Puget Sound Chinook

Harvest Management Plan

January 19, 2018

Presentation Overview

- Background on the Puget Sound Chinook ESA listing and ESA coverage for fisheries
- Conservation concerns and challenges with ESA plan for 2018 and beyond
- Summary of long-term plan submitted to NOAA last month
  - Details on Stillaguamish management objectives
- What has changed since Plan submission?
- Next steps

Puget Sound Chinook ESA listing

- March 1999 – Puget Sound Chinook ESA listed
- July 2000 – ESA 4(d) rule issued
- 2001 – 2013 – ESA coverage for Puget Sound fisheries obtained through a series of co-manager plans under limit 6 of the 4(d) rule
- 2014 – 2017 – ESA coverage obtained through annual Section 7 consultations through the Bureau of Indian Affairs
- 2016 – ESA coverage and fisheries delayed due to lack of comanager agreement on fisheries package at the end of North of Falcon process

Puget Sound Chinook ESA listing

- 2016 – Meet and refer request, co-managers began mediation process

- The focus of mediation in 2017 was completion of a new multi-year plan by December 1. The NOAA evaluation/ administrative process is expected to take ~18 months, so meeting the December 1 deadline was expected to result in the new long-term plan going into effect in May 2019.

- Coverage for 2018 fisheries was planned to be through another one-year Section 7 consultation with BIA, presumably with the same objectives developed for the 10-year plan.

ESA Coverage – What's at stake and what's required?

- Without ESA coverage, fisheries that "take" listed Puget Sound Chinook – incidentally or directly – violate the ESA Section 9 "take" prohibition.
- An approved Chinook Plan provides ESA "take" coverage.
  - Fundamentally, this allows co-managers to access harvestable hatchery Chinook, and other salmon species, that are intermixed with ESA protected Chinook (primarily natural origin Chinook).
- Fundamentally, the Chinook Plan is not a recovery plan.
  - Accordingly, the question is NOT: How, if at all, can harvest contribute to recovery?
- The Chinook Plan is essentially a request for permission to continue impacting listed Chinook by taking them in fisheries.
  - Approval requires convincing analysis that implementing fisheries will not appreciably reduce the likelihood that Puget Sound Chinook will continue to survive and ultimately recover.

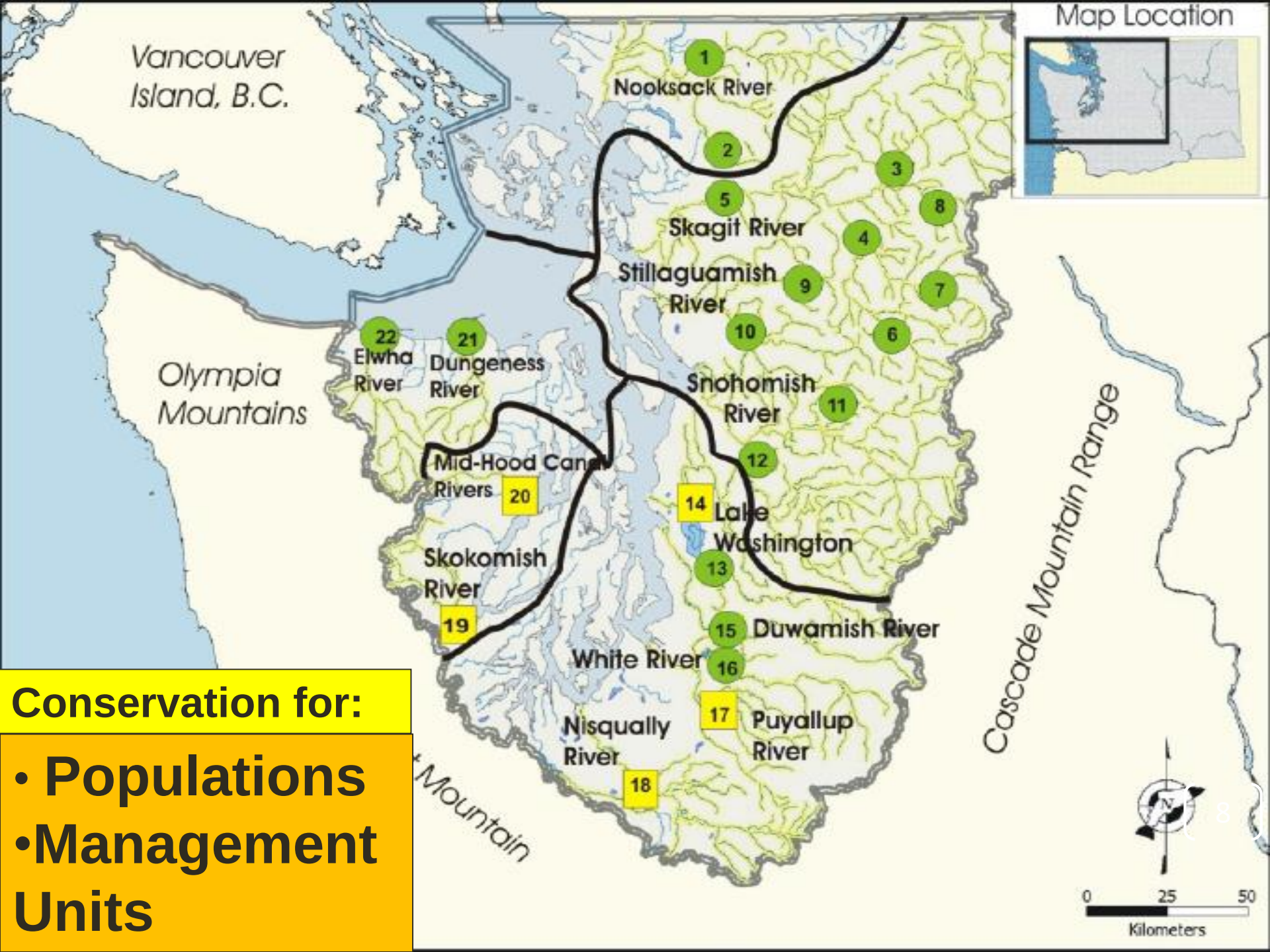
ESA Coverage – What's at stake and what's required?

