

**UWR Chinook salmon & UWR steelhead
status, life history, ecology, etc.**

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Corresponding Summary Page(s): 7-8

Salmon and Steelhead in the Upper Willamette River



Bull Trout



Winter Steelhead

**Spring Chinook
Salmon**



Brian Franklin

Winter Steelhead

Life History Trait	Characteristic
Willamette Falls timing	Ascend Willamette Falls February* - May
Spawn timing	March – June, peak April - May
Spawning habitat type	High gradient tributaries, mainstems
Emergence timing	April - August
Rearing habitat	Rears primarily in upper portions of subbasins in small to medium streams
Duration in freshwater	2-3 years
Estuarine use	Days to several weeks
Life history type	Stream
Ocean migration	Predominately north, as far as southeast Alaska and Kamchatka Peninsula
Age at return	3-6 years; primarily 4 years



General Life History – Spring Chinook Salmon

Spawn: late August – late October

Peak migration over Willamette Falls:
April – May



Rear 2 – 4 years in North Pacific
Most Willamette Chinook: 4 – 5 years old
when they return



Incubation and emergence:
December – April



Rear 5 – 15 months
Migrate to ocean as smolts



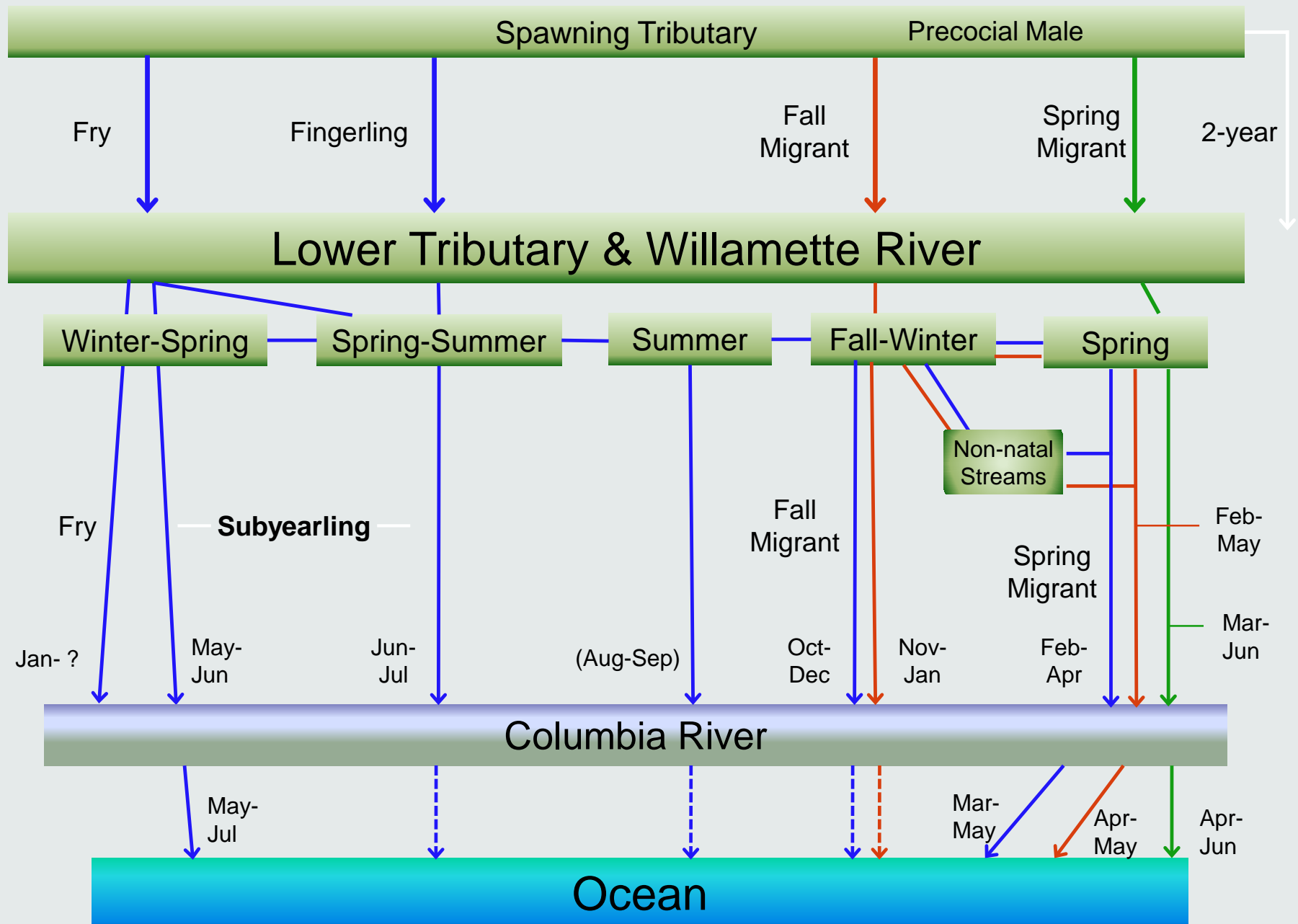
Spring Chinook Salmon in the Willamette

Life History Trait

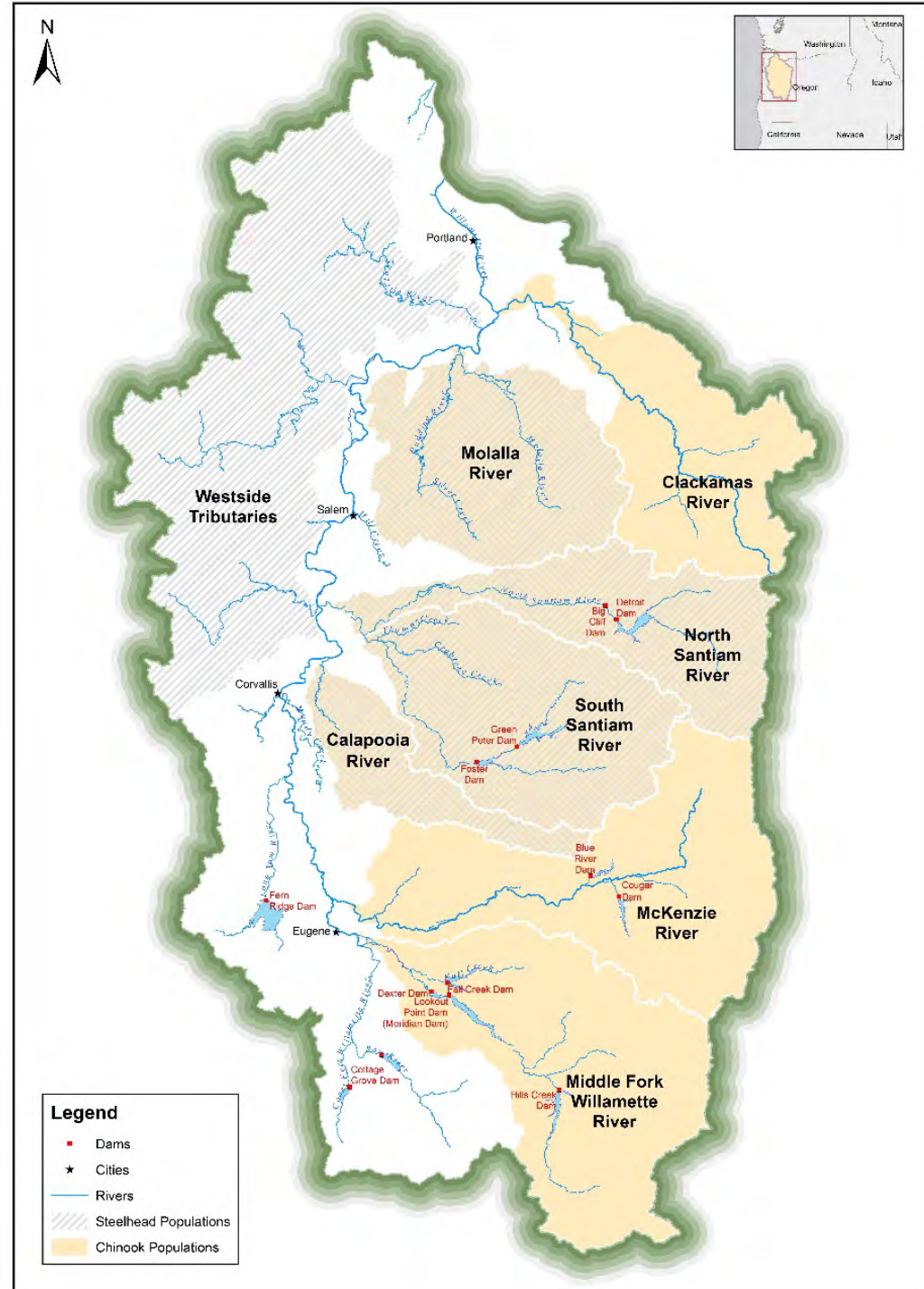
Willamette Falls timing	Ascend Willamette Falls April – August
Spawn timing	August – October; peaking in September
Spawning habitat type	Larger headwater streams
Emergence timing	December – March
Rearing habitat	Rears in larger tributaries and mainstem Willamette
Duration in freshwater	12-14 months; sometimes 2-5 months
Estuarine use	Days to several weeks
Life history type	Stream
Ocean migration	Predominately north, as far as southeast Alaska
Age at return	3-6 years; primarily 4-5 years



