's Ridley and Loggerhead, will not meet their demise in the wake of the Deepwater Horizon oil spill.

Contact Trevor Fanning at tfanning@lsureveille.com.

--
Monica Allen
NOAA Communications & External Affairs
National Marine Fisheries Service
U.S. Department of Commerce
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Room 14502
Silver Spring, Md. 20910
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Fax: (301) 713-1452
Cell: (202) 379-6693
E-mail monica.allen@noaa.gov
Join us on Facebook: www.facebook.com/noaa.lubchenco

Stacy,Brian A

From: SEATURTLE.ORG [bytes@seaturtle.org]
Sent: Wednesday, July 21, 2010 9:52 PM
To: Brian Stacy
Subject: Turtle Bytes - Tracking Sea Turtles in the Gulf of Mexico

http://www.seaturtle.org/newsletter/images/spacer.gif
Turtle Bytes
http://www.seaturtle.org/newsletter/images/spacer.gif Byte Sized Bits of Sea Turtle Information

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Tracking Sea Turtles in the Gulf of Mexico

Composite Map
Latest locations for animals being tracked in the Gulf of Mexico. Click on the map for more details and to learn more about each of the projects included on the map.

Seaturtle.org's tracking site has hosted 28 wildlife tracking projects in the Gulf of Mexico. These projects are providing extremely valuable information about the movements of sea turtles and other animals in the Gulf of Mexico that will help determine how they have been impacted by the recent Deepwater Horizon oil spill. This information will aid response and mitigation in the Gulf of Mexico and help develop better regulations and planning for future emergencies.

However, it is important to remember that the majority of tracked sea turtles are adult females (because they are the easiest to access when they come on the beach to nest). Information about the distribution and behavior of adult male sea turtles, juveniles and especially hatchlings, is extremely limited. There are also nesting populations in the Gulf of Mexico for which little or no tracking data are available. Basically, we don't know where those turtles go! The projects completed to date represent a tremendous amount of hard work, but paint an incomplete picture. It is critical that work continue and expand so that we have a better understanding of the habits and habitats of sea turtles in the open ocean.

Support Sea Turtle Research and Conservation

You can help support current and future sea turtle research and conservation by adopting a tracked sea turtle from projects in the Gulf of Mexico.

You can also support the study and conservation of many species of conservation concern from around the world through our Wildlife Adoption Program.

Gulf of Mexico Sea Turtle Network

This week, with the help of Wallace J Nichols and many friends in the sea turtle community, we launched the Gulf of Mexico Sea Turtle Network. The intent of this new site is to help people interested in the rescue, conservation and biology of sea turtles in the Gulf of Mexico stay connected, share information and communicate in response to the BP Deepwater Horizon oil spill, and beyond. We will continue to add information and resources, but we need your help. Please send your ideas for information to be added to the GTURTLE site; Upload oil spill related photos to the new Oil Spill category in the Image Library; Share your job and volunteer opportunities in the Gulf on the Job

Board; Add events i! n the Gulf of Mexico to the Events Calendar.

Finally, you can keep in touch and share information on the GTURTLE listserv. If you have feedback or would like to join the listserv please send a message to support@seaturtle.org

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SEATURTLE.ORG relies on community support. Donate and help us build better resources for sea turtle conservation and research. http://www.seaturtle.org/newsletter/images/spacer.gif
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Image Library

Help support sea turtle conservation by uploading and sharing your sea turtle photos today. Let others use your photos to educate and inspire!

Recent Photos

Kelly leaving the Keewaydin Island nesting beach
(Submitted by Katrina Phillips)

Isabel enters the sea
This adult green turtle entered the sea for the first time after being rared in captivity. The satellite tag will hopefully reveal how and where she settles into her new environment. (Submitted by Sandra Hochscheid)

Marilyn
Marilyn has a Fastloc GPS tag and a geomagnetic tag, deployed simultaneously to evaluate the accuracy and performance of the latter tag. (Submitted by Tony Tucker)

Another lucky loggerhead
Pav and David release a freshly tagged turtle in Amvrakikos Bay, NW Greece. One of over 250 individuals identified there. (Submitted by ALan Rees)

Lacinia on the beach
(Submitted by Paolo Luschi)

See 4950 more sea turtle photos online.

Recent Recent Photos

PD Public Domain Photos

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Hot News

1st sea turtle hatchlings evacuated from Gulf oil released into Atlantic The Republic

470+ Endangered Sea Turtles Killed by BP Oil Spill \(so far\) PlanetSave.com (blog)

Turtles delivering surprises in SW Fla. The News-Press

Photos From the Gulf's Great Sea Turtle Relocation Discover Magazine (blog)

Hundreds Cheer Rehabbed Turtles Released Off Jekyll WXIA-TV

More sea turtle news...

PD News Feed

Subscribe to receive hourly e-mail updates

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http://www.seaturtle.org/newsletter/images/spacer.gif
Blog Posts

Turtle travel with an iPhone

2010 Funding for Marine Turtle Conservation Act

Sign Lights Out for Rush Limbaugh Sea Turtle Pledge

Sea Turtle News Widgets

New Apple Tablet will help save sea turtles!

http://www.seaturtle.org/newsletter/images/spacer.gif
http://www.seaturtle.org/newsletter/images/dotted_divider.gif
http://www.seaturtle.org/newsletter/images/spacer.gif
Satellite Tracking

Follow more than 43 species and 1982 individual animals from 290 projects around the world.

Recently Released Animals

Marilyn Loggerhead
Casey Key
Casey Key Loggerheads-2010
Adopt Me!

Wee Marie Loggerhead
Casey Key
Casey Key Loggerheads-2010
Adopt Me!

Sunny Loggerhead

Jekyll Island
Georgia Sea Turtle Center and Georgia Aquarium Monitoring of Released Turtles

62742 Loggerhead
GA
NOAA Southeast Fisheries Science Center - Satellite Tracking - AMAPPS

Carning Loggerhead
Jekyll Island
Georgia Sea Turtle Center - Monitoring of Rehabilitated Patients

Contact tracking@seaturtle.org to add your tracking project to the SEATURTLE.ORG web site.

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Word of the Day

Sea Turtle Glossary

Anthropogenic

Effects or processes that are derived from human activities, as opposed to natural effects or processes that occur in the environment without human influences.

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Job/Volunteer Board

The quickest way to find a large number of highly qualified applicants. Post a new sea turtle job or volunteer position.

Recent Postings

Asia
Turtle Conservation Volunteer in Thailand

Latin America
Research Assistant - ISV Leatherback and Pacific Green Sea Turtle Research Project Ostional, Costa Rica

Asia
Field leader and assistant position Thailand

North America
Sea Turtle Rescue Program Intern

North America
Marine Endangered Species Observers

Find 34 more sea turtle job and volunteer opportunities online.

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Events

Post a new sea turtle related event or let us know about other upcoming events.

Upcoming Events

Jul 24 2nd International Sclerochronology Conference
Mainz, Germany (24th July 2010 - 28th July 2010)

Sep 27 Pathways to Success 2010: Integrating Human Dimensions into Fish and Wildlife Management
Estes Park, Colorado, USA (27th September 2010 - 1st October 2010)

Oct 16 Reunión Nacional sobre Conservación de Tortugas Marinas
Cozumel, Quintana Roo, México (16th October 2010 - 21st October 2010)

Nov 13 Restore America's Estuaries Habitat Restoration Conference
Galveston, TX, USA (13th November 2010 - 17th November 2010)

Mar 14 Fourth International Science Symposium on Bio-logging
Hobart, Tasmania, Australia (14th March 2011 - 18th March 2011)

More sea turtle events...

http://www.seaturtle.org/events/events.ics Subscribe

http://www.seaturtle.org/newsletter/images/spacer.gif
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http://www.seaturtle.org/newsletter/images/spacer.gif
Groups

177 groups and counting. Add your sea turtle group today!

Recently Added Groups

The Georgia Sea Turtle Group
United States (Non-governmental)

NC Aquarium on Roanoke Island
United States (Governmental)

WWF Sea Turtle Rescue Centre in Lampedusa
Italy (Non-profit)

Kids For A Clean Planet

United States (Non-profit)

Find 173 more sea turtle groups online.

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http://www.seaturtle.org/bytes/images/adopt.gif **Adopt-a-Nest**
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http://www.seaturtle.org/newsletter/images/mtn.gif **Marine Turtle Newsletter**

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Turtle Bytes is delivered to more than 10,000 sea turtle enthusiasts around the world.
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Be an Eco Maniac! ecomaniaccompany.com
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Coral Reef Stars

A Galaxy of Undersea Images
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feedback@seaturtle.org

Stacy,Brian A

From: Brown, Catalina [Catalina.Brown@MyFWC.com]
Sent: Thursday, July 22, 2010 2:29 PM
Subject: Fish Kill Hotline Report 7/22/2010

Attachments: Picture (Device Independent Bitmap) 1.jpg

Picture (Device Independent Bi...

7/20/2010

Haines - Polk County - Hotline Call – FWRI Avian staff received a report of several dead ducks in Hack Lake. During their investigation they observed approximately 150 dead fish, mostly bluegill and red ear sunfish. The water color was green and duck weed was observed on the lake surface. FWRI staff is currently analyzing the water samples for an algal bloom.
Suspected Cause - Unidentified (Call ID: 072010_15710)
Referred the call to FWC HAB FWH Avian Group

7/21/2010

Miramar - Broward County - Hotline Call - A concerned citizen contacted us to let us know that one fish was swimming close to the surface in a private pond in the Villas of Renaissance subdivision. The caller explained that the fish appeared to have a sore near the dorsal fin. The report initiator will forward pictures of the animal.
Suspected Cause - Other (Call ID: 072110_15713)

Chipley - Washington County - Hotline Call – We received a report of a fish kill in Crystal Lake. The caller explained that most of the dead fish were blue gill and shell crackers. The water looked normal and there was no evidence of debris or macro algae on the surface. The report initiator also wanted to know if there were any potential issues associated with the sand mining that is currently taking place near the lake, and if that could result in the kill.
Suspected Cause - Low Dissolved Oxygen (Call ID: 072110_15714) - - - (Group Report ID # 15711)
Referred the call to Washington County Parks & Recreation

Miami - Dade County - Hotline Call – An angler contacted us for identification of a fish that he believed to be a northern pike. Pictures of the fish will be forwarded for potential identification.
Info Request - (Call ID: 072110_15716)

Palatka - Putnam County - Hotline Call – A concerned citizen contacted us to find out if there were any potential health issues associated with the consumption of fish caught in the SJR.
Info Request - (Call ID: 072110_15717) - - - (Group Report ID # 14951)
Referred the call to DOH

St Augustine - St. Johns County - Hotline Call – We received a report of a fish kill in the FWC fish management area near Stetson Road.
Suspected Cause - (Call ID: 072110_15718)

West Palm Beach - Palm Beach County - WWW Form – We received a report of a fish kill in a private pond near Village Boulevard. The caller explained that the vegetation near the pond had also turned brown and died at the same time the fish kill was observed.
Suspected Cause - Unidentified (Call ID: 072110_15719)
Referred the call to FDACS

Chipley - Washington County - Hotline Call - Washington County Department of Health staff contacted us for information pertaining to the fish kill in Crystal Lake.
Suspected Cause - Low Dissolved Oxygen (Call ID: 072110_15720) - - - (Group Report ID # 15711)
Referred the call to Public Works

St Augustine - St. Johns County - Hotline Call - A concerned citizen contacted us to find out if there were any potential health issues associated with the consumption of crabs caught in the SJR
Info Request - (Call ID: 072110_15712) - - - (Group Report ID # 14951)
Referred the call to DOH FL Aquatic Toxins Hotline

The following reports were submitted to BP's Horizon call center, a wildlife hotline set up in response to the oil spill. The calls were forwarded to FWH as a courtesy and to other agencies for follow-up. The following is a summary of these reports. FWH staff

does not confirm species ID unless samples are received at the FWRI FWH necropsy lab.

Panama City - Bay County - BP Event Horizon Call-Center – Two unidentified fish were reported dead near the Front Road Beach Access #63. No evidence of oil.
Suspected Cause - Unidentified (Call ID: 072110_15715)

The following reports from BP's Horizon call center were not followed up by FWH staff:

DATE CITY TYPE SPECIES NUMBER DEAD GPS
07/20/2010 Unknown Bird Loon 0 lat: 30.09012
long: 85.67168
07/21/2010 Tallahassee Bird Unknown 0 lat: 30.334
long: 87.301
07/21/2010 Eastside Bird Loon 0
07/21/2010 Panama City Bird Laughlin Gull 0
07/21/2010 Destin Bird Seagull 1 lat: 30.21.819
long: 8614.228
07/21/2010 N/A Reptile Baby Sea Turtle 0
07/21/2010 Pensacola Bird Unknown 1 lat: 30.270017 ,
long: 87.543833
07/21/2010 Panama City Bird Unknown 1
07/21/2010 Perdido Key Bird Cormorant 0 lat: 30.30970
long: 87.36699
07/21/2010 Panama City Bird Loon 0 lat: 29.598243
long: 85.52107
07/21/2010 Pensacola Beach Fish Shark Sucker 1 lat: 30 19.610 ,
long: 87 09.812
07/21/2010 N/A Bird Laughing Gull 0 lat: 30.24883 ,
long: 87.68942
07/21/2010 Panama City Bird Unknown 0
07/21/2010 Fort Walton Beach Turtle Turtle Egg 0 lat: 30.39710
long: 86.59781
07/21/2010 Orange Beach Bird Unknown 0
07/21/2010 Perdido Key Bird Unknown 0 lat: 30 19.509
long: 87 10.881

NOTE: The above summaries are distributed by the Fish and Wildlife Health group (FWH) at the Fish and Wildlife Research Institute of the Florida Fish and Wildlife Conservation Commission. The summaries account for fish and wildlife health-related communications received by FWH via the statewide Marine Fish Kill Hotline (1-800-636-0511), through website reports submitted to the FWRI fish kill web page (http://research.myfwc.com/fishkill/submit.asp , or direct phone/email contact during the specified period. The summary is intended to 1) provide a timely source of information regarding fish and wildlife health events to Florida agency individuals who are responsible for response and 2) facilitate communication among these individuals in order to direct response activity and appropriately address associated public concern. While every practical step has been taken to make the above summary accurate and informative, the need for rapid distribution precludes extensive review. Reports are summarized as they are made to FWH staff with limited interpretation and do not necessarily reflect the observations of scientifically trained individuals. Unless otherwise specified, FWH has not verified any of the above accounts through direct observation. Questions, corrections, and requests regarding the above summary should be made to the original sender.

Catalina E. Brown
Biological Scientist, M.S.
Fish Kill Hotline Coordinator
Fish & Wildlife Health
Florida Fish and Wildlife Research Institute
100 Eighth Avenue Southeast,
St. Petersburg, Fl 33701-5020
Phone: (727) 896-8626 ext. 3106

Fish Kill Hotline: (800) 636- 0511
Climate Change Communications and Outreach Team
Catalina.Brown@myfwc.com

Please consider the environment before printing this e-mail.

Stacy,Brian A

From: Sara.McNulty@noaa.gov
Sent: Thursday, July 22, 2010 11:55 PM
To: HoumaICC MMST; MobileICC MMST; Wendy.Teas@noaa.gov; Brian Stacy; _NMFS SER Emergency Consult; Kristy Long; Blair Witherington
Cc: Phil.Williams@noaa.gov
Subject: Sea Turtle Deputy

Hi Everyone,

Just wanted to let you know that I'm rotating out. Phil Williams will be serving in the Sea Turtle Deputy Position in Houma for the next 2 weeks. He will be carrying the sea turtle cell phone and can be reached at 985-860-5430.

See you in 2 weeks!
Sara

Stacy,Brian A

From: Michael Ziccardi [mhziccardi@ucdavis.edu]
Sent: Thursday, July 22, 2010 11:59 PM
To: Sara.McNulty@noaa.gov
Cc: HoumaICC MMST; MobileICC MMST; Wendy.Teas@noaa.gov; Brian Stacy; _NMFS SER Emergency Consult; Kristy Long; Blair Witherington; Phil.Williams@noaa.gov
Subject: Re: Sea Turtle Deputy

Thx Sara. Great work!

Mike

On Jul 22, 2010, at 8:54 PM, Sara.McNulty@noaa.gov wrote:

> Hi Everyone,
>
> Just wanted to let you know that I'm rotating out. Phil Williams will be serving in the Sea Turtle Deputy Position in Houma for the next 2 weeks. He will be carrying the sea turtle cell phone and can be reached at 985-860-5430.
>
> See you in 2 weeks!
> Sara

****
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E: mhziccardi@ucdavis.edu
www.owcn.org

Stacy,Brian A

From: Pam Yochem [PYochem@hswri.org]
Sent: Sunday, July 25, 2010 6:54 PM
To: Stacy,Brian A
Subject: RE: Sea turtle research

Hi Brian,
Have you had a chance to think about the research ideas we talked about on the phone? I need to get something out tomorrow.
Thanks!
Pam

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Stacy,Brian A

From: DANIEL,HEATHER [htdaniel@UFL.EDU]
Sent: Tuesday, July 27, 2010 11:27 AM
To: (mark.flint@myfwc.com); Anderson,Peter A; Behringer,Donald C,JR; Bonde, Robert K; Courtney,Charles H,III; deWit, Martine; Erlacher-Reid,Claire; Farina,Lisa Lee; Francis-Floyd,Ruth; Harvey,John W; Isaza,Ramiro; Jacobson,Elliott R; Kane,Andrew S; Larkin,Iskande V; Mcguire,Peter M; Petty,B Denise; Randy Wells (rwells@mote.org); Reep,Roger L; Romero,Carlos H; Samuelson,Don A; Sheppard,Barbara J; Stacy, Brian; Stacy,Nicole Indra; Walsh,Michael T; WELLEHAN,JAMES FRANCIS JR; Yanong,Roy P
Subject: FW: BP and Academic Freedom

Attachments: image001.jpg; image002.gif

image001.jpg (30 KB) image002.gif (3 KB)

From: Francis-Floyd,Ruth
Sent: Tuesday, July 27, 2010 9:51 AM
To: DANIEL,HEATHER
Subject: FW: BP and Academic Freedom

Heather,

Please forward to our faculty as general information.

Thank-you,

ruth

From: Frazer,Tom K
Sent: Tuesday, July 27, 2010 9:30 AM
To: Barber,David S; Bjorndal,Karen Anne; dean@coastal.ufl.edu; Delfino,Joseph J; Denslow,Nancy D; denslow@ufl.edu; Fennelly,Kevin; Ruth Francis-Floyd; Francis-Floyd,Ruth; Frederick,Peter C; Gray,Gregory C; sholland@ufl.edu; James,Margaret O; Jaeger,John M; Sobha Jaishankar; Kane,Andrew S; Martin,Jonathan Bowman; Mayer,Brian M; Mills,Jon L; Morris,John Glenn; Ogram,Andrew V; Osenberg,Craig W.; Otwell,Walter S; Roberts,Stephen M; Sheng,Yeayi P; Sheremet,Alex; Spranger,Michael S; Stepp,John Richard; Valle-Levinson,Arnoldo; Zimmerman,Andrew R
Cc: Havens,Karl; Frazer,Tom K

Subject: BP and Academic Freedom

Thanks to Jon Mills for providing this recent article addressing the issue of oil spill related research activities and academic freedom.

Tom

Newsletter banner

The following piece by AAUP president Cary Nelson--about BP's impact on academic freedom following the Gulf oil spill-- was published in *Inside Higher Ed* on Thursday, July 22.It was followed by interviews with the BBC, the Associated Press, and United Press International. Stories quoting the AAUP president and citing the organization then appeared in over 2,000 media outlets in such countries as Australia, Britain, Canada, Greece, France, Khazakstan, and New Zealand.

BP and Academic Freedom
On Friday, July 16, Ben Raines, a reporter for Mobile, Alabama's *Press-Register*, published a story detailing extensive efforts by BP to employ scientists engaged in (or likely to engage in) research about the massive oil spill in the Gulf of Mexico. *Inside Higher Ed* has since conducted independent interviews for its own coverage. The contracts offered by the giant company, according to both sources, restrict the scientists from publishing research results, sharing them with other scientists, or even talking about them for as long as three years, a serious restraint in the midst of an ongoing crisis.

Both during the immediate crisis and for an extended period as government leaders and the courts figure out how to respond to the Gulf tragedy, the work these scientists do will essentially belong to BP, which will be free to suppress it or characterize it in any way it chooses. Faculty members under contract to BP, meanwhile, would be unable to testify against the company in court and would be available to testify on the company's behalf. Several faculty members in the area have confirmed to the American Association of University Professors that they have been offered contracts by BP in exchange for restrictive confidentiality clauses. A notably chilling provision directs contracted scientists to communicate through BP's lawyers, thus raising the possibility that research findings will be constrained by lawyer-client privilege.

The oil spill is not only a catastrophic economic and environmental disaster for the Gulf region; it also has major implications for energy policy in both the United States and the rest of the world. The ability to share research results promptly and freely is not only a basic tenet of academic freedom; in this case, it is also critical to the health of the region and the world. While more investigative work is needed, the very prospect of an interested corporation worth billions of dollars blocking the free exchange of university research and controlling the work scientists choose to do is deeply disturbing. If knowledgeable scientists cannot testify in court, the ability of injured parties to win just compensation is also jeopardized. But the long-term threat to American society is still more grave: we need independent faculty voices, perhaps more so now — in a knowledge-based society — than ever before.

In its founding 1915 Declaration, the AAUP warned of the "danger of restrictions upon the expression

of opinions" that "call into question the moral legitimacy or social expediency of economic conditions or commercial practices in which large vested interests are involved." Our 2004 "Statement on Corporate Funding of Academic Research" establishes the fundamental standard: "Such contracts should explicitly provide for the open communication of research results, not subject to the sponsor's permission for publication."

Universities that prohibit faculty members from doing research that violates this principle, in my view, are protecting academic freedom, not restricting it. Of course in recommending that universities enforce this principle I am going beyond current AAUP policy. The world has changed. The increasing impact of corporate funding on the integrity of faculty research is among the changes higher education must confront. The decision about whether to sign restrictive contracts is not simply a matter of individual choice. It has broad implications for higher education and for the society at large.

At least one university has refused an institution-wide contract with BP for exactly these reasons. Many individual faculty members are declining BP offers or withdrawing from existing ones. Perhaps this is the time to reexamine the increasing role corporations are playing in funding and controlling university research. Universities should work with faculty to set ethical standards for industry collaboration that champion the public interest and discourage faculty members from selling their freedom of speech and research to the highest bidder.

Meanwhile, we urge other news media to join the effort to interview area scientists, gather copies of BP contracts, and publish the results. This story needs to be told in full. Universities should also consider where the public interest lies before permitting faculty members to sign contracts that limit the free exchange of information and bar public testimony. BP itself should certainly invest in research related to the spill, but it should do so without curtailing either faculty members' free speech rights or their academic freedom. To do otherwise could prove hazardous to all of our health.

The AAUP Online is an electronic newsletter of the American Association of University Professors. Learn more about the AAUP. Visit us on Facebook. Follow us on Twitter.

http://www.aaup2.org/newsroom/newsletters/treefoot.gif

Stacy,Brian A

From: Flanagan, Joe [jflanagan@houstonzoo.org]
Sent: Monday, August 02, 2010 3:31 PM
To: Stacy,Brian A; Howard, Lauren
Subject: RE: Vet support at Gulf World

Brian, the week of the 30th looks best to me right now. We have 1 potential issue I need to clear before confirming. The week of the 23rd is also possible, but I have a commitment that I should make every effort to keep. I'll be back with you when I find out about the week of the 30th.
Joe

Joseph P. Flanagan DVM
Director of Veterinary Services
Houston Zoo, Inc.
1513 Cambridge (formerly N. MacGregor)
Houston, TX 77030
713-533-6628

-----Original Message-----
From: Stacy,Brian A [mailto:bstacy@ufl.edu]
Sent: Monday, August 02, 2010 2:13 PM
To: Howard, Lauren; Flanagan, Joe
Subject: Vet support at Gulf World

Hi Joe and Lauren,

I am still having to provide a vet for Gulf World, Panama City for incoming captured oiled juvenile turtles. They have a contract vet starting on the 5th, Pam Govett, but are requesting an additional person. Please let me know if either of you would be interesting help out there for a week - am looking to fill the weeks of the 16th, 23rd or 30th.

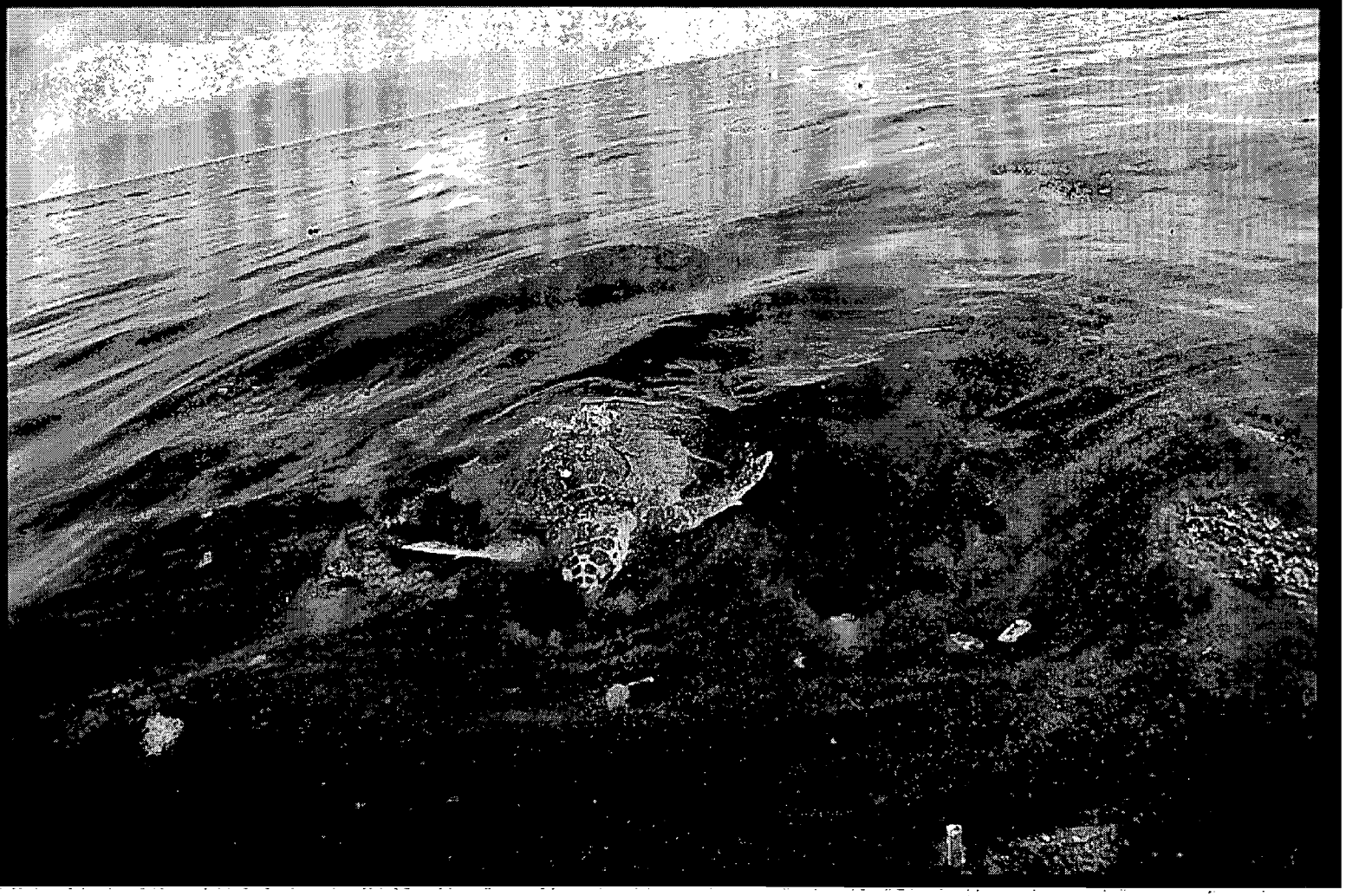
Thanks,

Brian

Brian A Stacy, DVM, PhD, DACVP
NOAA/NMFS/Protected Resources
Marine Animal Disease Laboratory
University of Florida, College of Veterinary Medicine Aquatic Animal Health Program

Gulf oil spill containment efforts underway

In the Gulf of Mexico and along the coastline, cleanup and containment efforts continue after the explosion of the Deepwater Horizon oil rig April 20.



May 5

A sea turtle surfaces to feed on Portuguese Man-O-War, contaminated with oil due to the spill from the Deepwater Horizon rig.

Carol Guzy-The Washington Post

Related Content:

- Gallery: Oil spills throughout history
- Article: Oil rig that had explosion sinks; 11 still missing
- Washington Post Photo Store
- More Photos and Videos

Sea Turtle Identification Key

Typical adult colors are described here; colors may differ, particularly in hatchlings and juveniles

- Leathery, no scutes; Longitudinal dorsal ridges
  - **Leatherback** *Dermochelys coriacea*
    - Carapace: dark gray/black with white spots; Plastron: white with dark blotches
- Hard carapace (shell) with large scutes (shell plates)
  - One pair prefrontal scales; no preocccular scales; serrated lower jaw
    - Usually 4 costal (lateral) scutes; first costal scute does not touch nuchal; usually 4 inframarginal scutes without pores
      - **Green** *Chelonia mydas*
        - Carapace: brown with radiating streaks; Plastron: white to yellow
  - Two pairs prefrontal scales
    - Usually 4 costal (lateral) scutes; first costal scute does not touch nuchal
      - Usually 4 inframarginal scutes without pores
        - **Hawksbill** *Eretmochelys imbricata*
          - Carapace: tan, brown and black with random streaks; overlapping scutes; Plastron: cream with dark blotches
    - Usually 5 or more costal (lateral) scutes; first costal scute touches nuchal
      - Usually 3 inframarginal scutes without pores
        - **Loggerhead** *Caretta caretta*
          - Carapace: red brown/dark brown; first costal scute is very small; Plastron: yellow/orange
      - Usually 4 inframarginal scutes with pores
        - Usually 5 costal scutes
          - **Kemp's Ridley** *Lepidochelys kempii*
            - Carapace: gray to light olive green; round; Plastron: white/yellow
        - Usually 6 or more costal scutes
          - **Olive Ridley** *Lepidochelys olivacea*
            - Carapace: gray to olive green; number of costal scutes may be asymmetrical; Plastron: white/yellow

seaturtle.org

Leatherback, *Dermochelys coriacea* (**Spanish:** Baula, Tortuga Laud, Tora; **French:** Tortue Luth; **Portuguese:** Tartaruga Gigante, Tartaruga-de-couro)
Adult Size Range: Length: 165-190+ cm/ 65-75+ in; **Weight:** 400-500 kg females, males to 900 kg/ 885-1985 lb
Range: All oceans, sub-arctic to tropical; mainly pelagic oceanic (surface dwelling in the open ocean) but found in bays and over continental shelves.

