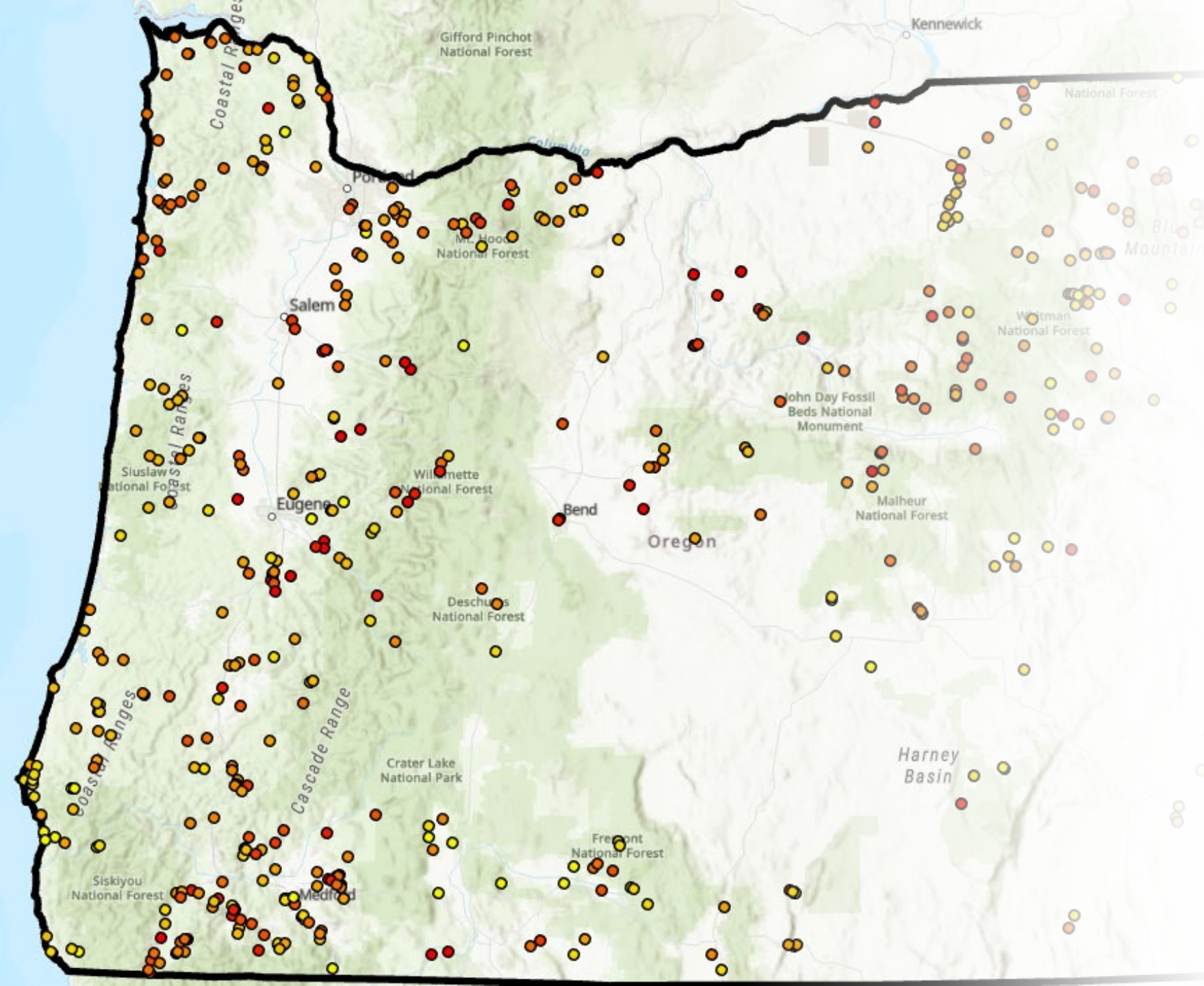
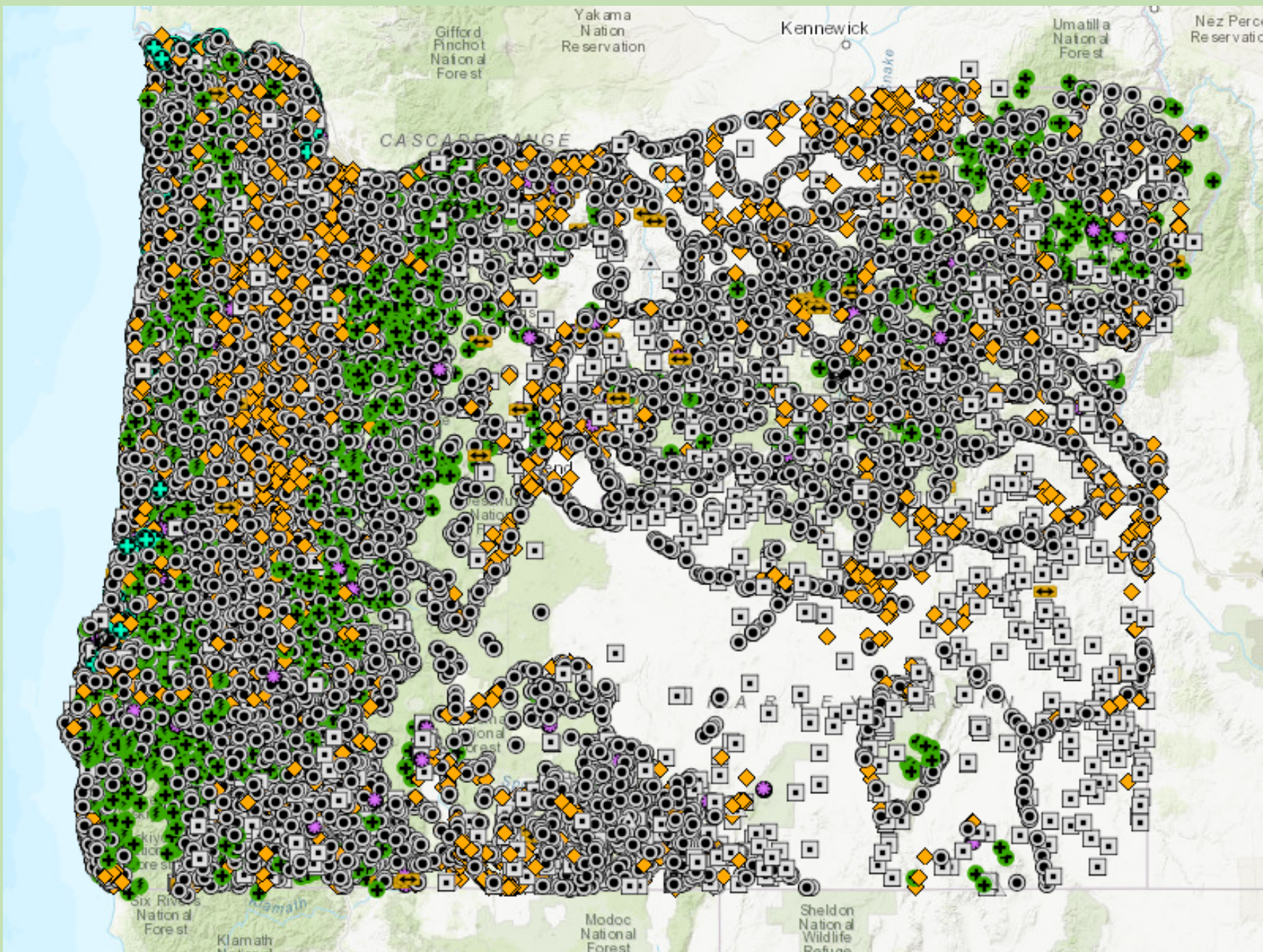
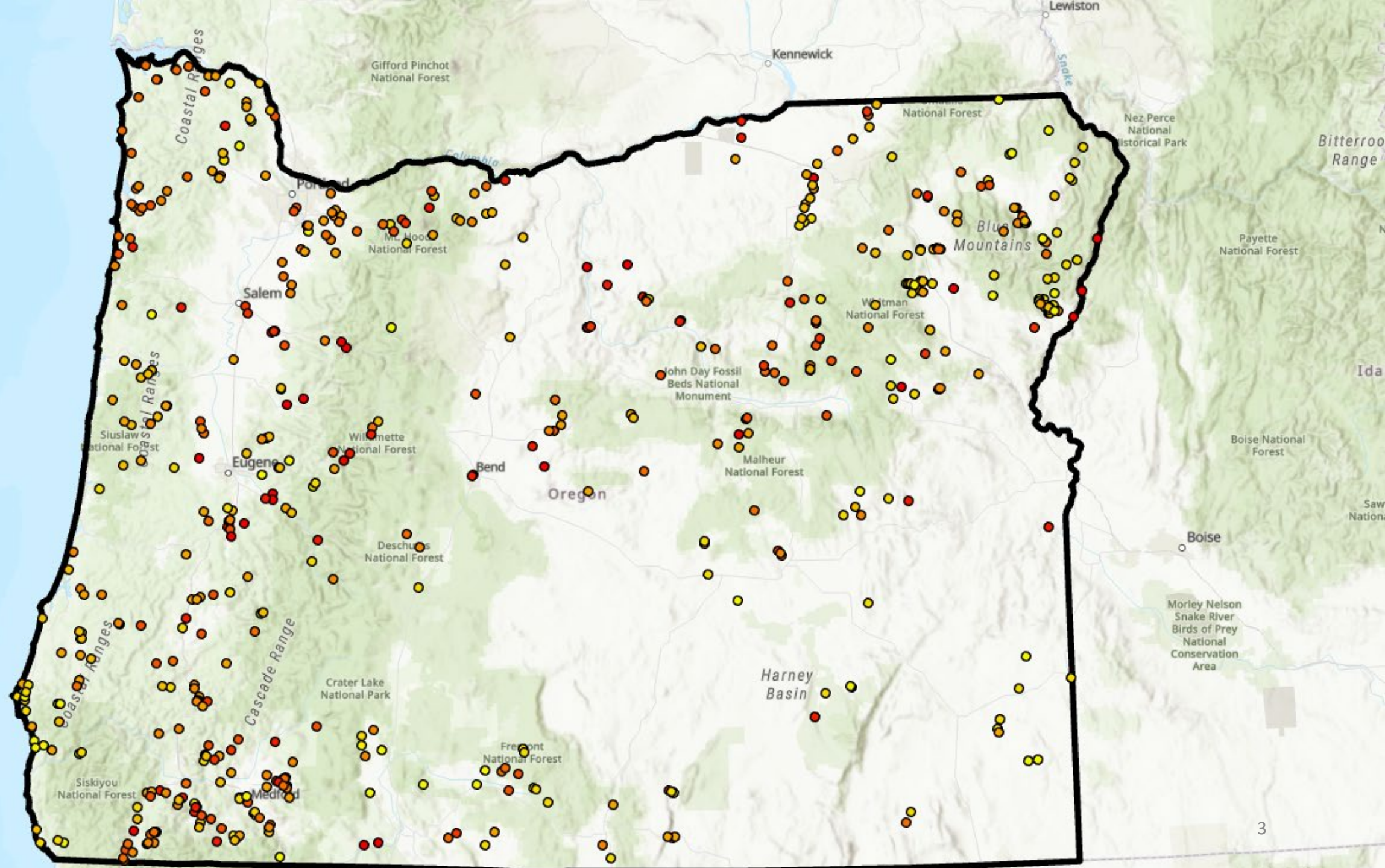


