Using thermal marks to assess wild McDonald Lake sockeye salmon migration routes & run timing

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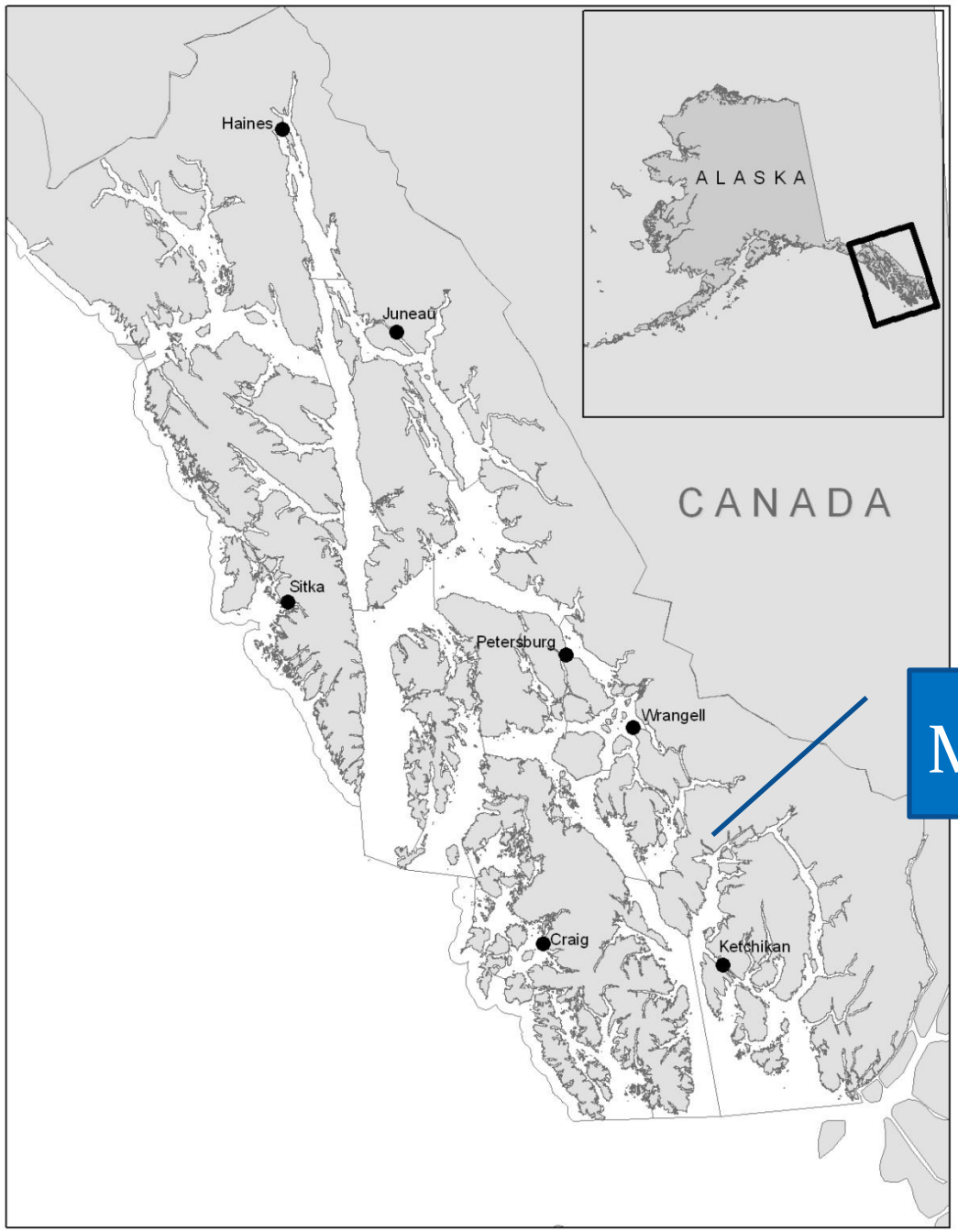
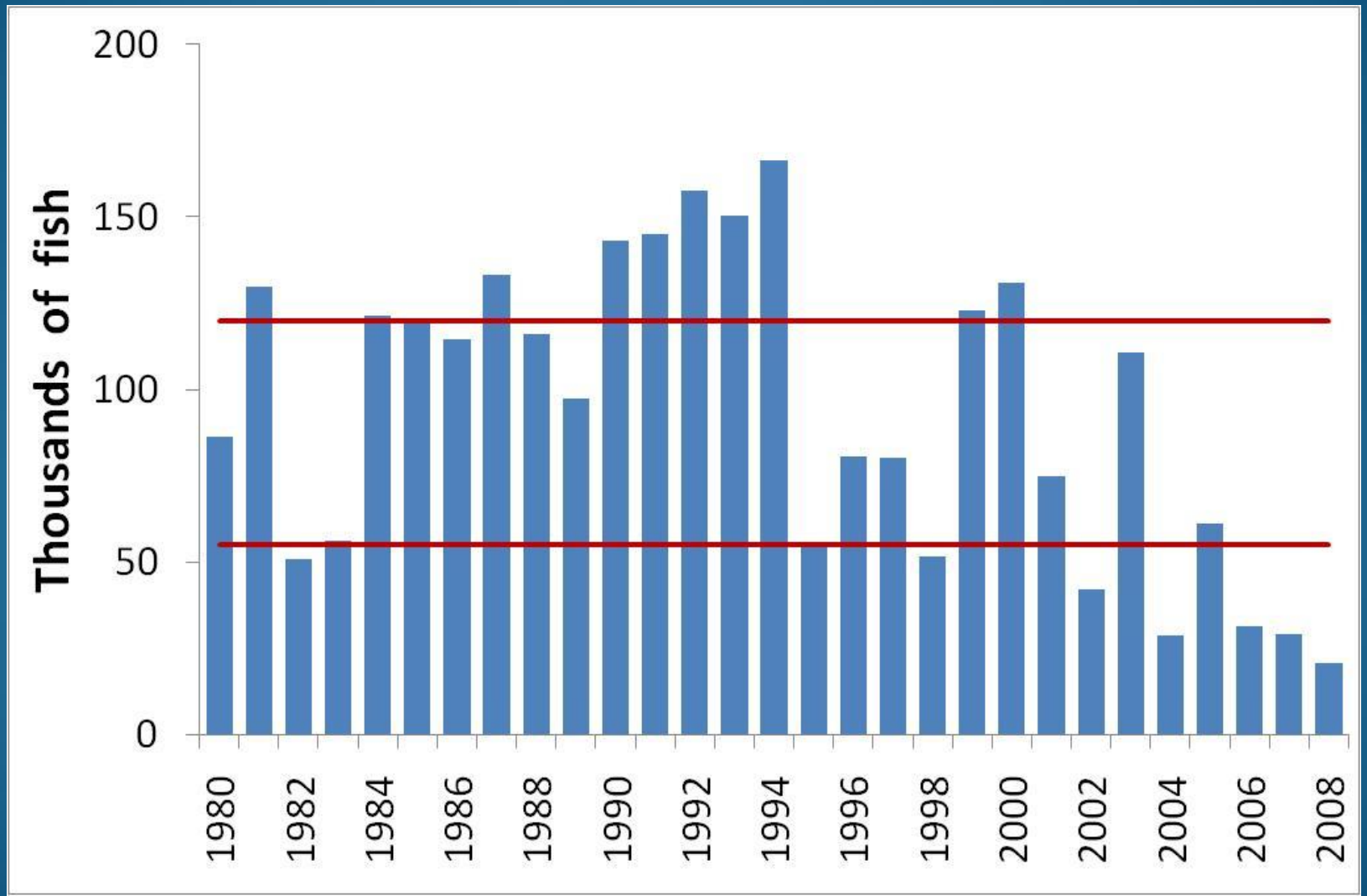


