# FORUM ON THE FUTURE OF FRASER RIVER WHITE STURGEON

**January 29th, 2004**
**9:30 am – 4:00 pm**
**Skway Hall, 44860 Schweyey Road, Chilliwack**

# Meeting Report

**Prepared by:**

**Graham Long**
**Compass Resource Management**

**May 15, 2004**

# Executive Summary

A “Forum On The Future Of Fraser River White Sturgeon” was held on January 29th, 2004 at Skway Hall, 44860 Schweyey Road, Chilliwack.

Initiated by the Fraser River White Sturgeon Conservation Society, this Forum brought together over 90 people from a wide variety of First Nations and stakeholder groups to pool knowledge on Fraser River White Sturgeon as an input to the development of a Fraser River White Sturgeon Conservation Plan.

Forum Goal:

- To share information and discuss options for sustaining white sturgeon in the Fraser River Basin

Forum Objectives:

- To learn about First Nations relationship with white sturgeon
- To share technical information on the status of Fraser River white sturgeon
- To discuss current issues facing white sturgeon
- To help clarify white sturgeon conservation priorities
- To share ideas and perspectives on how all interested groups can work together to sustain white sturgeon, now, and in the future.”

A speaker session heard from diverse topics and speakers, including:

- First Nations Relationships with White Sturgeon
- Biology and Status of Fraser River White Sturgeon
- Sturgeon Assessment and Stewardship in the Lower Fraser River
- Sturgeon Recovery Planning in the Nechako River Watershed
- Sturgeon Enforcement – A Cooperative Approach to Regulatory Compliance
- The Federal Species at Risk Act and Fraser Sturgeon – An Update

An afternoon session considered the findings of a technical group that had attempted to identify and prioritize a range of issues thought to be possibly of concern to White Sturgeon.

This document details the events of the day and summarizes the conclusions that can be drawn.

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# Hosts, Sponsors & Organizers

The workshop was co-hosted by:

- The BC Aboriginal Fisheries Commission
- The Fraser Basin Council
- The Fraser River Sturgeon Conservation Society

Facilities were provided by Skway First Nation. Catering provided by Len and Lorie Fisher of Steetoss Catering, Chilliwack.

Workshop content designed by:

- Jessica Bratty, Fraser Basin Council
- Todd Hatfield, Solander Ecological Research
- Graham Long, Compass Resource Management
- Troy Nelson, Fraser River Sturgeon Conservation Society

Support for this event was generously provided by:

**Vancouver Foundation**
**Ministry of Water, Land and Air Protection**
**Fraser River Sturgeon Conservation Society**

# Attendees

| First Name | Last Name | Affiliation |
|---|---|---|
| Devona | Adams | Fisheries & Oceans Canada |
| John | Allen | Village of Harrison Hotsprings |
| Francis | Andrew | Boothroyd Indian Band |
| Kevin | Andrew | Boothroyd Indian Band |
| Mark | Angelo | BCIT School of Engineering Technologies |
| Les | Antoine | Kwantlen First Nation |
| Les | Antone | Kwantlen First Nation |
| Clayton | Arkesteyn-Vogler | Fraser Valley Watershed Coalition |
| Andrew | Arkesteyn-Vogler | Fraser Valley Watershed Coalition |
| Francine | Audy | Golder Associates |
| Allan | Baker | Peter's Band |
| Bill | Bennett | Malaspina University College |
| Todd | Boychuk | Environment Canada |
| Jessica | Bratty | Fraser Basin Council |
| Kevin | Buxton | Peter's Band |
| Don | Cadden | Min. of Water, Land & Air Protection |
| Chris | Campbell | Boothroyd Indian Band |
| Al | Castledine | Min. Agriculture, Food & Fisheries |
| Doug | Clift | Fisheries & Oceans Canada |
| Colin | Copland | Min. of Water, Land & Air Protection |
| Paul | Cottrell | Fisheries & Oceans Canada |
| Ken | Cropley | Interested Citizen |
| Glen | Dixon | Fisheries & Oceans Canada |
| Ted | Down | Min. of Water, Land & Air Protection |
| Gordon | Edmondson | Malaspina University College |
| Bob | Esau | LaFarge |
| Viviane | Gosselin | Gulf of Georgia Cannery |
| Bob | Hall | Sto:lo Nation |
| Todd | Hatfield | Solander Inc. |
| Fred | Helmer | Fraser Valley Angling Guides Association |
| Justin | Henry | Target Marine |
| Anne-Marie | Huang | Fisheries & Oceans Canada |
| Dave | Huntley | Dave's Fishing |
| Steve | Jacobi | Min. of Water, Land & Air Protection |
| Tony | Jacobs | Tsawwassen First Nation |
| Mark | Johnson | Fisheries & Oceans Canada |
| Wendy | Kaiser | BC Hydro |
| Paul | Kariya | Pacific Salmon Foundation |
| Frank | Kwack | Fraser Valley Salmon Society |
| Carole | Lamont | BC Hydro |
| David | Lane | Malaspina University College |
| Gavin | Last | Min. Agriculture, Food & Fisheries |
| Marc | Laynes | Cascade Fishing Adventures |
| Graham | Long | Compass Consulting |

