DROUGHT IMPACTS ON FISH AND WILDLIFE

House Water Committee – November 17, 2021

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Oregon Department of Fish and Wildlife

2021 Drought Snapshot

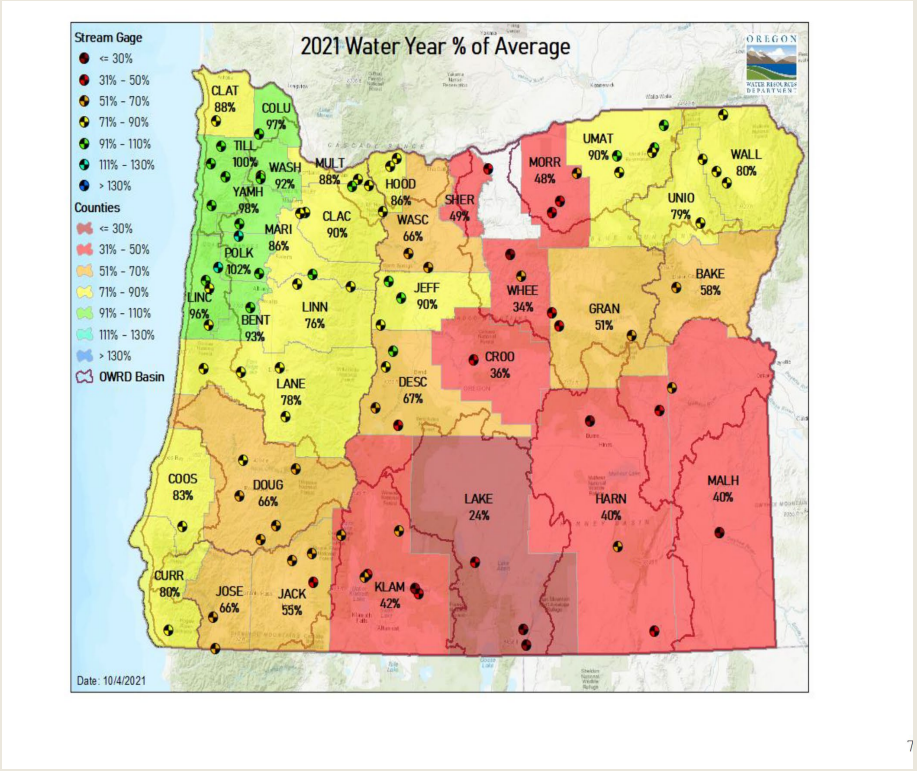
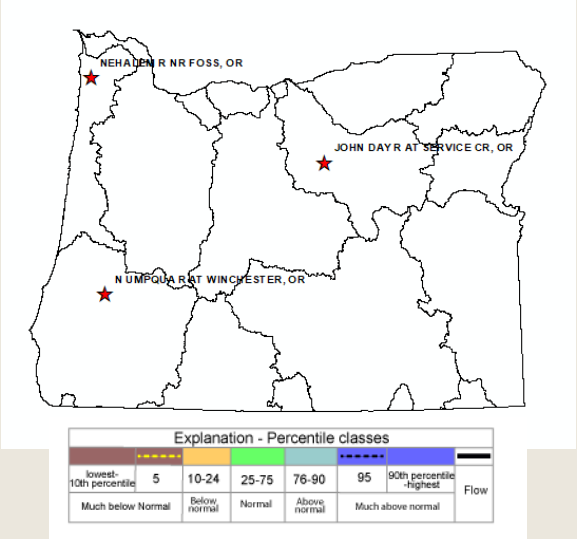
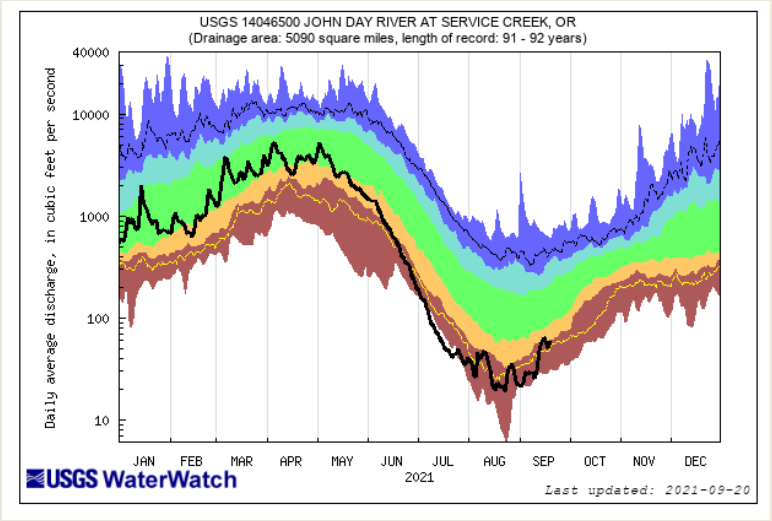