McDonald Lake

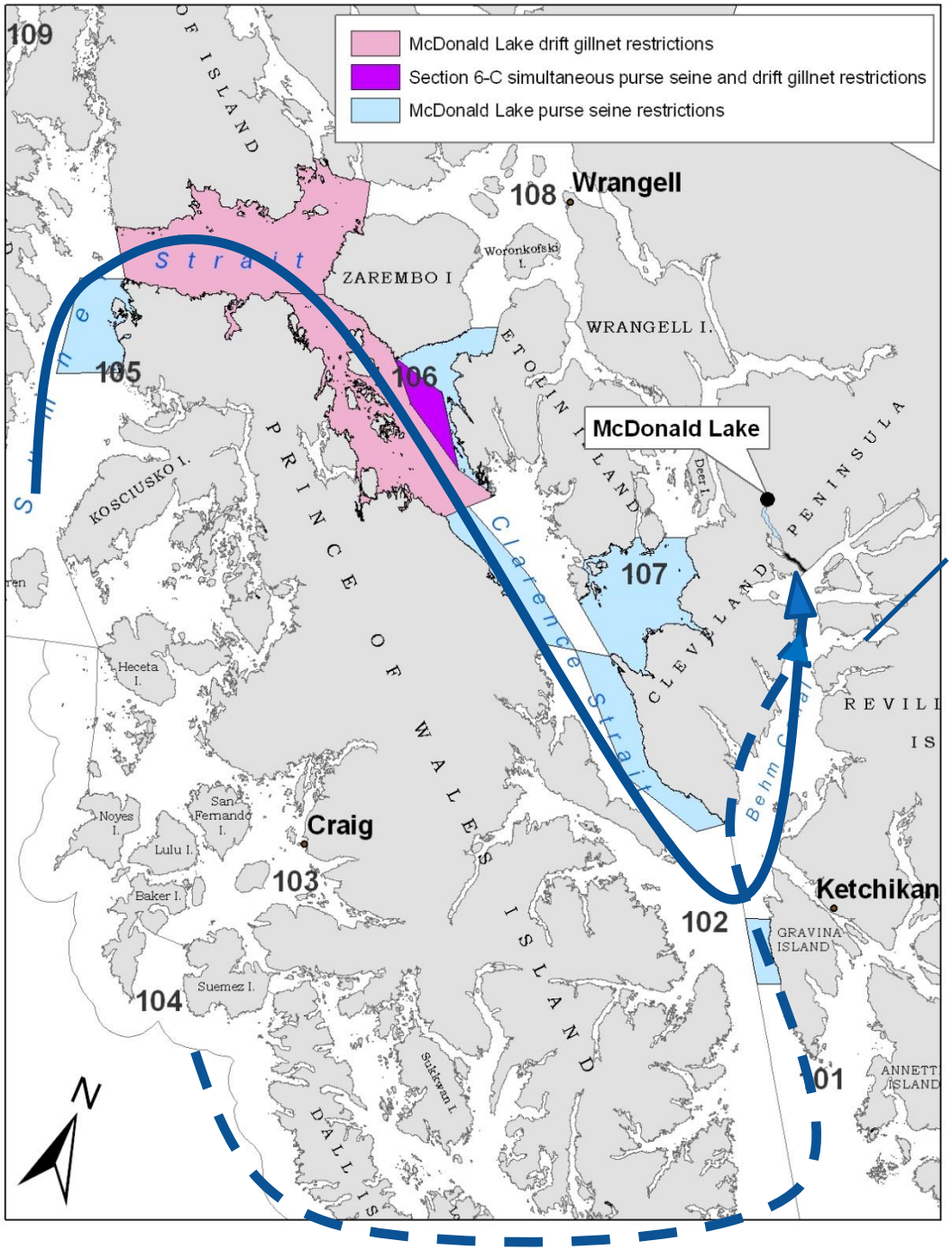
Estimated sockeye salmon escapement at McDonald Lake, 1980–2008



2009 Board of Fish meeting: *stock of management concern*

Action Plan:

- Fishery restrictions
- Ongoing SSRAA lake stocking project
  - Sample commercial harvest
  - Sample spawning escapement



