

Nechako White Sturgeon Recovery Initiative 2013-2014 Annual Report



NECHAKO **WHITE STURGEON**



RECOVERY INITIATIVE



This sturgeon larvae was captured in a fyke net during the night of June 18, 2013. It was one of nine larvae captured this year. Sampling for larvae is part of the Wild Spawn Monitoring Project. Photo provide by CSTC.

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 immediate action is taken these great creatures, survivors from the age of dinosaurs, will become extinct in the Nechako watershed.

With so many stakeholders involved along the entire length of the Nechako River, it was imperative that 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 (NWSRI). The NWSRI is composed of two committees: the Technical Working Group (TWG), which is responsible for identifying the reasons for the decline of white sturgeon in the Nechako watershed, and for the design and implementation of habitat protection, restoration and management options; and the Community Working Group (CWG), which focuses on increasing the public's awareness and knowledge about the recovery process, as well as the ecological problems facing the Nechako white sturgeon.

The Nechako White Sturgeon Recovery Initiative is committed to ensuring that sturgeon, from juveniles to adults, continue to live in the Nechako River for many generations to come.

For more information on the NWSRI, and for detailed reports on projects outlined in this report, please visit our website:

www.nechakowhitesturgeon.org

Cover Photo: An aerial view of the building of the Nechako White Sturgeon Conservation Centre (2013). The green tanks will be used to house the sturgeon brought to the facility for brood capture and to grow the fertilized eggs into juvenile fish.

Table of Contents

Messages from the Chairs:	
Technical Working Group Chair	3
Community Working Group Chair	4
The Teams	5
NWSRI Partnerships	6
Research Project Updates 2013-2014:	
Broodstock Capture	7
Juvenile Index Program	8
Adult Sampling and Spawn Monitoring: Telemetry, Egg Mats and Drift Sampling	9
Spawning Habitat Manipulation Project (Gravel placement project)	12
Biochronology of Juvenile Recruitment	14
Population Status Update!	15
7th International Symposium on Sturgeons	16
Community Education, Outreach and Harm Reduction Programs:	
Healthy Watersheds for Sturgeon, Grades 4 to 7 Curriculum Program	17
Emergency Sturgeon Live Release Boat Kit Program	18
First Nations By-Catch Monitor	19
River's Day in Vanderhoof and Prince George	20
NWSRI Management & Conservation Goals:	
NWSRI Coordination and Data Management	21
Conservation Fish Culture: Construct and Operate Facility	22
Includes an update on the Species at Risk Act Recovery Strategy for White Sturgeon (<i>Acipenser transmontanus</i>) in Canada	
Financial Summary for 2013-2014	24



Messages from the Chairs

Technical Working Group

What a year! The construction of the Nechako White Sturgeon Conservation Centre seemed impossible a little over a year ago and is now nearly complete and operational. Many thanks to the team that made this happen, in particular, Hillel Architecture, Knight Contracting and all the individual contractors that worked at the site. Like any construction project we have had some challenges keeping the project on track- the timeline was aggressive say the least. Clearing of the site began on May 17 , 2013 and the water is starting to flow to the new tanks less than a year later. This \$5 million dollar project aims to save the northernmost population of white sturgeon from extirpation- it's easy to forget that in the day to day grind to get work done. Without a doubt everyone on site had that objective in mind, it was not just another contract for them. Looking ahead, completion of this facility is not only about improving the outlook for the species and proving a place to more efficiently work on research for this population, its about a community that is making a difference and wants to see changes in the way we all do business in our environments- perhaps this will be the biggest success of this project. In the very short term we anticipate being able to capture brood stock and begin in earnest the process to rebuild the Nechako White sturgeon population.

Cory Williamson
Chair, NWSRI-TWG
March 31, 2014



Cory Williamson, TWG Chair and manager of the Nechako White Sturgeon Conservation Centre.

Community Working Group

The construction of the Nechako white sturgeon facility is upon us. What seemed to be a dream 12 years ago, is now finally a reality. There have been major hurdles and much perseverance but through it all, members of the Community Working Group have remained steadfast in their efforts to accomplish the task at hand.

Our community is constantly being inundated with requests, some subtle with others more direct, to adapt to the changes in our life, climate, economy, technology and our environment. I am amazed everyday by what people in our communities can accomplish. It has been a honour to chair the CWG for the past couple of years and I look forward to working with the group for years to come.



Brian Frenkel, CWG Chair

Brian Frenkel, Chair
Community Working Group
Avison Management Services Ltd
March 31, 2014



CWG Chair, Brian Frenkel, celebrates the achievement of securing funding to build and operate the white sturgeon Conservation Facility at the public announcement in Vanderhoof on 10 April 2013.

The Teams

Technical Working Group

The Technical Working Group (TWG) was formed in September 2000, and is made up of private sector, 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 watershed.

This team of scientists is responsible for investigating *why* the Nechako white sturgeon population 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 (CWG) was assembled. Composed of some 20 individuals that represent First Nations, non-government environmental organizations, industry, local and regional governments, and affected public, the group 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 the Nechako white sturgeon 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.

Together the TWG and CWG work towards a common vision of sturgeon recovery. The TWG works to develop and oversee implementation of the Nechako White Sturgeon Recovery Plan. This includes designing and carrying out the projects that are described in this Annual Report. The CWG is the communication and extension arm of the Initiative, and assists the TWG by garnering public and financial support for sturgeon recovery within the Nechako watershed. By sharing a common coordinator, the two groups maintain a continual flow of information and are able to support each other on projects as needed.



NWSRI TWG & CWG Partnerships

Partners Involved During 2013-2014

The members of both the Technical Working Group and Community Working Group represent a wide range of organizations. Those involved during the 2013-2014 fiscal year included:

BC Ministry of Environment	Freshwater Fisheries Society of BC
BC Ministry of Forests, Lands & Natural Resource Operations	Lheidli T'enneh First Nation
BC Nature (Federation of BC Naturalists)	Parks Canada
Carrier Sekani Tribal Council	Rio Tinto Alcan Inc.
District of Vanderhoof	Sports Fisher representative
Fisheries and Oceans Canada	Spruce City Wildlife Association
Fraser Basin Council	Nechako River Alliance
Fraser River Sturgeon Conservation Society	Nechako Watershed Council
	Tl'azt'en First Nation Fisheries Program



This little sturgeon is getting its total length measured and recorded. If this sturgeon is recaptured in the future the data can be used to check its rate of growth.

Project Updates for 2013-2014

Broodstock Capture

Project Lead: Carrier Sekani Tribal Council

Funders: Project not carried out this year

Year: 8 and ongoing

The TWG planned to conduct a pilot scale brood capture program this spring but instead focused on securing the funding for the Conservation Facility; therefore, a brood project was not conducted in 2013.

