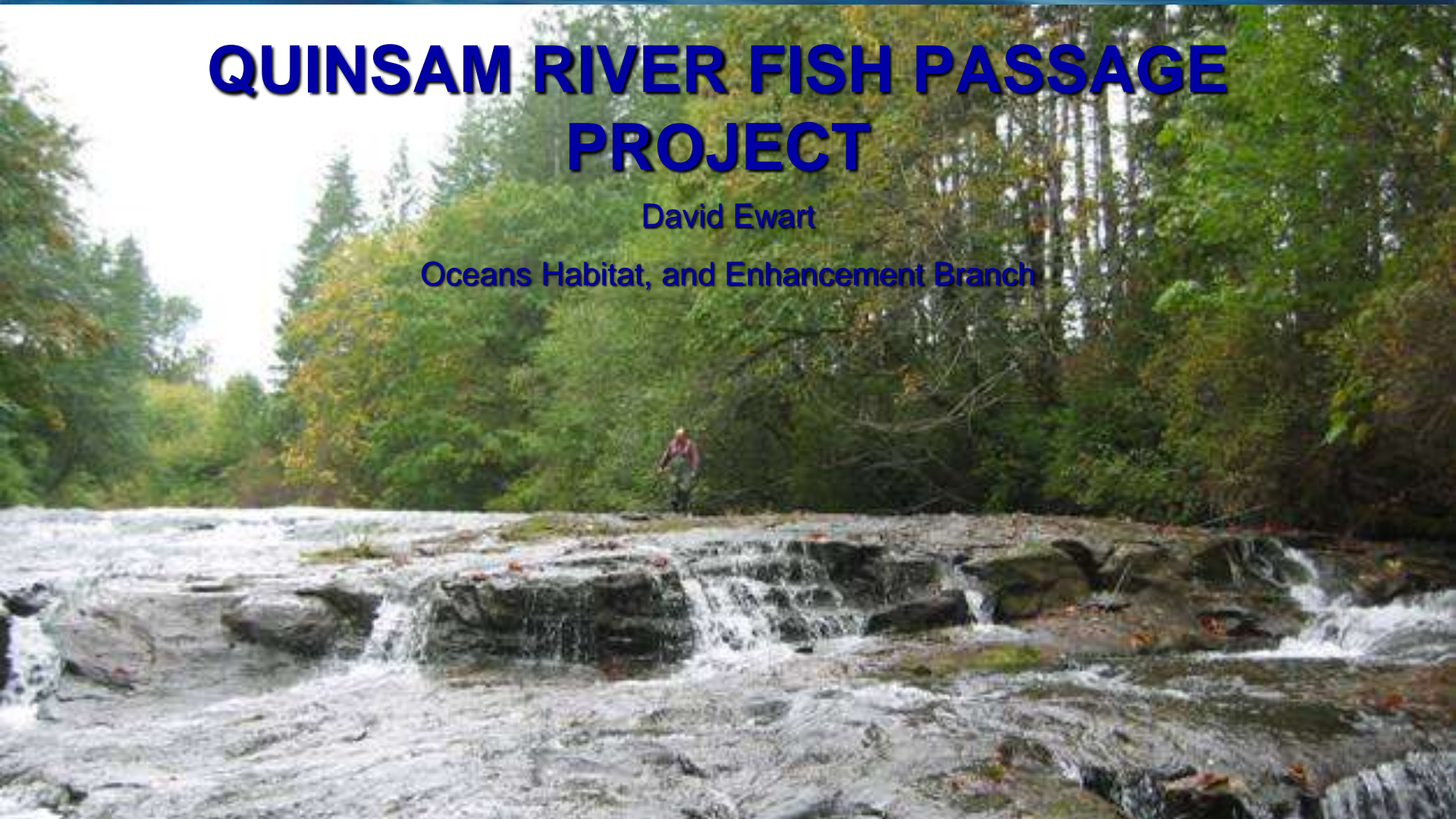




QUINSAM RIVER FISH PASSAGE PROJECT

David Ewart

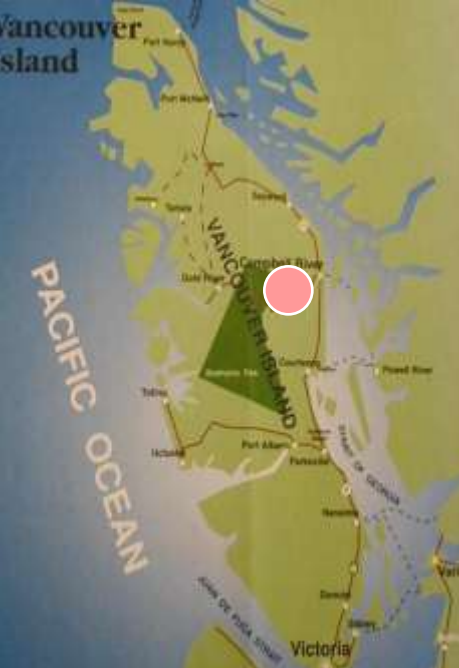
