



# NECHAKO WHITE STURGEON RECOVERY INITIATIVE

## 2020-2021 Annual Report



*Figure 1. Sonar image of White Sturgeon spawning reach near Vanderhoof. How many White Sturgeon can you find?  
Image Credit: Kevin Moutray.*



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# MESSAGE FROM THE NWSRI CHAIRS

## Technical Working Group Chair, Trevor Rhodes

The Nechako White Sturgeon Recovery Initiative's (NWSRI) Technical Working Group (TWG) had another successful year conducting research and monitoring activities in the Nechako Watershed including adult spawn monitoring, juvenile indexing, an otter predation study, and a spawning substrate cleaning experiment. This year the TWG developed two new subgroups to further investigate causes of high predation rates and options for habitat restoration. These groups will develop research plans for these topics. The TWG also plans to develop subgroups to focus on a broader river-wide habitat plan and long-term hatchery release strategy.

This was the seventh year of operation for the Nechako White Sturgeon Conservation Centre (NWSCC) in the full facility. NWSCC staff were out in the river in the spring collecting broodstock and wild eggs then busy incubating and rearing the offspring for future release back into the rivers and lakes within the Nechako Watershed.

Movements and habitat use by hatchery reared sturgeon were studied remotely through radio telemetry and directly through PIT-tagged juvenile recapture in the Nechako Watershed and adjacent portions of the mainstem Fraser River. These ongoing evaluations of fish movement support the TWG's goal of restoring the Nechako White Sturgeon population while limiting potential interactions with adjacent populations in the Fraser River. In 2020/2021 the NWSRI continued to support recovery efforts through both habitat and hatchery-based conservation work. Thank you to all of the NWSRI partners for the collaborative effort that supports the ongoing recovery of this endangered population of White Sturgeon.



## Community Working Group Chair, Wayne Salewski

The Nechako White Sturgeon Recovery Initiative found creative ways to engage the community and run our programs in 2020 even though COVID-19 meant that we were not able to offer in-person tours at the Nechako White Sturgeon Conservation Center and we were not able to host in-person events including the popular annual juvenile sturgeon release event.

We continue to grow our signage program as we bring awareness of the presence of White Sturgeon to adjacent communities throughout the Nechako watershed. Signs were added to Wilkins Park in the Fraser Fort George Regional District and to Riverside Park in Vanderhoof.

Sadly, we had to cancel the in-person juvenile sturgeon release event in 2020. In a typical year, students from throughout the region each get to release a sturgeon they have named by hand. In 2020, we filmed the release so the kids could watch the fish being released, but we are excited to get back to the popular in-person event in the future. The annual release of juveniles at the Riverside Park in Vanderhoof is an excellent educational outreach opportunity that engages students from throughout the watershed. Thank you to all the stakeholders and volunteers that helped to plan the event (despite it being cancelled) in 2020 and for all their help during past events!

With continuing declines in the salmon populations, we are seeing fewer First Nation fisher families that can set their nets and this is resulting in fewer by-catch of sturgeon. We feel there is a need to continue the by-catch monitoring program, should we see a rebound of salmon, but also as First Nations change over to more char and burbot fisheries we may see some incidental catches happening. We need this program to respond to this possibility.

The NWSRI and School District 91 educational programs continue to grow and modernize with the move forward to now present smart-board compatible educational videos. The mini-documentary-style videos have been popular within the classrooms and beyond.

As school District 91 develops complementary programs to bring watershed education opportunities to its students, the NWSCC is increasingly viewed as an educational center. In 2020, we installed an outdoor TV so visitors can see the fish even when the facility is closed to public tours. Thank you to the District of Vanderhoof for this donation.

I would like to thank the membership of the CWG along with our many stakeholders for their support and look forward to the following years as we continue our work to save this incredible fish. Without your help we would not succeed.

I would like to thank our many sponsors for their continued support and look forward to the continuing growth and help as we work towards the recovery of the Nechako White Sturgeon.



## ABOUT THE NWSRI

Nechako White Sturgeon have been in the Nechako watershed for centuries (maybe as long as 10,000 years); however, within the last 100 years (the normal life span of a sturgeon) the number of Nechako White Sturgeon has dropped significantly. The population was listed as Endangered under the federal Species at Risk Act in 2006. The Nechako White Sturgeon Recovery Initiative (NWSRI) was established in 2000 by a group of stakeholders interested and invested in working together to find out why the Nechako White Sturgeon numbers have dropped dramatically in the last half century and what actions can be taken to restore a self-sustaining population within the Nechako watershed. The reduction in the total population of Nechako White Sturgeon may be due to many possible factors, including changes to habitat and flow regulation from the creation of the Nechako Reservoir and predation.

This report highlights projects on Nechako White Sturgeon from April 2020 to March 2021. The report is broken down into three main sections that provide updates on the 2020-2021 activities of the: 1) Technical Working Group (science-based arm of the NWSRI), 2) Community Working Group (outreach and awareness arm), and 3) the Nechako White Sturgeon Conservation Centre (NWSCC).

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

[NECHAKOWHITESTURGEON.ORG](http://NECHAKOWHITESTURGEON.ORG)



*Photo 1. Two males ready to spawn. Photo credit NWSCC.*



# STRUCTURE AND FUNCTION OF THE NWSRI

The Nechako White Sturgeon Recovery Initiative (NWSRI) was established in 2000 in response to learning that Nechako juvenile White Sturgeon were no longer as abundant as before, the sturgeon population as a whole was smaller, and the average age of fish was much older than expected. The NWSRI consists of individuals from the private sector, federal and provincial specialists, First Nations members and technical staff, industry experts, and members from non-profit wildlife and wilderness groups. The work of the NWSRI is based on the Recovery Strategy for Nechako White Sturgeon. The Recovery Strategy is based on the best-available science, local knowledge, and traditional knowledge. The NWSRI members work together in different capacities to address the Recovery Strategy. The NWSRI participates in the following activities to ensure that sturgeon, from eggs to adults, continue to live in the Nechako watershed for many generations to come:

- conservation fish culture;
- habitat research and recruitment failure mitigation; and
- stewardship and education.

