Resources and Guidance for writing a River Herring Management Plan

In 2011 members of the River Herring Network brainstormed a list of questions that should be answered in order to develop a plan for herring run maintenance and management for individual herring runs on Cape Cod and Southeastern Massachusetts. These plans will help to facilitate communication among the current herring warden(s) and the wardens that will follow.

This document is intended to give guidance to a herring warden who is beginning the process of turning the answers on that worksheet into a more formal plan.

Section 1: Physical Description of the Herring Run

Spawning Habitat

A resource for information about river herring spawning habitat is The MA Division of Marine Fisheries Technical Report TR-42 titled, "Quality Assurance Program Plan (QAPP) for Water Quality Measurements Conducted for Diadromous Fish Habitat Monitoring" published in May 2010. It can be found on the DMF website under the tab "Technical Publications" and on the River Herring Network website under the tab "State Resources". It lists suitable conditions for spawning habitat in terms of temperature, pH, dissolved oxygen, turbidity, and nitrogen and phosphorus levels. If you are interested in conducting a formal assessment of spawning pond habitat, contact Brad Chase with the Division of Marine Fisheries to discuss the logistics of staff and volunteer time, equipment, and sampling protocol.

Another good resource for learning about spawning habitat is the Atlantic States Marine Fisheries Commission publication, "Atlantic Coast Diadromous Fish Habitat: A Review of Utilization, Threats, Recommendations for Conservation, and Research Needs" published in 2009. It can be found on the River Herring Network website under the tab, "ASMFC".

Water Quantity

River herring generally need at least six inches of water depth in a stream in order to swim efficiently. See the section below on, "Water Withdrawals" for additional information.

Water Quality

River herring are affected by water quality at all stages of their life cycle from egg to adult, freshwater to saltwater. The above mentioned ASMFC publication, "Atlantic Coast Diadromous Fish Habitat: A Review of Utilization, Threats, Recommendations for Conservation, and Research Needs" contains an excellent summary of river herring water quality requirements.

Section 2: Factors that Can Affect Productivity of the Herring Run

Water Withdrawals

Water withdrawals and diversions, whether for municipal water supply, cranberry bogs, or other needs can have a major impact on herring runs. The largest impacts tend to be a function of available water quantity in streams and fish runs at the appropriate times to trigger fish migration and allow fish to pass. Many fishways operate well only within a certain range of flow. Large variations in flow and water availability, particularly in the spring, can result in spawning in areas that will later dry up. In addition, low flows due to water diversion or increased summer water use can limit or prevent downstream passage of outgoing fish in the fall.

In locations where water withdrawals or diversions impact herring runs, there have been multiple efforts to reconcile the needs of the environment with the source of the demand. For example, in Scituate's First Herring Brook where the municipal water supply withdraws from the brook, the town has made efforts to conserve water and follows an operational plan that provides fish ladder and downstream flows in appropriate quantities throughout the year. The best approach to improving conditions for herring without negatively impacting the water user is to work cooperatively to determine if there are ways to optimize the timing and quantity of water use to benefit both needs.

Sara Grady, North and South Rivers Watershed Association

Restrictions to Passage

If you do not currently have an inventory of passage restrictions, start by reviewing the Division of Marine Fisheries technical publication, "A survey of anadromous fish passage in coastal Massachusetts" written in 2004. This report lists most of the herring runs in Massachusetts and the major obstructions to upstream passage. It can be found on the DMF webpage under Technical Publications.

Fish Ladders, Notches, etc.

The above mentioned DMF publication, "A survey of anadromous fish passage in coastal Massachusetts" written in 2004 lists most of the fish ladders present on the herring runs in Massachusetts. If you need assistance with the operation or maintenance of a fish ladder, contact Brad Chase at DMF. It is helpful to have an Operation and Maintenance plan prepared for each fish ladder. Division of Marine Fisheries now required an O&M plan to be developed for all newly constructed fish ladders.

Section 3: Actions that are taken to maintain/improve the productivity of the Herring Run

Maintenance

Herring run maintenance is specific to each individual stream. Here is a synopsis of how the Town of Barnstable maintains its four active herring runs.

EARLY WINTER – EARLY SUMMER

During the winter and early spring the main objective is to make sure there is an adequate amount of water running through the streams. It is equally important to clear the streams of obstructions to fish passage. During the winter storms, trees often fall in the runs and leaves will accumulate in areas blocking water flow. Briars and shrubs from the summer growing season are also cut back to prevent future blockages for those runs we cannot maintain continuously throughout the year. Once the runs are cleared for fish passage, water flow rates and levels are observed and managed to provide cover, easy ascent, and resting pools for adult herring. After the spawning run is complete, the water flow is adjusted or even stopped to ensure a sufficient amount of water is available for the adult herring to exit.

