

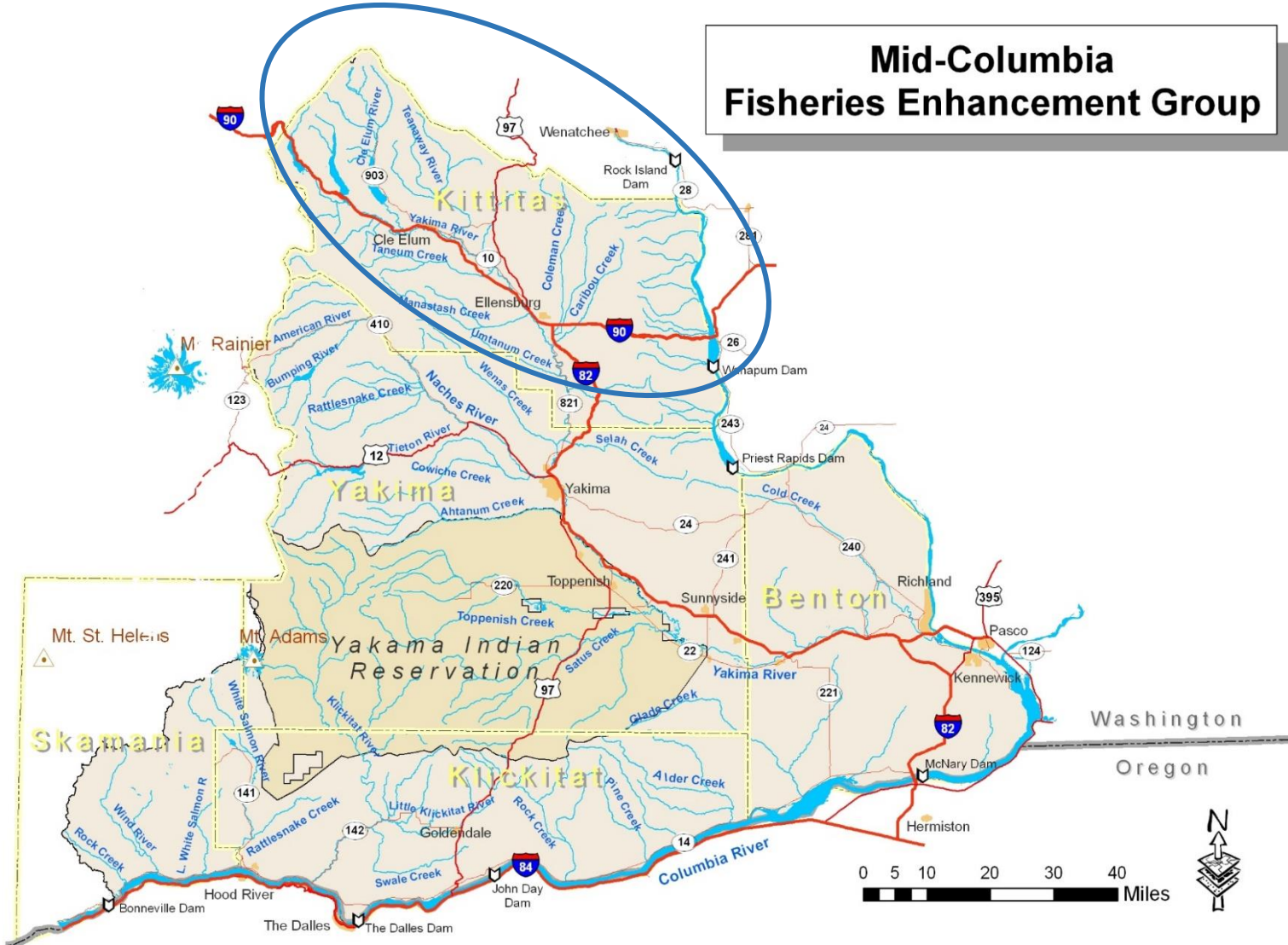
2017 Upper Yakima Bull Trout eDNA Surveys



09/13/2017



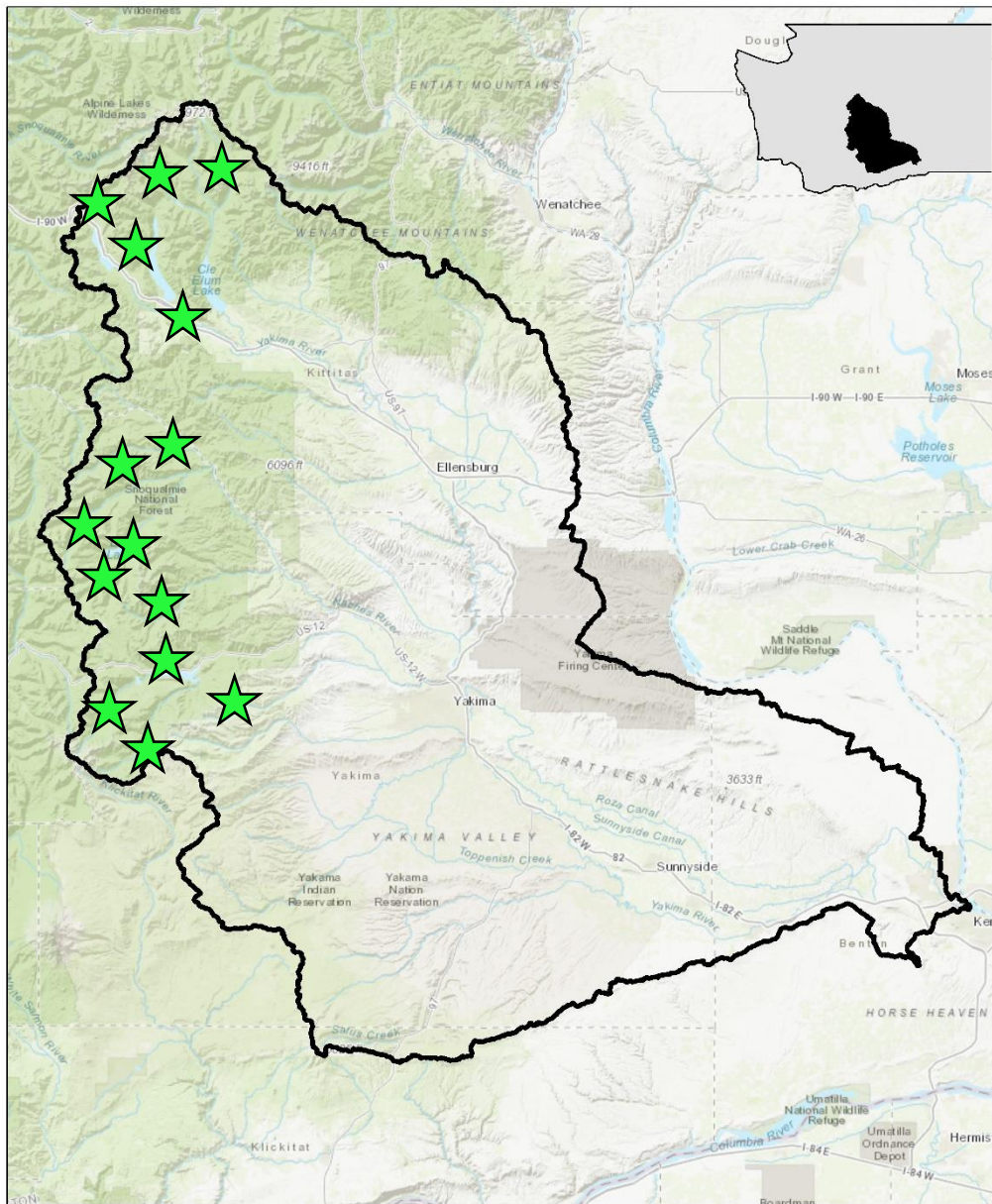
Mid-Columbia Fisheries Enhancement Group



- One of **14** Regional Fisheries Enhancement Groups
- Established by the Legislature in 1990
- Partner with Landowners, Communities and State, Tribal and Federal Partners to implement habitat restoration projects that benefit salmon and other native fish.
- Conduct community outreach.