- Formulating a long-term Chinook Plan is more challenging than ever.
  - Chinook stocks have continued to decline since the last plan.
  - Many stocks now chronically hover at critically low abundance
  - A longer term plan is inherently riskier.
  - Listed Orcas need Chinook as a source of food in order to survive, and Orcas have declined in abundance over the last 20 years.
- The question is not whether harvest actions in the past have done a good job or sufficient job of contributing to salmon conservation.
- The question is: Considering the status of both listed Chinook and Orcas, can we continue to impact Chinook via harvest of other salmon stocks?
  - Maintaining the status quo on harvest is not workable here.
  - When we look for a balance between conservation, ESA limits, and proposed harvest, we're going to have to look for impact reductions, even at the margins, **and/or** additional forms of mitigation.
  - Alternate mitigation needs to be real, not speculative. Pointing at impacts elsewhere (e.g. lost habitat) is deflection, and won't work. Making mitigation real, as part of a Chinook Plan, can help.

Puget Sound Chinook ESA coverage

- The goal of past multi-year plans, and the Plan recently submitted to NOAA, is to:

"Ensure that fishery-related mortality will not impede rebuilding of natural Puget Sound Chinook salmon populations, consistent with the capacity of properly functioning habitat, to levels that will sustain fisheries, enable ecological functions, and are consistent with treaty-reserved fishing rights."

