

WY 2022 Impact on Nooksack Salmon Recovery



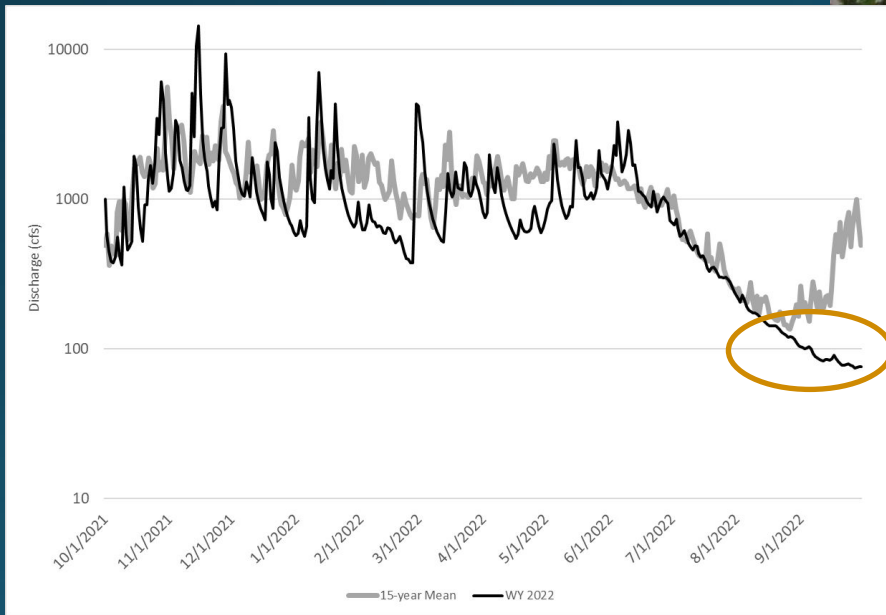
Michael Maudlin
Nooksack Indian Tribe

Nooksack Watershed



WY 2022 was a Year of Extremes

November 2021 precipitation events led to record flooding on the Nooksack River



September 2022 lack-of-precipitation events led to record low flow in the Nooksack Watershed