Oceans Habitat, and Enhancement Branch



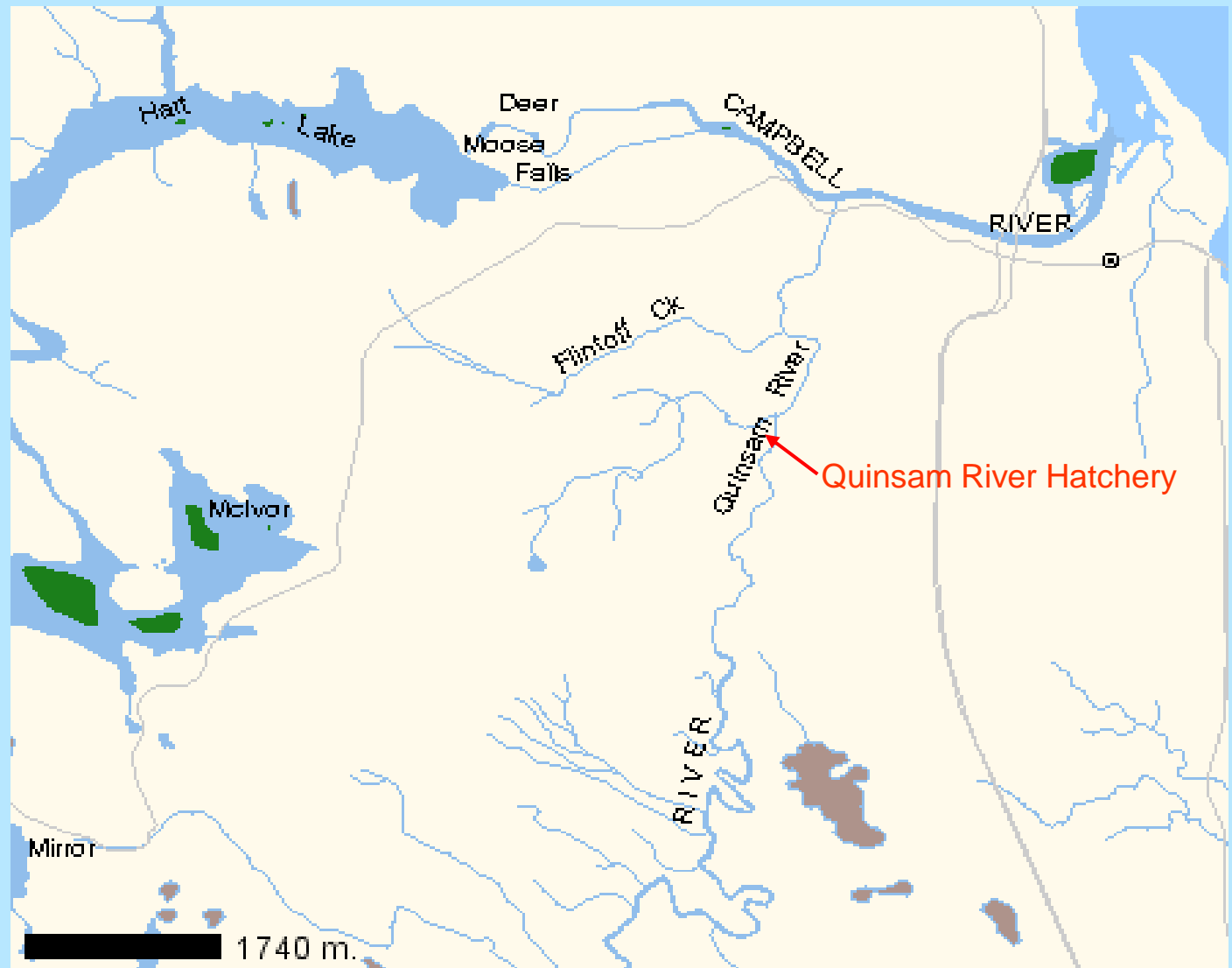
2011 62nd Annual North West Fish Culture
Conference, December 6 – 8

Victoria, B.C.

