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# UPPER COLUMBIA WHITE STURGEON RECOVERY INITIATIVE



...on the brink



**For more than a century**, the upper Columbia River white sturgeon has been swimming against the currents of change. Once abundant, white sturgeon have suffered a serious decline in numbers due to environmental change. Now the Initiative, a coalition of transboundary partners, is working to bring this ancient fish back from the brink.

The Upper Columbia White Sturgeon Recovery Initiative (UCWSRI) began in 2000 with an agreement signed by Fisheries

and Oceans Canada, BC Environment, BC Fisheries and BC Hydro. The Initiative brings the combined interests of over 25 partners, including government, First Nations and American tribes, industry, environmental groups and others to the challenge of building a healthy future for the white sturgeon in the upper Columbia River in British Columbia and across the border in the United States.

# Upper Columbia White Sturgeon

As BC and the western states' largest freshwater fish, reaching a maximum size of six metres (19 feet) and 800 kilograms (1,800 pounds), the white sturgeon can live for more than a century. Its familiar name derives from the white colouring along its sides and belly, but its scientific name, *Acipenser transmontanus*, means "sturgeon across the mountains."

Fossil records indicate that the sturgeon family has been around for at least 175-million years. It is equipped with four barbels or "whisker-like sensors," for detecting food, which is sucked into a toothless mouth. The torpedo-shaped body, large dorsal fin, flat head, and bony plates along its length resemble the fossils of its ancestors.

## Geographic Range

The upper Columbia River white sturgeon is found in Canadian and US portions of the Columbia River. Two populations are of immediate concern to the Initiative: in the Columbia River from the Hugh L. Keenleyside Dam to the Grand Coulee Dam, and in the Arrow Lakes Reservoir. Smaller, remnant populations exist in the Revelstoke Reservoir and part of the Kinbasket Reservoir around Mica Dam (Big Bend).

The upper Columbia River populations are genetically distinct from sturgeon in the Kootenay River system, and thus provide an important contribution to biodiversity in the Columbia River Basin. Their role in First Nations traditional and modern culture is also important.

## Threats to Survival

Young sturgeon are prey to a variety of fish, but adults have no predators other than humans. Although the upper Columbia River watershed is closed to fishing for white sturgeon (including catch-and-release), the challenge remains to recover diminishing populations and prevent their extinction.

The causes of the white sturgeon's decline are not fully understood, but in the last 125 years, human development, construction of hydroelectric dams, changes in flow patterns, loss of habitat, introduction of exotic species and harvesting in the Columbia River have led to its decline. While spawning has been recorded, young sturgeon are seldom found, indicating these fish are not successfully surviving to adulthood.

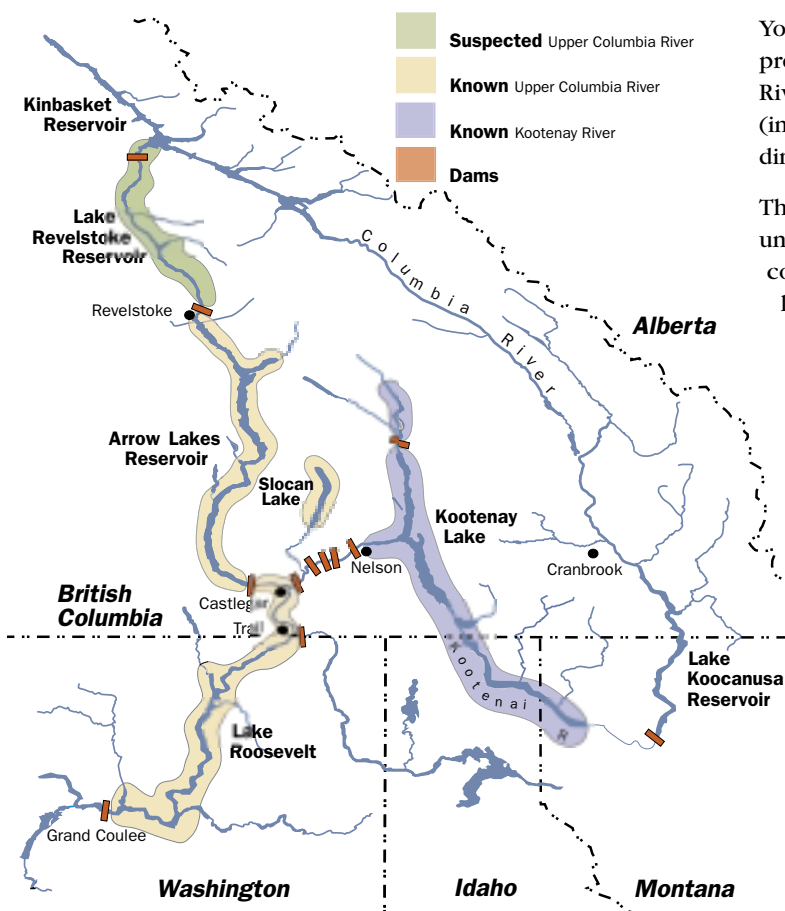
*"We hope that a combination of water management, habitat restoration and conservation aquaculture can be used to ensure the long-term survival of upper Columbia River white sturgeon."*

