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Salvelinus namaycush

(lake trout)

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By *Stephen Lenart*

Kingdom: [Animalia](#)
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 Order: [Salmoniformes](#)
 Family: [Salmonidae](#)
 Genus: [Salvelinus](#)
 Species: ***Salvelinus namaycush***

Geographic Range

The native range of the lake trout (also known as lakers, tongue trout, mackinaw trout and mountain trout) includes the cold water regions of northern Canada, Alaska, the Great Lakes and parts of New England. The species has been widely introduced outside its native range in many parts of the western United States and in other areas, including New Zealand, South America and Sweden (Page, 1991).

Biogeographic Regions: nearctic (native); palearctic (introduced); neotropical (introduced); australian (introduced).

Habitat

Lake trout are a cold-water species requiring relatively high concentrations of dissolved oxygen for survival (Ryan, 1994).

Lake trout are the only major native sport fish adapted to the deep, cold water of oligotrophic (low-nutrient) lakes, such as those often found in northern Canada and the northern Great Lakes region (Shuter, 1998)

At the southern range of the species, lake trout require deep water refugia, where preferred temperature ranges and oxygen levels exist. Although most often found in lakes, lake trout may inhabit large river systems that have the necessary habitat characteristics.

Aquatic Biomes: lakes and ponds; rivers and streams.

Physical Description

Mass

3 kg (average)
(6.6 lbs)

Lake trout possess a deeply forked caudal fin and a slate grey to greenish body with lighter undersides. Cream to yellow spots are generally present on the head, body and dorsal and caudal fins. The lower fins tend to be orange-red with a narrow white edge. Younger fish will have seven to twelve interrupted parr marks along their sides (Page, 1991). The species supports nine to twelve gill rakers and unlike their cousin the brook trout, *-Salvelinus fontinalis-*, lake trout do not have a black stripe on the anterior edge of their anal and pelvic fins (Wisconsin Sea Grant, 1999). Breeding males develop a dark, lateral stripe on their sides (Page, 1991).

Although an average weight of around 3kg is reported for this species, much larger fish are encountered, some weighing in excess of 27kg. These larger trout are thought to have lived for twenty years or more (Trout Angler's Society, 1999). Lake trout average 45 to 68cm in length, with unusual specimens reaching 126cm (Page, 1991).

Lake trout are known to hybridize with brook trout where the range of the two species overlap. The resulting hybrid, known as a splake, supports intermediate features.

Some key physical features: bilateral symmetry 

Reproduction

Lake trout are a slow-growing, late-maturing species with generally low reproductive potential (Shuter, 1998). Though long-lived, both males and females, on average, do not reach sexual maturity until six to eight years of age (Wisconsin Sea Grant, 1999). Research has indicated that environmental factors, such as lake size and dissolved solid concentrations, may play a role in the age of first maturity and overall reproductive success of the lake trout (Shuter, 1998).

Lake trout seek substrates of cobble, rubble or gravel in which to spawn. Males will fan the bottom clean of finer silt so that the fertilized eggs of the female can be deposited in the substrate. As a female enters a spawning area, several males engage in amplexus (clasping) with the female; in this way eggs and sperm are broadcast over the substrate. Spawning generally takes place in fall or early winter and most often at night (Moyle, 1976).

Because of the colder water habitats preferred by *-S. namaycush-*, fertilized eggs require a long time to hatch. Eggs overwinter for four to six months before hatching. The developing trout remain in the crevices of the spawning substrate until their yolk-sac is completely absorbed. These "fingerlings" then move into deeper waters in search of food, usually in the form of zooplankton.

Food Habits

As juveniles, lake trout feed on zooplankton and small invertebrates. As they mature, their foraging patterns shift and the fish become opportunistic piscivores.

As adults, lake trout are generally piscivorous, feeding on a wide variety of pelagic prey species. In the Great Lakes region, alewives, smelt, sculpin and chubs make up a large portion of the lake trout diet (Wisconsin Sea Grant, 1999).

Due to the cold water and dissolved oxygen content requirements of the species, lake trout which persist in the southern edge of their range must move to deeper water areas in the warmer summer months. If preferred prey species are not present at these depths, lake trout may then resort to feeding on zooplankton and invertebrates. In habitats that support no pelagic prey species, lake trout must subsist entirely on these secondary food sources. These dietary conditions often produce a leaner trout which grows more slowly and reaches sexual maturity earlier (Vander Zanden, 1999)

Economic Importance for Humans: Positive

Although once an important commercial fish stock, lake trout levels in the Great Lakes dropped sharply during the 1950's. Lake trout are still highly valued as a sport fish and anglers who seek this species contribute to the regional economy of areas with fishable populations through the purchase of fishing licenses.

Conservation Status

IUCN Red List: <http://www.redlist.org>: No special status.

The commercial lake trout fishery in Lake Superior alone supported an annual commercial harvest of 2 million kg from 1920 to 1950. Overfishing and predation by the non-native sea lamprey, *Petromyzon marinus*, led to a sharp decline in the commercial take in the 1950's. Continued stocking since 1952, chemical control of the sea lamprey and the closing of the commercial fishery in the early 1960's has stabilized the population, but has not achieved the goal of restoring self-sustaining stocks that can support an annual harvest comparable to that of the 1930's and early 1940's. (Great Lakes Fishery Commission, 1996).

Success of the stocked fish has varied depending on the area. Due to this and other factors, the restoration plan for Lake Superior has changed from a program that concentrated heavily on stocking to a program that emphasized management of wild lake trout populations.

Continued management of the sea lamprey, stringent fishing controls and better survival of stocked fish will be key components of future restoration plans. (Great Lakes Fishery Commission, 1996).

Contributors

Stephen Lenart (author), Eastern Michigan University: February, 2001.
Cynthia Sims Parr (editor), University of Michigan: February, 2001.

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