

## **River Herring Technical Expert Working Group (TEWG)**

### **Ecosystem Integration Committee (EIC) Conference Call**

**March 14, 2016  
1:00 pm – 3:00 pm**

#### **DRAFT BACKGROUND DOCUMENT**

##### **Cross-Cutting Issues:**

Many of the issues that the subgroups identify may apply to other subgroups as well. The EIC was formed to facilitate discussions among subgroups and ensure the work of the TEWG addresses the wide range of issues facing the species. Topics identified by the TEWG subgroups during their individual conference calls from March 2014 through February 2016 (recent additions highlighted where applicable) that may relate to other subgroup topics are identified below, and mirror those included in the subgroup summaries.

##### **Habitat**

- Genetics and consequently the Genetics Subgroup may play a role in the habitat of river herring; this will be investigated further as the Habitat Subgroup expertise document is compiled
- The distribution of fish in rivers, estuaries & at sea is linked with stock status and fisheries
- Climate change influences key habitat characteristics at all life stages
- Sea level rise on eastern shore of Maryland and Virginia could lead substantial loss to non-tidal habitat (Climate Change Subgroup).
- Current impacts such as water withdrawals may worsen with climate change (Climate Change Subgroup)
- Link freshwater habitat productivity and ocean mortality (Stock Assessment Subgroup)
- The topic of other sources of mortality at sea relates to Stock Status and Fisheries subgroups.

##### **Genetics/Hybrids/Landlocked:**

- Microsatellites can be used to determine effective population size which overlaps with Stock Status Subgroup and their need to understand census population size.
- Database with sources and availability of archival river herring samples would help inform research.
- Predation effects on river herring can be assessed by using genetics to identify stomach contents.
- Generate a standardized (lethal and non-lethal) sampling protocol to be used for all future river herring research that can be adopted by every state/province involved in regular monitoring efforts.

- Dedicated monitoring is needed at range edges (alewife: North Carolina and Quebec/Newfoundland; blueback herring: Florida and New Brunswick/Nova Scotia) - the genotyping of larvae provides large sample sizes and information on presence/absence of successful reproduction in drainages.
- Determine which stocks and populations are susceptible to bycatch in open ocean fisheries (e.g., Atlantic herring and mackerel), as well as other sources of mortality (dams, etc.).
- River herring funding is needed and non-traditional opportunities may need to be considered to obtain the needed funds.
- Monitoring genetic diversity at different life history stages: larvae vs. YOY/juveniles vs spawning adults. Is genetic diversity being lost at a specific stage in the life cycle?
- Suggest habitat group consider otolith microchemistry as a source of information.

#### Species Interaction:

- Collaboration with the Genetics Subgroup can illuminate the extent to which hybridization between the river herring species represent a quantifiable threat.
- Habitat Subgroup will be able to help during discussions of how predator abundance may be affected by invasive plants and how they invasive plants impact habitat quality.
- Genetics subgroup can also be consulted with to investigate migration patterns of the fish (e.g., where they go after they leave a South Carolina river).
- Stock Status Subgroup should consider assimilating predation data into modelling efforts to give a larger picture of species interactions. Species Interaction Subgroup could contribute to the information to be included.
- Bycatch in fisheries was discussed. There is interest in the relative impact of predation and bycatch on river herring populations.

#### Fisheries:

- Stock Status Subgroup should consider historic trends of river herring as this information is of interest to some members of the Fisheries Subgroup. Some members noted that consideration of issues such as the fisheries moratorium and river herring bycatch avoidance program(s) should be considered when looking at trends over time.
- Investigate stock structure of river herring catch.
- The relationship between catch and impact on stocks would be the primary domain of the TEWG Stock Status Subgroup.
- Members stressed the importance of continuing the genetic work to link the catch to the stocks (Genetics and Stock Status Subgroups).
- There was a recommendation to evaluate mortality on transboundary stocks in order to add a Canadian mortality component (Stock Status Subgroup).
- General life history information (e.g., migration).