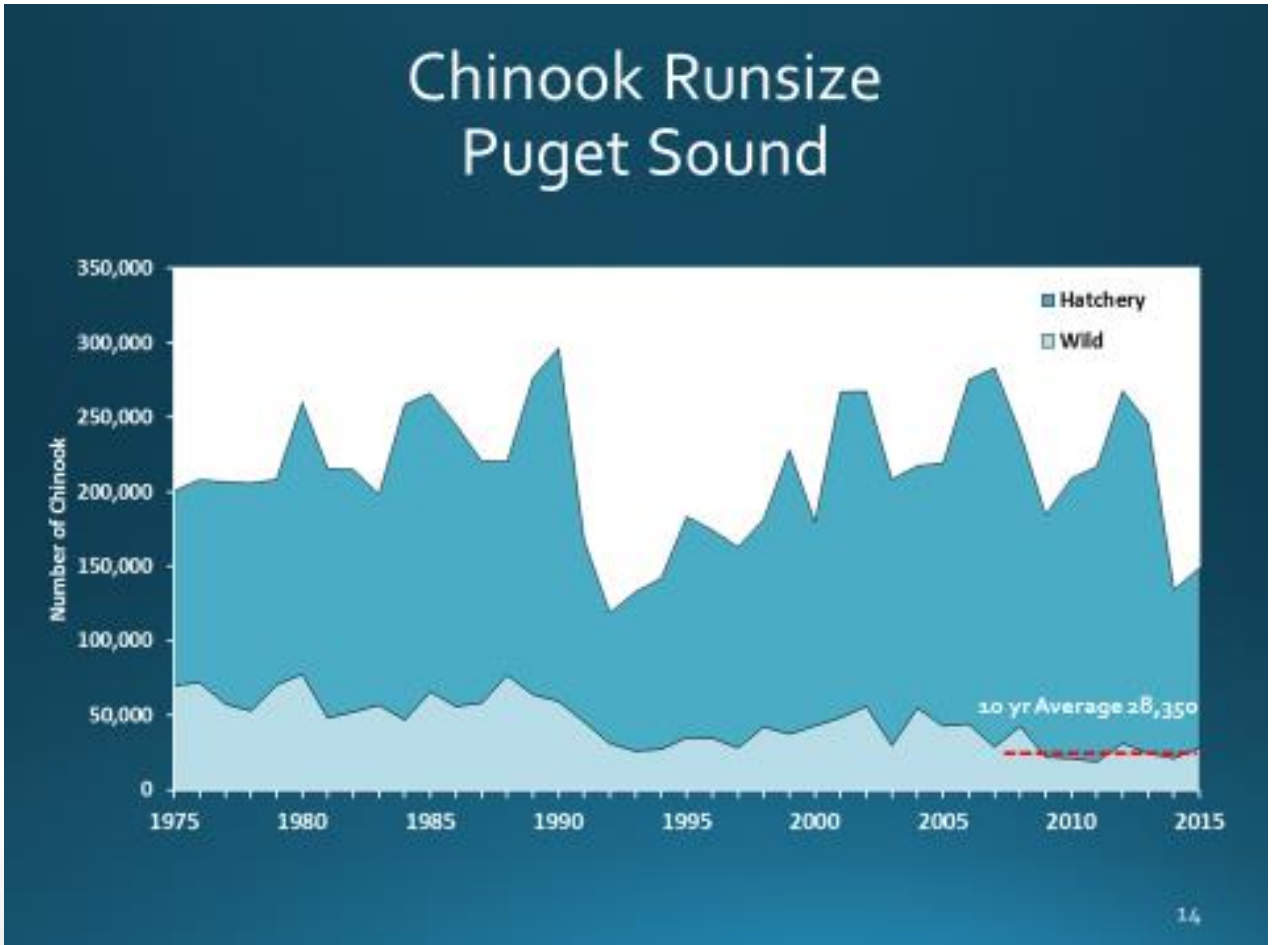


Conservation for:

- **Populations**
- **Management Units**

Conservation concerns with 2018+ plan

- Chinook abundance has not improved since ESA listing



Conservation concerns with 2018+ plan

- Chinook have been identified as a primary food source for Southern Resident Killer Whales (SRKW)
- Abundance of SRKW has declined in recent years, increasing scrutiny on activities that affect prey abundance
- NOAA recently updated their analyses of the maximum rates at which individual stocks can be impacted without negatively impacting their likelihood of recovery (Rebuilding Exploitation Rate, or RER), with decreases to estimated maximum rates for several stocks
- Exploitation rates in Northern fisheries exceed NOAA's RER for some stocks (e.g. Nooksack), meaning that risk to those populations will be high

Challenges with 2018+ plan

- Additional constraints on fisheries are likely needed in the new plan given decline in abundances and lower RER values. This is a hard message to accept given that majority of Puget Sound recreational fisheries are mark-selective for Chinook, and that many of the impacts on Puget Sound stocks occur in fisheries in Alaska and British Columbia

- Completion of a co-manager plan required reaching agreement with 17 tribes on management objectives for 15 Management Units and 22 populations

- Needed to meet December 1 submission deadline if long-term was coverage to be in place for 2019 fisheries

Challenges with 2018+ plan

- Co-managers completed the Plan through the mediation process and submitted it to NOAA on December 1, but negotiations were on-going through November 29th, leaving one day to complete & submit plan

- NOAA expressed concern during development of the Plan that they needed to review pieces of the plan as they were completed, so that they could evaluate & comment on sufficiency prior to submission