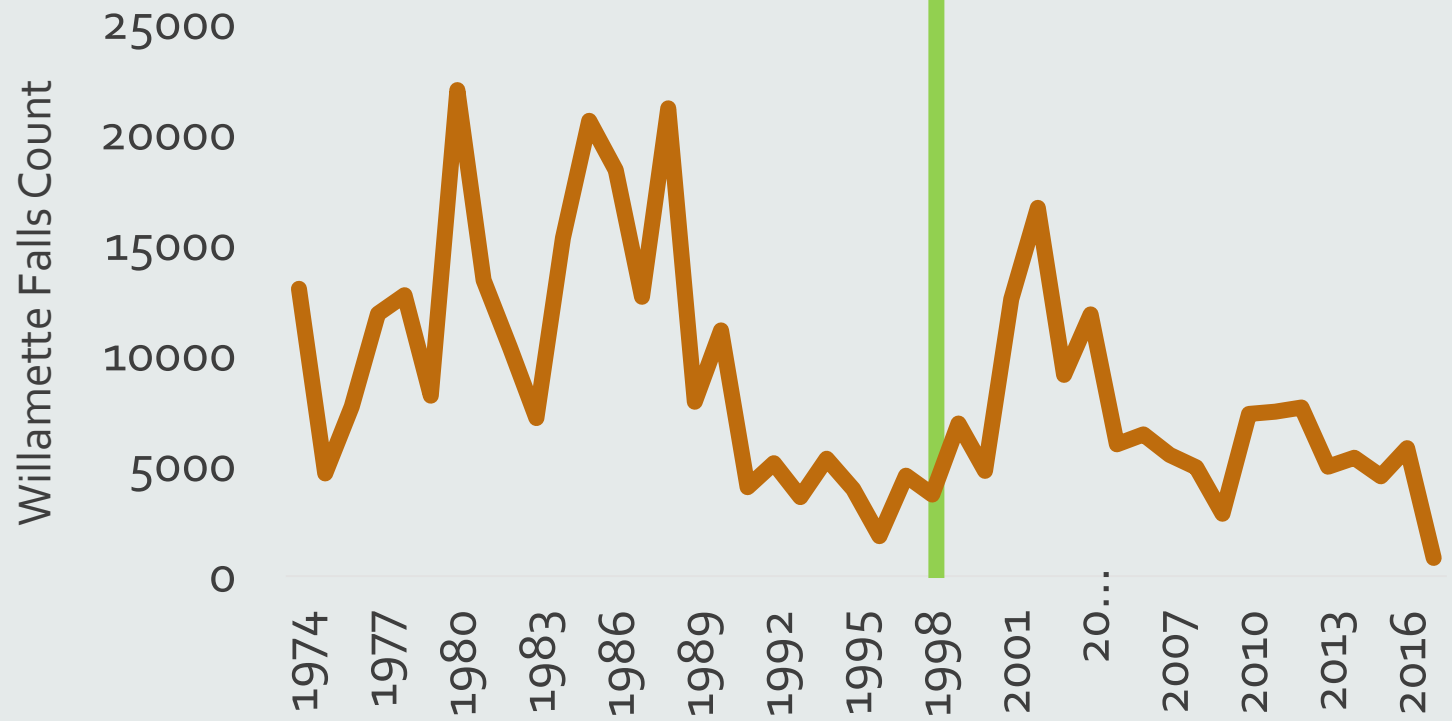
Willamette Juvenile Chinook Diversity (Spread the Risk)



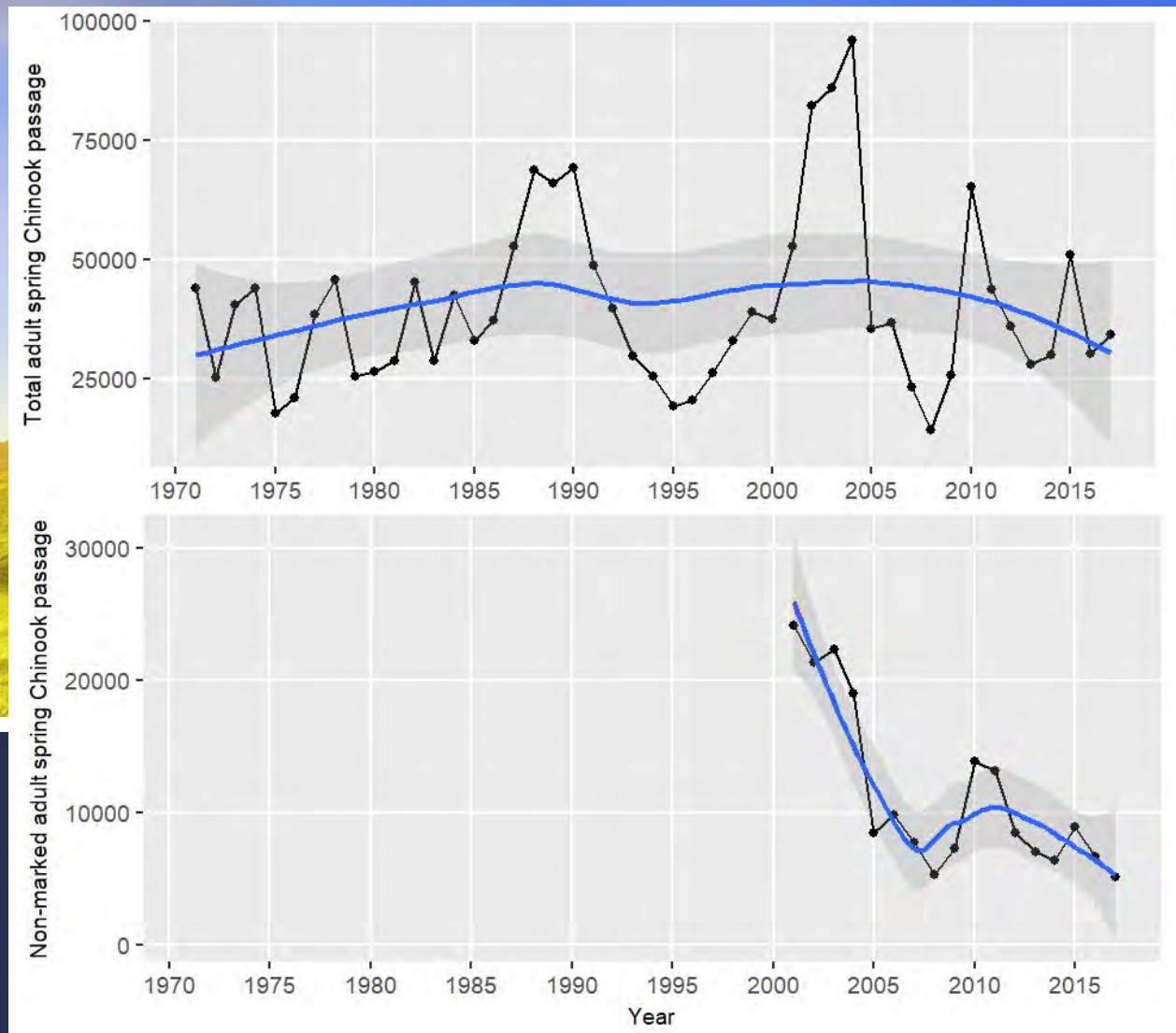
Salmon and Steelhead Populations in the Upper Willamette River



