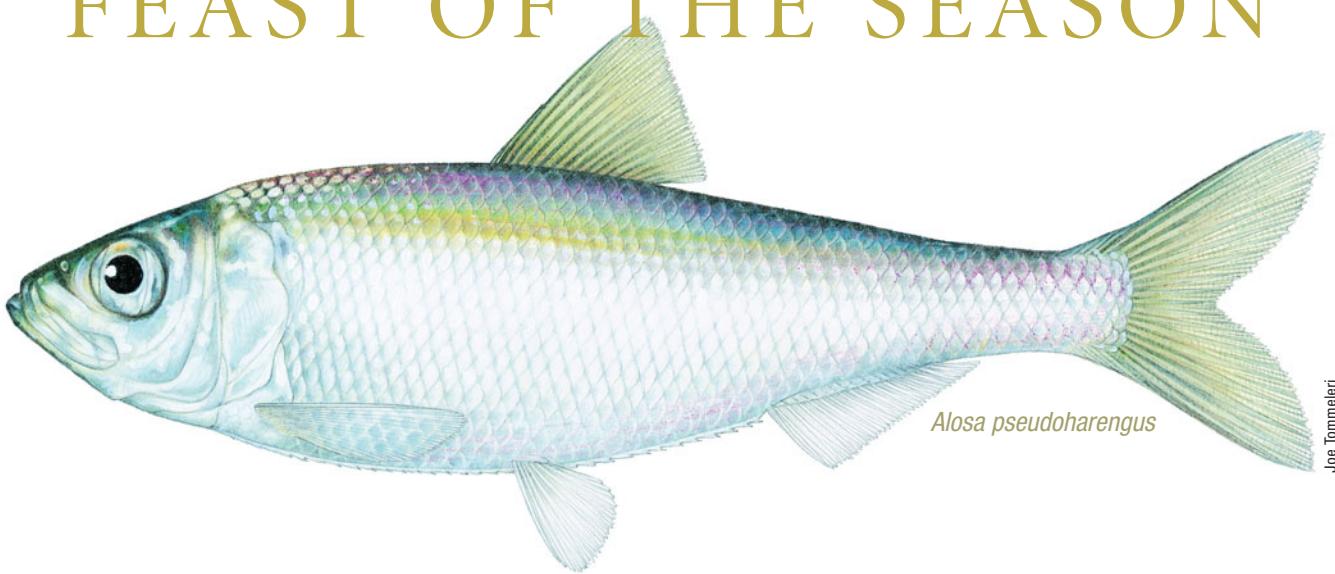




Each spring, alewives move upriver from salt water to fresh, an annual passage to the spawning grounds. Here, they work their way to a fish ladder around a dam.

# Alewives

## FEAST OF THE SEASON



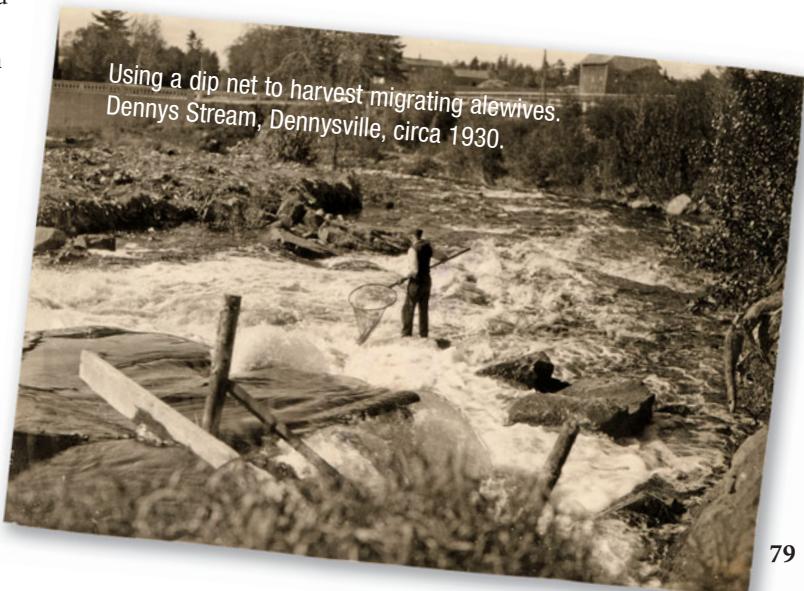
THE TIME IS MAY, before the greening that will soon wash over the spring landscape. A pale, fuzzy haze appears in the woods throughout coastal Maine, as white flowers emerge from the slender, leafless branches of certain small trees. These are the flowers of the shadbush, native to the Atlantic coast, so named because it flowers around the same time that millions of shad are leaving the open sea and making their way into coastal rivers and streams.

