



Carefully releasing a wild Chinook

The Orca Food Security Program

Presentation

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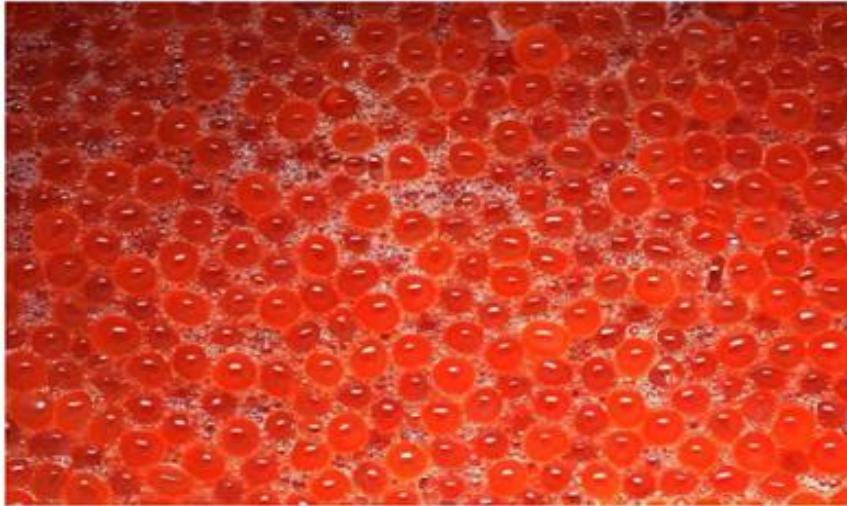
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G-Force Group

Presentation Outline

- Where it all Started
- Program Rationale
- Sooke Pilot Project
- Scoping the Possible
- Risks and Rewards
- Transformational Change

