Burbot
Lota lota

Actinopterygii — Gadiformes — Gadidae

CONSERVATION STATUS / CLASSIFICATION

Rangewide: Secure (G5)
Statewide: Critically imperiled (S1)
ESA: No status
USFS: Region 1: Sensitive; Region 4: No status
BLM: Regional/State imperiled (Type 3)
IDFG: Game fish; Endangered

BASIS FOR INCLUSION

State–listed as Endangered; small, declining population with a limited distribution in Idaho.

TAXONOMY

The burbot was originally described by Linnaeus in 1758. At various times the European and North American populations were considered separate species or subspecies, however recent authors have not used the subspecies designations (McPhail and Paragamian 2000). Currently, Nelson et al. (2004) places the genus Lota in the family Gadidae.

DISTRIBUTION AND ABUNDANCE

Burbot have a circumpolar distribution in northern latitudes with wide spread distribution in Canada and northern Asia and Europe. In Idaho, they are only found in the Kootenai River drainage. Current population estimates of burbot entering Idaho in the fall and winter average <25/year.

POPULATION TREND

Although common in large portions of their range, the Kootenai population has declined significantly in past years. In the 1960s, the winter fishery on the Kootenai River was thought to have exceeded thousands of pounds of fish in both the commercial and sport harvest. In 1994, IDFG only caught 8 fish for an average of 1 fish per 111 net days (Paragamian et al. 2000).

HABITAT AND ECOLOGY

Adult burbot primarily inhabit deep lakes or cool rivers or reservoirs in the southern edges of their range (McPhail and Paragamian 2000). In lakes, burbot are strongly associated with the bottom and prefer temperature range of 10–12 C (50–54 F) and normally remain below the thermocline. Burbot can attain lengths of 99 cm (39 in) and weigh 8 kg (17 lbs) but most are smaller in the 1–3 kg (2–7 lbs) range. Southern populations of burbot mature at 3–4 years of age and females may not spawn each year. Although burbot can spawn in lakes and rivers, the population entering Idaho is primarily a spawning population from Kootenay Lake in British Columbia, which leaves

the lake in the late fall and early winter to spawn in the Kootenai River or tributary streams in Idaho. In rivers, burbot spawn in low velocity areas in main channels or in side channels behind deposition bars. The preferred substrate is fine gravel, sand or silt. Eggs are broadcast above the substrate. The semi–buoyant eggs may drift but eventually settle into the substrate. Spawning is generally high synchronized over a short 2–3 week time period when water temperatures are low (1–3 C [34–39 F]). Burbot primarily feed at night, with fry feeding on zooplankton and small aquatic invertebrates. As they grow, their diet changes to include fish. As adults more than 80% of their diet is likely to be fish.

ISSUES

The altered flows associated with hydropower and flood control below Libby Dam on the Kootenai River has resulted in higher winter velocities, which may restrict upstream migration of the weak swimming burbot (Paragamian et al. 2000). Daily flow fluctuations for peak power generation may also flush eggs from spawning areas. Nutrient settling above Libby Dam has reduced burbot productivity of the river. The development of agricultural lands has resulted in a loss of habitat for juvenile fish with the elimination of slough backwaters by the diking of the river channel to prevent flooding.

RECOMMENDED ACTIONS

To restore natural reproduction of Kootenai River burbot, the adaptive operational guidelines designed to restore Kootenai River white sturgeon will also need to address winter flow requirements for burbot migration and spawning needs. The Army Corps of Engineers, Bonneville Power Administration, U.S. Fish and Wildlife Service, National Marine Fisheries Service, First Nations, BC Hydro, appropriate states, and Canada will need to develop coordination on information needed to plan and implement annual Kootenai River burbot recruitment flow proposals. In addition, monitoring will be needed to evaluate effects of flow augmentation on burbot. A nutrient enrichment program has been started for the Kootenai River in Idaho. This will require monitoring and evaluation to determine if the program is beneficial.

