Deschutes Large Wood Management Plan

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July 17, 2025

Pelton Round Butte 31st Annual Fisheries Workshop

Presentation Overview

Introduction

- Project area
- A history of dam construction and high flows (1958/1996)
- Pelton Round Butte relicensing (2005)
    - Large wood management Plan

Large wood placement

- Large woody debris (LWD) source
- Placement methods

LWD Monitoring

- Snorkeling
- Large wood tracking
    - Residence time

Presentation summary

Questions

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Study Area


Columbia River
Deschutes River
White River
Maupin
Buck Hollow Creek
Bakeoven Creek
Warm Springs River
Warm Springs
Pelton Dam
Reregulating Dam
Round Butte Dam
Madras
Trout Creek
McKay Creek
Ochoco Creek
Metolius River
Sisters
Prineville
Crooked River
Whychus Creek
Bend
Little Lava Lake
Deschutes River
Crescent Lake
PGE/CTWS Dam
River/Creek/Reservoir/Lake
Town
Warm Springs Reservation
N
20 miles

Large Wood History in the Lower Deschutes River

In 1958, Pelton Dam construction blocked LWD transport into the lower Deschutes River (LDR) from the Metolius, Deschutes and Crooked Rivers.

View of Pelton Dam and powerhouse with discharge through both spill gates January 27, 1958

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1996 High Flow Event

- As a partially spring-fed river, the Deschutes typically has a very stable flow compared to other river systems in Oregon.
- This means that much of the LWD in the LDR has a long residence time.
- Historical mean February discharge at the LDR Madras gage is about 5,250 cfs.
- In February 1996, the LDR at the Madras gage experienced a 19,100 cfs high flow event.

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Dam Construction and High Flow Effect on LWD

- Dam construction blocking recruitment from the upper basin Deschutes basin caused a slow decline of LWD.
- This was the most apparent between the Reregulating Dam and Shitike Creek near the Highway 26 bridge crossing.
- Between the Reregulating Dam and Trout Creek, there was an 85% decrease in Large wood after the 1996 flood (Minear 1999).

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The Large Wood Management Plan

- Dam relicensing started in 1994 with a license granted in 2005 (FERC Project No. 2030).
- In 2007 the Large Wood Management Plan started with the placement of 24 logs.
- The goal of the Large Wood Management Plan is to reconnect LWD transport from the Upper Deschutes Basin to the LDR.

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Large Wood Acquisition

- Free floating LWD is removed from Lake Billy Chinook (LBC) on a yearly basis.
- To meet LWD criteria a log must be a minimum of 8" diameter and a minimum of 10 feet long.

Placement

- LWD is placed in the LDR between the Reregulating Dam and the Warm Springs (Hwy 26.) bridge
- LWD placed in the LDR is not anchored, buried or otherwise secured and is placed in a manner that resembles natural recruitment.
- This method of placement allows for logs transport downstream to enhance a new spot along the river.