Yakima Basin Bull Trout





Bull Trout in the Yakima Basin

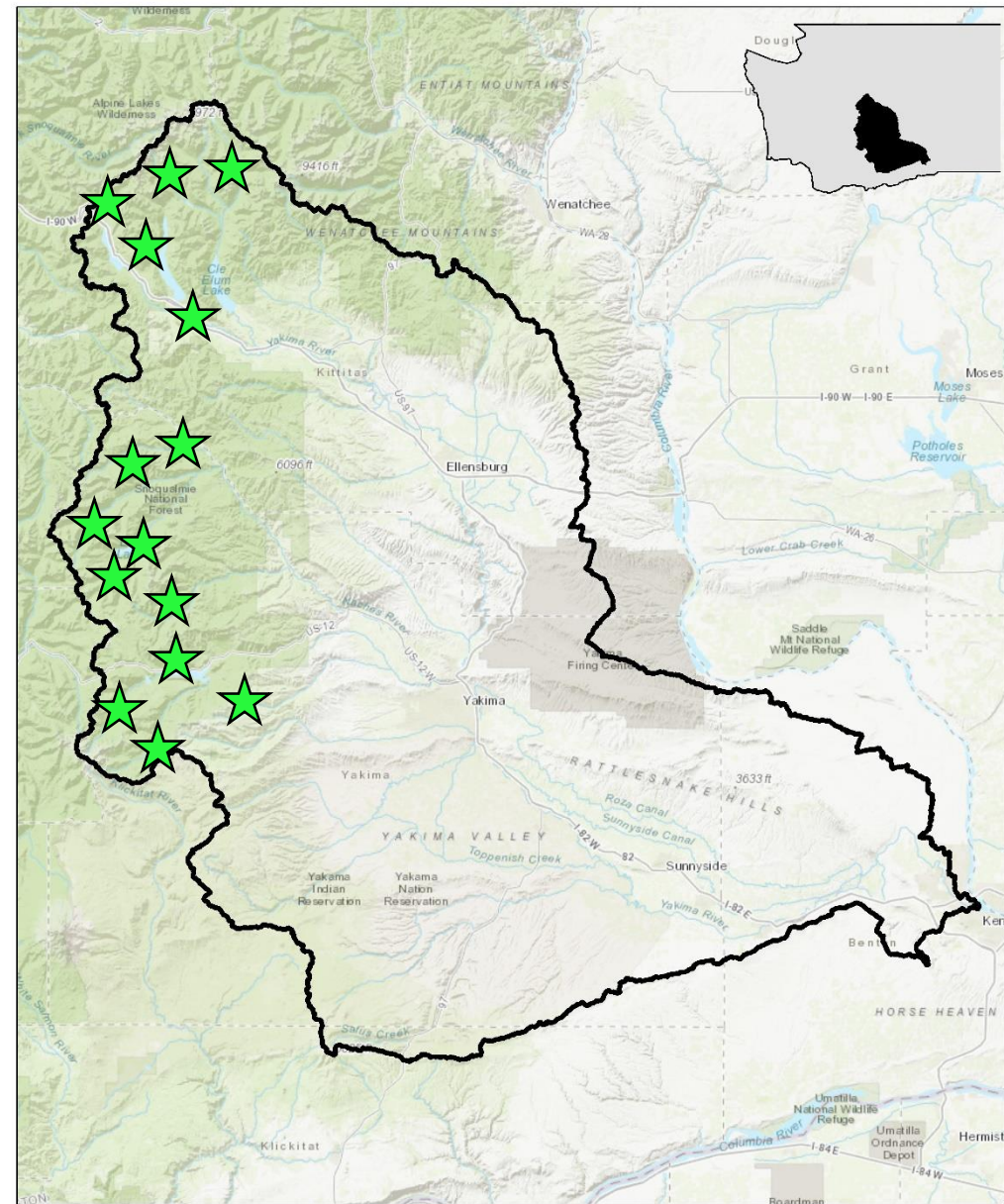
- 15 Identified populations
- Range from healthy to potentially extirpated
- Threats including
 - Genetic isolation
 - Legacy land use/management practices
 - Loss of historic prey base
 - Invasive species
 - Fishing
 - Changing climate

Endangered Species Act (ESA)

- Listed as threatened in 1998
- Protection
- Recovery

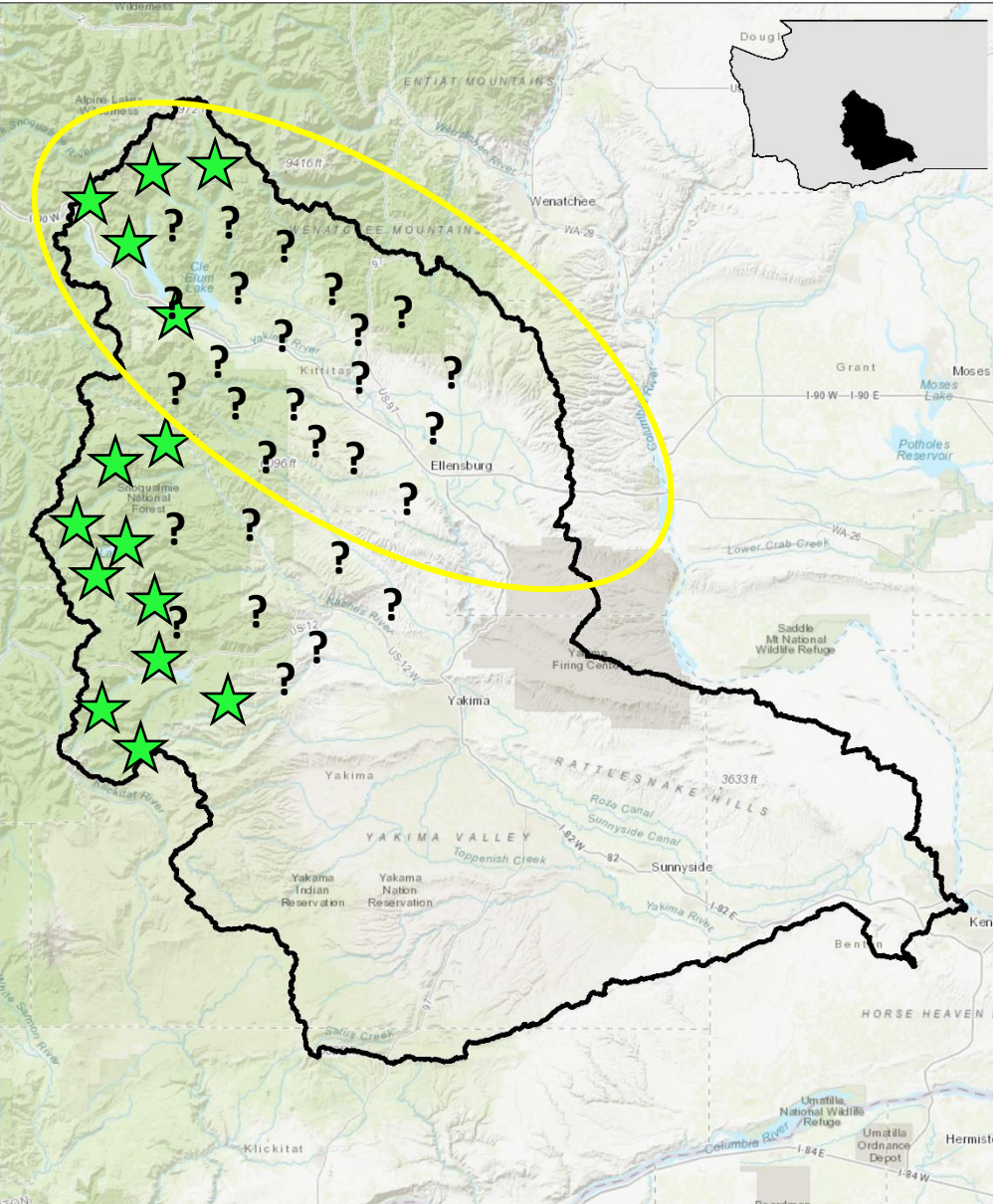


Photo: Eric Anderson





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Where are Bull Trout?

