

# RIVERS SMITH SALMON ECOSYSTEMS PLANNING SOCIETY

## SUMMARY OF MEETING

**Dec 04, 2008**

**9:30 a.m. to 4:00 p.m.**

**Pacific Salmon Boardroom**

**1682 West 7<sup>th</sup> Ave.**

**Vancouver**

Present:

Doug McCorquodale, David Stevenson, Misty MacDuffee, Karl Wilson, Dave Peacock, Mike Rough, Désirée Tommasi, , Colleen Hemphill, Cindy Hanuse, Brian Hunt, Ted Walkus, Sandie MacLaurin (by phone)

### 1. Coordinator's Report:

David gave a brief update on the status of RSSEPS. The Pacific Salmon Commission's Northern Fund has lost a significant amount of money due to the stock market crisis. It was down \$10.8 million in the third quarter of 2008. This means that the amount of money available for funding 2009 projects has been drastically reduced. We have applied to them for funding for the Nekite Chum Enumeration project and the Rivers Coho Enhancement project. We will learn in February if either of them is funded. The position of Coordinator is funded by the Tula Foundation until the end of 2008. We have put in another application for funding to the Tula Foundation for 2009 coordination. We continue to work on the development of the Wild Salmon Policy as it relates to the Rivers Smith stocks. We had one meeting on developing benchmarks but we have had to wait for a PSARC paper by DFO staff on benchmarks due to be published in January 09. I attended a meeting in Wuikinuxv in September to discuss the proposed hatchery, the Wild Salmon Policy and the Marine Use Plan. The Wuikinuxv are engaged in a marine use planning exercise through the Turning Point Initiative. The data collected by previous RSSEPS projects may be useful for the marine use planning. The proposed projects for 2009 include:

- stage 2 of the Nekite Chum Enumeration project,
- stage 2 of the Coho Enhancement project,
- habitat assessment of all watersheds in Rivers and Smith Inlets
- further support of the marine use planning process.
- development of benchmarks for the Wild Salmon Policy
- development of a program to train local stream keepers

### 2. Sports Fishing Report

Mike Rough reported that the sports fishing advisory board just had their annual meeting to review 2008 results. There was a decline in salmon in 2008, both Chinook and Coho numbers were down. Ted Walkus reported on the 2008 Dead Pitch, the largest Chinook recovered was 56 pounds. Julian will do the final Dead Pitch report. Mike expressed concern over the poor Chinook returns pointing to the low escapement of 2005. Dave Peacock pointed out that some Wannock Chinook were caught in the troll fishery off Haida Gwaii approximately 50 Chinook were caught in the troll fishery. Some Wannock Chinook are also caught in Alaska fisheries. Some DNA data to confirm this will be available soon. Misty reported that the Pollock fishery in the Bering Sea caught an estimated 100,000

Chinook in 2007 as by-catch. Karl suggested that there should be some compensation coming from lodges such as Langara Lodge in Haida Gwaii. They could sell hatchery tickets to guests to raise money for enhancement activities. The recreation fishing community is trying to be proactive to raise money for enhancement. Sandie pointed out that some money from the sale of salmon stamps goes to PSF. The question is what portion of the salmon stamp money goes to the Central Coast. David will follow up with inquiry to PSF regarding salmon stamp distribution.

Colleen called for a RSSEPS communication strategy. It was agreed that a subcommittee of Ted Walkus, Misty MacDuffee, Colleen Hemphill and Sandie MacLaurin will work with David to develop an effective communications strategy.

Ted asked why there was no funds available from Pacific Integrated Commercial Fisheries Initiative (PICFI) for the sports fishery. PICFI is a program to transfer commercial fishing licenses to First Nations. There are no sports licenses to transfer. PICFI is a share based program which envisages privatizing the fisheries according to shares.

