

Biological Impacts of Drought on Northeast Oregon Native Fish

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All Data CTUIR DNR Fisheries Except Where Noted

CTUIR - DNR and Fisheries Program

Missions and Goals

Department of Natural Resources

To protect, restore, and enhance the first foods - water, salmon, deer, cou, and huckleberry - for the perpetual cultural, economic, and sovereign benefit of the CTUIR. We will accomplish this utilizing traditional ecological and cultural knowledge and science to inform: 1) population and habitat management goals and actions; and 2) natural resource policies and regulatory mechanisms.

Fisheries Program

To provide sustainable harvest opportunities for aquatic species of the first food order by protecting, conserving, and restoring native aquatic populations and their habitats.



CTUIR'S FIRST FOODS-BASED RIVER VISION

First Foods Serving Order:

1

Water



2

Fish



3

Big Game



4

Roots



5

Berries



River Vision Touchstones



Hydrology

Geomorphology

Connectivity

Riparian
Vegetation

Aquatic
Biota

Goal:

Restored Floodplain and Increased First Foods for Tribal Use

River Vision



“ The Umatilla basin includes a healthy river capable of providing First Foods that sustain the continuity of the Tribe’s culture. This vision requires a river that is dynamic, and shaped not only by physical and biological processes, but the interactions and interconnections between those processes.”

Hydrology

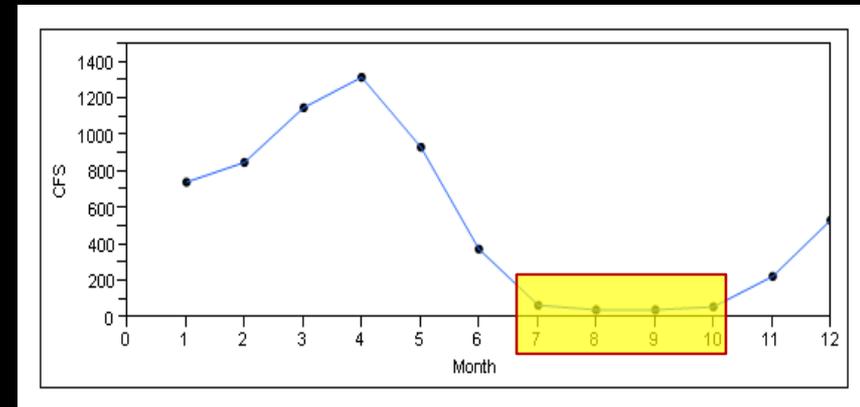


Volume and timing of water

Hydrology



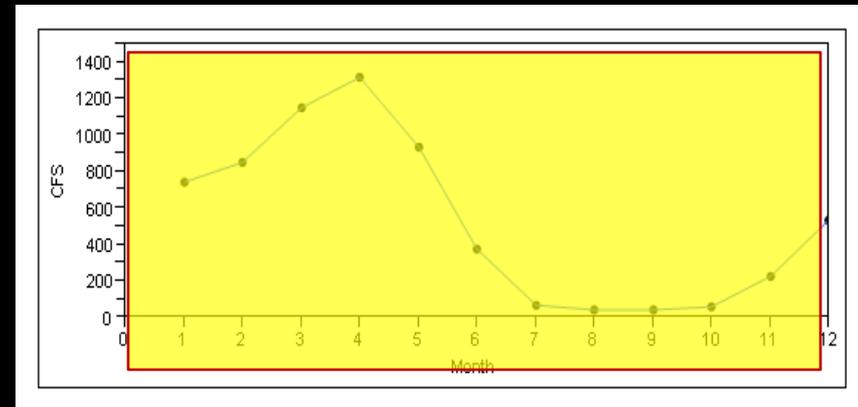
Volume and timing of water



Hydrology



Volume and timing of water



Connectivity



Longitudinal, Lateral, and Vertical

Geomorphology



Topographically Diverse, Accessible by River

Riparian Vegetation

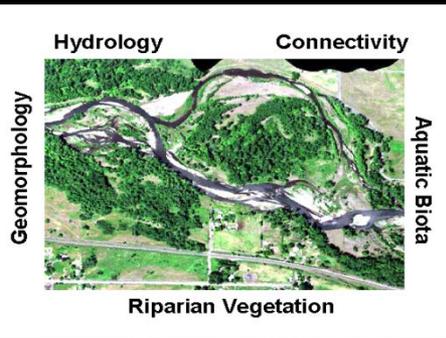


Native Vegetation – Large Wood Inputs, Other

Biota



Aquatic Biota

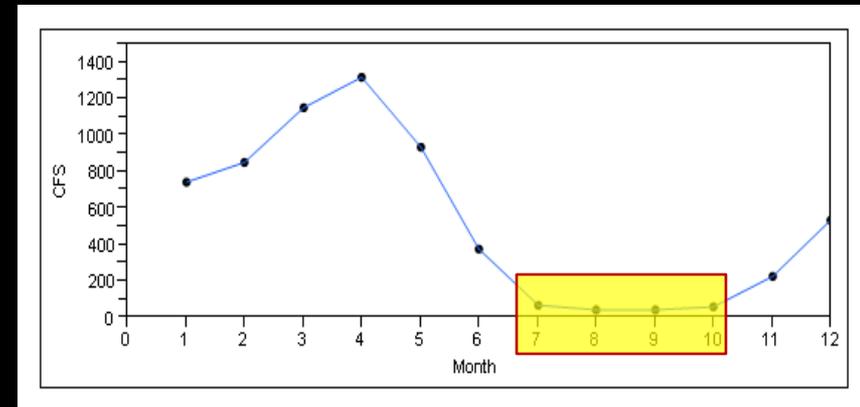


Without healthy touchstones, supplementation for various native species is likely required.