- Bull trout are hard to find
 - Remote areas
 - Cryptic
 - Low numbers



Photo: Ashton Bunce

- Traditional methods for finding fish
 - Large Crews + Equipment + Remote Areas = **Expensive**

Possible Solution: eDNA

- DNA collected from the Environment
 - Water
- Sources of DNA
 - Mucus, waste, etc.



eDNA Sampling

- Presence or absence data
- Minimal field equipment
- Cheaper way to look for bull trout

07/26/2017





UNITED STATES DEPARTMENT OF AGRICULTURE

U.S. FOREST SERVICE



Rocky Mountain Research Station

Air, Water, & Aquatic Environments Program



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[RESEARCH](#) ▾

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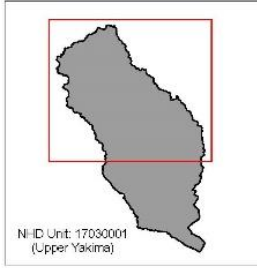
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The Rangelwide Bull Trout eDNA Project



Probability of Occupancy (%)

10 - 25

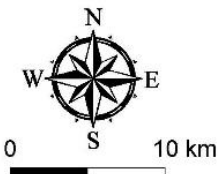
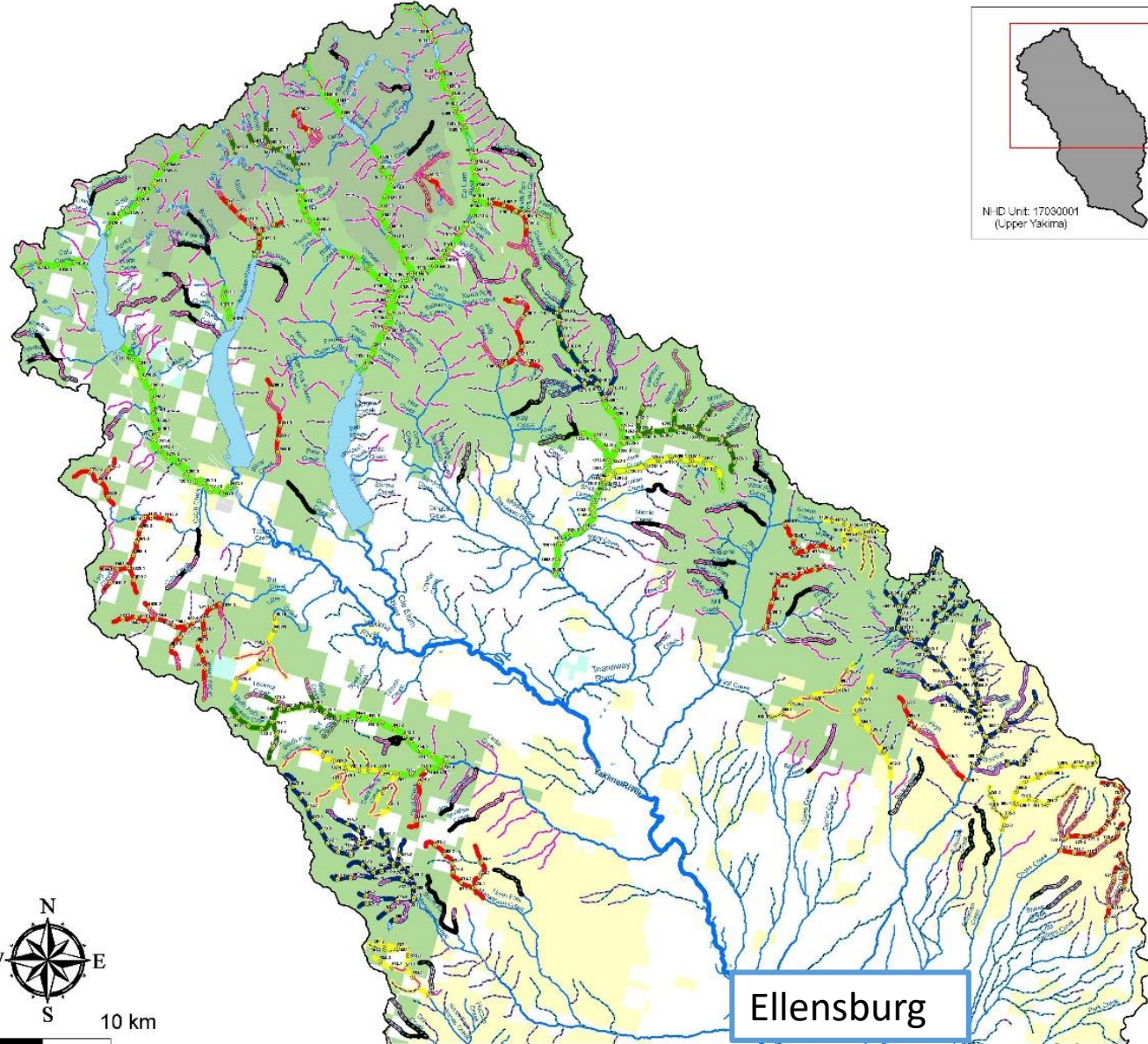
25 - 50