Green, Black*, *Chelonia mydas* (**Spanish:** Tortuga Verde, Tortuga Blanca; Tortuga Negra, Prieta; **French**: Tortue Verte; **Portuguese:** Tartaruga Verde, Aruanã)
Adult Size Range: Length: 90-120 cm/ 35-45 in; **Weight:** 120-230 kg/ 265-510 lb
Range: All subtropical and tropical seas; bays and coastal waters; black form restricted to eastern Pacific Ocean; pelagic oceanic (surface dwelling in the open ocean) small juveniles; benthic neritic (bottom dwelling in coastal waters) large juveniles and adults
*The status of the black turtle or eastern Pacific green turtle as *Chelonia agassizii* or *C. mydas agassizii* as a distinct species or subspecies is not supported, although it is often treated as such.

Flatback, *Natator depressus* (**Spanish:** Kikila, Tortuga Franca Oriental; **French:** Chelonée à dos Plat; **Portuguese:** Tartaruga de Casco Achatado)
Adult Size Range: Length: to 100 cm/ 40 in; **Weight:** to 90 kg/ 200 lb
Range: Tropical coastal Australia, including the waters up to Irian Jaya, Papua New Guinea and Java; pelagic neritic (surface dwelling in coastal waters)

Hawksbill, *Eretmochelys imbricata* (**Spanish:** Tortuga Carey; **French:** Tortue Imbriquée, Tortue Caret; **Portuguese:** Tartaruga-de-pente, Tartaruga de Escamas, Tartaruga Bico de Falcão, Tartaruga Verdadeira)
Adult Size Range: Length: 90-110+ cm/ 35-45+ in; **Weight:** 60-80 kg/ 130-175 lb
Range: All oceans; tropical waters, rarely subtropical; reef areas; pelagic oceanic (surface dwelling in the open ocean) small juveniles; benthic neritic (bottom dwelling in coastal waters) large juveniles and adults

Loggerhead, *Caretta caretta* (**Spanish:** Caguama, Amarilla, Cabezona, Tortuga Boba; **French:** Caouanne; **Portuguese:** Tartaruga Boba, Tartaruga Comum, Tartaruga Careta, Tartaruga Cabeçuda, Tartaruga amarela, Careba Dura, Careba Amarela)
Adult Size Range: Length: 90-130 cm/ 35-50 in; **Weight:** 100-180 kg/ 220-400 lb
Range: All oceans; primarily subtropical and temperate waters; often associated with structures (i.e., reefs, wrecks, platforms); pelagic oceanic (surface dwelling in the open ocean) small juveniles; benthic neritic (bottom dwelling in coastal waters) large juveniles and adults

Kemp's Ridley, *Lepidochelys kempii* (**Spanish:** Tortuga Lora, Cotorra; **French:** Tortue de Kemp; **Portuguese:** Tartaruga de Kemp)
Adult Size Range: Length: to 70 cm/ 28 in; **Weight:** 35-50 kg/ 80-110 lb
Range: Gulf of Mexico, eastern USA, rarely in eastern North Atlantic; coastal, primarily subtropical and temperate waters; pelagic oceanic (surface dwelling in the open ocean) small juveniles; benthic neritic (bottom dwelling in coastal waters) large juveniles and adults

Olive Ridley, *Lepidochelys olivacea* (**Spanish:** Tortuga Golfina, Tortuga Olivacea, Parlama; **French:** Tortue Olivâtre; **Portuguese:** Tartaruga Oliva, Tartaruga Olivácea, Tartaruga Pequena, Xibirro)
Adult Size Range: Length: 70-80 cm/ 28-32 in; **Weight:** 35-60 kg/ 80-130 lb
Range: Pacific, Indian and Atlantic Oceans, rarely in eastern North Atlantic; pelagic oceanic (surface dwelling in the open ocean); most often in tropical waters

Sources:

Seaturtle.org

Pritchard, P. C. H. and Mortimer, J. A. (1999) Taxonomy, External Morphology, and Species Identification. pp. 21-38. In: Eckert, K.L., K.A. Bjorndal, F.A. Abreu-Grobois, and M. Donnelly (Editors). 1999. Research and Management Techniques for the Conservation of Sea Turtles. IUCN/SSC Marine Turtle Specialist Group Publication No. 4. (for further details see http://www.iucn-mtsg.org/publications.htm)

Wyneken, J. The Anatomy of Sea Turtles. 2001. U.S. Department of Commerce NOAA Technical Memorandum NMFS-SEFSC-470, 172 pp.

Sea turtle figures used by permission of the Marine Turtle Specialist Group (iucn-mtsg.org); Peter Pritchard and Jeanette Wyneken
Illustrations by Tom McFarland and Dawn Witherington

2010-09519OPR0001412CJ

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July 22, 2010

Dr. Stacy,

Dr. Dave Rotstein has suggested that you might be able to create a communication piece from the gulf disaster on turtles. We think that "Veterinary Pathology" would be the right choice for an early report on the current status as well as on a follow-up with time. We (the collective we) now have over 6000 subscriptions and are the number one ranked veterinary pathology journal. We can fast track your manuscript getting into PubMed within 6 weeks of acceptance and into print within 4 months of acceptance. We believe that our international reach would be very important for such a manuscript. Any communication mode from an invited commentary (like on what the sea animal evaluation consists of), to a brief communication (the activities and the preliminary findings) to a full length manuscript would be very much appreciated by all of our members. We would also really like to get an image for the cover from the gulf oil disaster. We now have the capability to get publicity for a very carefully selected manuscript through SAGE. So an early manuscript on the disaster would really highlight the leading role that veterinary pathology experts are providing.

I would sincerely appreciate hearing your thoughts on this request.

Carl Alden
Editor, Vet Path

Common Sea Turtle Medicines and Doses

Medicine	Dosage	Frequency	Route
Amikacin	2.5-3 mg/kg	E3D	IM
Baytril	5-10 mg/kg	ED	Oral
	5 mg/kg	E 2 days	IM
Ceftazidime	20mg/kg	E3D for 10 doses min.	IM
Cisapride	0.5-2 mg/kg	ED	Oral
Clindamycin	5mg/kg	ED	Oral
Droncit (Praziquantel)	25mg/kg	3x in One Day Once	Oral or IM
Fluconazole, Capsule	5mg/kg	ED	Oral
Fluconazole, Injectable	21 mg/kg once, then 10 mg/kg 5 days	21mg/kg 1x; E5D for 10mg/kg, 1 month min.	IM
LRS without & with 5% Dextrose Fluids	1-3% Body Weight	ED to E3D	IP
Metacam/Meloxicam	0.1-0.2 mg/kg	ED	IM or oral
NaCl Fluids		ED to E3D	IP

F VIDEO NOTES – July 20, 2010

Russell Smith, the new Deputy Assistant Secretary for International Fisheries, was in attendance. Mr. Smith's chief responsibilities will be to serve as the new U.S. government commissioner for the International Commission for the Conservation of Atlantic Tunas (ICCAT). He'll also provide high-level coordination among all of the tuna regional fishery management organizations.

ACTION ITEMS

Next NOAA Fisheries Leadership Council Meeting (ACTION – ALL; Due July 23) - Please send requests for agenda items to John Oliver and copy Mark Holliday for the next Leadership Council Meeting. It will take place in St. Petersburg, Florida on August 31-Sept 2, at the Hilton Bayfront, 331 1st Street South, St. Petersburg (travel days on August 30th and September 3rd). A room block is available at the government rate of $101/night, under the name "US Department of Commerce-NOAA Fisheries" and is being held open until **July 30th.** Reservations can be made by calling 727-894-5000.

Active Directory Consolidation (ACTION- ALL; Due April 30, 2011) - The NMFS CIO office sent a memo on July 22, 2010, to the regions on the active directory consolidation project. This will enhance security, allow single sign-in capability and increase our ability to collaborate. The kick-off for the project will take place the week of July 26th and all Regions and Science Centers are required to cooperate in the consolidation of all Active Directory Forests and Domains into the NMFS Enterprise Active Direct Domain by April 30, 2011. For more information please contact Larry Tyminski or Michael Davis at 301-713- 2372.

INFORMATION ITEMS

International Institute of Fisheries Economics and Trade - NMFS staff from International Affairs, the Office of Policy, and Science and Technology joined regional staff from the Southwest, Alaska, and Northeast to participate in the biennial meeting of the International Institute of Fisheries Economics and Trade (IIFET) from July 13-16 in Montpellier, France. Following on July 17 was Policy Day, a forum to discuss reform of the Common Fisheries Policy for the European Union. View the agenda and presentation abstracts for the meeting and Policy Day.

Comment Period Closed for Pacific Trawl Rationalization Proposed Rule - The proposed rule for Amendment 20 to the Pacific Groundfish Fishery Management Plan, which includes provisions to place the trawl fishery under a catch share program, closed its public comment period last week on July 12. The Trawl Rationalization program will be implemented in January 2011. Stay updated on the Pacific Trawl Rationalization Program.

Turtle Talk - Last week NOAA Fisheries National Sea Turtle Coordinator Barbara Schroeder was a featured guest and Connie Barclay was on the scene to assist in the first Turtle Talk event. "Turtle Talk" is the first event to bring together the lead agencies involved in turtle protection efforts in one forum to discuss the status of sea turtles affected by the Deepwater Horizon oil

spill. The Unified Area Command is co-hosting Turtle Talk with Audubon Nature Institute, bringing together sea turtle experts from National Oceanic and Atmospheric Administration, the U.S. Fish and Wildlife Service and the National Park Service for a roundtable discussion. Click here to view the Turtle Talk website.

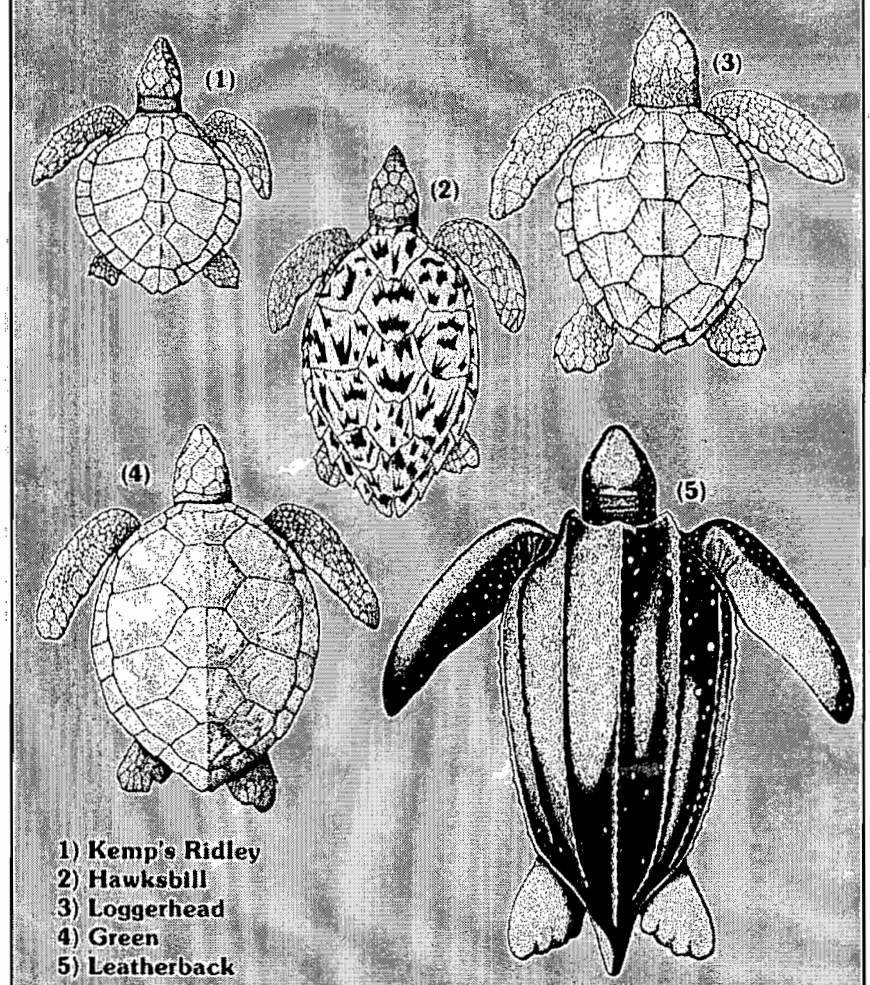
NOAA ship *David Starr Jordan* to be decommissioned in Seattle - On August 3, 2010, NOAA will decommission the *David Starr Jordan* after 44 years of service. The ship has logged over a million miles while studying the biological and physical oceanography of the southwestern U.S. coast and the eastern tropical Pacific. The *David Starr Jordan* was also an integral part of the marine mammal surveys conducted by the Protected Resources Division of NMFS Southwest Fisheries Science Center, including the Stenella Abundance Research Project (STAR), a three-year study designed to assess the status of dolphin stocks which have been taken as incidental catch by the yellowfin tuna purse-seine fishery in the eastern tropical Pacific. Read more about the *David Starr Jordan*'s activities and history.

False Killer Whale Take Reduction Team - Last week the False Killer Whale Take Reduction Team (TRT) concluded a series of meetings in Hawaii. The team was convened to draft a plan for reducing serious injuries and mortalities of false killer whales that occur incidental to commercial fishing activities. The TRT delivered a draft plan to the Pacific Islands Regional Office this week. Click here to view the TRT schedule and other information about False Killer Whales.

NOAA Science Camp 2010 - This week and next week, the Alaska Fisheries Science Center coordinates the annual NOAA Science Camp in Seattle. For two weeks, 50 middle-school-aged campers will work toward determining the cause and impacts of a hypothetical environmental incident - a fish kill discovered on a Puget Sound beach. The campers will work in teams on a variety of hands-on educational activities, aligned to national and Washington State standards, which highlight techniques used by NOAA scientists in their work. Read more about this outreach project at AFSC.

Gold Ray Dam Removal on Hold - Last week a federal judge issued a preliminary injunction to halt removal of the Gold Ray Dam, which is located on the Rogue River in Oregon, in response to complaints filed by local residents opposed to the removal. The Rogue River Restoration is one of NOAA's habitat restoration projects funded by the American Recovery and Reinvestment Act. Removal of the Gold Ray Dam, a 38-foot-high dam that spans the mainstem Rogue River, will restore free-flowing conditions and unimpeded migratory fish access to more than 300 upstream miles within the watershed. The judge will hear arguments on Monday, July 26, and the plaintiffs are seeking a permanent injunction on the project. Click here to learn more about the Rogue River Restoration.

QUICK REFERENCE ILLUSTRATIONS

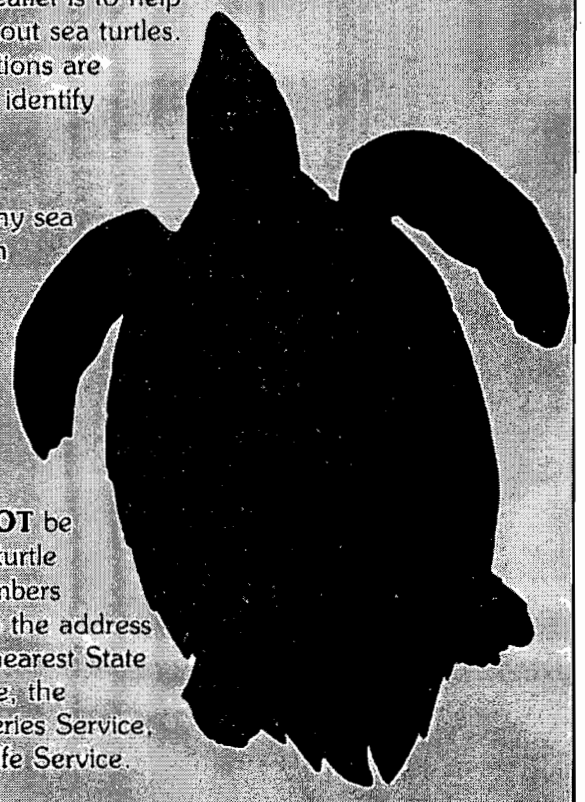


1) Kemp's Ridley
2) Hawksbill
3) Loggerhead
4) Green
5) Leatherback

U.S. GOVERNMENT PRINTING OFFICE: 1991—557-736

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.



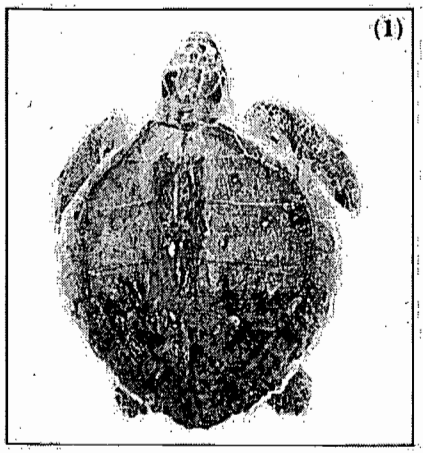
WHAT TO DO: Many sea turtles are tagged with metal or plastic tags usually on the inside edge of the front flippers but sometimes on the rear flippers or even the shell. If you see a tag it should **NOT** be removed (unless the turtle is dead). The tag numbers should be reported to the address on the 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.

2010-00519OPR0001452C1

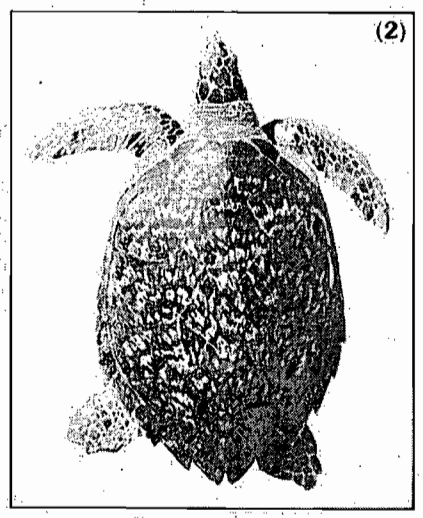
SEA TURTLES of the ATLANTIC and GULF COAST of the UNITED STATES and their status under the ENDANGERED SPECIES ACT (ESA)



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.

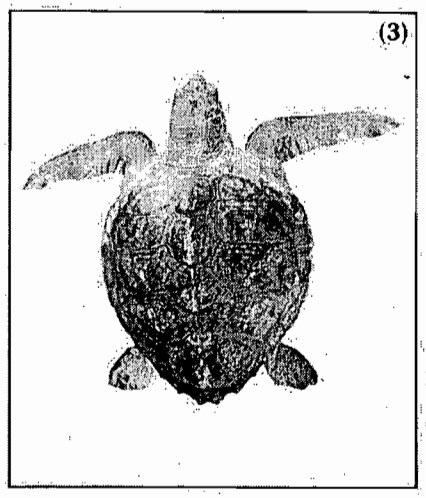
ESA Status: **ENDANGERED**



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)

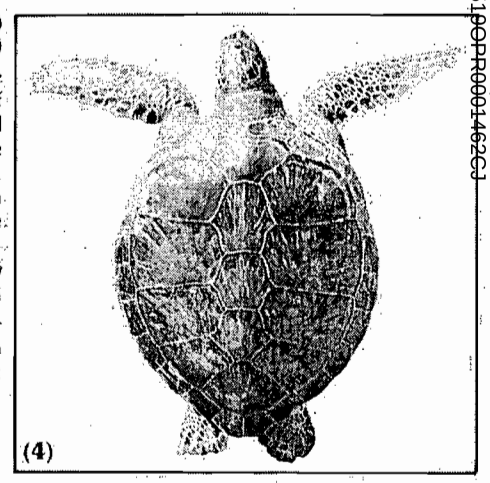
A large reddish-brown sea turtle with a disproportionately large head. Adults range in size from 33-40 inches shell length and weigh 150-400 pounds. This is the most common sea turtle encountered in the southeastern United States. Frequently observed around wrecks, underwater structures, and reefs where it forages on a variety of crabs, jellyfish, and mollusks.

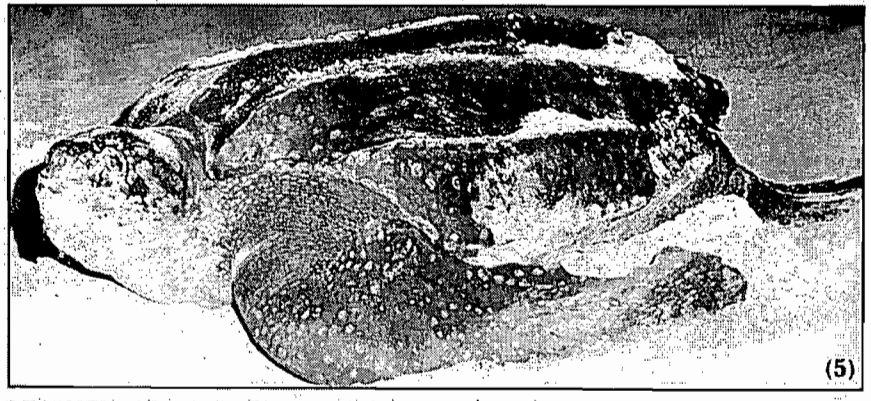
ESA Status: **THREATENED**

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

2010-00519PR00014462C1

Assessment of Sea Turtle Status and Trends: Integrating Demography and Abundance
National Research Council of the National Academy of Sciences

Questions and Answers

Q. Did the U.S. Fish and Wildlife Service participate in or provide material that was used in the development of the National Academy of Sciences Sea Turtle Assessment Report?

A. The decision to seek and fund the National Research Council (NRC) review was made by NOAA's National Marine Fisheries Service (NMFS). Subsequent to that decision, the Service was included to help define the task. The Service participated in early coordination meetings and cooperated to the extent requested by the Committee. On balance, Service input was minimal.

Q. Is it likely that the Service will use any of the recommendations included in the final report by the National Academy of Sciences Sea Turtle Assessment Report? If not, why not?

A. While the Service has not had an opportunity to review the report in detail, it always recognizes and considers the strengths and weaknesses of the scientific data upon which it must make management decisions regarding sea turtles or any listed species. The NRC recommendations are intended to strengthen the scientific basis for decision making. The Service will use the recommendations to the extent feasible and will have to determine what if anything can be accomplished within existing resources and what would require additional appropriations.

Q. What is the status of sea turtles under the Endangered Species Act (ESA)?

A. Of the six sea turtle species that are found in U.S. waters or that nest on U.S. beaches, all are designated as either threatened or endangered under the ESA. The leatherback, Kemp's ridley, hawksbill, olive ridley and green turtles are federally-listed as endangered, and the loggerhead as threatened. On March 16, 2010, the NMFS and the Service jointly proposed to separate the global listing of the loggerhead sea turtle as threatened into 9 Distinct Population Segments (DPSs) and list 7 of those as endangered, while retaining 2 as threatened.

The DPSs that are proposed for reclassification as endangered include the NW Atlantic and North Pacific populations, both of which occur in U.S. waters and have experienced serious declines in nesting numbers over the last decade or two. On June 2, 2010, in response to several requests, the Services extended the comment period for the proposed rule to September 16, 2010, because of the Gulf Oil Spill. We concur with the NRC report concludes that abundance estimates of nesting females by itself is not the best indicator of population dynamics and recommends collecting additional information to improve our understanding of population dynamics in the future.

However, the ESA requires the agencies to make their listing determinations on the best scientific and commercial data available and imposes strict time frames for making such determinations. The nesting female data trends, combined with information about the threats impacting the species, are the best currently available data for these populations and the Service

must proceed to make this current determination based on these data. We will be reviewing any additional data submitted during the public comment period, and make our determination at that time.

Q. What type of work does the Service do internationally for marine turtle conservation and capacity building?

A. Sea turtles are highly migratory and utilize the waters of more than one country in their lifetimes. The 2009 Congressional appropriation of $1.5 million, which leveraged over $2.2 million in matching funds and in-kind donations from other marine turtle stakeholders, allowed the Service to fund 35 innovative marine turtle conservation projects overseas. This funding helps strengthen international cooperation and collaboration on sea turtle research, management practices and conservation efforts by aiding in the assembly of more than 900 sea turtle specialists. To learn more about the Service's international work, visit: http://www.fws.gov/international/DIC/species/marine_turtles/marine_turtle.html.

You can also learn more about marine wildlife through our partnership program, Western Hemisphere Migratory Species Initiative. http://www.fws.gov/international/DIC/WHMSI/pdf/WHMSI%20Migratory%20Species.pdf.

Q. Will the findings and conclusions in the report have any bearing on the recent efforts by the Service to relocate sea turtles necessitated by the Deepwater Horizon Oil Spill?

A. The NRC report was commenced prior to the oil spill and will have no bearing on the Service response to the spill. However, the spill response will delay an in-depth review of the NRC report and will be considered as sea turtle Natural Resources Damage Assessment studies are planned.

Q. Will the NRC report impact the Service's sea turtle conservation and management practices?

A. The NRC report focuses on data gathering, management, and analysis to improve population assessments. Therefore, it will have minimal effect on the ongoing habitat conservation activities and management of threats to sea turtles on nesting beaches in the short run. However, to the extent that we can implement these recommendations and they help us obtain better population assessments in the future, they may help us refine and improve our decisions for management of threats and habitat conservation in the future.

Q. Where can more information on sea turtle recovery efforts by the Service be found?

A. http://www.fws.gov/northflorida/SeaTurtles/seaturtle-info.htm

DRAFT

National Research Council of the National Academy of Sciences
Assessment of Sea Turtle Status and Trends: Integrating Demography and Abundance
Talking Points

Sea turtles are highly migratory species and utilize the waters of more than one country during their lifetimes. Sea turtles are monitored through the multi-partnership efforts of government, universities and non-governmental organizations. Of the six sea turtle species (loggerhead, green, hawksbill, Kemp's ridley, olive ridley and leatherback) that are found in U.S. waters or that nest on U.S. beaches, all are designated as either threatened or endangered under the Endangered Species Act (ESA).

- The National Research Council (NRC) report has just been received and appears to make a number of helpful suggestions and recommendations that could enhance current monitoring, research and management efforts.

- The new report reinforces the U.S. Fish and Wildlife Service's ongoing efforts to improve sea turtle population assessments, data management, education and coordination for the species. The Service has commenced a careful review of the new study and its various recommendations.

- Like all scientific reviews, the NRC report should prove to be a useful addition of scientific information to the existing body of research and knowledge that contributes to the work of the Service and NOAA's National Marine Fisheries Service for the benefit of sea turtles.

- However, it should be noted that nothing in the NRC report invalidates the Service's current work or renders it in any way legally inadequate and should not be interpreted as a legal judgment as to whether the agencies have met their legal requirements under the ESA.

- We will look at incorporating modeling suggestions contained in the report as we develop sea turtle recovery plans, administer sea turtle research permits and implement other sea turtle activities in the future. The agency also needs to bear in mind its current priority response to the biological situation from the Deepwater Horizon Oil Spill.

- The Service will continue working with our partners in our ongoing efforts to conserve and recover sea turtles.

DRAFT

Stacy,Brian A

From: NOAA Communications [Press.Releases@noaa.gov]
Sent: Friday, July 16, 2010 9:34 AM
To: Internalpa.distribution@noaa.gov
Subject: MEDIA ADVISORY: Unified Area Command and Audubon Nature Institute Co-host "Turtle Talk" Roundtable TODAY

NOAA NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
UNITED STATES DEPARTMENT OF COMMERCE

Contact: Connie Barclay
202-441-2398 (cell)

FOR IMMEDIATE RELEASE
July 16, 2010

MEDIA ADVISORY: Unified Area Command and Audubon Nature Institute Co-host "Turtle Talk" Roundtable TODAY

Discussion for News and Online Media -
First Event Bringing Together Major Agencies Involved in Sea Turtle Protection

WHAT: "Turtle Talk" is the first event to bring together the lead agencies involved in turtle protection efforts in one forum to discuss the status of sea turtles affected by the Deepwater Horizon oil spill. The Unified Area Command is co-hosting Turtle Talk with Audubon Nature Institute, bringing together sea turtle experts from NOAA, the U.S. Fish and Wildlife Service and the National Park Service for a roundtable discussion. Additionally, wildlife expert Jeff Corwin will provide a video introduction to the event, sharing his concern for sea turtles.

Media will be able to join the discussion virtually, having the option to ask questions via conference line or participate via a live webcast enabled with a chat function.

WHO: NOAA's national sea turtle coordinator, Barbara Schroeder, National Park Service chief of science and resource management Rick Clark, Fish and Wildlife Service sea turtle expert, Dr. Debby Crouse

Moderated by Karyn Kearney, senior vice president and managing director of Audubon Nature Institute's Audubon Aquarium of the Americas

Video introduction provided by wildlife biologist and NBC and MSNBC's science and environmental expert, Jeff Corwin

WHEN: ***TODAY***, Friday, July 16, 11 a.m. – 12 p.m. CDT

WHERE: This event will take place online at http://turtletalk.deepwaterhorizonresponse.com

Dial-in at (866) 304-5784 domestic and (706) 643-1612 and use passcode # 88759207 or use the live chat function within the Turtle Talk web page to pose questions to our panel.

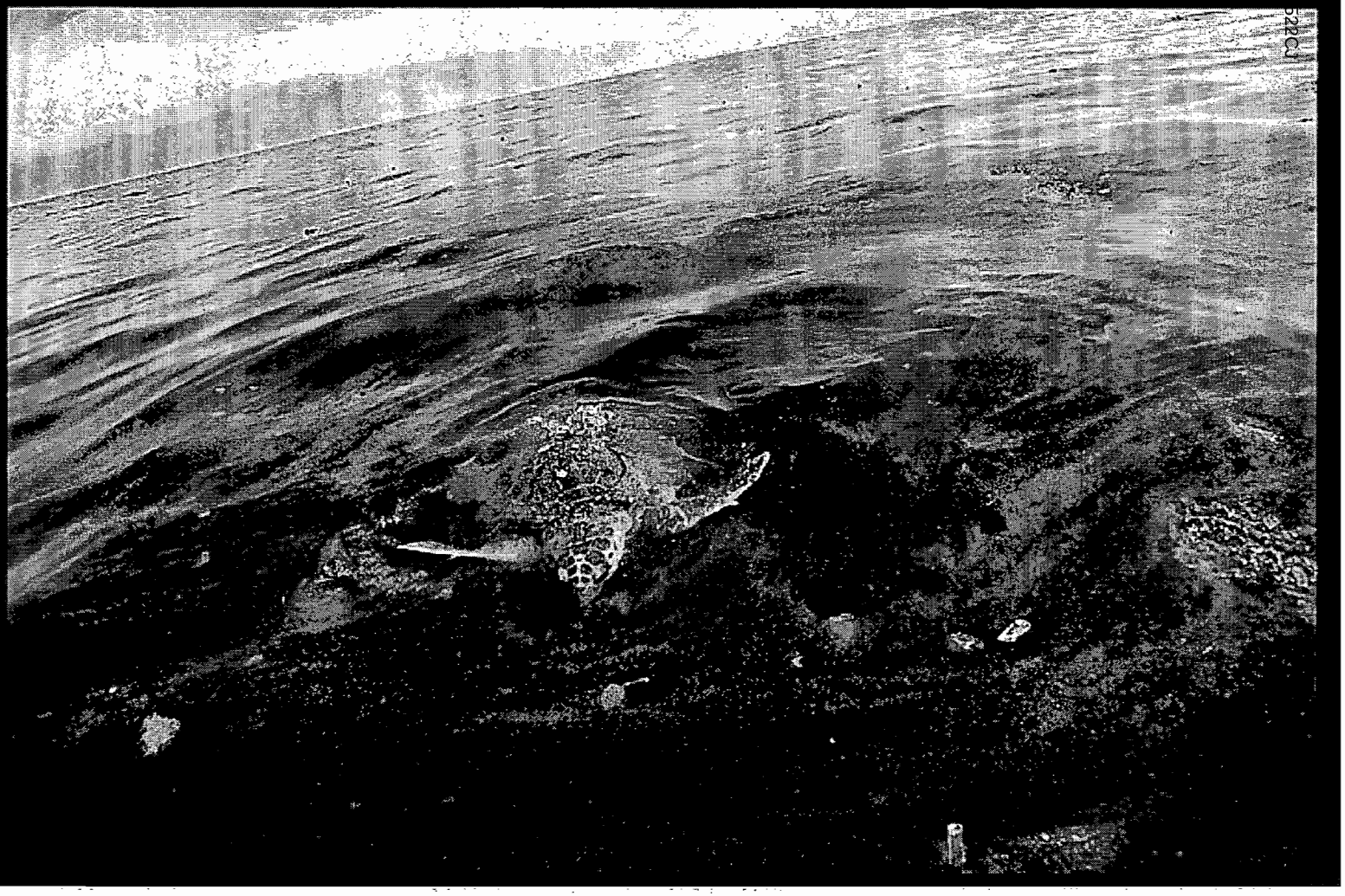
The event will be streamed live from the Audubon Nature Institute's Audubon Aquarium of the Americas in New Orleans. Audubon serves as coordinator for the Louisiana Marine Mammal and Sea Turtle Rescue Program and is responsible for rescuing and rehabilitating sea turtles and marine mammals stranded in Louisiana.

