

# ALL ABOUT MAINE ALEWIVES...

## What are alewives?



Alewives are anadromous (sea-run) fish that spend the majority of their life at sea but return to freshwater to spawn. Alewives have co-evolved and co-existed with other native fish and wildlife in Maine's streams, rivers, ponds and lakes for thousands of years. Alewives are members of the herring family; their close cousins are shad and blueback herring. Alewives have slender bodies, and they normally grow to 10 - 11" in length, and weigh about half a pound. Repeat spawners can be as large as 14" and weigh a pound or more. Alewives are grayish green on their back, and silvery on their sides and belly. They've got a single black spot just behind their eye, and their tails are forked.

## Were alewives originally present in our lakes?

The bad news is that many Mainers have never seen an alewife run because Maine's historically thriving alewife population has plummeted during the last two centuries. Dams, pollution and overfishing have taken their toll. Southern Maine's Alewife Brook, for example, no longer has alewives.

But historians and scientists tell us that prior to Europeans settling this region, there was probably not a stream flowing out of a lake or pond anywhere in the Gulf of Maine that didn't have an annual alewife migration, unless it was blocked by impassable waterfalls. One early historian said, "There can have been hardly an accessible pond in the whole State they did not visit." Of all the migratory fish that came up Maine's rivers, alewives were the most abundant. One history of Gardiner and Pittston, written in 1852, relates that "alewives were so plentiful there at the time the country was settled, that bears, and later swine, fed on them in the water. They were crowded ashore by the thousands."



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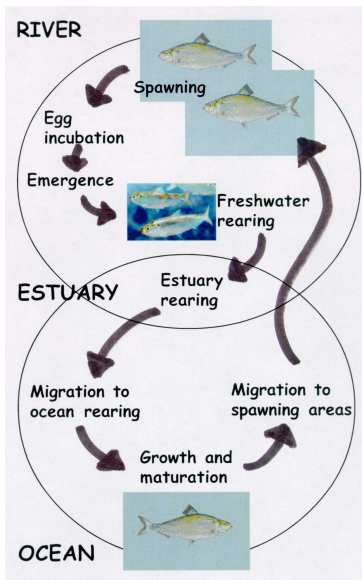
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Native Americans and European settlers depended on the bounty brought to inland waters by spring migrations. When one river town built a dam and blocked the fish from their spawning habitat, one early chronicler wrote that the inhabitants of the next town were outraged. "It was difficult to persuade the aggrieved people to forbear using violence to open a passage for ye fish... the cry of the poor every year for want of the fish...is enough to move the bowels of compassion in any man that hath not an heart of stone." In 1809, the selectmen in Benton ordered a mill dam to be torn down because it blocked huge runs of alewives and shad on the Sebasticook River.

## What is the alewife's life cycle?



Every May and June, adult alewives, guided by their sense of smell, migrate upstream from the ocean to rivers, streams, ponds and lakes to spawn. Spawning occurs in ponds and lakes or the quiet backwaters of rivers and streams. Some males return to freshwater when they are three years old. Females usually return when they are four or five years old. One female alewife can produce somewhere between 60,000 to 100,000 eggs, but only a few eggs survive to the juvenile stage, and sometimes only as few as three juveniles survive to adulthood. Although some adults die after spawning, the majority of adults make their way back to the ocean shortly after spawning - and many return the following spring to spawn again. During their downstream migration, adult alewives feed primarily on zooplankton. Once hatched, juvenile alewives remain in freshwater lakes and ponds where they also feed on zooplankton. Juvenile alewives grow anywhere between one to six inches, depending on the productivity of the lake. From mid-July through October, juveniles migrate downstream to the ocean where they grow to adulthood.



## Do alewives affect water quality?

Maine Dept. of Environmental Protection (DEP) studies in more than a dozen Maine lakes with natural or reintroduced runs of alewives have not shown water quality decline that can be attributed to alewives, according to Barry Mower, a fisheries biologist and water quality specialist. It is well-substantiated that the major factor causing algae blooms in our lakes is the introduction of phosphorus. There are many sources of phosphorus in our lakes -- and most are directly linked to residential development.

When adult alewives migrate into a freshwater pond or lake, there is an influx of phosphorus to the lake. However, the majority of the spawning alewives return to the ocean, taking phosphorus with them. Additionally, young alewives that grow in freshwater ponds and lakes incorporate phosphorus from lakes into their bodies. That phosphorus is removed when the young migrate to the ocean.

