Management plans for Washington Columbia River tributary fisheries

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Washington Department of FISH & WILDLIFE

Why we're here

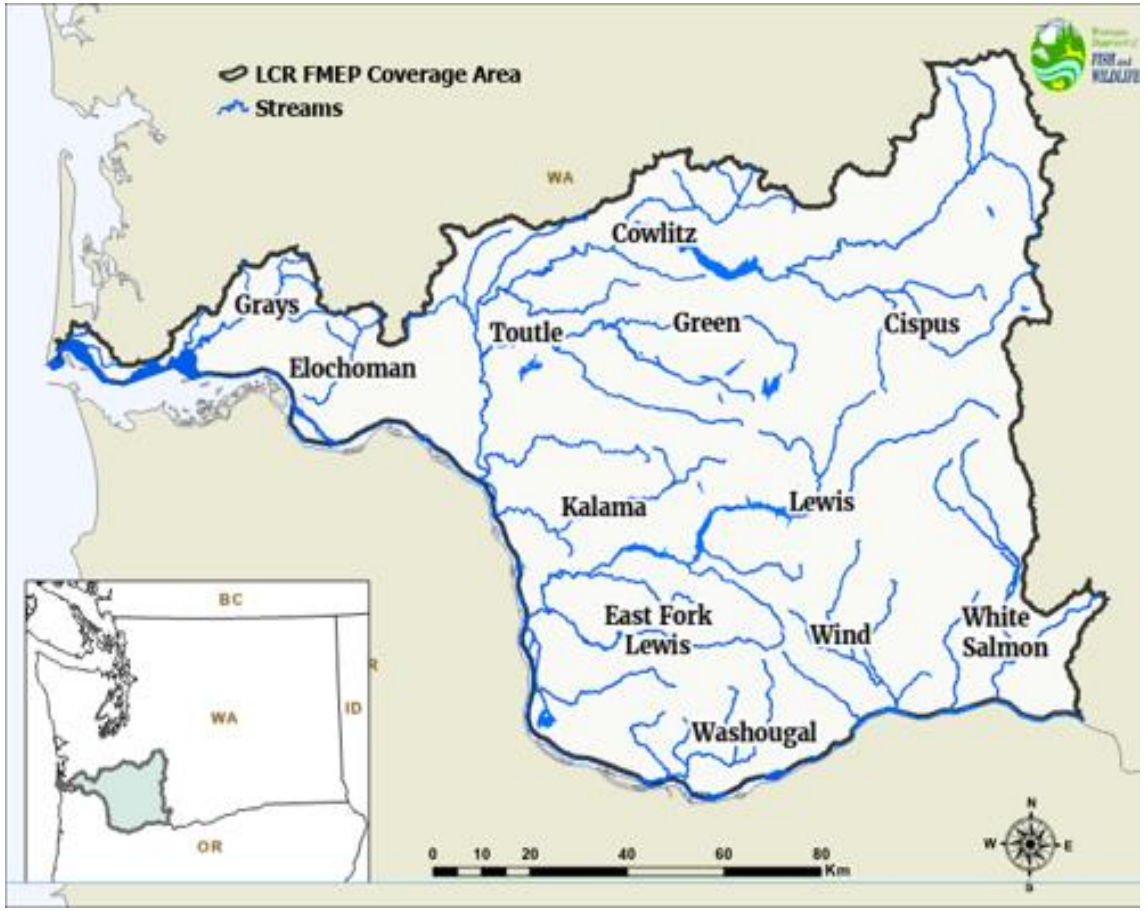
- WDFW is considering updates to the lower Columbia River (LCR) Tributary Fisheries Management and Evaluation Plan (FMEP).
- The National Oceanic and Atmospheric Administration (NOAA) requires FMEPs for fishery impacts on Endangered Species Act (ESA) listed species.

Snow fall on the Lewis River. Photo by Roderick Bosch.

Why we're here

LCR Tributary FMEP

- Permits fishery impacts on fish listed under the ESA Section 4(d).
- Coho, Chinook, chum, and steelhead listed as threatened in LCR.
- Washington tributaries only.
- Sets Harvest Control Rules (HCRs): targets for total allowable fishing mortality.



Lower Columbia River FMEP Coverage Area. Graphic by WDFW

Why we're here

- Current WA LCR Tributary FMEP was last updated in 2003.
- Opportunity to use Management Strategy Evaluation (MSE).
- MSE allows WDFW to assess long-term effects of management options on fish populations and fishing opportunities.
- Planning cycle every 5-10 years.
- Cyclical adaptive management.

Coho harvested in the Klickitat River. Photo by Eugene Nicholas.

