

Disease epidemics

Observations

1991-Present

Alexandra Morton, Raincoast Research

presented to the Salmon Aquaculture Dialogue

November 2006

Impact of large stationary
populations of salmon on
wild B.C. salmon was
forecast

Hansard

12-9-1990

We have a concession law. One has to have a concession to be a fish farmer. We are very strict about the quality and the environment questions. Therefore, some of the fish farmers went to Canada. They said we want bigger fish farms; we can do as we like. That is a very hot subject, I think.

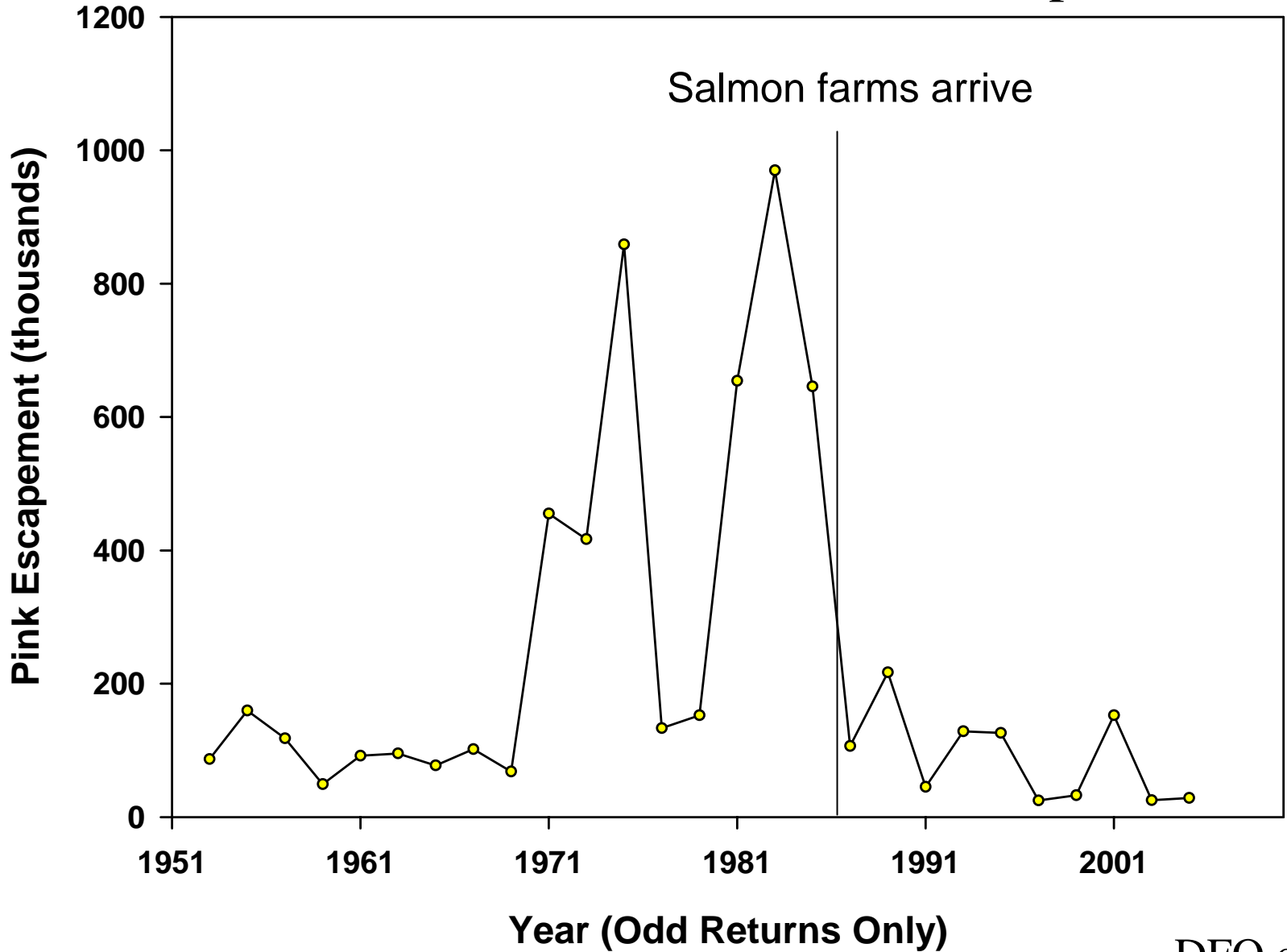
Jon Lilletun

(Norwegian Parliamentary Committee on Environment)

Mr. Loken (Interpreter): Mr. Lilletun made the point that in regard to disease, which is now causing so much difficulty for the fish farming, we have to look back at the history of this. Fish farming has had very good times in Norway. It was a flourishing industry and the need came up to import small fry from Scotland. At the time, the representatives from the fishing industry itself said that they needed this in order to maintain the viability of the industry. The scientists said no, that it was dangerous, that we knew there were problems with the small fry from Scotland and we should not do it.

In the end the politicians gave in and the import occurred against the advice of the best-informed scientists in the country. So that is a lesson the politicians may have to take from what happened.

Area 12 Mainland Pink salmon escapement



DFO data

In 1991, IBEC placed furunculosis infected Atlantic salmon into the Broughton Archipelago.

Massive farm stock die off occurred,

Stolt Sea farms bought the infected farms and left the fish in the water.

