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USGS Great Lakes Science Center

Lake Trout Biology and Restoration Research

Progress of Lake Trout Restoration in the Great Lakes

Lake Superior—Lake trout are reproducing throughout the lake and in most Michigan, Wisconsin, and Ontario waters. The rate of reproduction is adequate to sustain the populations *without additional stocking*.

Lake Michigan—Spawning of stocked lake trout and subsequent production of young have been evident since the early 1970s. However, survival of young fish to adults has not been documented. Offshore reefs appear to be the most promising areas for establishing reproducing stocks, though recent high levels of spawning on these reefs along with the lack of survival to adulthood indicates factors such as egg and fry predation by exotic species such as alewife and round gobies, or Early Mortality Syndrome (EMS) may be preventing their recruitment.

Lake Huron—Stocked lake trout began reproducing on several nearshore reefs in 1981, and a small number of adults were evident in the annual assessments and creel catches. Intensive stocking of multiple strains in the 1970's and 80's on mid-lake reefs resulted in the production of young lake trout each year since 1993. Current stocking efforts have been reduced and some parts of Georgian Bay in northern Lake Huron are seeing high levels of reproduction.

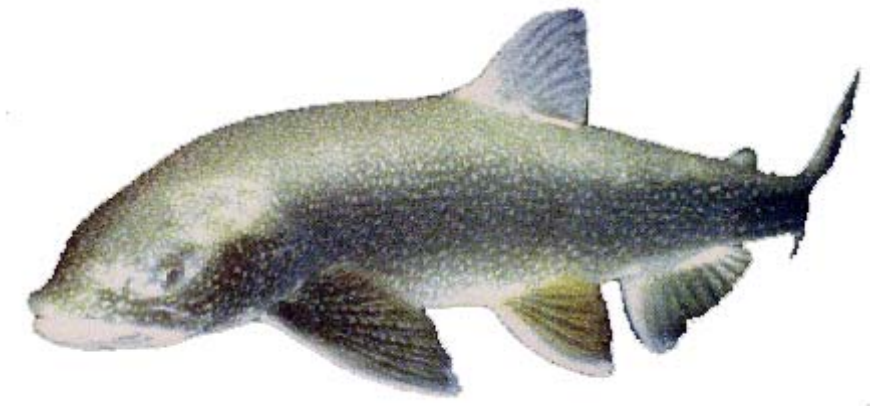
Lake Erie—Lake trout stocking began in 1978 and abundance has been improving annually since 1992, and they have been expanding their range to areas not previously inhabited. Reproduction has not been detected, but lake trout are surviving to sexual maturity and offspring of stocked lake trout have been raised successfully in a hatchery.

Lake Ontario—Naturally produced age 2 lake trout have been present in many areas of the lake since 1995. Prior to this, spawning by stocked lake trout failed to produce detectable numbers of two-year old fish, although fry were detected as early as 1983.

Lake trout (*Salvelinus namaycush*) historically was the top native predator fish in the Great Lakes and an important component of the commercial and sport fisheries. A combination of over-fishing and predation by the exotic sea lamprey (*Petromyzon marinus*), along with other contributing factors caused the extinction of lake trout during the 1950s in all of the Great Lakes except Lake Superior where populations were greatly diminished.

For over 40 years the Great Lakes Science Center (GLSC), a research center of the U.S. Geological Survey, has worked closely with the Great Lakes Fishery Commission and its cooperating U.S. and Canadian Federal agencies, the eight Great Lakes states, the Province of Ontario, and Tribal fishery management agencies to restore lake trout populations in all of the Great Lakes. GLSC has conducted long-term assessment of native lake trout in Lake Superior and of hatchery-reared lake trout in all of the Great Lakes. In addition, intensive research has been done on factors suspected of adversely influencing the establishment of self-reproducing, sustainable stocks of lake trout in the Great Lakes; this research continues today. Factors that may impede lake trout reproduction and survival include degradation of spawning reef habitat, competition and predation at spawning and nursery grounds, decreased numbers of spawners, continued sea lamprey predation, stocking strains of lake trout that are genetically unfit for their new environment, ineffective stocking practices, and environmental contamination.

Today, the status of lake trout restoration varies considerably among the lakes. The good news is that in Lake Superior, lake trout reproduction and survival has reached a modern high, no longer requiring supplemental stocking of hatchery fish. The success of lake trout restoration in Lake Superior was accomplished by sea lamprey control, regulations on harvest, and close cooperation between research and management agencies. Lake Ontario and northern Lake Huron have also been showing increased reproduction of stocked fish in recent years, and may be on the road to recovery. The science and management activities that proved successful in Lake Superior are now being adapted to other lakes and other species in a basin-wide effort to restore native fish species throughout the Great Lakes.



U.S. Department of the Interior
U.S. Geological Survey

Great Lakes Science Center
1451 Green Road
Ann Arbor, Michigan 48105
(734) 994-3331
http://www.glsc.usgs.gov

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