Oregon DEQ Aquatic Life Use Updates

Rule Advisory Committee Meeting #2

1. Welcome and Introduction

Feb. 28, 2022

Welcome!

Zoom meeting logistics

- Trina Brown – DEQ Admin. Support
- “Raise hand” to be recognized for questions or comments  
- Feel free to post questions into the chat and we will respond
- If you are listening on the phone:
  - Press *9 To raise your hand
  - Press *6 Unmute/Mute your line
- Today’s meeting will be recorded

Agenda

Time	Topic
9 a.m.	Welcome and Introduction
9:15 a.m.	Temperature Decision Rules and Designation Methods (James McConaghie, DEQ)
10:30 a.m.	Break
10:40 a.m.	Temperature Decision Rules cont.
11:15 a.m.	Draft Temperature Use Maps – Online Web Viewer Orientation and Discussion
12 p.m.	Lunch Break
1 p.m.	Documenting potential use changes and justification (Aron Borok, DEQ)
2:30 p.m.	Break
2:40 p.m.	Crooked River pH criteria
3:45 p.m.	Wrap-Up
4:30 p.m.	Adjourn

Meeting Objective

- Review methods for designating temperature use subcategories
- Provide overview of inline draft map viewer and discussion draft maps
- Discuss strategy for documenting use changes
- Review miscellaneous rule amendments

Follow Up From Last Meeting

- Any corrections for meeting summary
- Any corrections for Charter

Discussion Ground Rules

- Be respectful of each other
- Raise your virtual hand to speak
- Speak for yourself when recognized
- Stay on mute unless speaking
- Stay on topic in the chat
- Let others speak without interrupting

Questions about today's meeting?

Image Source: ODFW

Rule Advisory Committee Meeting #2

2. Temperature Use Subcategory Methodology and Updates

Oregon DEQ Aquatic Life Use Updates

Feb. 28, 2022

Objectives

- Inform stakeholder group about how proposed designation updates come about
- Review methods for each temperature subcategory designation
- Looking for statewide perspectives on methodology.
- Focus primarily on changes to the methods and consequences of application.
- Temperature criteria are not being revised at this time.

Purpose of the Temperature Standards

"Protect designated uses and account for the natural temporal and spatial variability of stream temperatures."

Lostine River, Wallowa Mountains- August

Source: Debra Sturdevant

Temperature Subcategory Species List

Anadromous Fish

- Chum
- Coho
- Fall Chinook
- Spring Chinook
- Sockeye
- summer steelhead
- winter steelhead

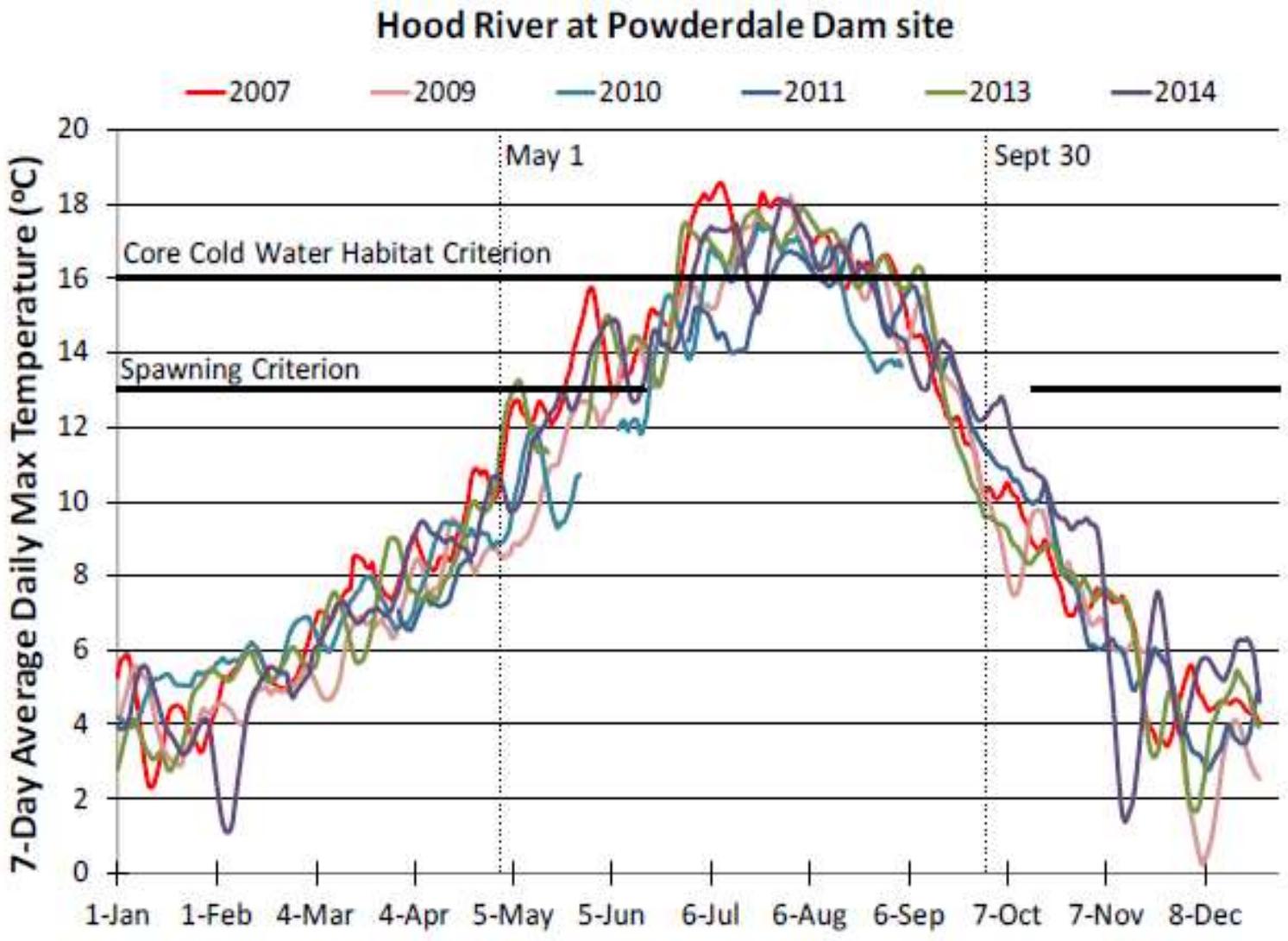
Resident Fish

- Rainbow Trout
- Cutthroat Trout
  - Coastal
  - Westslope
  - Lahontan
- Redband Trout
- Mountain Whitefish
- Bull Trout (char)

What are the Designated Uses and Criteria for Temperature?

Aquatic Use Subcategory	Criterion (7dADM-°C)
Bull Trout Spawning and Juvenile Rearing	12°C
Salmon and Steelhead Spawning	13°C
Core Cold Water Habitat	16°C
Salmon and Trout Rearing and Migration	18°C
Salmon and Steelhead Migration Corridors	20°C
Redband or Lohantan Cutthroat Trout	20°C
Cool Water Species	narrative
Borax Lake Chub	narrative

*Protecting cold water provision
*Upstream waters rule


Hood River at Powderdale Dam site
2007
2009
2010
2011
2013
2014
7-Day Average Daily Max Temperature (°C)
20
18
16
14
12
10
8
6
4
2
0
May 1
Sept 30
Core Cold Water Habitat Criterion
Spawning Criterion
1-Jan
1-Feb
4-Mar
4-Apr
5-May
5-Jun
6-Jul
6-Aug
6-Sep
7-Oct
7-Nov
8-Dec

Separate criteria for waterbodies

Oceans and Bays
- Separate narrative criteria

Natural Lakes
- Separate narrative criteria

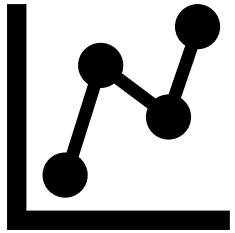
Reservoirs and Estuaries
- Use assigned as for rivers and streams according to methods.
- Not expected to support spawning uses (more on this later)

* Availability of more accurate and complete hydrography data can change the location where we understand these waterbodies and uses occur.

Technical evaluation process

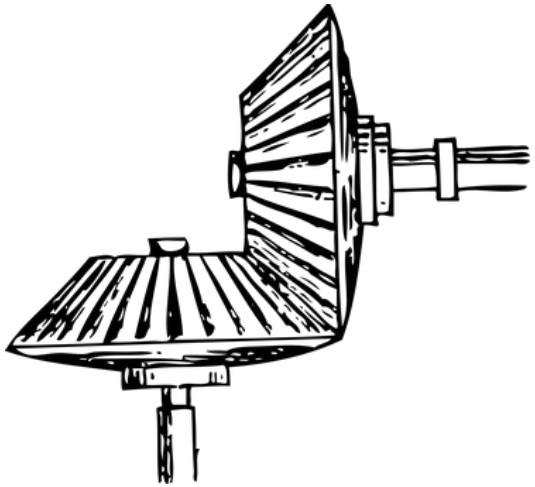
Regulations

Data



‘Defines’ the designated uses and information for identifying them

Decision Rules



‘Method’ to apply data in a way that matches the regulations

Aquatic Life Use designations

TABLE 121B

BENEFICIAL USE DESIGNATIONS - FISH USES
MAINSTEM SNAKE RIVER

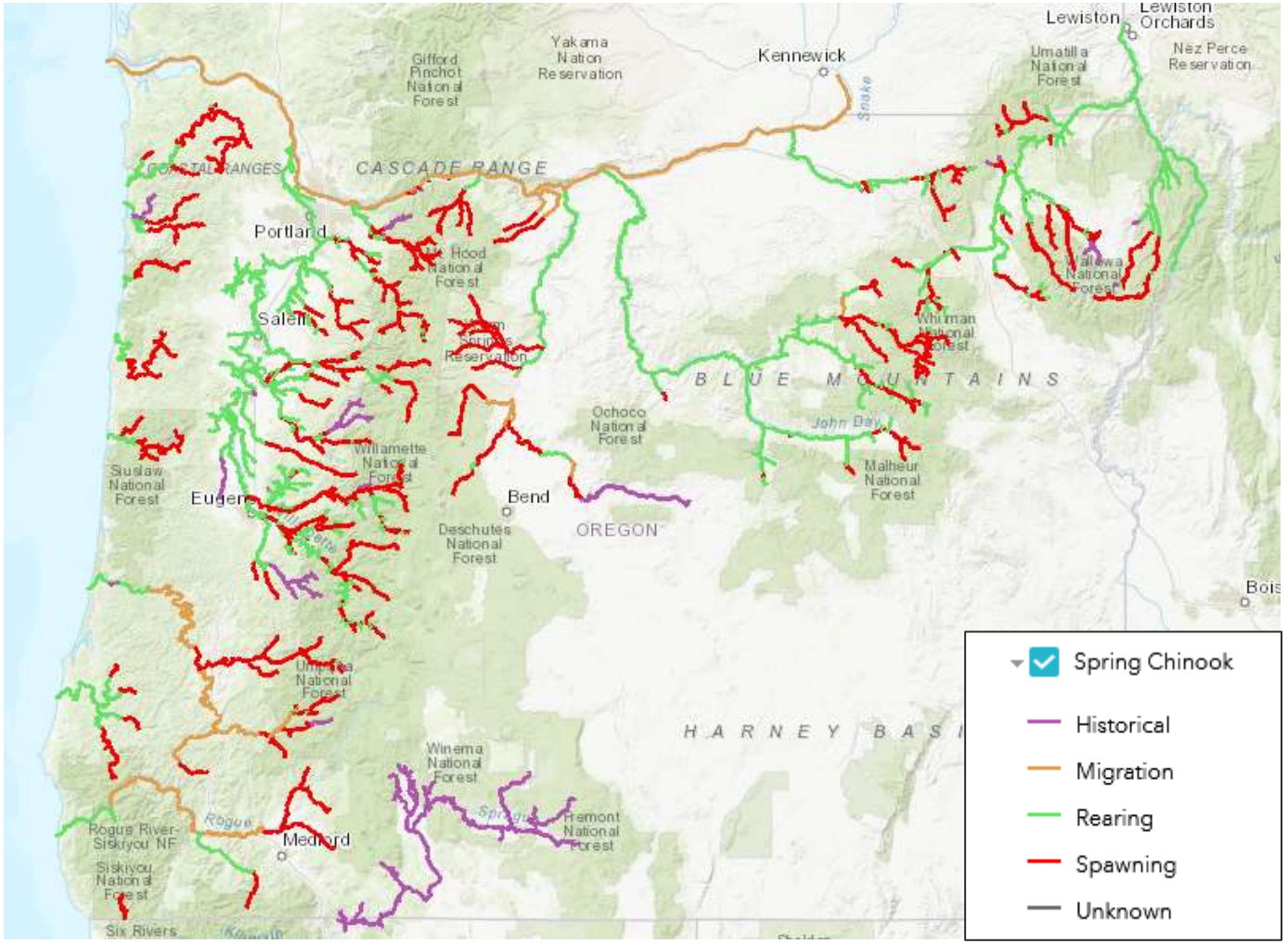
Geographic Extent of Use	Salmon and Steelhead Migration Corridors (20°C)	Redband or Lahontan Cutthroat Trout (20°C)	Salmon and Steelhead Spawning through Fry Emergence
Mainstem Snake River			
Oregon/Washington Border to Hells Canyon Dam (RM 169 to RM 247.5)	X		October 23-April 15
Hells Canyon Dam to Idaho border (RM 247.5 to RM 409)		X	

Table produced November 2003

‘Depiction’ of the use designations

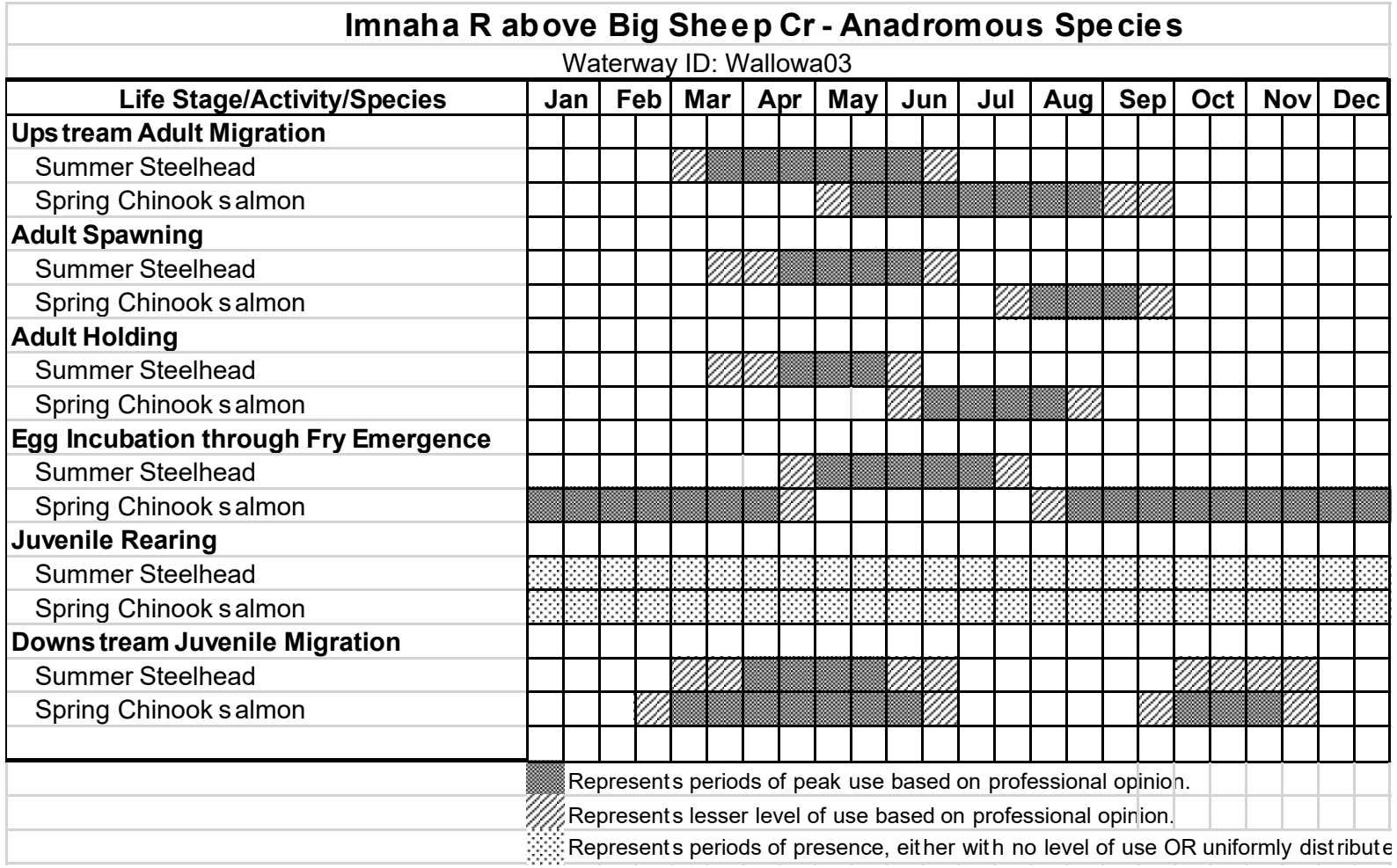
‘Where’ – Fish Habitat Distribution

- Primarily rely on ODFW ‘Fish Habitat Distribution Database’
- Maps where species are distributed
- What habitat use / life stages occur there



‘When’ – Life Stage Timing Data

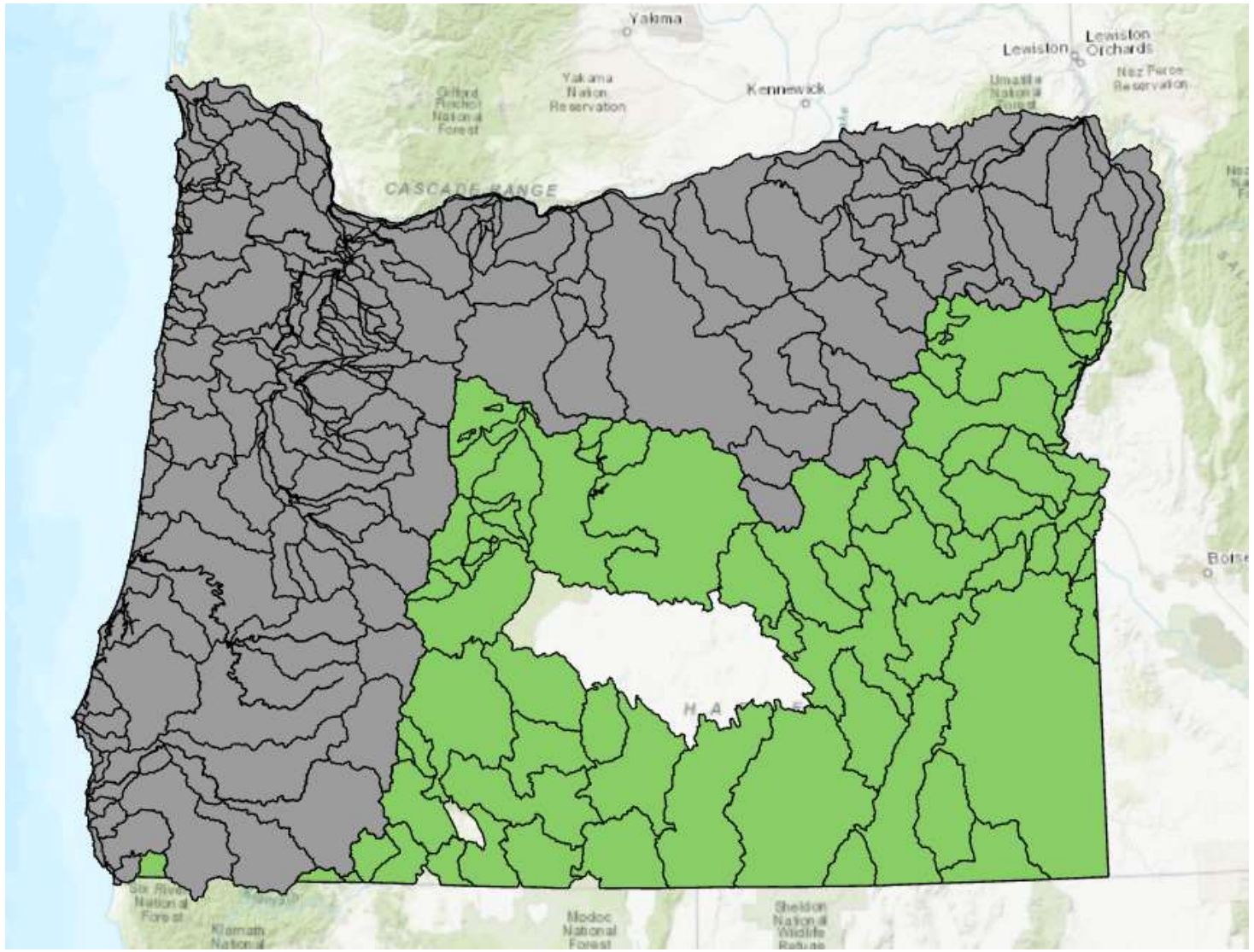
- Also rely on ODFW
- Show *when* life stage activities shown on the maps occur.
- 2-week resolution



When' – Life Stage Timing Data

"Timing Units"

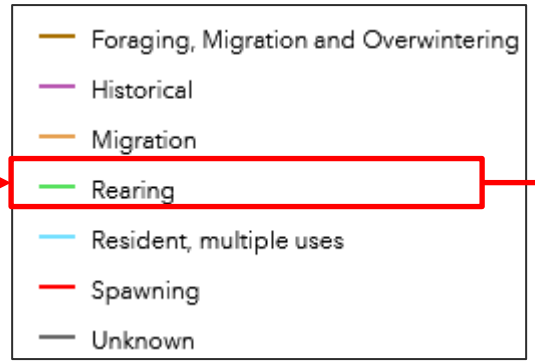
- Units 2003
- Additional units 2021



Example: Turning (FHD) data into Aquatic Life Use Subcategories

ODFW-FHD Database

- Species specific habitat
- Life-stage specific timing



Bull Trout Spawning and Juvenile Rearing

Salmon and Steelhead Spawning

Core Cold Water Habitat

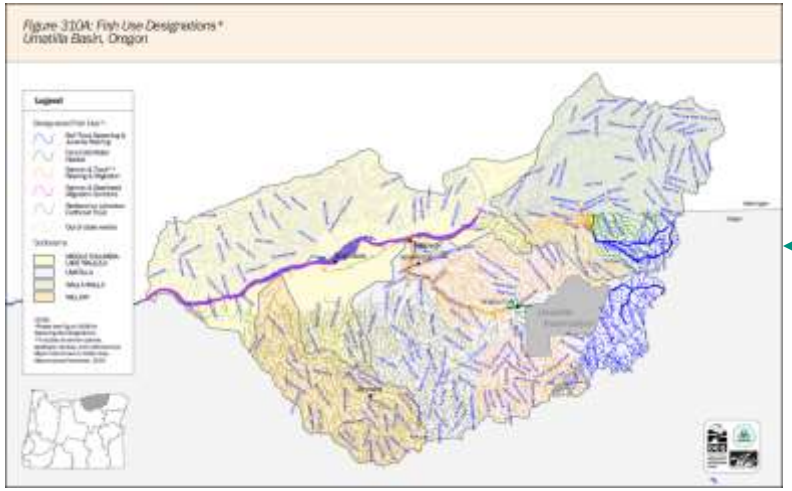
Salmon and Trout Rearing and Migration

Salmon and Steelhead Migration Corridors

Redband or Lohantan Cutthroat Trout

Cool Water Species

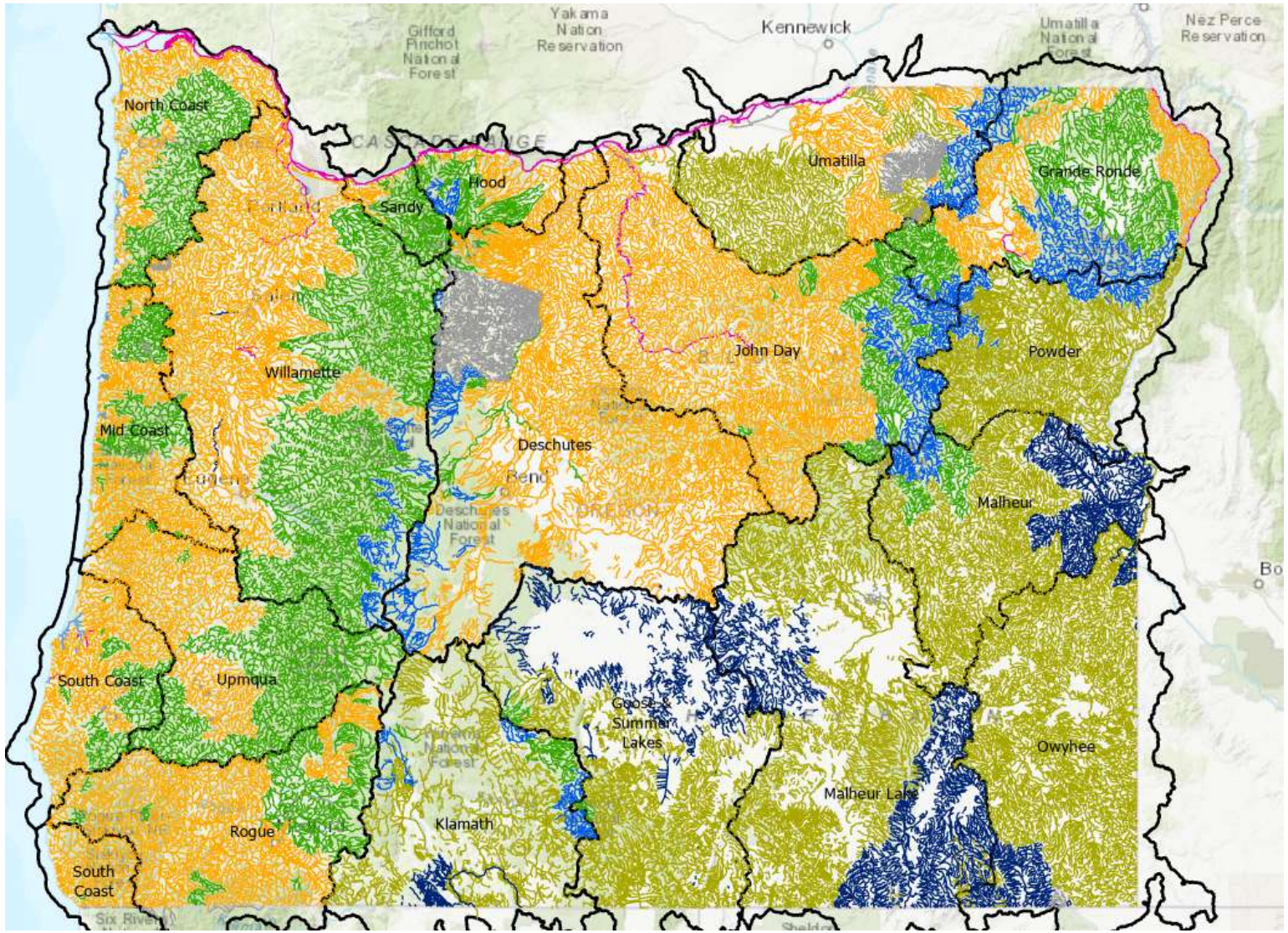
Borax Lake Chub



Aquatic Life Use Subcategories Overview Map

Legend

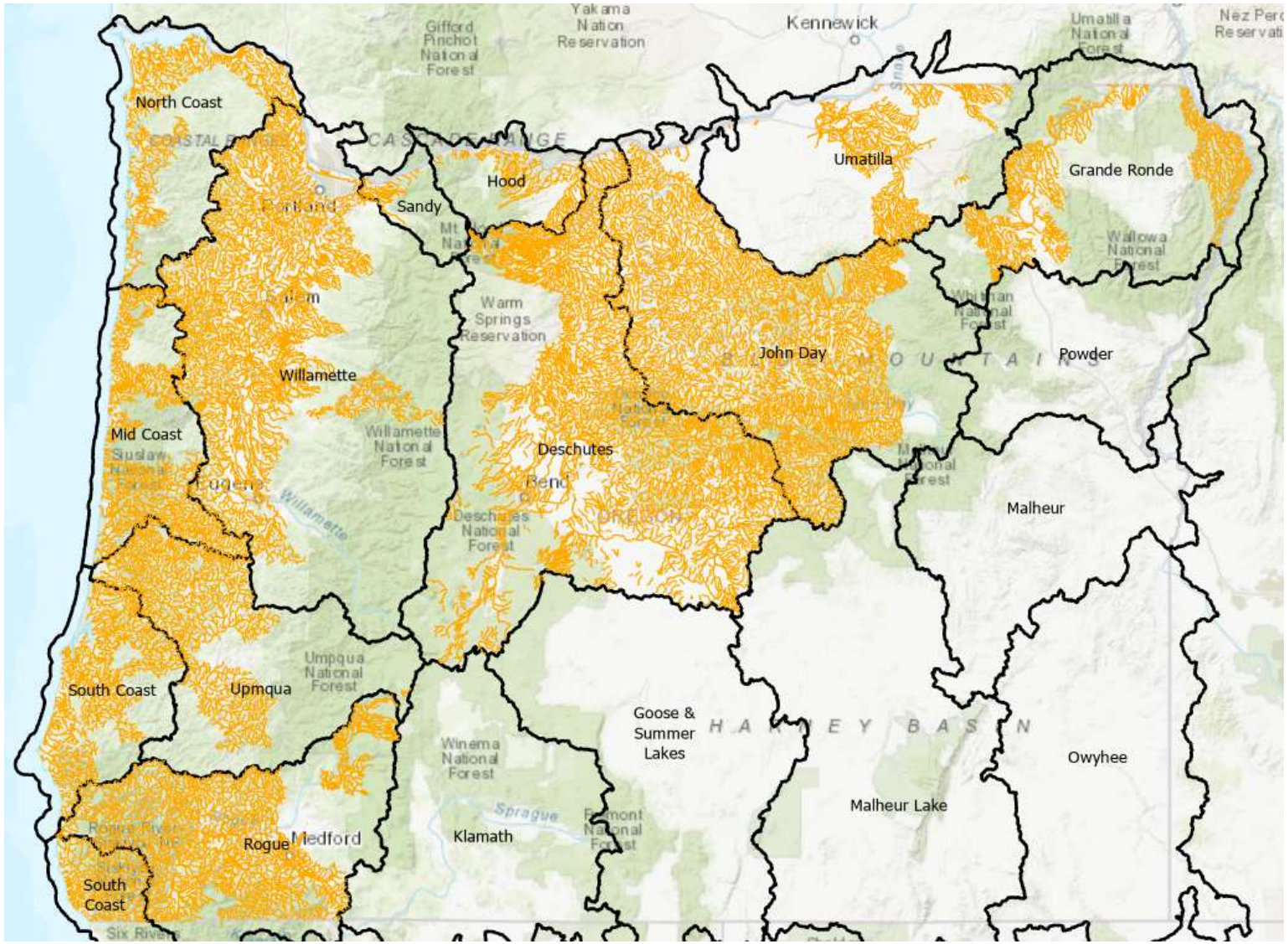
- Cool Water Species
- Borax Lake Chub (Warm Water Species)
- Bull Trout Spawning & Juvenile Rearing
- Core Cold Water Habitat
- Salmon and Trout Rearing & Migration
- Salmon and Steelhead Migration Corridors
- Oceans and Bays
- Redband or Lahontan Cutthroat Trout
- Out of Jurisdiction / Not Designated