50 - 75

75 - 90

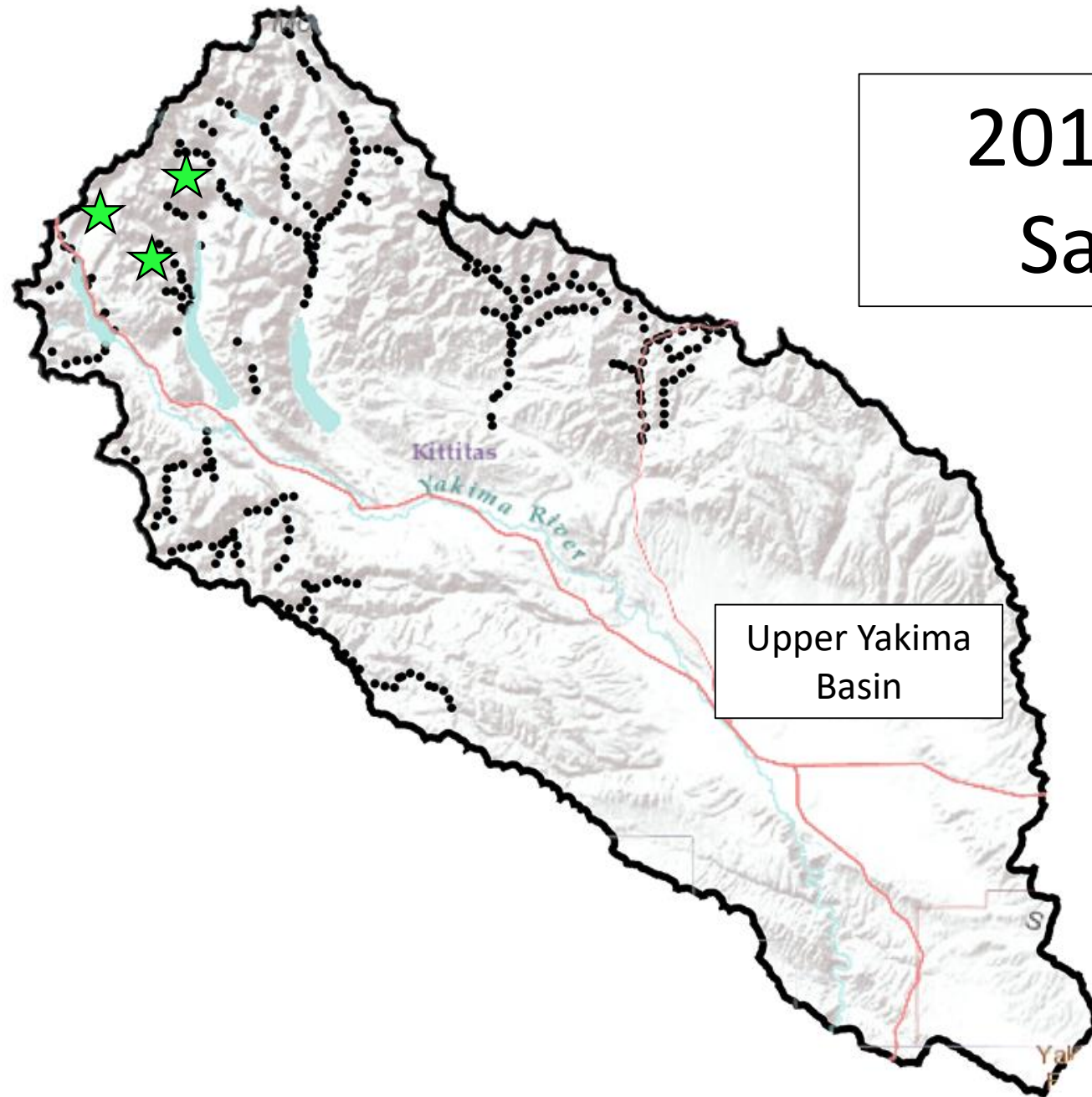
90 - 100

Bull Trout Critical Habitat

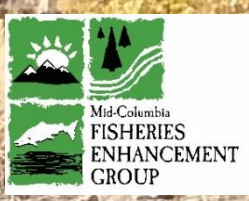




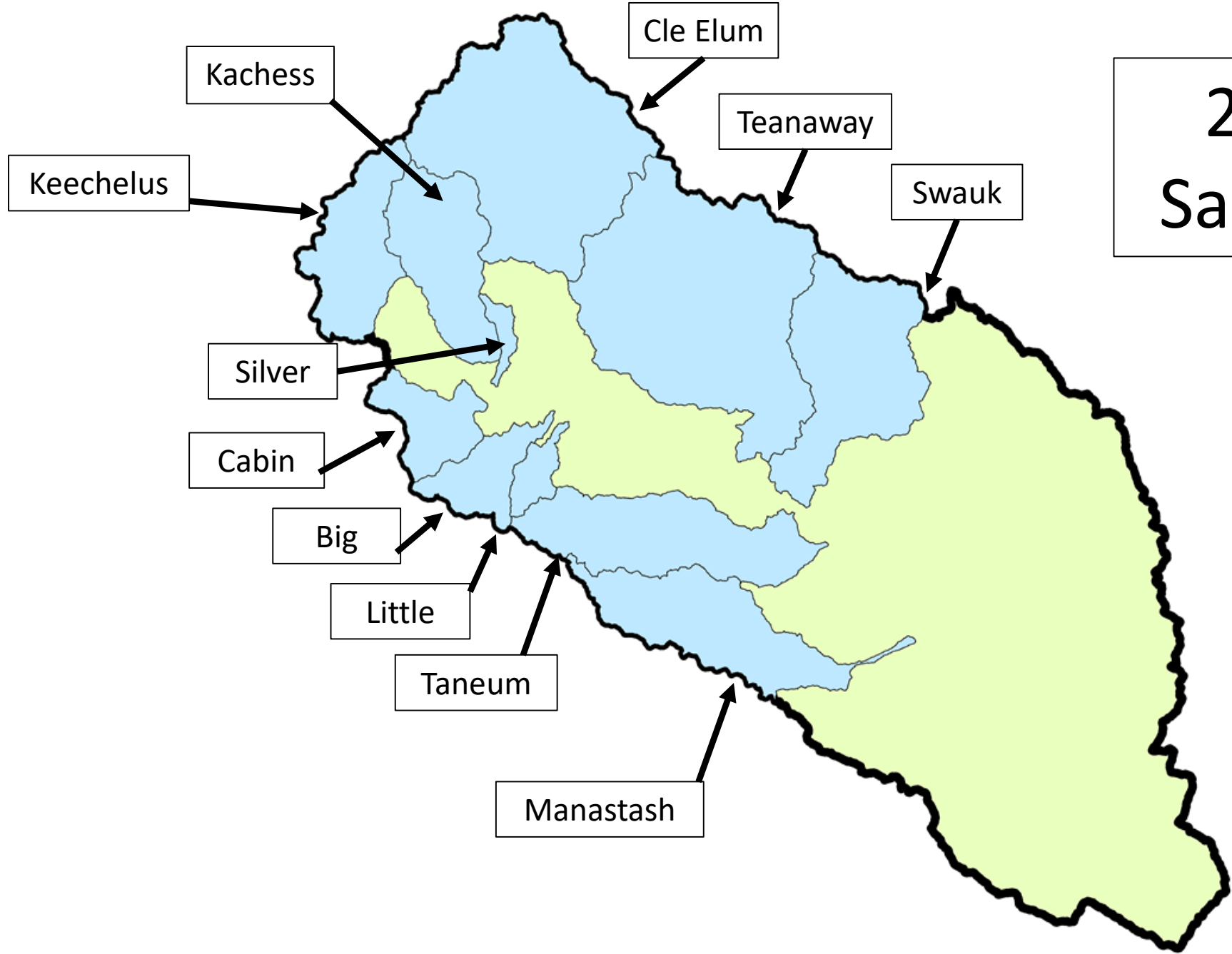
2017 eDNA Samples



- 313 samples collected by MCF, USFWS, USFS
 - 237 identified through modeling effort
 - 76 identified by the BTWG

