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North Shore River Herring Stakeholder Meeting

Date: March 3, 2020

Time: 10:00 am – 12:30 pm

Location: Conference Room at the MA Division of Marine Fisheries, Gloucester

Meeting Purpose

To create a dialogue and awareness among people working on river herring projects and issues on the north shore, share information, identify and discuss stakeholder issues, and build collaborations to address stakeholder needs.

Meeting Summary

19 people registered for the meeting

18 people attended

4 presentations

General discussion period

The meeting was rescheduled from a date in February due to snow cancellations

This summary is based on notes taken by Rob Vincent

Presentations

- **General Overview of North Shore River Herring**
Ben Gahagan, MA Division of Marine Fisheries
 - River herring sub populations have been identified coast-wide mid-Atlantic to Canada
 - Commercial fisheries-related impacts are not an issue on the north shore in bycatch based on portside sampling – Nantucket, mid Atlantic, long island sound, block island sound have the most fisheries bycatch impacts
 - Hudson canyon has been a focus areas for river herring persecution more recently
 - Habitat variability exhibit a north-south gradient for adults per surface acre, Town Brook, Back River, and Mystic River show highest adults per surface acre – rivers are lock systems and manage passage out for juveniles after spawning, or open systems, or wardens open up out-passage that allows juveniles out for returned spawning in these systems – *this information is based on my notes and needs clarification*
 - Matt deveined determined 3.5-4 juvenile fish per (meter? acre? Other area measurement?) surface area in the Mystic

- High quality habitat allows fish to grow faster and bigger, habitat quality is important for supporting healthy river herring populations
- Take home
 - This is a good time for fish and fish passage – wet spring and summers helpful and hope will continue (dry conditions are not good)
 - 1 million fish in Mystic River system
 - 600k fish in the Charles River
 - UMass – Adrian Jordaan – assess fish numbers and benefits for resources and ecosystem function and health – what are the ecosystem benefits? Need further work to determine
 - End of the day it is a value based system – science informed, not science based
 - Need to inform people about their heritage and rights in terms of river resources, use, fish, ecosystem, and outreach to the community
 - Need more outreach
 - More awareness regarding building hydropower needed for communities – i.e., impacts to river herring, human health, dams impact cold water habitats required by the fish, etc.
 - Where do the fish go in the winter?
 - Still needs to be understood – research needs associated with river herring resource use and population behavior
 - Acoustic tagging needed to understand movement
 - Better nursery habitat will help offset bycatch and natural mortality due to better and more successful spawning and production
 - Acoustic tagging studies have shown that juveniles hang around the shoreline the first couple years of their life, which can add to juvenile bycatch mortality (20% bycatch mortality is likely high) – other factors more impactful to north shore populations than bycatch – locks, passage issues, habitat quality
 - Getting river herring back to its historic ecosystem function level is an underlying objective, but management of the resource is an obligation to federal and state agencies
- **Merrimack River Comprehensive Plan**
Sean McDermott, NOAA Fisheries
 - Hydropower licensing is the focus of the Merrimack River comprehensive plan
 - Section 10, section 18 of FERC
 - FERC needs to balance energy and non-energy interests in the licensing – resulting in a Comprehensive plan outlining issues and defining steps that need to be taken
 - NOAA Fisheries puts fisheries interests and concerns into the bigger picture as part of the comprehensive plan for consideration for licensing decision

- Balance fisheries interests in terms of a resource and community interests
 - Merrimack river comprehensive plan started in January
 - Plan should be done by end of 2020
 - All existing data is used in the assessment and plan development, nothing new is created
 - Fisheries managers on the committee provide the information , and work with others in the watershed
 - Jane Mead – formerly CZM, now Gloucester DNR – Federal consistency review can be effective to influence the comprehensive plan
 - Jane wrote the regulations, - Sean will contact Jane
 - Peter – public input? When?
 - Sean – a public comment on the draft will be announced at some point in the process
 - Merrimack River Watershed Association has been compiling data for 4-5 years and wants to talk with Sean and Ben – three water treatment plants on the river of concern – wants CZM to contribute.
- **eDNA as a Monitoring Tool in Coastal Streams**
Geof Day, Sea Run Brook Trout Coalition
 - eDNA provides an assessment of the presence or absence of a species in the water at a location
 - Inexpensive, relatively simple, emerging technology
 - \$25 per sample, extra species additional \$5
 - Need replicate samples – degree of confidence
 - Three positive ids that is good – then state does electroshocking to confirm at the site
 - Available for river herring – eDNA sampling
 - Can help determine if fish get above a dam
 - Ben – conducted eDNA sampling in the Mystic River, calibrating for river herring, trying to see if you can get an abundance number – need to take into account degradation over time when sampling and results
 - Researcher in Chesapeake bay developed river herring primers
 - Can't tell blueback from alewife yet
 - eDNA primers may have been developed for freshwater mussels – a variety of species are now being sampled using eDNA
 - Mike Kennison (Univ. Maine) – has presented a figure showing lake and presence-absence of fish using eDNA sampling
 - Other species in MA – DMF , but maybe not diadromous species – Geoff probably the only one doing eDNA for diadromous species
 - Geoff is hearing that rainbow smelt in north shore are gone

- Geoff using eDNA to try to determine if rainbow smelt on north shore are or are not still present
 - Ben first year last year no smelt in DMF sampling
 - Andover Conservation Commission –would like to use eDNA to sample above and below the dam to assess presence or absence
 - Single fish at 100 meters and a groups of fish at 1 kilometer detection capability with eDNA
 - What is sample size needed for area of water body? – need to calculate based on above detection ranges
 - Geoff would like primers developed for invertebrate prey utilized by target fish species
- **Mystic River Acoustic Tracking and PIT Tag Simulation & Evaluation Tool**
Rob Vincent, MIT Sea Grant
 - Rob Vincent discussed river herring telemetry tracking, habitat assessments, restoration monitoring, citizen science, coordinating volunteer monitoring groups, and education programs that he is doing around the state with MA Division of Marine Fisheries and other partners. Details can be found under the river herring page on the MIT Sea Grant website (link below).