WILLAMETTE WINTER STEELHEAD



WILLAMETTE SPRING CHINOOK



After ESA listing...

- Regulatory framework to ensure that agency activities are not likely to jeopardize the continued existence of listed species or adversely modify designated critical habitats.
- Section 4 – Listing, Critical Habitat, and Recovery
- Section 4(d)- Fishery Management (FMEP), Hatchery Management (HGMP)
- Section 7 Consultations – protection from adverse effects of Federal activities
- Section 10 Hatchery Management (HGMP)



The Willamette Basin

LEGEND

- Projects operating in 1964
- Projects added since 1964
- Re-regulating Dams

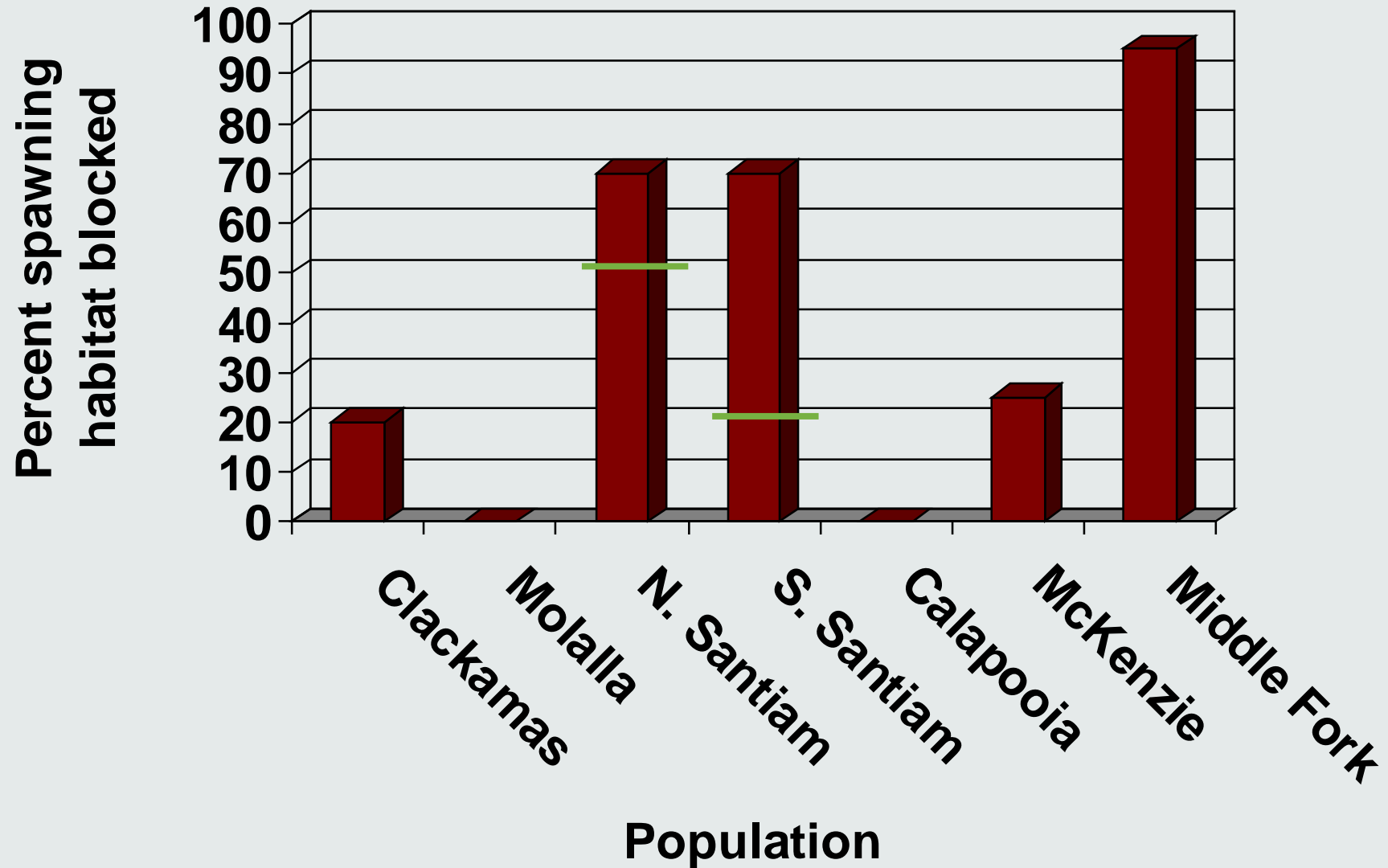
0 5 10 15 20 25 30
APPROXIMATE MILES



Willamette Biological Opinion

2008

Percent of Chinook spawning habitat blocked by dams in the Willamette Basin.



Upper Willamette Conservation and Recovery Plan for Chinook Salmon and Steelhead

2011

- Upper Willamette Chinook ESU (listed 1999)
- Upper Willamette steelhead DPS (listed 1999)
- Joint plan prepared by ODFW and NMFS
- Adopted in August 2011
- State or Oregon's conservation plan under our Native Fish Conservation Policy and recovery plan under the Federal ESA



Recovery Goals and Criteria

- Conservation road map to remove both species from the ESA Threatened list
- ESA/Delisting Recovery Goals:
 - Biological criteria
 - Threats criteria
- Broad Sense Recovery