The Broodstock capture program has three main objectives:

- 1) To capture of brood fish for hatchery purposes;
- 2) To place more tags and replacement of tags; and,
- 3) To continue the monitoring and collection of biological data.

Brood capture and tag replacements are high priorities for May 2014!



This Nechako White Sturgeon is being implanted with a radio-tracking device, 2011. Locations on sturgeon will help to delineate critical habitat and guide decisions on habitat restoration.

Photo by TWG member Zsolt Sary, FLNRO



TWG member, Steve McAdam of the Ministry of Environment, shows off Nechako White sturgeon eggs harvested from a broodstock female in 2011.

Photo by TWG member Zsolt Sary, FLNRO

Project Updates for 2013-2014

Juvenile Indexing Program

Project Lead: Carrier Sekani Tribal Council

Funders: Aboriginal Fund for Species at Risk \$22,200 via Carrier Sekani Tribal Council

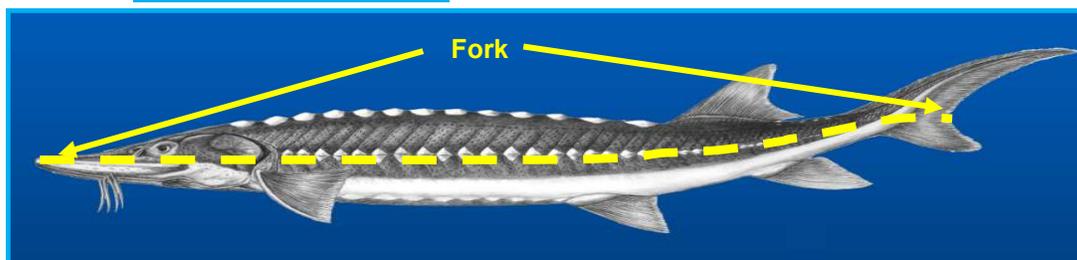
Year: 10 and ongoing

The Nechako White Sturgeon Juvenile Index program ran from 9 to 13 and 15 to 20 of September 2013. Sampling began at river kilometer (rkm) 134.4 (i.e., Vanderhoof) and covered downstream to 110.2 rkm (i.e., Keilor Point). In total, 94 setlines were deployed during the sampling period. Sampling occurred at the same areas as past indexing because that is where the prime habitat for juvenile sturgeon was previously identified. In total, 30 juvenile White Sturgeon were captured, with 14 fish being recaptured in previous years and 16 were new captures. One fish was captured twice during the 2013 sampling session. This fish was first captured on September 10, 2013 at rkm 129.8 and recaptured on Sept 16, 2013 at rkm 117, a downstream movement of 12.8 rkm. For 14 of the 16 new captures fork lengths ranged from 36.2 cm to 40.8 cm while the remaining two new captures had fork lengths of 49.4 cm and 74.3 cm. Of the 14 recaptured individuals fork length ranged from 56.5 cm to 78.7 cm.

Of the 30 juvenile white sturgeon captured 24 fish appear to be of wild origin and 7 of hatchery origin. All new captured individuals were PIT tagged, measured, scute marked (R2), and had aging structure (finray) and DNA (fin clip) taken. All recaptured individuals were measured and had their PIT tag and scute mark (hatchery and R2) confirmed. Six of the 14 recaptures had aging structure (finray) taken. DNA was not taken on recaptures. In total 22 aging structures and 16 DNA samples were gathered from juvenile fish. The capture depths ranged from 1.3 m to 5.8 m. There were no juvenile White Sturgeon mortalities during the 2013 sampling period.



Ashley Raphael of Saik'uz First Nation gets set to release a rare juvenile white sturgeon back into the Nechako River after recording all of the relevant data. Photo provided by CSTC.



Fork length is measured from the tip of the snout to the fork in the tail. Larger fork lengths indicate longer fish.

Project Updates for 2013-2014

Adult Spawn Monitoring (Telemetry, Egg Mats and Drift Net Sampling)

Project Lead: Carrier Sekani Tribal Council

Funders: Aboriginal Funds for Species at Risk \$54,800; Ministry of Environment \$36,000; Canadian Forest Products Pulp Division \$10,000 (fixed station telemetry); CSTC \$7,925 in-kind; Fisheries and Oceans Canada via Species at Risk Committee \$1,500.

Year: 10 and ongoing

Mobile (mainly boat-based) Telemetry (Adult Monitoring)

Fish were radio-tracked using boat-based telemetry for 15 days from May 10 – June 21, 2013. In total, 29 fish were found; there were 113 detections of those 29 fish. The fish encountered the most times ($n = 12$) was a male fish that was first captured in 2001 at rkm 116.8 and recaptured in 2009, 2011 and 2012 (149.520 code 62). No middle Fraser fish were located in the reach. Fish were located in the same place where the majority of the eggs were caught; however, the 29 fish were not necessarily all spawners. Spawning movement occurred around 26 May and June 1 and 4th, coinciding with the peak of the egg collection. This was a low water year and the fish were spread throughout the reach. Fish appeared to be in the deepest part of the channel.

Fixed Station Telemetry

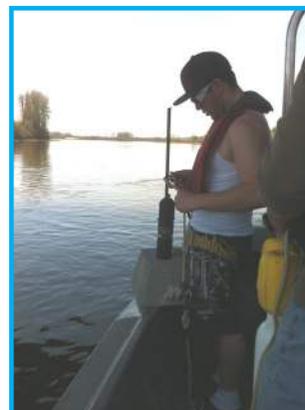
Fish were also monitored at the spawning grounds and throughout the River systems using fixed station telemetry. There are five fixed shore-based telemetry stations on the Nechako River located at the Nechako-Fraser confluence, Stuart-Nechako confluence, Vanderhoof, Nautley-Nechako confluence, and the Stuart River near outlet from Stuart Lake. These fixed stations provide an important mechanism for documenting movements of fish between the upper Fraser River, Nechako River and Stuart River, which is otherwise difficult to detect with regular frequency using mobile (boat-based or aerial) telemetry surveys. Fixed stations were operational from May 9, 2013 through to November 4, 2013. A new type of receiver, the Orion (Sigma Eight), was added to the Lotek receivers. Unfortunately some problems were detected with the receivers properly logging data. However, they did record 101 detections of 17 individual fish. Detections of fish ranged from 1 to 19 times per fish with an average of 5.9 detections per fish (median = 5).

The fish encountered the most times regardless of detection method ($n = 27$; 8 by boat and 19 by fixed station) was a male fish that weighed 63.96 kg at its capture at rkm 116.8 in 2010 (149.700 code 86).