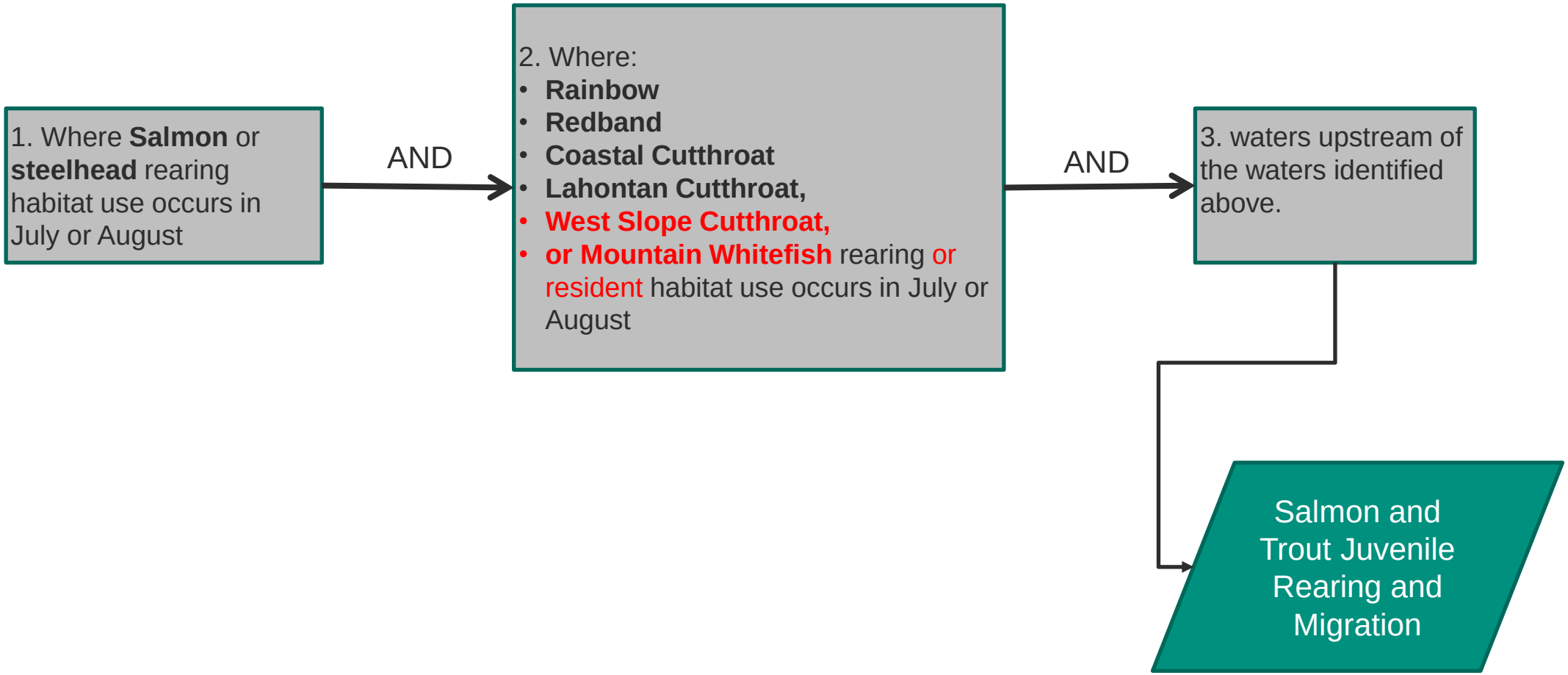
Salmon and Trout Rearing & Migration

OAR-340-041-0002(53): "Salmon and Trout Rearing and Migration Use" means thermally suitable rearing habitat for salmon, steelhead, rainbow trout, and cutthroat trout

Year-round
18°C 7-dADM

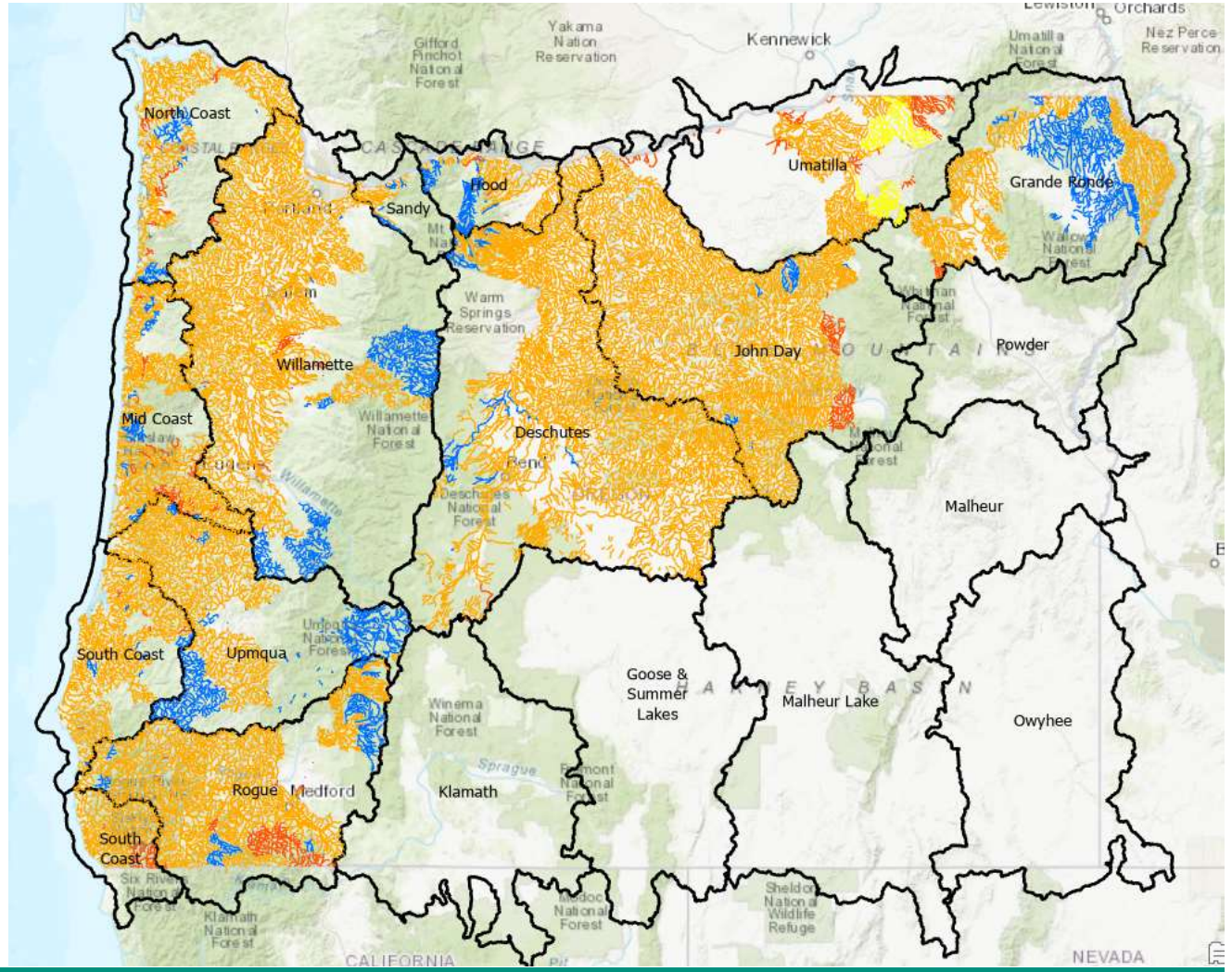


Salmon and Trout Rearing & Migration Decision Rules



Salmon and Trout Rearing & Migration Changes

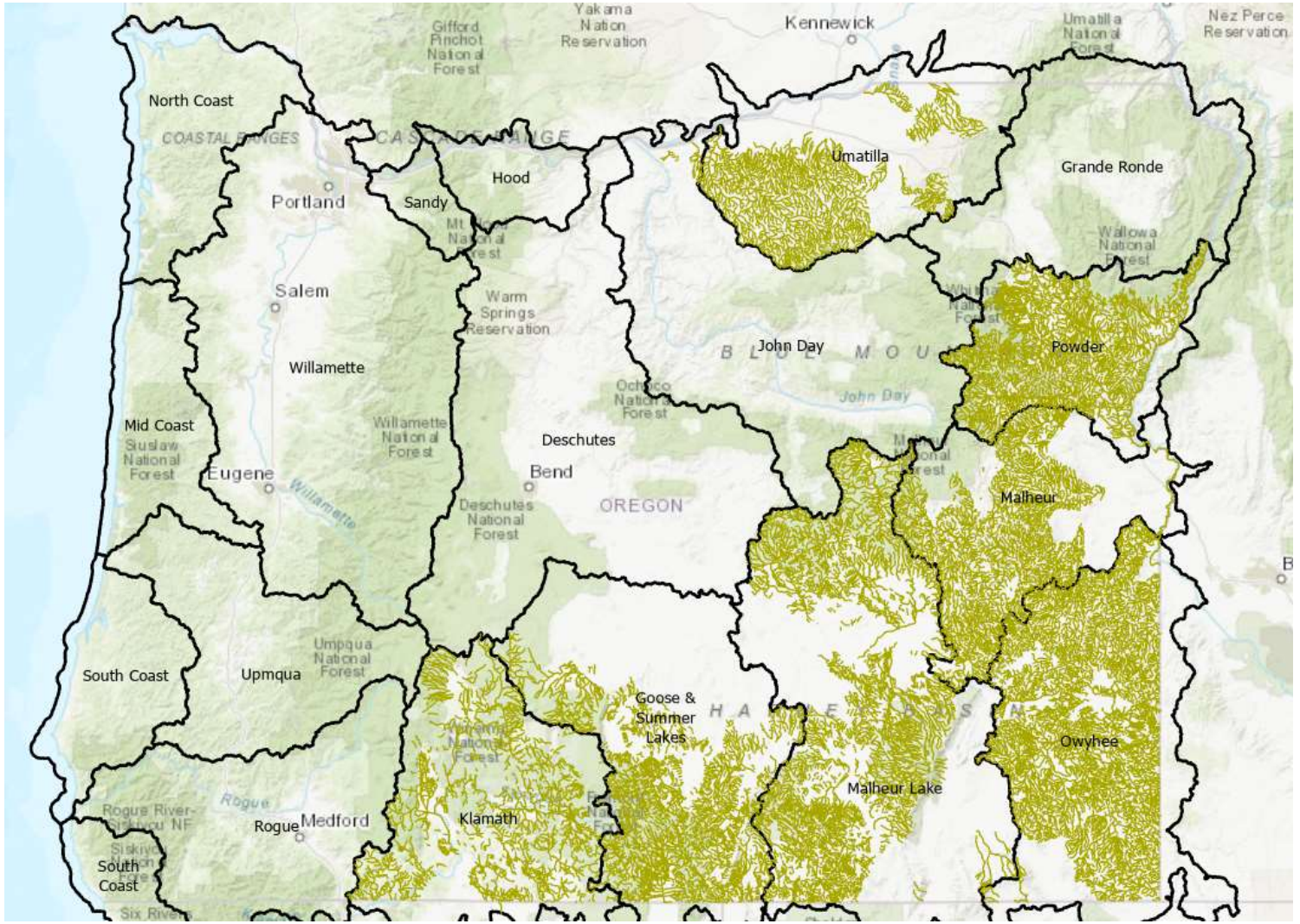
- No Change
- New
- Change to more stringent use
- Change to less stringent use



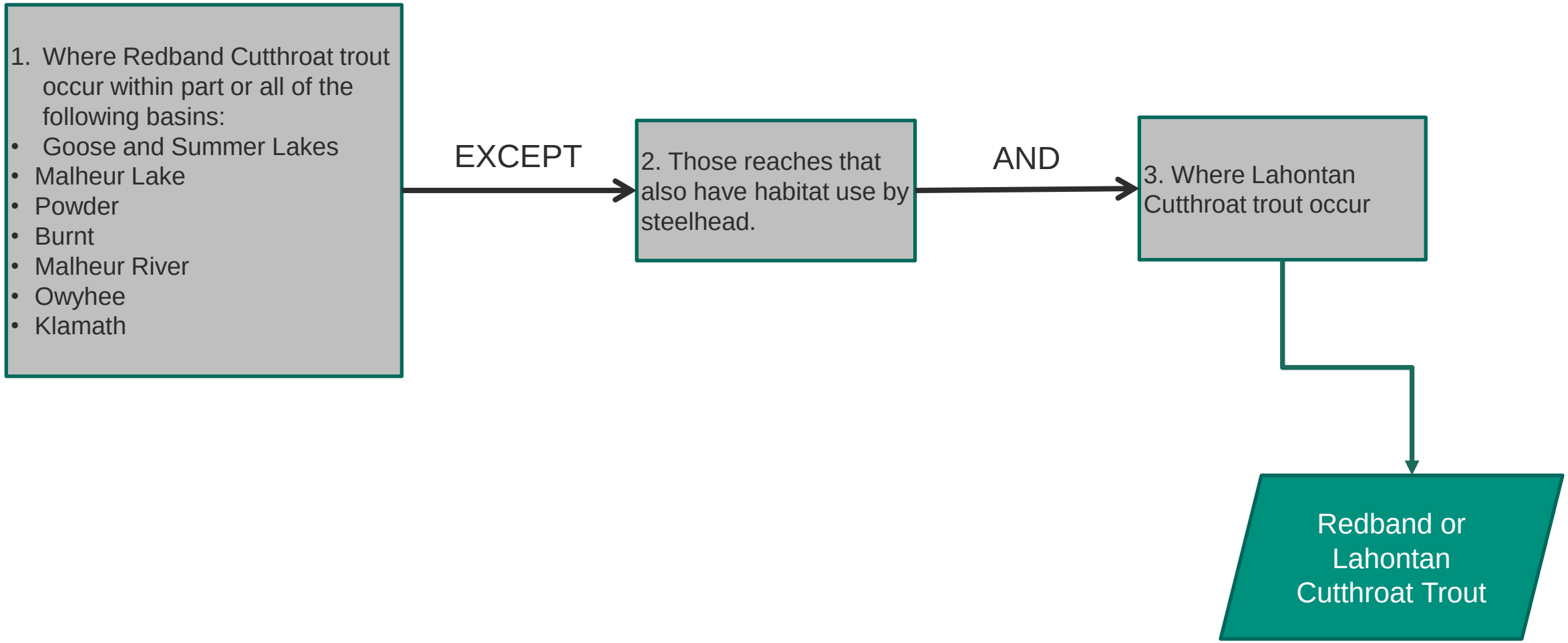
Redband or Lahontan Cutthroat Trout

OAR-340-041(4)(e): a stream identified as having Lahontan cutthroat trout or redband trout use…

Year-round
20°C 7-dADM



Redband or Lahontan Cutthroat Trout Decision Rules



Redband & Rainbow/steelhead trout

Redband Trout are a subspecies of Rainbow Trout:

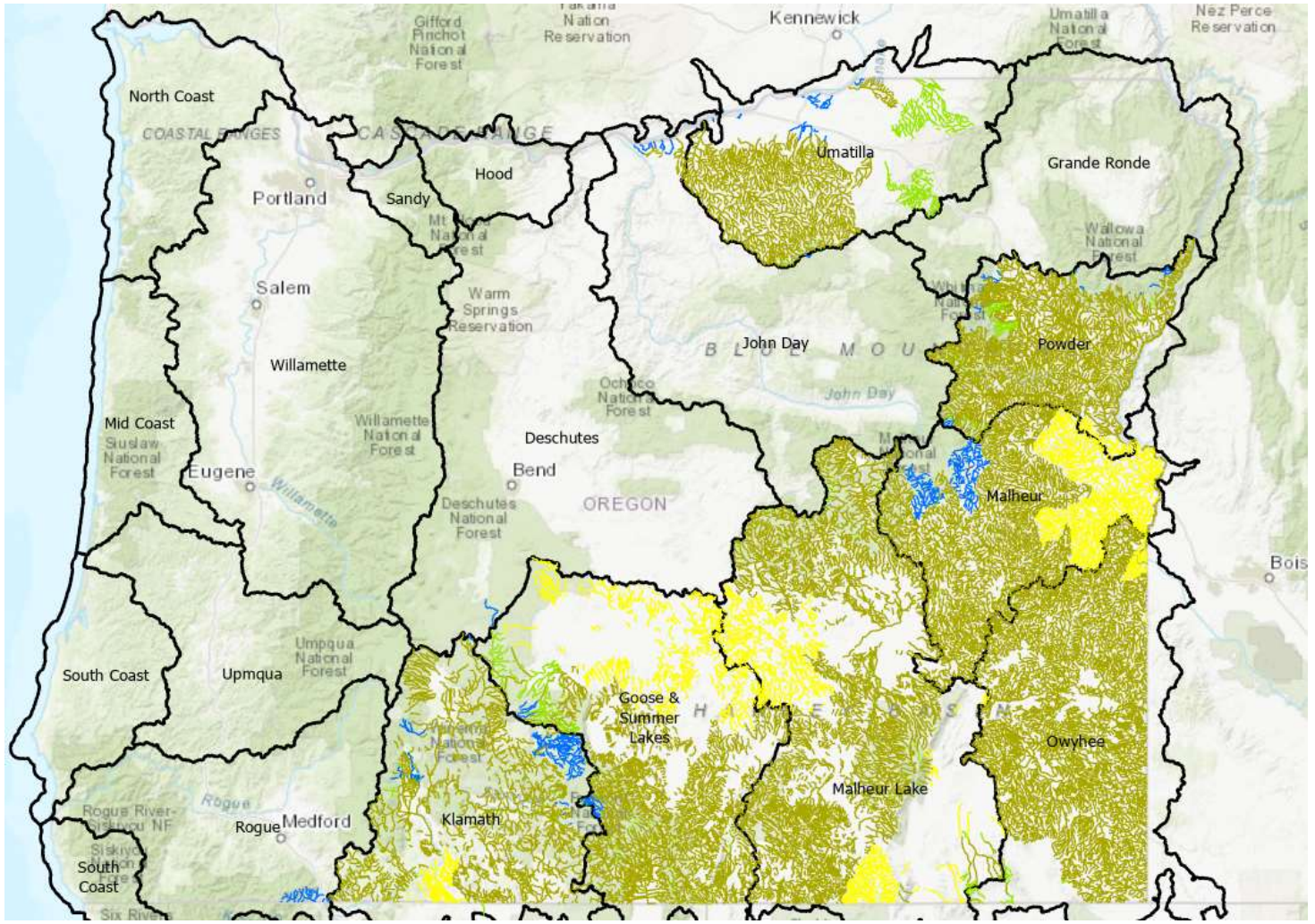
Rainbow Trout
Oncorhynchus mykiss

Redband Trout
O.mykiss spp. *gairdneri / newberrii*

- Differentiate **Redband or Lahontan** use from **Salmon & Trout Rearing & Migration** use by absence of overlap with anadromous O. mykiss.
- Absence of steelhead provides relative certainty that Redband trout are the only *O. mykiss* species likely present.
- The 20°C criterion is protective of Redband but not steelhead if present.

Redband or Lahontan Changes

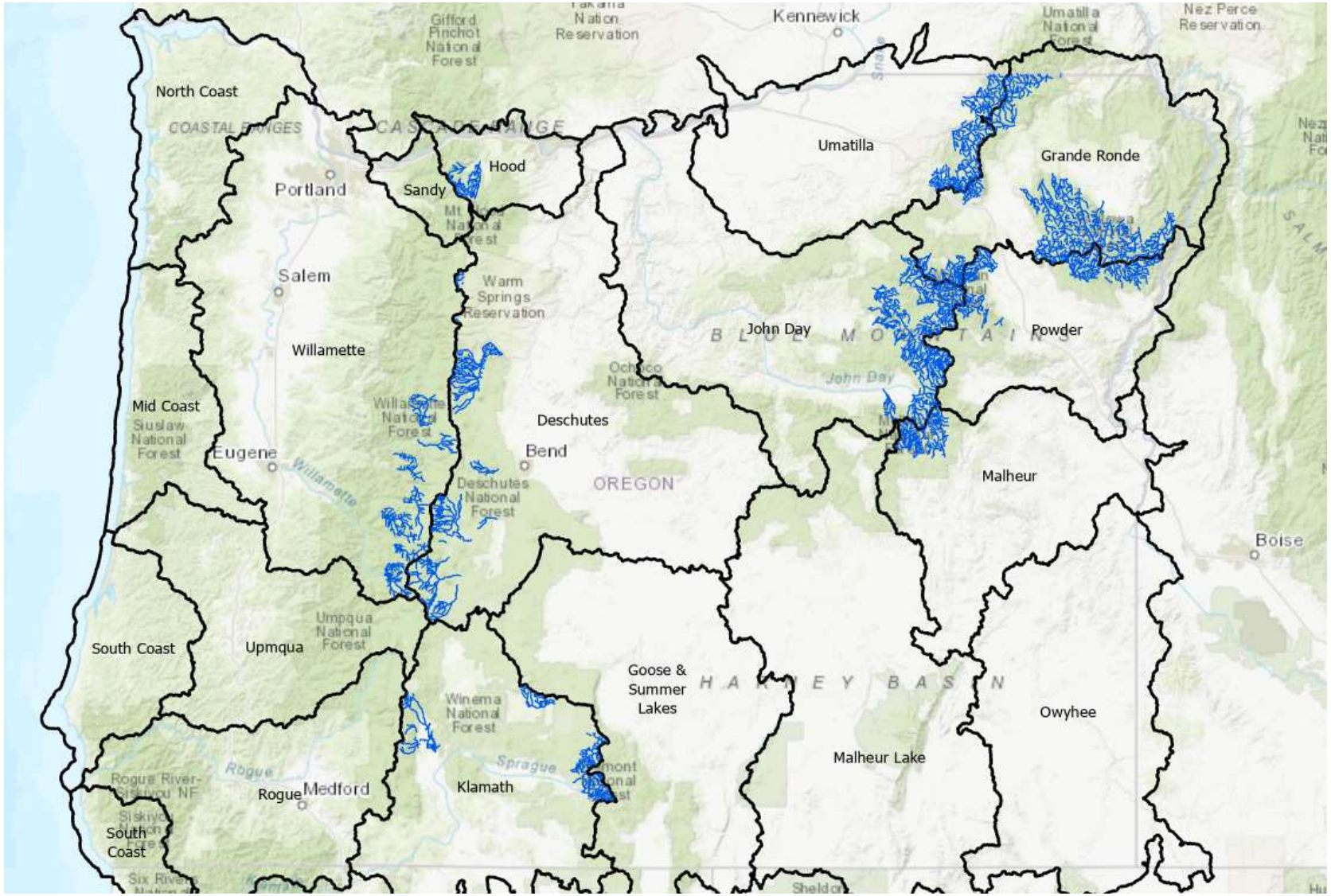
- No Change
- New
- Change to more stringent Use
- Change to less stringent use



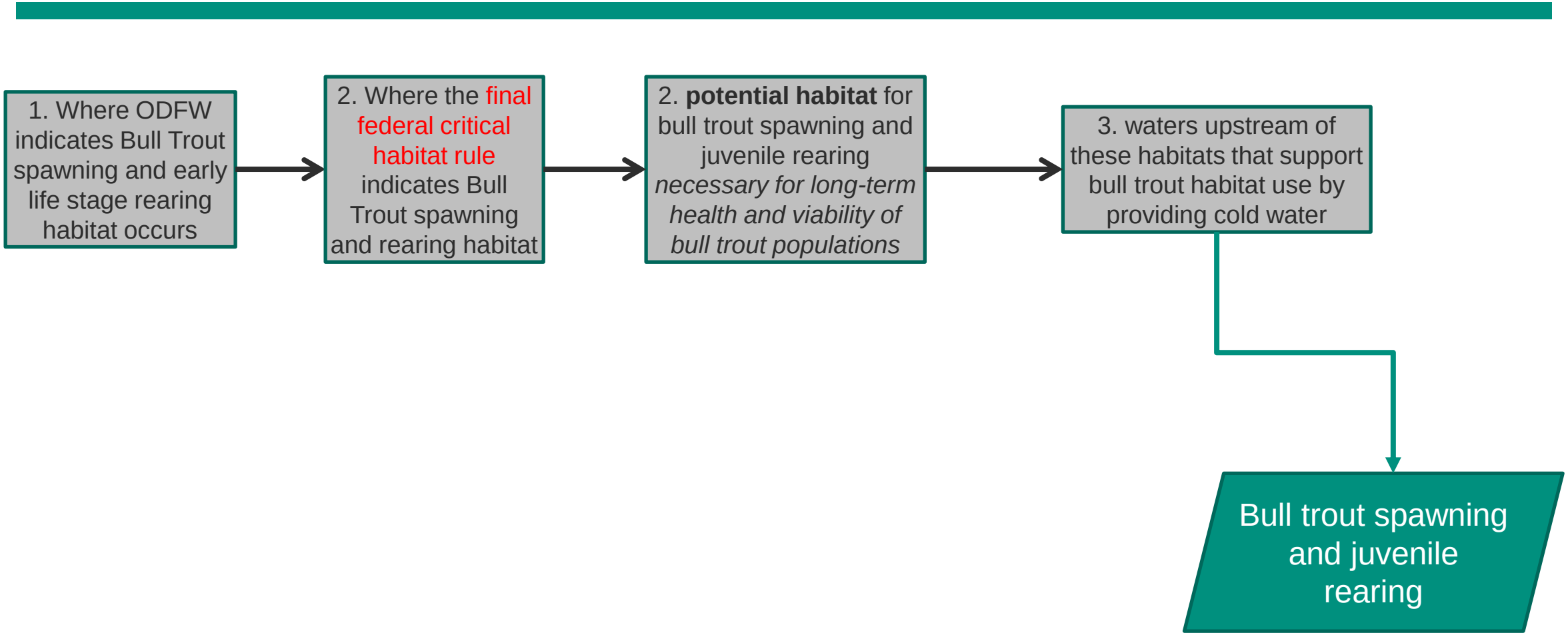
Bull Trout Spawning & Juvenile Rearing

OAR-340-041-0028(4)(f): a stream identified as having bull trout spawning and juvenile rearing use…

Year-round
12°C 7-dADM



Bull Trout Spawning & Juvenile Rearing Decision Rules



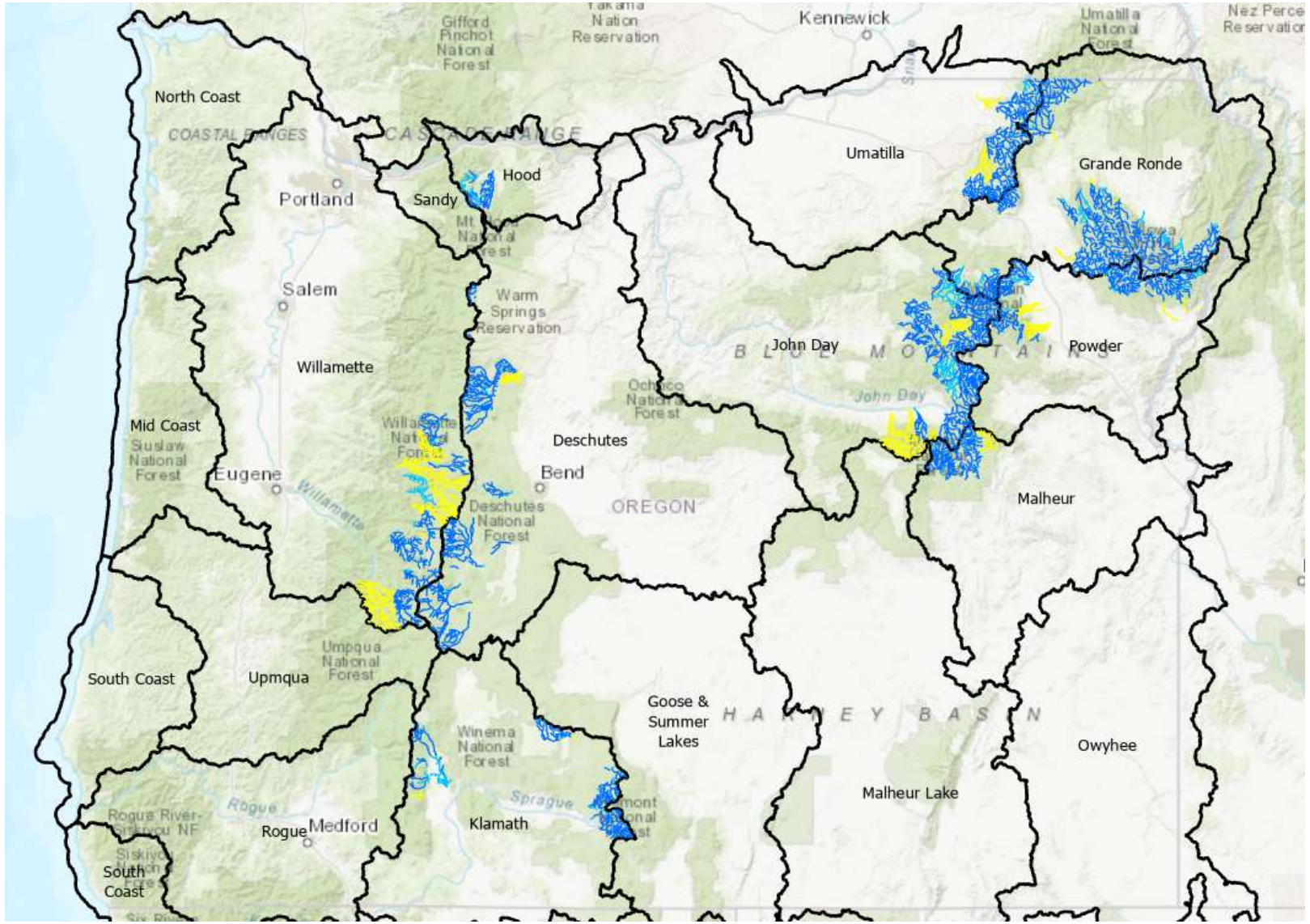
Identifying ‘potential habitat’