| First Name | Last Name | Affiliation |
|---|---|---|
| Donald | MacKenzie | Spirit of Aboriginal Youth Magazine |
| Paul | Malcolm | Vancouver Aquarium Marine Sciences Centre |
| Ken | Malloway | BC Aboriginal Fisheries Commission |
| Steve | McAdam | Min. of Water, Land & Air Protection |
| Leigh | McCracken | Drifer Rod & Reel Club |
| Paul | McFadden | Min. of Water, Land & Air Protection |
| Sonny | McHalsie | StoLo Nation |
| Holly | Munn | BC Outdoors Magazine |
| Erin | Mussell | Skwah First Nation |
| Denise | Mussell | Skwah First Nation |
| Arnie | Narcisse | BC Aboriginal Fisheries Commission |
| Mario | Narte | Skway First Nation |
| Troy | Nelson | Fraser River Sturgeon Conservation Society |
| Craig | Orr | Watershed Watch Salmon Society |
| Mike | Peters | Min. of Water, Land & Air Protection |
| Patrick | Porter | Environment Canada |
| Herb | Redekopp | Fisheries & Oceans Canada |
| Jim | Rissling | Fraser River Sturgeon Conservation Society |
| Ralph | Roberts | Fraser River Sturgeon Conservation Society |
| Marion | Robinson | Fraser Basin Council |
| Harvey | Robinson | Interested Citizen |
| Reid | Schrul | Fisheries & Oceans Canada |
| Deb | Sneddon | Fisheries & Oceans Canada |
| Dan | Sneep | Fisheries & Oceans Canada |
| Anthony | Sprangers | Fred's Fishing Adventures |
| Erin | Stoddard | Min. of Water, Land & Air Protection |
| Lance | Sundquist | Min. of Water, Land & Air Protection |
| Jen | Thomas | BC Aboriginal Fisheries Commission |
| Carole | Thomas | BC Aboriginal Fisheries Commission |
| Tony | Toth | BC Wildlife Federation |
| Andrew | Upper | Land and Water BC Inc. |
| Jim | Vanderwal | Fraser Basin Council |
| John | vanHove | Min. of Water, Land & Air Protection |
| Ernie | Victor | Sto:lo Nation |
| Ernie | Victor | Sto:lo Nation |
| Dan | Vo | Fisheries & Oceans Canada |
| Doug | Walker | Nature Trust/Ecotrust |
| Dave | Webster | Min. of Water, Land & Air Protection |
| Ted | Westlin | District of Kent |
| David | Willey | Federation of Drift Fishers |
| Allan | Williams | Sto:lo Nation |
| Wilfred | Wilson | Fraser River Sturgeon Conservation Society |
| John | Wong | Environment Canada |
| Ken | Wong | Interested Citizen |
| Dennis | Zentner | BC Wildlife Federation |
| Barry | Zunti | Fisheries & Oceans Canada |

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9:30 am – 4:00 pm
Skway Hall, 44860 Schweyey Road, Chilliwack

## *Agenda*

### *Morning*

| | | |
|---|---|---|
| 9:00 | Registration | |
| 9:45 | Welcome and Opening Prayer | |
| | Introduction | Troy Nelson |
| | Workshop Format, Agenda, Anticipated Outcomes | Graham Long |
| | *Session 1: Fraser River White Sturgeon - Pooling Our Knowledge* | |
| 10:00 | First Nations Relationship with White Sturgeon | Sonny McHalsie; Open Floor |
| 10:25 | Biology and Status of Fraser River White Sturgeon | Steve McAdam |
| 10:50 | Sturgeon Assessment and Stewardship in the Lower Fraser River | Troy Nelson |
| 11:10 | *Break* | |
| 11:25 | Sturgeon Recovery Planning in the Nechako River Watershed | Don Cadden |
| 11:45 | Sturgeon Enforcement - A Cooperative Approach to Regulatory Compliance | Barry Zunti & Paul Cottrell |
| 11:55 | The Federal Species at Risk Act and Fraser Sturgeon - An Update | Dan Sneep |
| | Questions, Open Discussion | Panel Discussion |
| 12:30 | *Lunch* | |

# *Agenda*

## *Afternoon*

| | | |
|---|---|---|
| | *Session 2: Identifying and Prioritizing Activities* | |
| 13:30 | Fraser River White Sturgeon Conservation Plan: Proposed Approach | Todd Hatfield |
| 13:55 | Interactive Session: Identifying and Prioritizing Activities | All |
| | *(Working Break)* | |
| 15:15 | Summary of Feedback, Facilitated Group Discussion | All |
| | Summary of Next Steps | Graham Long |
| 16:00 | Adjourn | Troy Nelson & Arnie Narcisse |

# Workshop Context

This meeting was held to learn, share, and discuss the contents of a plan for the future of Fraser River white sturgeon. The concept to develop a so-called "Conservation Plan" for white sturgeon in the Fraser River watershed grew within the directorship and membership of the Fraser River Sturgeon Conservation Society starting in 2000 (it also falls out of the legislation requiring a management plan for species of special concern, and has been a provincial priority for a while as well. I think some shared credit is due here.). The concept formed around the ultimate delivery of a single document that would include key background, status, issues, and direction for Fraser white sturgeon (NOTE: here and throughout the document the species should be referred to as white sturgeon, without capitals. We often get lazy and call them sturgeon, but should be more accurate here. This is especially true since there are green sturgeon in the Lower Fraser, and we are not addressing those here) on a watershed basis. Support for the concept was provided by the Ministry of Water, Land and Air Protection, with the acknowledgement that, in time, due to the designation of white sturgeon as a species of special concern, a comprehensive "plan" would be both necessary and required by the federal government.

The Sturgeon Society went forward with the Conservation Plan concept for a rather singular reason – that being the will to bring forth the best human ideas and actions for the betterment of the species.

Thus, in January 2003, the Sturgeon Society submitted a proposal to partner with the BC government to produce a draft "Conservation Plan" for white sturgeon in the Fraser watershed. The Ministry of Water, Land and Air Protection funded this proposal in the spring of 2003, with additional partnership support from the Vancouver Foundation and funds from the Sturgeon Society.

