



Fisheries and Aquatic Resources Node
Strategic Plan
2004 to 2009

February 2004

Fisheries and Aquatic Resources (FAR) Node

Strategic Plan, 2004 to 2009

NODE MISSION

Fisheries and aquatic resources are economically, ecologically, culturally, and aesthetically important to the nation, yet many of these resources are in decline due to factors such as habitat alteration, degrading water quality, invasive species, water availability, and overharvest. Thus, to aid conservation and restoration efforts, comprehensive data and information on the various aspects of fish biology, population dynamics, management, hatcheries, water quality, and aquatic habitat and ecosystems are needed in a format accessible to an audience ranging from scientists and managers to environmentalists and the general public. To fill this need, the Fisheries and Aquatic Resources (FAR) node was initiated in 2001. The node will provide an integrated, comprehensive web-based resource that will: 1) serve and access fishery and aquatic databases, 2) link to fishery and aquatic resource information sites, and 3) act as a larger scale coordinating site for fisheries and aquatic resources standards.

Once completed, the FAR node will provide information on both larger-scale and biodiversity-related issues. The identification and integration of distributed datasets collected by a variety of partners will provide users one-stop shopping to fisheries information. This improved access to data will result in more widespread use of the information, thus facilitating further analyses by partners and others within the management and research communities.

SCOPE OF INFORMATION

Because the state of information system development differs by type of aquatic system, proper development of the FAR node necessitates breaking down aquatic systems into the following categories:

Diadromous – Those aquatic species that have part of their life cycle in both fresh and salt water.

Freshwater – Those species that spend their entire life in freshwater ecosystems.

Marine – Those species that spend their entire life in marine ecosystems. Included in this category are coral reef systems.

Culture – Fish and aquatic resources that are propagated and are stocked within ecosystems.

Throughout most of these discussions the emphasis was on fishes, however other aquatic species and complexes, such as mussels, aquatic invertebrates, and corals, will be considered during node development. Further, the FAR node will work on both harvested species and biodiversity specific issues, but may emphasize information on these issues based on priorities within each aquatic system category defined above. A number of current information systems are available across all categories and are listed in Appendix A.

CURRENT INFORMATION MANAGEMENT ISSUES

Within all FAR categories, there exist many information systems. Most of these are typically mission-oriented and do an excellent job of providing access to information needed for the specific goals. However, because these information systems are mission-oriented, they are held by a number of different organizations and contain a number of different data structures and types. There have been few larger-scale, national level attempts to coordinate these information systems, leading to the fragmented landscape of fisheries and aquatic resources information systems. This creates a disconnect between the smaller scale needs associated with individual projects and the larger scale requirements of reporting national status and trends. To resolve these inconsistencies, several issues need to be addressed:

Information integration – Most of the freshwater, diadromous, and culture data systems are built to solve local or regional-scale management issues. In some limited instances, despite few incentives for cooperation among local and regional entities, there have been attempts to integrate data across state boundaries. Marine systems also address regional scale issues, with the scale of system development dependent on whether the data are for harvested marine species or marine biodiversity. For harvested marine species, reporting requirements have made it necessary to report data across larger geographic areas, and the National Marine Fisheries Service (or NOAA-Fisheries) provides coordination for the national integration of this data. However, only in limited instances has a broader ecosystem approach, which includes biological, chemical, and physical information, been taken to fully understand aquatic systems.

Standards – The ability to compare data across multiple jurisdictions and geographic areas depends on the availability of collection and reporting standards. Standards can be as simple as the naming of species being collected and as complex as the type of gear used to collect them. Developing standard terminology to describe how the data are collected or reported makes information more comparable across jurisdictions or geographic areas. In marine systems, some descriptive standards exist in various regions, although these standards may not be consistent. Nationwide standards for reporting and collecting information beyond harvested marine species are non-existent beyond the use of the Integrated Taxonomic Information System (ITIS) and the American Fisheries Society (AFS) list of accepted fish names. A similar situation exists for freshwater and diadromous species. The development of the National Fish Strain Registry by the US

Fish and Wildlife Service (USFWS) and the US Geological Survey (USGS) has provided some standards to describe cultured fishes, however they have not been widely applied beyond the data in the registry.

Effort – For all systems described above, the majority of the effort in collecting, reporting, and standardizing information has been spent on harvested, invasive, forage, threatened, and endangered species. Effort and dollars spent on managing information for all species has traditionally been much lower than the effort and dollars spent on collecting information. Making broad temporal and spatial scale statements about the state of the nation’s resources will require a stronger emphasis on non-traditional datasets and more effort and money spent on managing the information.