2023 - 2024 Statewide Fish Passage Barrier Prioritization

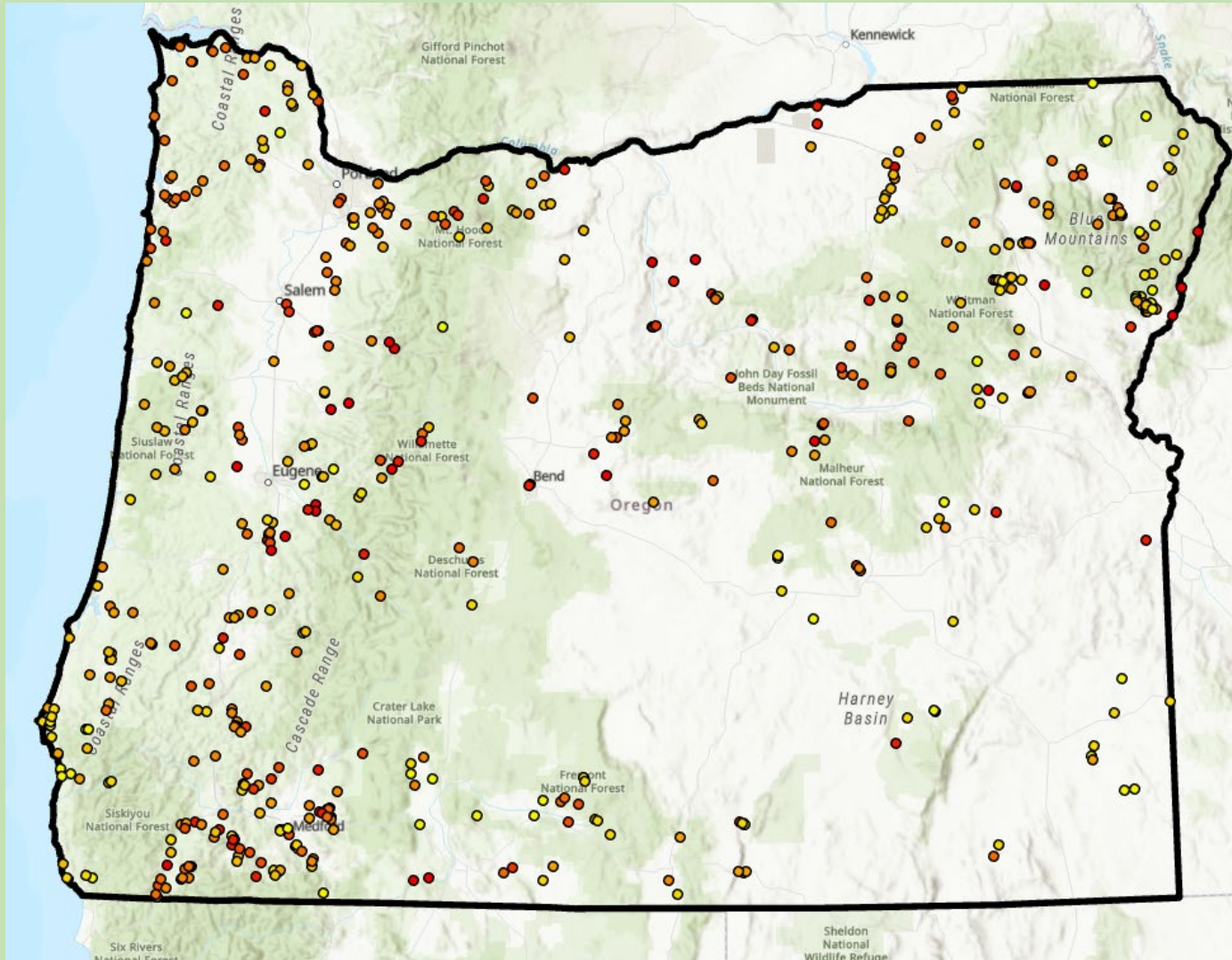




- Culvert
- Dam
- ⊕ Tide gate
- ◆ Bridge
- ▬ Ford - road stream crossing
- ▲ Weir / sill
- Other (Ford, Weir, Debris Jam, Unknown)
- Unknown
- Cascades / gradient / velocity
- Natural waterfalls