Bull Trout Basin Working Groups

- Coordinator: Stephanie Gunckel ODFW/USFWS
- Spawning habitat outside of Critical Habitat / FHD needed for recovery and connectivity
- May not be occupied but high priority for reintroduction
- Based on current recovery plans, other restoration work

Bull Trout Spawning Rearing Changes

- No Change
- New
- Changed to less stringent use



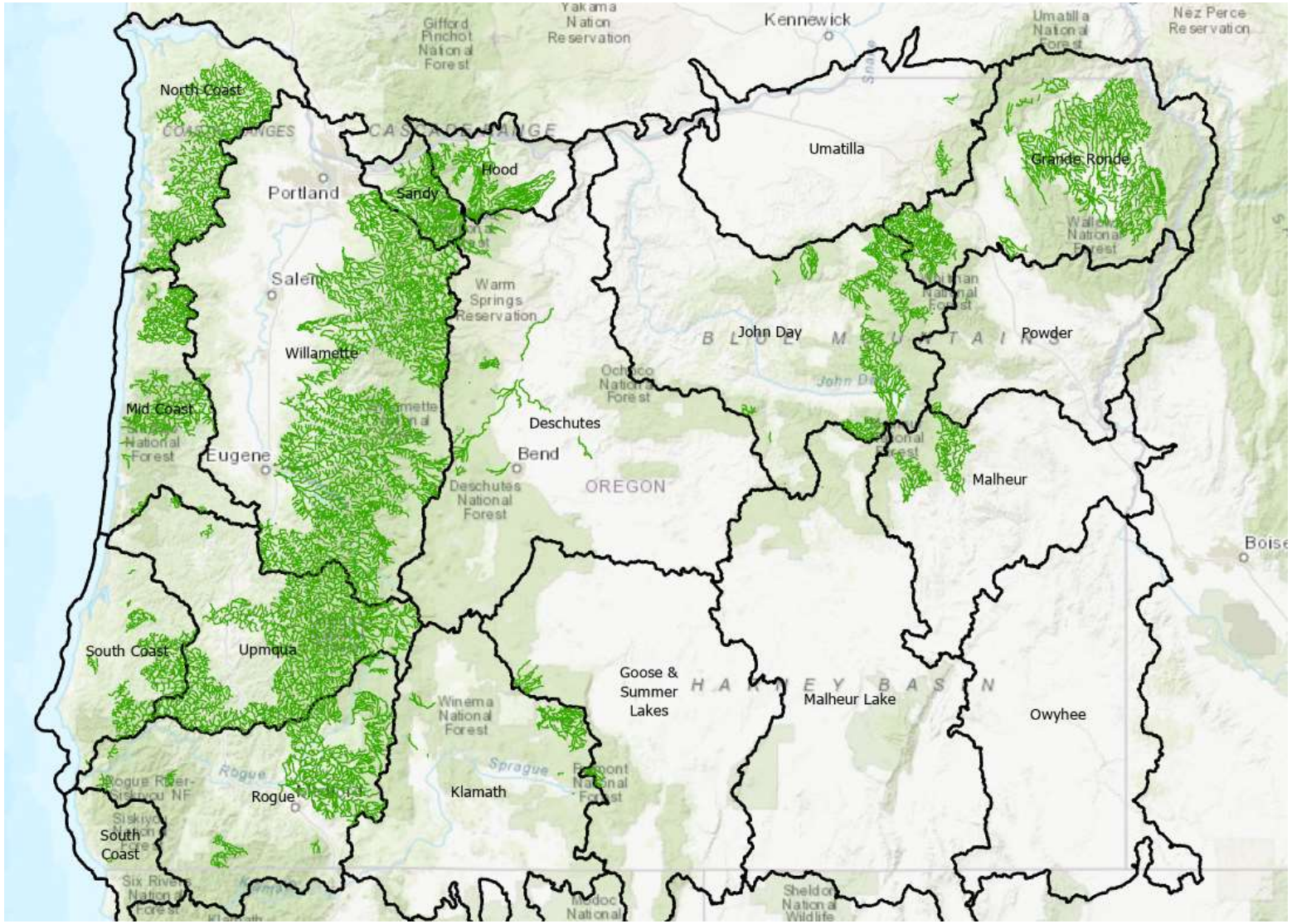
Questions about Bull Trout?

Image Source: Wikimedia Commons

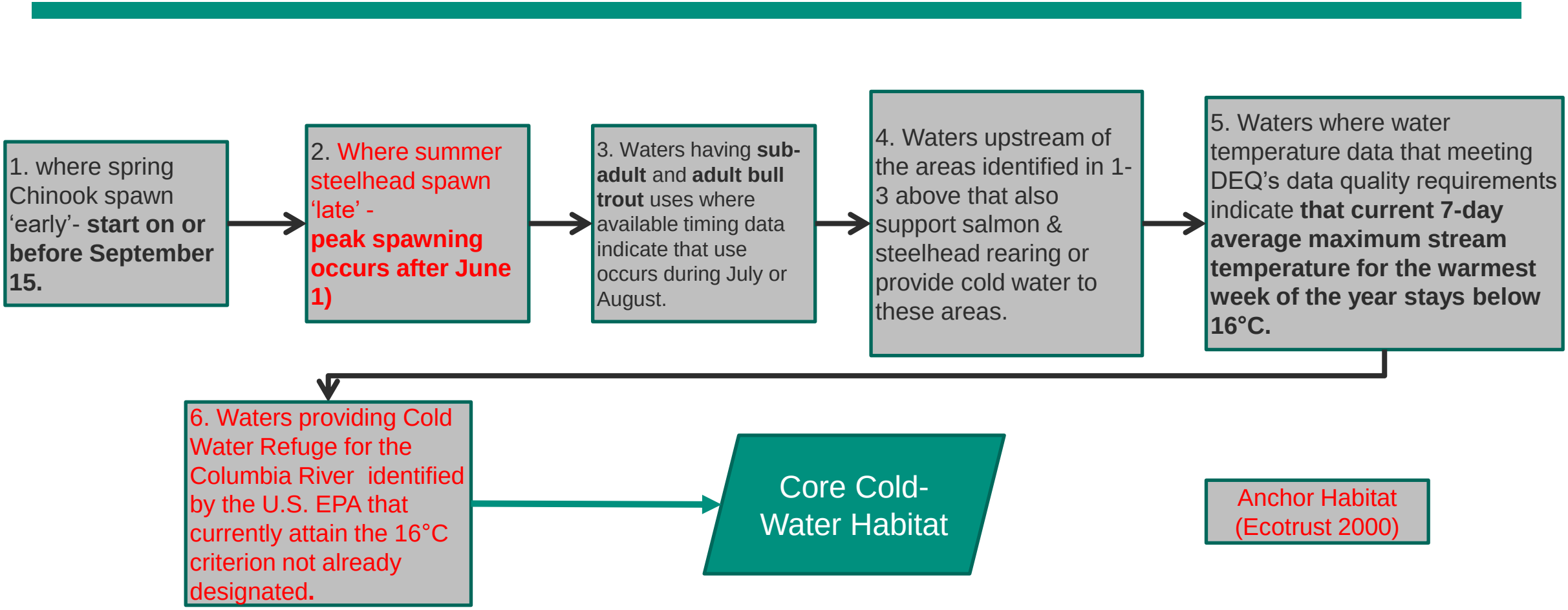
Core Cold Water Habitat

OAR-340-041-0002(13): "Core Cold Water Habitat Use" means waters expected to maintain temperatures within the range generally considered optimal for salmon and steelhead rearing, or that are suitable for bull trout migration, foraging and sub-adult rearing that occurs during the summer.

Year-round
16°C 7-dADM



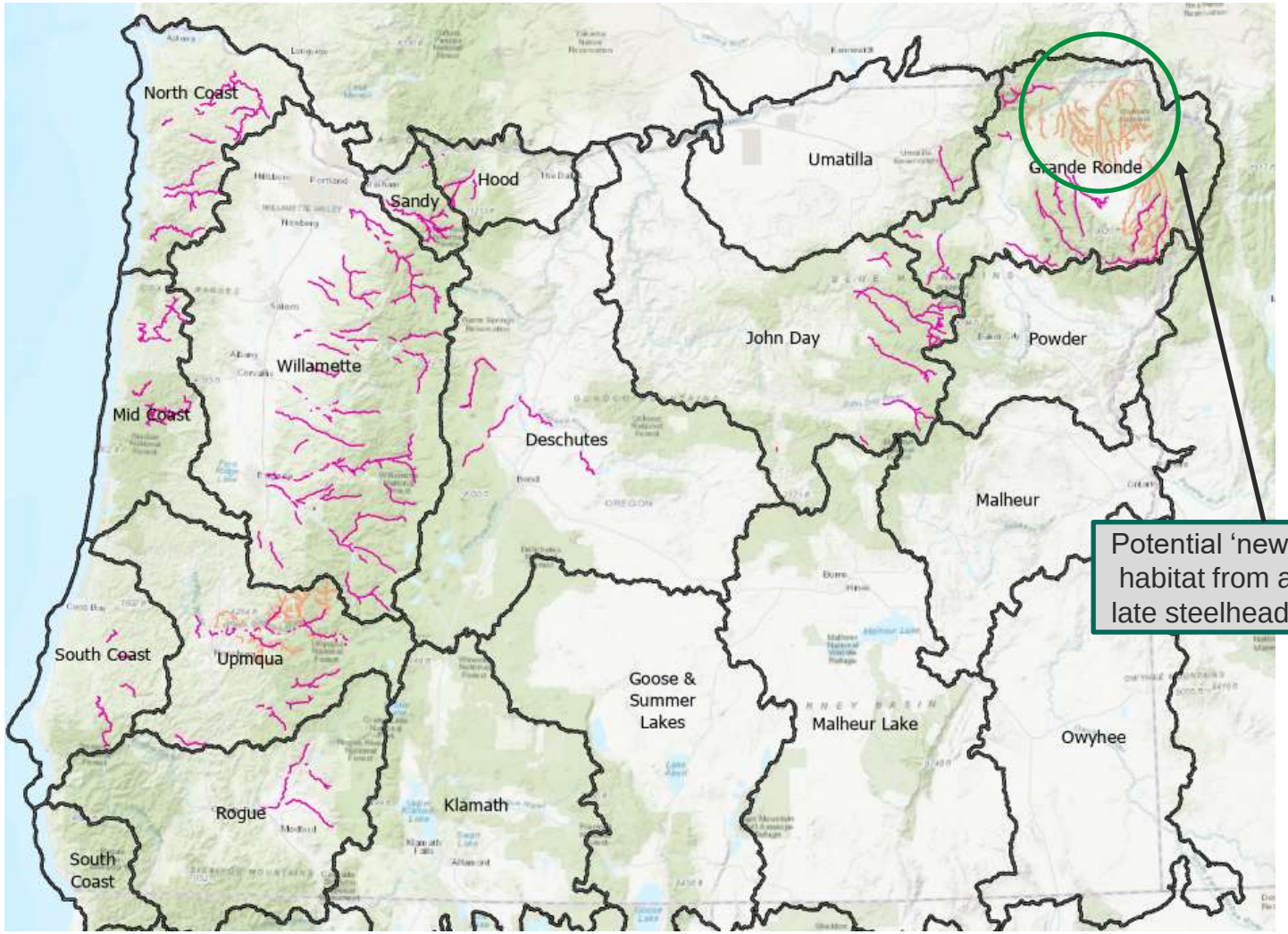
Core Cold-water habitat Decision Rules



Early Chinook / Late Steelhead Spawning

Early Chinook spawning

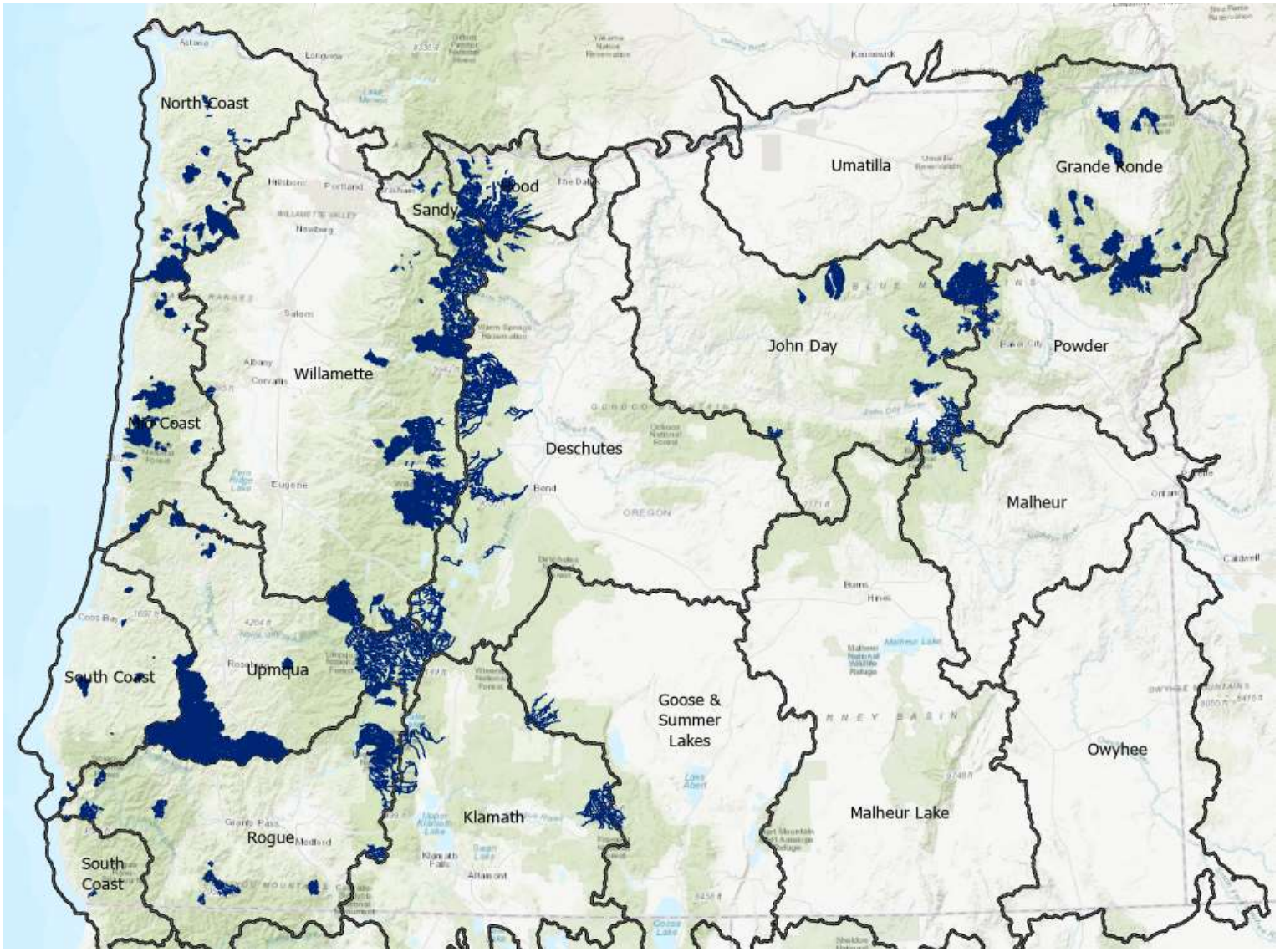
Late steelhead spawning



"Early" = start on or before Sept. 15
"Late" = continuing after June 1

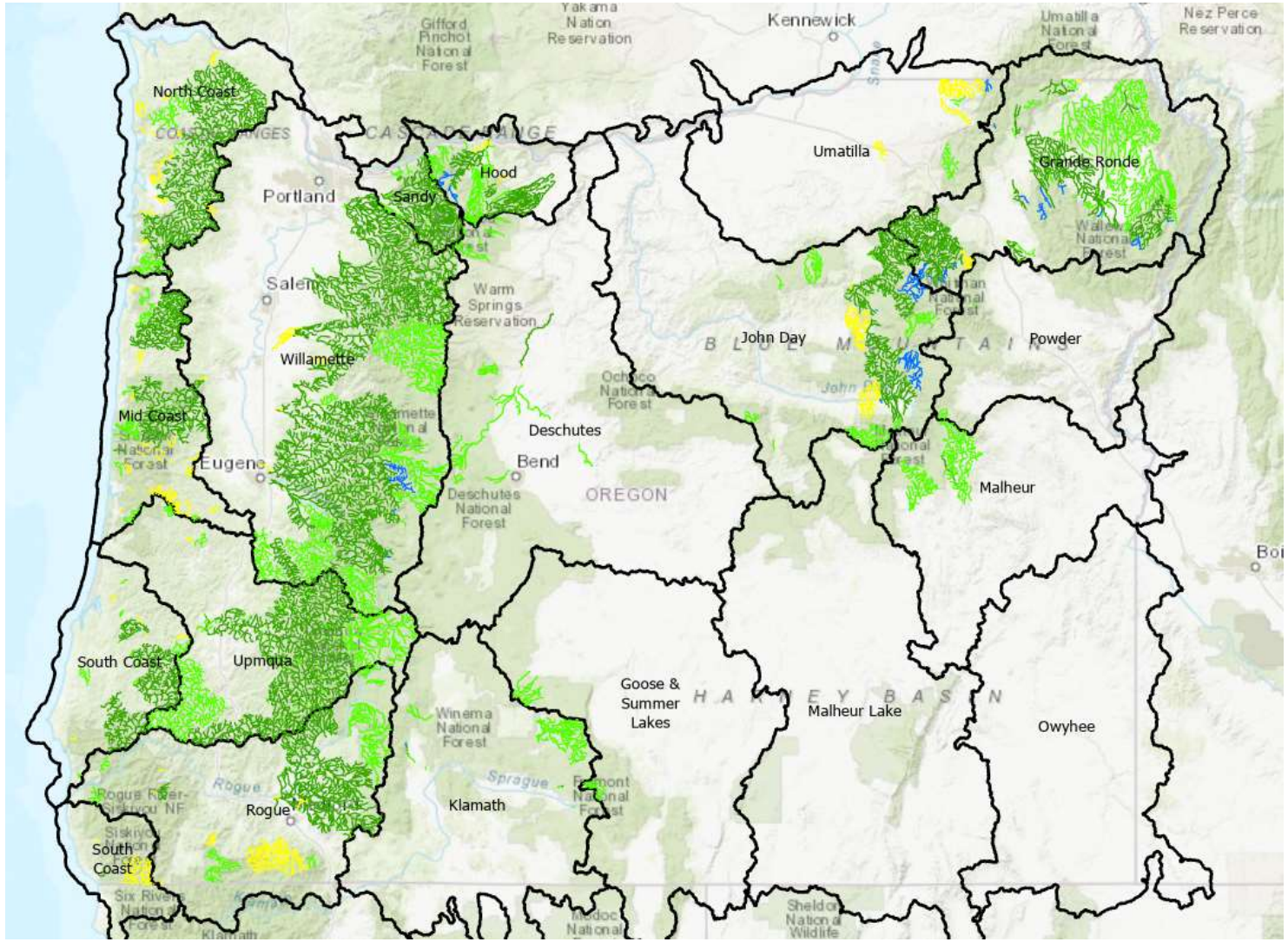
DEQ- AWQMS Cold Water Temperate Data Coverage

- Multiple data sources:
  - DEQ-AWQMS
  - NorWeST Observations
- 7-dadm / weekly maximum temperatures
- Continuous monitoring
- 1990’s - 2018
- Must include multiple years
- From critical period (June-Sept)
- Represent significant areas of habitat



Core Cold Water Habitat Changes

- No Change
- New
- Change to more stringent use
- Change to less stringent use



Questions about Core Cold Water Habitat?

Image Source: USFWS

Salmon & Steelhead Migration Corridors

OAR-340-041-0002 (37): "Migration Corridors" mean those waters that are predominantly used for salmon and steelhead migration during the summer and have little or no anadromous salmonid rearing in the months of July and August.

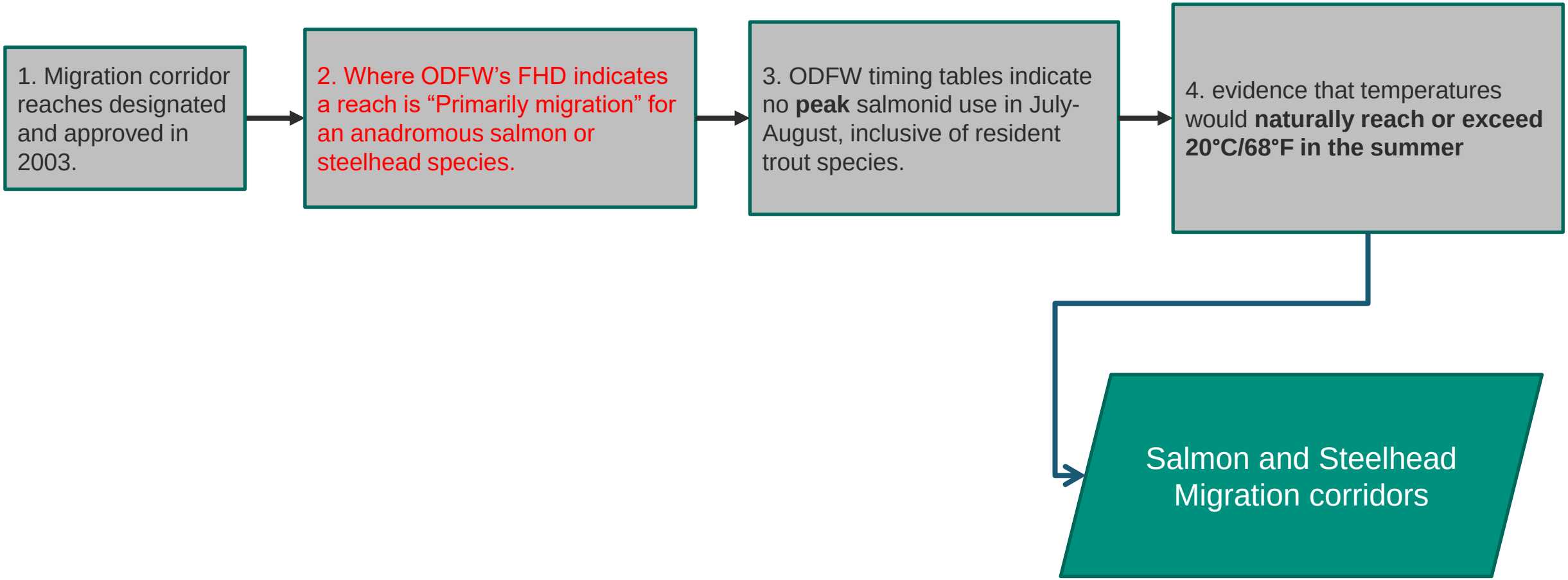
Summer maximum*
20°C 7-dADM

*There are also seasonal spawning criteria in Migration Corridors where salmon & steelhead spawning is indicated by ODFW.

Migration Corridors - Intent

- DEQ Rules definition: “predominantly migration” & “limited or no rearing”
  - Language based on state of knowledge at the time
- Multiple lines of evidence approach.
- Current application:
  - Seasonally cold rivers that are not optimal rearing habitat in the summer.
  - Juvenile rearing may be supported widely in cool months.
  - Limited (off-peak) juvenile salmon & steelhead rearing in July/Aug.
  - Naturally exceed 18°C and reach 20°C/68°F in July/Aug.

Migration Corridors Decision Rules



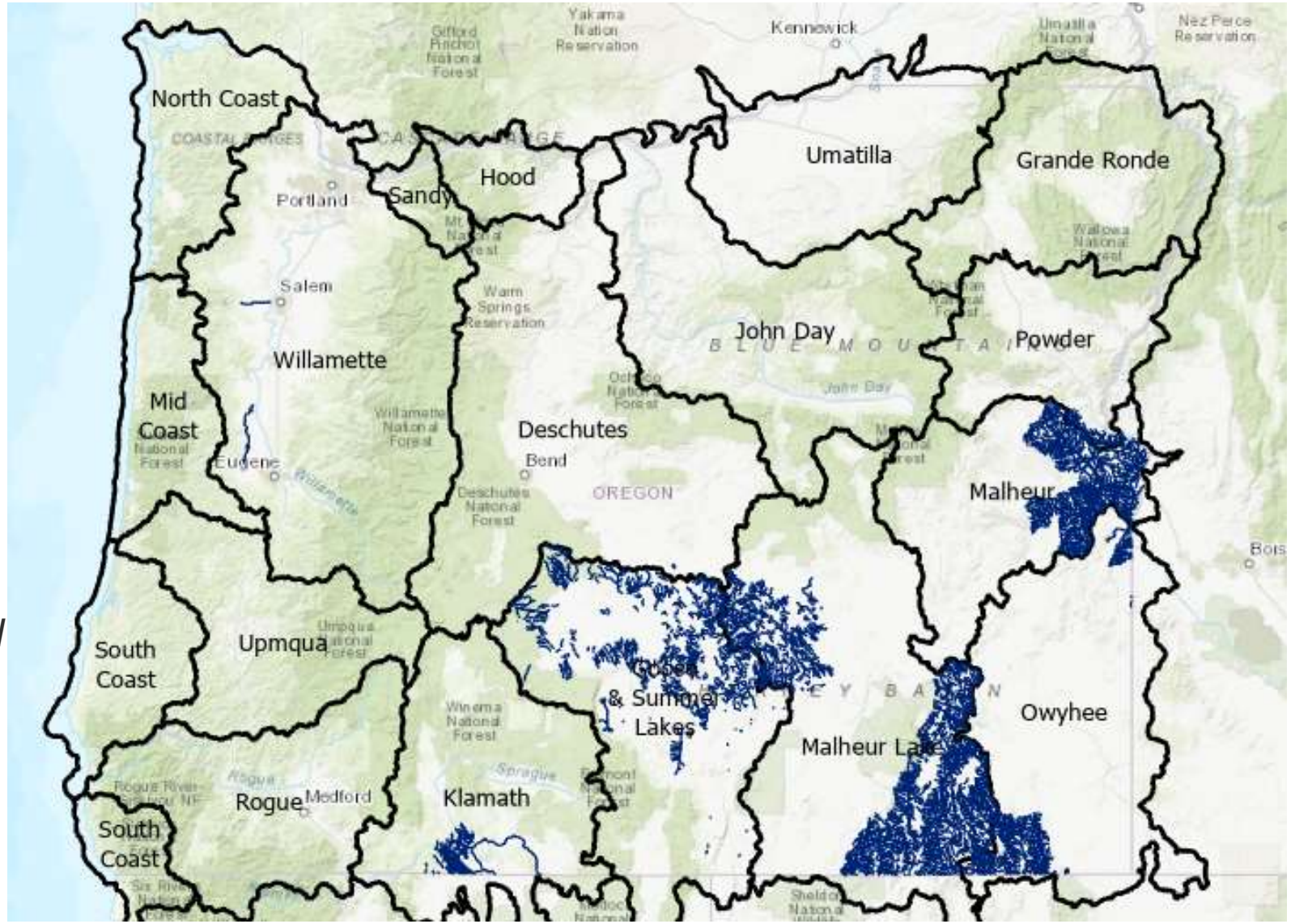
Salmon & Steelhead Migration Corridor Changes

- Out of Jurisdiction
- No Change
- New
- Change to more stringent use

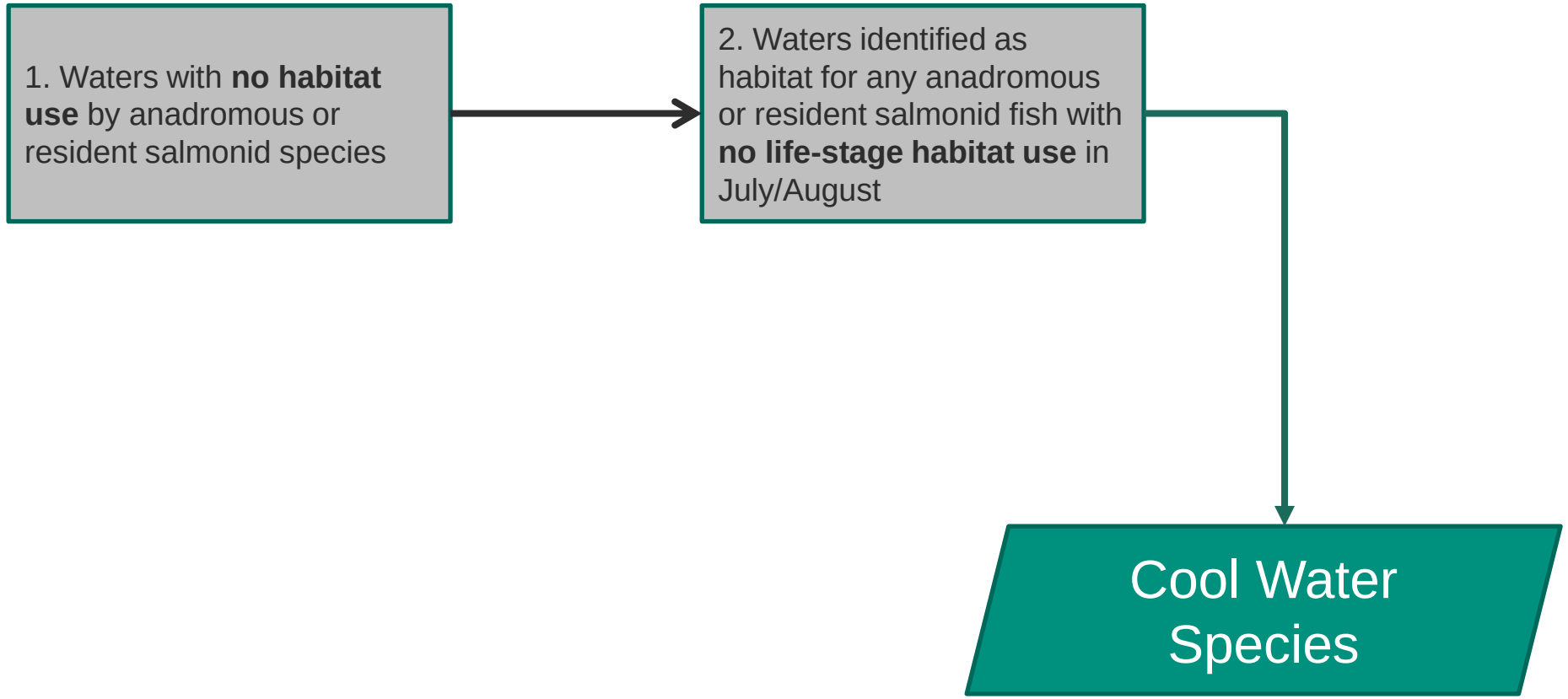
Cool Water Species

OAR-340-041-00028 (12):
"Cool Water Aquatic Life" means aquatic organisms that are physiologically restricted to cool waters including, but not limited to, native sturgeon, Pacific lamprey, suckers, chub, sculpins and certain species of cyprinids (minnows.)