Why we're here

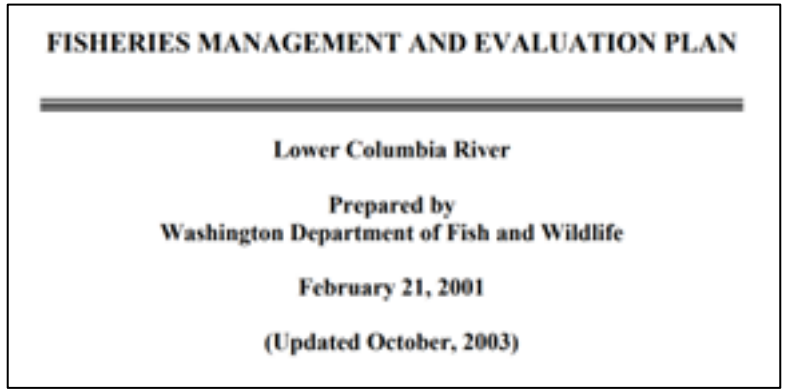
- The MSE assesses the trade-offs between different harvest control rules (HCRs).
- WDFW wants to understand anglers' fishery preferences to help managers choose which HCR options to select.

Columbia River at sunset. Photo by Kelly Hall.

FMEP vs. regulations

Fisheries Management Plan

- Strategy
- Sets harvest control rules
- Sets harvest impact targets
- Does not change annually
- Cyclically re-evaluated
- Described in FMEP


FISHERIES MANAGEMENT AND EVALUATION PLAN

Lower Columbia River

Prepared by
Washington Department of Fish and Wildlife

February 21, 2001

(Updated October, 2003)

Fishing regulations

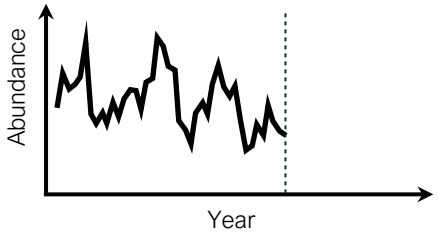
- Tactics
- Tools used to meet impact targets in FMEP
- Both permanent and emergency rules
- May change in-season
- Described in annual fishing pamphlet

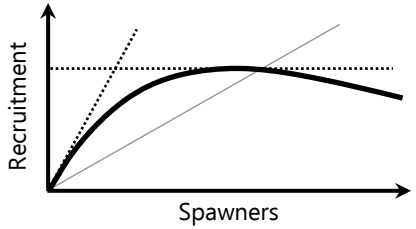
What is Management Strategy Evaluation (MSE)?

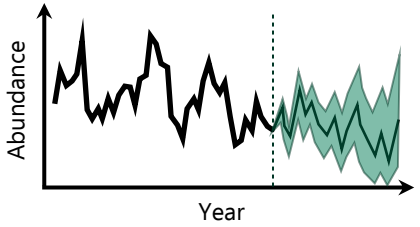
- MSE is a general term for this type of tool.
- WDFW is implementing the MSE process for salmon and steelhead fishery management for the first time.
- MSE helps fishery managers decide which harvest control rule (HCR) to select based on **conservation risk** and availability of **fishing opportunities**.

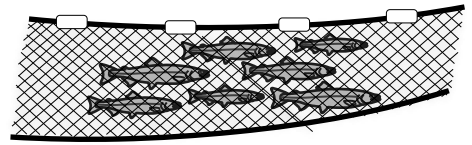
Management strategy Evaluation process

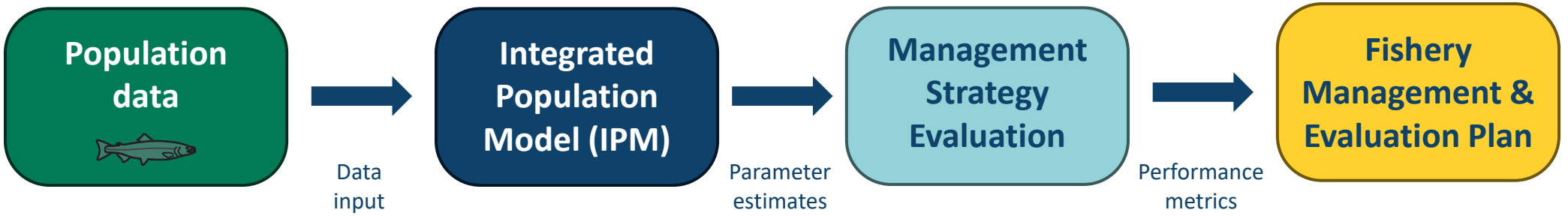
1. **Gather data about fish (comes from monitoring programs)**
2. **Fit a statistical population model based on the data**
3. **Simulate what will happen to fish populations given different HCRs**
4. **Assess the trade-offs associated with each HCR option**