Can you spot the fixed station receiver's antenna used to track sturgeon?
Photo provided by Zsolt Sary, FLNRO.



Will Mole of Saik'uz is monitoring Nechako white sturgeon using acoustic telemetry. Photo provided by CSTC.



Project Updates for 2013-2014

Adult Spawn Monitoring Continued

Acoustic Telemetry:

2013 was the first year the NWSRI examined using acoustic telemetry (including acoustic tags) to monitor the behaviour of fish when they are on the spawning grounds. Acoustic array and tag tracking technology provides a 3D view of the location of fish to within sub-meter accuracy. This year was about testing the equipment to determine if it would provide useful information in the Nechako system. The goal of the acoustic array for the Nechako is to pinpoint the spawning locations and conditions for future habitat restoration. Acoustic tags were not placed in fish this year. This year three range tests were completed on acoustic tags placed in various locations to simulate placement in fish:

Test 1 ran from 30 April to 2 May and was a Range Test to check if the Nechako River was viable for an acoustic array to monitor sturgeon. The first attempt setup did not prove to be viable as the flow was too high and the receiver had trouble remaining upright. The data was not adequate.

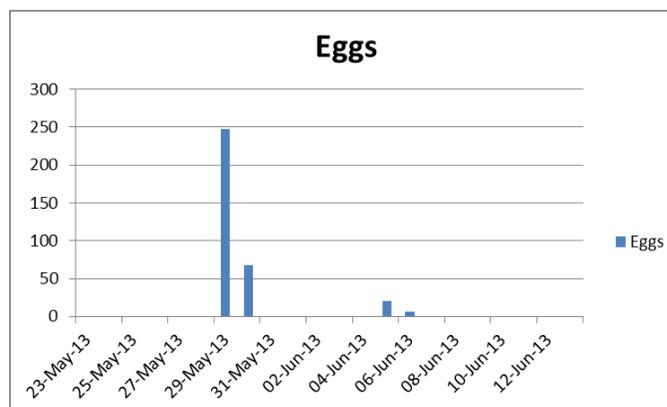
Test 2 ran from May 8 – 13 and was also a range test. For this test we switched from soft to hard anchors in the form of cement deck blocks with rebar to hold the receiver and tags. This test was more successful than test 1.

Test 3 ran on the 17 & 18 July and used 13 VR2W receivers each with a sync tag attached and 2 test tags. Testing occurred during the high water flow in July so heavy anchors were used to keep the tags and receivers stable. Test 3 resulted in good data; tags placed 90m from the receivers were being located with excellent accuracy.

Based on the testing, we anticipate placing acoustic tags in fish starting in 2014.

Egg Mat Program

Seventy-five mats used to gather sturgeon eggs were placed in the Nechako River at the white sturgeon spawning grounds on May 23-24, 2013. Twenty-seven of the mats deployed were large and 48 were small. The mats were checked six times with the last check on June 12 and 13, 2013, resulting in a deployment of 21 days. The first check for eggs was on May 29, 2013, and 248 eggs were found; 68 eggs were gathered on 30 May, 21 eggs on 5 June, and 7 eggs on June 6, 2013 (see figure). In total 344 eggs were collected with the last eggs found on the 6 June 2013. The majority of eggs were located just above the bridge in the centre of the channel; however, some eggs were collected off the lower mats as well. Water temperatures varied between 11.2°C and 15.7°C during egg sampler deployment.



Histogram showing the number of eggs caught by date. The data may indicate two spawning events near May 29-31 and June 5-6, 2013.

Project Updates for 2013-2014

Adult Spawn Monitoring Continued

Drift Net Program

Hatch is estimated to occur two to three weeks (14 to 21 days) after eggs are laid. Drift nets, also termed fyke nets, are used to sample to detect the presence of sturgeon larvae. CSTC conducted the drift net sampling. Twelve nets were set for day sampling and 4 nets for night sampling. Sampling occurred periodically from the 4 to 21 June, 2013. All drift net sampling was located below the Burrard Bridge. Setting only downstream was decided due to limited resources. Twelve fyke nets were set at three different locations below the bridge; four nets at each of the upper, middle and lower sites. Nine days of sampling were completed over four days and five nights. Nine white sturgeon larvae were captured (four on June 4, one on June 5, one on June 6, two on June 7, and one on June 18). The highest amount of larvae ($n = 4$) were caught in the net located the furthest downstream of the Burrard Bridge. Overall, three of the four lower set nets caught the most larvae ($n = 7$), while two larvae were caught in one of the upper most nets. The four middle nets caught no larvae.



Aaron Raphael of Saik'uz First Nation is picking Nechako white sturgeon eggs off the egg mat.



Nechako white sturgeon eggs found on the egg mats.



Aaron Raphael and Will Mole of Saik'uz display the large egg mats and buoy used on the study to capture Nechako white sturgeon eggs. Photos provided by CSTC.

Project Updates for 2013-2014

Spawning Habitat Manipulation Gravel Placement Project

Project Lead: Ministry of Forests, Lands and Natural Resource Operations

Funders: Fisheries and Oceans Canada via Species at Risk Committee \$63,683.

Year: 4 and ongoing

In 2011, 2,100 m³ of gravel of cleaned and sorted gravel substrate were placed on the bed of the Nechako River at the white sturgeon spawning grounds near Vanderhoof, BC (lower & middle patches). Biological and physical monitoring programs of the gravel pads have been conducted each year since placement. Biological monitoring of the placed gravel pads occurs during the wild spawn and consists of monitoring egg production, incubation and early larval rearing success; please refer to the Adult Spawn Monitoring section of this report for biological monitoring results. The physical monitoring consists of monitoring the sediment infilling rates of the placed pads. Infilling sediment rates effect the ability of the pads to provide spawning, incubation and rearing platforms for Nechako white sturgeon.

Physical Monitoring of the Gravel Pads: Northwest Hydraulic Consultants Ltd. were hired to monitor the sediment transport rate during high and low flow conditions. The 2011 and 2012 substrate assessments revealed that the inside corner of the placed substrate patches was more prone to infilling with fine gravel and coarse sand than the outside portion of the pads. Coarse sand and fine gravel was mobile despite relatively low flows.

Four study sites were selected and at each site a transect was established across the channel with several sampling stations spaced at even intervals. At each site a bedload sample was collected, vertical velocity profile was measured and an underwater camera was deployed. Sediment was sampled August 15-16, 2013 and October 11-12, 2013. The August sampling was done during the cold water release from the Kenney Dam with a high flow of ~320 m³/s.



August (high flow) sampling of the Upper Site, 2013. The transport rate is indicated by the size of the blue circle. Photo by NHC and can be found in their 2013 report.



