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March 5, 2024

MEMORANDUM

TO: Fish and Wildlife Committee Members

FROM: Windy Schoby, Fish and Wildlife Policy Analyst- Idaho

SUBJECT: Expansion of Non-native Walleye: Another Threat to Salmon and Steelhead

BACKGROUND:

Presenter: Marika Dobos, Fisheries Staff Biologist, Idaho Department of Fish and Game

Summary: The abundance and distribution of walleye in the Columbia Basin has recently been increasing and expanding in the Snake River upstream of Lower Granite Dam. This expansion of walleye is a concerning issue that poses greater predation risk to wild and hatchery stocks of juvenile anadromous salmon, steelhead and lamprey that use the overlapping habitat for rearing and emigration. The Idaho Department of Fish and Game will provide information on walleye life history, angler encounters in the Snake River in Idaho, and research on potential passage pathways at Lower Granite Dam. They will also outline the next steps being taken to coordinate with other state, federal, and tribal agencies to understand the expanding threat.

Relevance: The [2014 Columbia River Basin Fish and Wildlife Program](#) has a strategy for 'Non-native and Invasive Species' designed to evaluate potential adverse impacts from invasives, prevent their establishment and dispersal, supports their removal and eradication and finally calls for coordination with the region on efforts to track and monitor data on species distribution and movement. Education and outreach are also identified as an essential part of any successful suppression effort.

The [2020 Addendum](#) to the Fish and Wildlife Program calls on Bonneville, Corps of Engineers, Bureau of Reclamation, NOAA, state fish and wildlife agencies and Columbia Basin tribes to adequately sustain and support efforts to reduce, increase and revise predation efforts as necessary.

Predator management is requiring more program resources and efforts year by year. Everyone involved in the program, including the Council, Bonneville Power Administration, the Corps of Engineers, state and federal fish and wildlife agencies, tribes, and others, must work together to continue developing a more effective systemwide, ecosystem-based approach for assessing and addressing the impacts of fish, avian, and pinniped predation on salmon and steelhead and other fish species important to the program.

In the interim, while an ecosystem-based approach to predator management is being encouraged, the Council has identified three predation management implementation issues that need particular attention: Northern pike, pinniped, and avian predation. Walleye were not included in this list, but their predation threat to juvenile salmonids is increasing as populations expand into additional habitat in the Snake River.

Background: Outside of their native range¹, walleye are effective and opportunistic predators that can collapse local fisheries and food webs. Authorized and unauthorized introductions of walleye have been widespread due to their prized value as sportfish and table fare. While management objectives differ by waterbody, walleye are classified as a gamefish by Oregon, Washington, Idaho and Montana.

Walleye spread throughout the Columbia River basin following an unauthorized introduction to Lake Roosevelt in the mid-20th century². Until recently, walleye distribution had mostly remained downstream of Idaho's salmon and steelhead rivers. Monitoring efforts for salmon and steelhead

¹ Walleye are native to the Great Lakes and Mississippi River drainage basins

² A sport fishery had developed in Lake Roosevelt, Washington, by the 1960's.

at Lower Granite Dam, downstream from Lewiston, Idaho is showing more walleye moving upstream. Data collected at the adult fish trap has shown that walleye have been moving through the fish ladder and likely passing over or through the dam since at least 2016. Observations at the ladder have been increasing annually (2016=2; 2017=11; 2018=49; 2019=20; 2020=45; 2021=75; 2022=73 2023=154). Additionally, anglers are encountering walleye in Idaho's anadromous waters with increasing frequency and distance upstream from the dam. Walleye have been caught over 80 miles upstream in the Salmon River near the town of Riggins.

Juvenile salmonids in Idaho rivers and streams are already affected by predation from native and non-native birds and fishes. As more walleye continue to move upstream of Lower Granite, predation rates are likely to rise. Researchers downriver have estimated that the average walleye can eat 2.5 salmonid smolts per day during the spring (McMichael and James 2017), and that non-native predators, including walleye, might be eating up to 17% of certain populations of juvenile emigrants (Harnish et al. 2014). The Idaho Department of Fish and Game has been working to better understand the mechanisms in which walleye are moving past Lower Granite dam and coordinate with other state, federal, and tribal entities on this emerging challenge.

More information:

Walleye in the news:

[Data shows increasing numbers of walleye at Lower Granite Dam near Lewiston | Idaho Fish and Game](#)

[Walleye aren't bad fish, just the wrong fish for Idaho | Idaho Fish and Game](#)