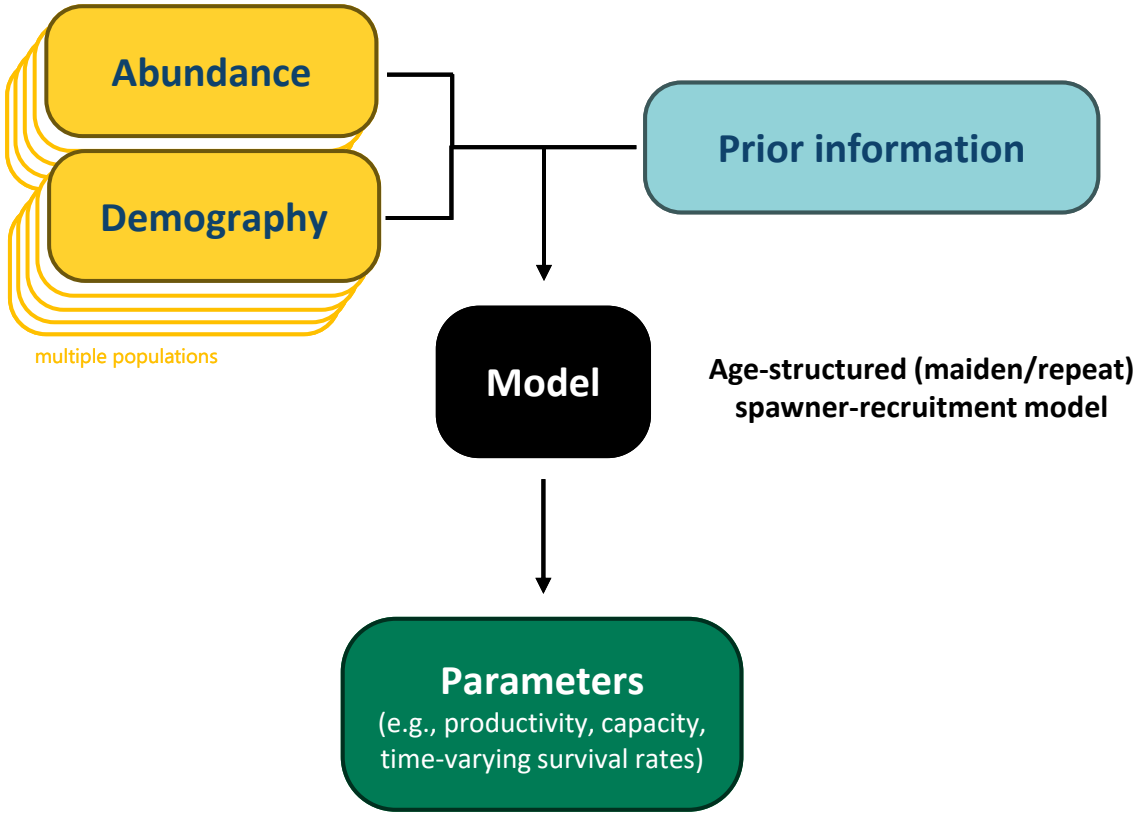
1. Collect fish population data

- Abundance
- Total impacts
  - Harvest
  - Catch and release mortality
  - Hatchery removals
- Percent hatchery origin spawners (pHOS)
- Age structure

WDFW staff records data while sampling hatchery Chinook. Photo by WDFW.

2. Integrated Population Model (IPM)

- The IPM is a statistical tool that combines multiple types of data to offer a comprehensive view of fish population characteristics including:
  - Growth
  - Survival
- The IPM allows for sharing of information across populations.



3. Select Harvest Control Rules (HCR)

What are HCRs?

- A target for the number of fish that die due to fishing known as “total impacts.”
- Escapement goal
  - Target number of fish that reach the spawning grounds.
- Harvest or impact rate
  - Harvest
  - Catch and release mortality
  - Hatchery removals

