

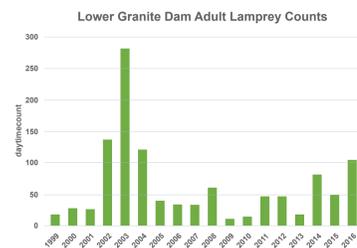
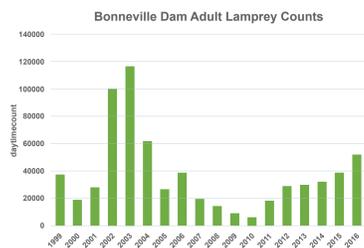


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Lamprey, White Sturgeon, Bull Trout

Pacific Lamprey

Pacific lamprey belong to a group of eel-like fishes and are a significant cultural and subsistence resource for tribal communities. Lamprey begin their life in fresh water, migrate to the ocean and return to fresh water to spawn. Each stage of their lifecycle comes with its own survival challenges. Since lamprey larvae spend years buried in the soft sediment of stream beds, they are especially susceptible to physical disturbance, dewatering events and contamination. Pacific lamprey populations have declined throughout their west coast range, including in the Columbia River Basin. They are considered a Species of Concern.



*Daytime counts at Bonneville and Lower Granite dam are useful as an index only: many lamprey pass these dams at night and through other upstream passage routes.

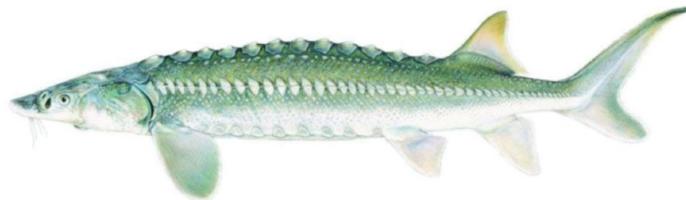
Impacts:

- ▶ Habitat degradation
- ▶ Ocean conditions
- ▶ Passage barriers
- ▶ Predation
- ▶ Reduced flows
- ▶ Water quality

Conservation actions:

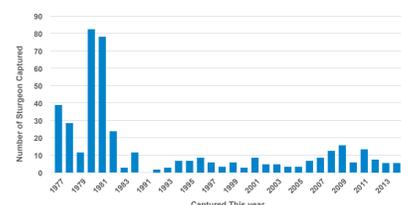
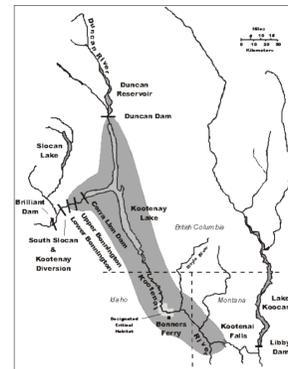
- ▶ Genetics monitoring
- ▶ Passage improvements
- ▶ Propagation research
- ▶ Tagging studies
- ▶ Translocation

Kootenai River white sturgeon



Kootenai River white sturgeon have been genetically isolated from other white sturgeon in the Columbia River system for approximately 10,000 years by the natural impassable barrier of Bonnington Falls in British Columbia, Canada. These long-lived fish live in a 167 river mile stretch of the Kootenai River from Kootenai Falls, Montana — located 31 river miles below Libby Dam — downstream to Kootenay Lake in British Columbia. Approximately 45 percent of their range is located in British Columbia.

They live to approximately 100 years, with females in the Kootenai River reaching reproductive maturity in their late twenties to early thirties. The wild Kootenai River white sturgeon population is comprised mainly of older adults, and significant larval recruitment has not occurred since the 1970s. In 1994, the fish was listed as endangered under the Endangered Species Act.



The current natural population of wild Kootenai River white sturgeon consists primarily of an aging cohort of large, old fish. This graph represents the number of wild juvenile white sturgeon captured annually in the Kootenai River between 1977 and 2014.

Impacts:

- ▶ Altered Hydrograph
- ▶ Altered Thermograph
- ▶ Habitat degradation
- ▶ Reduced nutrients and river productivity

Conservation actions:

- ▶ Conservation Aquaculture
- ▶ Flow augmentation and water temperature management at Libby Dam
- ▶ Habitat restoration
- ▶ Harvest restriction

The wild population of Kootenai River white sturgeon is in decline due to an aging population and low juvenile survival. Although the specific causes of low juvenile survival remain unclear, years of research suggest that most mortality occurs between egg and larval stages. The hatchery program continues to be crucial for the longevity of the species.

Bull trout



Bull trout are members of the salmonid family (Salmonidae) which include salmon, trout, grayling, whitefish and char. Bull trout exhibit both resident and migratory life cycles. Compared to other salmonids, bull trout have more specific temperature requirements. They occur in cold water streams, and are rarely found in waters where temperatures exceed 15.0 to 17.8°C (59 to 64°F). Once found in about 60 percent of the Columbia River Basin, today bull trout occur in less than half of their historic range. Bull Trout were listed as threatened under the Endangered Species Act in 1998.

Impacts:

- ▶ Competition with and predation by non-native fish
- ▶ Habitat degradation
- ▶ Migration barriers
- ▶ Overfishing and poaching
- ▶ Water temperatures
- ▶ Water quality

Conservation actions:

- ▶ Controlling non-native fish populations
- ▶ Habitat improvements
- ▶ Harvest reductions or prohibitions
- ▶ Instream flow enhancement
- ▶ Land use modifications
- ▶ Passage improvements
- ▶ Silt and erosion reduction
- ▶ Temperature improvements
- ▶ Water quality improvements

