

Species Profile: Shad & River Herring: FMP Seeks to Restore American Shad Populations & Improve Understanding of Other Alosines



American Shad *Alosa sapidissima*



General Characteristics:

- **Largest of the herrings**
- **Can reach up to 2 ½' in length, weighing about 11 ½ lbs**
- **Age at maturity
Female = 5 years
Male = 4 years**
- **Range from south-eastern coast of Newfoundland to St. Johns River, Florida**
- **Primarily feed on plankton**
- **Stock status varies by river system**

See side-bar on opposite page for information on remaining alosine species

Introduction

Shad and river herring are anadromous fish that spend the majority of their adult lives at sea, only returning to freshwater in the spring to spawn. Historically, these species spawned in virtually every accessible river and tributary along the coast. However, blockage of spawning rivers by dams and other impediments, combined with degradation of water quality, has severely depleted suitable spawning habitat.

Species of shad and river herring once supported important commercial and recreational fisheries along the Atlantic coast. Today, these fisheries are just a fraction of what they were due to riverine habitat loss and fishing pressure. Management under Amendment 1 to the Interstate Fishery Management Plan for Shad & River Herring (Amendment 1) seeks to restore these species through conservative regulatory measures and state-by-state monitoring requirements to improve our understanding of species stock status.

Life History

American & Hickory Shad

American shad, *Alosa sapidissima*, are found in many Atlantic coastal rivers from Newfoundland to the St. Johns River in Florida. Shortly after recruitment, juveniles emigrate from estuarine nursery areas and join a mixed-stock, migratory population. After four to six years as coastal migrants, individuals become sexually mature and migrate to their natal rivers during spring spawning seasons that vary by latitude. The percentage of shad that survive to spawn more than once decreases from north to south. Shad that spawn in more northerly rivers may survive to spawn again, while shad native to the rivers south of Cape Fear, North Carolina die after spawning. American shad adults that exhibit repeat spawning return to the sea soon after spawning and migrate northward to summer feeding grounds in the Gulf of Maine.

Hickory shad, *Alosa mediocris*, spawn in rivers and tributaries along the Atlantic coast from the Bay of Fundy to the Tomoka River in Florida. After spawning, hickory shad return to the ocean, but their distribution and movements are essentially unknown. Fertilized eggs are carried by river currents, and eventually develop into larvae, which begin to feed four to seven days after hatching. Larvae drift downstream into tidal freshwater reaches of the spawning rivers, and gradually mature into juveniles. In early to late summer, juvenile shad migrate out of their nursery areas to the sea. With increasing water temperatures in the spring, mature hickory shad will migrate back to their native rivers to compete their life cycle.

Alewife & Blueback Herring

Alewife and blueback herring (collectively known as “river herring”) are relatively small anadromous fish, spending most of their adult life at sea, but returning to freshwater areas to spawn in the spring. Alewife spawn in rivers, lakes, and tributaries from northeastern Newfoundland to South Carolina, but are most abundant in the Mid-Atlantic and the Northeast states. Blueback herring prefer to spawn in swift flowing rivers and tributaries from Nova Scotia to northern Florida, but are most numerous in waters from the Chesapeake Bay south. Mature alewife (ages three to eight) and blueback herring (ages three to six) migrate rapidly downstream after spawning. Larvae begin to feed three to five days after hatching, and transform gradually into the juvenile stage. Juveniles remain in tidal freshwater nursery areas in spring and early summer, but may also move upstream with the

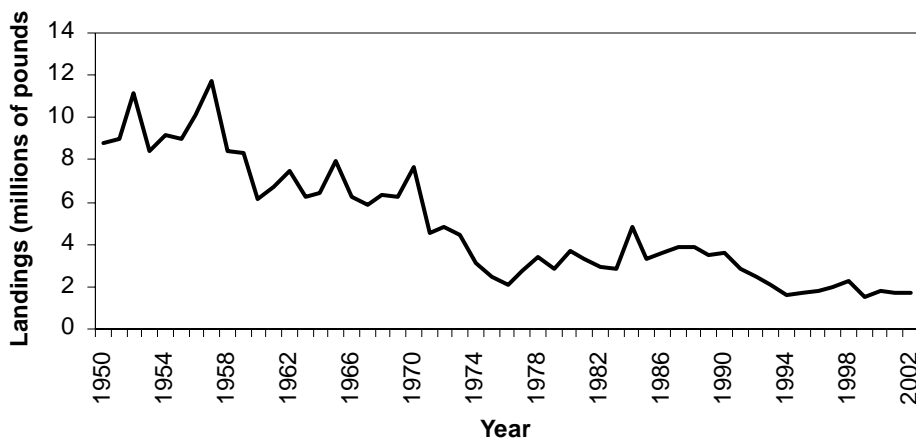
encroachment of saline water. As water temperatures decline in the fall, juveniles move downstream to more saline waters. Little information is available on the life history of juvenile and adult alewife and blueback herring after they emigrate to the sea as young-of-the-year or yearlings, and before they mature and return to freshwater to spawn.

Commercial and Recreational Fisheries

American shad, hickory shad, and river herring formerly supported significant commercial and recreational fisheries throughout their range. Fisheries are executed in rivers, estuaries, and coastal waters. Although recreational harvest data are scarce, most harvest is believed to come from the commercial industry. Commercial landings for all these species have declined dramatically from historic highs. Following is a summary of fisheries by species.

