Washington State Mark-Selective Recreational Fisheries Overview and Lessons Learned

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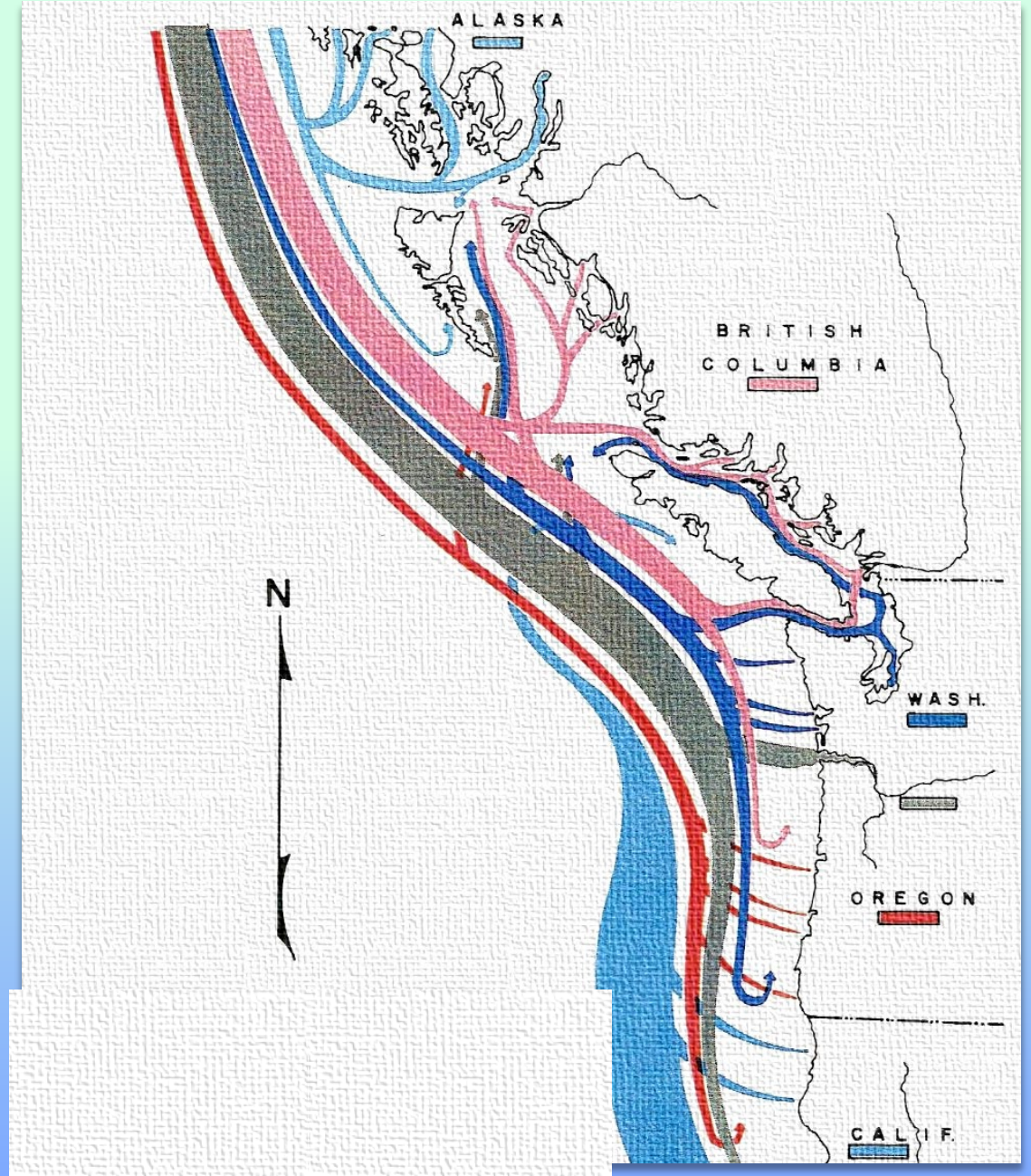
Washington Department of FISH and WILDLIFE

Topics

- Background:
  - Why consider mark-selective fisheries?
  - Where are MSFs occurring?
- Lessons Learned
  - Sampling program
  - Compliance
  - Catch and effort
  - Impacts on wild populations
- Questions

Management Framework



- 1973 – Endangered Species Act (ESA) -recover threatened/ endangered species

- 1969 – US v. OR
- 1974 – US v. WA
  - Tribal treaty rights and co-management

- 1985 – Pacific Salmon Treaty

- Annually – Forecast and fishery modeling - run size estimates and escapement goals

Why consider mark-selective fisheries?

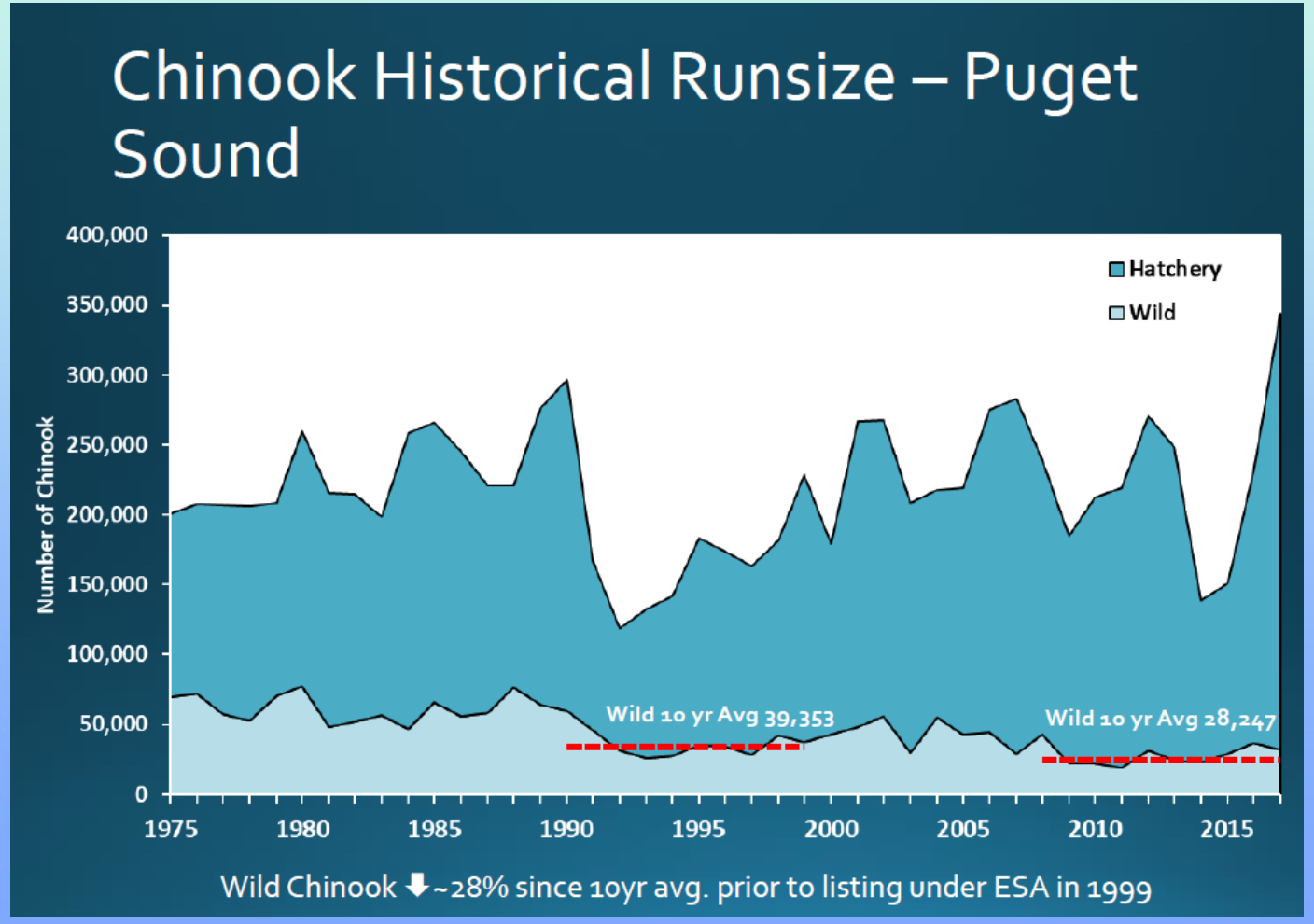
- Salmon stocks decline leading to less fishing opportunity (i.e., ESA-listing)

- Hatchery production opportunity with mass marking and CWT
  - Near zero impact on survival
  - Identifiable visually with adipose clip
  - CWT and RMIS to monitor/report harvest

- Capacity to increase sampling efforts to account for wild released component

Why consider mark-selective fisheries?