EXPANSION OF NON-NATIVE WALLEYE: ANOTHER THREAT TO SALMON AND STEELHEAD

BIOLOGY AND BACKGROUND

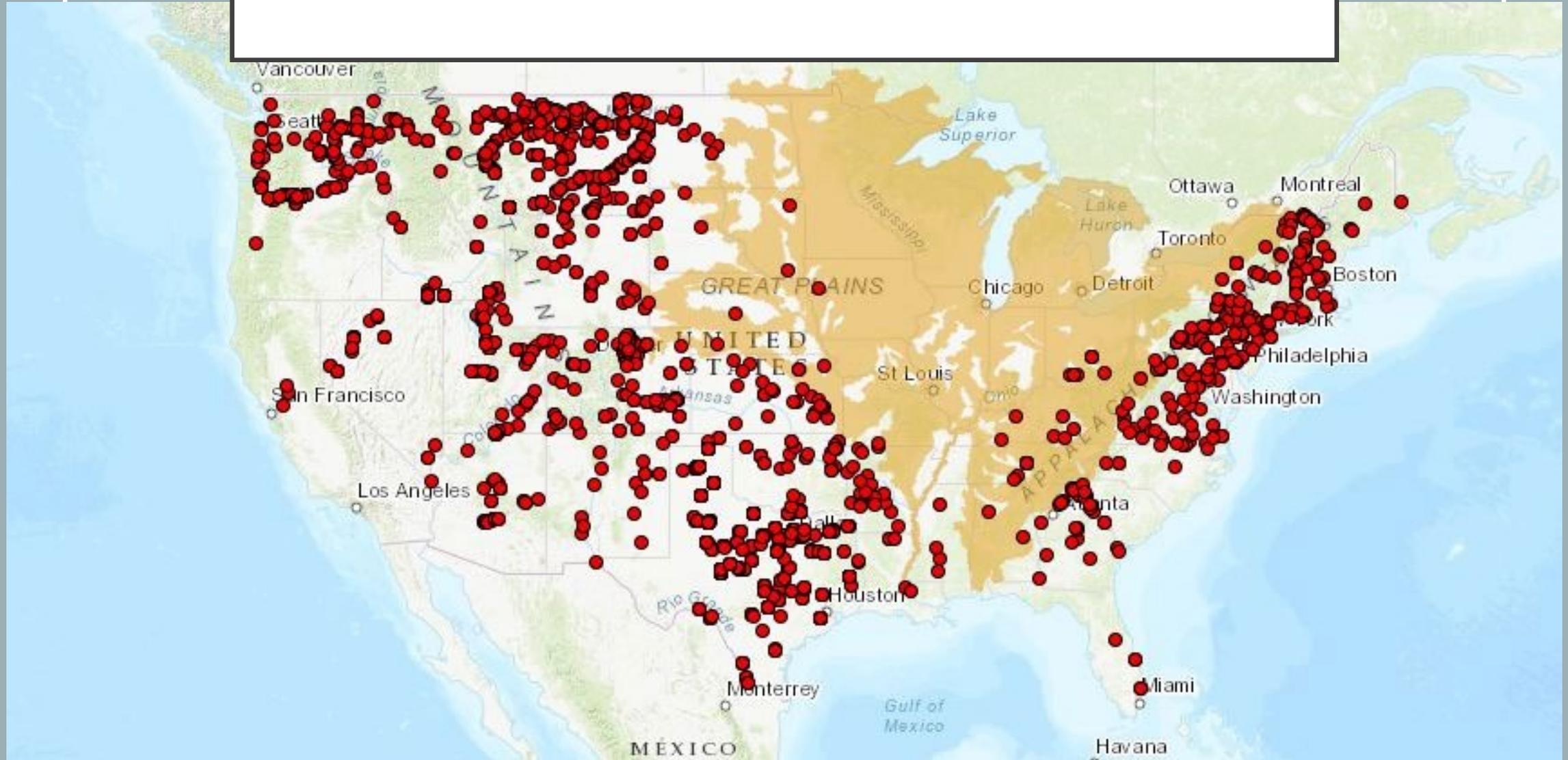
- Coolwater species
(optimum range: 18–24°C)
- Maturation and growth
 - Males: 2 yrs; Females: 4 yrs
 - Up to 20+ yrs and 20+ lbs
- Egg producing machines
 - 12" female = 30,000 eggs/yr
 - 10lb female = 250,000 eggs/yr
- Fish eating machines!



NATIVE RANGE

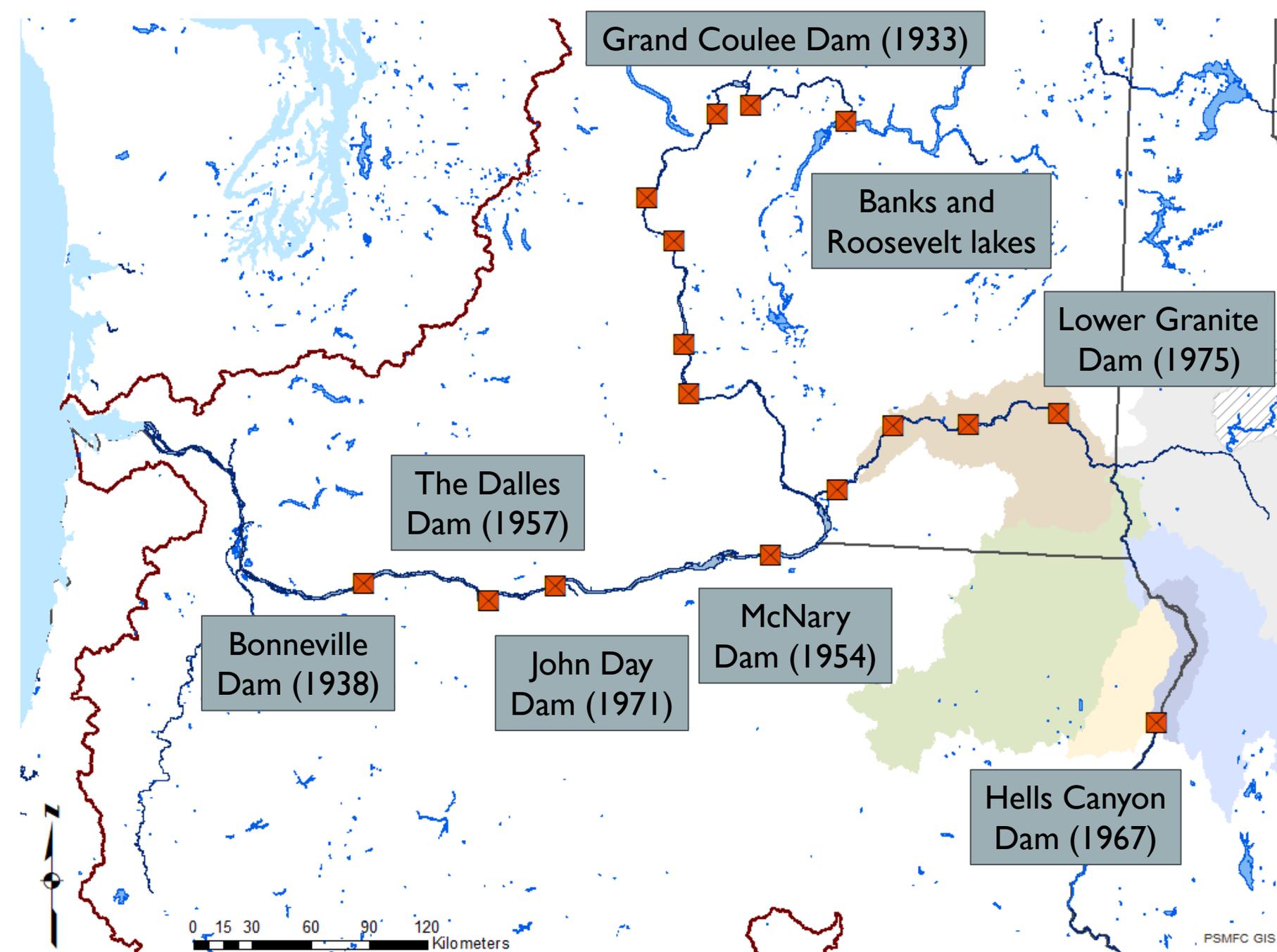


CURRENT RANGE



EXPANSION TREND

- 1940s: first introduction
- 1990s: lower Columbia River surveys
- Late 1990s: first observations in the Snake River
- 2010–2018: notable increase from angler reports and surveys