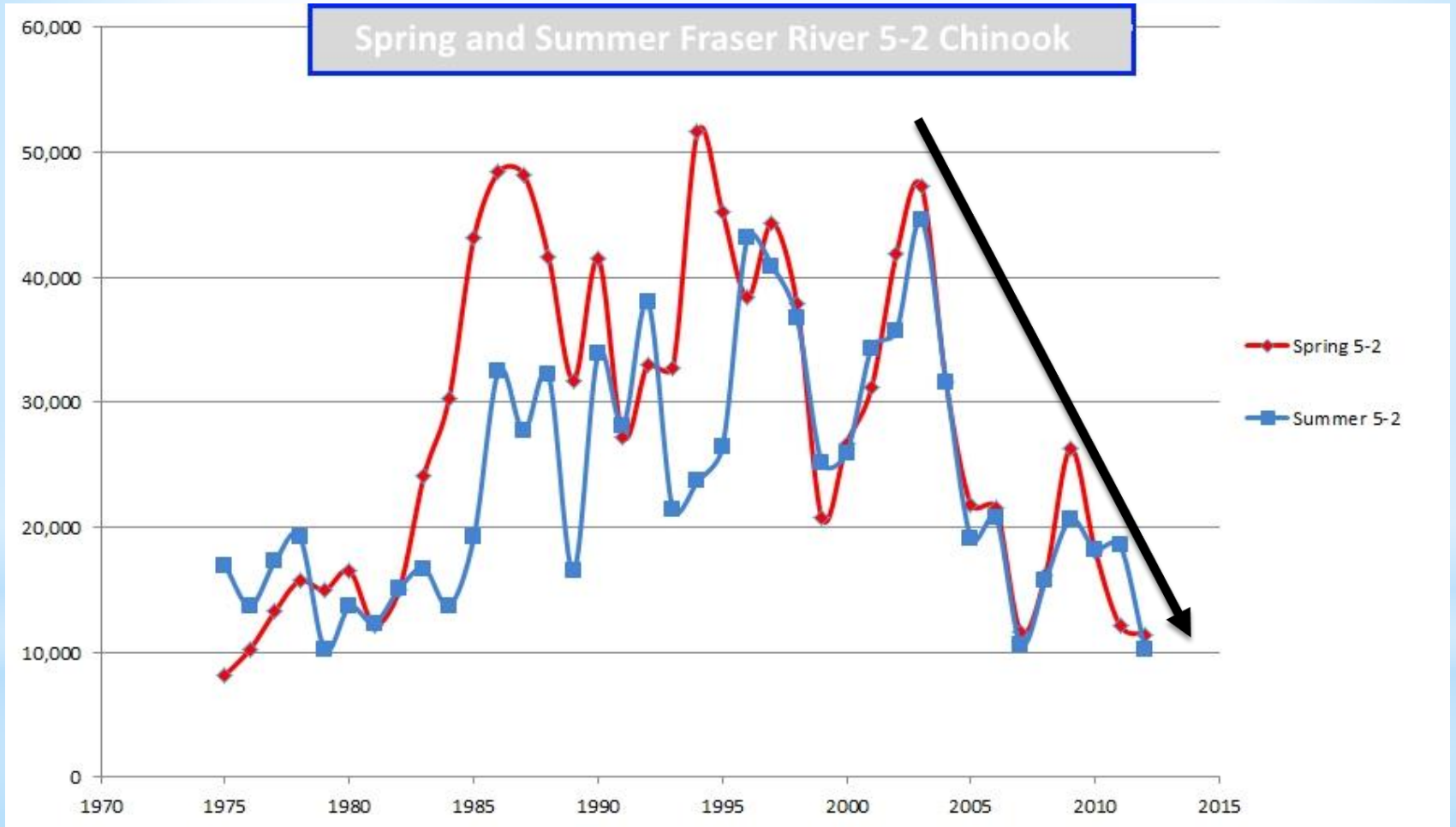
Strategic Chinook Enhancement



Need for Transformational Change!

- Continuing declines in Chinook salmon abundance
- Increased rates of habitat destruction and pollution as human populations grow
- Uncertainty as to how Climate Change will impact wild Chinook in the future
- *More of the same will fail!* – Closures will not lead to recovery quickly and Chinook closures will trigger economic disaster
- An action plan is critical to *Grow More Chinook!*

Middle and Upper Fraser Chinook



Where it all Started

- In 2015, met with Regional Director of DFO to obtain approval for a Sooke pilot project
- DFO stated “Any project had to be cost neutral” which meant raise all the funding privately
- Held a Sooke Town Hall meeting to gauge community support and brought T’Sou-ke Nation together
- Assembled expertise and developed community involvement and raised funds

