Atlantic States Marine Fisheries Commission

NEWS RELEASE

Vision: Sustainably Managing Atlantic Coastal Fisheries

FOR IMMEDIATE RELEASE
November 30, 2017

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ASMFC & NOAA Fisheries Award Funds to East Carolina University to Study River Herring Spawning Populations Using Environmental DNA

ECU Researchers Michael Brewer, Erin Field, and Roger Rulifson received funding to survey river herring using eDNA.

The Atlantic States Marine Fisheries Commission and NOAA Fisheries announced today they have awarded approximately $40,000 to researchers at East Carolina University (ECU) to further ground-truth a new way to survey river herring (i.e., alewife and blueback herring) using Environmental DNA (eDNA). In 2013, NOAA Fisheries collaborated with the Commission and other partners to implement a coordinated coastwide effort that builds upon other ongoing efforts to proactively conserve river herring and address data gaps. This project will help to address some of these data gaps.

Small silver fish that spawn in freshwater reaches of rivers along the East Coast, river herring spend most of their lives in the ocean. Once highly abundant, these historically and culturally important fish have declined significantly, primarily due to habitat degradation, overfishing, climate change and fish passage impediments that have prevented them from reaching their spawning habitat.

"River herring are an important prey species for a variety of animals including commercial and recreational fish like cod and haddock. When they migrate from marine to freshwater, river herring also release important nutrients, which helps promote healthy aquatic ecosystems," said John Bullard, regional administrator, NOAA Fisheries. "This award complements the proactive conservation effort that we are undertaking with the Commission, the Atlantic states, fishery management councils, and other partners to better understand river herring populations."

The Atlantic States Marine Fisheries Commission was formed by the 15 Atlantic coastal states in 1942 for the promotion and protection of coastal fishery resources. The Commission serves as a deliberative body of the Atlantic coastal states, coordinating the conservation and management of nearshore fishery resources, including marine, shell and anadromous species.

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“For this funding opportunity, we were looking specifically for projects that would contribute to future stock assessments of river herring, particularly blueback herring in the Mid-Atlantic. The selected project examines the innovative approach of using eDNA versus traditional, labor-intensive methods to survey rivers to determine population abundance,” said Robert Beal, executive director, Atlantic States Marine Fisheries Commission. “If this technique is proven to be effective, it could result in more efficient, accurate sampling, and help monitor areas where traditional survey methods are challenging.”

The use of eDNA for biological research and monitoring is relatively new. Environmental DNA is DNA that is collected from a variety of environmental samples such as soil, seawater, or even air, rather than directly sampled from an individual organism. As various organisms interact with the environment, DNA is expelled and accumulates in their surroundings. Example sources of eDNA include, but are not limited to, feces, mucus, gametes, shed skin, and carcasses.

Researcher Michael Brewer on a river herring sampling trip.

Researchers Erin Field, Michael Brewer, and Roger Rulifson from ECU’s Department of Biology and Institute for Coastal Science and Policy, have already completed a pilot study in North Carolina’s Chowan River watersheds, corroborating the presence of river herring eDNA with actual river herring presence using electrofishing. This project will further develop eDNA methods to measure river herring abundances by calibrating the eDNA method in two Massachusetts watersheds with highly accurate fish counts in collaboration with MA Division of Marine Fisheries. By comparing fish abundance using eDNA quantity and shedding rates with traditional fish counting, the researchers will assess the validity of the new method. This method can then be applied to understudied watersheds in the Mid-Atlantic.

“Being able to rapidly monitor spawning habitats is essential for developing and monitoring conservation efforts, sustainability, and population growth.” says Erin Field. “In Mid-Atlantic watersheds, traditional survey methods are more difficult due to high turbidity, large run sizes, and vast watersheds. The ability to provide information for previously unsurveyed areas will not only help us with stock status assessments, but will also help us better plan restoration and remediation efforts to help bring back river herring.”

Find out more about our River Herring Conservation Plan and other funded research projects.

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