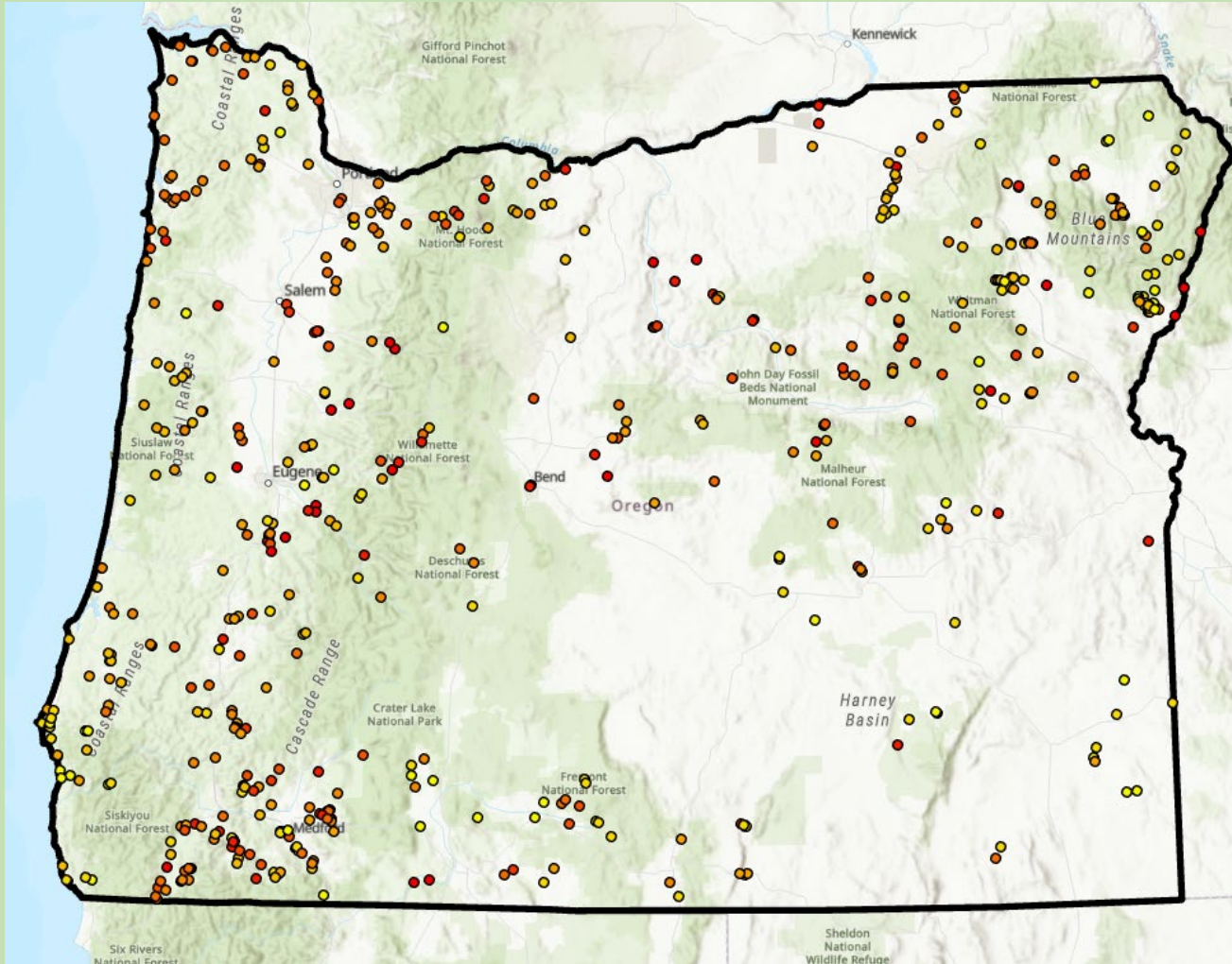


Statewide Priority List

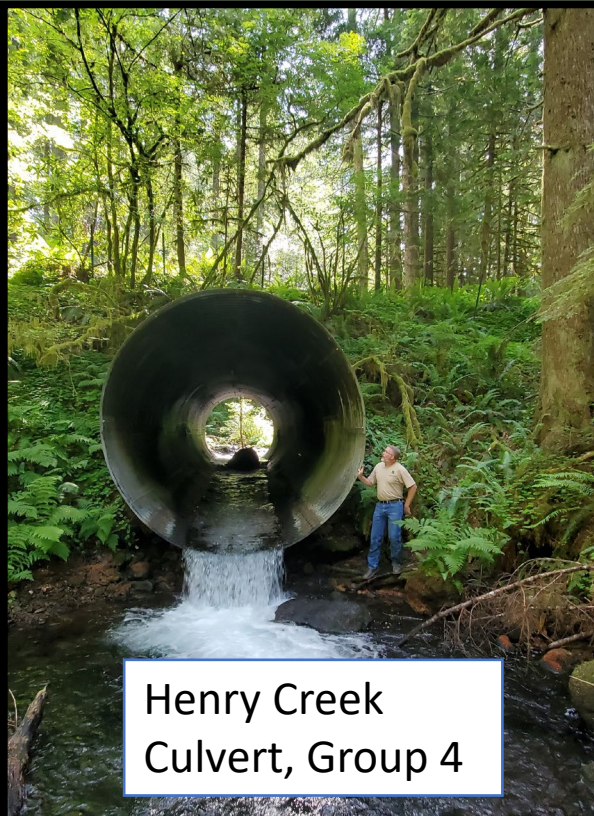


- Statute requires this prioritization.
- Highlights the list for **enforcement actions** based on the needs of native migratory fish.
- The priority project list shall be subject to **periodic review and amendment by the department** and to **formal review and amendment by the Commission** no less frequently than once every five years.

Statewide Priority List



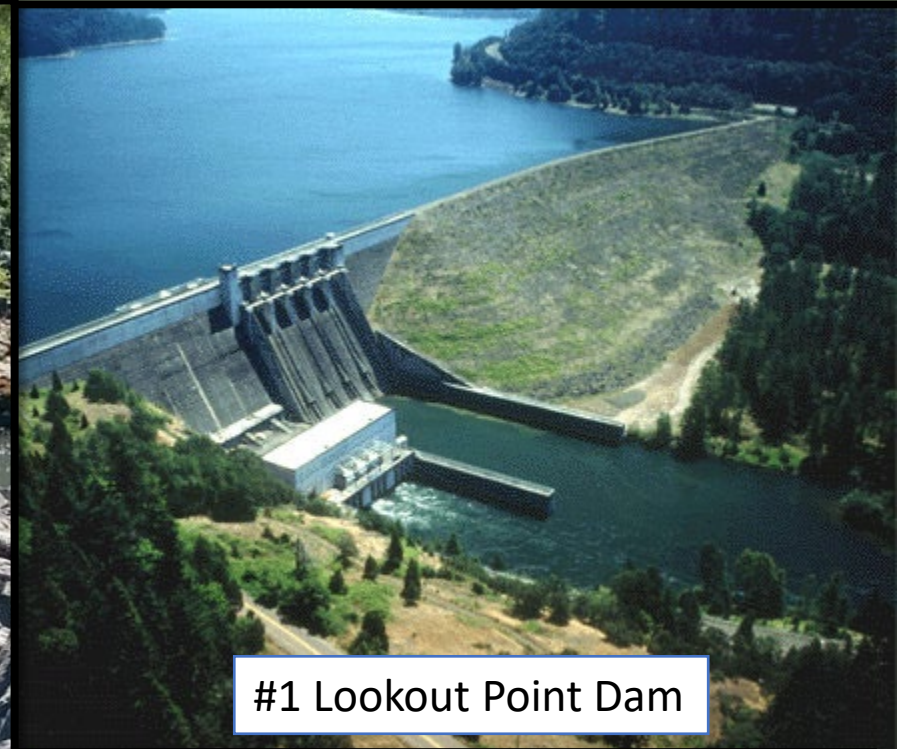
- Recent rule changes added a focus on restoration purposes for the list
- The reasonably **foreseeable future** quantity and quality of native migratory fish habitat given known trends in **climate change**



