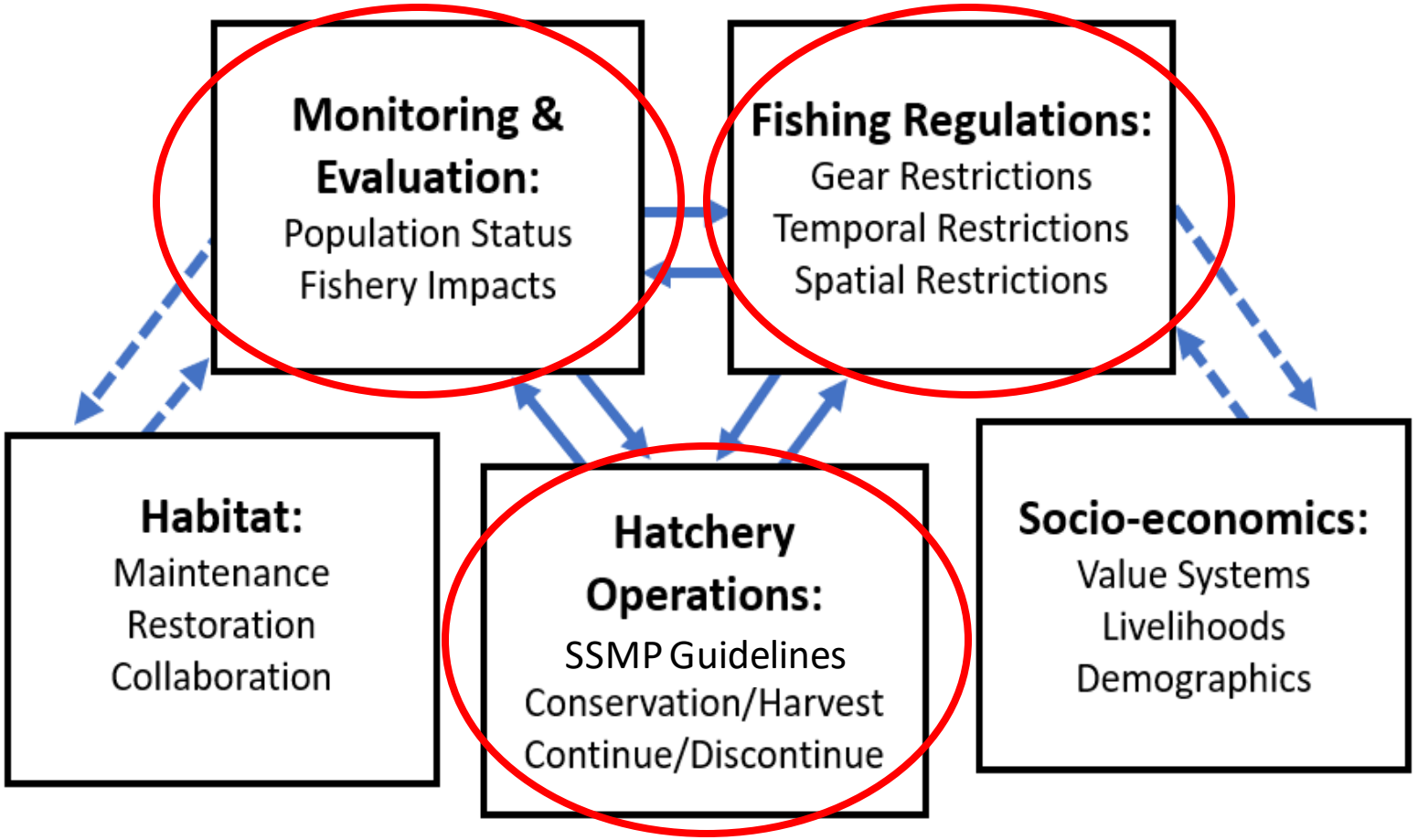
# Ad-hoc Coastal Steelhead Advisory Group: June 14 Meeting