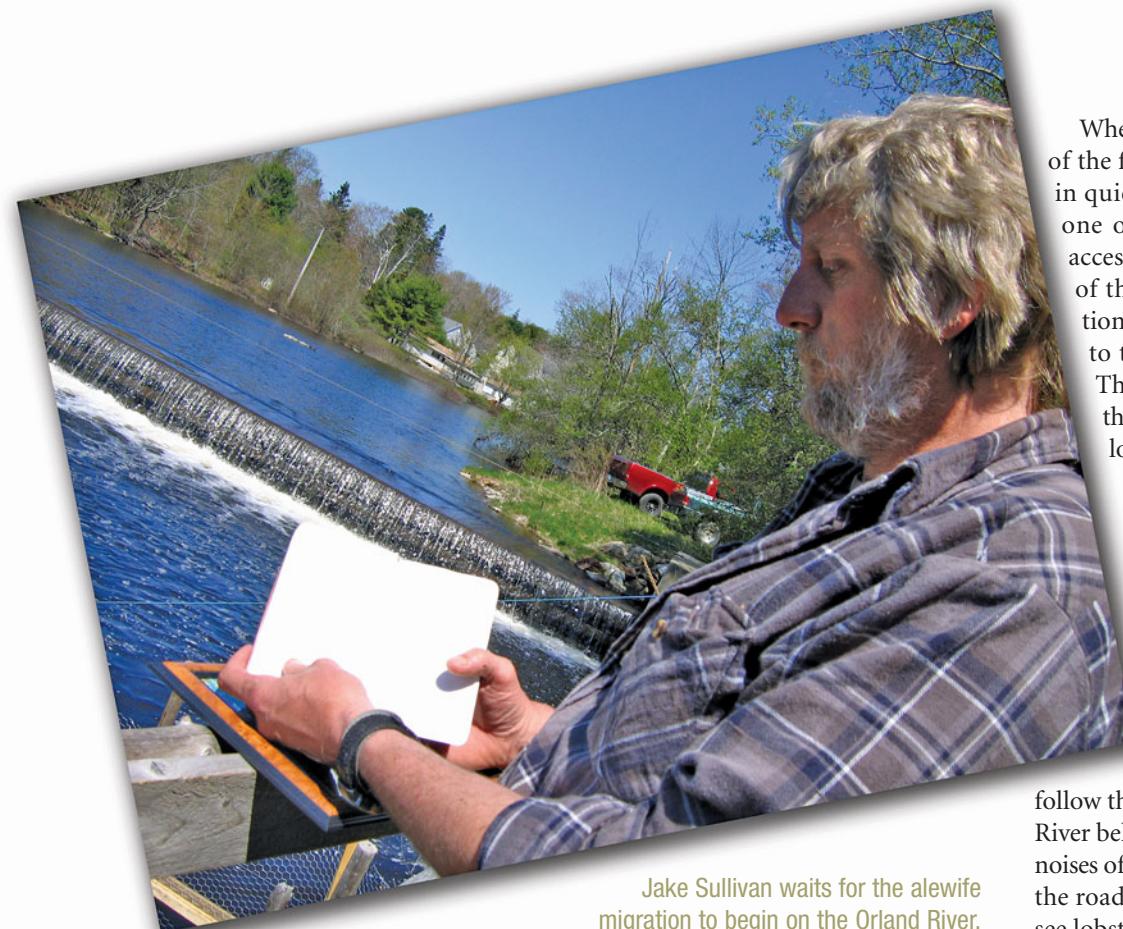
In Maine, where shad run a bit later than in more southern regions, the flowers are more closely timed with the movement of such other river herring as the alewife (*Alosa pseudoharengus*) and the blueback herring (*Alosa aestivalis*). Alewives and blueback herring—also known as sawbellies, gaspereau, and graybacks—spend most of their lives in the Atlantic Ocean, but they return to fresh water as adults to spawn in the same lakes and ponds where they were born.