The Unified Command will be live tweeting the event at @Oil_Spill_2010, in addition to posting updates on the Deepwater Horizon Response Facebook page.

- 30 -

Gulf oil spill containment efforts underway

In the Gulf of Mexico and along the coastline, cleanup and containment efforts continue after the explosion of the Deepwater Horizon oil rig April 20.



May 5

A sea turtle surfaces to feed on Portuguese Man-O-War, contaminated with oil due to the spill from the Deepwater Horizon rig.

Carol Guzy-The Washington Post

Related Content:

- Gallery: Oil spills throughout history
- Article: Oil rig that had explosion sinks; 11 still missing
- Washington Post Photo Store
- More Photos and Videos

2010
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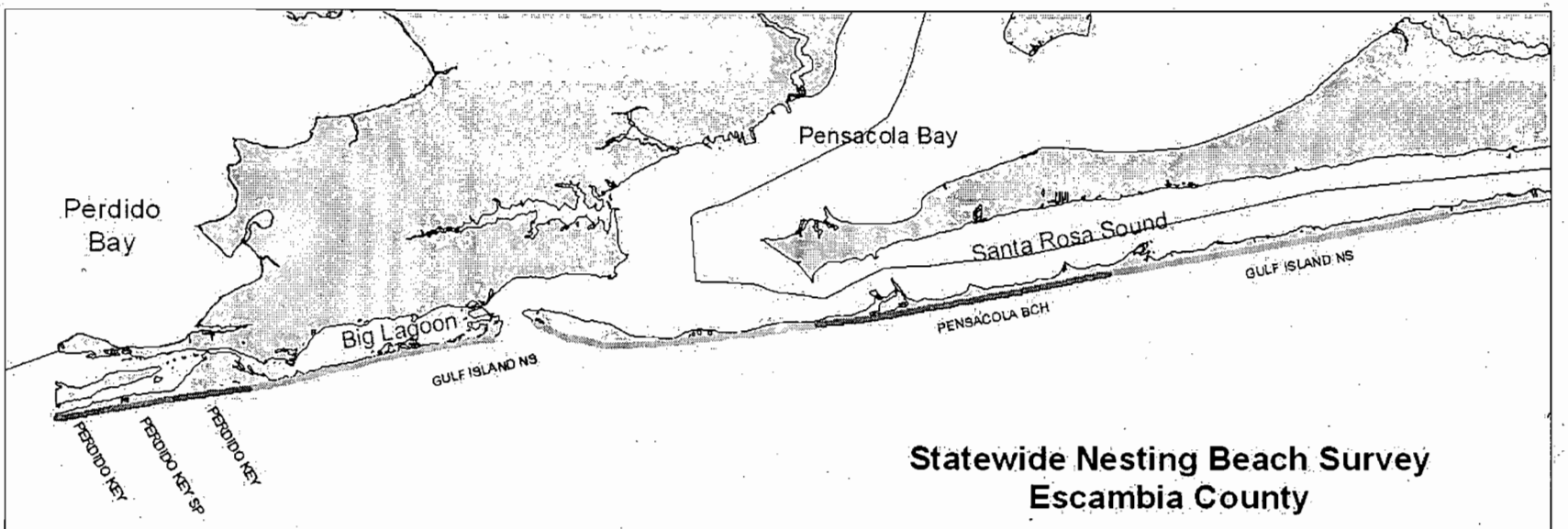
APPENDIX I

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



Statewide Nesting Beach Survey
Escambia County

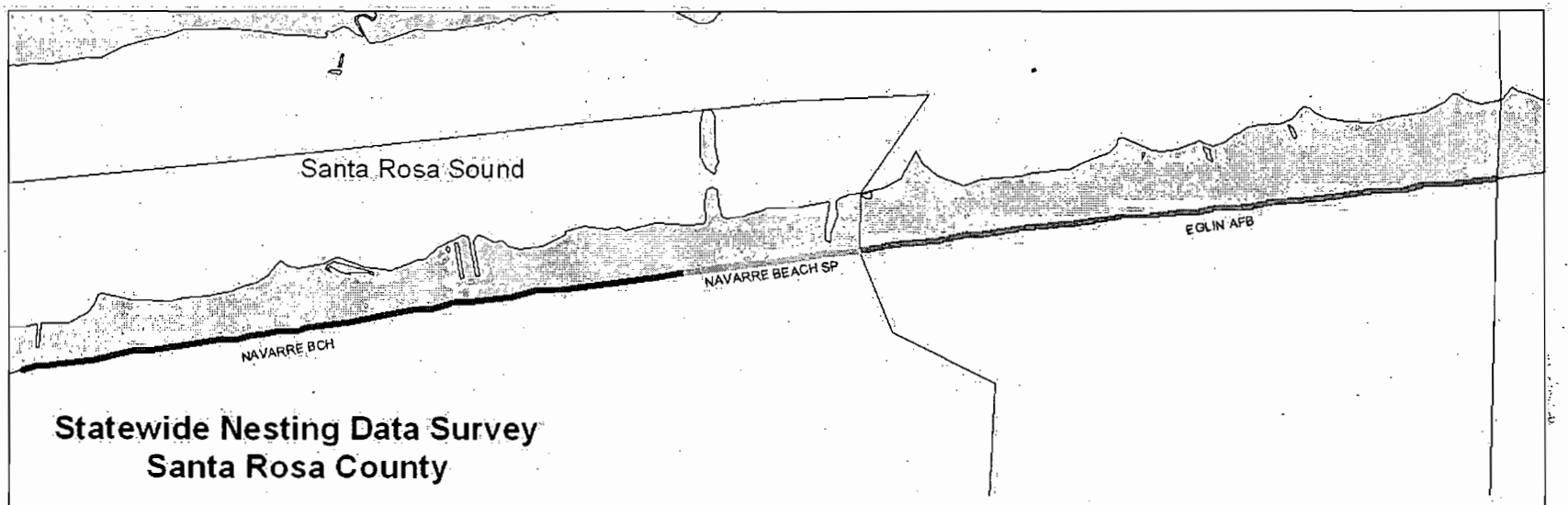
47 Loggerhead Nests in 2009
5 Year Average: 34 nests

Earliest first nest date: 18 May
Average first nest date: 27 June

7 0 7 Kilometers

N

2010-00519OPR0001562CJ



Statewide Nesting Data Survey
Santa Rosa County

8 Loggerhead Nests in 2009
5 Year Average: 5 nests

Earliest first nest date: 29 May
Average first nest date: 5 June

0.9 0 0.9 1.8 Kilometers

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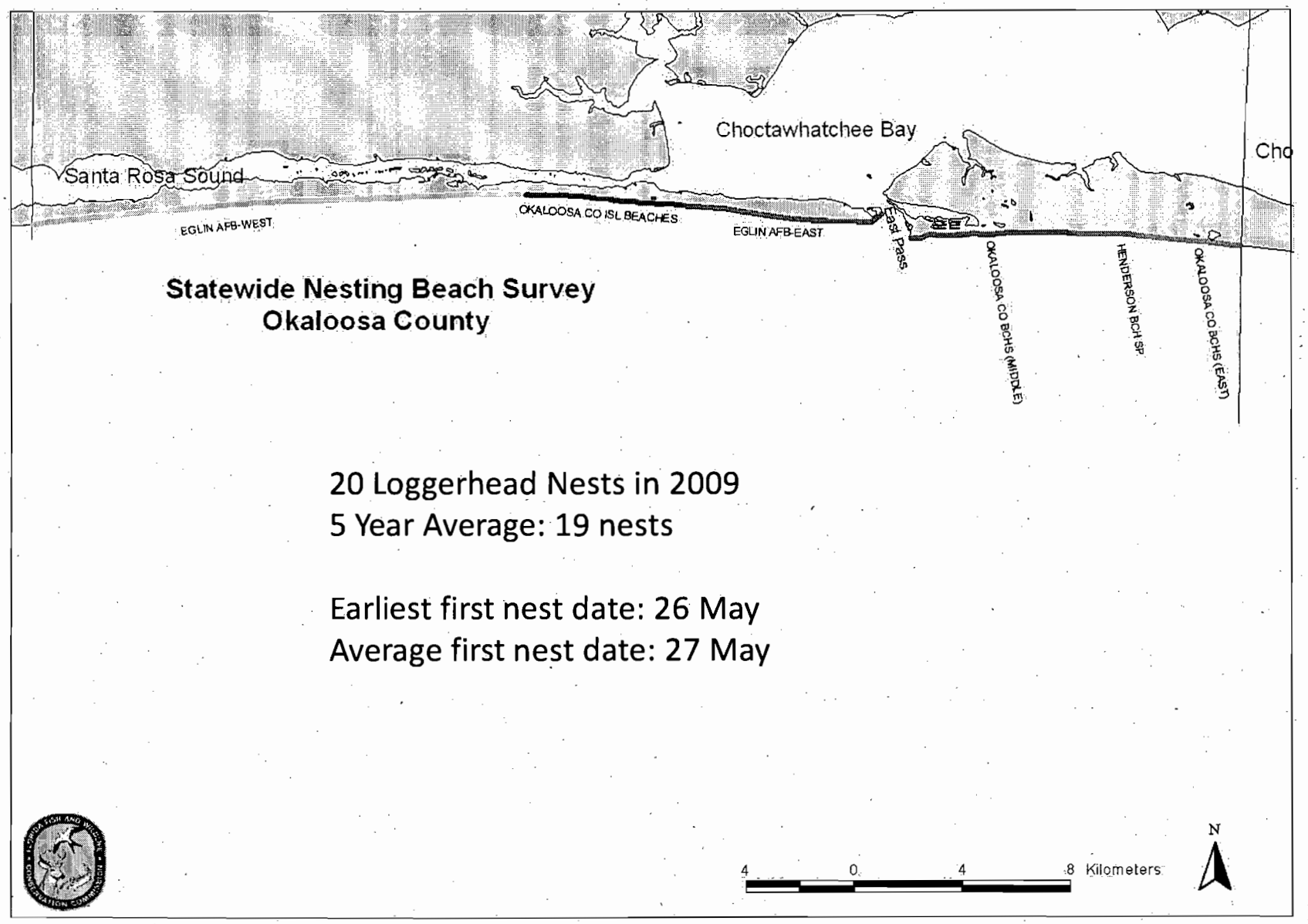
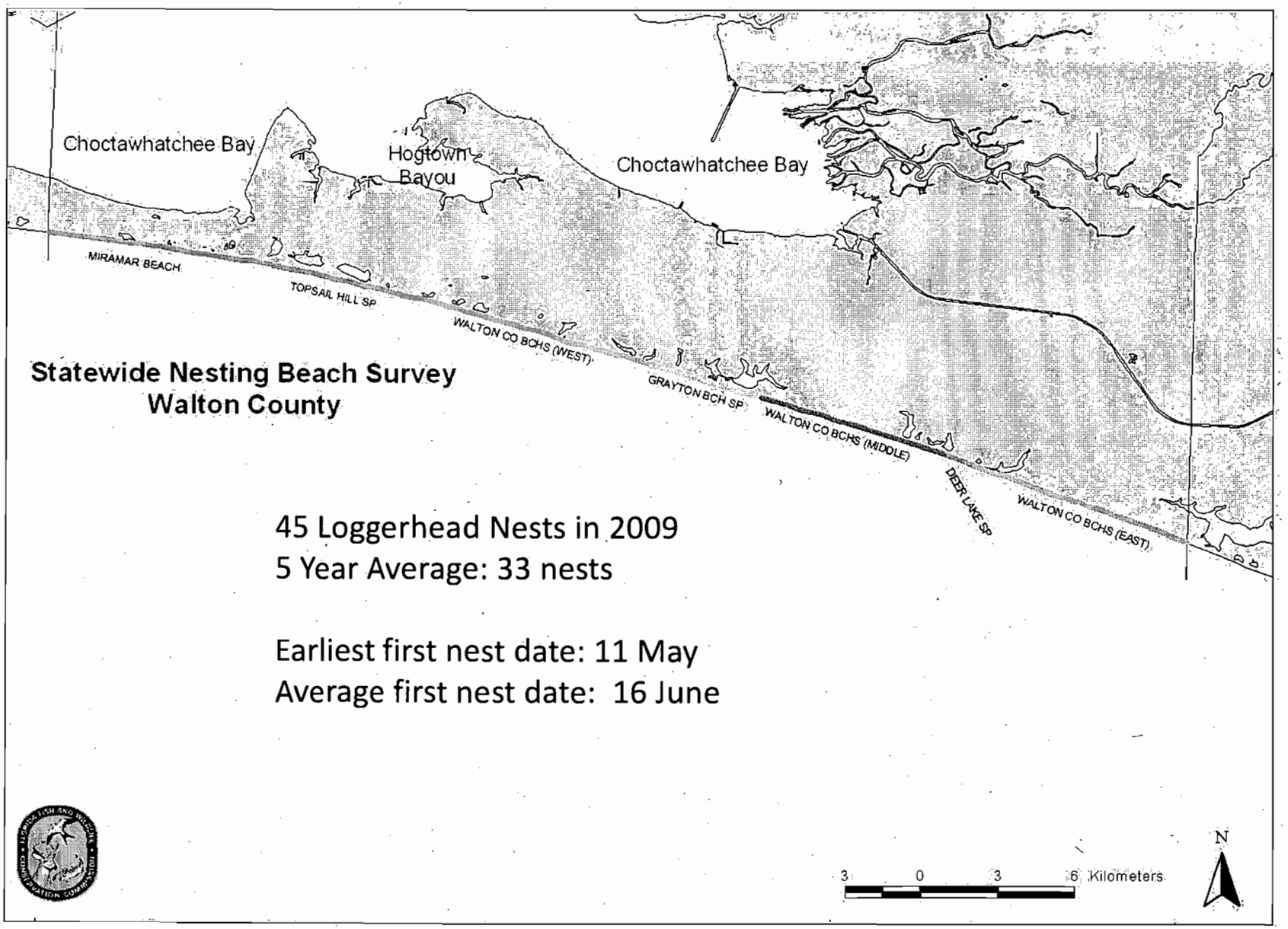


20 Loggerhead Nests in 2009
5 Year Average: 19 nests

Earliest first nest date: 26 May
Average first nest date: 27 May

2010-00519OPR0001582CJ



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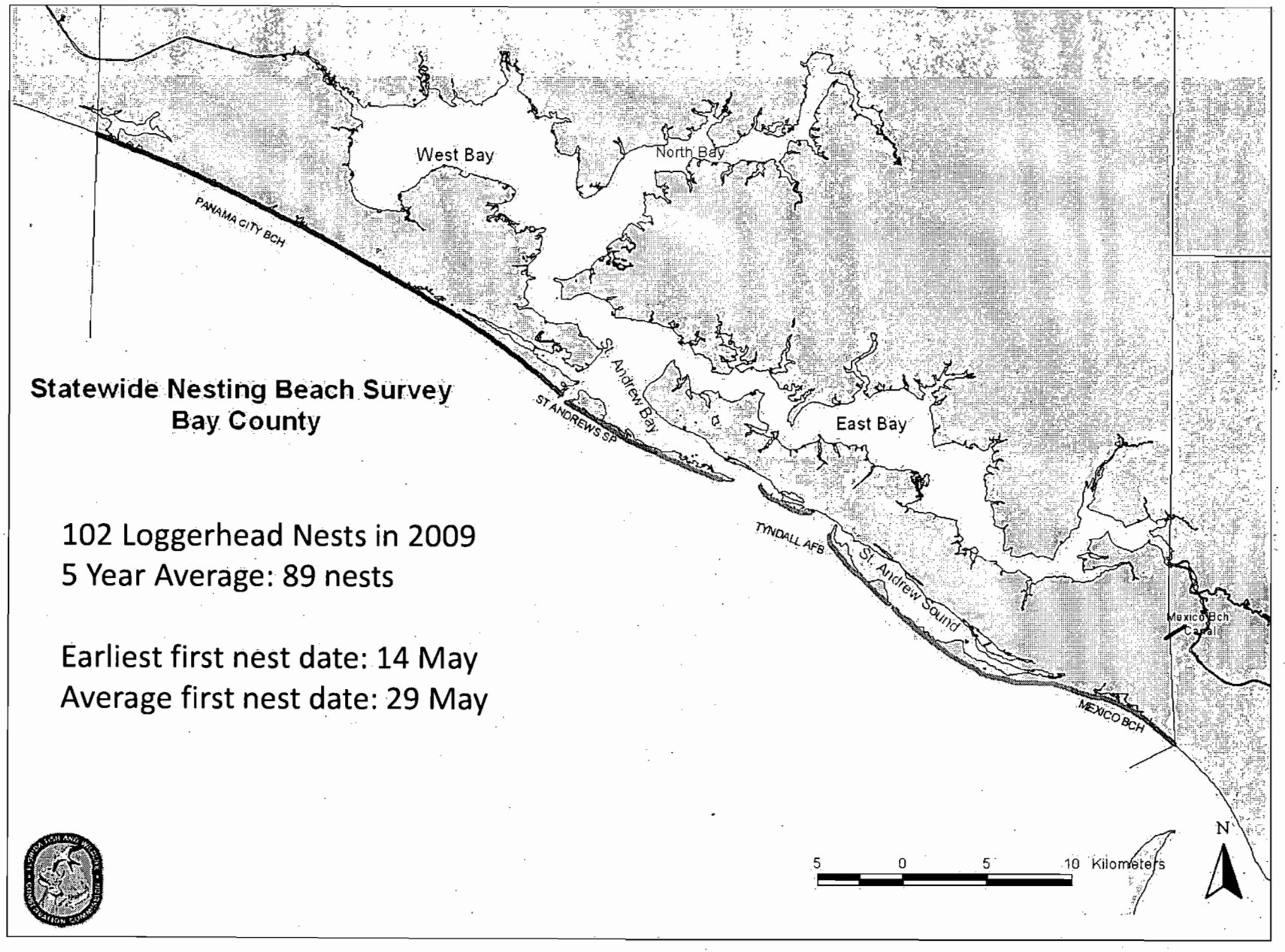


Statewide Nesting Beach Survey
Bay County

102 Loggerhead Nests in 2009
5 Year Average: 89 nests

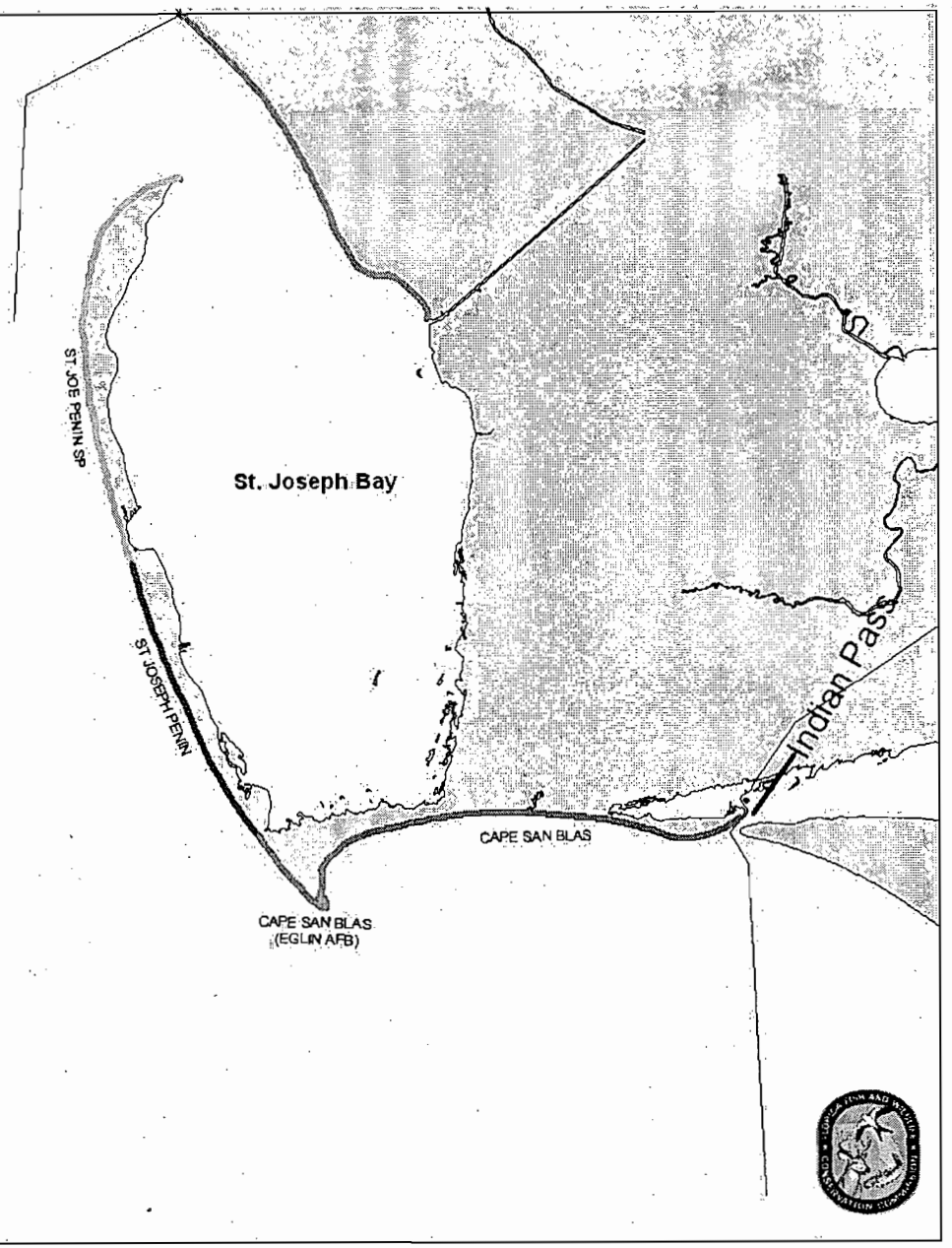
Earliest first nest date: 14 May
Average first nest date: 29 May

2010-00519OPR00001602CJ

Statewide Nesting Beach Survey
Gulf County

236 Loggerhead Nests in 2009
5 Year Average: 244 nests

Earliest first nest date: 1 May
Average first nest date: 27 May



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5 0 5 Kilometers

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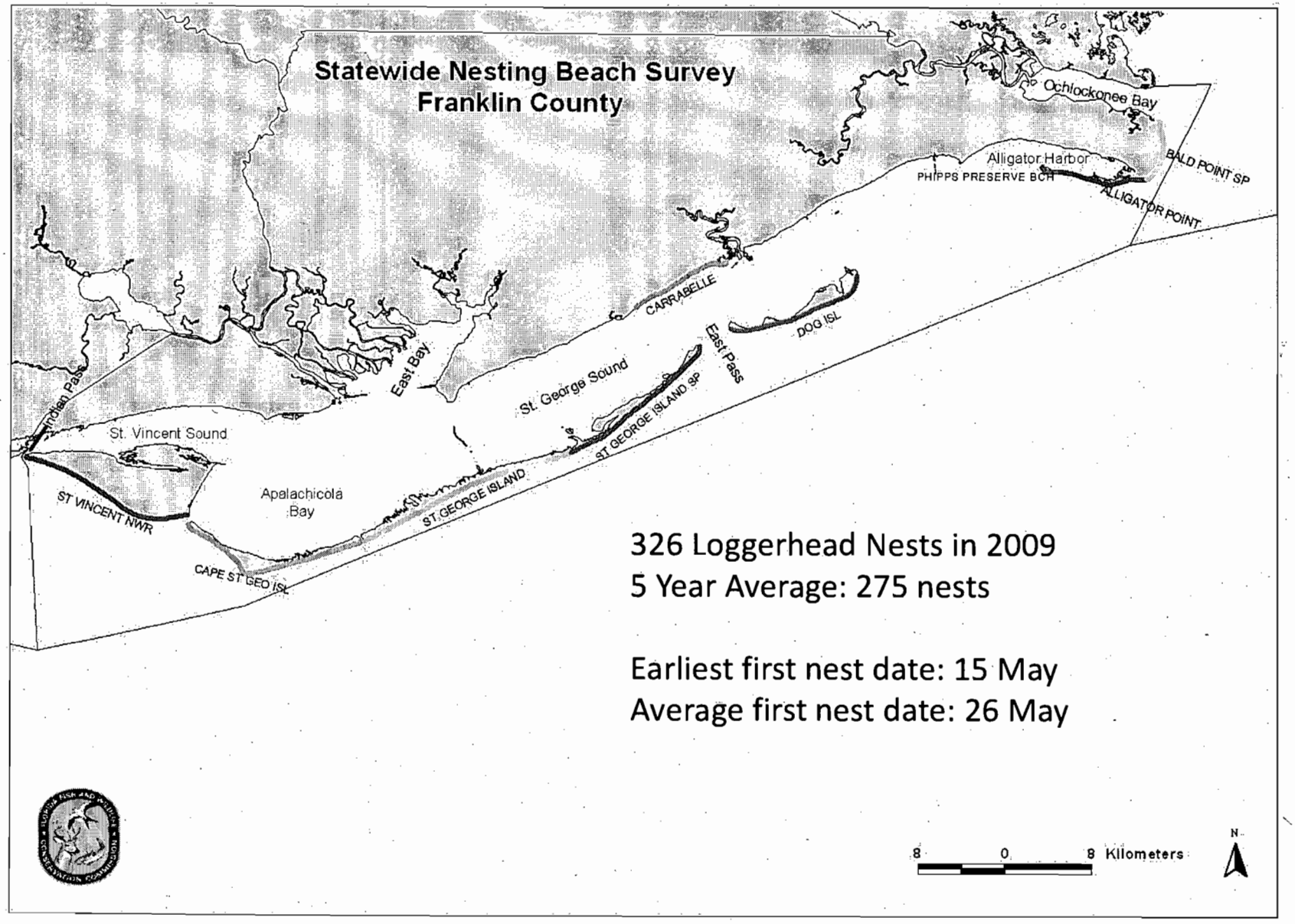

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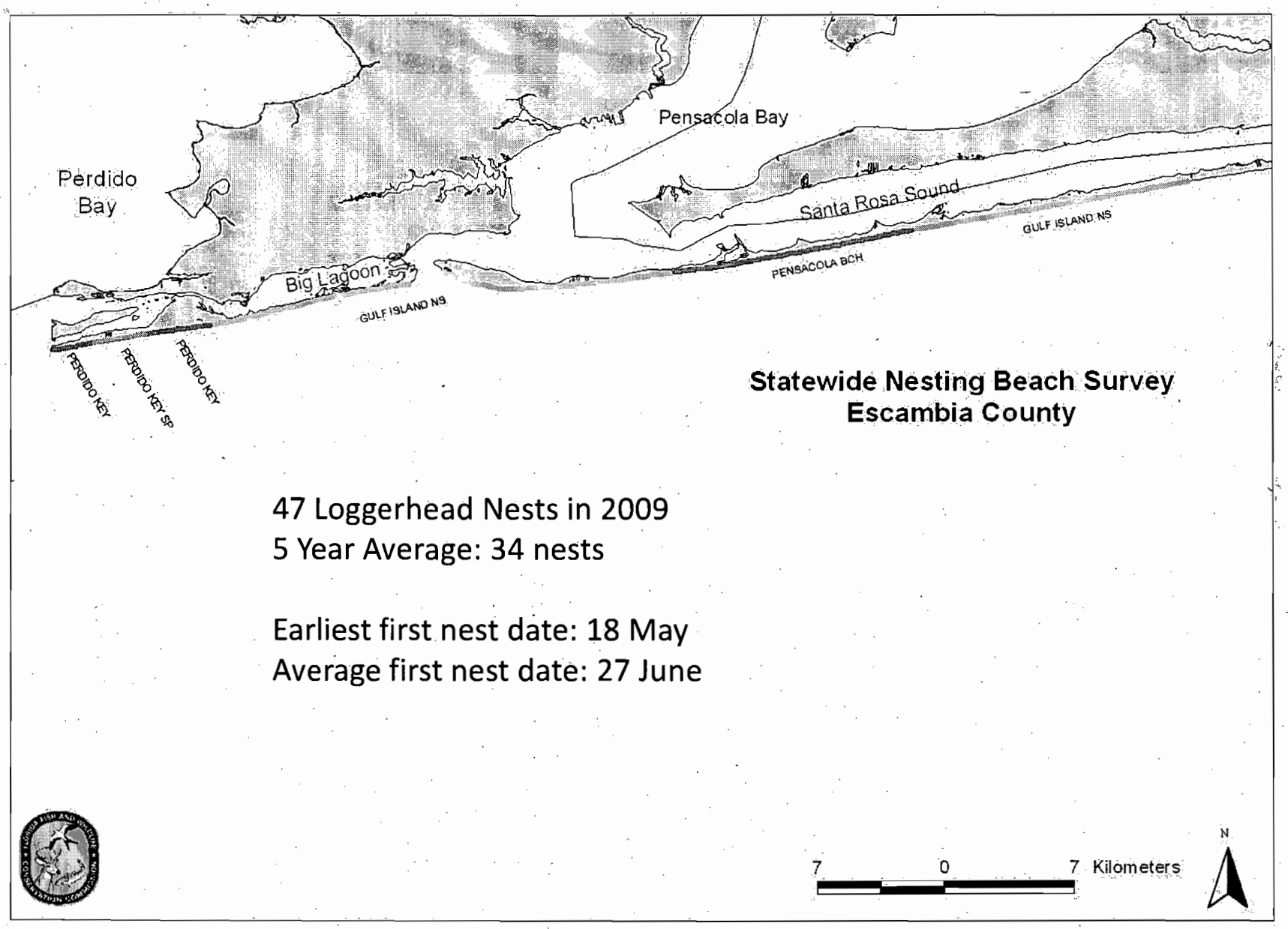
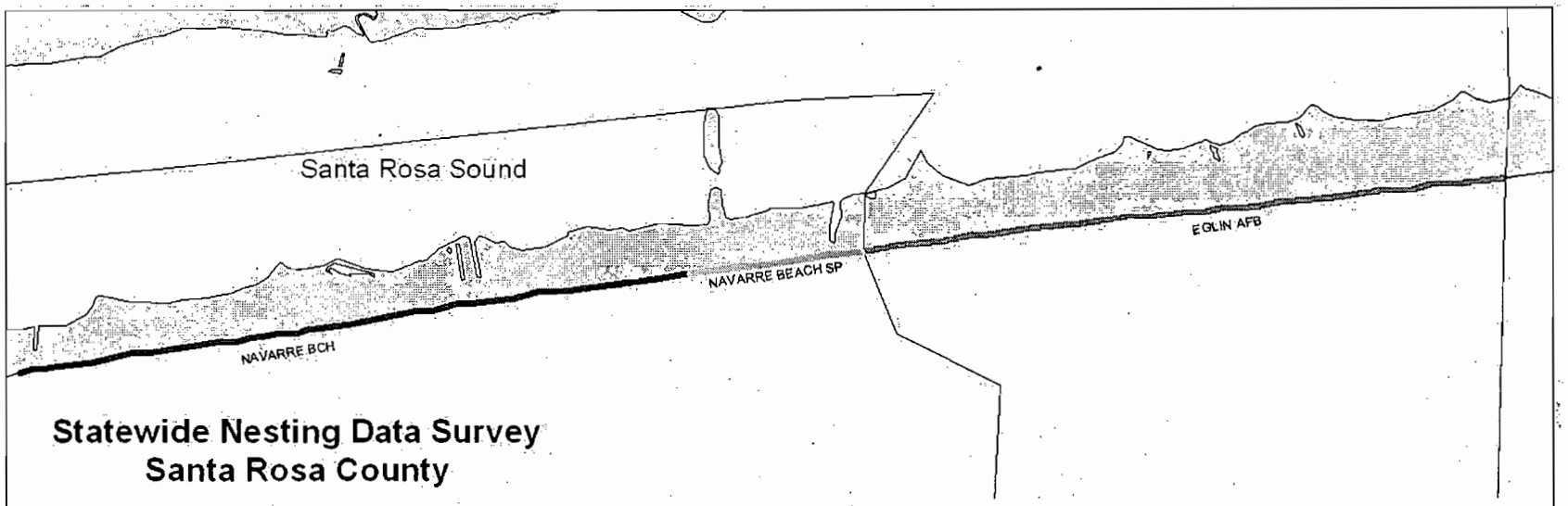