Burbot

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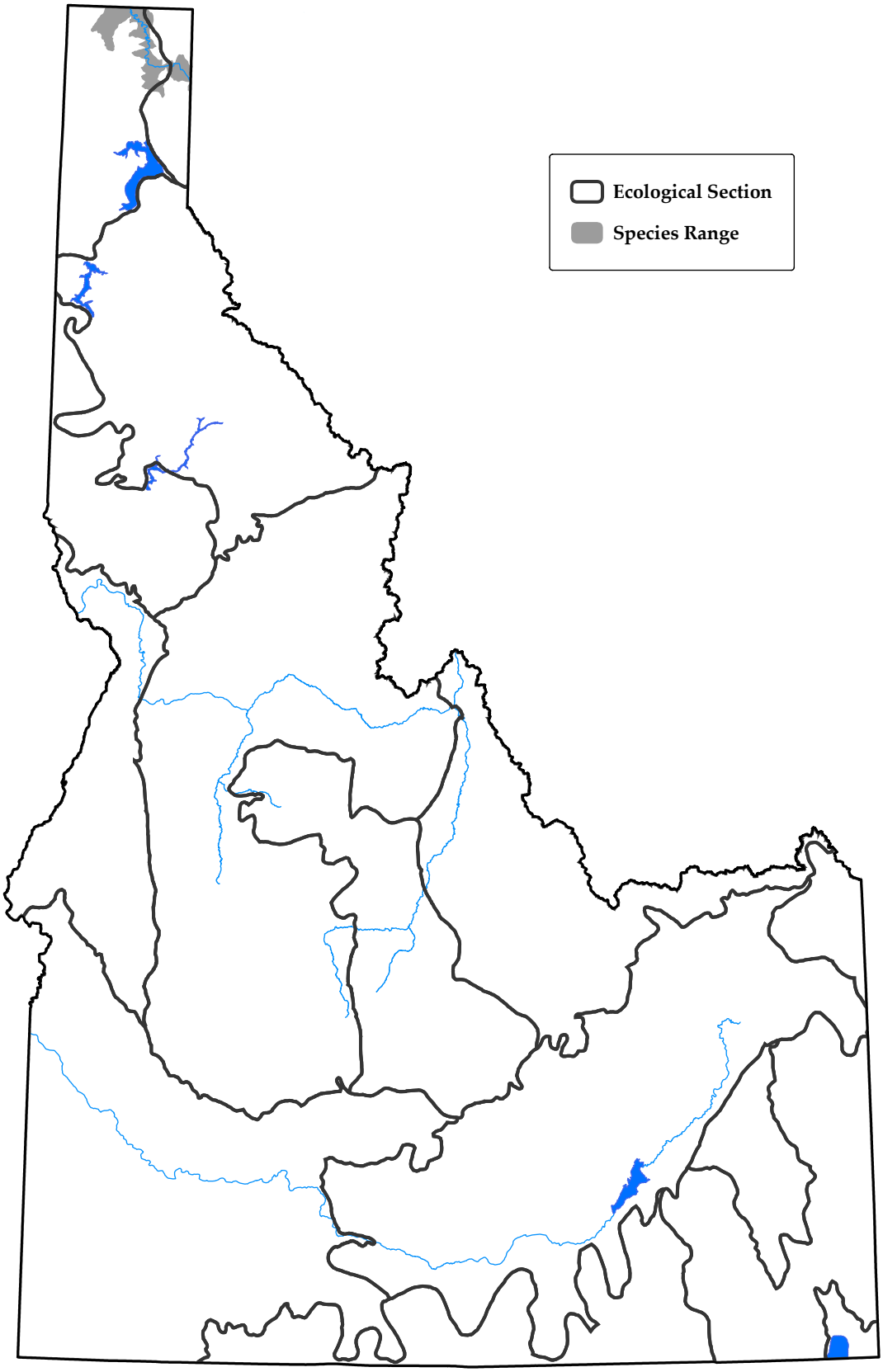

10 August 2005
Fish information is from Idaho Fish and Wildlife Information System, Idaho Deptartment of Fish and Game and displayed at the 6th code hydrologic unit.

0 20 40 80 Kilometers

0 20 40 80 Miles