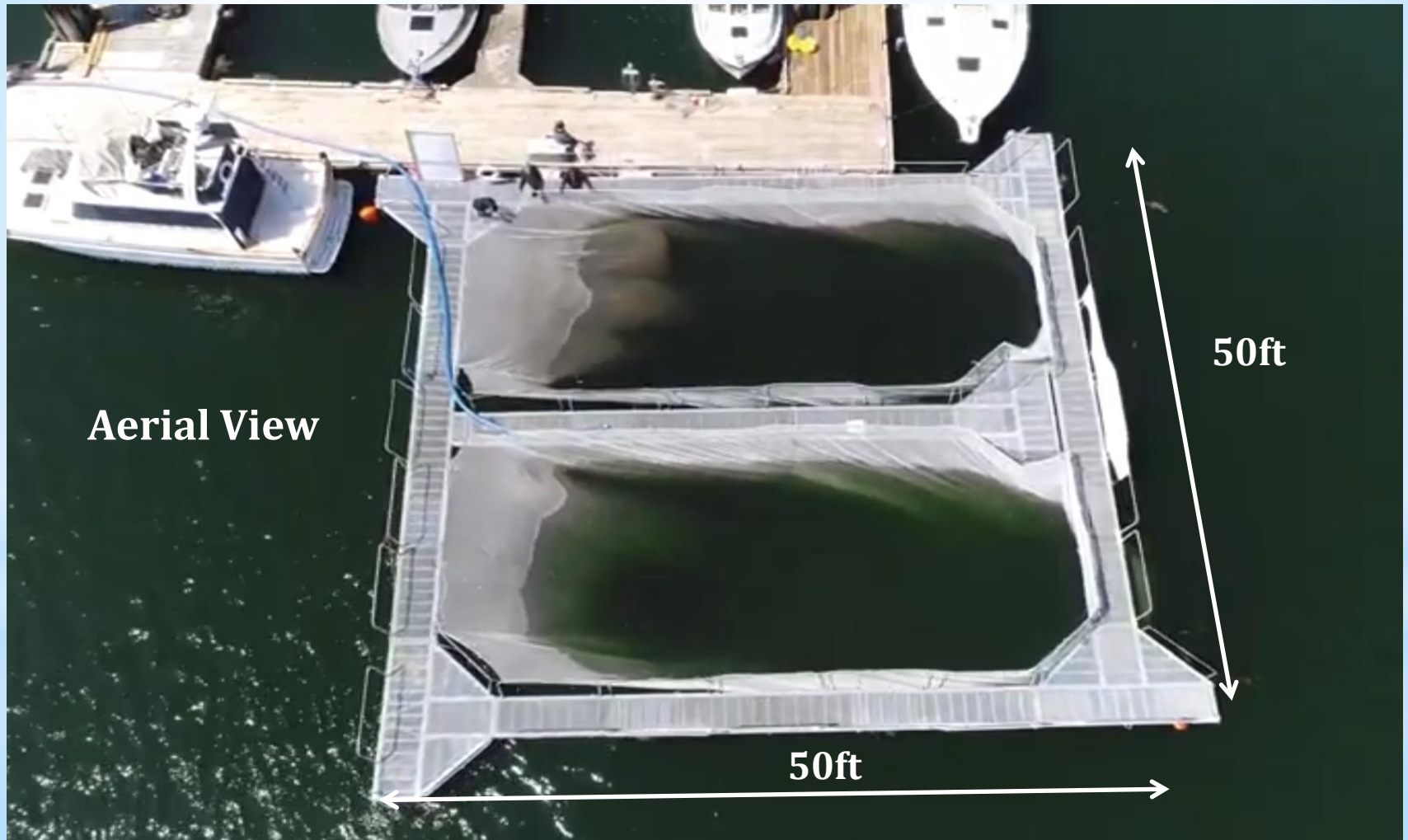
The Sooke Pilot Project



Simple technology:
“Temporary Marine Enclosures” in the spring, add 500,000 chinook and feed them for a month!

- Used Sooke Basin as a pilot location to test feasibility
- Brought T’Sou-ke Nation and stakeholders together to develop a community-based initiative
- Examined new business relationships, raised private funds and interest

