



American Shad

Alosa sapidissima

Every year, in an event that heralds the coming of spring, large numbers of American shad make their way up several of North Carolina's coastal rivers to their ancient spawning grounds, where shad fishermen eagerly await their arrival. The American shad (*Alosa sapidissima*), commonly known as white shad in North Carolina, is a member of the Clupeidae, or herring, family. The herring family is composed primarily of marine species and includes some of the most valuable food fish in the ocean. Hickory shad and river herring, as well as the American shad, are highly prized for their firm flesh and eggs. In addition to being prized food fish, some, such as the river herring and thread-fin and gizzard shad, are also commercially important baitfishes.

History and Status

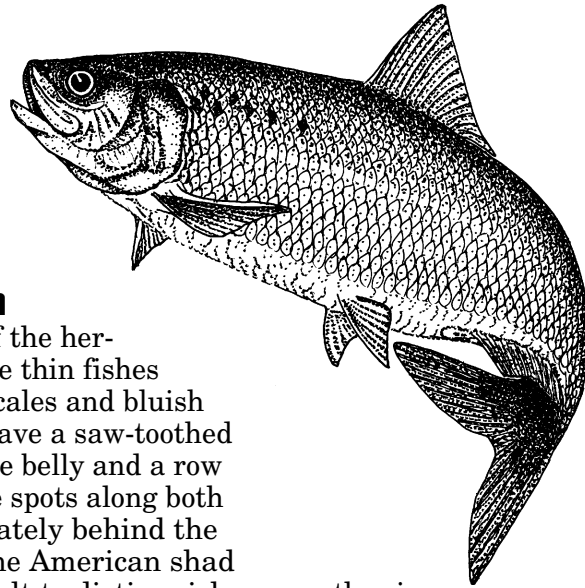
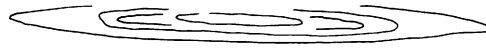
Historically, American shad have supported important sport and commercial fisheries along the Atlantic coast. However, overfishing and the construction of dams, which block spawning migrations, have depressed many shad populations. The recreational sport fishery is more important than the commercial fishery in rivers still supporting spawning runs, such as the Cape Fear, Neuse and Tar/Pamlico rivers in North Carolina. Currently, federal and state resource agencies have implemented management programs aimed at restoring American shad to their former range and abundance.

Description

Members of the herring family are thin fishes with silvery scales and bluish backs. They have a saw-toothed ridge along the belly and a row of one or more spots along both sides immediately behind the operculum. The American shad is often difficult to distinguish from the hickory shad, since both have a row of four to six dark spots along both sides. However, the American shad has more than 55 gill rakers on the lower part of the first gill arch, while the hickory has fewer than 55. The American also has a silvery patch on its cheek that is deeper than it is long, just the opposite of the hickory. While the juvenile American shad lives in fresh water, its diet consists primarily of small aquatic insects and crustaceans such as copepods and dipterans (flies, midges and mosquitoes). Adult shad feed primarily on the larger zooplankton (copepods) but also consume fish eggs and small fish.

Habitat and Habits

American shad are anadromous fish, which means they spend most of their life in salt water but return to spawn in the freshwater river in which they were hatched. Most shad make their first spawning run when they are four or five years old. The males, or "buck" shad, precede the female, or "roe" shad,

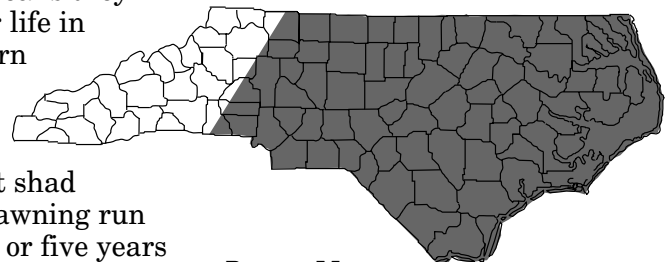


up the river.