Canada 



Quinsam River Watershed

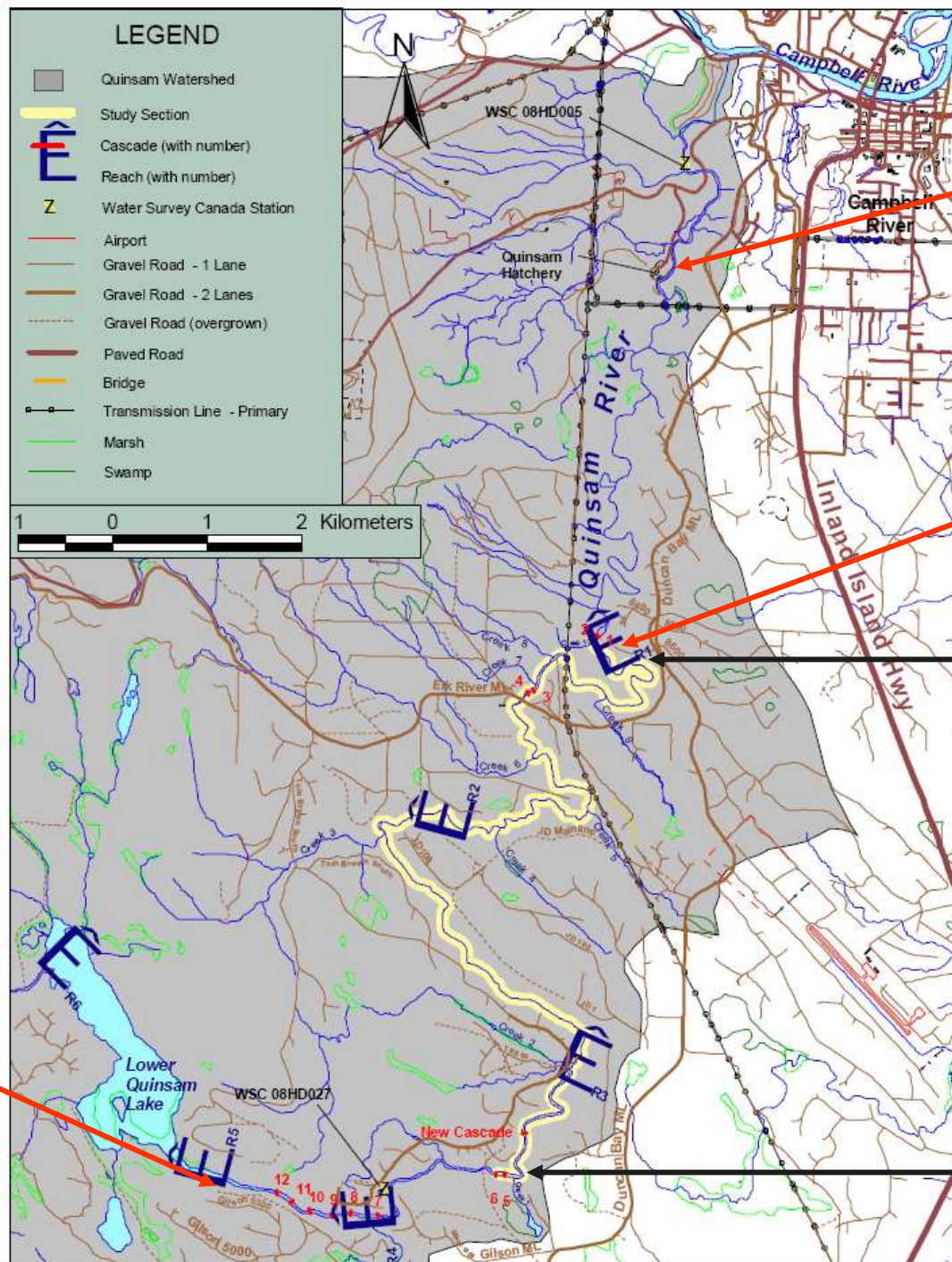


HISTORY

- Quinsam River Pink Salmon a major part of the East Coast Vancouver Island Conservation Unit.
- Has even & odd year runs; Even year was stronger pre-2000, odd appears to have become the stronger run since then.
- Pink enhancement began at Quinsam Hatchery in 1979 BY and has continued to this day.
- This stock supports a commercial and growing recreational fishery, and is used to populate other South Coast VI Pink rebuilding and fishery projects.