The NWSRI is comprised of two working groups - the Technical Working Group (TWG) and the Community Working Group (CWG). Together the TWG and CWG work towards the common vision of sturgeon population recovery.

- The TWG works to develop and oversee implementation of the Nechako White Sturgeon Recovery Strategy. This includes designing and carrying out the projects that are described in this Annual Report.
- The CWG is the communication and outreach arm of the NWSRI, and assists the TWG by garnering public and financial support for sturgeon recovery within the Nechako watershed, and sharing information with stakeholders.

## Technical Working Group

The Technical Working Group represents the Nechako and Upper Fraser Rivers, but also has representation from the Middle Fraser River. It was formed in September 2000, and is made up of fisheries, habitat and river geomorphology scientists and researchers as well as First Nations fisheries managers and government representatives. The TWG met four times in 2020-2021 to discuss the latest research project findings, future project planning, the progress of the group, and the development of recovery recommendations for Provincial managers. Each member brings specific qualifications related to the technical problems being researched that might include: a working knowledge of White Sturgeon biology; expertise in stream flow management/hydraulic engineering; or experience in other animal recovery initiatives. The TWG is responsible for addressing the Recovery Strategy by:

- investigating why Nechako White Sturgeon is in decline; and
- implementing the strategies to help restore the fish to a self-sustaining population.



## Community Working Group

The Community Working Group is comprised of First Nations, non-government environmental organizations, industry, local and regional governments, and engaged members of the public. The CWG discuss the findings of the TWG and to use that information to help plan community-based projects that provide:

- outreach and educational opportunities that relate to the latest research of the TWG; and
- public awareness for Nechako White Sturgeon in the watershed.

Increasing the knowledge about White Sturgeon recovery in the watershed is a key focus of the group, and programs target key interest groups and stakeholders, including school children, riverside residents, industrial companies in the watershed, First Nations, and local governments.

## NWSRI Partnerships

The members of both the Technical Working Group and Community Working Group represent a wide range of organizations. Those involved during the 2020-2021 fiscal year included:

- Avison Management Ltd.
- BC Ministry of Environment
- BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development
- Canfor Pulp and Paper
- Carrier Sekani Tribal Council
- District of Fraser Fort George
- District of Vanderhoof
- The Exploration Place
- Fisheries and Oceans Canada
- Fraser River Sturgeon Conservation Society
- Freshwater Fisheries Society of BC
- Habitat Stewardship Program
- Integris Credit Union
- New Gold
- Rio Tinto Alcan
- School District 91
- Spruce City Wildlife Association
- University of British Columbia

## NWSRI Recovery Coordinator

**Project:** NWSRI Coordinator  
**Project Lead:** NWSRI  
**Funders:** FLNRORD via Land Base Investment Strategy- Species at Risk (LBIS-SAR) \$17,500  
**Start Year:** 2001

The NWSRI has a paid part-time Recovery Coordinator that supports the work of the TWG and CWG. The role involves coordination and administrative support of meetings, project proposals, budgets, and project progress related to outreach and education projects. Other tasks involve

maintenance of the website and social media, assisting in the development of outreach materials, and the coordination of public events. Andrea Sterling was the Recovery Coordinator during the 2020-2021 year. Andrea is a biologist based out of Prince George.



# SPAWN MONITORING

**Project:** Egg monitoring  
**Project Lead:** CSTC  
**Funders:** HSP \$50,600  
**Start Year:** 2014

## Objectives

- To determine the timing of spawning;
- to collect wild-fertilized eggs for hatchery rearing and later release;
- to track the physical parameters of the river that occur during spawning, such as river discharge, temperature and substrate condition;
- to ascertain the exact location(s) where spawning occurs to inform habitat restoration decisions; and
- to collect larval sturgeon and provide measure of spawning success and recruitment to young of year.

## River Conditions During the Spawning Period

- River discharge during the spawning period ranged from 145 - 213 m<sup>3</sup>/s.
- The spawning period in 2020 (May 24 - June 12) occurred during a period of decreasing river discharge.
- Water temperature ranged from nightly lows between 10.9°C – 13.3°C to daytime highs between 13.4°C – 15.6°C. Mean daily temperature during the spawning period ranged from 12.6°C to 14.3°C.

The information gathered from this NWSRI project helps the TWG members to better understand the spawning behaviours and locations adult Nechako White Sturgeon use within the Nechako Watershed. This information is used to help inform habitat restoration projects with the goal to improve in-river survival of eggs to year-old sturgeon, as well as to understand the behaviour of sturgeon in relation to the river characteristics. Larval sampling can provide data related to annual spawning success and recruitment to young-of-year life-stage. Egg and larval detections can help TWG members assess spawning habitat remediation activities. There are three projects that make up the adult spawn monitoring program:

- egg mats,
- larval sampling, and
- radio-telemetry (fixed station, boat-based and aerial telemetry).



*Photo 2. Cale checking egg mats for wild-spawned White Sturgeon eggs and buoys that are often spotted from Burrard St Bridge during spawning season. These buoys mark the egg mats. Photo credit: NWSCC.*





# EGG MATS

## Objectives

- To confirm wild spawning activity in the river;
- to monitor river conditions, spawning behaviours and habitat preference; and
- to collect wild eggs for rearing within the NWSCC, to bring these eggs past the critical stage of recruitment failure and ensure genetic diversity is maintained in the population.

Sturgeon spawn mid-water column. Females broadcast eggs at the same time and location males broadcast milt. Sturgeon eggs become adhesive and negatively buoyant once fertilized, at which point they drift downstream until they adhere to the river substrate. This program sets egg mats on the river bottom within and downstream of known spawning sites.