Shad spawn at night in the middle of the river channel, usually in shallow water with moderate currents. Spawning sites remain the same from year to year.

Shad spawning begins when the water temperature reaches 54° F, peaks at 64° F and concludes as water temperatures reach 68° F. Females deposit between 125,000 and 600,000 eggs that drift with the current until they hatch in about eight to 12 days. Juvenile shad spend their first summer in the river but return to brackish water in the fall. American shad native to rivers south of the Cape Fear River die after spawning, while some shad in rivers north of the Cape Fear survive to spawn again the following the year.

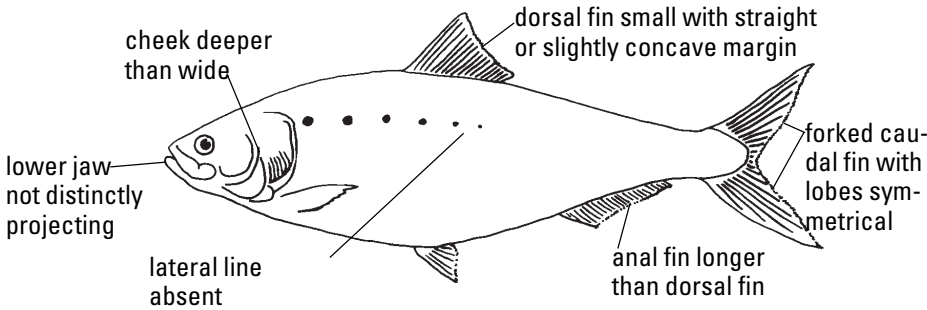
Stocks of American shad along



Range Map:

Occupied range

coloration: green to blue with metallic luster above; silver on side; white below



the Atlantic coast form large schools and undertake extensive ocean migrations, regulated primarily by changes in bottom water temperatures. They seem to prefer bottom temperatures between 37° and 59° F and are most concentrated at temperatures between 45° and 55° F. American shad typically live five to seven years and may reach a weight of 2.2 to 6.6 pounds. The oldest shad caught in the United States was 11 years old and 23 inches long.

Range and Distribution

The range of American shad extends along the east coast of North America from Newfoundland southward to Florida, but they are most abundant from Connecticut to North Carolina. The species has probably spawned in virtually every accessible river and tributary from the Sand Hill River in Labrador to the St. Johns River in Florida. American shad also occur along the Pacific coast from southern California northward to Cook Inlet, Alaska, and westward to the Kamchatka Peninsula in Asia, due to introductions into the Sacramento and Columbia rivers in 1871. Shad spawning migrations can extend up to 500 miles inland in some of the larger coastal rivers (Connecticut River, for example).

People Interactions

Human activities—dam construction and commercial fishing in particular—have led directly to a decline in American shad popu-

lations throughout their range. Prized for their firm flesh and eggs, shad were commercially overharvested between 1930 and 1960. Dams built for navigational or flood control purposes on the larger coastal rivers restricted or even prevented shad from reaching their traditional spawning grounds. Increasing levels of water pollution from increased development across North Carolina have resulted in degraded spawning sites and decreased reproduction by the species.

References

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Credits

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AMERICAN SHAD

Classification

Class: Osteichthyes
 Order: Clupeiformes

Average Size

Length: 14 to 16 in.
 Weight: 2.2 to 6.6 lbs.

Food

Juveniles eat worms, crustaceans and insects. Adults eat large zooplankton, fish eggs and small fish.

Breeding

Promiscuous. Males may breed with more than 1 female. Spawning occurs in mid-river at night between sundown and midnight. Spawning can occur as early as November (Florida) or as late as July (Canada). Fish remain in the system during summer and return down-river in the fall.

Young

Hatch in about 8 to 12 days at water temperature of 11° to 15° C (52° to 59° F). No parental care given to young. Young reach sexual maturity within 5 to 7 years.

Life Expectancy

Typically live 5 to 7 years.
 Oldest known shad, 11 years.