National Fish Habitat Partnership
2015 National Fish Habitat Assessment Strategy

ASSESSMENT PURPOSE

The National Fish Habitat Action Plan (Action Plan) calls for a status report on all fish habitat within the United States, with the initial report prepared in 2010 and every 5 years thereafter. The purpose of the National Fish Habitat Assessment (Assessment) is to provide a comprehensive analysis of the status of aquatic habitats at the national and regional scales to facilitate planning and success measurement by the National Fish Habitat Partnership Board (Board) and Fish Habitat Partnerships (Partnerships). The Assessment is designed to complement and support assessment efforts by the Partnerships along with providing national perspectives on fish habitat condition.

The Assessment will: provide information on the relative condition of aquatic systems; identify both intact and degraded aquatic habitats; clearly define key disturbance or stress factors; and illustrate the scope and effectiveness of habitat conservation activities overtime. The results of the Assessment will be a key tool for both the Board and Partnerships to achieve the vision (side box) outlined in the National Fish Habitat Action Plan. In addition to providing access to assessment products, the data system supporting the Assessment will ultimately serve as a repository for both the Board's and Partnerships' assessment input data, detailed geospatial results from the Board's and Partnerships' assessment analyses, and Partnership conservation project descriptions, making these data readily available to Partnerships and other stakeholders for further use and analysis.

LONG TERM ASSESSMENT VISION

The long term vision for the National Assessment is to incorporate all available and relevant landscape and process information into a spatial framework and work towards including measureable process-related data and habitat condition scores for all United States aquatic habitats from the mountains downstream to the continental shelf. The six processes (Hydrology, Connectivity, Water Quality, Material Recruitment, Geomorphology, and Energy Flow) that control habitat quality are detailed in the Science and Data Framework Document along with potential variables that represent these processes. Process variables to be eventually incorporated by the Assessment will be those that are directly related to fish habitat maintenance and development and can be manipulated or influenced by Partnership actions. These variables are also sensitive to the changing landscape baselines attributable to climate change and land use changes.

PROGRESS TO DATE

This unprecedented effort successfully met an initial milestone in 2010 with the completion of the first national assessment by Michigan State University (inland) and the National Oceanic and Atmospheric Administration (NOAA) (marine), with oversight from the Board's National Science and Data Committee (Committee).

The 2010 National Fish Habitat Assessment successfully:

- developed a geospatial framework for the Lower 48 states based upon the 1:100,000 National Hydrography Database + (NHD+)
- developed the 1:24,000 NHD for Hawaii and the initial geospatial framework for Alaska and marine areas;
- developed a geospatial framework for estuaries in the contiguous United States and Southeast Alaska
- attributed the geospatial framework with available habitat-related national databases;
- developed analytical approaches for condition analysis; and
- conducted stressor analyses for inland habitats in the contiguous United States, Alaska, and Hawaii, and for estuarine habitats in the contiguous United States and Southeast Alaska.

The 2010 Assessment provides an initial, though incomplete, view of aquatic habitat from a very course national perspective and lays the foundation for future efforts. The 2010 Assessment has clear and acknowledged gaps that did not allow detailed habitat condition analysis to be conducted as a result of the lack of detailed process data measured in a consistent manner on a national scale. Gaps were particularly noted in connectivity, hydrology, and water quality processes, and the unavailability of fish data precluded finer resolution analysis of estuarine information.

ASSESSMENT COMPONENTS AND PRODUCTS OF THE 2015 ASSESSMENT

The 2015 Assessment will address the identified gaps of the 2010 Assessment, where possible, and will work to more strongly relate the national landscape scale assessment to fisheries management or Partnership objectives to facilitate direct implementation at Partnership, regional or local planning. A series of demonstration projects will be compiled and evaluated to help advance this approach. These efforts will result from coordinated activity between the Committee and willing Partnerships, and will represent both inland and marine areas distributed across the United States. Some potential example demonstration projects that may be considered include: incorporation of springs and ciénegas information and analysis (possibly in cooperation with the Desert Fish Habitat Partnership); broader analysis of riparian zone condition using the Southeastern Aquatic Resources Partnership methodology; attribution and analysis of fine scale water quality data (possibly in cooperation with Southeastern Aquatic Resources Partnership or the Eastern Brook Trout Joint Venture); incorporation of water withdrawal locations, data and analyses into the Assessment (possibly in cooperation with the Western Native Trout Initiative or Hawaii Fish Habitat Partnership); and attributing and analyzing coastal navigation projects and hardened structures (possibly in cooperation with the Atlantic Coast Fish Habitat Partnership, Great Lakes Basin Fish Habitat Partnership or the Pacific Marine & Estuarine Fish Habitat Partnership).

