

River Herring Technical Expert Working Group (TEWG)

Stock Status Subgroup Webinar/Conference Call

May 21, 2014

1:00 pm

Summary

I. Overview

The Stock Status Subgroup of the River Herring Technical Expert Working Group was established to “consider and test appropriate stock status methodologies to quantitatively assess river herring populations rangewide” in order to help contribute to the expected products of the TEWG. Kevin Sullivan and Michael Bailey, co-chairs of the Stock Status Subgroup, convened a call on May 21, 2014, to “kick-off” discussions and obtain input on potentially productive approaches to move the subgroup forward. The draft agenda for the meeting included topics such as: 1) discussing subgroup charge and potential further subgroups; 2) brainstorming to create a ‘master list’ of options for analysis, and 3) beginning the process of identifying research needs from the ‘master list.’ This meeting summary includes the primary discussion topics and outcomes to contribute to future TEWG discussions. The information provided below reflects individual expert opinion and not consensus.

II. Key Topics

Following is a list of individual expert opinion provided by Stock Status Subgroup members or the public on various overarching topics. Some ideas have been combined where appropriate.

- The co-chairs suggested that the subgroup calls are an opportunity to look at what has been done, discuss available data sets, as well as identify possible modeling approaches and what information may be needed for these. This process is not a consensus process, and all opinions are welcome on these topics.
- Two of the members, who are stock assessment scientists, gave brief introductions on the stock assessment models they have used in the past. Katie Drew presented on the depletion-based stock reduction analysis (DBSRA) model used for the Atlantic States Marine Fisheries Commission (ASMFC) Benchmark Stock assessment (presentation available at the website below under “Meeting Materials”), and Kiersten Curti presented on the multivariate auto-regressive state-space model (MARSS) which NMFS used for the Endangered Species Act (ESA) assessment (links to additional information available below). It was acknowledged that the models considered/used for river herring are those for data poor stocks. Some topics that arose during the discussion included, but were not limited to:

- The possible models considered by ASMFC (Statistical catch-at-age, Surplus production model, Stochastic stock reduction analysis) had some limitations given the data. ASMFC chose the DBSRA model for the U.S. coastwide analysis, and although the peer review panel indicated it was not ready for management use, it is worthy of further development. ASMFC used the entire time series of river herring catch data (alewife and blueback herring combined).
- NMFS used the MARRS model to obtain trends in the relative abundance of alewife and blueback herring for each species range-wide, as well as by stock complex. This model allowed for the incorporation of data with multiple time series such as NMFS bottom trawl index, Fisheries and Ocean Canada Scotian Shelf index, and run counts. Data from 1976 through the present were incorporated into the trend analysis for the Endangered Species Act listing determination due to the presence of distant water fleets and greater fishing intensity before this time. Therefore, this time period would be more representative of what would be seen in the future. Additional information can be found at:
 - http://www.nero.noaa.gov/prot_res/CandidateSpeciesProgram/RiverHerringExtinctionRiskAnalysisFoWeb.pdf
- NMFS discussed the MARSS model presented at the 2012 NMFS River Herring Extinction Risk Workshop. The presentation is available at:
 - http://www.nero.noaa.gov/prot_res/CandidateSpeciesProgram/erawsp.html
- Whatever modeling approaches subgroup members suggest, it would be important to discuss what data sources are available, what time frame should be considered, and what any data needs would be for such an analysis.
- The sources of the datasets need to be informed about the type of information needed for future stock assessments and listing determinations.
- Figuring out the best techniques to avoid error will be important.
- Looking at various sources of mortality is important.
- Coastwide considerations are important, including U.S. and Canada.
- It is important to recognize the distinction between determining the stock status and determining what factors may be contributing to the stock status.
- There are different modeling methods, and it would be helpful for the subgroup to consider where the data are coming from and how the subgroup can inform what data needs to be collected to be considered in the next stock assessment and ESA listing determination. It would be important to look at data needs and/or research needs to inform short term (e.g., 3-5 years) and long term goals (e.g., 10-20 years) for potential modeling methods.
- One member was not present during the call, but did send an email to the subgroup stating an opinion that the subgroup should have Ecosystem Based Management

(EBM) goals. Because the member was not present during this call, the topic of EBM was tabled for next meeting's agenda.

