# The Outside Story

## Against the Flow: Spring Alewife Run

### By Loren Merrill

One of the most exciting rites of spring is the alewife run, an annual event where throngs of fish race upstream from the ocean to inland water bodies on a reproductive journey. These “river herring,” as they are categorized, actually spend most of their lives at sea. Come spring, when the water warms to at least 5 degrees Celsius, schools of alewives gather near river and stream mouths. Striped bass, seals, and cormorants pursue them underwater, while osprey, bald eagles, and a cacophony of gulls attack from the air. The fish adopt a “safety in numbers” approach by congregating in dense groups, and when they make their push upstream, the water appears to reverse direction as masses of gleaming, silver bodies surge against the current.

Unless you live close to an “alewife stream,” however, you may not be familiar with this natural spectacle.

Like their salmonid cousins, alewives are anadromous, meaning they migrate up coastal streams and rivers to breed in ponds, lakes, and slow-moving riverine habitats. Breeding can start as early as February in South Carolina, at the southern end of their range, but not until late May or June in the Gulf of St. Lawrence, the northern extent of their range. When alewives reach their spawning sites, they release vast quantities of eggs and sperm. Females can release over 300,000 eggs at times.

Soon after spawning, the alewives return downstream to spend another year at sea. Fertilized eggs hatch after a few days, and the young fish spend the next several months eating freshwater zooplankton and trying to avoid being eaten. Everything from dragonfly larvae to bass can dine on young alewives. In fact, biologists estimate that only 1 in 80,000 survive their first summer. At the end of summer and into early fall, those surviving individuals travel downstream to the ocean, where they spend the next few years feeding on marine zooplankton. After three to four years, they return to their natal freshwater bodies to spawn, drawn there by olfactory cues.

Prior to the arrival of Europeans and the construction of dams that cut off access to most of the alewife's historic breeding grounds, alewives likely occurred in the billions. In 1634, an Englishman named William Wood who lived at the Massachusetts Bay colony from 1629-1633, published an account of the areas he visited called “New Englands Prospects,” in which he wrote of the alewife’s abundance:

“Alewives… come up to the fresh Rivers to spawne, in such multitudes as is allmost incredible, pressing up in such shallow waters as will scarce permit them to swimme…”

These multitudes resulted in huge volumes of marine nutrients flowing into inland ecosystems. Envision streams and rivers as a great circulatory system, transporting nutrients from the ocean across the landscape in a variety of forms. Not only do the fish excrete nitrogen and phosphorus as waste, fertilizing the water for aquatic plants and algae, but they also feed dozens of predator species. Large rivers like the Delaware, Hudson, and Kennebec served as major thoroughfares from which the alewives accessed thousands of smaller streams and rivers on their way to interior ponds and lakes. The impact of these fish extended far inland from the coasts, in some cases well over 100 miles.

In addition to their ecological role, alewives are thought to have been a significant resource for Indigenous peoples and early European colonists. Wood’s descriptions of towns often included whether an alewife river was present or not. In this account of a Massachusetts town, for example, he wrote:

“...Dorchester… which is the greatest Towne in New England... [has] no Alewife-river, which is a great inconvenience.”

There is evidence that Indigenous people used the alewife for fertilizer as well as food. Indeed, the alewife is suspected of being the fish most commonly used by the Wampanoags to fertilize their “three sisters” crop of corn, bean, and squash.

Today, the alewife exists at a fraction of its former levels, and spawns in a tiny subset of its native breeding sites. But as dams are removed and fish ladders added to those that remain, the alewife is slowly reclaiming portions of its historic range, where it may once again serve as a conduit for energy flow from the ocean to the land.

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