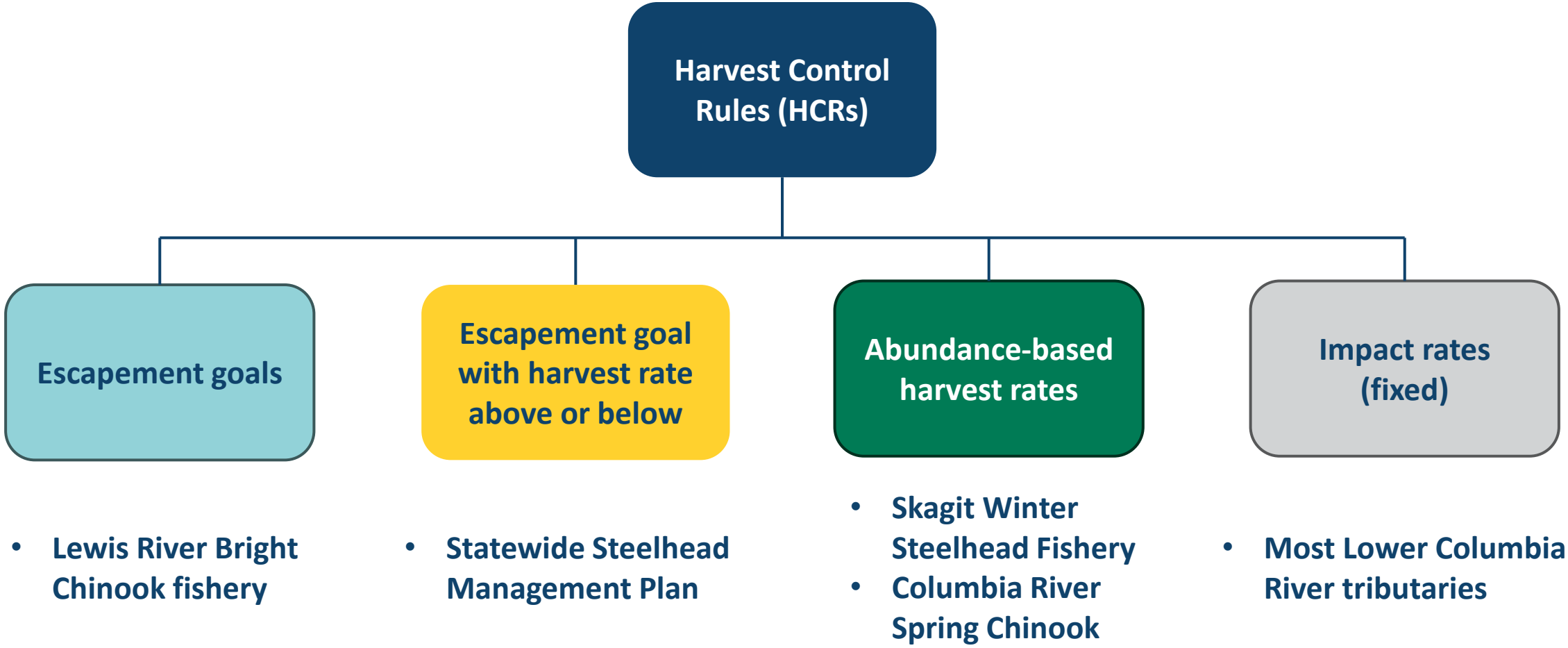
Chum salmon swimming upstream. Photo by WDFW.

Harvest Control Rule examples

- In these examples, consider there are 1,400 fish in a run.
- **Fixed harvest rate of 10%**
  - 1,400 x 10%
  - 140 fish can die
- **Escapement goal of 1260 fish**
  - 1,400 – 1,260
  - 140 fish can die

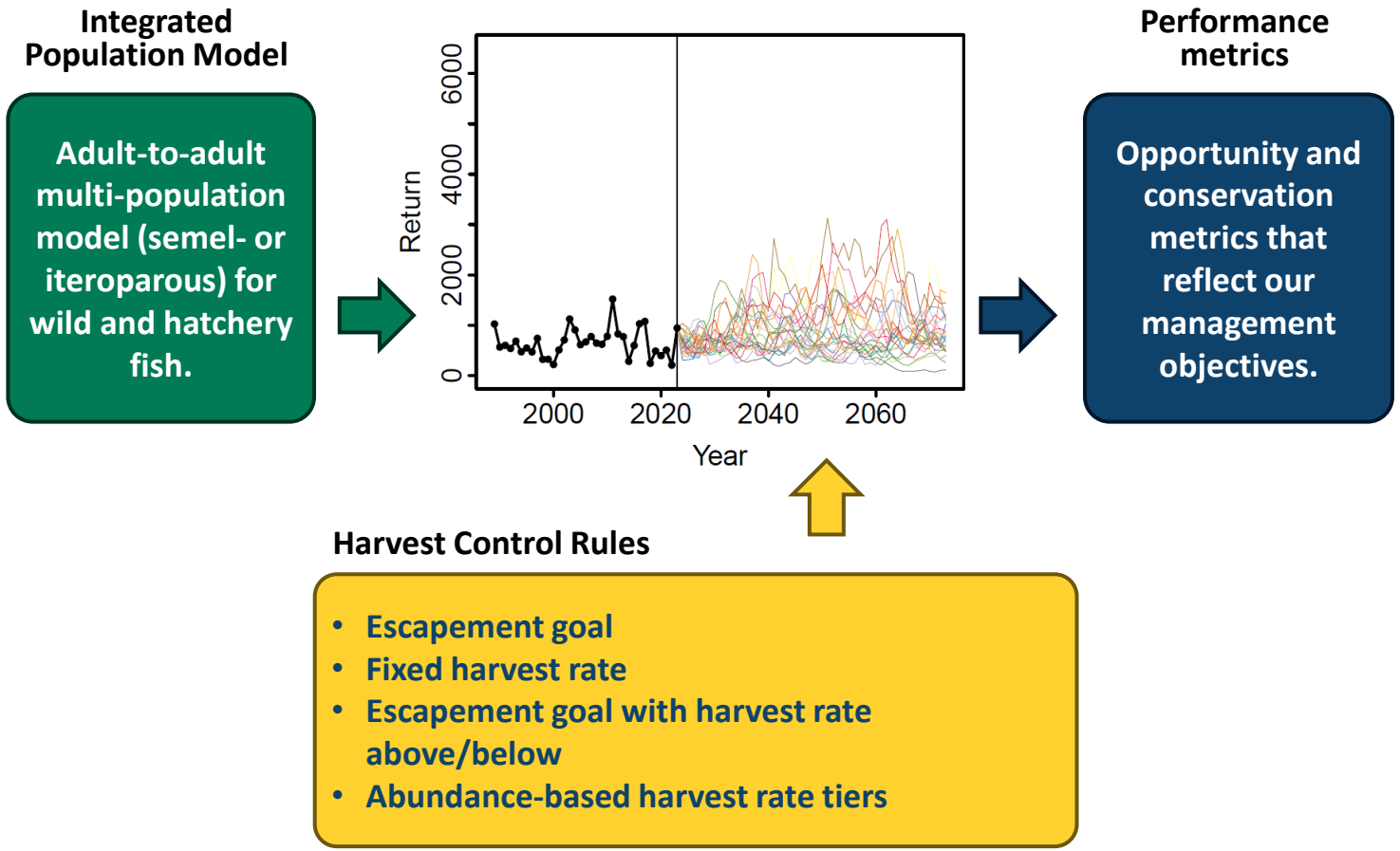
Adult coho salmon. Photo by WDFW.

