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## Pacific Lamprey

### *Lampetra tridentata*

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Cephalaspidomorphi — Petromyzontiformes — Petromyzontidae

#### CONSERVATION STATUS / CLASSIFICATION

Rangewide: Secure (G5)  
Statewide: Critically imperiled (S1)  
ESA: No status  
USFS: Region 1: Sensitive; Region 4: No status  
BLM: Rangewide/Globally imperiled (Type 2)  
IDFG: Endangered

#### BASIS FOR INCLUSION

State-listed Endangered; low and declining populations.

#### TAXONOMY

Populations were split at one time into *Entosphenus tridentatus* (Columbia River and north) and *E. ciliatus* (Klamath River and south). However, this division is no longer recognized (Scott and Crossman 1973). Nelson et al. (2004) elaborated on the current use of the genus *Lampetra*.

#### DISTRIBUTION AND ABUNDANCE

This species is found on the Pacific Coast from Baja California to the Aleutian Islands and Hokkaido, Japan (Simpson and Wallace 1982). In Idaho, the Pacific lamprey was originally distributed in all drainages of the Snake River below Shoshone Falls, except the Palouse River. It is now restricted to the Clearwater and Salmon river drainages and tributaries to the Snake River below Hells Canyon Dam.

The Pacific lamprey was once abundant in Idaho waters and used by native peoples for food. Juveniles were commonly seen in Idaho streams in the 1960s. The species is currently irregularly distributed in the Clearwater drainage (Cochner and Claire 2003). The size structure of juveniles (ammocoetes) indicates declining recruitment.

#### POPULATION TREND

Counts of adults returning to Idaho and eastern Oregon at Ice Harbor Dam in the lower Snake River have decreased from >40,000 to <1000 fish since the dam was built (Close et al. 1995). During 2000–2005, counts of adults passing upstream over Lower Granite Dam into the Snake River basin have ranged from 25–282 (Columbia River DART 2005). Due to low and declining populations, the Pacific lamprey is classified as endangered by the Idaho Department of Fish and Game (IDFG 2001b). In January 2003, this species and 3 other lamprey species were petitioned to be listed as threatened or endangered species under the Endangered Species Act. USFWS denied emergency protection for any of the 4 species but will start formal consideration during 2005.

## **HABITAT AND ECOLOGY**

Adults spawn in small freshwater streams in spring and die after spawning. The ammocoetes hatch, drift downstream and burrow into silt or sand in areas having low-velocity current where they live 5 years or more as filter feeders. During spring freshets, ammocoetes transform into macrothemia at 150–250 mm (6–10 in) and begin their migration downstream to the ocean. This species spends at least 1.5 years in the ocean as a fish parasite before beginning upstream migration into freshwater in late summer. Individuals spawn the following spring. The species is prey for a variety of fish, birds, and mammals (Close et al. 1995) and may have been the major food source for the white sturgeon in Idaho.

## **ISSUES**

The Hells Canyon dam complex on the Snake River and Dworshak Dam on the North Fork Clearwater River has eliminated access to nearly half of the historic habitat in Idaho. Eight dams and reservoirs are migration barriers in the Snake and Columbia rivers. Systems designed to improve survival of salmonid smolts migrating downstream can be lethal to Pacific lampreys. Ammocoetes can be entrapped in screens, and transportation of juveniles using barge tanks is particularly stressful because tanks do not have substrates for hiding and resting. Returning adults may not negotiate the fish ladders as well as other anadromous species.