Narrative:
No increase in temperature is allowed that would reasonably be expected to impair cool water species.

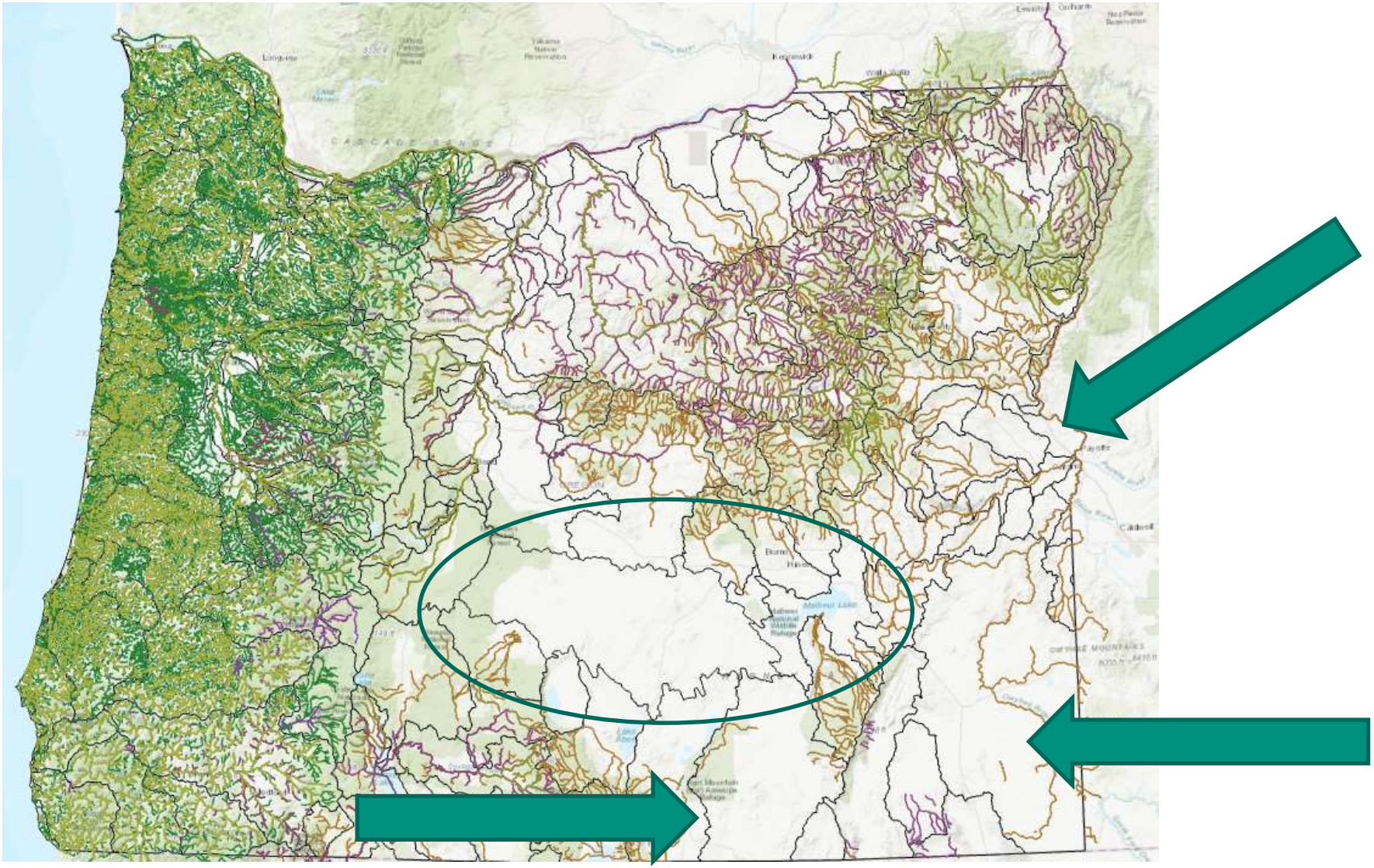


Cool Water Species Decision Rules



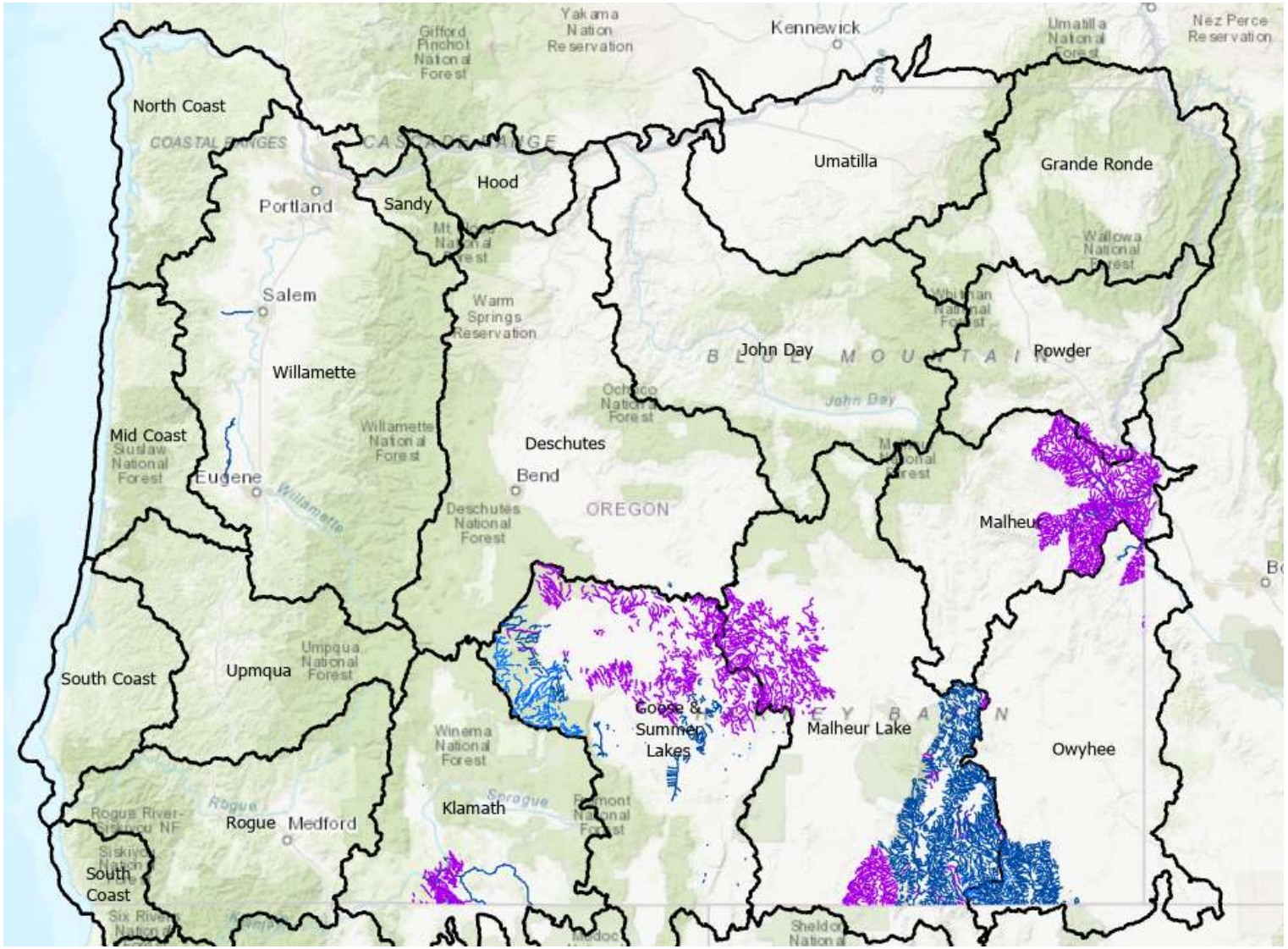
Areas of no habitat use by salmonid species

Salmon, steelhead, and resident trout habitat



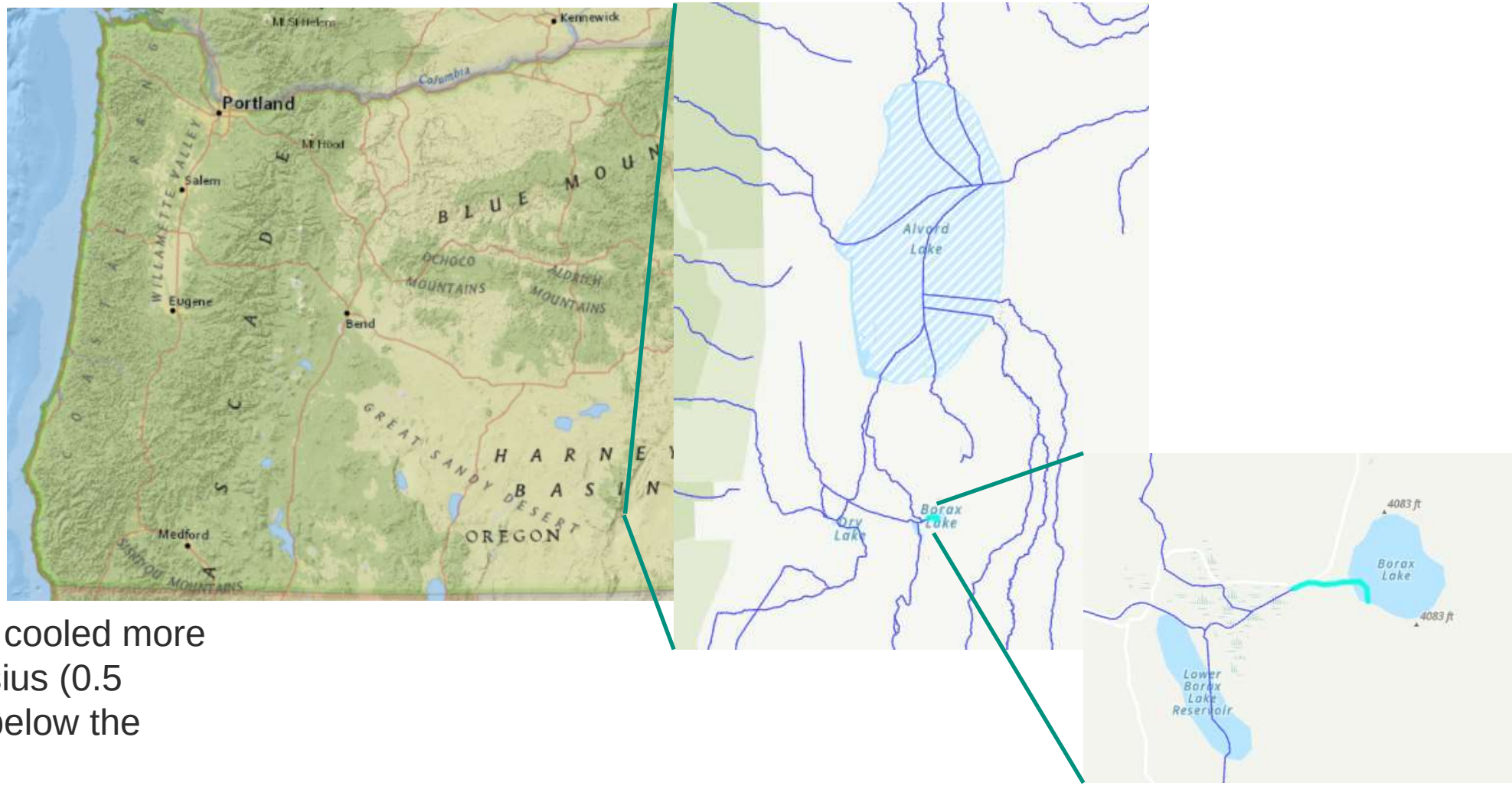
Cool Water Species changes

- No Jurisdiction
- No change
- New
- Change to more stringent use



Warm-Water Species: Borax Lake Chub

OAR-340-041-0028 (10): State waters in the Malheur Lake Basin supporting the Borax Lake chub



Year-round
Narrative: may not be cooled more than 0.3 degrees Celsius (0.5 degrees Fahrenheit) below the natural condition.

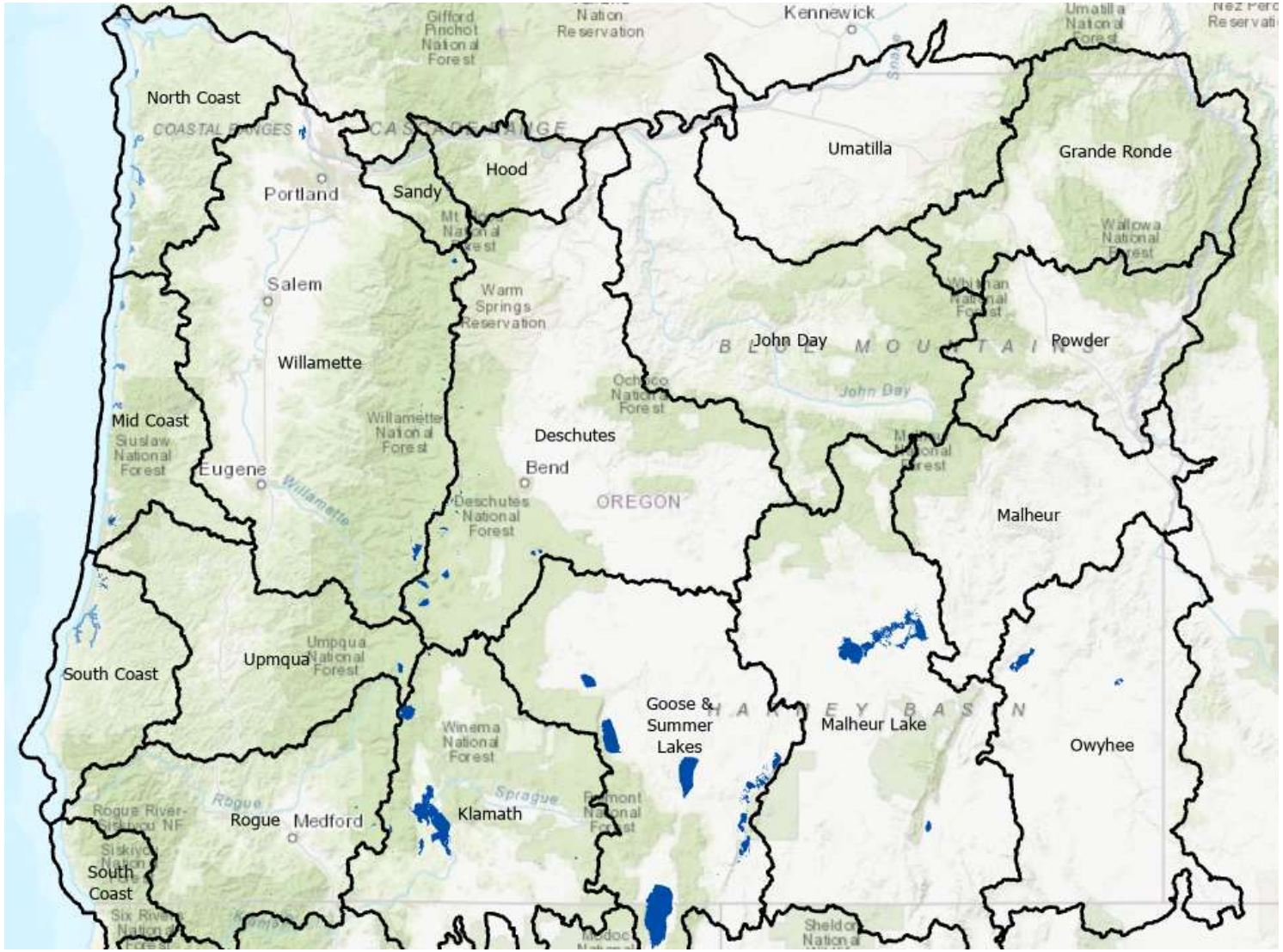
Natural Lakes and Oceans & Bays

OAR-340-041-0028 (6) & (7) :

“Natural lakes” or “ocean and bay waters”.

Year-round
Narrative:

may not be warmed by more than 0.3 degrees Celsius (0.5 degrees Fahrenheit) above the natural condition unless a greater increase would not reasonably be expected to adversely affect fish or other aquatic life.



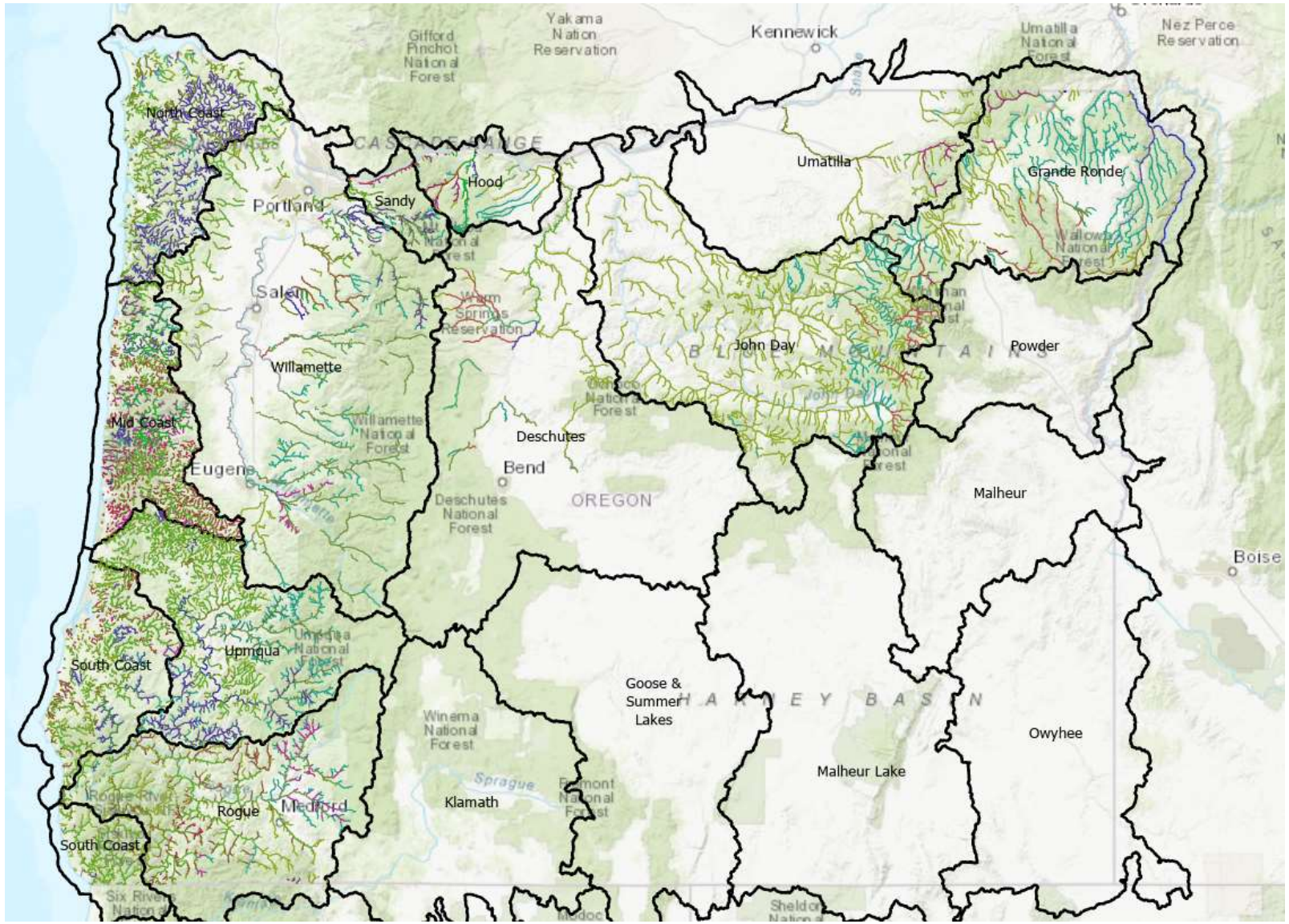
Questions about year- round use subcategories?

Salmon & Steelhead Spawning

OAR-340-041-0002 (52):
"Salmon and Steelhead Spawning Use" means waters that are or could be used for salmon and steelhead spawning, egg incubation, and fry emergence.

Seasonal criterion (dates vary):
13°C 7-dADM

- Coho
- Spring Chinook
- Fall Chinook
- Chum
- Sockeye
- Summer Steelhead
- Winter Steelhead



Salmon & Steelhead Spawning

Spatial Components

1. Salmon & Steelhead Spawning Habitat

Temporal Components

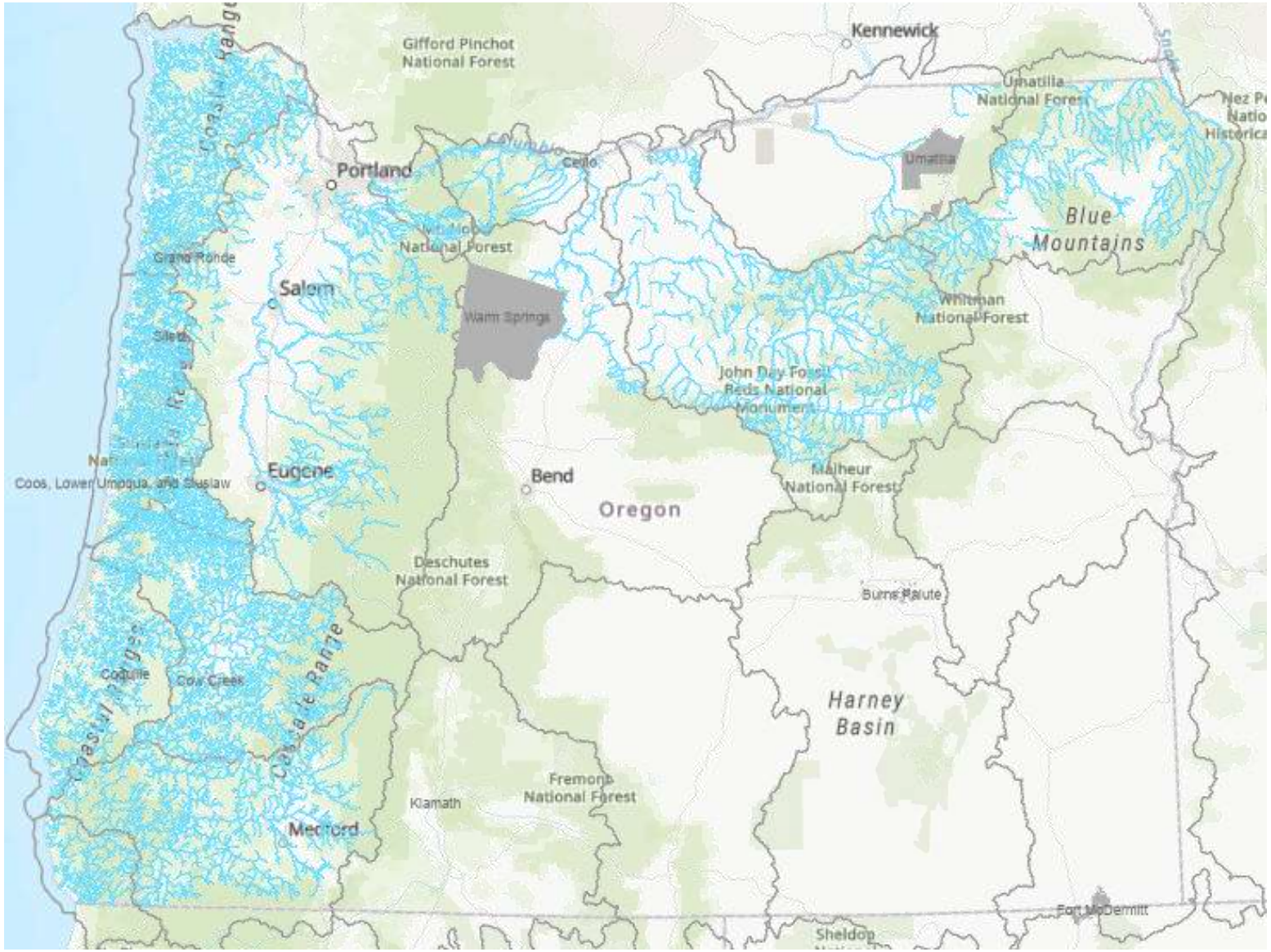
2. Adult Spawning (start)

3. Egg Incubation & Emergence (end)

“Salmon & Steelhead Spawning”

1. Spatial - Spawning Habitat Distribution

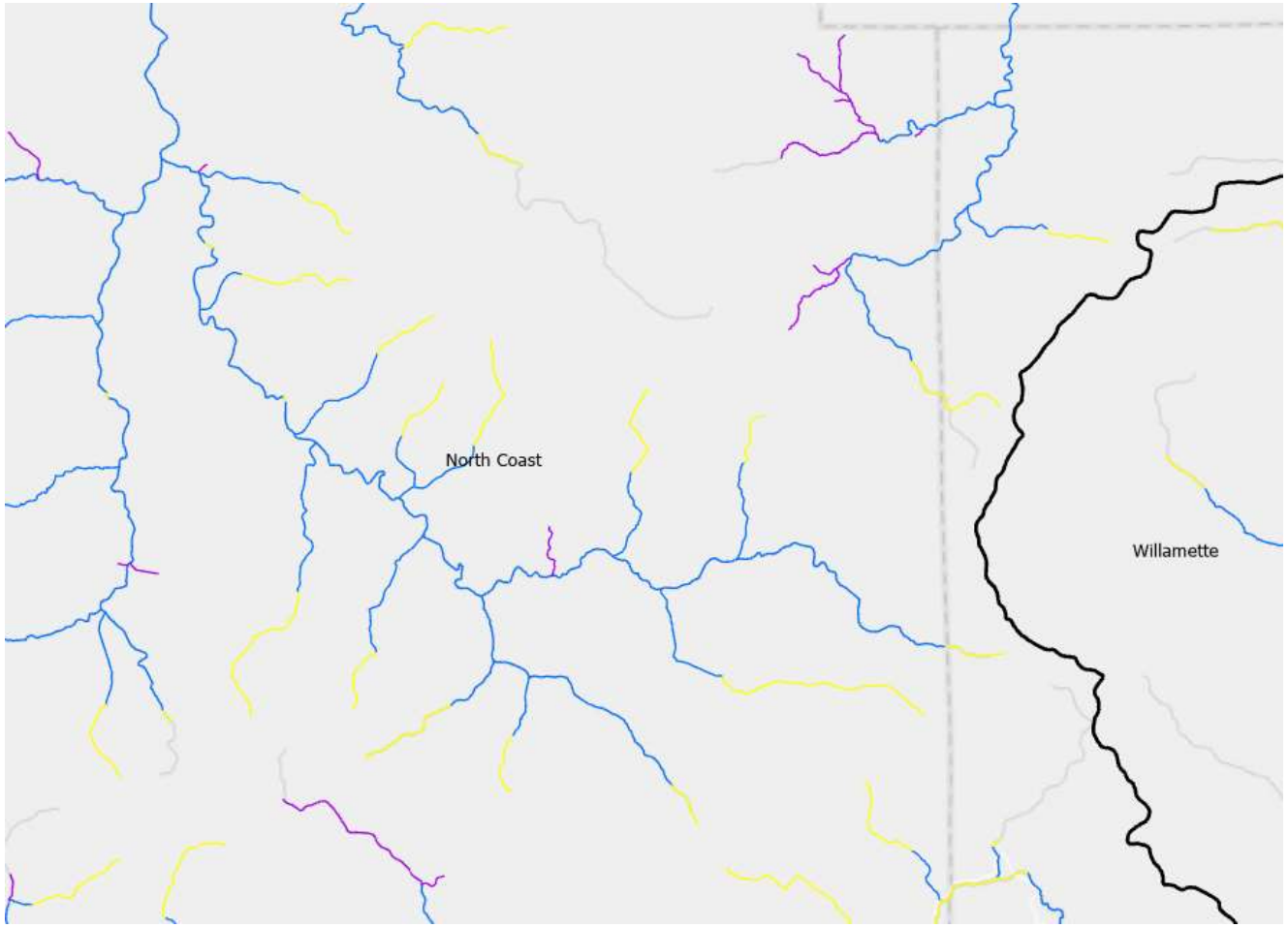
- ODFW-FHD designated as “primarily spawning”.
- Salmon, steelhead.
- DEQ spawning fish use intended to match ODFW distribution explicitly.
- Upstream waters not designated.



