

A Call to Action

Crystal Clear

National Park Service
U.S. Department of the Interior

Yellowstone National Park



Yellowstone Lake Ecosystem Recovery



National Park Service boat
Freedom on Yellowstone Lake
in Yellowstone National Park
(Wyoming, Idaho, Montana).
NPS/TODD KOEL

The Yellowstone Lake drainage above the upper falls at Canyon Village, Yellowstone National Park, represents the largest remaining undisturbed habitat for genetically pure Yellowstone cutthroat trout (YCT) in existence. Cutthroat trout in this area are highly valued ecologically, economically, and socially. They are a valuable food source for several species of birds and mammals, including grizzly bears, otters, eagles, white pelicans, and osprey. Cutthroat trout are the basis for an extensive sport fishing economy in communities surrounding Yellowstone, with anglers coming from all over the world to fish for these wild natives.

Background

During the late 1800s non-native lake trout were intentionally stocked in Lewis and Shoshone lakes within Yellowstone National Park by the US Fish Commission. In 1994 their presence was confirmed in Yellowstone Lake where they had been (unintentionally) introduced at least 20 years earlier. This discovery immediately caused great concern because the lake trout are highly predatory; in other lakes in the western United States where they have been introduced, the native cutthroat trout have been virtually eliminated. Since lake trout grow much larger, occupy very deep areas of the lake, and spawn within the lake, they are not available as prey for most mammals and birds. Allowing lake trout to replace cutthroat trout in Yellowstone Lake would have severe consequences on the overall status of the YCT subspecies, the Yellowstone Lake ecosystem, and the sport fishery.

In 1995 a panel of fisheries experts projected that without control of lake trout in Yellow-

stone Lake, native cutthroat trout would be reduced to a mere fraction of historical levels or functionally eliminated. With effective suppression, however, cutthroat trout could be maintained at a population size that would sustain the ecological integrity of the system. NPS staff immediately initiated lake trout suppression on Yellowstone Lake. Despite increasing netting efforts each year, the lake trout abundance increased, cutthroat trout numbers decreased, and important species that consume cutthroat were impacted. In 2008 the park convened a panel of expert fisheries scientists to review ongoing lake trout suppression efforts and provide guidance for improvements. The review concluded that while great strides had been made, a significant increase in removal effort was needed to control lake trout numbers. This 'surge' in effort was made by adding contracted netters from the commercial fishing industry.

Status

Since 1994 biologists have removed over 1.6 million lake trout from Yellowstone Lake. In 2013 alone, the combined effort of the contracted and NPS crews removed 300,000 lake trout from the population with an approximate 25 percent reduction in overall catch-per-unit-of-effort from the previous year. Population modeling has suggested this level of removal will be sufficient to drive the lake trout population into decline. Ongoing tagging research on Yellowstone Lake will help better determine lake trout movement patterns and discover new spawning areas that will help maximize lake trout suppression efforts. After relatively low but stable catches of YCT during annual lake-wide monitoring between 2002 and 2010, sampling in 2012–2013 indicated an increase in the abundance of YCT with a modest increase in the number of juvenile fish caught. This is the first indication that the cutthroat trout may be responding positively to the suppression of lake trout.

native trout population, resulting in catastrophic park-wide multi-trophic level resource degradation and likely listing of the YCT under the Endangered Species Act.



Top right: Spawning Yellowstone cutthroat trout in the Lamar Valley of Yellowstone National Park. NPS/JAY FLEMING

Middle right: Contracted netting crew lifts a large trap net to remove non-native lake trout from Yellowstone Lake. The trap nets capture and hold fish alive allowing them to be set in habitats supporting both lake trout and cutthroat trout. The captured cutthroat are released alive and unharmed. NPS/BIGELOW

Bottom right: Freedom gillnetting to remove non-native lake trout from Yellowstone Lake. NPS/TODD KOEL



More Information

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