## Results

Egg mats were deployed to maximize the number of wild fertilized eggs collected for hatchery rearing. During the first spawning event eggs were detected by Carrier Sekani Tribal Council (CSTC) at sites upstream, within, and downstream of the island complex in Vanderhoof. CSTC also detected eggs upstream and downstream of Burrard Bridge during the later two spawning events. This is a summary of the 2020 result:

- there were 64 egg mat sites in total within and downstream of the spawning reach;
- CSTC and NWSCC mats detected a total of 418 eggs;
- egg detections suggested the primary spawning event occurred around May 27<sup>th</sup>, 2020;
- prime condition eggs were found downstream of the island complex within the spawning reach; and
- viable eggs were brought to the NWSCC, where they are reared separately from the hatchery program sturgeon.

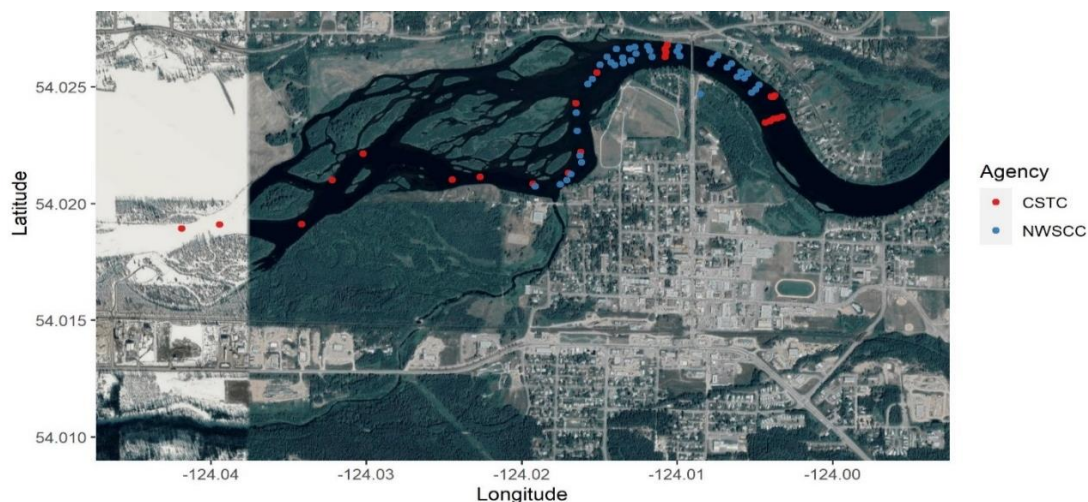


Figure 2. Map of 2020 Nechako River spawn monitoring egg mat sites (red for CSTC sites blue for NWSCC sites). Map provided by CSTC



# LARVAL SAMPLING

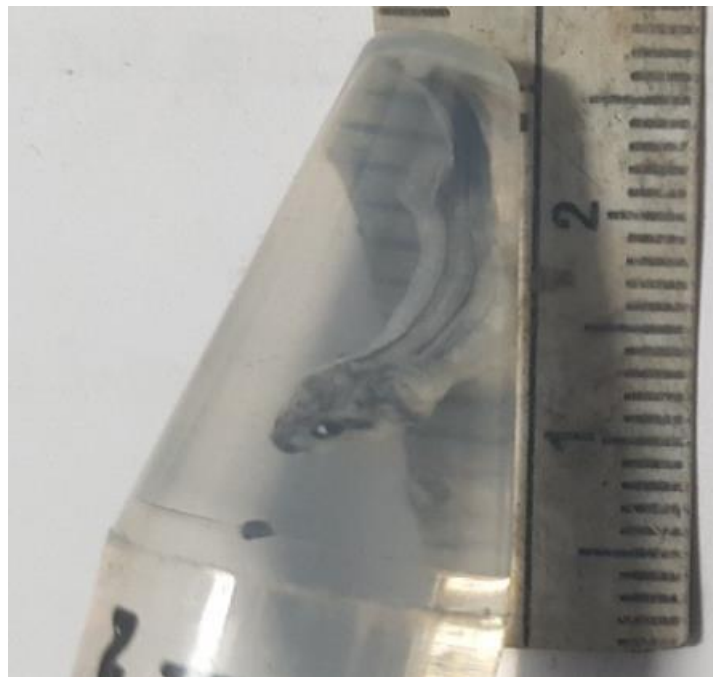
## Objectives

- To confirm and assess wild spawning success to young-of-year life stage;
- to identify important or critical habitat for sturgeon larvae in Nechako River; and
- to collect wild larvae specimens for use in genetic identification and otolith studies.

Once hatched, sturgeon larvae have two major life-stages associated with different behaviours. 0-12 days post-hatch (dph) sturgeon larvae hide near their hatching location using substrate interstitial spaces and feed off their egg yolk-sac. 12-40 dph sturgeon larvae become free-feeding and must actively forage in-river. Free-feeding larvae disperse by downstream migrations at night and can travel many kilometres.

## Results

Four sites within the spawning reach were sampled for larvae 16 times between June 3<sup>rd</sup> and June 27<sup>th</sup>. Three sites downstream of the spawning reach were sampled 10 times between June 12<sup>th</sup> and June 27<sup>th</sup>. No larvae were detected.



*Figure 3. Larval White Sturgeon found in the Nechako River in 2019. Photo Credit: Jeff Beardsall*



# RADIO TELEMETRY TRACKING

**Project:** Radio Telemetry  
**Project Lead:** FLNRORD, FFSBC  
**Funders:** \$22,000 total: \$5,000 LBIS- SAR, \$17,000 FLNRORD and FFSBC monitoring in-kind  
**Start Year:** 2015

Telemetry data informs our understanding of broad scale dispersal patterns, periodicity of habitat use, and migration behaviours of both wild and hatchery origin White Sturgeon within the Nechako watershed and beyond.



*Photo 3. Aerial telemetry receiver with Nechako White Sturgeon Conservation Centre below (photo by Dr. Nikolaus Gantner).*

## Objectives

- To determine the timing of spawning and habitat use of adult sturgeon;
- to determine dispersal patterns and migration behaviours of adult sturgeon within the Nechako Watershed; and
- to monitor post-release movement of hatchery released juvenile sturgeon.