A "Fraser Sturgeon Working Group" was assembled in the summer of 2003. This Working Group includes representatives from provincial, federal, and First Nations governments, and non-government organizations including the University of British Columbia, the Fraser Basin Council, and the Sturgeon Society.

The Society's goal is to produce a draft Plan for the conservation of Fraser sturgeon, for submission in spring 2004. Dr. Todd Hatfield, an independent writer who is familiar and experienced with the development and construction of recovery/conservation plans, has been retained by the Society to construct and write the draft Plan.

A technical session was recently held to consider some of the technical issues involved in such a plan; a review of this work forms part of this workshop. The Fraser White Sturgeon Working Group identified the need and desire to hold a public workshop or "forum" to present and discuss the contents and direction of the Plan, and to capture the thoughts and ideas of individuals that are linked in some way to the future of the mighty fish of the Fraser.

# Record of Events

## Introductions and Administration

Troy Nelson initiated the meeting by inviting Vivian Narcisse to say a prayer. Mario Darte welcomed participants to the Skway First Nation.

Troy Nelson
Troy thanked Vivian and Mario for their welcome and presented each of them with a gift – a hand-carved wooden sturgeon. He acknowledged the presence especially of elders, elected officials and those who had traveled long distances, as well as thanking the sponsors and co-hosts of the meeting.

Troy gave an introduction to the idea of, and development of, the Fraser River Sturgeon Conservation Plan (as detailed in 'Context' above), and listed the objective and goals of this meeting:

Forum Goals:

- To share information and discuss options for sustaining white sturgeon in the Fraser River Basin

Forum Objectives:

- To learn about First Nations relationship with white sturgeon
- To share technical information on the status of Fraser River white sturgeon
- To discuss current issues facing white sturgeon
- To help clarify white sturgeon conservation priorities
- To share ideas and perspectives on how all interested groups can work together to sustain white sturgeon, now, and in the future.

Troy concluded by introducing Graham Long (Compass Resource Management), the facilitator for the event.

Graham Long
Graham asked for, and received, permission to keep the meeting on track as per the agenda, and to curtail any discussions that strayed off-topic or were lengthy in order to allow everyone to have an opportunity speak and be heard. He pointed out that the focus of the day was to explore the issues surrounding white sturgeon in the Fraser River at a very high level, to ensure at this point that there were no issues that were being missed. Detailed discussion around specific issues could then follow from this meeting in the future in the knowledge that all the main issues had been considered.

Graham gave a brief overview of the day's agenda.

He introduced Arnie Narcisse and Ken Malloway, who in turn introduced the first speaker, Sonny McHalsie. Both Arnie and Ken touched on the past troubled relationships between First Nations and the regulatory authorities, in particular the lack of consultation and emphasis paid to Traditional Ecological Knowledge in developing programs for White Sturgeon (no caps). They welcomed the presence of the recreational fishermen at the meeting. Arnie and Ken hoped that this event would be a first step in working together to consider the needs of White Sturgeon (no caps), as well as other issues, from a more inclusive perspective.

# Session 1: Fraser River White Sturgeon – Pooling Our Knowledge

## First Nations Relationship with White Sturgeon

Sonny McHalsie (*Shxw'ow'hamel First Nation)*

Sonny gave the group an oral account of the importance of sturgeon to First Nations, focusing on his own community, the *Stó:lo.*

Sonny told the group some of the Sxwoxwiyám Xéyt te Xwélmexw (Central Coast Salish Transformation Stories), in which people are often transformed into various animals, plants and objects. These stories emphasise the relationship between the modern Xwélmexw and animals, plants and objects, which in some ways represent the continuity of their ancestors.

One such story relates directly to sturgeon, when sturgeon were first created by the transformation of a young woman who was cast into the water.

In questions, several people warmly welcomed Sonny's talk and there was a brief discussion about the Christian church's changing attitude towards First Nations spiritual beliefs.

## Biology and Status of Fraser River White Sturgeon

Steve McAdam (*Ministry of Water, Land and Air Protection*)


**Fraser River Sub Groups. For this Plan, SG1 and SG2 have been combined.**

Steve gave an introduction to white sturgeon, covering basic physical and biological information.

White Sturgeon inhabit the Fraser, Columbia and Sacramento Rivers. In the Columbia and Kootenay Rivers they are endangered due to recruitment failure – population estimates are around 1,200 and 900 respectively. Recovery plans are examining the causes of this recruitment failure. Flow regulation (dams) and loss of flooded habitat (dykes) are strongly implicated.

In the Fraser River, four or five stock groups (SGs) were identified in a 1995-99, as shown in the diagram reproduced here. (Note, in this plan SG1 and SG2 have been combined).

Population estimates are: Upper Fraser – low; Nechako River – 571; Mid Fraser – 3,745; Lower Fraser – 47, 431. The Nechako population is currently undergoing recruitment failure. The Lower Fraser River had an intensive historic fishery. Current biomass for this population is estimated at 1.23 million pounds.