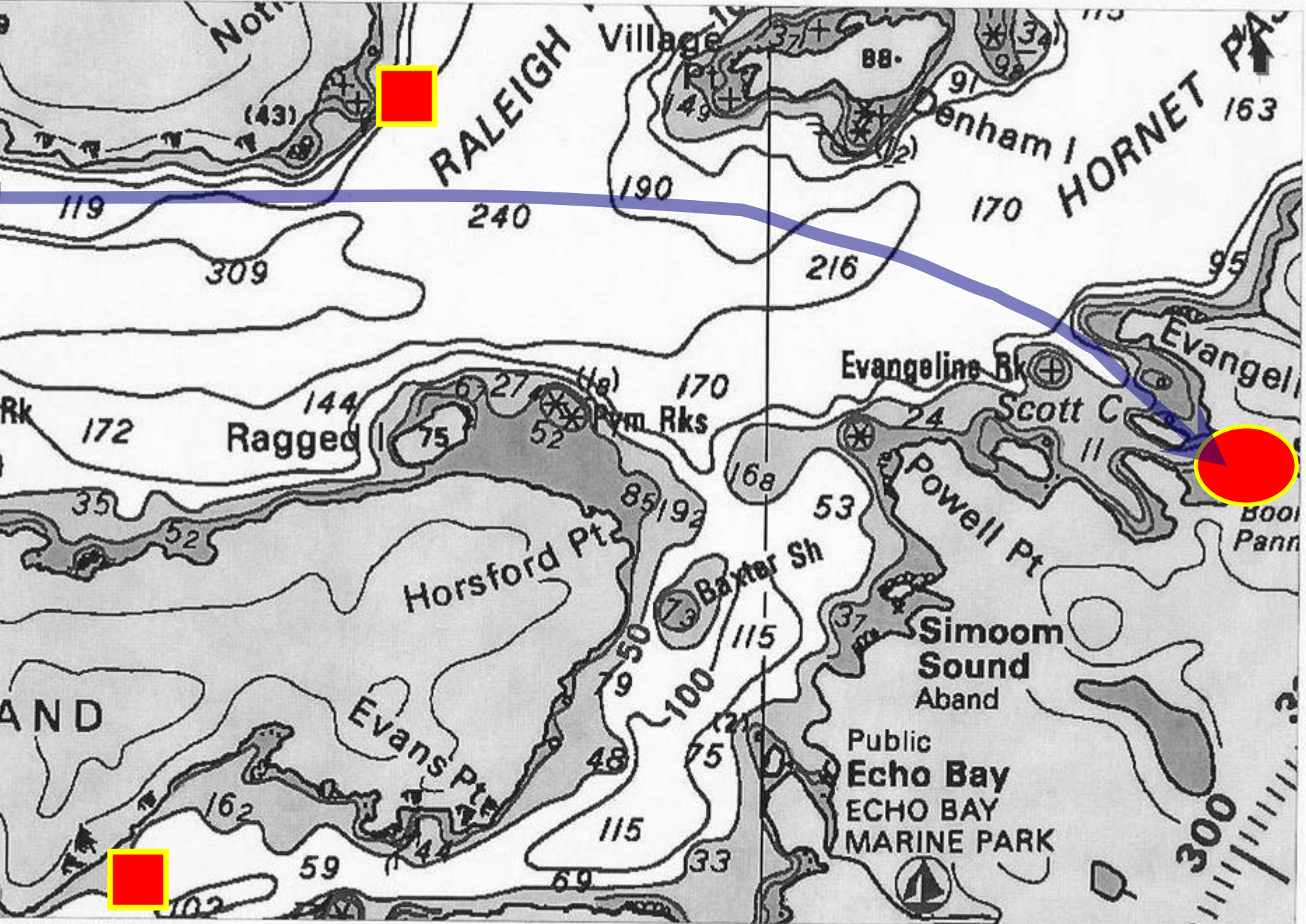
Dale Blackburn, Echo Bay 1991

After IBEC put their fish in the water

Coho returned to spawn

Scott Cove Hatchery operated from 1980-1990

with 3% broodstock mortality



In 1993,

it happened again

Scanmar put Atlantics in Broughton pens
infected
with a strain of furunculosis
resistant to all drugs approved for fish in BC.

This time BC Packers bought the infected fish,
left them in the water and





Risk factors for infection with *Aeromonas salmonicida* subsp. *salmonicida* in Norwegian freshwater hatcheries

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²OCEANOR a.s., Pirsenteret, N-7005 Trondheim, Norway

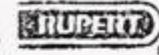
³Fusa and Kvam forsøksring, N-5640 Eikelandssosen, Norway

ABSTRACT: In 1991, a matched case-control study was performed in Norwegian freshwater hatcheries on risk factors for infection with *Aeromonas salmonicida* subsp. *salmonicida*, the causative agent of furunculosis. The study was based on replies to a questionnaire mailed to smolt producers, and included 30 infected and 66 non-infected hatcheries, matched by county. The odds ratios for infection with *A. salmonicida* subsp. *salmonicida* in hatcheries associated with certain management and environmental factors were analyzed using a conditional logistic regression analysis. The study revealed that the main risk factors for infection with *A. salmonicida* subsp. *salmonicida* in freshwater hatcheries were: (1) migration of anadromous fish into the freshwater supply of the hatchery, (2) sharing of personnel with other fish farms, and (3) a high concentration of fish farms infected with *A. salmonicida* subsp. *salmonicida* near the hatchery. Results indicate that the high prevalence of furunculosis in Norwegian seawater farms has great impact on the risk of infection with *A. salmonicida* subsp. *salmonicida* in hatcheries, and also that the bacterium may be transmitted between fish farms by humans.

Norway already knew salmon farms were the leading cause of furunculosis in wild enhancement hatcheries

The industry
recognized
furunculosis infection
was part of salmon
farming

BRITISH COLUMBIA PACKERS LIMITED



SEAFOODS

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POSTAL ADDRESS:
BOX 2488
VANCOUVER, B.C. CANADA V6S 2A2

December 03, 1990

Gary Hoskins
Fish Health Officer, Pacific Region
Pacific Biological Station
NANAIMO, B. C.
V9R 5X6

recorded by Evelyn since 1971), you are unwilling to support the import of eggs from this Icelandic source. As we have no other disease-free source available anywhere in the world, I am requesting that you reconsider your position, particularly in the light of the expected change in the DFO regulations. We could review matters in the most unlikely event of A. salmonicida achromoganae appearing in the fish during quarantine.

I enclose the data I have from Scotland and Iceland for your information.

Best wishes,

Yours truly,

Dr. Ted Needham
Director, Aquaculture Operations

INTO BRITISH COLUMBIA

ing down the conditions which approval for Atlantic Salmon we have discussed at length to be careful and proceed

points for me:

protocol for imports into o fundamentally from the r counterpart, John Cornick lantic salmon egg transfer a Scotia? As you know, John pass Schedule II testing at her hand, insist that four red over the previous two odfish.

ly the McConnell strain of riteria (see enclosed memo well represented in British e in further imports of this es. On the other hand, the ain from Iceland fits the troduce some Norwegian blood umbia. Unfortunately their from Sigi Helgason) by your isolation of the ubiquitous ida achromoganae. Despite e are about to be changed to rganism is destroyed by egg in British Columbia anyway