## Adult Telemetry Monitoring

Each year during the brood capture program adult White Sturgeon are radio tagged and monitored by boat-based crews. In the spring of 2020, three new radio tags were implanted during the brood capture program, one of these was used to replace an old tag. As of June 2020, approximately 271 adult White Sturgeon carry active radio tags in the Upper Fraser watershed (Nechako, Middle Fraser and Upper Fraser). To monitor sturgeon movements, five fixed telemetry stations are maintained in the Nechako watershed. Three of these stations operate year-round (Vanderhoof, Ft. St. James, and Nechako confluence) and two of these stations operate seasonally (Nautley River, Lower Stuart). Two additional seasonal stations are set-up in the Fraser River at Stone Creek and the Bowron River. In addition to fixed stations, boat and aerial telemetry surveys are completed periodically to search for radio-tagged sturgeon.

### Results

- Spawning activity is inferred from multiple daily detections at the spawning reach from May 15<sup>th</sup> to approximately June 2<sup>nd</sup>, 2020. A total of 31 individual radio tagged adult sturgeon were detected at the spawning reach during this period.
- Several clusters of adult radio tag activity occurred on May 16-18<sup>th</sup>, May 24-26<sup>th</sup> and May 28<sup>th</sup>. On May 17<sup>th</sup> up to fifteen individuals, the maximum per day, were detected at the Vanderhoof telemetry station (spawning reach).



## Juvenile Telemetry Monitoring

Radio telemetry studies on hatchery-released juveniles are used to better understand movement patterns of juvenile sturgeon post-release and generate estimates of post-release survival of hatchery-origin juvenile sturgeon. One hundred and twelve “large-sized” (mean fork length ranging from 55.0 cm to 69.4 cm) juvenile sturgeon have been released with radio tags since 2018.

Results from previous years demonstrated three of the tagged 2019 hatchery-released juvenile sturgeon moved quickly throughout the Nechako River mainstem and into the Fraser River. One of four juveniles that moved to the Fraser River have moved back to the Nechako River, and the other three have continued to occupy the Fraser River within 50km of the Nechako confluence. Telemetry results also demonstrate 50% survival rate of hatchery-released juveniles 12-months post release in the Nechako River, and as low as 33% survival 24-months post release in the Nechako River.

In 2020 radio-tagged juveniles were released at three sites in the Nechako River mainstem (N=30) and at two sites in Fraser Lake (N=20). Additional lake release sites were added to better understand movements of juveniles between the Nechako River and Fraser Lake and to clarify if juveniles released in Fraser Lake had a different survival rate compared to juveniles released in the Nechako River mainstem.

### Results

- During the 2020 survey year, all 30 juvenile radio tags released into the river were detected, ranging from river kilometer (RKM) 205 (upstream of Fort Fraser) to RKM 900 (Stuart River confluence).
- Three tags from the 2019 release group were observed in the Fraser River to RKM 755 (Stone Creek), and one tag was observed downstream of RKM 700 (Blackwater River confluence).
- Tag movement was detected within Fraser Lake; four tags moved from the west end of Fraser Lake to the east end near the Nautley River outflow, and three tags moved from the southeast portion (Beaumont Park) north to the Nautley River outflow.
- One tag released in the Nechako River mainstem was detected in Fraser Lake, and one tag released in Fraser Lake was detected in the Nechako River mainstem.
- Two tags from the 2020 Nechako River release group (N=30) were confirmed mortalities by October 2020 indicating a survival rate of 93% five months post release.
- Post release survival rate for the 2018 release group (N=32) was estimated 33% 24 months post release. Post release survival rate for the 2019 release group (N=30) was estimated 50% 12 months post release.



# SPAWNING SUBSTRATE RESTORATION

**Project:** Spawning Habitat Restoration  
**Project Lead:** FLNRORD  
**Funders:** DFO MOU to MOE \$89,388  
**Start Year:** 2019

**Objective:** Test a method to remove fine substrates that accumulate in critical spawning areas for White Sturgeon then monitor riverbed condition and subsequent infilling. This project was a collaborative effort including MOE, FLNRORD, Northwest Hydraulic Consultants, the NWSCC, CSTC, and the NWSRI.

## Results

Several different cleaning methods were tested including use of a hydraulic jet, a suction dredge with multiple sizes of dredge heads and screen sizes, and mechanical raking. For a method to be effective, it needed to remove sand and silt from the gravel. Exposed gravel, including interstitial spaces, is required for sturgeon eggs to adhere and for larval sturgeon to find refuge from predators. These methods were all deployed using divers.

- Of the methods tested, the hydraulic jet was the most effective at removing sand and silt from the gravel.
- Approximately 20-25 m<sup>2</sup> of the lower patch and 30-35 m<sup>2</sup> of the upper patch were restored on May 7<sup>th</sup> and 8<sup>th</sup> respectively.
- The hydraulic jet method allowed for substrate cleaning at a rate of 8-14 m<sup>2</sup>/hr.
- Substrates appeared to remain relatively free of sand and silt in June, but limitations in video monitoring made the images difficult to interpret. Locations near the bank appear to have infilled with sediment at a faster rate.
- This method has limitations as only small areas can be cleaned and the divers were not able to clean substrate in high velocity areas, but the method appears to be feasible for certain applications.



*Photo 4. Substrate cleaning experiment 2020. Photo credit: Northwest Hydraulic Consultants.*



## OTTER PREDATION STUDY

**Project:** Otter Predation Study

**Project Lead:** UNBC

**Funders:** In kind: UNBC  
\$8,750; FFSBC \$5,000

**Start Year:** 2016

Preliminary searches from 2016-2018 resulted in 93 hatchery-released juvenile sturgeon PIT tags being retrieved from seven River Otter (*Lontra canadensis*) latrine sites. With increased effort in 2019, an additional 20 latrine sites and seven feeding sites were identified, resulting in the collection of 405 PIT tags. With the help of FFSBC and FLNRORD staff, a UNBC graduate student studying this predation further increased effort and the spatial extent of latrine identification and PIT tag collection in 2020.

