

WHY DO ALEWIFE DIE?

Understanding Mass Die-Offs in the GREAT LAKES

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Alewife

Alewife (*Alosa pseudoharengus*) are a small, silvery member of the herring family that typically measure an average of 3 to 7 inches long as adults. They are planktivorous, feeding on tiny aquatic organisms like zooplankton and larval fish. While native to the Atlantic Ocean, Alewife are a non-native species in the Great Lakes that play an important role in the food web as prey for trout and salmon.



Alewife. Photo by USGS.

A Brief History in the Great Lakes

Alewife first arrived in Lake Ontario in the 1860s through the canal system that connects it to the Hudson River. By the 1890s, they were the most abundant fish in Lake Ontario, and by the 1950s, they could be found in all five Great Lakes. With few natural predators and high nutrient inputs that created abundant food, Alewife populations grew too large for their environment. These high densities often resulted in massive die-offs in the spring (late April–June) that washed up on shore, fouled beaches, and created a significant public nuisance. In the late 1960s, fishery managers introduced Pacific salmon, such as Chinook and Coho Salmon, to the area to create world-class recreational fisheries. This reduced Alewife density and thus reduced the frequency of die-off events.

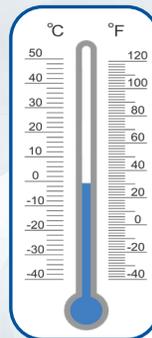
The Science Behind the Die-Offs

Seasonal Alewife die-offs are not caused by a specific disease or spawning stress. Instead, most occur when Alewife density is high, and winters are colder or longer than average.



Abundance & Competition:

High densities (lots of Alewife) lead to increased competition for food. The higher the density of Alewife, the lower the energy reserves they can accumulate before winter. Without energy reserves, fish begin to starve by spring.



Cold Stress & Physiology:

Alewives evolved in coastal waters of the Atlantic coast, where they annually migrated away from colder waters. In the Great Lakes, winter water temperatures get much colder than Alewife prefer (60–64°F). A long, cold winter depletes energy reserves, leaving fish in a weakened, stressed state by the time spring arrives.

Recap

While large-scale die-offs still occur, they are generally less severe than they were before the introduction of salmon. These events are now understood as a natural, recurring part of the Great Lakes ecosystem. Despite being a non-native species, Alewife have become a key part of the food web as the primary food source for the multi-million dollar trout and salmon fishery.

Key Takeaways:

Alewife are physiologically disadvantaged in the cold freshwater of the Great Lakes. High Alewife abundance followed by an unusually cold or long winter will often result in a spring (late April–June) die-off as water temperatures rise.



Pile of Alewife. Photo by NYSG.