VORACIOUS PREDATORS

- Lots of native prey are spiny
- Opportunistic fish eaters
- Good cover can help prey evade predation
- Native fishes have soft fins
- Reservoirs have little cover
- Stocking programs can be affected

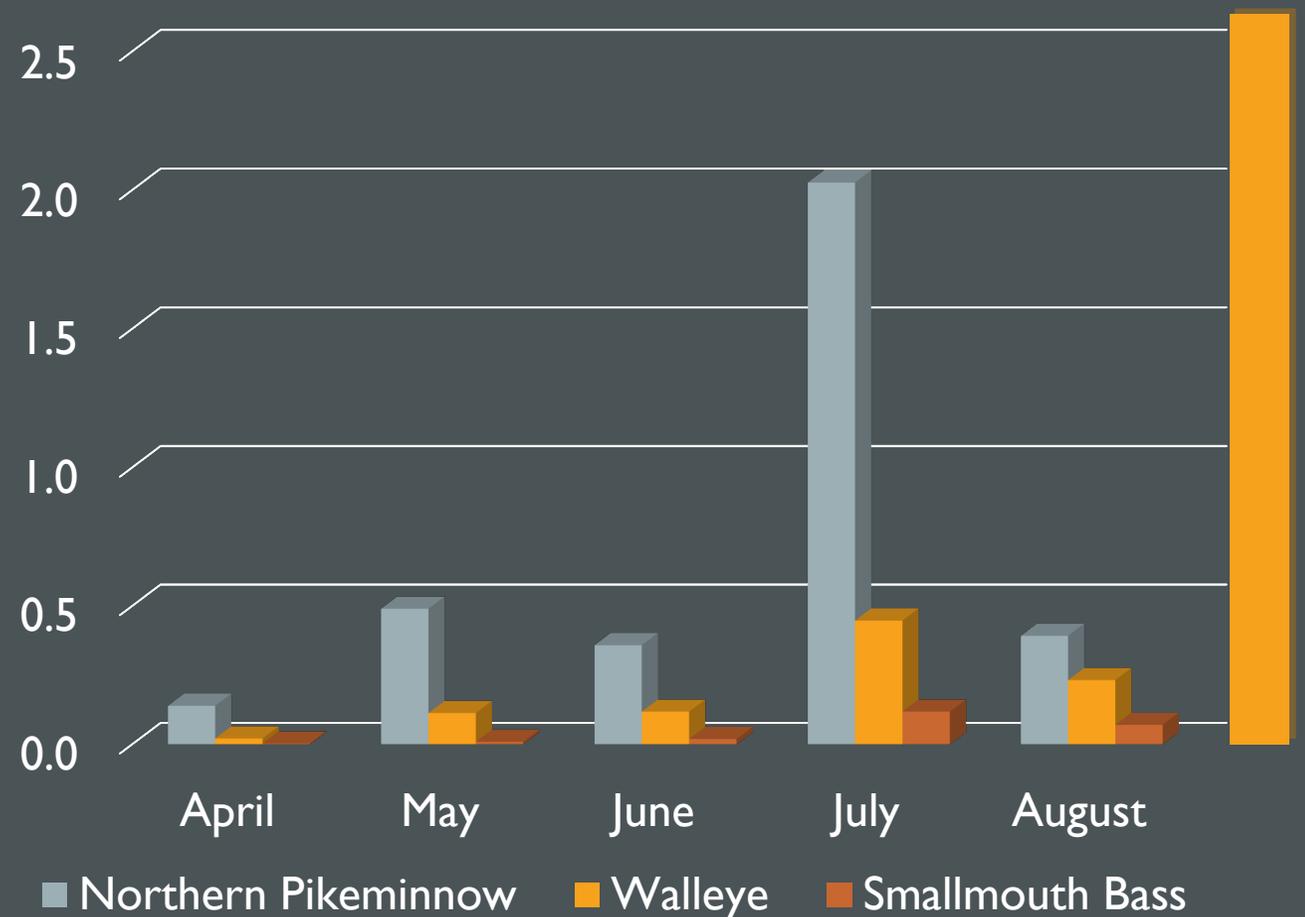


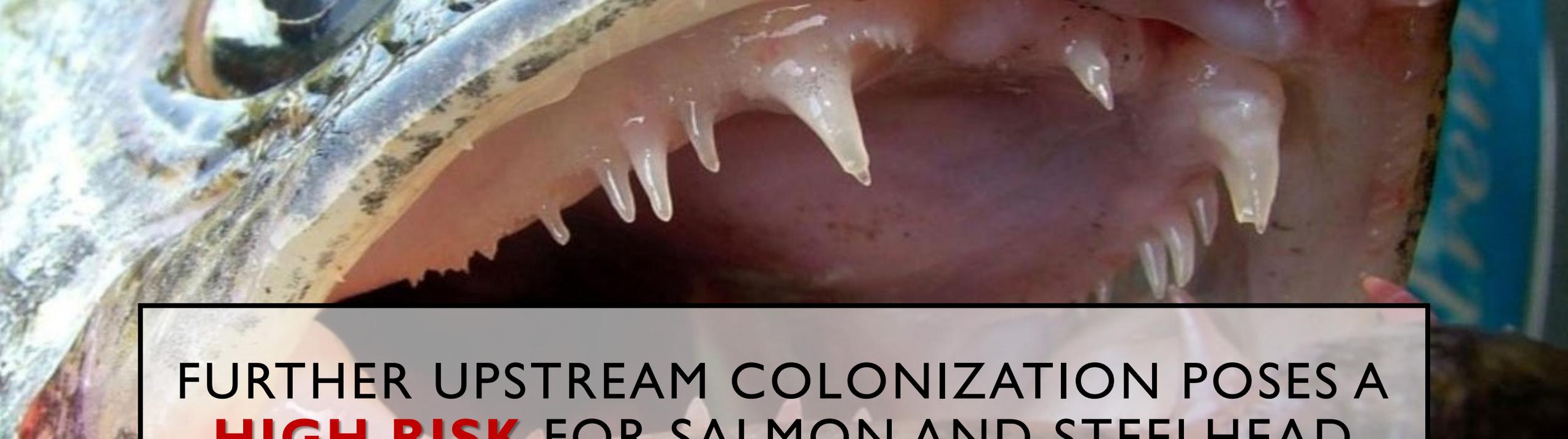
CONSUMPTION OF SALMONIDS