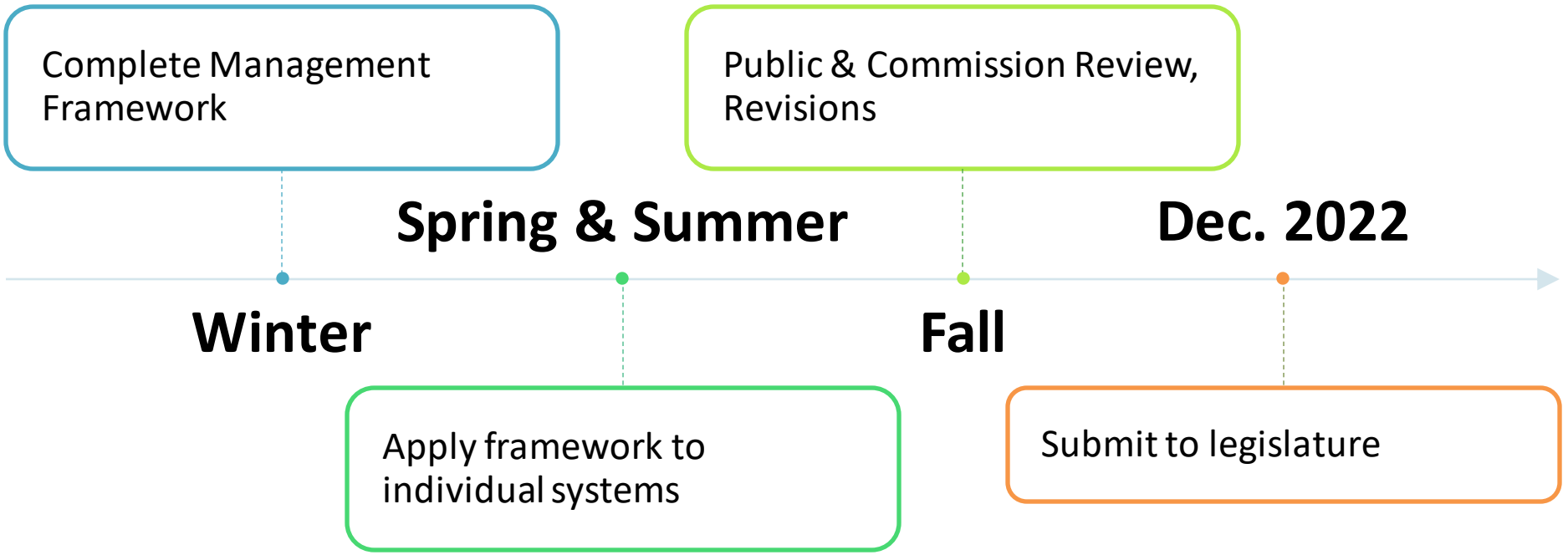
Toby Harbison
James Losee
Amy Edwards
Anja Huff

Washington Department of FISH and WILDLIFE

# Proviso Implementation Strategy



# Timeline


Complete Management Framework
Public & Commission Review, Revisions
Spring & Summer
Dec. 2022
Winter
Fall
Apply framework to individual systems
Submit to legislature

# Monitoring & Evaluation

# Hook and Line Test Fisheries

**Objective:** Produce a standardized estimate of catch and harvest that is independent of creel, catch record cards, guide logbooks etc. to be tracked over multiple years.

Theoretical Weekly Schedule for Test Angler(s)

| | Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|---|
| **Type of Angling** | Guided Boat | | Non-guided Shore | Non-guided Boat | | Non-Guided Boat | |

**Discussion topics:**

- Schedule (weekend vs. weekday)
- Fishing location.
- Randomly choose guide vs. select, voluntary guides.
- Ratio of guide to non-guide days.

# Fishery Regulations

1. Choose a coastal river and consider how the fisheries regulations discussed might impact that river, both in terms of biology and socioeconomics.
2. Are there alternative methods the Department should consider when determining fisheries regulations?