- Ultimately, the pace of negotiations did not provide an opportunity for NOAA to conduct its sufficiency review prior to submission of the Plan

- NOAA's initial comments indicate that they need more information to evaluate whether the Plan represents an acceptable level of risk for Puget Sound Chinook

Summary of 2018+ Plan

- Plan submitted to cover fisheries from 2019 through 2028
- Structure of plan similar to past plans
  - Body of plan includes chapters on:
    - Fisheries and Jurisdictions
    - Population structure & aggregation for management
    - Management objectives
    - Implementation
    - Conservative management
    - Monitoring and Assessment
  - Appendices includes ‘Management Unit Profiles’
    - Watershed by watershed overview of habitat issues, hatchery production, stock data and status, and description of management objectives

Summary of 2018+ Plan

- Notable changes in the Plan
  - Points of instability identified for several stocks
  - Total ER ceilings implemented for Snohomish and Stillaguamish
  - Escapement goals rather than maximum ER ceilings identified for Puyallup, White, Green and Lake Washington
  - SUS ER ceilings that vary by abundance identified for Stillaguamish natural-origin and hatchery-origin Chinook

NOAA initial review of Plan

- Exploitation Rates in the comanager plan are higher than NOAA's calculated Rebuilding Exploitation Rates for all stocks except the North Fork Stillaguamish
  - Part of the difference may be due to the methods used to convert the RERs, which are calculated using estimates of past exploitation rates from Chinook Technical Committee analysis, to fishery model (FRAM) rates that we use for planning
  - NOAA's total RER is lower than the ER in northern fisheries for several stocks
- NOAA has asked for better explanations of how the Plan meets 4(d) rule requirements, including:
  - How the proposed ERs and abundance thresholds relate to viable and critical thresholds
  - How the Plan's management objectives affect all four Viable Salmonid Population criteria – abundance, population growth rate, population spatial structure and diversity
  - Expected total impacts on populations that have a Southern US ER ceiling, but no total ER ceiling

Management Unit	Population (Tier)	Status	2010-2014 NOR /2005-2009 NOR	NMFS RER (total)	Comanager proposed ER (total expected)
Nooksack	NF Nooksack (1) SF Nooksack (1)	critical	-44/-64%	4%	10-16% SUS (41-47%)
Skagit sp	Suiattle (1)	above	+38%	25%	38%
	U. Sauk (1)	above	+68%	19%	38%
	Cascade (1)	above	+1%	25%	38%
Skagit S/F	Upper Skagit (1)	above	-31%	40%	47%
	L. Sauk (1)	above	-24%	39%	47%
	L. Skagit (1)	between	-34%	23%	47%
Snohomish	Skykomish (2)	above	-29%	14%	21%
	Snoqualmie (3)	above	-32%	19%	21%
Stillaguamish	NF Stilly (2)	above	+4%	24%	24%
	SF Stilly (2)	critical	-30%	18%	24%
Green	Green (2)	between	-33%	18%	18% SUS (27%)
L. WA	Sammamish (3)	critical	-45%	19%[a]	18% SUS (27%)
	Cedar (3)	between	-16%	19% [a]	18% SUS (27%)
Puyallup	Puyallup (3)	above	-25%	30%[b]	30% SUS (43%)
White	White (1)	between	-59%		22% SUS (26%)
Nisqually	Nisqually (1)	between	+19%	30% [b]	47%
Skokomish	Skokomish (1)	critical	-49%	30%	50%
MHC	MHC (1)	critical	+60%	4%[c]	12-15% SUS (24-29%)
Elwha	Elwha (1)	critical	-15%	4% [c]	6-10% SUS (19-23%)
Dungeness	Dungeness (1)	critical	-27%	4% [c]	6-10% SUS (19-23%)

