Title: Science and Data Committee Report for March, 2015 National Fish Habitat Board Meeting

Desired outcome: Information briefing to the Board on the Science and Data Committee's 2015 work plan progress with indicated Board decision points.

1. **Status of Project Tracking Database (Presentation by Robin Carlson, PSMFC)**

   Background: The NFHP Project Tracking Database has been developed under the direction of Robin Carlson of the Pacific States Marine Fisheries Commission (PSMFC). The current funding agreement for development and hosting ends June 30, 2015. Currently there is no plan in place for continued development and/or maintenance of the database. The USGS unit that maintains the NFHP data system is not willing to take this on. The PSMFC has proposed two ways forward, each of which will require additional funding. The low-cost option (approximately $19,000) will maintain the system as-is and provide some minimal assistance to Partnerships for data entry and troubleshooting. The high-cost option (approximately $52,000) will provide for development to improve usability, data-transfer capabilities, improved reporting features, and assistance to Partnerships.

   Continued maintenance or enhancement of the Project Tracking Database is not listed in the proposed 2015 Board Priorities. Should it be one of the explicitly recognized priority items?

   Desired outcomes: *Information* - Update the Board on the current status of the Project Tracking Database. *Decision* - Request *Formal Board input* on the relative priority of this system and funding of this effort.

2. **Action Plan Objective 1: Achieve Measurable Habitat Conservation Results**

   <u>Priority Task E: Continue development of standard effectiveness measures for conservation actions used to address nationwide fish habitat focus areas</u>

   Background: There is broad consensus that evaluating and reporting on the effectiveness of conservation actions of the National Fish Habitat Partnership is important. The Board has always desired measurements of NFHP project that measure both the habitat and fisheries changes that result along with the accounting of the work being conducted and funds expended (i.e. number of dams removed). While project accounting is straight forward, there is, however, lack of consensus about how many projects should be examined, the types of outcomes that should be measured and the appropriate scales of evaluation. It is acknowledged that it is not cost effective to measure the resource results of every project but the development of appropriate system and project classifications is needed to allow proper sampling strata to be implemented. Similarly, the spatial and temporal extents of resource effects from project implementation need to be developed. At one end of the spectrum, effectiveness could be defined as the amount of habitat and

fish populations directly improved or protected by a local action. At the other end of the spectrum, effectiveness could be defined as the measured effect on basin-wide or even regional fish populations.

At the November Board Meeting, discussions were initiated with the American Fisheries Society and its Habitat Section on collaborating to develop a set of local-scale metrics that could be applied to describe the effectiveness of tangible Partnership projects. The proposed approach would be to: (1) to develop appropriate sampling strata to allow subsampling of all similar projects and systems; (2) identify types, or classes of habitat restoration, enhancement, and protection activities, and (3) to develop "best practices" guidelines for describing the effectiveness of each class of projects to include temporal and spatial bounds for sampling. For example, a project that eliminated fish passage barriers might report on number of stream miles made accessible and appropriate measures of fish population improvement that occurred as a result over an agreed upon timeframe. Similarly, a stream restoration project might report on stream length rehabilitated to a target condition and appropriate measures of fish population improvement that occurred as a result over an agreed upon timeframe.

Both the American Fisheries Society and the Board Science and Data Committee believe it is time to develop a more formal agreement, perhaps a Memorandum of Understanding (MOU), to move this effort forward and seek Board approval to develop the appropriate instrument to allow this effort to commence and a timeline for completion.

Desired outcome: *Decision – Formal Board input* on proposed focus and approach for developing standard effectiveness measures and *Board approval* to develop a MOU or similar instrument between the Board and the American Fisheries Society to include the Habitat Section to move this effort forward in a more systematic way.

3. Action Plan Objective 4: Fill in Gaps in the National Fish Habitat Assessment and its Associated Database

Priority Task K: Examine and review National Assessment products produced by Marine and Inland Assessment Teams along with activities underway by the Fish Habitat Partnerships and Landscape Conservation Cooperatives (LCCs).

Status - No issues to report. The National Assessments are in preparation and reports by the Assessment Teams are attached as Appendices. Initial products will be reviewed by the Science and Data Committee at their April 15-16 meeting in San Marcos, Texas.

Desired outcome: *Information - Board understanding* of 2015 National Assessment status

Priority Task L: Develop coordinated delivery of the 2015 assessment, including adding new online capabilities to help partners and stakeholders understand and best use the new National Assessment data and products.

2015 Report Website - USGS is preparing a proof-of-concept demonstration of an interactive website product for the 2015 National Assessment. The functionality of the web site will be modeled after the 2014 National Climate Assessment (http://nca2014.globalchange.gov/). The demonstration will use some of the content of the 2010 National Assessment report and the NFHP data system to illustrate how the web site could serve multiple audiences with varying degrees of detail. The target date for the demonstration is the March 20 conference call of the Science and Data Committee.

