



NECHAKO WHITE STURGEON RECOVERY INITIATIVE—2006 RESEARCH UPDATES

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Special points of interest:

- White sturgeon are North America's largest fish. The largest fish every recorded weighed more than 625 kg (1,500 lbs).
- White sturgeon grow slowly, taking anywhere between 8-20 years to reach maturity. Female white sturgeon produce 100,000 to four million eggs per spawning, but they spawn only once every two to eight years.
- In the past, *isinglass*—an almost pure gelatin prepared from the lining of sturgeon air bladders—was often used as a clarifying agent and as glue. In spite of modern substitutes for isinglass, it's still used to clarify white wines and for glue and sizing in art restoration work. Now that most populations of white sturgeon are listed as endangered, only commercially raised fish can be used for this purpose.

BROODSTOCK CAPTURE 2006

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 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 three white sturgeon were captured over a ten day sampling session in May. Two late maturity females and 6 mature males were cap-



Freshwater Fisheries Society and Triton Environmental staff

tured and retained to create 2 separate family groups for the pilot conservation hatchery. In addition, fifteen radio tags were put on captured fish to track their movements in the Nechako River.



Pilot Conservation Hatchery Becomes a Reality

Because natural recruitment has been extremely low for several decades, a conservation hatchery is needed to rebuild the Nechako white sturgeon population. (Recruitment refers to new juveniles entering the population. Recruitment failure means there are almost no juveniles entering the popula-

tion). The objectives for this longer term project are two-fold:

- 1) Restore the natural age structure of the Nechako white sturgeon population (i.e., a healthy and sustainable mix of ages); and,
- 2) Produce juvenile white sturgeon that can be used to research the

Spring Spawning Studies April –June 2006

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

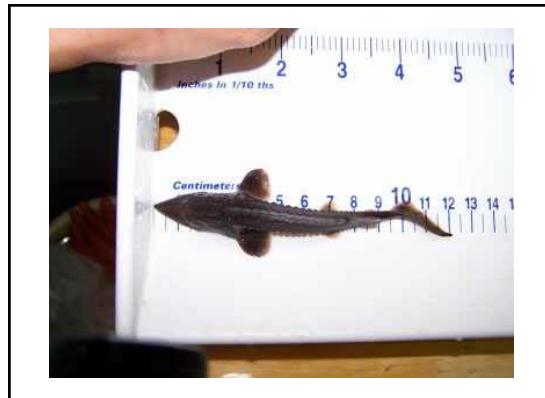


Staff from Triton Environmental collecting wild spawned white sturgeon eggs on egg mats.

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 have since been reared in our pilot hatchery for release in fall 2006.

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.

“White sturgeon are an ancient and important species to all the residents of Northern British Columbia.”



Measuring a juvenile white sturgeon raised in the pilot hatchery during the summer of 2006.

Geomorphology - Spring/Summer 2006

Geomorphology is the study of the characteristics, origin, and development of landforms. This 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 substrate mapping surveys. This will help create a model that can be used to

predict how sediments react to water flows under different levels of river releases. These results allow the NWSRI to have a better understanding of past river changes, as well how restoration measures could be developed to improve habitat for the white sturgeon.



Larval Habitat and Behaviour Studies



White sturgeon larva.

It is thought that there is a strong link between the quality of spawning habitat and recruitment failure. The TWG decided to further test this theory by developing lab and field tests to better understand larval white sturgeon habitat behaviour and how flow and substrate (surface material—i.e., sand, cobbles, rocks) conditions affect the larvae.

Tests to date have focused on variables such as hiding behaviour, downstream movement, and yolk utilization. Other tests have also looked the effects of substrate type on larval predation. Ultimately this work will help the TWG with the development of habitat improvement and restoration actions for white sturgeon population of not only the Nechako river, but also the populations in the Columbia and Kootenay as well.

Some of the preliminary findings of this research project include:

- In both the field and the laboratory larvae appear to prefer substrates with spaces for hiding (i.e., gravel versus sand);
- Behaviours and response differs by stage of development (i.e., fish that have just hatched behave differently than fish that are already 10 days old);
- In the Nechako River, the presence of gravel substrates appears to help larvae stay in suitable early rearing habitat,;
- Predation of larvae is increased in when no appropriate hiding material is available (i.e., gravel).



Juvenile white sturgeon caught in September 2006.

“Nechako white sturgeon are now officially listed as endangered under the Federal Species at Risk Act (SARA).”

Searching Lakes for Adult Sturgeon

Stuart, Trembleur Takla and Fraser lakes are known white sturgeon spawning habitat. Growing evidence suggests that white sturgeon using these habitats are part of the Nechako population, however it is not certain whether or not they are a separate sub-population or are simply using Stuart Lake as a feeding area. This

project helps the NWSRI understand the relationship of these fish to other sturgeon caught in the Nechako, and also help build First Nations capacity to monitor white sturgeon in this river drainage. Exciting results were obtained this September, as for the first time ever, 5 adults were captured in Fraser Lake!

This year the NWSRI welcomes the Freshwater Fisheries Society of BC as a member of the Initiative. Special thanks to the FFSBC for making the 2006 pilot conservation

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*For a donation of
\$20 or more to
the NWSRI, you
will receive a
unique clay
'Stuart' the
sturgeon made by
local Prince
George artist
Bruce Baycroft.
Contact Carla at*

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 likely 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 are no longer successfully spawning and surviving 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

Pilot Conservation Hatchery Becomes a Reality (cont.)

cause(s) of recruitment failure. Since the construction of a long-term recovery facility will take some time, this pilot was implemented as a temporary solution to begin restoring the white sturgeon population.

5000 juvenile white sturgeon that were raised in the pilot conservation hatchery over the summer of 2006 will be released this October. Each fish will be scute marked (scutes are bony plates that line the bodies of sturgeon) and tagged with a unique identification tag. An additional 26 fish will be radio tagged to track movements in the next year using a combination of ground and mobile tracking.



Pilot conservation hatchery under construction in late May 2006 Vanderhoof, BC. The FFSCB got the

NECHAKO **WHITE STURGEON**



RECOVERY INITIATIVE