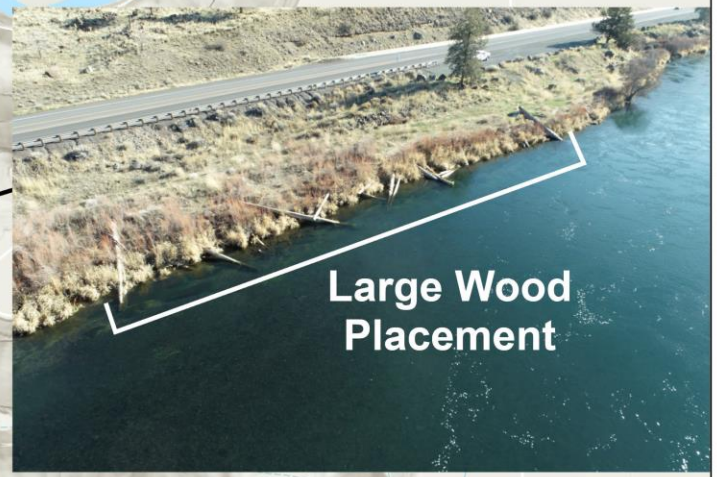
Map Features

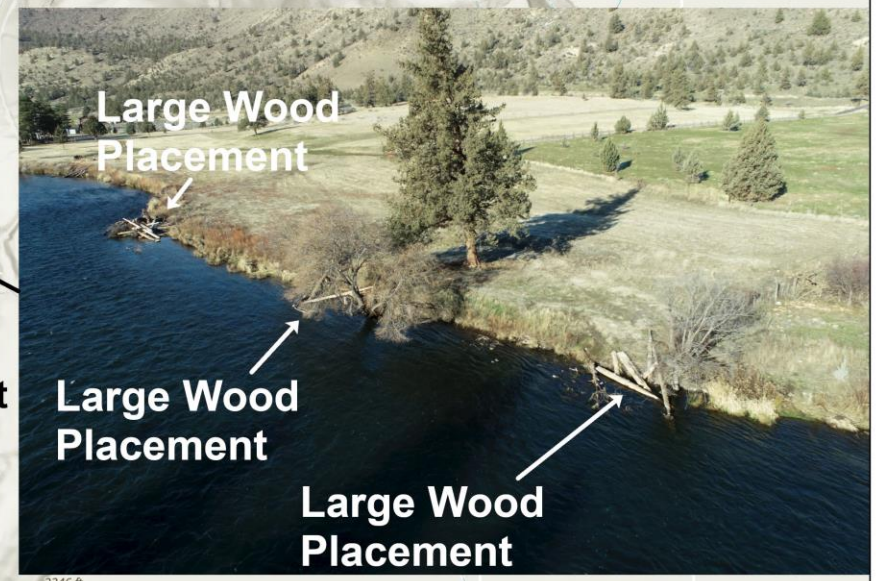
Placement by Year

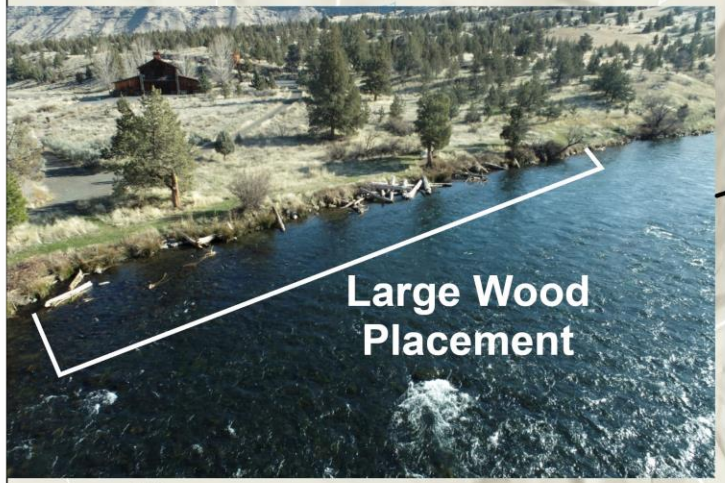
- 2019 (N = 36)
- 2020 (N = 33)
- 2022 (N = 26)
- 2023 (N = 23)
- 2024 (N = 22)

Shitike Creek

Warm Springs Boat Launch







Standard project methodology for placement didn't occur in 2019.

Reregulating Dam

Esri, NASA, NGA, USGS, FEMA, Oregon State Parks, State of Oregon GEO, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA, USFWS

0 2,000 4,000 US Feet

LWD Placement

- There have been a total of 451 logs placed since 2007
- Large wood placement has affected 11.8% of the LDR shoreline from the Reregulating Dam to the Warm Springs bridge.

Year	Number of logs
2019	36
2020	33
2021	-
2022	26
2023	23
2024	22
Total	**140**

Fish Benefits of Wood to the Deschutes River

- In the LDR large wood enhances riparian habitat, mostly by creating current refuge and structure, resulting in an improvement in juvenile rearing habitat.
- Many large wood placement sites are directly associated with spawning habitat or directly downstream of spawning habitat.
- Placement locations near good spawning habitat give fry emerging from gravel quick access to rearing habitat.