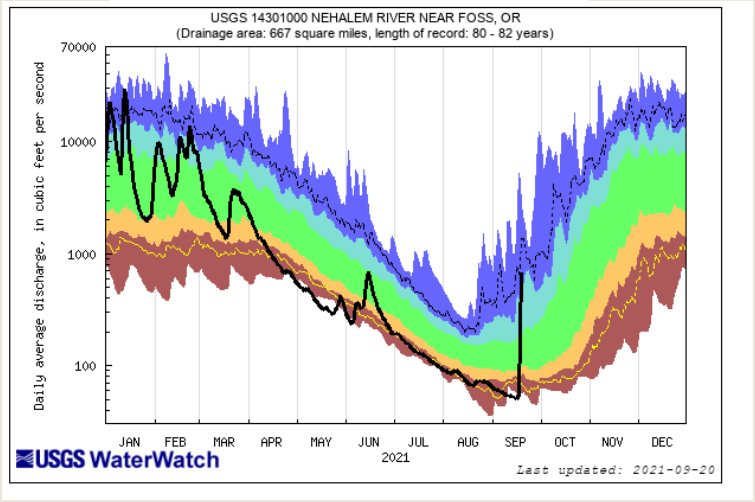
Image courtesy of Oregon Water Resources Department

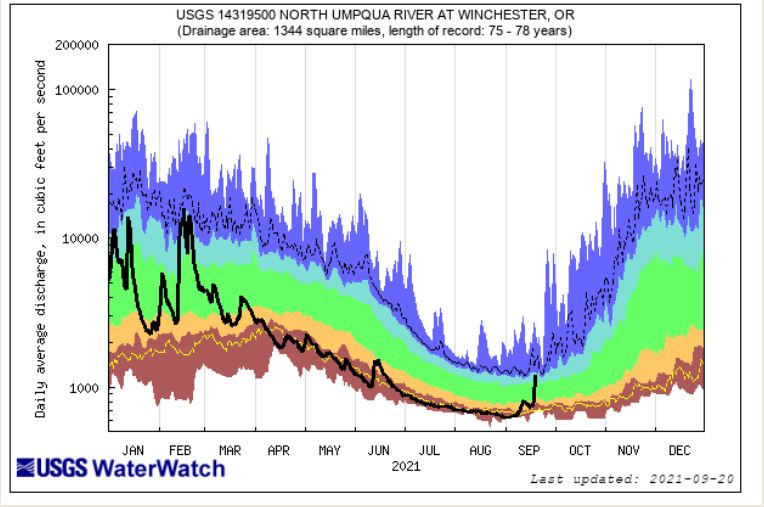
- 100% of Oregon experienced drought conditions
- 75 percent of the state classified as D3 (extreme drought) or D4 (exceptional drought) in August (highest in US Drought Monitor data record).
- Record low streamflows on many streams, reduced reservoir storage and groundwater recharge and streams drying faster than usual.
- Extreme temperatures during the late June heat wave and record high average temperatures that exacerbated drought conditions
- Water year with below average precipitation and record low precipitation in spring and summer months (second driest on record)
- Rapid melt of snowpack in April
- Record low soil moisture
- Lingering effects as 2021 constitutes the fourth year of below-average precipitation and second year of multi-year drought event