- Significant downward trend in salmon populations - human caused effects
  - Habitat
  - Harvest
  - Hydropower
  - Hatcheries



Puget Sound Mark-Selective Fishery Development

- 1970's – wild salmon populations decline throughout the Pacific Northwest

- Mid-1990's
  - Puget Sound wild Chinook populations severely depressed
  - WDFW begins mass marking (remove adipose fin) hatchery salmon

- 1999 – Puget Sound wild Chinook ESA-listed

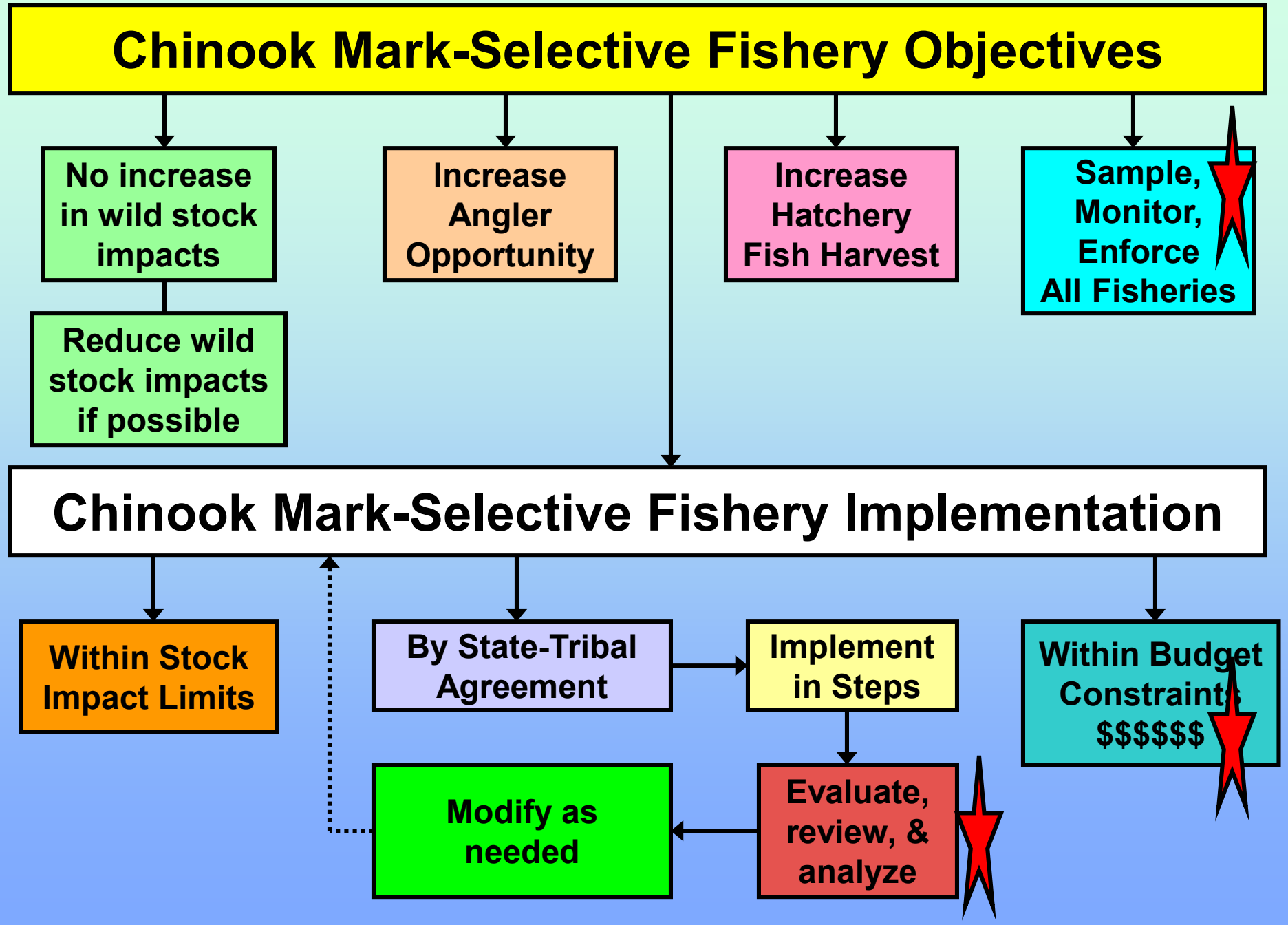
- 2000 – Hatchery Scientific Review Group begins assessment

- 2003 – Federal funding supports mass marking

- 2003 – First Chinook MSF in Puget Sound

Chinook Mark-Selective Fishery Objectives

- No increase in wild stock impacts
  - Reduce wild stock impacts if possible
- Increase Angler Opportunity
- Increase Hatchery Fish Harvest
- Sample, Monitor, Enforce All Fisheries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No increase in wild stock impacts
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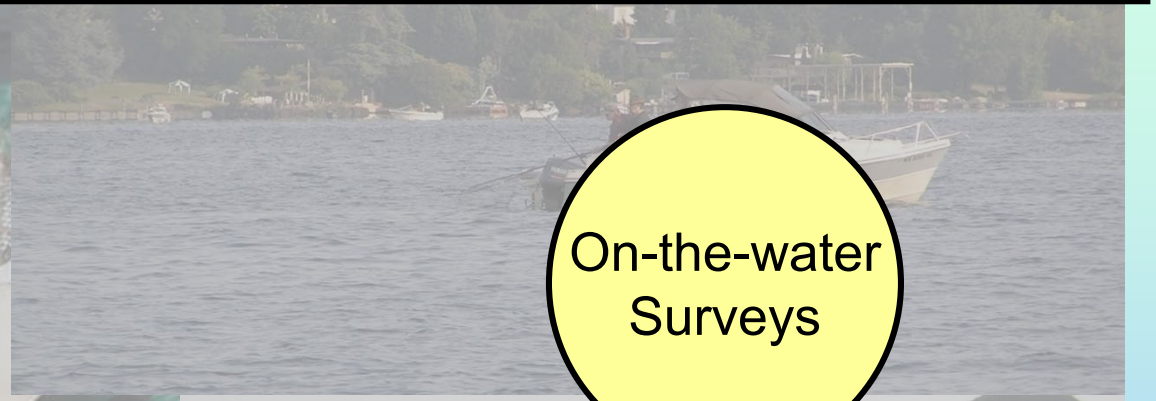
Increase Angler Opportunity
Increase Hatchery Fish Harvest
Sample, Monitor, Enforce All Fisheries
Chinook Mark-Selective Fishery Implementation
Within Stock Impact Limits
By State-Tribal Agreement
Implement in Steps
Within Budget Constraints $$$$$$
Modify as needed
Evaluate, review, & analyze