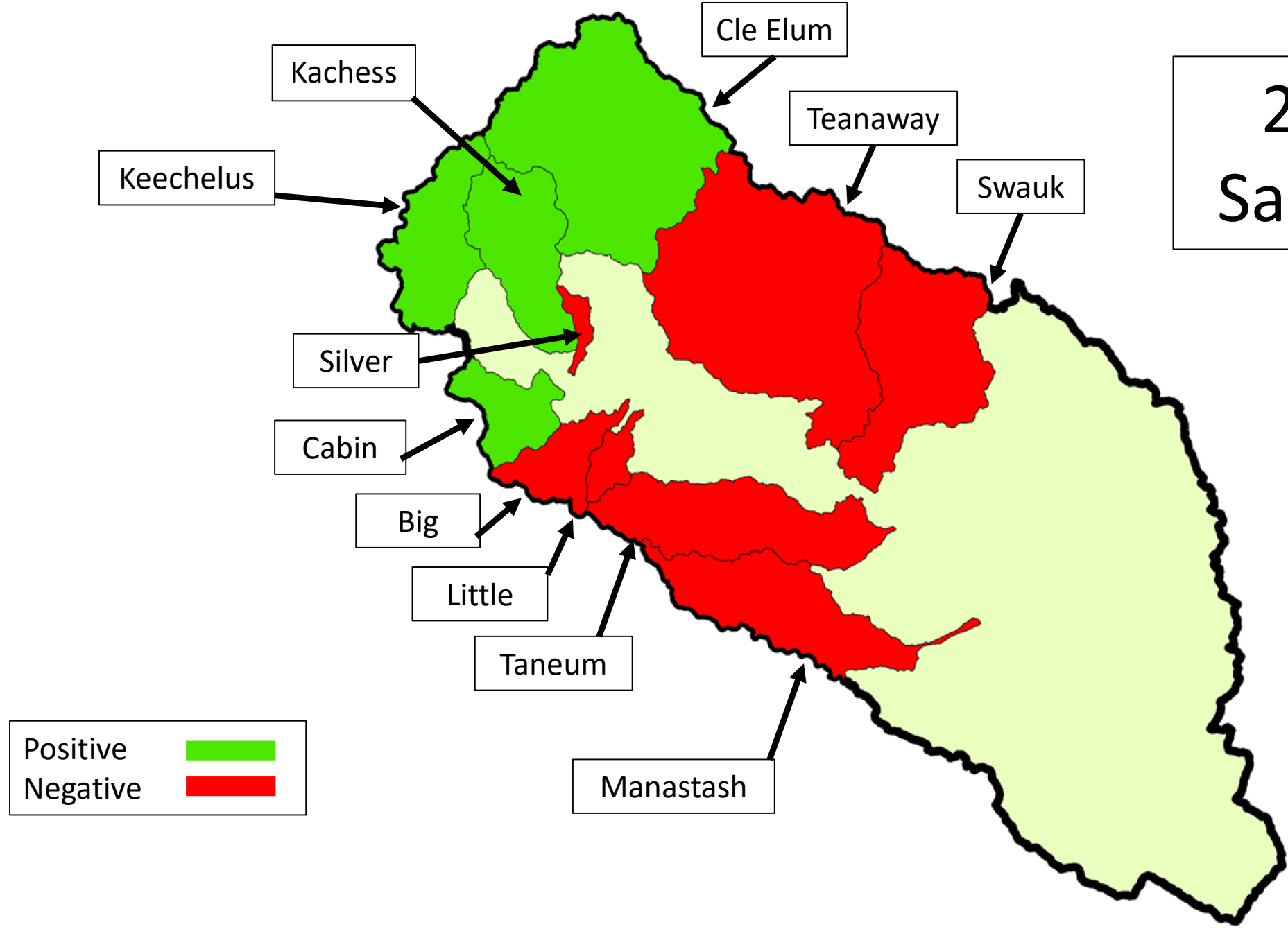


Results



2017 eDNA Sample Basins

2017 eDNA Sample Basins

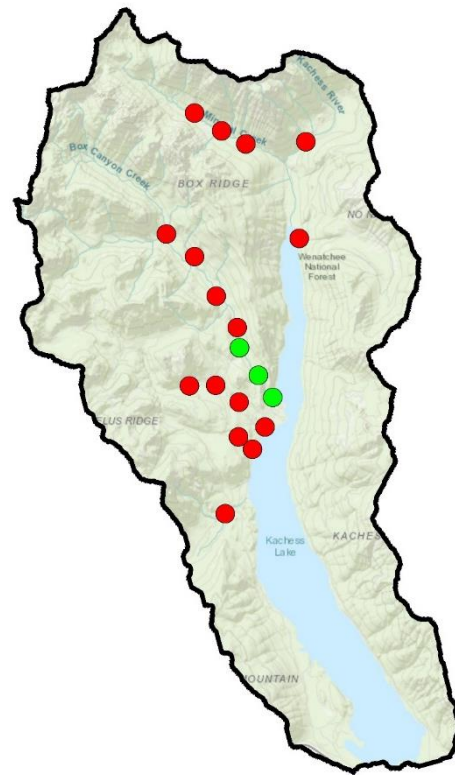
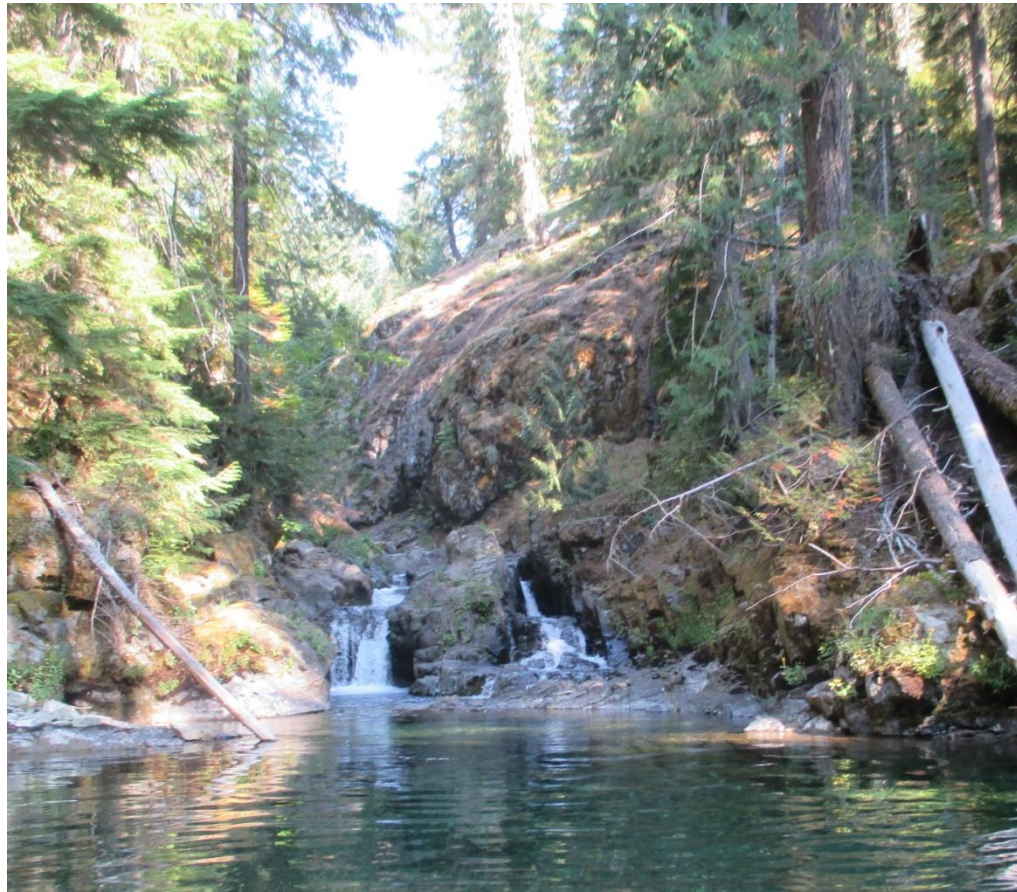


Positive Results

- Extracted DNA
 - Tested 3 times
- Results
 - Low 1/3
 - Medium 2/3
 - High 3/3
- Contamination



Kachess Watershed



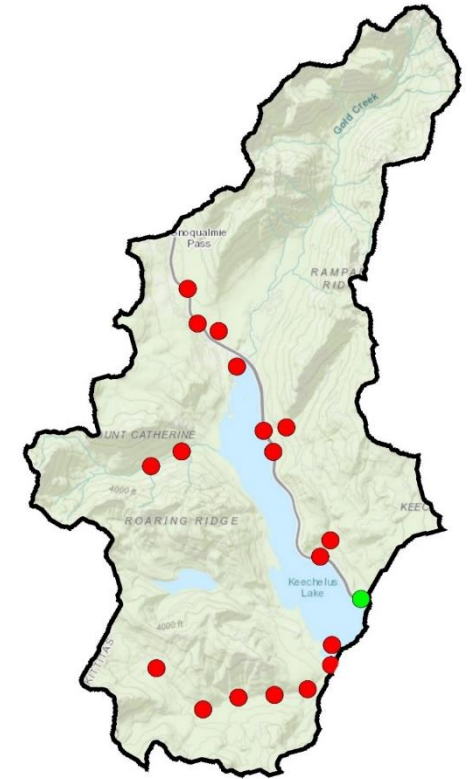
- 3 positive results in Box Canyon Creek
 - Strong positive detections
 - Known bull trout population
- Proof of method
 - All positive below the falls
 - All negative above
 - No contamination