DROUGHT 2021:LOW FLOWS







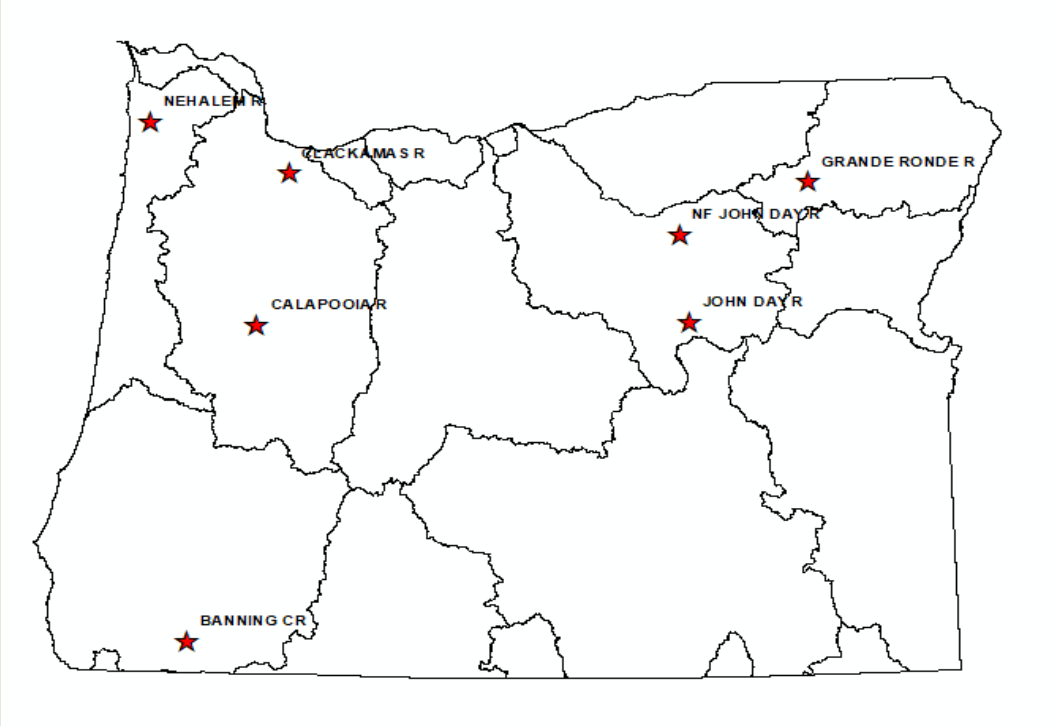


Drought Impacts

Aquatic Impacts

- *Native cold-water fish effects (salmon, steelhead, lamprey) due to elevated water temperatures/low flows*
  - Require suitable thermal conditions to complete life stages (spawning, rearing, migration etc.)
- *Range expansion of invasive species and warm-water non-native species*
- *Blue-green algal blooms resulting in depleted oxygen levels*
- *Increased stress causing increased susceptibility to disease, parasites, predation*
- *Reduced Habitat*
  - Fresh Water:
    - *Low stream flows, lake and reservoir pool levels and reduction in accessibility of rearing habitat (shelter and forage)*
    - *The ephemeral streams should have flowed longer and some perennial streams were reduced to ephemeral by mid-summer*
    - *Reduction in habitat quality and connectivity to wetlands and off-channel habitats*
  - Coastal Water:
    - *Reduction in freshwater raises salinity in estuaries enabling salt water to mix farther upstream - threatening to degrade ecosystem health in brackish water systems*
    - *Fish and other organisms shift their distribution in response to the salt-fresh boundary*
    - *Intrusion of saltwater further upstream can cause it to enter within groundwater posing risks for coastal drinking water infrastructure*
- *Fish Mortality*

DROUGHT 2021: FISH KILLS



John Day River Mountain Whitefish, 7-1-21

Calapooia River Cutthroat, 6-28-21

Drought 2021: Inland Hatchery Impacts

- Low source flows and high temperatures impact hatchery operations
- Increased fish health issues and incidence of disease
  - Surge in fish parasites and bacterial pathogens along coastal facilities. Spring Chinook adults were more susceptible to fungus and pre-spawning mortality in the Willamette Valley hatcheries.
  - *During the peak of the summer 30-50% of adult spring Chinook passing above N. Fk adult sorting facility on the Clackamas suffered from Columnaris*
- Earlier than planned releases and stocking adjustments
  - *Stocked fish exhibiting stress/disease led to public calls and perception from some anglers that stocked trout are unhealthy and/or unfit to eat.*
- Mortality
  - Willamette hatchery experienced significant mortality of spring Chinook broodstock for example (likely from Columnaris)
- Cascading effects