The lists that follow identify tasks necessary to complete the 2015 assessment in priority order for all inland and coastal assessments which will be conducted in parallel. The number of tasks that will actually be completed will depend on the budgetary and technical resources available to the Committee and in cooperation with interested partners and/or Fish Habitat Partnerships.

Inland

1. Catalog all FHP assessments completed or underway
2. Refine and update 2010 Assessment by addressing identified data gaps, attributing new fish data including available and appropriate anadromous/catadromous/diadromous fish data, and incorporating improvements to the analytical approach
3. Add new national connectivity analysis
4. Determine how to incorporate process data using FHP demonstration projects
5. Add socioeconomic data to spatial framework
6. Add national hydrology analysis using existing stream gauging information
7. Attribute lakes and reservoir data to Assessment geospatial framework
8. Attribute AK anadromous fish catalog data into Alaska spatial framework
9. Attribute fish and selected invertebrate data into Hawaiian spatial framework
10. Attribute local catchment data for Southeast Alaska into spatial framework
11. Develop and incorporate fish-stressor analyses for Alaska and Hawaii
12. Develop and incorporate downstream summaries of landscape condition at the reach scale
13. Incorporate available fisheries management and FHP objectives into the spatial framework.
14. Attribute springs, ciénegas, water withdrawal, instream flow prescriptions, and water use data into spatial framework as feasible.
15. Attribute additional water quality data
16. Attribute additional mining and energy development data

Marine (includes estuaries, nearshore, and offshore)

1. Catalog all FHP assessments completed or underway
2. Improve analytical basis of marine assessment to inland standards by incorporating all available fish and shellfish data and stressor relationships and addressing additional gaps
3. Incorporate additional spatial framework information for estuaries in Alaska
4. Incorporate additional spatial framework information for estuaries and nearshore-marine habitats in Hawaii
5. Develop an initial assessment of nearshore-marine habitats
6. Develop an initial assessment of offshore-marine habitats
7. Determine how to incorporate process data using FHP demonstration projects
8. Add socioeconomic data to spatial framework
9. Incorporate available fisheries management and FHP objectives into the spatial framework.
10. Develop inland-marine system scoring linkages
11. Incorporate the final Great Lakes assessment into overall Assessment

12. Attribute additional water quality data
13. Attribute additional mining and energy development data

Inland Spatial Framework and Assessment:

The overall goal for the inland component of the 2015 Assessment is to refine and fill the identified gaps in the 2010 Assessment. This effort will include the incorporation of natural lakes (> 10 acres) and reservoirs along with the appropriate lake and reservoir-sheds needed to allow Assessment work to continue on these waters.

Key milestones for this assessment component are:

- By 2012 – Catalog all existing FHP assessments and determine how to best coordinate efforts between the Board and Partnerships assessment work (Science and Data Committee)
- By 2013 – The 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.
- By 2014 – The assessment will refine habitat models and system scoring with additional available information collected and organized. Demonstration process projects will begin with interested Partnerships and focused work within specific regions on key resources will be conducted. The assessment will continue to explore approaches for developing marine-inland linkages between the assessments.
- By 2015 – The assessment will delineate lake catchments and attribute landscape scale information for natural lakes for waters over 10 acres that are not in the NHD+ network into the assessment spatial framework. With the assistance of the Reservoir Partnership, reservoir and reservoir catchments for reservoirs over 250 acres will be incorporated into the assessment spatial system. Demonstration projects will be conducted with Partnerships. The assessment will complete incorporating the new data detailed above to fill outstanding data gaps, and refine habitat models and system scoring with all available information. The assessment will allow for suggested refinements for future assessments to be recommended.

If additional resources become available for the Inland Assessment, the following areas will be addressed:

- By 2013 – Attribute and incorporate available information on small dams and culverts into spatial framework to improve connectivity analysis.
- By 2014 – Downstream summaries of landscape conditions will be summarized for stream reaches, providing information at a spatial scale relevant important to

anadromous/catadromous/diadromous fishes. Available fisheries management and Partnership objectives will be incorporated into the spatial framework.

- By 2015 – Attribute and incorporate springs, ciénegas, water withdrawal, instream flow prescriptions, and water use data into spatial framework and use these data to refine the hydrology analysis. The assessment will also identify river and stream reaches where the magnitude and timing of river flows have been altered if sufficient and appropriate data is available. The assessment will incorporate new and updated national datasets to include attributing the 2006 National Land Cover Dataset and develop analytical methods to examine temporal landscape variable changes. Incorporate additional water quality, mining and energy development data into the assessment and refine assessment analyses.