# Fishery Regulations (cont.)

- Starting season with restrictive regulations and expanding if possible
- How useful are town hall meetings?
- Fishing from a floating device
- Hatchery targeted fisheries
- Considerations for rainbow trout
- Coastal WA as a “destination fishery”
- Co-manager communication

# 5 Minute Break

# Hatchery Production

- Primary goal for CSPIP: Meet pre-existing SSMP genetic influence thresholds

→ Increase or decrease releases depending on wild steelhead run size and available fishery and hatchery tools

→ Manage proactively to optimize utilization around hatchery releases

# WDFW Hatchery Steelhead Modeling

Anja Huff
WDFW HEAT Unit

# Introduction

- The Statewide Steelhead Management Plan (SSMP) indicates that hatchery impacts on wild populations should not exceed 2% geneflow, and/or 30% pHOS and 0.70 PNI
- Estimates of geneflow and pHOS have not been evaluated for coastal steelhead programs since their inception
- Models Used
  - Integrated Programs Modeled with the AHA Model
  - Segregated Programs modeled with the Demographic Geneflow Model (DGM)

# All-H Analyzer (AHA) Model

- Uses hatchery and natural population data to provide estimates of pHOS and PNI.
- SSMP set standard of pHOS <30% and PNI ≥0.70

Productivity data used to model natural-origin abundance:

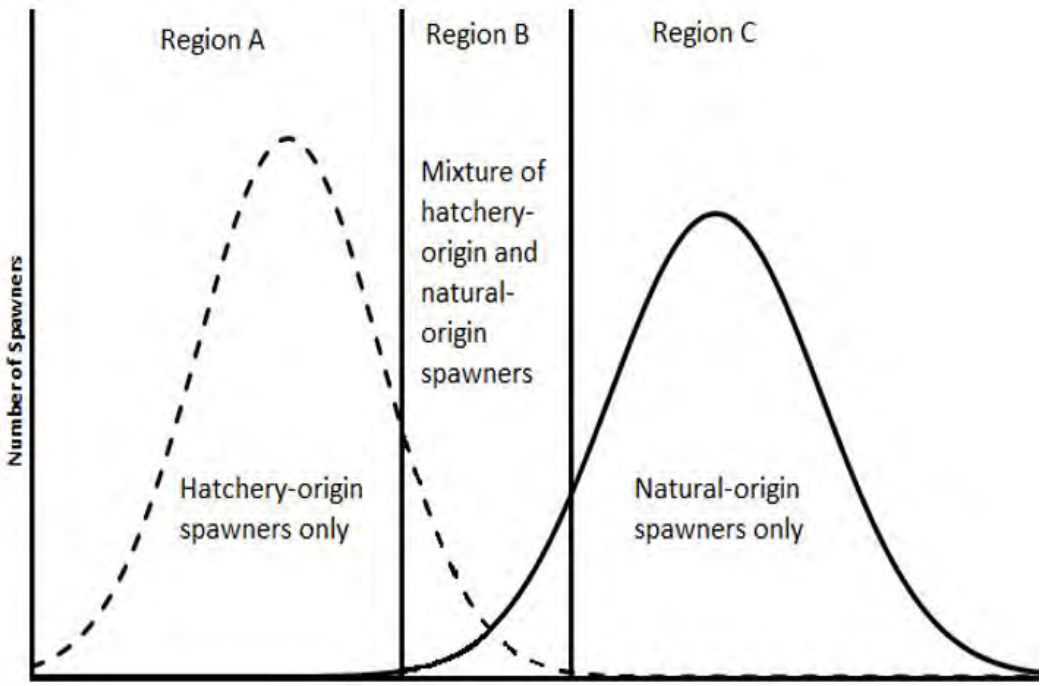
- SAR%
- Recruits per spawner
- Harvest Rate

- HEAT Hatchery Performance Tables for Steelhead used to verify model inputs:
  - SAR%
  - Harvest Rate
  - Trapping Efficiency