Henry Creek
Culvert, Group 4



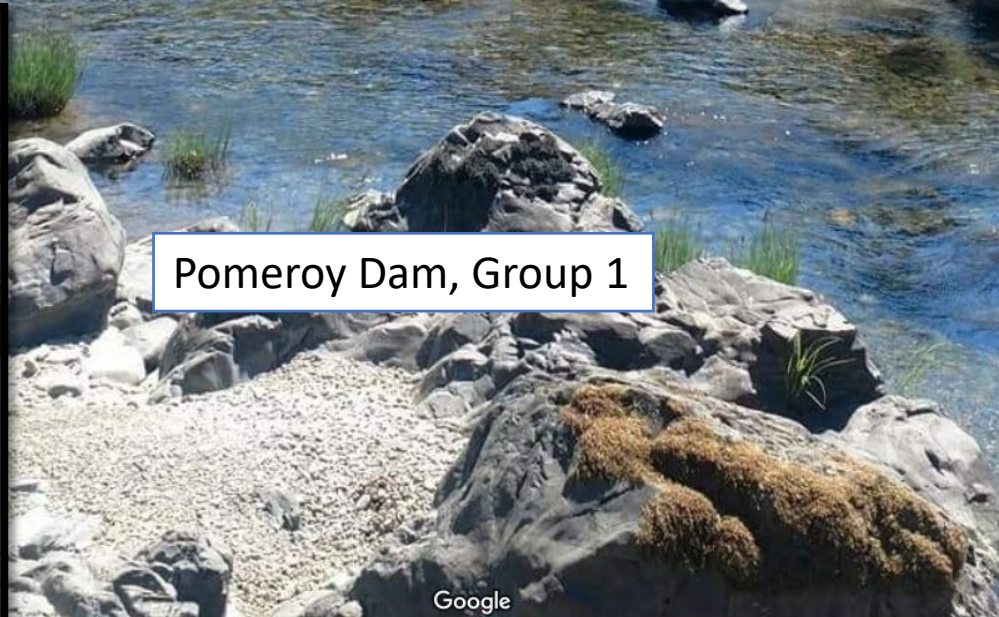
Pomeroy Dam, Group 1



#1 Lookout Point Dam



Nell Creek Culvert, Group 15



East Pine Creek Dam, Group 15



Method

- High priority fish passage barriers are identified by the ODFW District Fish Biologists.
- Barriers are removed from the list as they get addressed or new information on the barriers reduce the priority.
- Barriers on the list are scored with an equation that incorporates habitat metrics and fish species metrics.
 - Habitat quality
 - Habitat quantity
 - Level of passage at the barrier
 - Number of species (and the number of ESA listed species)
 - Points for site specific or regional knowledge

The Equation for the 2019 Priority List

$$(Quantity \times Quality) \times \left(\frac{Level\ of\ Passage}{5} \right) + (n(\#listedNMF) + 20(\#NMF) + 15(\#autoup) - 15(\#autodown))$$

2019 Equation

$$\underbrace{\left(\text{Quantity} \times \text{Quality} \right) \times \left(\frac{\text{Level of Passage}}{5} \right)}_{\text{Habitat Access}} + \underbrace{\left(n(\text{\#listedNMF}) + 20(\text{\#NMF}) \right)}_{\text{Species Impacted}} + \underbrace{15(\text{\#autoup}) - 15(\text{\#autodown})}_{\text{Additional Factors}}$$

Detailed in a White Paper online:

<https://www.dfw.state.or.us/fish/passage/inventories.asp>

2019 Equation

$$\underbrace{\left(\text{Quantity} \times \text{Quality} \right) \times \left(\frac{\text{Level of Passage}}{5} \right)} + \underbrace{n(\# \text{listed NMF}) + 20(\# \text{NMF})}_{\text{NMF Points}} + \underbrace{15(\# \text{autoup}) - 15(\# \text{autodown})}_{\text{Autoup/Autodown Points}}$$

- >300 miles = 130 points
- 200-299 miles = 115 points
- 100-199 miles = 100 points
- 50-99 miles = 85 points
- 25-49 miles = 70 points
- 10-25 miles = 55 points
- 3-9 miles = 40 points
- 1-2 miles = 25 points
- < 1 mile = 10 points

2019 Equation

$$\underbrace{\left(\text{Quantity} \times \text{Quality} \right) \times \left(\frac{\text{Level of Passage}}{5} \right)}_{\text{Species Associations}} + \underbrace{\left(n(\# \text{listed NMF}) + 20(\# \text{NMF}) \right)}_{\text{Habitat Quality Divisions}} + \underbrace{15(\# \text{autoup}) - 15(\# \text{autodown})}_{\text{Habitat Quality Divisions}}$$

Two Components

1. Species Associations
2. Habitat Quality Divisions

Species Associations

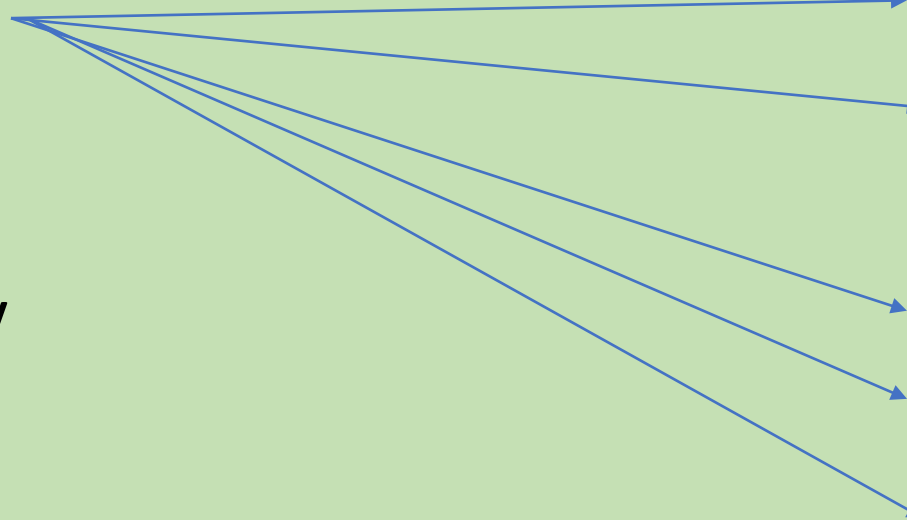
SA I	SAII	SAII, low	SA III	SA IV
Bull trout	Chum Salmon		Bridgelip Sucker	Green Sturgeon
Cutthroat trout	Coho Salmon	Pit-Klamath lamprey	Lost River Sucker	White Sturgeon
Rainbow trout	Chinook Salmon	Sockeye salmon	Largescale Sucker	Redtail Surfperch
Miller Lake Lamprey	Pacific lamprey	Klamath lamprey	Modoc Sucker	Eulochan
Mountain whitefish		Northern Pikeminnow	Klamath smallscale Sucker	Surf smelt
Redband Trout			Klamath Largescale Sucker	
Mountain Sucker			Tahoe Sucker	
Goose Lake Sucker			Warner Sucker	
			Shortnose Sucker	
			River lamprey	
			Redband Trout	