- Average percentage of salmonids consumed during the spring (ODFW & USFWS early 90s)
 - 90% of Northern Pikeminnow diet
 - 60% of Walleye diet
 - 10% of Smallmouth Bass diet
- Mean consumption was 2.52 (May–June) in Lake Wallula (McNary pool) in 2016

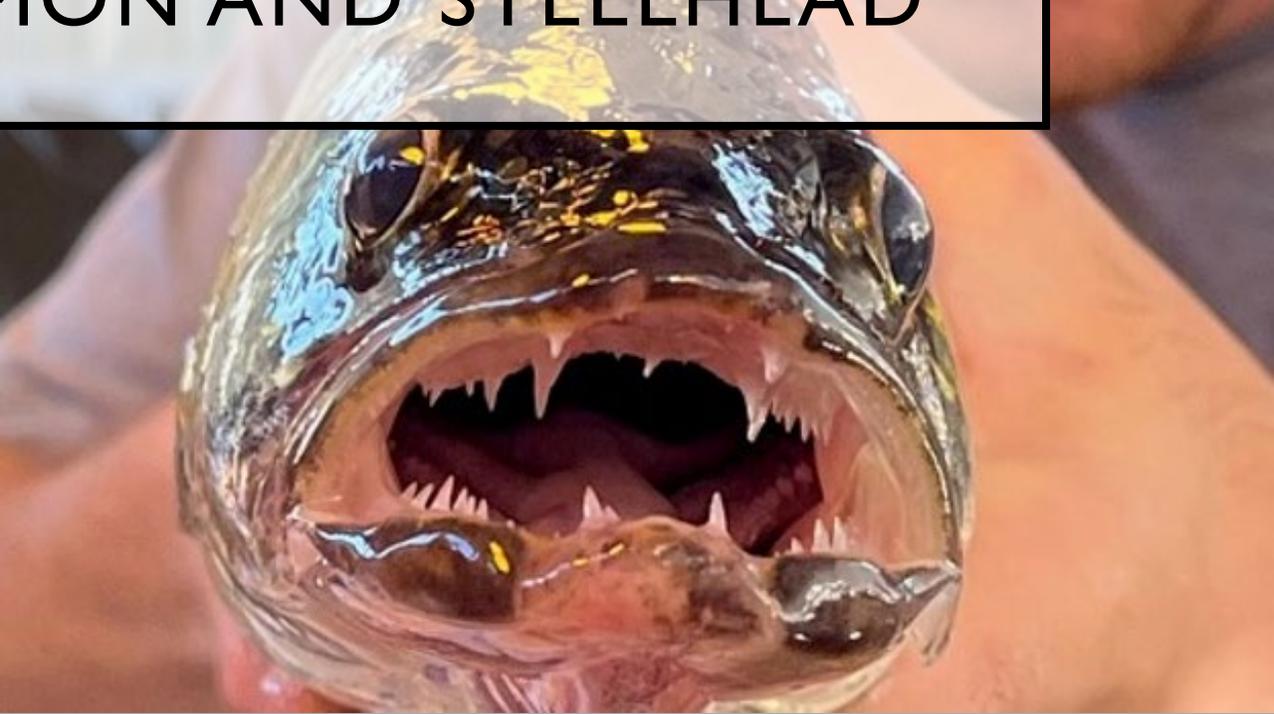
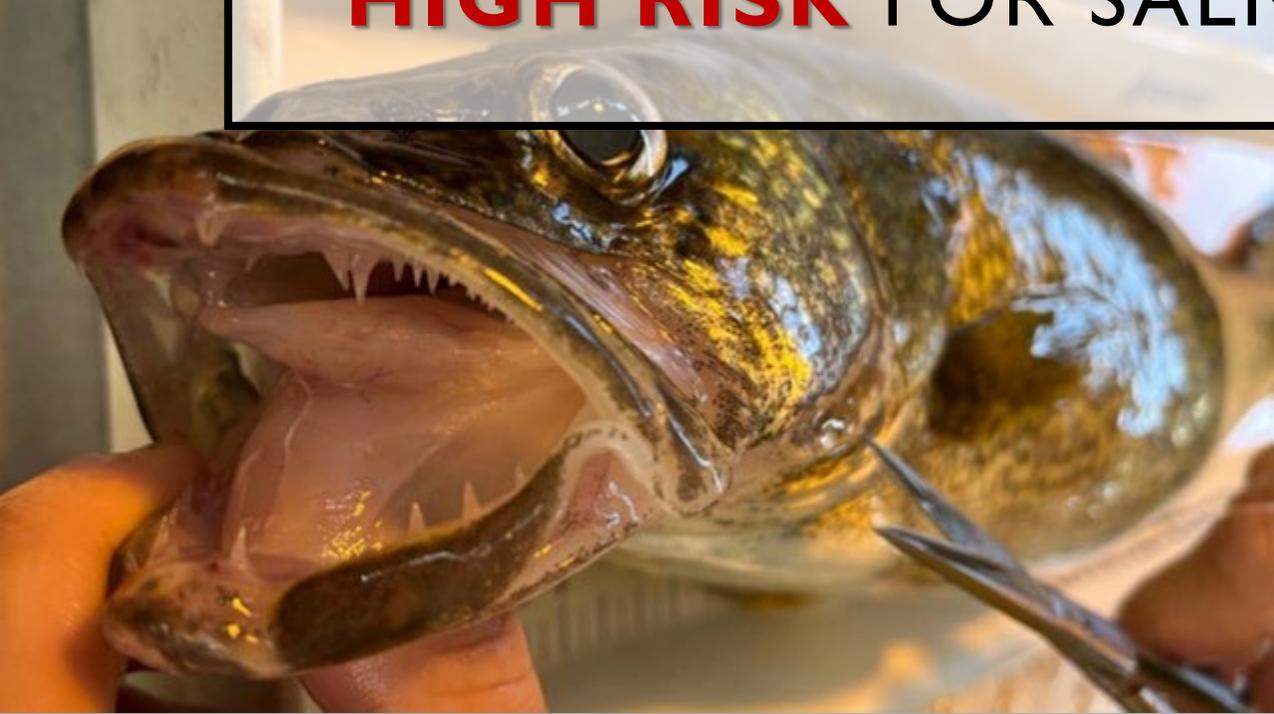


