

Species Profile: American Shad

State Habitat Plans Help Identify Biggest Threats to Species Recovery

Introduction

Each spring, as water temperatures slowly warm, fishermen and nature-lovers know what's moving into the rivers. Following the scent of the water, American shad hone in on streams where they were born. These small fish travel up to 2,000 miles from their oceanic feeding grounds to their freshwater spawning grounds. As they enter freshwater and swim upstream, they are a favorite target for recreational fishermen, as shad are known to put up a good fight. Many communities hold festivals to celebrate the arrival of shad in the spring. As a forage fish, shad are an important seasonal prey for larger predators, including birds and other wildlife. However, declines in many shad stocks prompted the Commission to adopt Amendment 3 to the Interstate Fishery Management Plan (Amendment 3) in 2010 with the goal of rebuilding and ensuring the sustainability of shad populations.

Life History

American shad are a migratory anadromous fish that spend most of their life in the Atlantic Ocean but return to coastal rivers and tributaries in the spring to spawn. Adults are highly migratory along the coast with primary summer feeding grounds located in the Bay of Fundy and three primary offshore wintering grounds located off the Scotian Shelf/Bay of Fundy, in the Middle Atlantic Bight (Maryland to North Carolina), and off the Florida coast.

Spawning adults are capable of migrating hundreds of miles upstream where impediments do not block movement; however, in most river systems, they do not spawn as far upstream as they did historically. Males or "buck shad" return first, followed by females or "roe shad." They spawn usually at night or during overcast days. In the southern range (Cape Hatteras south), females release as many as 700,000 eggs during the spawning season, but both males and females normally die after spawning. In the northern range (Cape Hatteras north), females typically release 300,000 eggs or less during the spawning season; however, most shad will return again to spawn in the following years, with some shad living up to ten years.

The young leave their natal (home) river within the first year and will spend the next few years at sea, schooling in large numbers with shad from other regions and feeding on plankton and other small fish or crustaceans. Upon reaching maturity – at about age four – they will return to their natal streams to spawn.

When the fish slow down and in themselves declare the end of the [spawning] season, you can stand on a rock in the river and watch them go by. These are the ghost days. The fish, always in single file as they climb into faster water and advance the migration, are gray and spectral. But they keep going. If you throw out a proper cast and let it swing down current an occasional shad will hit. They may be tired but they're not defeated.

– John McPhee, *The Founding Fish*

Importance

American shad play an important ecological role in freshwater, estuarine, and marine environments during its anadromous life cycle. Once in the ocean, American shad are preyed upon by many species including sharks, tunas, king mackerel, seals, and porpoises. They are also a seasonally important prey species for a number of fish, birds, and wildlife species, with the adult spawning American shad arriving in the early spring when other prey may be scarce and the nesting/breeding season is just beginning for many wildlife predators. During earlier periods of high abundance, American shad played a significant role in ecosystem nutrient and energy cycling. For example, in South Atlantic coastal river systems, many shad die shortly after spawning and provide beneficial marine-derived nutrients to the freshwater systems.

American shad played an important cultural role to Native Americans and early colonists. Their importance today is still seen in the many communities which still celebrate the arrival of American shad in the spring by holding festivals to mark the occasion. These festivals include activities such as

Species Snapshot

American Shad
Alosa sapidissima

Management

Unit:
Maine -
Florida



General Characteristics:

- Adults average 20 inches in length and 4 pounds in weight.
- Range from Newfoundland to Northern Florida
- Opportunistic predator, feeding primarily in plankton
- Females are larger than males

Interesting Facts:

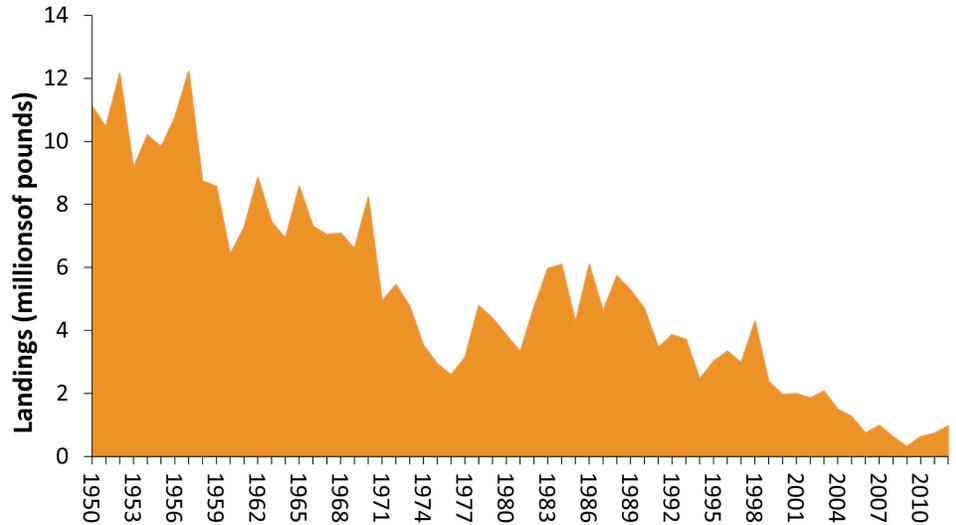
- George Washington was an avid and exceptional shad fisherman.
- The Latin name translates as "most savory."
- The State of Connecticut designated American shad as its state fish in 2003.

Stock Status:

- There are 86 discrete American shad stocks along the East Coast.
- Many stocks remain severely depressed compared to historic levels.