Species Association

- SAI
- SAII
- SAIII
- SAIV

Habitat Quality Divisions

- Cold Headwater (CDH)
- Cool Headwater (CLH)
- Warm Headwater (WH)
- Cold Stream (CDS)
- Cool Stream (CLS)
- Medium River (MR)
- Large River (LR)

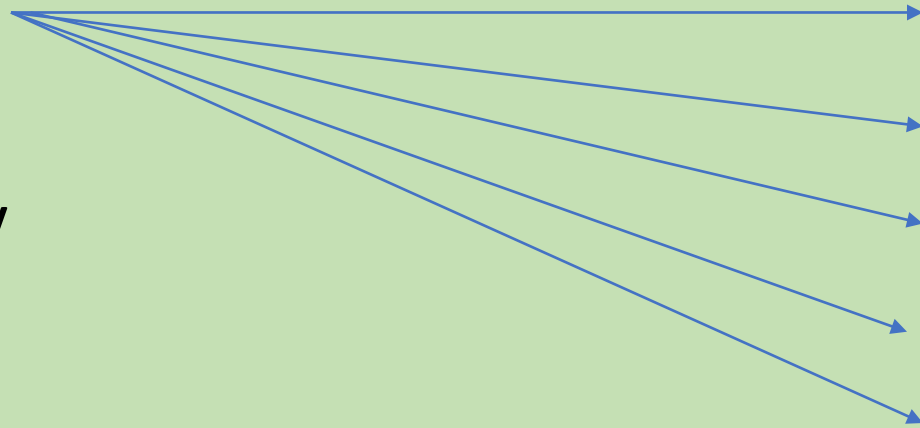


Species Association

- SAI
- SAII
- SAIII
- SAIV

Habitat Quality Divisions

- Cold Headwater (CDH)
- Cool Headwater (CLH)
- Warm Headwater (WH)
- Cold Stream (CDS)
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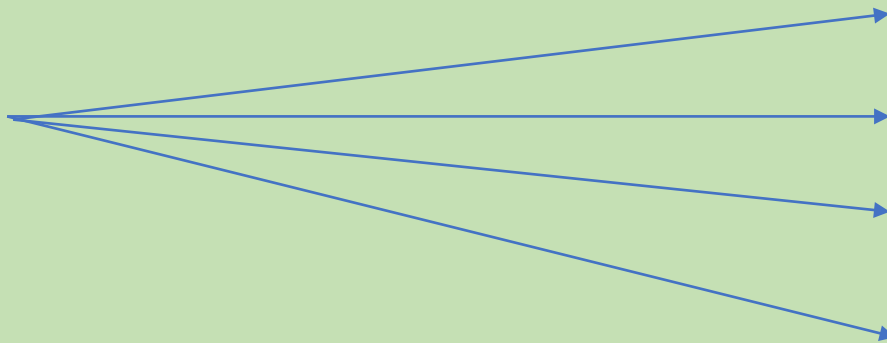


Species Association

- SAI
- SAII
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- SAIV

Habitat Quality Divisions

- Cold Headwater (CDH)
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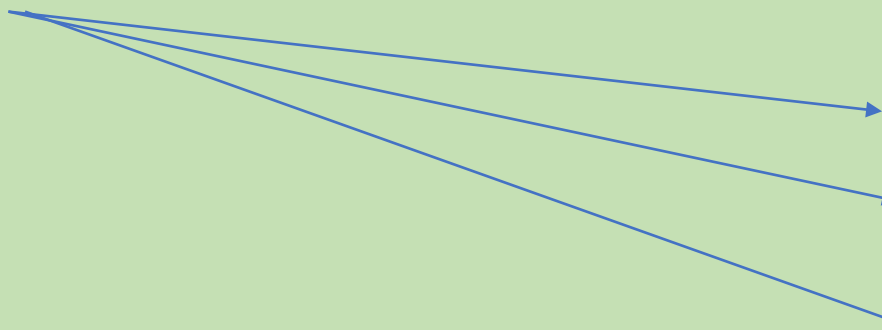


Species Association

- SAI
- SAII
- SAIII
- SAIV

Habitat Quality Divisions

- Cold Headwater (CDH)
- Cool Headwater (CLH)
- Warm Headwater (WH)
- Cold Stream (CDS)
- Cool Stream (CLS)
- Medium River (MR)
- Large River (LR)



Species: Points For:

- SAI

- Cold Headwater (CDH)
- Cool Headwater (CLH)
- Cold Stream (CDS)
- Cool Stream (CLS)
- Medium River (MR)

- SAII

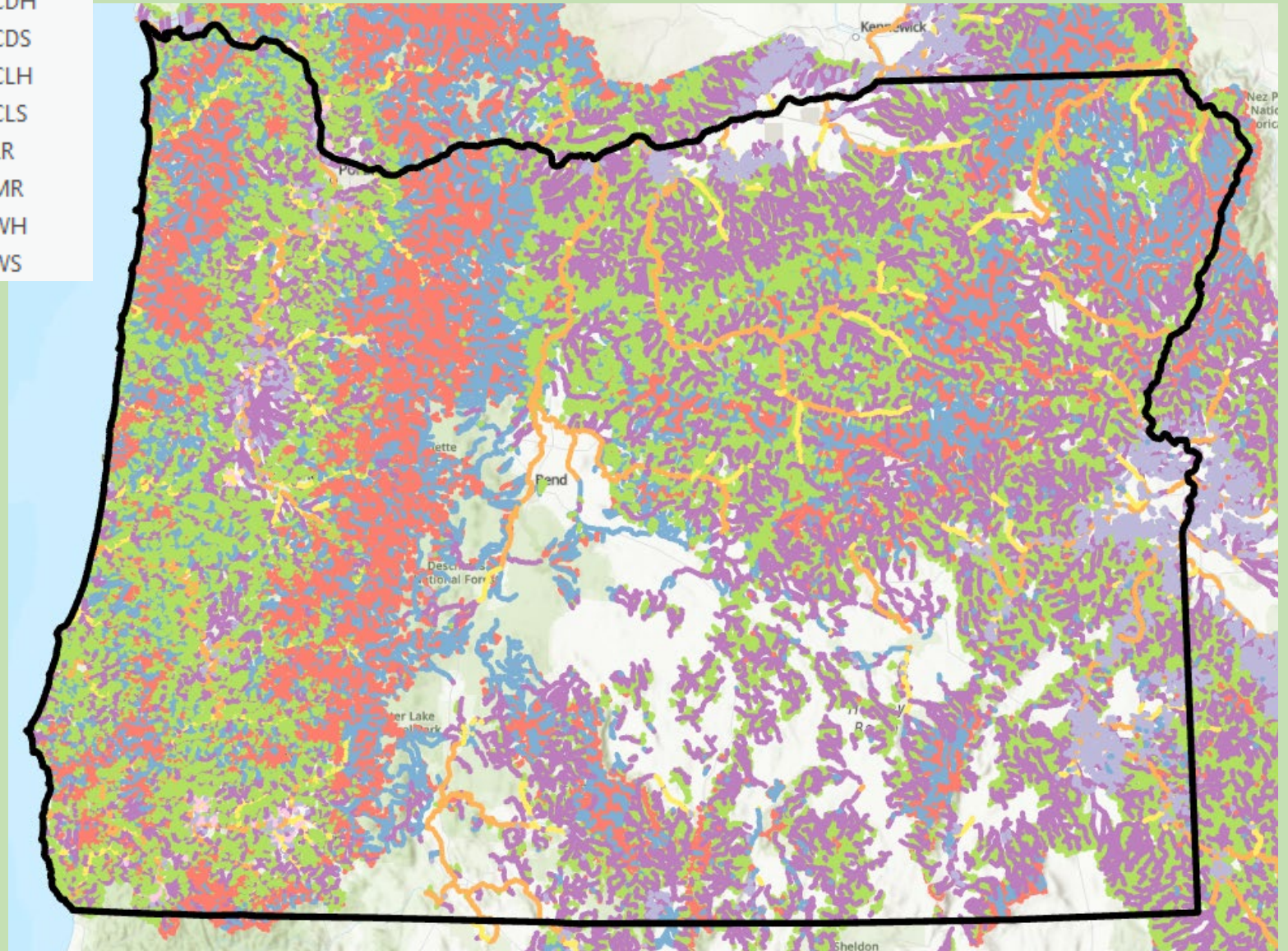
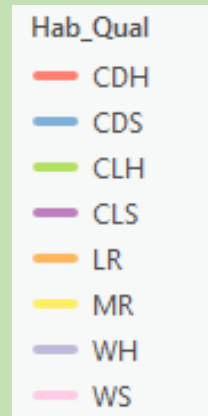
- Cool Headwater (CLH)
- Warm Headwater (WH)
- Cold Stream (CDS)
- Cool Stream (CLS)
- Medium River (MR)