Drought 2021: Fish Passage Impairment

- Drought and low flows have caused partial barriers to passage to become significant barriers to passage.
  - Example: downtown Medford where a large number of fall chinook struggled to pass an abandoned sewer line. ODFW maintained a temporary sandbag fish ladder to help fish pass.
- Increased reports of unauthorized obstructions
- Increased reports regarding pushup dams not authorized by ODFW

Drought Impacts

Wildlife Impacts

Reduced Forage/Reduction in available water sources

Reductions in available waterbird and shorebird habitat and initial indications of reduced breeding success. ODFW refuges are attempting to manage limited water as strategically as possible

- *Flights to photograph American White Pelican breeding colonies in 2021 show limited or no nesting at historic sites.*

Increased water temperature at remnant breeding areas limiting reproductive success for amphibians

Disease impacts due to concentration of animals around remaining water sources

- More white-tailed deer than normal have been infected with either bluetongue or epizootic hemorrhagic disease (EHD). Reports of black-tailed deer with EHD in Central Oregon.
- Survey data will not be available until later this year, but expect so see reductions in reproductive success in deer and elk herds due to the drought

– *Impacts to migratory species due to lack of available habitat at key stopover sites*

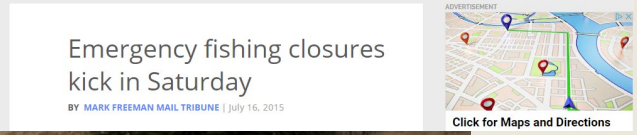
- Bypassing Klamath Refuge

– *Some fall hunting opportunities impacted by forest fires*

  – Deer tags refunded for units impacted by Bootleg fire

ODFW DROUGHT ACTIONS AND STRATEGIES

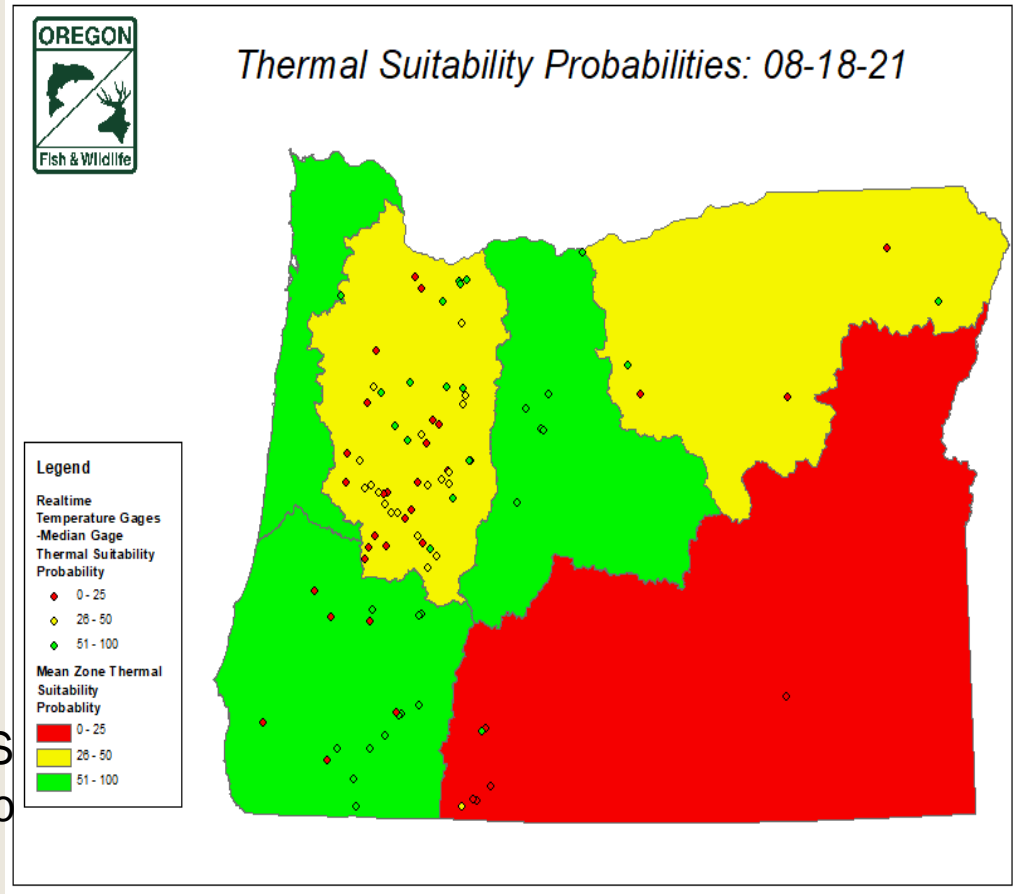
Fishing Regulations



- Restrictions: “Hoot owl” regulations. Fishing is closed for salmon, steelhead, sturgeon, and trout from 2 p.m. until one hour before sunrise in some rivers and streams in the NW, SW, Willamette, Central, and NE zones.
- Closures: Full closures in portions of the Nehalem and Rogue River and North Umpqua (NU closed through Nov. 30)
- Removal of bag limits: Certain reservoirs across state
- Thermal sanctuaries: no-angling sanctuaries in certain tributary mouths

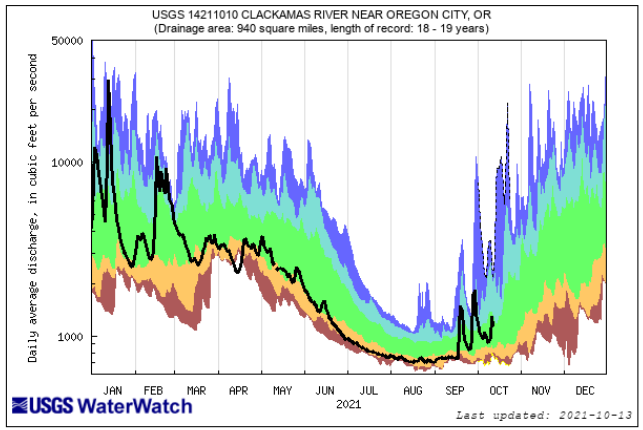
Using Data to Understand the Problem and Inform Solutions

- Forecasting Temperature Events: Water temperature loggers in coastal streams (from Nehalem to Illinois) to capture temperature events. Data collected will be used in modeling effort to help forecast water temperature in future years.