Keechelus Watershed

Townsend Creek

08/29/2017

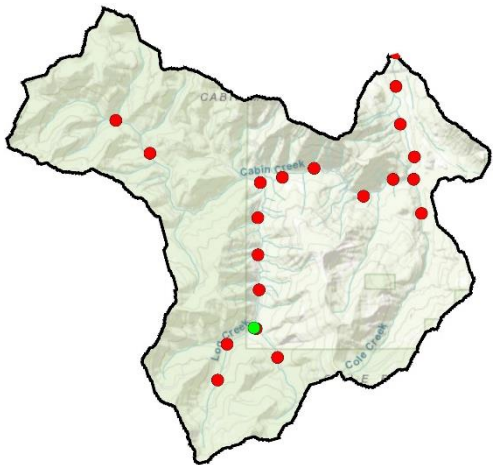
- Positive result in Townsend Creek
 - Strong positive detection
 - A bull trout was caught, tagged, and released by Paul James earlier that summer

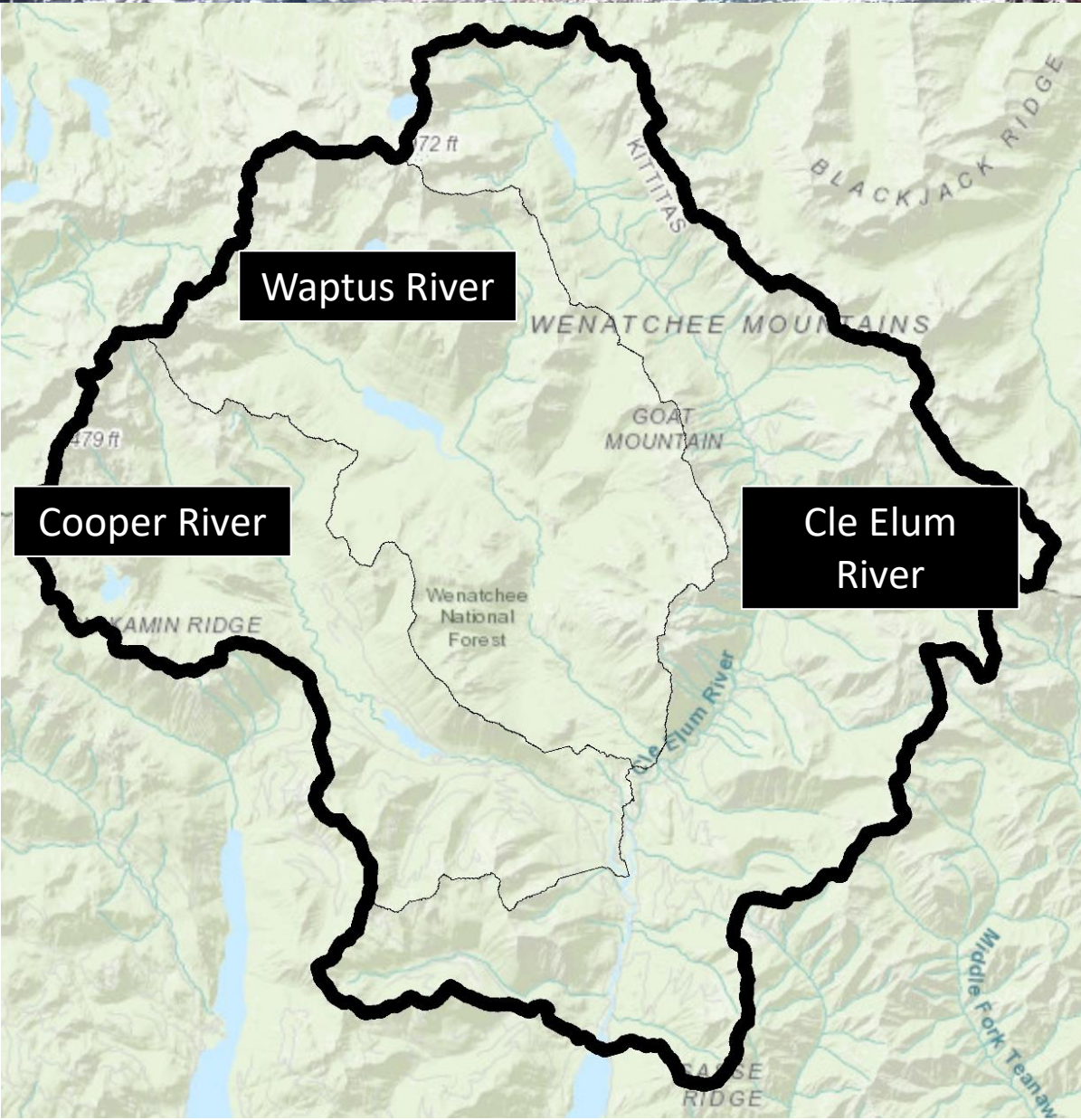




Cabin Creek Watershed

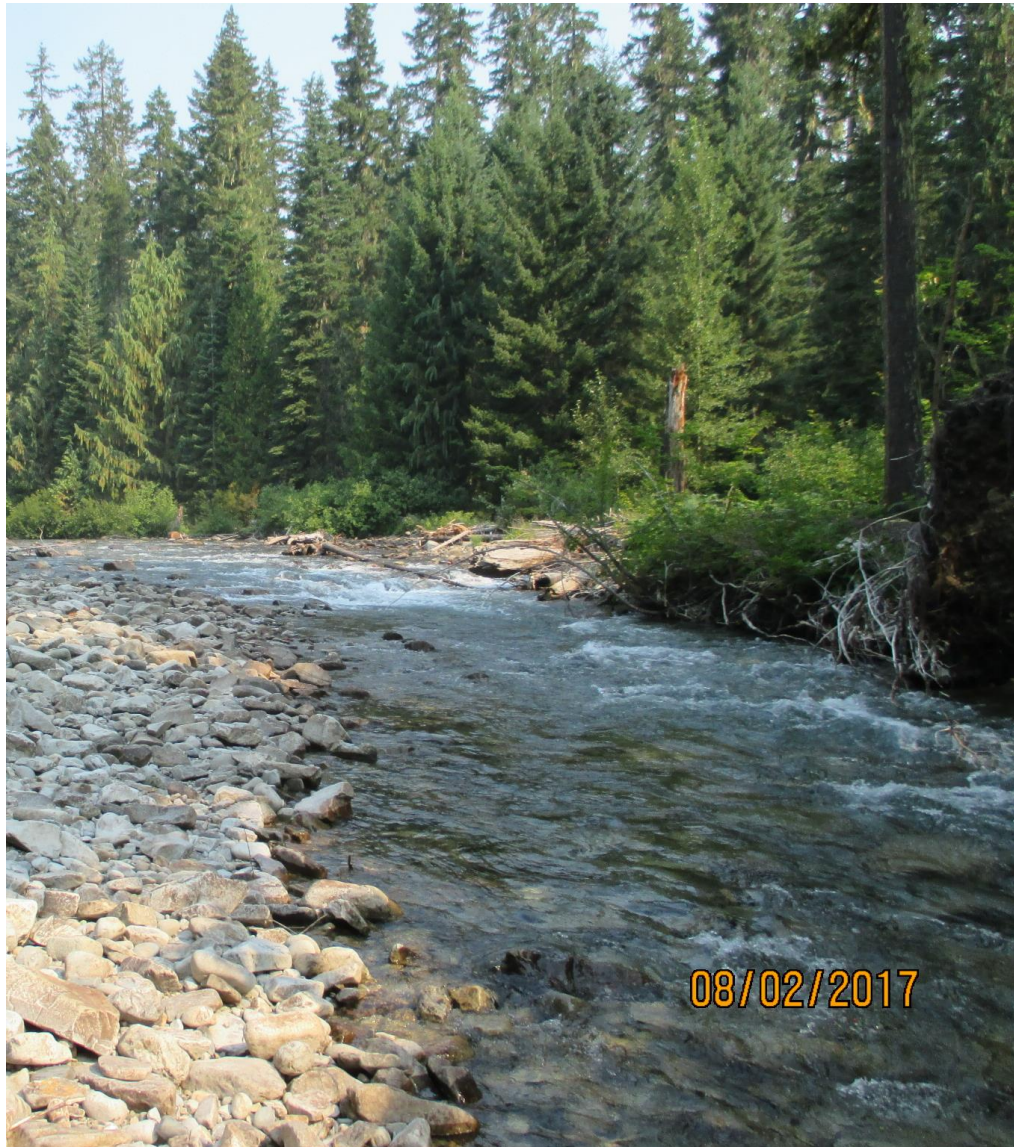
- Positive result in Log Creek
 - Low-level positive
 - Sample location was very remote





