Shovelnose Sturgeon - Scaphirhynchus platorynchus

Abundance: Rare

Status: NSS3 (Bb) NatureServe: G4 S1

Population Status: Extirpated from the North Platte River and Bighorn River drainages. Native populations restricted to the Powder River. Re-introduced to the Bighorn River.

Limiting Factor: Habitat: Physical barriers caused by the construction of major dams and irrigation diversions on main stem rivers are most likely responsible for the extirpation of this species from major drainages in Wyoming. Impoundments block access to spawning habitats, fragment populations, alter temperature and flow regimes, and alter physical and chemical queues that are critical to maintaining the timing of life cycles.

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

Introduction

Although relatively widespread in the Missouri River drainage, this fish is rare in Wyoming. Prior to 1900, shovelnose sturgeon were found in the large rivers of Wyoming's North Platte, Powder and Bighorn River basins (Evermann and Cox 1896). Recent sampling efforts document their presence in the latter two (WGFD 2006; WGFD 2009). This species was initially reintroduced to the Bighorn River and its tributaries in 1996, and regular stocking continues (WGFD Fish Stock database). The diet consists primarily of bottom-dwelling invertebrates as well as some minnows, fish eggs, and vegetation (Baxter and Simon 1970). Shovelnose sturgeon are typically sampled from the mainstem of the Powder River and its major tributaries between the Montana border and Interstate 90 only from mid-May through late June, during what is presumed to be their spawning migration (WGFD 1991; 1998; 2006). Shovelnose sturgeon are regularly sampled in the mainstem of the Bighorn River from the confluence of the Nowood River downstream to Big Horn Lake (WGFD 2015, 2016). While spawning has never been observed, multiple instances of ripe males and females have been documented in the Powder River and Crazy Woman Creek (Smith and Hubert 1989) and in the Bighorn River (WGFD 2016). Shovelnose sturgeon may live up to 40 years (Brown 1971).

Habitat

Shovelnose sturgeon prefer habitat at or near the bottom of large, unregulated, turbid rivers with relatively warm water that is essentially free of chemical contaminants. Flowing water over sand or fine gravel substrates is preferred. Given its migratory tendencies, unregulated flows and the absence of fish barriers that allow unrestricted access to very long segments of rivers are critical to the completion of the sturgeon's lifecycle (Baxter and Stone 1970; Pflieger 1997).

Problems

- Infrastructure that creates physical barriers or changes water quality by making water cooler and less turbid can negatively affect the distribution, abundance, recruitment, growth, and survival of the species.
- Lack of connectivity resulting from low flows or other physical barriers (natural and man made) may significantly limit access to upstream habitats.
- There are no published reports that indicate fish passage features can be built into dams to allow shovelnose sturgeon to move up and downstream past the dam due to the fish's inability to move very high off the river bottom or jump.

Conservation Actions

- Use radio telemetry to identify spawning sites and seasonal habitat use of shovelnose sturgeon in the Bighorn and Nowood rivers. Determine if natural recruitment is occurring in the Bighorn River system by modeling embryo development rates and drift distances. Validate model results with larval drift surveys.
- Revaluate annual stocking of fry and fingerling shovelnose sturgeon in the Bighorn River based upon the presence or absence of natural recruitment in the system. If successful recruitment is documented, discontinue regular stocking efforts.

Monitoring/Research

Monitor use of the Kendrick Diversion dam bypass channel on Clear Creek, a tributary to the Powder River, by large-bodied, migratory fishes.

Continue periodic monitoring of the shovelnose sturgeon population that spawns in the lower reaches of Crazy Woman Creek and the Powder River below the confluence of this tributary.

Continue and expand upon surveys to determine recruitment, growth, and survival of stocked shovelnose sturgeon in the lower Bighorn River mainstem and tributaries.

Use radio telemetry to determine seasonal distribution and habitat use in the Bighorn River system. Use these data to develop an annual monitoring protocol.

Continue and expand upon larval drift sampling to document presence or absence of natural recruitment.

Recent Developments

A radio telemetry project was initiated in 2015 to identify spawning sites and determine seasonal habitat use of adult shovelnose sturgeon in the Bighorn River system. The goal of this project is to determine if there is an adequate length of fluvial habitat between the spawning sites and the reservoir to allow for natural recruitment to occur (see Braaten et al. 2008 and Guy et al. 2015). Data needed to model embryo drift and larval settlement of shovelnose sturgeon in the Bighorn River (water temperature and river velocities) began in 2015 and will be expanded upon in 2016 and 2017.

Completed construction of the Kendrick Diversion dam bypass channel on Clear Creek, 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. No shovelnose sturgeon were documented using the Kendrick bypass channel during annual surveys in 2011 - 2014 (WGFD 2015).

References

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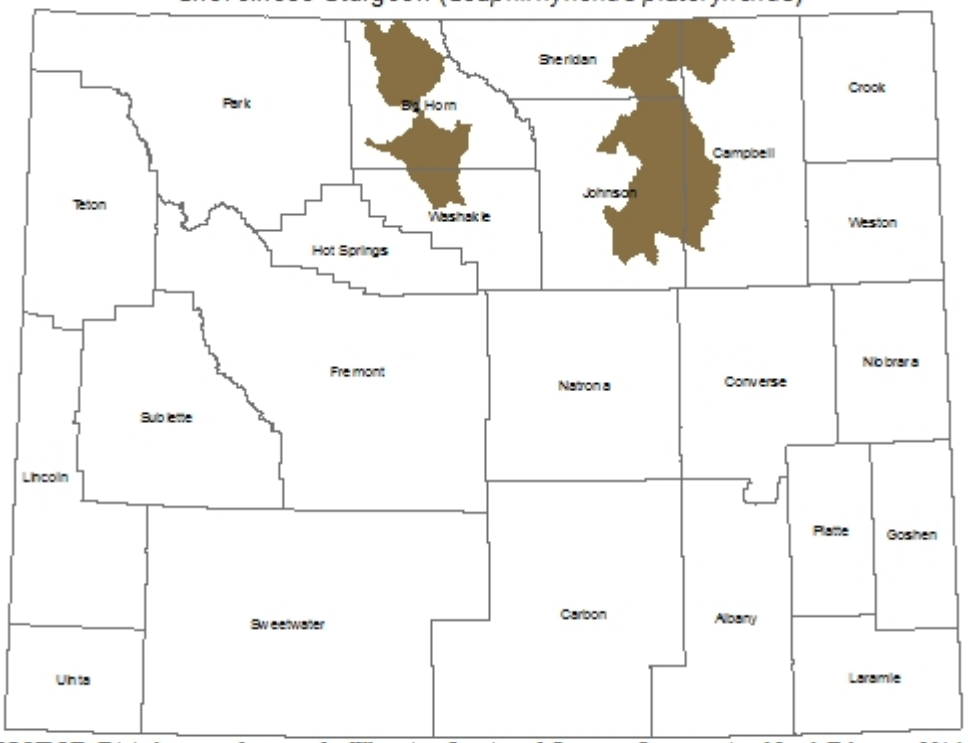
Shovelnose Sturgeon (*Scaphirhynchus platorynchus*)



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.