



Great Lakes Fishery Commission

ESTABLISHED BY CONVENTION BETWEEN CANADA AND THE UNITED STATES TO IMPROVE AND PERPETUATE FISHERY RESOURCES

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KEY RESEARCH NEEDS IDENTIFIED FOR RESTORATION OF GREAT LAKES DEEPWATER FISHES

ANN ARBOR, MI—A study released recently by the Great Lakes Fishery Commission has identified key scientific needs that will encourage the restoration of extirpated native deepwater fish species of the Great Lakes. The study identifies questions for further research on three lake trout varieties, three cisco species, and two sculpin species. These research topics combine conceptual ecological understanding with practical application to the Great Lakes system. The central premise is the need to re-establish natural ecosystem processes.

Entire communities of deepwater fish were extirpated from the Great Lakes in the 1950s due to over harvesting and predation by the sea lamprey, an invasive, parasitic fish. Researchers believe conditions are now right for reintroduction: sea lampreys are under control, commercial harvests are carefully managed, alewives prey and compete less with native fish, and native fish populations exist that can be used for reintroduction. Past attempts to reintroduce extirpated species to the Great Lakes focused on restocking and mortality reduction, and have not always been successful. Commission researchers argue that long-term persistence of re-introduced species depends on re-establishing natural processes that foster conditions to increase species' resilience and resistance to environmental disruptions.

"That we have not experienced more success with restoration of native species in the Great Lakes has been perplexing," said Dr. Charles Krueger, the commission's Science Director and principal investigator of the study. "Why so little success? What stands in the way of progress? The paper explores potential barriers to success by systematically considering the different life stages of lake trout, sculpin, and ciscoes, each considered in the context of populations, communities, and the ecosystem."

Krueger added: "The study highlights four priority research areas for each species: identifying lifecycle bottlenecks and the variables which contribute most to survival and reproduction; understanding characteristics of self sustaining populations; matching unique fish genetics to stocking sites, focusing on the adaptive traits, life history, ecological and behavioral variables of the species; and propagation and stocking methods."

"I hope that scientists working to re-establish native fishes will be able to use this study to avoid the pitfall of thinking that stocks are inherently stable, because natural systems rarely persist in steady-state," Krueger concluded. "The best approach is to focus on the interconnectedness of species in the system. For example, understanding top-down predation by large fish, and bottom-up influences such as the availability of basic food like plankton, is critical for establishing resilient lake trout and cisco populations. While no fishery exists for sculpins, this species participates in key predator/prey interactions with trout and ciscos, and yet even the most basic description for their population structure does not exist. Data on these and other topics will be essential to the successful re-establishment of valuable native deepwater species in the Great Lakes."

The research completion report is available at: www.glfc.org/research/Native%20Fishes.pdf

The Great Lakes Fishery Commission is an international organization established by the United States and Canada through the 1954 Convention on Great Lakes Fisheries. The commission has the responsibility to support fisheries research, control the invasive sea lamprey in the Great Lakes, and facilitate implementation of A Joint Strategic Plan for Management of Great Lakes Fisheries, a provincial, state, and tribal fisheries management agreement. Visit online at www.glfc.org

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