Water quality studies were coordinated by Maine DEP in the 1970s on Little Pond in

Damariscotta, additional studies were coordinated

by Maine DEP, Maine Dept. of Marine Resources (DMR) and Maine Dept. of Inland Fisheries and Wildlife (DIFW) on Lake George in Canaan in the 1990s, and supplementary water quality studies have been conducted in half a dozen other Maine lakes and ponds with restored alewives. All of the studies have found that when alewives



are restored, there is either no change or a minor net *decrease* in total lake phosphorus. In fact, data from Maine points to good water quality on lakes with healthy alewife populations. To name only a few, those lakes include Nequasset Lake in Woolwich, Damariscotta Lake in Nobleboro and Jefferson, Alamoosook Lake in East Orland, and Gardiner Lake in East Machias. A little further afield in southeastern Massachusetts, the Assawompsett Ponds host the largest alewife population in New England (two million adult alewives this past spring). Most of the ponds in this complex have served as public water supplies since about 1900, and water quality and quantity in the ponds is outstanding, even though the ponds are generally very shallow. And, it must be added, the area surrounding these ponds is undeveloped.

## Are alewives important for recreational or commercial fishing?

Alewives are an integral part of marine and freshwater food chains. Both adult and juvenile alewives are small and are therefore eaten by



*smallmouth bass*

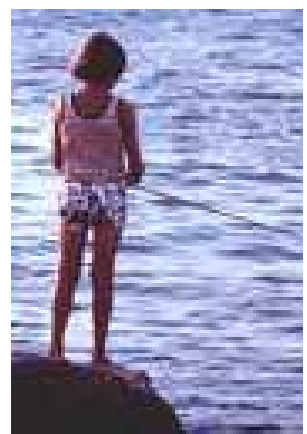
many other species of native, introduced, commercially and recreationally important fish. In freshwater, alewives are food for large- and smallmouth bass, brown trout and other salmonids. In the estuaries and the

ocean, striped bass, cod and haddock feed on alewives, and the recovery of these economically valuable fish depends in part, on restored populations of alewives. In addition, lobstermen depend on alewives; they are the traditional spring bait for lobsters.



*Atlantic cod*

The ten-year study conducted by Maine Dept. of Marine Resources, Maine Dept. of Inland Fisheries and Wildlife and Maine Dept. of Environmental Protection on Lake George in Canaan showed that alewife stocking at the rate of six fish/acre had no detrimental effects on freshwater fish such as smallmouth bass, brown trout, chain pickerel and white perch in terms of size or abundance. Young-of-the-year smelt actually grew better in the presence of alewives! A similar study is currently underway in the St. Croix River watershed. Many other lakes in Maine, such as Sabattus Pond and Damariscotta Lake have thriving alewives that co-exist with healthy populations of other fish. The Assawompsett Pond complex in southeastern Massachusetts, which hosts the largest alewife population in New England, offers great fishing. According to local fisherman, the ponds support exceptionally robust populations of largemouth and smallmouth bass, crappie, white perch, yellow perch, walleye, pickerel, pike, catfish, suckers, and a variety of baitfish.





## How do alewives benefit lakes, rivers, and the ocean?

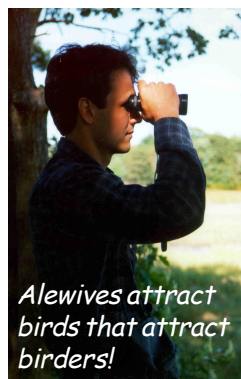
While alewives present a spectacular migration every spring that's lovely for people to watch, alewives perform other vital functions in the larger ecosystem. For example, in the spring, when alewives move up our rivers, that's *precisely* the same time juvenile salmon smolts are moving downriver. If you were a sharp-eyed osprey in a riverside tree, what would you go for? One of the zillions of alewives you see down there, or the few salmon smolt hidden by alewives? Alewives provide cover for those salmon. In the same way, healthy populations of alewives also provide cover for upstream migrating adult salmon that could be preyed on by eagles or osprey, and for young salmon in the estuaries and open ocean that might be captured by seals.



The important message is that alewives tie our ocean, rivers and lakes together, providing vital nutrients and forage needed to make healthy watersheds. Imagine huge schools of alewives that swim in the Gulf of Maine, as far as 120 miles out. Then the adults move, in huge waves, back inshore and up into freshwater.



Once they have spawned, adults migrate back downstream, followed later in the summer and fall by the juveniles. Between and within those various habitats, *everything* eats alewives: striped bass, bluefish, weakfish, tuna, cod, haddock, halibut, American eel, rainbow trout, brown trout, landlocked salmon, smallmouth bass, largemouth bass, pickerel, pike, white and yellow perch, seabirds, bald eagle, osprey, great blue heron, gulls, terns, cormorants, seals, whales, otter, mink, fox, raccoon, skunk, weasel, fisher, and turtles.



Alewives have been central to the web of life in Maine for millenia. If we give alewives a chance by helping restore them to their ancestral spawning grounds, alewives will once again play an important role in bringing our rivers, lakes, estuaries and oceans back to life. In return, we will be treated to exuberance and bounty in Maine's watersheds, in a way that none of us have fully experienced in our lifetimes.