<https://seagrant.mit.edu/river-herring-and-the-mystic-river-watershed/>

General Discussion

- Bill, NOAA Fisheries– Challenges with counting groups and data quality of count data
 - NEED DATA VISUALIZATION AND ANALYSIS SYSTEM FOR MA STATE_WIDE RIVER HERRING
 - Companies paid staff, volunteers, state agencies, federal agencies, all creating data – need standardized, centralized data
 - Base metrics: day, species, location, count
 - Right now it's just a mishmash of count data coming in , a bit of a mess
 - Centralized web based page is required
 - Need a system to capture and manage the data state-wide – web based
 - DMF has daily estimates for all sites in MA
 - Summer interns possibly available from DMF or NOAA to help
 - MITSG – can provide this system, but funding is required for development (NOAA? NFWF? ASMFC? Others?)
 - Rob talk to Bill M and Ben G (DMF) and Ben Bray programmer at MITSG to define and create the system needed – need to work on funding source and proposal
 - Map with location points
 - Data buckets need to be defined

- Use the MIT Sea Grant - Nantucket water quality system as a template
- Use EPA NWI system for additional information
- Sean – range-wide data and visualization system needed in the long term to expand the initial more localized (MA) database
- Massbays may find this type of river herring monitoring system useful for monitoring and characterization of their coast-wide embayments
- Funding
 - In general, there is limited to no funding available for river herring work (unless directly linked to a restoration project) – this is a problem for people needing funding resources to support and enable the work that is needed
 - Bill suggested that people talk to state and federal representatives about the importance and funding opportunities for river herring work
- Nitrogen controls in estuaries used by river herring, any assessments being done on this potential impact to river herring populations?
 - Joel Llopiz on the south shore has done some work on this pertaining to river herring larval growth
- What is MA doing about nutrient loading impacts on habitat and fisheries?
- It's of interest, but not a focus for fisheries right now, per resource managers present at the meeting
- Agreement among attendees to continue providing the north shore river herring meetings every spring

Stakeholder Needs Identified

- The need to provide this forum for north shore river herring stakeholder engagement
- Development of a cloud-based, open access, state-wide river herring data management, analysis, and visualization system is needed
- Development of river herring simulation tools for various groups conducting telemetry tracking and monitoring of river herring in association with various restoration, passage, and population assessment projects
- Need more river herring outreach to increase awareness and understanding of the importance of healthy river herring populations for healthy coastal ecosystems, sustainable fisheries, support of local communities and economies, and historic and cultural value
- Research needs associated with river herring resource use and population behavior (seasonal, annual, spawning periods)
- More acoustic tagging projects are needed to understand movement and resource requirement of river herring
- Increase the use of eDNA sampling to assess the presence or absence of river herring at specific locations (e.g., pre-post restoration, above and below dams, etc.)
- Assess the impacts of nutrient loading on river herring populations

Next Steps

- The group agreed there is a need to continue gathering annually for a north shore river herring meeting
- The next meeting will be in the spring 2021
- Rob Vincent will follow up with Christine in Nashua regarding developing a river herring simulation tool for her program based on data that her group will collect from the Merrimack River this year
- Rob will follow up with Bill regarding the development of (and finding funding for) a state-wide river herring data capture, analysis, and visualization tool. This will be cloud based and open access. Discussions regarding the specifics of the database, desired analytical tools, and data treatment and standardization, as well as pursuing funding to support development of the system are to follow.
- Sean will contact Jane Mead at Gloucester DNR regarding the use of Federal consistency review for development of the Merrimack River comprehensive plan
- Merrimack River Watershed Association will follow up with Sean and Ben regarding their historic monitoring data and potential impacts from water treatment plants along the river, suggests CZM input into the development of the Comprehensive Plan
- Andover Conservation Commission should talk with Geof Day (Sea Run Brook Trout Coalition) and Ben Gahagan (MA DMF) regarding eDNA sampling at their dam site
- Distribute meeting summary to the full stakeholder list (approx.. 40 people)
- Schedule Spring 2021 North Shore River Herring Stakeholder meeting

Thanks to all those who participated in this first north shore river herring stakeholder meeting, we look forward to providing this forum annually. Thanks also to Ben Gahagan at MA Division of Marine Fisheries for his encouragement and providing the meeting space, the speakers for their time and efforts in preparing presentations, Sean McDermott, Bill McDavitt, and Eric Hutchins at NOAA for their efforts in helping to locate meeting rooms, and Abigail Archer at Barnstable County Extension/Woods Hole Sea Grant for her support in identifying the need for this north shore meeting through the greater Massachusetts River Herring Network. The next meeting will take place in spring 2021, an announcement of time and location will be made at the end of this year. Please contact me with any questions. Good luck with your spring spawning runs!

Best Regards,

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