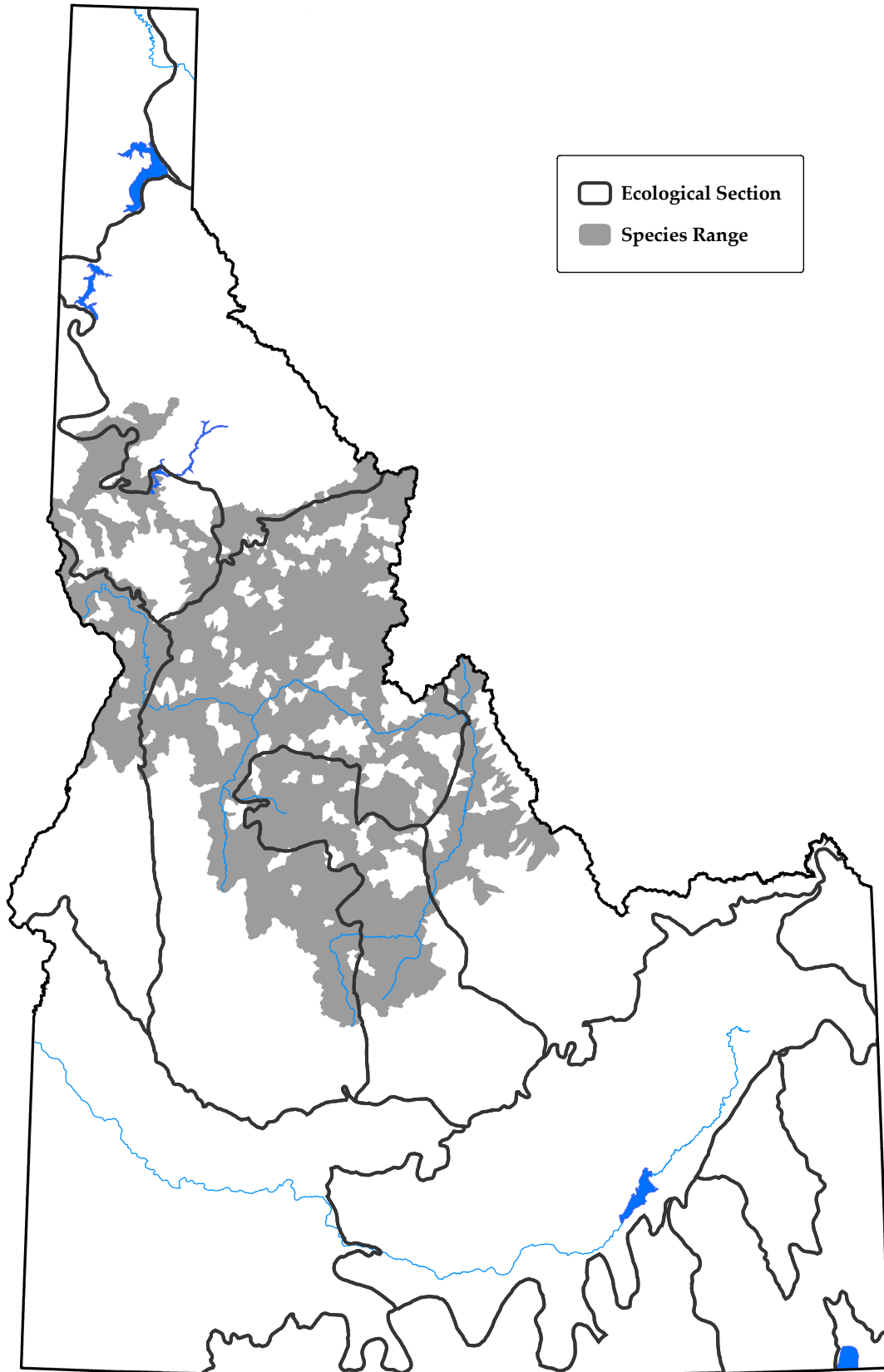
Spawning and larval development occurs in streams having high water quality, woody riparian vegetation and overhanging banks (Cochnauer and Claire 2003). Degradation of habitat conditions associated with mining, livestock grazing, stream channelization, logging, road construction, and urbanization have been identified as the most important issues affecting distribution in accessible habitat. Loss of riparian cover can increase water temperatures and reduce stream productivity. Culverts with a water drop can prevent adults from returning to spawning and rearing streams.

## **RECOMMENDED ACTIONS**

Population and habitat trend data are needed. Determine the limiting factor(s) for lamprey in the Hells Canyon Reach of the Snake River. Continue the basin-wide monitoring program in Idaho. Improvement of stream passage in Snake and Columbia rivers used during migration is important for population viability. Efforts are also needed to maintain or improve passage and water quality in tributary streams where larvae develop. In particular, sediment delivery to spawning tributaries must be reduced, and riparian vegetation should be protected and enhanced in occupied habitat.

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