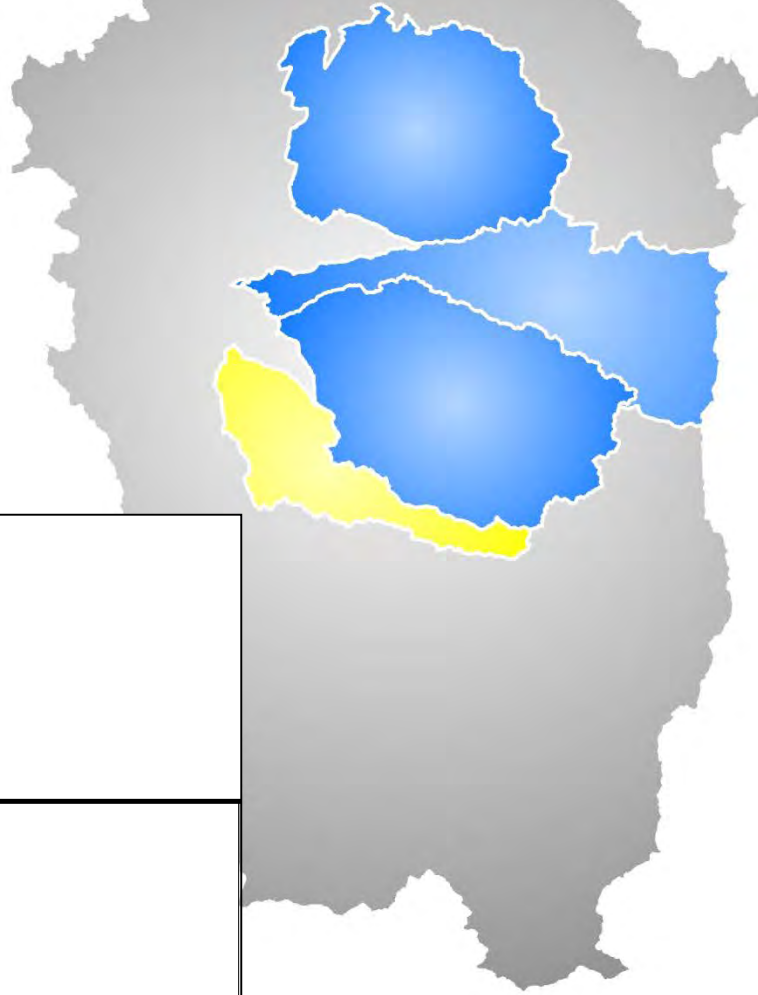
Winter Steelhead

Recovery Plan Status



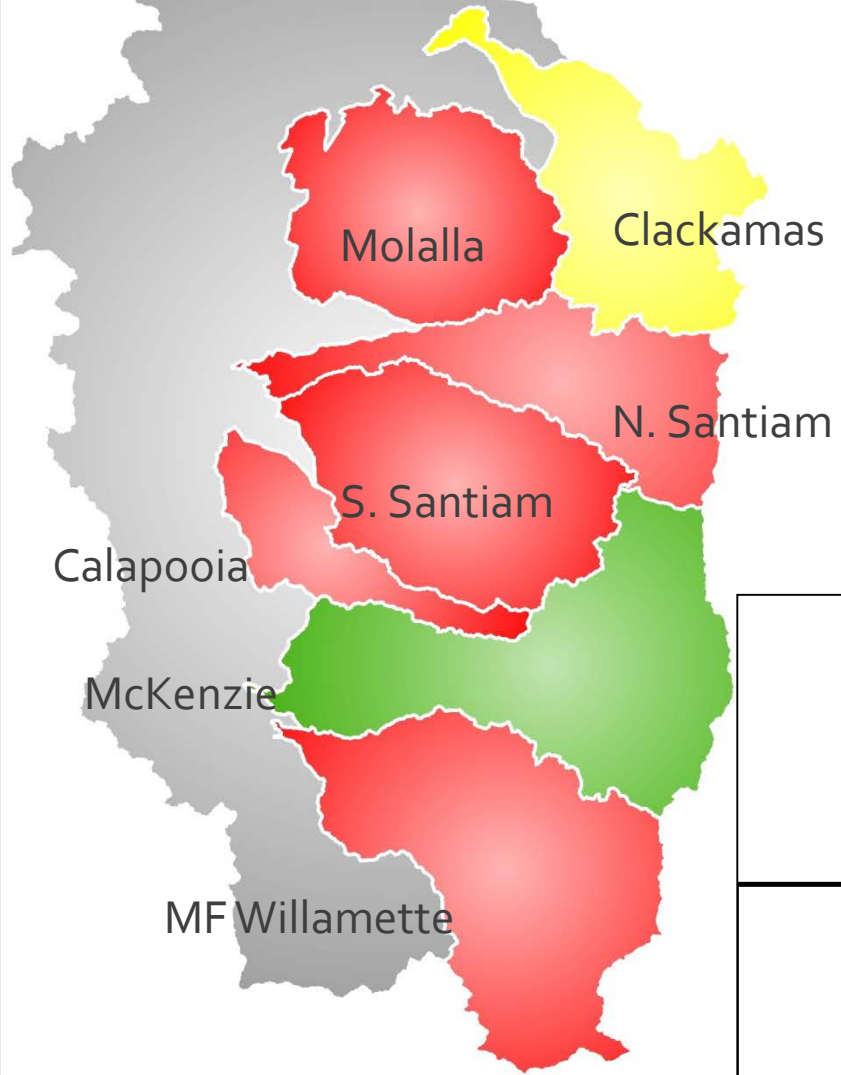
Winter Steelhead

Desired Status



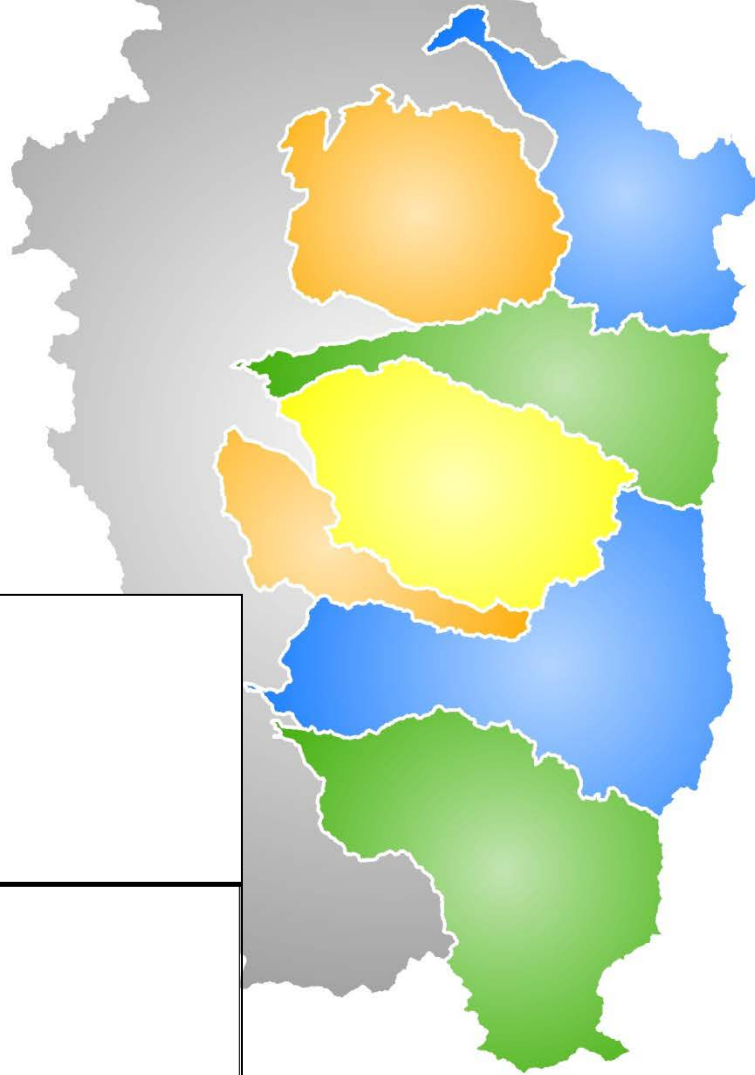
Spring Chinook

Recovery Plan Status



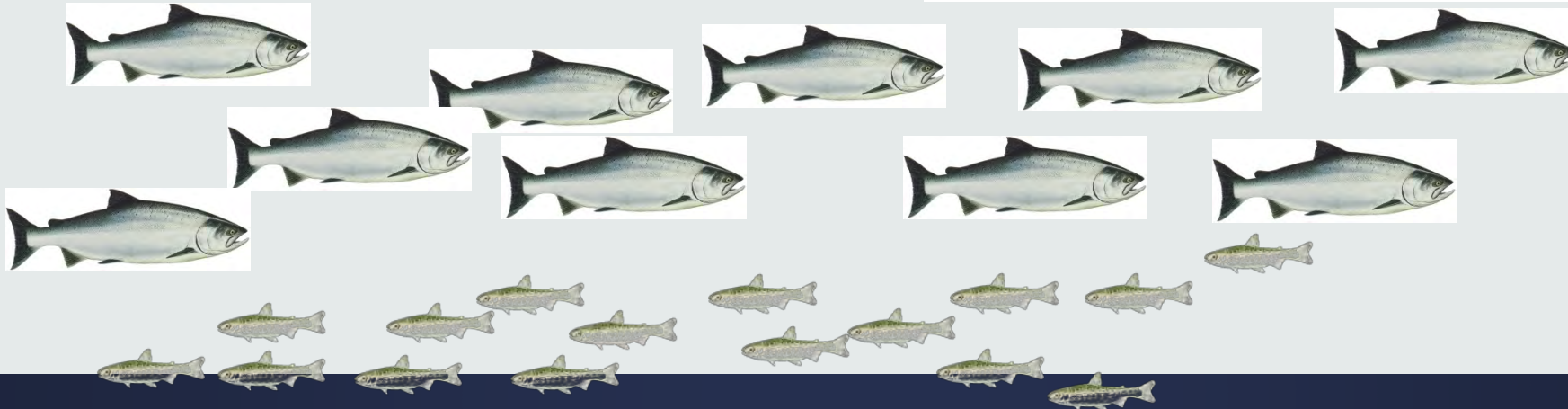
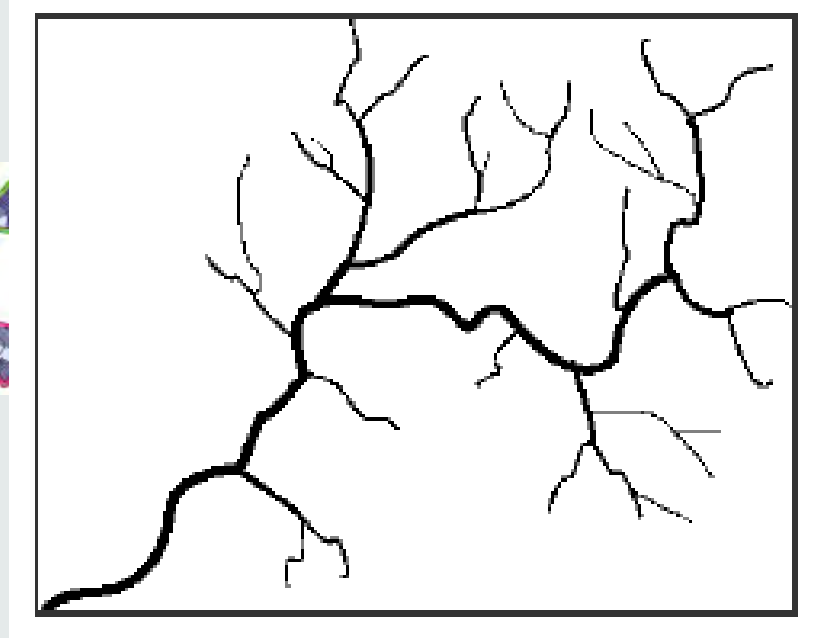
Spring Chinook

Desired Status



Viabale Salmonid Population (VSP) Improvements

- Abundance
- Productivity
- Diversity
- Spatial Structure



Middle Fork Chinook

VSP Parameter	Recovery Plan Status	Desired Delisting Status
Abundance/ Productivity	VH	L
Spatial Structure	H	L
Diversity	H	L
Total Score	VH	L

Desired abundance: 5,820

McKenzie Chinook

VSP Parameter	Recovery Plan Status	Desired Delisting Status
Abundance/ Productivity	VL	VL
Spatial Structure	M	L
Diversity	M	L
Total Score	L	VL

Desired abundance: 10,916

North Santiam Steelhead

VSP Parameter	Recovery Plan Status	Desired Delisting Status
Abundance/ Productivity	L	VL
Spatial Structure	H	L
Diversity	M	L
Total Score	L	VL