Location of the substrate monitoring pads in the Nechako River at the white sturgeon spawning grounds in Vanderhoof. Photo by NHC and can be found in their 2013 report.

Project Updates for 2013-2014

Spawning Habitat Manipulation Gravel Placement Project—Continued

Upper Site Placed Gravel: In August, moderate transport of sediments occurred along the left bank and sediment rates decreased as sampling moved across the channel. In the October sampling no sediment was captured. Two additional sampling stations were added in October to ensure that the area was being adequately covered. The upper site remains in good shape for spawning.

Middle Site Placed Gravel: In August and October no sediment was recorded closest to the right bank. The middle of the pad returned the largest amount of sediment. There was a large sand component and strips of sand were visible along the surface. In October, the low water levels meant this site could not be accessed by boat. The middle of the pad again returned the most sediment.

Lower Site Placed Gravel: In August sediment was recorded at all sites across the channel at varying rates. In the two sampling sites closest to the left bank the bed material was almost entirely sand. In October the water depth was very shallow and most sample sites were not accessible. Only two of the sites could be sampled; they contained little sediment transport compared to that found in August.

For all sites there was an uneven distribution of sand moving across the river. The sediment tended to concentrate towards the centre and inside corner portions of the channel; a lot of sand was obtained in fast flowing areas (thalweg) with less in low flow areas (banks). Transport rates tended to be low or zero on the outside edge of the channel.

Fort Fraser Sampling: Sampling was conducted 60-km upstream of the placed gravel near Fort Fraser upstream of the Highway 16 crossing. This sampling was conducted to determine the source of the sediment being sampled on the gravel pads. The high sediment transport rates recorded at the Fort Fraser sites indicated that the source of the sediment is likely further upstream. The source of the sediment occurring in the spawning reach (gravel pad areas) will continue to be investigated.

Turbidity monitoring: A turbidity centre was installed at the weather station in Vanderhoof to develop an index relationship between turbidity and bedload. Turbidity is a measure of particulates in water. The higher the turbidity, the cloudier the water looks. A Helley-Smith sampler was used to obtain a better understanding and refinement of bedload (determine how the sand moves through the system). This work is on-going so stay tuned for the results!



Acoustic Doppler Current Profiler was used to measure water current velocities.



A Helley-Smith sampler was used to measure bedload. The bag collects the sediment sample.

Photos by Zsolt Sary, FLNRO.

For more information on the physical monitoring component of this project please download the NHC. 2013. Nechako River 2013 Sediment Transport investigations. Prepared for Ministry of Forests, Lands and Renewable Resources. January 2014 report by clicking on this link: <http://www.nechakowhitesturgeon.org/research/reports>.

Project Updates for 2013-2014

Biochronology of Juvenile Recruitment

Project Lead: Ministry of Forests, Lands and Natural Resource Operations

Funders: Nechako Environmental Enhancement Fund \$19,932 (matched with Land Based Investment Strategy funds from 2012-13).

Year: 2 and complete

Biochronology refers to the dating of biological events. The first phase of the biochronology project occurred last year (2012-13) and utilized the available finrays and otoliths samples obtained from Nechako white sturgeon less than 45 years of age (i.e. recruited since the 1967 recruitment bottleneck) to determine estimated fish ages using standard protocols. That work also examined the wild recruited juvenile data gathered since the start of sampling and tied it to biotic and abiotic factors that may affect recruitment.

This second phase of the biochronology work was a growth analysis. Environmental Dynamics Inc. was contracted to conduct this work. They worked with Dr. K. Lewis from the University of Northern BC to investigate the relationship between growth rates observed in white sturgeon fin ray annuli and environmental factors. Specifically they were interested in factors that may have influenced annual growth of sturgeon. This year's biochronology project had two main objectives:

- (1) Develop a chronology for Nechako white sturgeon; and,
- (2) Investigate and identify environmental factors that may have contributed to years of good or poor sturgeon growth.

Annuli increments from 81 fin ray structures were measured and 18 met qualifications to use in this analysis. The results showed that there was no discernable pattern in the population based on the individuals in the dataset. For example, certain years would be identified as years of good growth for select individuals, while the same year would also be identified as a year of poor growth for other individuals. Since there was no population level trend in growth patterns, it was not possible to detect environmental influences on sturgeon growth. The results may be due to the small sample size and it is possible that this work may be repeated in the future when sample sizes are larger. The EDI report is currently being commented on by TWG members. It will be available for download from the NWSRI web site once finalized:

<http://www.nechakowhitesturgeon.org/research/reports>



The fin ray sections used in this analysis were taken from this area of the pectoral fin of captured sturgeon. The missing section of fin eventually grows back.



Project Updates for 2013-2014

Population Status Update!

Project Lead: NWSRI Technical Working Group

Funders: Fisheries and Oceans Canada via Species at Risk Committee \$10,000

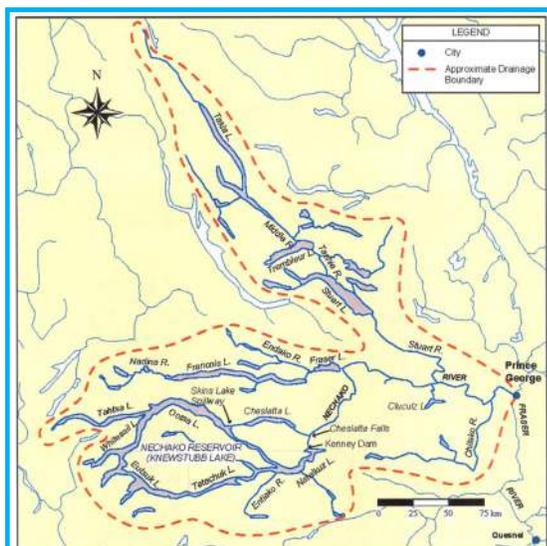
Year: 1 and complete

The last population status estimate for Nechako white sturgeon was completed in 1999 and estimated 571 fish remained (95% CI 421-890; RL&L 2000). Dr. Tom Carruthers from the University of British Columbia conducted the 2013 analysis of Nechako River White Sturgeon population using a multi-state Cormac-Jolly-Seber model to provide an updated population estimate that accommodates the potential movements of fish throughout the recovery area.

The analysis considered four spatial areas that are known to be used by Nechako white sturgeon. There was a core area where most of the fish were detected most of the time and there were peripheral areas where detections were lower. Movement of fish between the four main areas were examined to determine how that movement influences the population estimate. The most recent population estimate is approximately 630 adult fish. Inclusion of fish movement in the model between the Fort Fraser/Nadleh area seems to contribute to the higher number of fish than the 1999 estimate. This work remains in review.