Statewide Nesting Beach Survey
Escambia County

47 Loggerhead Nests in 2009
5 Year Average: 34 nests

Earliest first nest date: 18 May
Average first nest date: 27 June



Statewide Nesting Data Survey
Santa Rosa County

8 Loggerhead Nests in 2009
5 Year Average: 5 nests

Earliest first nest date: 29 May
Average first nest date: 5 June

0.9 0 0.9 1.8 Kilometers

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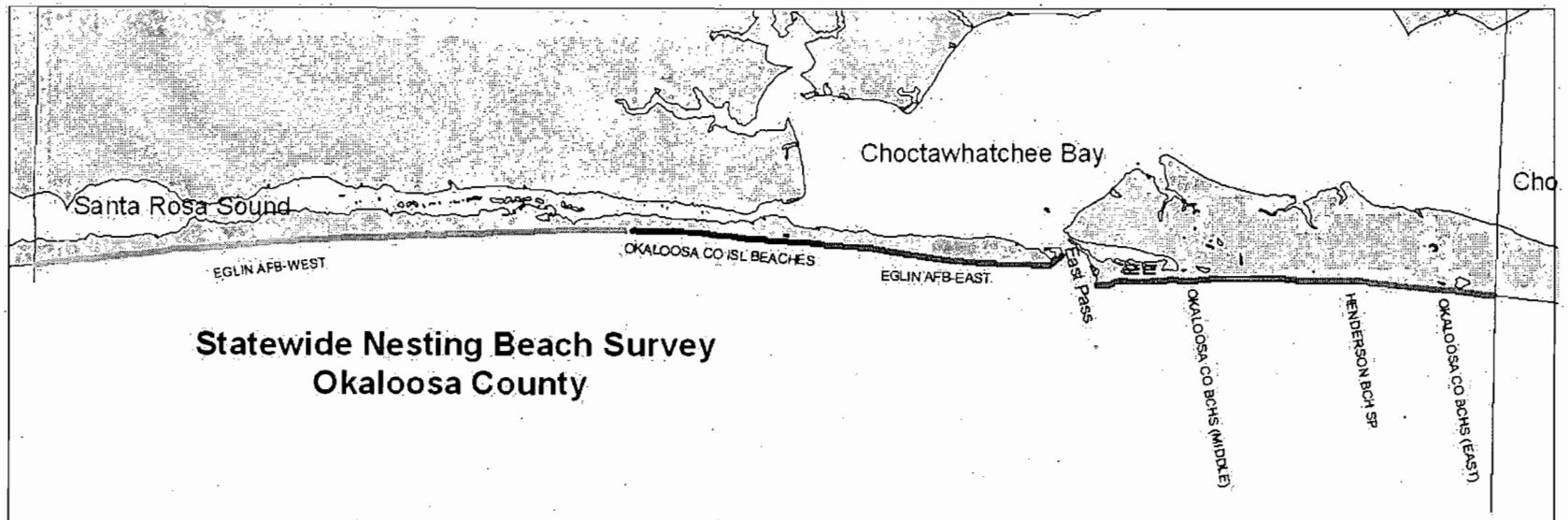

Statewide Nesting Beach Survey
Okaloosa County

20 Loggerhead Nests in 2009
5 Year Average: 19 nests

Earliest first nest date: 26 May
Average first nest date: 27 May

4 0 4 8 Kilometers

N

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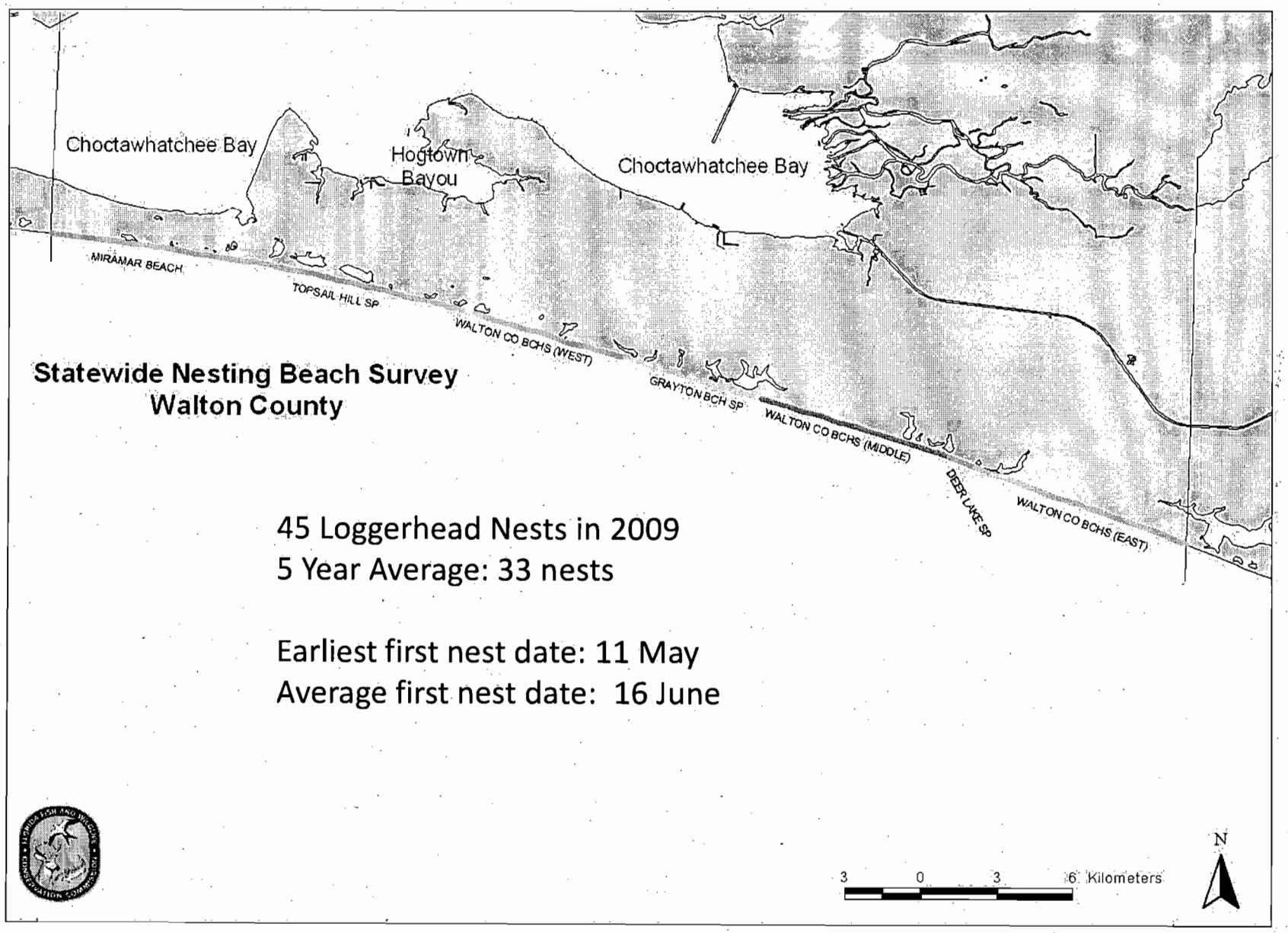

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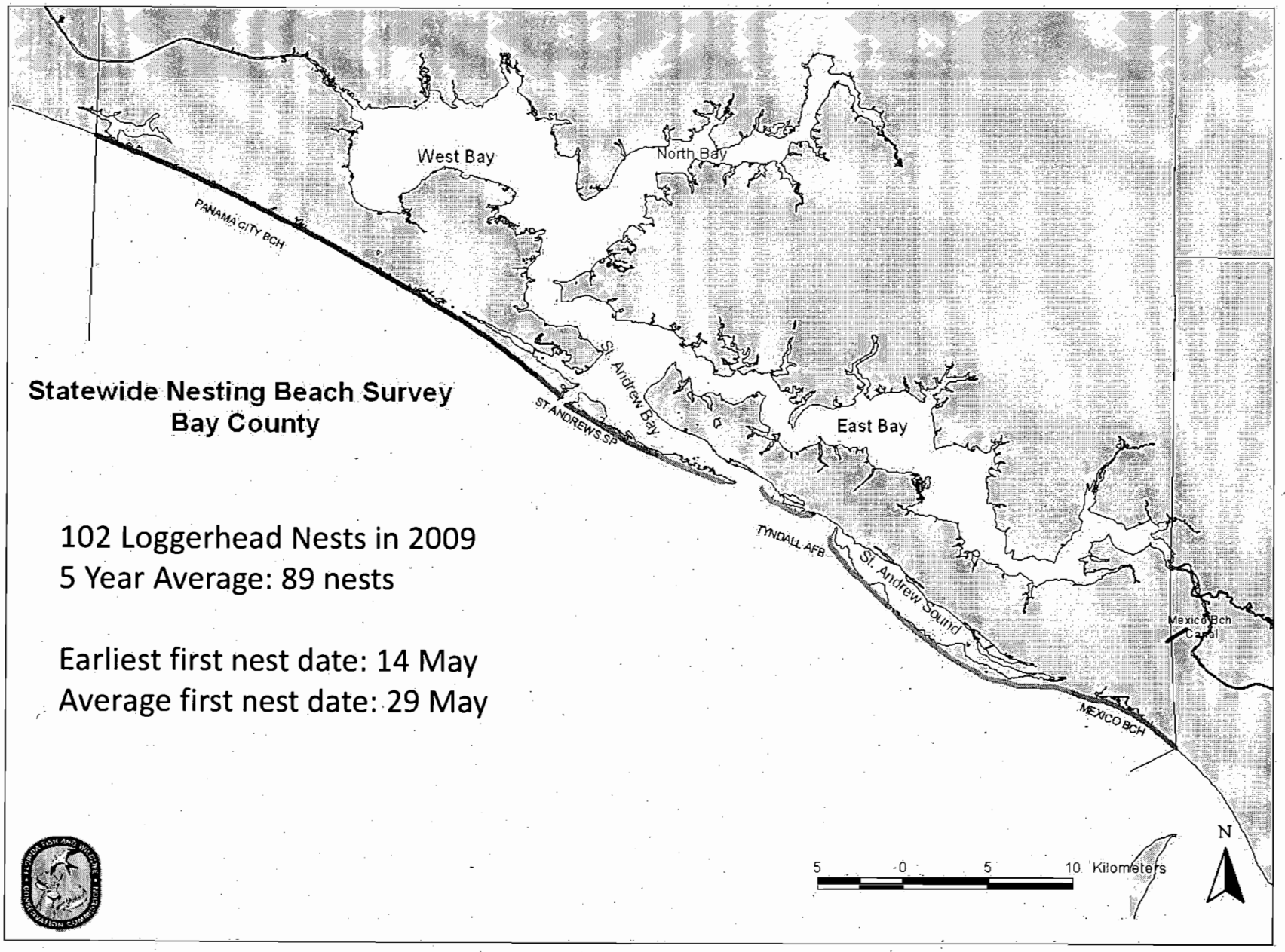

Statewide Nesting Beach Survey
Bay County

102 Loggerhead Nests in 2009
5 Year Average: 89 nests

Earliest first nest date: 14 May
Average first nest date: 29 May

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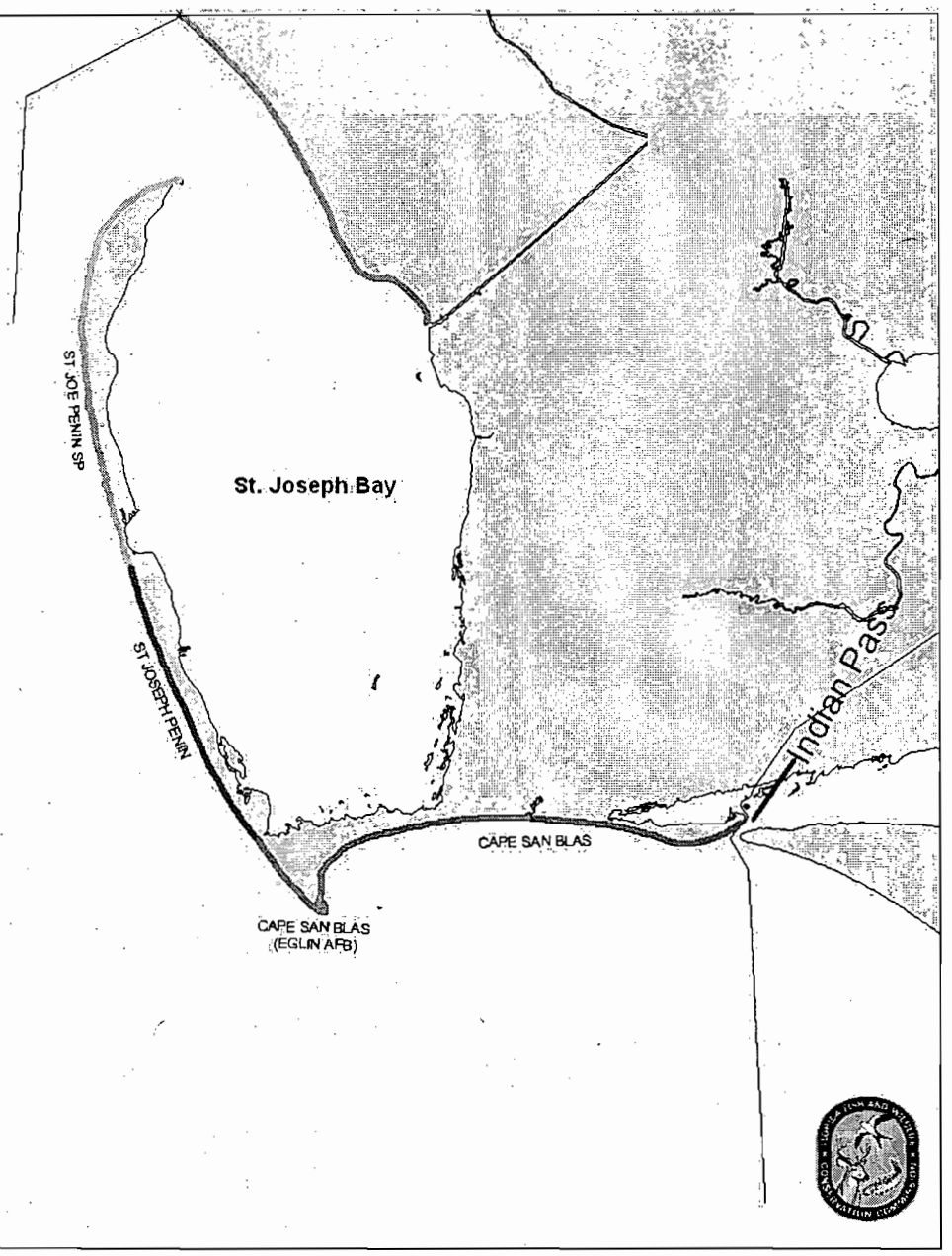
Statewide Nesting Beach Survey
Gulf County

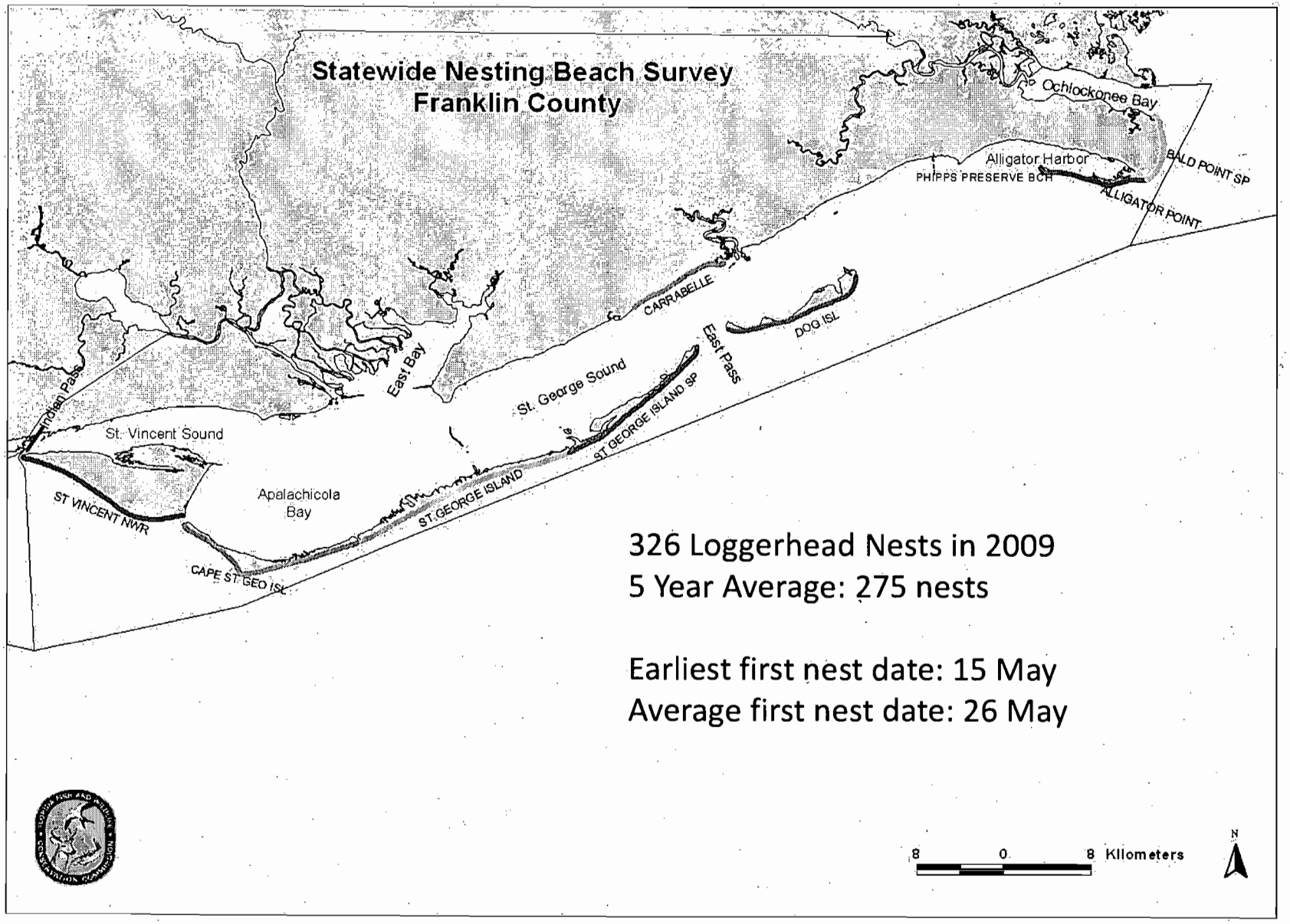
236 Loggerhead Nests in 2009
5 Year Average: 244 nests

Earliest first nest date: 1 May
Average first nest date: 27 May



N

5 0 5 Kilometers


Statewide Nesting Beach Survey
Franklin County
Ochlockonee Bay
Alligator Harbor
PHIPPS PRESERVE BCH
BALD POINT SP
ALLIGATOR POINT
CARRABELLE
DOG ISL
East Pass
St. George Sound
ST GEORGE ISLAND SP
ST.GEORGE ISLAND
East Bay
Indian Pass
St. Vincent Sound
Apalachicola Bay
ST VINCENT NWR
CAPE ST. GEO ISL
326 Loggerhead Nests in 2009
5 Year Average: 275 nests
Earliest first nest date: 15 May
Average first nest date: 26 May
8 0 8 Kilometers
N

X Troubled Waters

IN THE SUMMER OF 1979, at a time when the nesting season was essentially over and the only member of the U.S. contingent remaining on the beach was biologist Richard Byles, the hatchlings and their protectors found themselves at the centre of a major crisis. Crude oil from the blowout of the IXTOC 1 oil well in the Gulf of Campeche, which occurred in the spring of that year, was being carried in a north-westerly direction across the Gulf, missing the south-west Mexican Gulf coast and coming ashore in Tamaulipas and Texas. In a glare of international publicity, preparations were made to evacuate the season's hatchlings from Rancho Nuevo by helicopter. Byles, a young, rugged, bearded outdoorsman, who has since acquired a Ph.D. and a job with the U.S. Fish and Wildlife Service, was the right man on the spot.

The contingency plan, devised by Woody and Pritchard when the oil slick first began to move up the coast, was that, if oil came ashore at Rancho Nuevo, the hatchlings would be held in temporary containers after they emerged from the nests and air-lifted at intervals to oil-free parts of the Gulf for release. Arrangements for the use of helicopters were made with the U.S. Coast Guard and Woody obtained a letter formally requesting this assistance from the Director of Departamento de Pesca.

Some oil was observed on the beach on July 17, and Pesca officials who went on a reconnaissance flight reported isolated patches of oil at sea. Four days later, Byles noticed about twenty men erecting a floating oil barricade across the mouth of Barra del Tordo, by Campo Andrés, presumably to keep oil out of the oyster beds. On that same afternoon, globs of sticky oil appeared in the sea at the mouth of Barra Coma, the site of the turtle camp.

Construction of the temporary holding pens was begun next day in the lagoon at Barra del Tordo, nine miles south of the turtle camp. The amount of oil on the beach remained very small, although large surface slicks were present 80 to 120 miles off shore. Then, on July 25, high tides

Two crates of hatchlings hang from a helicopter over the sea.

breached the sandbar at the normally-closed entrance to the lagoon where the hatchlings were being held.

In case oil might enter the lagoon, 550 hatchlings were kept overnight in buckets and other improvised containers, just in time to be inspected by a group of visiting VIP's, including the Director of Pemex (the organization responsible for the oil spill), the Director of Aquaculture, the Comandante of the First Naval Zone, and a number of prominent Mexican citizens. They arrived by Pemex helicopter and a plan was announced for taking the hatchlings out to sea aboard a Pemex helicopter, rather than on one belonging to the U.S. Coast Guard. The visitors saw high tides bringing oil into the lagoon and a number of blue crabs lying dead on the beach, presumably from oil ingestion. They informed Byles of the cleanest nearby area for hatchling release but nobody knew whether there was any sargassum there for the turtles to hide in.

By this time the potential effect of the oil spill on the hatchling turtles had caught the attention of international news media. Television crews from Tampico, Los Angeles, and other places expressed interest and, together with representatives of newspapers and other news media, they

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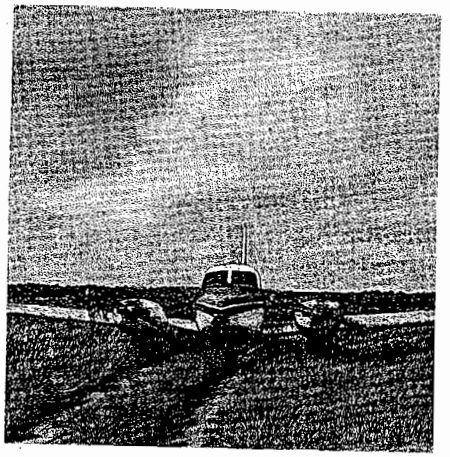
arrived on the beach and interviewed Manuel Sánchez and Byles. On July 26 several trucks arrived unexpectedly at Barra Coma, bringing heavy equipment with which to construct floating barricades across the mouths of Barra Coma and Boca San Vincente, a river-mouth six miles north of the base camp.

A helicopter survey on July 27 showed that the amount of oil in the vicinity had diminished, and the area adjacent to Barra Coma appeared clean. A large raft of sargassum was identified in a clean area south-east of Barra del Tordo and this was designated as the first hatchling release area. It was decided to release the turtles just a little to the east of this weed patch, because it was possible that the downdraft from the helicopter might force them too deep into the sargassum and suffocate them.

For the release, two plastic crates of about 500 hatchlings each were suspended fifteen metres below the helicopter, with an extra line that could be pulled to capsize the hatchlings into the sea. And so on July 29, in the course of seven separate trips, 8,298 hatchlings were released. Some of them had been held for five days, but the total mortality during the holding period was only 225 turtles. Between the second and third flights an ABC news team arrived from Arlington, Texas, to share in the



A twin-engined plane in deep vegetation at Rancho Nuevo airstrip.

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excitement. Helicopter flights on August 5, 13 and 21 released a further 5,286 hatchlings. A few nests that hatched shortly after the August 5 flight were set free directly into the ocean, because the mortality rate became too high if hatchlings were held for more than five days. Sixteen Styrofoam hatching boxes were taken to Tampico to complete their incubation; there too the hatchlings were released from a helicopter.

The arguments for having an aircraft bore fruit in 1980, and Pritchard's next job was to find a suitable landing place near the turtle camp. He and field workers marked off several hundred yards of a comparatively scrub-free stretch of duneland and dragged a heavy log up and down behind a pickup truck until, to quote Pritchard:

"... we thought we had done sufficient environmental damage to allow an aircraft to land.

"Then I drove to Brownsville to meet the pilot and escort him to the strip," he relates. At Brownsville he discovered that the first landing would be made not by the Florida Audubon Society's little Cessna, but by a sleek, twin-engined plane, property of the federal government.

"Hold it," Pritchard said nervously to the pilot, a dynamic individual by the name of Tug Kangus, "this thing will never land on our little strip, it's too big."

"How long is the strip?" asked Tug.

"About from here to there," Pritchard replied, waving his hands vaguely.

"No problem," said Tug.

Tug was used to taking off in the rarefied atmosphere of Albuquerque and felt that anything would be possible on a sea-level strip. Pritchard doubtfully agreed and off they went.

As they came in low over the turtle camp, camp personnel, both U.S. and Mexican, showed signs of alarm which evolved into emphatic gestures of "Don't do it!", "Impossible!", and so on, when they realised that the pilot intended to land.

Ignoring advice from the ground, they skimmed over a dry but soft-bottomed lake and cleared a four-foot barbed-wire fence by inches before touching down. Quite soon it became apparent that they would still have a lot of forward speed when they got to the end of the airstrip, so Tug veered off onto a donkey path where heavy brush dragged over the wings and buzz-sawed through the propellers, aiding deceleration. They ultimately came to a halt, unscathed and even proud of themselves, but it took a long time to pick all the vegetation out of the aircraft. The takeoff for the return journey was made, without further modification of the

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GUIDELINES FOR USE OF LIVE AMPHIBIANS AND REPTILES IN FIELD AND LABORATORY RESEARCH

Second Edition, Revised by the Herpetological Animal Care and Use Committee (HACC) of the American Society of Ichthyologists and Herpetologists, 2004. (Committee Chair: Steven J. Beaupre, Members: Elliott R. Jacobson, Harvey B. Lillywhite, and Kelly Zamudio).

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I. Introduction:

Consistent with our long-standing interests in conservation, education, research and the general well-being of amphibians and reptiles, the ASIH, HL and SSAR support the following principles and guidelines for scientists conducting research on these animals. Successful care and husbandry of amphibians and reptiles depends on procedures different from accepted guidelines for birds and mammals commonly used in biomedical research, and the welfare of wild-caught animals often requires considerations different from those applicable to captive-bred or domesticated species. Thus, these guidelines are intended for use by researchers, educators, and resource managers from universities and colleges, zoological parks, research institutions, natural resource agencies, and consultants to private or public institutions and agencies.

Investigations involving amphibians and reptiles, their wild populations, and their habitats are of profound importance to advancement of basic scientific knowledge that is vital to the well-being of human societies as well as to the improved treatment and conservation of these vertebrates in the wild and in captivity. Although acquisition of basic scientific knowledge can

justify research with amphibians and reptiles, the use of these animals in scientific research can produce effects that cannot always be predicted. Many investigations may involve simple observations of animals, while others require some form of manipulation, either in the field or in captivity. Such studies can disrupt normal activities, induce stress, or otherwise lead to abnormal behaviors that possibly place individuals at greater risk due to increased susceptibility to predation, accidents, or disease. Thus, just as with other vertebrate groups, the use of amphibians and reptiles in research and teaching raises ethical questions that must be carefully considered prior to the initiation of a project.

The humane treatment of both captive and wild vertebrates is an ethical, legal, and scientific necessity. Traumatized or stressed animals may exhibit abnormal physiological, behavioral and ecological responses that defeat the purposes of the investigation (Raney and Lachner, 1947; Pritchard et al., 1982). Humane treatment of wild-captured animals requires minimal impairment of their abilities to resume normal activities when returned to the wild. Moreover, habitats that are essential for these activities should not be rendered unsuitable during the course of capture or study efforts. Any deviation from conditions that eliminate or minimize risks to animals requires justification to an Animal Care and Use Committee.