Temporary Marine Enclosure



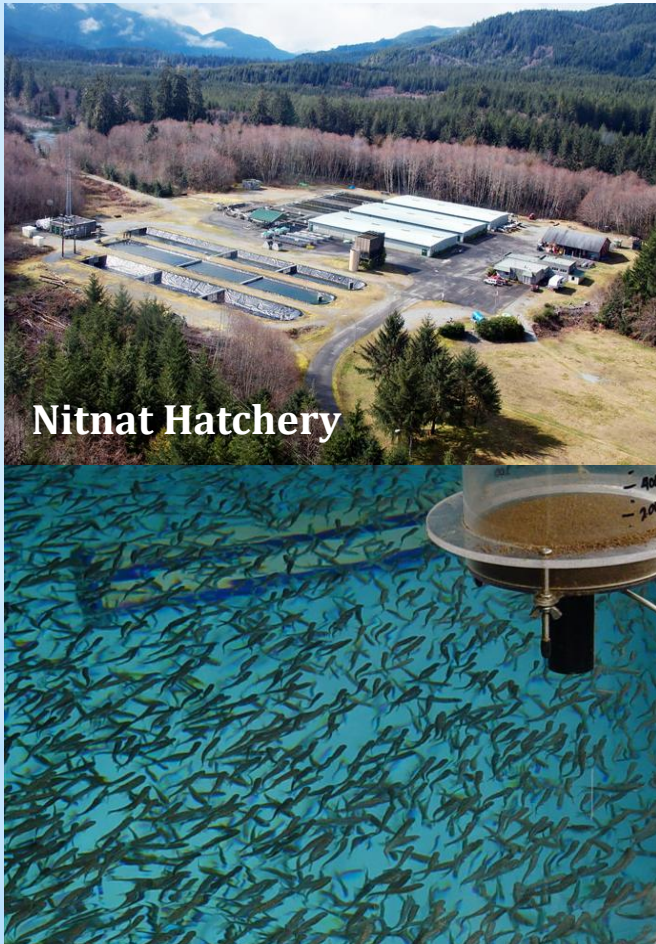
Program Rationale

- Endangered SRKW were becoming a conservation concern that could impact recreational fisheries
- South Van. Is. public fisheries rely on adipose fin-clipped Chinook from Washington State hatcheries during the spring, but marked fish become less abundant in summer
- Since 2008, Chinook management in Juan de Fuca (FMAs 19 and 20) was becoming more restrictive
- DFO had no new strategic Chinook enhancement for SRKW in Southern British Columbia

Program Rationale

- Fraser River Stream-type 4-2 and 5-2 Chinook had a steady decline in abundance
- DFO continued with fisheries management closures and restrictions as conservation recovery actions to protect Fraser Chinook and other 'Stocks-of-Concern'
- Future salmon fishing opportunities look bleak at this time!
- S. Van. Is. Anglers Coalition embraced an important opportunity to be proactive