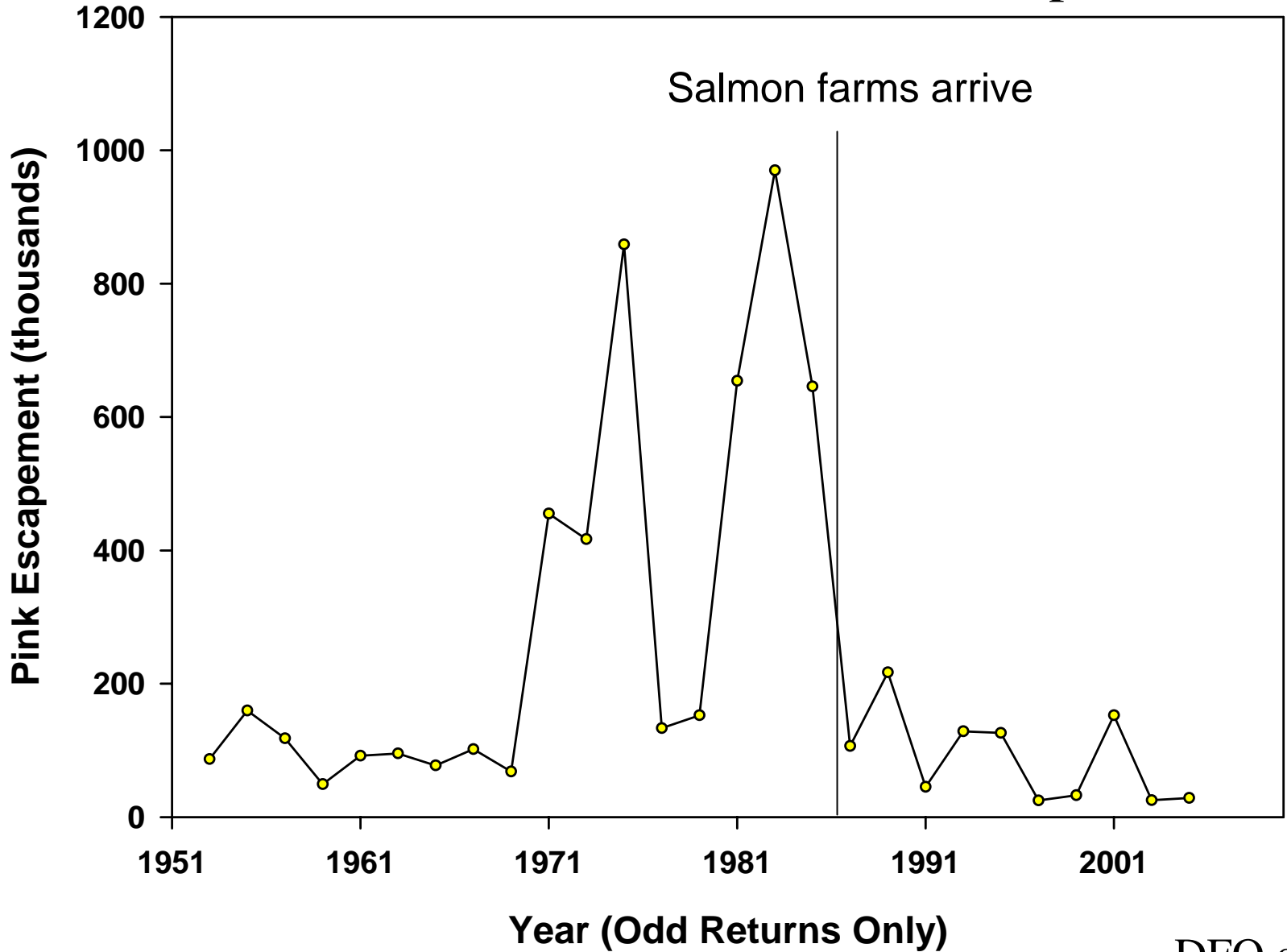
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“No other disease-free source available
anywhere in the world”

Ted Needham, BC Packers

“The scientists said no, that it was dangerous”
Lilletun, Norwegian Parliament

Area 12 Mainland Pink salmon escapement



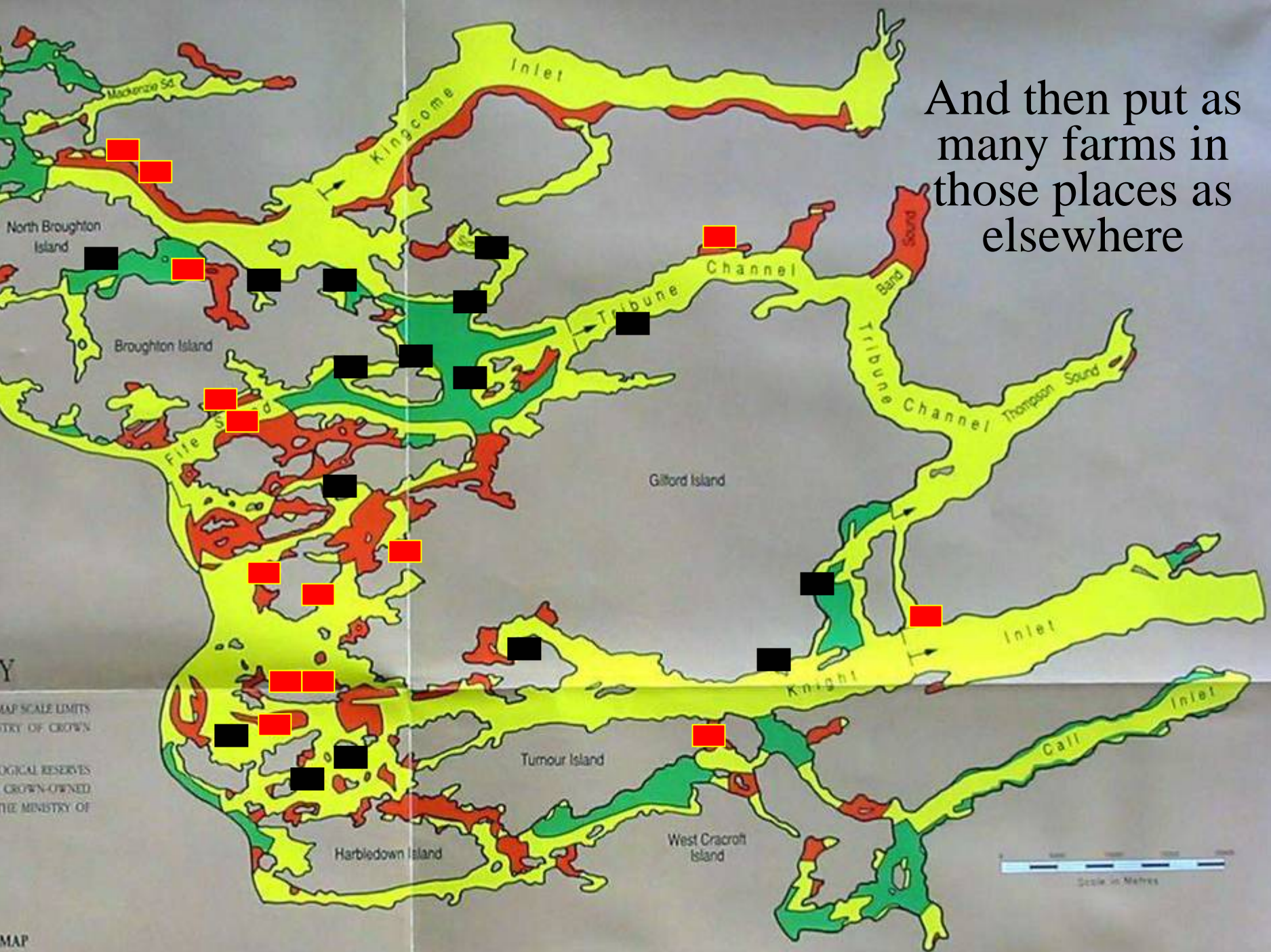
DFO data

No one asked my community if we
were willing to risk our wild salmon

In fact,

They asked us where don't
you want salmon farms

And then put as many farms in those places as elsewhere



MAP SCALE LIMITS
COUNTRY OF CROWN
LOGICAL RESERVES
CROWN-OWNED
THE MINISTRY OF
MAP

Scale in Metres

SPECIAL NOTICE

This was not only a betrayal of public trust,

it placed salmon farms in the most
biologically productive locations

and ensured conflict and impact

**FISH FARMS
MAKE LOUSEY
NEIGHBOURS**





Investigation of the 2001-2003 IHN
epizootic in farmed Atlantic salmon
in British Columbia