Growing concern for the well being and humane treatment of research animals has led several agencies and professional organizations to publish guidelines for the care and use of animals in the field and laboratory. However, due to the large range of diversity represented by the over 12,280 species of amphibians and reptiles, no concise or specific compendium of approved or required methods for field and laboratory research is practical or desirable. A blanket approach such as that applied to domesticated lines of research animals (e.g., laboratory rodents) would not work for animals as diverse as these, many of which have millions of years of independent evolution and consequently adaptations to unique environments or conditions. Rather, the guidelines presented below build on the most current information available for various groups of reptile and amphibians and are intended as a guide for the investigator (who will often be an authority on the biology of the species under study) - of the techniques that are known to be humane and effective. Ultimate responsibility for the ethical and scientific validity of an investigation, and the methods employed therein, must rest with the investigator. To those who adhere to the principles of careful research, these guidelines will simply be a formal statement of precautions already in place. We emphasize that because of the sometimes species-specific requirements of many reptiles and amphibians, the refinement of animal care and use guidelines for amphibians and reptiles will always be an evolving process.

II. General Considerations

It is the responsibility of investigators to balance humane treatment and scientific discovery. Specifically, one must prioritize humane treatment while achieving valid scientific goals. Toward this end, each investigator should provide written assurance to Institutional Animal Care and Use Committees that field or laboratory research with amphibians and reptiles will meet the following criteria:

a. Procedures should avoid or minimize distress to the animals, consistent with a conceptually sound research design.

b. Procedures do not constitute unnecessary duplications of previous work.

c. Procedures that may cause more than momentary or slight distress to the animals should be performed with appropriate sedation, analgesia, or anesthesia, except when justified for scientific reasons by the investigator.

d. Animals that would otherwise experience severe or chronic stress or pain that cannot be relieved should be euthanized at the end of the procedure or, if appropriate, during the procedure.

e. Methods of euthanasia will be consistent with recommendations of the American Veterinary Medical Association (AVMA) Panel on Euthanasia (Smith et al., 1986), unless deviation is justified for scientific reasons by the investigator. However, the AVMA recommendations cannot be taken rigidly for ectothermic vertebrates; the methods suggested for endothermic birds or mammals are often not applicable to ectotherms, which have significant anaerobic capacities. Additional information on euthanasia of reptiles and amphibians can be found elsewhere (see Cooper et al., 1989; AVMA, 1993; McDiarmid, 1994; Chen and Combs, 1999).

f. The living conditions of animals held in captivity either in the laboratory, at holding facilities, or at field sites should be appropriate for that species and contribute to their health and well being. The housing, feeding, and non-medical care of the animals will be directed by a scientist (generally the investigator) who is trained or experienced in the proper care, handling, and use of the species being maintained or studied. While recognizing that living requirements of amphibians and reptiles may differ dramatically from those conventionally assumed for laboratory mammals, the investigator should ensure that all animals are maintained in a state of cleanliness that promotes good health and a safe and stress-free environment. Feeding intervals, requirements for water, temperature, and humidity levels will vary greatly, and the departure of these parameters from mammalian norms should be carefully explained to IACUC members, attending veterinarians, or other personnel who might not be knowledgeable about the biology of amphibians and reptiles. Some experiments (e.g., competition studies) will require the housing of mixed species, often in the same enclosure. Mixed housing is also appropriate for holding or displaying certain species. Whereas considerable information is available for reptiles/amphibians in captivity in the laboratory, private, and zoological collections, little information is available for housing in the field. It is expected that the investigator working with a species will

have the expertise to construct enclosures suitable for the focal taxon. Enclosing areas where the species occurs naturally is one way to provide a semi-natural environment. Animals held or enclosed in the field should be monitored carefully for natural behaviors and that sufficient food resources are available, either naturally or through supplementation.

Additional general considerations that should be incorporated into any research project using wild amphibians or reptiles include the following:

g. The investigator must have knowledge of all regulations pertaining to the animals under study, and must obtain all necessary federal, state, and local permits for the proposed studies. (See the following for applicable regulations: Estes and Sessions, 1984a; Estes and Sessions, 1984b; King and Schrock, 1985; Levell, 1997; Malaro, 1998; Tompkins, 1998; Simmons 2002; and web resources listed in Appendix A). Researchers working outside the United States should ensure they comply with all wildlife regulations of the country in which the research is being performed. Work with many species is regulated by the provisions of the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES; see "CITES" references in Estes and Sessions, 1984a; Estes and Sessions, 1984b; Malaro, 1998; Tompkins 1998; and the CITES home page lister in Appendix A). Regulations affecting a single species may vary with country and with districts or regions.

h. Individuals of endangered or threatened taxa should not be removed from the wild nor imported or exported, except in cases involving conservation efforts that are in full compliance with applicable regulations.

i. Before initiating field research, investigators must be familiar with the target species and its response to disturbance, sensitivity to capture and restraint, and, if necessary, requirements for captive maintenance to the extent that these factors are known and applicable to a particular investigation. Special concern should be shown for species known to remain with nests or young during certain seasons. Removal from the wild of individuals of species known to tend nests should, as a general principle, be avoided during the nesting season, unless such removal is justified for scientific reasons.

j. Every effort should be made prior to removal of animals (if any) to understand the population status (abundant, threatened, rare, etc.) of the taxa to be studied, and the numbers of animals removed from the wild must be kept to the minimum the investigator determines is necessary to accomplish the goals of the study. This statement should not be interpreted as proscribing study and/or collection of

uncommon species. Indeed, collection for scientific study can be crucial to understanding why a species is uncommonly observed.

k. The numbers of specimens required for an investigation will vary greatly, depending on the nature of the questions explored. Certain investigations will require collection of relatively large numbers of specimens, though the actual percent of any population taken will generally be very small. Studies should use the fewest animals necessary to answer reliably the questions being posed. Use of adequate numbers to assure reliability and statistical power is essential, as inadequate studies will ultimately require repetition and can result in wasted animal use. When appropriate, numbers of animals should be justified by specific statistical design requirements, and formal power analysis.

Numerous publications exist that will assist investigators and animal care committees in implementing these general guidelines; a number of useful publications are listed in the literature cited section and in Appendix A.

III. Role of IACUC

Recognizing that the function of the IACUC is to ensure humane use of reptiles and amphibians in laboratory and field research, rather than to curtail it, the IACUC should make every effort to work with Investigators such that their research missions are supported. The role of the IACUC in approving and monitoring laboratory use of reptiles and amphibians includes responsibilities for ensuring that laboratory facilities and housing support the health and well-being of study animals. Furthermore, periodic inspection of such facilities should be the norm, as it is for other traditional research models. Field resources for the care and use of wild vertebrates are very different from laboratory resources, and the role of the IACUC necessarily is limited to considerations that are practical for implementation at locations where field research is to be conducted. Prevailing conditions may prevent investigators from following these general guidelines to the letter at all times. However, the IACUC should expect that investigators will make every effort to follow the spirit of these guidelines. The omission from these guidelines of a specific research or husbandry technique should not be interpreted as proscription of the technique.

The IACUC must be aware that whereas vertebrates typically used in laboratory research represent a small number of species with well understood husbandry requirements, the classes Amphibia and Reptilia contain at least 12,280 distinct species with very diverse and often poorly known behavioral, physiological and ecological characteristics. This diversity, coupled with the diversity of laboratory and field research situations, requires that each project be judged on its own merits. Techniques that are useful and fitting for one taxon, experiment, or field situation may, in another context be counter-productive. Therefore, in most cases, it is impossible to generate specific guidelines for groups larger than a few closely related species. Indeed, the premature stipulation of specific guidelines would "severely inhibit humane care as well as

research" (Guidelines for Care and Use of Lower Vertebrates, 1986). The IACUC must note the frequent use of the word "should" throughout these guidelines, and be aware that this is in deliberate recognition of the diversity of animals and situations covered by the guidelines. Investigators, on the other hand, must be aware that the use of the word "should" denotes the ethical obligation to follow these guidelines whenever realistically possible.

Laboratory studies are generally conducted under relatively controlled circumstances with the purpose of testing specific hypotheses within the framework of a broader scientific investigation. Under such circumstances, the IACUC should reasonably assume that investigators can provide defensible estimates of the numbers of animals required for a study, and outline in detail the conditions under which animals will be housed and manipulated. As practicing herpetologists, we recognize the importance of reptiles and amphibians as model systems for teaching basic biological principles in the classroom laboratory. We also note the social and conservation benefits of public outreach using captive amphibians and reptiles. Therefore, the IACUC should be prepared to approve the humane use of reptiles and amphibians for educational purposes, including both routine use in University teaching laboratories, and maintenance of captive animals for the purposes of general public education. As in laboratory research, the use of reptiles and amphibians in teaching laboratories should be described in sufficient detail to justify numbers and procedures. Of particular importance is the Instructor's assurance that procedures using animals in teaching laboratories yield real pedagogical benefits that cannot be obtained by alternative means (e.g., computer simulations). Collections of animals maintained for educational purposes will vary, but they will be usually field-collected and will likely vary in species composition. The IACUC should be willing and prepared to accept "blanket" protocol applications that involve the short- to long-term captivity of several taxonomically diverse species for the purposes of public outreach as well as exploratory research.

Field investigations very commonly involve studies of interactions among many related or sympatric species, of which a large proportion may be poorly known. There is sound scientific merit in exploratory work, and ample reason for investigators to propose studies of a rather general nature, where opportunity and the flexibility to pursue unanticipated observations may become crucial to the success of the undertaking. New species continue to be discovered in this fashion, and the discovery of novel attributes of known species is to be expected as a consequence of the investigation. The IACUC should recognize that the acquisition of such new knowledge constitutes a major justification for any investigation, and that a corollary of this approach is that protocols may list a large number of individual species, or may refer to taxa above the species level.

When laboratory or field studies on wild vertebrates are to be reviewed, the IACUC must include personnel who can provide an understanding of the nature and impact of the proposed investigation, the housing of the species to be studied, and knowledge concerning the risks associated with maintaining certain species of wild vertebrates in captivity. Each IACUC should therefore include at least one institution-appointed member who is experienced in zoological field investigations. Such personnel may be appointed to the committee on an ad hoc basis to provide

necessary expertise. When sufficient personnel with the necessary expertise in this area are not available within an institution, this ad hoc representative may be a qualified member from another institution. Alternatively, when the IACUC lacks the expertise to evaluate and approve specific procedures there are several potential remedies including, but not limited to, educational demonstrations by the principle investigator and external review by expert. We note however, that external review can be time consuming and should not cost legitimate field researchers opportunities to conduct seasonally-sensitive research. The IACUC should be sensitive to the importance of timing in field research with amphibians and reptiles and make every effort to approve legitimate protocol applications.

Field research on native amphibians and reptiles requires permits from state and/or federal wildlife agencies. These agencies review applications for their scientific merit and their potential impact on native populations, and issue permits that authorize the taking of specified numbers of individuals, the taxa and methods allowed, the period of study, and often other restrictions which are designed to minimize the likelihood that an investigation will have deleterious effects on natural populations. Legal permission to conduct field research rests with these agencies, and the IACUC should seek to avoid infringement on their authority to control the use of wildlife species. Conversely, the IACUC may reasonably require evidence of proper permits from relevant agencies.

IV. Research with Amphibians and Reptiles

1. Collecting and Acquisition

Laboratory and field research with amphibians and reptiles frequently involves capture of specimens, whether for preservation, data recording, marking, temporary or long-term confinement, or relocation. We treat each of the general research activities for field and laboratory separately.

a. Habitat and Population Considerations

Whether collecting for permanent laboratory use, future release, or museum preparation, each investigator should observe, and require of students and co-workers, a strict ethic of habitat conservation. In general, collecting should always be conducted so as to leave habitat as undisturbed as possible, especially for species dependent on highly specialized habitat or for which essential details of life history and population biology or poorly known. Permanent removal of large numbers of animals from any breeding or hibernation aggregation should be avoided unless justified in writing for scientific reasons by the investigator. The judgment of what constitutes "large numbers" is subjective, but may be informed by some knowledge of population size. Similarly, destructive sampling of large numbers of gravid females from any population should be avoided unless justified for scientific reasons. When permanent, destructive human alteration of habitat is imminent (construction, water impoundment, etc.), removal of entire populations may be justified. Systematists should investigate extant collections for suitable specimens before conducting fieldwork. However, under some circumstances (e.g., field studies of competition), permanent removal of animals may be part of a valid experimental design, and should be allowed with proper justification.

b. Live capture, (trapping and other methods)

Live Capture. - Investigators should be familiar with herpetological capture techniques (Dunham et al., 1988; Heyer et al., 1994; Brown, 1997; Simmons, 2002) and should choose a method suited to both the species and the study. Live-capture techniques should prevent or minimize damage to the animal. In addition, live-capture techniques for venomous or otherwise hazardous species should be carefully chosen so as to minimize risk to animals and researchers.

Trapping. - Traps of various kinds are often necessary to obtain unbiased samples of secretive, nocturnal or infrequently active species (Corn, 1994). The interval between visits to traps should be as short as possible, although it may vary with species, weather, objectives of the study, and the type of trap. Traps should be checked daily when weather conditions threaten survival of trapped animals. Investigators must make every effort to prevent trap deaths from exposure, drowning, cardiogenic shock, or capture myopathy (Young, 1975). Traps should be sheltered from environmental extremes and care should be taken to reduce predation in pitfall traps (Gibbons and Semlitsch, 1981). Pitfall traps set during extremely dry or wet periods should be equipped so as to prevent desiccation and/or drowning of captured reptiles and amphibians (Corn, 1994). Traps should be tightly covered between sampling periods and removed at conclusion of a study.

c. Field sheets, record keeping, and photography

Whenever an animal is handled and samples are collected, all information that relates to the animal and sample should be thoroughly described and entered into either a field notebook or on specific forms that have been developed to record this information. Information should be as detailed as possible. As much pertinent information should be collected and recorded as possible including species, weight, morphometric measurements, and sex. Weather conditions should be noted. When practical, images should be collected of each animal handled and digital cameras have made this process very easy. While one can always eliminate excess information, it is impossible to go back and retrieve information that is forgotten or has been missed. Health assessment forms have been developed for the desert tortoise, *Gopherus agassizii* (Berry and Christopher, 2001), and can serve as a model for other reptiles and also amphibians.

If an animal dies or is euthanized and is necropsied, necropsy forms should be used to record information. These forms vary between institutions, and their application is especially important when researching species of special conservation concern. An example of one such form has been developed for sea turtles and is available on line (http://www.vetmed.ufl.edu/sacs/wildlife/seaturtletechniques/index.htm). The times at start and finish of the necropsy should be noted. For captive animals, a summary of the clinical course of each animal should be recorded. For wild animals found dead in the field, the stranding data sheet should be attached to the necropsy report. Photographs should be taken of the entire carcass, both dorsally and ventrally, and of any lesions recognized.

d. Commercial acquisition

Under some circumstances, study animals may be acquired through commercial suppliers for laboratory studies and teaching applications. Generally speaking, licensed amphibian and reptile dealers acquire their specimens through field capture, trade, or captive breeding. Upon receipt of commercial specimens, and prior to introduction to any existing laboratory colonies, commercial specimens should be subjected to careful inspection for potential health problems or known pathogens. If feasible, a quarantine period may be advisable.

2. Restraint, Handling, and Anesthesia

a. General principles: manual versus chemical

The decision to use physical or chemical restraint of wild amphibians or reptiles should be based upon design of the experiment, knowledge of behavior of the animals, and availability of facilities. Investigators should determine and use the least amount of restraint necessary to do the procedure in a humane manner. Because amphibians or reptiles, especially venomous or toxic species (including those with toxic skin secretions), may be capable of inflicting serious injury either on themselves or those handling them, some form of restraint often is prudent. The well-being of the animal under study is of paramount importance; improper restraint, especially of frightened animals, can lead to major physical or physiological disturbances that can result in deleterious or even fatal consequences.

Animals are best handled quietly and with the minimum personnel necessary. Slightly darkened conditions tend to alleviate stress and quiet the animals and are recommended whenever appropriate. When handling large reptiles, netting, maneuvering or dropping them into a bag it is preferable to the use of hooks, tongs, etc., to reduce struggling and damage or stress to the individual. Work with venomous species should never be done alone. Plastic tubes may be used when handling venomous snakes (Murphy and Armstrong, 1978). Snakes are guided into the tubes using a snake stick and when in the proper location, researchers can secure the animal by grasping the end of the tube (at the junction with the snake's body), thus impeding forward or backward movement of the snake.

Details on the use of tranquillizers, sedatives, and anesthetics have been reviewed elsewhere for amphibians (Fellers et al., 1994; Wright, 2001a) and reptiles (Heard, 2001; Fleming, 2001). The selection of the particular chemical that will aid the investigator when restraint is needed will depend upon the species being studied and the experience of the investigator or the consulting veterinarian. No single chemical is ideal for all reptiles and amphibians in all situations. Administration of a tranquilizer or sedative to an animal that is restrained in a body squeeze may prevent injury to the animal and/or persons working with it. Special procedures are needed for venomous reptiles (Gillingham, 1983).

In some cases, administration of general anesthesia for restraint in the field may be advisable. If so, the anesthetic chosen should be a low-risk one that permits rapid return to normal physiological and behavioral state. The animal must be kept under observation until complete recovery occurs. The relatively unpredictable and potentially delayed response of some ectotherms to immobilants or anesthetics may contraindicate use of these chemicals under field

conditions. Investigators must understand the specific action of restraint chemicals on the taxa studied. The investigator also should be prepared, if necessary, to hold the animal overnight until recovery is complete. A partially recovered animal may be at risk for injury, overheating, freezing, or predation.

Chemical Restraint. - Many chemicals used for restraint or immobilization of amphibians or reptiles are controlled by the Federal Bureau of Narcotics and Drugs. Permits are generally required for purchase or use of these chemicals. Extensive information on these substances and their use is available (Code of Federal Regulations, 1980; Marcus, 1981; Wallach and Boever, 1983), and permit application procedures are available from regional DEA offices.

For vertebrates in general, an appropriate chemical should usually be used whenever a procedure will cause pain or discomfort. The issue of pain in lower vertebrates can be traced back to 1900 (Dearborn, 1900). The author of this early study concluded that between the "maximum and minimum of developed life, all animal life has place and has accordingly, from this theoretical point of view, some degree or other of what, for want of a better term, is called pain." In a recent review of analgesia in fish, amphibians and reptiles (Machin, 2001), the author notes that the ability of an animal to perceive pain and distress is related to its taxonomic position in the Animal Kingdom, with mammals having a greater capacity than other vertebrates (Stevens, 1992). However, evidence is slowly accumulating to support presence of pain perception in amphibians and reptiles. In amphibians the smallest unmyelinated axons respond to painful stimulation (Spray, 1976). The endogenous opioid system that modulate the central processing of noxious stimulation in mammals are also present in amphibians (Stevens, 1988). While there are relatively few studies on the mechanism of pain perception in reptiles, the presence of nociceptor neurons in the oral mucosa and facial skin of crotaline snakes (Liang and Terashima, 1993), the effects of low dosages of opioids on the response of crocodilians to painful stimuli (Kanui and Hole, 1992), the presence of anatomic pathways that register noxious stimuli (Ten Donkelaar and de Boer-van Huizen, 1987), and behavioral response to noxious stimuli (Chrisman et al., 1997), all support pain perception in a wide variety of reptiles. Investigators should assume (unless proven otherwise) that any invasive procedure will cause pain in their research animal. The behavioral response to pain may be expressed differentially across taxonomic groups and nuances characteristic of a group will need to be appreciated. We note, however, that pain is an adaptive response in the sense that it reduces use of injured parts during the healing process. Such information should probably not be withheld from post-operative animals released into the field (e.g., after radio transmitter implant).

In order to reduce or eliminate pain, various chemicals that are used for this purpose in mammals also have application in reptiles. This includes the use of analgesics, sedatives, tranquilizers and anesthetics (Fleming, 2001; Heard, 2001; Machin, 2001). Because of the uncertainty of chemical actions on ectotherms, certain minor procedures may in the long run, be less traumatic to animals when anesthetics are not used. It is noteworthy that the elimination of pain by chemical means may impose increased handling and recovery time and consequent increases in stress. Therefore, there is an inherent trade-off between the severity and duration of pain, use of anesthetics, and stress produced by handling. In cases where the ultimate objective

is to minimize disturbance for observing natural behavior, the use of anesthetics may be undesired in order to minimize handling time. The IACUC should be receptive to reasonable justification of such procedures (e.g., toe-clipping, venipuncture).

The potent drugs available for wildlife immobilization when properly used are relatively safe (with the exception of succinylcholine) for target animals, but can be extremely dangerous if accidentally administered to humans. Succinylcholine has been used for immobilization of crocodilians and large chelonians. While capable of immobilizing an animal through its depolarizing effects at neuromuscular junctions, this chemical belongs to a class of drugs that have no analgesic properties at all. They should never be used as a means for collecting biopsies or performing any painful procedures. More effective chemicals are available for immobilizing most amphibians (Fellers et al., 1994; Wright, 2001a) and reptiles (Heard, 2001). The degree of danger varies according to the drug, and users must be aware of the appropriate action to take in the event of accident (Parker and Adams, 1978). Several common local anesthetics (e.g., Tetracaine, Lidocaine, Piperocaine, etc.) can be used for collecting biopsies. Lidocaine has been used most commonly and is generally infiltrated around the biopsy site. In small species these drugs may have systemic effects and animals treated with these drugs should be observed before release to the wild to be certain that behavior approximates normal. Investigators should choose the chemical for immobilization with consideration of the effects of that chemical on the target organism and in consultation with researchers that have relevant experience.

b. Hazardous Species

Venomous snakes and lizards, certain large non-venomous lizards and snakes, some colubrid snakes (McKinstry, 1983), highly poisonous frogs, crocodilians, and some large turtles are potentially dangerous, and require special methods of restraint and handling as a compromise between potential injury to handlers and injurious restraint of the animal. The particular method chosen will vary with species and the purpose of the project. There are three elements to successful and safe handling of hazardous species; attention, equipment, and distance. Investigators should never rely on any one of these three elements alone, safety can only be achieved by the simultaneous application of all three.

(1) Attention: Hazardous wild animals are unpredictable. Investigators should always maintain concentration, and their attention on the animal while handling. Never work with hazardous species under distracting circumstances.

(2) Equipment: Using equipment such as tongs, tubes and squeeze boxes (Quinn and Jones, 1974) places a barrier between the investigator and the animal. A barrier is critical to keeping the investigator safe, but should never be trusted completely. For example, the use of heavy leather welding gloves to handle small venomous snakes is a technique that has resulted in some cases of accidental envenomation when fangs penetrate the glove. Gloves give researchers a false sense of

security (which causes lapse of attention), and if they fail, the investigator is not protected by attention or distance.

(3) Distance: Attention and equipment cannot prevent accidents if they lapse; however, distance is sure to prevent injury. Investigators should always keep hazardous species at a safe distance from body and extremities, even when they are controlled by equipment.

Adherence to the following general guidelines is recommended when housing and working with hazardous species (Gans and Taub, 1964):

a. Procedures chosen should minimize the amount of handling time required, and reduce or eliminate contact between handler and animal. For example, bare-handing venomous snakes is a practice that is entrenched in some areas of herpetological research and husbandry despite the fact that injury to snakes and their handlers are common. The availability of tongs, tubes, and other handling devices renders direct contact between investigators and the head or neck of a venomous snake unnecessary. There are few, if any, legitimate circumstances where venomous snakes must be handled with the investigator's bare hand at the head or neck.

b. Those handling venomous snakes or lizards should be knowledgeable concerning the proper methods and tools for handling these animals. A training plan should be in place that emphasizes safe procedures and responsibility.

c. Animal technicians should be aware of emergency procedures to be instituted in case of accidental envenomation. Location of a nearby hospital with a supply of antivenin and of a physician with knowledge of envenomation treatment should be ascertained in advance. At a minimum, emergency procedures should include first aid measures, an evacuation plan (for field and laboratory), the logging of relevant data (species, time of envenomation, circumstances), and contact numbers for relevant medical professionals (personal physicians, nearest Poison Control Center). We also recommend the use of cell phones for both field and laboratory activities.

d. One should avoid working alone. A second person, knowledgeable of capture/handling techniques and emergency measures, should be present whenever possible.

e. Prior consultation with workers experienced with hazardous species, and review of the relevant literature, is of particular importance because much of the information on handling dangerous species is not published, but is passed simply from one investigator to another. Laboratories that work with hazardous species often have handling protocols written in formal manuals that can be obtained by request (e.g., Beaupre, 1999). Some institutions may require written handling protocols for hazardous species.

f. Housing of hazardous species requires special care to avoid escape. Hazardous species should be kept in locking cages (i.e., cages with locking mechanisms that do not rely on weighted lids), which should in turn be isolated in locked, escape-proof rooms. Such rooms should be inspected carefully and any potential routes of escape (including air vents, drains, exposed fixtures, or cracks under doors) should be blocked.

3. Non-Invasive Procedures

A variety of diagnostic techniques have some application for field use. Most of these procedures entail various forms of imaging. Portable X-ray machines can be used in the field and have been used most commonly to determine presence of eggs in the coelomic cavity of chelonians. This has also been used to evaluate density of the skeletal system and therefore provide information on the nutritional status of the animal. Field workers need to be instructed in proper use of this equipment to reduce exposure to radiation. Radiation exposure badges should be used and monitored. Lead lined gloves and an apron should be used. Ultrasound devices also have been used to evaluate the reproductive status of female reptiles in the field. Imaging procedures such as CAT scans and MRIs, while technically feasible, have not been adapted to field use. While mobile machines are available from private companies, the cost of using these machines is a major factor limiting their use in the field. Pulse oximiters that have been developed for measuring oxygen saturation of blood and pulse rate of mammals, also have been used for monitoring reptile patients. However the data provided by such devices has not been validated for the oxygen dissociation curves of reptiles.

4. Biological Samples

a. Blood Sampling

The total amount of blood that can be safely withdrawn from a reptile or amphibian depends upon the animal's size and health status. The total blood volume of reptiles varies between species but as a generalization is approximately 5 to 8% of total body weight (Lillywhite and Smits, 1984; Smits and Kozubowski, 1985). Thus, a 100 g snake has an estimated blood volume of 5 to 8 ml. Healthy reptiles can lose 10% of their blood volume without any detrimental consequences, thus, from a snake weighing 100 g, 0.7-ml of blood can be withdrawn safely. Much larger volume percentages of blood can be removed over an extended period of time (Lillywhite et al., 1983). However, this practice is limited to experimental animals under controlled laboratory conditions.

Anurans and Urodeles:

Several sites can be used depending upon size and species being sampled (Wright, 2001b). Urodeles can be sampled from the heart, abdominal vein and ventral tail vein. A cannulation technique has been described for the mudpuppy, *Necturus macuolosus*, and for the bullfrog (*Rana catesbiana* (Copeland and DeRoos 1971; Herman et al., 1978). Frogs can be sampled from a lingual venous plexus, ventral abdominal vein, and tail vein.

Chelonians (turtles and tortoises)

Several sites can be used in obtaining blood from chelonians, each having advantages and disadvantages. Sites include the heart, jugular vein, brachial vein, ventral coccygeal vein, orbital sinus, and trimmed toenails (Gandal, 1958; Dessauer, 1970; McDonald, 1976; Maxwell, 1979; Taylor and Jacobson, 1981; Rosskopf, 1982; Stephens and Creekmore, 1983; Avery and Vitt, 1984; Nagy and Medica, 1986; Jacobson, 1987).

Cardiac sampling, although not recommended, has been utilized. In young chelonians, before the shell has calcified, a needle can be passed through the plastron into the heart. Older tortoises with calcified shells requires either drilling a hole through the plastron over the heart, or using a spinal needle for percutaneous sampling through soft tissue in the axillary region at the base of the forelimbs. In all situations, a sterile technique is necessary since contamination of the pericardial sac with bacteria and other potential pathogens can lead to pericarditis and death of the turtle. A sterile drill bit should be used to create a hole, and the hole should be sealed with an appropriate sealant such as bone wax (Johnson and Johnson Co., Somerville, N.J., USA) and a methacrylate resin (Cyanoveneer, Ellman International Mfg., Inc., Hewlett, N.Y. USA).

In turtles and tortoises orbital sinus sampling can be used for collecting small volumes of blood in capillary tubes (Nagy and Medica, 1986). However, in order to prevent damage to periocular tissues and possible trauma to the cornea a moderate amount of care must be taken when using this technique. The end of the capillary tube is placed into the lateral canthus of the orbit and utilizing a gentle twisting motion blood can be collected. A further problem with this technique is that dilution of the blood sample with extravascular fluids and secretions may alter composition of plasma and effect volume percentages of cellular components. Blood samples are also commonly obtained from the scapular vein, brachial vein and brachial artery of chelonians (Rosskopf, 1982; Avery and Vitt 1984). However, vessels associated with limbs can rarely be visualized through the skin, and sampling is usually blind. In addition, since lymphatics are well developed in chelonian forelimbs (Ottaviani and Tazzi, 1977), obtaining blood samples from these vessels may result in hemodilution with lymph. At times pure lymph may be obtained.

One of the authors (E. Jacobson) has found that the only peripheral blood vessels which can be consistently visualized in many small and moderate sized tortoises is the jugular vein and carotid artery (Jacobson et al., 1992). The major problem encountered when sampling from these vessels is that manual extension and restraint of the head of the tortoise beyond the margins of the plastron is required, which at times may be difficult or impossible. One method is to push in or lightly touch the rear limbs, which usually causes the tortoise to extend its head from the shell, and allows the sampler to restrain the tortoise's head. Once grasped, the head is pulled out with one hand, and while sitting, the sampler positions the tortoise between the knees, with the tortoise's head pointing toward the sampler's body. The jugular vein and carotid artery are well developed on both right and left sides of the neck. Once the head is extended, the jugular can often be seen as a bulge through the cervical skin, coursing caudal from the level of the tympanic membrane to the base of the neck. The carotid artery is deeper and more difficult to visualize and is located ventral and parallel to the jugular vein. Once either vessel is identified, the skin over the puncture site should be cleaned with 70% ethanol and a 23 or 25 gauge butterfly catheter can be used for obtaining the sample. With the cap removed from the end of the tube, blood will flow down the tube once the needle is inserted into the vessel. The technique described above can be

used in Mediterranean tortoises (*Testudo* spp.), but is not always successful (E. Jacobson, pers. obs).

Crocodilians (crocodiles, alligators, gharial)

Blood samples can be obtained from the supravertebral vessel located caudal to the occiput and immediately dorsal to the spinal cord (Olson et al., 1975). The skin behind the occiput is cleansed with an organic iodine solution and 70% ethanol. A 3.75-cm, 22- or 23-gauge needle is inserted through the skin in the midline directly behind the occiput and is slowly advanced in a perpendicular direction. As the needle is advanced, gentle pressure is placed on the plunger. If the needle is passed too deep, the spinal cord will be pithed. Other sites of blood collection that are commonly used include the heart (via cardiocentesis) and ventral coccygeal vein (Jacobson, 1984). The heart is located in the ventral midline, approximately 11 scale rows behind the forelimbs. In collecting blood from the coccygeal vein, the crocodilian is placed in dorsal recumbency and the needle is inserted through the skin toward the caudal vertebrae.

Lizards

Blood samples can be obtained from several sites. In large lizards, blood is easily obtained from the ventral tail vein (Esra et al., 1975). Toenails can be clipped, and blood can be obtained in a microcapillary tube (Samour et al., 1984). Microcapillary tubes also can be used to obtain blood samples from the orbital sinus (LaPointe and Jacobson, 1974), in a similar fashion for collecting blood from mice.