- The goal of the larger TEWG effort is to develop a list of actions and consequently research projects that will contribute to river herring conservation. The timeframe for the conservation planning and website is approximately one year, however, it will be helpful to have a list of identified data gaps and conservation actions with estimated costs before this time. NOAA Fisheries and Atlantic States Marine Fisheries Commission will support independent research projects to help fill in data gaps and implement conservation actions for river herring through an open and competitive process. Through the TEWG effort, NOAA Fisheries and ASMFC hope that other alternative sources of funding can be identified for other research needs. Additionally, the ideas generated for conservation actions will be useful for various management bodies.

III. Key Outcomes

Below is a list of individual expert opinions provided by participants related to specific threats, data gaps, research projects, conservation actions, information to be considered and/or monitoring (i.e., the identified research projects and/or conservation actions).¹ Some ideas have been combined where appropriate. These outcomes are listed in no particular order, and those related to other subgroups are also included in the "Cross-Cutting Issues" section below).

a. Data Gaps

- Speciation is important and needs to be improved for some areas.
- Canadian data needs to be included in order to see what is happening coastwide. In some surveys, all river herring are classified as alewife so there is a speciation issue.
- There needs to be monitoring of life stage information such as age at maturity and size at age which are important for the classical stock assessment approach.
- Age structures are important to collect to inform some assessment models.
- Information about river herring in freshwater and the ocean is still data poor (e.g., there may be species specific differences in freshwater habitat, age-structured coastwide indices).
- Productivity is poorly sampled in fresh water lakes and ponds, as well as salt and brackish water.
- Hybridization.
- Determine which proportion of alewife and blueback herring catch in coastal or coastwide surveys is from a particular stock complex.

¹ It is important to note that the agenda focused discussions on how to organize the subgroup, however, some ideas related to the categories listed were mentioned.

b. Research Projects

- Understanding different trends in certain areas when it comes to the different species and stocks (e.g., MARSS modeling indicated the Canadian stock of alewives was significantly increasing but blueback herring in the mid-Atlantic was significantly decreasing).
- Determine if availability has changed over the course of a survey.
- Develop a method to track indices of abundance in the rivers; this would help link what is happening in the ocean to what is happening in the rivers. Rigorous run counts and age-0 indices need to be linked to the age structure in the rivers and the ocean.
- Determine which methods are best for obtaining data on spawning runs to detect changes in the future (e.g., if fish are not counted at all time at a fish ladder, important parts of the run may be missed). What is the best methodology/survey design for monitoring.
- Options to investigate for different models:
 - MARSS model: Investigate using just the offshore strata in order to extend the time series further back in time. Also, assume separate underlying states/stocks in the coastwide model and estimate how they interact with each other.
 - DBSRA model: Obtain a time-varying element for the carrying capacity (K) (versus an estimate for the parameters for the entire series). Explore use of index to tune model (X-DBSRA)

c. Monitoring

- Survey timing should consider that there are some runs that are shifting earlier in the year.

IV. **Next Steps**

The Stock Status Subgroup discussed the following next steps:

- Discuss the topic of EBM (brought up by a member not able to make the call) on the next call.
- In order to prevent reinventing the wheel, the subgroup will review the data gaps that are already listed in the river herring ESA listing determination and the stock assessment. They will transfer the stock-related data needs into their own list. The subgroup will then discuss what needs to be added to the list, estimate costs, etc.
- The group will start sharing documents through email. There will be an ASMFC file share website available to them if needed.

- Kevin and Michael will consider additional e-mail conversations with the subgroup on topics as needed before the next call. A future subgroup call will be scheduled sometime around June 15.
- A draft meeting summary will be distributed to the subgroup and additional ideas can be provided.

V. Cross-Cutting Subgroup Issues

The following cross-cutting subgroup issues were discussed and will be further considered by the TEWG and its Ecosystem Integration Committee.

- 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.

VI. Participants

a. Subgroup Members

The affiliation of each member can be found on the subgroup roster available at the TEWG Fisheries Subgroup website:

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

Genine Lipkey
 Diane Borggaard
 Joe Hightower
 Kevin Sullivan
 Alan Weaver
 Matthew Ogburn
 Katie Drew
 Adrian Jordaan
 Eric Hilton
 Ben Gahagan

Jason Didden
Michael Bailey
Kiersten Curti

- b. Public
Edith Carson

VII. Meeting Materials

The following materials were provided to support the meeting. Additional information can be found at the TEWG Stock Status Subgroup website:

<http://www.nero.noaa.gov/protected/riverherring/tewg/stocks/index.html>

- a. Draft Agenda
- b. ASFMC Depletion based stock reduction analysis