

## Pygmy Whitefish

(*Prosopium coulteri*)

**State Status:** Sensitive, 1998

**Federal Status:** Species of concern

**Recovery Plans:** None

**State Management Plan:** None

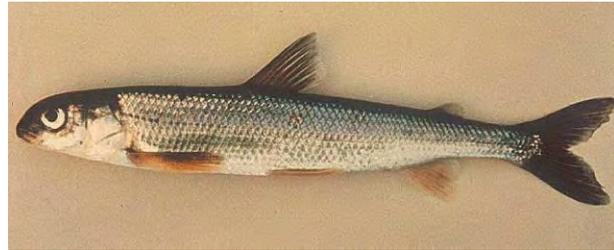


Figure 1. Pygmy whitefish (photo from Wydoski and Whitney 2003).

The pygmy whitefish, a small (usually < 20 cm) member of the family Salmonidae, is distributed across the northern tier of the United States, throughout western Canada and north into southeast Alaska, and in one lake in Russia (Hallock and Mongillo 1998). Their widely scattered distribution, primarily in deep lakes, suggests they are relics of a wider distribution prior to the last ice age (Wydoski and Whitney 2003). Washington is at the extreme southern edge of their native range in North America.

Pygmy whitefish are most commonly found in cool oligotrophic lakes and streams of mountainous regions. However, they have been collected from smaller, shallow, more productive lakes in British Columbia and Washington. Pygmy whitefish eat crustaceans, aquatic insect larvae and pupae, fish eggs, and small mollusks. Pygmy whitefish are important forage fish for larger predatory species including bull trout (*Salvelinus confluentus*).

Historically, pygmy whitefish resided in at least 16 lakes in Washington (Figure 2; Hallock and Mongillo 1998). Currently they inhabit only nine. Their demise in six lakes is attributed to piscicides, introduction of exotic fish species and/or declining water quality. Because of the very limited range of the pygmy whitefish in Washington, they are vulnerable to additional extirpations without cooperative management.

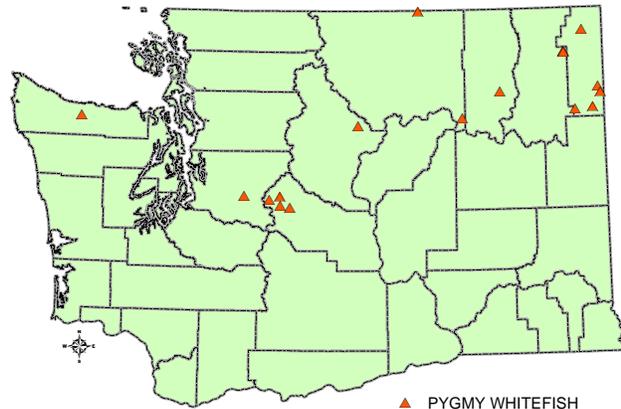


Figure 2. Lakes where pygmy whitefish have been collected.

Pygmy whitefish surveys require specialized techniques because of the fish's small size and tendency to inhabit the deeper portions of lakes; their presence in lakes heavily sampled for other species sometimes goes undetected. Pygmy whitefish have been caught in water depths ranging from 7 to 92 m in Washington. Pygmy whitefish are broadcast spawners and deposit their eggs over cobble and gravel substrates in riverine habitat (Hallock and Mongillo 1998). They spawn when temperatures for incubation are coldest, often below 4 °C in the Cedar and Rex rivers (Barnett and Paige 2012).

**Surveys.** The only targeted surveys for pygmy whitefish in Washington since 1998 have been made at Chester Morse Reservoir in King County, which has one of the strongest and most protected populations in the state. Seattle City Light has conducted pygmy whitefish spawning surveys at the reservoir every year since 2001 and is conducting research on the species' ecology. Pygmy whitefish are especially important prey for bull trout in Chester Morse Reservoir, where the fish community is composed of only four species (pygmy whitefish, bull trout, rainbow trout (*Oncorhynchus mykiss*), and shorthead sculpin (*Cottus confusus*)) (Barnett and Paige 2012).

Pygmy whitefish have also been incidentally recorded at Lake Crescent, Keechelus Reservoir, and Sullivan Lake since 2004, confirming the continued presence of populations in these water bodies. The population at Lake Crescent (Clallam County) is also fairly well protected because it occurs on National Park Service land. In 2004, Olympic National Park staff deployed a remote controlled tracker with video capability on the floor of Lake Crescent to determine fish usage of an old car body; small schools of pygmy whitefish were recorded on the video tape.

In 2009, the Pend Oreille County Public Utility District investigated fish presence associated with Sullivan Lake Dam using various fish capture/observation methods. Consistent with past gill netting efforts in Sullivan Lake, only a couple of pygmy whitefish were captured. However, an entrainment trapping study in Outlet Creek below Sullivan Dam captured 14 pygmy whitefish over a two-month period.

In 2010, the Bureau of Reclamation conducted a fish entrainment (the incidental trapping of any life stage of fish within waterways or structures that carry water being diverted for human uses) study below Keechelus Dam in Kittitas County (USBOR 2011). Pygmy whitefish were the second most common fish captured in the study, but suffered a high mortality rate of about 90%. During the 3.5-month sampling period, it was estimated that 2,500-10,000 pygmy whitefish were entrained below Keechelus Reservoir, suggesting a relatively healthy population in the reservoir. It is not known if this entrainment loss is abnormally high due to Keechelus Dam operations (EES 2010).

**Recent research.** Barnett and Paige (2012) collected fertilized eggs and monitored development in incubation boxes under natural river conditions. Pygmy whitefish eggs required a long incubation period of 127–145 days, suggesting the eggs may be vulnerable to increased scouring flows that may occur with climate change (Littell et al. 2009), which would reduce reproductive success (Barnett and Paige 2012).

**Partners and cooperators:** U.S. Fish and Wildlife Service, Seattle Public Utilities, Bonneville Power Administration, U.S. Department of Energy, U.S. Bureau of Reclamation.

### Literature Cited

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