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# Nechako White Sturgeon Recovery Initiative 2006-2007 Annual Report



NECHAKO **WHITE STURGEON**



RECOVERY INITIATIVE



From 1994 to 1999, the Province of British Columbia coordinated an intensive study of white sturgeon in the Nechako River. The study came to an unwelcome conclusion - the Nechako white sturgeon are in a critical state of decline. Unless something is done, and done soon, the great creatures will go extinct.

With so many stakeholders involved along the entire length of the Nechako River, it was imperative all interested parties gather together, to begin working as a team in recovery planning efforts. This was the beginning of the Nechako White Sturgeon Recovery Initiative. The NWSRI is ultimately responsible for identifying the reasons why white sturgeon declining in the Nechako watershed, and for the design and implementation of habitat protection, restoration and management options.

For more information on the NWSRI, please visit our website:

[www.nechakowhitesturgeon.org](http://www.nechakowhitesturgeon.org)

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## Messages from the Chairs

### Technical Working Group

I think that we have a lot to be proud of - we includes everyone from those who have taken a moment to think about what white sturgeon means to them - to active members of the technical and community working groups. Many individuals within and outside the Recovery Initiative as well as past and present members have taken steps to bring back Nechako White Sturgeon from the edge of a precipice. Recently, our collective efforts have been recognized by MLA John Rustad and his peers in the BC legislature. The community spirit that is now behind our efforts to save this amazing fish has resulted in significant progress in the last year. First, we increased our understanding of timing of spawning and the types of habitat used. We captured twelve mature spawners including four males and two females that contributed to first time- pilot hatchery program. Local First Nations released a higher percentage of sturgeon caught in food fisheries than ever before. Research into the habitat requirements and behaviour of larvae has resulted in a better understanding of larval sturgeon needs and we hope this will eventually lead to habitat restoration.

The TWG also undertook several other projects to better understand white sturgeon including adult and juvenile monitoring in different parts of the watershed. Finally in the fall of 2006, despite some very significant challenges we released, with substantial community support, close to 4200 juvenile sturgeon back to the Nechako River, moving back the clock that is leading these fish toward extinction. With the same level of commitment in the coming years, we can expect continued success.

Cory Williamson, Chair  
*Technical Working Group*  
BC Ministry of Environment

## Community Working Group

The Community Working Group had a busy 2006 marked by a successful public event to release over 1,000 juvenile sturgeon into the Nechako River at Vanderhoof. School students of all ages, toddlers, teachers, administrators, businesses, biologists and politicians all took part. Releasing juvenile sturgeon raised in a hatchery is a unique and thrilling experience and an important part of the Nechako White Sturgeon Recovery Strategy. In the coming year the Community Working Group will be working with volunteers, community partners and business to promote the Recovery Initiative goals and strategy as well as working with all groups to once again release more Nechako White Sturgeon into the Nechako River. I encourage you to become involved, please do not hesitate to contact any member of the Recovery Initiative if you have questions.

Justus Benckhuysen, Chair  
*Community Working Group*  
Alcan Primary Metal



**Cory Williamson, TWG Chair**



**Justus Benckhuysen, CWG Chair**



## The Teams

### Technical Working Group

The Technical Working Group (formerly called the Recovery Team) was formed in September 2000, and is the group consisting of federal and provincial biologists as well as First Nations and industry experts. Each member has specific qualifications, including a working knowledge of white sturgeon biology, expertise in stream-flow management/hydraulic engineering or experience in other animal recovery initiatives. Some members have a regulatory role with regard to the protection of fish and their habitats in the Nechako basin.

This team of scientists is responsible for coming up with the answers to *why* the white sturgeon is in decline, and then developing an effective plan to help restore the fish to a self-sustaining population. These strategies are based on the best-available science, local and traditional knowledge.

### Community Working Group

In April 2001, the Community Working Group (formerly called the Action Planning Group) was assembled. Composed of about 20 individuals that represent First Nations, non-government environmental organizations, industry, local and regional governments and affected public, it was created to provide input from river stakeholders, and to act first and foremost as a public advocate for Nechako White Sturgeon and the Recovery Initiative.