### 3. Stock Assessment Report

Dave Peacock gave a report on the status of stocks for 2008. The returns for Pink, Coho, sockeye, and Chinook were all low. The Docee Fence counts were: Sockeye 16,389, Coho 6303, and Chinook 89. The Long Lake sockeye return was lower than expected – for every 100 spawners only 4 fish returned. Large escapements of 2003 should have returned larger numbers for 2007/2008 especially since there was no fishing pressure on them. The Central Coast sockeye tend to migrate straight out and not up the coast. Owikeno Lake sockeye are unique in that they are generally smaller than other sockeye stocks with smaller scales. We don't know how long they are in the ocean or how long they hold in the Inlets. The Rivers Smith Sockeye stocks act different from other Sockeye stocks. For Smith Inlet Sockeye a 2003 escapement of 179,000 returned only approximately 40,000 which is a dismal return when the expected ratio is 4 fish returning for every one spawner. The estimated 2008 escapement for Rivers Sockeye is 83,000 which is also a decline from the expected brood years 2003 and 2004. All indications are that ocean conditions are the main reasons for these declines.

### 4. Nekite Chum Mark Recapture

Doug McCorquodale gave a report on the 2008 Neitke Chum Mark Recapture program. Dave Peacock said he wanted to move ahead with a stage 2 Nekite Mark Recapture project with the possibility of a First Nation commercial fishery on the stock.

Doug reported that this year's program was successful in that a higher number of Stream Inspection Logs were conducted this year, collection of scale and DNA samples were accomplished, and a more precise population estimate was obtained through the mark and recapture program. The number of fish tagged was 1,575 compared to a target of 7,000 fish. This year's escapement estimate of 8072 chum salmon was significantly lower than previous years. This estimate (determined from the mark-recapture experiment) was further substantiated by the low catch per unit effort during tagging, low spawning channel counts, intense bear activity (high amount of bear kills and fully devastated carcasses) and the low numbers achieved during dead pitch efforts. Overall this year's program was a success despite the poor return.

The Chum are not making use of the Nekite spawning channel. There is an opportunity to refurbish the channel but first we need good data on the Chum population, a management plan, and we need to assess the impact it will have on other stocks.

#### 5. Central Coast Chinook

Dave Peacock reported that only 150 Chuckwalla Chinook were counted which is very low. The counting is done by helicopter. Sandie said a dead pitch revealed very few tagged Chinook were recovered. There has been a big decline in this stock since 2003. The Wannock Chinook dead pitch was a success. There were 614 Chinook recovered which is a good return so the estimated escapement looks good. It was suggested that we investigate the use of a web cam at the Spring Pool to help in assessing Chinook numbers. Ted asked for a copy of the Chinook radio tag report from Dave Peacock. Dave said that it is hard to assign an exploitation rate for Chinook based on the Dead Pitch alone as it is only an index. Ted commented on the seal predation in the Wannock and at the foot of the lake. He said the seals eat the pre-spawners as well as the fish that are spawning. Bear and wolf predation is not an issue for Wannock Chinook. It looks like a relatively strong escapement of Chinook this year based on the Dead Pitch.

#### 6. Fishery Management Strategies

Aaron Springford from the School of Resource and Environmental Management SFU gave a presentation on fishery management strategies for Rivers Inlet sockeye. He, and Misty Mcduffee, have developed a paper on which examines current fisheries management strategies. Aaron presented a analysis of the Maximum Sustainable Yield (MSY) model for calculating salmon populations. He expressed concern that past approaches neglected predator needs and overlooked the role that 'surplus' salmon played in maintaining the conditions that allow this apparent surplus to be produced. As a result, some would argue conventional fisheries models are often useful only in the short term.

He argued that an ecological approach needs to replace the MSY strategy if harvest levels and escapement targets are to fulfill ecosystem requirements and be sustainable for all predators (human and non-human) over the long term. As a first step in furthering the WSP goals, they examined a standard Ricker model and MSY approach for Rivers Inlet sockeye, added scenarios with broader considerations of uncertainty, and then simulated future escapement, catch and total returns to examine the likelihood of meeting these objectives. Their final paper will be circulated when it is available.

