

Kootenai River White Sturgeon Improvements

The white sturgeon (*Acipenser transmontanus*) in the Kootenai River of Montana, Idaho and British Columbia, are isolated from other white sturgeon and are genetically unique. Their numbers have been declining over the past three or more decades, and they have not successfully reproduced in the wild in meaningful numbers since the early 1970's. This has resulted in an aging population of remaining sturgeon without any younger wild-produced fish to sustain the population when the older fish eventually die. In September 1994, the Kootenai River population of white sturgeon was declared endangered. The change in annual river flow patterns since 1972, when [Libby Dam](#) was built by the Corps of Engineers in Montana, is thought to be one major factor contributing to reduced reproductive success of these sturgeon. Libby is a storage dam and traditionally has used the spring runoff to refill Lake Kootenai for the summer after the wintertime drawdowns for flood control and power generation. Lake refill benefits recreation on the reservoir and provides water for power production.

In their natural environment, sturgeon have adapted to high spring flows. Prior to construction of Libby Dam, the average annual peak flow at Bonners Ferry was about 75,000 cubic feet per second (cfs). Since Libby Dam became operational, the average annual peak flow has been about 35,000 cfs. Sturgeon spawning and migration keys in on the spring snowmelt period. As flows increase and water temperatures rise in the spring, white sturgeon migrate upstream from Kootenai Lake (the Canadians spell it with a "y") to the spawning reach located between Bonners Ferry and Shorty's Island. Scientists believe that the alteration in springtime river conditions resulting from Libby Dam operations plays a role in the poor reproductive success of sturgeon since dam construction.

There are two Corps fish biologists on the Kootenai River White Sturgeon Recovery Team, a multiagency group which is chaired by the US Fish and Wildlife Service (USFWS). The recovery team has prepared a [recovery plan](#) for the sturgeon that contains strategies and criteria for downlisting the fish from the endangered status. Besides flows, the Recovery Team has looked into factors

such as contaminants, nutrient scarcity, habitat conditions, and predation that may be further affecting the success of the sturgeon's reproduction.

The Corps participates on the International Kootenai(y) Ecosystem Recovery Team, an interagency technical group which acts as a clearinghouse for technical information and ecosystem management actions.

The Corps is also active with the Kootenai River Basin Steering Committee, another multiagency group, which coordinates technical efforts and provides flow requests during the spring and summer. Generally, two fish biologists and a water management specialist represent the Corps on the Steering Committee.

We also have continual communication with the Kootenai Valley Resource Initiative, based in Bonners Ferry. This community-based group is very active in addressing resource issues that affect them. The KVRI works with government agencies who manage those resources, and with Congressional staffs.

Under the Biological Opinion of 2006 from the USFWS concerning operation of Libby Dam, there are several actions the Corps is undertaking to avoid jeopardy to sturgeon in the Kootenai:

Storage of water and provision of sturgeon flows

Since 1992, by purchasing some of the power elsewhere, the Bonneville Power Administration (BPA) has helped the Corps store water behind Libby Dam in the winter so that it can be released in the spring to help sturgeon spawning without jeopardizing refill. These experimental flows have changed from year to year according to water availability and our increasing understanding of the requirements of the sturgeon. Experimental flow and temperature information for 1991-2003 is available [here](#).

Sturgeon reproductive activity has been monitored by the Kootenai Tribe of Idaho and the Idaho Department of Fish and Game under Bonneville Power Administration funding. The flow

tests have resulted in some sturgeon spawning, but have not produced meaningful numbers of young sturgeon. Much more information is needed about how to get high levels of spawning, and how to get the eggs and fry to survive. An adaptive management strategy is being used to make use of all available data each year to determine what flows and other provisions are needed to aid the sturgeon.

Conservation Aquaculture Program

The Kootenai Tribe has also maintained a conservation aquaculture program with BPA funding of their hatchery at Bonners Ferry. They release sturgeon juveniles annually to provide short-term protection against extinction of the Kootenai sturgeon population. The hatchery also supplies sturgeon larvae and eggs for other release experiments to help our understanding of early life stage requirements, which in turn informs our recovery actions.

VARQ Flood Control

Variable Discharge (or VARQ, with Q representing engineering shorthand for discharge) flood control is an alternative that takes advantage of operating flexibility to better assure reservoir refill in medium-runoff years. It helps with refill while we provide sturgeon flow augmentation in spring, but its most tangible benefit to fish is providing water for flow augmentation for Columbia River salmon in the summer. An [Environmental Impact Statement](#) has been prepared, and was final in April 2006. In light of new information, and high-flow events of spring 2006, no Record of Decision has been published concerning long-term implementation of VARQ, to allow completion of any further needed documentation. Based on an [Environmental Assessment and Finding of No Significant Impact](#) in 2002, the Corps has implemented VARQ at Libby on an interim basis pending the completion of the EIS.

Kootenai Valley Seepage Study

In the Kootenai Valley near Bonners Ferry, Idaho, local farmers have expressed concerns that high river levels can elevate groundwater levels and adversely affect agricultural production. The Kootenai Valley Agricultural Seepage Study has evaluated the economic impacts to agriculture under a variety of different Libby Dam operations. The study involves analysis of current agricultural practices in the valley, analysis of how crops respond to elevated

groundwater levels, computer simulation of groundwater levels, and analysis of how simulated groundwater conditions affect the economic bottom line of the Kootenai River Valley. Results were documented in the environmental impact statement published in 2006 (see VARQ Flood Control, above).

Kootenai River Sturgeon Habitat Improvement Pilot Project, and Kootenai River Habitat Improvement Projects

Spawning of Kootenai River white sturgeon over unsuitable substrate (sand and silt) seems to be adversely affecting successful sturgeon recruitment. Physical modifications are proposed to provide suitable hard substrate where sturgeon now spawn. There is concern that changes made in the channel bottom may raise water surface elevation or cause additional scouring of levees. The work in the Kootenai River Habitat Pilot Project, at Shorty's Island, will evaluate one proposed solution to this problem to better ensure success of full-scale implementation of habitat improvement measures and to determine if water surface elevation and scouring concerns are warranted. An effort to plan full-scale habitat modification is underway.

Libby Dam to Troy, MT, Channel Capacity

The Libby Flood Control and Hydropower Project was authorized to protect Bonners Ferry, Libby, Troy and the Kootenai Valley against the floods of 1894 and 1948. This project was commissioned to evaluate and document the channel capacity of the Libby Dam to Troy reach of the Kootenai River based on current development and channel characteristics.

Bonners Ferry Flood Level Assessment

The Libby Flood Control and Hydropower Project was authorized to protect Bonners Ferry, Libby, Troy and the Kootenai Valley against the floods of 1894 and 1948. This project has evaluated current development, levee conditions, and dam operations to determine the flood level at Bonners Ferry under the existing conditions.

Kootenai River White Sturgeon Section 7 Consultation

Because of new information about sturgeon, as well as designation of critical habitat under the Endangered Species Act since 2000, the

Corps and BPA reconsulted with the USFWS concerning effects of Libby Dam on sturgeon. A new biological opinion was provided by the USFWS in February 2006, and is now in effect. Link [here](#) to the biological opinion and the Corps' 2006 Record of Consultation and Statement of Decision.

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