WDFW Puget Sound Sampling Unit
Selective Fishery Monitoring Program

WDFW Puget Sound Sampling Unit
Selective Fishery Monitoring Program

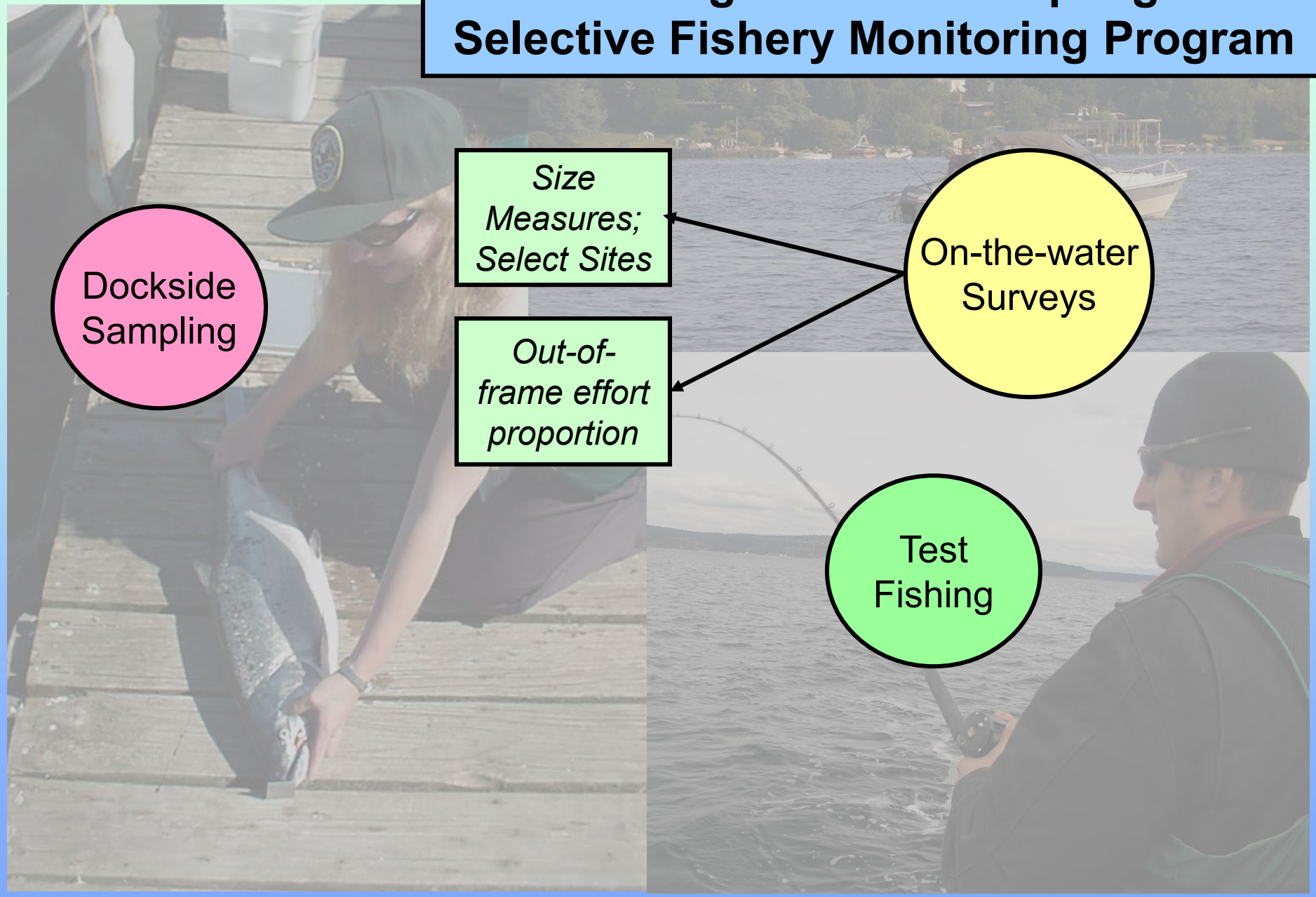
Dockside Sampling



On-the-water Surveys

Test Fishing

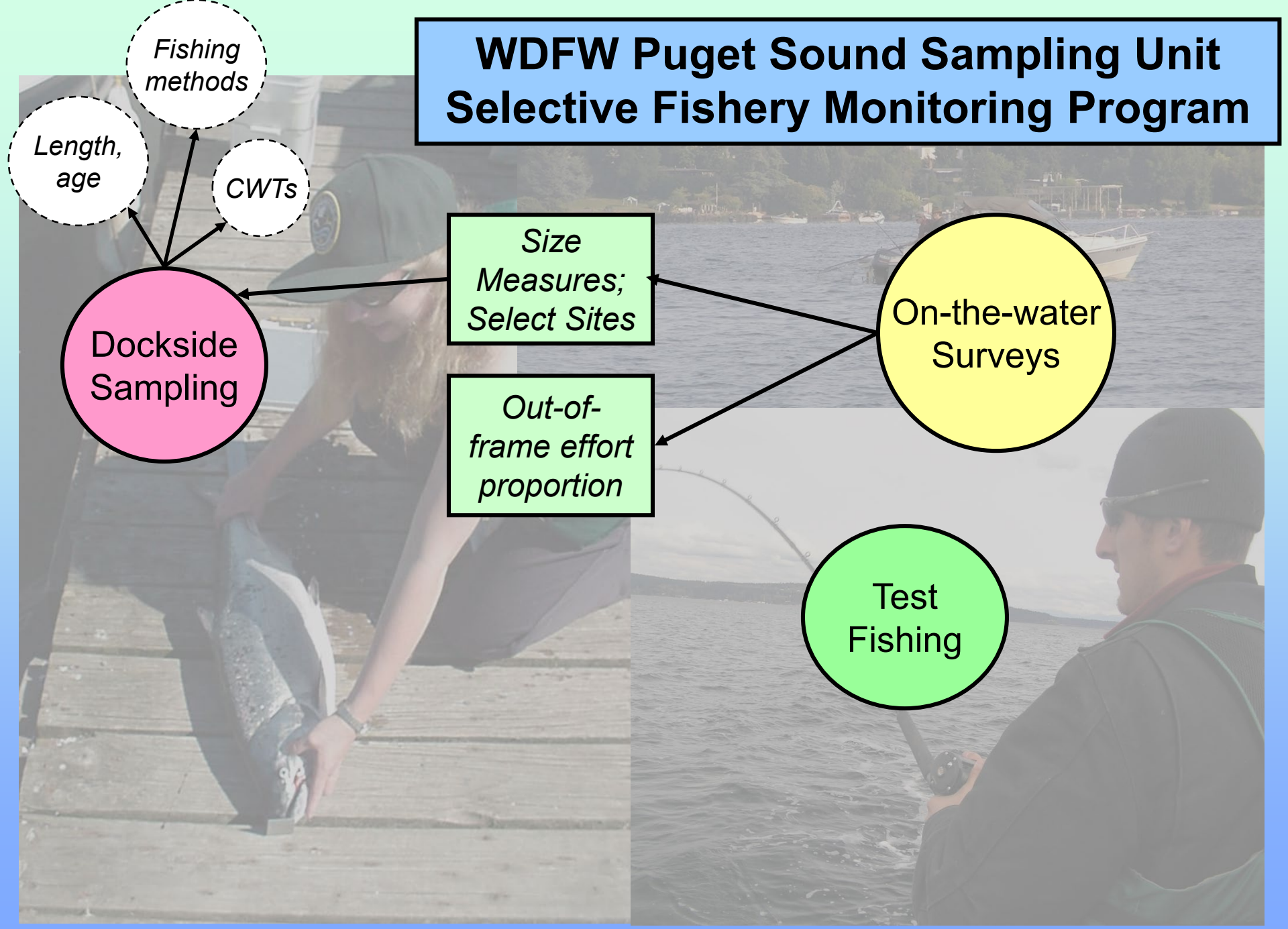
WDFW Puget Sound Sampling Unit
Selective Fishery Monitoring Program