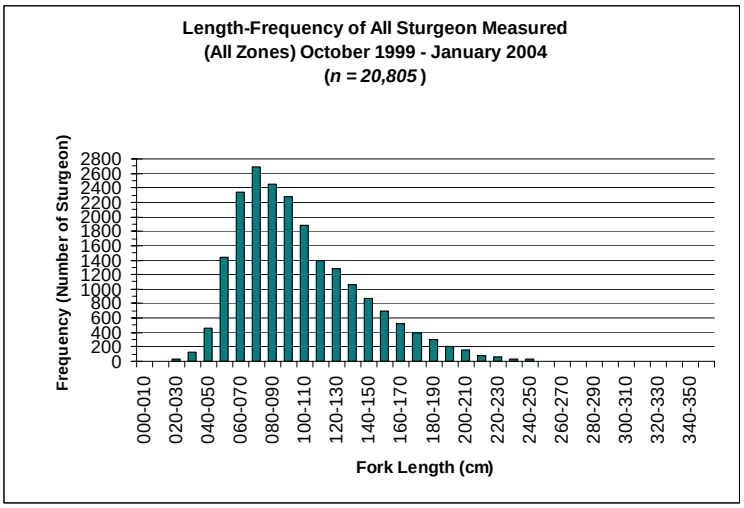
Steve gave a brief introduction to white sturgeon biology. Spawning occurs on descending limb of spring freshet, in high velocity areas, turbulent areas, e.g. rapids and side channels. There is significant uncertainty about habitat use of larvae and early juveniles. Floodplain habitats such as sloughs, side-channels and seasonally inundated areas are important. The Fraser Valley incurred a 60% decline in wetland areas by 1930 (e.g. draining of Sumas Prairie). In the mid and upper Fraser similar habitats are less affected, but also less abundant. Adults and sub-adults use primarily mainstem habitats. Previous reports indicated fish are fairly sedentary, but the Stewardship tagging program identified seasonal movements, likely related to feeding. Adult white sturgeon can be highly specific in diet, with salmon and eulachon as important food sources.

Steve summarized his message by saying that conservation threats occur due to the interaction of white sturgeon life history and human induced habitat change, and that there is significant uncertainty remaining regarding many aspects of white sturgeon biology.

Questions covered toxic pollution effects on subadults (thought to be surprisingly minor), the degree to which sturgeon use the ocean, and a discussion on the link between sturgeon and eulachon now that eulachon runs are way down. In the past, sturgeon have be found stuffed full of eulachon.

## Sturgeon Assessment and Stewardship in the Lower Fraser River

Troy Nelson (*Fraser River Sturgeon Conservation Society*)




**Some of the data resulting from the monitoring and assessment program**

Troy provided additional background on the history of Fraser River sturgeon: in the late 1800s-early 1900s, there was a directed commercial fishery that removed several million pounds of sturgeon from the lower Fraser in just a few years. The population collapsed, and the fishery was closed, but populations continued to decline due to continued pressures from habitat loss, fishery interceptions, and urbanization, In 1993-94, 34 very large sturgeon, mostly females, were found dead in the Fraser River; the reasons for these die-offs remains unknown. The Fraser River Sturgeon Conservation Society was formed with the vision to ensure, "That sturgeon populations in the Fraser River are strong, healthy and sustainable for future generations" and a mission to "To conserve and restore Fraser River sturgeon by conducting research relating to Fraser River sturgeon and to disseminate the results, and educating and increasing the public's understanding of Fraser River sturgeon."

Troy noted that the Fraser River Sturgeon Conservation Society is a non-profit, charitable organization dependent on grants, sponsors, and volunteer contributions from a wide variety of sources.

He gave an overview of the current monitoring and assessment program. The work of the program is undertaken by project volunteers - the "true stewards of the resource" – who include: Test Fisheries (Albion, PSC, DFO), First Nation fishermen and catch monitors, aboriginal fisheries officers, provincial and federal enforcement officers, selective fisheries programs, angling guides and clients, "select" recreational anglers, commercial net fishermen, DFO catch monitors, and charter patrolmen. The program is currently supported by in-kind labor from over 100 volunteers.

Troy discussed some of the interesting and valuable statistics this information has yielded for sturgeon research, such as the population structure by size illustrated above. Recent estimates place the population of sturgeon (40-220 cm fork length) at 62,600. Comparisons of population changes since 1999 indicate that the number of sturgeon in the lower Fraser is steadily increasing for all size groups.

Troy also introduced and discussed the First Nations Stewardship Program. The project works directly with Fraser River First Nation fishermen, both in the field (on the water) and through education and awareness session (meetings and presentations) to demonstrate effective sturgeon conservation and protection techniques and to provide the rational for these efforts, respectively. The 2003 field program centered around 4 floating sturgeon cages, which were used to hold sturgeon captured in First Nation gill nets prior to sampling and release. Fishermen from participating First Nations were trained to remove captured sturgeon from gill nets in a non-destructive manner. The education and awareness program brought presentation materials directly into First Nation communities; presentations were made to Band administrators, First Nations fisheries coordinators and fishermen, community members, and government officials. The education and awareness components of the program are making a notable difference for the conservation and protection of sturgeon captured in First Nation fisheries.

## Sturgeon Recovery Planning in the Nechako River Watershed

Don Cadden (*Ministry of Water, Land and Air Protection*)

Don is involved with the development of a white sturgeon recovery plan for Nechako River. He presented an overview of the process and conclusions of that process.

The principles of the Plan were to develop an understanding of the issues, uphold the spirit of 'Species at Risk Act', be consistent with relevant legislation, policies & strategic direction, use the best available science and to use committees to guide the process. Don discussed the various roles and responsibilities of the participants in the process.