Areas affected by fishery restrictions outlined in the 2009 Action Plan

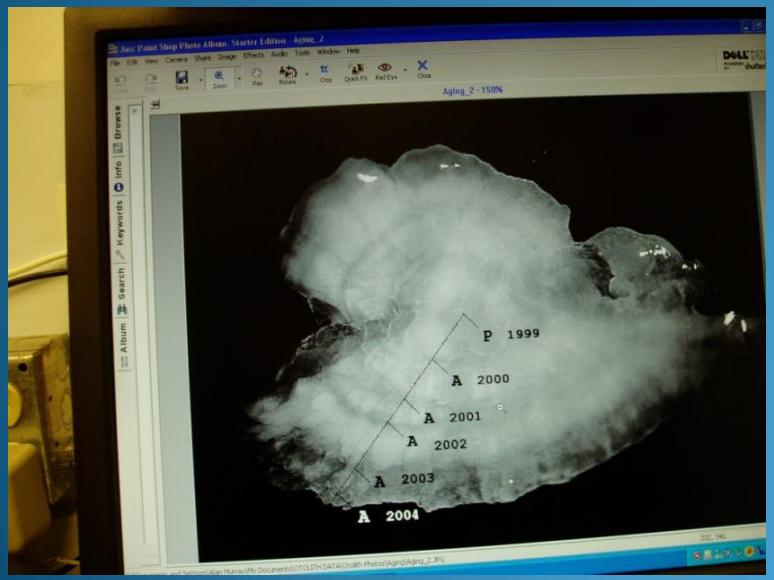
Neets Bay

- CWT studies (1985, 1989, 1990)

Otolith-marked sockeye salmon returning to McDonald Lake from 2011–2014

ADF&G will sample the commercial fisheries for otolith marked McDonald Lake sockeye salmon as they are intercepted in the Districts 1 - 7 net fisheries.

Thermal marked sockeye will be used as a proxy to represent wild McDonald Lake sockeye salmon as they pass though the commercial purse seine and drift gillnet fisheries.



We assume that stocked fish will be representative of, and behave like wild fish ~

1. Stocked fish will be harvested in the same places,
2. At the same time,
3. And in the same relative abundance as wild fish.

Hugh Smith Lake sockeye salmon stocking project

Heinl, S. C., X. Zhang, and H. J. Geiger. 2007. Distribution and run timing of Hugh Smith Lake sockeye salmon in the District 101 commercial net fisheries of southern Southeast Alaska, 2004-2006. Alaska Department of Fish and Game, Fishery Manuscript No. 07-03, Anchorage.

1. SSRAA collected eggs from Hugh Smith Lake.

2. Fish marked and reared at Burnett Inlet Hatchery.

3. Fry were returned to Hugh Smith Lake, fed in net pens near the outlet (2 months), released in summer (1999–2003).

Hugh Smith Lake sockeye salmon stocking project,

Commercial Fisheries Harvest

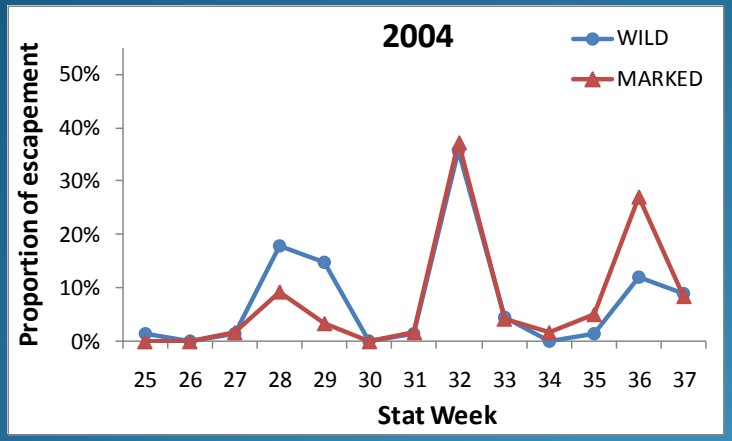
- Collected otolith samples from the District 1 net fisheries (2004–2007).