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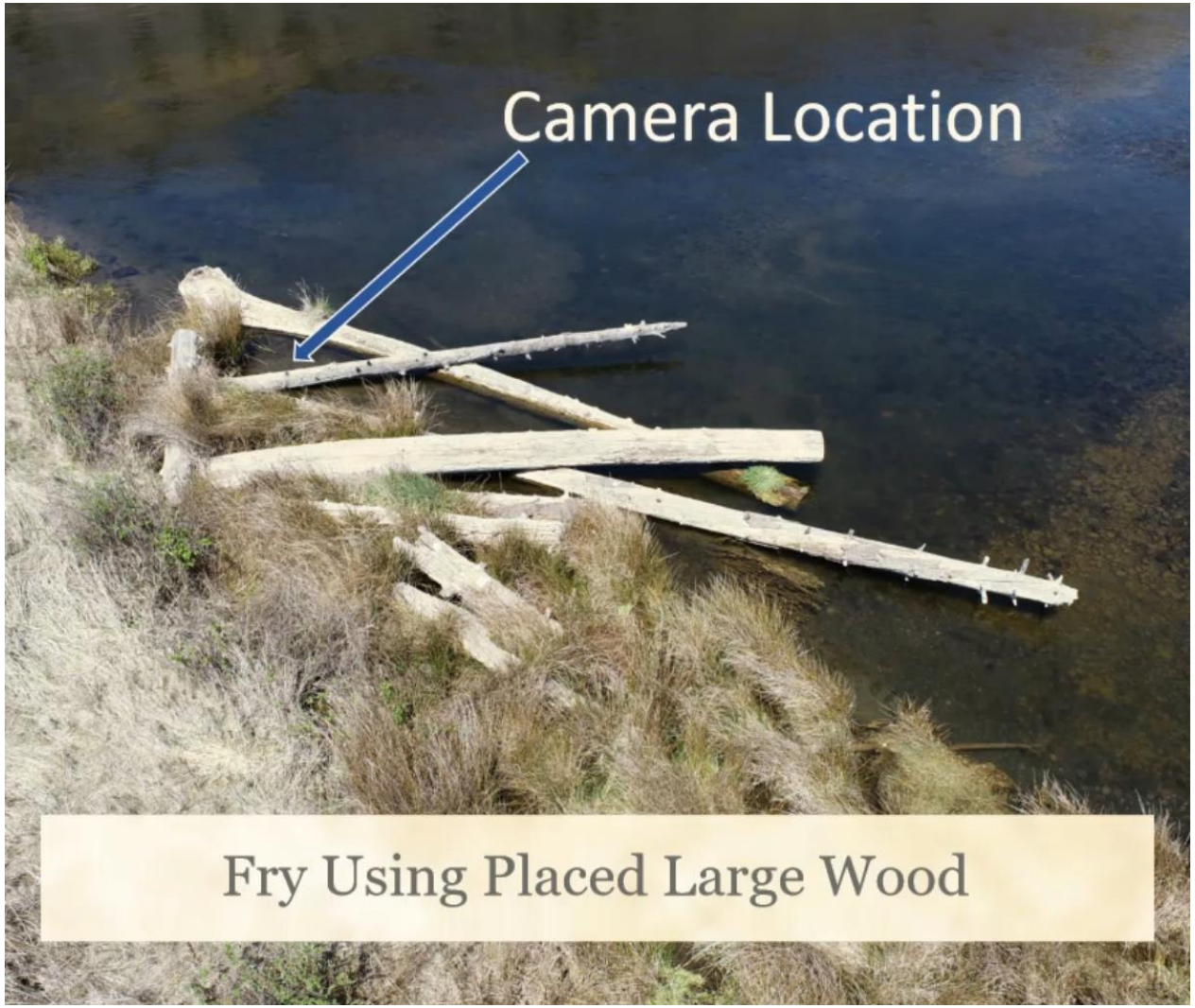

