

River Herring Technical Expert Working Group (TEWG)
Conference Call Summary
March 15, 2016
1:00 p.m. – 4:00 p.m.

The River Herring Technical Expert Working Group (TEWG) met for the first bi-annual meeting of 2016 to discuss the following: 1) the status of the river herring conservation planning initiative; 2) updates on TEWG-related activities; and 3) updates on TEWG subgroups and committee efforts. Below is a summary of the discussions. The meeting summary includes the primary discussion topics and outcomes to contribute to future TEWG discussions. Below is a summary of the discussions. Please note the information provided below reflects individual expert opinion and not consensus.

1). River Herring Conservation Planning

NOAA Fisheries and Atlantic States Marine Fisheries Commission (ASMFC) noted that these larger calls are important to maintain coastwide consideration and obtain broad feedback. NOAA Fisheries and ASMFC provided various related updates.

- River Herring TEWG and Conservation Plan: Diane Borggaard (NOAA Fisheries) provided an overview on behalf of NOAA Fisheries and ASMFC on some of the outcomes related to the TEWG and Conservation Plan. This included funding and support for various river herring initiatives. The full presentation can be found on the TEWG website (<http://www.greateratlantic.fisheries.noaa.gov/protected/riverherring/tewg/index.html>). NOAA Fisheries and ASMFC also plan on producing yearly executive summaries of the River Herring Conservation Plan highlighting various efforts, and will distribute the 2015 document shortly. Similar summaries for the TEWG Subgroups will be an opportunity to track and monitor the ongoing research and conservation actions underway for river herring.
- Data Collection Standardization Meeting Summary: Kirby Rootes-Murdy (ASMFC) provided an overview of the River Herring Data Collection Standardization Meeting that the Commission held in November 2015, with financial support provided by NOAA Fisheries. The meeting brought together representatives of 15 state agencies, 1 additional federal agency (US Fish and Wildlife), one federally recognized tribe, and Fisheries and Oceans Canada to present and discuss monitoring programs along the Atlantic coast that encounter river herring species. Current fishery independent and fishery dependent surveys utilized across the Atlantic coast and in inland rivers were reviewed by over 30 participants. The major discussion points included reviewing each current monitoring program (predominantly fishery-independent surveys) as well as current biological

sampling associated with each survey. The group developed recommendations to standardize programs and considered funding sources. Strong focus on highlighting recommendations for changes to existing and new surveys that could be done immediately with existing funding. The report from the meeting is in the final editing stage, and will be available later in Spring 2016.

2). General River Herring Updates and/or Initiatives

There were reports provided on two large initiatives related to the TEWG. An overview is provided below (including speaker's conclusions) and additional information, including the full presentations, can be found on the TEWG website

(<http://www.greateratlantic.fisheries.noaa.gov/protected/riverherring/tewg/index.html>):

- Evidence of River Herring Life History Variation in Penobscot River Estuary, Maine. Justin Stevens (NOAA Fisheries) presented new research on life history dynamics of the river herring in the Penobscot River Estuary. Historically, the Penobscot river system annually held river herring runs in the millions. In present day, river herring runs are at historic lows due to a myriad of human induced stressors. The Penobscot has been a focal area for active restoration in the form of dam removals and hatchery stocking programs. This study of the Penobscot river system has been conducted since 2010. Trawl survey samples (sampling in spring, summer, and fall) found that in September, age 0 are the dominate age class observed and with juveniles (age-1) were primarily observed in April-June. Surprisingly, age 1 and 2 are present from April through October, showing a delayed outward migration. The implications relates to species resilience (e.g., life history as a solution to environmental stochasticity, further evidence of life history diversity in *Alosa*). The study also concluded that river herring are an important component of the estuary system. The habitat use patterns found in this study supports the idea that further research is needed on how seasonal habitat selection many affect growth and survival rates, as well as to evaluate whether marine rearing and estuary rearing are being driven by habitat accessibility.
 - Comments: Similar delayed outmigration in age 1 American shad from the Roanoke River system has been observed recently. Age 1-2 year olds remain in the Roanoke instead of out-migrating. Dams could be altering hydrology or habitat.
 - The same behavior has been observed for shad on the West Coast, specifically in the Columbia River. Many think dams have modified environmental cues, specifically declining water temperature, delaying shad outmigration. By the time they reach the ocean, conditions may not be suitable for outmigration which is interesting from an evolutionary perspective.
 - In the Hudson system, they are seen riding as far up the tides as possible and locking in way up the river. There is interest in knowing how far they work their way up the Penobscot.

