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River Herring

The alewife (*Alosa psuedoharengus*) and blueback herring (*Alosa aestivalis*) are collectively referred to as "river herring," sometimes nicknamed "buckeyes" (buck-ees) or "sawbelly." Well known for their spring migration from the ocean to their freshwater spawning grounds, these small silver fish with soft fin rays are easy to identify at a passing glance as they swim upstream each year. Once innumerable, river herring populations have faced steep declines due to a combination of overfishing, predation, pollution, habitat loss and habitat fragmentation. Herring were once collected in large dip nets by the barrel, and used for pickling, smoking, canning, and even fertilizer. Colonial dams and water-powered mills severed the connection from the sea to headwater marshes and ponds, drastically reducing the spawning habitat available. To address these stressors, Rhode Island closed the fishery, and continued efforts to expand habitat access through dam removals and fish passage improvements are now in effect.

LIFE HISTORY

Range and Habitat: River herring populations extend across the eastern seaboard, from Florida to Canada. While most of the species spend a significant portion of time each year in the marine environment, landlocked freshwater populations are not uncommon. Sea-run populations imprint on the freshwater system where they were born and attempt to return annually to spawn. During the spring spawning season, they spread through coastal waterways and can be found all the way from the coastal marshes just off the beach, to headwater ponds and lakes far upstream. Rhode Island has numerous notable herring run rivers, including the Pettaquamscutt, Sakonnet, Saugatucket, Pawtuxet, Woonasquatucket, and Pawcatuck. Many of the brackish ponds on the south coast and the east and west bays also breach seasonally. Herring wait for high tides to swim into these ponds through the surf and temporary channels created in the beach sand.

Behavior: River herring are alosids, the genus that also includes American shad. River herring and American shad are anadromous, meaning they make an annual migration from the ocean to freshwater systems to reproduce. Adult river herring spend most of the year schooling out at sea as filter feeders. When water temperatures start to rise during early spring, sexually mature individuals (generally 3-4 years for males, 4-5 years for the larger females) stop feeding and migrate back to the freshwater systems where they were born.

Reproduction: Alewife typically spawn earlier in the season as compared to blueback, but may overlap in the mid-season. Over a period of 2-3 months, herring continually cycle in and out of the freshwater systems. Once females reach suitable habitat, they will release their sticky eggs to be fertilized near underwater debris like stones, logs, or vegetation. Once attached, the eggs harden and will hatch just a few days later. Adults who have spawned will head back downstream to return to the sea. Juveniles will hatch throughout the spring and spend the summer growing to about 3 inches. In late summer to late fall, the juveniles begin to disperse downstream. They will continue to

DID YOU KNOW...

- Diadromous fish move between salt and fresh water; herring are specifically anadromous, meaning they spawn in freshwater.
- Adult herring do not perish after spawning and can reproduce for several years.
- Herring don't jump like some salmon but can swim quite fast over short distances.
- Historical accounts of river herring migration described rivers as "turning silver" from the enormous number of fish present.
- Fish passages, aka "ladders," help fish swim upstream when manmade obstacles block their way. They come in many shapes and sizes, including denil, steeppass, pool and weir, and elevators.

grow in sheltered brackish waters before eventually venturing out to sea as adults. Of all the eggs laid, only about 1% will produce offspring that survive to adulthood.

VOLUNTEER SURVEYS

During the spring herring run, state biologists and volunteers monitor the number of herring moving upstream past specific locations in coastal waterways. White backboards are placed beneath the water at chokepoints in the river, usually at the exit of a fish passage, to allow observers to visually count how many herring pass over the board as they move upstream. With enough surveys, counts can be used to calculate the total number of adult fish entering a river system to spawn in a given year. To increase the number of surveys conducted, RIDEM asks for volunteers to help observe sites across the state. During spring migration, volunteers can visit one of these observation sites any time during daylight hours to count herring for ten minutes. Each ten-minute survey contributes valuable data to the study of this still fragile population which plays a crucial role in Rhode Island's ecosystem. For more information regarding how you can become a part of RIDEM's volunteer effort, contact Jennifer.Brooks@dem.ri.gov.

REGULATIONS

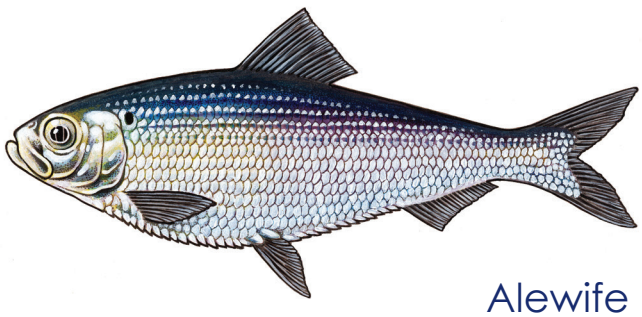
A fishing moratorium was instituted in 2006 and river herring still remains a closed fishery in Rhode Island. No one is permitted to harvest river herring at any time, for any reason. **If you see people harassing or poaching river herring, please contact the RIDEM Division of Law Enforcement at 401-222-3070.**

A TREACHEROUS JOURNEY

River herring are a critical part of the coastal food chain. With little in the way of defenses other than their group schooling behavior and agility, most predators along the Atlantic coast take advantage of the seasonal bounty of food. As herring pour into coastal waterways, they face a gauntlet of hungry mouths. Here in Rhode Island, the venerable striped bass is one of the first to take a share, along with the osprey, whose arrival in New England purposefully coincides with this influx of prey. As herring move into more confined water bodies, cormorants and gulls (such as the aptly named herring gull) are next to feed. Then as they move past river mouths, into shallower depths, herons and snapping turtles have their fill. Once under forested canopies, aquatic mammals such as otters and mink chase them down or pluck them from shore. When they arrive at their final destination, in ponds and lakes, largemouth bass wait lurking in the shadowy waters. By migration's end, many herring show scars from the arduous run.

IDENTIFICATION

Alewife and blueback herring are visually very similar. Alewife have a larger eye in comparison to their body size and are usually larger than bluebacks. When observing dead specimens, the body cavity lining (peritoneum) of the alewife is flesh-colored and black in the blueback. *Artwork courtesy of Robert Jon Golder.*



Alewife

Blueback