*[Colin Spence, Recovery Team Co-Chair, December 2003]*



Five-month old juvenile upper Columbia River white sturgeon rearing at sturgeon conservation hatchery.

## Upper Columbia White Sturgeon Distribution



Province of British Columbia  
Fisheries and Oceans Canada  
BC Hydro  
Columbia Basin  
Fish and Wildlife Compensation Program  
Habitat Conservation Trust Fund  
Government of Canada's  
Habitat Stewardship Program  
for Species at Risk  
Freshwater Fisheries Society  
of British Columbia  
Columbia Basin Trust  
Bonneville Power Administration  
Spokane Tribe of Indians  
Canadian Columbia  
Inter-tribal Fisheries Commission  
US Fish and Wildlife Service  
Columbia Power Corporation  
Washington Department  
of Fish and Wildlife  
Colville Confederated Tribes  
Celgar Pulp Company  
Teck Cominco Metals Ltd.  
(Trail Operations)  
Salmo Watershed Streamkeepers Society  
West Kootenay Naturalists  
Golder Associates  
Revelstoke Rod and Gun Club  
Columbia-Kootenay Fisheries  
Renewal Partnership  
USGS Western Fisheries Research Center

## Current Status

Recent estimates put the upper Columbia River basin population at 1,400 adult white sturgeon. The majority of these white sturgeon are greater than 30 years of age, suggesting a population of aging fish with relatively few young to replace the old. This puts in question reproductive success, and survival of young fry.

White sturgeon are "endangered" according to the Committee on the Status of Endangered Wildlife in Canada. Provincially, they have been Red Listed as a "critically imperiled" species.

## Who is Involved?

At the heart of the Initiative are three core teams that bring the necessary skills, expertise and community perspectives to the Recovery Plan, encouraging white sturgeon population growth in the upper Columbia River.

## Recovery Team, Action Planning Group and Sub-Committees

The Recovery Team is responsible for the development and implementation of the Recovery Plan, and is comprised of biologists, researchers, and other sturgeon experts from provincial, federal and state governments, BC Hydro, Bonneville Power Administration, Spokane Tribe of Indians, Colville Confederated Tribes and other groups. Recovery is a shared Canada-US goal, so the team includes members from Washington and Oregon States as well as British Columbia.

The Recovery Team completed the Initiative's first Recovery Plan and Technical Appendices in November 2002. The plan provides a summary of the biology of white sturgeon, and factors leading to the decline in the upper Columbia River area. This document, which includes existing conservation measures and recommendations for recovery, is available for viewing on our Web site: [www.uppercolumbiasturgeon.org](http://www.uppercolumbiasturgeon.org). Since completion of the Recovery Plan, the Project Management Sub-Committee, a sub-group of the main Recovery Team, was formed to implement projects and contracts approved by the Recovery Team.

The public-based Action Planning Group (APG) is responsible for developing a common vision and public support for sturgeon recovery, providing information and feedback on recovery operations, informing the public and seeking funding for recovery projects. Members of this group represent a range of interests including federal, provincial and local governments, First Nations, public and industrial stakeholders, and US regulatory and tribal agencies.

The APG reviewed and accepted the Recovery Plan over the fall-winter of 2002. Since then, members actively consult with their representatives, as well as First Nation communities, to gain support of people and organizations that have played a part in the upper Columbia River white sturgeon's decline. This group also assists the Recovery Team by assessing the economic and social feasibility of project plans. An active sub-group of the APG, the Communications Sub-Committee, assists with public outreach and education about white sturgeon and the Initiative.

*... "helping hands of ancients of the deep"*



Recovery Team members discuss recovery planning strategies during technical meeting in Nelson, BC.



Initiative team members prepare to land a large adult white sturgeon for biological examination.

# Research Update

During the 2003-2004 funding year, over 30 projects were launched or continued from the previous years' work.