The CWG provides an opportunity for key groups essential to the success of a recovery plan to become involved in the process. The group focuses on increasing the public's awareness and knowledge about the recovery process, as well as the ecological problems facing the Nechako white sturgeon. It is also concerned with building and maintaining community support for the recovery plan and communicating progress back to their respective organizations.



*Partners Involved During 2006-2007*

The members of both the Technical Working Group and Community Working Group represent a wide range of organizations. Those involved during the 2006-2007 fiscal year included:

- Alcan Primary Metal
- BC Ministry of Environment
- Carrier Sekani Tribal Council
- City of Prince George
- District of Vanderhoof
- Federation of BC Naturalists
- Fisheries and Oceans Canada
- Fraser Basin Council
- Fraser River Sturgeon Conservation Society
- Freshwater Fisheries Society of BC
- Lheidli T'enneh
- Sports Fisher representative
- Spruce City Wildlife Association
- Nechako River Alliance
- Nechako Watershed Council
- Tl'azt'en Fisheries Program



## Project Updates for 2006-2007

### Juvenile Indexing Program

**Project Lead:** Carrier Sekani Tribal Council

**Funders:** Alcan \$30,000 & CSTC \$20,000

**Year:** 3 and ongoing

This is the third year of the project that focuses on the capture and assessment of sturgeon under 1 meter in length. The intent is to develop a methodology for a long term indexing program for the purposes of monitoring both natural juvenile recruitment levels, as well as the growth, survival and distribution of hatchery reared juveniles. The project is key to detecting the Nechako's sturgeon population's responses to recovery efforts. This year, technicians noticed that the key over wintering site was so dense with adults that it was impossible to deploy a net for any length of time. In the end, six fish were caught throughout the study area and there was one recapture from previous sampling. The small size of some of the juveniles captured was another notable occurrence this year. A report will be produced from this year's activities, as well, a comprehensive 3 year summary report will also be produced to recommend the format of future recruitment monitoring activities. Please visit our website to find these and other reports.



## Adult Sampling

**Project Lead:** Carrier Sekani Tribal Council

**Funders:** Species at Risk - Aboriginal Capacity Building Program \$20,000

**Year:** 1

The CSTC received funding to continue to look at white sturgeon presence, distribution and abundance in Nechako watershed habitats outside of the Nechako River mainstem. Stuart, Trembleur, and Fraser lakes are known white sturgeon habitat, and growing evidence suggests that these areas comprise the full range of habitats utilized by the Nechako population. Work is ongoing to determine the degree to which white sturgeon that utilize these areas may differ genetically or in any other manner such as habitat preference from white sturgeon captured and assessed from the Nechako River. The intent is to gain a better understanding of the role(s) these tributary habitats play in the biological needs and life history of white sturgeon. In 2006, a total of 12 adults were caught in Stuart Lake, 1 in Trembleur Lake and 5 in Fraser Lake.

## Adult Spawn Monitoring

**Project Lead:** Alcan Primary Metal

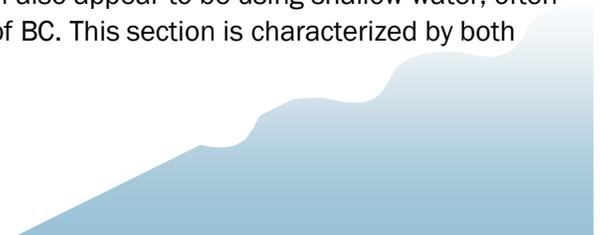
**Funders:** Alcan \$20,000, CSTC \$10,000, IRF \$30,000

**Year:** 3 and ongoing

In order to better understand white sturgeon spawning in the Nechako River, Technical Working Group (TWG) members need to increase their understanding of the timing of spawning and how it relates to environmental conditions (i.e., flow and temperature). They also need to record the duration of spawning, describe the specific habitat used for spawning, and understand the early life history of sturgeon. This type of work will help define critical spawning habitat for Nechako White sturgeon and should significantly aid the identification of the cause(s) of recruitment failure.