THE PROBLEM

- Reports beginning in the 1930's of adult Pink Salmon migration barriers in the upper Quinsam.
- Pink Salmon adults were being held at barriers, reducing productive capacity of river.
- Problem compounded by low river flow in late summer and early fall.
- Climate change - very low flows during Pink Salmon migration are becoming the norm.



Quinsam Hatchery

Lower Cascades

Increased potential 14km

Falls at Lower Quinsam Lake

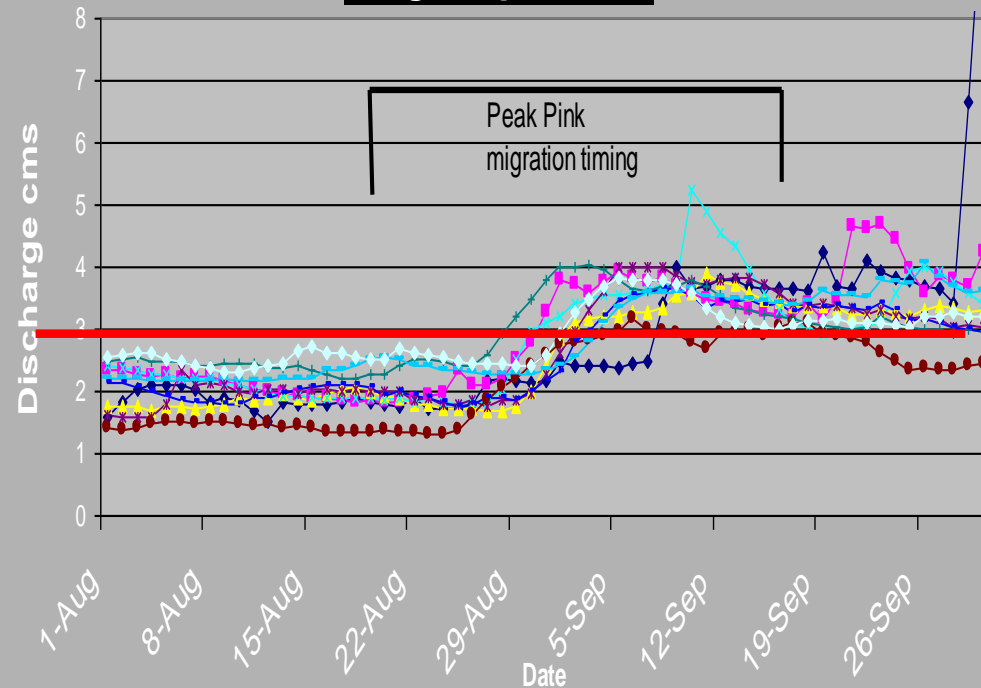
No passage at less than 1.4cms
(50 cfs)