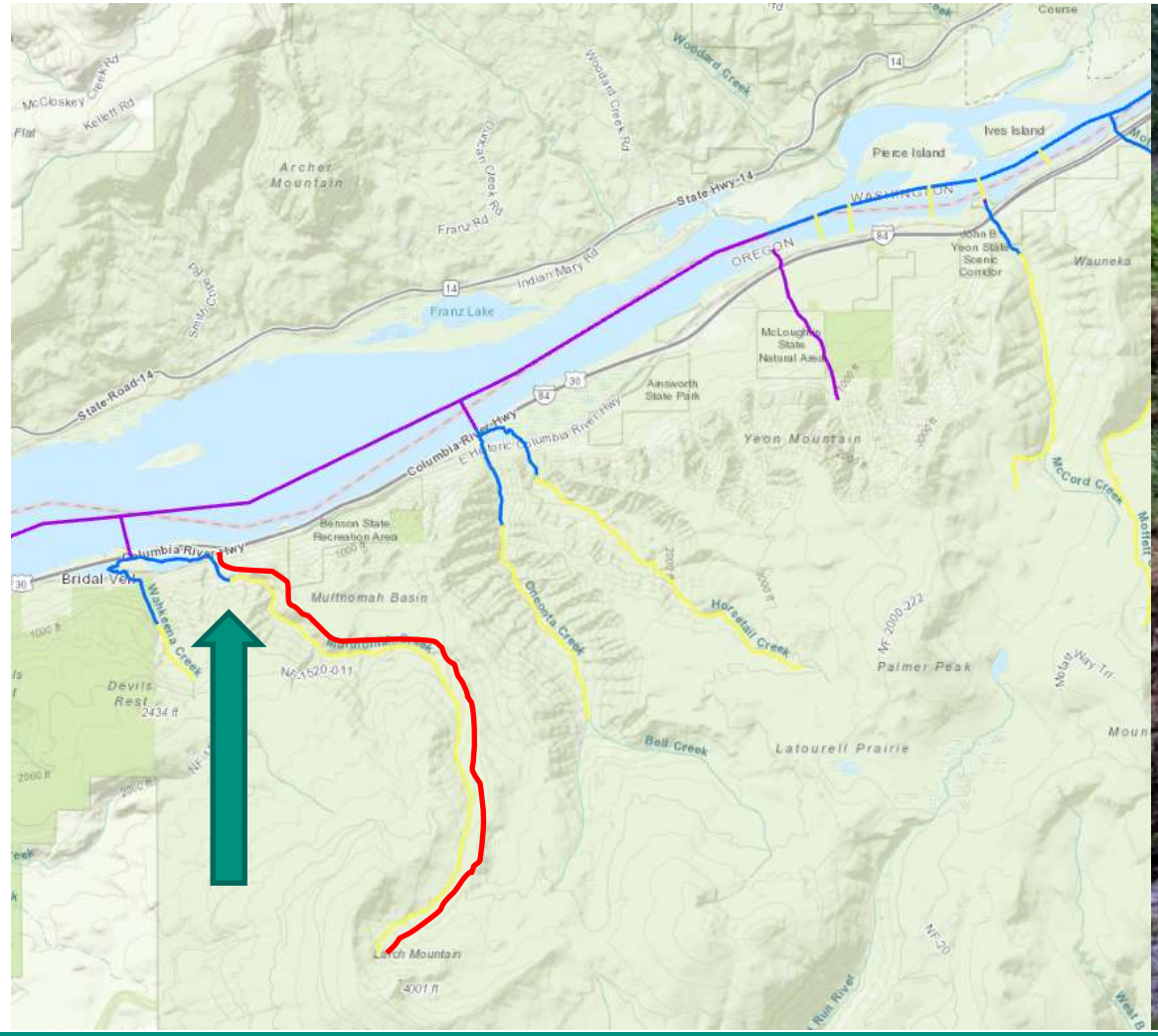
Types of Changes-Corrections

- Align with ODFW data
- Better hydrography
- Correct where spawning use was identified in estuarine waters or reservoirs.
- New reaches where passage has been restored.
- Locations mostly consistent from 2003 – 2020.
- These are the reaches where we are making corrections.

East Fork South Fork Trask River

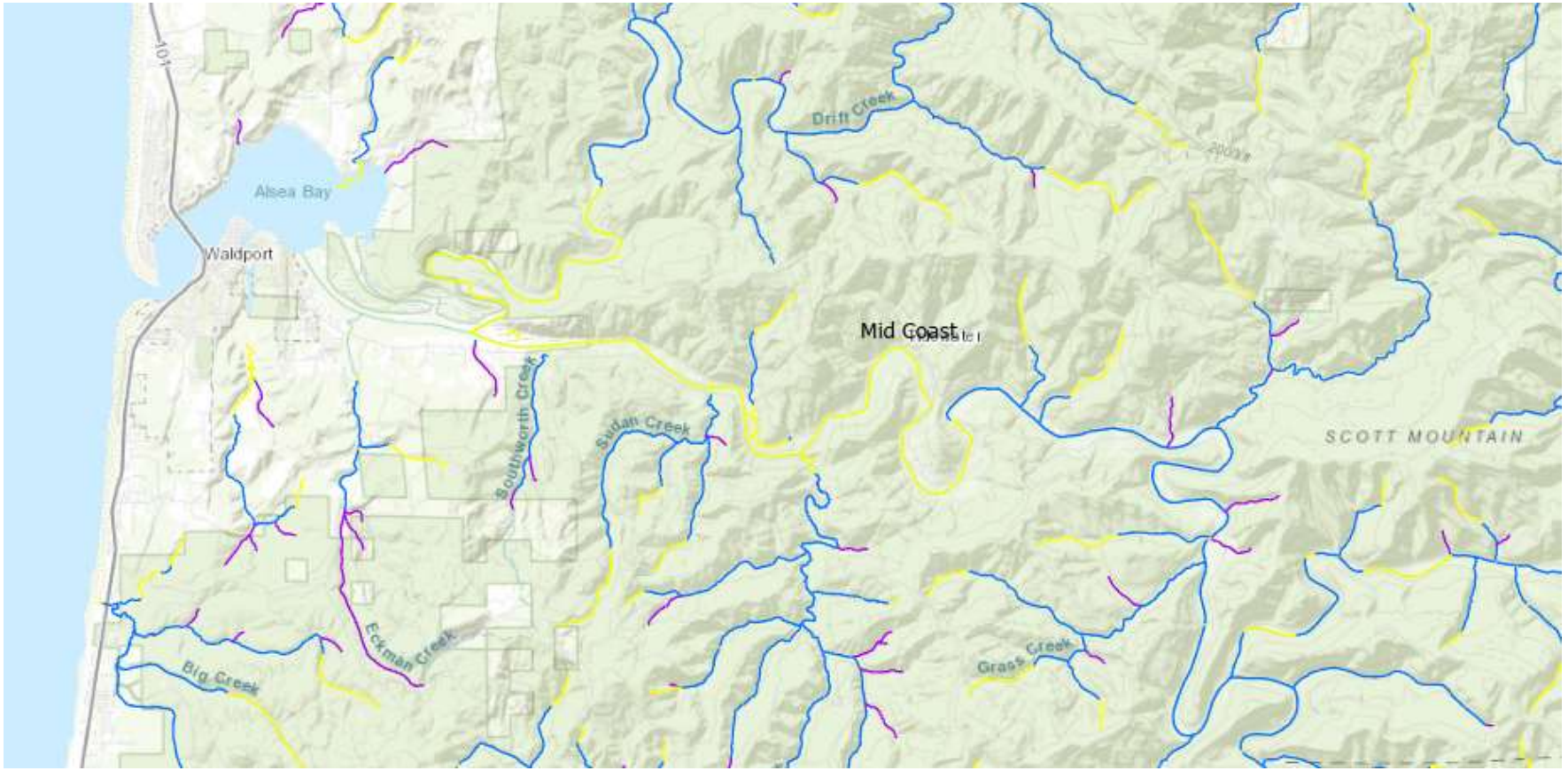


Spawning location changes



Estuary spawning updates

- Correcting distribution in some estuaries based on ODFWs' updated spawning habitat distribution.
- Also matches estuary tidal and salinity extent based on Coastal and Marine Ecological Classification Standard (CMECS).



Salmon & Steelhead Spawning in Estuaries

- DEQ has been using the CMECS standard to apply toxics, D.O. criteria since 2017.

<u>Characteristics</u>

- Salinity >0.5 PSU salinity (during average annual low-flow)
- Below 'Approximate Maximum Extent of Tidal Wetlands' boundary
  - Elevations below NOAA high-water 50% exceedance probability
  - >50% annual exceedance probability to be inundated at MHHW.

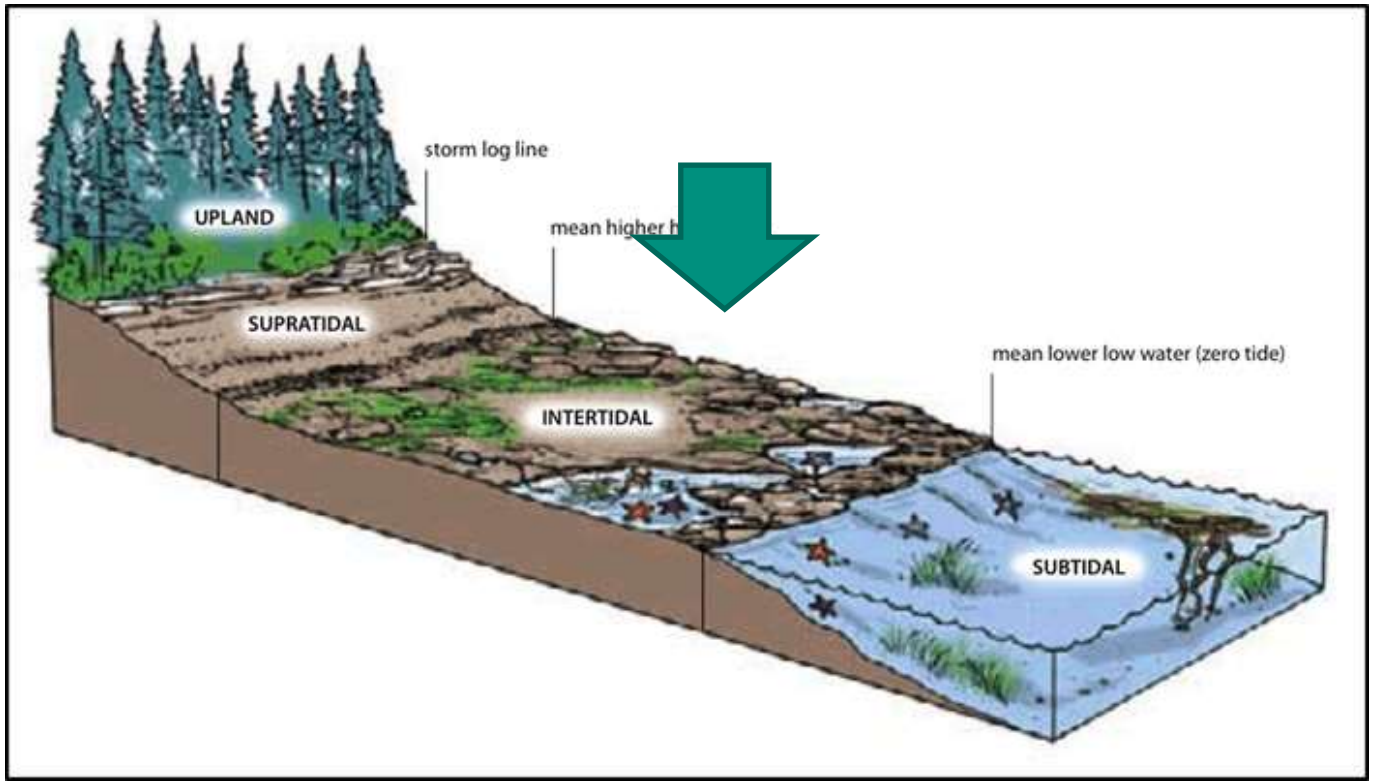
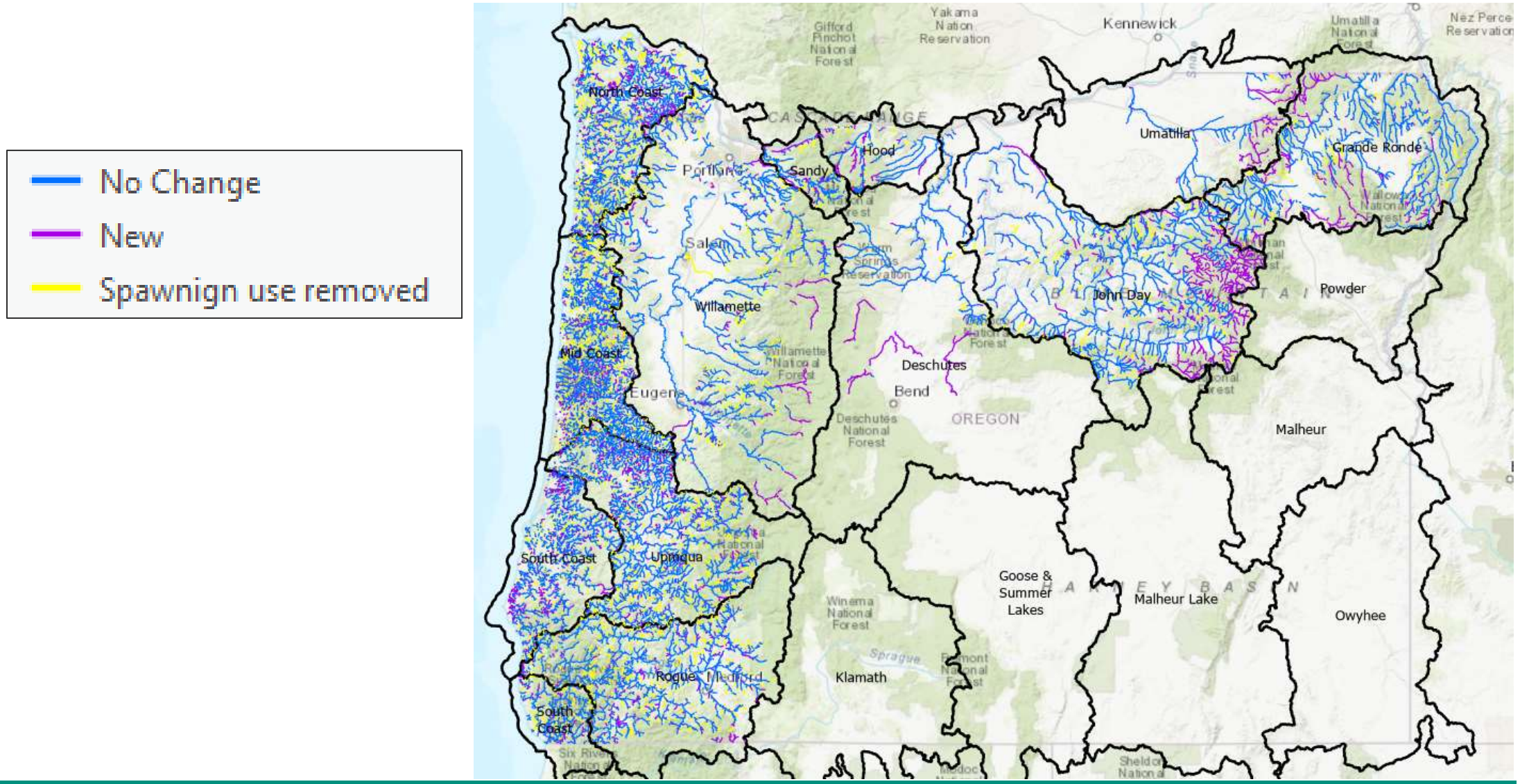


Photo credit: NOAA, Soren Henrich

Spawning Habitat Location Changes

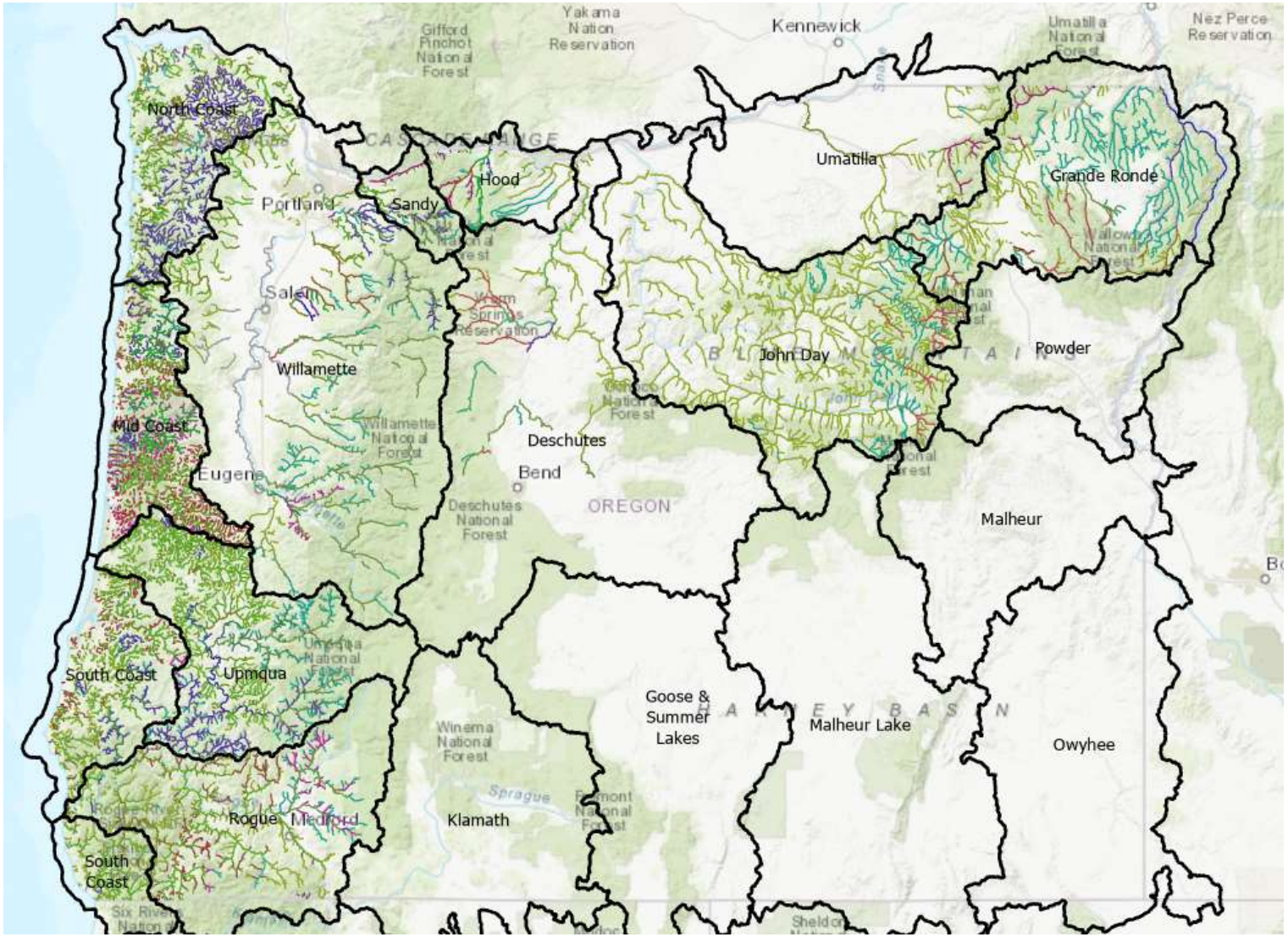


Questions about Spawning Location?

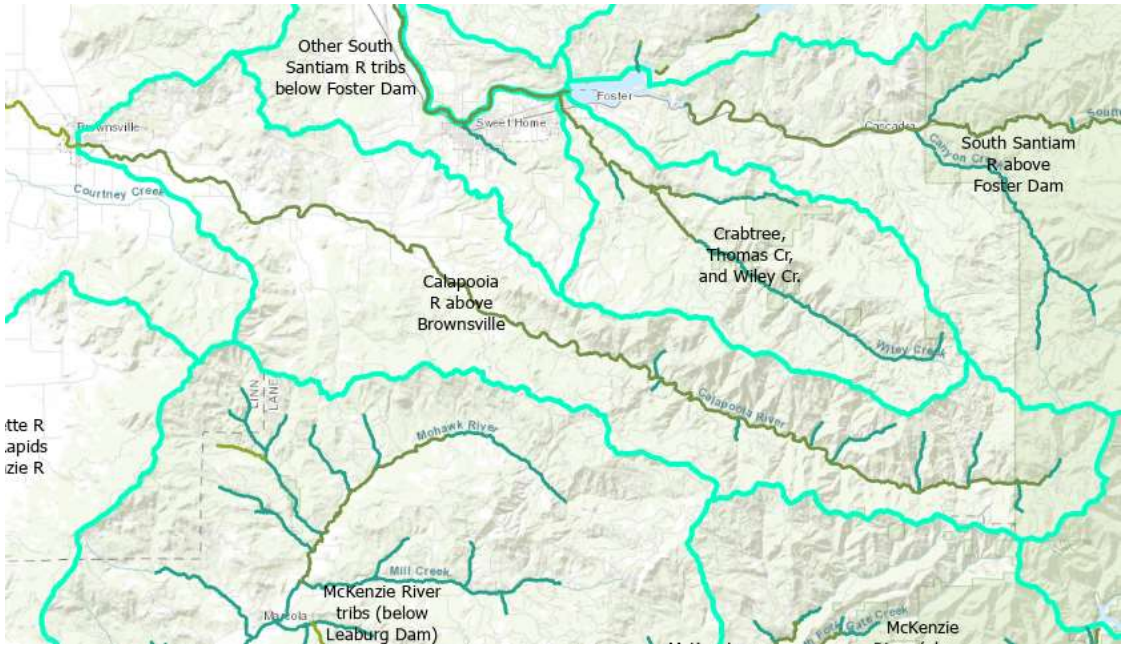
Image Source: ODFW

Salmon & Steelhead Spawning Timing

- Depends on species and locations
- From ODFW timing tables
- 29 different ranges
- As early as July to as late as June.
- Most common – Oct. 15 to May 15



Timing Units and Timing Tables



Calapooia R above Brownsville - Anadromous Species

Waterway ID: MidWill02

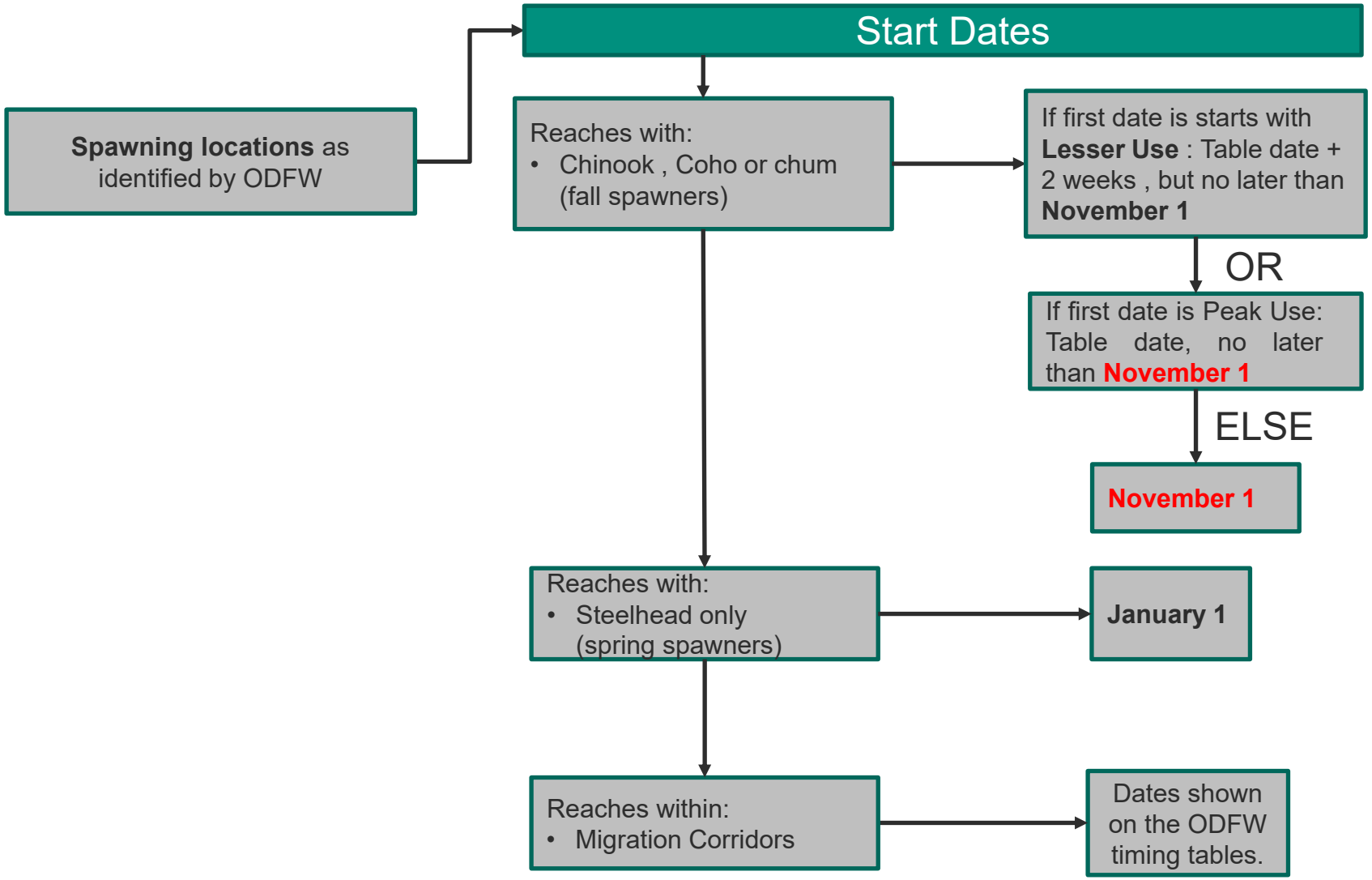
Life Stage/Activity/Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Upstream Adult Migration												
Winter Steelhead	▨	▨	■	■	■	▨	▨					▨
Spring Chinook salmon				▨	■	■	■	▨				
Adult Spawning												
Winter Steelhead			▨	■	■	▨	▨					
Spring Chinook salmon								▨	■	■	▨	
Adult Holding												
Winter Steelhead		▨	▨	▨	▨							
Spring Chinook salmon				▨	■	■	■	■	■	▨		
Egg Incubation through Fry Emergence												
Winter Steelhead			▨	■	■	■	▨	▨				
Spring Chinook salmon	■	▨	▨					▨	■	■	■	■
Juvenile Rearing												
Winter Steelhead	▩	▩	▩	▩	▩	▩	▩	▩	▩	▩	▩	▩
Spring Chinook salmon	▩	▩	▩	▩	▩	▩	▩	▩	▩	▩	▩	▩
Downstream Juvenile Migration												
Winter Steelhead	▨	▨	▨	■	■	▨	▨	▨	▨	▨	▨	▨
Spring Chinook salmon	▨	▨	■	▨	▨	▨	▨	▨	▨	▨	■	■

■ Represents periods of peak use based on professional opinion, survey data, or other inform

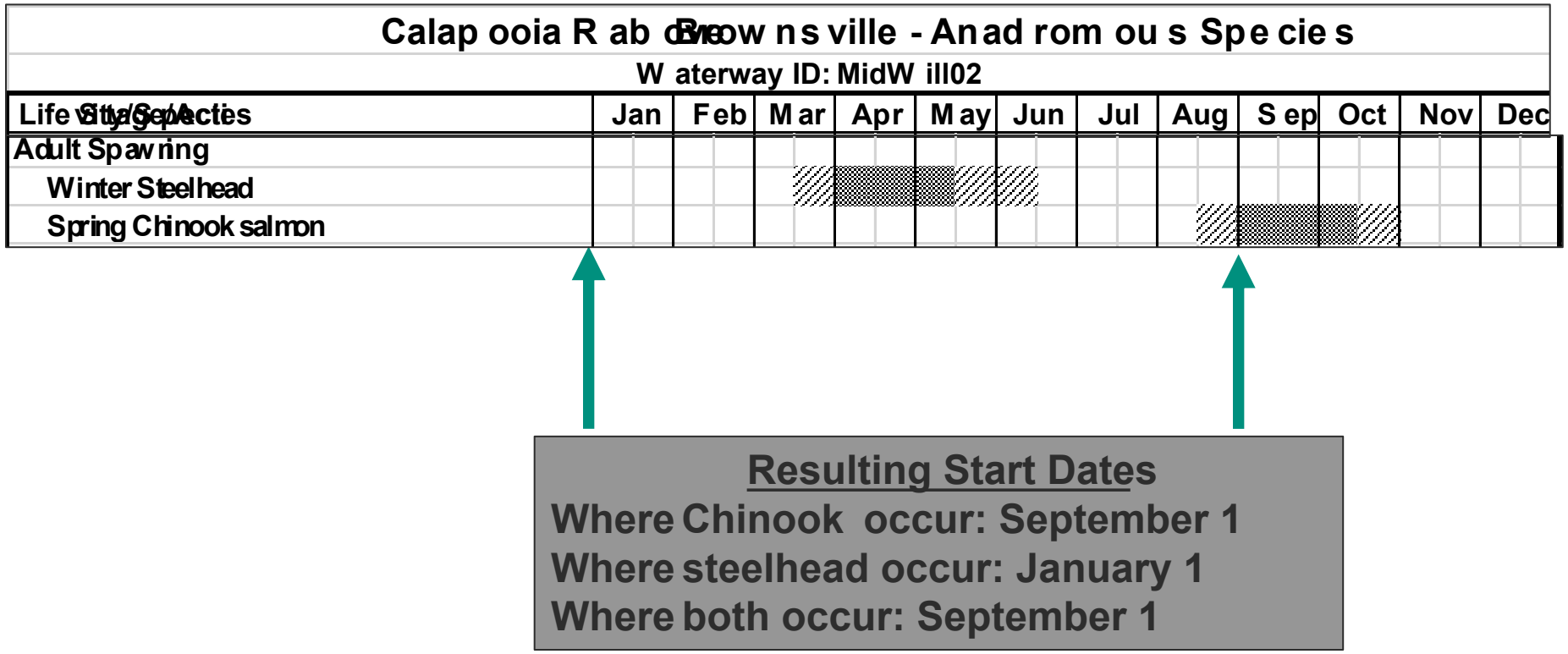
▨ Represents lesser level of use based on professional opinion,survey data, or other informat

