SUMMARY

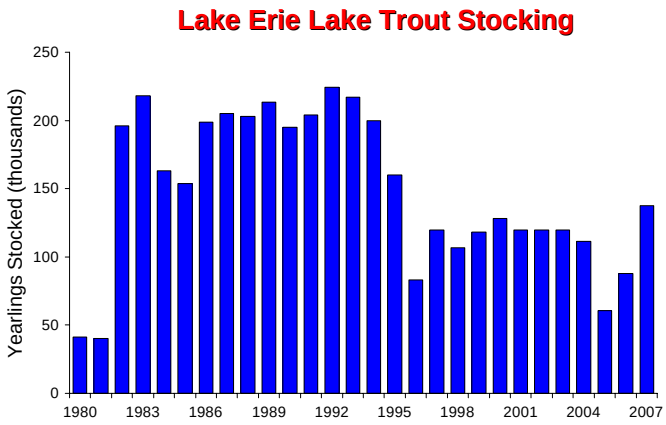
A STRATEGIC PLAN FOR THE RESTORATION OF LAKE TROUT IN LAKE ERIE, 2008-2020

A revision of the Lake Erie lake trout management plan, titled "A Strategic Plan for the Rehabilitation of Lake Trout in Lake Erie, 2008-2020", was completed in 2008. The original "Lake Erie Lake Trout Restoration Plan" was written in 1985 and preceded the invasion of dreissenid mussels and other invasive species that have been linked to major perturbations in the Lake Erie ecosystem and fish community. The new plan covers the historical background of lake trout restoration in Lake Erie, current status of stocks, new goals and objectives, management strategies to achieve these new goals, and impediments to lake trout restoration. The document also outlines assessment and research needs by lake jurisdictions as well as agency roles and responsibilities. The complete plan will be posted on the Great Lakes Fishery Commission website (www.glfc.org/lakecom/lec/CWTG.htm). Copies will also be available upon request from an LEC, Standing Technical Committee (STC), or CWTG representative.

Overview of the Lake Trout Population

Lake trout were a major component of the Lake Erie fish community before colonization of the area by early European settlers in the 1700s. Commercial lake trout exploitation began as early as the late-1700s in Lake Erie, but populations did not start to decline until the period from 1850-1900 when lake trout were subjected to intense commercial exploitation. A directed fishery continued into the 1930s and a combination of factors combined to locally eliminate lake trout stocks by 1950. Total loss of the native lake trout stocks in Lake Erie was thought to have occurred around 1965.

Modern lake trout restoration efforts began in 1969 when 17,000 yearlings were stocked by the Pennsylvania Fish Commission (PFC). Beginning in 1982, the USFWS, in partnership with the NYSDEC and the PFC, committed to an annual production and stocking of at least 160,000 yearlings in Lake Erie. Initial recruitment of these stocked fish was good, but survival to mature adults was poor due to abundant sea lampreys.



The results of the activities taken under the 1985 lake trout management plan combined with the adoption and implementation of the Lake Erie Sea Lamprey Management Plan were very successful. Annual stockings of 200,000 yearling lake trout and successful sea lamprey control treatments resulted in the establishment of a large lake trout population. By 1990, the adult lake trout population increased over four-fold and showed evidence of spawning in the nearshore reef and harbor areas. This initial accomplishment, however, was short-lived as stocking numbers were reduced from 200,000 yearlings in 1994 to 120,000 yearlings in 1996 due to forage concerns while sea lamprey control measures relaxed. Adult lake trout numbers quickly declined while sea lamprey-induced mortality increased. By 2000, the adult population was severely reduced and has remained at comparatively low levels since that time. No significant natural reproduction of lake trout has been recorded since rehabilitation efforts began.

Impediments

Impediments to lake trout rehabilitation were examined to determine why natural reproduction has not yet occurred in Lake Erie. The main impediments were identified as: 1) Insufficient spawner biomass, 2) Stocking limitations, 3) Invasive species, and 4) Habitat limitations.