| Late Winter Steelhead Program | | | | | | |
|---|---|---|---|---|---|---|
| **Parameters** | **Bogachiel** | **Lake Aberdeen** | **Bingham Creek** | **Skookumchuck** | **Newaukum** | **Eight Creek** |
| $Prod_{Adult}$ | 3.25 | 2.5 | 3.5 | 2.5 | 2.5 | 3.0 |
| $Prod_{Smolt}$ | 81 | 63 | 88 | 63 | 63 | 75 |
| $Cap_{Adult}$ | 8,500 | 2,475 | 3,400 | 2,300 | 2,300 | 4,000 |
| $Cap_{Smolt}$ | 212,500 | 61,875 | 85,000 | 57,500 | 57,500 | 100,000 |
| $Fecund_{NOR}$ | 3,913 | 3,833 | 3,911 | 3,980 | 3,980 | 3,980 |
| $\%Fem_{NOR}$ | 50% | 50% | 50% | 50% | 50% | 50% |
| $SAR_{obs}$ | 4.0% | 4.0% | 4.0% | 4.0% | 4.0% | 4.0% |
| $SAR_{PDO}$ | PDO | PDO | PDO | PDO | PDO | PDO |
| $HR_{NOR}$ | 25% | 8.5% | 8.5% | 12.7% | 12.7% | 12.7% |
| $HR_{HOR}$ | 45% | 80% | 72% | 54% | 56% | 54% |
| $S_{prespawn}$ | 80% | 90% | 99% | 99% | 99% | 99% |
| $Fecund_{HOR}$ | 3,193 | 3,833 | 3,874 | 3,980 | 3,980 | 3,980 |
| $\%Fem_{HOR}$ | 50% | 50% | 50% | 50% | 50% | 50% |
| $S_{egg\text{-}smolt}$ | 85% | 81% | 90% | 95% | 85% | 95% |
| $SAR_{yearling}$ | 3.00% | 2.6% | 2.3% | 3.3% | 0.40% | 2.0% |
| $RRS_{HOS}$ | 100% | 80% | 80% | 80% | 80% | 80% |
| $\%Hatch_{return}$ | 0% | 25% | 60% | 75% | 10% | 5% |
| #Yearlings | Input | Input | Input | Input | Input | Input |
| $Brood_{local}$ | Calculated | Calculated | Calculated | Calculated | Calculated | Calculated |
| $\%NOR_{max}$ | 30% | 30% | 30% | 30% | 30% | 30% |

Colors denote confidence levels in the parameter values (Green = High), (Yellow = Moderate), (Red = Low).

# Demographic Geneflow Model (DGM)




Bases geneflow on the overlap in the hatchery and wild spawning period

- Hatchery spawning from hatchery data.
- Wild spawning from redd data.

Uses hatchery releases and escapement along with an assumption of trapping efficiency to determine gene flow.

# Geneflow Model Assumptions

- Hatchery spawning and trap dates to determine mean spawn date and cutoff (e.g. March 15th)
- Model results has a high-level of sensitivity to trapping efficiency.
  - ➢ Lacking data on actual trapping efficiency
- Uses six-year average for hatchery and wild escapement

| Natural Stock: | North River Wild | | | | Willapa River Wild | | | | Naselle River Wild | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hatchery Stock: | Forks Creek EWS | | | | | | | | Naselle EWS | | | |
| Parameter | Stray Rate = 0.20 | | Stray Rate = 0.30 | | Stray Rate = 0.20 | | Stray Rate = 0.30 | | Stray Rate = 0.40 | | Stray Rate = 0.50 | |
| | $K_1$= 0.02 | $K_1$= 0.13 | $K_1$= 0.02 | $3_1$= 0.18 | $K_1$= 0.02 | $K_1$= 0.13 | $K_1$= 0.02 | $K_1$= 0.13 | $K_1$= 0.02 | $K_1$= 0.13 | $K_1$= 0.02 | $K_1$= 0.13 |
| Spawners prior to Mar15 | 0.1042 | 0.1042 | 0.1042 | 0.1042 | 0.1127 | 0.1127 | 0.1127 | 0.1127 | 0.1718 | 0.1718 | 0.1718 | 0.1718 |
| $O_N$ | 0.0401 | 0.0401 | 0.0401 | 0.0401 | 0.0535 | 0.0535 | 0.0535 | 0.0535 | 0.0409 | 0.0409 | 0.0409 | 0.0409 |
| $O_H$ | 0.0141 | 0.0141 | 0.0141 | 0.0141 | 0.0511 | 0.0511 | 0.0511 | 0.0511 | 0.0854 | 0.0854 | 0.0854 | 0.0854 |
| $K_1$ | 0.0200 | 0.1300 | 0.0200 | 0.1300 | 0.0200 | 0.1300 | 0.0200 | 0.1300 | 0.0200 | 0.1300 | 0.0200 | 0.1300 |
| $K_2$ | 0.5400 | 0.5400 | 0.5400 | 0.5400 | 0.5400 | 0.5400 | 0.5400 | 0.5400 | 0.5400 | 0.5400 | 0.5400 | 0.5400 |
| Homing Rate | 0.1000 | 0.1000 | 0.0500 | 0.0500 | 0.8000 | 0.8000 | 0.7000 | 0.7000 | 0.6000 | 0.6000 | 0.5000 | 0.5000 |
| Stray Contribution Rate | 0.1533 | 0.1533 | 0.3237 | 0.3237 | 0.0035 | 0.0035 | 0.0060 | 0.0060 | 0.0036 | 0.0036 | 0.0054 | 0.0054 |
| Hatchery Spawning Ground Strays | 100 | 100 | 210 | 210 | 141 | 141 | 241 | 241 | 145 | 145 | 217 | 217 |
| Natural Spawners | 571 | 571 | 571 | 571 | 784 | 784 | 784 | 784 | 780 | 780 | 780 | 780 |
| Adj. Natural Spawners | 637 | 637 | 637 | 637 | 884 | 884 | 884 | 884 | 942 | 942 | 942 | 942 |
| q | 0.1353 | 0.1353 | 0.2483 | 0.2483 | 0.1374 | 0.1374 | 0.2145 | 0.2145 | 0.1333 | 0.1333 | 0.1874 | 0.1874 |