▩ Represents periods of presence OR uniformly distributed level of use

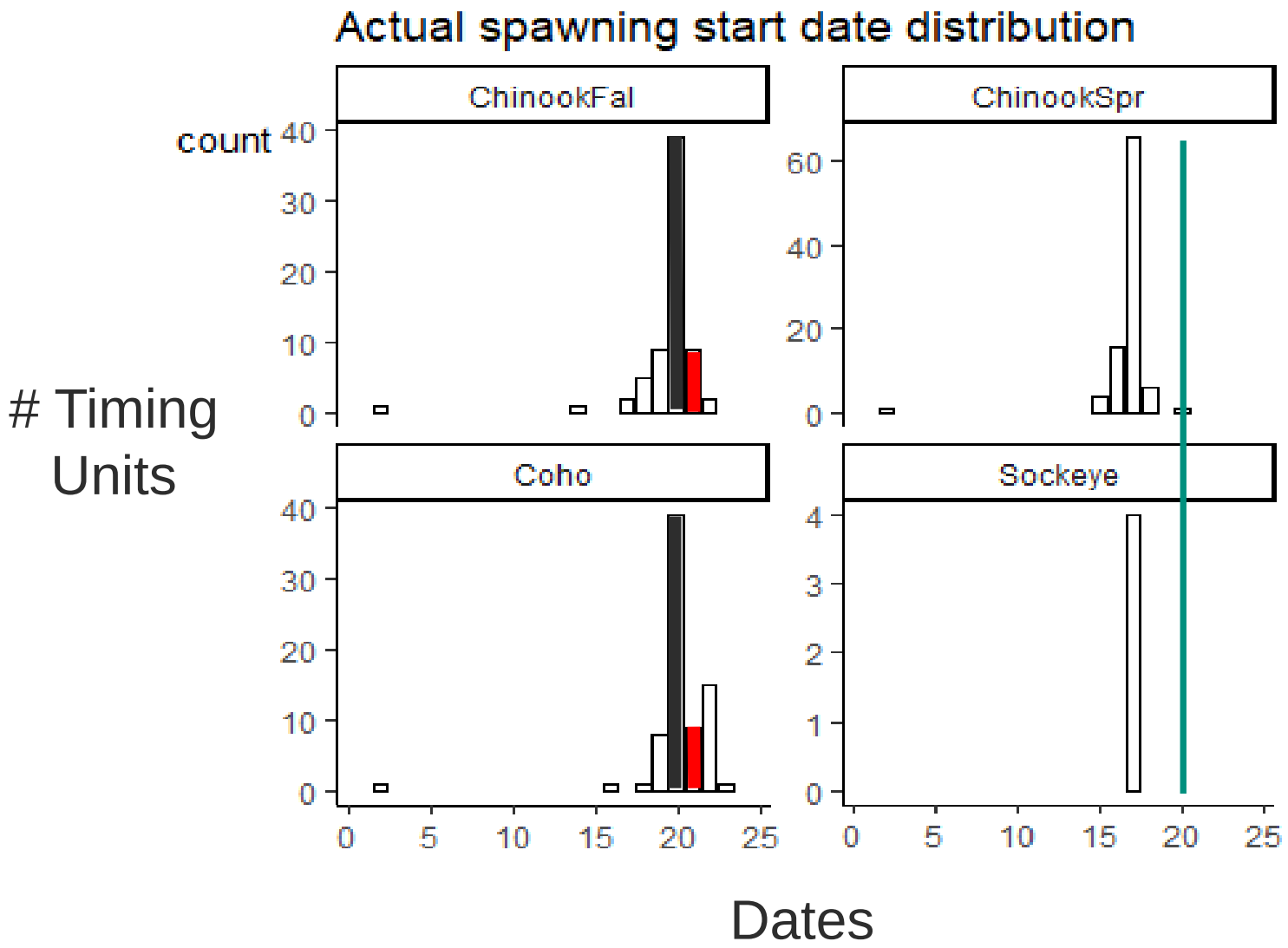
Decision Rules for “Salmon & Steelhead Spawning”: Start Dates



Start Date Calculation

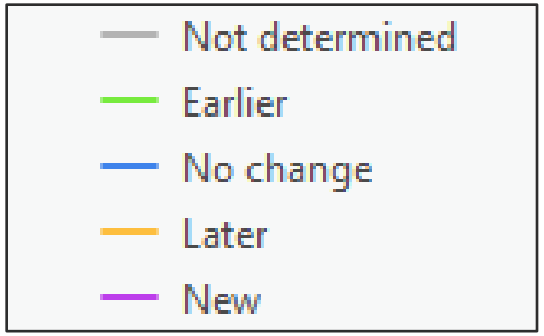


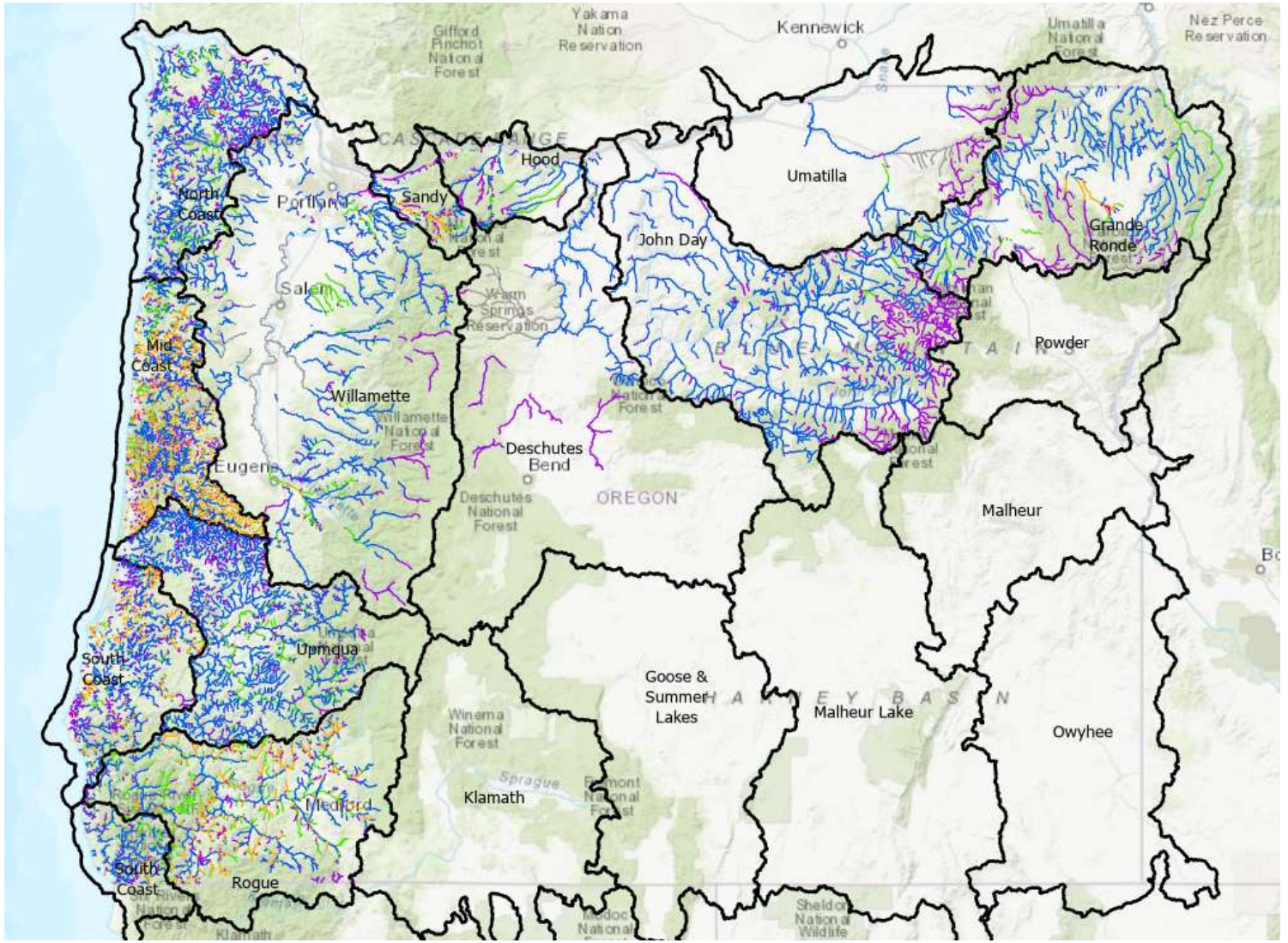
Proposed ‘default date' shift: Oct-Nov.



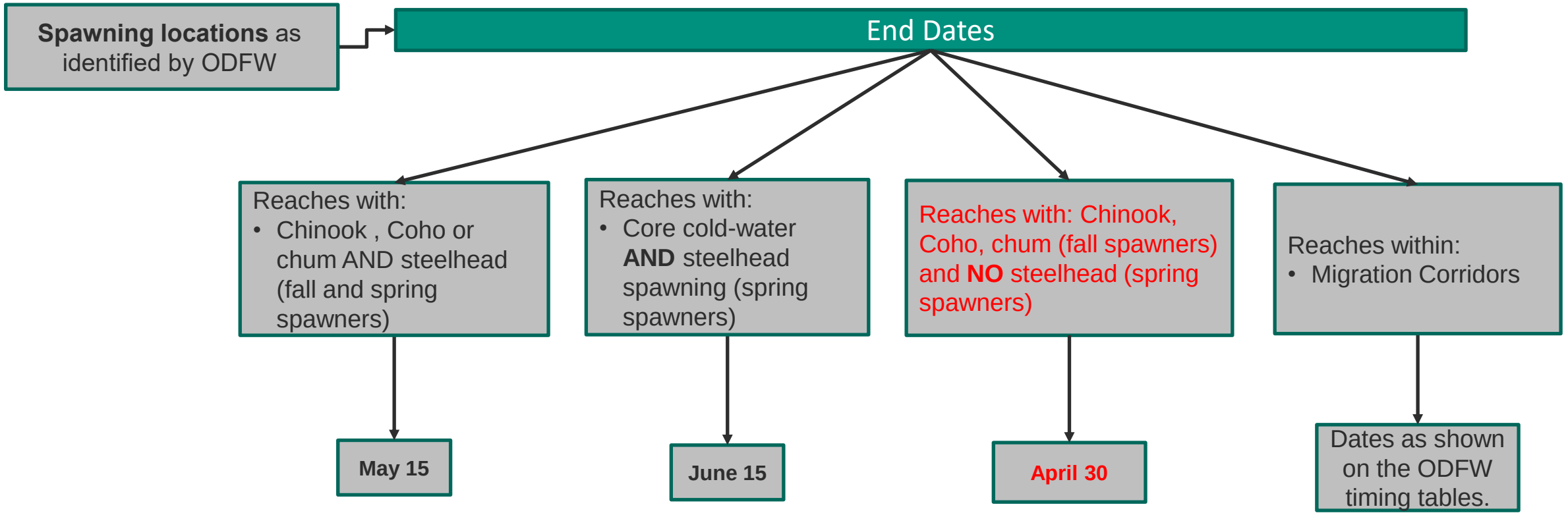
Date Values:	
1=	Jan. 1
2=	Jan. 15
15=	Aug. 1
17=	Sept. 1
20=	Oct. 15
21=	Nov. 1

Spawning Timing Start Changes





Decision Rules for "Salmon & Steelhead Spawning" End Dates



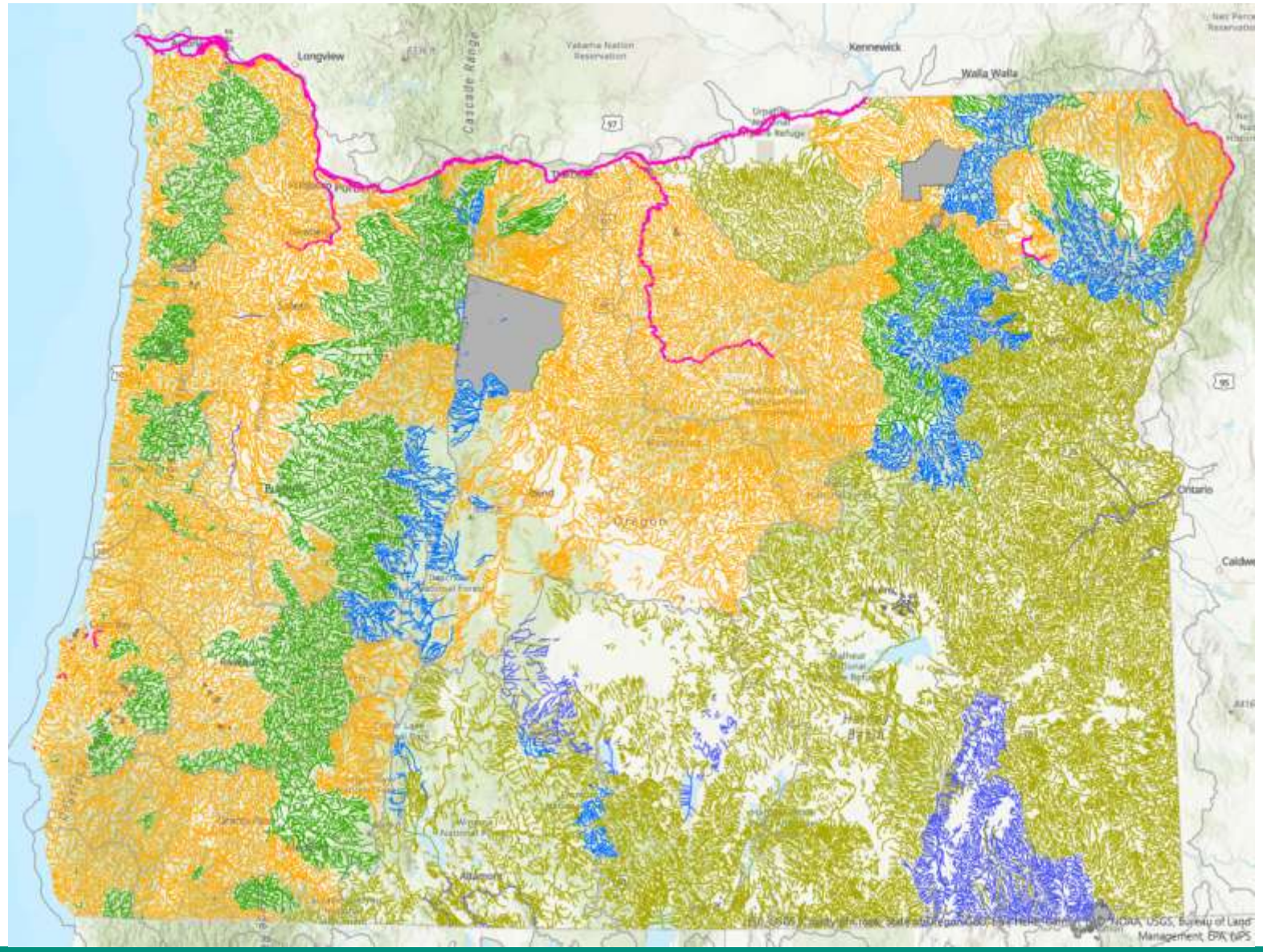
Questions about Spawning Timing?

Image Source: ODFW

The End (Proposed) Result

Legend

- Cool Water Species
- Borax Lake Chub
- Bull Trout Spawning and Juvenile Rearing
- Core Cold Water Habitat
- Salmon and Trout Rearing and Migration
- Salmon and Steelhead Migration Corridors
- Special Cool Water Narrative
- Redband or Lahontan Cutthroat
- Non-Jurisdictional



Opportunities to provide feedback

DEQ will accept advance comments on the proposed temperature decision rules until March 14.

- Focus on policy implications
- Changes to rules
- Impacts caused by application of proposed updates

Full Technical Support Document for Review - April

- Specific questions about how methods are derived
- Other methods considered

Public Comment Period – June/July

- Use change justifications
- Comment on changes to specific reaches of interest

Further Questions?

Image Source: ODFW

Oregon DEQ Aquatic Life Use Updates

Rule Advisory Committee Meeting #2

3. Documenting and justifying potential use changes

Feb. 28, 2022

Objectives

- Regulatory background regarding requirements for designated uses.
- DEQ objectives for justifying use changes.
- Overview of types of use changes and requirements to support those changes.

Regulatory background – use designations

- 40 CFR 131.10 – Designation of uses
  - "States may adopt sub-categories of a use and set the appropriate criteria to reflect varying needs of such sub-categories of uses..."
  - "States may not remove designated uses if they are existing uses…" (attained in the water body on or after November 28, 1975).

Use Attainability Analysis

- UAA is required when…
  - State wishes to remove a fishable/swimmable use, to remove a sub-category of such a use, or to designate a sub-category of such a use that requires criteria less stringent than previously applicable.
- 40 CFR 131.3(g) – Use attainability analysis
  - "a structured scientific assessment of the factors affecting the attainment of the use which may include physical, chemical, biological, and economic factors…"

Regulatory background – UAA factors

Use cannot be attained due to…

- Naturally occurring pollutant concentrations
- Natural, ephemeral, intermittent or low flow conditions
- Human-caused conditions or sources of pollution
- Dams, diversions, or other hydrologic modifications
- Physical conditions and natural features
- Substantial and widespread economic and social impact

Regulatory background – highest attainable use

- If a State conducts a use attainability analysis, the State shall adopt the highest attainable use:
  - modified aquatic life, wildlife, or recreation use that is closest to a fishable/swimmable use and attainable, based on the evaluation of the UAA factor(s) and information or analyses that were used to evaluate attainability.

Use change rationale – background

- Intention when maps were adopted in 2003 to update maps as new/improved information became available.
- Most changes resulting in less stringent criteria are:
  - Corrections (based on improved mapping capabilities or finalization of bull trout critical habitat rules)
  - *De minimis* refinements (small adjustments in designations based on improved ODFW data)

Use change rationale – background

- Working with EPA to determine required information to justify changes resulting in less stringent criteria.
- “Batch” similar changes for efficiency.
- ODFW considers habitat suitability, not only presence, in the fish habitat distribution database.

Documentation of use changes

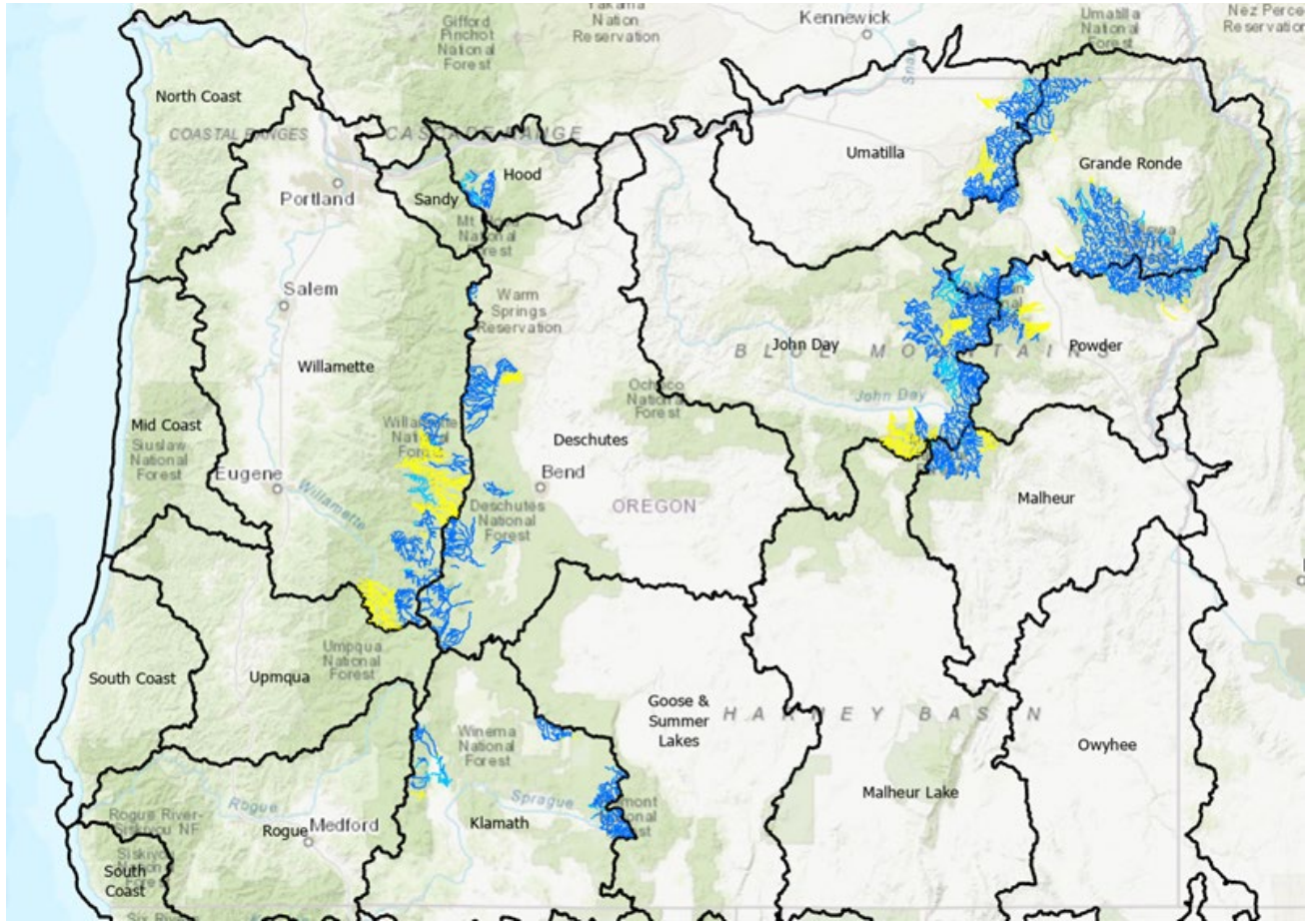
- Categories of use change
- Information that will be included in documentation to support use changes
- Relevant examples of each category

Corrections – bull trout critical habitat

- DEQ designated bull trout spawning use based on 2002 USFWS proposed bull trout critical habitat rule.
  - Intent to align uses with final critical habitat rule once published.
- USFWS published final critical habitat rule in 2010.
  - Some reaches are not in final rule.
- Removing use where neither USFWS or ODFW identify water as bull trout spawning habitat.

Corrections – bull trout critical habitat

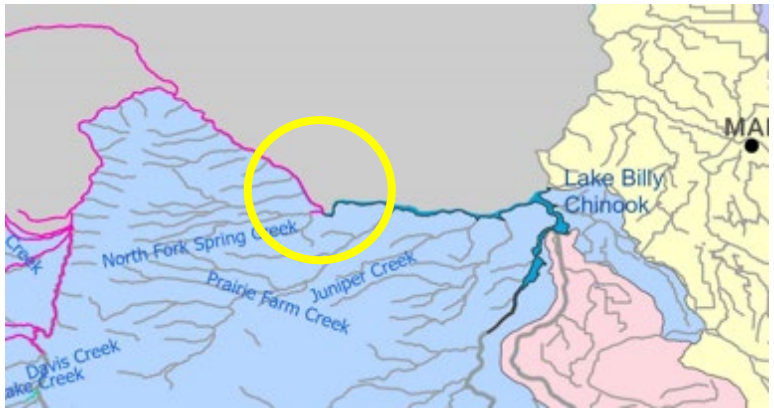
Corrections –bull trout critical habitat



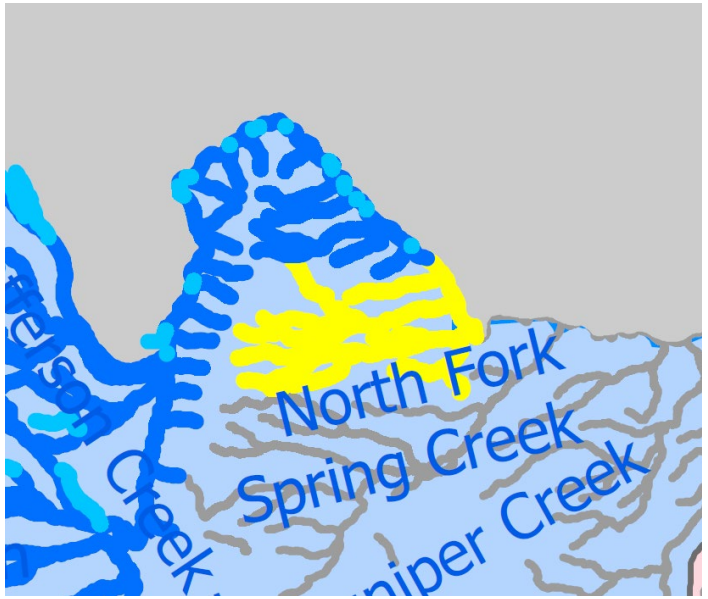
Corrections - bull trout spawning use based on ODFW data

- ODFW has revised bull trout spawning habitat in some streams. DEQ is revising the use accordingly.
- Impacts some tributaries designated in 2003 due to downstream protection rule, but which do not provide bull trout spawning habitat according to ODFW and USFWS.

Corrections to bull trout spawning use based on ODFW data



2003 ODFW data



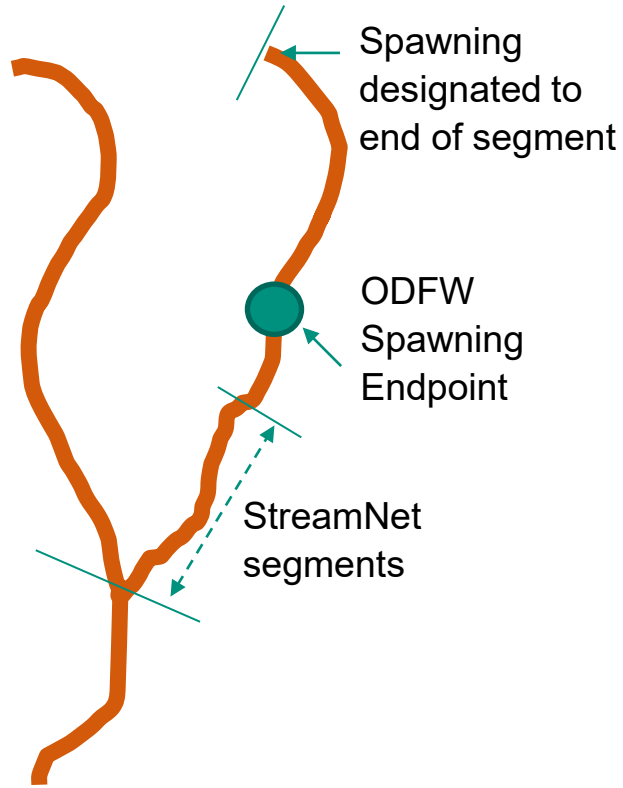
Current ODFW data

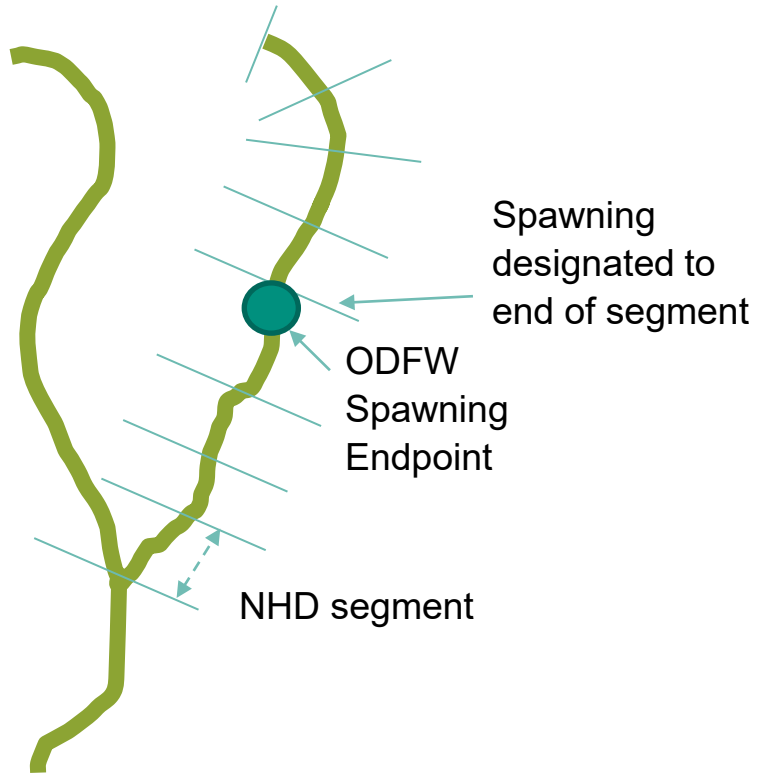
Tributaries included in 2003 due to downstream protection.