MSE Harvest Control Rules



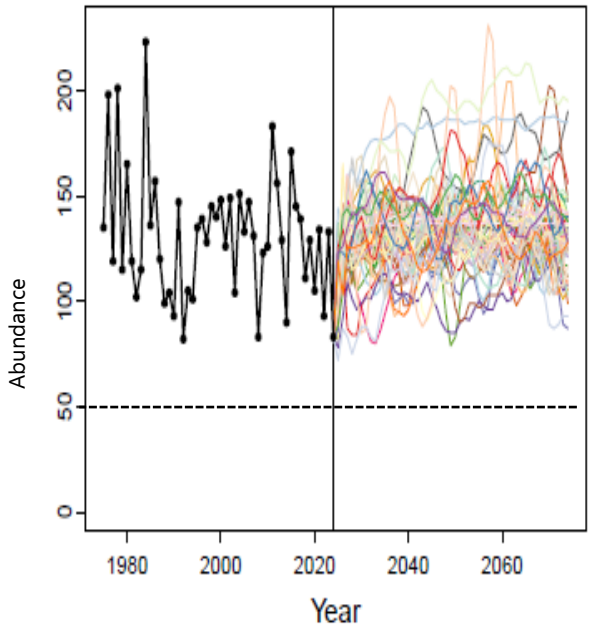
IPM to MSE

- Project populations forward using information from IPM.
- Apply alternative harvest control rules during forward projections.
- Repeat many times to account for process and parameter/implementation uncertainty.
- Assume hatchery influences, mainstem/ocean harvest rates will remain the same in the future as in recent past.

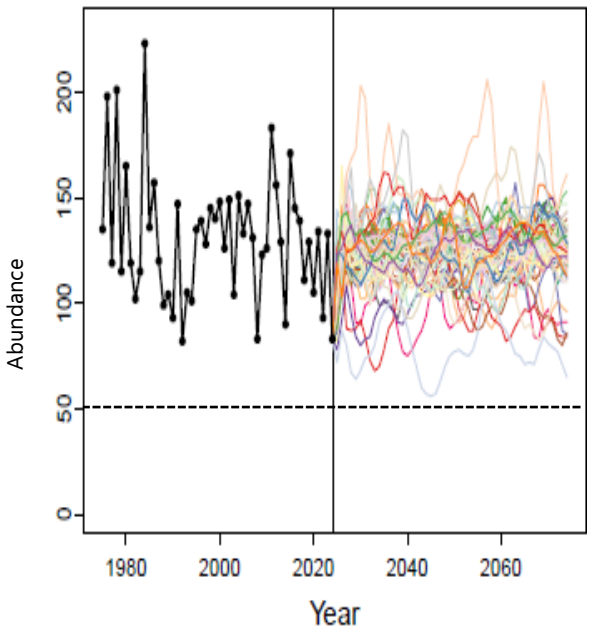


What will happen to fish population in the future?