Hydrology



Volume and timing of water



Drought Impacts to Fish and Aquatic Biota

1. Reduced

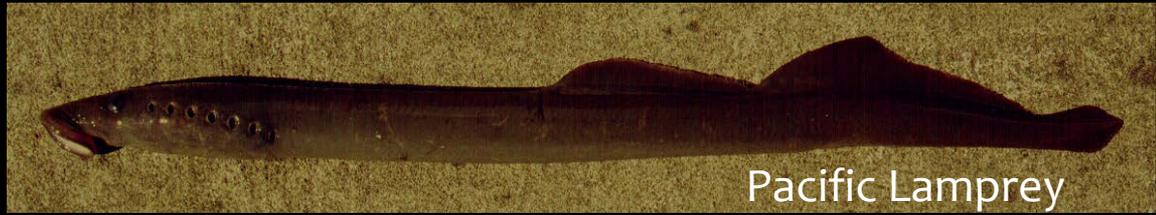
- Flows;
- Dissolved Oxygen;
- Extent of Suitable Rearing Areas;
- Fish Food Organisms;
- Smolt Survival;
- Fish Production; and
- Fish harvest opportunities.

2. Increased

- Water Temperatures;
- Pre-spawning Mortality of Adults; and
- Stress of Riparian Communities

3. Drought Affects Multiple Life-History Stages and Effects Persist for Multiple Years.

Native North East Oregon Aquatic Biota