Corrections to spawning due to improved GIS

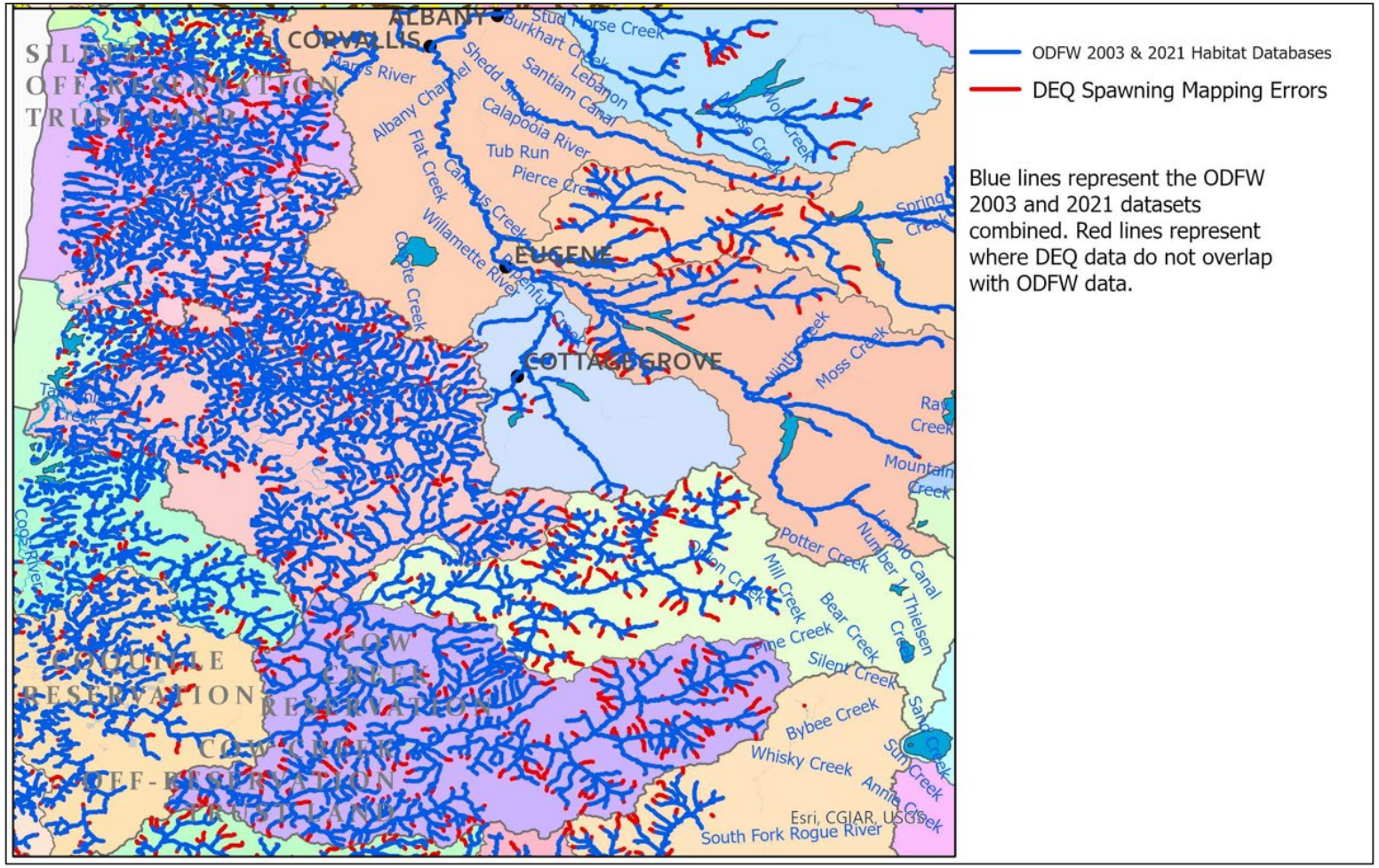
- Many small reaches upstream of salmon and steelhead spawning habitat identified for spawning use due to scale of DEQ's GIS mapping.
- ODFW did not identify these areas as spawning in 2003 or today.

Corrections to spawning due to improved GIS





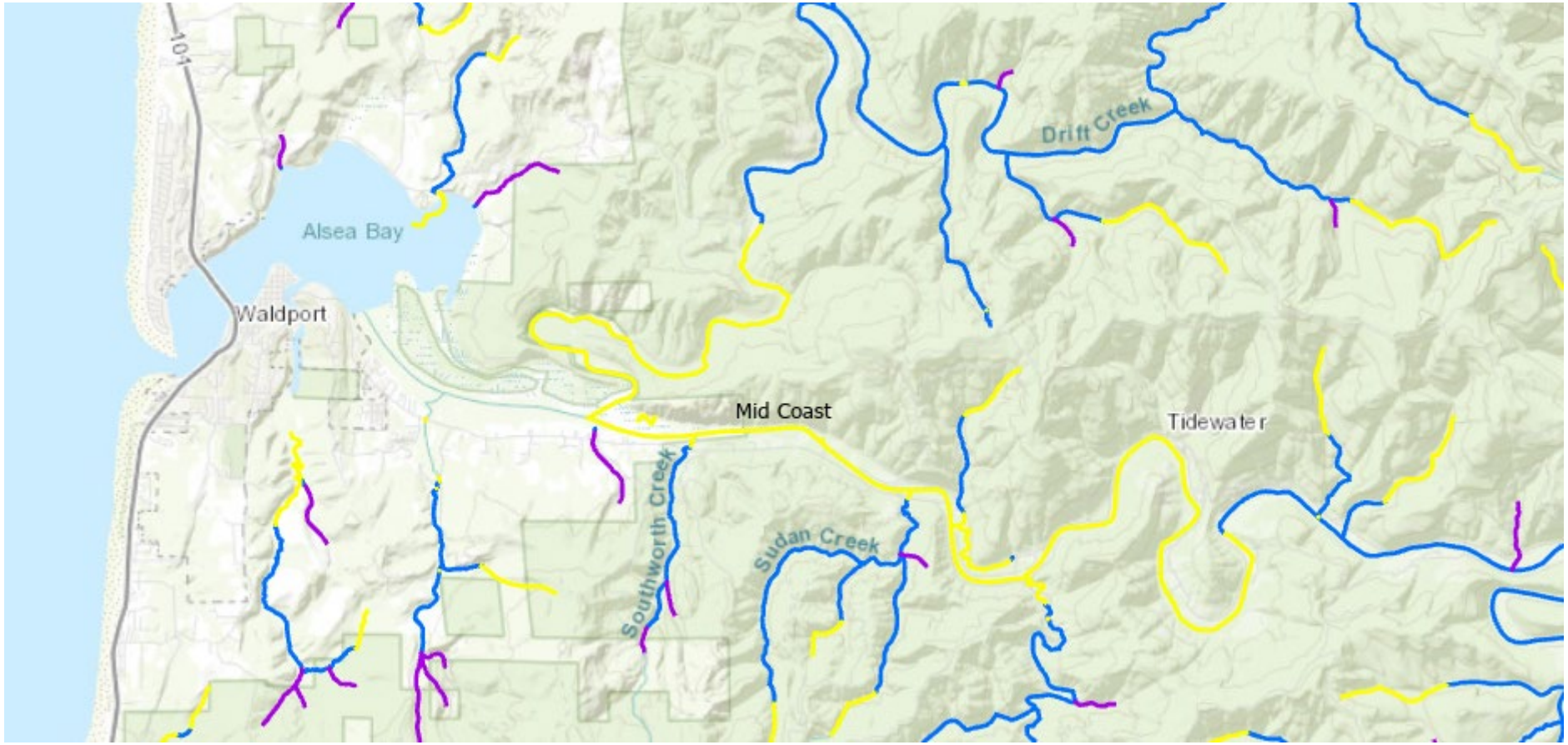
Corrections to spawning due to improved GIS



Corrections to spawning in estuaries

- In 2003, some areas of estuaries and tidally influenced lower river segments were designated for spawning.
- ODFW recognizes that spawning habitat doesn't occur below head of tide but didn't have the ability to accurately map the upstream extent of estuaries and tidally influenced waters.
- Estuaries now more precisely mapped using CMECS.
- ODFW has updated its database with this information.

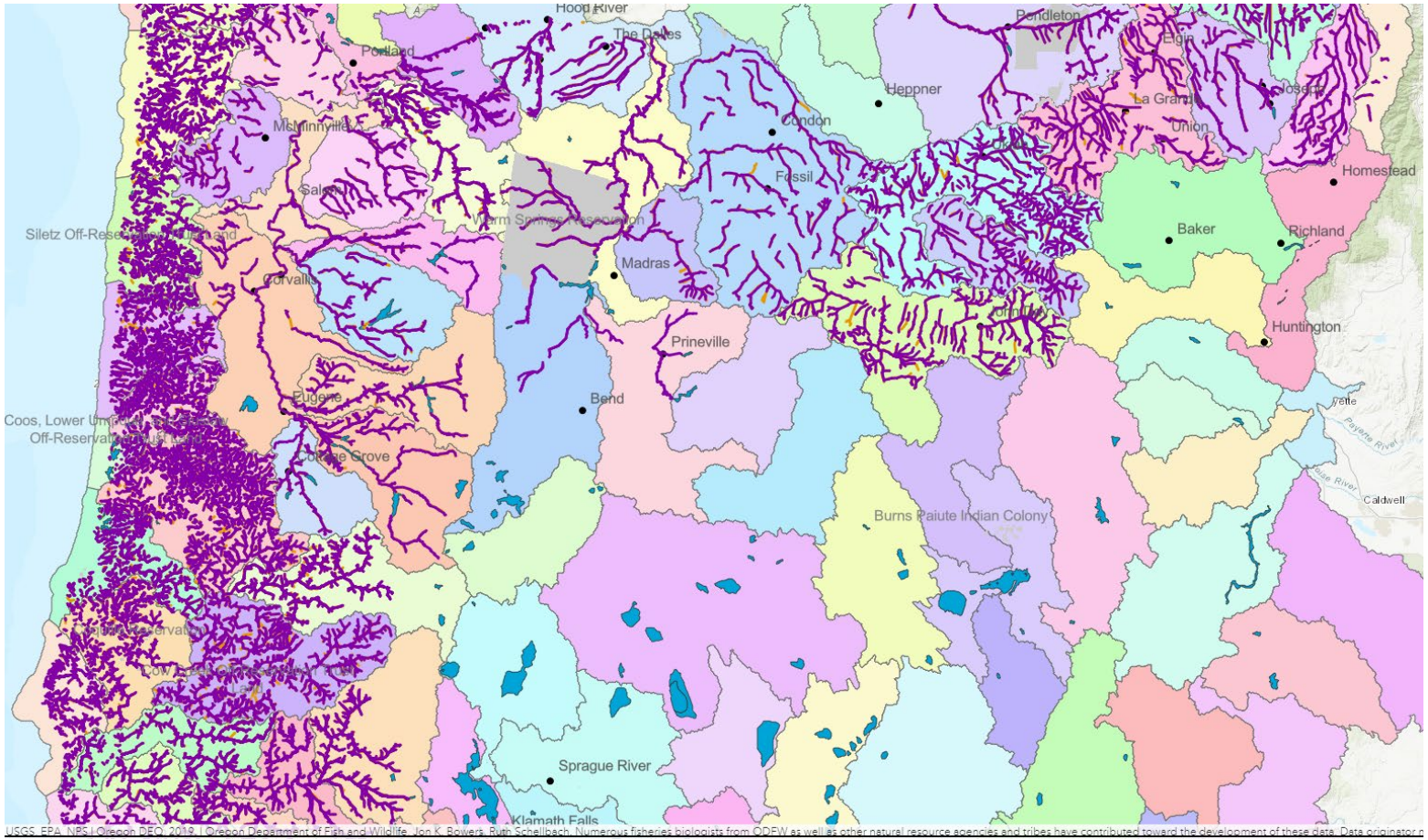
Corrections to spawning in estuaries



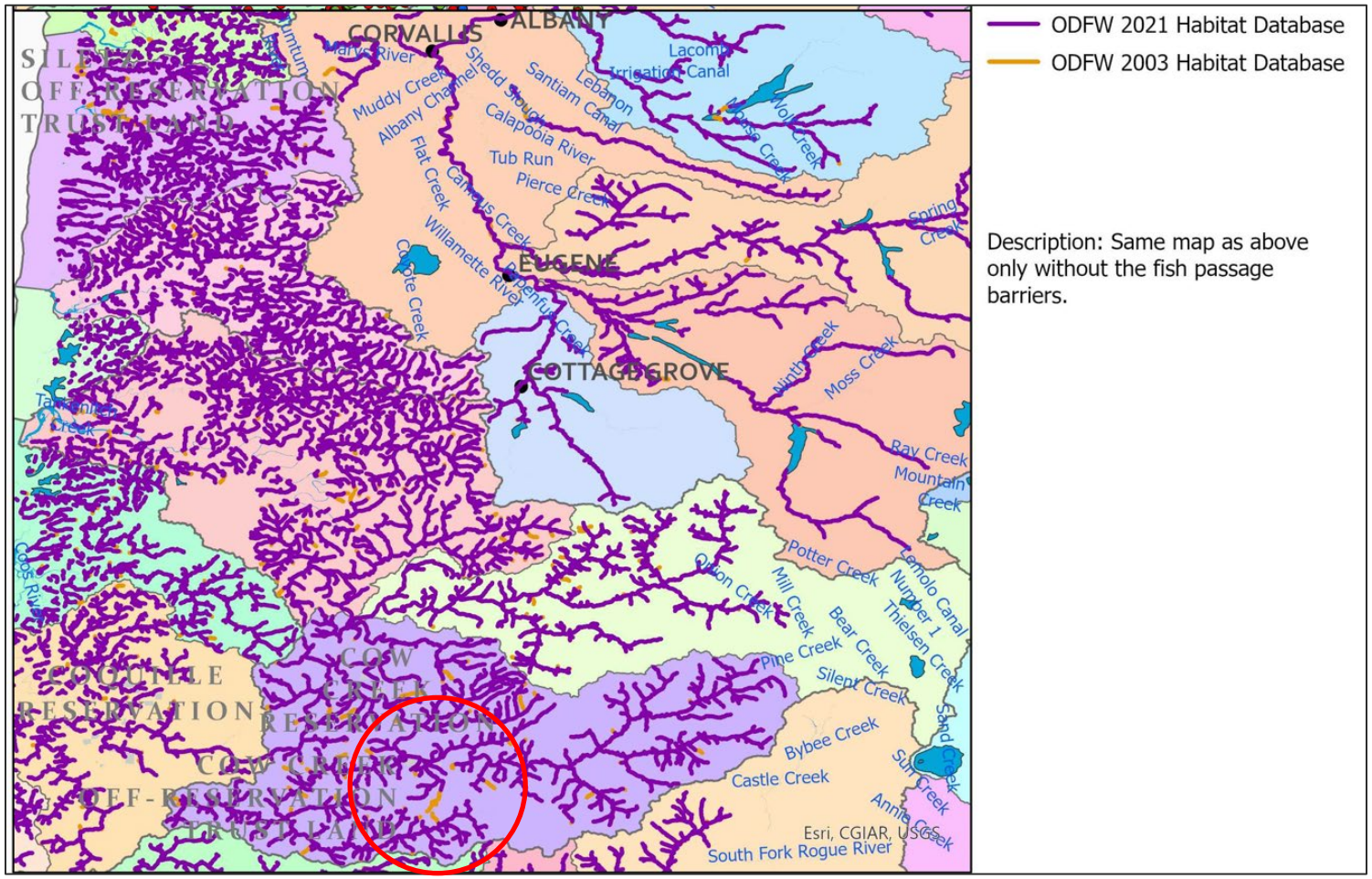
De minimis refinements to spawning

- Small adjustments in ODFW spawning habitat distribution data based on additional surveys since 2002.
  - Information about habitat suitability and accessibility has improved.
  - Both adding and removing salmon and steelhead spawning use.

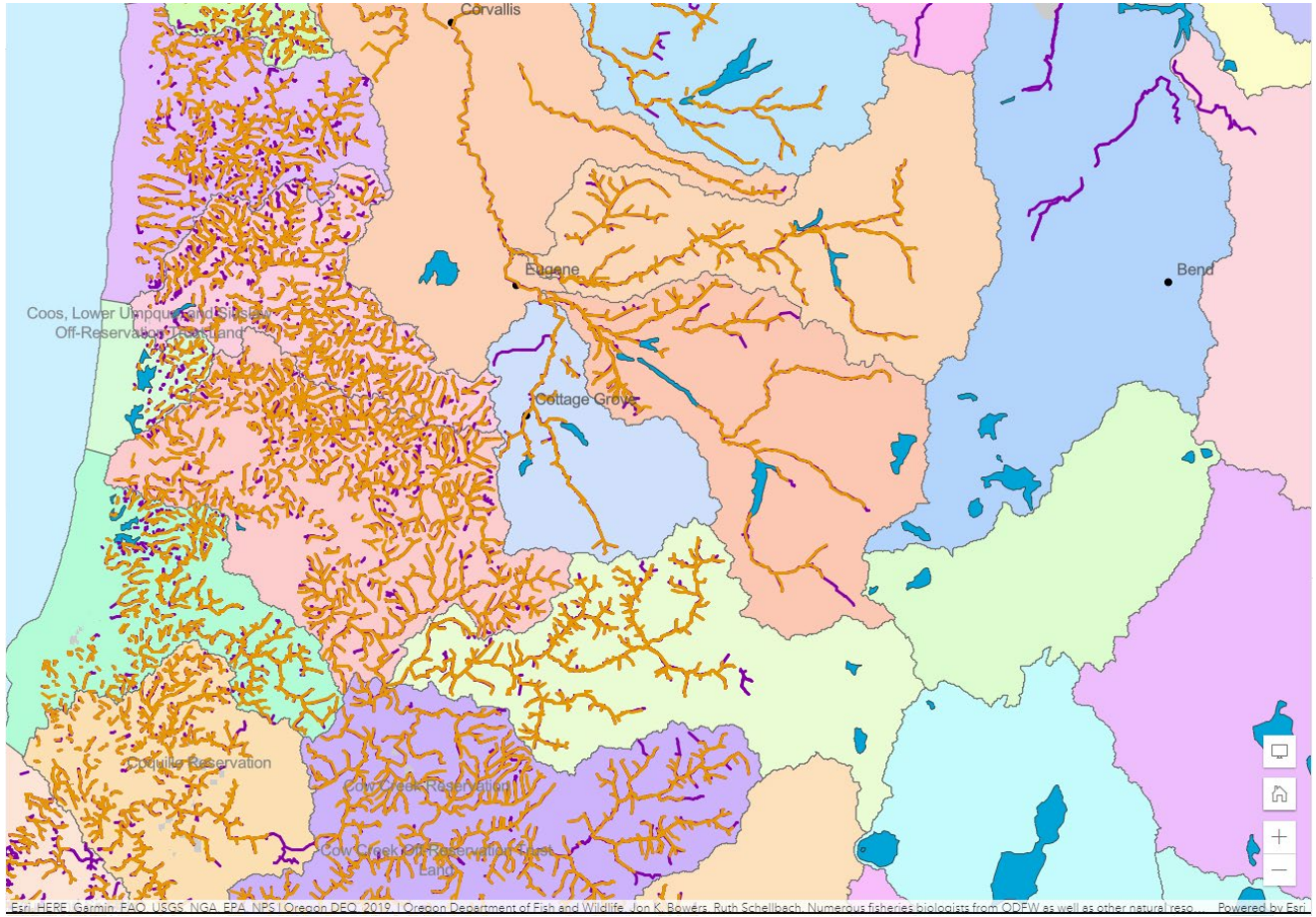
De minimis refinements to spawning



De minimis refinements to spawning



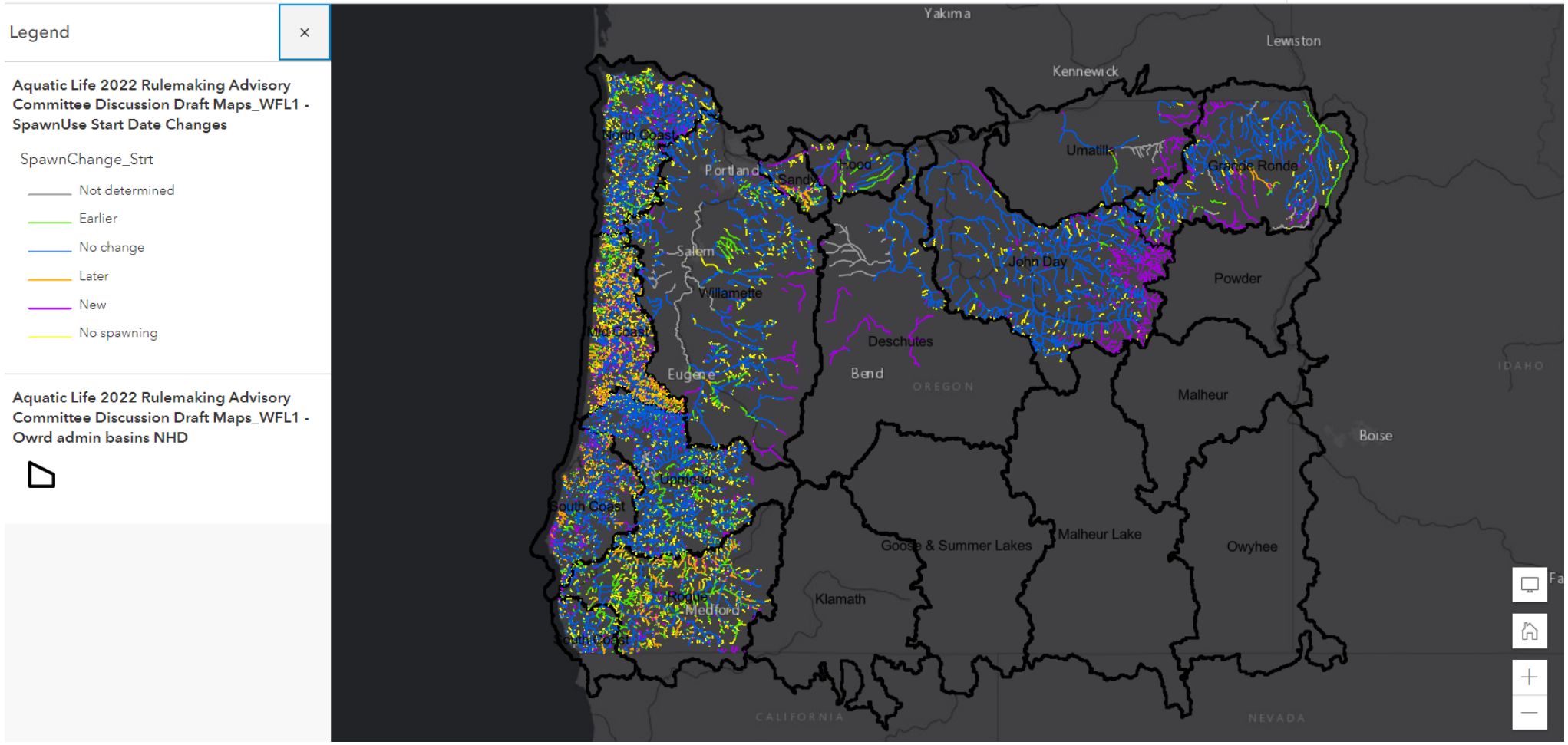
De minimis refinements to spawning



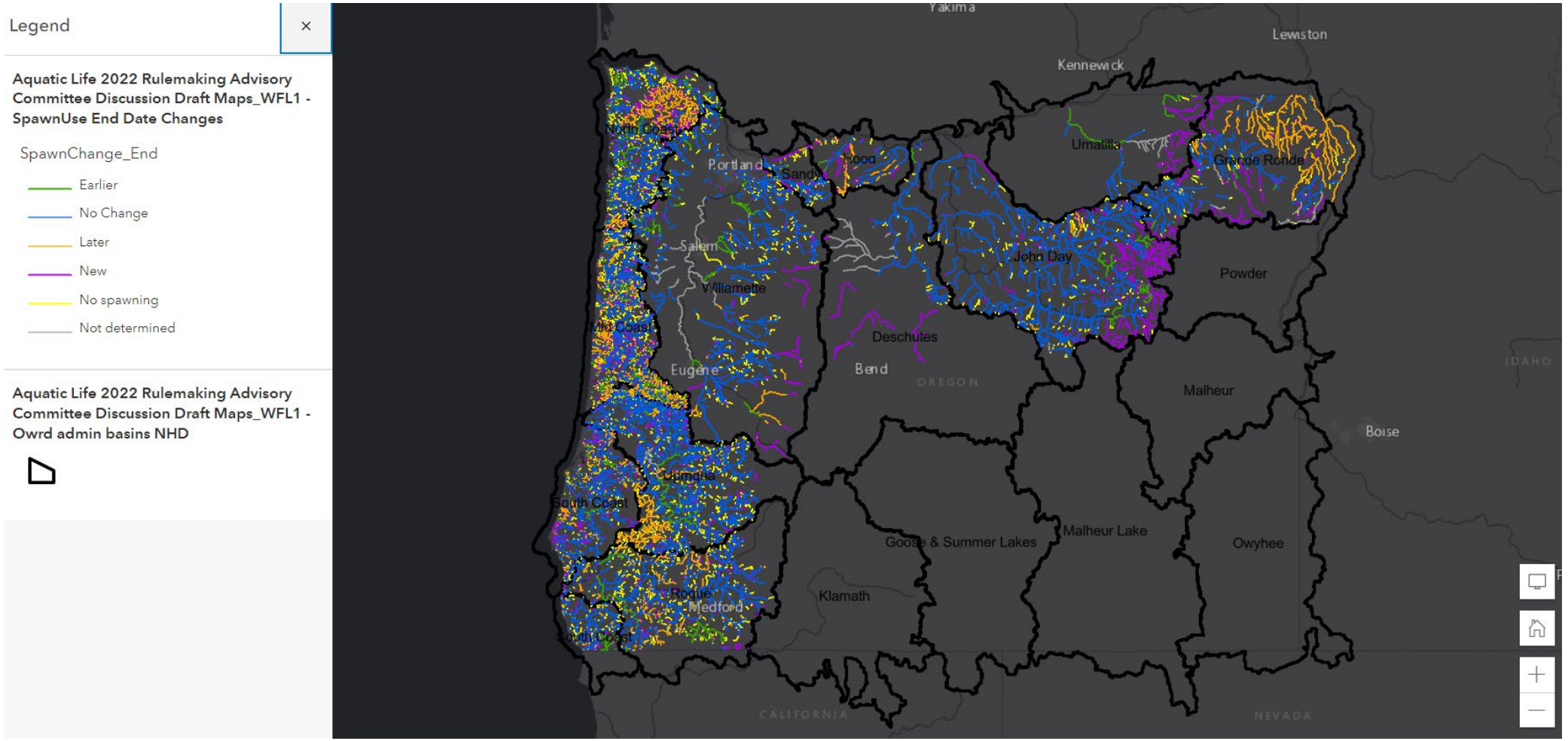
De minimis refinements to spawning timing

- Refining timing when spawning use occurs based on decision rules.
- Affects temporal distribution, not spatial.