#### 7. Rivers Coho Enhancement

Sandie gave an update to the Rivers Coho Enhancement project. The 60,000 Coho eggs taken in 2007 are doing well and on target. They will be released at Johnston Bay in April 2009. In 2008 the egg take was 36,000 eggs which are currently at the Snootli Hatchery in Bella Coola. The 2008 program was funded by the Northern Fund of the Pacific Salmon Commission. There is some concern that funds will not be available to see the 2008 brood batch of eggs through to completion as the PSC has lost significant funds on the stock market. The total request for the 2009 Northern fund was for \$30,000. If this is not forthcoming then we will need to look to other donors for these funds.

## 8. Early Marine Survival Research

Rick Routledge made the following report for the 2008 field research:

- obtained a second year of depth profiles for monitoring phytoplankton dynamics at 11 sites in the Inlet.

- surveyed zooplankton dynamics and factors that influence them in the Inlet.

- obtained weather data from 2 sites in the Inlet for use in the modeling exercises.

- continued to develop the hydrodynamic model. This will provide a two-dimensional moving picture of the circulation and mixing of inlet waters. We shall soon be able to compare model predictions to observations on surface water flows from the drifter deployments.

- used passive drifters with GPS data loggers for measuring surface currents.

- surveyed juvenile sockeye salmon using a purse seine.

- completed the second season of salinity preference experiments.

- commissioned Dr. Jonathan Hughes of the University of the Fraser Valley to begin developing a scientific understanding of the ecology of the wetlands at the mouth of the Wannock river and the Chuckwalla.

- phytoplankton production was earlier and stronger this year compared to 2007 due to colder weather and lower fresh water outflows.

- salinity experiments confirmed that juvenile sockeye salmon prefer relatively low salinity levels.

Our pilot study on salinity preferences demonstrated that the small sockeye salmon consistently preferred relatively low salinity levels. In addition, we experienced considerably more difficulty in keeping the sockeye salmon alive if they were caught near the inlet mouth. This suggests that early marine survival for these fish will have been low this year, and provides further evidence that the inlet plays a critical role in determining marine survival.

Thus we have found direct evidence supporting the importance of inlet conditions in early spring to the marine survival of juvenile sockeye salmon migrating down the inlet in late spring. A late phytoplankton bloom appears to disrupt food production for the late-spring juvenile sockeye salmon migration.

It is planned that the Early Marine Survival Research Project will continue until 2010 with funding from the Tula Foundation.

## 9. Rivers Inlet Ecosystem Study – Brian Hunt

Brian is involved in a research program investigating the seasonal cycle of plankton at Rivers Inlet, and its relationship to recruitment success of sockeye salmon. He gave a brief report on his work:

It is hypothesized that the growth of sockeye salmon smolt is crucial to their early marine survival and hence recruitment success. Plankton are the key component of smolt diets when they first enter the marine environment, and variability in the composition of plankton communities (prey quality) and the timing of plankton blooms (prey quantity) is therefore expected to significantly affect their growth. The overarching goals of the RIES are to firstly understand the physical and biological processes that drive plankton productivity at Rivers Inlet, and secondly the relationship between plankton production and growth of sockeye smolt. The RIES is funded by the TULA foundation, and will run from 2008 to 2010. In 2008 intensive sampling was completed at approximately ten sites distributed across the inlet. These sites were sampled approximately every two weeks from the end of February to September, providing temporal coverage of the spring plankton bloom and the migration of sockeye smolt from

Owikeno Lake into the inlet. Data collected at each site included physical parameters (conductivity, temperature, depth, oxygen), nutrients, viruses, chlorophyll biomass, phytoplankton and zooplankton. In addition seine netting was carried out from mid-April to mid-June to collect juvenile salmon for dietary and growth analysis.