Pacific Lamprey

Summer Steelhead



Freshwater Mussels



Bull Trout



Mountain Whitefish



Spring Chinook Salmon

Salmon and Steelhead Life-History Stages

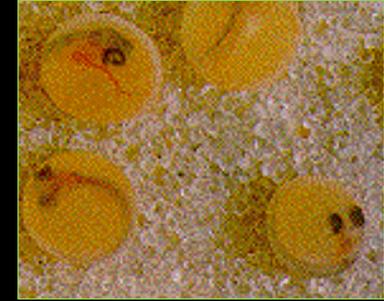
Adult Migrants



Adult Spawners



Eggs



Ocean Rearing



Sac Fry



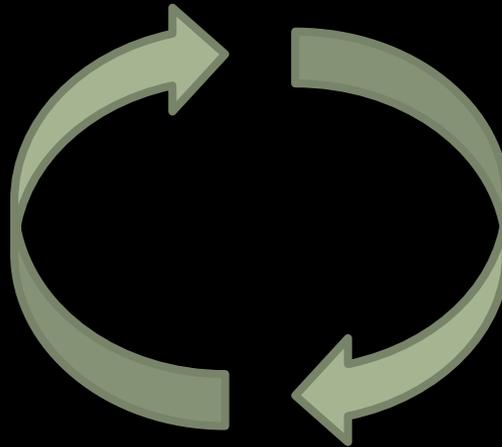
Smolt Migrants



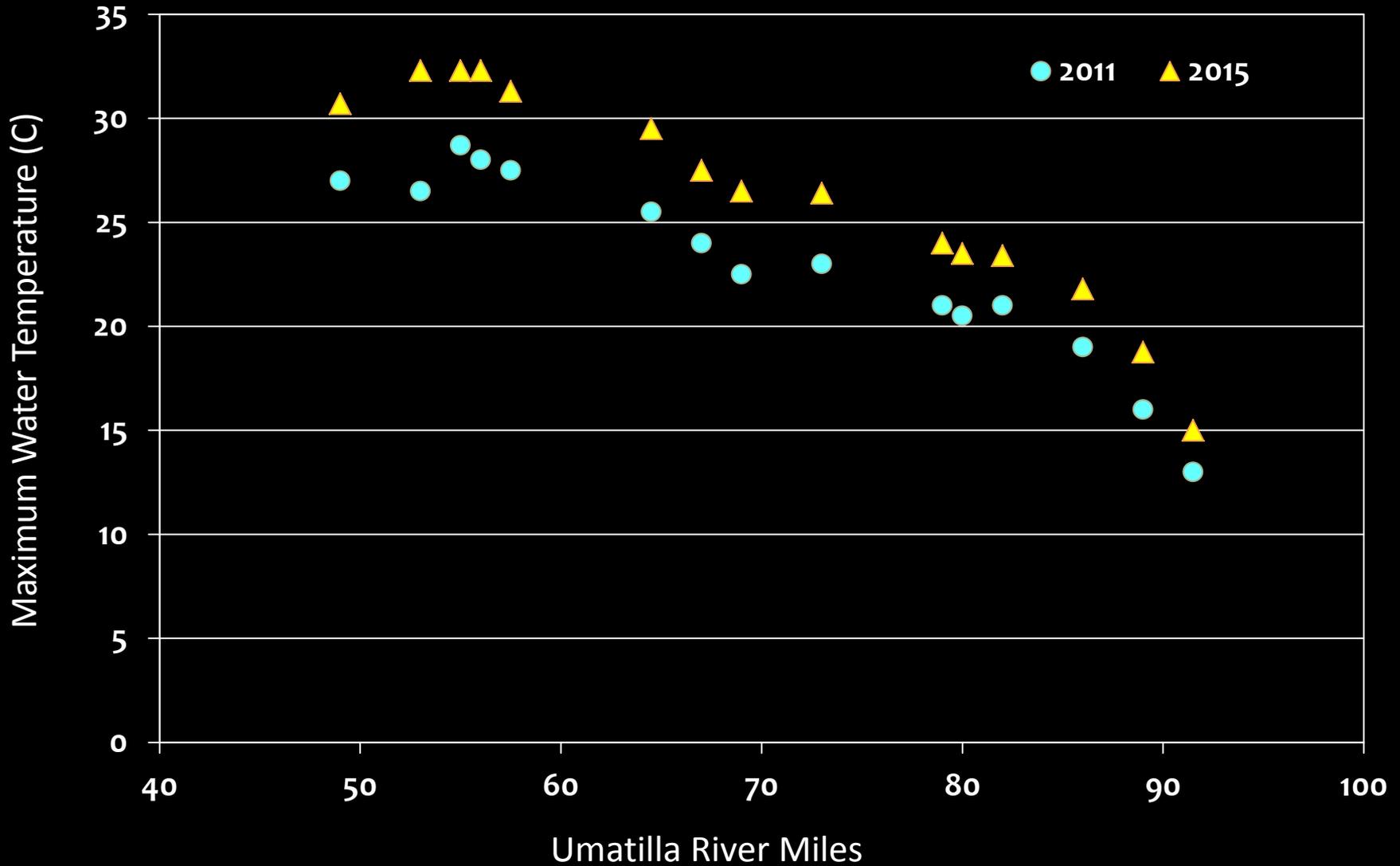
Parr



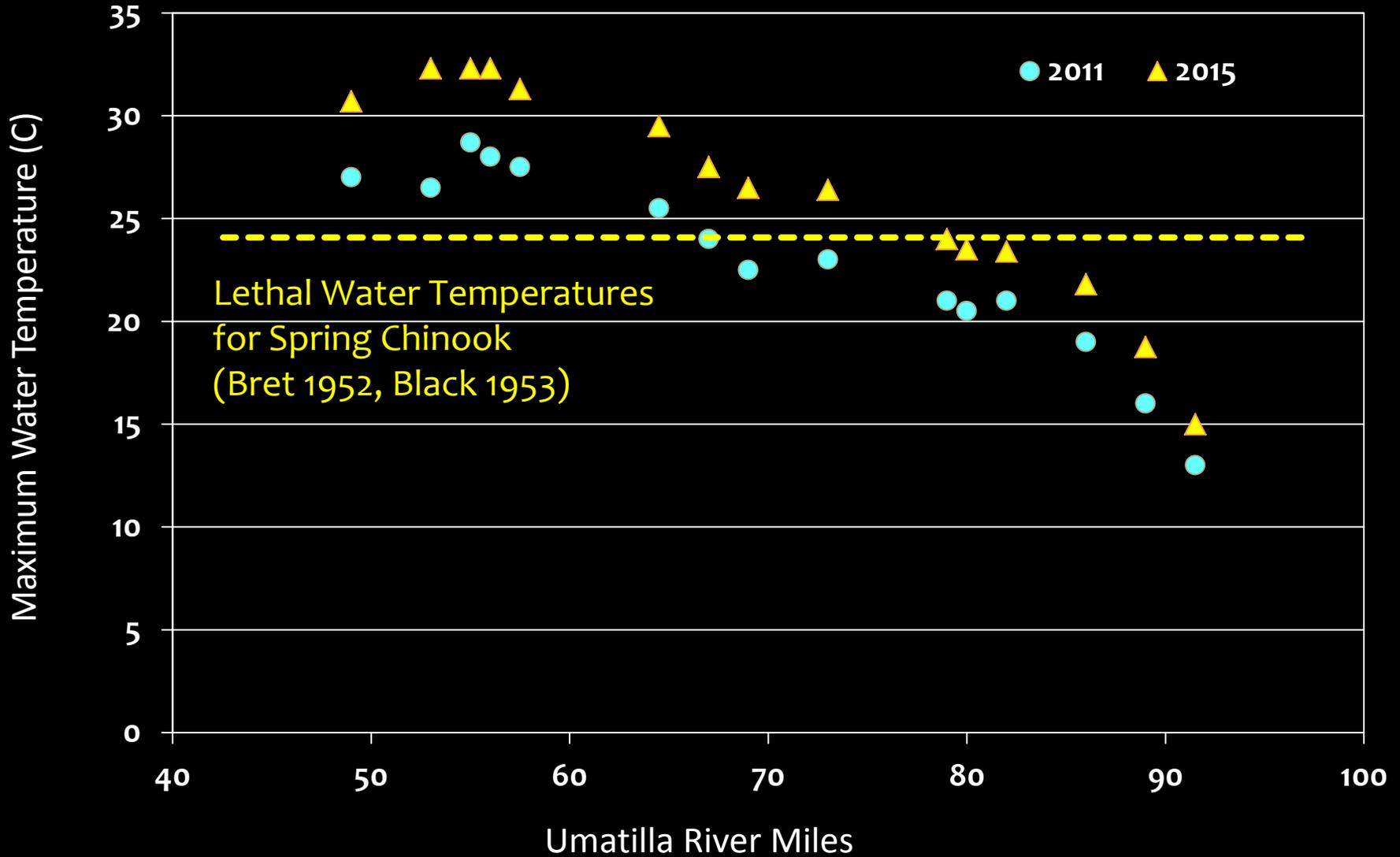
Fry



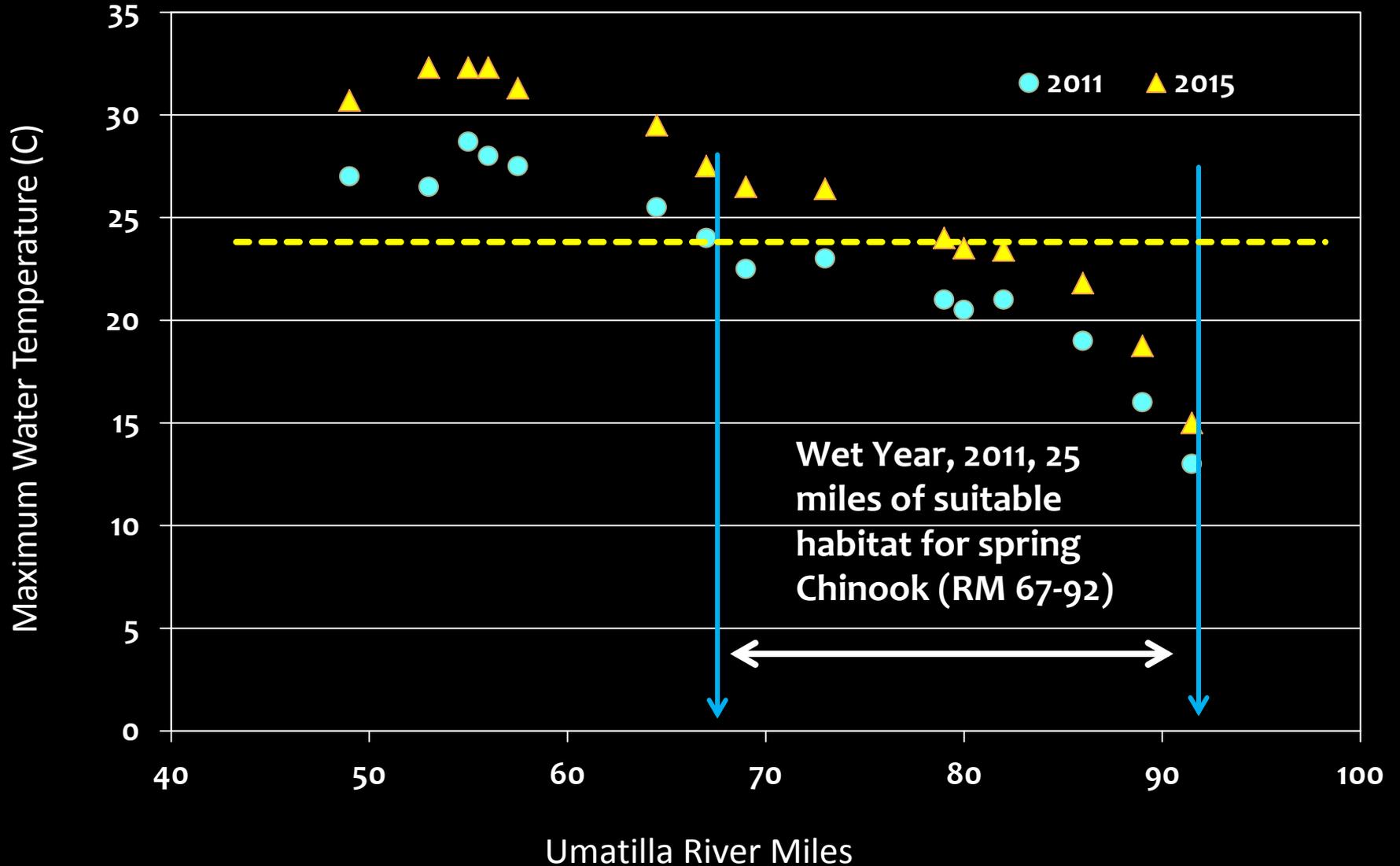
Increased Summer Water Temperatures



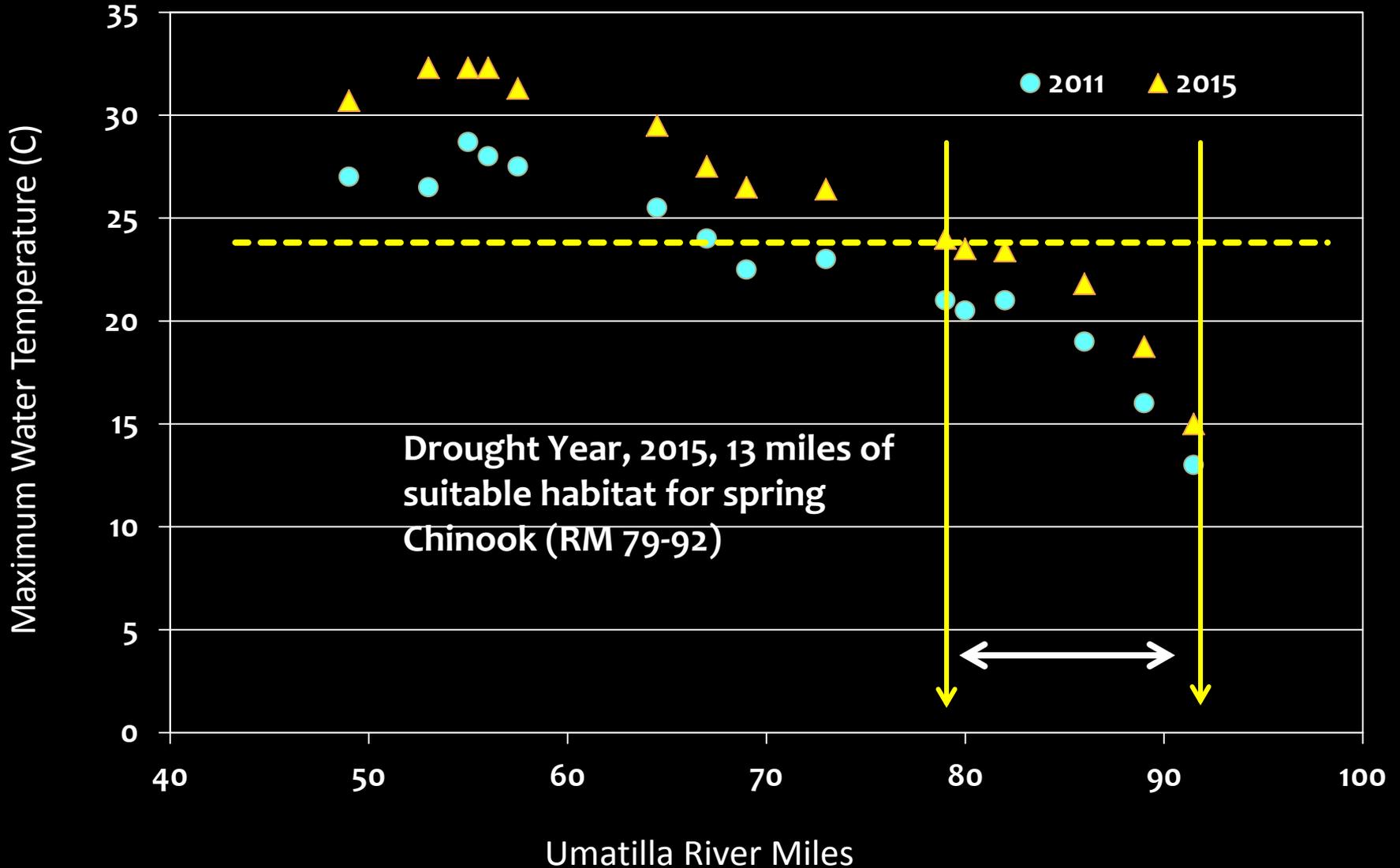