New Goals and Objectives

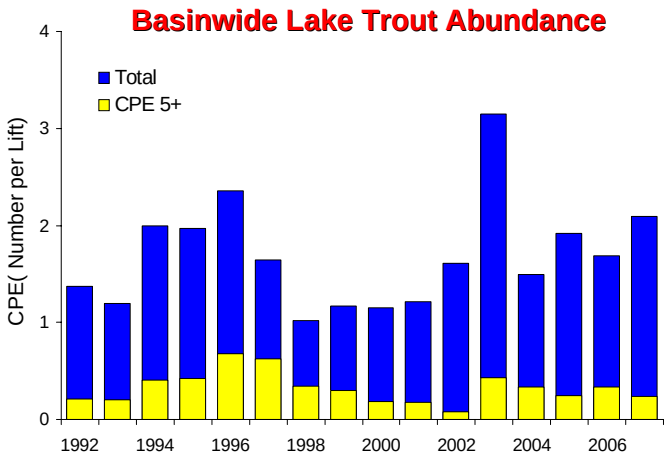
The Lake Erie Fish Community Goals and Objectives state that "the goal for the eastern basin is a balanced cold-water fish community with lake trout as the dominant predator." Restoration of lake trout may play an integral part for restoration of the entire native coldwater fish community. The objectives are progressive steps in the process and should be met and maintained to accomplish the next objective.

Ultimate Goal: To reestablish a genetically diverse, self-sustaining lake trout population in the eastern basin of Lake Erie that serves as the dominant predator in the coldwater community and produces an annual harvestable surplus capable of sustaining fisheries.

Interim Goal: By 2030, demonstrate that rehabilitation is possible by developing and maintaining a lake trout population in Lake Erie which produces a measurable level of wild yearling recruits.

Objective 1: Increase Overall Lake Trout Abundance.
Measurables: By 2020, achieve and maintain an average target catch-per-effort (CPE) of 8 fish per 152.4 m (all age groups) of standard assessment graded mesh gill nets (38-152 mm) set overnight in summer coldwater assessment surveys in all jurisdictions.

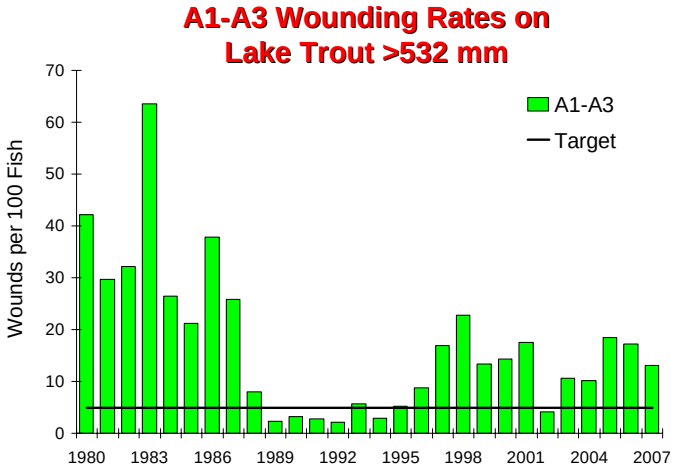
Objective 2: Maintain Spawning Stock Abundance.
Measurables: By 2024, increase and maintain the average abundance of adults age 5+ to 25% of the total CPE (2 fish per 152.4 m) defined in Objective 1. Adult populations should consist of at least 25% females greater than 4500g and be comprised of 10 year-classes age-5 and older.



Objective 3: Maximize Reproductive Potential
Measurables: By 2024, maintain yearly egg densities of 25-500 eggs/m^2 in at least four different suitable spawning locations, and minimum egg densities of 1000 eggs/m^2 in at least two high-quality spawning areas.

Objective 4: Demonstrate that Natural Recruitment is Possible
Measurables: By 2030, achieve and maintain a consistent, measurable contribution of naturally produced fish.

Objective 5: Enhance Survival of Wild Fish
Measurables: Upon determination of measurable natural recruitment for three consecutive years, jurisdictions should enact regulations to minimize or eliminate the harvest of non-clipped (wild) lake trout. Objectives 1-4 should be continued until naturally-produced fish represent 50% of the total lake trout population. At this time, stocking should be terminated and stocks declared rehabilitated.



Management Strategies for Lake Trout Rehabilitation

There are three main strategies that need to be reached in order to achieve any of the objectives.

1) **STRATEGY:** *Increase stocking rates to at least 200,000 yearlings per year.*
2) **STRATEGY:** *Maintain sea lamprey populations at levels that produce no more than 5 fresh (A1-A3) wounds per 100 lake trout greater than 532 mm in annual assessment surveys and adult sea lamprey populations at less than 4,000 spawning adults.*
3) **STRATEGY:** *Identify potential lake trout spawning habitat*

Other management strategies include: expanding the distribution of stocked fish, rotation of stocking areas, maintaining genetic diversity of stocked lake trout, and maintaining adult survival rates of at least 60%.