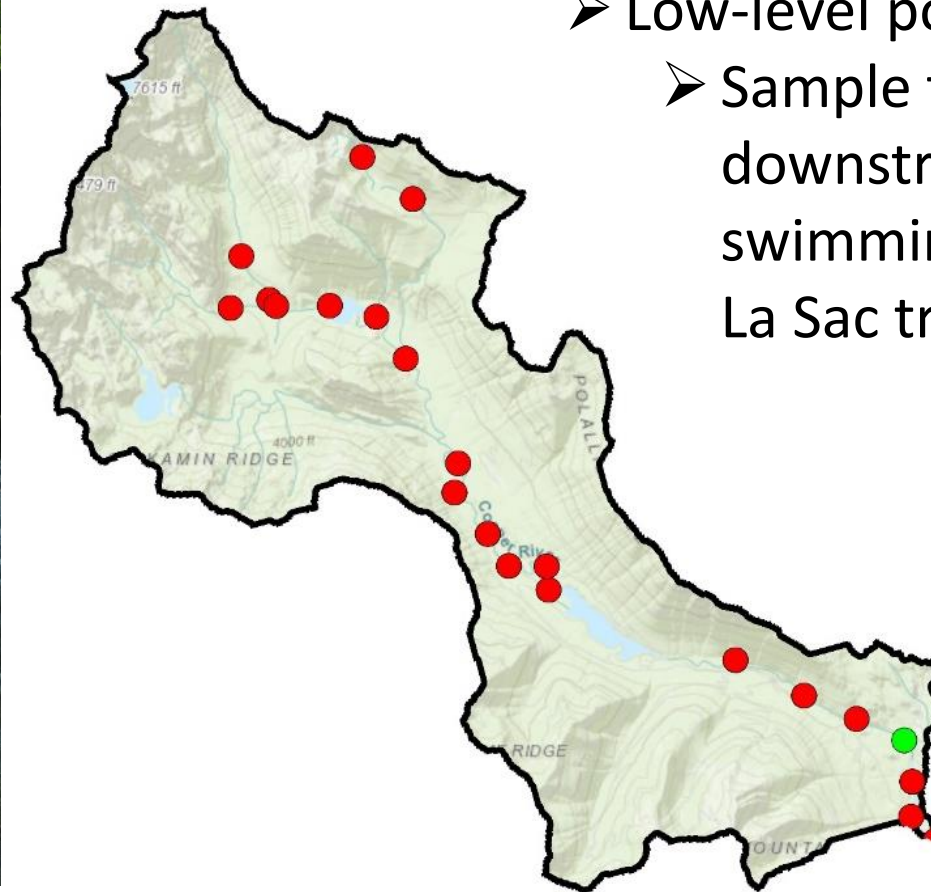
Upper Cle Elum Watershed

- Positive results in Cooper River and Wapatus River
- Cle Elum River was negative



Cooper River

- Low-level positive
- Sample taken ~200 m downstream from popular swimming hole at Salmon La Sac trailhead

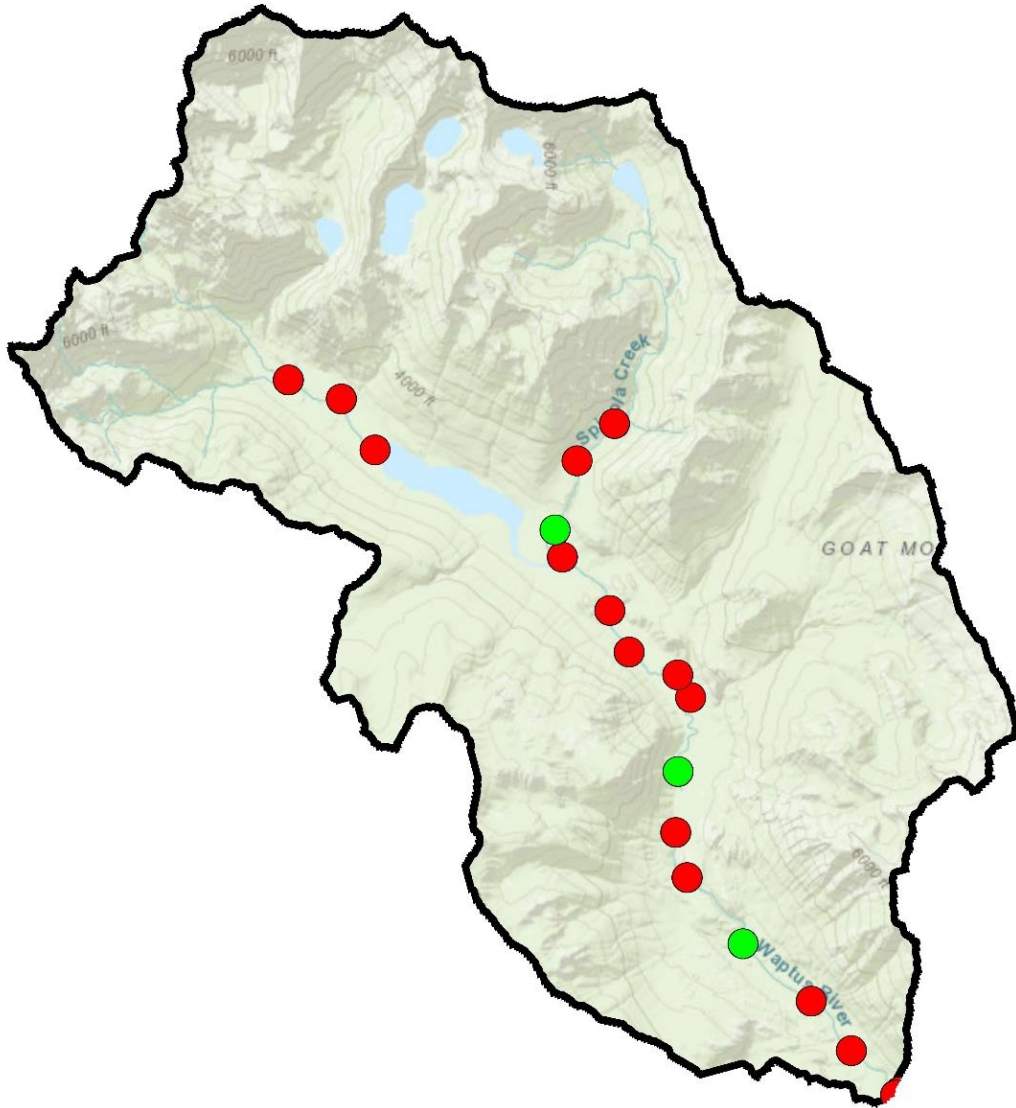


Waptus River

- 2 positive results
 - Low-level positive detections

Spinola Creek

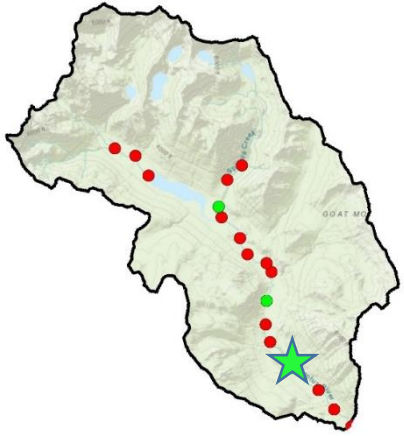
- 1 positive result
 - Strong positive detection