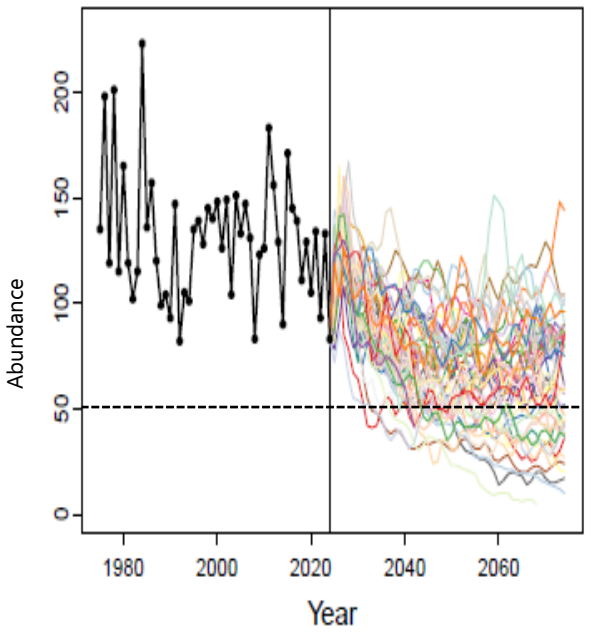
Harvest rate fixed at 10%



Harvest rate fixed at 30%



Harvest rate fixed at 50%



Performance metrics

e.g., probability of abundance below quasi-extinction threshold

4. MSE: Evaluating trade-offs

For each Harvest Control Rule option, how much fishing opportunity will there be and how much conservation risk is there?

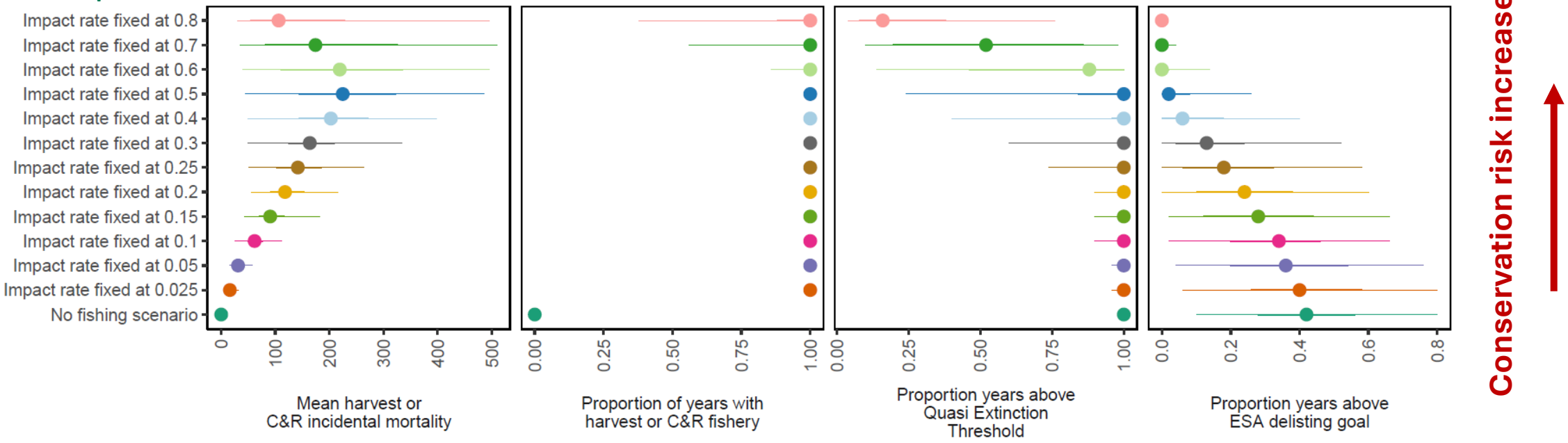
- “Conservation metrics”
- “Opportunity metrics”

Angler posing with wild steelhead before successful release. Photo by William Kupar.

Opportunity and conservation metrics

Opportunity Metrics:
How much fishing would be possible?

Conservation Metrics:
What is the risk to fish populations?