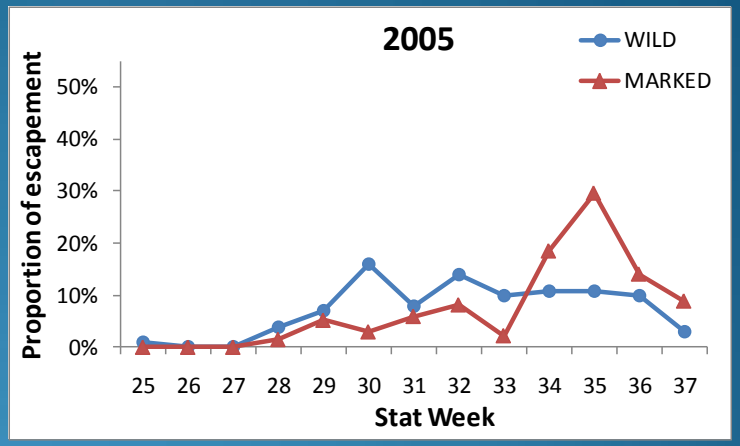
- Results corroborated with CWT data (1991–1996)

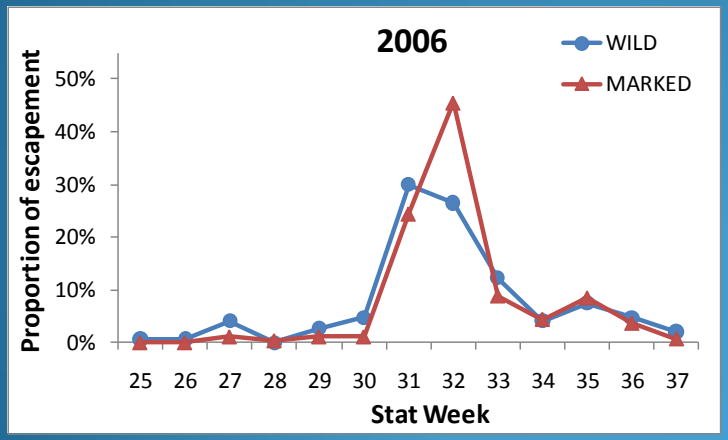
- Fishery restrictions (timing and location of area closures) were appropriate for reducing the harvest of Hugh Smith Lake sockeye salmon.

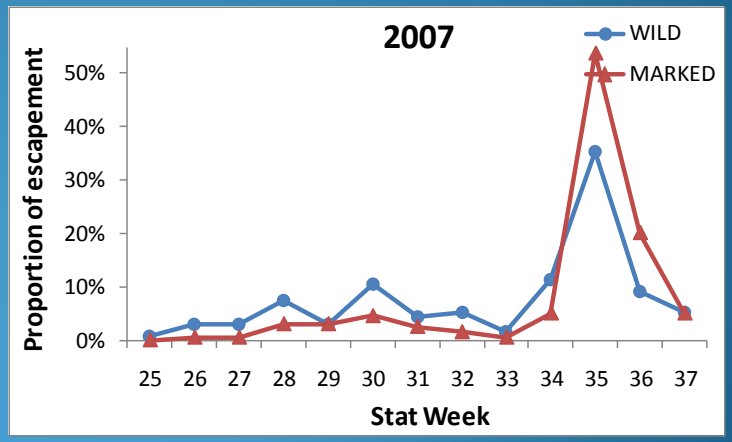
Hugh Smith Lake sockeye salmon stocking project,