### 2020 Results

- 31 additional river otter latrine sites were identified and a total of 646 PIT tags retrieved from the now 59 known river otter latrine sites. There have been 1,170 juvenile sturgeon PIT tags collected to date.
- The first evidence of otter predation of a wild sturgeon in the Nechako was collected in 2020, with a PIT tag belonging to a wild sturgeon that was at least 19 years old and 69.1 cm in length collected from a newly identified otter latrine site.



Photo 5. Two otter latrine sites identified in 2020. Each orange flag indicates the location of a defecated juvenile sturgeon PIT tag. Photo credit: Cale Babey.



# JUVENILE INDEXING PROGRAM

**Project:** Juvenile White Sturgeon Monitoring  
**Project Lead:** CSTC  
**Funders:** \$60,000 MOE and FLNRORD  
**Start Year:** 2004

## Objectives

- To gain insight into hatchery and wild juvenile sturgeon survival and growth rates;
- to collect biological samples for movement, growth, and genetic analyses; and
- to refine knowledge of juvenile sturgeon habitat and distribution in the Upper Fraser watershed including Nechako watershed.

## Nechako River and Upper Fraser

The juvenile indexing program uses a standardized set-line sampling technique, gear, and methodology to catch wild-origin and hatchery-origin juvenile sturgeon. The gear targets juvenile and sub-adult sturgeon (approximately 30 to 130 cm fork length). Biological data, capture location, and river conditions were collected for each juvenile sturgeon caught.

Location	Effort (hook hours)	Hatchery Captures (recaptures)	Wild Captures (recaptures)
Core reach Index Zone in Nechako River (RKM 105-135)	107,513	65 (33)	0 (0)
Peripheral areas in Nechako Watershed (Nechako River, Stuart River, Fraser Lake, Stuart Lake)	84,399	20 (3)	2 (2)
Fraser River Region 7 (RKM 740-956)	28,364	10 (0)	45 (7)
Fraser River Region 5 (RKM 524-695)	43,381	21 (4)	30 (11)
Longworth Canyon Fraser River (RKM 957-955)	6,422	1 (0)	85 (16)

## Middle Fraser River

Region 5 FLNRORD staff conducted juvenile sampling in the Middle Fraser between RKM 524 and 695. In 2020, they caught a total of 85 juvenile white sturgeon (43,616 hook hours). Of these 85 fish, 49 were hatchery origin and 36 were wild origin. Staff are able to distinguish hatchery origin fish from their wild counterparts because they have a PIT tag.

## Recommendations:

- Monitoring Upper-Mid Fraser watershed and Nechako watershed continue with similar effort to address knowledge gaps related to 1) juvenile survival in Nechako River and effectiveness of current population recovery strategy, and 2) threats to wild Fraser River sturgeon populations.
- Detailed recommendations are made in the 2020 Upper-Mid Fraser/Nechako Watershed Juvenile White Sturgeon Monitoring report.

## JUVENILE STURGEON RELEASE

**Project:** Juvenile Sturgeon Release and Website  
**Project Lead:** NWSRI CWG  
**Funders:** Total \$20,910: HSP \$3,820, NWSRI \$1,890; In-kind: FFSBC \$6,000; School District 91 \$2,000; SCWA \$1,000; District of Vanderhoof \$1000; New Gold \$2,000; CSTC \$800; NWSRI TWG \$1000; DFO-SEP \$400  
**Start Year:** Release: 2006; Website 2012

### Objectives

- To provide an opportunity for students to participate hands-on in the recovery of Nechako White Sturgeon; and
- public awareness and education.

In the spring of 2020, the NWSRI CWG had to cancel the annual release event following wide spread detection of COVID-19 in British Columbia. For the first time in 2021, the students were going to be able to release both white sturgeon and chinook salmon into the Nechako River thanks to Spruce City Wildlife Association’s (SCWA) willingness to bring Chinook Salmon fry and hatchery volunteers to the event.

Most of the planning for the event was already complete and the NWSRI CWG wanted to find a way to engage the 500+ kids that would have bussed to this exciting in-person event at Riverside Park in Vanderhoof. While following COVID-19 protocols, NWSCC staff and SCWA volunteers filmed the release of both fish species into the Nechako River. This footage was turned into a shareable video that you can find on our website or via the link below:

[www.youtube.com/watch?v=NHZ6btIMV8I](http://www.youtube.com/watch?v=NHZ6btIMV8I)

We were not able to have the in-person event again in 2021, but we also had some more time to plan creative ways to engage the students. You can read more about that in the 2021/2022 Annual Report.

Students that released juvenile sturgeon in the past can track their movements via the NWSRI Where is My Fish page on the website:

[www.nechakowhitesturgeon.org/where-is-my-fish](http://www.nechakowhitesturgeon.org/where-is-my-fish)



Figure 4. FFSBC staff releasing 2-year old juvenile White Sturgeon in June of 2020. Photo credit: FFSBC





# EVERY FISH COUNTS - BOAT KIT PROGRAM

**Project:** Boat Kit Program

**Project Lead:** NWSRI and CSTC

**Funders:** Total: \$8,215 HSP \$1,440; Canfor \$3,000; NWSRI \$1,575; In-kind: CSTC \$1,200; NWSRI \$1000

**Start Year:** 2011

## Objectives

To reduce accidental harm to sturgeon and the sturgeon population as a result of sturgeon by-catch associated with the First Nation salmon, char and burbot fisheries.

The Emergency Sturgeon Live Release Boat Kit program has been operating since 2011. It is an initiative developed by the NWSRI and Carrier Sekani Tribal Council (CSTC) to reduce the potential for by-catch mortalities associated with the First Nation Food, Social and Ceremonial (FSC) fisheries. Every sturgeon saved because of this program remains in the population to breed in the future and contribute to the genetic variability of the population to prevent extirpation of the Nechako White Sturgeon. Since 2011, 86 sturgeon have been reported by the program, and 78 sturgeon have been released live. Considering the adult population to be roughly 600, the number of live released sturgeon since 2011 is likely 10% of the available adults in the population.