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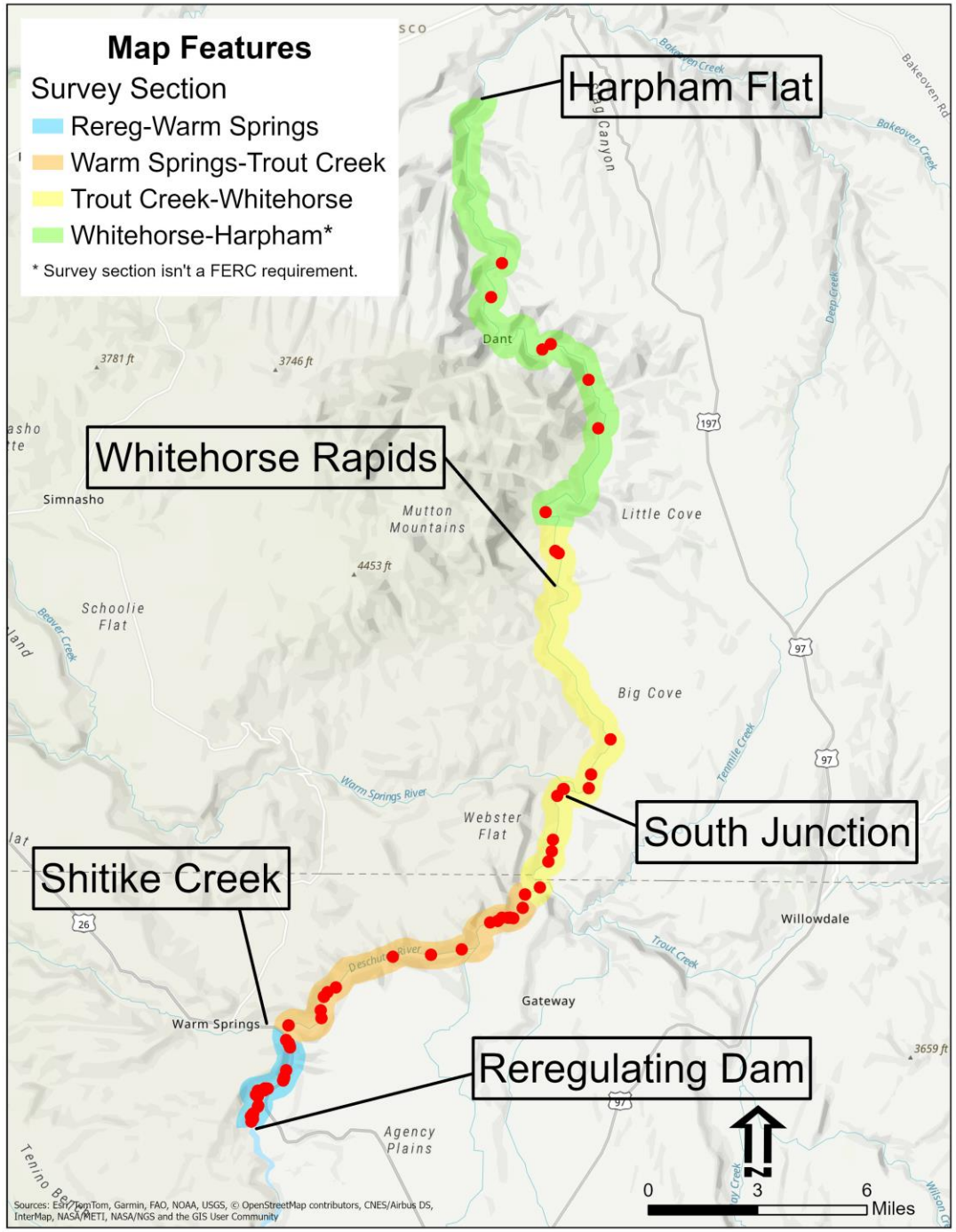
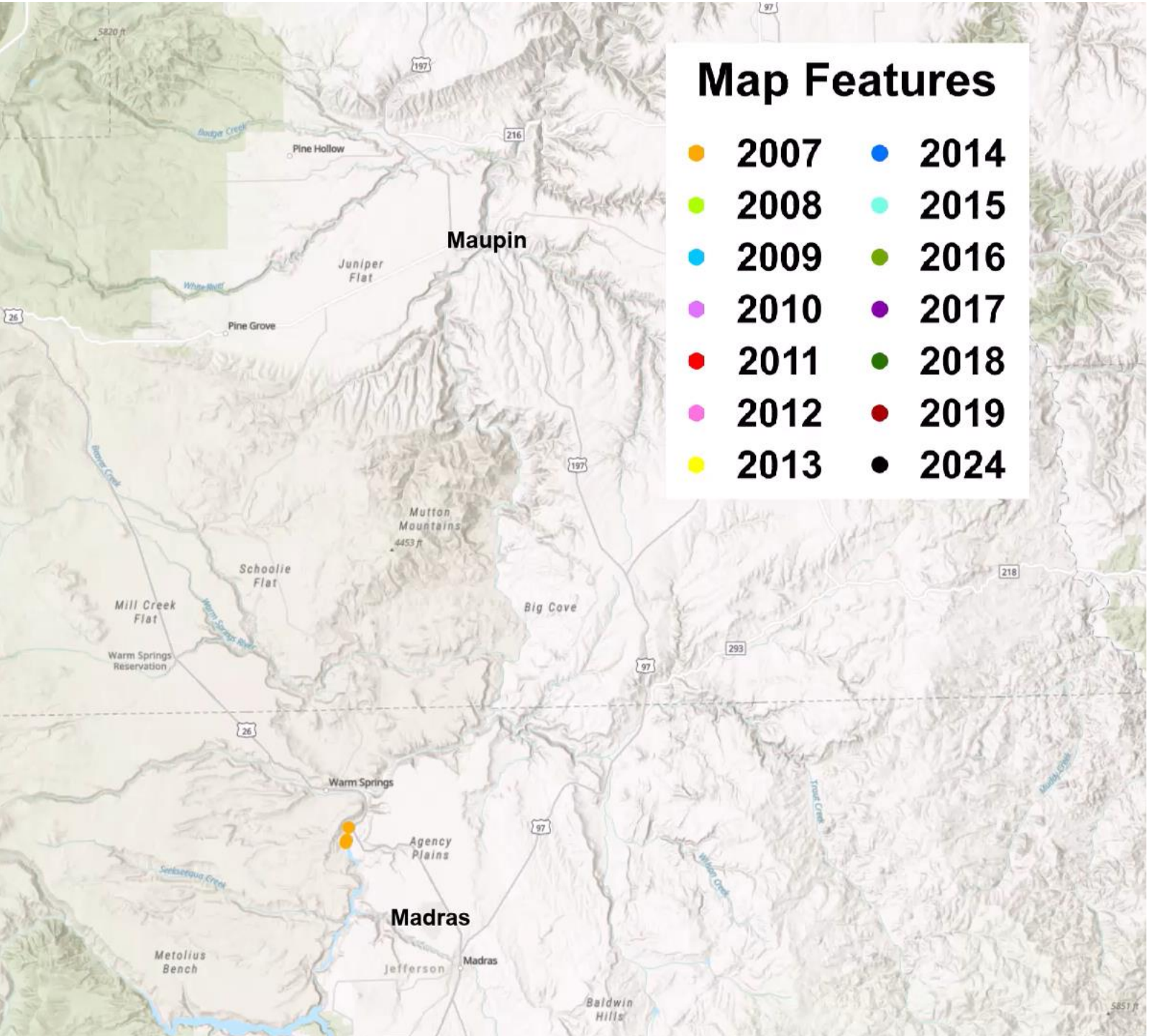