Consumption Rates of Salmonids
(Average Salmonid Per Day)





FURTHER UPSTREAM COLONIZATION POSES A
HIGH RISK FOR SALMON AND STEELHEAD



LOWER GRANITE DAM TRAP

| Year | Trap count | Size Range (in) |
|------|------------|-----------------|
| 2016 | 2 | 16-23 |
| 2017 | 11 | 9-19 |
| 2018 | 49 | 14-22 |
| 2019 | 20 | 15-22 |



IDFG STUDIES AT LOWER GRANITE DAM

- Demographics (2020-2022)
 - Age and growth
 - Sex
 - Maturity
 - Diet
- Movement in 2023



GETTING THE WORD OUT



Idaho Fish and Game



Walleye are spreading into Idaho

Home — Press Releases and Articles

idfg-mdobos
Monday, August 14, 2023 - 3:07 PM MDT

Wild Salmon and Steelhead

Idaho Fish & Game Asking Anglers to Keep all Walleye Caught in Snake River

Aug 15, 2023 Updated Aug 15, 2023



Invasive Walleyes are Spreading into Idaho, Threatening Native Salmon and Steelhead

The voracious apex predators are moving into portions of the Salmon and Snake rivers

BY KRIS MILLGATE | PUBLISHED AUG 18, 2023 2:00 PM EDT

CONSERVATION



Idaho Official Government Website | Buy a License

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Idaho Fish and Game



Walleye aren't bad fish, just the wrong fish for Idaho



THE SPOKESMAN-REVIEW

Spokane, Washington Est. May 19, 1883



WSU Football Gonzaga Basketball Gonzaga Women's Basketball Outdoors High Schools



SPORTS - OUTDOORS

'Not good for salmon and steelhead': Smolt-eating walleye worry fishery managers

Aug 29, 2023 | Updated Wed., Aug. 30, 2023 at 6:50 p.m.



Invasive walleye keep popping up where they aren't supposed to be

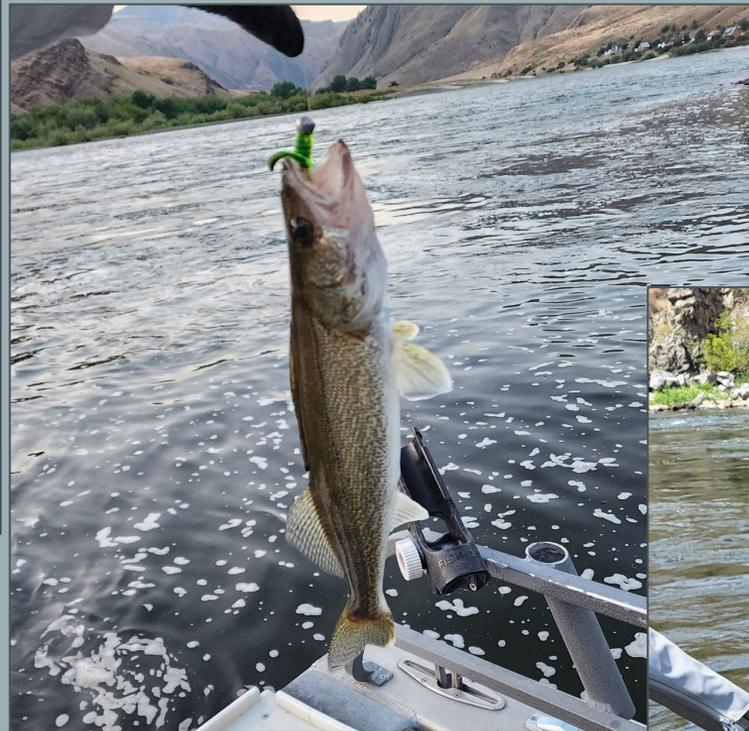
Boise State Public Radio News | By Troy Oppie
Published August 30, 2022 at 8:48 AM MDT