- This information could have implications for timing of in-water activities, as well as predator-prey relationships.
- Life history-based models as quantitative tools to support passage performance standards for alosines. Dan Stich (State University of New York College at Oneonta) noted that there have been observed range-wide population declines, due in part to dams which both physically block and affect environmental cues delaying outmigration. NOAA is building a dam impact analysis, working on the Connecticut River and a few other rivers to the north. These are simulation models, part projection model, part agent-based, based on life-history data along east coast.

This individual-based upstream migration model can be used to evaluate changes in population with respect to sex, age, size structure etc. With this model the effects of making specific management decisions on the ground can be analyzed. When analyzing current shad populations, we found that the downstream passage is very important to when considering upstream passage improvement.

This modeling project has been largely a collaborative effort. The current work is on shad but river herring populations are beginning to be added to the model which is very likely readily adapted to other species. The model utilizes a standardized approach and could be applied across multiple water systems fairly easily. The models are currently being reviewed. There are working models in the Connecticut and Penobscot watersheds which are in the final stages before publishing. ***Diane Borggaard noted that this work will be distribute to the TEWG when published***

3). TEWG Updates (More detailed summaries of the subgroup calls and progress are available on the TEWG website¹)

General TEWG Updates (Coordinators: Diane Borggaard and Kirby Rootes-Murdy)

The next TEWG meeting will be in September. NOAA Fisheries and ASMFC will distribute a Doodle poll a few months before the meeting as recommended on the last TEWG call.

Fisheries Subgroup (Co-chairs: Jason Didden and Mary Beth Tooley)

The Mid-Atlantic Fishery Management Council (MAFMC) is discussing whether to more explicitly manage shad and river herring outside of the catch caps in the squid, mackerel, and butterfish fishery. The preliminary data suggests the mackerel fishery is experiencing fewer trips this year due to limited catch, and catch caps for river herring may not come into play. The MAFMC is formalizing the plan to address the stock in the fishery later this year. In April, the MAFMC will review an update to the 2013 white paper that focused on the possibility of the Council developing a shad and river herring management plan. There will be a formal decision in

¹ <http://www.greateratlantic.fisheries.noaa.gov/protected/riverherring/tewg/index.html>

October on whether to initiate an amendment to add river herring and shad as managed stocks. The Councils are considering increasing monitoring on the mackerel and Atlantic herring fisheries. ***Jason will follow up with Dan Stitch's group to see how they may be able to collaborate on analyzing different levels of ocean bycatch and see how it may be affecting spawning populations of shad and river herring***

Climate Change Subgroup (Co-chairs: Janet Nye and Mike Alexander)

Mike Alexander provided an update on the recent effort: "Assessing the vulnerability of fish stocks to climate change." NOAA developed a tool to assess the vulnerability of a wide range of fish stocks to a changing climate. In the vulnerability scoring rubric, both alewife and blueback herring were assigned a "very high" vulnerability. The full presentation can be found on the TEWG website

(<http://www.greateratlantic.fisheries.noaa.gov/protected/riverherring/tewg/index.html>).

- Comments: One member noted that earlier on the call it was presented that a lot of ages 1-2 are remaining upriver, and was curious what impact that would have on the results? Specifically how does the group consider the riverine life phase vs the marine life phase? Mike noted that they considered both. Rivers get quite a bit warmer, so that would definitely play a role.
- Another participant brought up whether anoxic waters and increased eutrophication were considered as factors. Mike responded that climate models do not typically factor in eutrophication, but he will look into how this was considered in the vulnerability assessment and get back to the TEWG.

Stock Status Subgroup (Co-chairs: Kevin Sullivan and Michael Bailey)

The River Herring Data Collection Standardization Workshop addresses a major need for the subgroup. The subgroup will be looking for speakers on data-limited approaches to address the subgroup after the field season.

Genetics/Hybrids/Landlocked populations Subgroup (Chair: Dan Hasselman)

The white paper on the TEWG website has been updated with some small edits to reflect a 2015 update. There is importance research underway related to SNPs and a paper will be distributed when available.

Habitat Subgroup (Co-chairs: Alison Bowden and Jeff Pierce)

Alison noted to the group that she is on the advisory board for fish passage conference 2016 and if anyone would like to present, to submit an abstract by April 15th. World Fish Migration day is May 21st if anyone is interested in posting an event. There are plans to update white paper about the fish habitat decision support tool, renewable energy developments (especially in Canada), and habitat research priorities. Updates on the Atlantic Coastal Fish Habitat Partnership were also provided.