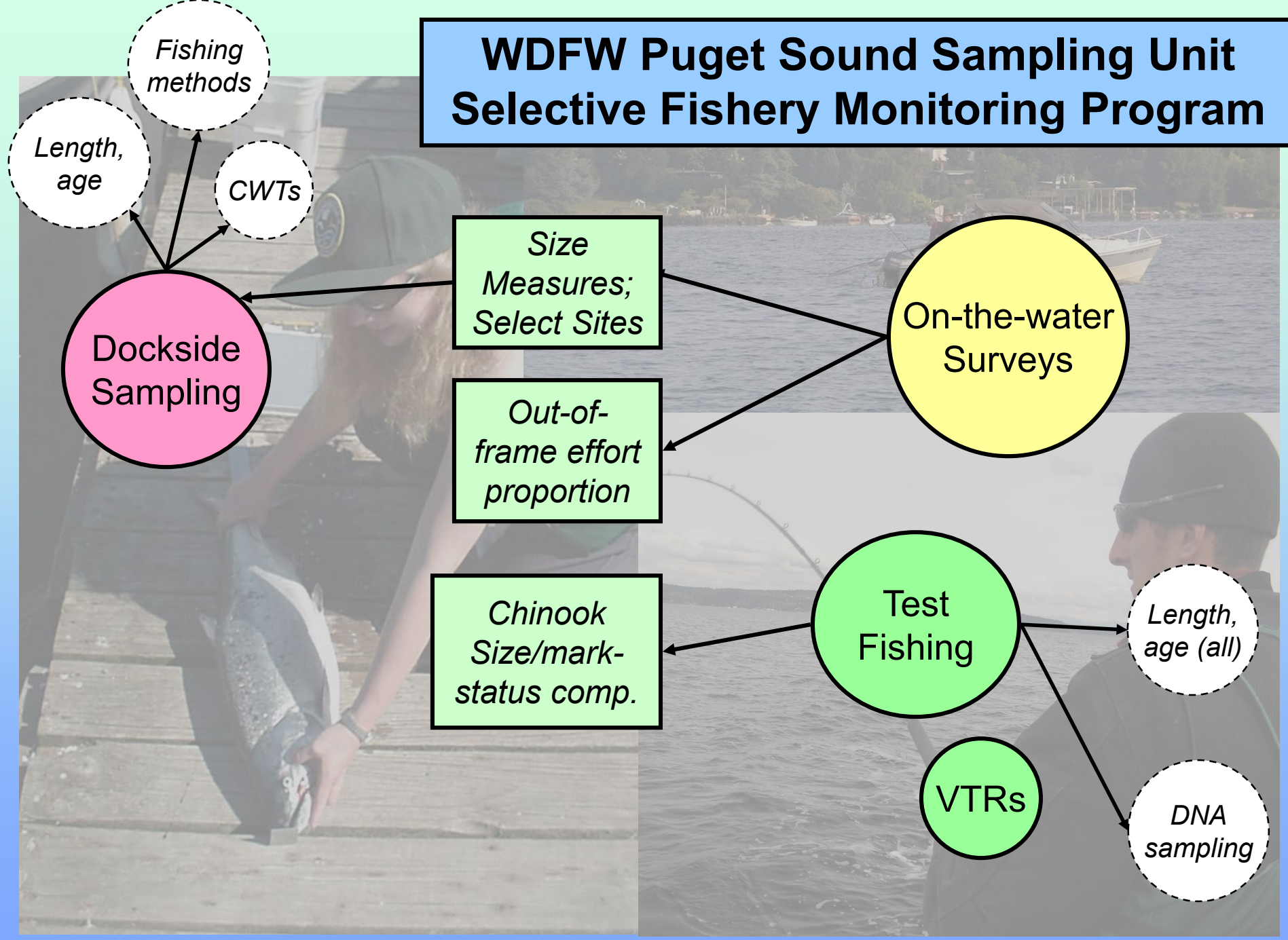
Dockside Sampling

- Recover CWT's from salmon that detect positive for a tag.
- Goal ≥ 20% sample rate.
- Fish length and scale samples.
- Fishing method data.

WDFW Puget Sound Sampling Unit Selective Fishery Monitoring Program

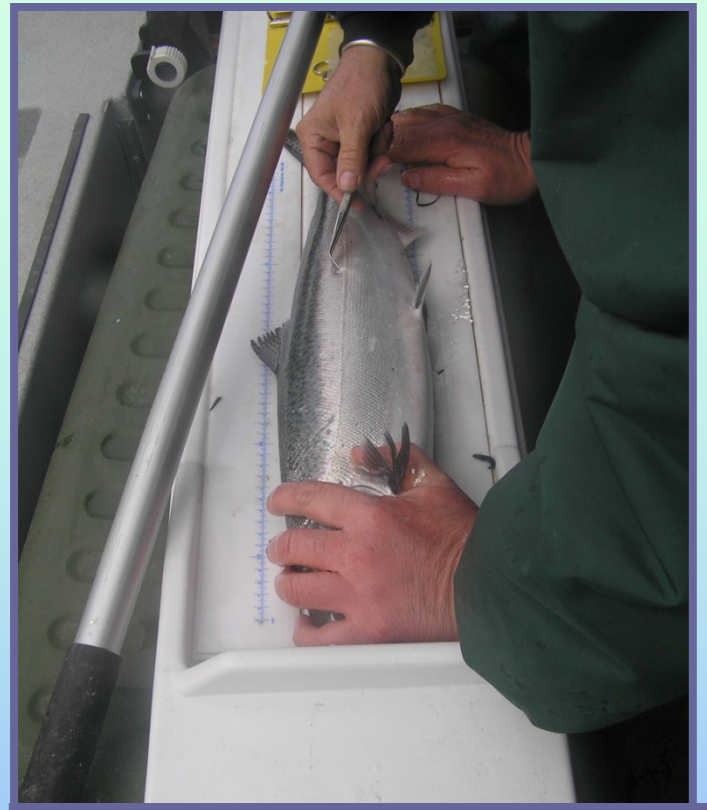


WDFW Puget Sound Sampling Unit Selective Fishery Monitoring Program



Test Fishing

- Encounters by species.
- Chinook mark rates and encounter rates by size/mark status.
- DNA samples on all Chinook.
- Scale and length samples on all Chinook.
- Emulate the recreational fleet (gear types, locations fished).



Voluntary Salmon Trip Reports (VTRs)

- Encounters by species.
- Chinook mark rates and encounter rates by size/mark status.

WDFW Puget Sound Salmon Trip Report

(circle one selection of the three choices below)

Target Species: Chinook Coho All Salmon

Date of Fishing Trip: _____ Marine Area: _____

Angler Name/Wild ID: _____

Kept Fish

	Chinook		Coho	
	clipped	not clipped	clipped	not clipped
Over 16"				
Under 16"				

Released Fish

		Chinook		Coho	
		clipped	not clipped	clipped	not clipped
Legal Size	Over 16"				
Sub-legal	Under 16"				

Unknown Salmon

SALMON TRIP REPORT INSTRUCTIONS

1) Use one form per fishing trip. All anglers on a boat can use one form. Please document EVERY hookup even if the fish is small or gets away.

2) **Target Species:** Circle which salmon species you are targeting. If you are hoping to catch any legal/open season salmon species, select "ALL SALMON"

3) **Date:** Record the date you are fishing (month/day/year)

4) **Marine Area:** Record the Marine Area you are fishing. Start a new form if you fish more than one Marine Area in a day.

5) **Angler Name/Wild ID:** Record your name and Wild ID #. This number is located at the top of your fishing license. This information allows Fish Managers to call you in case they have any questions.

6) **Species Hooked:** Please record a tally mark in the box associated with each fish you caught, either kept or released, indicating the species, size (Legal/Undersize), and adipose fin- clipped/not clipped status.

7) **Unknown Salmon:** Record a tally mark for each unknown salmon species caught and released.

8) **Turn it in! The sooner we get your data the better.** Hand each completed sheet to a port sampler if there is one at your location. If you don't see a sampler or forget to turn it in, fold this sheet in thirds, tape/staple it with the address side out and drop it in the mail. You can also take a photo and email it to VTR@dfw.wa.gov. Also available via Fish Washington regulations mobile app. at wdfw.wa.gov.

THANK YOU FOR YOUR PARTICIPATION! Any questions can be directed to Ann Stephenson at Ann.Stephenson@dfw.wa.gov or 360-902-2739.