De minimis changes to spawning starting date



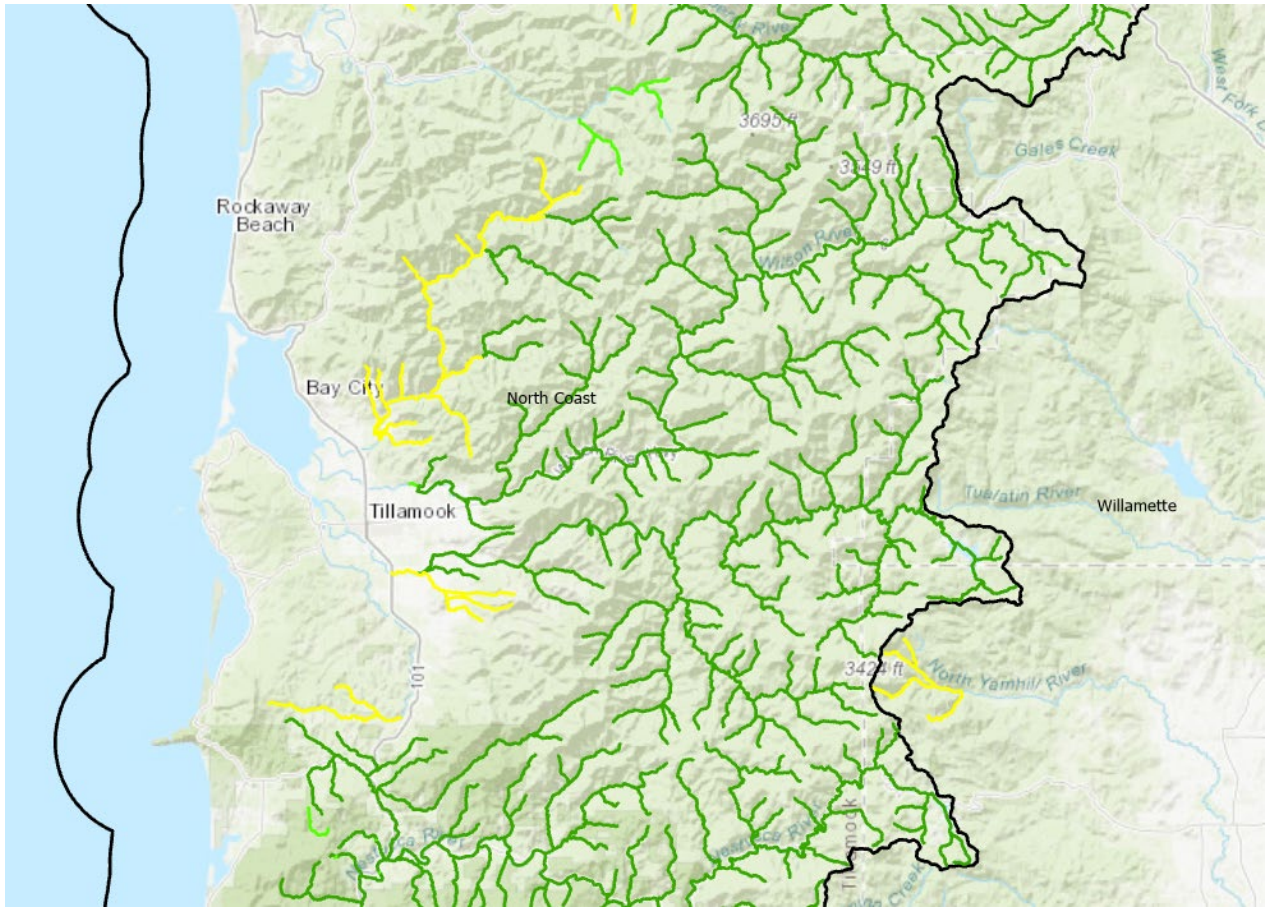
De minimis changes to spawning end date



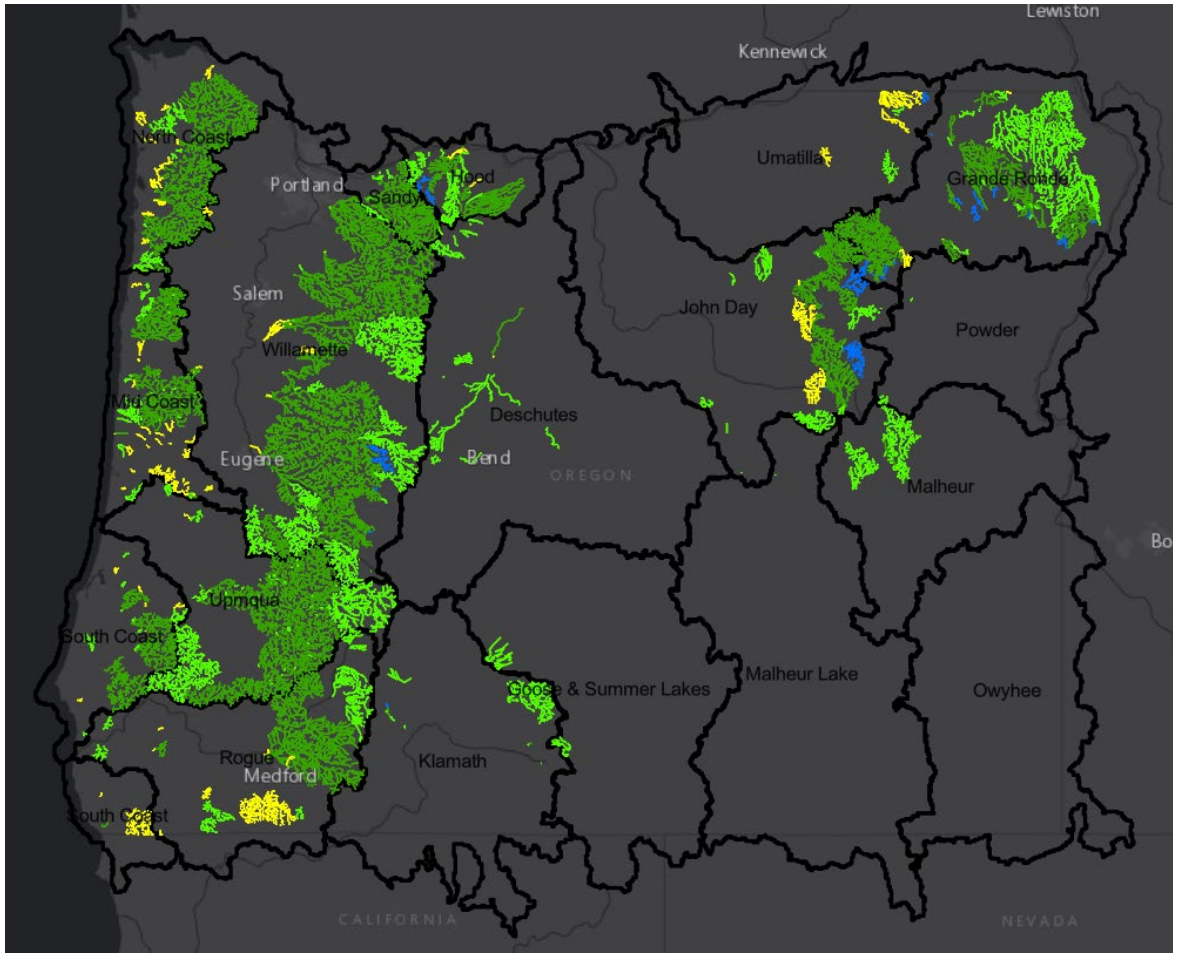
Changes to core cold water use

- Refining extent of core-cold water use designations based on updated decision rules and new data.
  - ODFW does not consider reaches as “early spawning,” so they are not considered core cold water.

De minimis changes to core cold water



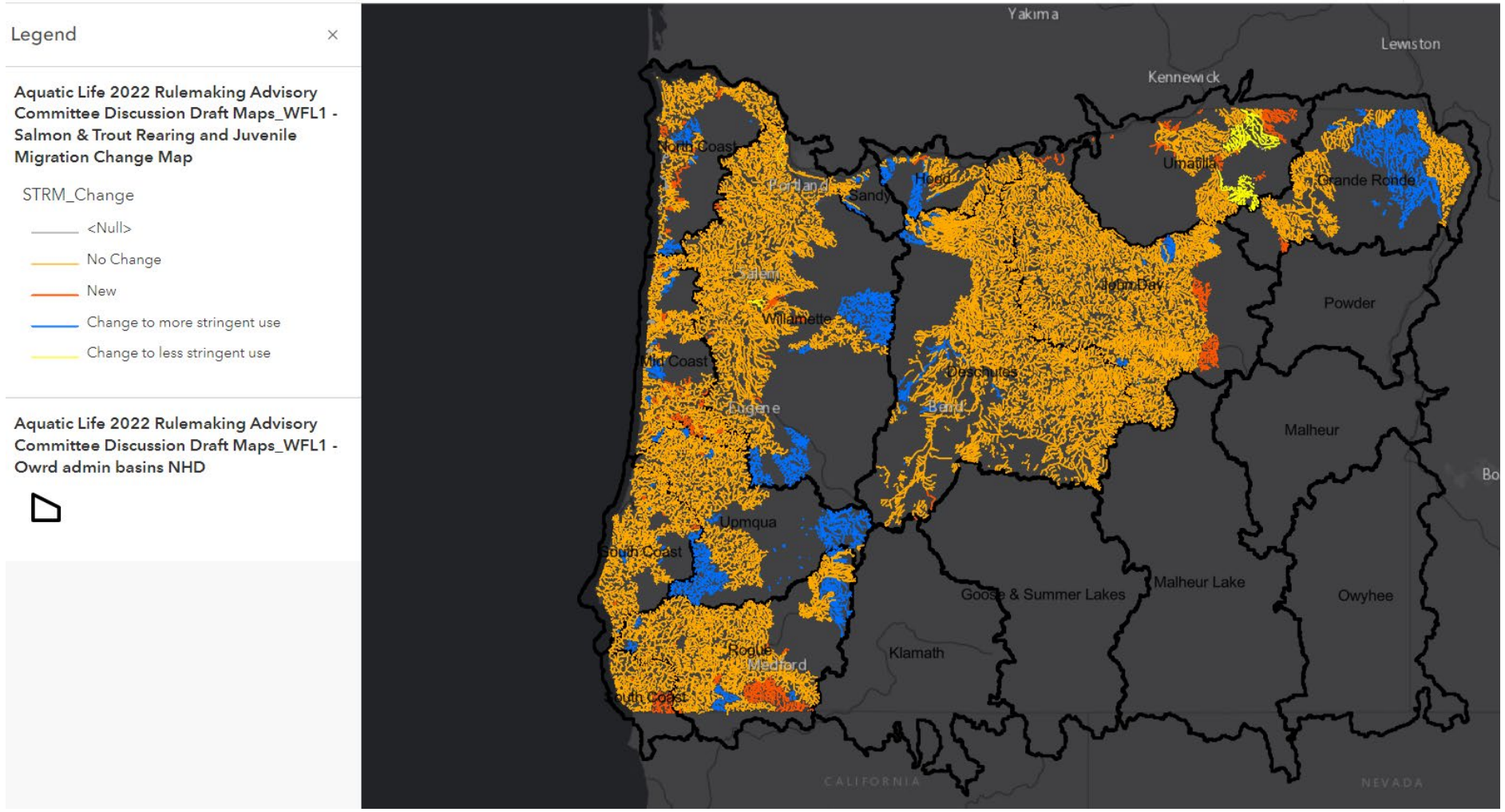
Changes to core cold water - statewide



Changes to rearing and migration use

- Refining extent of rearing and migration use designations based on updated decision rules and new data.
  - In Umatilla Basin, steelhead are not present, so use is being changed to Lahontan and redband trout.
  - In lower part of Santiam and the D River, use is being changed to migration corridor based on decision rules.

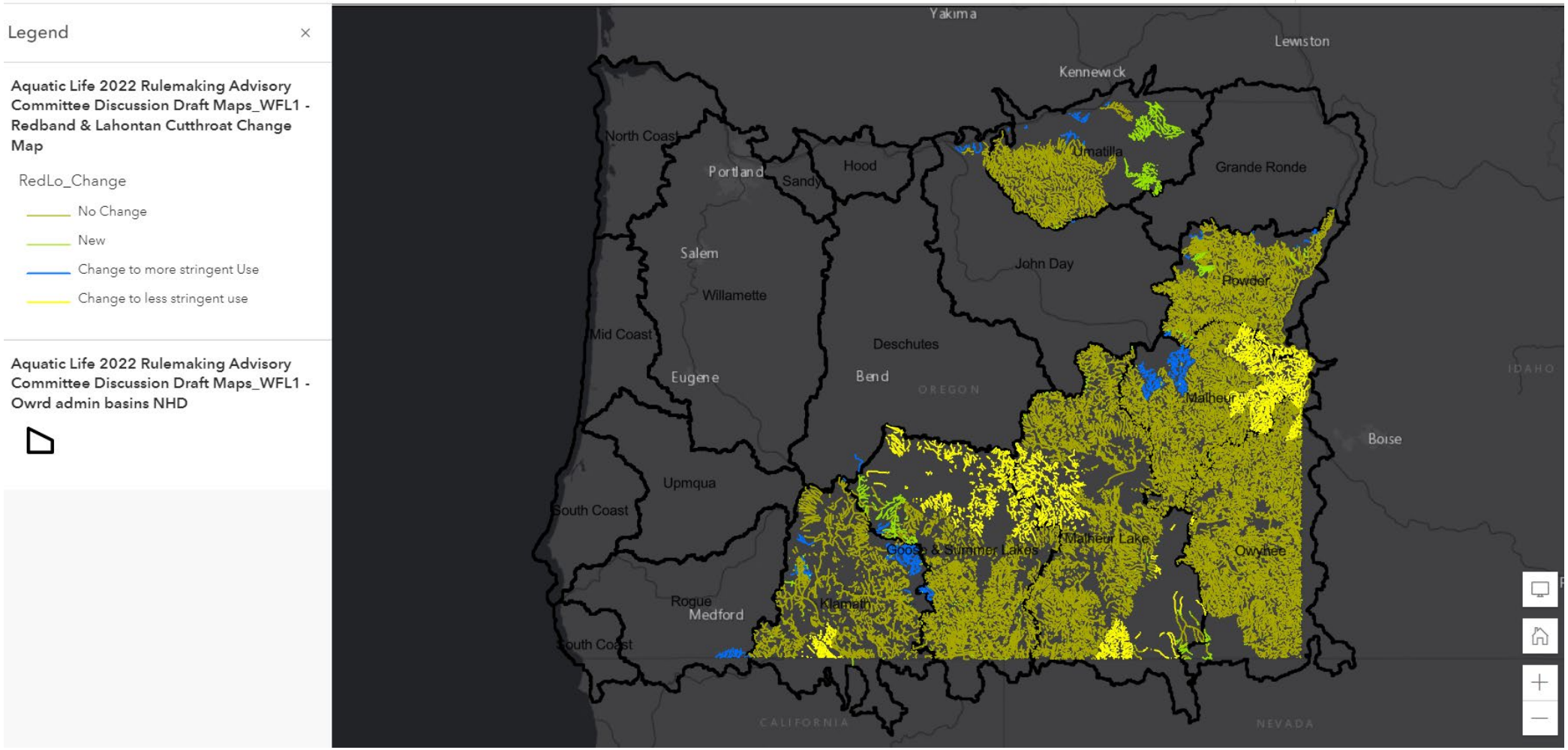
De minimis refinements to rearing and migration



Changes to Lahontan cutthroat and redband trout use

- Changing from Lahontan cutthroat and redband trout use to cool water species use in many areas of SE Oregon.
- In 2003, there was little information about redband trout habitat.
- Use in 2003 based on blanket assumption of presence of redbound trout in those basins.
- ODFW now has data on redband trout distribution and timing.

Large scale refinements to Lahontan cutthroat and redband trout use



Questions

Oregon DEQ Aquatic Life Use Updates

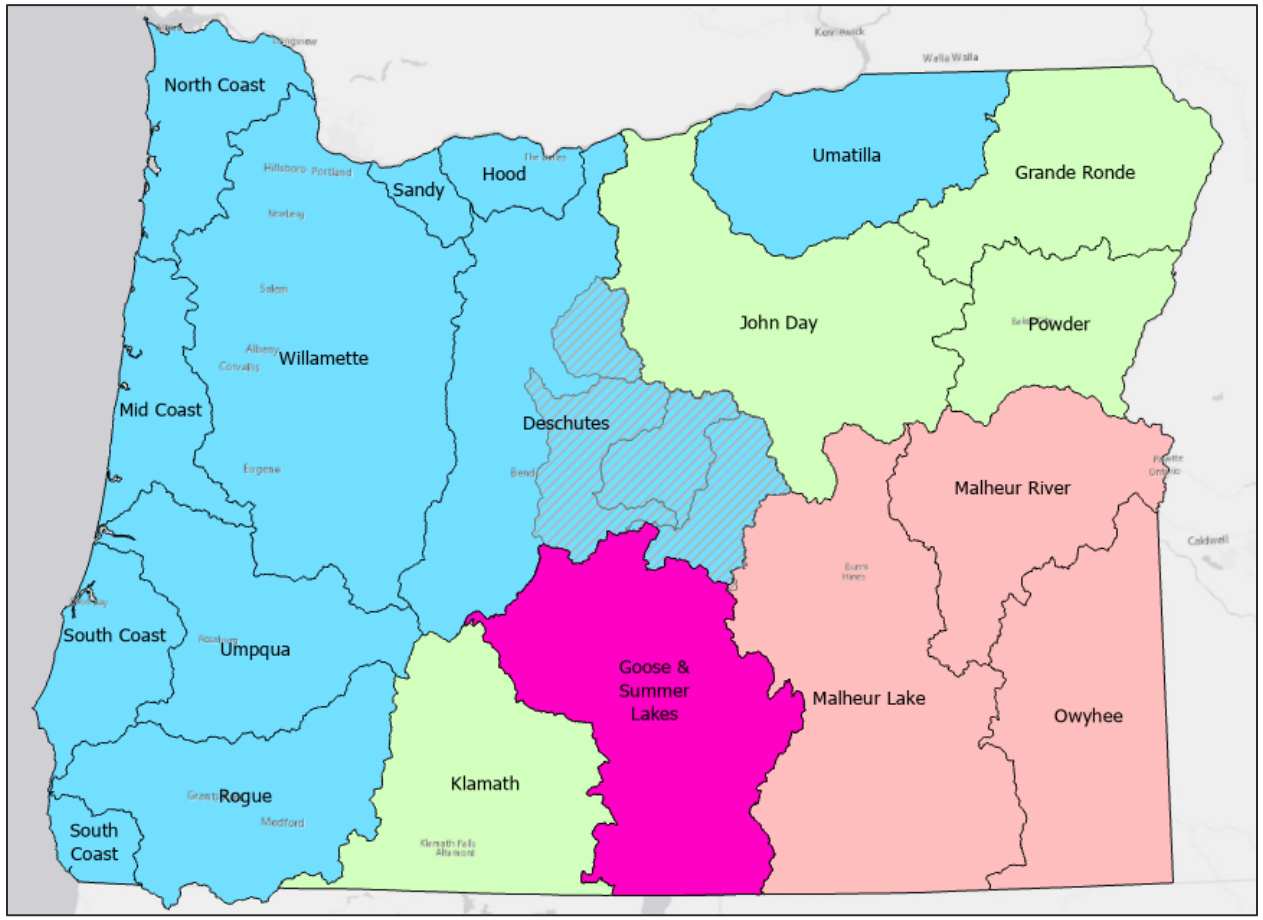
Rule Advisory Committee Meeting #2

4. Crooked River pH updates

Feb. 28, 2022

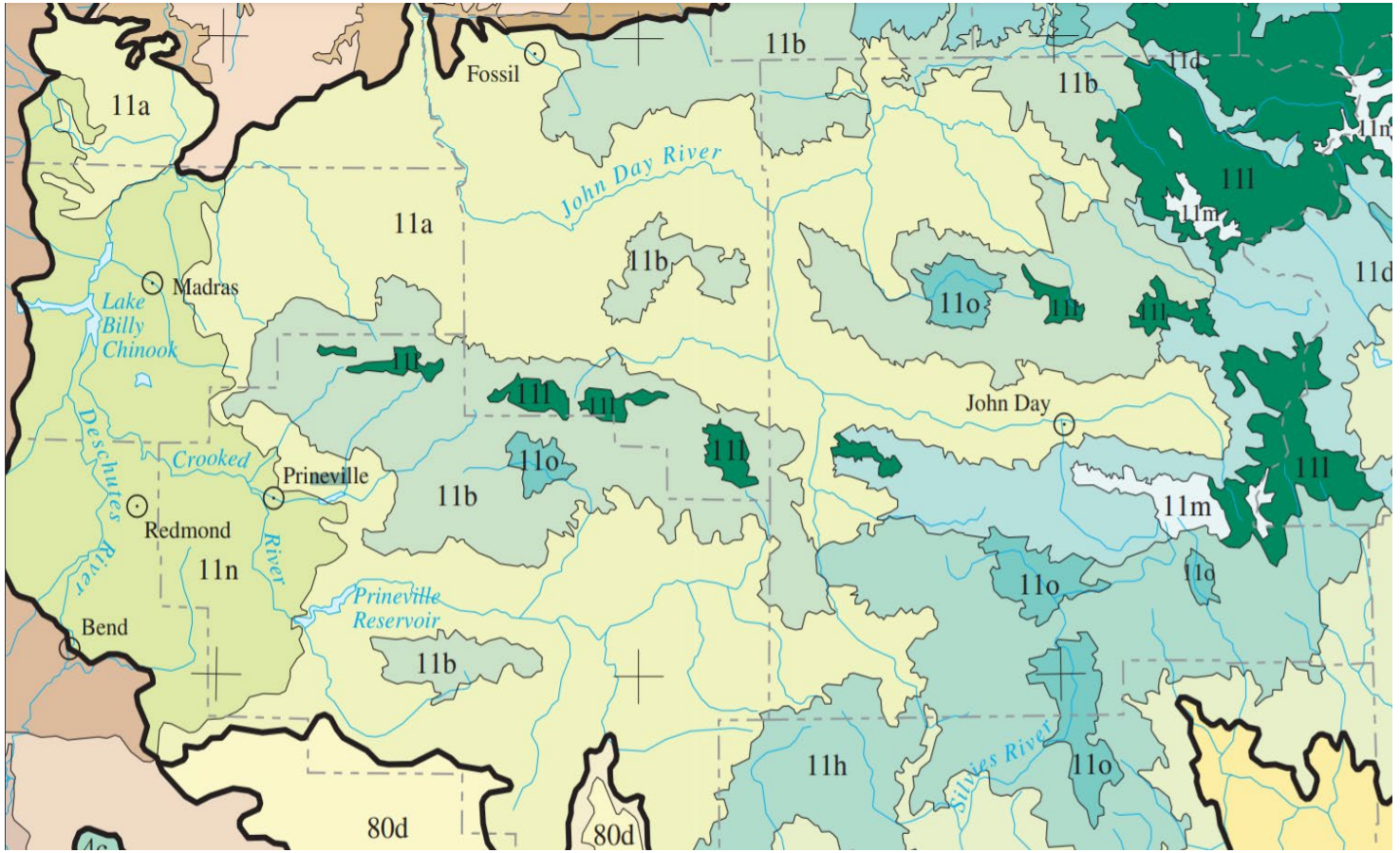
Crooked River pH updates - Background

- Current pH criteria for Deschutes Basin consistent with coastal Oregon and Cascades basins criteria (6.5 – 8.5).



Crooked River pH updates - Background

- Crooked River/ Trout Creek - same ecoregion as John Day basin.
- Naturally sodic soils from bentonite results in higher pH.



Crooked River pH updates – Rule language

"pH values may not fall outside the following range: 6.5-9.0. When greater than 25 percent of ambient measurements taken between June and September are greater than pH 8.7, and as resources are available according to priorities set by the Department, the Department will determine whether the values higher than 8.7 are anthropogenic or natural in origin."

Questions

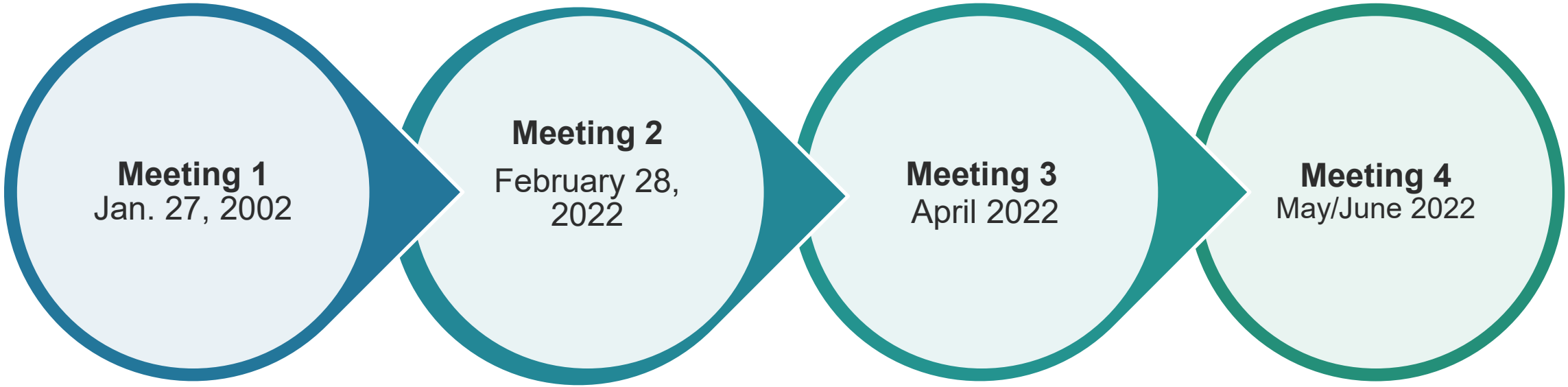
Rule Advisory Committee Meeting #2

5. Wrap Up and Adjournment

Oregon DEQ Aquatic Life Use Updates

Feb. 28, 2022

Future Meeting Topics



- Introduction and Overview

- Temperature use designations
- Crooked River pH
- Overview of Justification and Supporting Documentation

- Dissolved Oxygen designations
- Aquatic Life Use Definitions
- Introduce fiscal and economic impact analysis

- Fiscal and economic impact discussion
- Use change justifications
- Additional topics as needed

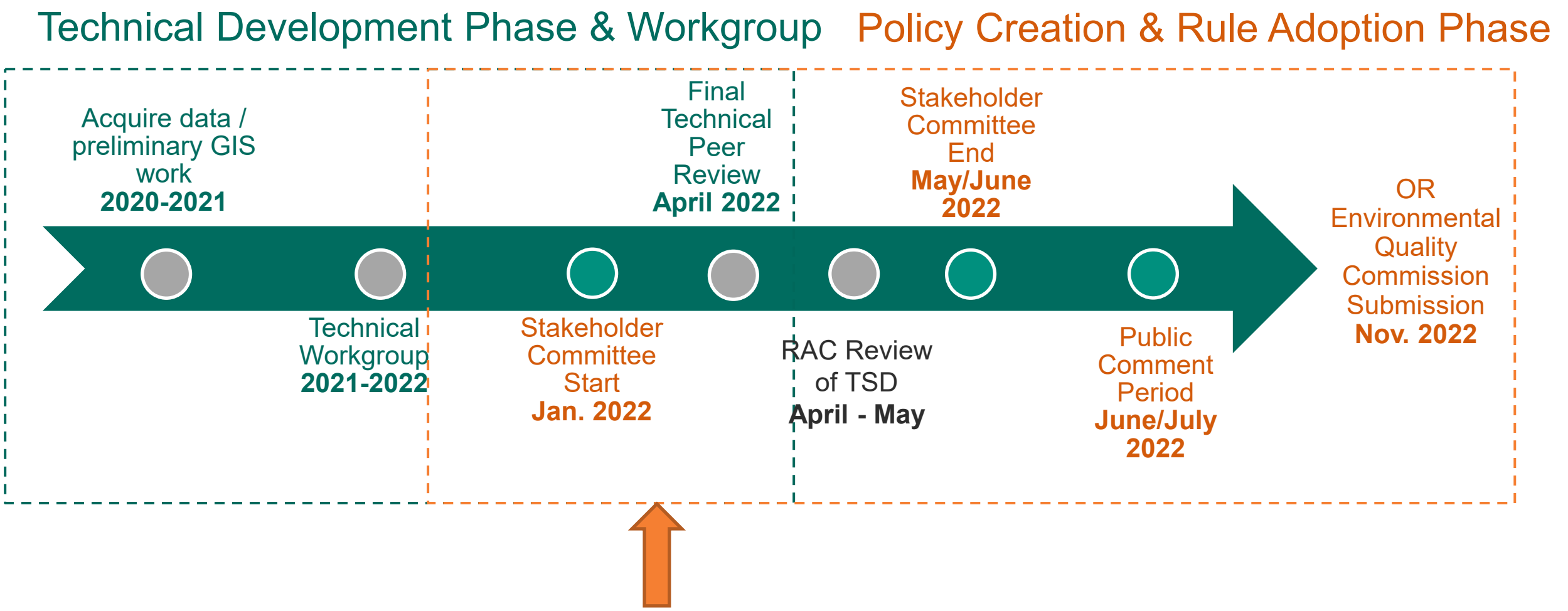
Next Steps

Meeting 3 Topics:

- Overview of Dissolved Oxygen Rules and Draft Maps
  - data sources and application methods
  - GIS Online maps
- Discuss misc. definitions.
- Introduce fiscal and economic impact analysis

James will send a poll to schedule the next meeting

Project Schedule Overview



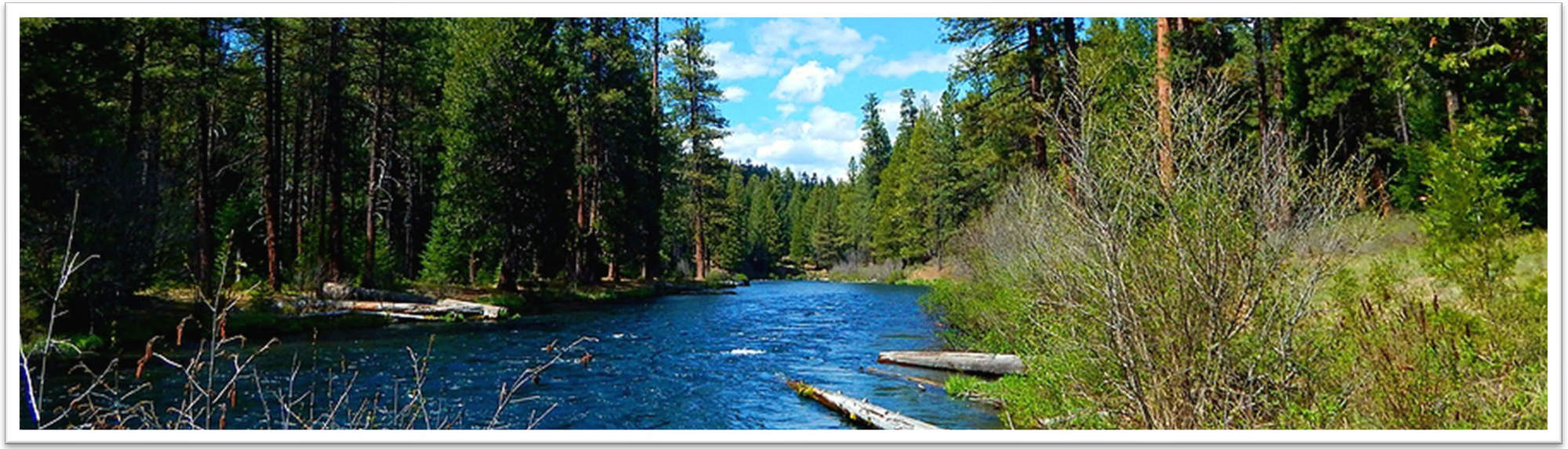
Before next meeting

- Draft meeting summary will be provided to the group
  ~1 week for review and corrections
- Provide any comments on the Temperature Decision Rule Methods by March 11
- Send comments to: aquaticlife.2022@deq.oregon.gov

Questions before Adjournment?

Image source: NOAA Photo Library

Thank you



Metolius River, Oregon

Aquatic Life Rulemaking: aquaticlife.2022@deq.oregon.gov

James McConaghie, Aquatic Life Use Updates Project Lead:

james.mcconaghie@deq.oregon.gov or call (503) 229-5619

Website: https://www.oregon.gov/deq/rulemaking/Pages/aquaticlife2022.aspx