

DISTRIBUTION, LIFE HISTORY, AND MOVEMENTS OF YELLOWSTONE CUTTHROAT TROUT IN THE UPPER YELLOWSTONE RIVER DRAINAGE

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The Yellowstone Lake ecosystem has long been a stronghold for native Yellowstone cutthroat trout (*Oncorhynchus clarkii bouvieri*). However, recent declines in this assemblage, due to non-native lake trout (*Salvelinus namaycush*) and whirling disease, prompted fisheries investigations into the 1244-km² upper Yellowstone River watershed. The Yellowstone River is the largest tributary to Yellowstone Lake; however, because of its remoteness, little is known about the life-history of fishes using this watershed. During 2003- 2007 radio telemetry, electrofishing, and snorkeling were used to determine cutthroat trout distribution, life-history, and habitat use. Movements of 151 adults were tracked by aircraft and ground surveys. Cutthroat entered the river in April and migrated as far as 67 km to spawn. Spawning aggregations within the park were rare, found in only five locations. These sections were predominately runs with gravel substrate. Tagged fish typically spent < 3 mos in the river, the majority (72%) returned to the lake, 26 percent migrated downstream until signal loss, and 2 percent stayed in the river. Raft-mounted electrofishing and snorkeling of the main-stem Yellowstone River found 1.1 and 3.4 fish/km >200 mm respectively. The majority were found in 8 of the 39 sections surveyed. These sections contained pool habitats or runs/glides > 1.5m in depth, all contained woody debris. Densities of fish < 200 mm were 3.95 and 2.7 fish/km, respectively. Smaller fish were found in all habitats with the exception of pools. These data suggested that the majority of cutthroat trout in the Yellowstone River above Yellowstone Lake express a lacustrine-adfluvial life-history.