The priorities associated with the various perceived threats to Sturgeon were:

| High priority | Medium Priority | Low Priority |
|---|---|---|
| • Changes in hydrograph – power generation since 1952 and associated changes in hydrograph led to recruitment decline<br>• Altered thermal regime – reduction or elimination of spawning events, change in bioenergetic requirements of young sturgeon leading to reduced survival<br>• Natural seasonal patterns – Stimulation of spawning and recruitment require consecutive years of high spring flows<br>• Predation – changes in species richness and diversity and increased predation on young sturgeon led to recruitment decline | • Food resources for juveniles – decreased food abundance has affected growth of young sturgeon<br>• Physical regime affecting turbidity and sedimentation rates – reduced sediment transport and turbidity led to increased predation<br>• Macrophyte development – macrophyte development and increased BOD/reduced DO has affected survival of juvenile sturgeon<br>• Changes in channel morphology – changes in hydrograph and sediment inputs have altered channel morphology and affected spawning and recruitment | • Loss of spawning habitat – loss of spawning habitat in canyon section near Cheslatta falls led to recruitment decline<br>• Spawning cycle periodicity – recruitment linked to cyclical abundance of sockeye salmon<br>• Mortality due to harvest – recruitment failure due to historic over harvest through intentional and incidental catches<br>• Land development – land use and effects on runoff patterns, temperature regimes and tributary health led to recruitment failure |

From this process, the Committee agreed upon the following over Short (next 5), Medium (next 10) and Long-term (next 50) time periods.

| Strategies | Targets | Low Priority |
|---|---|---|
| STRATEGY:<br>• Control sources of adult mortality<br>• Conservation fish culture<br>• Re-establish natural recruitment<br>• Ongoing adaptation | • Natural recruitment and juvenile population size that supports desired adult population size<br>• Stable or increasing trends in adult and juvenile numbers<br>• Stable size and age distribution<br>• Genetic diversity similar to current levels<br>• Support sustenance fishery | • Conservation fish culture – preserve remaining diversity<br>• Water management – define flow requirements<br>• Water quality and habitat – restore temperature, turbidity regimes; investigate changes in geomorphology<br>• Population assessment, monitoring, research – protect, adult stock/spawning assessments, juvenile indexing, essential habitats, recruitment bottlenecks, genetic baseline, population analysis, community interactions<br>• Information/Education – linkage to broader constituency |

## Sturgeon Enforcement - A Cooperative Approach to Regulatory Compliance

Barry Zunti & Paul Cottrell (*Fisheries and Oceans*)

In their presentation, Barry and Paul provided some background on the regulations that exist to protect White Sturgeon, and appealed for assistance in upholding those regulations.

**Illegally poached White Sturgeon**

As Fisheries Officers, Barry and Paul operate under Section 91(12) of the Constitution Act. All sea coast and inland fisheries are the responsibility of the federal government. Management of freshwater species were delegated to the province in 1905. White sturgeon is both a marine and freshwater species. Currently there is a shared management and enforcement approach between the province (MWLAP) and the federal government (DFO, EC). The ultimate responsibility/liability lies with federal government

Sport fishery is catch-and-release only (all sturgeon must be released without exception). Common offences include: Not releasing, fishing with illegal gear (only a single barbless hook is legal in non-tidal waters, but there are currently no hook restrictions in tidal waters), fishing without a licence, not releasing fish in the least harmful manner and illegal possession of sturgeon

There is no commercial fishing allowed for white sturgeon in BC. Commercial gill net fisheries in the Fraser River that target salmon intercept sturgeon, but all must be released. Sturgeon are an important part of First Nation Culture and Heritage, and there is no targeted First Nation fishery for sturgeon on the Fraser River at this time. May only harvest fish for brood stock from the Fraser River under appropriate licences. Permits are required for the transport of live sturgeon. All stores and restaurants are required to retain the proof of purchase of all fish. Export of any sturgeon requires a CITES permit.

It is illegal put any substance into the river that is harmful to sturgeon. It is illegal to destroy sturgeon habitat, which means spawning grounds and nursery, rearing, food supply, and migration areas on which fish depend directly or indirectly in order to carry out their life processes. Agencies have combined resources and information to combat illegal harvest, sale, and export of sturgeon
Dedicated patrols are being conducted to ensure compliance and deter illegal activity
Recent conviction resulted in penalties of 60 days in prison and loss of fishing gear

In a recent study, a total of 224 White Sturgeon were identified as having been poached over a six month period between the mouth of the Fraser and Hope. 97% of these were poached after dark. The officers noted that some of this was a result of organized crime, and appealed for help. Following a question, it was clarified that people should report suspicious activities and should never approach a suspected poacher.

## The Federal Species at Risk Act (SARA) and Fraser Sturgeon - An Update

Dan Sneep (*Fisheries and Oceans*)

SARA was passed in 2002, phased in through 2004. Its purpose is to prevent extinction, provide for recovery, and manage species at risk. Its principles are cooperation, consultation, stewardship and responsibility. DFO is responsible for aquatic species.

Dan outlined the SARA Legal Listing Process: Starting from the COSEWIC status assessment and classification, a report must be sent to the Minister of Environment, who in turn must respond within 90 days. Following consultation with First Nations, stakeholders and the public on social and economic consequences of listing, the GIC (Cabinet) determines (within nine months) whether to add species to legal list. Under SARA, immediate prohibitions will make it illegal to kill, harm, harass, capture, or take a listed species; possess, buy, sell, or trade a listed species; damage or destroy the residence of a listed species

A Recovery Team that identifies threats, and objectives and approaches to addressing them, develops a SARA Recovery Strategy. An Action Plan developed by a Recovery Implementation Group specifies the means of implementation, critical habitat issues, monitoring, and evaluation of socio-economic costs and benefits.

Permits and exceptions for SARA offences may be issued for conservation research, beneficial activities, and incidental activities. Compensation may be offered for exceptional losses associated with critical habitat protection

A SARA Public Registry (www.sararegistry.gc.ca) contains all public documents and decisions related to SARA

For White Sturgeon specifically, OSEWIC designation of Special Concern in 1991 was downgraded to Endangered in November 2003. Assessment and consultations on White Sturgeon SARA listing are likely to begin in summer 2005. As a rough guide, legal listing may occur by summer 2006, with a recovery strategy in place by summer 2007. Recovery planning and implementation will be led by DFO and WLAP, and existing plans (such as the one this meeting is supporting) should form basis of SARA plan.