- SAIII

- Cool Headwater (CLH)
- Cold Stream (CDS)
- Cool Stream (CLS)
- Warm Headwater (WH)

- SAIV

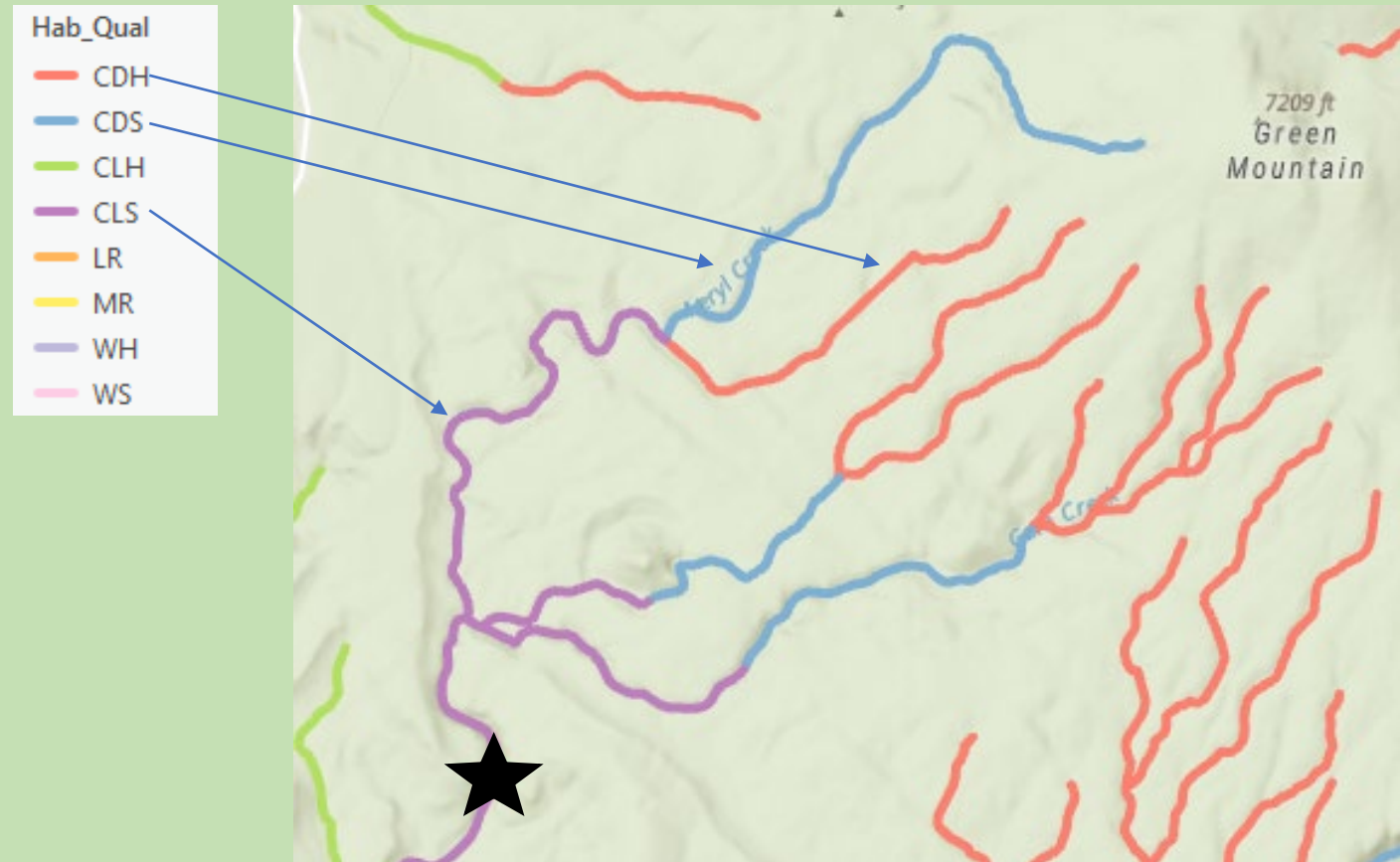
- Cool Stream (CLS)
- Medium River (MR)
- Large River (LR)



Habitat Quality Score

Species: Redband, Bulltrout
Species Association Group 1
Correlated with five habitat types.

- Cold Headwater (CDH)
- Cool Headwater (CLH)
- Cold Stream (CDS)
- Cool Stream (CLS)
- Medium River (MR)