Large Wood Tracking

- Large wood is tracked from the base of the Reregulating Dam to Harpham Flats, however the study plan only requires LWD tracking down to Whitehorse Rapids.
- Starting in 2020 LWD is tracked every five years, or if the LDR reaches 9,000 CFS at the Madras gage on a given year.

Reach	Number of logs in 2024
Reregulating Dam-Warm Springs	190
Warm Springs-Trout Creek	32
Trout Creek-Harpham	29
Total	**251**



Large Wood Movement from 2007 to 2024

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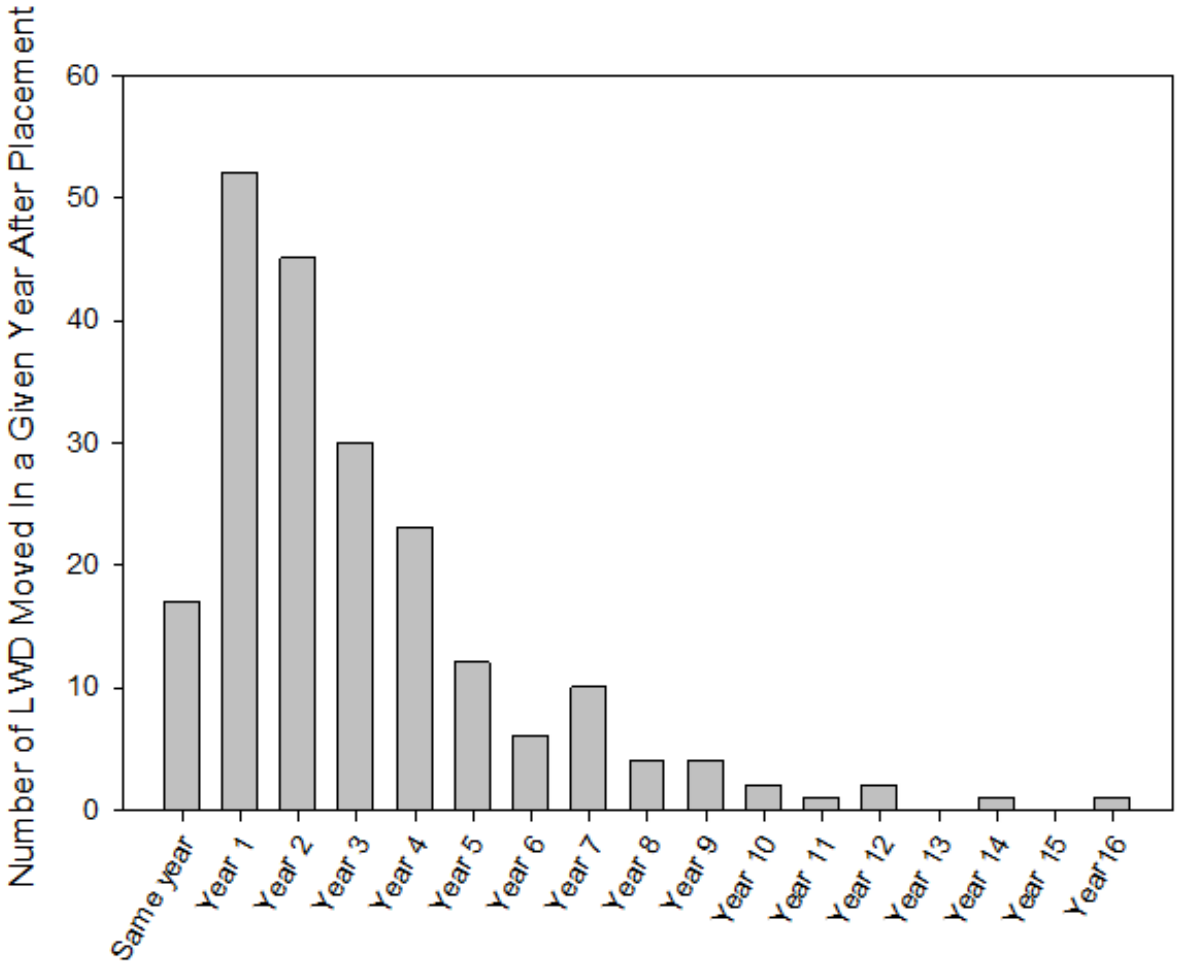
Residence Time at Placement Site