- At Wardner, BC near Cranbrook, the Upper Columbia Sturgeon Conservation Hatchery provides adult holding, spawning, incubation and rearing facilities for the Initiative's aquaculture component. Hatchery staff were able to successfully spawn two adult white sturgeon females with five males in July and August 2003, resulting in six families totaling about 13,500 juveniles. The adult white sturgeon were captured from Waneta, Hugh Keenleyside and Fort Shepard eddies during May and June. Their juvenile progeny were tagged during early spring 2004 and will be released during May and early summer to upper Columbia River sites near Castlegar and Trail.

- The Sturgeon Contaminants Working Group, a collaboration of scientists and managers from throughout the Columbia River basin, assists the Initiative in evaluating the potential effects of contaminants on the transboundary reach population. Contaminant effects on white sturgeon can vary from acute to chronic. A number of factors make sturgeon particularly susceptible to exposure and bioaccumulation of contaminants. These include their long life span, late age at maturation, benthic habitats and position at the top of the food chain. A multi-year research project was designed to evaluate concentrations of different metals and organic compounds in Columbia River adult and juvenile white sturgeon tissues (eggs, sperm, liver, gonad, muscle). Contaminant concentrations will be correlated with embryo survival, hatch success, mortality associated with initiation to feeding and body deformities. Contaminant levels will also be correlated with sex steroid concentrations.

- Now in the fourth year of the Initiative, several researchers have undertaken studies to determine the distribution, habitat use and life history for upper Columbia River adult white sturgeon in Lower Arrow Lakes Reservoir. By late 2003, it was confirmed that suspected adult white sturgeon populations were indeed present in the system. The Lower Arrow Lakes Reservoir provides important feeding and overwintering habitat to the lakes population as individuals move through upper and lower basins.

- Juvenile monitoring programs, ongoing for over two years, have provided Canadian and American researchers with insight into the movements of one and two-year-old sturgeon, as well as their growth and survival. Monitoring between Hugh L. Keenleyside Dam, BC and Northport, WA by means of gillnet sampling, diver surveys, and the use of a mobile underwater camera has enabled the team to learn where the young fish are rearing and evaluate their status since they were released in 2002 and 2003. These investigations were carried out during the fall-winter periods of these years and resulted in field crews successfully locating hundreds of juvenile sturgeon over wintering in Waneta eddy, near the Canada-US border. Juveniles were in close proximity with several adult sturgeon, suggesting these young sturgeon are not prey for adult sturgeon.

## Juvenile Findings!

- Growth rates of recaptured upper Columbia white sturgeon juveniles greatly exceed that recorded in the Kootenay River system.
- Several one year-old juveniles released in May 2003 (average length 20 cms or 8 inches) were recaptured during October-November 2003 at nearly double their size, at 39 cms (16 inches.)
- Locating one and two year-old juveniles in recent months indicate conservation aquaculture is successful in progressing towards the goal of "injecting youth" in the aging sturgeon population.



Ron Ek, Senior Fish Culturist, Columbia Sturgeon Conservation Hatchery helps children release juvenile sturgeon to Columbia River, July 2003.



Jayna Pooley, Biological Technician, recaptures two-year-old Columbia River sturgeon during monitoring program, winter 2003.

## Ongoing Initiative Projects Include:

- Assessing the effects of industrial effluents entering the Columbia River on early life-stages of juvenile white sturgeon through exposure tests on larval sturgeon.
- Refining field capture and/or observation techniques to collect background data on locations and age classes in the Columbia River between Hugh L. Keenleyside Dam and Kettle Falls.
- Examining the feasibility of additional fish culture facilities to meet the Recovery program's sturgeon culture requirements over the longer term. Particular concerns include the need for a fail-safe facility and the desire to have additional fish culture work conducted on the US side of the border.
- Assessing fin and head deformities noted amongst upper Columbia juvenile white sturgeon during early weeks of development at the fish culture facility. Given the lack of evidence that these conditions appear in wild adults, this suggests such fish may not survive.