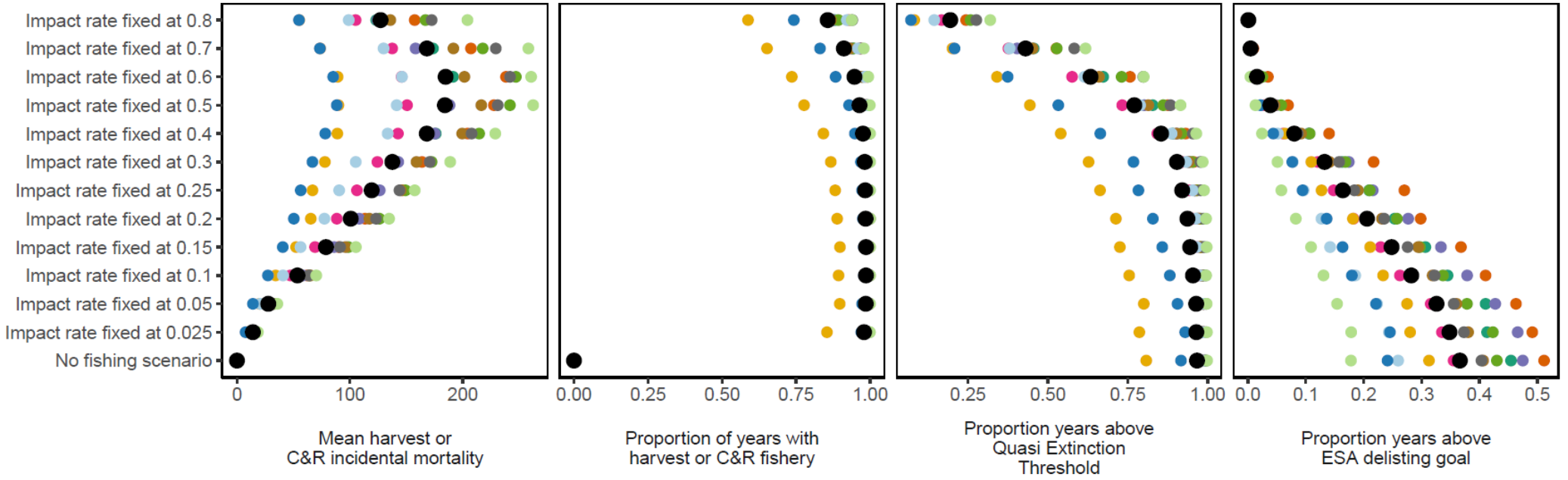


- Single population, with uncertainty (observation, process, estimation, implementation)

Opportunity and conservation metrics

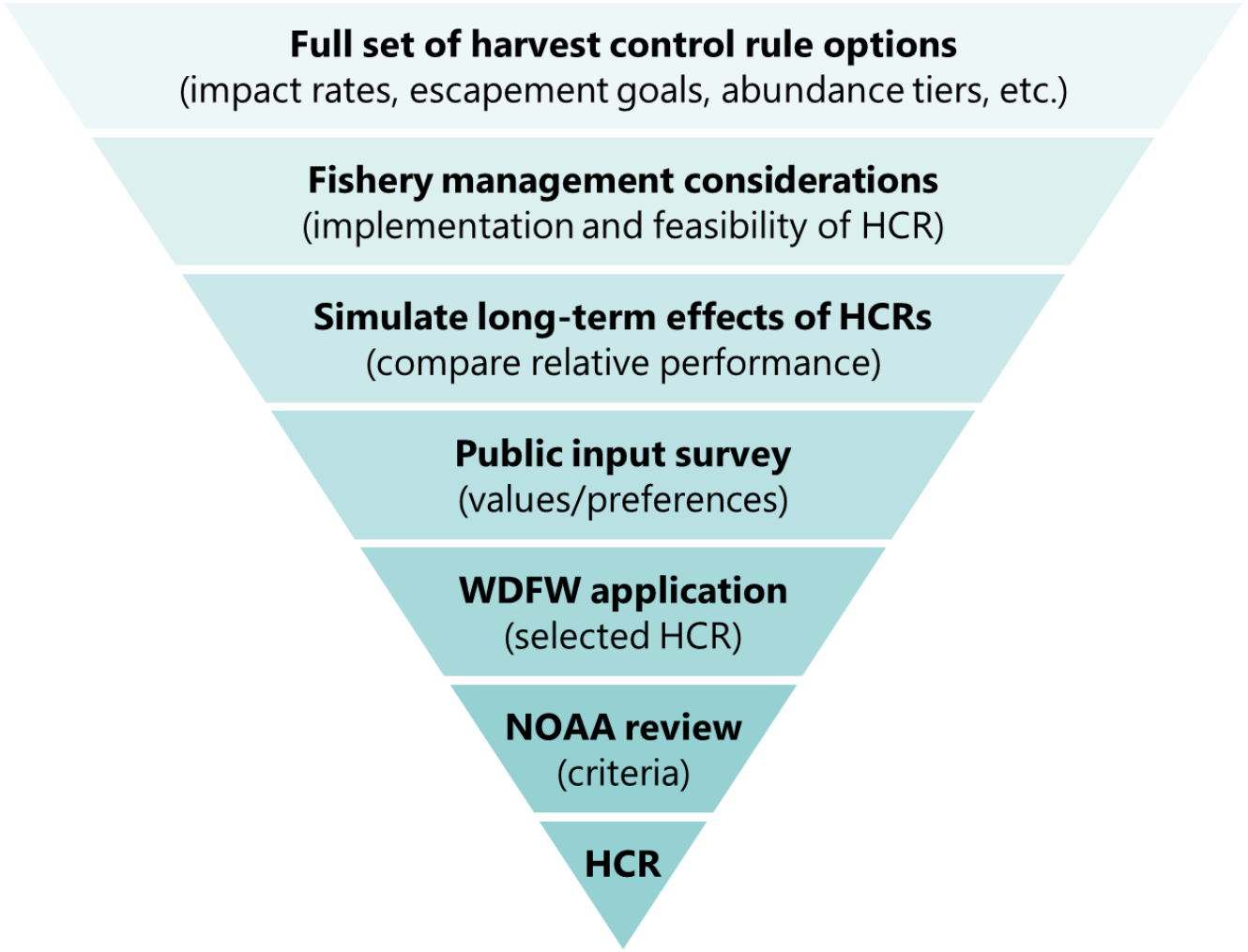
Opportunity Metrics:
How much fishing would be possible?