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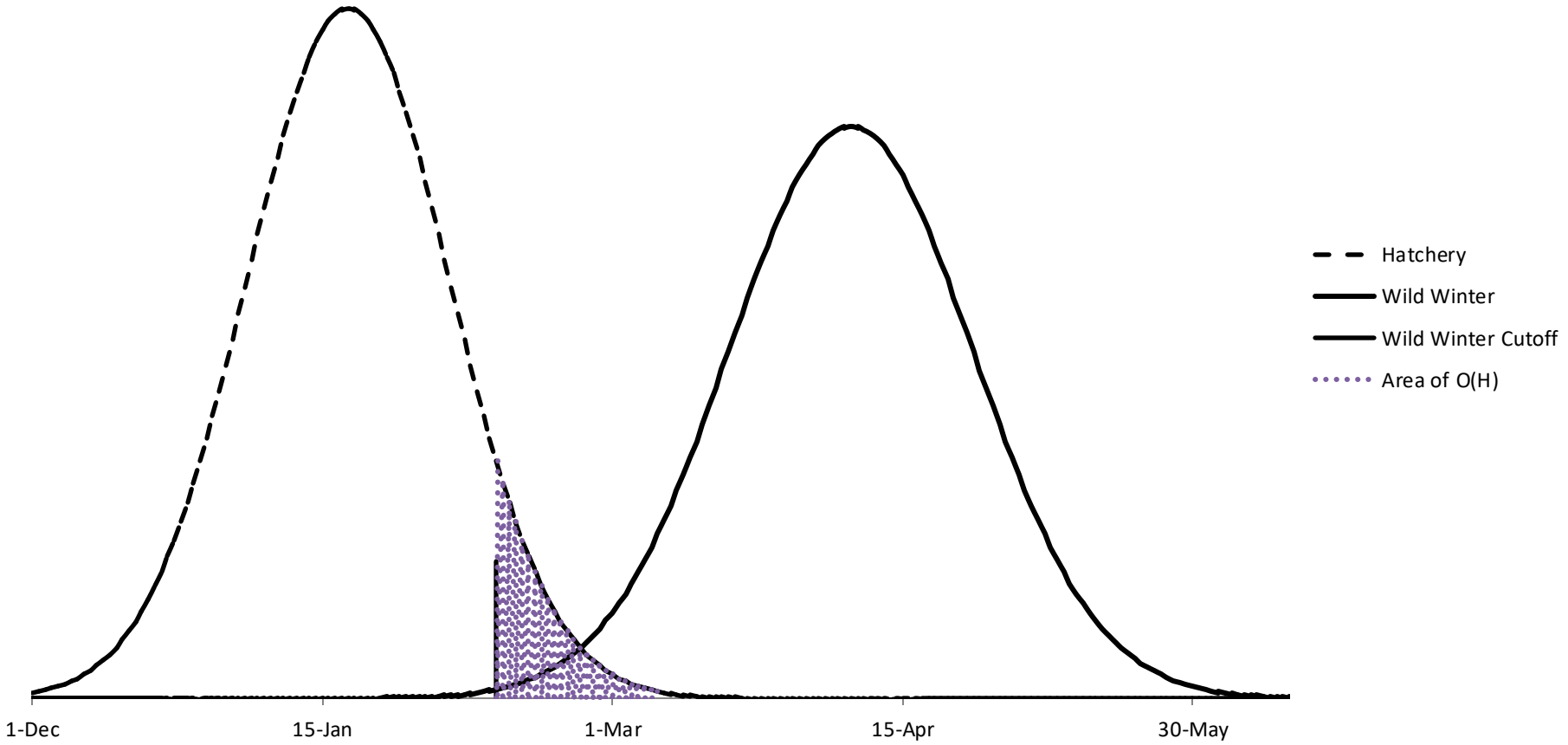
# O(H) Relative to Hatchery/Wild Spawning Overlap