Spawning Assessment

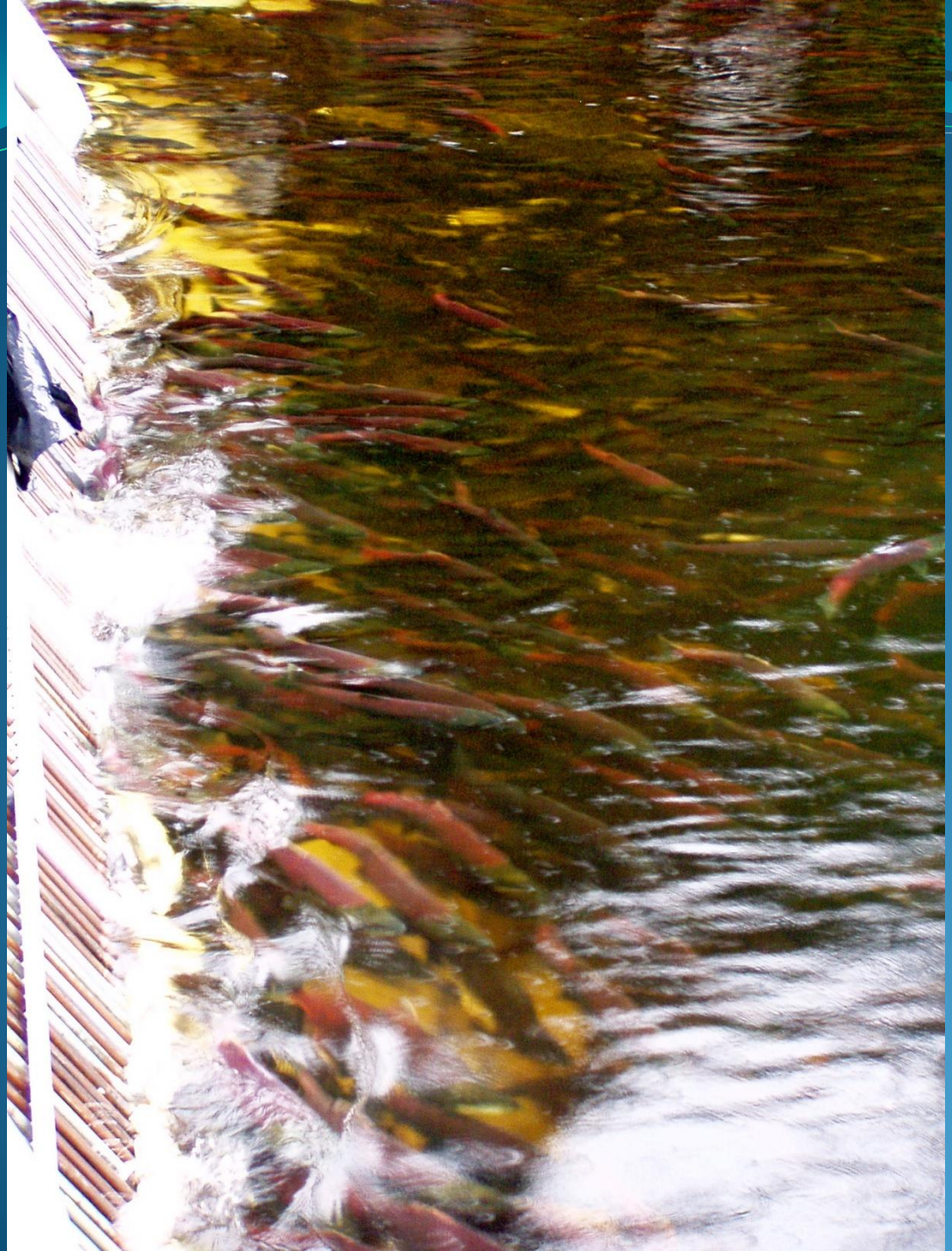








Run timing at the weir was slightly different (2004, 2005).



Many stocked fish homed to net pen site and spawned in unsuitable habitat near the weir.

Hugh Smith Lake

Eggs collected on one occasion each year

Reared at Burnett Inlet Hatchery for 8 months (fry)

Fry fed in net pens near outlet of the lake (2 months)

Sample net fisheries in District 1

McDonald Lake

Eggs collected three times during historical thirds of the run

Reared at Burnett Inlet Hatchery for 18 months (full-term smolt)

Smolt held in net pens near inlet stream (up to 24 hrs)

Sample net fisheries in Districts 1, 2, 4, 5, 6 and 7

Summary~

- Collect otolith samples from the commercial net fisheries (Districts 1 – 7)
  1. Effectiveness of the Action Plan

- Collect otolith samples from the escapement
  1. Proportion of stocked fish
  2. Distribution of stocked fish in system