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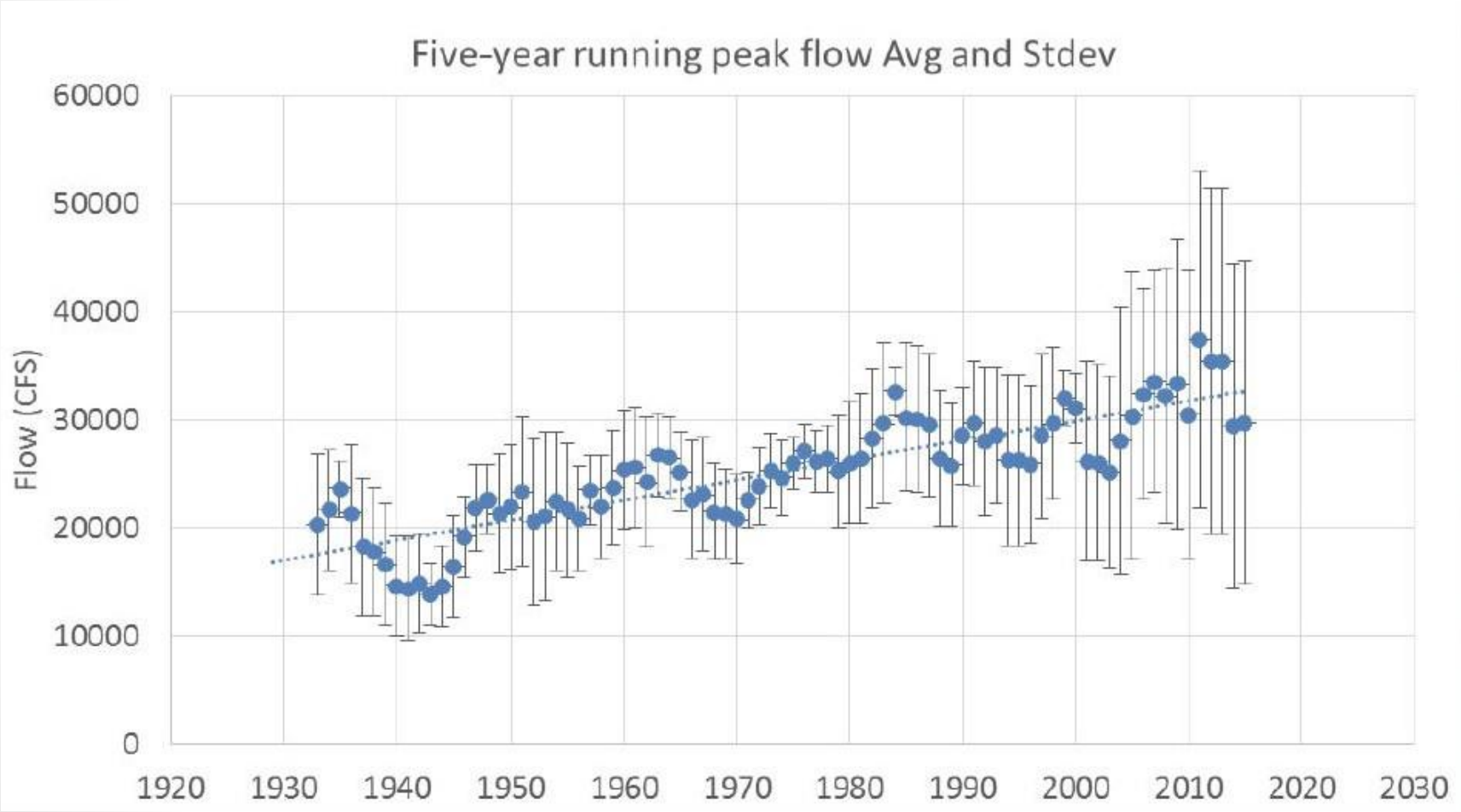
Status of Stillaguamish Chinook

- Two populations within the watershed – Summer (or North Fork) population and Fall (or South Fork) population
- NOAA analysis shows:
  - South Fork population natural origin escapement has declined over last 10 years, is in critical status, averaging ~100 spawners
  - North Fork population showed stable natural origin escapement over last 10 years, is above its rebuilding threshold on average
  - RERs of 24% for the North Fork population and 18% for the South Fork population
- Lower summer river flows, high winter river flows and sediment load are negatively affecting productivity of population
- There are conflicting views on the productivity of the populations, and the benefit of increasing escapement at lower abundances to decrease risk to the populations.

