

THIS INTRODUCED FISH HAS BECOME CRITICAL TO THE LAKE GEORGE FISHERY

# RAINBOW SMELT

Rainbow smelt (*Osmerus mordax*) are a slender, elongate fish, which are relatively small averaging 6 to 8 inches long. This silvery fish has a pointed head, protruding lower jaw, deeply forked tail and a conspicuous streak running lengthwise along each side. Smelt living in saltwater are anadromous, which means they enter freshwater streams to spawn. However, rainbow smelt have been successfully introduced into many freshwater systems, including Lake George as a forage item because smelt are eaten by many other commercially and recreationally valuable fish.

In Lake George the first recorded introduction of rainbow smelt was in 1918 when roughly 2.5 million fish were released to improve the lake trout fishery. In 1929, another 5 million were released into Lake George. Efforts were eventually successful and rainbow smelt have become an extremely important component of the Lake George fisheries.



Rainbow Smelt in Indian Brook during the annual spawning run.

However, in the late 1980s concern arose over the stability of the smelt population and a ban was placed on the collection or possession of smelt within the Lake George watershed by the New York State Department of Environmental Conservation (NYS DEC). The NYS DEC continues to be concerned about the stability of smelt populations in Lake George in the face of abundant predator fish populations and variable spawning success of smelt.

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Regardless of its dwindling numbers, smelt continue to spawn annually in numerous streams tributary to Lake George. Spawning occurs shortly after ice-out when water temperatures approach 7°C or 45°F and primarily takes place during the night, although runs can also be observed during the daylight. During the spawning period, both male and female fish enter the stream. Females can produce thousands of very small eggs, which are deposited on the streambed. After spawning the fish return to the lake where they congregate in the relatively cool medium depths of the lake. Smelt eggs take a couple of weeks to hatch, which can be influenced by a variety of factors including water temperature, the speed of the water, and instream habitat. After hatching the larvae work their way back to the lake.

During the spawning period adult mortality can be quite high. For example, one study showed that spawning in the Park River, Massachusetts was fatal for 70% of rainbow smelt. The relatively high mortality rate of smelt may be due to their increased vulnerability to predation by other fish, waterfowl, or humans during



Rainbow Smelt in Hague Brook.

the spawning period. Additionally, declines in smelt abundance have also been linked to pollution, blockage of spawning migration by dams and other barriers, temperature, as well as the loss of habitat.