▶ LISTEN • 1:33

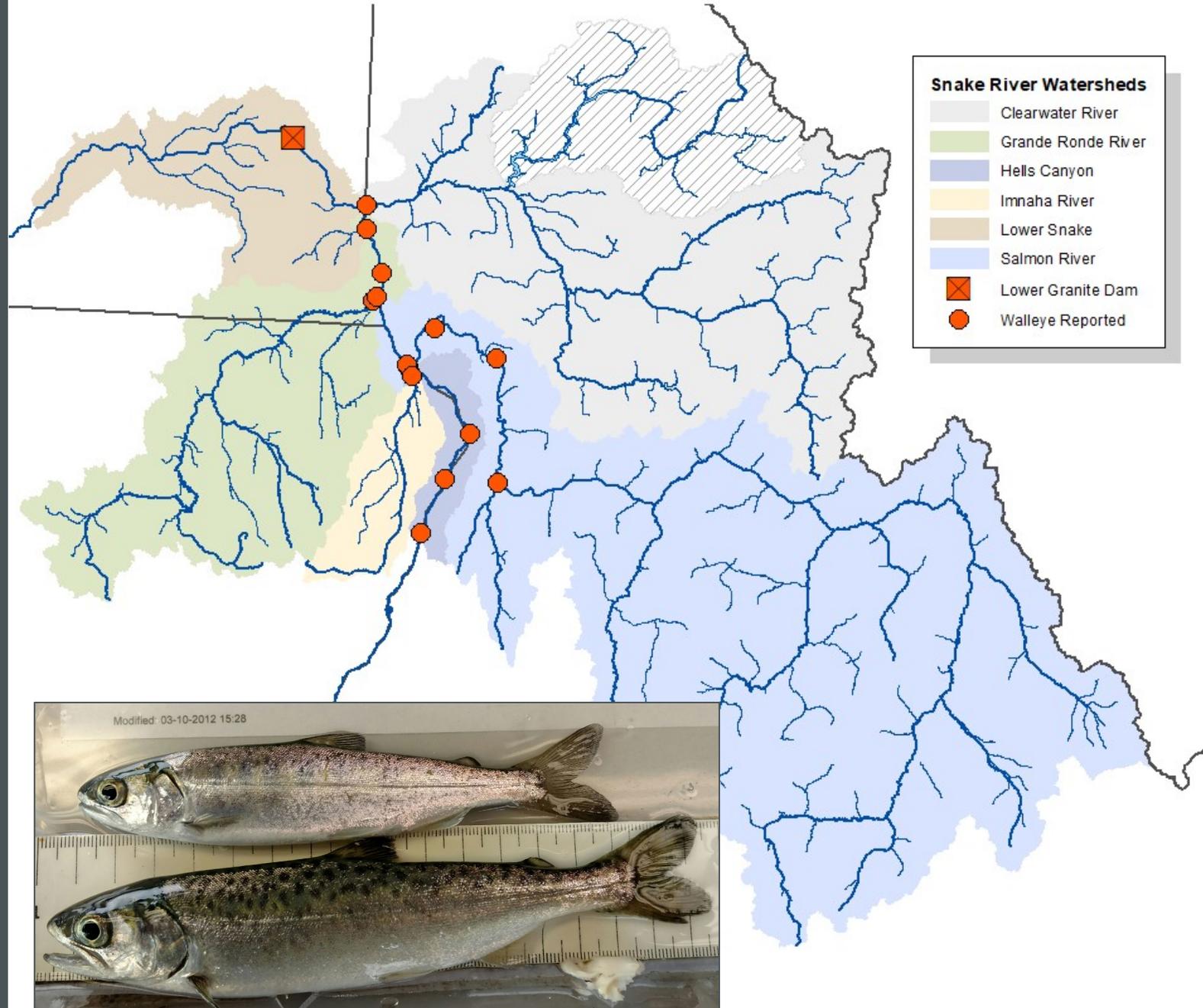


WALLEY CAUGHT IN IDAHO DURING 2023



PREDATION THREAT

- Current overlap with important rearing habitat in mainstem rivers
- Current overlap with fall Chinook Salmon hatchery releases
- Established walleye population and further expansion = lower survival of wild salmon and steelhead



TRENDS AT LOWER GRANITE DAM



| Year | Trap count | Size range (in) |
|------|------------|-----------------|
| 2016 | 2 | 16-23 |
| 2017 | 11 | 9-19 |
| 2018 | 49 | 14-22 |
| 2019 | 20 | 15-22 |
| 2020 | 45 | 10-23 |
| 2021 | 75 | 13-22 |
| 2022 | 73 | 10-23 |
| 2023 | 154 | 10-26 |

