

## Margined Sculpin

(*Cottus marginatus*)

**State Status:** Sensitive, 1998

**Federal Status:** Species of concern

**Recovery Plans:** None

**State Management Plan:** None



Figure 1. Margined sculpin (from Wydoski and Whitney 2003).

The margined sculpin is a small (2.5 in) native freshwater fish (Figure 1) found only in southeastern Washington and northeastern Oregon (Mongillo and Hallock 1998, Wydoski and Whitney 2003). In Washington, it occurs only in the Tucannon and Walla Walla River drainages (Figure 2). The historical range of the sculpin is unknown. It is primarily a pool dweller in streams and its preference for pools does not appear to be strongly affected by seasons. It is normally found in water temperatures less than 20°C and adults tend to be found in deeper, faster water than juveniles.

The species appears to be locally common, but disturbances can have profound effects on its persistence. Most of the waters inhabited by margined sculpins have been degraded by development, logging, agriculture, livestock grazing, and channelization. These activities produce sedimentation of substrate, elevated water temperatures, algal blooms, and reduction in pool habitat. Agricultural and yard chemicals not used properly can directly eliminate fish as well as cause indirect problems such as algal blooms.

Populations in southeastern Washington appear stable, but based on the species' small geographic distribution and limited quality habitat, it could become threatened or endangered without protection of habitat and cooperative management.

Margined sculpin in the Tucannon and Walla Walla drainages will likely benefit from habitat protection measures implemented in recent years to protect federally listed chinook salmon (*Oncorhynchus tshawytscha*), steelhead trout (*O. mykiss*), and bull trout (*Salvelinus confluentus*).

**Recent information.** Some data on margined sculpin populations were gathered during annual salmonid assessments for the Walla River Basin in 1999-2005, when information on relative abundance for other fish species was also collected (e.g., Mendel et al. 2005). For survey years when sculpins were identified by species, margined sculpin appeared more abundant and were collected at more sites than Paiute sculpin (*C. beldingi*). Overall relative abundance of sculpins appeared stable during this period.

**Recent research.** Two Whitman College student projects have recently focused on margined sculpin. Johnson (2007) explored

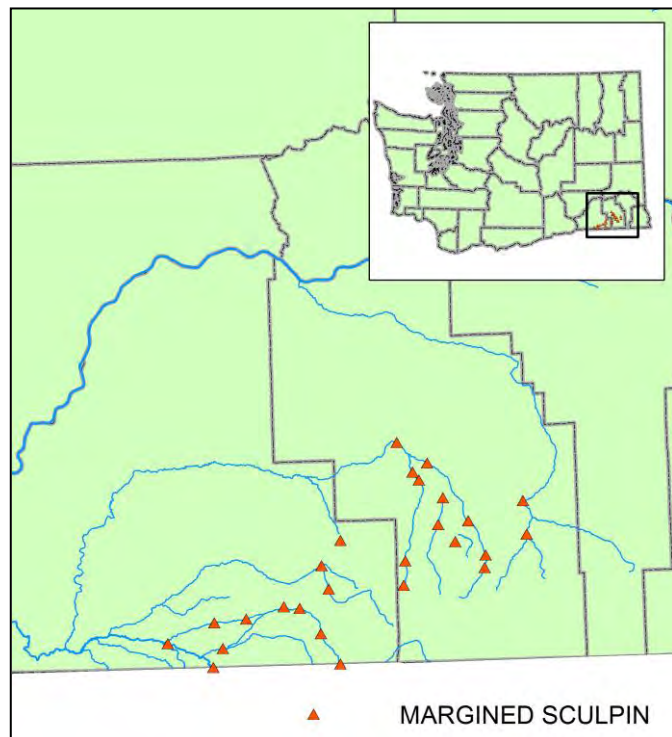


Figure 2. Sites in Washington where margined sculpins have been recorded.

the summer distribution and habitat selection of the species and Hagan (2006) conducted a phylogeographic analysis. Johnson's collection, identification, and extrapolation of numbers produced estimates of 0 to 833 (average = 99) margined sculpins per sampling site. Johnson (2007) observed a difference in microhabitat selection between margined sculpin and Paiute sculpin, with margined sculpins appearing to select shallower water. Estimates of relative population density were highly variable among the sites, but fish were considered fairly abundant at some sites.

Carlin et al. (2012) sampled fishes in the Walla Walla watershed during 2005-2006 and conducted genetic analysis of 26 specimens. Margined sculpin occurrence was high, with 7,485 individuals observed. Margined sculpins made up 49.3% of the fish identified to species, and occurred in 29 of 37 fish-bearing sites sampled. Occurrence was significantly correlated with more boulders and slightly warmer watertemperatures. The species seemed to be locally abundant with relatively wide habitat tolerances. Genetic analysis indicated substantial gene flow (historical or recent) occurring in the Walla Walla sub-basin and rapid population expansion from a small founder population, or bottleneck (Carlin et al. 2012). They noted, however, that margined sculpin still have a very restricted distribution, and as such they could be vulnerable to human related habitat change.

**Partners and cooperators:** U.S. Fish and Wildlife Service, Bonneville Power Administration, U.S. Department of Energy, Whitman College, Confederated Tribes of the Umatilla Indian Reservation, Gustavus Adolphus College, Jones and Stokes Inc.

### Literature Cited

- Carlin, J. L., M. Consoer, C. Hagan, M. Johnson, B. Mahoney, J. McDermet, and J. Schwartz. 2012. Population and habitat characteristics of margined sculpin, *Cottus marginatus*, in the Walla Walla watershed (Oregon, Washington, U.S.A.) Northwest Science 86(3):153-167.
- Hagan, C. N. 2006. A phylogenetic analysis of a freshwater stream fish, *Cottus marginatus*, to address taxonomic status and conservation. B. S. thesis, Whitman College, Walla Walla, Washington. 36 pp.
- Johnson, M. B. 2007. Summer distribution and habitat selection of margined sculpin (*Cottus marginatus*), in the Walla Walla River Basin. B. S. thesis, Whitman College, Walla Walla, Washington. 28 pp.
- Mendel, G., J. Trump, and M. Gembala. 2005. Assessment of salmonids and their habitat conditions in the Walla Walla River Basin within Washington: 2004 annual report. Report to BPA. Project 199802000. 178 pages.
- Mongillo, P. E. and M. Hallock. 1998. Washington state status report for the margined sculpin. Washington Department of Fish and Wildlife, Olympia, Washington. 15 pp.
- Wydoski, R. S., and R. R. Whitney. 2003. Inland Fishes of Washington. 2<sup>nd</sup> ed. American Fisheries Society and University of Washington Press, Seattle, Washington. 322 pp.