Existing conservation activities include harvest restrictions, habitat protection (e.g., Fisheries Act) which is focused on enforcement activities; ongoing assessment and monitoring, stewardship activities (e.g., FRSCS) and the initiation of a conservation plan.

Questions for Dan were rolled into a combined panel discussion in which the panel discussed issues raised from participants.

## Panel Discussion

A lively panel discussion covered a range of issues of importance to participants. Points covered included:

- is there a hatchery facility and what is the general strategy vis-à-vis habitat vs. hatchery
- what is the penalty for gravel removal and has it ever been successfully enforced
- is there funding for enforcement that the public can access
- gravel compaction in side channels from vehicles, is it a problem
- are the lower Fraser sturgeon also going to be listed alongside the other populations
- who is the FN rep on COSEWIC? need to involve FN in the recovery planning process

Following lunch, Bob Hall, of the Stó:lo Nation Fisheries Program addressed the meeting directly before he had to leave.

He expressed pleasure that so many diverse people were obviously concerned about sturgeon, and emphasized the importance of working together to find solutions. Stó:lo has asked all its fishermen to let the sturgeon go. Echoing the comments of several people in the room, Bob said he was concerned about SARA and its effects on people, and how it will impact Stó:lo. He also expressed concerned about sockeye stocks at risk, and the implications of listing these. Stó:lo would be pushing government to define answers to these questions.

Bob said he had concerns about consultations and stressed the need to “accommodate” First Nations. Would there be new legislation to define “accommodation”? What does this mean in the context of sturgeon?

# Session 2: Identifying and Prioritizing Activities

## Fraser River White Sturgeon Conservation Plan

Todd Hatfield

The idea for a Fraser River White Sturgeon Conservation Plan started some time ago, prior to the COSEWIC "endangered" listing. White sturgeon are/were a "species of concern", and required a Management Plan. A Conservation Plan is "a high-level planning document that provides information on white sturgeon biology and conservation, identifies information gaps, and sets priorities for action by government and non-government organizations." It's somewhat similar to a Recovery Strategy (science-based strategic document)

A Conservation Plan has three main components:

1. a set of objectives (what is it we are trying to achieve?)
2. a detailed biological assessment (what are the issues with respect to conservation of sturgeon? what do we know and what don't we know?)
3. a series of management recommendations (what are our general priorities for action?)

The Plan is being developed by a Working Group (including FRSCS, FN, MWLAP, DFO). A technical workshop held last week reviewed a number of hypothesised impacts to White Sturgeon, and used an analytical system to prioritize these impacts from the perspectives of research and action. The results of this technical session will be the subject of this afternoon's work.

Todd then described the contents of the tables attached here as Appendix I and Appendix II. The first lists the broad impact categories considered by the technical group. The latter shows the relative priority given to each of these categories from the perspectives of 1) Research priority and 2) Action priority.

## Interactive Session: Identifying and Prioritizing Activities

Participants were divided into four groups, based on their geographical focus. Since most participants were from the Lower Fraser region, three of the groups discussed Lower Fraser issues. A fourth, smaller group, discussed issues elsewhere, primarily in the Nechako.

The groups were tasked with reading through the tables presented in Appendices I and II and asking the following the questions:

1. Do we all understand the issues?
2. Is the list complete?
3. Do the results make sense?
4. What might we be missing?

The purpose of the exercise was to ensure that no major issues were being missed by the technical group, and that suggested prioritization so far made sense to others.

Each group was appointed a facilitator, who also acted as a note-taker. Each group also had at least one person who had attended the technical session, and so was in a position to explain some of the technical group's recommendations.

Following approximately one hour of lively discussions, each group reported back on their findings and debates. The main points raised are summarized below.

1. **Understand the issues**

   Since most participants were highly knowledgeable of white sturgeon issues in the Lower Fraser River, relatively little time was required to review the issues listed.

2. **Is the list complete?**

   Participants generally agreed that the listing was complete, though often struggled with the categorization used. Some issues that were not explicitly addressed so far include the following:

   Fish competition. In several groups, a link was drawn between a eulachon failure in 1994 (caused by competition from sockeye) and dramatic decline in sturgeon populations (what evidence is there of a dramatic decline?

   Marine mammal predation was mentioned by at least two groups. One person mentioned that seals can often be observed in Chilliwack, pursuing fish up the Fraser River. In one case, a killer whale apparently reached the Chilliwack in pursuit of seals!

   One group felt that enforcement should be recognized as a strategy which, alongside research and action, should be prioritized according to need.

3. **Do the results make sense?**

   Among the discussions were:

   One group considered that Pollution Research should be a higher priority than the technical group suggested. The technical group had considered this to be a low priority because there is already a large amount of information available, and although much is still unknown the relative benefit of researching more was considered lower than using resources to investigate other, less researched issues.

   Disease Research Why is this listed as a low priority? The technical group had listed this as a relatively low priority because currently there are no major disease problems in Fraser White Sturgeon. However, one groups thought that this was short sighted, and that it was important to find out which diseases might pose a problem and to monitor for signs of disease so that action could be taken before it is too late.

   Hatchery Impacts Why is this listed as a high priority? The technical group was conscious of the potential for genetic effects in the future. Escapes from a sturgeon hatchery could result in genetic diversity being reduced, hence the high priority listing. Some people felt that this was unnecessarily conservative.

4. **What might we be missing?**

   Of the many discussions that people had, the following were recurring themes:

   Basic research needs
   Several of the groups highlighted our basic ignorance of sturgeon as a major concern. Uncertainty surrounding sturgeon physiology, diet, reproductive behavior, and other factors directly impact the level of uncertainty we attribute to any of the issues we've listed here. There's a danger of leaping directly to the issues in the list while our basic knowledge is so primitive.