This summer, the TWG confirmed for the second time since 2000 that white sturgeon are spawning in the Nechako River near Vanderhoof. Several spawning events are suspected to have occurred and twenty six eggs were captured on egg-mats spread over several kilometres of river. Eight larvae hatched from these eggs and were reared in the NWSRI pilot hatchery and later released back to the Nechako River.

It was also observed that the spawning period is longer in duration than previously thought and the spawning area was also larger than was recorded in May 2004. Sturgeon also appear to be using shallow water, often less than 1m deep in a braided section of river near Vanderhoof BC. This section is characterized by both gravel and sand substrates.



## Project Updates for 2006-2007

### Outreach and Harm Reduction Program

**Project Lead:** Carrier Sekani Tribal Council

**Funders:** Habitat Stewardship Program \$30,000

**Year:** 3 and ongoing

The CSTC's 8 member First Nation communities all actively fish for sockeye and other fish species within the Nechako watershed, and have voluntarily refrained from the directed harvest of white sturgeon since 1994. The focus of the outreach and harm reduction program is to share information with member communities about the Nechako White Sturgeon Recovery Initiative, the CSTC's role in the initiative, and the status of the Nechako's sturgeon population. Information is also provided regarding techniques for releasing sturgeon and how to reduce harm to the fish when they are by-captured in gear targeting other species. This year there was a great deal of information shared by fishers within the communities, feedback was provided to the CSTC regarding by-catch, and the majority of sturgeon captured were released unharmed.



The second component of this project involves looking at options for transitioning First Nation food fisheries back to selective methods, which would see sturgeon by-captures no longer an issue. A beach seine fishery was conducted for 5 days in mid September on the Nautley River (with the permission of the community of Nadleh). The fishery was very successful and fish captured were distributed to Nadleh members and members within adjacent communities. The fishery would have been far more extensive, but was constrained by the Stellako sockeye run's small size and late timing. Intentions are to continue to develop and provide selective fishing options for CSTC member First Nations.



## Project Updates for 2006-2007

### Diagnosing the Causes of Recruitment Failure

**Project Lead:** Ministry of Environment

**Funders:** Alcan \$40,000, MOE \$25,000 (In-Kind)

**Year:** 2 and ongoing

Understanding the causes of recruitment failure is particularly challenging due to the historic nature of impacts. However, the longevity of white sturgeon allows us to use the present age composition of the population to 'hindcast' the timing and magnitude of past recruitment (i.e. an index of past abundance of juvenile production). This analysis indicates that recruitment failure occurred about 1967, which is 15 years after the completion of Kenney Dam. Analysis of air photos and other data sources have identified a "sand wave" near Vanderhoof, after the Cheslatta avulsions that occurred in the same time from as the start of recruitment failure. The TWG is conducting additional studies to determine if there is a causal link between the alterations to flow and substrate and recruitment failure.

### Effects of River Substrates on Larval White Sturgeon Behaviour

**Project Lead:** Ministry of Environment, UBC

**Funders:** MOE \$25,000 (In-Kind), BC Hydro \$19,000, Interdepartmental Recovery Fund (Environment Canada) \$19,000, Alcan \$5,000

**Year:** 1 and ongoing

Potential linkages between recruitment failure and the arrival of a "sand wave" near Vanderhoof underscore the need to understand the mechanisms by which changes in substrate may contribute to recruitment failure. Studies were therefore undertaken to investigate larval white sturgeon behaviour in relation to various flow and substrate conditions.

Tests to date have focused on behavioral variables such as the timing of hiding when suitable substrates are available (e.g. gravel). Results to date suggest that in the absence of appropriate substrate (e.g. sand), larvae tend to drift downstream. Predation tests under these conditions have shown that larval mortality rates are much higher when hiding habitat is not available. Further tests are planned to continue this work, but these preliminary results suggest that a shift from gravel to sand substrates could increase larval drift and predation rates, and both changes would decrease recruitment.



## Investigations of the Geomorphology of the Nechako River

**Project Lead:** Ministry of Environment, UBC

**Funders:** Alcan \$22,000, Endangered Species Recovery Fund \$22,000, MOE \$5,000 (In-Kind)

**Year:** 3 and ongoing

The geomorphology project seeks to understand how river geomorphology has changed since flow regulation, in particular at the Vanderhoof white sturgeon spawning site. The focus of 2006 was to complete extensive surveys and preliminary hydraulic modeling. These results allow the NWSRI to have a better understanding of past river changes, and assist with the conceptual development of restoration measures which may improve habitat for the white sturgeon.