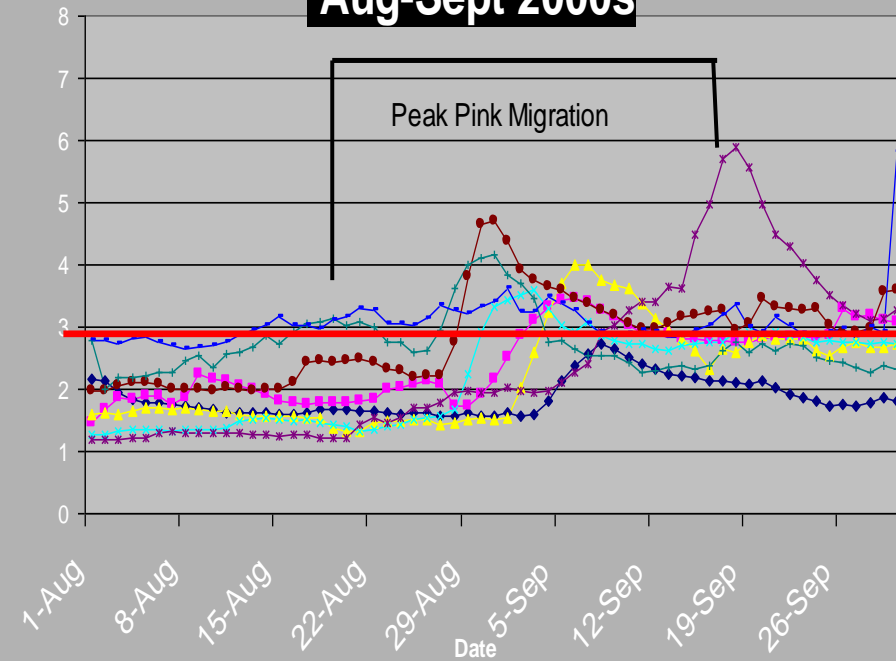


Lower Quinsam River Discharge 1980s vs 2000s

Aug- Sept 1980s



Aug-Sept 2000s



- Red line = Lower river flow at which upper river barriers become impassable

Why the Concern?

- Many years of enhancement at the hatchery had stabilised and supported the escapement of Pink Salmon to the river.
- However, over 30 years of downstream fry trapping in the spring indicated low survival in the river for many brood years.
- Questions raised about the limiting factors and how survival could be increased.

WHY PINKS???

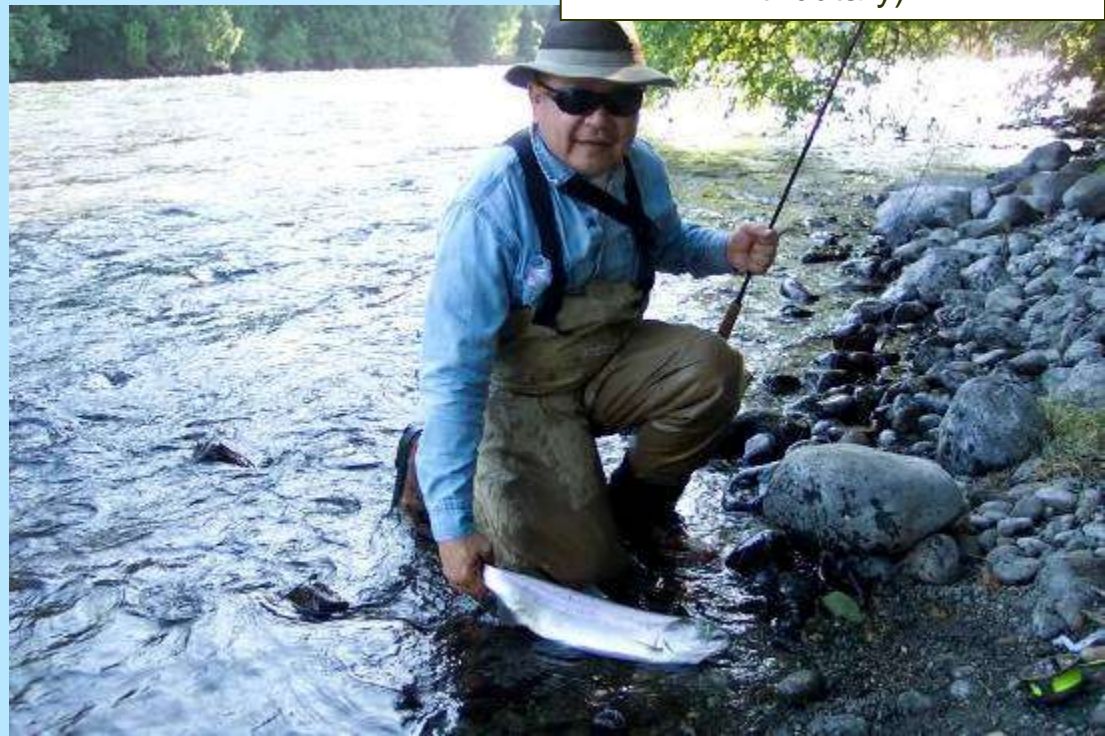


- Increasing importance as a recreational species, tidal and non-tidal.
- Creates fisheries that are accessible to everyone.
- Quick return (2 years).
- Adult return timing is mid-July to September - Matches most active fishing period.

