Title: Science and Data Committee Report for FY2013

Desired outcome: An informational briefing to the Board on the Science and Data Committee's 2013 work plan outcomes and Board concurrence for the Science and Data Committee's proposed priority issues it will address in 2014.

Background: At the October 2012 Meeting, the Board approved the following Science and Data Committee priorities for 2013:

1. Refine Science and Data Committee membership to ensure the Committee can meet the Board's needs.
2. The Science and Data Committee will catalog and review current Assessment activities underway by the Fish Habitat Partnerships.
3. Develop mechanisms and document procedures to guide Fish Habitat Partnerships and partners in data management practices to improve data and information exchange that will facilitate collaborative science and data efforts across the National Fish Habitat Partnership. Dedicated workflow strategies will be developed to implement best practices in data management including data curation and preservation tasks to ensure data access and re-use in the future.
4. Update and improve the NFHP data system to improve usability by a broad range of partners.
5. Implement approved strategy to refine the 2010 National Fish Habitat Assessment (Assessment) for 2015 and beyond.
    a. The inland assessment will refine and update fisheries, aquatic nuisance and invasive species, dam inventory, land conservation status, and water quality status (focusing on potentially using Section 303d listings and NPDES violation data) information as data become available. Improved river fragmentation analyses and national calculation of fragmentation metrics will be completed. Demonstration project areas will be identified with interested Partnerships. Approaches to refine the marine-inland linkages between the inland and marine assessments will be evaluated.
    b. Refine the existing geospatial framework for estuaries in the contiguous United States and complete initial development of a geospatial framework for all estuaries across Alaska. A pilot project, illustrating the proposed new fish stressor methodology and regional assessment approach, will be conducted for estuaries in the Gulf of Mexico, including methodological refinements as necessary. Begin data collection and processing to support additional regional estuarine assessments, including datasets on fish/shellfish abundance and diversity, physical habitat, anthropogenic stress, and biological response.

Explore methodologies to improve linkages between the inland and marine components of the National Assessment.

2013 Work Plan Outcomes

- Refine Science and Data Committee membership to ensure the Committee can meet the Board's needs. This effort is expected to be completed by the Board meeting.
- The Science and Data Committee will catalog and review current Assessment activities underway by the Fish Habitat Partnerships. This work was completed in June and the Committee will be examining these data in the coming months.
- Develop mechanisms and document procedures to guide Fish Habitat Partnerships and partners in data management practices to improve data and information exchange that will facilitate collaborative science and data efforts across the National Fish Habitat Partnership. A draft standard operating procedures document has been completed and will be finalized by the next Board meeting.
- Update and improve the NFHP data system to improve usability by a broad range of partners. An updated data system has been completed by USGS staff and is currently in use with additional refinements to be completed over the winter.
- Implement approved strategy to refine the 2010 National Fish Habitat Assessment (Assessment) for 2015 and beyond. Progress on this task is detailed in the attached reports from the two assessment groups.
- Develop standard effectiveness measures for conservation actions used to address nationwide fish habitat focus areas. This task is currently in progress.

Draft Science and Data Priorities for FY2014:

- The Science and Data Committee will examine and review current Assessment activities underway by the Fish Habitat Partnerships, Landscape Conservation Cooperatives (LCCs), and the National Assessment Teams.
  Resources: $20,000 to support a single Science and Data Committee meeting to focus on FHPs and LCCs Assessment efforts and to review progress on along with products from the 2015 National Fish Habitat Assessment. This task was not conducted in FY2013 as refinement of the Science and Data Committee membership was delayed by the need for additional review time by partner agencies.

- Refine mechanisms and document procedures to guide Fish Habitat Partnerships and partners in data management practices to improve data and information exchange that will facilitate collaborative science and data efforts across the National Fish Habitat Partnership.