North Fork Stillaguamish River peak flows



Status of Stillaguamish Chinook – Supplementation Programs

- Harvey Creek / Whitehorse Ponds – summer Chinook program
  - Target release of 220,000 sub-yearling per year
  - Conservation program to boost numbers of the stock and reduce risk of extinction
  - Releases are adipose clipped and coded-wire tagged as a Pacific Salmon Commission (PSC) indicator stock, allowing monitoring of harvest distribution
- Brenner Creek Hatchery – fall Chinook program
  - Captive brood program – juveniles collected from the wild & raised to adults for spawning
  - 200,000 sub-yearling release goal – program growing, averaging 35,000 release
  - Releases are adipose clipped and coded-wire tagged for development as a PSC indicator stock – currently modeling assumes same harvest distribution for summer and fall Chinook

Stillaguamish exploitation limits

- Stillaguamish is likely to be one of the most constraining stocks under the plan
- Level of fishery constraint depends on abundance. At lower abundances, the constraints are tighter
- Natural-origin constraints
  - The lower tier exploitation rate ceiling is 8% in Southern US fisheries on natural-origin Stillaguamish Chinook, and 12% on hatchery-origin Stillaguamish Chinook
  - Allowable SUS ER's increase to 13% on natural-origin, and no limit on hatchery-origin at higher abundances

Stillaguamish exploitation limits

- Hatchery-origin constraints
  - Limit to hatchery-origin impact is reflective of the importance of the hatchery conservation program to spawning escapement, particularly at low abundances
  - There may be options for increasing hatchery production and altering marking to increase escapement and limit the effect of the hatchery-origin ER limit

Stillaguamish exploitation limits

- The low abundance ER limit of 8% is slightly above the most recent 6-year average of post-season FRAM estimates of exploitation rates on natural-origin Stillaguamish Chinook
- Recent annual pre-season fishery plans have had expected exploitation rates on Stillaguamish Chinook ranging from 10-15%
- Fisheries plans are developed annually through North of Falcon process to meet objectives preseason – **modeling accurate predictions for all fishery impacts will be key**.

Table 1. Pre-season predicted exploitation rates on unmarked Stillaguamish Chinook by fishery in Southern US fisheries using new FRAM base period from 2013-2017.

Fishery Name	Time Step	Average	2017	2016	2015	2014	2013
Freshwater Net	July-Sept	3.6%	4.3%	2.6%	4.7%	2.5%	3.7%
Tr 3:4 Trl	Oct-Apr	1.7%	1.4%	2.9%	1.1%	1.2%	2.0%
Ar 7 Sport	July-Sept	1.2%	0.8%	2.5%	0.9%	0.9%	0.9%
Ar 7 Sport	Oct-Apr	0.9%	0.4%	0.9%	0.9%	0.4%	1.8%
Tr 3:4 Trl	May-June	0.8%	0.5%	0.7%	1.0%	0.8%	0.9%
Tr TulaNet	July-Sept	0.6%	0.6%	0.5%	0.5%	0.6%	0.6%
Ar 8-1 Spt	Oct-Apr	0.5%	0.4%	0.7%	0.6%	0.6%	0.2%
Ar 9 Sport	Oct-Apr	0.4%	0.4%	0.6%	0.3%	0.3%	0.6%
A 11 Sport	Oct-Apr	0.4%	0.1%	0.2%	0.1%	0.1%	1.6%
FW Sport	July-Sept	0.4%	0.5%	0.1%	0.6%	0.4%	0.2%
Ar 6 Sport	Oct-Apr	0.3%	0.2%	0.6%	0.2%	0.3%	0.4%
Tr StSnNet	July-Sept	0.3%	0.0%	0.1%	0.7%	0.1%	0.3%
Ar 9 Sport	July-Sept	0.3%	0.2%	0.3%	0.2%	0.2%	0.3%
Ar 5 Sport	Oct-Apr	0.2%	0.2%	0.1%	0.3%	0.2%	0.4%
Ar 5 Sport	July-Sept	0.2%	0.3%	0.3%	0.2%	0.2%	0.1%
Ar 3:4 Spt	July-Sept	0.2%	0.2%	0.2%	0.2%	0.1%	0.2%

Table 2. Pre-season predicted exploitation rates on marked Stillaguamish Chinook by fishery in Southern US fisheries using new FRAM base period from 2013-2017.