Access – There are many groups attempting to develop information sets about aquatic resources for a variety of audiences. However, there is little coordination of this information across all categories of aquatic systems, making it very confusing for users to access information and hard for data developers to communicate with users. Gaining access to information at multiple scales is inconsistent, hard to do, and makes analysis across multiple jurisdictions or large geographic areas very difficult. A structured approach and better communication would make access to fisheries information easier.

GOALS AND STRATEGIES

Note – given current funding and personnel resources, this represents a very ambitious program. Further, the reliance on partner agencies to initiate many of these projects means that some goals and strategies will proceed at different rates than others. For clarification, the Guidance Team believes that the FAR initiative should concentrate efforts and help on systems in the following order; freshwater, marine biodiversity, culture, and marine harvested fishes. Given our resource constraints, we will focus on strategies underneath goals given the previous system order.

For the initial 5-year strategic planning period, the majority (80%) of personnel time, effort, and FAR funds will be spent on inland freshwater fisheries and aquatic resources. However, we will spend time and effort on issues surrounding marine biodiversity, especially issues regarding non-fish marine species. In addition we will continue to work on the Fish Strain Registry and other aquatic culture systems, providing guidance to national and international efforts where appropriate. Finally, when asked by partners, we will be available to assist and coordinate efforts on other marine resource issues. In all instances, FAR will seek to work with partners to avoid redundancy and duplication of effort on all projects it undertakes.

Given FAR’s limited resources, a number of strategies will be employed to accomplish the goals outlined below. First, we will coordinate with the International Association of Fish and Wildlife Agencies, the Organization of Fish and Wildlife Information Managers, the American Fisheries Society, and other organizations to help advance the strategic plan. Further, we will use the prototype approach to develop and expand outward to other watersheds and species. Using workshops and symposia, we will get buy-in and participation from other partners. Finally, we will coordinate with regional NBII nodes, aquatic GAP, and other major federal programs to generate interest and resources for this program.

The FAR node goals and strategies fit nicely into 4 major strategies developed to guide the entire NBII program:

Strategy 4. Pursue a thematic approach to managing the information relevant to biological issues of national concern.

Strategy 5. Leverage resources through partnerships.

Strategy 6. Support biological informatics research and development.

Strategy 7. Educate NBII users and potential users through outreach, training, and technical support.

Goal 1: Coordinate and provide access to information that permits multiple-scale analysis of the status and trends of aquatic resources.

***Audience** – Aquatic Resources professionals, land managers, aquatic advocacy organizations, educators, and policy-makers*

***Issues Addressed** – Scale, Effort, Access*

***Strategies** –*

Freshwater & Diadromous Systems

a. Develop projects that provide access to data for determining status and trends of aquatic resources. Focus will be on species or species groupings that exist across a variety of ecosystems, are indicators of ecosystem health, cross geopolitical boundaries, or can be assessed across a variety of scales. This will be accomplished via two approaches:

i. Geographical approach that allows assessment of both status and trends of multiple taxa within a region and the usefulness of an information management approach for integrating multiple regions into a national information system.

ii. Species approach, that identifies reference datasets to document the status and trends of a species, or groups of related species, that can be subsequently federated into a national information monitoring network.

b. Continue coordination work with those UN FAO and U.S. agencies having primary responsibility for the management of aquatic resources, to develop international initiatives that assess the status and trends of inland freshwater aquatic resources.

- c. Coordinate and participate in symposia that are designed to identify status and trends indicators for fisheries and aquatic resources.

Marine Systems

- a. Work with other marine biodiversity information management initiatives to develop a broader scale assessment of marine biodiversity, especially in marine coral reef areas and non-fish marine data.
- b. Be available to assist U.S. based marine management agencies in regards to development of information on status and trends. As asked by marine management agencies, provide support for production of information systems that are necessary for inclusion into international initiatives.

Culture

- a. Develop a data-system that allows users to determine the importance of culture-based production to fisheries within the U.S. Work with existing data sets/systems to provide accessibility to information to complete this analysis.
- b. Provide guidance, based on U.S. experience and work with international initiatives, for collection and reporting on the status and trends in world aquaculture production.
- c. Continue support for the National Fish Strain Registry as an information tool for aquaculturists in the United States.
- d. Develop a database with information on the registration of drugs and therapeutics for fisheries culture.