Planning Goals and Objectives

Several groups discussed the need for more concrete planning goals and objectives for the Conservation Plan. Goals and baselines have not yet been fully addressed. What are the targets for recovery? What do we think is an acceptable sturgeon population in today's world (as opposed simply to reviewing historical numbers). What is the carrying capacity of various sections of the Fraser River, and how might help set regulatory objectives and targets,?

Public Education

Public education builds political will – a high priority should be to educate people about the status of sturgeon, particularly among young people.

Fishing effects

Several questions were presented and discussed for this category:

- What is the latent mortality rate for sturgeon released from gill nets?
- Are there different mortality and injury rates for sturgeon released from drift net (commercial and First Nation) and set net (First Nation) fisheries?
- Are there measurable changes in sturgeon mortality rates from set nets that are fished (soaked) for different lengths of time (i.e., increasing soak times from 1-48 hours)?
- Can injuries caused by gill nets effect the behavior, growth, and/or spawning success of sturgeon?
- Are there measurable changes in the mortality rate of sturgeon captured in net fisheries captured in different water temperatures (i.e., May vs. September)?
- What is the injury and latent mortality rate of sturgeon released in the recreational fishery?
- Does the type of hook used (in the recreational fishery) make a difference in injury or mortality rates (i.e., J versus circle hooks)?
- Are there measurable changes in mortality rate in the recreational fishery in different areas (i.e., estuary vs. gravel reach vs. canyon) and time of year (i.e., changes in water temperature)?
- What is a realistic estimate for the number of sturgeon killed each year by illegal fisheries (poaching) in for each stock group?
- Who is responsible for instigating studies to answer the numerous questions of fishing effects (from all fisheries), and when will these studies be implemented?

SARA listing

A common discussion concerned the likely SARA listing for sturgeon and its implications for the various participant groups. Some people felt that the Lower Fraser should be treated differently because populations are considerably higher there. However, no resolution on SARA listing issues was possible during the meeting as these issues have simply not been addressed by government.

In summary, participants broadly agreed with the priority issues identified by the technical groups, with the exceptions noted that will be considered during the writing of the plan. Most people expressed enthusiasm for working more with the detailed issues that this ‘high level’ overview could only touch upon.

# Conclusions and Next Steps

Troy Nelson concluded the meeting by thanking participants for their efforts and enthusiasm throughout the day. He thanked Todd Hatfield, Jessica Bratty and Graham Long for their work in developing this workshop. Jessica in turn thanked Troy for his initiative, energy and drive in first proposing and seeing through the Conservation Plan and this workshop.

This meeting brought together the spectrum of people interested in Fraser River White Sturgeon. It heard from many perspectives about the importance to various groups – from First Nations culture and spiritual perspectives, to enforcement agencies daily challenges, from sport fisherman and high tech tagging programs to provincial ministry planning processes in other jurisdictions.

The meeting displayed above all else the strength and diversity of the commitment to conserve the Fraser River White Sturgeon. On this issue, people put aside past on ongoing grievances to work together towards an important cause. Groups had opportunity to discuss and exchange ideas with others that they would not usually come into direct contact with. All were in agreement they were the richer for it.

Next steps are dependent on future funding for the organizers, in particular the Fraser River White Sturgeon Conservation Society. It is hoped that more detailed workshops will be developed to examine specific issues in greater depth.

The Draft Conservation Plan itself will be completed in the coming weeks.

# Appendices

Appendix 1 Issues Summary

Appendix 2 *Preliminary* Technical Group Findings

## Appendix 1 Issues Summary

| Issue | How it works | Comments |
|---|---|---|
| Hydrograph components | Changes in the timing and volume of water flows may have negatively impacted white sturgeon. | In the Nechako, concern has focused on the absence of high spring flows. This is not likely a problem elsewhere in the Fraser. |
| Sequential years of adequate flows | Changes in water flow regulation may have reduced the number of sequential years in which flows are adequate | This issue was identified as a concern in the Nechako, following failure of sturgeon to spawn there successfully during a single year (1976) of high flows. |
| Thermal regime | Successful spawning and rearing of Fraser River white sturgeon requires a specific range of water temperatures during critical time periods. Flow regulation and climate change may have altered water temperatures, thereby negatively affecting sturgeon. | There is uncertainty surrounding how river temperatures have changed, how they may change in the future, and what effect, if any, this might have on white sturgeon. This issue has been of greatest concern in the Nechako. |
| Turbidity | Some scientists believe that larval white sturgeon "hide" from predators in turbid (cloudy) waters. Increasing the clarity of water may expose very young white sturgeon to higher predation. | This issue is especially important in dammed systems like the Nechako. |
| Macrophyte Development | Reductions in peak flows and land use changes have resulted in significant macrophyte (aquatic plant) development in some sections of the Nechako River. This may affect juvenile sturgeon survival due to increased oxygen demand in the river. | This issue is especially important in dammed systems like the Nechako. |
| Spawning habitat | Quality and quantity of spawning habitats have been affected at many places in the Fraser River. This may have had negative influences on Fraser River white sturgeon abundance and distribution. | This is of greatest concern in the Nechako and lower Fraser, but is also of considerable concern in the mid and upper Fraser. |
| In-channel rearing habitat | Rearing habitats in the Fraser include the main channel and adjacent sloughs and tributaries. Changes in rearing habitats may have had negative effects on Fraser River white sturgeon abundance and distribution. | Rearing habitat for sturgeon can be directly impacted by river regulation (dams), sand and gravel mining, and dyking. The areas of greatest concern for this issue are the Nechako and lower Fraser, but rearing habitat is also of considerable concern in the mid and upper Fraser. |
| Off-channel rearing habitat | Limited information is available about which habitats are most important to white sturgeon during early life stages. However, there are indications that floodplain habitats (side-channels, sloughs, etc.) are key. The loss of these habitats can occur due to dyking, flow regulation, and modifications to the available floodplain. | This issue is especially a concern in the lower Fraser River, although it is also a key concern elsewhere in the watershed. |