Snakes

Blood samples can be obtained from a variety of sites, including the palatine veins, ventral tail vein, and via cardiocentesis (Olson et al., 1975; Samour et al., 1984). Some prefer heart puncture to other methods, and as long as the heart is not excessively traumatized with multiple attempts at sampling, the procedure is safe and effective. This method should be limited to those snakes over 300 grams (Jackson, 1981). Essentially, the heart is located either directly by seeing it beating through ventral scales or by palpation. The heart is relatively moveable within the coelomic cavity and is easy to move manually several scale rows both cranially and caudally. Once the heart is located, it is stabilized by placing a thumb at its apex and forefinger at its base. A 23- or 25-gauge needle attached to a 3- to 6-ml syringe is advanced under a ventral scale, starting at the apex and aiming toward the base. With gentle suction, a sample can be obtained. Sometimes a clear fluid is withdrawn, representing the pericardial fluid. In such cases, the needle should be withdrawn, a new syringe and needle secured, and the procedure repeated.

b. Tissue Sampling

Biopsies are often collected for diagnosing disease problems in amphibians (Wright, 2001c) and reptiles (Jacobson, 1992) and for biological studies such as DNA analyses. Procedures for the collection and preparation of tissues for biochemical analysis have been extensively reviewed (Dessauer and Hafner, 1984; Dessauer et al., 1990; Jacobs and Heyer, 1994). When the samples are collected for pathologic studies, multiple samples should be obtained for: 1) histopathology; 2) electron microscopy; 3) cytology; and 4) microbiology. While biopsies of internal organs also

can be collected, these are more often collected for disease studies rather than biologic studies. The focus here will be skin biopsies.

Amphibians

Skin biopsies are easy to obtain in most species. Lidocaine can be used as a ring block around the biopsy site. The portion of skin is elevated with a forceps and a fine surgical scissor should be used for cutting the tissue. Wound glue or an appropriate suture material (see below) should be used to close the incision.

Chelonians

Of all the reptiles, chelonians present the greatest challenge for biopsy, especially when lesions involve the shell. The reptile shell is a very hard biological structure that makes biopsy somewhat difficult. While under anesthesia, a rotary power saw (Dremel Mototool, Dremel Mfg. Co., Racine, Wisconsin, USA) or bone trephine can be used to cut a wedge out of the shell. Ideally, the biopsy should include normal tissue along with the diseased component. A piece should be fixed in neutral buffered 10% formalin for histopathological evaluation and a piece (with the most superficial contaminated portion removed) submitted for microbial culture. For initial attempts at isolation, the author often uses a broth such as tryptic soy broth. The defect created in the shell should be filled with calcium hydroxide dental paste (Root-Cal, Ellman International Mfg., Inc., Hewlett, New York, USA) and covered over with a methacrylate resin (Cyanoveneer, Ellman International Mfg., Inc., Hewlett, New York, USA). This technique is routinely used in repair of the chelonian shell.

For biopsy of soft tissue, a 2% xylocaine block is satisfactory and can be infiltrated around the biopsy site and the skin cleaned with 70% ethanol and allowed to dry. If the sample is to be cultured, sterile saline is used instead of ethanol. If there is epidermal involvement, a biopsy punch can be used for collecting the sample. Following punch biopsy, the skin may require a single suture for closure. Monofilament nylon is routinely used. If a subcutaneous mass is present, fine-needle aspiration can be performed. This is a rapid method, resulting in minimal trauma to the patient. A 22-gauge needle is inserted into the mass and using a 6 to 12 ml syringe, full negative pressure is developed by quickly pulling back on the plunger. While maintaining negative pressure on the syringe, the needle is moved throughout the mass in multiple planes. After several passes through the mass, the plunger is released and the needle removed from the mass. Negative pressure should not be applied to the plunger while removing the needle from the mass since this will cause the sample to be aspirated into the syringe barrel. The specimen may then be used in culture, cytological preparations, or histopathology (Jacobson, 1992).

Crocodilians and Lizards

A full-thickness biopsy may be difficult in those areas of the crocodilian integument having osteoderms. Small crocodilians and most lizards can be manually restrained, whereas large crocodilians and large monitors must be chemically immobilized. The area around the biopsy site should be infiltrated with 2% xylocaine and a full-thickness skin incision taken with a biopsy punch. As with chelonians, a minimum of two biopsies should be taken, one for

histopathology and one for microbiology. For microbial culture, the lesions can be ground in a sterile tissue grinder and samples applied to appropriate media. This appears to be particularly important for isolation of fungi from reptile skin lesions. The author has had more success in isolating fungi when the skin is ground prior to attempts at isolation (E. Jacobson, pers. obs.).

Snakes

Snakes are ideally suited for skin biopsy. Harmless species can be manually restrained, and venomous species can be guided into a plexiglass tube for restraint or anesthesia. Affected scales can be removed with a scalpel blade, or a sterilized one-hole paper punch can be utilized for biopsies of individual scales. In such cases, the area around the lesion should be infiltrated with 2 per cent xylocaine hydrochloride. In certain skin diseases, such as vesiculating skin lesions, larger samples may be needed.. Similarly, for sampling subcutaneous masses, 2 per cent xylocaine can be infiltrated subcutaneously around the mass. Once removed, the mass should be split into several portions for various diagnostic evaluations.

5. Surgical Procedures

a. General principles. With any invasive procedure, standard aseptic technique (Powers, 1985) is essential. Amphibians, because of the structure of the skin, may need special considerations. For instance, prior to preparation of the surgical site, a commercially available artificial slime can be used to coat the skin (Wright, 2001c). While most liquids used in preparation of the surgical site are not absorbed by reptile skin, amphibian skin is permeable, and will be affected by most topical applications. Surgical scrubs and organic iodines, both solutions and soaps, are routinely used in reptiles. But in amphibians they are toxic and therefore must be avoided. In amphibians the two most commonly used disinfectants are chlorhexidine and benzalkonium chloride. While reptile skin is easily draped using either cloth drapes or plastic drapes, amphibian skin needs special attention. First, since amphibians are often anesthetized in a solution of MS222, this chemical needs to be applied to the skin of amphibians throughout the procedure. Aquatic amphibians having gills can be placed on a Styrofoam board with a section cut out for the head, and with the board floating in a solution of MS222, the head is placed in the solution. Sterile cloth soaked in an anesthetic solution of MS222 can be used to cover the animal's body (except for the surgical site). A plastic drape then can be used to completely cover the amphibian.

1. Equipment. The surgical equipment used will depend on the size of the animal. Standard surgical equipment can be used for mid-sized to large sized reptiles. Microsurgical equipment, while expensive, is preferred for use in small reptiles and amphibians (Bennett, 2000a, 2000; Wright, 2001c). If the procedure involves entering the coelomic cavity, retractors can be used to allow maximum visualization. Magnification is recommended for surgery on small amphibians and reptiles and is achieved using binocular loupes and telescopes. These magnification systems often come with a focal light source. Dexterity and manipulation of small structures are significantly improved when using this equipment.

2. Suture material. Suture material used in mammals and birds are used for similar procedures in amphibians and reptiles. The size of the material used will depend upon the size of the patient. For most small amphibians and reptiles, the size will range from 4-0 to 8-0. Larger sized material is available for large animals. Absorbable material such as polyglycolic acid and polydioxanone, are absorbed at a slower rate compared to birds and mammals. If used for closing skin, it may have to be removed following healing of the incision site. Nylon is most commonly used for closing skin. Gut suture material, especially chromic gut is to be avoided since it induces a major inflammatory response in amphibians and reptiles (Jacobson et al., 1985; Bennett, 2000a).

b. Procedures. A wide variety of surgical procedures have been described for amphibians (Wright, 2001c, Wright, 2000) and reptiles (Bennett, 2000a,b; Lock, 2000). In amphibians the most common minor surgical procedures are toe clipping or placement of subcutaneous or intracoelomic passive integrated transponder (PIT) tags (discussed below). Major surgical procedures in amphibians include placement of intravascular catheters for chronic blood sampling, laparoscopy, celiotomy, ovariectomy, and organ biopsy. In reptiles, toe clipping also has been used for identification, particularly in lizards, and the same principles discussed below similarly apply. PIT tags are also commonly used for identification. Radio transmitters (discussed below) have been surgically implanted in snakes, lizards, and crocodilians for tracking studies. These are generally implanted into the coelomic cavity following surgical procedures used for celiotomies in general (Bennett, 2000b). Other surgical procedures include implantation of intravascular catheters for chronic blood sampling and blood pressure recording studies, laparoscopy, endoscopy, ovariectomy, ovariosalpingohysterectomy (removal of the ovary, ovidict, shell gland, uterus), orchidectomy, and organ biopsy (Lock, 2000).

6. Animal Marking and Telemetry

Marking animals for laboratory or field recognition is an essential technique in biological research. Important considerations in choosing a marking technique concern effects on behavior, physiology, and survival of the animal. The utility of any technique varies with the species under study; tissue-removal techniques may pose less long-term survival threat to some species than certain tagging methods. Marking techniques for amphibians and reptiles have been reviewed extensively (Ferner, 1979; Dunham et al., 1988; Donnelly et al., 1994). Although field observation indicates that individual wild animals can survive extensive tissue damage from natural causes (Brunson, 1986), the effect of most tissue-removal marking techniques on survival and fitness is not adequately known and is a topic worth investigating.

When choosing an acceptable marking technique, investigators must consider the nature and duration of restraint, the amount of tissue affected, whether pain is momentary or prolonged, whether the animal will be at greater than normal predation risk, whether the animal's ability to mate is reduced, and whether the risk of infection is minimal. Careful testing of unproven marking techniques on captive animals before use on free-ranging animals may reveal potential problems and is recommended. It may be desirable to use redundant techniques to assure accuracy during a study.

a. Passive Integrated Transponders. -
Passive integrated transponders (or PIT tags) represent a recent advance in animal marking techniques (Camper and Dixon, 1988). The tag itself is a small cylinder that can be injected into the animal either subcutaneously or intraperitoneally. The tags are read by a scanning device that provides electromagnetic energy to the tag, which then reflects a unique series of numbers and/or letters. The injection of the tag is a relatively simple procedure, however, aseptic procedures are needed. Surgical glue can be used to cover the site where the trochar (used for insertion of the PIT tag) is inserted through the skin. Studies that assess the impact of PIT tags on behavior, growth and survival are rare, however, available data suggests no strong evidence for lasting detrimental effects in frogs (Brown, 1997), salamanders (Ott and Scott, 1999) or snakes (Keck, 1994; Jemison et al. 1995). In some cases, PIT tags are not retained as reliably as other marking techniques (Germano and Williams, 1993; Ott and Scott, 1999), and the high cost of individual tags (approximately $5.00 each) and tag readers may render this technique uneconomical for some research programs. In addition, although tags are small, they are clearly inappropriate for small species.

b. Toe Clipping. - Toe clipping, a ubiquitous technique (Dunham et al., 1988), may be used for general marking of free-ranging animals when toe removal is not judged (by observation of captives or of a closely-related species) to impair the normal activities of the marked animal. Toes essential to animals for activities such as burrowing, climbing, amplexus, or nest excavation, should never be removed. Removal of more than two non-adjacent toes per foot should be avoided. If behavior or survival of the animal is likely to be seriously impaired, alternate marking techniques should be employed. Aseptic technique should be maintained to avoid infection. Surgical equipment needs to be disinfected prior to each animal being clipped. If a scissor is used, the instrument can be dipped in alcohol and flamed. The impact of toe clipping on survival of marked amphibians has been discussed (Golay and Durrer, 1994; Reaser, 1995). Clarke (1972) reported adverse effects of toe-clipping on survival of *Bufo woodhousei.* Further work is needed to determine the impact that toe clipping may have on differential mortality, growth, or reproduction. However, the high incidence of natural toe loss among small lizards suggests that for small species at least, toe clipping, when prudently applied, may result in only minimal impact. The most important point to realize is that toe clipping is potentially a painful procedure and can result in infection if aseptic procedures are not followed.

c. Scale Clipping / Branding. - Removal of subcaudal or ventral scutes according to a standardized numerical code provides a good permanent marking system for snakes, which does not appear to increase mortality or impair locomotion (Blanchard and Finster, 1933). The scute is removed with small surgical scissors, or by rapid cauterization; healing usually is rapid, and infection is rare. Again, aseptic technique should be employed. Electrocauterization of a number or letter on the skin, in which deep layers of skin are cauterized to prevent regeneration, is comparable. Brand marks may not be visible in amphibians after a few months. The use of a local anesthetic (aerosols containing benzocaine, such as Cetacaine, may be applied) with branding or electrocauterization is complicated. Permeable skin of amphibians renders all topical applications

risky. Conversely, the less permeable skin of reptiles may reduce the effectiveness of topical products.

d. Tattoos and Dye Markers. - Tattooing has been used with success on both amphibians and reptiles. Two potential problems should be resolved prior to tattooing: 1) selection of a dye which will contrast with the normal skin pigmentation; and 2) loss of legibility due to diffusion or ultraviolet degradation of the dye. Paint should not be used to mark the moist and permeable skin of amphibians. Reptile skin permeability is quite variable, and paint or paint solvents may be absorbed and cause death of the animal. Paints with non-toxic pigments, bases, and solvents must be used. When toxicity is unknown, laboratory trials, even if limited, should be done before field use. Very tenacious paints may, if applied across shell sutures, severely distort ' the normal shell growth of turtles, especially sub-adults. Paint should not be applied to sutures of turtle shells. Two procedures for tagging amphibians for individual identification have recently been evaluated, or applied to large-scale field studies. Both procedures involve marking different regions of the body of amphibians with colored dyes; the combination of location and color provides a large number of potential unique identifiers. Of these, the most promising seems to be visible implant fluorescent elastomers (VIE) that are injected sub-cutaneously and either visualized with the naked eye (in lighter skinned animals) or with a black light that causes the dyes to fluoresce (Anholt and Negovetic, 1998; Jung et al., 2000; Nauwelaerts et al., 2000). A second method uses pressurized application of inert fluorescent powder (Nishikawa and Service, 1988; Schlaepfer, 1998). Both methods have been used successfully to mark caudates and anurans.

e. Banding and Tagging. - The size, shape and placement of tags should be appropriate to permit normal behavior of the animal marked. Bands and tags projecting from the body may produce physical impairment or enhance the risk of entanglement in undergrowth or aquatic cover. Brightly colored tags also may compromise an animal's camouflage. Raney and Lachner (1947) documented growth cessation in jaw-tagged toads. Graham (1986) cautioned that Petersen discs may cause mortality when used on freshwater turtles; they therefore must be used with great care in this application. Their use on marine turtles less exposed to the hazards cited by Graham may be less risky. Colored mylar ribbon tags 2-5 cm long may prove an acceptable alternative for freshwater turtles. Colored discs and tags conceivably could function as predator attractants.

f. Shell Marking. - In most species of turtles, the bony shell can be marked by cutting notches or small holes in the marginal scutes of the carapace. In addition, disc-type tags and clamp-on ear-type tags (see cautionary remarks above) have been applied to those soft-shelled turtles that lack bony scutes and to sea turtles.

g. Radioisotopes. - The use of radioisotopes as markers in natural systems is valuable, and may be the only means of adequately gathering data on movements of very small species; the technique, however, should be undertaken with caution. Special training and precautions are required of researchers by federal and, frequently, state law (Code of Federal Regulations, 1984). A license, which specifies safety procedures for laboratory use, is required for release of isotopes

into natural systems and for disposal of waste material. The pros and cons of using strong emitters must be assessed in terms of possible deleterious effects on the animal, to predators that might ingest isotope-labeled animals, and potential hazard to the public.

g. Radiotelemetry

Radiotelemetry is a specialized form of animal marking, and the same general caveats apply. Transmission is regulated by the Federal Communications Commission, and investigators should inquire about the availability of the frequencies they plan to use. General telemetry techniques are summarized in (Amlaner and MacDonald, 1980), and new ones become available continually. In general, each group of organisms poses unique problems for transmitter attachment or surgical implantation. For example, the body form of lizards limits most telemetry to species of relatively large size. However, the body form of snakes facilitates telemetry by being elongate (which allows subcutaneous extension of an antenna), by usually being in contact with the substrate (which provides additional support for the transmitter), and by being distensible to a larger degree (the large meals relative to body size that snakes ingest are accommodated by additional room in the body cavity) than in most lizards. Some turtles, on the other hand, may require external attachment of transmitters due to limited access to the peritoneal cavity through limb openings in the shell. In addition the probability of post-surgery infection may depend on species and environment. For example, aquatic or semi-aquatic species may pose greater infection risk than terrestrial species. Although there are several publications regarding surgical techniques for transmitter implantation in snakes (Reinert and Cundall 1982; Weatherhead and Anderka, 1984; Hardy and Greene, 1999), and lizards (Wang and Adolph, 1995), the best source of information for any particular species probably lies with specific researchers that have relevant experience. As discussed above under surgical techniques, aseptic but not necessarily sterile procedures should be employed. It is reasonable for the local IACUC to require evidence of research into species-specific techniques, or taxon-specific training from experienced individuals.

There are differences of opinion regarding maximum recommended ratios for transmitter weight to animal weight. Most agreement seems to settle around a maximum of 10%, and most of this weight will be battery where long transmitter life is necessary; in practice, component miniaturization allows ratios of about 6% to 1% for many applications with larger animals. Smaller (and hence shorter-lived) batteries presently are the only means of achieving these ratios with small animals. Researchers intending to use radiotelemetry on amphibian or reptilian species should consider the following guidelines and comments:

1. Force-Fed Transmitters. - Force-fed packages, most commonly used in snakes, should be small enough to pass through the gut without greatly impairing the passage of food. Force-fed or implanted packages should be coated with an impervious, biologically inert material before use. Force-fed packages should not be secured within the animal by suturing the gut. If secured within the animal via body-band, the band should be removed periodically to allow resumption of feeding.

2. Implanted Transmitters. - The size and placement of implanted transmitters should not interfere with the function(s) of the organs surrounding them or with normal behavior. For intracoelomic or subcutaneous implants, suturing the transmitter package in place may be necessary to prevent its movement or interference with vital organs. Implants should be done in aseptic conditions.

3. Externally Attached Transmitters. - Radiotransmitter attachment to small reptiles (such as lizards) can also be achieved by means of a harness constructed to fit the study species (Fisher and Muth, 1995). In the case of externally mounted radiotransmitters, care should be taken to ensure that the transmitter poses no risk of entanglement (such as in arboreal or fossorial species). Consideration must be given to the effect of the package on behavioral interactions between tagged animals and other individuals. For example, the transmitter should neither conceal nor enhance the appearance of behaviorally important dorsal crests or gular flaps. Transmitter attachments that can be expected to greatly impair reproduction, locomotion or other normal activity of the animal should be avoided.

Most amphibians and reptiles, including adults, may continue to grow throughout life. External transmitters must be removed or designed to be lost after a time, or they may constrict or irritate the animals. External transmitters can be attached to crocodilians and turtles by collars, clamps, or adhesives. Rigid adhesives and paints extensively applied across sutures of shells of young turtles may impair normal growth if left in place over several years. Special consideration must be given to soft-shelled species to prevent abrasion (Eckert and Eckert, 1986).

7. Euthanasia

Euthanasia is the act of bringing about death in the most humane way as possible. The AVMA Panel on Euthanasia (AVMA, 1993) was expanded over the previous report to include poikilothermic vertebrates. Additional information on euthanasia of amphibians and reptiles can be found elsewhere (Cooper et al., 1989). Adult amphibians (A) and reptiles (R) may be painlessly killed by use of a chemical anesthetic such as sodium pentobarbitol (R), hydrous chlorobutanol (A), MS-222 (A) (Tricaine methane sulfonate, marketed as Finquel(tm) by Ayerst, Inc.), urethane-ethyl-carbamate (A) (referred to hereafter as urethane), 10% ethanol (A) or similar anesthetics. In addition, amphibians can be euthanized by ventral application of Oragel, a 20% benzocaine gel, available over the counter world-wide (Chn and Combs, 1999). The euthanasia agent T-61 (National Laboratories) is very effective on reptiles (J. Johnson, pers. comm.). Use of such chemicals requires little additional time and effort, adds little to the bulk or weight of collecting equipment, and allows for preparation of better quality specimens. Urethane is carcinogenic, and caution should be observed with its use and field disposal. Other anesthetics may also be acceptable, especially since new agents are frequently developed. Gunshot is an acceptable and often necessary collecting technique, and is also recognized for euthanasia (Smith, 1986). The euthanasia procedure selected will depend upon the disposition of the carcass. For instance, while intracoelomic barbiturates are commonly used in the euthanasia of amphibians and reptiles, these chemicals are very destructive to tissues. If histologic studies of internal organs are to be conducted, then intracoelomic injection of barbiturates should be avoided. When special

circumstances require that specimens (very small or larval animals, for example) be formalin-fixed without prior anesthetic killing, prior light anesthetization with an anesthetic such as MS-222 is recommended (Fowler, 1986).

8. Museum Specimens

The collection of samples for museum preparation from natural populations is critical to: 1) understanding the biology of animals throughout their ranges and over time; 2) recording the biotic diversity, over time and/or in different habitats; and 3) establishing and maintaining taxonomic reference material essential to understanding the evolution and phylogenetic relationships of amphibians and reptiles. The number of specimens collected should be kept to the minimum the investigator determines necessary to accomplish the goal of a study. Some studies (e.g., diversity over geographic range or delineation of variation of new species) require relatively large samples (Reynolds et al., 1994).

Museum Specimens and Other Killed Specimens. - The collection of live animals and their preparation as museum specimens is necessary for research and teaching activities in Systematic Zoology. Such collections should further our understanding of these animals in their natural state and do not serve merely as tools for teaching specimen preparation techniques. Herpetological collecting techniques and representative practices of collection management have been compiled (Simmons, 2002), as have references to field techniques (Thomas, 1977). Whenever amphibians or reptiles are collected for museum deposition, specimens should be fixed and preserved according to accepted methods (McDiarmid, 1994; Jacobs and Heyer, 1994; Simmons, 2002) to assure the maximum utility of each animal and to minimize the need for duplicate collecting. In principle, each animal collected should serve as a source of information on many levels of organization from behavior to DNA sequence. Whenever practical, blood and other tissues should be collected for karyotypic and molecular study prior to formalin fixation of the specimen.

Formalin fixation of dead specimens is acceptable practice; however, killing unanesthetized specimens by immersion in a formalin solution is unacceptable, unless justified for scientific reasons. Formalin immersion of unanesthetized animals may, however, be the only way to adequately fix certain details of morphology critical to the successful completion of research.

V. Housing and Maintenance

Because the biological needs of each species and the nature of individual projects vary widely, only the most general recommendations on housing wild reptiles and amphibians can be made. When dealing with unfamiliar species, testing and comparing several methods of housing to find the method most appropriate for the needs of the animal and the purposes of the study may be necessary. Restraint and ease of maintenance by animal keepers should not be the prime determinant of housing conditions; however, many times researchers can infer from knowledge of the biology of their animals, what the requirements are for a particular species to thrive. Such information should be incorporated whenever possible

Normal field and laboratory maintenance should incorporate, as far as possible, those aspects of natural habitat deemed important to the survival and well-being of the animal. Adequacy of maintenance can be judged, relative to the natural environment, by monitoring a combination of factors such as changes in growth and weight, survival rates, breeding success, activity levels, general behavior, and appearance. Consideration should be given to providing an environment that includes features such as natural materials, refuges, perches, and water baths. Natural foods should be duplicated as closely as possible, as should natural light and temperature conditions unless alterations of these are factors under investigation.

Frequency of cage cleaning should represent a compromise between the level of cleanliness necessary to prevent disease, and the amount of stress imposed by frequent handling and exposure to unfamiliar surroundings and bedding. Applied knowledge of animal ethology can assist the investigator to provide optimum care and housing.

1. General Considerations

Husbandry has been discussed at length for both amphibians and reptiles (Nace et al. 1974; Frye, 1991; Pough, 1992; Schaeffer et al., 1992; Greene, 1996; Wright and Whitaker, 2001b; Zimmerman 1986). A particularly excellent resource, which provides taxon-specific (e.g. salamanders, frogs, crocodilians, lizards, snakes and turtles) information on housing and maintenance can be found in Schaeffer et al. (1992). Our goal is not to reiterate the detail found in these other sources, but rather to summarize major considerations, and provide access to relevant literature for both researchers and local IACUC. What follows is a general synthesis of information found in the references cited above.

The diversity of reptiles and amphibians makes it impractical to provide strict recommendations for housing and maintenance. It is always in the best interest of the principal investigator to ensure the welfare of animals in their care. Failure to do so will likely result in unreliable experimental or observational results. It is reasonable for the local IACUC to require evidence that husbandry protocols for any particular species are appropriate to that species. Likewise, under most circumstances, the principal investigator is usually an authority on the proper care of the focal species, and the IACUC should be receptive to well supported deviations from what might be considered standard procedures for other research organisms.

As Pough (1992) points out, reptiles and amphibians require special considerations because of their diversity and ectothermy. The latter of these two features sets reptiles and amphibians apart from more traditional endothermic organisms (mammals and birds) used in biomedical or agricultural research. As ectotherms, reptiles and amphibians are relatively low energy systems with minimal gas exchange requirements, and therefore, they can usually be fed infrequently and housed at relatively high density in rooms with fewer air changes per unit time. There are several physical and biological factors that must be considered when housing and caring for reptiles and amphibians, including; temperature, light, humidity, availability of water, refuges, behavioral or social interactions, cage substrates, and nutrition. Some attention should be paid to each of these factors to ensure that the requirements for physical, social, and physiological function are met. Research on amphibians and reptiles may require both short-term (days to weeks) and/or long-term (months to years) confinement, and the degree to which conditions must be maintained will vary depending on duration.

2. Short-term housing

Many research programs require the capture of amphibians and reptiles from the field and transportation to field stations, laboratories, or other facilities. In many cases, animals will be held for short periods while they are marked and measured, and may have tissue samples collected, or minor surgical procedures such as radio transmitter implantation. Housing during these short periods of captivity can focus specifically on minimal requirements for short-term survival, including temperature, moisture and light conditions. Specifically, these three parameters should be maintained within ranges that facilitate the short-term comfort and well-being of the species in question.

a. Transportation

Animals collected in the field should be confined and transported in a way that does not compromise them from extremes of temperature, moisture, or overcrowding. Some species should be contained independently of others to minimize negative interactions such as predation or disease vectoring.

b. Temporary field site housing

If manipulation of parameters of the natural environment (daylength, etc.) is not part of the research protocol, field housing for wild vertebrates being held for more extended periods of time (e.g. weeks) should approximate natural conditions as closely as possible, while adhering to appropriate standards of care (e.g., Nace et al., 1974; National Institutes of Health Guide for Grants and Contracts, 1985a, 1985b; Frye, 1991; Schaeffer et al., 1992). Caging and maintenance should provide for the safety and well-being of the animal, while adequately allowing for the objectives of the study.

3. Long-term and colony housing

Many research programs require the long-term housing, and possibly the propagation of amphibians and reptiles in captivity. Unlike temporary housing, long-term captivity requires greater attention to details that promote the health and well being of research animals.

a. Caging and maintenance

Recommendations for cage characteristics have been discussed at length for both amphibians (Nace et al., 1974) and reptiles (Frye, 1991; Pough, 1992; Schaeffer et al., 1992). In general, containers should be large enough to promote comfort and normal growth, as well as facilitate the provision of other requirements listed below. Most researchers that utilize reptiles and amphibians will work with wild animals that are prone to escape. Cages should be chosen or designed to be escape-proof for the species under consideration. This is a crucial consideration and responsibility for principal investigators that conduct research on venomous or otherwise

dangerous species. We recommend locking containers that do not rely on weighted lids or other hastily constructed alternatives. Cages should be constructed of materials that do not absorb water so that they can be easily cleaned, disinfected and dried when appropriate. Likewise, caging materials should not present hazards such as rough edges or surfaces that can damage animals as they search for escape routes. Cages for dangerous species should be transparent so that the position of the animal can be visually assessed.

Schedules of cage cleaning should represent a tradeoff between cleanliness and disturbance. In some cases, small amounts of fecal material and pheromones deposited in the cage may be beneficial to behavior and stress levels (reviewed in Pough 1992; and taxon-specific chapters in Schaeffer et al., 1992, Greene, 1996).

b. Thermal requirements

Because of their ectothermic nature, thermal considerations are paramount to the health and well-being of amphibians and reptiles (Frye, 1991; Pough, 1992). Taxon-specific ranges of preferred temperature can be obtained from primary literature (reviewed in Frye, 1991; Pough, 1992). Frye (1991) provides general guidelines for estimating preferred temperature ranges based on characteristics of natural habitat. Every effort should be made to ensure that caging environment provides thermal conditions that enhance behavioral and physiological function. Pough (1992) recommends cage designs that provide thermal gradients and ample opportunity for animals to behaviorally thermoregulate by choosing from diverse microenvironments. Such caging arrangements may require heat lamps or tapes, and a diversity of perch and retreat sites. For some larger or more eurythermic species, providing such a diversity of thermal microhabitats may be both unnecessary and/or impractical. In such circumstances, adequate control over room temperature can be substituted. Most sources recommend that captive reptiles and amphibians be subjected to thermal cycles around the "preferred" temperature. Where possible, such cycles should be based on natural thermal variation during the normal active season of the organism (provided that natural variation does not exceed the critical thermal limits of the animal).

c. Lighting

Photoperiod is another important factor that must be considered for captive reptiles and amphibians. Many reptiles obtain physiological cues from light:dark cycles. In addition, many species (especially lizards, and some amphibians), but not all (e.g., most snakes) require an ultraviolet light source for normal calcium metabolism and Vitamin D synthesis (reviewed in Pough, 1992). Principal investigators should research their organisms to determine if UV or full-spectrum lighting is required (reviewed by Pough, 1992). Constant light (or dark) environments should be avoided because they may induce stress (Frye, 1991).

d. Air changes and humidity

As previously indicated, and reviewed in detail by Pough (1992), ectotherms are generally small, have low metabolic rates, and therefore, low rates of gas exchange and waste production. Thus,

mammalian or avian standards for room air changes are generally excessive for reptiles and amphibians. In addition, high humidity is necessary for some species; a condition that is more practical and economical with lower air turnover rates (Pough, 1992), and which may require virtually sealed containers for some amphibians (Jaeger, 1992). Humidity requirements should be considered on a case-by-case basis. It is reasonable for the IACUC to request references that recommend specific humidity guidelines for particular taxonomic groups.

e. Food and water

General nutritional requirements (e.g., herbivory, omnivory, insectivory, carnivory) are well-known for most amphibians and reptiles (Pough, 1992; Schaeffer et al., 1992). For particular species, there is often information available in the primary literature regarding natural diets. Captive diets should mimic natural diets to the closest extent possible, but this is often difficult and substitute foods must be used. Amphibians and reptiles should be fed appropriate foods on schedules that maintain normal growth and/or maintenance depending on the needs of specific studies. Because of their low energy requirements, ectotherms do not usually need frequent feedings, at least in comparison to mammals and birds. The key criteria for feeding schedules should be maintenance of weight and general health. Some reptiles and amphibians may require vitamin supplements (reviewed in Pough, 1992).