Prepared by Sonja Saksida BSc DVM MSc
Sea to Sky Veterinary Service
Campbell River, British Columbia

“once an Atlantic salmon pen becomes
infected with IHNV ...,

the disease quickly spreads

The probable mode of transmission is via waterborne
exposure”

“...cases where infected, but undiagnosed,
Atlantic salmon were transported via live-haul boats
to a new site and subsequently
infected farms situated downstream from the new site.”







Heritage Salmon Ltd.

DATE: April 16, 2003
TO: All Broughton Area Sites
FROM: Tim Talbot
RE: Area Wide Quarantine

Hello Everyone,

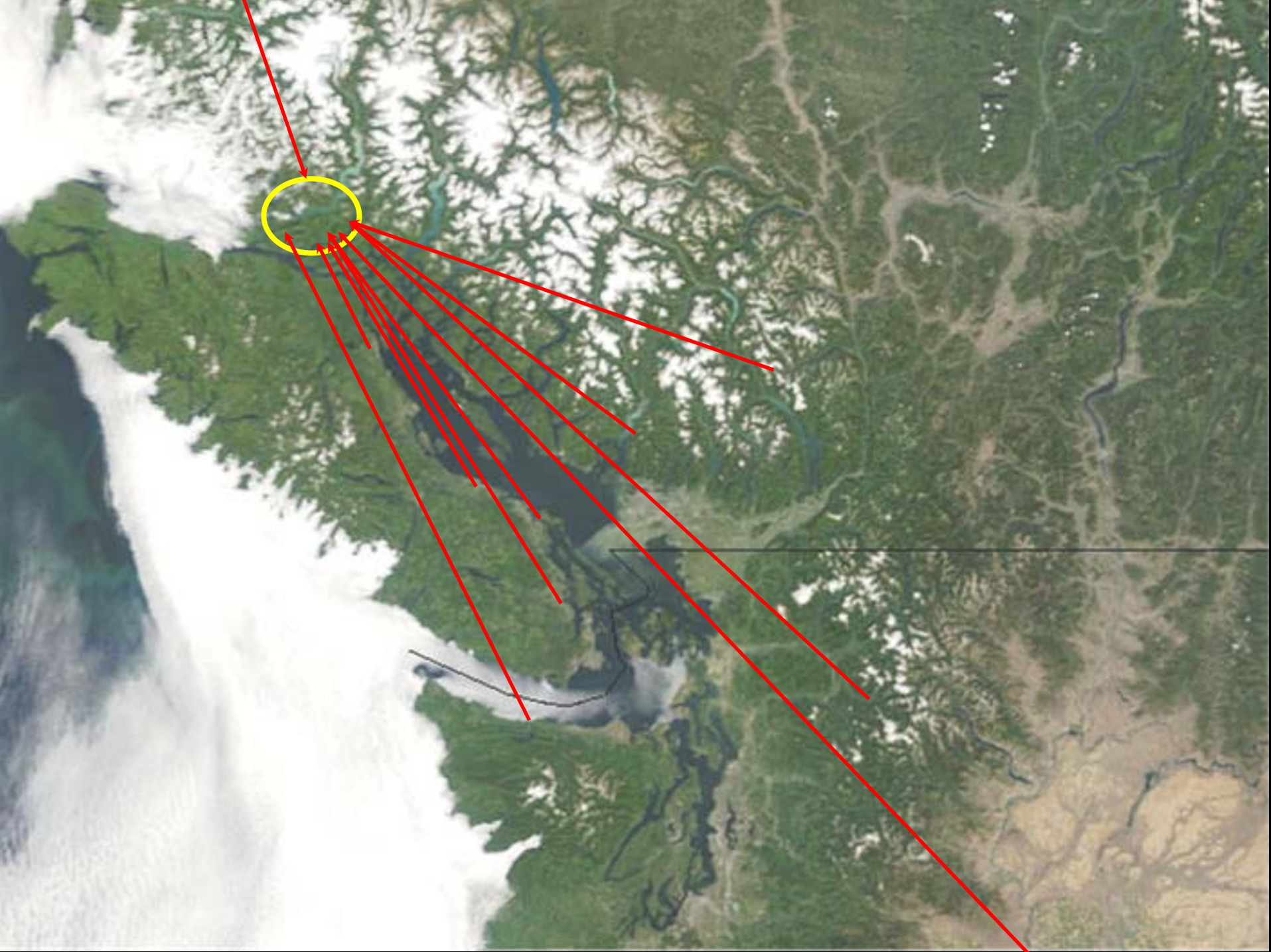
Effective immediately there is a Broughton area quarantine for all Heritage sites. This includes; Burdwood, North Wishart, Cliff Bay, Sir Edmund Bay, Cypress Harbour, Cecil Island, Maude Island, Simmonds Point and Wehllis Bay. Please strictly adhere to the protocols listed below. This measure has been put in place to heighten bio-security and prevent the spread of disease.

- Treat your site as if it is positive for a highly infectious disease.