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Tr 3:4 Trl	Oct-Apr	1.9%	2.6%	2.8%	1.3%	1.3%	1.2%
Ar 7 Sport	July-Sept	1.4%	2.2%	2.2%	1.1%	1.0%	0.5%
Ar 8-1 Spt	Oct-Apr	1.3%	1.5%	1.3%	1.2%	1.2%	1.0%
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Ar 6 Sport	July-Sept	0.2%	0.4%	0.3%	0.2%	0.2%	0.0%
A 10 Sport	July-Sept	0.2%	0.4%	0.2%	0.1%	0.1%	0.1%

Table 3. Management abundance thresholds and corresponding allowable exploitation rates for Stillaguamish Chinook

THRESHOLD LEVEL	FORECASTED TRS	SUS NOR ER CEILING	HOR % diff	SUS HOR ER CEILING	TOTAL NOR ER*
BELOW LBT	< 900	LBT GUIDELINES IMPLEMENTED			24.0%
LBT	900	8.0%	4.0%	12.0%	24.0%
	1000	8.0%	4.2%	12.2%	24.0%
	1100	8.0%	4.4%	12.4%	24.0%
LAT	1200	10.0%	4.8%	14.8%	24.0%
	1300	11.0%	5.2%	16.2%	24.0%
	1400	12.0%	5.6%	17.6%	24.0%
UMT	1500	13.0%	6.0%	19.0%	24.0%
ABOVE UMT	1500+	13.0%	no constraint		24.0%

* Total NOR ER not to be exceeded w/ consideration of Northern Fisheries, which may cause SUS impacts to be lowered from defined ceiling rates.

