2015 NFHP Marine Assessment Update

October 17, 2014

Kristan Blackhart (Kristan.Blackhart@noaa.gov), NOAA Fisheries Office of Science and Technology

Background

The National Fish Habitat Partnership (NFHP) calls for national assessments of fish habitats within the United States every five years, with the first National Fish Habitat Assessment completed in 2010. The purpose of these national assessments is to provide a comprehensive analysis of the relative condition of fish habitats at national and regional scales, providing national perspectives to facilitate planning and measure success and to complement efforts led by the regional Fish Habitat Partnerships. Assessment products are intended to provide the NFHP Board, Partnerships, and stakeholders with information on intact and degraded habitats, key disturbance factors, and the scope and effectiveness of habitat conservation activities over time. Each successive 5-year assessment interval is additionally intended to fill gaps identified in the previous National Fish Habitat Assessments.

In 2008, an assessment team lead by NOAA scientists initiated efforts to develop a marine habitat assessment component for the NFHP National Assessment. For the 2010 assessment, the NOAA assessment team successfully developed a multi-scale geospatial framework and assembled an index of estuary condition for the contiguous United States based on national data sets of landscape disturbance (see Greene et al., 2014 for more details). A complementary analysis was completed for estuaries in Southeast Alaska as well. The 2010 estuary assessment provided a foundation for further analysis, but the coarse spatial resolution and lack of data on fish abundance and distribution were identified as clear gaps to be addressed in future assessments. In 2012, the NFHP Science and Data Committee developed a 2015 National Fish Habitat Assessment Strategy that outlines the goals for the next iteration of the National Fish Habitat Assessment. The Assessment Strategy identifies the overall goal for the 2015 Marine Assessment as strategically addressing the gaps identified in the 2010 Marine Assessment, particularly the lack of a fish-stressor analysis.

Since completion of the 2010 Marine Assessment products, the NOAA assessment team has been focusing efforts on improving the analytical basis of the marine assessment by incorporating available fish and shellfish data and stressor relationships. This work has required refinement of the original geospatial framework developed for the 2010 assessment, as well as extensive development of a new assessment methodology to incorporate fish abundance and distribution information and new sources of stressor data. To fully take advantage of available data resources and improve spatial resolution of results for the next iteration of the marine assessment, the new marine assessment methodology will be implemented on a regional basis. This new regional approach not only enables us to better relate habitat condition to effects on fish populations and communities, but also provides the NOAA assessment team and NFHP Science and Data Committee increased opportunities for collaboration and coordination with Fish Habitat Partnerships and other regional stakeholders and promotes better incorporation of regional habitat concerns.

Progress

Spatial Framework: Our updated process for delineating estuary and associated watershed units in the geospatial framework was initiated for the northern Gulf of Mexico to produce a revised geospatial framework for use in the Gulf of Mexico marine assessment. This process is currently undergoing further refinements for updates to spatial units on the Pacific Coast, particularly in terms of improvements to identification of tidal wetlands and the head of tide to refine landward boundaries of estuary units. The process and products of these efforts are currently under review with regional experts and are expected to be finalized by the end of the year. Nearshore units are also under development for the Pacific Coast using available information on coastal drift cells to delineate individual units along the coast. These new nearshore spatial units will support extension of analysis beyond estuaries when resources become available.

Model Development: A pilot assessment to develop and test the new marine assessment methods was completed in late 2013 for estuaries in the Gulf of Mexico. This effort included extensive collection of available regional datasets on fish abundance and distribution, natural habitat variation, and stressor variables. The new assessment approach uses several steps within a statistical modeling framework to identify appropriate indicators, systematically evaluate species/community sensitivity to anthropogenic stressors, identify stressor thresholds across which changes to populations and communities occur, and develop biological condition scores. Critically, this modeling approach gives 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. Development of the modeling framework was led by a group of academic experts from around the country and the NOAA assessment team. Throughout the process of model development and testing, regional experts (including members of the Southeast Aquatic Resources Partnership) were invited to review and provide feedback on model development and pilot assessment results. The pilot assessment included analysis of only a subset of the available data (used to test and refine models), and thus cannot provide condition scores for estuaries in the northern Gulf of Mexico. However, the pilot assessment does provide a strong foundation for further work, including a follow-up full assessment of estuaries in the northern Gulf of Mexico and methods to be applied in additional coastal regions.

Next Steps

A full assessment of estuaries in the northern Gulf of Mexico, building from the results of the pilot assessment described above, was initiated in October 2014. This assessment will provide biological condition scores for estuaries and associated watersheds across the Gulf Coast. Results are expected in mid-2015 for inclusion in the NFHP 2015 National Fish Habitat Assessment Report.

Several coastal habitat assessment efforts are underway on the Pacific Coast, coordinated by the Pacific Marine and Estuarine Fish Habitat Partnership (PMEP). These include an assessment of nursery habitats (led by PMEP), an assessment of forage fish populations and associated habitats (lead by the NOAA Northwest Fisheries Science Center), and an estuary condition assessment using the methods developed in the Gulf of Mexico estuary pilot assessment (led by the NOAA assessment team). Full results will not be available for the NFHP 2015 National Fish Habitat

Assessment Report, but intermediate products will be summarized to contribute the most up-to-date information available.

A coastal assessment is also underway for the Greater Atlantic Region, led by the North Atlantic Landscape Conservation Cooperative and the Atlantic Coastal Fish Habitat Partnership. Downstream Strategies has been contracted to develop assessment products for this effort. This assessment uses a distinct set of methods from other coastal assessment efforts, and the NOAA assessment team is not directly involved in development (although members are serving on the technical advisory team). An initial assessment of winter flounder in Narragansett Bay is currently under development to test and refine the modeling approach to be used for the assessments. Additional assessments targeting specific species/communities will follow.

Challenges

The 2015 Assessment Strategy identifies 13 prioritized tasks for the marine assessment – many of these outlined tasks are dependent on finding additional budgetary and technical resources and will remain incomplete for the 2015 assessment. Overall, a lack of resources (staff time, funding) has slowed progress on development/improvement of the marine assessment, and will continue to do so for the foreseeable future. Currently, the only sources of funding for the marine portions of the National Fish Habitat Assessment are in-kind contributions and a small amount of funding from NOAA.