Desired outcome: *Information - Board understanding* of the potential 2015 National Assessment product option.

Priority Task M: Continue to catalog science data products and assessments completed and underway within each of the established Fish Habitat Partnerships and the national assessment team via the NFHP Data System.

During January, USGS CSAS conducted a usability study of the NFHP Data System (http://ecosystems.usgs.gov/fishhabitat/). The purpose was to obtain input from stakeholders on:

- The overall direction of the NFHP data viewers as data visualization tools versus data exploration tools vs decision support tools
- How the presentation of data can facilitate these uses
- How well the current user interface supports and presents existing functionality of the data system.

The study was conducted using a hybrid approach of typical usability test scenarios and interviews. There were 23 participants; 19 are members of the Science and Data Committee. The full results will be presented to the Science and Data Committee on March 20, and a written report will be prepared and distributed shortly after to the Board. Work is underway to explore ways to improve usability of the system.

Preliminary findings suggest that:

- The data set download page (http://ecosystems.usgs.gov/fishhabitat/nfhap_download.jsp) needs to be re-organized, or perhaps even re-designed to make it easier for external users to find datasets of interest.
- The path from the map displayed in the viewers to downloading data for the area shown on the map needs to be made simple and intuitive.
- People expected to be able to download data based on the extent of the map shown.
- The use of jargon (e.g. “NHD+ Catchments) needs to be reduced.

Desired outcome: *Information - Board awareness* of NFHP Data System usability testing.

Priority Task N: Refine and update fisheries, aquatic nuisance and invasive species, dam inventory, land conservation status, and water quality status information as data become available.

No issues to report and refinements to both National Assessments in these areas are included in their reports.

Priority Task O: Improve river fragmentation analyses and national calculation of fragmentation metrics and initiate development of lakesheds and lake assessments.

No issues to report and refinements to the National Inland Assessment is included in their report.

Priority Task P: Evaluate approaches to improve hydrology and temperature incorporation and to refine the marine-inland linkages between the inland and marine assessments

No issues to report and and refinements to the National Inland Assessment with respect to hydrology is included in their report. Additional work on marine-inland linkages will not be completed until the 2020 National Assessment.

Priority Task Q: Refine and improve the 2010 National Marine Assessment by incorporating updated datasets; complete a full assessment of estuaries in the northern Gulf of Mexico; continue data collection, processing, and initial analysis for West Coast estuaries

No issues to report and refinements to the National Marine Assessment is reported on in their attached report.

Priority Task R: Conduct Science and Data Outreach to FHPs, LCCs, Board, and other key audiences

Gary Whelan and Peter Ruhl participated with the Inland Assessment Team in their conference calls with the AK FHPs as a group (January 9) and with the SE AK FHP (February 5) on their specific assessment. Additionally, Gary discussed the National Assessments with WNTI on February 19 and gave the plenary talk at the Ontario Chapter of the American Fisheries Society meeting on NFHP on February 27 to improve Canadian understanding of NFHP. He will also be giving a National Assessment updates at the upcoming AFWA Committee Meetings and to the American Fisheries Society – Administration Meeting during the week of March 9.

Desired outcome: *Information - Board awareness* of the status of the NFHP National Assessments and Outreach efforts.

Appendix 1 – NFHP National Inland Habitat Assessment Update

Alaska: Since Fall 2014, the inland assessment team has engaged in three conference calls with Alaskan Partnerships to discuss data and analytical approaches for the assessment. Decisions made during these calls include: appropriate landscape datasets to be used; spatial units for the assessment; and an analytical approach. We are currently deciding on whether or not an assessment for southeast Alaska will occur in specially-developed, fine-scale watersheds; and once that decision is made, we will be on-track to complete the assessment product for the state by early Summer, 2015.

Hawaii: Since Fall 2014, we have completed development of a stream classification for Hawaii. These ecologically-defined groupings of stream reaches will be the basis for the 2015 assessment. We have also nearly completed assembling an updated set of landscape disturbance data, and are in the process of attributing these data to catchments, including downstream summaries. In early Spring 2015, we will be meeting with representatives of the Hawaii Fish Habitat Partnership to finalize our assessment approach and finish the assessment product by Summer, 2015.

Conterminous United States: Since Fall 2014, we have completed identification of updated and new landscape disturbance data to use in the assessment and we have very recently completed a long series of analyses to test fish associations with these landscape disturbances summarized in different spatial units (catchments, buffers) in each of 9 ecoregions nationally. With results of these threshold analyses, we are in the process of testing options for generating cumulative habitat condition scores and will be sharing these options with the Science and Data Committee at the upcoming Spring Meeting. The 2015 disturbances scores and a variable indicating change in condition between 2010 and 2015 will be finalized at the spring Science and Data Committee meeting. We are also in the process of early discussions with USGS to begin planning for web-based dissemination of data.