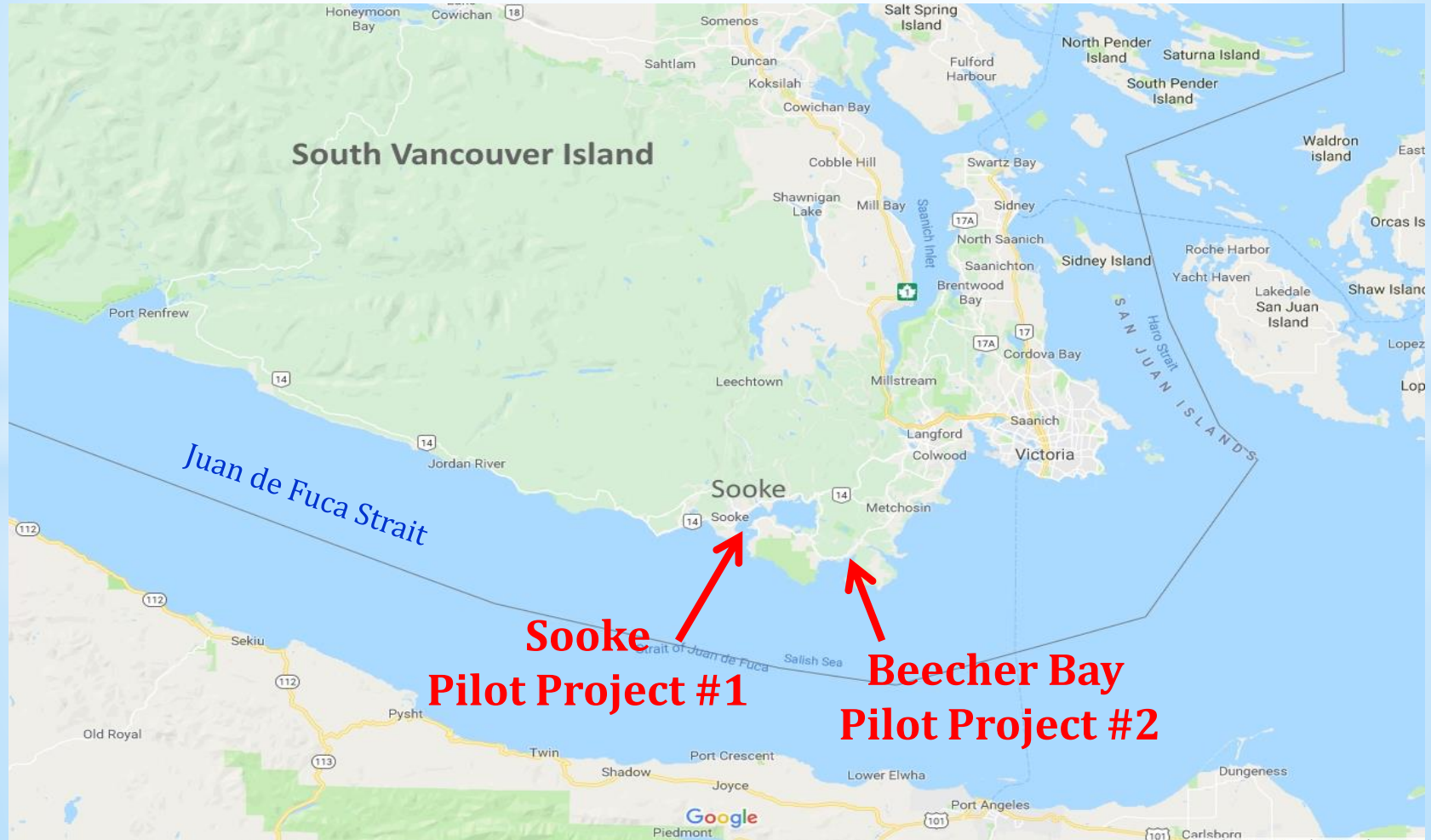
Sooke Pilot Project – Low Risk



Nitnat Hatchery

- Sooke River has no natural wild Chinook run
- Historic enhancement of Chinook using Nitinat stock
- No other Chinook rivers are in the vicinity to cause straying issues
- Conformed to 'Wild Salmon Policy' and within a Conservation Unit

Pilot Project Location Map



Ramp Rate and Anticipated Returns

Pen Year	Chinook Smolts	Adult Return Year	* Anticipated Return (2% - 3%)
2017	200,000	2020	4,000 - 6,000
2018	500,000	2021	10,000 - 15,000
2019	500,000	2022	10,000 - 15,000
2020	1,500,000	2023	30,000 - 45,000
2021	2,000,000	2024	40,000 - 60,000

* = DFO information

Broad Nested Benefits

- Improve Orca food security
- Target enhanced stocks and release Wild Chinook
- Reduced juvenile predation and increased survival of Chinook
- Protect and enhance coastal community viability
- Mark retention in support of public fisheries
- First Nations terminal FSC fishing opportunity
- First Nation Economic Opportunity Fisheries
- Support sustainable fishing and tourism

Sponsors and Funding

South Vancouver Island Anglers Coalition
CHINOOK ENHANCEMENT INITIATIVE
"Feeding Our Endangered Orcas"

THANK YOU TO OUR GENEROUS SPONSORS

Pacific Salmon Foundation

SPRINGTIDE

HARBOUR AIR SEAPLANES

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Blue Wolf Charters • Thomas Cole (R/V CPO) • Betty Cole • Juan de Fuca Salmon Restoration Society • Puget Sound Anglers Association
Sea Wind Fishing • Sooke Harbour Resort and Marina • True Key Hotels and Resorts • Vancouver Island Lodge • Vancouver Whale Watching

Another Successful Project by **SVIAC** South Vancouver Island Anglers Coalition

- Broad P3 support from private sector and foundations
- Potential for advertising and new sponsorships (e.g. 'Pod Pack'- Vancouver Island Brewery)
- Possible long-term self funding via *S3 –(Sustainable Salmon Stewardship)* from terminal FN Economic Opportunity fisheries

Underlying Challenges

3 key threats to at-risk killer whales:



noise



food



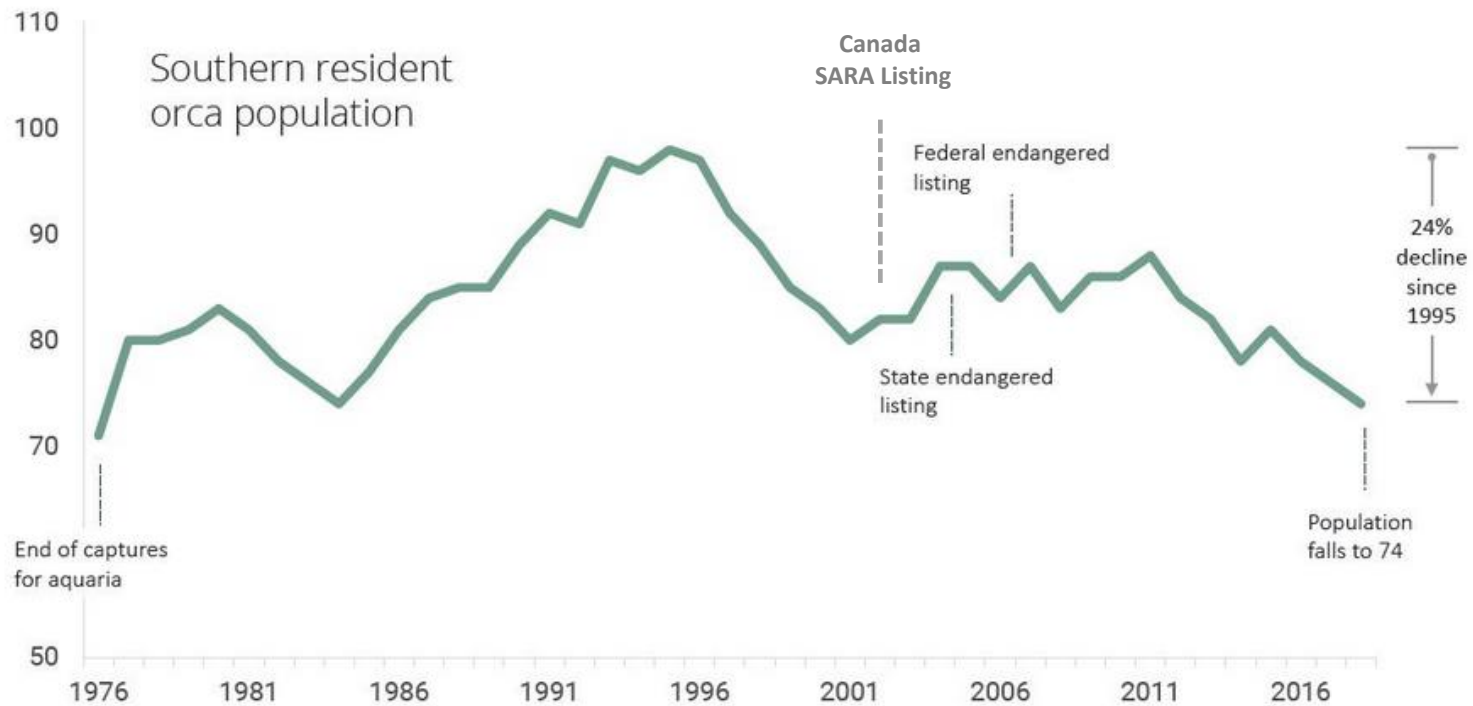
pollutants



SRKW Prey Related Challenges

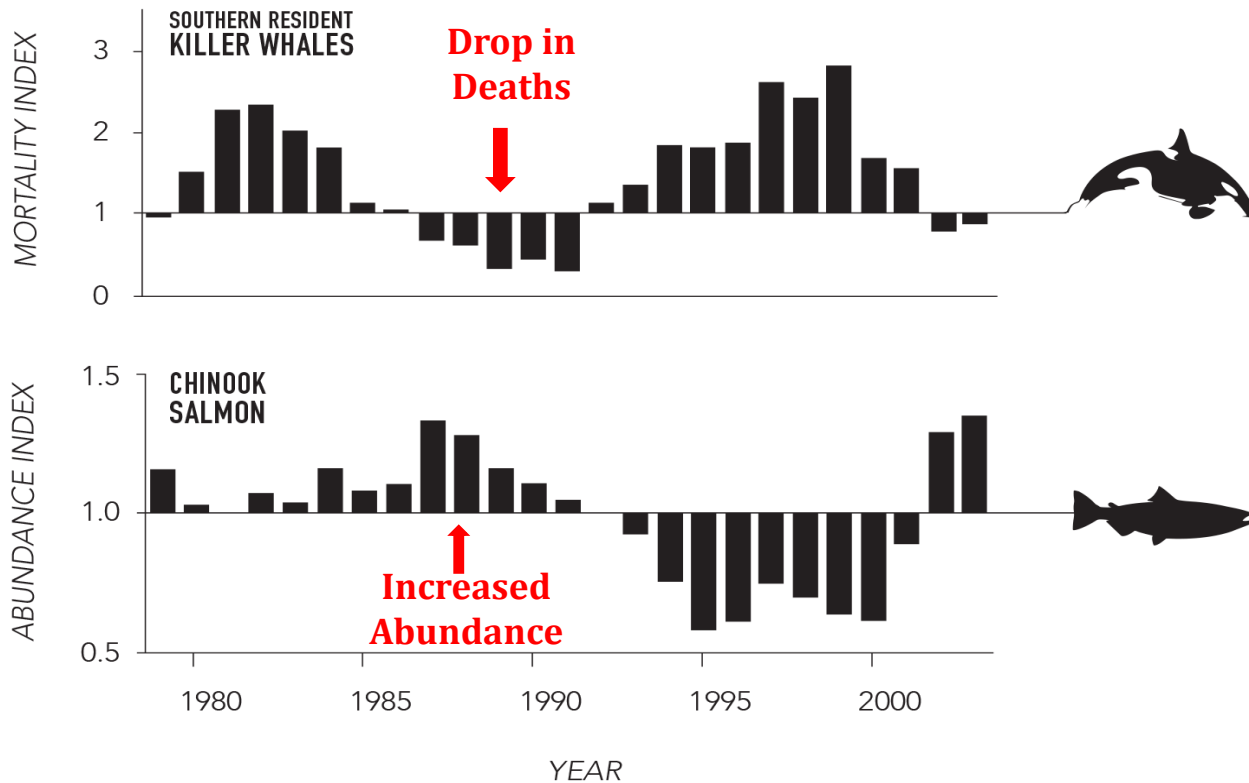
- Southern Resident Orcas prefer large Chinook salmon (18lbs or greater)
- Approximately 75% of their annual diet is Chinook largely from the Fraser
- Low abundance of Upper Fraser River S1 stream-type Chinook related to increased SRKW mortality
- Food uncertainty leads to ingestion of toxin-laden blubber, resulting in suppressed immune systems and increased disease