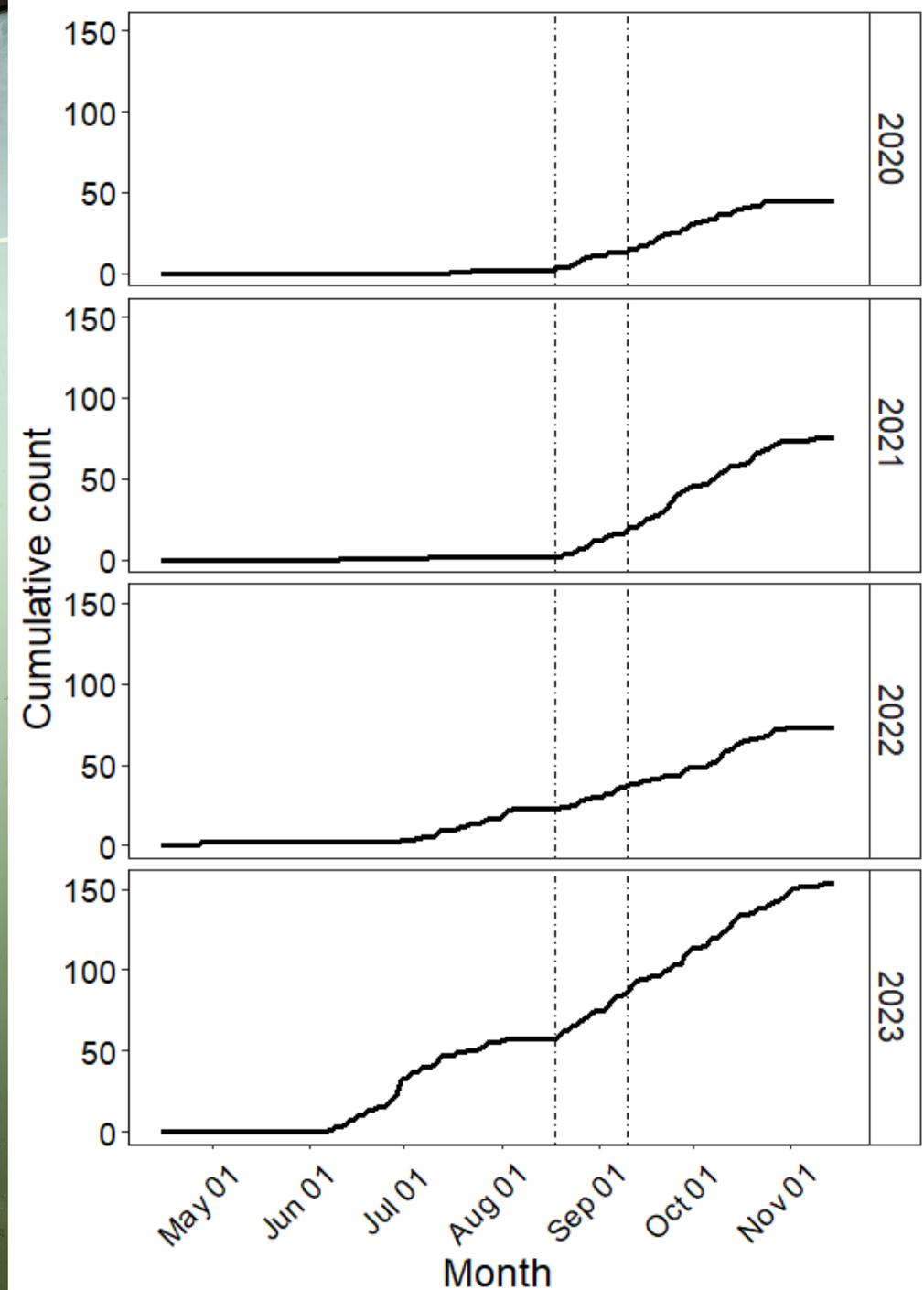


TIMING OF WALLEYE TRAPPED



Window counts (USACE)

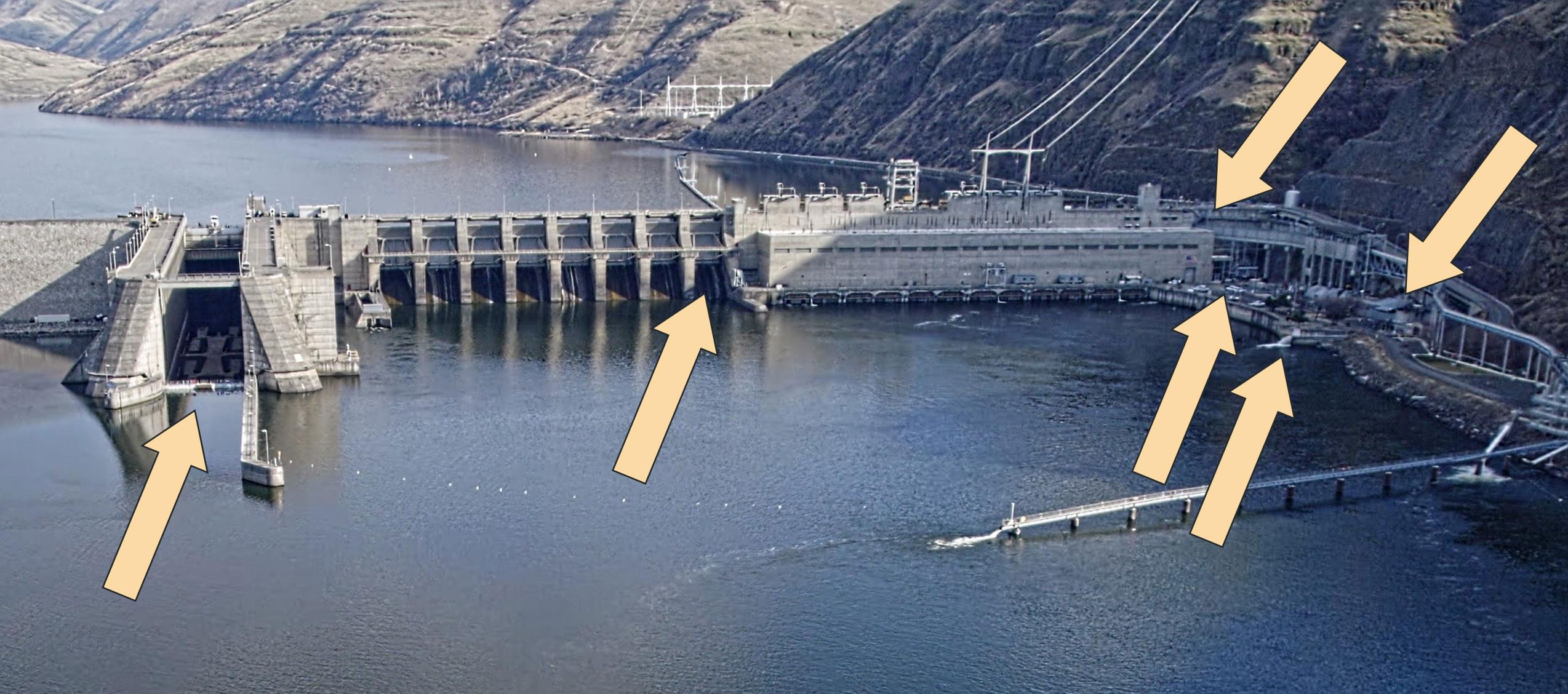
- 1,877 (April–October) in 2021
- 75 total trapped in 2021



2023 PIT TAGGING EFFORT

- Tailrace release
- Detection sites (LGR)
 - Ladder entrance weir
 - Ladder bypass loop
 - Upstream ladder weirs
 - Ladder exit weirs
- Spillway array