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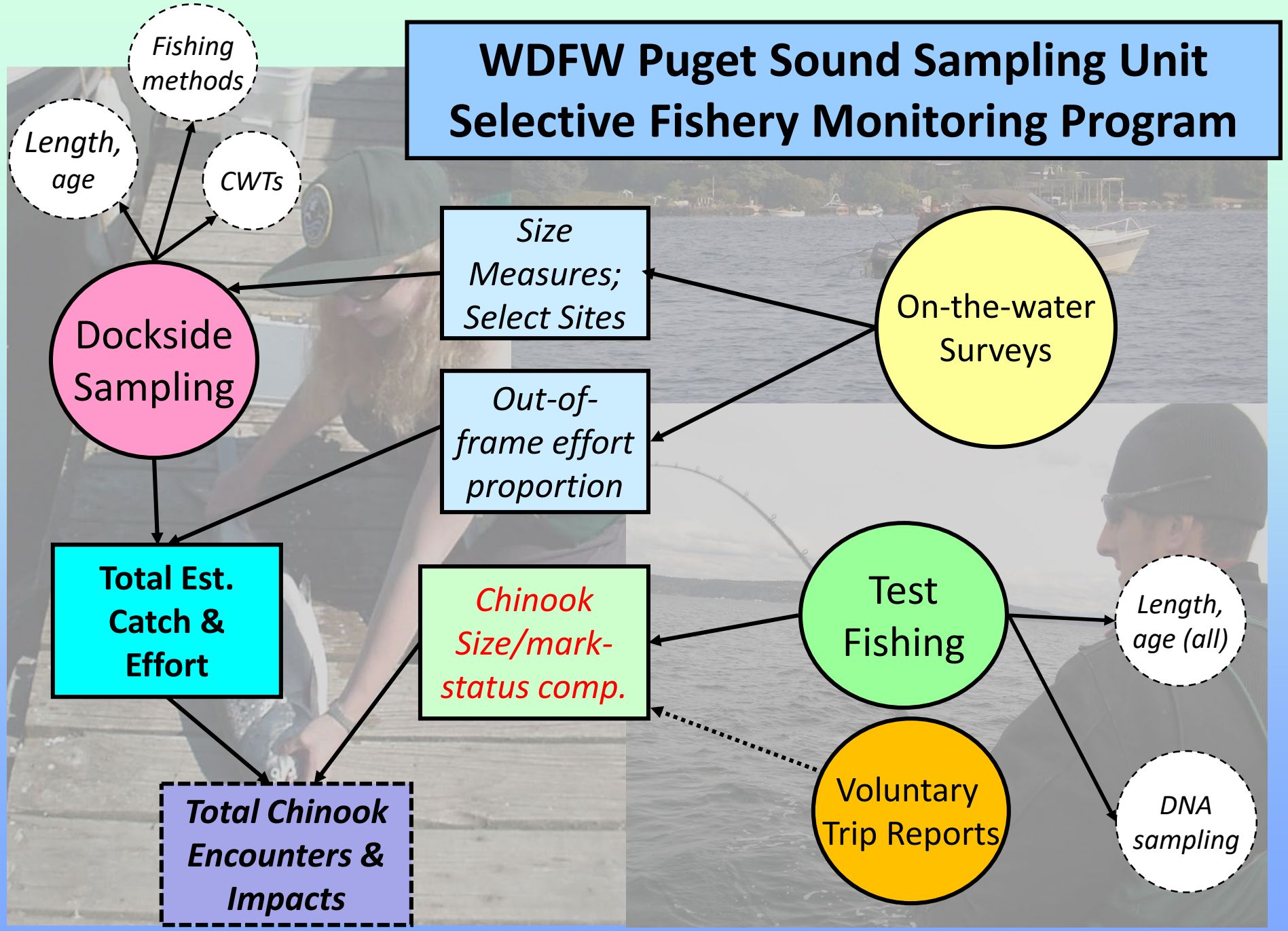
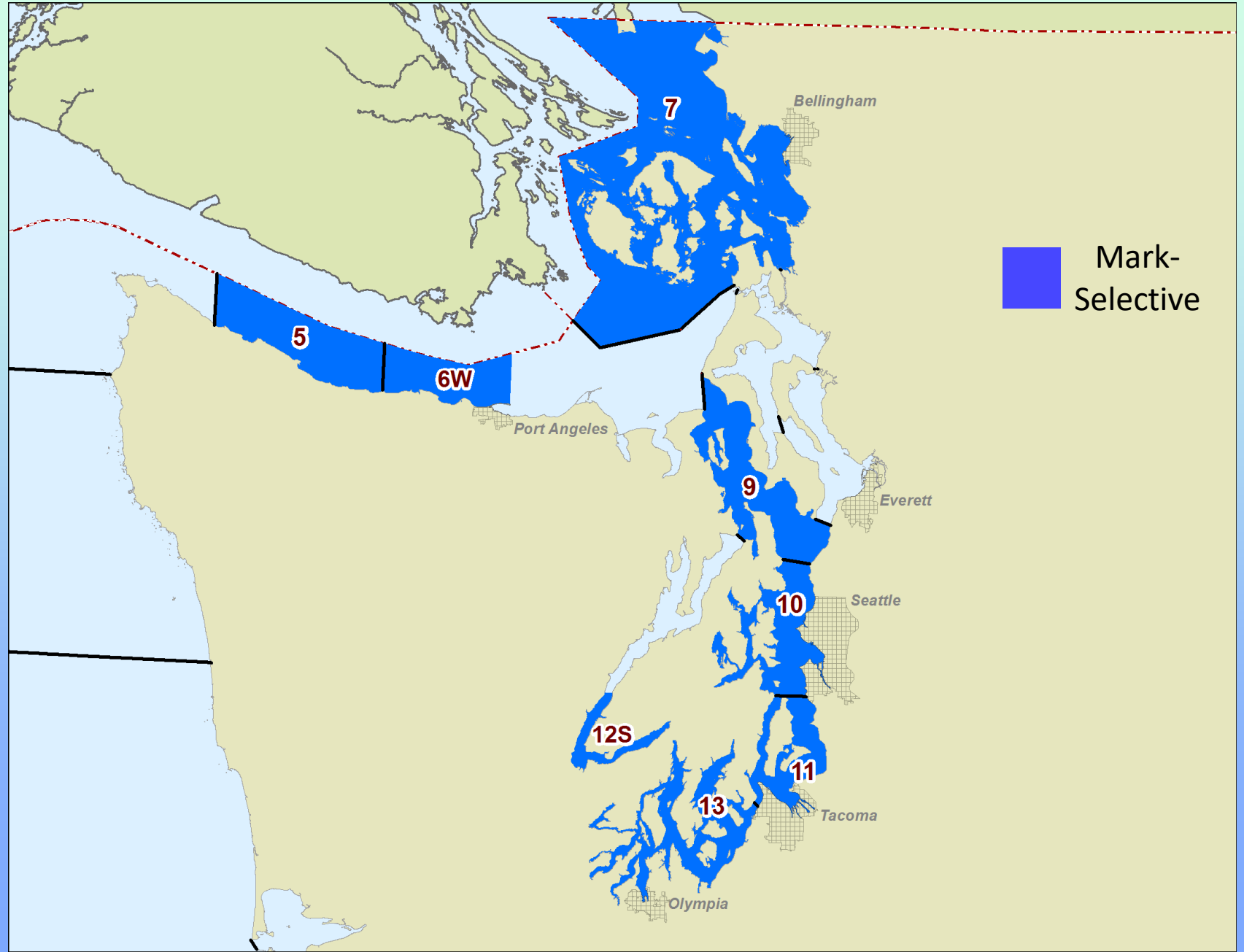
WDFW Puget Sound Sampling Unit Selective Fishery Monitoring Program