**Outputs from this work, currently in progress, will include:**

1. Hydrodynamic modelling of the inlet (Rick Routledge, Maureen Jeremy )
2. Description of the physical oceanographic environment and estimates freshwater, heat and nutrient budgets (R. Pawlowicz, Mike Hodal (MSc student))
3. Bio/physical Coupling and Ecosystem Modeling (S. Allen, R. Pawlowicz, P. Tortell, M. Maldonado, Megan Wolfe (MSc student))
4. Spring Plankton Productivity (E. Pakhomov, R. Routledge, F. Whitney, P. Tortell, M. Maldonado, B. Hunt, Desiree Tomassi (PhD student))
5. Growth and Behavior of Sockeye Salmon (E. Pakhomov, B. Hunt, R. Routledge, Asha Ajmani (MSc student))

#### 10. Core Analysis workshop

Misty gave a report on the Lake Core Analysis workshop in December which brought together leading scientists in the salmon nutrient and paleolimnology fields to review sediment core studies conducted in BC, the Pacific Northwest and Alaskan sockeye lakes. The goal of the workshop was to better understand what paleolimnological techniques can tell us about long-term changes in salmon escapements and lake ecology relative to salmon harvesting and climate change. Misty reported that sediment records give inconsistent results in relation to salmon productivity. Lakes vary in degree of flows and the workshop highlighted that core analysis has a limited use to determine salmon abundance. More work needs to be done on the relationship between Carbon 13 and Nitrogen 15.

#### 11. Wild Salmon Policy

Al Cass of DFO gave an overview of the benchmark paper being developed by himself, Carrie Holt and others. There will be a review of the Benchmark paper in January Misty has agreed to attend this meeting and report back to RSSEPS. Dave Peacock said that determining extinction levels was a difficult task. We have good data for Owikeno Chum, Pinks, and sockeye. The next procedure is: to review which indicator streams are being used for benchmark calculations, review the data that is available for each indicator stream and identify gaps, and review the metrics used to ensure consistency in applying the data.

Doug said that numbers were not as important as having effective strategies to deal with low salmon populations. Discussion included the need for more stream monitoring, data collection and the importance of smolt size in ocean survival. Rick Routledge is planning on travelling to the Wuikinuxv in January to discuss habitat indicators, and Jonathan Hughes' work on modeling the estuary ecosystems.

Criteria are being developed to assess the CUs and the benchmarks by Brian Riddell. Work is being done on the habitat assessment indicators by Heather Stalwart and Gary Taccogna of the DFO. The task of monitoring the habitat benchmarks is not the sole responsibility of the DFO. There is still a lot of work to be done. The Work on integrated Strategic Planning is focusing on governance structures.

The WSP goals are:

1. Determine Stock Status
  - Identify CU
  - Criteria to assess CU: CU benchmarks paper scheduled fall 2008
  - Monitor CU
  - Integrated Planning Process
2. Assess Habitat Status
  - Document habitat characteristics
  - Indicators and benchmarks for habitat status
3. Inclusion of ecosystem values and monitoring
  - indicators of FW ecosystems
  - integrate climate and marine conditions
4. Integrated Strategic Planning
  - Management/ strategy for priority CUs
  - Design/implement planning process for salmon conservation

#### 12. Dead Zones

Colleen raised the question about Dead Zones in the ocean. Rick mentioned the work of Dr. Frank Whitney of the DFO. Over the past decade, he has carried out studies of nutrient transport in coastal waters, to sponge reefs, offshore by mesoscale eddies and into surface ocean waters. In open ocean, warm periods (usually associated with El Ninos) reduce the supply of nutrients to the upper ocean, the cause being an increased stratification of surface waters. Such changes resulted in reduced carbon flux to deep ocean through much of the 1990s, suggesting reduced primary productivity.

Recently he has been tracking the decline of oxygen in interior waters of the subarctic Pacific. Since oxygen is low at depth in this region, its reduced supply to intermediate waters will affect mid water ecosystems especially along continental shelf and slope regions. In open ocean, he has recorded a 22% decline in oxygen between 150 and 600 m depth, the result of weakening ventilation of ocean waters off the Asian coast.

It was suggested that we invite him to our next meeting to discuss the state of the oceans.

There was lengthy discussion on the need for more data on spawning habitat indicators including frequency of visits to streams, measuring silt levels and overall health of spawning areas. Rick encouraged RSSEPs to get more active in developing management plans and monitoring plans that will more accurately reflect the state of these ecosystems.

Misty agreed to work with Aaron and Dave to develop a model for developing watershed management plans.

The meeting was adjourned at 4: 00 p.m.