LOWER GRANITE DAM

ADULT TRAP BYPASS LOOP





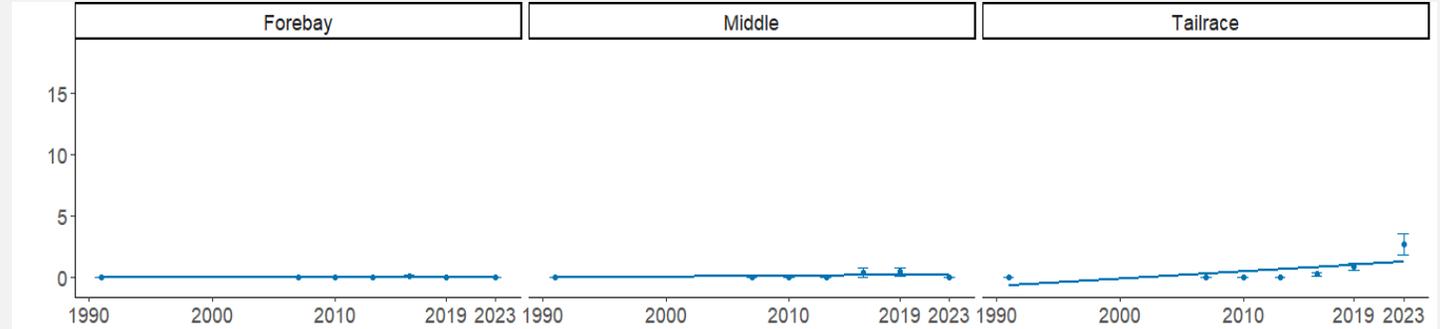
DAM PASSAGE SUCCESS

- 154 PIT tagged (2023)
 - 73 (47%) at the ladder entrance
 - 11 (7%) in the bypass loop
 - 9 (12% of those that entered) at the ladder exit— 2 fell back and over the spillway
 - 2 (1%) on spillway array only

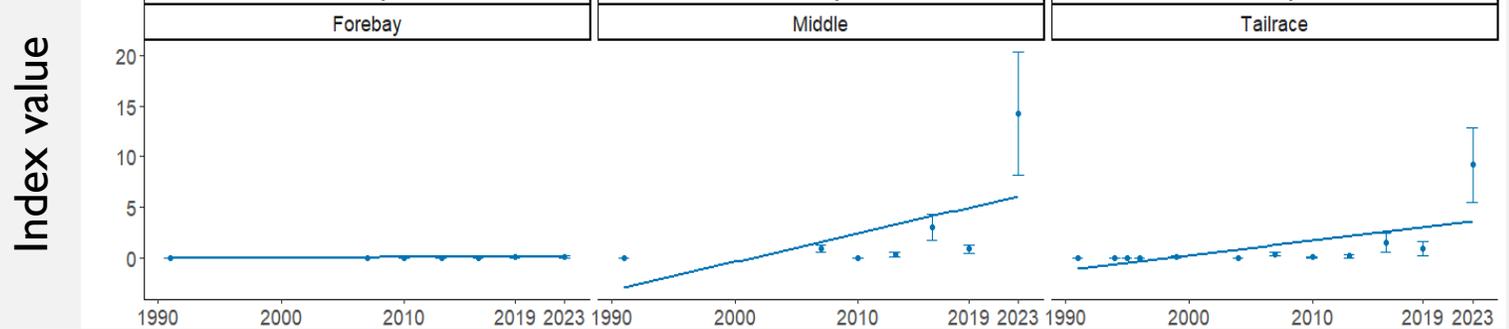
SNAKE RIVER RESERVOIR TRENDS

| Reservoir | WAE | NPM | SMB |
|------------------|-----|-----|-----|
| Ice Harbor | 47% | 0% | 4% |
| Lower Monumental | 14% | 0% | 2% |
| Little Goose | 30% | 33% | 10% |
| Lower Granite | 50% | 4% | 15% |

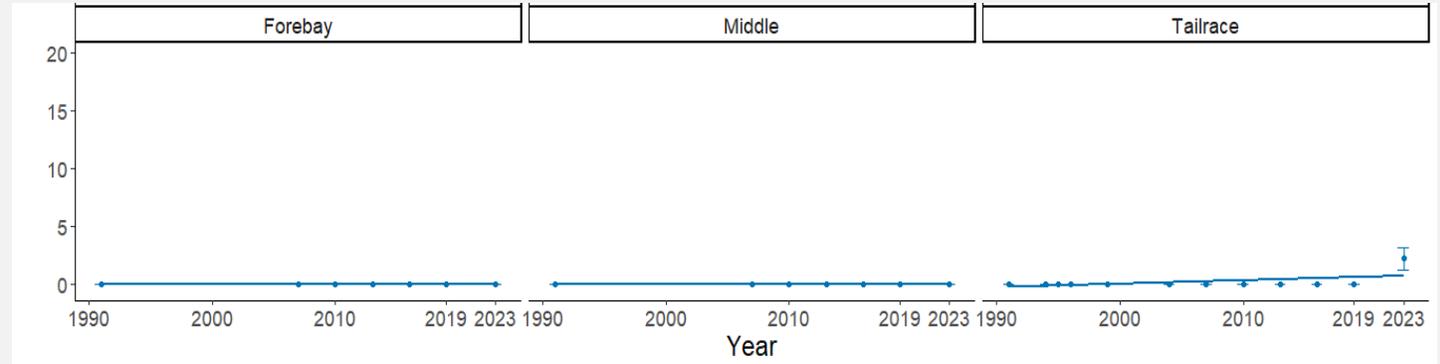
Ice Harbor Reservoir



Lower Monumental Reservoir



Little Goose Reservoir



CHALLENGES

The Snake and Columbia are big systems

Overlap with anadromous adult fish

When allowed access, they will colonize

Angler support for Walleye fisheries

WALLEYE REGULATIONS

- Classified as a Game Fish (WA, OR, and ID)
- No size or bag limit on Walleye in the lower Snake River and Columbia River downstream of Lake Roosevelt (WA, OR, and ID)



WALLEYE/ NON-NATIVE PISCIVORE WORK GROUP

- Confederated Tribes of the Umatilla Indian Reservation
- Idaho Department of Fish and Game
- Nez Perce Tribe
- Oregon Department of Fish and Wildlife
- US Geological Survey
- Washington Department of Fish and Wildlife
- NOAA – Northwest Fisheries Science Center



Implement research and management actions with a goal to reduce, minimize, and prevent piscine predation-related mortality from introduced non-native fishes on anadromous species within the Columbia River basin.

WHAT CAN BE DONE?

- Encourage reporting and harvesting of Walleye – Get the word out!
- Learn about them
 - Where and how successful are they moving upstream of dams?
 - Where do they spawn?
 - Are they naturally recruiting above LGR?
 - What are abundances and angler harvest?
- Consider what methods of suppression can be effective
- Consider modifications that could limit passage at dams
- Consider policy changes that can be useful



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QUESTIONS???