Conservation Metrics:
What is the risk to fish populations?



- Multiple populations

MSE Harvest Control Rules



Public input process

- Involve the public in the decision making process.
- Transparency in how fisheries are managed.
- Produces useable data.
- Three step process:
  - Blog post.
  - Public meeting.
  - Online survey (30 questions)

Survey goals

1. How does the public value measures of fishery performance in terms of both conservation and opportunities?
2. How do these values correlate to preferences for specific harvest control rules?
3. Which harvest control rules does the public prefer?
4. Do values or preferences differ across fisheries and/or demographic groups?

Public input process

- This survey is **not a vote**.
- Survey responses will be used to help fishery managers understand public preferences.
- Fishery managers will make the final decisions.
- WDFW plans to share a summary of the results with the public.

WDFW staff records data from a fall Chinook carcass. Photo by WDFW.

About the survey

- Six sets of questions.
- Likert scale and multiple choice.
- Demographics and fishery participation.
- Anonymous and voluntary.
- Should take 10-15 minutes to complete.
- Survey will be available after meeting.

Likert scale questions

*** Fishing opportunities and preferences**

1. On a scale from 1 to 5, please indicate the extent to which you agree or disagree with the following statements.

	1. Strongly disagree	2. Somewhat disagree	3. Neutral	4. Somewhat agree	5. Strongly agree
I value having opportunities to harvest hatchery steelhead.	○	○	○	○	○
I value having opportunities to harvest hatchery salmon.	○	○	○	○	○
I value having opportunities to catch and release wild, or unclipped, steelhead.	○	○	○	○	○
I value having opportunities to catch and release wild, or unclipped, salmon.	○	○	○	○	○
I value having opportunities to harvest wild, or unclipped, salmon.	○	○	○	○	○

Potential fishery options

Potential Coho Harvest Fishery

Options	Harvest	Open/Closed	Quasi-Extinction Risk	Recovery Potential
	On average, how many fish could be harvested annually?	On average, in how many years out of 100 will the fishery be closed?	On average, in how many years out of 100 will the population be at very high risk of extinction? *	On average, in how many years out of 100 will there be enough fish to meet the Endangered Species Act recovery goal?
Option A	0	Always closed	2 years	71 years
Option B	283	1 year	2 years	67 years
Option C	512	1 year	2 years	64 years
Option D	1,001	1 year	2 years	58 years
Option E	1,433	2 years	3 years	52 years
Option F	1,619	2 years	3 years	45 years

* Very high risk of extinction is defined at the quasi-extinction threshold (QET), which is the level below which the population is unlikely to recover. For most populations, the QET is 50 fish.

Acknowledgements

This work was made possible through the Washington State Legislature's 2023-2025 biennial budget allocation for Columbia River ESA Permitting.

Questions?

Please read the ground rules before participating in the question and answer.

Request this information in an alternative format or language at wdfw.wa.gov/accessibility/requests-accommodation, 833-885-1012, TTY (711), or CivilRightsTeam@dfw.wa.gov.

Q&A ground rules

- This is a **Q&A session**, not an open public comment opportunity.
- Please keep questions focused on the topic. Off-topic questions will not be answered.
- Only one opportunity to ask questions to ensure fairness.
- Back-and-forth discussion will not be allowed.
- Follow-ups may be addressed if time allows.
- Please keep questions concise.
- **Be respectful**.

Acronym key

- **LCR**: Lower Columbia River
- **FMEP**: Fishery Management and Evaluation Plan
- **NOAA**: National Oceanic and Atmospheric Administration
- **IPM**: Integrated Population Model
- **ESA**: Endangered Species Act
- **MSE**: Management Strategy Evaluation
- **HCR**: Harvest Control Rule
- **pHOS**: Percent hatchery origin spawners

Bull trout

- While bull trout are largely absent from Lower Columbia River tributaries, some small populations do exist.
- WDFW's ESA Section 6 Cooperative Agreement with the U.S. Fish and Wildlife Service provides statewide coverage of incidental take of bull trout associated with recreational fisheries targeting resident and anadromous fish species.

Two bull trout. Photo by WDFW.