Resources: $197,000 to support applications developer, metadata specialist, infrastructure maintenance and support – in-kind from USGS, Core Science Analytics & Synthesis for FY2014

- Continue to catalog data products developed by Fish Habitat Partnerships via the NFHP Data System. Refine developed workflow strategies to allow implementation of best practices in data management including data curation and preservation tasks to ensure data access and re-use in the future.
  Resources: $63,200 to provide dedicated data management support to catalog FHP data – in-kind from USGS, Core Science Analytics & Synthesis for FY2014

- Continue development of standard effectiveness measures for conservation actions used to address nationwide fish habitat focus areas.
  Resources: Needed resources being determined at this time.

- The inland assessment will refine and update fisheries, aquatic nuisance and invasive species, dam inventory, land conservation status, and water quality status information as data become available. Improved river fragmentation analyses and national calculation of fragmentation metrics will be completed. Development of lakesheds and lake assessments will begin. Demonstration project areas will be identified and implemented with interested Partnerships. Approaches to improve hydrology and temperature incorporation and to refine the marine-inland linkages between the inland and marine assessments will be evaluated.
  Resources: $42,300 to support data management activities for inland assessment team – in-kind from USGS, Core Science Analytics & Synthesis for FY2014
  Resources: $151,000 to continue core development of the Inland Assessment – USFWS funds.

- Refine the existing marine geospatial framework for estuaries in the contiguous United States and complete initial development of a geospatial framework for all estuaries across Alaska. A pilot project, illustrating the proposed new fish stressor methodology and regional assessment approach, will be completed for estuaries in the Gulf of Mexico, including methodological refinements as necessary. Begin data collection and processing to support additional regional estuarine assessments starting in the Pacific Northwest, including datasets on fish/shellfish abundance and diversity, physical habitat, anthropogenic stress, and biological response. Explore methodologies to improve linkages between the inland and marine components of the National Assessment.
  Resources: $220,000 to support continued core development of the Marine Assessment – in-kind from NOAA-Fisheries for FY2014.

Resources Needed: $60,000 for 1 FTE for 6 months to do GIS and coordination support with partners (AK FHPs and NMFS, FWS) to complete geospatial framework for Alaska estuaries.

- Science and Data Committee outreach efforts will: ensure coordination of assessment and data actions among all interested entities including FHPs and LCCs; inform Board and key audiences of the direction and products of the National Fish Habitat Assessment and its integral data system; and seek new resources and partnerships from appropriate entities and groups to increase efficiency and the quality of the National Fish Habitat Assessment.
  Resources: $12,000 to support state agency Science and Data Committee Co-Chair travel for six trips @ $2,000 each to include 2 NFHP Board meetings, 2 AFWA meetings and 2 other trips to be determined by opportunities.

- Develop new science and data products from existing and new Fish Habitat Partnership assessment databases to further support FHP habitat analysis and the Board's 2015 National Fish Habitat Assessment. Key FHP datasets will be identified by the Science and Data Committee and these data along with appropriate analytical tools will be integrated into the Board's Data System for wider inter-FHP habitat assessment efforts.
  Resources: $70,000 to support additional GIS specialist time to integrate FHP datasets and develop associated analytical tools.

- Continue to develop selected socioeconomic data and analyses to support decision making by the Board and FHPs. This work will focus on continuing and expanding the currently funded work to attribute and incorporate appropriate socioeconomic data into the existing Board Data System.
  Resources: $35,000 to support specialist work to acquire and integrate socioeconomic data into the Board Data System with the development of a limited set of appropriate analytical tools for the proper analysis of these data by FHPs and Board.

Key Areas Without Full Resources for FY2014:

- Strengthening the science foundation of the National Fish Habitat Partnership Board's National Assessment by determining the best approaches for incorporating data on connectivity, hydrology and marine fish and shellfish. These were all gaps in the Assessment that were consistently identified by reviewers and FHPs.
  Resources Needed: $300,000 for 2.0 FTEs and workshops to fully develop strategy to be combined with $100,000 in matching resources from USGS.