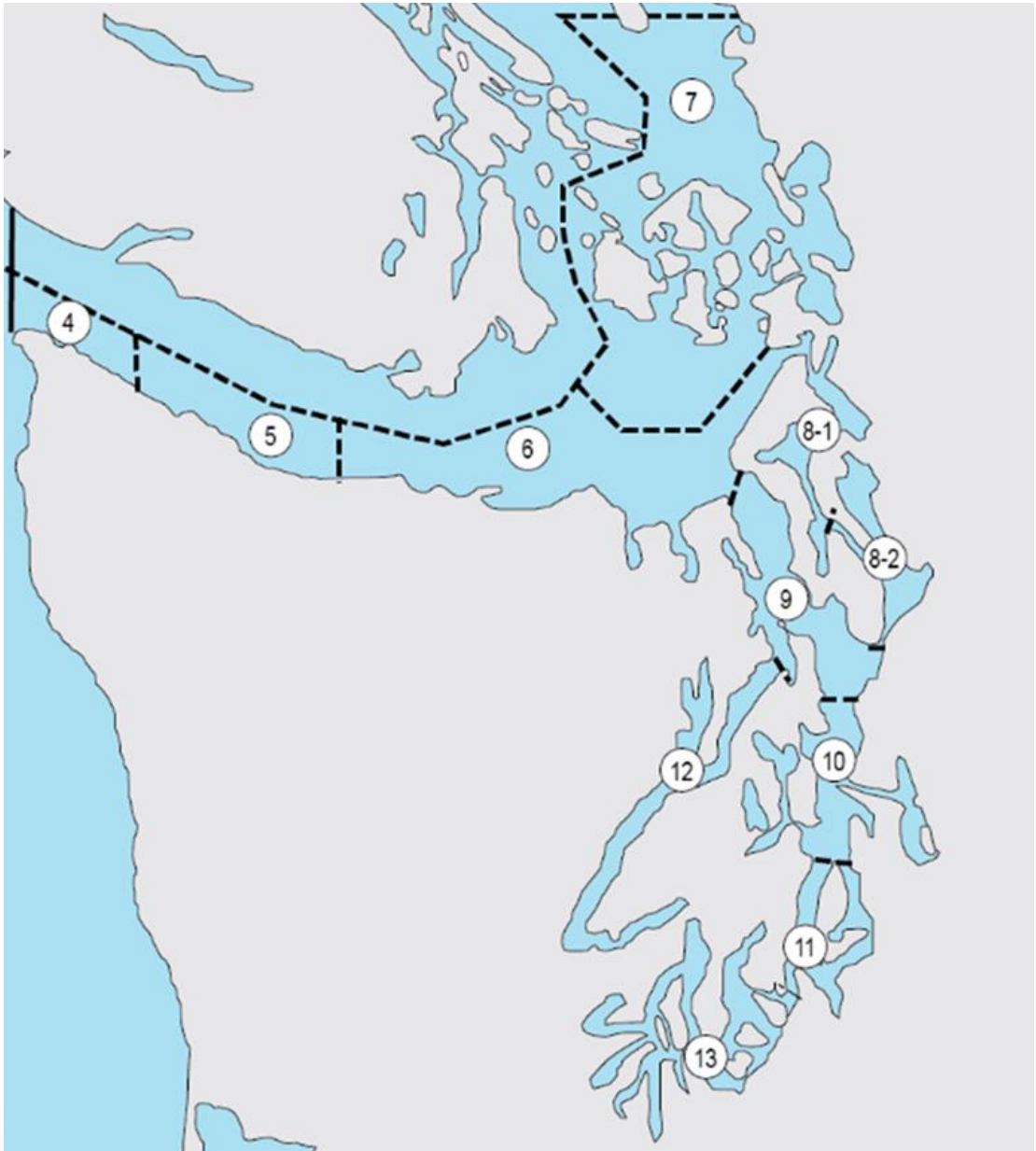
Stillaguamish exploitation limits

- Future abundances of Stillaguamish Chinook are unknown; the corresponding management responses will depend on the forecast in a given year

- Modeling work has been done exploring what changes to fisheries planned in recent years would be necessary at various abundance forecasts, but it is impossible to know what changes actually would have been negotiated through the North of Falcon process in each scenario

- Changes that would have been required range from no changes at higher abundance, to significant reductions in treaty and non-treaty fisheries at low abundance.

Puget Sound Marine Catch Areas



Why the 8 percent limit in low abundance years?

- 8% in low abundance years is a very conservative approach
  - Considers importance of the Stillaguamish population for ESA purposes
  - Reflects the fact that a 10-year ESA plan may call for less risk to listed Chinook
  - Extirpation of this population is not an option for the Stillaguamish Tribe and the State

Why the 8 percent limit in low abundance years?

- NOAA's RER analysis completed in 2017
  - There is some productivity in the watershed at low escapements
  - High stream flows and high sediment levels from landslides have major negative effects on Chinook survival and productivity
    - In years with less severe winter flows, maximizing escapement should lead to increased abundance in subsequent brood years
- In light of continued Chinook declines, the new plan takes a harder look at conservation when populations are consistently at low abundances
- 8% represented a rate slightly above the actual recent-year average ER on Stillaguamish Chinook in SUS fisheries
  - Idea was to not increase SUS fishery impact on the stock above the rates of recent years

Why the 8 percent limit in low abundance years?

- Are there alternative perspectives on Stillaguamish productivity?
  - WDFW developed independent spawner recruit analysis during development of the plan, showing different productivity estimates
- The differences in the analyses led us to ask questions like:
  - Is there an escapement level above which increased escapement does not result in an increased number of recruits?
  - Is there an escapement level below which providing additional escapement through fishery constraints provides minimal benefit?
  - If benefits to the population from fishery constraints are minimal, what other tools are available to rebuild the population?

What are the tools for balancing conservation and harvest?

- Accepting higher levels of risk should be paired with mitigation
  - This is an approach used in prior plans where harvest rates were higher than NOAA was comfortable with as a starting point
- Development of additional mitigation may be an option
  - Hatchery production
  - Hatchery marking strategy
  - Habitat improvements

350 Public Comments received

- Habitat and Harvest
  - 100+ form letters said that habitat is the problem with Stillaguamish Chinook and that fisheries cannot improve returns
  - 55 individual comments said that habitat is the problem
- Economic impact - 75
- Transparency - 75
- General opposition – 40
- Multiple other concerns
  - 40 forwarded or provided support for Puget Sound Anglers' comments
  - Tribal/commercial fisheries are the problem
  - Mark-selective fisheries are a responsible approach, shouldn't be affected

What has changed since Plan submission?

- Lack of sufficiency
  - All 13 Management Unit Profiles need additional work
    - Have received comments from NOAA on 9, waiting for 4 more
  - Additional work needed to achieve sufficiency likely pushes implementation of long-term plan to 2020
    - There are still critical deadlines, but there is time to explore options
- Ongoing technical work on conversion of NOAA's RERs to FRAM exploitation rates
- While RMP constraints are under revision, comanagers must submit management objectives for 2018 that will get one-year approval from NOAA
  - 2018 constraints not necessarily the same as the RMP
  - One-year plan may tolerate more risk than long-term plan

Next steps

- Continue work with NOAA and co-managers to revise the Plan
  - Continue mediated process to completion
  - Communicate with Commission regarding RMP development on all conference calls and at all scheduled meetings
  - Build in stakeholder workshop opportunity
- The ~18-month NOAA review process won't start until the revised Plan is deemed sufficient by NOAA
- Comanagers need to finalize management objectives for 2018 fisheries by late February

Questions?