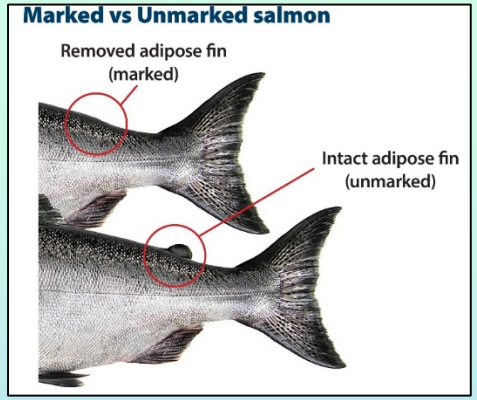


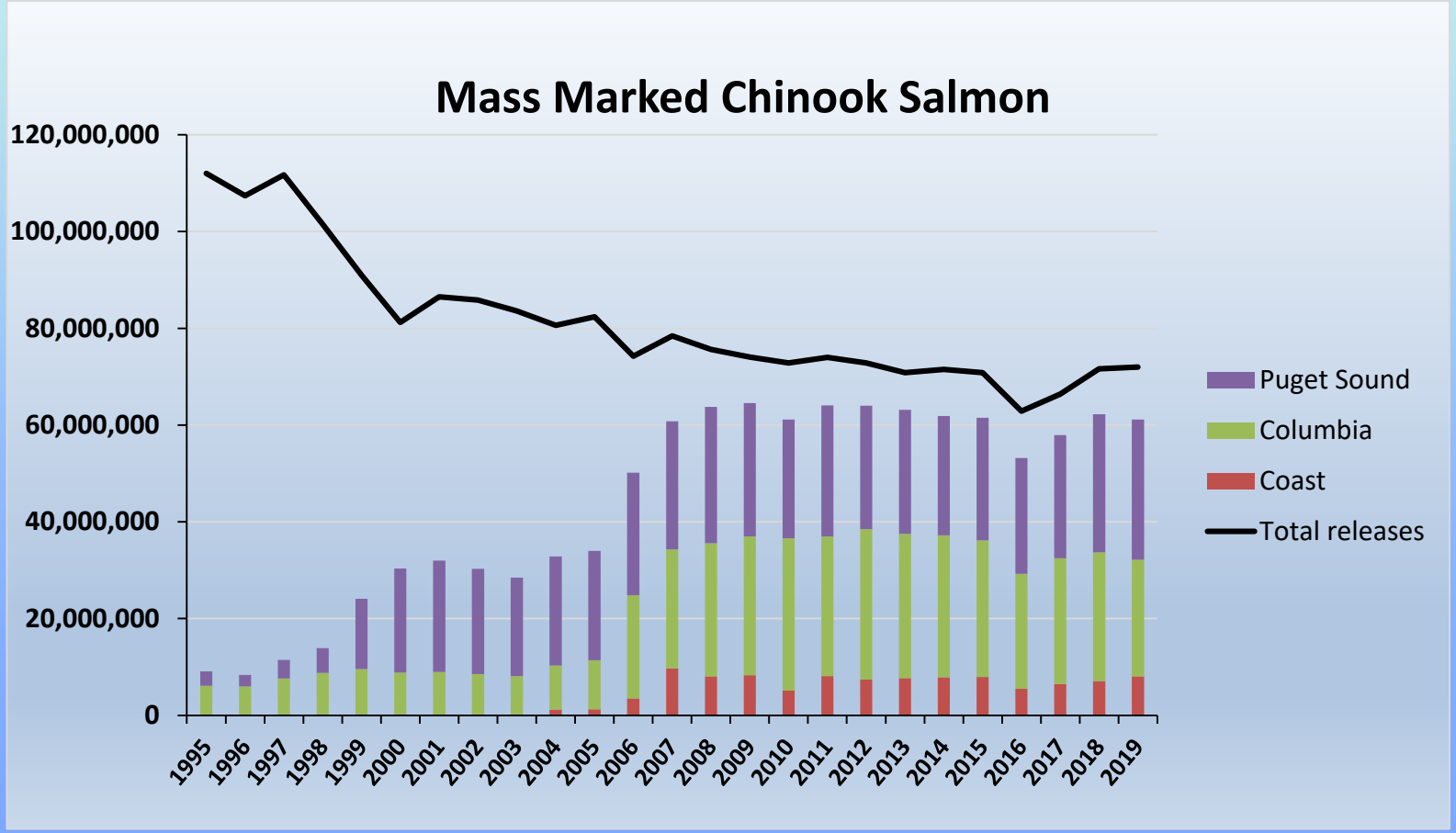
Puget Sound Summer Chinook MSF



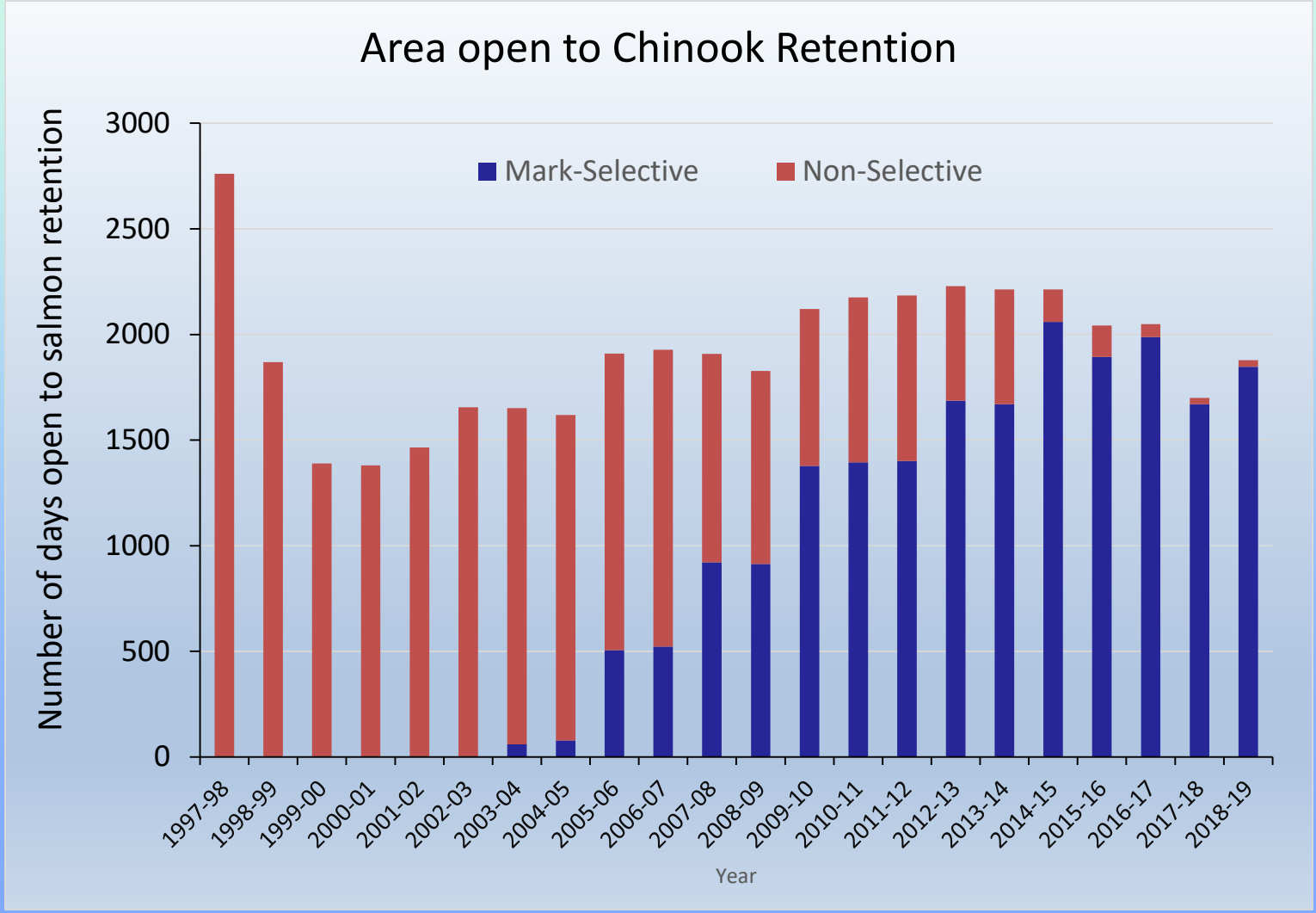
Production of Marked Chinook

- Adipose fin-clip; external mark indicating hatchery origin fish.
- Marking program consistent with hatchery reform practices.