Fly fishing the Campbell River
(fish destined for the Quinsam
tributary)



Campbell River Fishing
Pier



SOLUTIONS??

A local committee was formed to investigate the problem and develop a plan. Haig-Brown Institute stewards of the project.

Two Stages:

1. Survey the area above barriers to determine amount and extent of habitat. PSF, BCRP, Funded in 2004.
2. If survey indicated abundant habitat, proceed with construction of Fishways through main barriers.

Haig-Brown
INSTITUTE



BC HYDRO
FISH & WILDLIFE
BRIDGE COASTAL RESTORATION PROGRAM

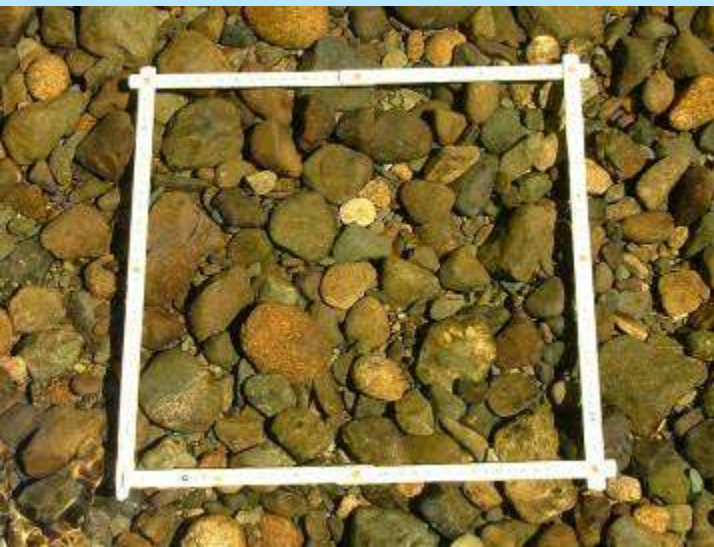


Fisheries and Oceans
Canada

Pêches et Océans
Canada

Spawning Habitat for 46,000 Pinks

- Survey indicated that there was abundant habitat above barriers.
- Design work was done by DFO staff for a fishway through lower 3 cascade areas.
- Funding provided by PSF and BC Hydro and led by local partners, (Haig-Brown Institute), with in-kind technical support from DFO.



Adult Pink Salmon fish passage requirements

- Design criteria : Specific to Pinks; Coho, Chinook and Sthd had access when flows increased later in the fall & winter (later migration)
- Focus on Pinks strong swimming abilities -not much for jumping – and to the flow reality- how much water do we have to work with?
- Access to sites, maintenance implications
- Feasibility of construction
- Costs