Goal 2: Develop a clearinghouse for fisheries and aquatic resources information.

Audience – Aquatic resources professionals, the public, policy-makers

Issues Addressed – Effort, Access

Strategies –

- a. Design the FAR website and clearinghouse infrastructure, and establish development and maintenance protocols. This will include several tasks:
 - i. Create a review process for determining topics of emphasis and site design.

- ii. Institute protocols for determining the suitability of web sites for inclusion into the FAR clearinghouse.
 - iii. Develop a process for partners to notify FAR on new sources of information.
 - iv. Establish a link-management program that insures links are kept up-to-date.
- b. Develop and establish an outreach strategy that insures FAR is the one-stop shopping site for fisheries and aquatic resources information, and is supported by partners and policy-makers.
 - c. Incorporate NBII search tools into the FAR website.

Goal 3: Promote development of standards for fisheries and aquatic resources information.

Audience – Aquatic resources professionals

Issues Addressed – Scale, Access, Standards

Strategies –

- a. Collect, collate, and make available via the FAR website existing fisheries and aquatic resources collection, reporting, and definition standards.
- b. Work with appropriate professional societies, such as the American Fisheries Society, the International Association of Fish and Wildlife Agencies, or the Organization of Fish and Wildlife Information Managers, to:
 - i. Develop standards for data collection, reporting, and, where appropriate, definition of terms across all systems.
 - ii. Develop a hierarchy for standards across multiple spatial and temporal scales, assuring the determination of data quality.
 - iii. Address various issues related to data exchange, such as the development of model legal policies.
- c. Provide training, guidance, and assistance to agencies in the development of metadata and documentation standards. Act as a warehouse for storage of metadata standards for use by all agency professionals.

- d. Develop tools that will:
 - i. Enable automation and promote greater standardization.
 - ii. Assure that standards can be applied and compared across scales.
- e. Develop a network and technological framework that can integrate data from multiple scales into one system.

Goal 4: Leverage existing programs and information systems to further develop fisheries applications.

Audience – Fisheries, IT, and aquatic resources professionals

Issues Addressed – Scales, Access, Effort

Strategies –

- a. Meet with other fisheries and aquatic resources agencies to identify current information systems. Develop partnerships with these agencies to maximize the benefit of existing systems. Work with partners to utilize existing information systems, where appropriate, and market to other agencies.
- b. Develop proposals to leverage resources from other funding agencies that meet the primary mission statement of the FAR node. Where appropriate, work with partners in joint proposals that can advance the missions of both agencies.
- c. Provide access to training and assistance on existing systems to other agencies. Develop training course on fisheries information systems and market as a product of the FAR node.
- d. Provide support to other agencies in making data available across the Internet. This support can be provided via expertise, in-kind services, and financial mechanisms.
- e. Work with regional NBII nodes to assure all fisheries and aquatic resources projects fit within the FAR node framework, are not redundant, and are mutually beneficial.
- f. Maintain FAR's flexibility to timely deal with fisheries and aquatic resources issues of concern as they arise in the future.
- g. Maintain the guidance team to insure constant quality and revision of FAR strategic goals, plans, and issues of the management and science agencies.

MEASURES OF SUCCESS

Strategic plans and the programs they guide are only successful if their performance is measured against the goals in the plan. To that end a number of possible performance measures were discussed and will be implemented to assure FAR program success.

1. Develop a web-based user tracking system. This system should track both user domains and the number of repeat users.
2. Track development of structures and data on status and trends projects, i.e., can our data be used to produce status and trends reports.
3. Develop both a formal customer survey instrument and a web-based user feedback application. Use these tools to determine user satisfaction with the product.
4. Keep a high leverage rate on non-NBII resources, where our dollars are matched with partner commitments.
5. Track the number of new data systems on the FAR site, and use by customers.
6. Track the number of new tools developed.
7. Successful implementation of a status and trends project in conjunction with partners.
8. Track the number of partnerships developed and outreach efforts initiated.