# Mean Spawning Dates & Cutoff

| Facility/ Population | Population | Mean Spawning Date | Mean Spawning Day Number/[1] (day) | Standard Deviation (day) | Natural/Hatchery Cutoff Date/[2] |
|---|---|---|---|---|---|
| Bogachiel/ Calawah River | Natural Winter | April 22 | 143 | 27.6 | January 29 |
| Bogachiel | EWS | January 2 | 33 | 17.2 | February 23 |
| Bogachiel | ESS | November 16 | -15 | 18.2 | January 9 |
| Humptulips River | Natural Winter | April 28 | 149 | 15.9 | March 11 |
| Wynoochee River | Natural Winter | April 20 | 141 | 23.6 | February 12 |
| Humptulips | EWS | January 5 | 36 | 15.4 | February 20 |
| Humptulips | ESS | December 26 | 26 | 7.3 | January 17 |
| Lake Aberdeen | ESS | December 11 | 11 | 6.2 | January 1 |
| North River | Natural Winter | April 2 | 123 | 15.7 | February 18 |
| Willapa River | Natural Winter | April 7 | 128 | 19.0 | February 9 |
| Naselle River | Natural Winter | April 1 | 122 | 18.0 | February 6 |
| Forks Creek | EWS | January 19 | 50 | 15.7 | March 7 |
| Naselle | EWS | January 21 | 52 | 18.0 | March 7 |

# Acknowledgements

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Region 6 staff, including Robert Allan, Kim Figlar-Barnes, Matt Heil, Curt Holt, Kenneth Isaksson, Lyle Jennings, John Larson, Michael Lucero, Jody Pope, and Mike Scharpf, who provided invaluable data, including redd counts, harvest rates, and hatchery program information.


Questions?

# Adaptive Strategy

- Do not exceed SSMP genetic influence thresholds in Conservation Focus, Transitional, nor Maintenance
- Re-run models
- Open vs. Closed Fisheries
- Hatchery Equilibrium Protocol

Naselle Hatchery, 1963

# Wild Gene Banks (aka Wild Steelhead Management Zones)

- One WGB per major population group (MPG) in each distinct population segment (DPS) → at least one MPG per WRIA
- Sufficiently abundant and self-sustaining
- No hatchery releases
- Fisheries permitted if management objectives are met
- Stakeholder & comanager process

# Next Steps

- Read the Artificial Production section of the Statewide Steelhead Management Plan (SSMP) → come to the next meeting prepared to discuss
- Optional: Review drafts and send feedback no later than 2 weeks prior to the next meeting
- Optional: Provide feedback/ideas for freshwater test fishery
- Next meetings: August, September, November

# Zoom reminders for public comments

- You can type a question through the Q&A function or ask a question by "raising your hand." If you're calling in you can raise a hand by dialing *9 on your phone, or if you're calling from a computer, you can find the hand icon at the bottom of your screen.
- To speak you will need to unmute yourself by using the mute button on your computer or mobile device or enter *6 if you're calling from a land line.
- If you have a technical issue, please drop us a note in the Q&A and we will help you through it.
- You can also submit general feedback on coastal steelhead management at wdfw.wa.gov/coastal-steelhead