Summer 2005 Construction



Construction Cost =
\$86,000





Before



After

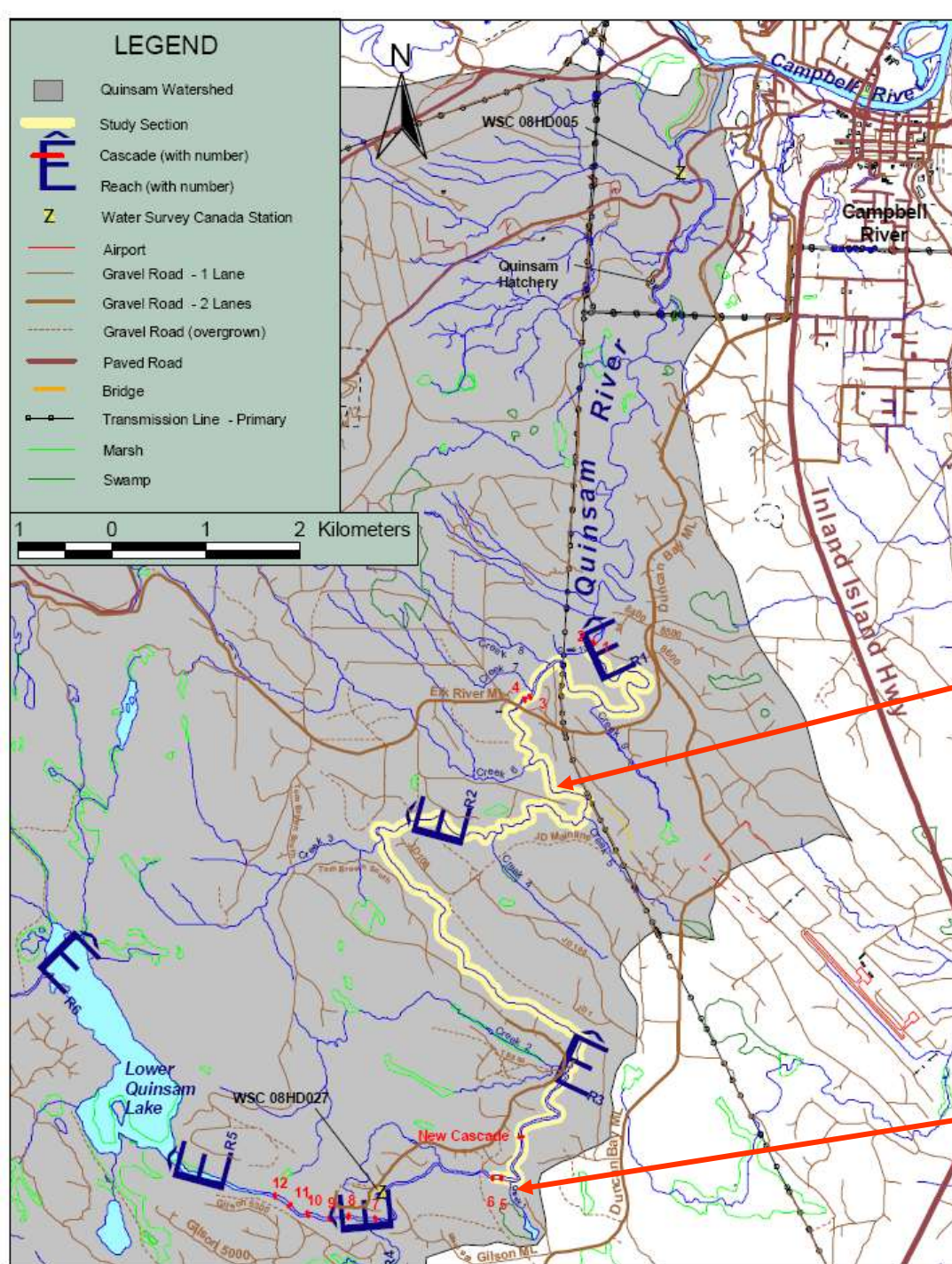


Before



After

Average of 40,000 Pink adults estimated migration & spawn above fishways every year since construction on flows below 1.4cms (50 cfs)!!



Adult carcass (nutrient) biomass additions to upper watershed estimated at 60,000kg annually – supporting aquatic and terrestrial ecosystems

Pinks waiting their turn at the lower cascades bypass



Quinsam River Fishway Project: Downstream (Fry) Assessment

- Assessment of Pink fry natural migration has been done on the lower Quinsam River (at hatchery fence), since the 1970's.
- Fry counts performed after fishway installation and compared with pre-construction years.

Main downstream
traps in lower river
at hatchery fence
(below fishways)

