

“KNOW YOUR CALIFORNIA TROUT”

EAGLE LAKE THE RAINBOW TROUT

Oncorhynchus mykiss aquilarum

Introduction

The Eagle Lake rainbow trout evolved from an ancestral species in the headwaters of the Pit River drainage. It is an atypical redband trout, and genetic mixing with the coastal rainbow trout in the Northern Sacramento River basin may have influenced its evolution. Eagle Lake is located in Lassen County and is the second largest natural lake in California. This region is an isolated part of the Lahontan basin that, in turn, is part of Great Basin. All native fishes of Eagle Lake, except for the rainbow trout, are Lahontan basin species. It is probable that in the late Pleistocene epoch (10,000 to 20,000 years ago), the original trout of Eagle Lake was a Lahontan cutthroat trout. The warmer and drier climate that existed from about 4,000 to 10,000 years ago likely resulted in lower flows and higher temperatures in Pine Creek, the only tributary to Eagle Lake. These extreme changes made natural reproduction impossible, and the Eagle Lake cutthroat became extinct. A subsequent period of cooler, wetter climate allowed for a headwater connection to a segment of the Pit River drainage and the eventual “invasion” by the redband rainbow trout. Eagle Lake is now a closed (i.e. endorheic) basin with a high alkalinity (pH of 8.4 to 9.66) that is lethal to most other trout.

Description

In 191, J.O. Snyder gave the Eagle Lake rainbow the unique subspecies designation of, *aquilarum*, the Latin term for eagle. The Eagle Lake rainbow trout has anatomical characteristics more reflective of the coastal rainbow and the Great Basin redband trout than the Lahontan cutthroat trout.

The Eagle Lake rainbow has a rounded snout. The fins and upper part of the body have large elongated spots. The numbers of spots decrease in size and number below the lateral line. The caudal (tail) fin has numerous irregular spots and a flat edge. There is also a white tip on the dorsal, pelvic and anal fins. At spawning, J. O. Snyder described the male...”Body above and down the sides to the lateral line is a rich dark olive, with brassy scales. The sides below the lateral line and the ventral surface are deep, coppery-red with bright metallic reflections. The sides of the head are a very rich cherry-red. A trace of red is seen below the mandible. The pectoral fins are broadly edged with olive”. Females were described...”Light olive on the dorsal surface where each scale is silvery with greenish reflections. The sides are lighter and the scales greener than in the dorsal region. The ventral surface is silvery and tinted with pink. A very distinct pale reddish stripe extends along the sides, below the lateral line. The cheeks and opercula are red. Ventral and anal fins are suffused with red”.

Biology

The Eagle Lake rainbow trout has a physiological adaptation to survive in the highly alkaline waters of Eagle Lake. The precise mechanisms for this adaptation are

not known but involve the ability to withstand high levels of carbonate, bicarbonate and sulfate ions. The life span for these fish has been estimated at up to 11 years. Small fish feed on aquatic and terrestrial invertebrates. As the fish grow they become more piscivorous, primarily because of the availability of the tui chub as a food source. Adult fish can grow to 24-30" and weigh 5 to 10 pounds. Eagle Lake also supports three other Lahontan basin fish species: the Tahoe sucker, the speckled dace and the Lahontan reddsides.

Natural Distribution and Artificial Propagation

The Eagle Lake rainbow trout is the only rainbow trout native to the eastern Sierra-Nevada Mountains and is endemic solely to Eagle Lake, and its tributaries, Pine, Papoose and Merrill Creeks. Under previous natural conditions, the Eagle Lake rainbow would spawn in Pine Creek during high spring flows. Unfortunately, in the 1940s irrigation diversions, logging and cattle grazing resulted in flows that were insufficient to support the natural reproduction of this species. In the 1950s the Eagle Lake rainbow was on the brink of extinction. The California Department of Fish and Game established a hatchery program that has been successful in maintaining this species for sport fishing. The primary spawning facility is the Crystal Lake Hatchery near Burney, while a broad stock of Eagle Lake trout is also maintained at the Mt. Shasta Hatchery. Millions of eggs are sent to other California hatcheries for rearing and for stocking many Sierra lakes and streams. In addition, eggs are also transported to New Zealand, Wyoming and Montana. Thousands of fry are returned to Eagle Lake each year to maintain the population for angling.

Currently, the Department of Fish and Wildlife, through its State Wildlife Action Plan, is developing strategies to improve conditions in Pine Creek to support future spawning and rearing, as well as the migration of both adult and young fish to and from Eagle Lake and Pine Creek. The primary focus is on improving habitat by: 1) repairing the degraded stream channel 2) reducing erosion 3) improving stream flow 4) removing migration barriers and 5) removing non-native brook trout in the upper headwaters of Pine Creek. The long-term goal is to make Eagle Lake a self-sustaining, viable ecosystem, which can once again support the iconic Eagle Lake rainbow trout.

Note: The Eagle Lake rainbow trout is one of the native California trout species included in the Heritage Trout Challenge. If you do the Challenge and have never fished Eagle Lake, I would recommend that you go with an experienced angler or hire a guide.

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