# How Can You Help?

Bringing the white sturgeon back to the upper Columbia River is a large and difficult undertaking. There are several things you can do to help the Recovery Initiative reach this worthwhile goal:

- **DON'T POLLUTE!** Avoid polluting streams and lakes with garbage, fuel, or other contaminants.
- **REPORT A POACHER!** Report any illegal white sturgeon captures to the Ministry of Water, Land and Air Protection's Observe, Record, Report Hot Line at **1-800-663-WILD** (9453), or on the US side, call the Hot Line at **1-800-477-6224** to access a Washington State Patrol Fish & Wildlife Enforcement Officer.
- **TELL US WHAT YOU KNOW!** What you know about the white sturgeon could be useful. Creel survey technicians and Initiative Recovery Team members invite you to pass this information along by phoning the Sturgeon Hot Line. Dead or dying sturgeon should be reported immediately. White sturgeon carcasses reported in the Columbia River in the past, particularly near Castlegar and Trail, BC, have provided valuable information.
- **EDUCATE YOURSELF!** Learning more about the overall Initiative and its Recovery Plan is vital. Team members will visit community groups to update the public about the Initiative and answer inquiries. Contact us through our Web site email - **info@uppercolumbiasturgeon.org** to request information.

- Monitoring white sturgeon spawning activity in the Waneta spawning area, the only known spawning area for white sturgeon in the Columbia River between Hugh L. Keenleyside and Grand Coulee dams. Similar monitoring is also ongoing in the Columbia River below Revelstoke Dam, where Arrow Lakes Reservoir sturgeon are known to spawn.
- Ongoing investigation of adult white sturgeon mortalities periodically observed in the upper Columbia River and encouraging the public to report carcasses found to the BC Ministry of Water, Land and Air Protection, BC Hydro or the Washington Department of Fish and Wildlife.
- Sampling and tagging of adult white sturgeon in Lake Roosevelt to identify important habitats and confirm that this group of sturgeon is subject to persistent recruitment failure.
- Providing public education and outreach to promote a conservation ethic while seeking in-kind and financial support for the Recovery Plan.

- **MAKE A DONATION!** Funding is critical to ensure the upper Columbia white sturgeon have a good chance of survival. Without it, Initiative programs can't continue. A number of organizations have committed financial and in-kind support towards the Recovery Initiative, and the list is growing. Your financial contribution will help support research, public education and other efforts. You can make a tax deductible donation to the Upper Columbia White Sturgeon Recovery Initiative to sponsor a project by contacting us through our Web site.



Upper Columbia White Sturgeon Recovery Initiative informational Display Booth, March 2004.

Cover Photo: Five-month-old juvenile upper Columbia River white sturgeon rearing at sturgeon conservation hatchery.

COORDINATION and WRITING Margaret Birch PHOTOS David R. Gluns and Upper Columbia White Sturgeon Recovery Initiative  
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## What's Inside [www.uppercolumbiasturgeon.org](http://www.uppercolumbiasturgeon.org)

The Initiative invites you to visit our Web site to access interactive slide tours, resource information, current events, links to partner sites and other reports about white sturgeon. The November 2002 Recovery Plan and Technical Appendices are also posted for viewing or downloading. With funding support from Bonneville Power Administration and Spokane Tribe of Indians the site was redeveloped through 2003 and launched during February 2004.

### **About White Sturgeon**—Interactive Slide Tours

- Initiative and Background
- Biology and Life History
- Kootenay Sturgeon Conservation Hatchery
- Education, Outreach and Youth
- Local Knowledge Perspectives

### **Recovery Efforts**—Recovery Initiative—An Overview Recovery Plan and Technical Appendices Partners and Leaders

### **Research**

Study Plans  
Initiative and Other Reports

### **Current Events**—Upcoming and Past Public Information

- Press Releases
- Creel Survey and Angler Awareness Program
- Newsletters
- Brochures



Selection of main pages for Initiative Web site – [www.uppercolumbiasturgeon.org](http://www.uppercolumbiasturgeon.org), February 2004.

### **Kids Corner**—Have Fun Learning More!

- Sturgeon Crossword and Word Search
- Print and Colour a white sturgeon
- Where's my sturgeon?

### **You Can Help**—Ways You Can Help Fishing Regulations

- British Columbia, Canada
- Washington State, USA

[FAQ's](#)

[Glossary](#)

[Links](#)

[Contact Us](#)

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# For more Information about the UCWSRI

Check out our Initiative **Web site** at [www.uppercolumbiasturgeon.org](http://www.uppercolumbiasturgeon.org)  
or contact us at [info@uppercolumbiasturgeon.org](mailto:info@uppercolumbiasturgeon.org)

Visit the staff at the Upper Columbia Sturgeon Conservation Hatchery, located on the same site as the Kootenay Trout Hatchery and side by side with the Kootenay Sturgeon Conservation Hatchery, near Cranbrook. The public are welcome to view displays in the facility's viewing area, and watch juvenile upper Columbia white sturgeon via the recently installed web camera! Please contact the hatchery office, **250-429-3214** for further fish culture information and their hours of operation.

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