- Refinement of the National Fish Habitat Partnership Board's National Assessment by initiating the filling analytical gaps on connectivity, hydrology and in the marine assessment identified by National Fish Habitat Board (Board) and Fish Habitat Partnerships (FHPs) in the 2010 National Fish Habitat Assessment (Assessment).
  Resources Needed: $150,000 for 2.0 FTEs to fill key gaps in the Marine Assessment to be combined with $220,000 in matching resources from NOAA- Fisheries.

- Strengthening the science foundation of the National Fish Habitat Partnership Board's National Assessment by developing standardized effectiveness measurements for FHPs' connectivity projects which will include developing new methods to incorporate fine-scale system process information from FHP projects. This task was requested by the Board.
  Resources Needed: $206,000 for 2.0 FTEs to develop standardized connectivity effectiveness measures that will be combined with up to $177,500 from USGS.

- Fully developing and attributing of detailed socioeconomic data and analyses on the same geospatial scale as habitat assessment to improve conservation planning abilities of the Board and FHPs. This information was requested for inclusion into the Assessment by the Board.
  Resources Needed: $100,000 to contract for the acquisition and attribution of socioeconomic data.

Report Prepared By:

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October 8, 2013

Attachment 1 – Current Progress on the 2015 Inland Assessment for the National Fish Habitat Partnership (NFHP)

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Department of Fisheries and Wildlife, Michigan State University (MSU)

The National Fish Habitat Partnership calls for a status assessment of all fish habitats within the United States every 5 years beginning in 2010. MSU has been working in support of NFHP to conduct assessments for inland water bodies in the conterminous United States, Alaska, and Hawaii since 2006. This has involved developing a consistent and comprehensive spatial framework for organizing data and results, compiling and generating suitable GIS databases for use in assessment, completing an initial, proof-of-concept assessment for the conterminous United States in 2009, refining this assessment and conducting initial assessments for Alaska and Hawaii for 2010, and beginning the next assessments due by 2015. Since 2006, MSU has engaged with multiple Partnerships and other stakeholders to share data and analytical approaches for use in regional assessment efforts, modeling activities, and development of decision support tools to aid in conservation and management of fish habitat nationally. Following are highlights of data improvements to be incorporated into the 2015 assessments:

Conterminous United States

- The 2006 National Land Cover Dataset, estimates of atmospheric deposition of pollutants, and estimates of nutrient loading to waterbodies are being attributed to the spatial framework and evaluated for assessment.
- Reach-specific measures of river fragmentation by large dams are being developed and tested for assessment.
- A new data layer is being developed to characterize influences of coal and uranium mining activities.
- Stream buffers will be incorporated into the spatial framework, and multiple disturbances will be summarized and tested within buffers for assessment.

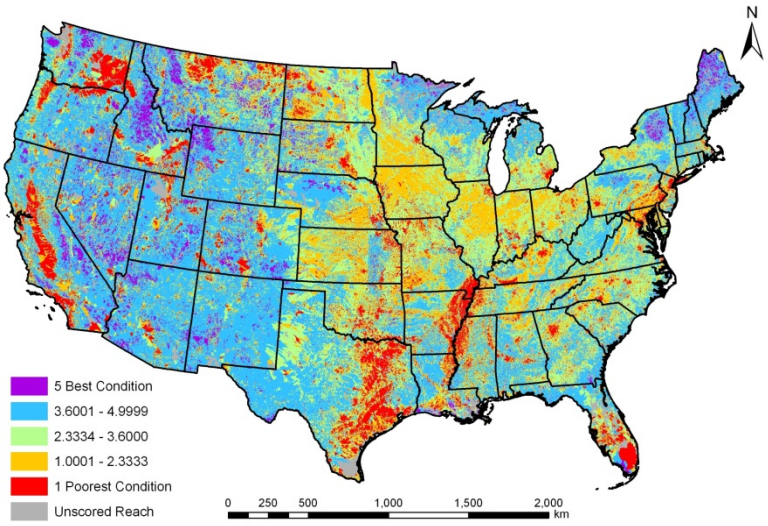

Figure 1 in river rea

Alaska

- Subcatchments have been delineated for river reaches in a portion of southeast Alaska, and landscape disturbances summarized within these units are being tested for the 2015 assessment.