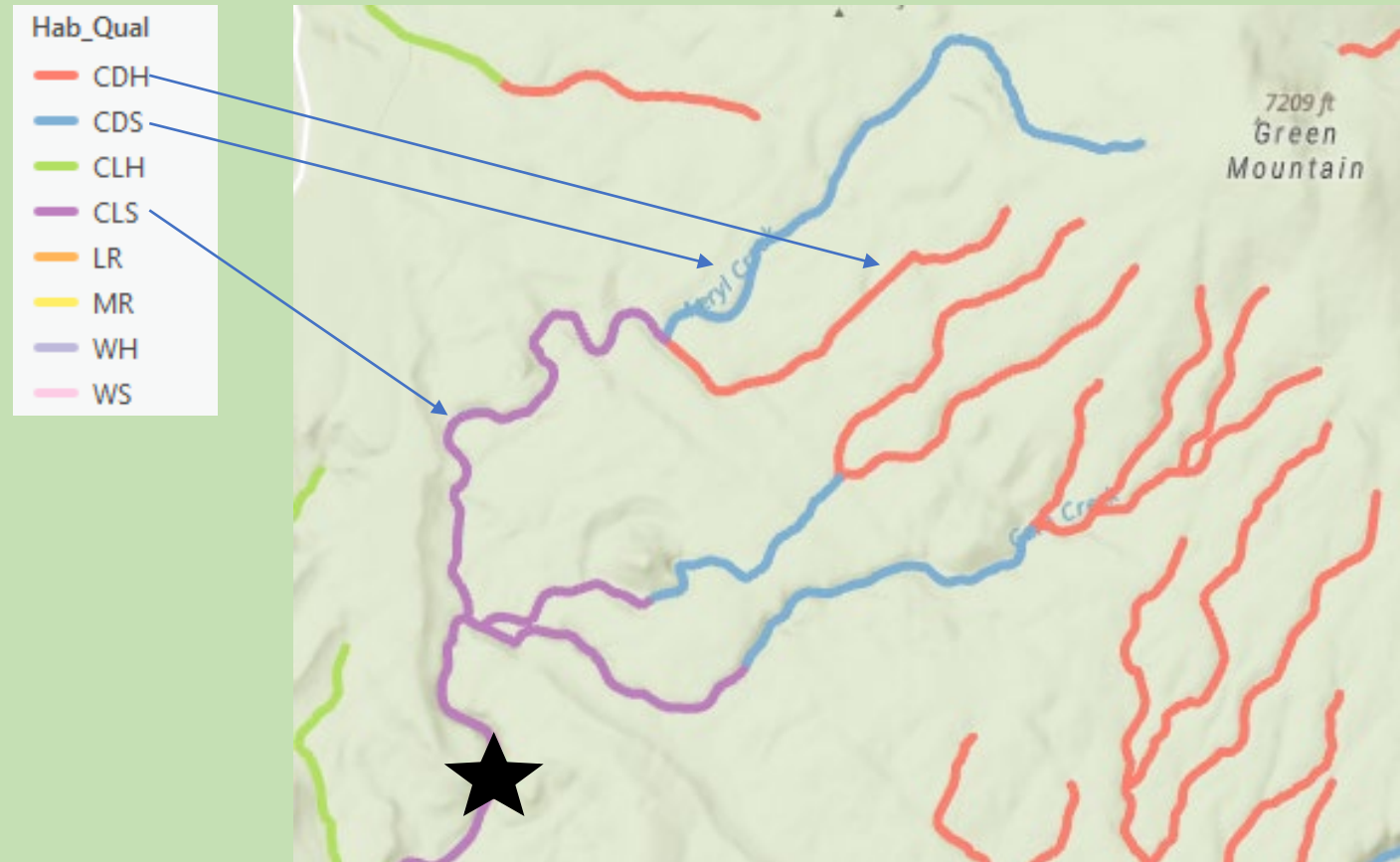


Habitat Quality Score

Species: Redband, Bulltrout
Species Association Group 1
Correlated with five habitat types.

- Cold Headwater (CDH) ✓
- Cool Headwater (CLH)
- Cold Stream (CDS) ✓
- Cool Stream (CLS) ✓
- Medium River (MR)

Three Points



2019 Equation

$$\underbrace{(Quantity \times Quality) \times \left(\frac{Level\ of\ Passage}{5} \right)}_{\text{Barrier to passage}} + \underbrace{(n(\#listedNMF) + 20(\#NMF))}_{\text{Native migratory fish species}} + \underbrace{15(\#autoup) - 15(\#autodown)}_{\text{Autonomous up/down}}$$

- 5 - barrier to all native migratory fish,
- 4 - barrier to some native migratory fish adults and/or species,
- 3 - barrier to some native migratory fish adults and/or species for only part of migration period,
- 2 - barrier to all native migratory fish juveniles,
- 1 - barrier to some native migratory fish juveniles and/or for only part of migration period.
- 0 - Full volitional passage for all native migratory fish species, adults and juveniles.

2019 Equation

$$\underbrace{(Quantity \times Quality) \times \left(\frac{Level\ of\ Passage}{5} \right)} + \underbrace{(n(\#listedNMF) + 20(\#NMF))}_{\text{a. 40 Points associated with "Endangered" status}} + \underbrace{15(\#autoup) - 15(\#autodown)}_{\text{b. 30 Points associated with "Threatened" status}}$$

- a. 40 Points associated with "Endangered" status
- b. 30 Points associated with "Threatened" status
- c. 15 Points associated with "Special Concern" status

2019 Equation

$$\underbrace{\left(\text{Quantity} \times \text{Quality} \right) \times \left(\frac{\text{Level of Passage}}{5} \right)} + \underbrace{\left(n(\# \text{listed NMF}) + 20(\# \text{NMF}) \right)} + \underbrace{15(\# \text{autoup}) - 15(\# \text{autodown})}$$

- Historical habitat inaccessible for a unique stock of fish or limited species distribution
- Access to Estuarine habitat
- Artificial obstruction affects large population of fish
- Access to side channels or limited habitat types within a stream reach blocked by the barrier
- Over 100 miles of additional potential fish habitat = 3 “auto-ups” (45 points)
- Over 50 miles of additional potential fish habitat = 2 “auto-ups” (30 points)
- Conservation need/uplift

2019 Equation

$$\underbrace{(Quantity \times Quality) \times \left(\frac{Level\ of\ Passage}{5} \right)} + \underbrace{(n(\#listedNMF) + 20(\#NMF) + 15(\#autoup))}_{-} \underbrace{15(\#autodown)}$$

- Complete blocked barriers downstream prevent historic or current native migratory fish
- Fish management concerns (non-native fish, or other concerns)
- 10 or more complete barriers upstream = 2 “auto-downs” (-30 points)
- Multiple complete barriers upstream where the habitat gain is less than one mile of inaccessible habitat
- Waiver or exemption has been granted through existing ODFW agreements

Final List

ODFW 2019 Statewide Fish Passage Barrier Priority List (Appendix A)																
Subbasin	Owner	Barrier ID	Barrier Name	Barrier Type	Stream Name	Species In need of passage at barrier and biological status	T&E score	Avg Hab. Quant	Habitat Quantity Score	# NMF Species	Habitat Quality	Auto Up	Auto Down	Psg. Level	Score	2019 Group Rank
Middle Fork Willamette River	U.S. Army Corps of Engineers	18101	Lookout Point Dam	Dam	Middle Fork Willamette River	Bulltrout (FT historical), Spring Chinook (FT), Rainbow trout, Cutthroat trout, WF, Pacific Lamprey, Northern Pike Minnow, CSS	1.0	54.8	85.0	7.0	6.0	3.0	1.0	5.0	710.0	Top Ten
Upper Klamath	PacifiCorp	18538	Keno Dam	Dam	Klamath River	Redband trout, Fall and Spring Chinook (historical), Coho (historical), Pacific lamprey (historical), Summer Steelhead(historical), smallscale sucker, Klamath river lamprey, Klamath largescale sucker, Miller Lake Lamprey, Lost River sucker (FE)	1.3	348.1	130.0	6.0	5.0	3.0	2.0	4.0	694.0	Top Ten
Hells Canyon	Idaho Power Company	18071	Hells Canyon Dam	Dam	Snake River	Pacific lamprey, Summer Steelhead (FT), Redband trout, fall Chinook (FT), spring Chinook (FT), bull trout (FT), largescale sucker, northern pikeminnow, white sturgeon	4.0	75.0	85.0	9.0	5.0	4.0	2.0	4.0	670.0	Top Ten
Upper Klamath	PacifiCorp	18539	John C. Boyle Dam	Dam	Klamath River	Redband trout, Fall and Spring Chinook (historical), Coho (historical), Pacific lamprey (historical), Summer Steelhead (historical), Klamath smallscale sucker, Miller Lake lamprey, Klamath River lamprey	1.0	342.7	130.0	4.0	5.0	4.0	2.0	4.0	660.0	Top Ten



