Chesapeake Bay Program
A Watershed Partnership

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Backgrounder

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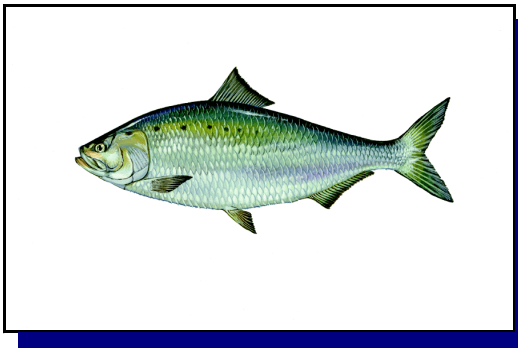
Shad in the Chesapeake Bay

River shad have long played a pivotal role in the history, culture and economy of the states that border the Chesapeake Bay.

American shad constituted one of the most important mid-Atlantic fishery until the early 20th century, but by the mid-19th century, their populations had begun to decline. Over-harvesting, pollution and habitat degradation led to a sharp downturn in shad numbers. The construction of small mill dams and other obstructions, and later the development of large hydroelectric dams, blocked migratory fish from their spawning habitat.

For more than a decade, Bay Program partners have worked to remove dams and other blockages throughout the Bay watershed. By the end of 2004, Bay Program partners are on target to meet their goal to reopen 1,357 miles to shad and other migratory fish. A new goal will be set at the Chesapeake Executive Council's 2004 annual meeting.

A Brief History



Bay Program partners have undertaken 123 fish passage projects, reopening more than 1,300 river miles to migratory fish in the Chesapeake Bay watershed. When combined with stocking efforts, fish passages and dam removals have led to significant increases in the watershed's American shad population.

Rachel Carson once referred to shad as "…the piscatorial representative of the states bordering on the Chesapeake," and it's impossible to encounter colonial accounts of the mid-Atlantic states without running into this essential fish. Native Americans taught the earliest Bay colonial settlers how to catch shad.

Traditional Revolutionary War accounts treat it as the 'savior fish', credited with saving George Washington's troops from starvation after the harsh winter of 1777-78, when they were encamped along the right bank of the Schuylkill River. Although the shad run that spring probably could not have reached them in time (the river was still frozen over in late March), the image of millions of fat shad 'filling' and 'boiling' the river, has become fixed in American cultural memory. Thomas Jefferson was born in Shadwell, Virginia, and as a boy fished for shad using seines; later, in his garden notebooks, he notes shifts in the seasons by their spawning runs and what price they fetched at market.

Shad were plentiful, easy to catch, tasty and nutritious to eat, and could be 'planked' – tacked to wooden boards and smoked over open fires until the bones disintegrated – and put aside in quantity for winter consumption. Shad roe – steamed or sauteed with bacon and lemon – are considered a culinary delicacy. For generations regional gardeners have worked shad remains into the soil to fertilize their summer vegetables and herbs. Local economies have flourished on the basis of the annual shad run – the moment in spring, often heralded by the blooming of the snow-white flowers of the shadbush, or serviceberry – when the fishes' upriver migration began. New technologies, such as shad floats, large seines and gill nets, made possible enormous catches and ironically signaled the decline of the fishery.

Since the middle of the 1900s, pollution, overfishing and the proliferation of dams and blockages that prevent fish from spawning upstream, have decimated shad populations. Many Americans living in the region have never heard of the fish, much less tasted it.

American shad, also called white shad, is the best-known of the six species of shad and herring in the Chesapeake Bay. *Alosa sapidissima* (referring in Latin to the fish's 'most delicious' properties), also is a handsome fish, with silvery, iridescent sides, with blue-green scales that fade to lavender at the tail. A mature American shad can reach 30 inches in length, and is the largest of the Bay's shads.

White shad spend most of their lives at sea in large schools, and only enter the freshwater river in which they were born to spawn. (The average shad may migrate more than 12,000 miles during its lifetime.) From January to June, four- to six-year-old shad swim into the Chesapeake Bay to spawn upstream in freshwater tributaries, including the Susquehanna River as far north as New York state. As each shad migrates from salt water to fresh, its cloak of large, easily-shed (or 'deciduous') scales dulls from opalescent blue-green to brown. Water temperature is key-spawning runs are most favorable when temperatures reach between 55 to 61 degrees fahrenheit.

Once upstream, spawning usually takes place between sunrise and sunset. Female shad lay as many as 600,000 eggs, while several males hover nearby to fertilize them. Shad usually migrate without feeding and move far enough upstream for the eggs to drift downstream and hatch before reaching salt water. After spawning, depending on the shad's age and health, the fish either dies or makes the return trip to the sea.

Shad eggs mature quickly and hatch within four to twelve days. The young of the year remain in fresh or brackish waters, feeding on copepods and insect larvae until early fall, when they complete their downriver journey and enter the sea, or overwinter in deeper waters near the mouth of the Bay. During the first year, nearly 70 percent of young shad never make it to the sea.

Those that do spend the next three to five years schooling with other fishes and migrating along the coast, feeding on plankton, small crustaceans and fish. Within six years they reach sexual maturity and return to the Bay and the rivers of their birth.

Removing fish passages and restoring shad habitat

Until dams and other blockages interrupted their progress, American shad probably spawned in every accessible river and tributary along the Atlantic coast. As of 2003, there remained more than 2,500 blockages in the Bay watershed, including dams, road culverts and bridge aprons. Removing these blockages and opening spawning habitat are key components of restoration efforts.

Shad stocks were in such poor condition in 1980 that a moratorium against taking them was implemented in Maryland waters, with the exception of the Potomac River and coastal waters. In 1985 the Atlantic States Marine Fisheries Commission adopted a Fisheries Management Plan for American shad, and in 1989 Pennsylvania, Maryland and Virginia agreed to conserve existing stocks under a baywide shad management plan.

Recent restoration efforts – including the restoration of more than 1,200 miles of streams to anadromous fish – have led to greater numbers of shad and herring in the upper Chesapeake Bay and Susquehanna River. Between 2001 and 2003, an average of 142,237 American shad were documented passing through the Conowingo Dam. Stocking programs also help the restoration process. Through 2003, more than 380 million American shad fry and fingerlings were cultured and released in the Susquehanna, James, Pamunkey, Mattaponi and Potomac rivers, and in several Maryland tributaries. Four of the largest dams in the Bay watershed, located on the Susquehanna River, have been reopened to migratory fish. The recently constructed fish ladder at Bosher's Dam on the James River has rendered the river accessible from Richmond to Lynchburg. In February 2004, Embrey Dam on the Rappahannock River will be breached, restoring more than 100 miles of spawning habitat.