Marine Spatial Framework and Assessment:

The overall goal for the 2015 Marine Assessment is to strategically address the identified gaps in the 2010 Marine Assessment, particularly the lack of a fish-stressor analysis in the 2010 estuarine assessment. This will be addressed by refining the assessment methods and incorporating fish and shellfish (where available) abundance and diversity data for the contiguous United States in a manner similar that used in the Inland Assessment. Additional gaps will be met by adding additional datasets on estuarine physical habitat characteristics, anthropogenic stressors, and biological responses. As time and resources allow, the Marine Assessment will be extended into near shore- and offshore-marine waters to provide an initial habitat condition analysis of these habitats. Another identified gap was the lack of consistent methodology between the contiguous United States and Southeast Alaska portions of the 2010 Marine Assessment, and a lack of any data or analysis for the rest of Alaska's coastal areas. To address this, the Marine Assessment Team will develop a geospatial framework for estuarine habitats across all of Alaska and develop a refined methodology that applies to all United States estuarine habitats.

Key milestones for this assessment component are:

- By 2012 - Catalog all existing Partnership Assessments and determine how to best coordinate efforts between the Board and Partnerships assessment work (Science and Data Committee)
- By 2013 – 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.

- By 2014 – Continue to develop refined estuarine assessments for additional regions using the methodology developed and refined during the pilot project for Gulf of Mexico estuaries. Continue to work on improving connections between the inland and marine components of the assessment and incorporate information into assessment as available.
- By 2015 – Complete estuarine fish stressor analyses for all regions in the contiguous United States and Alaska (as time and resources allow and where sufficient data exists). Assemble individual regional components of estuarine assessment together to form national assessment and address any inconsistencies or potential issues with interpretation. Ensure accuracy of results at the national scale.

If additional resources become available for the Coastal Assessment, the following areas will be addressed:

- By 2013 - Refine the existing geospatial framework for near shore- and offshore-marine waters for the contiguous United States and Alaska. Acquire available habitat and fisheries data for nearshore- and offshore-marine waters.
- By 2014 - Begin development of nearshore and offshore marine assessment strategy including incorporation of available fish, shellfish and habitat data into spatial framework and develop analytical methods.
- By 2015 - Complete initial nearshore and offshore-marine assessment. The Marine Assessment will incorporate new and updated national datasets to include attributing the 2011 National Land Cover Dataset (depending on availability) and develop analytical methods to examine temporal landscape variable changes on marine habitat. Incorporate additional water quality, mining and energy development data into the assessment and refine assessment analyses.

Great Lakes Spatial Framework and Assessment

The overall goal for the 2015 Great Lakes Assessment is to complete an initial inshore assessment for the Great Lakes to include a spatial framework and a stressor level analysis using all available assessment information. Currently, multiple partial assessments are either completed or close to completion. If resources become available and with the assistance of the Great Lakes Basin Fish Habitat Partnership and other Great Lakes partners (i.e. Great Lakes Fishery Trust and the Great Lakes Fishery Commission), an initial composite habitat assessment will be developed by 2015 to include an initial linkage approach between inland and Great Lakes systems. With additional resources, attribute and incorporate socioeconomic data into the spatial framework for the Great Lakes.

Inland Alaska Spatial Framework and Assessment

The overall goal for the 2015 Inland Alaska Assessment is to refine the 2010 Assessment by incorporating fish data into analysis and to continue to fill existing identified information gaps. We expect progress to be impaired by the lack of a spatial framework

similar to the NHDPlus, except in localized areas around Anchorage and potentially southeast Alaska.

Key milestones for this assessment component are:

- By 2012 - Catalog all existing AK FHP assessments and determine how to best coordinate efforts between the Board and Partnerships assessment work (Science and Data Committee)
- By 2013 – The assessment will begin to incorporate Alaska anadromous fish catalog data into the spatial framework where possible following the guidance of Alaska Partnerships. Additional planning will be done to determine the extent of local catchments that can be determined in Southeastern Alaska and initial work started in this area. Demonstration project areas will be identified with interested Partnerships with an emphasis on characterizing connectivity.
- By 2014 – Work will be completed on developing local catchments for Southeast Alaska, where data are available. The incorporation and attribution of Alaska anadromous fish catalog data into the spatial framework will be completed. Initial fish-stressor analyses will be completed and refinement initiated. Evaluation of demonstration projects will begin with interested Partnerships.
- By 2015 – Fish analyses will be completed. Results from demonstration projects will be compiled.
- By April 2015 – An updated and refined Inland Alaska Assessment to include demonstration projects will be completed.