In 2020, for the second consecutive year our First Nation partners were not able to fish for the salmon they have relied on for centuries due to declining salmon stocks exacerbated by the Big Bar landslide which largely prevented passage of early run salmon stocks again in 2021. For this reason, our member First Nations did not fish for salmon this year and were forced to seek alternate protein sources or protein sources outside of the Nechako Watershed. Due to reduced fishing effort (other small fisheries such as char and burbot were active), there were no sturgeon encounters reported in 2020. Instead, CSTC and the NWSRI focused on developing an electronic data form that would allow bycatch monitors and fisher families to collect data on any sturgeon encounters on their phone.

## Kit Components

- A small boat kit that contains all of the tools necessary for a successful live release;
- a video, “Every Sturgeon Counts,” which is used as a training tool for Fisher Families; and
- an on-site community By-catch Monitor that can explain the program and help release sturgeon caught in a net.

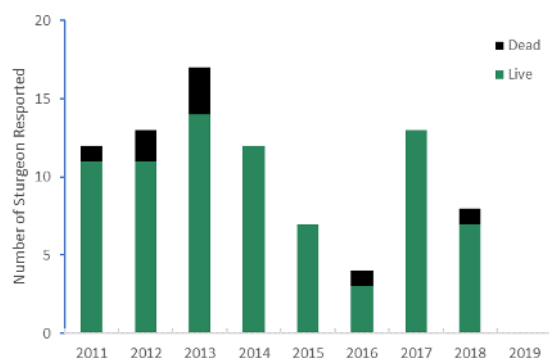


Figure 5. White Sturgeon bycatch reported in the Nechako Watershed to date.



# SCHOOL CURRICULUM

**Project:** Nechako White Sturgeon Curriculum  
**Project Lead:** NWSRI  
**Funders:** Total \$53,536: HSP \$27,886; District of Vanderhoof \$4000; NWSRI \$2,835; In-kind: School District 91 \$4,000; FFSBC \$8,465; CSTC \$2000; UNBC \$1000; NWSRI \$2,350  
**Start Year:** 2014

The Healthy Watersheds for Sturgeon School Curriculum Program was first introduced in schools within School District 91 in 2014.

## Objectives

- The program provides tool to increase awareness of the connection between maintaining healthy rivers, riparian areas and watersheds to benefit sturgeon and all organisms; and
- provide educational tools to teachers and students within the Nechako watershed (School District 91), to learn about the biology, history, environment and value of the Nechako White Sturgeon.

In 2020-2021, we started migrating the curriculum content to a mini-documentary format and developed three live streams from the NWSRI. In 2020-2021, we completed four additional curriculum videos. We also provided an interactive curriculum calendar that was tailored to specific age groups and includes links to videos and other resources. Finally, we installed a TV outside the NWSRI to show live streams of sturgeon inside and educational videos.

Four mini-documentaries are available for streaming on YouTube:

Search Nechako White Sturgeon Recovery Initiative on YouTube or go to:  
[www.youtube.com/channel/UC\\_TQ1F2mc8HRzi5at0-K-gg](http://www.youtube.com/channel/UC_TQ1F2mc8HRzi5at0-K-gg)

These videos are great for all age groups and audiences!

**K-GRADE 3 2021-2022 STURGEON CALENDAR**

**SMARTBOARD - Click on the LINKS for more! ON YOUR CLASSROOM WALL - Add your own events and projects on this calendar!**

**WHAT'S HAPPENING WHEN...**

- Sturgeon
- History
- Environment
- Watersheds
- Local Activity Day
- Material
- Community

**Highlighted Calendar Dates/Activities/Links**

**BIG IDEAS!**

- ✓ Life cycle
- ✓ Adaptations
- ✓ How living things interact with their environment

**QUICK LINKS**

- 1. Curriculum Centre
- 2. Sturgeon in the Wild
- 3. Sturgeon in the Wild
- 4. Sturgeon in the Wild
- 5. Sturgeon in the Wild
- 6. Sturgeon in the Wild
- 7. Sturgeon in the Wild
- 8. Sturgeon in the Wild
- 9. Sturgeon in the Wild
- 10. Sturgeon in the Wild
- 11. Sturgeon in the Wild
- 12. Sturgeon in the Wild
- 13. Sturgeon in the Wild
- 14. Sturgeon in the Wild
- 15. Sturgeon in the Wild
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- 17. Sturgeon in the Wild
- 18. Sturgeon in the Wild
- 19. Sturgeon in the Wild
- 20. Sturgeon in the Wild
- 21. Sturgeon in the Wild
- 22. Sturgeon in the Wild
- 23. Sturgeon in the Wild
- 24. Sturgeon in the Wild
- 25. Sturgeon in the Wild
- 26. Sturgeon in the Wild
- 27. Sturgeon in the Wild
- 28. Sturgeon in the Wild
- 29. Sturgeon in the Wild
- 30. Sturgeon in the Wild

**NWSRI**

**nechakowhitesturgeon.org**

**To Teachers: We want to help YOU & YOUR STUDENTS LEARN about sturgeon.**

**Sturgeon in the Wild**

Figure 6. 2021/2022 curriculum calendar.



## COMMUNITY OUTREACH SIGNAGE

**Project Lead:** NWSRI CWG  
**Funders:** Total \$6,494: HSP \$2,027; NWSRI \$967; In-kind: NWSRI \$500; RDFFG \$2000; DoV \$1000  
**Start Year:** 2017

In 2020/2021, the NWSRI designed and printed two interpretive signs to support public education and awareness within the Nechako watershed:

- Riverside Park in Vanderhoof; and
- Wilkins Park in the Regional District of Fraser Fort George