The Year Logs Moved After Placement

- 125 pieces of LWD have stayed where they were placed during the project.
- 52 LWD pieces moved the first year after placement.
- 43 LWD pieces stayed in place at least five years before their first movement
- 231 LWD pieces either moved without documentation, the log decomposed before movement, or the log was not found during tracking

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Summary

- A history of dam construction and a high flow event resulted in a section of LDR that was starved of LWD.
- Even though we only place small amounts of wood at a time, the year-to-year placement adds up and results in significant habitat improvement in a section of river that was lacking LWD
- Our snorkel study showed that placed LWD improves Fall Chinook and redband trout/summer steelhead by 67% and 76% respectively
- Tracking placed LWD shows that many pieces stay where they are placed, but some migrate downstream to enhance other places along the river

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Thanks to all who make this project possible

- Landowners
  - Bodie Shaw, Nathan Styffe and the owners of Riffle Ranch, and the Confederated Tribes of Warm Springs Reservation

- Placement staff
  - Elting Northwest Inc., and the PGE maintenance crew

- PGE staff:
  - Leah Hough, Brad Wymore, Beth Bailey, Kelli Iddings, Sidney Minnick, Sarah Ross, Gonzalo Mendez, Bob Spateholts, Rebekah Burchell and many others

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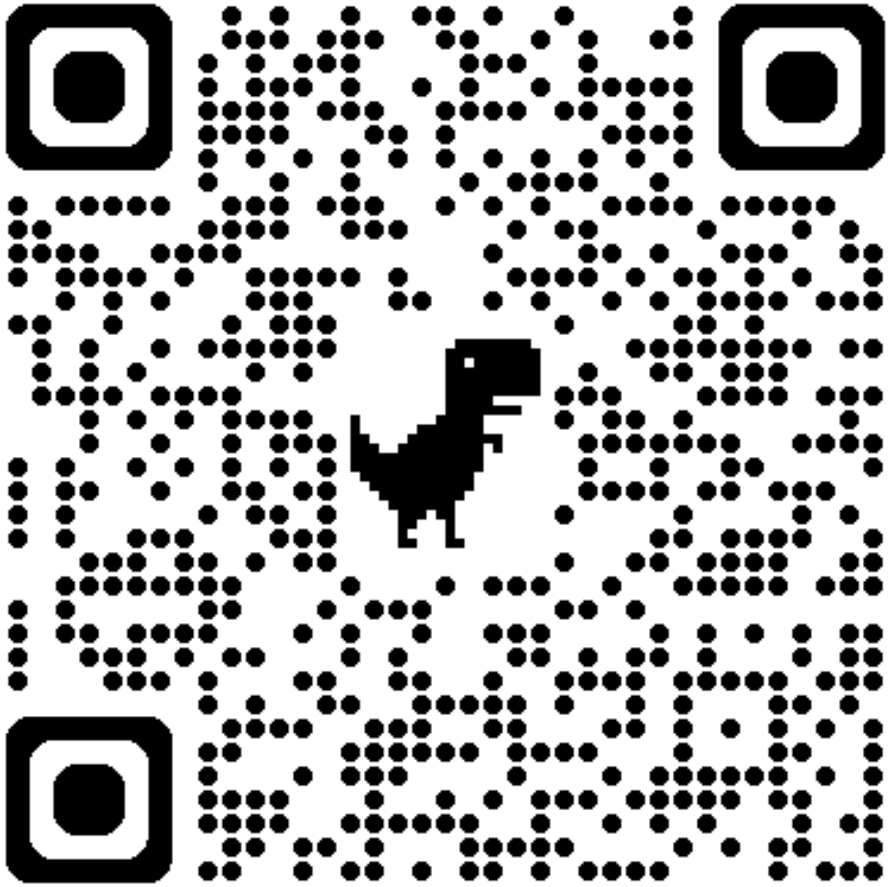
Questions?



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