Hawaii

- Data characterizing stream fish assemblages have been provided by the Hawaii Department of Aquatic Resources and other partners. These data will be used to characterize the natural potential of stream reaches throughout the state and to understand assemblage response to landscape disturbances.

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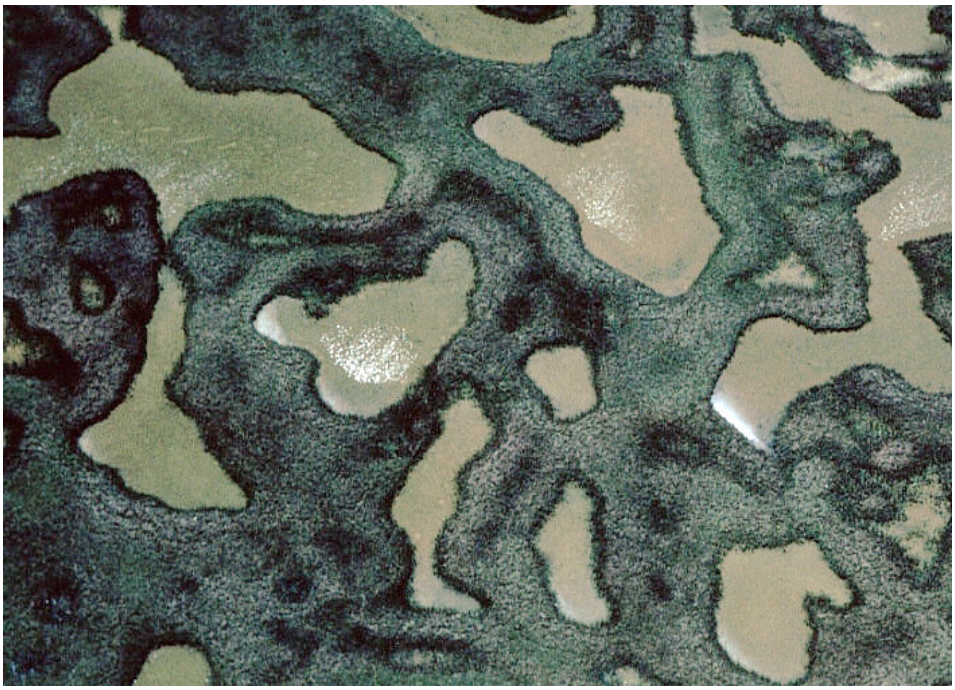
National Fish Habitat Partnership

Marine Assessment Update – September 2013

Background

The National Fish Habitat Partnership (NFHP) is a voluntary, regionally-based consortium focused on protection, restoration, and enhancement of important fish habitats across North America. The National Fish Habitat Action Plan calls for national assessments of U.S. aquatic habitats every five years, beginning in 2010. These assessments provide national perspectives on fish habitat and complement and support assessment efforts by regional Fish Habitat Partnerships (FHPs). The goals of the 2015 National Fish Habitat Assessment are to provide a comprehensive analysis of the relative condition of fish habitats at national and regional scales, identify intact and degraded habitats, define key disturbance factors, and illustrate the scope and effectiveness of habitat conservation activities over time.

With the 2010 marine assessment, the NOAA marine assessment team established a multiscale geospatial framework and assembled an index of estuary condition based on national data sets of landscape disturbance. To fill in gaps identified from the 2010 effort, we are developing a new regional assessment methodology that integrates information on fish and shellfish distribution and abundance, enabling us to relate habitat condition to effects on fish populations and communities. This regional approach also improves collaboration and coordination with FHPs and other regional stakeholders and promotes better incorporation of regional habitat concerns.