American Shad Commercial Landings

Source: Personal communication NMFS Fisheries Statistics Division, 2013



Timeline of Management Actions: FMP (1985); Amendment 1 (1999); Addendum I (2000); Amendment 2 - River Herring (2009); Amendment 3 - American shad (2010)

fishing for shad, shad bakes or “planking,” along with a variety of other activities including running events, arts and crafts shows, music, and many other activities to foster community relations, attract tourists, and benefit the local economy. A listing of shad and river herring festivals can be found in Amendment 3 on the Commission’s website.

Recreational & Commercial Fisheries

Since the early 1800s, American shad have supported major commercial fisheries along the Atlantic coast and were one of the most valuable food fish of the U.S. Atlantic coast before World War II. The estimated East Coast catch in 1896 was 50 million pounds, but by the 1950s landings had declined to approximately 10 million pounds. Fisheries included in-river fisheries targeting river-specific stocks and ocean fisheries targeting mixed stocks of schooling shad. In-river landings began decreasing and ocean harvest landings began increasing during the 1970s, with coastwide landings of approximately two million pounds annually. By 1996,

1, 2013, only states with a sustainable fishery management plan in place may have directed commercial fisheries for American shad (see ‘Atlantic Coastal Management’ section).

Data on American shad recreational fisheries are very limited. Historically, large recreational shad fisheries were known to occur on the Connecticut, Hudson, Delaware, Susquehanna, Santee-Cooper, Savannah, and St. Johns Rivers. The actual harvest (i.e. catch and removal) may amount to only about 20-40% of total catch as a result of catch-and-release angling practices. Recreational catch-and-release anglers are encouraged to use a barbless hook and to keep shad in the water when removing the hook to avoid stress to the fish.

were noted for Maine, New Hampshire, Rhode Island, and Georgia stocks, as well as in the Hudson (NY), Susquehanna (PA), James (VA), and Edisto (SC) Rivers. Although improvement has been seen in a few stocks (e.g., Potomac and York Rivers), many remain severely depressed compared to their historic levels. The benchmark stock assessment identified the primary causes of stock decline as a combination of overfishing, pollution, and habitat loss due to dam construction.

Atlantic Coastal Management

In 2010, the Commission’s Shad and River Herring Management Board approved Amendment 3. In an effort to aid in the recovery of depleted and declining stocks, Amendment 3 prohibits state water commercial and recreational fisheries beginning January 1, 2013 unless states/jurisdictions develop and implement sustainable fishery management plans (SFMPs.) Amendment 3 defines a sustainable fishery as “a commercial and/or recreational fishery that will not diminish the potential future stock reproduction and recruitment.” SFMPs must clearly demonstrate that the state’s or jurisdiction’s American shad fisheries meet this definition of sustainability through sustainability targets which must be monitored, achieved, and maintained. Connecticut, Pennsylvania,

Stock Status

The 2007 benchmark stock assessment identified 86 separate tributaries or potential individual stocks. American shad stocks are river-specific; that is, each major tributary along the Atlantic coast appears to have its own spawning stock. The stock assessment found that stocks were at all-time lows and did not appear to be recovering to acceptable levels. Recent declines



Father and son with an American shad. Photo courtesy of Peter L. Groves, Woo’s Shad Fishing, www.woofish.com/shad.html

ocean harvest comprised 67% of the coastwide landings. The ocean-intercept fishery was closed in 2005. Since then, coastwide landings have averaged 575,000 pounds annually, with the largest landings occurring in North and South Carolina. As of January

New York, New Jersey, Delaware, the Potomac River Fisheries Commission, North Carolina, South Carolina, Georgia and Florida all have approved SFMPs for American shad. All states and jurisdictions are allowed to maintain a shad catch-and-release recreational fishery.

In addition, Amendment 3 requires states and jurisdictions to submit a habitat plan regardless of whether their commercial fishery would remain open. The habitat plans outline current and historical spawning and nursery habitat, threats to those habitats, and habitat restoration programs in each of the river systems. The purpose of the habitat plans is to provide a record of the major threats facing American shad to aid in future management efforts. The habitat plans provide a comprehensive picture of threats to American shad in each state and include collaboration with other state and federal agencies (e.g., state inland fish and wildlife agencies, water quality agencies, U.S Army Corps of Engineers).

The two largest threats identified in the habitat plans were barriers to migration and a lack of information on the consequences of climate change. A key benefit of the habitat plans is that each river system relevant to shad now has its threats characterized. The habitat plans will be filed with the Federal Energy Regulatory Commission to ensure that shad habitat is considered when hydropower dams are licensed. They will also be shared with inland fisheries divisions to aid in habitat monitoring and restoration efforts. In February 2014, the Board approved habitat plans for all states/jurisdictions with the exception of the Hudson and Merrimack Rivers, and the State of Florida. It is anticipated that habitat plans will be updated every five years. To learn more about state habitat plans, go to the Shad & River Herring webpage at <http://www.asmfc.org/species/shad-river-herring> (under Management Section). For more information, please contact Marin Hawk, Fishery Management Plan Coordinator, at mhawk@asmfc.org or 703.842.0740.

Shad Habitat Threats and Future Plans

Largest Threats

- * Main stem dams in New England states which impede fish passage
- * Contaminant issues with natural gas in Mid-Atlantic states
- * Dredging in Southeast may impact shad habitat, but it is unclear to what extent

Lack of Information

- * Climate change impacts
- * Data on competition and predation by invasive species
- * Assessment of toxic and thermal discharges in watersheds

Future Plans

- * Investigating potential dam removals
- * Working to improve water quality coastwide
- * Exploring the feasibility of using fish passage technologies on larger rivers