Analysis of historic air photos indicates that the spawning reach historically contained gravel bars, but these have now become vegetated islands. Furthermore, higher pre-regulation flows previously flowed overtop of historic gravel bars. In contrast the post regulation flows tend to flow around vegetated islands more often than they did historically.

The results from the river geomorphology investigations, in conjunction with results from larval behaviour studies, suggest that the greater historic abundance of gravel on the river-bottom may have provided suitable hiding and rearing habitat for early larvae, and its absence may be a key factor contributing to recruitment failure. A river flow model developed in 2006 improves our understanding of pre-regulation flow patterns, and with further improvements this model will be used to predict how substrates react to different flows. In addition the flow model should help the NWSRI begin to plan future experimental restoration measures. Results from the Nechako River may also assist restoration efforts in the Columbia and Kootenay Rivers which also have endangered populations of white sturgeon..

## Project Updates for 2006-2007

### Pilot Broodstock Capture

**Project Lead:** Ministry of Environment

**Funders:** MOE and FFSBC \$32,000 (In-Kind), *Volunteers:* Triton Environmental Ltd., CSTC, Alcan, District of Vanderhoof

**Year:** 1 and ongoing

Prior to 2006 only a small number of white sturgeon in an advanced state of maturity have been observed in the Nechako watershed. The Technical Working Group of the NWSRI undertook a study this year that had 3 main objectives:

- To look at the feasibility of capturing up to 10 mature white sturgeon of each sex for use in a conservation fish culture program;
- To capture sufficient mature adults to create two families of white sturgeon for a pilot conservation fish culture program to be implemented in 2006;
- To radio tag mature fish so that spawning and biological data on the remaining fish could be collected.

2006 was a very successful year for the NWSRI. Thirty five white sturgeon were captured over a ten day sampling session in May. Two female and ten male spawners were captured. Two females and four males were retained to create 2 separate family groups for the pilot conservation hatchery; these fish were released after spawning. In addition, fifteen radio tags were implanted in captured fish to track their movements in the Nechako River and to aid the spawn monitoring project.



## Summer/Fall 2006 Pilot Conservation Fish Culture Program

**Project Lead:** Freshwater Fisheries Society of BC (FFSBC)

**Funders:** FFSBC \$75,000, MOE \$50,000, Alcan \$40,000, CSTC \$10,000, District of Vanderhoof \$6,435

**Year:** 1 and ongoing

During mid – May of 2006, the Technical Working Group in partnership with the District of Vanderhoof began a pilot conservation fish culture program. Personnel from the Freshwater Fisheries Society of BC (FFSBC) began the spawning process over the May long weekend with six of the 12 mature white sturgeon retained during the broodstock capture program. The eggs from each of the 2 females were separately fertilized with the milt from the 2 males in order to provide the greatest genetic diversity given the number of fish caught for the program. After spawning, the adults were released back to the Nechako River. On Thursday, May 25th, a public event attended by over 400 people was held to watch the last female sturgeon be returned to the river.



The eggs, larvae and juveniles were reared as two separate family groups at the Vanderhoof pilot facility. Over the summer, a communications coordinator held regular tours of the pilot hatchery and Riverside Park, providing critical outreach to community members and out of town visitors.

For the first time ever, in early October, over 1,100 juvenile Nechako White sturgeon were released by Vanderhoof area school children (see Fall Juvenile Release with SD 91) and a further 3,000 juveniles were released throughout the remainder of October and early November.

Although the pilot conservation hatchery was considered successful, several challenges that arose over the summer and fall highlighted the need for a more permanent and improved facility for future years. An enhanced pilot facility is planned for 2007-08 and funding is currently being sought to develop a permanent Nechako White Sturgeon Recovery Facility.