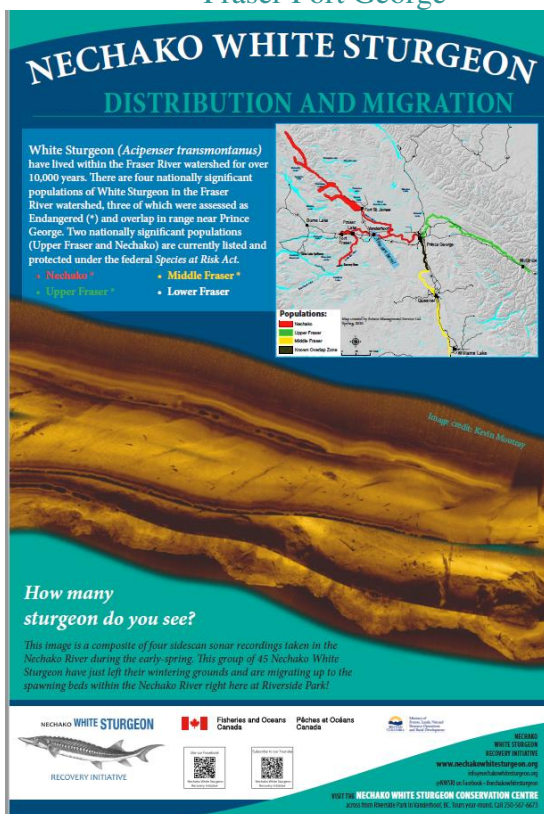


Figure 7. Sign developed for Riverside Park in Vanderhoof

## OTHER NWSRI CWG ACTIVITIES

**Project Lead:** NWSRI CWG  
**Funders:** Total \$18,672: HSP \$12,597; NWSRI \$1,575 In-kind: NWSRI \$1500; Exploration Place \$3,000  
**Start Year:** 2017

In 2020/2021 the CWG also completed the following activities:

- developed an Annual Report and Brochure for 2019/2020;
- worked with the Exploration Place in Prince George to develop content for their White Sturgeon display and purchased a touchscreen display; and
- website (nechakowhitesturgeon.org) and Facebook (@NWSRI) updates.

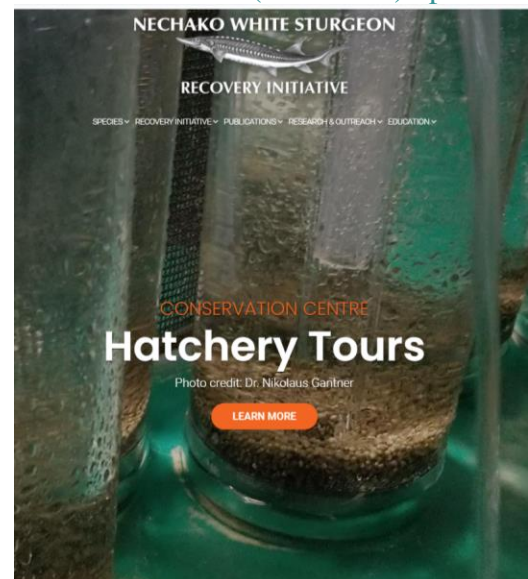


Figure 8. Refreshed Website Home Page



# NECHAKO WHITE STURGEON CONSERVATION CENTRE

## Conservation Fish Culture

**Project:** Conservation Fish Culture

**Project Lead:** FFSBC

**Funders:** Total: \$483,484. Nechako Environmental Enhancement Fund \$433,484, Rio Tinto \$50,000.

**Start Year:** 2014

## Objectives

- To produce the next generation of sturgeon that will spawn naturally in the Nechako River.
- To conserve genetic diversity within the Nechako White Sturgeon population.
- To grow sturgeon to 2 years of age to get them through the critical recruitment failure stage.

This was the seventh year of operation for the Nechako White Sturgeon Conservation Centre. Mike Manky was the Hatchery Manager; Fraser Linza was the Senior Fish Culturist; Jake Zimich was the Fish Culturist and Emily Bailey was the seasonal Fish Culture Technician. The other seasonal staff in 2020 were Caitlin Day, Junior Research and Fish Culture Technician; Jordan Cranmer, Outreach Coordinator/Junior Research and Fish Culture Technician; and Alexis Seely, Research and Community Outreach Assistant.

Four females were spawned with 3 males in two events in 2020 in May and June. Eggs hatched by mid-June, and first feeding was a week later. As of February 2021, there were 500 juvenile sturgeon in the hatchery. This included: 200 from brood year 2019 and 300 from brood year 2020. The 2019 brood year will be released in the Spring of 2021 and the 2020 brood year are expected to be released in the Spring of 2022.

Prior to release in the Spring of 2021, our hope is that the fish will be past the stage of recruitment failure identified by our TWG and therefore a greater number will survive to breeding age. These young fish will be released at various locations in the Nechako watershed. The NWSRI continues to recognize that the facility is a stop-gap for sturgeon recovery that will aid in providing more time for the TWG to continue to research, implement, and monitor the more permanent solutions required to achieve a self-sustaining sturgeon population.



*Photo 6. FFSBC staff, Caitlin, measuring an adult sturgeon.*



## Broodstock Captures

The broodstock capture program underpins the success of the breeding plan for the endangered Nechako White Sturgeon. This program captures wild adult sturgeon in breeding condition to use to seed the hatchery program for the coming year. The Breeding Plan currently calls for the production of up to 12 adult females and from 12 adult males in a factorial mating design (up to 144 crosses).

### Objectives

- To capture 12 female and 12 male mature sturgeon, which supply eggs and milt for the conservation fish culture program.
- To assist NWSRI research programs such as the application of radio or tracking of tagged adults to inform programs such as spawn monitoring.
- To monitor and assess the health of the adult sturgeon population.

### Results

- Fourteen adult sturgeon (10 males and three females, and one un-sexed) were caught in a two and a half week sampling period from May 4<sup>th</sup> to 22<sup>nd</sup>, using set-lines and angling.
- Three males and four females (three from adult holding) were used for the brood program to make four families and nine half-sibling crosses.
- One radio-tag was implanted in an adult that was not used in the brood program but returned to the river. All adults used in the brood program were released with radio tags.
- Of 382 wild eggs collected between May 25th and June 12th, 30 were held to the juvenile stage.
- Three days of brood sampling took place from September 16th to 18<sup>th</sup>. Eleven adult sturgeon were captured (five males, four females and two un-sexed). None were brought back to the hatchery for use in future brood programs. Three additional radio tags were applied.