Christine Charlie, Jonathan Shearer and Neil Heron from Stellat'en First Nation set out to locate sturgeon. Locations on sturgeon obtained from radio-telemetry tracking were used in the population estimate. Note the radio antennae used to help located sturgeon mounted on the top of the boat.
Photo provided by CSTC



Map of the Nechako Watershed. The newest population estimate used a core area around Vanderhoof where most fish have been detected and then accounts for fish movement between periphery areas. This map is part of the grades 4-7 Healthy Watersheds for Sturgeon School Curriculum program (see CWG outreach and harm reduction projects).

Project Updates for 2013-2014

7th International Symposium on Sturgeons in Nanaimo, BC

Project Lead: Ministry of Forests, Lands and Natural Resource Operations

Funders: Specific funds not allocated. Approval from employment agency—Carrier Sekani Tribal Council; Ministry of Forests, Lands and Natural Resource Operations; Ministry of Environment.

Year: 1 and complete

The 7th International Symposium on Sturgeon took place at Vancouver Island University in Nanaimo, BC, on the 21-25 July, 2014. Research was presented on 23 of the 33 species of sturgeon that occur throughout the world. There were approximately 330 participants in attendance representing 22 countries!

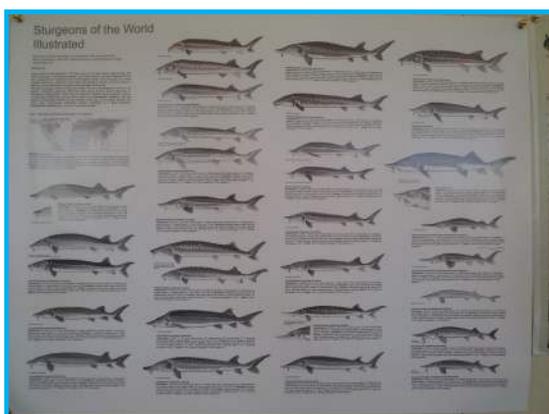
The NWSRI TWG submitted three abstracts: (1) Christina Ciesielski submitted on stewardship and harm reduction featuring the Emergency sturgeon live release boat kit program; (2) Brian Toth and Chris Pharness on Nechako White Sturgeon Juvenile monitoring and habitat indexing; and, (3) Cory Williamson and Steve McAdam on Recruitment failure of the Nechako white sturgeon: from uncertainty to restoration. All three abstracts were accepted for presentations. S. McAdam also organized a symposium on habitat restoration. The conference proceedings will be published during the summer of 2014 in the Journal of Applied Ichthyology (JAI), which is the official journal of the World Sturgeon Conservation Society (WSCS). For more information on this international symposium please visit: <http://www.viu.ca>



H. Rosenthal, WSCS President welcomes delegates to the conference.



Technical Working Group Chair, Cory Williamson, presenting on recruitment restoration of the Nechako White Sturgeon.



A sturgeon of the world poster illustrating the phylogenetic variation of sturgeon. Poster by P. Vecsei and M. Hochleithner.



TWG Member, Christina Ciesielski presenting on First Nation issues as they relate to sturgeon. Photos by Zsolt Sary, FLNRO.

Community Education, Outreach & Harm Reduction Programs for 2013-14

Healthy Watersheds for Sturgeon, Grades 4 to 7 Curriculum Level School Program

Project Lead: NWSRI Community Working Group

Funders: Habitat Stewardship Program \$15,710.50; Freshwater Fisheries Society of BC \$11,500; Murray Creek Rehabilitation Project \$3,000 and \$2,000 In-Kind; Nechako White Sturgeon Recovery Initiative \$1,250 In-Kind

Year: 8 of school programs; Year 1 of the curriculum program and ongoing

This year the NWSRI CWG hired M. Roberge to test, refine and fully develop a grade 4 through 7 curriculum level Nechako White Sturgeon educational program. The “Healthy Watersheds for Sturgeon” program discusses the importance of the Nechako watershed and riparian ecosystems, the habitat and life cycle of the Nechako white sturgeon, and human impacts on the sturgeon. Two classrooms at WL McLeod Elementary (Vanderhoof), one classroom at Sinkut View School (Vanderhoof), and five classrooms at Fraser Lake Elementary (FLESS) took part in the pilot program. One hundred and seventy six students participated in some capacity during the three-month pilot project. Participation included in-class activities and/or field trip activities. The pilot project officially ended in January 2014 and teachers provided feedback on the curriculum. The program was finalized based on the feedback received.

The 14 lesson program includes SMARTboard activities, PowerPoint presentations, arts and crafts projects, mini experiments, a Unit project for students to complete, field trips and opportunities for guest speakers. The majority of the program can be delivered by the teacher with no or little outside help. The program aims to increase the children’s knowledge and build a foundation for future white sturgeon ambassadors that will promote stewardship of sturgeon within their communities. Fostering individual and community stewardship and empowerment in the conservation of the Nechako white sturgeon improves the potential for the eventual recovery of the population. The program will be available free of charge to elementary schools within School District 91 (SD91) for the September 2014 school year.



Vanderhoof community member, Shirley Abercrombie (far right), made two life-sized sturgeon stuffies that can be signed out by classes using the Healthy Watersheds for Sturgeon curriculum.

Now available in our schools...

Nechako White Sturgeon Curriculum

LOCAL SCIENCE IN OUR SCHOOLS

The Nechako White Sturgeon Curriculum was developed here in Vanderhoof for Grade 4-7 students. The curriculum includes presentations, activities and field trips. It is available in all schools within School District 91.

It introduces students to concepts and facts about:

- the biology and ecology of the Nechako white sturgeon
- endangered status
- scientific terminology
- watersheds and watershed health
 - riparian zones
 - local ecology
- fish and fish habitat
 - local history
 - conservation

Ask us about it!

NECHAKO WHITE STURGEON RECOVERY INITIATIVE

A project sponsored by the Nechako White Sturgeon Recovery Initiative

This poster made to advertise the school program was displayed at all NWSRI events.

Outreach and Harm Reduction Programs, 2013-2014

EVERY FISH COUNTS – The Emergency Sturgeon Live Release Boat Kit Program

Project Lead: Nechako White Sturgeon Recovery Initiative and Carrier Sekani Tribal Council

Funders: Habitat Stewardship Program \$13,510.50; Carrier Sekani Tribal Council \$12,650 In-Kind; Nechako White Sturgeon Recovery Initiative \$2,800 In-Kind.