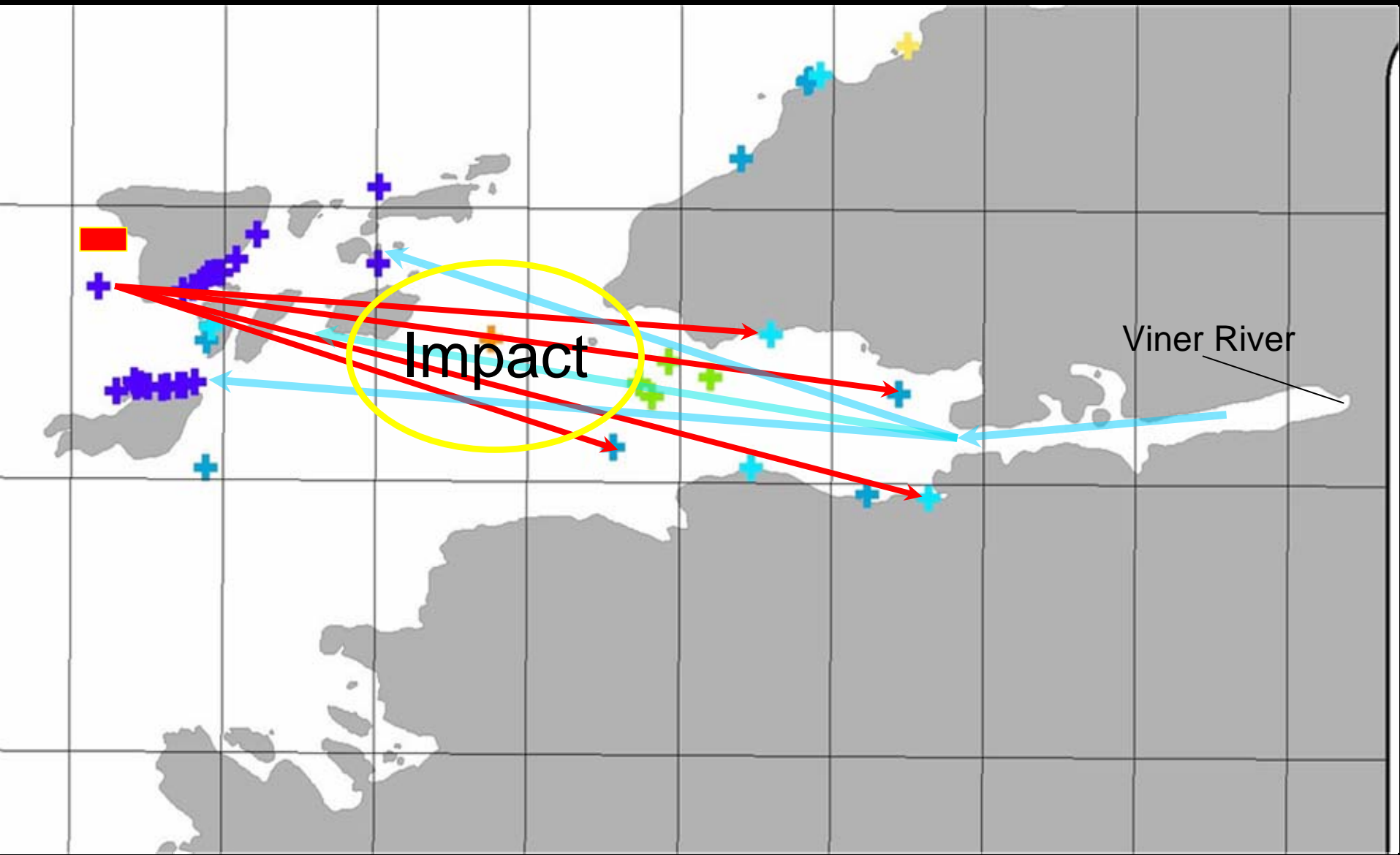






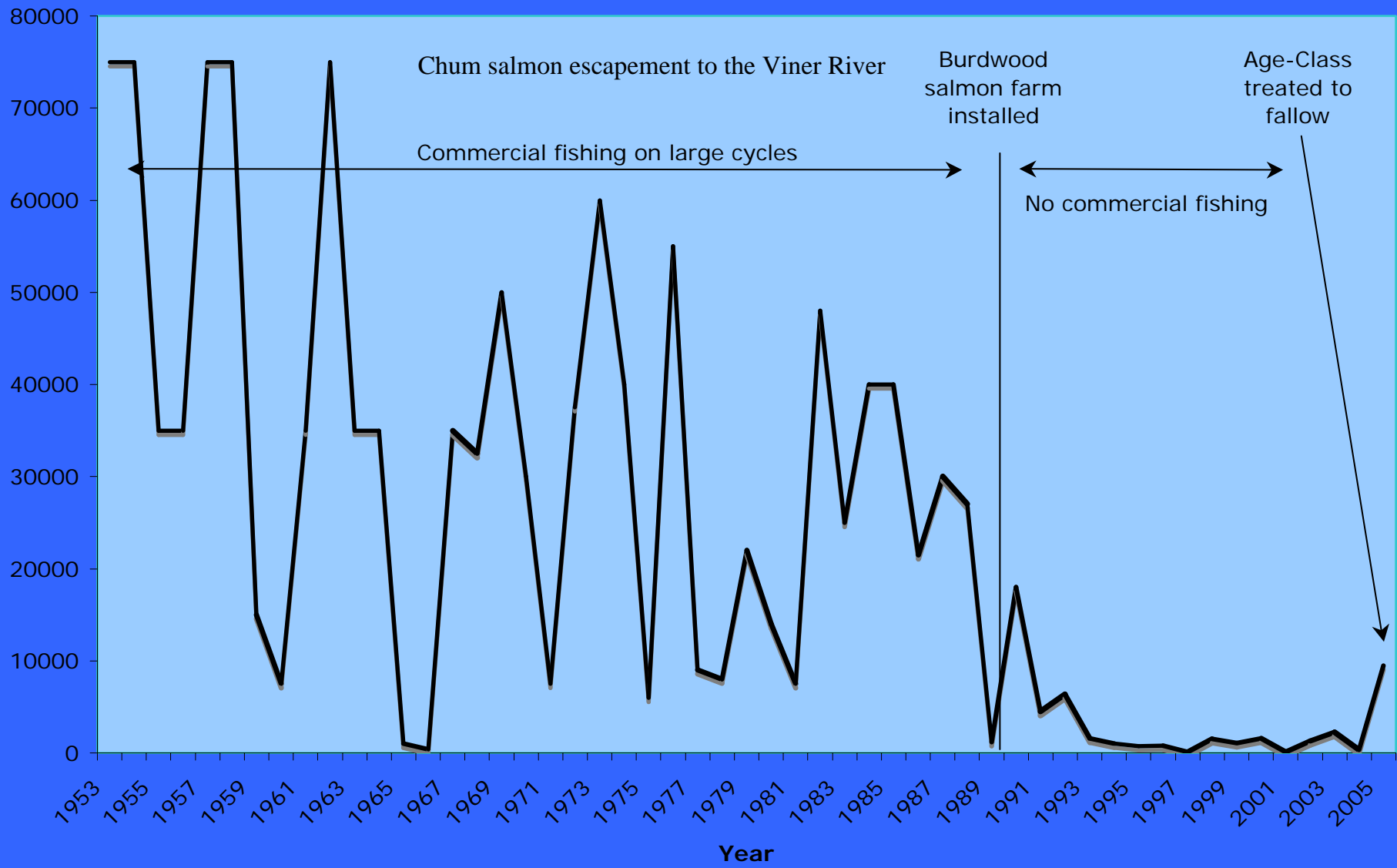


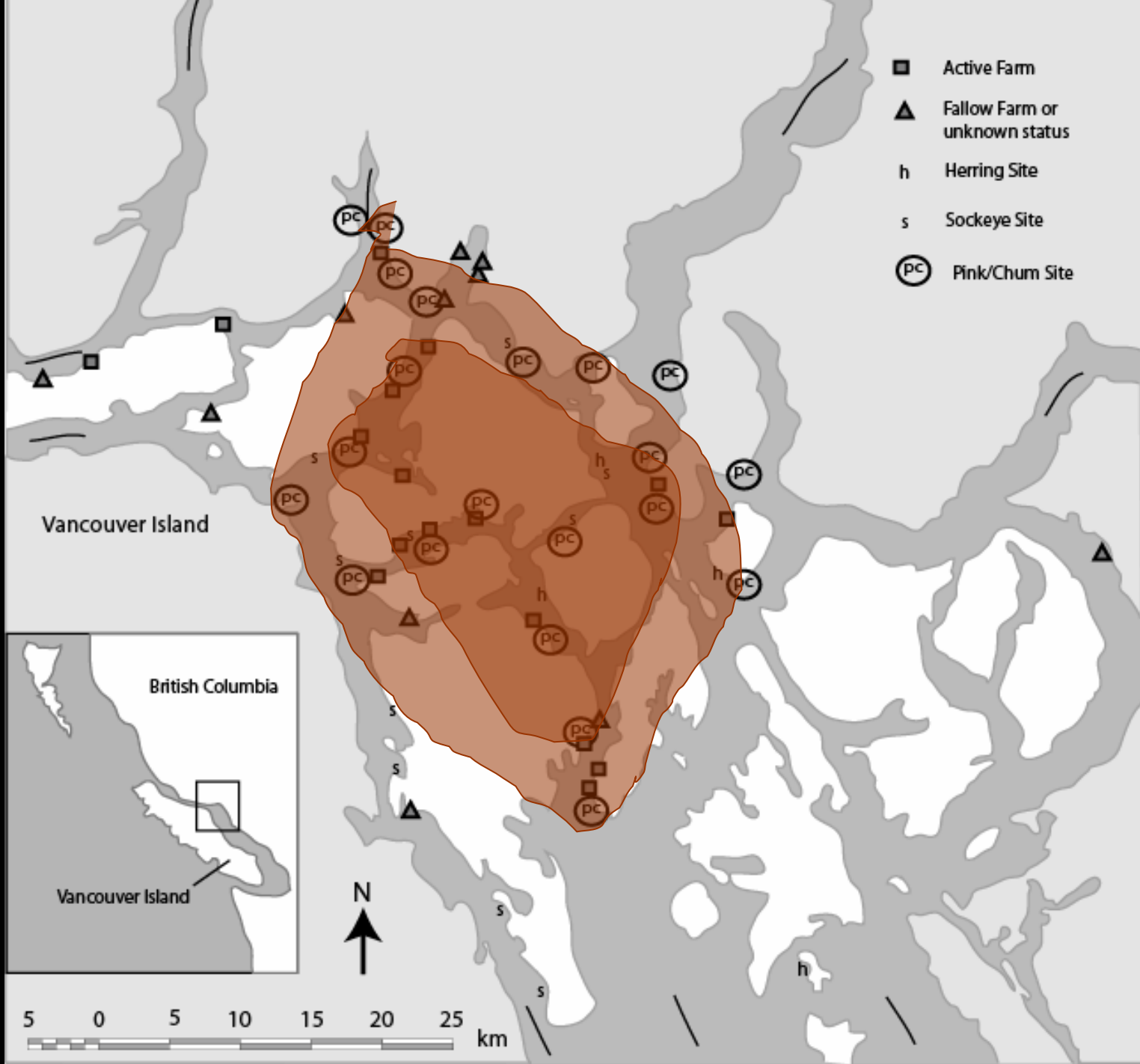




Impact

Viner River



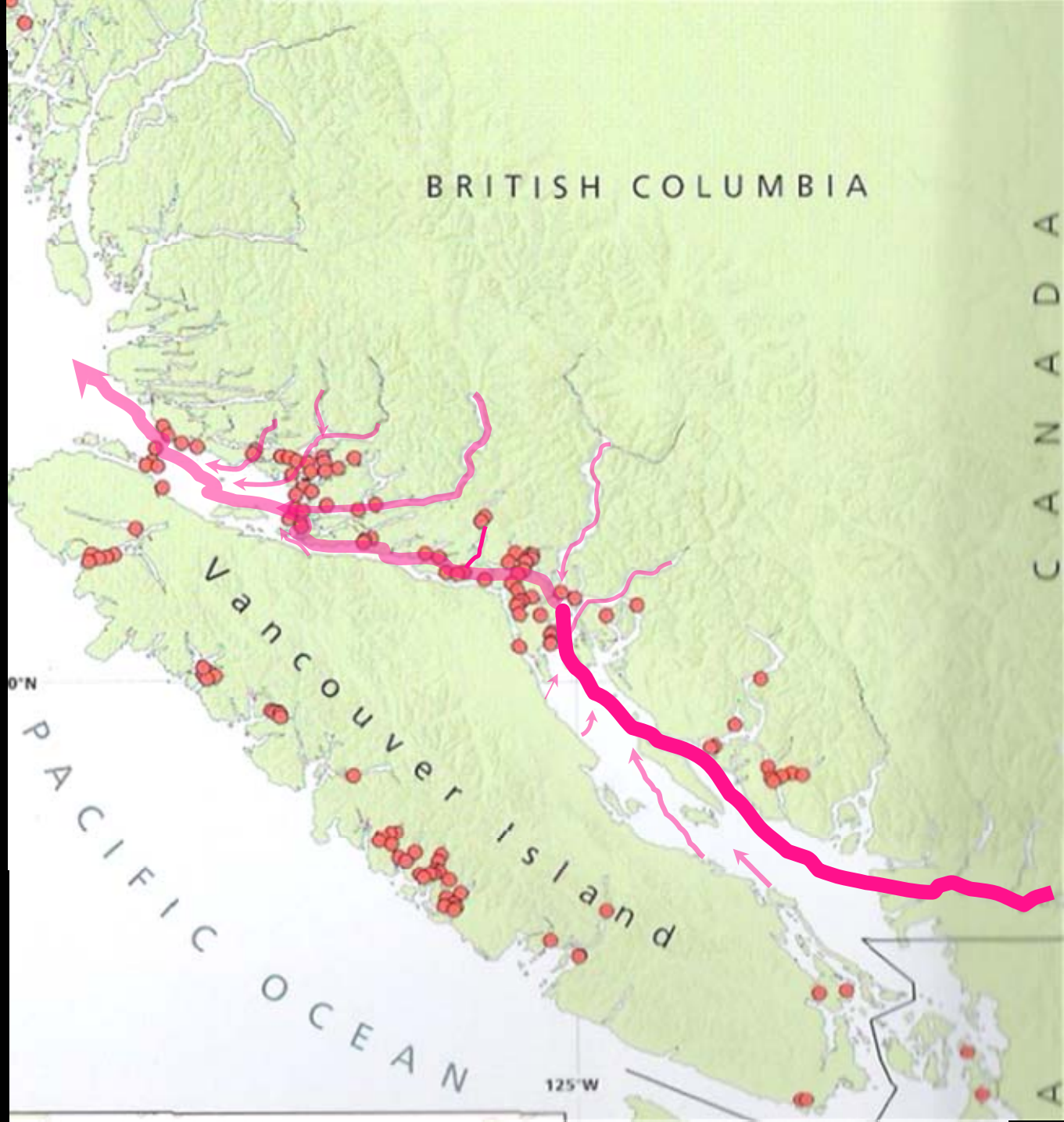




Cyrus Rocks - Jc

Quadra Island





BRITISH COLUMBIA

C A N A D A

Vancouver Island

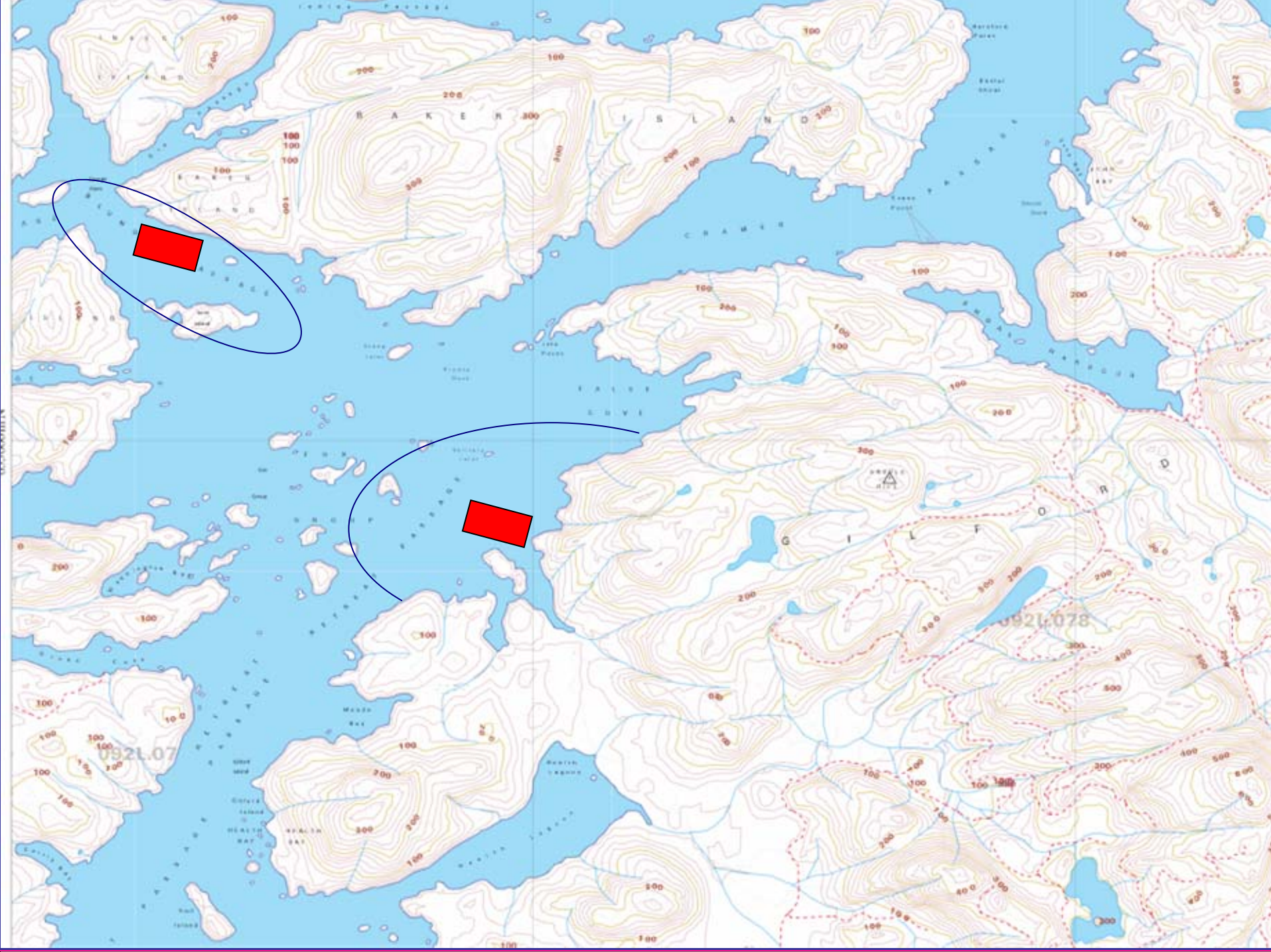