You can watch the alewives run upriver in Damariscotta Mills, at a historic fish ladder restored by local residents in 1998. Climb the path that zig-zags alongside the steep fishway for a close view of the fish as they crowd into the flumes and pools. Watch the fish as they power their way uphill, pausing to rest between surges. Side by side, they face upstream, driven forward by ancestral urges passed from one generation to the next. Focused solely on reproduction, they have stopped eating. Occasionally an impatient fish writhes in anticipation of home, a tail flicks the surface in a splash of silver.

In the spring, in coastal rivers and streams, the alewives run. It's a sight to see when they do.

BY CATHERINE SCHMITT





Jake Sullivan waits for the alewife migration to begin on the Orland River.

When they finally surmount the top of the fishway, the alewives will spawn in quiet coves of Damariscotta Lake, one of roughly 90 ponds in Maine accessible to sea-run alewives. Some of the adults will die from exhaustion, others will return downstream to the sea shortly after spawning. The newly hatched fish will spend the summer in the lake before following their parents to the ocean.

You can tell where the fish are running by watching the sky for hovering osprey, eagles, and gulls. Fish tend to pile up where their route is blocked or slowed by dams or natural falls, attracting human and animal predators. Should you find yourself near

Winslow on a late spring day, follow the gulls down to the Sebasticook River below the Fort Halifax dam. As the noises of the falls and cars zooming by on the road above fill your ears, you might see lobstermen gathering bait; they'll be scurrying around on the ledges below the

Catherine Schmitt

spillway, scooping alewives into plastic crates as a nearby fisherman reels in a big striped bass.

“The feast of the season is alewives,” wrote Robert Peter Tristram Coffin of the fish runs on the Sebasticook River in the nineteenth century, when one million herring would have swum up the river, “for the fattest of the herring have returned, and the land near all the brooks is frosted with their scales.”

The river herring fishery is one of the oldest documented fisheries in North America. Before the Europeans arrived, Native Americans wove sticks in intricate designs to trap migrating fish at the mouths of rivers. Later, the spring fish runs were busy days and nights for early colonists in Maine, who dried, pickled, salted, and smoked millions of the bony fish. Alewives and other river herring represented food after a winter’s scarcity, a sign that the warm season’s bounty had begun.

Commercial harvests of river herring have decreased over the last century all along the Atlantic coast. Steep declines

in numbers in the past few years have forced Massachusetts, Rhode Island, and Connecticut to place moratoriums on harvesting alewives and blueback herring. In 2006, the National Marine Fisheries Service placed alewives on its list of species of special concern. Commercial landings in Maine have decreased in the

access, either because of dams and other barriers, or because, according to Gail Wippelhauser, a fisheries biologist with the Maine Department of Marine Resources, stocking efforts have been halted.

Where the fish do have habitat access, they are coming back in force.

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**Watch the fish as they power their way uphill, pausing to rest between surges. Side by side, they face upstream, driven forward by ancestral urges carried from one generation to the next.**

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last 50 years by more than three million pounds, although there has been a slight increase in the last decade.

In many areas, the reasons for the declines in fish populations are still unknown. In Maine, fisheries scientists link local declines to a loss of habitat

The fish runs are strong enough in some rivers that alewife harvesting took place in 25 Maine municipalities in 2007, including the town of Orland.

Jake Sullivan tends the herring weir in the Orland River, a short tributary of the Penobscot River.

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The herring weir in the Orland River.

"Got a few so far," Sullivan told me on the telephone one night last May. Sullivan is quiet, a man who thinks before he speaks and chooses his words carefully. This was only his second year tending the weir.

The next day I found Sullivan at the weir. An osprey sat in a tree, several cormorants skulked about the rocks, a bald eagle drifted in and out of view, the shiny curved head of a harbor seal bobbed in the distance. As we watched for the telltale ripple on the surface of the river that signifies the fish are running, men stopped by to visit with Sullivan and check on the fish. They clutched cups of hot coffee and talked in modest Downeast accents; most of them, like Sullivan and me, were new to this game.