Appendix A: Strategic Plan Creation

STRATEGIC PLANNING PROCESS

The creation of the FAR Strategic Plan was done using a FAR Guidance Committee that consisted of representatives from a number of different federal, state, and non-governmental fisheries agencies. We held a two-day meeting to generate the ideas that form the basis of the strategic plan and then used a series of revisions, via e-mail, to insure all members concerns were addressed. In addition to members of the Guidance Committee, we've also asked for review from a number of other fisheries organizations. These comments will be incorporated into the strategic plan upon concurrence of the Guidance Committee. One major issue identified during the FAR Strategic Planning meeting was the need for FAR to be complimentary to other current fisheries information systems, working with partners where necessary, and avoiding any duplication of effort. FAR should work as an integrator and coordinator, and, in many instances, rely on the excellent fisheries information systems that are currently used. A list of fisheries information systems identified during the planning process follows.

CURRENT INFORMATION SYSTEMS

Anadromous

- Streamnet
- PACFIN
- States in Great Lakes
- Fish Passage Ctr.
- PIT Tag Information System
- Regional Mark Processing Ctr.
- Atlantic Salmon – Maine
- Men Susq Conn.
- Fish Passage
- Pacific Salmon Commission
- NASCO
- CIMS
- NMFS
- ACCSP
- Gulf Coast States

Freshwater

- CALFISH, MARIS
- National Wild Fish Health Survey
- Fish passage decision support system

- Threatened and Endangered Species System (TESS)
- FWS developing database of fish stocks they are working on. Fisheries Information System Population Model
- NAWQA
- BEST, Fish Health database for large river systems
- ARIMS, aquatic resource management system (west)
- NRIS, Forest Service
- National Fish Strain Registry
- Fish Tag Registry
- STORET
- EMAP
- FWS hunting and fishing survey
- NHD
- Aquatic GAP
- Streamnet
- NPS species database
- Reservoir database
- Heritage Databases, NatureServe
- Individual State Systems?
- EPA Systems??
- International Database of Introduced Species (ISSG), invasives
- NAS
- MICRA
- EPA Surf your Watershed

Marine

- ACCSP
- NMFS and States
 - o Marine Recreational Fisheries Statistics Survey (MRFSS)
 - o Fishing Information System
 - o Species Information System
- NOS Status and Trends
- EPA status of the habitat
- National Ocean Data Center holds Oceanography Datasets
- National Estuary Program
- OBIS Oceanic Biogeographic System
- FishBase, Freshwater and Ocean, International
- EMAP and CMAP, RMAP Fisheries Independent Samples (Regional)
- FIGIS, international datasets, each of the international regions have them, FAO
- Spp. Commissions
- Fragmented, but regional and national programs are bringing together and setting data standards
- Sea Floor Mapping, Marine Mapping Users Group (MMUG)
- Mussel Watch Database
- National Shellfish Registry

Culture

- National Fish Strain Registry
- Streamnet & CALFISH
- EPA survey on effluent

GUIDANCE COMMITTEE MEMBERS

| Member | Affiliation |
|--------------------|--|
| Andy Loftus | Loftus Consulting |
| Stu Shipman | Indiana Dept. of Natural Resources, American Fisheries Society (AFS) |
| Dirk Miller | Wyoming Game and Fish, International Association of Fish and Wildlife Agencies (IAFWA)-Fisheries and Water Policy |
| Doug Stang | New York Dept. of Environmental Conservation, Fisheries Administrators |
| Mark Fornwall | NBII Pacific Basin Information Node |
| Mike Mac | US Geological Survey (USGS) Columbia Environmental Research Center, USGS Biological Resources Division Science Centers |
| Laura Hewitt | Trout Unlimited |
| Ruth Kelty | National Oceanic and Atmospheric Administration (NOAA) |
| Bill Fox | NOAA Fisheries |
| Karen Koltes | US Department of the Interior, US Coral Reef Task Force |
| Tom Bushian | US Fish and Wildlife Service (USFWS) |
| Hannibal Bolton | USFWS |
| Jim Preacher | USGS Fisheries: Aquatic and Endangered Resources Program |
| Jim Kapetsky | United Nations Food and Agriculture Organization |
| Maury Osborn | Atlantic Coastal Cooperative Statistics Program |
| Stan Allen | Pacific States Marine Fisheries Commission |
| Bill Taylor | Michigan State University, Sport Fishing and Boating Partnership Council |
| Gil Radonski | Marine Protected Areas Task Force |
| Jeff Waldon | Conservation Management Institute, Virginia Tech |
| Ex-officio: | |
| Cara Campbell | USGS Northern Appalachian Research Laboratory, FAR Node |
| Steve Rideout | USGS Conte Anadromous Fish Laboratory |
| Doug Beard | USGS NBII, FAR Node |