49°N

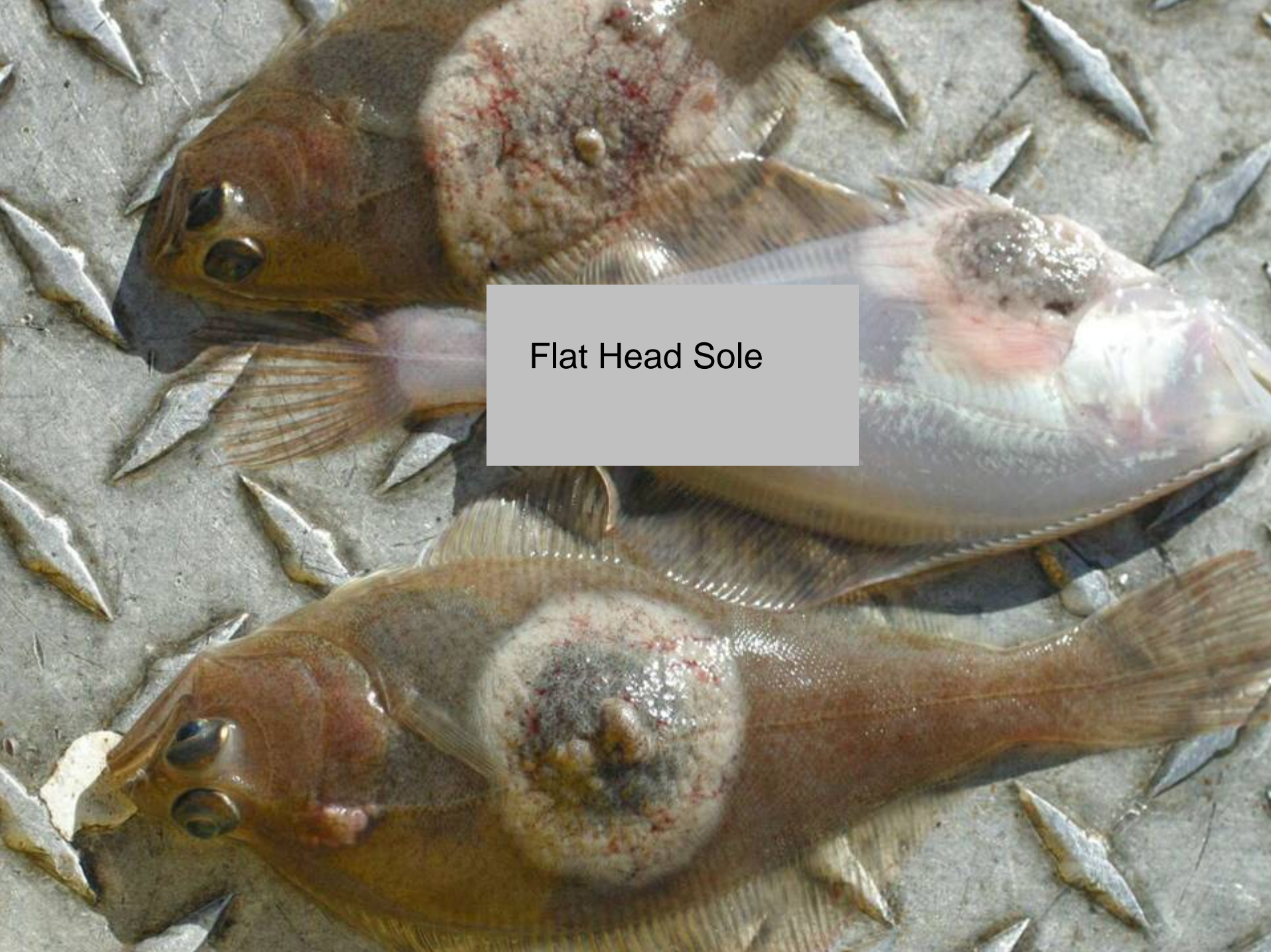
PACIFIC OCEAN

125°W

But,

salmon are not the only
species that appear
altered by proximity to
salmon farms






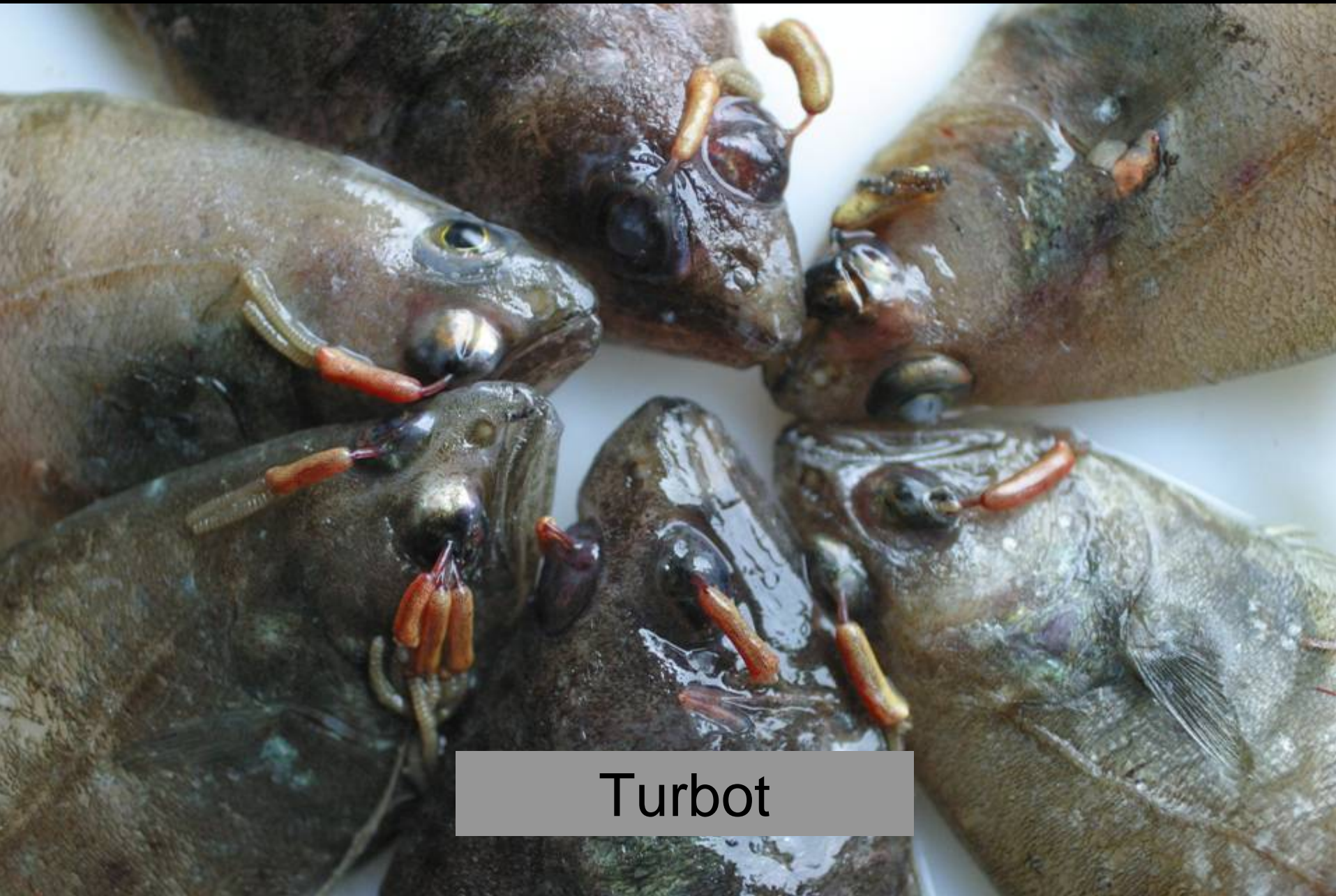
Flat Head Sole

Rock Sole



A close-up photograph of a fish's head, likely a sole, showing