

Colonial-era dams trigger parallel evolution of Connecticut fish

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Decisions made by Colonial era settlers to dam Connecticut waterways triggered sudden and parallel evolutionary changes in two species of fish competing for food, a new Yale University study shows.

Earlier studies documented the decrease in size and changes in gill structure of members of the alewife [species](#) cut off from access to the sea in newly dammed lakes. The new study, published online June 11 in the journal *Proceedings of the Royal Society B*, found similar changes in feeding habits of the bluegill, which also showed greater ability to feed on smaller zooplankton found in landlocked lakes the species shared with the alewife.

"Rapid evolution not only occurs, but runs across the food web in ways we are only now starting to understand," said David Post, professor of ecology and evolutionary biology and senior author the paper.

In its natural state, the small herring-like alewife swarms into Connecticut lakes, devours insects and all large zooplankton growing unmolested for most of the year, and then heads back out to sea, where itself becomes the main course of many of the ocean's fishes. However, the alewife underwent fundamental changes when lakes were dammed in Connecticut 300 years ago. The landlocked alewife became smaller, eliminated all large zooplankton in the lakes, and underwent changes in its gill structure that enabled it to eat the smaller zooplankton that grew there.

Magnus Huss, a postdoctoral fellow in Post's lab, now at the Swedish University of Agricultural Sciences, wanted to see if the strong effects of landlocked alewives on the zooplankton community would lead to similar changes in bluegills. Post, Huss and co-authors found that bluegills in lakes with ocean access did not feed well on small [zooplankton](#), but bluegills living in lakes isolated from the ocean with the landlocked alewives did just fine on a diet of smaller fare.

Post said these studies show that conservation efforts must take into account the entire food network when dealing with environmental changes such as dam construction or the introduction of new species into environments.

"Any time we have invasive species evolving rapidly, we can expect to see changes in competitors as well," Post said.

Provided by Yale University

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