

Bonneville Whitefish (*Prosopium gemmifer*)

Species Status Statement.

Distribution

Bonneville whitefish is one of four fish species naturally found only in Bear Lake, which straddles the Utah-Idaho border. This species has also never been transplanted elsewhere, and occurs nowhere else in the world (Sigler and Sigler 1987).

Table 1. Utah counties currently occupied by this species.

Bonneville Whitefish
RICH

Abundance and Trends

Prior to 1999, there was simply no reliable method for fishery biologists to differentiate Bonneville whitefish from Bear Lake whitefish at lengths less than approximately 10 inches outside of their respective spawning seasons (Tolentino and Thompson 2004). Therefore, the Utah Division of Wildlife Resources (UDWR) monitored both species combined as the “whitefish complex”. In 1999, Ward (2001) along with UDWR biologists (Tolentino and Thompson 2004) finally described a reliable method to distinguish the two whitefish species in Bear Lake. From 1999-2018 the UDWR has monitored gill net catch rates and composition of Bonneville and Bear Lake whitefish separately (Tolentino 2007). The abundance of Bonneville whitefish appears to have about a 20-25 year cycle between lows and highs (Thompson 2003, Tolentino 2007).

Statement of Habitat Needs and Threats to the Species.

Habitat Needs

Bonneville whitefish spend a majority of their life at water depths where the thermocline intersects the lake bottom (30-65 feet in depth; Thompson 2003, Tolentino 2007). However, during the months of November and December the adult fish move into shallow, littoral areas to spawn (Sigler and Sigler 1987, Albrecht 2004, Tolentino and Albrecht 2007). Juvenile Bonneville whitefish forage on invertebrates living on and near the lake bottom, while upon maturity (> 12 inches) they shift to a diet of almost exclusively other fish (Thompson 2003, Tolentino and Thompson 2004, Tolentino and Albrecht 2007).

Threats to the Species

Bonneville whitefish lives only in Bear Lake. It faces threats that include lowered water levels due to drought, nutrient loading, invasion of non-native species, and overstocking of predatory fishes (Thompson 2003, Albrecht 2004, Kennedy 2005). Increasing development and recreational use of the Bear Lake basin increases the chances of negative impacts to lake water quality (Sigler and Sigler 1987) which could directly affect Bonneville whitefish, or it could reduce their prey species. Predation by predatory fish (cutthroat trout, adult Bonneville whitefish and non-native lake trout) could possibly have a negative effect on the population of Bonneville whitefish. Since their first stocking into the lake in 1911, managers have believed that lake trout are unable to maintain their population in Bear Lake through natural reproduction. This is likely due to several factors including predation by native fish, lake trout eggs suffocating from the unique water chemistry in Bear Lake, and limited spawning habitat (Martinez et. al. 2009). To ensure control of lake trout numbers, beginning in 2001 the UDWR and Idaho Department of Fish and Game (IDFG) began stocking only sterile (triploid) lake trout.

Because of their need for shallow, rocky, littoral habitats for the spawning part of their life cycle, one of the most important concerns for this species is the dewatering of this habitat due to extended droughts (Albrecht 2004, Utah WAP 2015). The lake bottom of the top 40 feet of Bear Lake consists of less than 1% cobble & gravel, yet managers believe this is the only spawning habitat of the Bonneville whitefish (Glassic and Gaeta 2019). Although short-term fluctuation of lake levels can be beneficial (rising and falling lake levels coupled with wind action scours rocky shoreline habitat and prevents sediment accumulation and algal growth), extended low water periods caused by drought can dewater most spawning habitat. The Bonneville whitefish evolved in a dynamic environment with variable climatic conditions and may be able to adapt somewhat to these drought scenarios through genetic selection, but is at higher risk from the type of alterations in water level commonly observed with dam and hydropower operation, water allocation and groundwater pumping.

Table 2. Summary of a Utah threat assessment and prioritization completed in 2014. This assessment applies to the species' entire distribution within Utah. For species that also occur elsewhere, this assessment applies only to the portion of their distribution within Utah. The full threat assessment provides more information including lower-ranked threats, crucial data gaps, methods, and definitions (UDWR 2015; Salafsky et al. 2008).

Bonneville Whitefish
Very High
Dam / Reservoir Operation
Hydro Power Facilities
Power Generation
Water Allocation Policies
High
Groundwater Pumping
Unauthorized Species Introductions
Medium
Invasive Wildlife Species - Non-native

Rationale for Designation.

Bonneville whitefish is one of the four species of fish found nowhere else in the world but the unique Bear Lake of northern Utah and southern Idaho. This fish community is a unique wildlife resource that could be vulnerable to loss or degradation of their habitat. Sensitive species designation will help state management of this resource and prevent the need for federal Endangered Species Act listing. Measures to conserve Bonneville whitefish would also benefit Bear Lake whitefish, Bonneville cisco, and Bear Lake sculpin.

Economic Impacts of Sensitive Species Designation.

Sensitive species designation is intended to facilitate management of this species, which is required to prevent Endangered Species Act listing and lessen related economic impacts. The listing of Bonneville whitefish as endangered would have impacts on water resource management at Bear Lake, including reservoir operation, power generation, and groundwater pumping in the surrounding areas. There would also be costs associated with preventing and mitigating unauthorized species introductions and increased costs of regulatory compliance for many land-use decisions and mitigation costs.

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