Oregon Department of Fish & Wildlife
Fish Screening and Passage Program

2019 Statewide Fish Passage Priority List

April 19, 2019

Strengths of the List

- Simple tool to focus statewide efforts to restore fish passage
- Easy to use and update
- Increases awareness of fish passage barriers
- Has been very effective
- Publicly available



Removal of Barriers



Balm Grove Dam, Tualatin River Basin
Removed 2022

Weaknesses

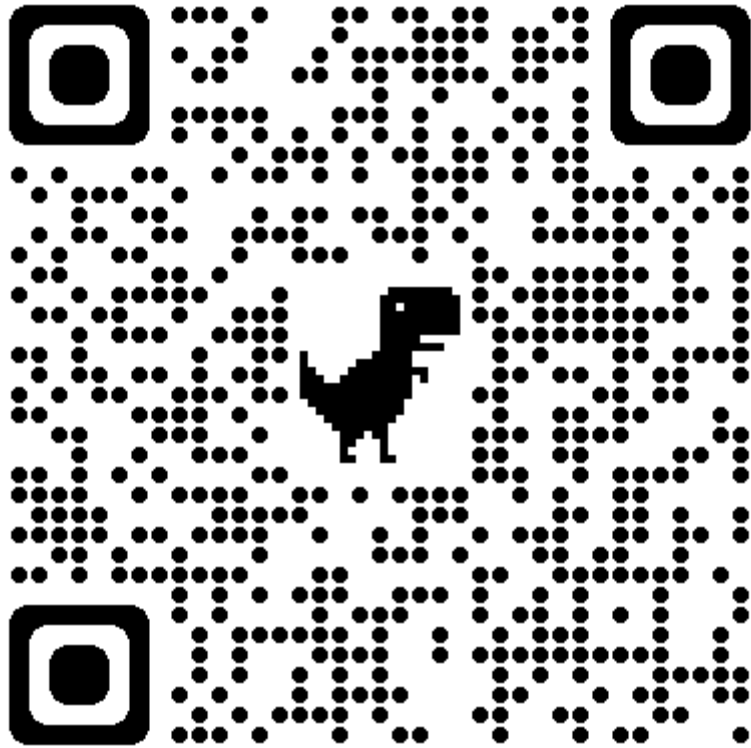
- Data accuracy
 - Missing species, Habitat miles
 - Habitat Quality difficult to reproduce
- The equation does not determine if the barrier is a priority
 - Low priority barriers need to be identified and removed by ODFW Staff
- Not an optimization tool
 - No cost estimates
- No indication of how likely barrier is to be fixed or removed
 - Willing landowners
 - Feasibility/cost

Barrier Prioritization Update

- 2023-2024
- Invite Public Participation in the Process
 - Public Comment Period (July 2023)
- Submit Questions or Comments at Any Time to Fish.Passage@ODFW.Oregon.gov
- Fish Passage Task Force Meetings
 - October 13, and December 8, 2023
 - Submit Public Comments During the Public Comment Periods
 - Members of the Task Force will Advise the Update
- Fish and Wildlife Commission Meeting - 2024

Website

- <https://www.dfw.state.or.us/fish/passage/inventories.asp>



FISH DIVISION

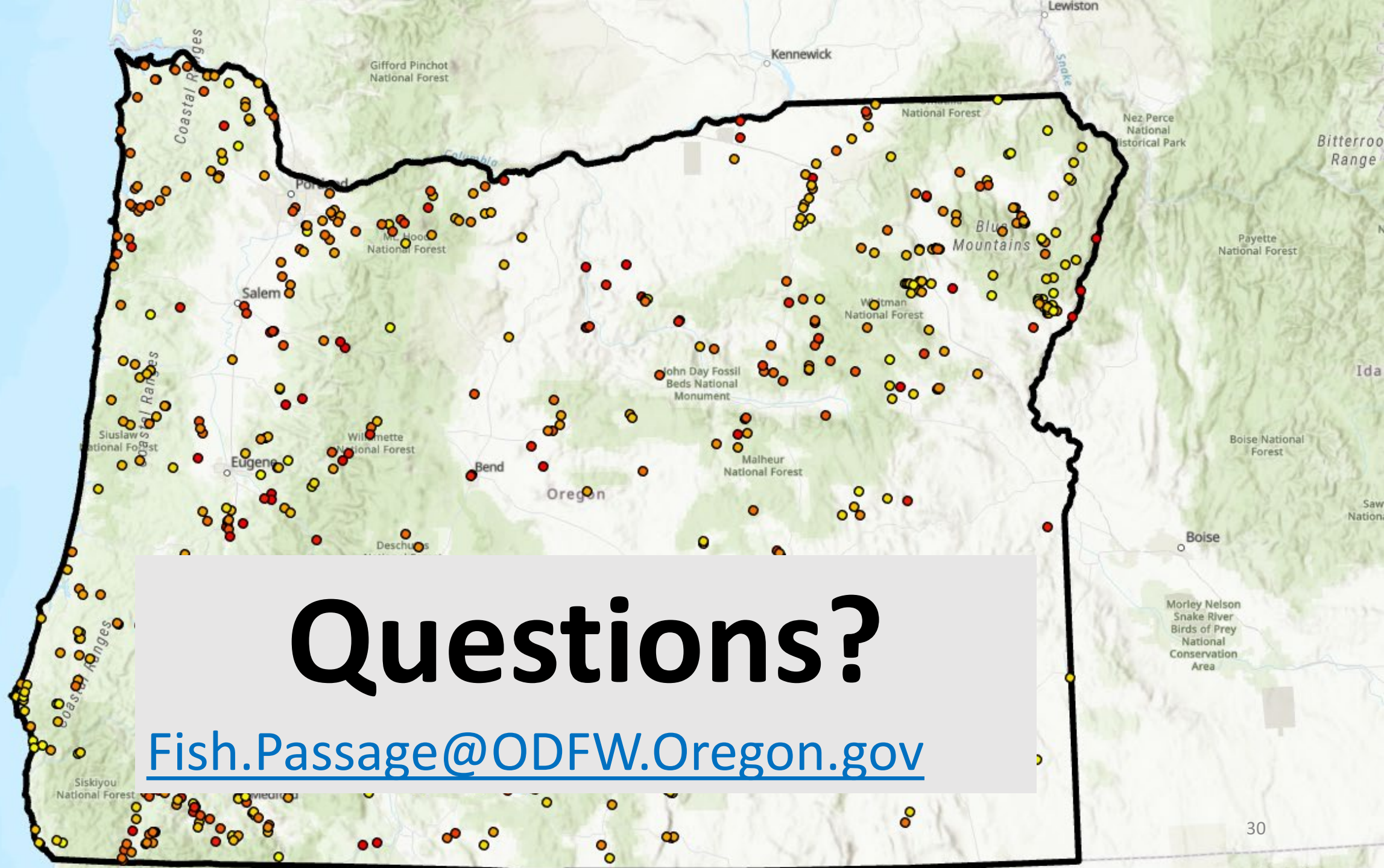
Regulating harvest, protection, and enhancement of fish populations

Fish Passage Barrier Inventories

- [ODFW's NRIMP Barrier Database](#)
 - [ODFW Data Clearinghouse](#)

2019 Statewide Fish Passage Priority List

- [Fish Passage Priority List](#) (pdf)
- [Fish Passage Priority List](#) (searchable Excel file)
- [Methods, Background and Supporting Information](#) (pdf)
 - [ODFW Data Clearinghouse](#)
- [1999 ODFW-ODOT Statewide Culvert Summary](#) (pdf)
- [2006 ODFW-ODOT Statewide Culvert Inventory](#) (xls)



Questions?

Fish.Passage@ODFW.Oregon.gov