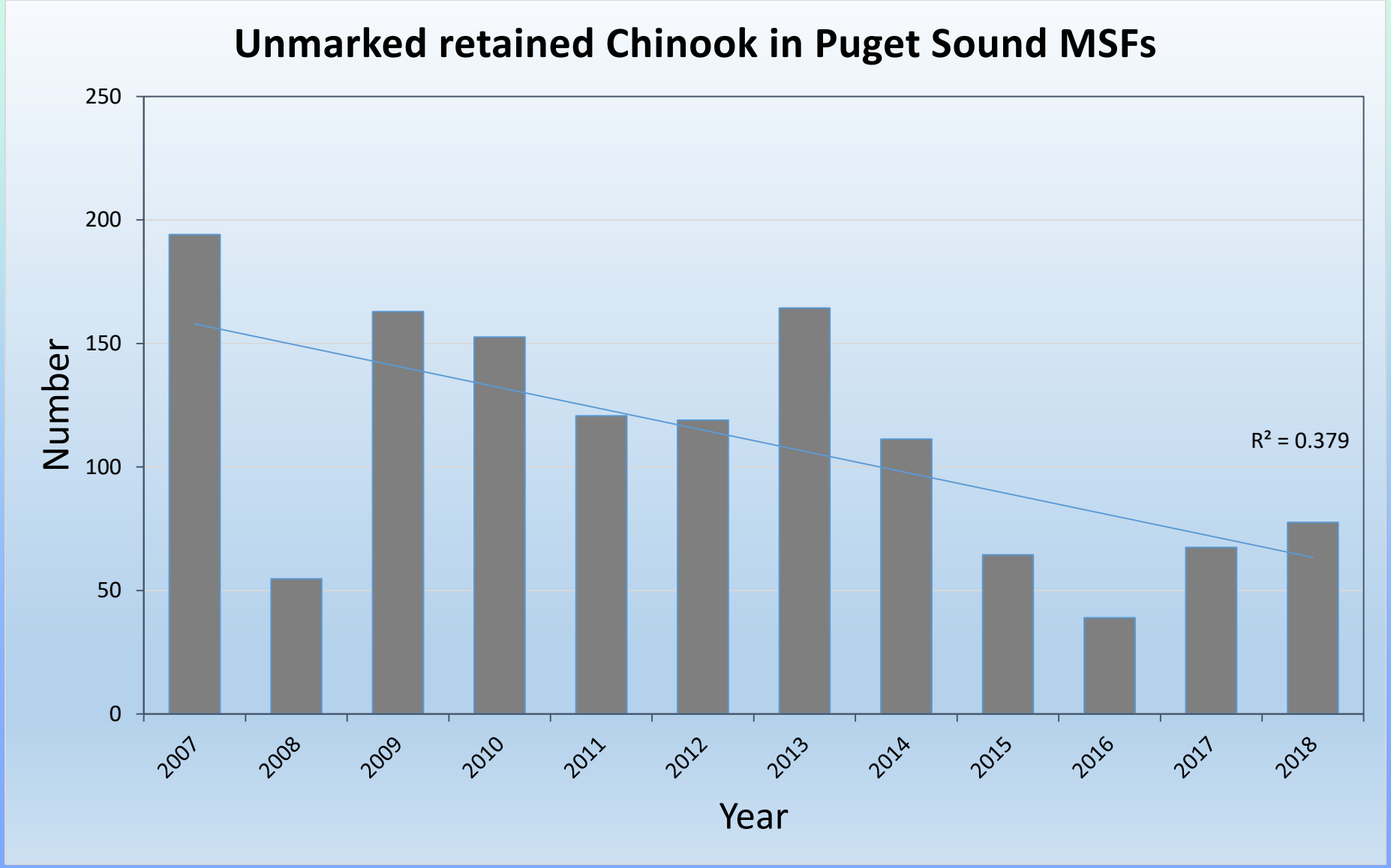


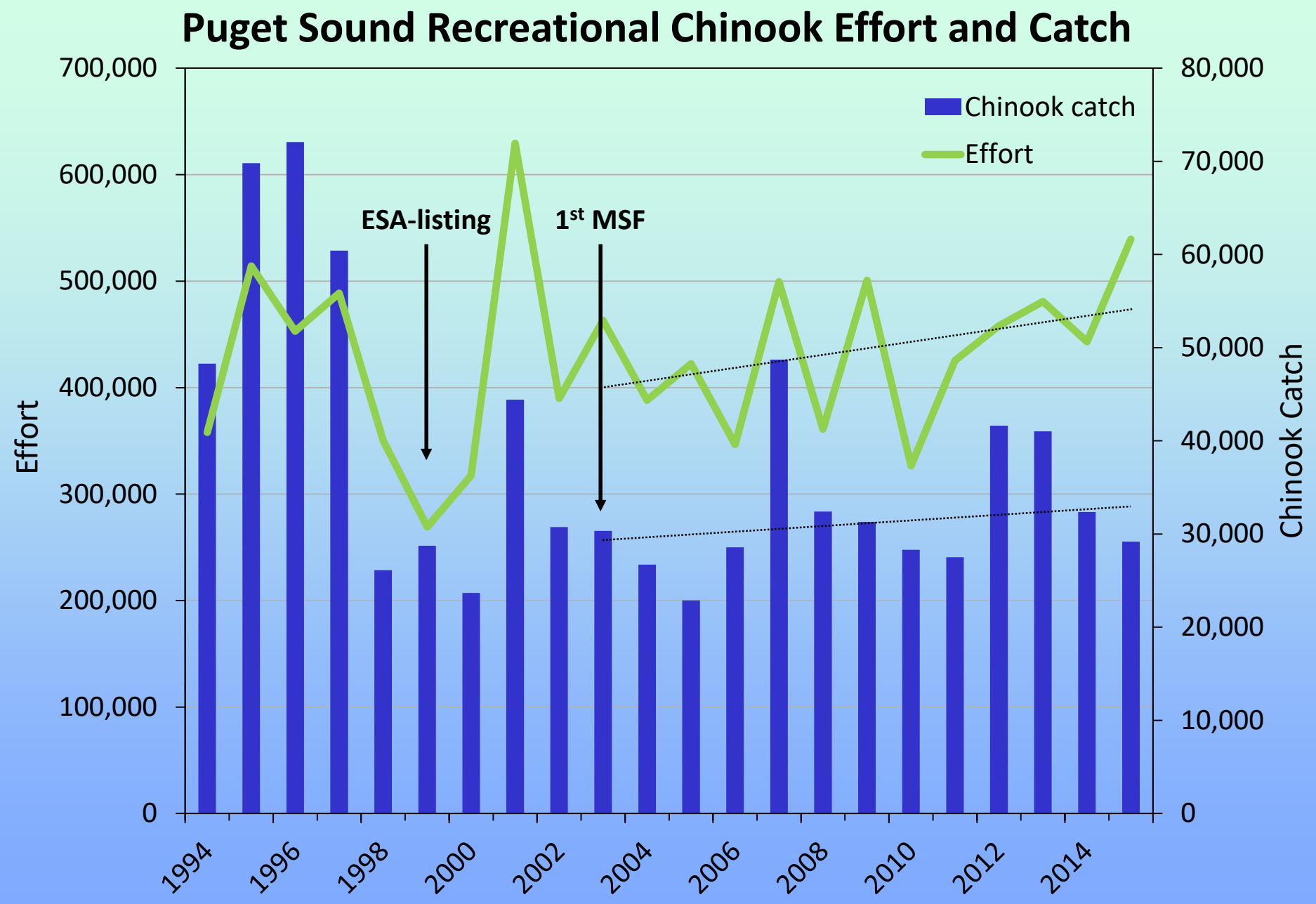


Puget Sound Area Recreational Salmon Fishing Opportunities

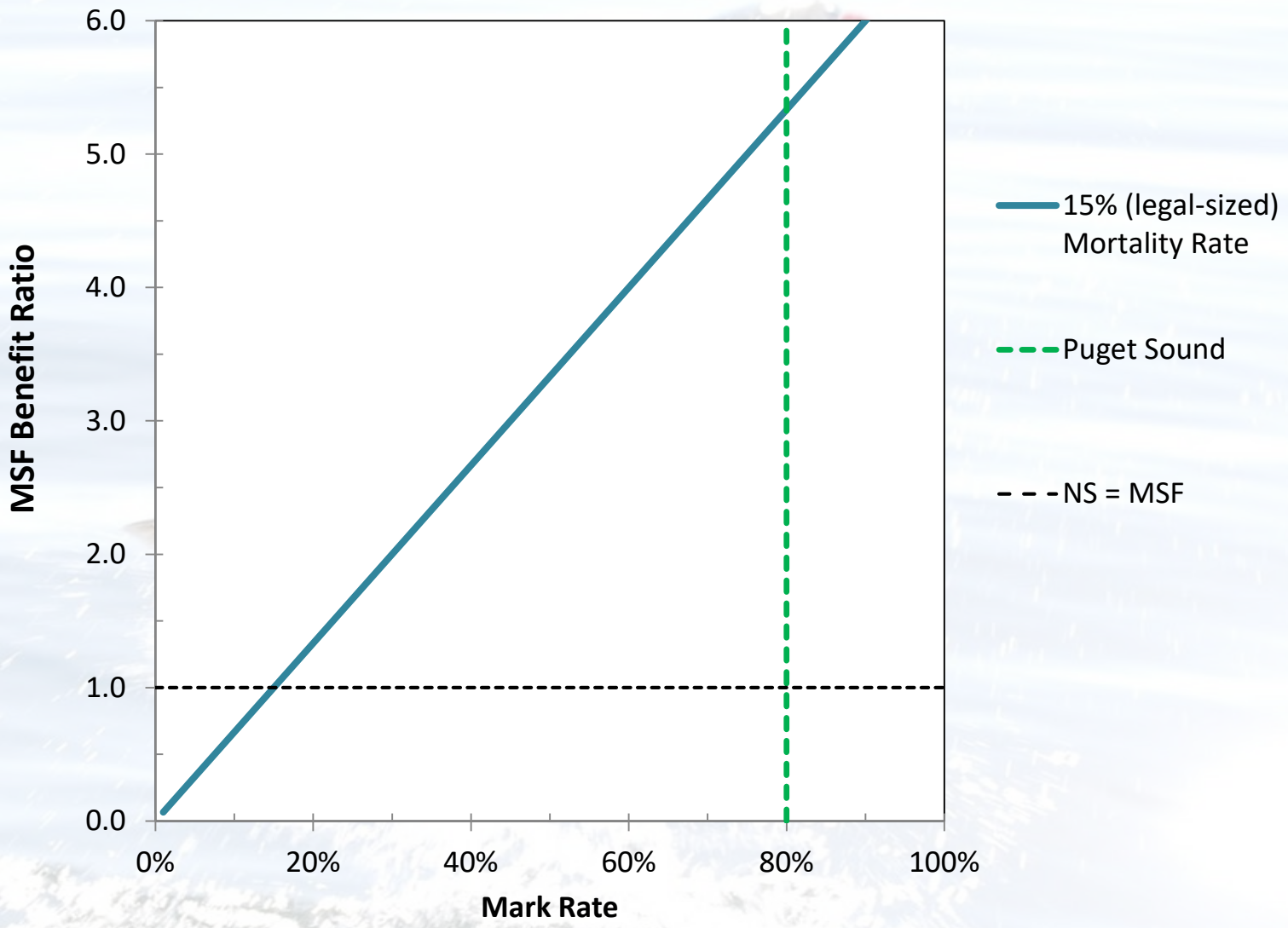


Angler compliance in MSFS




Puget Sound Recreational Chinook Effort and Catch
Effort
Chinook Catch
Chinook catch
Effort
ESA-listing
1st MSF
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014

Chinook MSF Cost/Benefit to Wild Impacts



Impact Savings of Wild Chinook

Final FRAM exploitation rate run sheet for 2019/20

Stock	Management Criteria			Model Prediction			
	Abundance Tier	ER Ceiling	ER Type	Escapement	Total ER	SUS ER	PT-SUS ER
Spring/Early:							
Nooksack - Total		10.5%	SUS		33.2%	10.5%	5.8%
North/Middle Fork	< LAT			167			
South Fork	< LAT			75			
Skagit - Total	> LAT	37.5%	Total	1,616	32.1%	21.2%	4.6%
Upper Sauk	> LAT			957			
Upper Cascade	> LAT			182			
Suiattle	> LAT			478			
White	> UMT	22.0%	SUS	1,834	24.3%	16.7%	5.1%
Dungeness	> UMT	10.0%	SUS	945	5.5%	1.2%	1.1%
Summer/Fall:							
Skagit - Total	> LAT	48.0%	Total	12,504	36.7%	16.4%	3.8%
Upper Skagit	> LAT			9,274			
Sauk	> LAT			587			
Lower Skagit	> LAT			2,363			
Stillaguamish - Total	900-1200	24.0%	Total	943			
Unmarked ER		8.0%	UM SUS		18.0%	8.0%	5.2%
Marked ER		12.0%	M SUS		20.4%	10.9%	8.2%
Snohomish - Total		21.0%	Total	3,208	15.8%	6.5%	5.0%
Skykomish	< LAT	15.0%	SUS	2,414			
Snoqualmie				794			
Lake WA (Cedar R.)	> UMT	13.0%	PT-SUS	1,217	33.2%	22.0%	12.9%
Green	> UB	13.0%	PT-SUS	5,842 9,500	53.8%	42.6%	12.9%
Puyallup	> UMT	13.0%	PT-SUS	2,695 4,613	51.1%	39.9%	12.9%
Nisqually	> LAT	47%	Total	11,467		41.9%	15.3%
Western Strait-Hoko	> UMT	10%	SUS	2,315		2.4%	2.4%
Elwha	> UMT	10%	SUS	6,662	5.8%	1.4%	1.4%
Mid-Hood Canal	< LAT	12%	PT-SUS	286	21.8%	12.1%	11.8%
Skokomish	> UMT	50%	Total	2,667 22,568	48.2%	38.6%	12.4%

- 4 constraining stocks
  1. Nooksack
  2. Stillaguamish
  3. Lake Washington
  4. Mid-Hood Canal

- Convert the Strait of Juan de Fuca and northern Puget Sound from MSF to NSF in summer and winter Chinook seasons…

Impact Savings of Wild Chinook

- Convert the Strait of Juan de Fuca and northern Puget Sound from MSF to NSF in summer and winter Chinook seasons…

- Exploitation rate estimate
  1. Nooksack = ^ 20%
  2. Stillaguamish = ^ 27%
  3. Lake WA = ^ 35%
  4. Mid-Hood Canal = ^ 38%

Simulated exploitation rate run sheet for 2019/20: MSF to NSF

	Management Criteria			Model Prediction			
Stock	Abundance Tier	ER Ceiling	ER Type	Escapement	Total ER	SUS ER	PT-SUS ER
Spring/Early:							
Nooksack - Total		10.5%	SUS		35.1%	12.9%	8.2%
North/Middle Fork	< LAT			166			
South Fork	< LAT			75			
