

2012 River Herring Workshops/Working Groups

*Climate Change Workshop
Draft Agenda*

July 18-19, 2012

NMFS Northeast Regional Office, Gloucester, MA

Goal & Objective:

- To discuss the potential impacts of climate change on alewife (*Alosa pseudoharengus*) and blueback herring (*Alosa aestivalis*), collectively referred to as river herring, in U.S. Canadian freshwater and marine habitats along the East Coast of North America.
- Review ongoing quantitative (e.g. modeling) and qualitative (e.g. vulnerability assessments) approaches to assessing impacts of climate change on river herring habitat and population dynamics.
- Review river herring research relevant to climate change assessments
- Identify research gaps for improving the assessment of climate impacts will be highlighted.
- Produce a peer-reviewed workshop summary that includes individual opinion gathered at the workshop on impacts of climate change on river herring. This workshop summary will be used to help inform the status review and listing determination for the species. NMFS will be soliciting recommendations for peer reviewers that meet specific qualifications.

Day 1

	Welcome
8:30	<ul style="list-style-type: none">• Introduction of Climate Change Workshop participants, facilitator, ground rules, and goals
	Management update
9:00-9:20 <i>9:20-9:40</i> <i>9:40-10:00</i> <i>10:00-10:20</i>	<ul style="list-style-type: none">• Overview of river herring listing determination process (NOAA/NMFS)• Overview of Atlantic States Marine Fisheries Commission River Herring Stock Assessment (ASMFC)• Overview of river herring management in Canada (UNH)• Questions and Answers
10:20-10:35	Break

July 17, 2012

	Setting the Stage
10:35-10:55 10:55-11:15 11:15-11:35 11:35-11:55	<ul style="list-style-type: none"> • Overview of river herring biology and possible effects of climate change (USM) • Analysis of climate models specific to river herring (NOAA/OAR) • U.S. Integrated Ocean Observing System (NERACOOS) • Panel discussion of climate, data, and river herring
11:55-1:00	Lunch (<i>on your own</i>)
	Ongoing river herring climate assessments
1:00-1:20 1:20-1:40 1:40-1:50 1:50-2:20	<ul style="list-style-type: none"> • NMFS' fishery vulnerability assessment (NOAA/NMFS) • Modeling assessment (NOAA & EPA) • Multivariate analysis (SUNY) • Panel discussion of assessments
	Climate science and river herring research and/or information relevant to climate change assessments
2:20-2:40 2:40-3:00 3:00-3:20	<ul style="list-style-type: none"> • Hydrology in response to climate change <ul style="list-style-type: none"> ○ Stream flow and river temperature in the Northeast (USGS) ○ An example of simulation of in-stream water temperatures related to projections of climate change in the southeastern US (USGS) ○ An example of simulating hydrologic response to projections of climate in the southeastern US (USGS)
3:20-3:35	Break
	Climate science and river herring research and/or information relevant to climate change assessments (<i>continued</i>)
3:35-3:55 3:55-4:15 4:15-4:35	<ul style="list-style-type: none"> • Flood trends and river herring habitat (VA-Canada) (NOAA/NMFS) • Ocean climate and river herring (temperature & acidification) (NOAA/NMFS) • Group discussion
4:35-5:00	Public contributions
5:00	Adjourn

DAY 2

8:30	Brief Review
8:45-8:55 8:55-9:05 9:05-9:15 9:15-9:25 9:25-9:35 9:35-9:45 9:45-9:55 9:55-10:05 10:05-10:15 10:15-10:25	<p align="center">Climate science and river herring research and/or information relevant to climate change assessments (<i>continued</i>)</p> <ul style="list-style-type: none"> • River Herring “Lightning Speed” Presentations (1-2 slides each; 10 minutes each) <ul style="list-style-type: none"> ○ Canada overview (UNH) ○ Maine (MEDMR) ○ Massachusetts (MADMF) ○ North Carolina (ECU) ○ South Carolina (SCDNR) ○ Florida (NC CRU) ○ Distribution model (UNH) ○ Open ocean studies (ECU) ○ Habitat suitability model (shad example) (NC CRU) ○ Otoliths as natural tags of river herring provenance and climate change impacts (SUNY)
10:25-10:40	Break
10:40-11:00	<p align="center">Climate science and river herring research and/or information relevant to climate change assessments (<i>continued</i>)</p> <ul style="list-style-type: none"> • Group discussion (acknowledging information received from invited participants not able to attend, as well as any other information from other participants)
11:00-11:30	Public contributions
11:30-12:30	<p align="center">Climate Change and River Herring Discussion</p> <ul style="list-style-type: none"> • Discussion topics (Individual opinion) <ul style="list-style-type: none"> ○ Local observations and information (Canada & US) (<i>see accompanying table & regional handout</i>)
12:30-1:30	Lunch (<i>on your own</i>)