Summer Water Temperatures



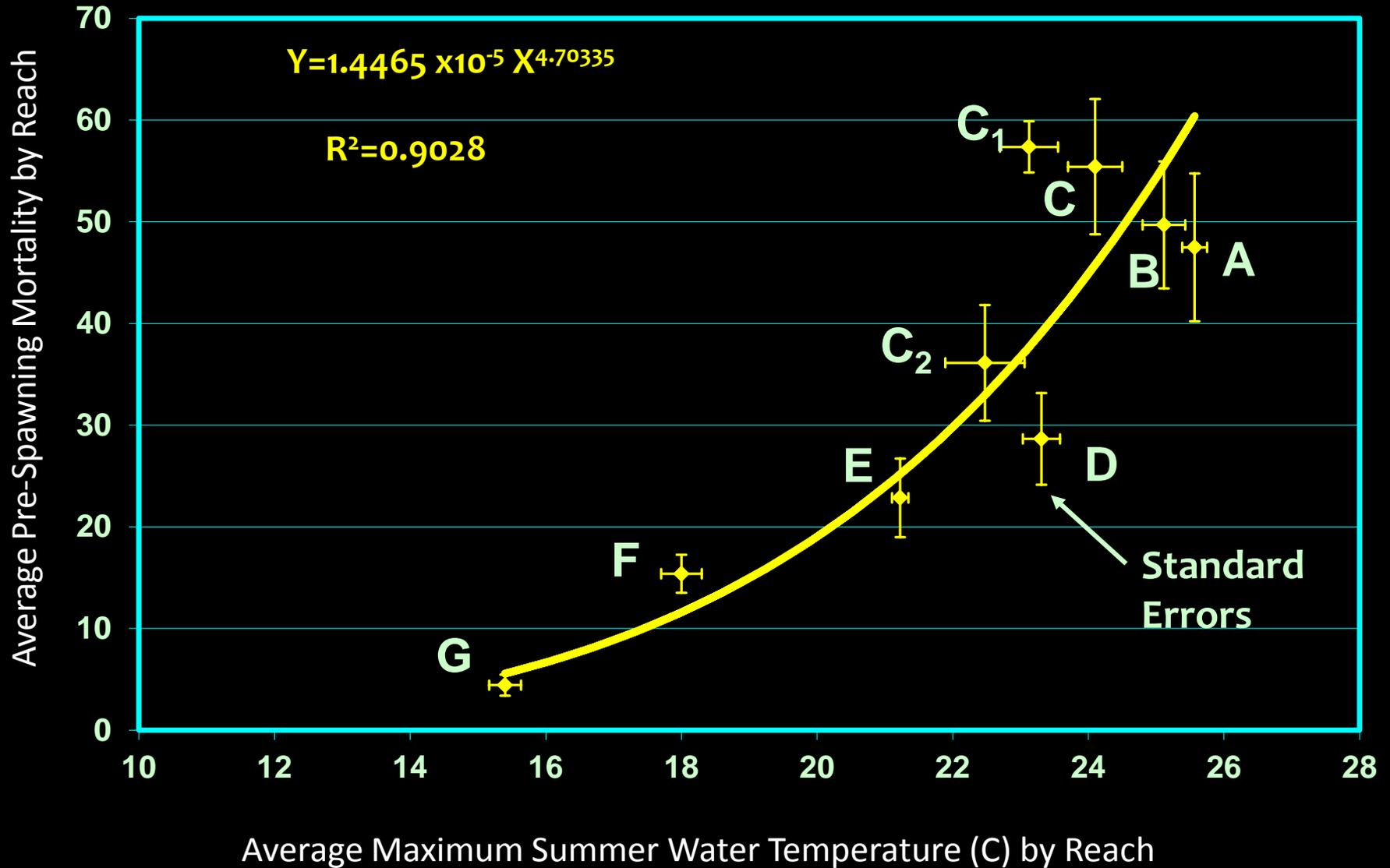
Summer Water Temperatures



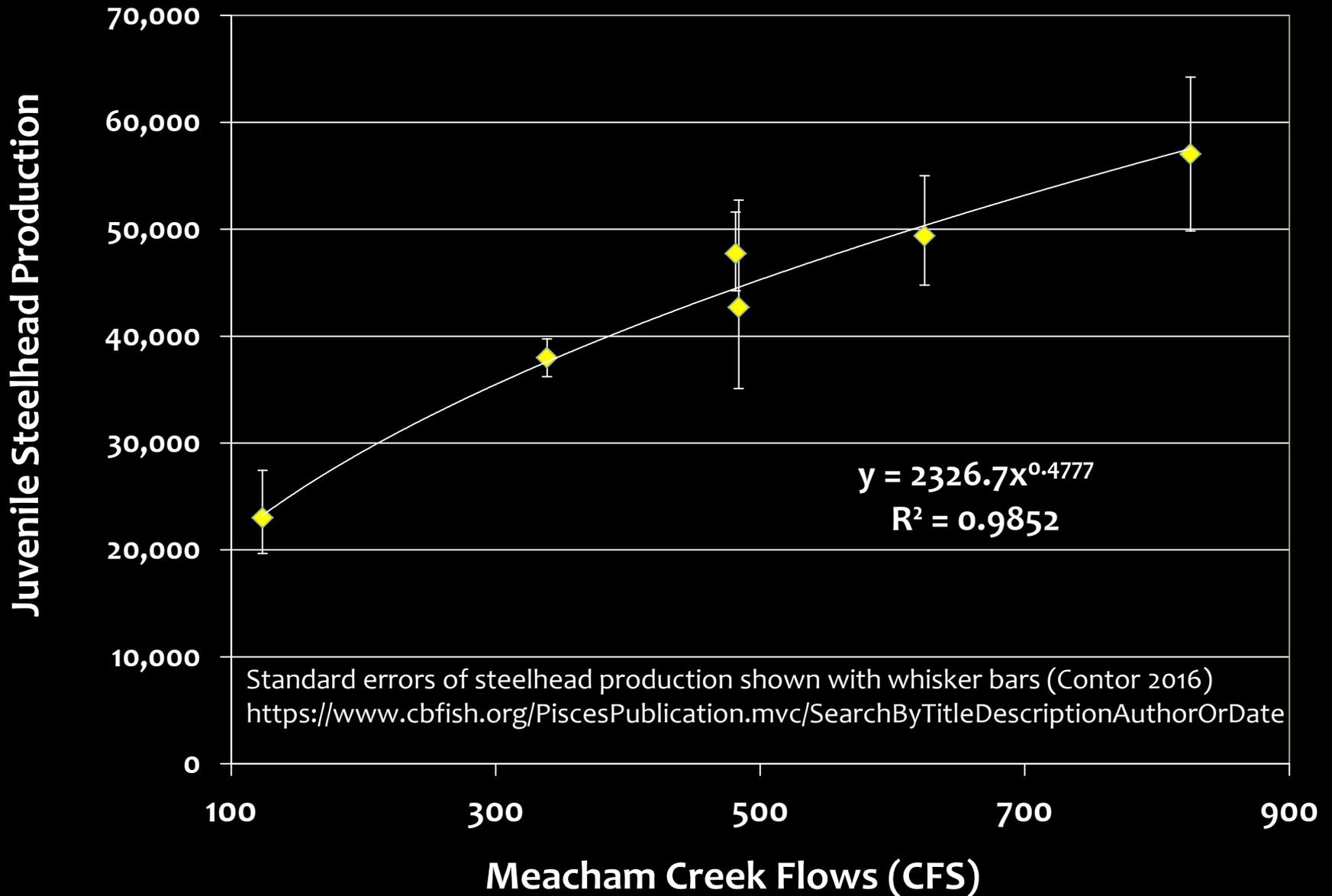
Summer Water Temperatures



Spring Chinook Pre-Spawning Mortality as a Function of Maximum Summer Water Temperatures