Year: 3 and ongoing

Cora McIntosh, member and Councilor with the Saik'uz First Nation, was hired as the Boat Kit manager. Seven First Nation Bands were invited to participate in the program and five bands actively participated (Saik'uz, Nak'azdli, Tl'azt'en, Lheidli T'enneh, and Stellat'en First Nations). Twenty-five of the 30 kits were signed out. Nak'azdli First Nation requested additional kits due to the number of sturgeon that were being caught this year. For the first time we added the fall 2013 char and lingcod gill net FSC fisheries to the program.

Every fish counts! Preliminary Pilot Program Results

14 sturgeon were live released using the tools contained within the 'Emergency Sturgeon Release Boat kit' during the Food, Social and Ceremonial (FSC) fisheries (6 by Nak'azdli, 1 by Saik'uz, 6 by Tl'azt'en, 1 by Lheidli T'enneh, and 0 by Stellat'en First Nations whom reported that none were caught and that they had fewer people fishing this year). Three sturgeon mortalities were reported. One of those mortalities resulted in a First Nation healing circle. The mortalities provided educational opportunities, particularly regarding the importance of frequently checking nets.

Since the Boat Kit program began in 2011, 37 sturgeon caught as by-catch during the FSC fishery have been live released. We are extremely pleased with the success of this program. By providing First Nation fishers with the tools and the knowledge necessary to mitigate bycatch and promote live releases this program fosters stewardship of sturgeon and ultimately helps to maintain the current number of breeding adults.

The goal of this program is an immediate reduction in the harm and deaths of sturgeon in the Nechako-Stuart-Takla system attributed to the First Nation gill net Food, Social and Ceremonial fishery.



A CD of the video, Every Sturgeon Counts: How to Live Release a Sturgeon From a Gill Net is provided in each boat kit.



This large mature sturgeon is having its tail unwrapped from a gill net by Nak'azdli First Nation member during the July FSC fishery. It swam away once its tail was freed from the net.

If you would like to view the video click here:

<http://www.youtube.com/watch?v=YhrEJUEi-ow&feature=colike>

Outreach and Harm Reduction Programs, 2013-2014

Promoting Harm Reduction and Monitoring By-catch in the Nechako Watershed FSC Fisheries

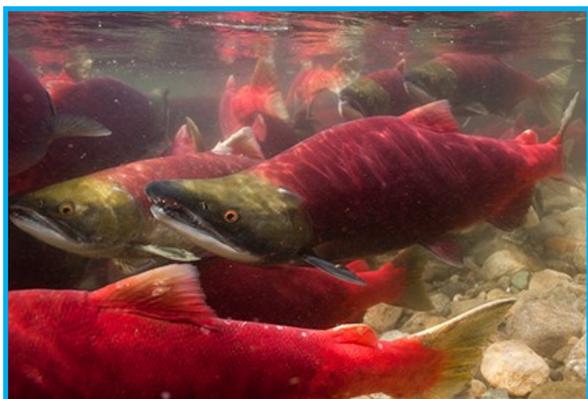
Project Lead: Carrier Sekani Tribal Council

Funders: Aboriginal Fisheries Strategy funding for salmon catch monitoring in-kind to NWSRI.

Year: 5 by-catch monitors (year 9 First Nation outreach & harm reduction programs) and ongoing

The Carrier Sekani Tribal Council (CSTC) hired 3 Catch Monitors: one for Saik'uz (Cora McIntosh) and two for Nak'azdli (Robert and Cameron Prince) First Nations from July to September 2013. These individuals were First Nations members of the band they were monitoring. Catch monitors are responsible for monitoring nets set in their territories and were to be present when fishers retrieved their nets each morning. They record the date, time, and number of sockeye and Chinook salmon by person and by day that are caught or released during the First Nation Food, Social and Ceremonial (FSC) salmon fishery. Monitors were responsible for directly interacting with the First Nations fishers in order to increase fisher-peoples' knowledge and awareness of the plight of the Nechako White Sturgeon. They speak with fishers throughout the fishing season and monitor the catch of any non-target species, such as sturgeon in the gill nets. Catch monitors also have emergency sturgeon live release boat kits and are available to help remove sturgeon from a gill net.

By working with the CSTC we are reaching out to more community members, fishers and their families. Unfortunately we were unable to engage Takla and Nadleh Whut'en First Nations to actively participate in the live release boat kit project this year. We think a large part of this was because there were no by-catch or catch monitors within those communities. We rely on working with the catch, by-catch and/or fisheries persons within each community and we plan to work towards the involvement of all First Nation FSC fishers in the watershed in the future. Ongoing education of fishers and community members about how changing their fishing practices can help maintain the Nechako white sturgeon and its genetic diversity is critical to restoring this species to a naturally sustainable population.



Sockeye salmon are sought after during the Food, Social and Ceremonial First Nation fishery. The fishery uses gill nets and sturgeon get accidentally caught in the nets. Photo by Jett Britnell



Although Catch Monitors are hired to monitor the FSC sockeye and Chinook salmon fishery they also help with live releasing sturgeon by-catch. Pictured here catch and by-catch monitor Cora McIntosh, Saikuz First Nation, helps Jerry Mole release a sturgeon incidentally caught during the FSC fishery. Photo by Ty Roberts, CNC

Outreach and Harm Reduction Programs, 2013-2014

River's Day Celebrations in Vanderhoof

Project Lead: NWSRI Community Working Group and Carrier Sekani Tribal Council

Funders: No Event Held in Vanderhoof

Year: 5 and ongoing

Each year on the last Sunday of September, local community groups come together to celebrate our province's spectacular river heritage by hosting a public Rivers Day event. The first River's Day event held in Vanderhoof was in 2010 and was hosted by the NWSRI. The NWSRI also hosted the 2011 event. In 2012, the event organization was taken over by the District of Vanderhoof (DOV) and the NWSRI was a main participant. Unfortunately, the DOV did not host an event in 2013. River's day is an opportunity for people to learn about rivers and river health. The river's day event allows us to discuss with the public ways we can work together to protect watersheds and the importance of healthy watershed to maintaining healthy ecosystems. We also take this opportunity to interact with the public to provide information on sturgeon biology and ecology. In order to ensure that future River's Day events will occur in Vanderhoof the NWSRI CWG voted to approach the DOV to co-host the 2014 River's Day event at Riverside Park adjacent to the Nechako white sturgeon spawning grounds.

Unfortunately the City of Prince George also did not host a River's Day celebration because the event was coordinated by the City's Environment Department which was terminated last year. Much later we learned that a River's Day celebration was held in Prince George, sponsored by Recycling and Environmental Action Planning Society (REAPS) and DFO Salmonid Enhancement Program (SEP). It was called the Banks of Gratitude and was held on the Fraser River just downstream of the Nechako confluence. It was organized and carried out by Danielea Castell of the Prince George Water Gratitude Society (now located in Quesnel).