*Photo 7. 2020 Broodstock captures by FFSBC staff and two males ready to spawn.*

## Juvenile Release

One hundred and ninety-nine juvenile sturgeon were released into the Nechako watershed in 2020. Fifteen juvenile sturgeon that were collected in 2018 as eggs were released on June 18, 2020 at Fort Fraser. 111 juvenile sturgeon were released in the mainstem of the Nechako river. They were proportionately represented at three different release locations including Fort Fraser (RKM 196.4), the boat launch in Vanderhoof (RKM 136.4) and RKM 116.9. 73 juvenile sturgeon were also released at two locations at either end of Fraser Lake in 2020. Ten of the juvenile sturgeon released at each of the five locations were released with radio tags. These tags were surgically implanted two weeks prior to release, allowing the fish time to heal in the hatchery before being released.



## Hatchery Tours

**Project:** Merchandise and Donations  
**Project Lead:** FFSBC & NWSRI  
**Raised:** \$639.66

### Objectives

- To increase public awareness in sturgeon conservation and recovery initiatives through public interaction.
- To facilitate a better understanding of the hatchery's role in sturgeon conservation.

Due to the Covid-19 Pandemic the Freshwater Fisheries Society of BC was not able to provide in-person public tours of the Nechako White Sturgeon Conservation Centre. Outreach activities were however, conducted in an online format and included several short videos and hatchery updates posted to social media.

### Tour Statistics

Data was collected about the “online” visitors to the NWSCC.

- In 2020 there were 655 followers to the NWSRI Facebook page
- Cancellation of in-person tours meant that we did not sell any merchandise, but we did receive two generous donations in 2020 following the tragic loss of Peter Cribbie who was the NWSCC tour guide in 2019.



Photo 8. Peter Cribbie flashing his winning smile while providing a tour of the NWSCC in 2019. Photo credit: Wayne Salewski.

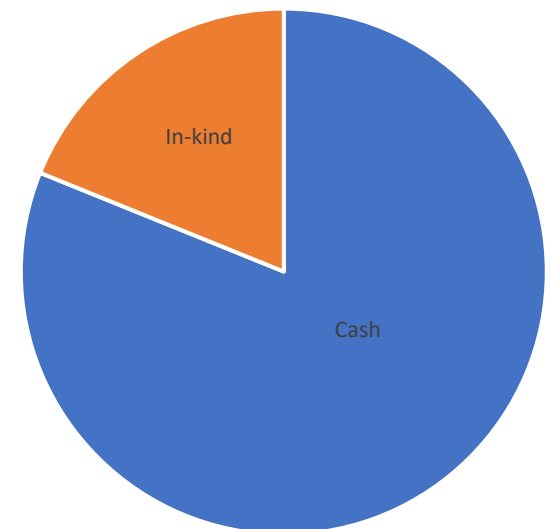
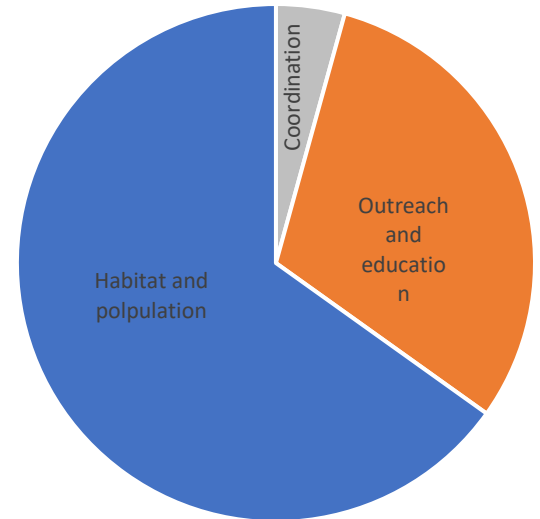


# FINANCIAL SUMMARY FOR 2020-2021

## Project Funding

Funding came from a variety of sources including industry, government, environmental funding sources, and volunteer hours. The following breakdown of financial and in-kind contributions underestimates the number of in-kind hours that are generously donated to the NWSRI by researchers, hatchery staff and community members. These numbers do not include the funding to run the NWSCC (see page 18).

Contributor	Cash	In-kind
Aboriginal Fund for Species At Risk via Carrier Sekani Tribal Council (CSTC)	\$60,000	
Habitat Stewardship Program via CSTC	\$50,600	
Ministry of Forests Lands Natural Resource Operations and Rural Development (FLNRORD)	\$30,000	
Ministry of Environment	\$30,000	
Habitat Stewardship Program	\$47,770	
Fisheries and Oceans Canada MOU to Ministry of Environment	\$89,385	
FLNRORD via Land Based Investment Strategy – Species at Risk	\$17,500	
Canfor Pulp and Paper	\$3,000	
New Gold	\$2,000	
NWSRI Sales & Donations	\$640	
The Exploration Place		\$3,000
School District 91		\$6,000
Freshwater Fisheries Society of BC		\$27,965
FLNRORD		\$8,500
District of Vanderhoof		\$6,000
NWSRI Working Groups		\$8,350
CSTC		\$4,000
University of Northern British Columbia		\$9,750
Regional District of Fraser Fort George		\$2,000
Spruce City Wildlife Association		\$1,000
Fisheries and Oceans Canada-SEP		\$400
<b>Total Cash Contributions</b>	<b>\$330,895</b>	
<b>Total In-Kind Contributions</b>		<b>\$76,965</b>
<b>Grand Total</b>	<b>\$407,860</b>	



*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 NWSRI and the recovery of White Sturgeon in the Nechako Watershed*



## CONTACT THE NWSRI

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**c/o The Nechako White Sturgeon Conservation Centre**  
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E-mail: [info@nechakowhitesturgeon.org](mailto:info@nechakowhitesturgeon.org)

Facebook @NWSRI

Visit our website for more information about the program, projects both past and present.

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



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Canada

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Canada

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