a large, fleshy, reddish growth on its snout. The growth is irregular in shape and appears to be composed of multiple lobes. The fish's eyes are visible, and the surrounding skin is dark and glistening. The background is a plain, light-colored surface.

Rex Sole



Turbot



The weight of evidence is

undeniable

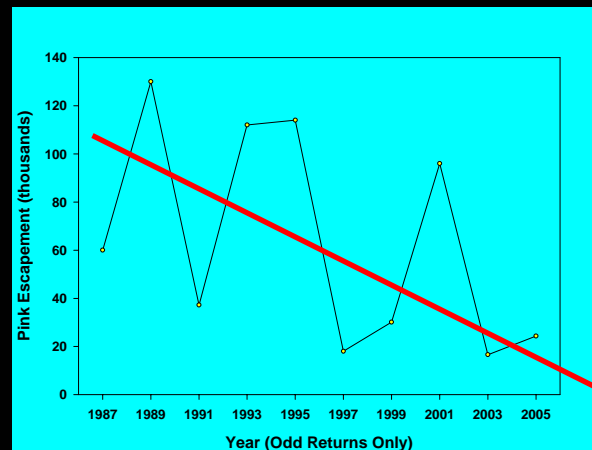
There is no debate in
the published literature
in Canada

Farm and wild fish will be separated

This is underway

The *only* question

is whether we take control of the end result.



We can have both
but either
we separate the two or nature
will do it for us

