

## Western Silvery Minnow - *Hybognathus argyritis*

Abundance: Rare

Status: NSS2 (Ab)

NatureServe: G4 SX

Population Status: This species has been extirpated from major drainages and occurs in very low abundance in a few others. Populations appear to have declined significantly, but reasons for declines are not known.

Limiting Factor: Habitat: impoundments are most likely responsible for the extirpation of this species from major drainages. Impoundments block migrations, fragment populations, alter temperature and flow regimes, and disrupt life-cycles.

Comment: NSS Ranks are reviewed and revised with each SWAP revision. No changes were made for this species in this revision.

### Introduction

The historical distribution of the Western Silvery Minnow primarily encompassed the Missouri and middle Mississippi rivers and the lower reaches of tributaries to the Missouri River (Pflieger 1997). Within Wyoming, they are present in the Powder and Little Missouri River drainages (Baxter and Stone 1995; McGree et al. 2010) of the northwestern and northeastern Missouri aquatic habitats. They may be present in the Belle Fourche River drainage but have not been sampled in recent surveys (Patton 1997; McGree et al. 2010), nor were they collected near the state line in South Dakota by Doorenbos (1998). However, Pindel (1997) reported 12 captured in 1994 and one in 1997, and long before Keyhole Reservoir was constructed, Bjorn (1938) reported "silvery minnow, numerous" near Devils Tower. None of these latter two authors noted any attempt to confirm species identifications however (i.e. not Plains Minnow). They are believed to be extirpated in the Big Horn drainage. Western Silvery Minnow are commonly associated with Plains Minnow (*Hybognathus placitus*) throughout their range, and although the two species look similar, Western Silver Minnow have a broad and blade-like basioccipital process with a back margin that is straight or only slightly concave (Pflieger 1997). To ensure proper identification of field-collected *Hybognathus* specimens, subsets are positively identified to species by Colorado State University's Larval Fish Laboratory. The diet, movement, breeding behavior, and life-history characteristics of this species are poorly known and often are presumed to be similar to other *Hybognathus* species. Throughout its entire range, this species has undergone a large decline in abundance and distribution in recent decades (Pflieger 1997). In Wyoming, it currently is believed to be in decline (McGree et al. 2010). A better understanding of the habitat, life-history, and flow requirements of this species is needed to assess the impacts of water and land use activities.

### Habitat

This species typically is found in medium to large, prairie rivers in habitats with sluggish flows. They are found in areas with fine substrate and silted bottoms: shallow backwaters, slow pools, or lower reaches of river tributaries (Pflieger 1997). This minnow species is adapted to turbid rivers, historically associated with the flathead chub (*Platygobio gracilis*), goldeye (*Hiodon alosoides*), plains minnow, sturgeon chub (*Macrhybopsis gelida*) and shovelnose sturgeon (*Scaphirhynchus platyrhynchus*). Detailed habitat requirements are not presently known (Quist et al. 2004).

### Problems

- h Habitat degradation due to impoundments in major river drainages is likely contributing to declines in distribution and population size.
- h Nonnative species are present and may be expanding within drainages occupied by this species.
- h Altered flow regimes, habitat fragmentation, and impacts to aquatic and riparian habitat associated with agricultural practices.

### Conservation Actions

- h Continue efforts to educate landowners and the public about the importance of native fish and their habitats.
- h Continue efforts to maintain flows and connectivity.
- h Continue efforts to prevent the colonization and spread of nonnative fishes throughout the Powder River basin through the maintenance of natural flow processes.

#### Monitoring/Research

Revisit sites in the range of this species sampled by Barrineau et al. (2007), Peterson et al. (2009) and McGree et al. (2010) to continue monitoring presence/absence and distribution.

Continue to identify and record observations while conducting fisheries management sampling.

#### Recent Developments

No plains minnow were found during detailed fish and habitat surveys at sites throughout the Bighorn River basin in 2006 and 2007 (Bear 2009). The species is believed extirpated from the basin.

Prairie stream surveys were completed in 2004-2005 (Barrineau et al. 2007) and 2008-2009 (McGree et al. 2010) to assess the distribution of this species in northeast Wyoming. Detailed spatially and temporally stratified surveys were also conducted from 2004 to 2006 at multiple sites on the mainstem Powder River in Wyoming and Montana (Peterson et al. 2009) and Crazy Woman Creek in Wyoming (WGFD 2005, WGFD 2006, WGFD 2007). Results of these studies suggest a decline in the distribution of this species.

Completed construction of the Kendrick Diversion dam bypass channel on Clear Creek in 2010, a tributary to the Powder River, to allow fish passage for spawning migrations. A project to determine which species are utilizing the bypass channel was initiated in 2011 (Bradshaw 2015), and Western Silvery Minnow were subsequently documented above Kendrick Dam.

#### References

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SOURCE: Digital maps of ranges for Wyoming Species of Greatest Conservation Need: February 2016. Wyoming Game and Fish Department. Note that brown indicates the current known range of the species.