SRKW Population Trend



Source: Washington Department of Fish and Wildlife, Nov. 2018

Correlation Between SRKW and Prey



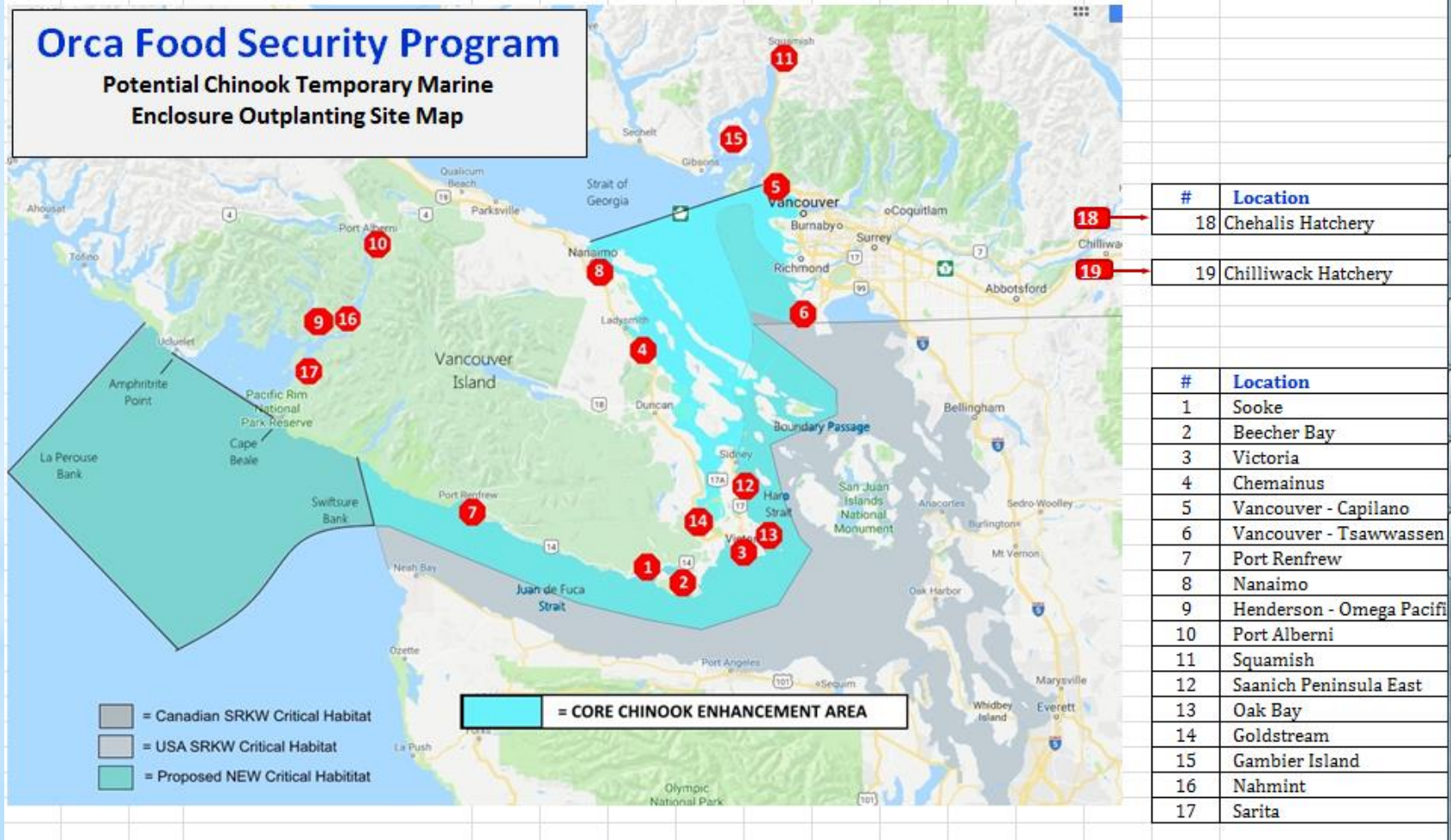
Sources: Ford, Ellis, and Olesiuk 2005

WILD ORCA

Orca Food Security Program

- **Approach A** – Using multiple sites and community-based Temporary Marine Enclosures (short term)
- **Approach B** – Increasing Chinook production at Chilliwack and Chehalis Hatcheries (short term)
- **Approach C** – Producing Fraser S1 (stream-type) Chinook:
 - (Short term) – Use a surrogate satellite cold water hatchery (*Omega Pacific*) to raise S1 Fraser Chinook and in support of ‘Stocks-of-Concern’
 - (Long term) - Construct a new Chinook hatchery on the Willow River north of Prince George

Potential TME Locations



TME Program Methodology

- Use professional hatchery fish culture techniques to produce healthy Chinook
- Use state of the art brood stock collection techniques to maintain genetic strength of Chinook
- Use strategic transplanting and rearing techniques to improve juvenile to adult survival
- Use **Temporary Marine Enclosures** and feed smolts for ~1 month to promote acclimation to salt water, growth, homing and maturation

TME Community-Based Solutions

- Work with approval, support and involvement of First Nations
- Co-ordinate with key local individuals, groups and stakeholders in each community
- Engage the local community hatchery to participate in project delivery
- Seek sponsorship from local businesses, foundations, corporate interests, philanthropists, to assist with jump-starting the self-funding model

Increase Adult Chinook Abundance



Program Support Team

OFSP administration will provide support in development of each potential TME location to:

- Work with local First Nation to gain acceptance and approval
- 'Bring together' key individuals, groups and stakeholders to help develop project
- Help identify project, location and assist with approval process
- Provide assistance in developing funding opportunities

Opportunity and Innovation

- Utilize different Chinook rearing strategies; S0-early release, S0-late release, & S1 overwintering
- Move to a 100% adipose mark retention fishery
- Possible annual self funding via **S3 – ‘Sustainable Salmon Stewardship’** terminal FN fisheries sales and pop-up markets
- Using natural homing compounds (Morpholine and P-Alcohol) to address possible straying issues
- Experiment with sterile Chinook and combine private/public partnerships

Abundance Benefits All



What Transformational Changes?

If wild Chinook continue to decline - an immediate action plan to [Grow More Chinook](#) is critical and:

- Mark (adipose fin-clip) 100% of all BC hatchery reared Chinook
- Allow retention only of Chinook with an adipose clip
- Require ALL wild Chinook to be released and rebuild to natural watershed capacities

If we do these [Transformational Changes](#), BC could avoid or reverse Chinook closures and:

- Prevent an economic disaster affecting the \$1.1+ Billion public fishery