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For More Information

fishhabitat.org

ecosystems.usgs.gov/fishhabitat/

Assessment Approach

We are in the final stages of developing an assessment of estuaries in the northern Gulf of Mexico. This project serves as a demonstration of a standard approach for comparing estuary condition relative to anthropogenic stress gradients and identifying key stressors and the scale at which they exert the greatest influence.

In the absence of wide-scale, high-resolution habitat data, we sought to use fish presence and abundance as indicators reflecting the condition of the local habitats where they live, feed, and reproduce. We assembled a rich data set consisting of 30+ years of trawl survey data collected by both state and national programs, as well as time-varying landscape environmental data (land use/land cover, population density, nutrients, pollution, river flow, estuary eutrophication, and estuary hydro-geomorphic class) and local habitat and disturbance data (depth, temperature, salinity, dissolved oxygen, Secchi depth, turbidity, and pH).

We attributed data to a hierarchical nested geospatial framework consisting of estuary, shoreline, estuarine drainage area, and basin units, as well as a variety of geopolitical boundaries for classifying and comparing results. The 45 estuary units in the northern Gulf of Mexico are the focus of the current analysis.

We used statistical models to systematically evaluate species sensitivities to stressors originating from the estuary shoreline, in the coastal watershed, or within the entire upstream river basin. Models give us the power to account for systematic biases resulting from methodological differences between sampling programs, filter out natural factors that may be affecting population patterns, and isolate variation resulting from anthropogenic stressors.

After preliminary data evaluation, we developed screening tools to rapidly assess the 100s of possible species and community metrics with the goal of identifying a subset of indicators that are most responsive to environmental stress. We then used the indicators identified in the screening step to model species and community response to stress and identify the influence and scale of stressors. Additionally, we identified stressor thresholds across which changes to populations and communities occur. Finally, we used the species-level response results to compare and map biological condition between estuaries in the northern Gulf of Mexico.

Next Steps

Final assessment results for estuaries in the northern Gulf of Mexico will be available in October 2013. We will next begin work on an assessment of estuaries for the Pacific Coast, in cooperation with the Pacific Marine and Estuarine Partnership and other regional parties. We are also consulting with the Atlantic Coast Fish Habitat Partnership and North Atlantic Landscape Conservation Cooperative on the beginning stages of a regional coastal assessment for the North Atlantic.

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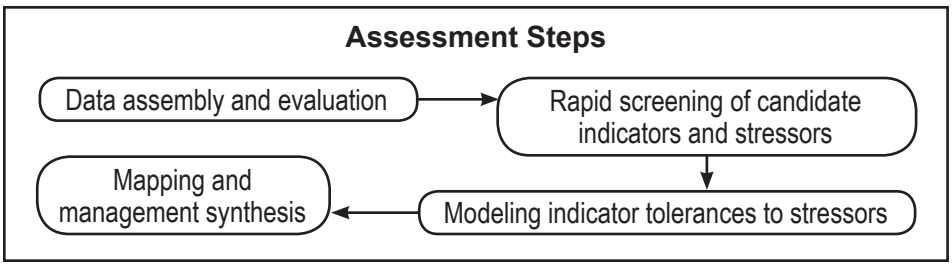
How to Get Involved

Our assessment products will contribute towards a variety of regional science needs and provide a tool for prioritizing conservation efforts. We are looking for partners to help integrate regional needs and goals into the marine assessment. Here's how you can get involved:

- Describe your regional habitat science and management needs
- Contribute data and provide local expertise
- Help identify important indicators or species of concern for your region
- Provide feedback on assessment approach
- Integrate assessment methods into regional assessment efforts



Questions or comments?
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