- ACFHP contributed to the Fish Habitat Decision Support Tool (www.fishhabitattool.org). Specifically, ACFHP contributed to three assessments in this web mapping tool, but the main one of interest for this group is the The Nature Conservancy (TNC) Diadromous Fish Prioritization. This was a collaborative effort with Downstream Strategies, the North Atlantic LCC, ACFHP, West Virginia University, and TNC (Erik Martin and Alison Bowden). The diadromous fish tool focuses on blueback herring, alewife, and American shad habitat along the Atlantic coast, and provides both spatial analyses (visualization tool) and prioritization for restoration and conservation efforts. Additional information can be found in the press release: (<http://www.atlanticfishhabitat.org/fish-habitat-decision-support-tool-launches/>). The outreach process is currently underway, and if there is interest, ACFHP can work with Downstream Strategies to set up a webinar to teach stakeholders how to use the tool.
- The Species-Habitat Matrix was an ACFHP-led coastal effort among many experts to analyze the use of 26 fish habitat types in four separate subregions (along the Atlantic coast) for over 100 diadromous, estuarine, and marine fish species at five separate life stages. The summary report is available at: <http://www.atlanticfishhabitat.org/Documents/Species%20Habitat%20Matrix%20Summary%20Report.pdf> , and the peer-reviewed paper was recently accepted to BioScience and will be published in April. Lisa Havel will be working with TNC to develop a web-based tool for the Matrix, that will allow users to query the data and either view it online or download it for further analyses. ACFHP is hoping the first version of this website will be available in the next few months, and if funding becomes available would like to expand this to a spatial tool in the future.

Species Interactions Subgroup (Chair: Eric Schultz; Kirby Rootes-Murdy provided an update on behalf of Eric)

Eric has asked Kirby to send a doodle poll to schedule a call within the next month or so.

- Comments: Wilson Laney commented that he is working with Max Appelman, Chris Wright, and Derek Orner on striped bass, He has compiled new striped bass literature on species interactions between striped bass and river herring, and will pass this along so the species interactions white paper can be updated.

Ecosystem Integration Committee (Co-chairs: Diane Borggaard and Jon Hare)

The committee is in discussions with NOAA Fisheries and ASMFC on a schedule for yearly subgroup updates to monitor identified research and/or conservation actions. These will be shared with the TEWG when finalized. The EIC also continues to discuss and coordinate on overlapping issues which is available on the committee's website.

4). Other Items

Individual expert opinion and comments made during the discussions on other items or those with broad applicability included:

- Eric Palkovacs is looking for a post doc to work on a variety of genetic and genomic projects at UC Santa Cruz.
- Jeremy McCargo from the North Carolina Wildlife Resources Commission is working on the blueback pilot stocking program. A report will be publishing soon with methods and tags, and will be sent to Kirby and Diane for TEWG distribution.
- Karin Limburg noted that the Hudson River Estuary Program was able to secure funds to remove derelict dams, so the Hudson is going to begin this initiative. The Program will be working with a doctoral student to understand the importance of Mohawk River to river herring. In the Hudson, blueback are declining and alewives are increasing, and based on the historical record, there seems to be cyclical trend that should be monitored.

5). Public Comment

None

6). Next Steps

1. Doodle poll will be distributed a few months before next TEWG meeting to aid in scheduling. The next TEWG meeting will be held in September.
2. Kirby will send out a doodle poll to schedule a call with the Species Interactions Subgroup within the next month.
3. The papers on life history-based models as quantitative tools to support passage performance standards for alosines, Species-Habitat Matrix, genetics paper and North Carolina Wildlife Resources Commission stocking will be distributed when available.
4. Additional information from Mike Alexander on the climate vulnerability assessment will be sent to the TEWG.
5. Yearly updates from NMFS and ASMFC, and the subgroups will be provided when available.
6. Jason Didden will follow-up with the authors of the life-history model.
7. Wilson Laney will pass along relevant literature to Eric Schultz and Kirby Rootes-Murdy for consideration by the Species Interaction Subgroup.

Note: Draft Agenda and background materials can be found at:

<http://www.greateratlantic.fisheries.noaa.gov/protected/riverherring/tewg/index.html>

TEWG Members

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Other Participants

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