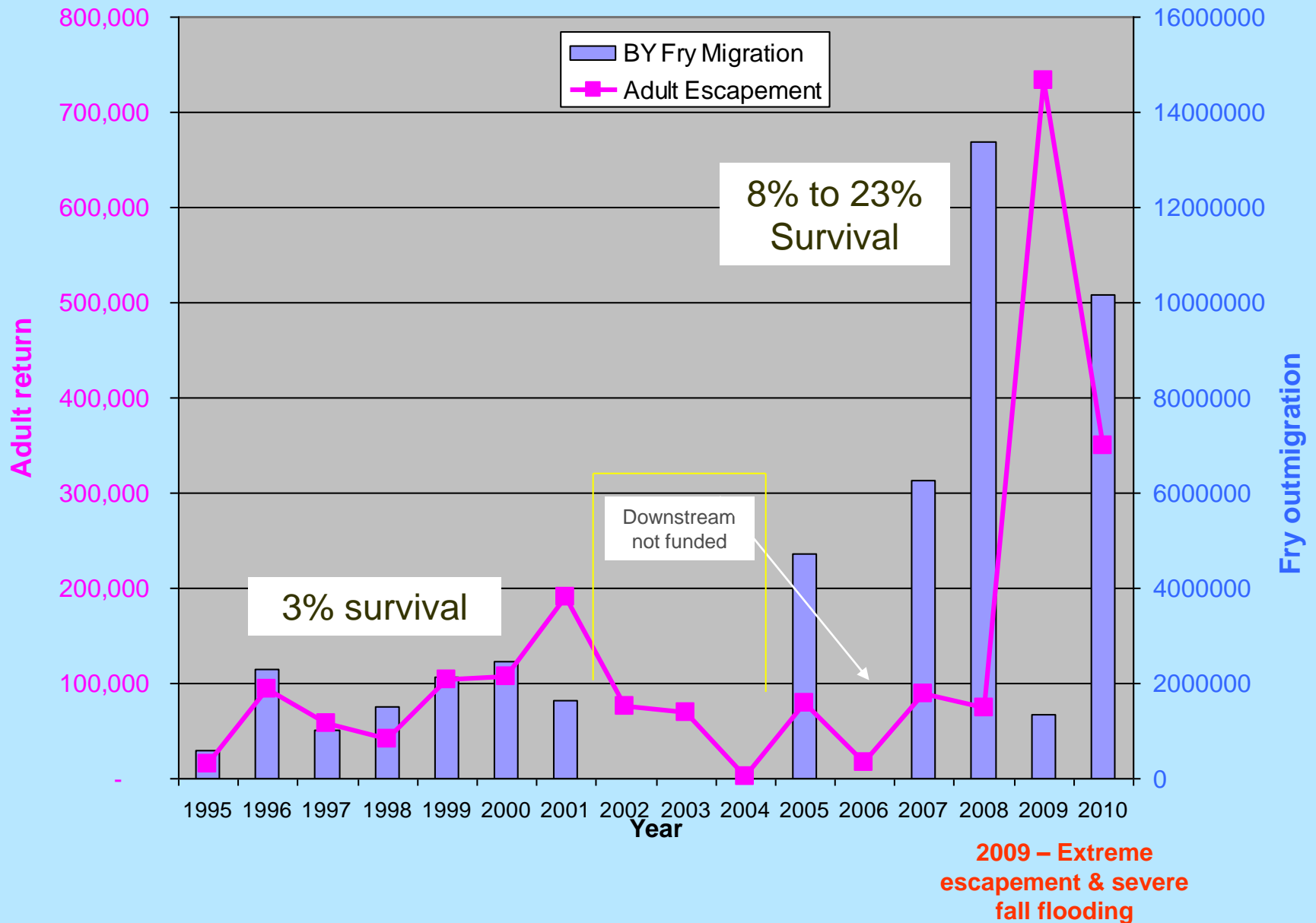


Rotary screw
trap above
fishways -
2009



Quinsam River Pinks

Fry outmigration from Brood Year 1995-2010



2009 Escapement



November flood, 2009

- 733,000 adult return to upper river (7x Brood Year).
- Marine Survival estimated at 6–7%.
- Very low exploitation rate because of Fraser Sockeye concerns and coho interception
- Created large over-escapement; (Target is 100,000 to 200,000).

CURRENT STATUS

- Since 2010 BY, Hatchery has decreased production of Pink fry from 6.5m to 4m (38%) to compensate for increase in natural production.
- Base hatchery production level on a floating scale, ensuring that minimum escapement target is met if survival rates are low in river & ocean.
- Harvest strategies to deal with large surpluses.
- Looking for better tools to predict ocean survival

Summary

- Simple fishway construction has provided low flow passage for Pink salmon to the upper Quinsam River.
- Increased spawning range, decreased density, and added nutrients further up the watershed.
- Fry production (egg to fry survival) in the river has significantly increased.
- Learning that many uncontrolled factors at play which are creating extremes: Ocean survival, timing of flood events, seasonal climate, etc.

Further information on Quinsam River Fish Passage Project

- Reports on BC Hydro website

Project 05.ca.10

http://www.bchydro.com/bcrp/reports/vancouverisland/vi_2005.html