## Climate Change:

- A good collaboration between the Habitat and Climate Change Subgroups would include looking at the impacts of various flows on passage (i.e., ability of river herring to get over a barrier).
- Consider how the phenology changes with timing of the survey is important (e.g., alewives appear to be moving north, but is it because the southern fish are moving earlier?).

## Stock Status:

- One member was not present during the call, but did send an email to the subgroup stating his opinion that the subgroup should have Ecosystem Based Management (EBM) goals.
- Hybridization.
- The effects of legacy contaminants (i.e. mercury, estrogen mimicking compounds, etc.) on river herring are unknown.
- There are data gaps in regards to fresh water habitat use (e.g., it is unknown what river herring do when they go past the fishway), as well as when river herring are in the ocean.
- Canadian data needs to be included in order to see what is happening coastwide.
- Determine which proportion of alewife and blueback herring catch in coastal or coastwide surveys is from a particular stock complex.
- Fisheries bycatch analyses cross-cut many subgroups: Fisheries will consider how best to estimate catch; Genetics/Hybrids/Landlocked Subgroup will consider stock structure of catch samples; and Stock Status Subgroup will consider what the impact of the catch is.
- Standardized sampling is important to various subgroups and determining the best methods for obtaining data (e.g., Stock Status, Fisheries).
- Stock Status and Climate Change Subgroups overlap on issues related to climate change as this information is needed for a stock status model.
- Discussion of standardizing the following terms may be useful: catch, bycatch and incidental catch.
- Establishing a catalogue/central repository of available samples is important (e.g., scales, otoliths).
- Food habitats of river herring and Atlantic herring is an important discussion topic for the Species Interaction Subgroup as this would support Stock Status Subgroup discussions (e.g., river herring competition with Atlantic herring).
- Creating an inventory of who is doing what and where is important.
- Encourage studies to quantify and improve fish passage efficiency and support the implementation of standard practices. (Habitat Subgroup should consider.)
- Expand observer and port sampling coverage to quantify additional sources of mortality for alosine species, including bait fisheries, as well as rates of incidental catch in other fisheries. (Fisheries Subgroup should consider.)

- Develop and implement monitoring protocols and analyses to determine river herring population responses and targets for rivers undergoing restoration (dam removals, fishways, supplemental stocking, etc.). (Habitat Subgroup should consider.)
- There is overlap with some of the research suggestions for the Fisheries and Stock Status Subgroups so coordination is important.

### **Overarching Issues:**

A draft list of overarching issues related to the TEWG that have arisen during TEWG and subgroup discussions, or through other discussions (e.g., between NMFS and ASMFC) is provided below.

- Additional funding needs and potential collaboration to address those funding needs.
- Rangewide perspective needed. Expertise from other TEWG members or those outside the TEWG will and/or may be needed for subgroup discussions.
- Climate Change Subgroup discussed data gaps and analyses identified at the NMFS River Herring Climate Change Workshop, and the below are those that (at this time) were identified as not climate specific, but still important.
  - a. Historical level of the population
  - b. Life history (ocean, habitat, etc.) for all stages and habitat areas (e.g., lake, river, estuary and ocean) using consistent coastwide protocols
  - c. Habitat use
  - d. Assess fish just above the tide zone and below a structure
  - e. Quantitative larval assessment for habitats (e.g., for spawning areas in North Carolina other than the Albemarle Sound)
  - f. Ocean distribution
  - g. Fishing impact in the ocean environment
  - h. Migratory patterns coast wide for all stocks
  - i. Overcome barriers to pull datasets together and coordination across states to fill-in data gaps
  - j. Increased river monitoring, not just at the first dam
  - k. Well-coordinated fishery independent survey network in juvenile habitats
  - l. Reproduction
  - m. Stock recruitment
  - n. Quantify juvenile emigration
  - o. Data disparity for blueback herring versus alewives
  - p. Improve long term indices on population status
  - q. Additional genetic information
  - r. Better methods to count river herring (e.g., Hewitt, 2003) and/or for other areas standardizing technologies where good counts can be obtained
  - s. Estimates of spawning habitat by watershed (with and without dams)
  - t. Improve long term indices on population status
  - u. Improved monitoring of restocking in the rivers
  - v. Juvenile indices