Burbot - Lota lota

Abundance: Rare

Status: NSS3 (Bb) NatureServe: G5 S3S4

Population Status: Population size and distribution restricted within native range.

Limiting Factor: Habitat: habitat fragmentation due to irrigation diversions and dams has impacted populations. Population numbers and length structure are thought to be vulnerable to angling pressure.

Comment: Changed from NSS2 in 2005 due solely to changes in the matrix.

Introduction

The burbot is the only member of the Gadiforme order that spends its entire life in freshwater. Burbot spawning behavior is unique among freshwater fishes, spawning mid-winter under the ice. They have a strong association with the bottom of lakes and are described as benthic (McPhail and Paragamian 2000). Burbot have a strong preference for cold water and avoid water temperatures exceeding 55 degrees Fahrenheit (Hackney 1973). They are most active during the winter and in Wyoming they become nearly dormant during the summer months. Burbot are voracious predators. Miller (1970) observed that large burbot fed primarily on non-game fish in lakes and reservoirs in Wyoming. Wyoming represents the southwestern extreme of burbot distribution in North America. Burbot historically occurred in the Wind-Bighorn River drainage and the Tongue (Baxter and Stone 1995) and the Powder (Hubert 1993) rivers. Currently, burbot populations within their native range in Wyoming are found only in the Wind-Bighorn River and lakes and reservoirs within the watershed. Illegal introductions of burbot have occurred within the Green River drainage and the species has become well established in Big Sandy and Green rivers, as well as Fontenelle, Big Sandy, and Flaming Gorge reservoirs.

Habitat

The burbot lives in cold, deep lakes and large rivers. Burbot are cover oriented and prefer areas with rock substrate having numerous crevises or with aquatic vegetation (Robins and Deubler 1955; Edsall et al. 1993; Dillen et al. 2008). Lentic spawning occurs during January or February over gravel substrate in shallow, near-shore waters (Boag 1989; McCrimmon 1959) or over reefs or shoals in deeper water (McCrimmon 1959). Burbot may also ascend tributary streams to spawn (Bjorn 1939).

Problems

- Burbot population densities and length structures are vulnerable to high angling harvest rates in some areas within their native range.
- In the long term, trends in increased global temperatures could negatively impact the habitat and persistence of burbot in waters that may already have temperatures that are on the edge of the species preferred limits.
- Habitat degradation (e.g., dewatering, loss of connectivity) and introduced species pose the most serious threats to this species' persistence.
- This species appears to be expanding outside of its native range and could be adversely impacting native fish populations through competition and predation.

Conservation Actions

- Isolate sources of production in the Bighorn-Wind watershed by examining drift/migration patterns.
- Continue efforts to maintain flows and connectivity.
- Continue to collaborate with Shoshone and Arapaho tribes and the USFWS to gain better understanding of factors influencing burbot populations within the Wind River drainage.

Monitoring/Research

Investigate burbot losses to irrigation diversion canals and determine sources of entrained burbot and estimate rates of entrainment.

Continue established trend monitoring programs at Boysen Reservoir and Torrey Lake.

Investigate the utility of bioenergetics modeling to help explain predator-prey relationships and identify management options for enhancing the availability of prey for burbot (Abrahamse 2009).

Recent Developments

Abundance and structure of burbot populations in the Wind River drainage were summarized in a masters thesis at the University of Wyoming Cooperative Fish and Wildlife Research Unit (Abrahamse 2009).

Microchemisty profiles of otiliths collected throughout the Wind River drainage are currently being analyzed to determine drift/migration patterns of burbot in the watershed. The study is being conducted by Scott Carleton a post-doctoral researcher at the University of Wyoming.

In 2006, the statewide creel limit within the burbot's native change was decreased from 6 fish to 3 fish.

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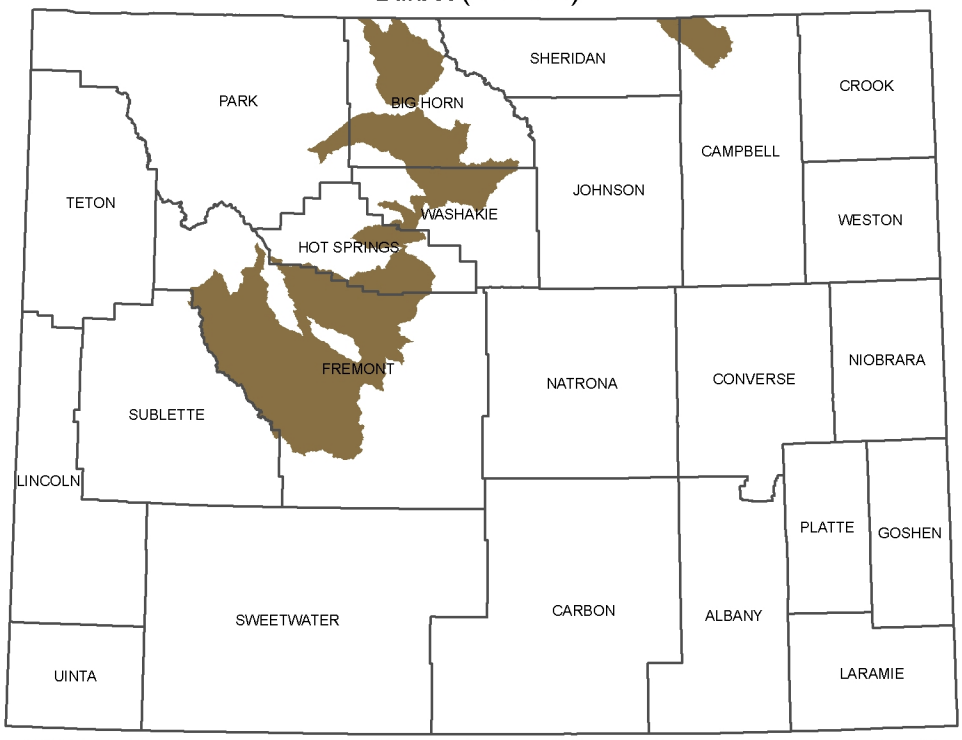
Burbot (*Lota lota*)



SOURCE: Digital maps of ranges for Wyoming Species of Greatest Conservation Need: April 2010. Wyoming Game and Fish Department. Note that brown indicates the current known range of the species.