<p>1:30-3:35 <i>(with Break)</i></p>	<p style="text-align: center;">Climate Change and River Herring Discussion (<i>continued</i>)</p> <ul style="list-style-type: none"> • Discussion topics (Individual opinion) <ul style="list-style-type: none"> ○ Continue to discuss topic above (as needed) ○ Considerations for assessing impacts of climate change on river herring (<i>incorporated into table, but discuss individually as needed including Indicators, Available Data, Relevant References</i>) <ul style="list-style-type: none"> ▪ Region ▪ Species ▪ Life stages ▪ Potential impacts ▪ Other? ○ Risk of climate change to river herring, and the relevant components of climate and biology that generates the most risk ○ Possible relationships between river herring hybridization and climate change ○ Potential impacts of ocean acidification on river herring ○ Data gaps ○ Other relevant information
<p>3:45-4:00</p>	<p style="text-align: center;">Wrap-up, Next Steps</p> <ul style="list-style-type: none"> • Wrap-up • Next Steps <ul style="list-style-type: none"> ○ Workshop summary (Individual suggestions for peer review)
<p>4:00-4:30</p>	<p>Public contributions</p>
<p>4:30</p>	<p>Adjourn</p>

Participant Selection Criteria for Workshop:

- Invited participants were selected based on their working knowledge and recent experience with one or both of the following: 1) climate science; and/or 2) population dynamics and life history of anadromous species; and/or 3) assessing impacts of climate or environmental change on fish. Participants with fish expertise were selected to represent both freshwater and marine areas based on the expansive coast-wide range of river herring. However, representation focused on areas where the majority of data on river herring are available. Additionally, participants with anadromous species expertise were selected to bring information and perspectives from both academic institutions and fisheries management.

Participants:

- Jamie Cournane, University of New Hampshire (UNH)
- Karen Wilson, University of Southern Maine (USM)
- Mike Dionne, New Hampshire Fish and Game (NHF&G)
- Claire Enterline, Maine Department of Marine Resources (ME DMR)
- Brad Chase, Massachusetts Division of Marine Fisheries (MADMF)
- Hugh Carberry, New Jersey Division of Fish & Wildlife (NJDFW)
- Karin E. Limburg, State University of New York (SUNY)
- Karen Capossela, Maryland Department of Natural Resources (MDDNR)
- Roger Rulifson, East Carolina University (ECU)
- Adrian Jordaan, State University of New York (SUNY)
- Bennett Wynne, North Carolina Wildlife Resources Commission (NCWRC) (webinar only)
- Amy Larimer, North Carolina Division of Marine Fisheries (NCDMF)
- Bill Post, South Carolina Department of Natural Resources (SCDNR)
- Julie Harris, North Carolina Cooperative Fish and Wildlife Research Unit, (NC CRU)
- Jon Hare, National Marine Fisheries Service (NMFS)
- Fritz Rhode, NOAA National Marine Fisheries Service (NMFS)
- Matt Collins, NOAA National Marine Fisheries Service (NMFS)
- Mike Alexander, NOAA Office of Oceanic and Atmospheric Research (OAR)
- Charles Stock, NOAA Office of Oceanic and Atmospheric Research (OAR)
- Janet Nye, Environmental Protection Agency (EPA)
- Patrick Lynch (Integrated Statistics, under contract by NOAA & EPA)
- Robert Lent, U.S. Geological Survey (USGS)
- Jacob LaFontaine, U.S. Geological Survey (USGS)
- Steve Markstrom, U.S. Geological Survey (USGS)
- Mike Bailey, U.S. Fish & Wildlife Service (USFWS)
- Wilson Laney, U.S. Fish & Wildlife Service (USFWS)
- Ru Morrison, Northeastern Regional Association of Coastal and Ocean Observing Systems (NERACOOS)
- Steve Miller, Great Bay National Estuarine Research Reserve (Great Bay NERR)
- Katie Drew, Atlantic States Marine Fisheries Commission (ASMFC)