| | | |
|---|---|---|
| Change in ecological community | Changes in the distribution and abundance of other fish species may have led to altered predation and competition. These may have negatively influenced white sturgeon survival and recruitment. | This issue is especially a concern in the Nechako, where changes in fish species is thought to have been greatest. |
| Fishing effects | Fraser River white sturgeon are caught by several fisheries, including recreational angling, commercial, aboriginal, and illegal harvest. The direct and incidental effects of these fisheries may have an influence on the distribution and abundance of sturgeon. | More work is required to assess this issue, and to compare the potential effects of the different fisheries and gear types used. This issue was flagged a concern throughout the watershed. |
| Hatchery effects | Hatchery effects are well-known in salmon, and for some other species. These effects include population effects and genetic effects. There is a concern that conservation or production aquaculture could pose a risk to sturgeon populations. | There is a proposal to construct and operate a white sturgeon hatchery on the Nechako as an aid to recovery of that stock group. There are also proposals to construct and operate sturgeon aquaculture facilities elsewhere, in response to demand for sturgeon meat and caviar. |
| Effects of small population size | When populations become sufficiently small there are a number of ecological effects that may prevent the population from increasing, even if resources are not limiting. There are concerns that some stock groups are "extra" sensitive due to their small population size. | This effect is very difficult to measure directly. It is not a concern in the lower Fraser. |
| Pollution | The Fraser River acts as the receiving waters for a wide variety point and non-point source pollutants. In the upper reaches of the river the main point sources are pulp mill effluent in Prince George and Quesnel. In the lower river there is a wide variety of sources downstream of Mission. There is concern that pollution may affect the abundance and distribution of white sturgeon. | Adults tested in the lower Fraser showed very low levels of pollutants in their bodies. This is probably because the major food sources are marine (e.g., salmon and eulachon). There is concern that this finding may not be applicable elsewhere in the watershed, and may not apply to sturgeon during early life stages. |
| Disease | Several parasites and diseases of white sturgeon are known to be present in British Columbia. We do not know the risks associated with other diseases or how they might spread. We do know that the risks of disease outbreak increase under conditions where fish are stressed (e.g., high temperature). | This risk is not well-defined. |
| Food Supply | Humans exploit a number of anadromous and resident fish species in the Fraser River that form part of the food base for white sturgeon. For example, eulachon and salmon are known to be an important food source for white sturgeon, yet are also harvested in considerable numbers. | This issue was deemed to be important throughout the Fraser River mainstem. Although current "escapements" may be adequate, higher exploitation rates may negatively influence Fraser River white sturgeon. |

## Appendix 2 *Preliminary* Technical Group Findings

### LOWER FRASER

| | Likely importance of issue on white sturgeon | Feasibility of action | Usefulness of more information for informing action |
|---|---|---|---|
| High | • Fishing effects<br>• Spawning habitat<br>• In-channel rearing habitat<br>• Off-channel rearing habitat<br>• Pollution<br>• Hatchery effects (potential) | • Fishing effects<br>• Food supply<br>• Spawning habitat<br>• In-channel rearing habitat<br>• Off-channel rearing habitat | • Fishing effects<br>• Spawning habitat<br>• In-channel rearing habitat<br>• Off-channel rearing habitat |
| Medium | • Food Supply | | • Food Supply |
| Low | • Hydrograph components<br>• Sequential years of adequate flows<br>• Thermal regime<br>• Turbidity<br>• Macrophyte Development<br>• Change in ecological community<br>• Effects of small population size<br>• Disease | • Hydrograph components<br>• Sequential years of adequate flows<br>• Thermal regime<br>• Turbidity<br>• Macrophyte Development<br>• Change in ecological community<br>• Hatchery effects<br>• Effects of small population size<br>• Pollution<br>• Disease | • Hydrograph components<br>• Sequential years of adequate flows<br>• Thermal regime<br>• Turbidity<br>• Macrophyte Development<br>• Change in ecological community<br>• Hatchery effects<br>• Effects of small population size<br>• Pollution<br>• Disease |

## UPPER / MID FRASER

| | Likely importance of issue on white sturgeon | Feasibility of action | Usefulness of more information for informing action |
|---|---|---|---|
| High | • Spawning habitat<br>• Food supply<br>• Hatchery effects (potential) | • Fishing effects<br>• Food supply | • Spawning habitat<br>• Fishing effects<br>• In-channel rearing habitat (Mid Fraser)<br>• Off-channel rearing habitat (Upper Fraser)<br>• Hatchery effects<br>• Food Supply |
| Medium | • In-channel rearing habitat (Mid Fraser)<br>• Off-channel rearing habitat (Upper Fraser)<br>• Fishing effects<br>• Effects of small population size | • Effects of small population size<br>• Pollution? (Mid Fraser) | • Effects of small population size<br>• Pollution? |
| Low | • Hydrograph components<br>• Sequential years of adequate flows<br>• Thermal regime<br>• Turbidity<br>• Macrophyte Development<br>• Pollution<br>• Change in ecological community<br>• Disease | • Thermal regime<br>• Turbidity<br>• Macrophyte Development<br>• Spawning habitat<br>• In-channel rearing habitat<br>• Off-channel rearing habitat<br>• Change in ecological community<br>• Hatchery effects<br>• Pollution<br>• Disease | • Hydrograph components<br>• Sequential years of adequate flows<br>• Thermal regime<br>• Turbidity<br>• Macrophyte Development<br>• Change in ecological community<br>• Disease |