# Cowichan Chinook Knowledge Workshop

March 4 - 5, 2013

Determine the high risk factors limiting chinook production in the Cowichan watershed.

The purpose of this knowledge workshop was to obtain a consensus of fisheries science and river experts on the most important factors affecting, or will affect, the production of Cowichan chinook salmon, and to develop some options for addressing them.

# Chinook Workshop Methodology

- 25 experts with over 300 years of collective experience working on the Cowichan discussed all freshwater factors affecting the river and limiting chinook production.
- Two Groups:
- One focused on chinook adult migration and spawning (August - Nov.);
- One focused on the egg to smolt (Nov. - July) before migrating to the ocean.
- Used a Risk Assessment group process.

**Background Plenary Sessions**

• Community groups involved with the Cowichan Stewardship Round Table have worked together to complete The Water Management Plan and significantly improve the the Cowichan - the  Stoltz Bluff remediation.

•These efforts helped improve the status of Cowichan chinook from a low of 500 natural spawners in 2009 to over 3000 in 2012.

•Climate Change is a significant threat!

***Stoltz Bluff***
***Mar 13 2003***

# Cowichan Chinook Knowledge Workshop

- Adequate chinook migration flow is critical.
  - Monitoring in early October 2012 revealed that the minimum flow release of 7cms at the weir results in only 2.5 cms at the mouth; a loss of almost 5cms through Catalyst 2cms + lower river seepage.

- Gravel deposition in the lower river is having a significant detrimental effect on chinook and other salmon.

- Climate change projections will cause chinook to face;
  - summer droughts that will be longer into the fall and warmer temperatures,
  - winters will have greater precipitation, but less snow.

# Results of Chinook Discussions.

## Very High Risk Factors

- Adults: Low water in late summer and early fall is preventing chinook migration through the lower river which makes them extremely vulnerable to seal predation in the estuary and poaching in the lower river. (LF 1)

- Adults: Under low flow conditions, the accumulation of gravels in the lower river has cut off the north arm flow and is causing additional loss of surface flow. (LF 4)

# Results of Chinook Discussions.

## Very High Risk Factors

- Egg-smolt: There is a significant lack of off-channel habitat in the lower river, mainly due to loss of access to historical tributary and off channel habitats. (LF23)

- Egg-smolt: There is a lack of good quality estuarine and nearshore habitat, whether through loss of the habitat or loss of access. The estuary and the lower river are linked; chinook salmon likely move between the two several times. (LF31).

# Results of Chinook Discussions.

## High Risk factors

- Adults: Under low flow conditions upstream migration of adults through the lower and middle reaches of the river is being impeded. Spawners may not reach the spawning grounds, are poached, or are subjected to stress (e.g. high water temperature) which impact spawning capacity. (LF2)

- Adults: Skutz Falls and fishway are periodically blocked by winter flood debris impeding upstream migrating adults from reaching the upper river spawning areas. (LF9)

# Results of Chinook Discussions.

## High Risk factors

- Egg-smolt: The juvenile chinook migrating downstream do not have sufficient refuge area and habitat in which to feed, due to channelization by the dykes. The “chute” created by the dykes has reduced habitat complexity and in-stream cover features important to the downstream migration of chinook. (LF3)

- Egg-smolt: There is a lack of high quality, high complexity rearing habitat along the margins of the mainstem of the river throughout the lower floodplain reach. (LF25)

# Results of Chinook Discussions.

## High Risk factors

- Egg-smolt: High suspended sediment loads, especially from numerous clay banks in the middle and upper reaches of the river pose a significant threat to egg incubation and emergence of alevins out of the spawning gravels. While the sediment load is much reduced after the remediation of Stoltz bluff, there are other zones which could become significant issues. (LF17)

# Summary

- Both groups identified the lower Cowichan River and the estuary as most ‘at risk’ and the biggest bottleneck to chinook production.
  - For adults, the greatest risk comes from the migration barrier posed by low water in early fall, and gravel accumulation, causing high vulnerability to seal predation and stress induced loss of spawning capacity.
  - For juvenile chinook the greatest risk comes from loss of off-channel habitat, main channel complexity for rearing, and good quality estuarine habitat.

✓ The upper river retains the high qualities of excellent habitat required by chinook salmon.