Nooksack Salmon

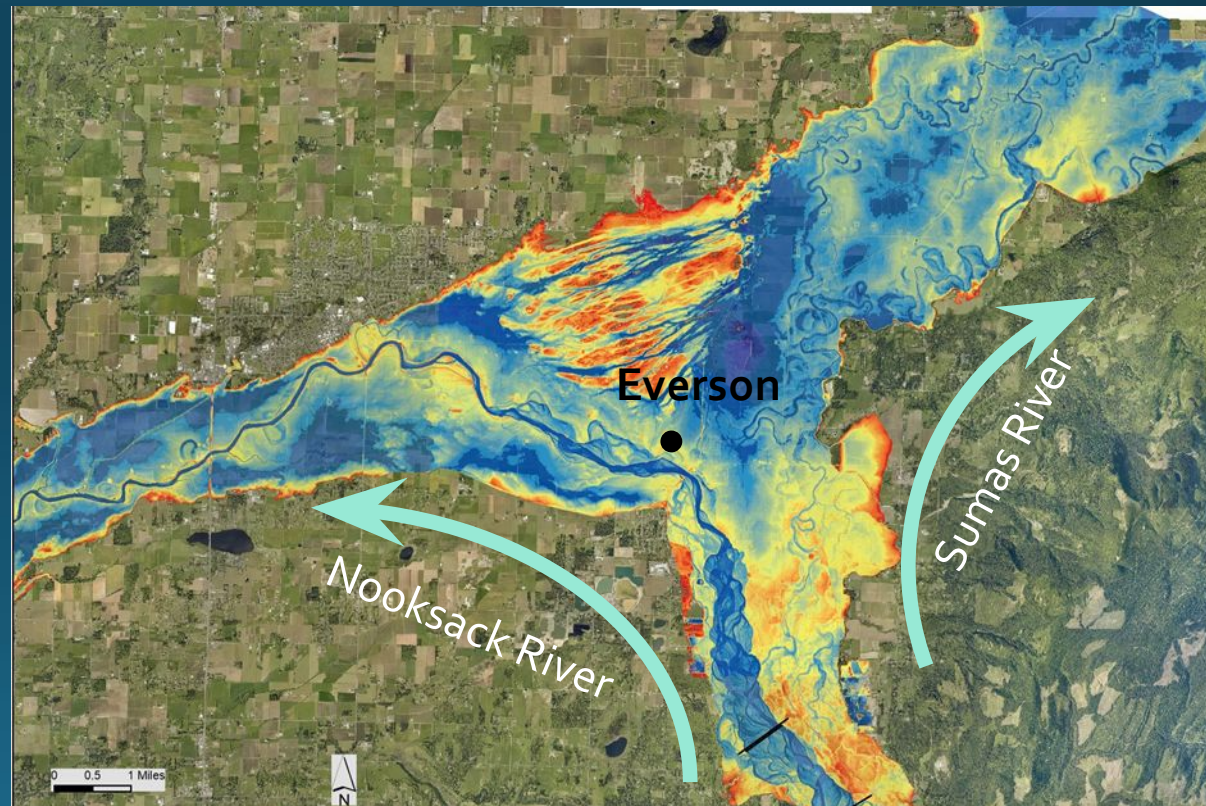
Spring Chinook Life History



November 2021 Flood Impacts

Nooksack Overflow to Canada

- Overflow follows ancestral Nooksack River path to Sumas Lake and Fraser River
- Impacted communities of Everson, Nooksack and Sumas in US, and Abbotsford in B.C