EARLY SUMMER – EARLY WINTER

Throughout the summer and fall, water levels are observed and runs are periodically checked after storms for downed trees. Before the fry are ready to leave the ponds, each run is walked and checked for blockages that might prevent their safe exit to sea. If necessary, leaves and branches are removed from the stream. In some instances areas will become over sanded preventing water from flowing out of the pond. If possible, those areas will be dredged, either by machine or hand. Once the fry have exited the runs, the water flow is adjusted and sometimes completely stopped for managing water levels for the next spawning run.

It is important to maintain each run for river herring passage, but equally important to maintain the streams for those species residing year round (invertebrates, birds, aquatic plants, other fish). Be sure to only cut back what is necessary and not remove the natural habitat for these other beings.

And then we do it all again!

Amy Raitto and Martin Wunderly, Town of Barnstable Natural Resource Officers

Monitoring

If you are not immediately aware of any monitoring efforts in the estuary, river or spawning ponds of your herring run, ask the local or regional environmental organizations and the DMF to see if they are aware of any activity.

The Atlantic States Marine Fisheries Commission now requires, through Amendment 2 to the Interstate Fishery Management Plan for Shad and River Herring Management that a sustainable fishery plan must be developed before harvest of river herring will be allowed. Sustainability targets will need to be established and these will require data on the population of river herring in your run. If you do not already have a herring count program established on your herring run and are interested in doing so, contact John Sheppard at the Division of Marine Fisheries, or Jo Ann Muramoto at the Association to Preserve Cape Cod.

Section 4: Interaction with people to maintain & improve the Herring Run

Permitting Issues

The Massachusetts Wetlands Protection Act (310 CMR 10.00) provides for jurisdictional authority over wetland resource areas. The following Regulations cover wetland resource areas that are relevant to River and Blueback Herring as well as other anadromous and catadromous species:

310 CMR 10.35- Banks of or Land Under Ocean, Ponds, Streams, Rivers, Lakes or Creeks that Underlie Anadromous/Catadromous fish runs.

310 CMR 10.56- Land Under Water bodies/Water ways (Creeks, Rivers, Streams, Ponds, Lakes)

310 CMR 10.58- Riverfront

Any work that proposes to alter, fill, dredge and/or remove any of the aforementioned resource areas shall require either a Notice of Intent (NOI) or Request for Determination of Applicability (RDA) permit application to your local Conservation Commission. Conservation Commissions often have a set of local Wetland By-laws which can be as strict as or stricter than the state Wetlands Protection Act; however, no by-law can be more lenient than state regulations.

For routine maintenance projects on herring runs such as replacing stop logs, adjusting boards to manipulate flow/water levels, clearing out nuisance vegetation, implementing signage or conducting herring run walks to ensure unimpeded herring passage, an RDA permit application is typically appropriate. RDAs typically cover small scale work that involves routine maintenance and low impact activities. RDAs and NOIs are valid for 3 years; however, NOIs can be extended for additional years, not to exceed 3 years at a time, via an Extension Permit application (WPA Form 7). The number of times a NOI permit can be extended is up to the discretion of the local conservation commission. NOI permit applications cover more impactful projects such as dredging, re-building of existing structure, habitat improvement projects or outright replacement and/or rehabilitation of a run.

It is strongly recommended that the applicant speak with a town's Conservation Agent or Administrator prior to the WPA application process so he or she can make the proper permitting recommendations based on the proposed work.

Andrew McManus, Town of Mashpee Conservation Agent

Volunteers

On Cape Cod, two groups that are available to help you find volunteers for projects are the Americorps Cape Cod program http://www.americorpscapecod.org/ and the group Cape Cod volunteers. http://capecodvolunteers.org/volunteer/

Many Towns rely on help from volunteers to clear streams of debris before the spring adult herring migration. Jeff Hughes, Wellfleet Herring Warden has organized work crews for many years and can be contacted for any needed advice on how to delegate tasks, supervise progress, maintain safe working conditions and keep volunteers happy so that they return the next year.

Harvest

Starting in 2004 the MA Division of Marine Fisheries instituted a moratorium on the harvest of river herring in response to observations of declining populations. Prior to this date Towns could establish their own harvesting regulations. Information about past and historic harvesting regulations can be found in Town Reports.

The Atlantic States Marine Fisheries Commission's recently (2009) updated Fishery Management Plan (FMP) for Shad and River Herring calls for the creation of sustainable fisheries management plans for states that would like their river herring fisheries open for harvest. A sustainable fishery is defined as one "that demonstrates their alewife or blueback herring stock could support a commercial and/or recreational fishery that will not diminish potential future stock reproduction and recruitment." States are required to develop sustainability targets which "may include, but is not limited to, repeat spawning ratio, spawning stock biomass, juvenile abundance levels, fish passage counts, hatchery contribution to stocks and bycatch rates."

At this time (2013) Massachusetts has not developed a sustainable fisheries management plan. It is possible that towns could develop their own and submit them to the MA Division of Marine Fisheries for approval. The states of Maine, New Hampshire, New York, North Carolina and South Carolina have all prepared plans and examples can be viewed at the ASMFC website. If your town is interested in preparing a plan for harvesting, contact Brad Chase at Division of Marine Fisheries.

Abby Franklin, Cape Cod Conservation District