Water requirements are also variable and species-specific. Water should be provided with knowledge of a species natural history as a guide (Frye, 1991; Pough, 1992; Greene, 1996). For most species, water bowls should be large enough to facilitate full-body soaking should the animal so desire. Water bowls should be kept full to provide *ad libitum* access (subject to needs of experimental design). For some species with high humidity requirements, or that refuse to drink from open water bowls, frequent misting may be required (Frye, 1991; Pough, 1992; Greene, 1996).

f. Substrates

Appropriate cage substrates will again vary by organism, and specific recommendations for broad taxonomic groups can be found in Schaeffer et al. (1992). Several undesirable substrates have been identified, including ground corncobs, kitty litter, pine shavings (all of which swell when ingested), and cedar shavings (which have toxic properties, reviewed in Pough, 1992). Attractive qualities of cage substrates include absorbancy, non-toxicity, and resistance to bacterial growth. Substrates that may cause intestinal blockage if ingested should be avoided (Frye, 1991). Some substrates also lend themselves to greater ease of cleaning or replacement (e.g. newsprint, butcher paper, artificial turf).

g. Other considerations

For many species, and especially among lizards (Greenberg, 1992), social environment may play an important role in health and well-being. In some cases, territorial individuals may do

better when housed individually (e.g., when dominance hierarchies form, some individuals may be injured or excluded from access to food, water, or basking sites), whereas in others, social interactions may enhance an individuals environment (reviewed in Pough, 1992). For species that communicate chemically, efforts should be made to minimize residual pheromones that may have been left by previous cage occupants, or that may be transferred by handling (Jaeger, 1992; Pough, 1992). We recommend that the degree of allowed social interactions be considered on a case-by-case basis, while considering the aims of the study and well-being of the animals. For some animals, especially when the researcher seeks to support a reproductive colony, the induction of artificial hibernation may be beneficial and should be considered (reviewed in Frye, 1991).

VI. Disposition of ill or dead animals during the course of study

1. Diagnosis. Diagnosis of specific health problems should be attempted whenever a research animal shows signs of illness. The greatest challenges are in those very small and very large reptiles, and also venomous species. The repertoire of diagnostic techniques is particularly limited in small reptiles and amphibians such as small geckos and dart frogs. Where colonies of amphibians or reptiles are affected, one or more ill animals should be killed for complete postmortem evaluation including histopathology. Where this is not practical or possible, then a variety of antemortem evaluations can be used to try and elucidate the problem. A laboratory animal veterinarian or clinician with experience in amphibian and reptile medicine should be consulted. The American Association of Reptilian and Amphibian Veterinarians is a professional organization having members with this experience and interest (see: http://www.arav.org/). Diagnostic techniques include blood evaluations (complete blood counts and plasma biochemical evaluations), imaging (radiology, CAT Scan, MRI, ultrasound), endoscopy/laparoscopy, microbial cultures, fecal examinations, and histologic examination of biopsy specimens.

2. Treatment. Specific treatment will depend upon diagnostic findings and/or overall assessment by the clinician. A veterinary clinician or laboratory animal veterinarian should be consulted for recommendations. Treatment is both an art and a science. The art is selection of a treatment regime prior to having all diagnostic test results. This will be dependent upon past experiences of the clinician. The science entails selecting the most appropriate diagnostic tests and then either persisting with or changing the current treatment regime. Treatment may entail local, oral and perenteral antimicrobials, parasiticides, fluid administration, and use of drugs to relieve pain. The immune system of reptiles appears to be temperature dependent so maintaining the ill animal at an ideal temperature is imperative. More detailed information on various treatments can be found elsewhere (Klingenberg, 1966; Jacobson, 1999; Wright and Whitaker, 2001a).

3. Necropsy – Scientifically valuable specimens should be preserved for museum donation, and necropsy may destroy the utility of a specimen. Necropsy, however, may be indispensable for assessing cause of death when such information is critical. Necropsy guides for amphibians (Nichols, 2001) and reptiles (Jacobson, 1978) are available. Necropsies start on the

outside and move internally in a methodical manner. The exterior of the animal should be thoroughly examined, describing all gross abnormalities. Drawings of the animal, both dorsally and ventrally, should be used to indicate location of lesions. Wounds to the integument should be noted. Any other changes such as swellings to joint spaces of long bones and cutaneous or subcutaneous masses are recorded. Samples of all significant lesions should be collected for histopathology. Samples are placed in neutral buffered 10% formalin (NBF). NBF will only penetrate 6 mm in 24 hr, so make sure tissues are thin enough to allow adequate fixation. The NBF to tissue volume ratio should be 10:1. If hard tissue such as long bone is collected, it should be fixed in a container separate from the soft tissues to allow adequate penetration and fixation.

The overall appearance of the animal will dictate whether to continue with a full necropsy. If the animal is in an advanced state of postmortem change, such as being bloated with gas, skin or discolored, collection of tissues for histopathologic evaluation will be unrewarding.

A complete necropsy should include collection and archiving of fixed (neutral buffered 10% formalin) and frozen tissue (at least -70 C) samples from all tissues, so that materials are available for retrospective studies and research (e.g., toxin analysis, nutrient analysis, virus isolation, transmission studies, immunodiagnostic and molecular diagnostic tests). Normal tissue specimens should be saved in addition to obvious lesions. Specimens from lesions should be representative of the entire lesion and large enough to include adjacent normal tissue. This not only facilitates comparison of pathologic tissue with normal but often the active process and the primary etiologic agent are found at the edges of a lesion.

VII. Disposition of living healthy animals following study

Upon completion of short-term studies, some researchers may wish to release field-trapped specimens whenever this is practical and ecologically appropriate. However, repatriation of research animals into the wild is controversial (Pough, 1992) and should probably be limited to field-oriented studies with special circumstances (see below). Captive animals that cannot be released should be disposed of properly, either by distribution to colleagues for further study or educational purposes, or by preservation and deposition as teaching or voucher specimens in research collections. Obviously, some specimens will be deposited as voucher specimens in an appropriate reference collection to document that the identification was appropriate and to provide a basis for comparison among studies (Reynolds et al., 1994).

1. Euthanasia

In both the field and laboratory, the investigator must be careful to ensure that animals subjected to euthanasia procedure are dead before disposal. In those rare instances where specimens are unacceptable for deposition as vouchers or teaching purposes, disposal of carcasses must be in accordance with acceptable practices as required by applicable regulations. Animals containing administered toxic substances or drugs (including euthanasia agents like T-61) must not be disposed of in areas where they may become part of the natural food web.

a. Incineration

A standard operating procedure for the disposal of animal carcasses from medical or agricultural studies is incineration. In many cases carcasses of amphibians and reptiles used in research retain scientific or educational value, and incineration may be inappropriate. The decision to utilize incineration as a means of disposal should be considered on a case-by-case basis.

b. Donation to teaching or museum collections

When possible, specimens that retain scientific or educational value should be properly preserved (Simmons, 2002) and donated to teaching or museum collections.

2. Living animals

In cases where animals are not sacrificed as a study endpoint, and they are pathogen-free and in good health, there are several options to consider for disposition. Consistent with the concept of minimizing ecological impact and obtaining maximum use out of living organisms, and especially those that were captured from field populations, transfer to other studies, adoption by zoos, museums, or individuals, and/or repatriation into the wild should be considered.

a. Transfer to other studies

In many cases, at the completion of studies, animals retain value for continued research. The IACUC should be receptive to the transfer of healthy valuable organisms both within and between institutions for the purposes of continued study. This is especially important from the standpoint of reducing the need to collect animals from the wild. Such transfers should be accompanied by full documentation and should adhere to applicable local, State and National laws governing possession and transfer of reptiles and amphibians. Appropriate quarantines should be applied (Jacobson, 1993; Woodford, 2001).

b. Adoption

In many cases, healthy animals retain significant educational value and can be constructively donated for adoption by zoos, museums, and even private individuals that support educational or captive breeding programs.

c. Repatriation into the wild

Repatriation of research animals into the wild is a controversial issue. Pough (1992) argues that release of reptiles and amphibians held in captivity "...should be prohibited in almost all cases", due to risk of pathogen introduction, and potential effects on natural gene pools. However, under some circumstances, especially with respect to ecological studies that involve integrated laboratory and field components, repatriation of captive animals may be a necessary element to a successful research program. Release of research animals needs to be considered and

incorporated into the design of the study from its inception. Releases should be limited to cases of short-term captivity where healthy animals are released at their capture location. Furthermore, published protocols for planned releases should be followed (Jacobson, 1993; Woodford, 2001). As a general rule, field-trapped animals should be released only:

(i) If release is not specifically prohibited by national, state, or local law.

(ii) If they are currently healthy and have been held in isolation from exotic species and other research collections. Animals returned to the wild should never be in contact with other species, especially exotics. Two major pathogens in amphibians, chytrid fungi and ranavirus may have been introduced into wild populations by humans (Daszak et al., 1999). Relatively few infectious diseases have been studied in wild amphibians and reptiles and the exact origin of these pathogens is unknown. Captive amphibians and reptiles can harbor pathogens that were acquired in captivity and may serve as a vector for infecting wild populations.

(iii) At the original site of capture. Preservation of the integrity of natural gene pools should be paramount. Conservation efforts or safety considerations may dictate that animals be translocated. For these exceptional circumstances, prior approval of relocation should be obtained from appropriate state and/or federal agencies, and approved relocations should be noted in subsequent publication of research results.

(iv) If their ability to survive in nature has not been irreversibly impaired.

(v) Where there is reasonable expectation that the released animal will re- establish its former social status.

(vi) When local and seasonal conditions are conducive to survival.

VIII. Preparation and Revisions of These Guidelines

The initial draft of these guidelines was prepared by George R. Pisani (SSAR), Stephen D. Busack (HL) and Herbert C. Dessauer (ASIH). Victor H. Hutchison prepared the formal copy and Gary D. Schnell the camera-ready copy. The guidelines were revised and expanded to include laboratory as well as field studies in 2004 by Steven J. Beaupre (ASIH), Elliott Jacobson, Harvey Lillywhite (ASIH) and Kelly Zamudio (ASIH). The current product represents the collective efforts of over 75 persons and the societies extend sincere thanks to all participants.

Periodic revision of these guidelines is expected. Investigators are encouraged to send constructive criticisms or applicable new information to officers of the societies.

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X. Appendix A: Additional Resources

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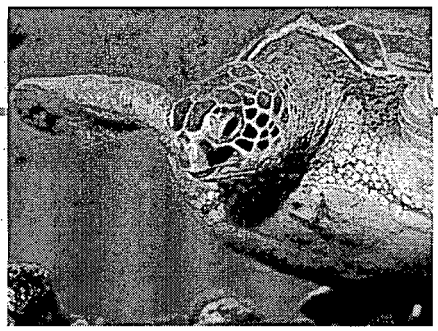
National Oceanic and Atmospheric Administration
U.S. Department of Commerce

NOAA's Oil Spill Response

Effects of Oil on Marine Mammals and Sea Turtles



Oil is a mixture of chemicals, all of which may have different effects on marine animals and the combination may be even more hazardous. In addition, some of the chemicals and methods used to clean up oil spills may also have effects on marine animals. Toxicity or harmful effects are dependent upon:

- The mixture and types of chemicals that make up the oil or are used to clean up the oil.
- The amount of exposure (dose for internal exposures or time for external exposures).
- The route of exposure (inhaled, ingested, absorbed, or external).
- The biomedical risk factors of the animal (age, sex, reproductive stage, and health status). For turtles this will include differing impacts and vulnerabilities at the different life stages such as eggs, post-hatchlings, juveniles and adults. For cetaceans this will include neonates, calves, juveniles and adults.

Research on dolphins in human care has shown that the animals avoid oil on the surface of the water, however observations of wild dolphins have documented the animals swimming in, feeding in and socializing in oiled water during previous oil spills in the Gulf of Mexico.

Several aspects of sea turtles put them at risk, including the lack of avoidance behavior of oiled waters and indiscriminate feeding in convergence zones.

Whales, dolphins, manatees and sea turtles are air breathers and all must come to the surface frequently to take a breath of air. In a large oil spill, these animals may be exposed to volatile chemicals during inhalation.

Depending on the size of a particular spill, marine mammals and sea turtles could be exposed to these chemicals for a fairly long time.

General Types of Effects on Marine Mammals and Sea Turtles

The following are generalities and would need to be specifically applied to the situation or event.

Cetaceans, manatees and sea turtles may be exposed to chemicals in oil (or used to treat oil spills like dispersants) in two ways: internally (eating or swallowing oil, consuming prey containing oil based chemicals, or inhaling of volatile oil related compounds) and externally (swimming in oil or dispersants, or oil or dispersants on skin and body).

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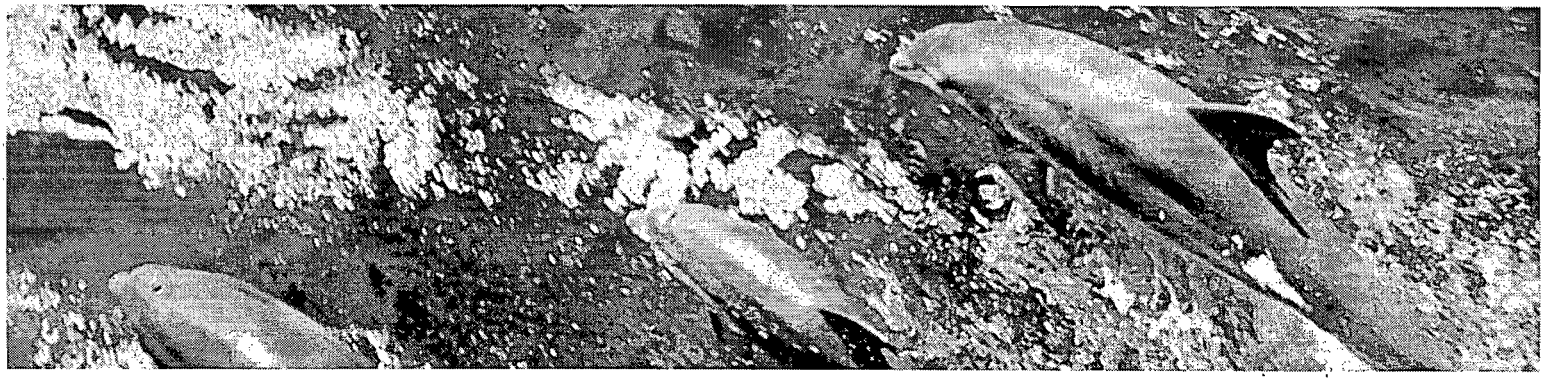

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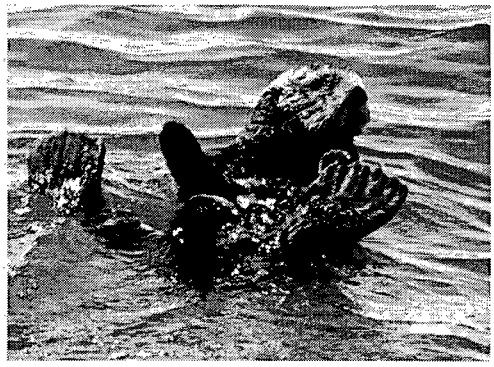
Additionally sea turtles may experience oiling impacts on nesting beaches and eggs through chemical exposures resulting in decreased survival to hatching and developmental defects in hatchlings.



External Effects

- Cetaceans and manatees have no fur which can be oiled and do not depend on fur for insulation. Therefore they are not susceptible to the insulation effects (hypothermia) that often puts haired marine mammals (such as fur seals or sea otters) at risk.
- Oil and other chemicals on skin and body may result in skin and eye irritation, burns to mucous membranes of eyes and mouth, and increased susceptibility to infection. For large whales, oil can foul the baleen they use to filter-feed, thereby potentially decreasing their ability to eat.

Internal Effects

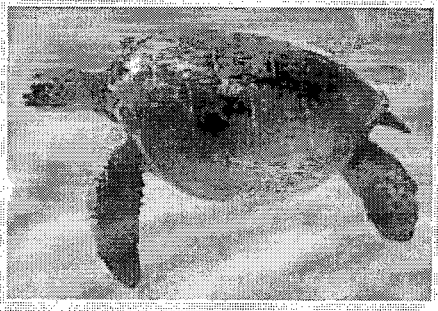
- Inhalation of volatile organics from oil or dispersants may result in respiratory irritation, inflammation, emphysema, or pneumonia.
- Ingesting oil or dispersants may result in gastrointestinal inflammation, ulcers, bleeding, diarrhea, and maldigestion.
- Absorption of inhaled and ingested chemicals may damage organs such as the liver or kidney, result in anemia and immune suppression, or lead to reproductive failure or death.

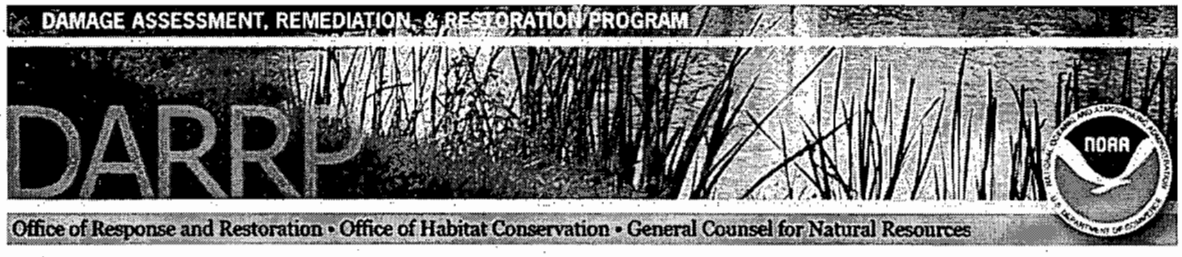
Summary

- Direct contact with of petroleum compounds or dispersants with skin may cause skin irritation, chemical burns, and infections.
- Inhalation of volatile petroleum compounds or dispersants may irritate or injure the respiratory tract, which may lead to inflammation or pneumonia.
- Ingestion of petroleum compounds may cause injury to the gastrointestinal tract, which may affect the animals' ability to absorb or digest foods.
- Absorption of petroleum compounds or dispersants may damage liver, kidney, and brain function as well as causing anemia and immune suppression.
- Long term chronic effects such as decreased survival and lowered reproductive success may occur.
- The Marine Mammal and Sea Turtle Stranding Networks have protocols and procedures in place for responding to live animals that are exposed to oil spills, and animals brought into rehabilitation facilities are provided veterinary care to remove oil and treat any related health effects.

Learn more about NOAA's response to the BP oil spill at http://response.restoration.noaa.gov/deepwaterhorizon.

To learn more about NOAA, visit http://www.noaa.gov.





Deepwater Horizon oil Spill: NOAA NRDA Activities as of May 7, 2010

Under the 1990 Oil Pollution Act (OPA), a Natural Resource Damage Assessment (NRDA) is a legal process to determine the type and amount of restoration needed to compensate the public for harm to natural resources and their human uses that occur as a result of an oil spill.

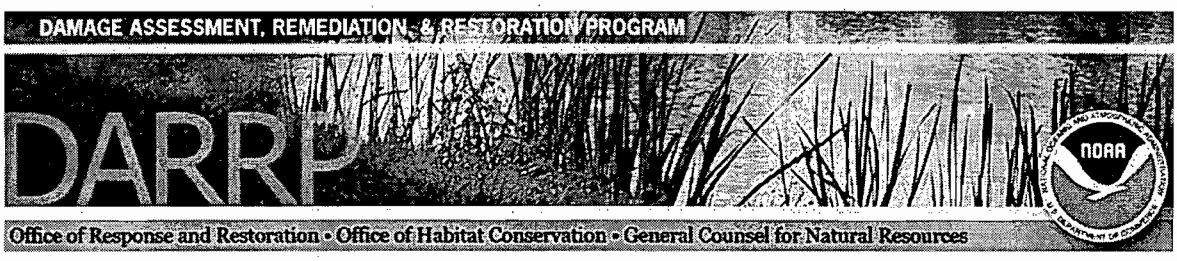
While it is still too early in the process to know what the scope of the Natural Resource Damage Assessment (NRDA) will be, from past experience, NOAA is concerned about impacts to fish, shellfish, marine mammals, turtles, birds and other sensitive resources as well as their habitats, including wetlands, beaches, mudflats, bottom sediments, corals and the water column. The trustees will also assess any lost human uses of these resources, for example, fishing, hunting, and beach recreational closures. The trustees are also assessing the efficacy of evaluating impacts from the response, including burning, and dispersant use at the surface and at depth.

NOAA's Damage Assessment Remediation and Restoration Program (DARRP) is coordinating this effort with natural resource trustees in four states (LA, MS, AL, FL), DOI (USFWS and NPS) and with BP (the Responsible Party or RP). Multiple agencies from each state are engaged. The Texas Trustees may become involved in the future.

The work that is being conducted under the Preliminary Assessment Phase of the NRDA is being done cooperatively with BP. This means that the Trustees are jointly meeting with BP to discuss NRDA actions and that BP is integrated into several NRDA Technical Working Groups (TWGs) that have been formed.

The focus of these TWGs currently is to assemble a variety of existing data on resources, their habitats and their human uses, and to collect baseline (pre-spill impact) data wherever possible. Information on impacts currently occurring to these resources and their uses is also being assembled. Currently, NOAA is coordinating stakeholder participation in most of these TWGs and is providing scientific and technical expertise and information management to many parts of the overall NRDA effort.

Additional general information about NRDA can be found below and at www.darrp.noaa.gov.



Natural Resource Damage Assessment

Overview: Natural Resource Damage Assessment (NRDA) is a legal process to determine the type and amount of restoration needed to compensate the public for harm to natural resources and their human uses that occur as a result of an oil spill.

NRDA is conducted by designated State and federal natural resource trustee agencies. Trustees for the Deepwater Horizon incident may include NOAA, DOI USFWS, DOI National Park Service, and the designated State trustee agencies for the states of Louisiana, Mississippi, Alabama, and Florida (more on trusteeship below). This Deepwater Horizon Oil Spill NRDA will be conducted pursuant to the Oil Pollution Act (OPA) of 1990 (see Laws below).

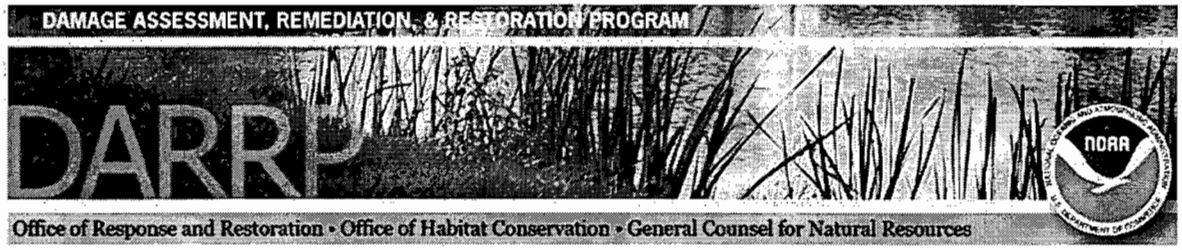
Trustees are required to demonstrate causality between the release, or substantial threat of a release, of oil and injured resources, lost services, and/or lost human use of those resources and services. This requires linking the release of oil, its fate and transport in the environment, exposure of natural resources to the oil, and its effects on the biota and human uses. Determining the amount of injury and appropriate restoration also requires an understanding of the condition of the natural resources and human uses if the spill had not occurred (baseline conditions).

Trustees seek to restore injured resources and services to baseline and to compensate the public for interim losses, i.e., the time it takes the resources to recover. Over the course of the NRDA process, the Trustees assess the nature and extent of the injuries, develop a restoration plan, seek compensation from the responsible party, oversee and/or implement the restoration plan, and conduct/oversee monitoring to ensure restoration has occurred. Liability for natural resource damages is in addition to liability for cleanup.

Additional details on NRDA are provided below and at www.darrp.noaa.gov, or call Tom Brosnan at 301 713 2990 x186.

NRDA Process: Through the NRDA process, DARRP and co-trustees conduct studies to identify the extent of resource injuries, the amount and type of restoration required to restore those resources to baseline conditions and compensate the public for interim losses. Under the OPA NRDA regulations, there are 3 steps in a NRDA:

1. Preassessment: Trustees determine whether injury to public trust resources has occurred. This includes collecting time-sensitive data and reviewing scientific literature about the released substance and its impact on trust resources to determine the extent and severity of injury.



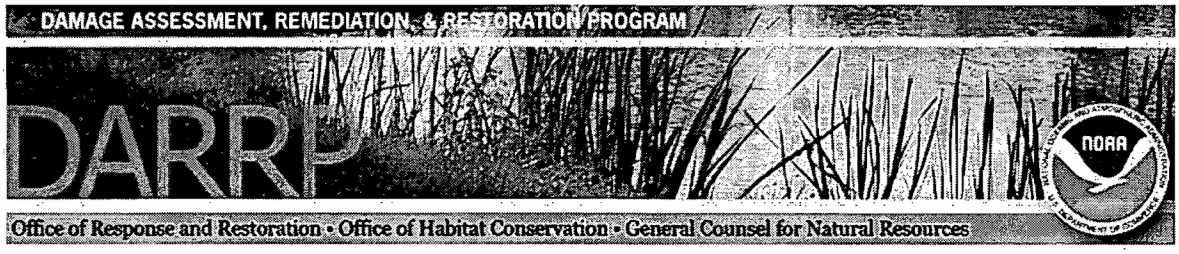
Mathematical models may be used to help predict the fate and effects of the spill on trust resources. If resources are injured, trustees proceed to the next step.

2. Restoration Planning (Including Injury Assessment): Trustees quantify injuries and identify possible restoration projects. Economic and scientific studies assess the injuries to natural resources and the loss of services. These studies are also used to develop a restoration plan that outlines alternative approaches to speed the recovery of injured resources and compensate for their loss or impairment from the time of injury to recovery. Trustees (i) evaluate the proposed alternatives based on factors identified in the OPA NRDA regulations, and (ii) draft and seek public comment on a Restoration Plan. The Restoration Plan identifies alternatives considered, discusses their evaluation and proposes projects intended to compensate for the injuries. Examples of restoration include enhancing beach shoreline, creating oyster reefs and other shellfish habitat, and conducting species recovery and monitoring programs.

3. Restoration Implementation: The final step is to implement restoration and monitor its effectiveness. The trustees seek from the responsible party the costs of conducting the assessment and restoration planning – a process in which the responsible party often works cooperatively with the trustees. The trustees also seek damages to implement the restoration, unless restoration is implemented by the responsible party, subject to trustee oversight. If the responsible party does not agree to damages, the trustees may bring suit or submit a claim for damages to the Oil Spill Liability Trust Fund (Fund), administered by the USCG's National Pollution Funds Center. The United States may seek to recover from the responsible party any compensation paid by the Fund.

Although the concept of assessing injuries may sound simple, understanding complex ecosystems, the services these ecosystems provide, and the injuries caused by oil and hazardous substances takes time—often years. The season the resource was injured, the type of oil and the amount and duration of the release are among the factors that affect how quickly resource injuries are assessed and restoration and recovery occurs. The rigorous scientific studies that are necessary to prove injury to resources and services—and withstand scrutiny in a court of law—may also take years to implement and complete. But the NRDA process described above ensures an objective and cost-effective assessment of injuries—and that the public is compensated for these injuries.

Trustees: Natural resource trustee agencies (including NOAA, DOI, state agencies, and Indian tribes) are responsible for trust resources as designated by the National Contingency Plan (40 CFR § 300.600). The Secretary of Commerce (acting through NOAA) is a trustee for the following natural resources and their supporting ecosystems: marine fishery resources;



anadromous fish; endangered species and marine mammals; and the resources of National Marine Sanctuaries and National Estuarine Research Reserves.

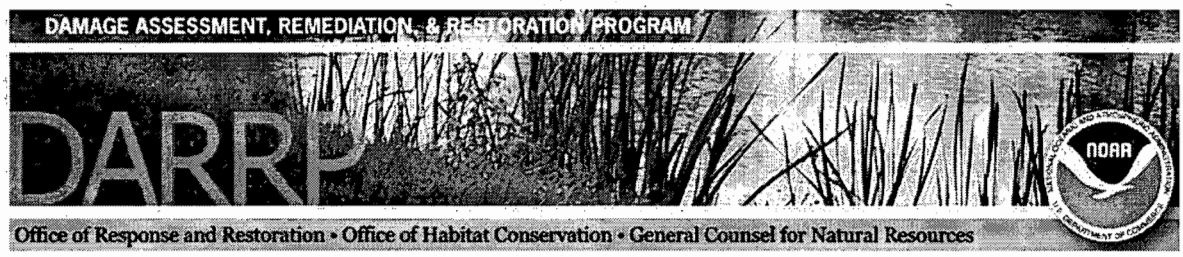
The Dept. of the Interior trust resources include migratory birds; anadromous fish; endangered species and marine mammals; federally owned minerals; and certain federally managed water resources. DOI is also a trustee for those natural resources for which an Indian tribe would otherwise act as trustee in those cases where the United States acts on behalf of the Indian tribe.

State trust resources include the following: Wetlands, surface waters, ground waters, air, soil, wildlife, aquatic life, and the appropriate habitats on which they depend

NRDA in NOAA is conducted by the Damage Assessment, Remediation and Restoration Program (DARRP): DARRP is a matrixed program between the NOS Office of Response and Restoration, NMFS Restoration Center, and the NOAA General Counsel Office for Natural Resources. It was established in 1990, after the Exxon Valdez oil spill. DARRP provides a team of scientists, economists, restoration experts, and attorneys to assess and restore injured resources. Together with federal, state and tribal co-trustees, DARRP has protected natural resources at more than 40 oil spills and 500 waste sites and generated more than $500 million for restoration to—

- Create and restore wetlands
- Create oyster reefs and other shellfish habitat
- Restore coral and seagrass beds
- Acquire, restore, and protect waterfowl habitat
- Conduct species recovery and monitoring programs
- Provide improved recreational opportunities

OR&R works cooperatively with co-trustee agencies and (in the case of a cooperative assessment of injuries) the Responsible Party (RP) to share data and information collected during the spill and during the injury assessment—working cooperatively with the RP and co-trustees can save time and money and can result in restoration being implemented faster and more efficiently.



Relevant Laws: *For summaries and links to these, see: http://www.darrp.noaa.gov/about/laws.html#OilPollution*

- Oil Pollution Act (OPA) of 1990 (NOAA promulgated regulations for assessing natural resource damages under OPA. (15 CFR Part 990)
- Clean Water Act
- Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA or Superfund)
- National Marine Sanctuaries Act
- Anadromous Fish Conservation Act (AFCA)
- Coastal Zone Management Act (CZMA)
- Endangered Species Act (ESA)
- Executive Order 11988—Construction in Floodplains
- Executive Order 12898—Environmental Justice
- Fish and Wildlife Coordination Act (FWCA)
- National Environmental Policy Act (NEPA)
- Park System Resource Protection Act
- Rivers and Harbors Act
- National Oil and Hazardous Substances Pollution Contingency Plan, 40 CFR Part 300.