Figure 1. American & Hickory Shad Commercial Landings, 1950-2002

Source: National Marine Fisheries Service, Fisheries Statistics and Economics Division, 2004



American Shad

Total in-river commercial landings have declined steadily from over 3.2 million pounds in 1980 to 711,840 pounds in 2002. Coastal intercept landings rose steadily from 1980 to a peak of two million pounds in 1989, then declined thereafter to 1.1 million pounds in 2002. Landings in the coast intercept fishery are not expected to increase given the scheduled closure of the fishery by December 31, 2004.

Hickory Shad

Atlantic coast (Maryland to Florida) hickory shad landings are poorly monitored. Federal and state data collected for this species is questionable because of mixing with American shad upon landing, poorly understood geographic ranges, and poorly monitored recreational fishing areas. This species supports a significant recreational fishery in some areas, but good recreational harvest data do not exist. North Carolina has historically dominated the commercial fishery. Total hickory shad landings at 195,054 pounds in 1996 and 165,386 pounds in 1997 were the highest in 30 years. Landings in 2002 were 93,219 pounds.

Alewife & Blueback Herring

Commercial landings of Atlantic coast river herring have ranged from a high of 74.9 million pounds in 1958 to a low of less than two million pounds in recent years. New England landings have declined dramatically from the 1970s to the end of the 1990s. In the Mid-Atlantic, landings have declined dramatically since

Hickory Shad *Alosa mediocris*



General Characteristics:

- Can reach up to 2' in length; 18" fish weighs about 2 lbs
- Range from Bay of Fundy to Tomoka River, Florida
- Prey on small fish such as lance, anchovies, cunners, and silversides
- Stock status unknown

Alewife *Alosa pseudoharengus*



General Characteristics:

- Adults average 10 - 11" in length; 8 - 9 oz in weight
- Range from Nova Scotia to South Carolina
- Primarily feed on plankton
- Congregate in large schools, numbering in the thousands
- Excellent food fish, marketed both fresh and salted
- Stock status unknown

Blueback Herring *Alosa aestivalis*



General Characteristics:

- Adults average 11" in length; 7 oz in weight
- Range from Nova Scotia to Northern Florida
- Primarily feed on plankton
- Name derived from dark blue/bluish gray coloring on back
- Stock status unknown

continued on page 8



Angler with an American shad. Photo courtesy of Brian Mullaney.

the mid-1960s and have remained very low in recent years. In the South Atlantic, the landings are steadily declining from an all time high of 11.5 million pounds in 1985 to less than 500,000 in 1999. During 2002, Maine, Virginia, and North Carolina accounted for the majority of coastwide commercial landings.

Atlantic Coastal Management Considerations

All 15 Atlantic coastal states from Maine through Florida currently manage shad and river herring species under Amendment 1. The Amendment focuses primarily on American shad regulations and monitoring programs, but also requires states to initiate fishery-dependent monitoring programs for river herring and hickory shad, in addition to current fishery-independent programs. The goal of the monitoring programs is to

Species Profile: Shad & River Herring (continued from page 3)

improve data collection and stock assessment capabilities. Furthermore, Amendment 1 contains specific measures to control exploitation of American shad populations, while maintaining the status quo in other fisheries for hickory shad and river herring.

Amendment 1 contains three primary regulatory requirements. The first is a five-year phase out of the ocean intercept fishery, which began on January 1, 2000. States were required to achieve at least a 40% reduction in effort in the ocean intercept fishery by December 31, 2002. The total closure of the fishery will occur by December 31, 2004. The second requirement establishes a fishing mortality target for in-river fisheries, and calls for the maintenance of existing or more conservative regulations for river herring and hickory shad. Lastly, the Amendment implements an aggregate 10-fish daily creel limit in recreational fisheries for American and hickory shad, with all jurisdictions maintaining existing or more conservative recreational regulations for river herring.

Stock Status

While the FMP addresses four species -- American shad, hickory shad, alewife, and blueback herring -- lack of comprehensive and accurate commercial and recreational fishery data for the latter three species make it difficult to ascertain the status of these stocks.

A stock assessment for American shad was completed in 1997 and submitted for peer review in 1998. The 1998 assessment estimated fishing mortality rates for nine shad stocks and general trends in abundance for 13 shad stocks. At the time of the 1998 assessment, current stock levels appeared greatly reduced from historic levels. Estimates of exploitation status were not provided for the majority of American shad stocks (12 of 19). Three of the seven stocks assessed (Hudson, Edisto, and Altamaha Rivers) were fully exploited. A conservative approach should be used to determine the status of other assessed stocks due to uncertainties in available data and model inputs.

During the period 1992-1996, most stocks varied without trend (i.e., stable), but some stocks were increasing (in part due to hatchery supplementation) and the Hudson River stock was declining. The York River stock declined during the period 1980-1993. These trends in abundance over the 1992-1996 period may reflect natural variability, changes in fishing pressure, or both. The short time series is of limited applicability in analyzing the long term health of American shad stocks. The next stock assessment update to be peer-reviewed is scheduled for 2005. For more information, please contact Lydia Munger, Shad & River Herring FMP Coordinator, at (202)289-6400 or lmunger@asmfc.org.

