River Herring Technical Expert Working Group
(TEWG) Habitat Subgroup Webinar/Conference Call

September 1, 2016
10:00 – 11:30 am

Summary

I.   Overview

The Habitat Subgroup of the River Herring Technical Expert Working Group was established to "consider the impacts from various factors affecting river herring habitat including, but not limited to, connectivity (e.g., fish passage), water quality/quantity, and appropriate habitat characteristics". Alison Bowden and Jeffrey Pierce, co-chairs of the Habitat Subgroup, convened a call on September 1 to discuss a habitat use study using eDNA, nature-like fishway designs for Atlantic Coast diadromous fishes and river herring life history variation. The draft agenda for the meeting included these topics. 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

The below includes a list of individual expert opinion provided by Habitat Subgroup members or the public on various overarching topics. Some ideas have been combined where appropriate.

- *Chesapeake Bay River Herring Habitat Use Study* presented by Matt Ogburn (Smithsonian Institution). Speaker's conclusions (full presentations available at the website below) and individual comments include:
  - The study sampled approximately 200 locations in the Chesapeake Bay; working toward a predicted habitat model at the stream scale to help guide conservation efforts.
  - Researchers collected water samples to check for the presence of herring DNA; sources include feces, mucous, gametes, skin sheds, carcasses, etc. This method, known as environmental DNA or eDNA, may be a more sensitive and less costly method for detecting the presence of herring than icthyoplankton samples.
  - Additional experiments are needed to take into account the rate of DNA that species shed in the water; for example do species shed more DNA when spawning
  - Q: Do samples show expanded habitat use?
  - A: A dam was recently removed on the Rappahannock River, using eDNA methods fish appear to be using 80% of habitat upstream. This represents far greater habitat usage than previously understood.
  - Kim de Mutsert offered to contribute run count samples next year.

- ***River Herring Life History Variation and Habitat Associations in Penobscot River Estuary, Maine USA*** presented by Rachel Lasley-Rasher, Justin Stevens and Rory Saunders (University of Maine). Speaker's conclusions (full presentations available at the website below) and individual comments include:
  - o The National Marine Fisheries Service and the University of Maine have been collaborating on a trawl survey on the Penobscot River system since 2013.
  - o The Penobscot River has active restoration efforts which include dam removal and inter-basin stocking. 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 through June.
  - o Surprisingly, age 1 and 2 are present from April through October, showing a delayed outward migration which suggests species resilience.
  - o The habitat use patterns found in this study supports the idea that further research is needed on how seasonal habitat selection may affect growth and survival rates, as well as to evaluate whether marine rearing and estuary rearing are being driven by habitat accessibility.

- ***Development of Biometric-Based Design Criteria for Nature-like Fishways*** presented by Jim Turek/Alex Haro (NOAA, USGS). Speaker's conclusions (full presentations available at the website below) and individual comments include:
  - o While dam removal is often viewed as a straightforward solution to restoring fish passage and other ecological services, many of these dam removal sites pose physical challenges to efficient fish passage. Nature-like fishways are one option in the hybridization of the dam removal practice that may be able to help improve fish passage efficiency.
  - o The manual is intended for restoration practitioners that are interested in building nature-like fishways, it provides passage design criteria and engineering practices for construction and performance monitoring.
  - o The manual is a living document, it will be updated as more information becomes available on things like swimming performance, turbulence, noise, innate motivation, predation etc.

III. Key Outcomes

The below includes 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). 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. Conservation actions
  - See presentation on nature-like fishways.
- b. Data gaps
  - See presentation on eDNA research
- c. Research projects
  - See presentation on eDNA research.
- d. Monitoring

- See presentation on Penobscot River survey.

IV.   Next Steps
The Habitat Subgroup discussed the following next steps:
- The group will meet via conference call in November
- Members will review the monitoring program and white paper and make updates as necessary. Both document will be uploaded into google docs for editing.

V.   Cross-Cutting Subgroup Issues
The following cross-cutting subgroups issues were discussed and will be further considered by the TEWG and its Ecosystem Integration Committee.

VI.   Participants
    a. <u>Subgroup members</u>
The affiliation of each member can be found on the subgroup roster available at the

Alison Bowden	Phil Edwards
Alan Weaver	Tara Lake
Eric Nelson	Mary Andrews
Matt Ogburn	Lisa Havel
Sean McDermott	Sara Turner
Eric Hilton	Kim de Mutsert
Dave Coughlin	Steve Gephard
Mike Bailey	Fritz Rhode
Alex Haro	

    b. <u>Staff</u>
Ashton Harp
Diane Borggaard

VII.   Meeting Materials
The following materials were provided to support the meeting.

a. Draft Agenda