The alewives may have been nearby that day, but they weren't running. As much as I wanted to hold a silvery alewife in my hands and feel the sharp serrations on its belly and see the sun reflecting off the grayish-greenish-blue of its back, no fish funneled into the maze of sticks that made up the weir. Sullivan and his buddies would have to wait for another day to shovel trapped fish into barrels. What were the alewives waiting for? Some cue, some subtle

Catherine Schmitt

change in temperature or flow that would spur the school upstream.

Alewives will migrate great distances to reach their inland spawning areas, as far as 130 miles in the case of the Penobscot River, although they will also spawn closer to the coast, in freshwater coves behind barrier beaches. The run begins when the water temperature reaches 40 to 50° F, which in Maine occurs any time from late April to the middle of May. Blueback herring and shad arrive about a month later, and by mid-June the herring run is over.

Herring provide food for a vast variety of animals and other fish, whether they are in the ocean during the fall and winter, or in inland waters during the spring and summer. The list of predators includes 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 eagles, ospreys, great blue herons, gulls, terns, cormorants, seals, whales, otter,

mink, fox, raccoon, skunk, weasel, fisher, and turtles.

Restoring populations of alewives and other herring may bolster other struggling species. For example, when large numbers of migrating alewives are in rivers at the same time that young Atlantic salmon are moving downstream

disrupted the traditional movement patterns and arrival times of inshore spawning populations of Atlantic cod, because cod are a major herring predator.

Theo Willis and Karen Wilson, researchers at the University of Southern Maine, with funding from the Northeast Consortium and Maine Sea Grant, have

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## What do the alewives wait for? Some cue, some subtle change in temperature or flow that would spur the school upstream.

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in spring, alewives are more likely to be eaten. As a result of this “prey buffering,” more of the salmon survive their journey. Some fisheries scientists think that river herring may be a key component in restoring Maine’s groundfish stocks. According to Ted Ames of the Penobscot East Resource Center in Stonington, the disappearance of river herring may have

been trying to look for these links in places where river herring are still abundant, such as the Damariscotta River.

“We worked in the Damariscotta estuary this spring, summer, and fall,” said Willis. “As far as we could tell, there were no fish around big enough to eat an adult alewife in the spring. The fall was a different story. From the mouth of the

Damariscotta River out to the White Islands we caught cod, pollock, mackerel, and a few other species stuffed full of baby alewives."

Because of the potentially important role of alewives in the ecology of coastal watersheds, much effort has been directed toward restoring river herring populations. River herring will return to a coastal stream when barriers are removed and habitat improved, even after having been absent for many years.

Alewifes readily use most types of fishways. Gail Wippelhauser of the Department of Marine Resources said that state-of-the-art fish lifts have been built in many rivers to allow fish to pass upstream over dams. At bigger dams on the larger rivers, such as the Kennebec, Androscoggin, and Saco, fish are collected and trucked to upriver spawning areas. Downstream passages or controlled water releases at hydropower dams allow for the safe downstream movement of adult and juvenile fish. Since the early 1970s, over \$12 million has been spent on fish

passages to restore runs of alewives and other sea-run fish in Maine. Wippelhauser said that alewife runs in the Kennebec and Sebasticook Rivers have been steadily high since Edwards Dam was removed in 1999. The Penobscot

the tributaries and ponds they once knew, the herring population will increase, which means that existing runs, such as the one in the Orland River, will improve as well. The more there streams fat with herring there are, the more birds, mammals,

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## Restoring populations of alewives and other herring may bolster other struggling species. Some fisheries scientists think that river herring may be a key component in restoring Maine's groundfish stocks.

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River Restoration Trust, a coalition of the Penobscot Indian Nation, conservation organizations, state and federal agencies, and the PPL hydropower corporation, is proposing to remove two major dams on the Penobscot River to provide access to hundreds of miles of river herring habitat.

The trust hopes that as fish return to

and other fish will benefit. By encouraging the growth of the herring population, we will encourage the strengthening of our coastal food web.



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*Catherine Schmitt is a science writer at Maine Sea Grant. Her last article for MBH&H was "Maine Oyster Cult," which appeared in the March 2008 issue.*