Members of the public learn about the life cycle of the Nechako white sturgeon as they view the egg to juvenile sturgeon display at the 2010 River's Day event in Vanderhoof. Photos by L. Ciarniello, NWSRI Coordinator.



Children transform this life-sized paper mache sturgeon, provided by CNC artist Annerose Georgeson, into an amazing work of art! River's Day in Vanderhoof, 2010.



NWSRI Management & Conservation Goals

NWSRI Coordination and Data Management

Project Lead: Lana Ciarniello—NWSRI Coordinator

Funders: Department of Fisheries and Oceans via SARCEP \$26,000

Year: 13 and ongoing

What an exciting year 2013 was! The year began with NWSRI members crossing their fingers that the proposal to NEEF to secure the final funding required to build and operate the white sturgeon conservation centre would be successful. Then, on 10 April 2013, the Province held an official press conference to announce that approximately \$10 million dollars was secured and the white sturgeon conservation centre will be built in Vanderhoof. This triumph was decades in the making and could not have been achieved without the dedication of the NWSRI CWG and the TWG.



Although we celebrated the immense achievements the conservation facility represents the Nechako white sturgeon remains in a critical state of decline and immediate action must be taken to maintain the remaining breeding and genetic stock of this endangered fish. The CWG outreach and harm reduction programs implemented addressed two key components of the Species at Risk Act (SARA) white sturgeon recovery plan: to undertake specific actions to reduce bycatch and mitigate impacts (necessary priority addressed in large part by the boat kit program); and, to increase public awareness which this year was achieved with the development of the school curriculum program (primary priority). While the CWG focused on public outreach and harm reduction programs, the TWG remained committed to identifying and maintaining critical sturgeon habitat. In addition to the biological research projects the geomorphology of the Nechako River was being closely examined for for the purpose of future habitat restoration projects.

Recovery Coordinator Lana Ciarniello (centre) gets set to release a Nechako White sturgeon that was used as broodstock for the gravel pad project.

As Coordinator I strive to ensure that all aspects of NWSRI technical and community working group projects are carried out with effective coordination and communication within the NWSRI, other sturgeon stakeholders and the public. I work cooperatively and with the involvement of NWSRI members by providing coordination between and within working groups as well as administrative and technical support. Coordination of NWSRI involves the following services: organizing meetings; tracking action items; completing technical tasks assigned by members of the Recovery Initiative; assisting in or leading project proposal development and Terms of Reference for projects and the development of funding proposals; assisting in the development of outreach materials and the coordination of public events; database and website maintenance; 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 of recovery tasks.

As Coordinator I strive to ensure that all aspects of NWSRI technical and community working group projects are carried out with effective coordination and communication within the NWSRI, other sturgeon stakeholders and the public. I work cooperatively and with the involvement of NWSRI members by providing coordination between and within working groups as well as administrative and technical support. Coordination of NWSRI involves the following services: organizing meetings; tracking action items; completing technical tasks assigned by members of the Recovery Initiative; assisting in or leading project proposal development and Terms of Reference for projects and the development of funding proposals; assisting in the development of outreach materials and the coordination of public events; database and website maintenance; 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 of recovery tasks.

I would like to take this opportunity to thank everyone involved in the NWSRI. It is through your persistence, dedication, and determination that the Conservation Facility is becoming a reality.

Congratulations Everyone. Together in Conservation! Lana Ciarniello

NWSRI Management & Conservation Goals

Conservation Fish Culture: Construct and Operate a Permanent Production Facility

Project Lead: Freshwater Fisheries Society of BC & NWSRI

Funders: Province of BC \$3,252,000; Rio Tinto Alcan \$1,500,000; Nechako Environmental Enhancement Fund \$315,000; District of Vanderhoof \$313,000 In-Kind; Fisheries and Oceans Canada \$160,000.

Year: 5 and Ongoing

The sun shone and the geese and swans flew overhead as years of dedication by Community and Technical working group members were realized in a public announcement made Wednesday April 10th at 11 am at Riverside Park in Vanderhoof – **The Nechako White Sturgeon Conservation Facility is going to become a reality!** The funding proposal submitted by Freshwater Fisheries Society of BC (FFSBC) to the Nechako Environmental Enhancement Fund (NEEF) was accepted and the Recovery Facility is going to be built with operational funding in place for the next 10 years! From a funding standpoint this is in large part due to an additional \$1.2 million from the province for capital and confirmation of \$313,000 from the District of Vanderhoof for land and site servicing preparations. Without these funds it was unlikely that the Conservation Centre would have gone ahead at this time. The \$5,540,000 noted above does not include the 10-year operational funding; NEEF has committed \$3.7 million towards operational funding, while RTA has committed \$500,000. Operational funds will be accounted for in future annual reports. The FFSBC plans to begin construction this spring.

Avison Management Ltd. was contracted to conduct a bird survey for the presence of sensitive species and bird nests. On the 13 May ground was broken and the building of the Nechako White Sturgeon Conservation Facility was underway. The minimum required area was cleared for the project, maintaining as many green spaces as possible. NWSRI Technical working Group Chair, Cory Williamson, was hired by the FFSBC as the Facility Manager and Mike Manky was hired as the Senior Fish Culturist. Hiring was also underway for two seasonal fish culture technicians. The construction went well and staff were in the building in early March 2014; they began preparing to have the facility ready to receive fish in April! Due to the time it took to secure the funding for the Conservation Facility the NWSRI TWG decided not conduct a pilot scale brood project in 2013. Brood capture and egg experiments remain high priorities for next year.



Public announcement that the funding for the white sturgeon Conservation Facility has been secured.



NWSRI Conservation Goal: Construct and Operate Facility

Conservation Fish Culture: Permanent Production Facility

The facility will allow us to produce, raise and release back into the Nechako River up to 12,000 juvenile sturgeon each year. We are confident that these fish will be past the stage of recruitment failure identified by our Technical Working Group and therefore a greater number will survive to breeding age. The NWSRI continues to recognize that the hatchery program is not a permanent solution for sturgeon recovery, however, it will aid in providing time for the TWG to continue to research, implement, and monitor the more permanent solutions required to achieve our ultimate goal of a self-sustaining Nechako White Sturgeon population; we remain committed to identifying, maintaining and potentially restoring critical sturgeon habitat. In late February 2013 the TWG hosted a workshop that was attended by 13 geomorphologists, hydrologists and engineers (see the 2012-13 annual report for further details on this workshop). This workshop identified best ways to proceed with habitat restoration issues from a geomorphology and hydrology perspective and the findings are being used to direct research programs aimed at Nechako white sturgeon habitat restoration.