Skagit - Total	> LAT	37.5%	Total	1,611	35.6%	25.3%	9.5%
Upper Sauk	> LAT			954			
Upper Cascade	> LAT			181			
Suiattle	> LAT			476			
White	> UMT	22.0%	SUS	1,834	26.7%	19.4%	8.2%
Dungeness	> UMT	10.0%	SUS	944	6.2%	1.9%	1.8%
Summer/Fall:							
Skagit - Total	> LAT	48.0%	Total	12,079	39.9%	20.0%	7.8%
Upper Skagit	> LAT			8,954			
Sauk	> LAT			566			
Lower Skagit	> LAT			2,281			
Stillaguamish - Total	900-1200	24.0%	Total	943			
Unmarked ER		8.0%	UM SUS		20.6%	10.9%	8.2%
Marked ER		12.0%	M SUS		20.6%	11.1%	8.4%
Snohomish - Total	< LAT	21.0%	Total	3,153	20.3%	11.4%	10.0%
Skykomish		15.0%	SUS	2,372			
Snoqualmie				781			
Lake WA (Cedar R.)	> UMT	13.0%	PT-SUS	1,167	39.1%	28.4%	19.8%
Green	> UB	13.0%	PT-SUS	5,513 9,159	58.7%	48.0%	19.8%
Puyallup	> UMT	13.0%	PT-SUS	2,603 4,478	55.4%	44.7%	19.8%
Nisqually	> LAT	47%	Total	11,214	52.8%	46.3%	21.7%
Western Strait-Hoko	> UMT	10%	SUS	2,310	21.1%	2.8%	2.8%
Elwha	> UMT	10%	SUS	6,652	6.5%	2.1%	2.1%
Mid-Hood Canal	< LAT	12%	PT-SUS	271	28.6%	19.2%	19.0%
Skokomish	> UMT	50%	Total	2,588 21,986	52.8%	43.5%	19.5%

Puget Sound Mark-Selective Fishery Development

- Annually since 2003 for Chinook
  - In-season estimates
  - Post-season reports
- 2007 – Majority of Puget Sound converted to MSF for Chinook
- 2017
  - Most of Puget Sound MSF for Coho due to poor returns
- 2019 – All of Puget Sound MSF for Chinook
  - Exception- special area fisheries

Other Washington mark-selective fisheries

- Coho
  - Ocean Areas 1-4
  - Grays Harbor and several coastal rivers (i.e. Quillayute, Sol Duc)
  - Columbia River, including Buoy 10, downstream of Hood River

- Chinook
  - Willapa Bay (and tributaries) and several coastal rivers (i.e., Quillayute, Hoh, Humptulips)
  - Columbia River (and tributaries)
    - Spring Chinook
    - Summer Chinook

Conclusions

- Mass Marking (hatchery) programs are providing sufficient marked hatchery Chinook (and coho) to support sustainable and economically viable sport fisheries.
  - Challenges remain to access hatchery surplus.
  - Funding support from federal government has been essential to implement MSFs as state resources remain constrained.

- More than a decade of MSF implementation clearly shows that sampling programs have succeeded in collecting critical information necessary for evaluating impacts and planning future fisheries.

- MSFs significantly reduce impacts on wild salmon and thereby allow for stable sport fisheries, or even increased fishing opportunities.

- MSFs will continue as both science and management are combined to further enhance sport fisheries.

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