## Project Updates for 2006-2007

### Fall Juvenile Release with School District 91

**Project Lead:** Community Working Group

**Funders:** Community Working Group \$1,100, *Volunteers:* CWG, TWG, FFSBC, CSTC, District of Vanderhoof, Triton Environmental Ltd., SD 91

**Year:** 1 and ongoing

On October 3rd and 4th, 1,100 schoolchildren from School District 91 each released a 4 month old juvenile sturgeon into the Nechako River. The students were able to name their fish and also record a unique PIT tag number so that they will be able to know if their fish is recaptured by NWSRI researchers in the future. Students and teachers also had the opportunity to listen to presentations made by Community Working Group members as well as visit the pilot hatchery to see how the fish were raised.



Special presentations were made on October 3rd with welcoming remarks from John Rustad (MLA - Prince George/Omineca), Len Fox (Mayor of Vanderhoof), Brian Frenkel (Councilor with the District of Vanderhoof) and Don Peterson (President of the Freshwater Fisheries Society of BC). The entire 2 day program was a great success and feedback from both teachers and students was extremely positive. Months later, the Recovery Initiative continues to receive exceptionally positive feedback from the community as a result of this event and members of the team were recognized for their efforts in the BC Legislature by MLA John Rustad. Both the TWG and the CWG hope that this can become a yearly event involving school children from the entire Nechako watershed, with the primary goal of promoting and fostering a stewardship ethic for Nechako White sturgeon and the Nechako River system.



## Project Updates for 2006-2007

### NWSRI Coordination and Data Management

**Project Lead:** Carla Wainwright—NWSRI Coordinator

**Funders:** MOE \$25,000, Alcan \$5,000

**Year:** 5 and ongoing

The Nechako White Sturgeon Recovery Initiative requires both coordination, administrative and technical support in order to be effective. The coordination and administrative support involves the following services: organizing meetings, tracking action items, completing technical tasks assigned by members of the Recovery Initiative, assisting in developing project proposals and Terms of Reference for projects, assisting in developing funding proposals, maintaining and updating the website, and where necessary, assisting team members with their assigned tasks. Technical support is provided to ensure scientific accuracy and technical expertise in planning and executing recovery tasks.

This year, in addition to the above tasks, the development and organization of a comprehensive Nechako White Sturgeon Database was undertaken. This database contains sampling effort, biological and tagging data, and radio telemetry data collected by the Initiative between 1995 and 2006. Accessing this data will become increasingly important to the TWG as released fish are recaptured and more information on sturgeon movement within the watershed is collected. In the future, analysis of the data housed in this database will provide additional insight into the biology of Nechako White sturgeon.



## Balance Sheet for 2006-2007

During the 2006-2007 fiscal year, project funding levels reached over \$700,000. Project dollars came from a variety of sources including industry, government, environmental funding sources and even from the sales of “Stuart” the clay sturgeon. The following is a breakdown of both financial and in-kind contributions to the NWSRI for 2006-2007:

Alcan Primary Metal— \$162,000

BC Ministry of Environment—\$85,000 and \$75,000 In-Kind

Carrier Sekani Tribal Council—\$70,000, \$40,000 In-Kind

District of Vanderhoof—\$24,177 In-Kind

Endangered Species Recovery Fund - \$22,000

Freshwater Fisheries Society— \$75,000, \$52,000 In-Kind

Habitat Stewardship Program—\$30,000

Interdepartmental Recovery Fund (Federal Government) - \$30,000

NWSRI Community Working Group - \$1,100

Sales of clay Stuart the Sturgeon— \$621

Species at Risk - Aboriginal Capacity Building Program - \$20,000

Triton Environmental Ltd.—\$20,000 In-Kind

The NWSRI would like to extend its thanks to all groups and individuals who have contributed, funds, time and other in-kind contributions—it is this support that has allowed the Initiative to have such a successful year.



**Photo Credits:**

We gratefully acknowledge the use of photos for this annual report from the following individuals and organizations.

- Alcan Primary Metal
- Allan Wishart of the Omineca Express
- Carrier Sekani Tribal Council
- Freshwater Fisheries Society of BC
- Ministry of Environment
- Nechako White Sturgeon Recovery Initiative
- Triton Environmental Ltd.

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