General Links for Natural Resource Damage Assessment

Trustee Role: http://www.darrp.noaa.gov/about/trustee.html
NRDA Process: http://www.darrp.noaa.gov/about/nrda.html
Restoration: http://www.darrp.noaa.gov/about/restoration.html
Relevant NRDA Laws, including OPA: http://www.darrp.noaa.gov/about/laws.html
OPA Guidance Documents: http://www.darrp.noaa.gov/library/1_d.html
NRDA 101 Presentation:
http://www.darrp.noaa.gov/partner/cap/pdf/nrda/NRD%20101%20Basics%20Presentation.pdf

For the latest information on the Deepwater Horizon Oil Spill see:

http://response.restoration.noaa.gov/deepwaterhorizon
http://www.deepwaterhorizonresponse.com/go/site/2931/

Twitter: http://twitter.com/usnoaagov **Facebook: http://www.facebook.com/usnoaagov**

Podcasts: see http://oceanservice.noaa.gov/podcast.html for two spill-related Podcasts: Making Waves:NOS Highlights -Gulf of Mexico Oil Spill and Diving Deeper Oil Spill Response

Synopsis of NOAA Roles and Tools during a spill: http://oceanservice.noaa.gov/topics/oceans/spills/

Sea Turtle Nesting Survey Information for Alabama and Mississippi
3 May 2010

Alabama

Share the Beach, a volunteer group permitted by the U.S. Fish and Wildlife Service, conducts annual sea turtle nesting surveys in Baldwin County from the Alabama/Florida state line to West Beach in Gulf Shores. On the Fort Morgan Peninsula, Bon Secour National Wildlife Refuge staff and volunteers jointly conduct surveys on both private lands and on the refuge. Beaches along Dauphin Island in Mobile County are only occasionally surveyed; however, they will be surveyed in 2010 as part of the Share the Beach project. Daily nesting surveys are conducted from May 1 through August 31. Nest sitting continues beyond August 31 until all nests have hatched, generally by October 31.

Number of nests in Alabama in 2009: 64 loggerheads, 2 Kemp's ridleys
5-year average of nests in Alabama (2005-2009, all species): 56.8 nests

The dates of earliest and latest sea turtle nesting recorded in Alabama for the past 5 years are as follows:

YEAR	EARLIEST FIRST NEST DATE	LATEST NEST DATE
2005	22 May	15 August
2006	26 May	21 August
2007	23 May	17 August
2008	23 May	14 August
2009	18 May	29 August

Contacts:
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Mississippi

Prior to 2006, the National Park Service annually conducted aerial sea turtle nesting surveys once a week during the nesting season on the Mississippi District of Gulf Islands National Seashore. Aerial surveys were conducted over Cat, Horn, West Ship, East Ship, and Petit Bois Islands. Surveys of sea turtle nesting in Mississippi are no longer being conducted.

Historically, the total number of nests for a season ranged from 0 to approximately 15, although aerial survey methods and frequency may have missed nests. Petit Bois and Horn Islands had the most nests; the other islands had occasional nests.

Earliest nests laid were in early to mid-May, and the latest nests laid were in early September. All nests sighted during aerial surveys appeared to be loggerheads, but it is possible some may have been Kemp's ridley nests. Kemp's ridley turtles were observed in the nearshore waters and stranded on the beach. Leatherbacks were also observed in nearshore waters, often associated with jellyfish.

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2010-00519OPR0002522CJ

Chapter 4 Oil Toxicity and Impacts on Sea Turtles

Sarah Milton, Peter Lutz, and Gary Shigenaka

Key Points

- Although surprisingly robust when faced with physical damage (shark attacks, boat strikes), sea turtles are highly sensitive to chemical insults such as oil.
- Areas of oil and gas exploration, transportation, and processing often overlap with important sea turtle habitats.
- Sea turtles are vulnerable to the effects of oil at all life stages—eggs, post-hatchlings, juveniles, and adults in nearshore waters.
- Several aspects of sea turtle biology and behavior place them at particular risk, including a lack of avoidance behavior, indiscriminate feeding in convergence zones, and large predive inhalations.
- Oil effects on turtles include increased egg mortality and developmental defects, direct mortality due to oiling in hatchlings, juveniles, and adults; and negative impacts to the skin, blood, digestive and immune systems, and salt glands.

Although oil spills are the focus of this book, it would be misleading to portray them as the most significant danger to the continued survival of sea turtles, either in U.S. waters or worldwide. In 1990, the National Research Council qualitatively ranked sources of sea turtle mortality by life stage. The highest mortalities on juvenile and adult turtles were caused by commercial fisheries, on hatchlings it was nonhuman predation and beach lighting, and on eggs, nonhuman predators. While "toxins" appeared as a listed source, their impact to all three turtle life stages was unknown. Oil spills were not considered as a specific potential impact, but their absence should not be construed as lack of a spill-related threat. Spills that have harmed sea turtles have been documented and case studies of those spills are described in Chapter 6. Moreover, it is not difficult to imagine a large spill washing ashore on a known nesting beach for an endangered sea turtle species when females are converging to nest or eggs are hatching.

Oil spills are rare events, but they have the potential to be spectacularly devastating to resources at risk. In addition, it is not simply infrequent or episodic spills that threaten sea turtles. Continuous low-level exposure to oil in the form of tarballs, slicks, or elevated background concentrations also challenge animals facing other natural and anthropogenic stresses. Chronic exposure may not be lethal by itself, but it may impair a turtle's overall fitness so that it is less able to withstand other stressors.

What do we know about the toxicity of oil to sea turtles? Unfortunately, not much. Direct experimental evidence is difficult to obtain, because all sea turtle species

are listed as threatened or endangered under the 1973 U.S. Endangered Species Act (Table 1.1). The tenuous status of sea turtles worldwide has significantly influenced research activities and is a key reason that basic information about the toxicity of oil to turtles is scarce. According to Lutz (1989), "Studies on sea turtles must take fully into account that all species are at risk and have either threatened or endangered species status. Investigation must be confined to sublethal effects that are fully reversible once the treatment is halted. This restricts the scope of toxicity studies that can be carried out, especially the study of internal effects, and investigations of natural defense mechanisms ... would be very difficult."

Notwithstanding ethical or legal arguments over exposing organisms to potentially harmful materials in order to document effects, from a response and operational perspective the lack of data impairs decision-making on trade-offs during oil spills. Fritts et al. (1983) concluded two decades ago that the dearth of basic scientific information about sea turtles complicates the detection of oil-related problems and non-oil-related problems. While much has been learned since then, it is still true that determining the source of stress to sea turtles is complicated and difficult.

Most reports of oil impact are anecdotal or based on small sample sizes, but there is no question that contact with oil negatively impacts sea turtles. Because they are highly migratory—spending different life-history stages in different habitats—sea turtles are vulnerable to oil at all life stages: eggs on the beach, post-hatchlings and juveniles in the open ocean gyres, subadults in nearshore habitats, and adults migrating between nesting and foraging grounds. Severity, rate, and effects of exposure will thus vary by life stage. Unfortunately, areas of oil and gas exploration, transportation, and processing often overlap with important sea turtle habitats, including U.S. waters off the Florida and Texas coasts and throughout the Gulf of Mexico and the Caribbean.

Figure 4.1 A juvenile green turtle oiled during a spill in Tampa Bay, Florida, in 1993. The turtle was rehabilitated by the Clearwater Aquarium and eventually released. Photo courtesy of Dr. Anne Meylan, Florida Fish and Wildlife Conservation Commission, Florida Marine Research Institute.

In this chapter, research on the toxicity of oil to sea turtles is summarized, along with indirect impacts that might occur during an oil spill and subsequent cleanup methods.

Toxicity Basics

It is necessary to begin the discussion of oil toxicity by defining what we mean by "oil." One universal challenge facing resource managers and spill responders when dealing with oil spills is that oil is a complex mixture of many chemicals. The oil spilled in one incident is almost certainly different from that spilled in another. In addition, broad categories such as crude oil or diesel oil contain vastly different ingredients, depending on the geologic source, refining processes, and additives incorporated for transportation. Even if we could somehow stipulate that all spilled oil was to be of a single fixed chemical formulation, petroleum products released into the environment are subjected to biologi-

cal, physical, and chemical processes—called weathering— that immediately begin altering the oil's original characteristics. As a result, samples of oil from exactly the same source can be very different in composition after exposure to a differing mix of environmental influences. Thus, while we generalize about oil toxicity to sea turtles in this book, the reader should be aware of the limitations in doing so.

Weathering - the alteration of the physical and chemical properties of spilled oil through a series of natural biological, physical, and chemical processes beginning when a spill occurs and continuing as long as the oil remains in the environment. Contributing processes include spreading, evaporation, dissolution, dispersion, photochemical oxidation, emulsification, microbial degradation, adsorption to suspended particulate material, stranding, or sedimentation.

Oil affects different turtle life stages in different ways. Unlike many other organisms, however, each turtle life stage frequents a habitat with notable potential to be impacted during an oil spill. Thus, information on oil toxicity is organized by life stage.

The earlier life stages of living marine resources are usually at greater risk from an oil spill than adults. The reasons for this are many, but include simple effects of scale: for example, a given amount of oil may overwhelm a smaller immature organism relative to the larger adult. The metabolic machinery an animal uses to detoxify or cleanse itself of a contaminant may not be fully developed in younger life stages. Also, in early life stages animals may contain a proportionally higher concentration of lipids, to which many contaminants such as petroleum hydrocarbons bind.

Eggs and Nesting

While eggs, embryos, and hatchlings are likely to be more vulnerable to volatile and water-soluble contaminants than adults, only one study has directly examined the effects of oil compounds on sea turtle eggs. Following the 1979 Ixtoc 1 blowout in the Bay of Campeche, Mexico, Fritts and McGehee (1981) collected both field and laboratory data on the spill's effects on sea turtle nests from an impacted beach. In laboratory experiments where fresh oil was poured on nests of eggs during the last half to last quarter of the incubation period, the researchers found a significant decrease in survival to hatching. Eggs oiled at the beginning of incubation survived to hatching, but the hatchlings had developmental deformities in the form of significant deviations in the number of scutes. Weathered oil, however, appeared to lose its toxic effect on eggs: oiled sand taken from the beach the year following the spill did not produce measurable impacts on hatchling survival or morphology. The data thus suggest that oil contamination of turtle nesting sites would be most harmful if fresh oil spilled during the nesting season.

On the other hand, Fritts and McGehee also concluded that oil spilled even a few weeks prior to the nesting season would have little effect on egg development and hatchling fitness. A threshold level of oiling to produce measurable effects on survival of loggerhead embryos was not determined; however, a mixture of 7.5 ml of oil per kg of sand did not significantly reduce survival. The way oil was introduced into a nest did affect toxicity. Oil poured on top of a clutch of eggs, versus that mixed thoroughly into the sand, had greater impact. That is, 30 ml of oil poured onto the sand over eggs lowered survival in embryos, whereas 30 ml of oil mixed into the sand around the eggs

did not. The authors speculated oil on the sand surface created an exposure gradient in which lethal concentrations were experienced by individual eggs, but not all of them.

The effects of beach oiling on nesting females' behavior and physiology were not investigated. Females may refuse to nest on an oiled beach, and crossing it could cause external oiling of the skin and carapace. Fritts and McGehee noted that the oil behaved like any other flotsam; not all beach areas received equal amounts, and most of it was deposited just above the high-tide line. The latter point is significant for planning and response because most turtles nest well above the high-tide level. One implication of nesting behavior is that under normal circumstances, nest sites are less likely to be directly affected by stranding oil. Spills, however, are often associated with storms or exceptional tides, which may deposit oil at higher than normal levels. In addition, beached oil would lie between nests and the water, thus females coming ashore to lay eggs or emerging hatchlings would risk exposure as they traversed the beach.

Phillott and Parmenter (2001) determined that oil covering different portions and different proportions of the surface of sea turtle eggs affects hatching success. For example, an egg's upper hemisphere is the primary gas exchange surface during early incubation. If oil covers enough of the upper surface to impede gaseous exchange, higher mortality in embryos will occur. Larger eggs are more likely to survive than smaller eggs. Physical smothering effects of oil therefore represent a threat to nest viability, even if the oil has low inherent toxicity.

Three important factors—nest temperature, gas exchange, and moisture—affect hatching success. Oil can potentially impact a nesting beach by interfering with gas exchange within the nest (oil-filled interstitial spaces, for example, would prevent oxygen from diffusing through the sand into the nest); altering the hydric environment (sea turtle nests need sand that is not too wet or too dry); and altering nest temperature by changing the color or thermal conductivity of the sand.

Langmuir cell - individual counter-rotating vortices (i.e., one rotates clockwise, the next counter clockwise, the next clockwise, etc.), resulting in the commonly observed "windrows" in which flotsam is arranged in rows paralleling the wind direction. At boundaries between the cells, water is moving either up or down. Where it is moving down, the surface water is converging (being pulled together), and any surface objects will be pulled into the boundary line between the cells; where the water is moving up between the cells, the water diverges, and no material collects.

Hatchlings

Once hatchling turtles successfully reach the water, they are subject to the same kinds of oil spill exposure hazards as adults (see page 39). However, relative size, lack of motility, and swimming and feeding habits increase the risk to recently hatched turtles. The increased risks can be linked to the following factors, among others:

- Size. A hatchling encountering the same tar patty or oil slick as an adult has a greater probability of being physically impaired or overwhelmed.
- Motility. Most reports of oiled hatchlings originate from convergence zones, ocean areas where currents meet to form collection points for material at or near the surface of the water. These zones aggregate oil slicks as well as smaller, weaker sea turtles. For a weakly motile organism such as a young turtle, a Langmuir cell, where

surface currents collide before pushing down and around, represents a virtually closed system where the turtle can easily become trapped.

- Surface swimming. Because hatchlings spend a greater proportion of their time at the sea surface than adults, their risk of exposure to floating oil slicks is increased.

The physical processes and behaviors that place sea turtles at risk during spills also pose threats from non-spill-related petroleum sources. Tarballs, for example, are a byproduct of normal and accepted ship operations (e.g., bilge tank flushing), are illegally discharged from tank washings and other shipboard operations, and are even released naturally from coastal oil seeps. They are found in every ocean and on every beach; features such as convergence zones and Langmuir cells can aggregate even widely dispersed tarballs into an area where sea turtles concentrate. Oil exposure is therefore a threat to sea turtles both in the presence and in the absence of an identified spill.

Non-spill-associated tarballs are likely to be more weathered than those derived from a spill, mostly due to differences in time spent on the water. While less toxic to eggs and embryos than freshly spilled oil, weathered oil can have significant impacts on hatchlings. Hatchlings that contact oil residues while crossing a beach can exhibit a range of effects, from acute toxicity to impaired movement and normal bodily functions. In convergence zones off the east coast of Florida, tar was found in the mouths, esophagi, or stomachs of 65 out of 103 post-hatchling loggerheads (Loehefener et al. 1989). In another study (Witherington 1994), 34 percent of post-hatchlings at "weed lines" off the Florida coast had tar in their mouths or esophagi, and over half had tar caked in their jaws. Lutz (1989) reported that hatchlings have been found apparently starved to death, their beaks and esophagi blocked with tarballs. Hatchlings sticky with oil residue may have a more difficult time crawling and swimming, rendering them more vulnerable to predation.

Whether hatchlings, juveniles, or adults, tarballs in a turtle's gut are likely to have a variety of effects—starvation from gut blockage, decreased absorption efficiency, absorption of toxins, effects of general intestinal blockage (such as local necrosis or ulceration), interference with fat metabolism, and buoyancy problems caused by the buildup of fermentation gases (floating prevents turtles from feeding and increases their vulnerability to predators and boats), among others.

Juveniles/Adults

Studies of oil effects on loggerheads in a controlled setting (Lutcavage et al. 1995) suggest that all post-hatch life stages are vulnerable to oil effects and tar ingestion because sea turtles show no avoidance behavior when they encounter an oil slick. Turtles also indiscriminately eat anything that registers as being an appropriate size for food, including tarballs. Such was the case with a juvenile loggerhead stranded in Gran

Canaria, Spain, which had an esophageal defect that trapped tarballs, plastics, and fishing line in its digestive system. The large esophageal swelling displaced the liver and intestines, causing severe tissue swelling near the stomach. The turtle was nearly starved, and it had buoyancy problems and a bacterial infection (most likely secondary to its poor physical condition).

Sea turtles' diving behavior also puts them at risk. They rapidly inhale a large volume of air before diving and continually resurface over time. Adults doing this in an oil spill would experience both extended physical exposure to the oil and prolonged exposure to petroleum vapors, the most acutely harmful phase of a spill. Compared to hatchlings, however, juveniles and adults spend less time at the sea surface, which potentially reduces their chances of exposure from a smaller oil slick.

Oil ingested by a turtle does not pass rapidly through its digestive tract. It may be retained for several days, increasing internal contact and the likelihood that toxic compounds will be absorbed. The risk of gut impaction also increases for turtles that have ingested oil.

Anecdotal accounts of dead or impaired green turtles found with tarballs in their mouths were summarized by Witham (1978). Three turtles found dead after the Ixtoc 1 blowout showed evidence of oil externally and in the mouth, esophagus, and small intestine, although there was no evidence of lesions in the gastrointestinal tract, trachea, or lungs (Hall et al. 1983). However, chemical analysis of tissue showed a chronic exposure to and selective accumulation of hydrocarbons. Some were concentrated 15 times higher than reference levels. Hall et al. believed prolonged exposure to oil may have caused the poor body condition of the animals by disrupting feeding.

Laboratory Studies

The only laboratory work investigating the direct impacts of oil on sea turtle health and physiology performed to date was part of comprehensive, multi-facility study conducted for the U.S. Minerals Management Service (MMS) in 1986 (Lutcavage et al. 1995). A conceptual framework for considering behavioral and physiological oil impacts was summarized by Lutz (1989) in a series of diagrams, two of which are reproduced here as Figures 4.2 and 4.3.

MMS - U.S. Minerals Management Service (U.S. Department of the Interior).

The Lutcavage et al. experiments on physiological and clinicopathological effects of oil on loggerhead sea turtles approximately 15 to 18 months old showed that the turtles' major physiological systems are adversely affected by both chronic and acute exposures (96-hour exposure to a 0.05-cm layer of South Louisiana crude oil versus 0.5 cm for 48 hours). The skin of exposed turtles, particularly the soft pliable areas of the neck and flippers, sloughed off in layers. This continued for one to two weeks into the recovery period. Histological examination of the damaged skin showed proliferation of inflamed,

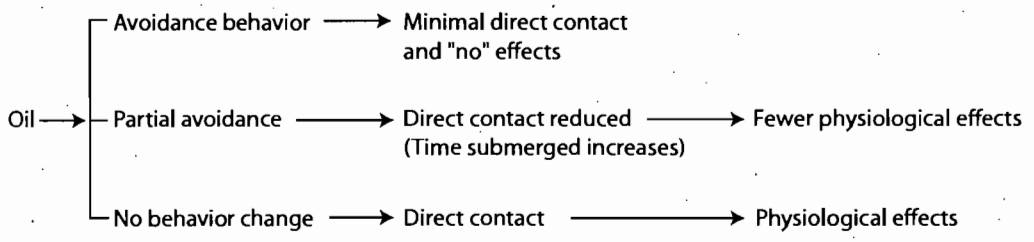

Figure 4.2 Conceptual framework of sea turtle behavioral responses to oil exposure (adapted from Lutz 1989).

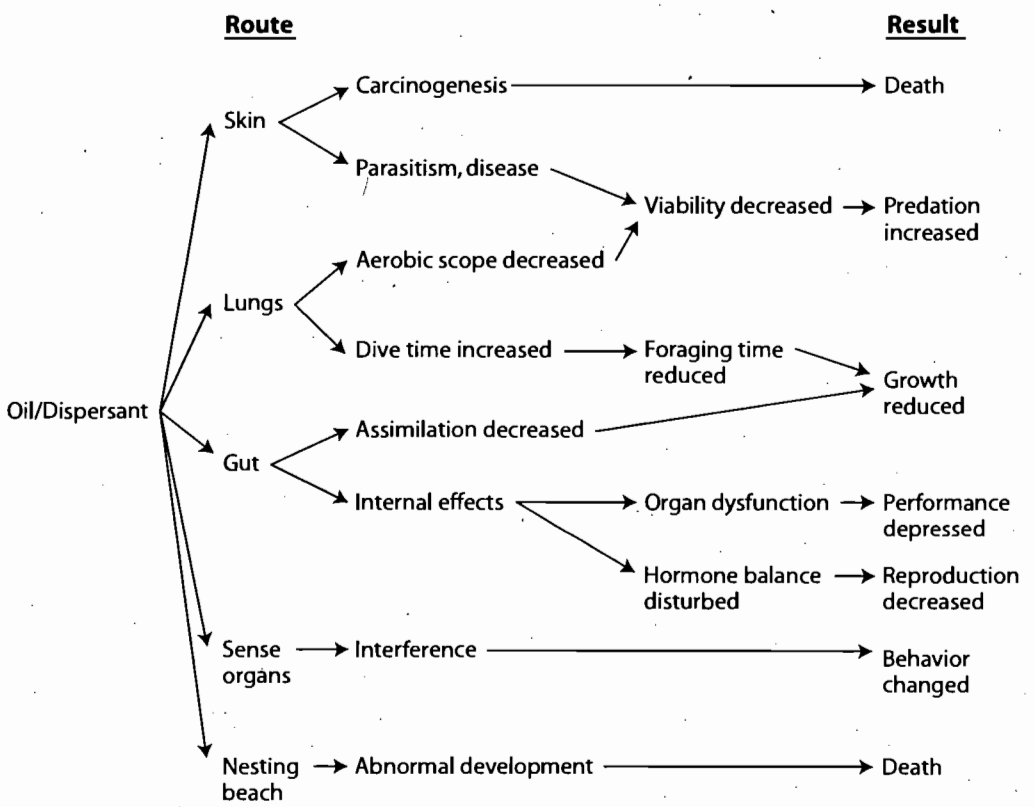

Figure 4.3 Conceptual framework for the effects of oil exposure to sea turtles (adapted from Lutz 1989).

abnormal, and dead cells. Recovery from the sloughing skin and mucosa took up to 21 days, increasing the turtle's susceptibility to infection.

Oil was also detected in the nares, eyes, upper esophagus, and feces, indicating that turtles were ingesting oil, though apparently not enough to cause intestinal bleeding and anemia. Ingestion would almost certainly have been greater if the turtles had been fed during the experimental period.

Hematocrit - red blood cell volume.

Internal effects of oil exposure include significant changes in blood and blood chemistry. Hematocrits (red blood cell volume) decreased nearly 50 percent in oiled turtles and did not increase again during the recovery period, though the presumed decrease in oxygen carrying capacity was not reflected in changes in blood oxygen or respiration. In mammals, changes in red blood cells and their production are associated with regenerative anemic conditions. Similar effects have been observed in oiled seabirds, indicating that red blood cells may be a primary target of oil toxicity. An immune response was also indicated by significant increases in white blood cells, which by day 3 of oil exposure were four times higher in oiled turtles than control animals. This increase persisted for more than a week.

While vapor inhalation changes the behavior and pathology of marine mammals—as evidenced, for example, by an increase in time spent submerged—such behavior was not evident with turtles. The experimental animals showed no overall avoidance behavior, though some were clearly disturbed by the fumes. Some turtles surfaced away from the oil in behavioral tests, but they appeared to be avoiding the dark surface, not the oil per se.

In vertebrates, the liver is the primary site of chemical detoxification, so it is reasonable to expect toxic effects to be evident in changed serum levels of various liver enzymes. (Such diagnoses are used in veterinary and human medicine, though their significance in turtle health has not yet been ascertained). However, no changes were evident in the Lutcavage et al. study, which differed significantly from control animals. Changes in some enzyme levels were most likely the result of starvation during the experiment (animals were not fed during exposure), since changes were similar in both control and experimental animals. Enzyme levels in oiled turtles did not recover as quickly once feeding commenced, however.

Hemorrhagic enteritis - bleeding inflammation of the intestine.

Since no animals were sacrificed during this study, it was not possible to examine the turtles for internal damage, except through indirect methods such as measuring serum enzyme levels. Potential effects, however, may be extrapolated from investigations of dead oiled birds, because reptiles and birds share a common lineage. Following the Gulf War, postmortem examinations of 300 birds revealed a variety of damage: gizzard impaction due to tarballs, enteritis, starvation, fluid and hemorrhaging in the lungs, damage to the absorptive surface of the intestines, liver degeneration, kidney damage, and degeneration of adrenal gland cells (which in turn affects salt gland function in seabirds and possibly turtles). Other studies found high incidences of hemorrhagic enteritis

in oil-killed birds. Sea turtles may be at particular risk from such problems due to their habit of eating anything that floats; post-hatchlings, in particular, feed in convergence zones, which collect a variety of anthropogenic materials such as tarballs.

Although they found little experimental evidence in the MMS studies to indicate bioaccumulation of hydrocarbons by sea turtles, Lutcavage et al. (1995) cited a report by Greenpeace from the Gulf War in which high concentrations of petroleum hydrocarbons were found in the liver (4,050 mg/kg) and stomach (310 mg/kg) of an oiled green turtle. The Lutcavage et al. studies provided qualitative evidence that oil exposure affects the balancing of salt and water. Extended salt gland dysfunction would have significant negative impacts on turtle health, altering internal salt and water homeostasis. In two experimentally oiled turtles, the salt glands effectively shut down for several days, although the turtles eventually recovered after the exposure was discontinued. The salt glands did not appear to be physically blocked (though this could not be ruled out), so it appeared that the impact was toxic, rather than physical.

Indirect Effects of Oil on Sea Turtles

Studies summarized thus far show that oil has a number of direct effects on sea turtles. Like any living resource at risk, turtles are susceptible to a number of potential indirect impacts, which would generally be less obvious than short-term direct impacts such as mortality, but may ultimately cause more harm to populations.

A number of potential indirect impacts can be attributed to the unique biological attributes or behaviors of marine turtles. Frazier (1980) suggested that olfactory impairment from chemical contamination could represent a substantial indirect effect in sea turtles, since a keen sense of smell apparently plays an important role in navigation and orientation. Frazier noted that masking olfactory cues may not harm a turtle outright, but impairing its ability to properly orient itself can result in a population impact as significant as direct toxicity—perhaps even greater. A related problem is the possibility that an oil spill impacting nesting beaches may affect the locational imprinting of hatchlings, and thus impair their ability to return to their natal beaches to breed and nest.

Even if sea turtles avoid direct contact with oil slicks, eating contaminated food is a direct exposure path, and reduced food availability is an indirect exposure route. A 1986 oil spill off Panama, for example, trapped oil in sediments of intertidal beds of turtle grass (*Thalassia testudinum*), killing the seagrass, a significant component of green turtle diets. Sediments below the damaged seagrasses subsequently eroded, exposing the coralline rock bed. Decreases in invertebrates and sponge populations affect other sea turtle species as well, including hawksbills, loggerheads, and ridleys. In this instance, after long-term contact with oil many invertebrates were killed and many others declined in numbers. A variety of petroleum compounds are toxic to fish and invertebrates, although the effect is not uniform; different species have different sensitivities to different com-

pounds. Some compounds are more toxic than others or are more toxic in different combinations (National Research Council 2003).

Dietary differences can potentially increase or decrease risk from hydrocarbon ingestion. Kemp's ridley and loggerhead turtles, for example, feed primarily on crustaceans and mollusks, which bioaccumulate petroleum hydrocarbons because they cannot efficiently clear contaminants from their bodies. Thus Kemp's ridleys and loggerheads may be at greater risk of exposure by ingesting food than leatherback turtles, which feed primarily on coelenterates.

Followup studies on the effects of an oil spill on San Cristóbal in the Galapagos Islands suggest an indirect and unanticipated food-related effect on another reptile, the marine iguana (*Amblyrhynchus cristatus*). Although the spill's short-term impacts were minimal, in the year that followed the iguana population of nearby Santa Fe Island suffered a significant mortality, 62 percent. Wikelski et al. (2002) reported that the probable cause of this substantial population decline was chronic, low-concentration oil exposure to the specialized fermentation bacteria that iguanas carry in their hindguts. The authors postulated that oil impacts on these bacteria impaired the iguanas' ability to process the algae they eat. Largely herbivorous sea turtles, like the green, also carry symbiotic bacteria to aid in digestion and are likely to be similarly vulnerable to effects on the bacteria observed in the marine iguanas.

Some authors (e.g., Hutchinson and Simmonds 1992) have suggested a link between low-level chronic exposure to contaminants such as oil, and the occurrence of cutaneous fibropapilloma disease (Chapter 3). The link was circumstantial; it was based on immune system responses to oil exposure observed by Lutcavage et al. (1995) and assertions by other pathologists that immune system weakness and aberrant wound responses may trigger fibropapilloma disease. However, the relationship is likely to be complex, thus it is unclear which is cause and which effect (L. Herbst 2002[1]).

albedo - ratio of solar energy reflected from an object to solar energy received by it.

Beach sand temperature influences sea turtle development and behavior, and Hays et al. (2001) determined that subtle differences in sand color or albedo can significantly affect underlying temperatures. Because sex determination in turtles is temperature-dependent, shifts in albedo could potentially change hatchling sex ratios. Even light surface oiling that does not penetrate directly to the eggs could therefore affect gender distribution in a population.

Exposure Risk

Much of the oil spilled in the oceans results in surface contamination along ocean tanker lanes and coastal areas, including along the coasts of California, Texas, and Florida; Cuba and northwest South America; northern Europe; the Gulf of Arabia and the Arabian Sea; and throughout the Indo-Pacific region along eastern Asia. Unfortunately, the risk of an oil spill affecting a significant nesting beach within U.S. territory is high. Of

these higher risk areas, south Florida is particularly vulnerable due to the convergence of ocean currents and shipping lanes. Data on wind, loop current, and drifter studies led Geo-Marine, Inc. (1980) to predict that oil spilled in the eastern Gulf of Mexico would have the highest probability of washing ashore along the southeast coast of Florida between Key West and Fort Pierce, an area that also hosts a large percentage of the loggerhead sea turtle nests in the southeastern United States. The Sargasso Sea alone is estimated to entrap 70,000 metric tons of tar, while a two-year study by Van Vleet et al. (1984) indicated that, in general, pelagic tar concentrations in the eastern Gulf of Mexico were significantly higher than those reported for other parts of the world.

Because environmental problems do not respect human boundaries, it is not surprising that sea turtles found in U.S. waters are vulnerable to spills that occur both within and outside U.S. waters. Approximately 1 percent of annual U.S. sea turtle strandings are associated with oil; rates are higher in south Florida (3 percent) and Texas (3 to 6.3 percent) (stranding statistics are summarized by Lutcavage et al. 1997). Rates of contact with pollutants are likely to be much higher than those detected from strandings alone; during the 1986 fishing season off Malta, for example, 17 of 99 loggerhead turtles caught by Maltese fisherman suffered from crude oil contamination, compared to three contaminated with plastic or metal litter but not oil (Gramentz 1988).

The consequences of chronic exposure to oil in the form of ingested tarballs is not clear, but some evidence exists that this occurrence, alone or in combination with other foreign material, can seriously compromise sea turtle health. Torrent et al. (2002) examined a juvenile loggerhead captured barely alive off the coast of Gran Canaria, Spain. The turtle died in transport and was necropsied. A number of abnormal pathologies were found, including an esophageal diverticulum (an abnormal saclike pouch) and an infection by bacteria not normally found in sea turtles. The authors attributed the poor condition of the turtle, directly and indirectly, to ingested tarballs, plastic, and fishing line.

Diverticulum - an abnormal saclike pouch projecting from a defect in the wall of a tube or cavity.

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