- Informing Management: Developed tool to automate retrieval of daily water temperature data from USGS gages and compare temps to species thermal suitability data. This information can be used to inform emergency angling regulations in real-time.



Work with Partners

Image courtesy of USDA Forest Service



- **ODFW continues to work with water management partners, particularly reservoir operators, to recommend and help determine dam release timing and rates for the benefit of fish**
- **Drought Readiness Council**
- **Drought Declarations**
- **Cannabis Coordination Team**
  - Jackson County State of Emergency
  - Huge spike in water-related complaints (700% over last few years)
- **OWRD Monitoring MOA**

LOOKING AHEAD

Proactive, informed actions

- Do we have the necessary information?
  - *Secure information to better predict and manage drought events in a manner that ensures resilient fish and wildlife populations and minimizes impacts to opportunity and other economic drivers. Robust data is necessary to sustainably manage the resource and resolve critical uncertainties.*
  - *Accurate, real-time water temperature data needed, particularly paired temperature/discharge gages*
    - Very few real-time temperature gages on coastal streams for example (currently only 1 real-time gage on the coast north of the Umpqua)
  - *Monitoring needed for open ocean, estuaries, to document the degree of change, and from there project impacts to key species/habitats (estuary vegetation, nursery habitats/species.)*
- Do we have the right focus?
  - *Prioritize Actions*
    - Improving habitat and focusing conservation on the most resilient remaining habitat gives fish and wildlife populations their best chance to persist on the landscape despite changing conditions
    - ODFW's Aquatic Habitat Prioritization (AHP) framework is in development
    - Strategic actions in fire impacted habitats for wildlife benefits
- Do we have the right tools?
  - *Continue seeking innovative tools to respond to and mitigate the effects of drought and ensure resilient habitat conditions for fish and wildlife*
  - *Conversations are likely to be more productive if they occur when we are not actively responding to drought.*

HEALTHY HABITAT HEALTHY ECONOMY

People that
2.8 M
Hunt, fish, recreate

Dollars
2.7 B
spent

Related
>11,000
Jobs

QUESTIONS?

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