If additional resources become available for the Inland Alaska Assessment, the following areas will be addressed:

- By 2013 – Begin development of additional demonstration projects with Alaskan FHPs to focus on climate change information. Attribute and incorporate new data sets to fill outstanding data gaps. Begin development of marine-inland linkage work for Alaskan systems.
- By 2014 - Complete incorporation of socioeconomic data into spatial framework and develop analytical methods for use of these data. The assessment will continue to incorporate new data to fill outstanding data gaps with potentially localized work on hydrology. Continue work on refining marine-inland linkage work for Alaskan systems. Incorporate all available fisheries management and Partnership objectives into the spatial framework will be completed.
- By 2015 - The refined inland-marine linkage will be completed and incorporated into the Assessment. The assessment will continue to incorporate new data to fill outstanding data gaps.

Hawaii Inland and Marine Spatial Framework and Assessment

The overall goal for the 2015 Hawaiian Assessment is to refine the 2010 Assessment by incorporating a fish-stressor analysis, linking inland and marine systems, and to continue to fill existing identified information gaps using the existing 1:24,000 NHD spatial

framework. By 2015, the Hawaiian Assessment will also develop a demonstration project with the Hawaiian Fish Habitat Partnership (HFHP) to determine the best way to incorporated detailed process-level data at smaller geographic scales with a focus on connectivity and hydrology data.

Key milestones for this assessment component are:

- By 2012 - Catalog all existing HI FHP assessments and determine how to best coordinate efforts between the Board and HI FHP assessment work (Science and Data Committee)
- By 2013 – In cooperation with the HFHP, the assessment will incorporate fish and selected invertebrate data for inland systems into the spatial framework and will develop a plan for refining scores based on a biologically-driven classification of Hawaiian stream reaches. Continue to incorporate new habitat data to fill outstanding data gaps, particularly water withdrawal information where available. Identify demonstration projects with the HFHP.
- By 2014 – Complete the initial fish-stressor analysis for inland systems, and develop approaches that can be considered for initial inland-coastal linkage products. Continue to incorporate new habitat, fish and invertebrate data to fill outstanding data gaps. Complete initial HI FHP demonstration process projects.
- By 2015 – Complete fish-stressor analyses. The assessment will continue to incorporate new habitat (particularly water withdrawal information), fish and invertebrate data to fill outstanding data gaps. Refinements will be made to the demonstration process projects with the HFHP.
- By April 2015 – In consultation with the HFHP, complete the updated and refined Hawaiian Assessment to include demonstration projects.

If additional resources become available for the Hawaiian Assessment, the following areas will be addressed:

- By 2013 – A plan for completing a marine spatial framework (focusing on estuaries and priority reef areas) and developing linkages between inland and marine assessments will be completed in concert with the HFHP. Attribute and incorporate new data sets to fill outstanding data gaps.
- By 2014 - Complete an initial marine spatial framework. Continue to incorporate new data to fill outstanding data gaps along with the initial work to examine riparian buffer zones. Incorporate all available fisheries management and Partnership objectives into the spatial framework will be completed. Develop a plan for completing the marine coastal assessment (focusing on estuaries and priority reef areas) in concert with the HFHP.
- By 2015 – Complete initial marine spatial framework, an initial marine assessment, riparian buffer analysis, and initial inland-marine linkages for incorporation into the Hawaiian Assessment. The refined inland-marine linkage will be completed and incorporated into the Assessment. The assessment will continue to incorporate new data to fill outstanding data gaps.

Socioeconomic Assessment

At the October 2011 Board Meeting, the Science and Data Committee was directed to develop potential approaches for including socioeconomic variables into the Assessment. To appropriately include such information into the assessment, additional expertise is needed along with a new strategy with a result to fully incorporate socioeconomic data into the 2020 Assessment. The 2015 Assessment will develop and complete a series of demonstration projects to determine the appropriate variables and methodology to incorporate these data into future assessments. This component cannot be completed with the currently available resources of the assessment.

With the provision of additional resources, the key milestones for this assessment component are:

- By 2012 - Catalog all existing FHP socioeconomic assessments and determine how to best coordinate efforts between the Board and Partnerships socioeconomic assessment work (Science and Data Committee)
- By June 2013 – The Science and Data Committee will identify and engage socioeconomic expert(s) to assist in guiding this part of the Assessment. A literature review and a review of identified FHP projects in which socioeconomics have been incorporated will be completed. Demonstration projects will be identified and plans for evaluating the demonstration projects with interested Partnerships will be developed.
- By 2015 – Complete the evaluation of the demonstration projects and develop a strategy for incorporating socioeconomic information into future assessments for Board approval. Attribute and incorporate socioeconomic data into the spatial framework.
- By April 2015 – Complete a report on the demonstration projects to include the socioeconomic strategy for future Assessments. Complete incorporation of socioeconomic data into the inland and marine spatial frameworks and develop analytical methods for use of these data.

Immediate Next Steps

July 2012

- Finalize the 2015 Assessment Strategy

October 2012

- Estimate costs for each milestone, assessment compilation and editing, and printing costs.
- Secure partner commitments.