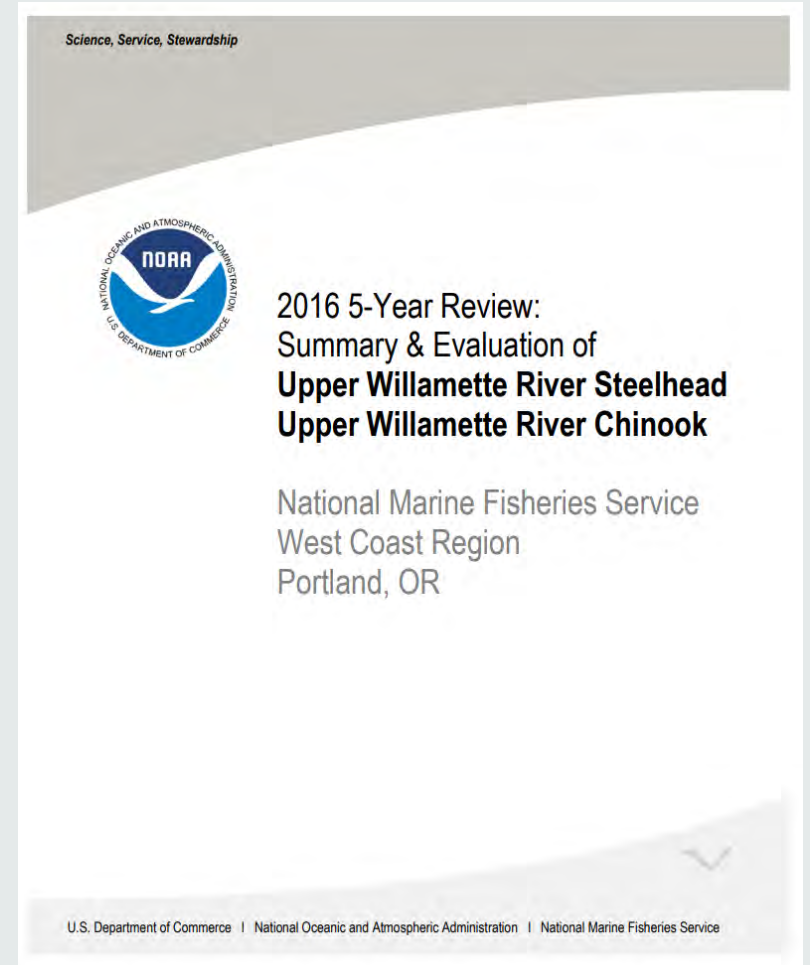
Desired abundance: 8,362

Listing Factors/Threats Criteria

- A. Present or threatened destruction, modification or curtailment of its habitat or range –
 - Habitat limiting factors
 - Hydropower limiting factors – passage, PSM, flow, water quality
- B. Overutilization for commercial, recreational, scientific, or educational purposes –
 - Harvest related threats
- C. Disease or predation
 - Marine mammals, avian, fish
 - Hatchery impacts related to disease
- D. Adequacy and inadequacy of regulatory mechanisms and protective efforts
 - Land use, instream flows, fisheries management, invasive species, habitat protection
- E. Other natural or manmade factors affecting its continued existence
 - Hatchery related threats – RME, pHOS, operations

2016 Status Review

- Recovery criteria still appropriate/adequate
- Listing factors addressed in the recovery criteria
- Upper Willamette River steelhead DPS remains listed as threatened
- Upper Willamette River Chinook salmon ESU remains listed as threatened



VSP Status

- UWR Steelhead DPS
 - Continued declines in abundance – need additional analysis to determine which fish are part of DPS
 - Hatchery summer steelhead introgression concern
 - Accessibility of historical spawning habitat limited
 - Accessible habitat degraded and under development pressure
- UWR Chinook Salmon ESU
 - Abundance estimates limited by PSM between falls and tributaries; high PSM in lower tributary reaches
 - Access to historical spawning and rearing areas; confined to lower reaches with development, water temp and water quality issues
 - TDG below high head dams
 - Overall decrease in VSP status, but magnitude not sufficient to change risk category

Listing Factors

Listing Factor A – Present or threatened destruction, modification or curtailment of its habitat or range –

- Habitat improvements have not lead to change in viability – needs to be monitored and evaluated going forward
- No change in risk to species' persistence because of habitat destruction or modification

Listing Factor B – Overutilization for commercial, recreational, scientific, or educational purposes –

- Harvest-related impacts for Chinook and steelhead remain low
- No change in effect since last review

Listing Factor C – Disease or predation

- Increase in avian and pinniped predation
- Pinniped predation
 - Predation by pinnipeds on listed salmon and steelhead has increased at an unprecedented rate
 - Need to expand monitoring to assess predator-prey interactions between pinnipeds and listed species
 - Complete life-cycle/extinction risk modeling to quantify predation rates by predatory pinnipeds
- Disease risks not expected to affect extinction risks

Listing Factors (continued)

Listing Factor D – Adequacy and inadequacy of regulatory mechanisms and protective efforts

- Risk based on adequacy of existing regulatory mechanisms has decreased slightly

Listing Factor E – Other natural or manmade factors affecting its continued existence

- Climate change (likely population decline as mean temps rise)
- Ocean conditions/marine survival (El Niño, blob; full impact not known)
- Hatchery impacts (some concern over impacts from summer steelhead)
- Chinook impacts stable with potential benefits from recent actions