



Life History and Habitat Needs

Geographic Range: Blueback herring range is from

St. Johns River, Florida to Cape Breton, Nova Scotia and the Miramichi River, New Brunswick.

Bluebacks are most abundant from warmer waters of the Chesapeake Bay southward, occurring in most tributaries of the Chesapeake Bay, in the Delaware River, and in adjacent offshore waters.

Movement/Migration: Adults and sub-adults spend most of their lives at sea following a north-south seasonal migration along the Atlantic coast, only returning to rivers to spawn. Adults begin moving coastward in response to changes in water temperature and light intensity. After spawning, fish return downstream. Eggs are buoyant in flowing water, but settle along the bottom in still water. Larvae drift passively downstream. Juveniles spend 3-9 months in their natal rivers before moving to the ocean. They move downstream in waves in response to dropping water temperatures beginning in late summer and generally are found in the lower ends of rivers and in freshwater tributaries. Other factors prompting downstream migration include changes in water flow, water levels, precipitation, and light intensity. Many juveniles spend their first winter close to the mouth of the river.

Spawning: Bluebacks generally spawn in freshwater inland of the tidal influence. Spawning runs begin in the south and move progressively north as the season progresses and water temperatures increase. Spawning typically occurs over an extended period with groups or waves of migrants. Bluebacks are repeat spawners that are assumed to return to their natal rivers. In regions where bluebacks co-occur with alewife, they select fast-moving waters, but in regions where they do not co-occur with alewife they may select slower-flowing tributaries.

Habitat Use: Bluebacks can tolerate a wide range of salinities. Adults often spawn in areas of rivers where there is gravel or clean sand substrates. In the Rappahannock River, Virginia, spawning substrates include sand, pebbles, and cobbles. Substrates with 75% silt or other soft material containing detritus and vegetation are suggested as optimal for spawning, egg and larval habitat. Juvenile bluebacks have been found among submerged aquatic vegetation beds in the lower Chesapeake Bay, which have been linked to improved water quality. Bluebacks are found at depths of 27-55 m throughout their offshore range.

Threats to Habitat

- Dams and other physical obstructions
- Water withdrawal facilities
- Thermal and toxic discharges
- Channelization and dredging
- Land use (farming, logging and urbanization)
- Aluminum and other metals
- Changes in pH levels

ASMFC Habitat Areas of Particular Concern

ASMFC Habitat Areas of Particular Concern include spawning sites; nursery areas; inlets that provide access to coastal bays, estuaries and riverine habitat upstream to spawning grounds; and sub-adult and adult nearshore ocean habitat.

Recommendations to Improve Habitat Quality

- Remove obstructions or improve passage to upstream migration. Evaluate effectiveness of passage at existing bypass facilities. Mitigate hydrological changes from dams. Determine if earlier upstream passage of migrating adults would increase production and larval survival, and opening downstream bypass facilities sooner would reduce mortality of early emigrants.
- Take into account water flow needs for alosine migration, spawning, and nursery use when deciding river flow allocation. Alter water withdrawal rates or water intake velocities to reduce alosine mortality. Locate water withdrawal facilities along the river where impingement will be low.
- Improve water quality. Upgrade wastewater treatment plants. Reduce thermal effluent into rivers and discharge earlier in the year to reduce impacts to migrating fish. Determine the effects of dredging on alosine habitat. Implement erosion control measures and best management practices.
- Identify, quantify, and evaluate potential alosine spawning and nursery habitat. Coordinate with other agencies responsible for habitat restoration plans and promote cooperative interstate research, monitoring and law enforcement. Evaluate water quality standards and criteria to ensure they meet special needs of alosines. Review proposed projects for alosine spawning and nursery areas. Limit development projects.
- Determine biotic effects of alosine passage into previously restricted habitats and on other native species.

Habitat Research Needs

- Determine optimal tolerances for temperature, salinity, dissolved oxygen, pH, depth, current velocity and suspended solids for various life stages
- Use a multiple scale approach for restoring alosine habitat and identify and assess indicators of suitable habitat, including potential spawning habitat
- Document the impact of power plants and other water intakes on early life stage mortality in spawning areas
- Focus research on within-species variation in genetic, reproductive, morphological, reproductive, and ecological characteristics
- Review studies dealing with effects of acid deposition on anadromous alosines
- Determine how abundance and distribution of potential prey affect growth and mortality of early life stages
- Conduct additional studies on the effects of land use on riverine stages
- Determine if pH and aluminum levels lead to reduced reproductive success and if chlorinated sewage effluent slows recovery of depressed stocks

Additional Information

Blueback herring are managed under Amendment 1 (1999), Technical Addendum I (2000) and Addendum I (2002) to the Fishery Management Plan for Shad and River Herring. Additional information is contained in the ASMFC's Diadromous Fish Habitat document. These documents can be found on the ASMFC website at www.asmfc.org or by contacting the ASMFC Habitat Specialist at (202) 289-6400.