We also celebrate the immense achievement the recovery facility provides for Nechako white sturgeon recovery and the maintenance of genetic diversity – *this announcement came at a critical time for the future survival of Nechako white sturgeon*. We thank everyone involved in making the recovery facility a reality!

Species at Risk Act Recovery Strategy for White Sturgeon (*Acipenser transmontanus*) in Canada

As if the building of the Conservation Facility wasn't enough to make this a great year in January 2014 the proposed Species at Risk Act Recovery Strategy for White Sturgeon (*Acipenser transmontanus*) in Canada was released! The 60 day public comment period closed on February 15, 2014. On the 19 March 2014 we were informed that the Recovery Strategy for White Sturgeon was posted on the SARA Public Registry. Critical habitat is now legally identified, and legal protection is due September 15, 2014. Click this link to view the recovery strategy http://www.registrelep-sararegistry.gc.ca/document/default_e.cfm?documentID=1774



The water used in the facility comes directly from the Nechako River. This is so fish can be imprinted with the river water, which helps them return to the area to spawn. Photos by Cory Williamson, FFSBC, and Fisheries and Oceans Canada.



Inside the Conservation Facility. The green tanks will house the brood stock and are where the fertilized eggs will grow into juvenile sturgeon raised for release.

Financial Summary for 2013-2014

During the 2013-2014 fiscal year, project funding was \$5,855,791.00 (\$5,516,166 cash and \$339,625 in-kind) which is \$5,300,747 more than last year’s budget! The large budget was the result of securing the funding to build the conservation facility, which accounted for 95% of this year’s budget. Excluding the conservation facility the budget was \$315,791. The peak in in-kind contributions was due to the donation of the land and site service preparations for the centre by the DOV (Figure 1). Project dollars came from a variety of sources including industry, government, environmental funding sources, and volunteer hours. The following provides a breakdown of financial and in-kind contributions to the NWSRI for 2013-14:

BC Ministry of Environment—\$36,000

Canfor Pulp Products Inc.—\$10,000

Carrier Sekani Tribal Council \$20,575 In-Kind & \$77,080 from Aboriginal Fisheries Strategy

District of Vanderhoof— \$313,000

Fisheries and Oceans Canada — \$261,183

Freshwater Fisheries Society of BC — \$11,500

Habitat Stewardship Program — \$29,971 to NWSRI

Murray Creek Rehabilitation Project — \$3,000 & \$2,000 In-Kind

Nechako Environmental Enhancement Fund — \$334,932

NWSRI Community and Technical Working Groups - \$4,050 In-Kind

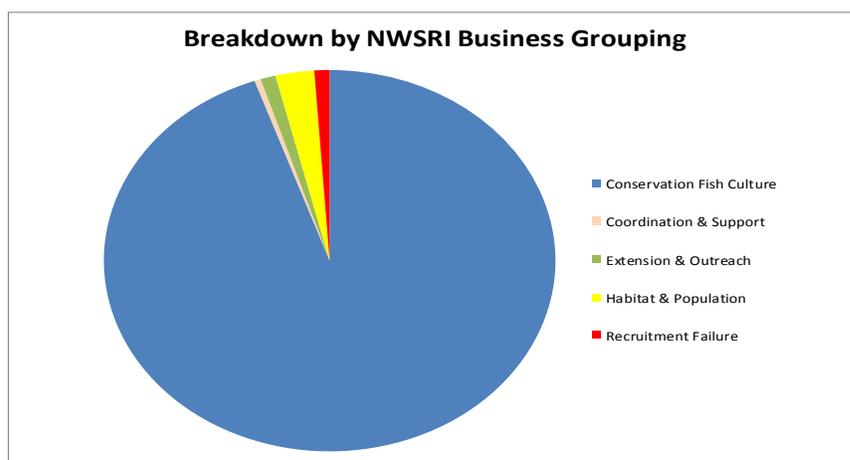
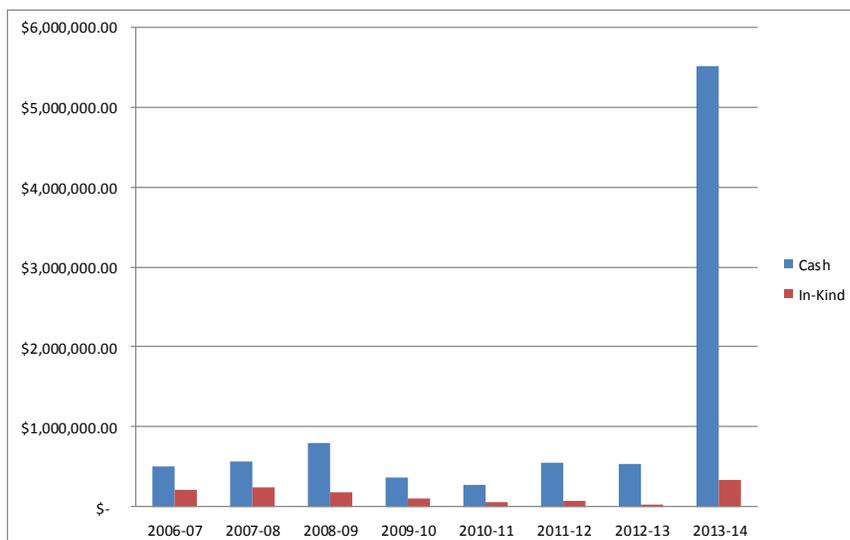
NWSRI Sales—\$400

Okanagan Nation Alliance — \$50

Province of BC — \$3,252,000

Rio Tinto Alcan Inc. — \$1,500,000

UNBC Fish & Wildlife Club—\$50



The NWSRI extends a sincere thank you to all of the groups and individuals who have contributed funds, time and/or other in-kind contributions. This support is essential to the success of the Initiative and the recovery of white sturgeon in the Nechako watershed.

Photo Credits:

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

- BC Ministry of Environment
- BC Ministry of Forests, Lands and Natural Resource Operations
- Carrier Sekani Tribal Council
- EDI Environmental Dynamics Inc.
- Fisheries and Oceans Canada
- Freshwater Fisheries Society of BC
- Jett Britnell
- Kevin Gedling, Parks Canada
- Nechako White Sturgeon Recovery Initiative
- Northwest Hydraulic Consultants (NHC)
- Ty Roberts, CNC
- Wayne Carlton, event participant
- Zsolt Sary, MFLNRO

NECHAKO **WHITE STURGEON**



RECOVERY INITIATIVE

N W S R I A N N U A L R E P O R T 2 0 1 3 - 2 0 1 4

Nechako White Sturgeon Conservation Centre
PO Box 710
3030 Burrard Avenue
Vanderhoof, BC, V0J 3A2

E-mail: info@nechakowhitesturgeon.org