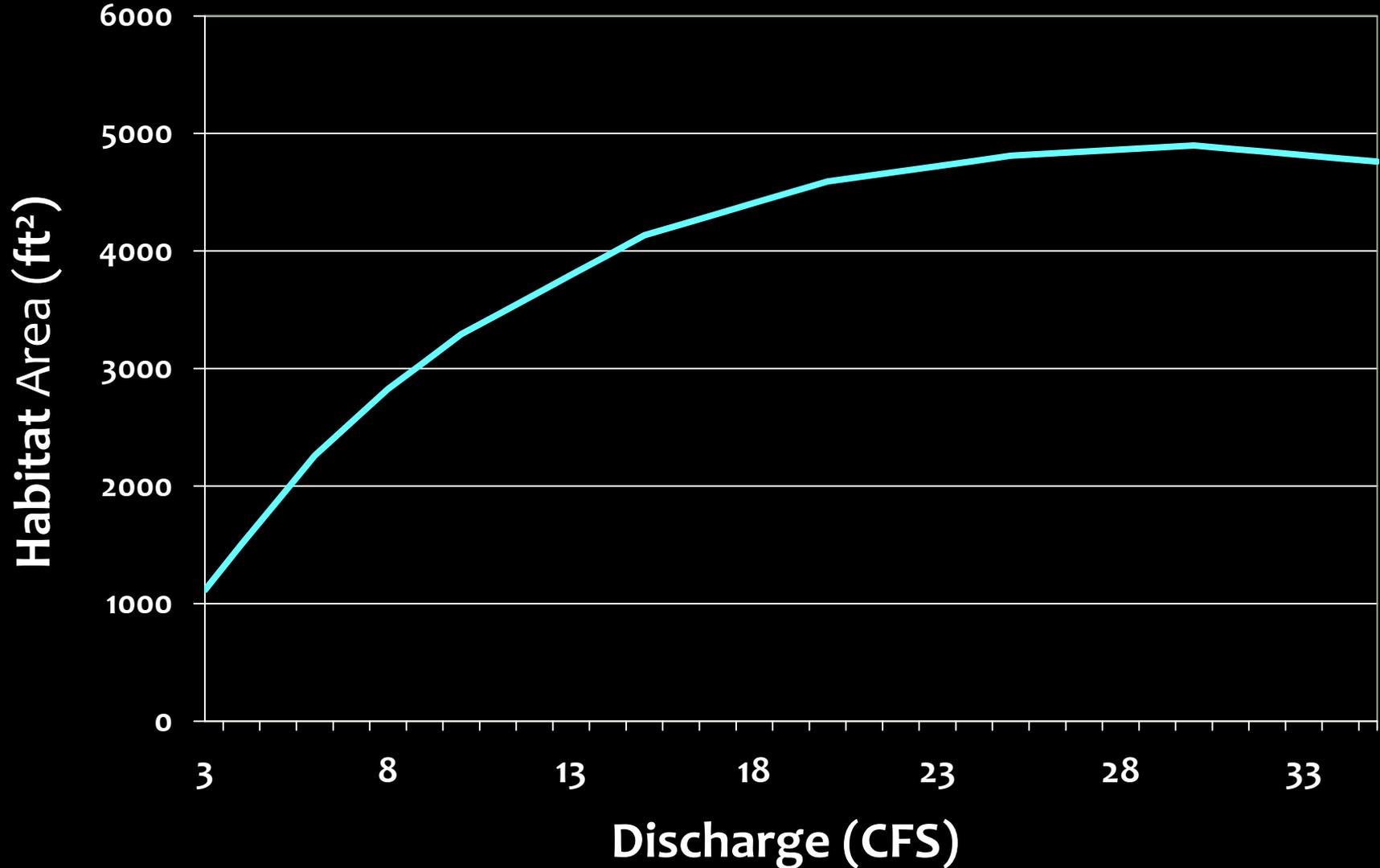


Reduced Fish Production with Reduced Flows

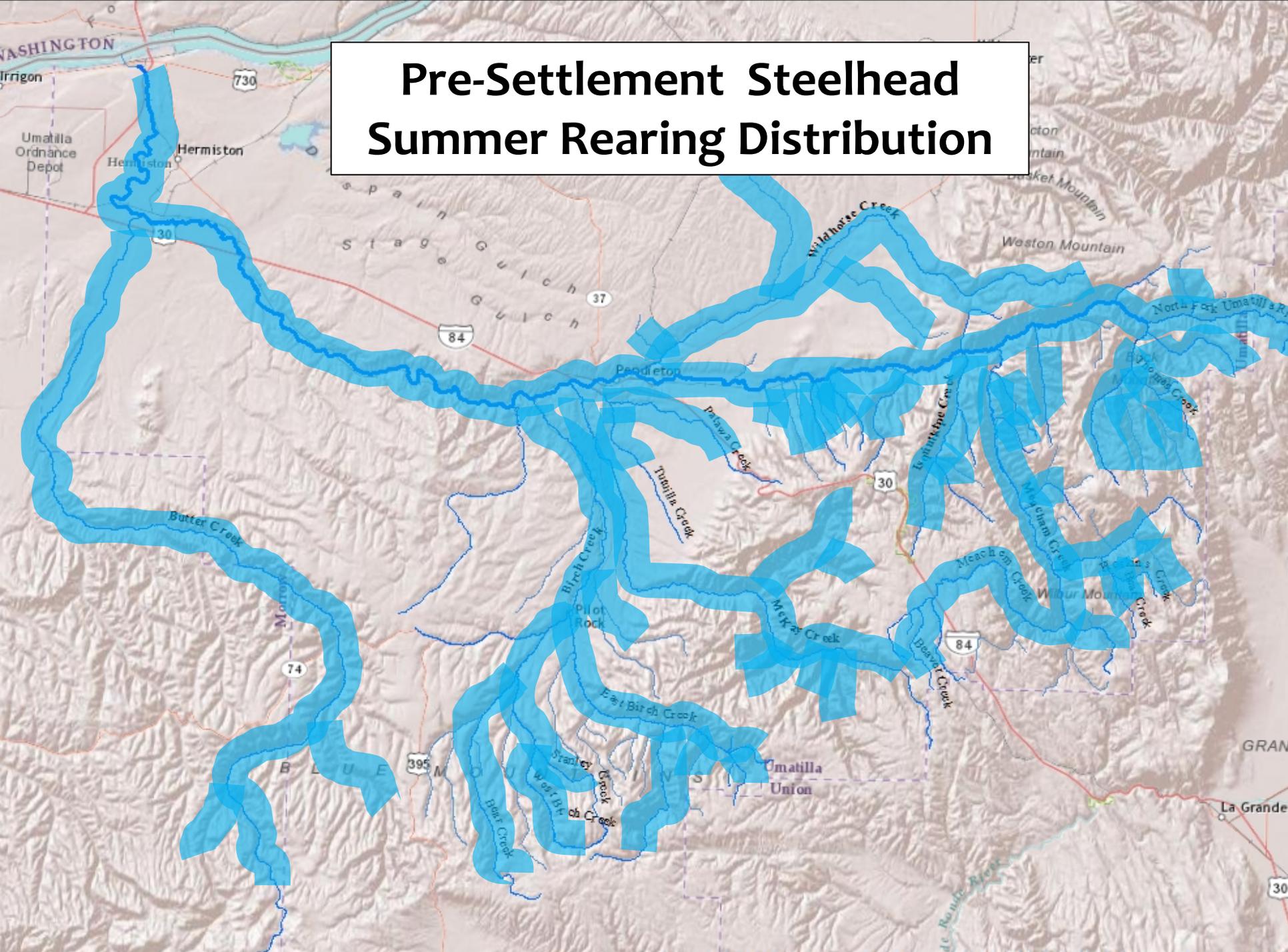


Weighted Usable Area of Juvenile Salmonid Habitat Related to Stream Flow

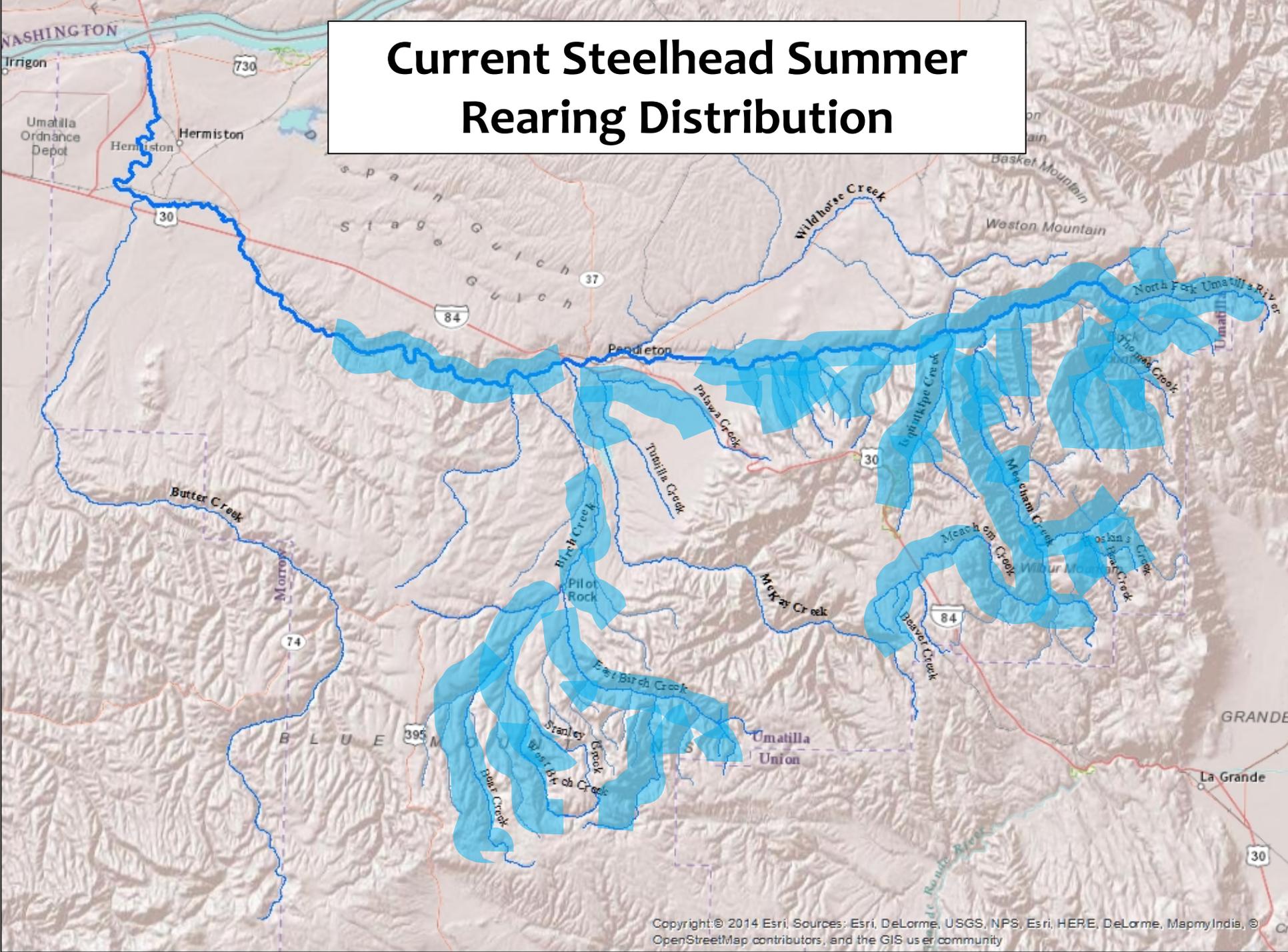
(McKay Creek, IFIM study by USFWS 1981)



Pre-Settlement Steelhead Summer Rearing Distribution



Current Steelhead Summer Rearing Distribution



Thank You



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