Recent presentations related to national inland assessment:

Infante, D. M. 2014. Using a landscape approach to assess condition of fluvial systems: Focus on a national assessment of fish habitats for the National Fish Habitat Partnership. Michigan Department of Natural Resources Fisheries Division Annual Research Meeting, Alpena, Michigan, December 15-16, 2014.

Infante D. M., and W. M. Daniel. 2015. National inland assessment of fish habitats for the National Fish Habitat Partnership. Webinar with the Great Lakes Aquatic Habitat Framework (GLAHF) Assessment Team (~15 participants), January 16, 2015.

Infante, D. M., and W. W. Taylor. 2015. Assessing condition of freshwater habitats using a landscape approach: Improving opportunities for conserving inland fisheries over large regions. Global Conference on Inland Fisheries, FAO Headquarters, Rome, Italy, January 26-28, 2015.

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Appendix 2 - NFHP National Marine Habitat Assessment Update

Background: The overall goal for the 2015 Coastal Assessment components is to strategically address the gaps identified in the 2010 Coastal Assessment, particularly the lack of a fish-stressor analysis. Over the past several years, the NOAA assessment team has focused efforts on substantially improving the analytical basis of the marine assessment by incorporating available fish and shellfish data and stressor relationships. To take full advantage of available data resources and improve connections between the national assessment process and regional constituents (especially the FHPs), the new regional assessment methodology is intended to be implemented on a regional basis. In addition to development and testing of revised modeling approaches for the assessment, this approach also requires extensive revision of existing spatial frameworks and collection of massive amounts of additional data to support the analyses, and has progressed slowly due to limited resources (funding and staff time).

Progress: The Coastal Assessment products delivered for the 2015 National Fish Habitat Assessment will consist of two main components:

1. An update of the national estuarine assessment completed in 2010 (contiguous U.S. only)
2. An estuarine assessment for the northern Gulf of Mexico, demonstrating the new coastal assessment methods and results

Details on these two products follow below. Additional coastal assessment work being led by regional FHPs (ACFHP, PMEP) may also be highlighted in the results of the national assessment, to the extent that the FHPs desire to incorporate their products.

National Update: Work is underway to incorporate updated and new data sources in to the four stressor indices used to calculate risk of current habitat degradation in estuary habitats. These stressor indices will be used to calculate updated scores for 2015. Trend scores over the 2010-2015 timeframe will be calculated as well. Preliminary products from this work are expected in May 2015 to incorporate into the National Assessment efforts.

Gulf of Mexico Assessment: A refined methodology for delineating estuary boundaries was used to update the spatial framework in support of analyses in the northern Gulf of Mexico. This was used in the completion of a pilot assessment in late 2013 that developed and tested an improved analytical approach to ecological assessment using a limited set of test data. The new assessment approach: incorporates available fish and shellfish abundance and distribution data; applies several steps within a statistical modeling framework to identify appropriate indicators; systematically evaluates species/community sensitivity to anthropogenic stressors; identifies stressor thresholds across which changes to populations and communities occur; and develops biological condition scores. A follow-up assessment for Gulf of Mexico estuaries, applying these methods and using the full set of available data on fish/shellfish abundance, natural factors, and anthropogenic stressors, is currently underway, with preliminary results expected in May 2015 to incorporate into the National Assessment efforts.

Next Steps: As work on the two components described above wraps up this year, focus will shift to work on an assessment of Pacific Coast estuaries (and potentially nearshore areas) using the same methodology developed and demonstrated in the Gulf of Mexico estuary assessment. Work to support this assessment has already initiated in cooperation with PMEP, and complements ongoing efforts led by PMEP and their partners, including:

1. An inventory and classification of West Coast estuaries (complete)
2. A 'state of knowledge' report synthesizing available information on the nursery functions of West Coast estuaries (complete)
3. Substantial refinement of the West Coast spatial framework, including improvements to the identification of tidal wetlands and head of tide, as well as development of nearshore units based on coastal drift cells (ongoing)
4. An assessment of juvenile fish habitat use of estuaries for focal species on the West Coast (ongoing)

Challenges: Resource limitations have prevented completion of additional regional components in time for the 2015 National Assessment. Although strong interest exists in moving forward with additional regional assessments (South Atlantic, Alaska, etc.), current resource constraints continue to limit forward progress on the Coastal Assessment by precluding the possibility of working on multiple regional assessments simultaneously.

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