Overflow
to Canada

City of Everson

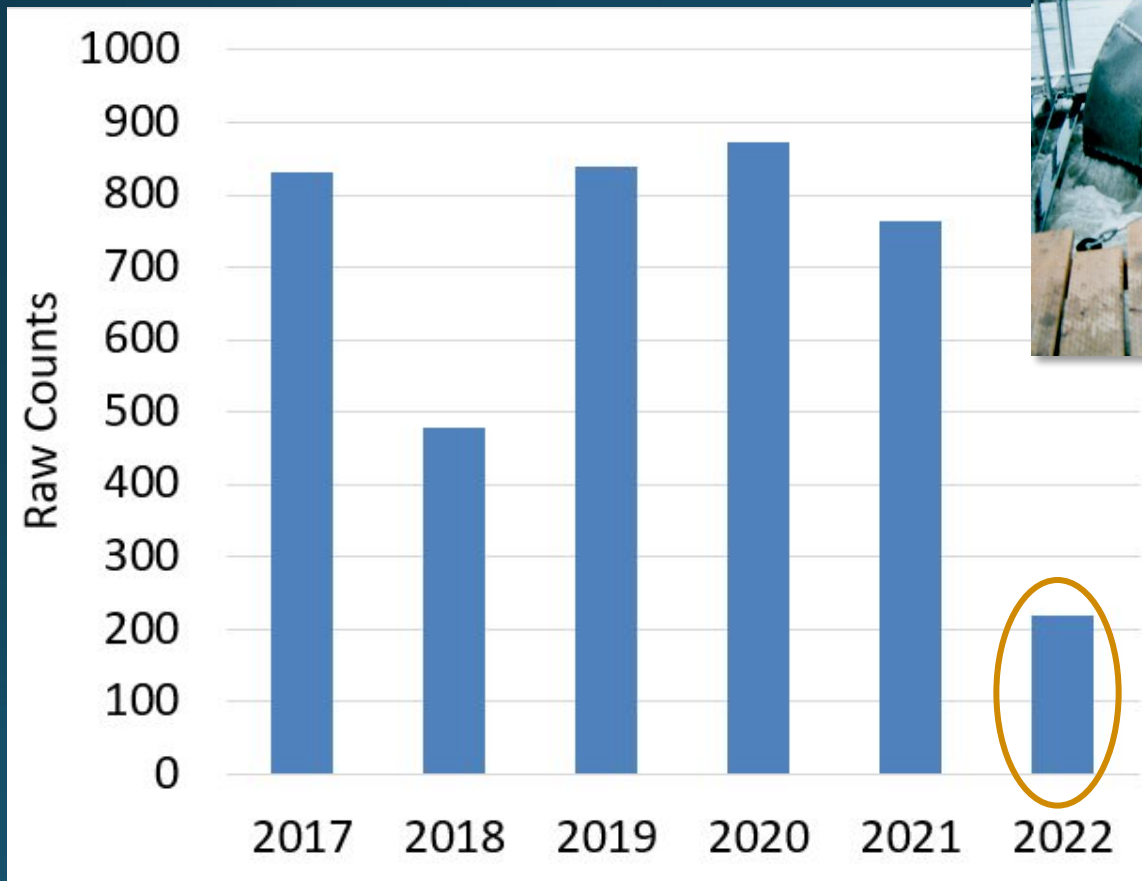
Nooksack River

Photo Credit: Aaron Kurashige

Flood Response Habitat Impacts



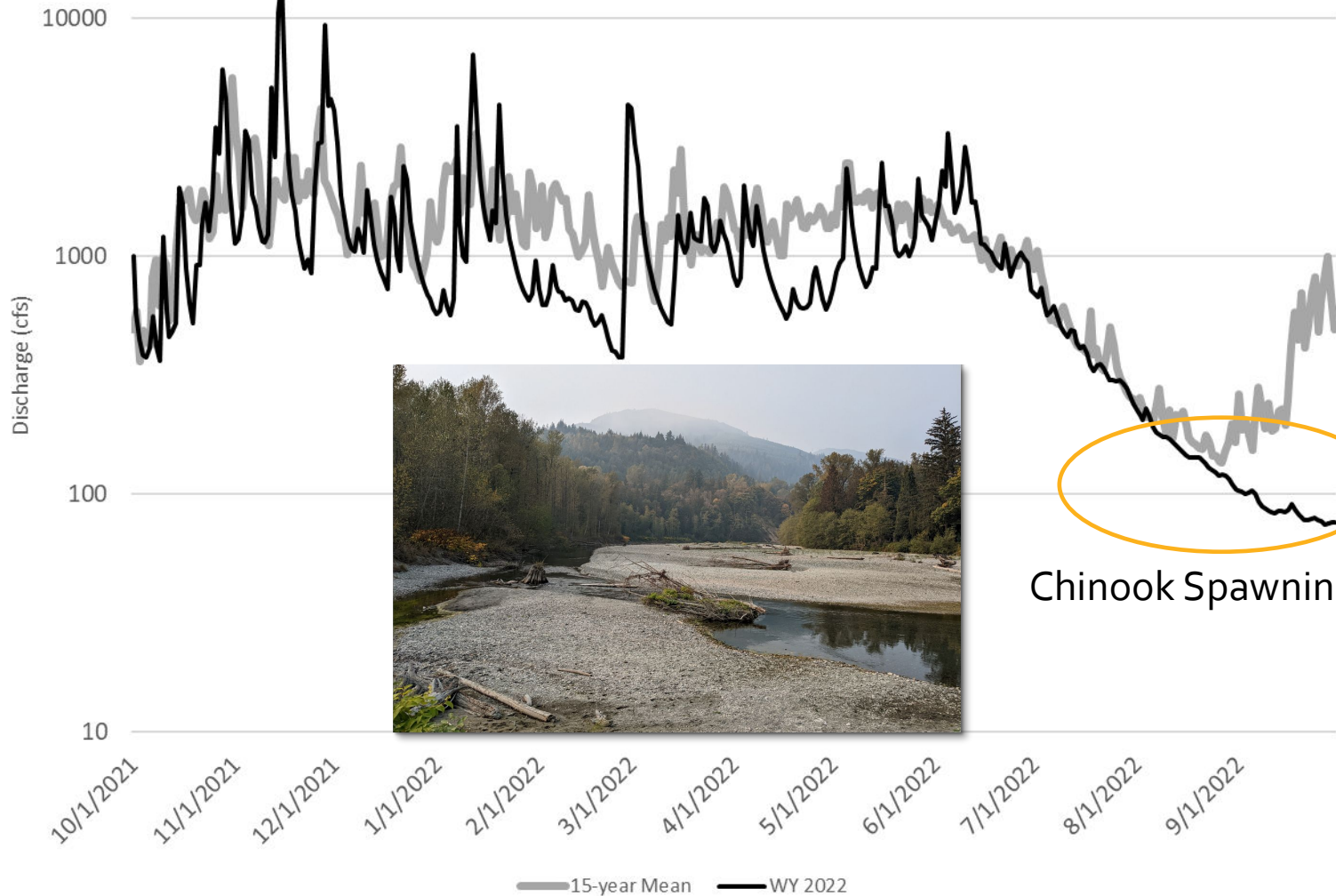
Wild Chinook Outmigration



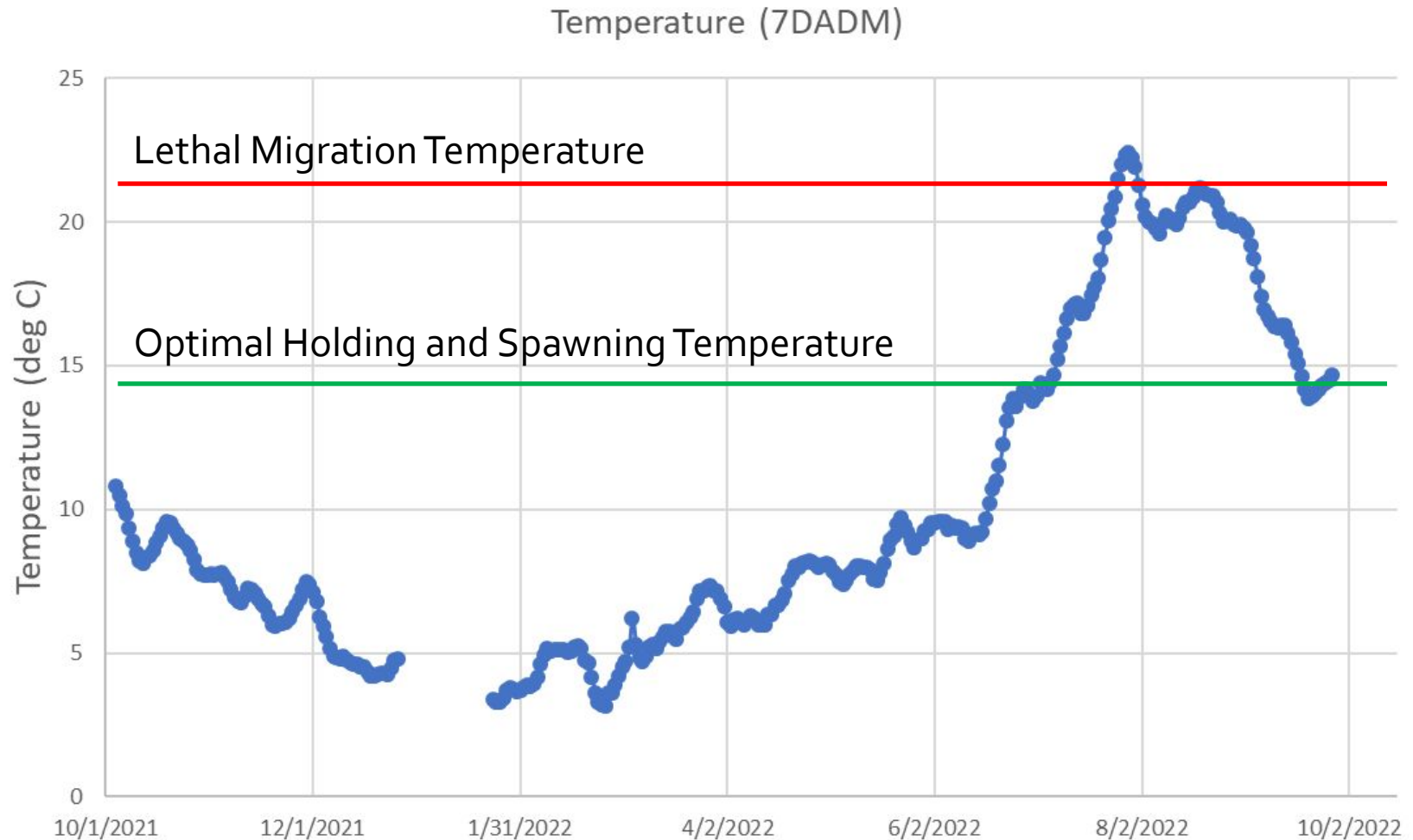
Nooksack smolt trap

*Also influenced by previous low flow impacts

South Fork Nooksack Discharge



South Fork Summer Temperature



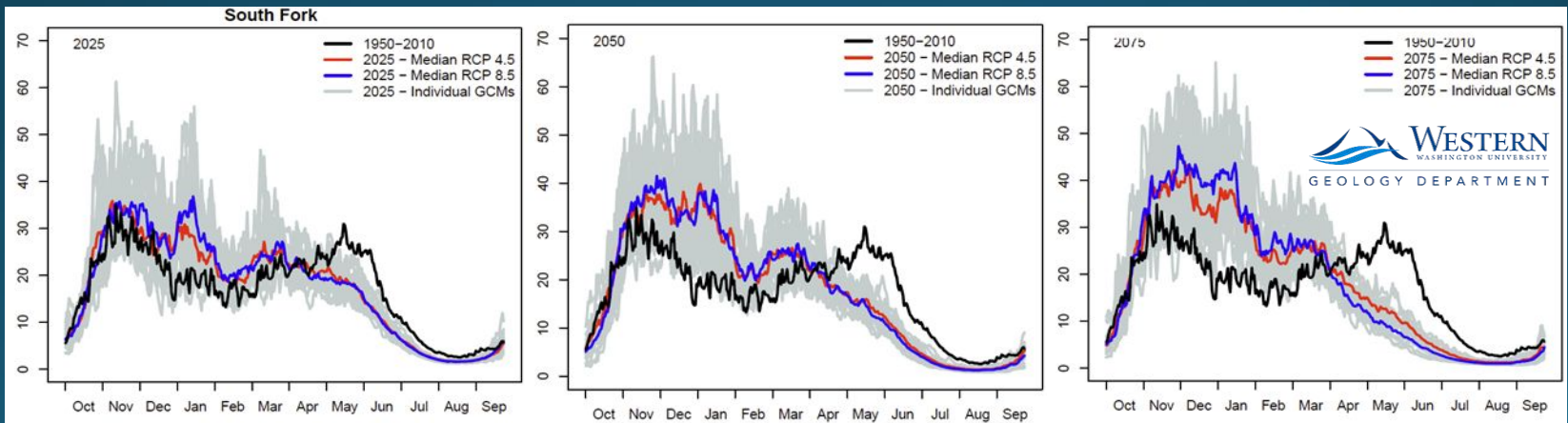
South Fork Chinook Mortality

- Typically a handful of fish lost every year to water temperature-related pathogens
- In 2021, ~2,500 mortalities over a few days in early September
- In 2022, several hundred fish lost over the late summer
- Confirmed three pathogens, all known to cause increased mortality if elevated temperatures
- Mortalities across all accessible areas of the river
- Other species affected, too



Improving our Understanding

- Developing a Life Cycle Model to evaluate specific impacts of habitat, water quality and flow on salmon
- Climate change and land use impact modeling
- Status and trends monitoring



Planning and Integration

- Integrated flood planning
- Salmon recovery adaptive management
- Climate change adaptation
- Water use- adjudication of water rights



Adaptation Actions

- Instream habitat enhancement
- Floodplain reconnection
- Riparian restoration
- Land and easement acquisition
- Changing land use