Waptus River

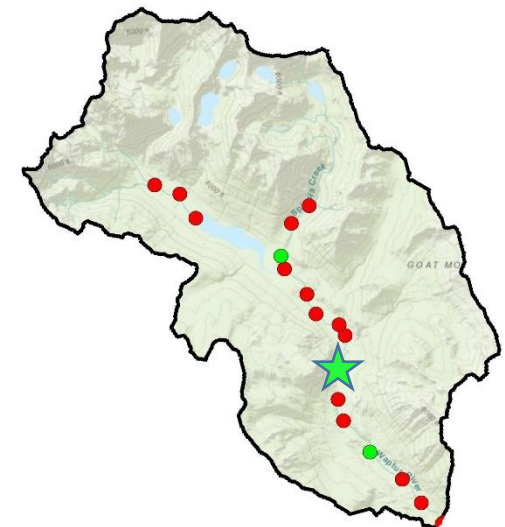
- Low-level positive
- Remote location
- 13°C





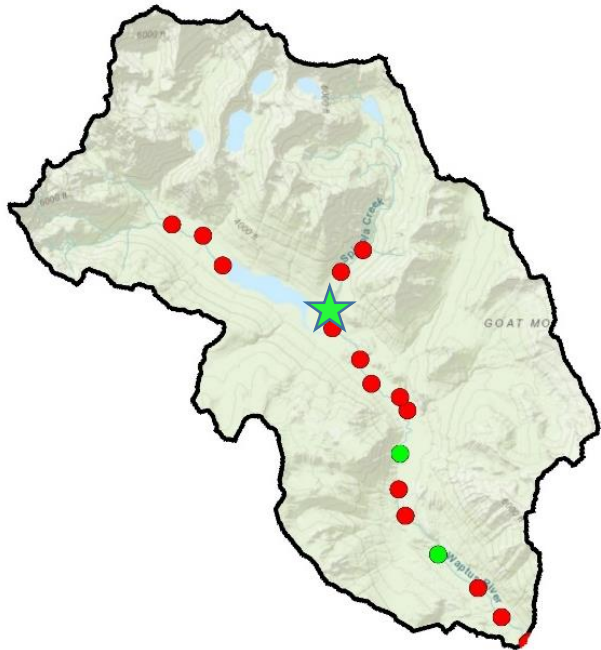
Waptus River

- Low-level positive
 - Remote location
 - 14°C



Spinola Creek

- Strong Positive
 - Remote location
 - 14°C



Summary

- 9/313 samples tested positive for bull trout eDNA
 - 4 of these were known to be currently used by bull trout
 - Box Canyon & Townsend Creek
 - 5 “Surprises”
 - Low-level positive detections
 - Waptus River (2), Cooper River, and Log Creek
 - Strong positive detection
 - Spinola Creek



Photo: Ashton Bunce

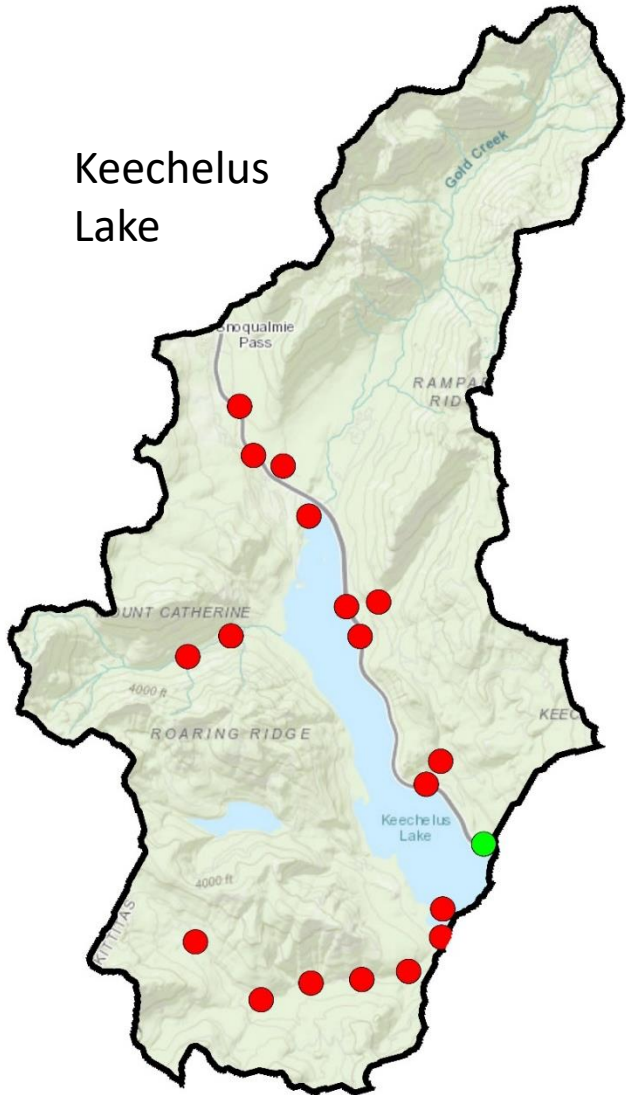
Summary



- Likely confirms extirpation/absence of bull trout
 - Teanaway River, Swauk Creek, Taneum Creek, etc.
 - One less hurdle for reintroduction/translocation?

07/25/2017

Keechelus
Lake



Summary

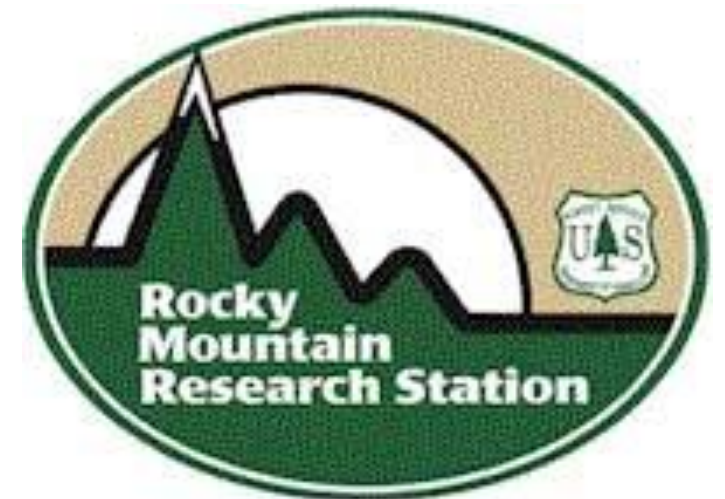
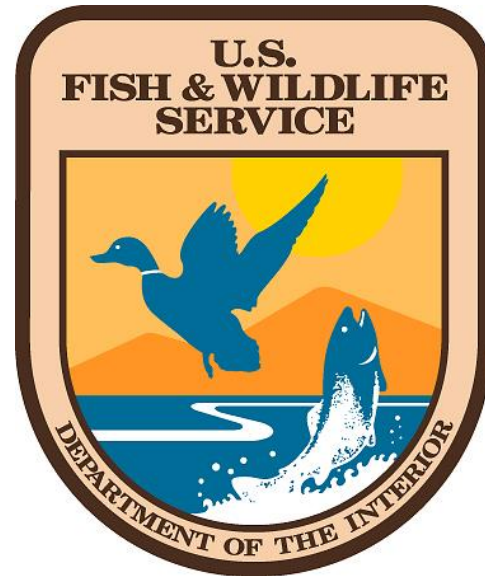
- Negative doesn't mean bull trout never use this area:
 - Ex: Keechelus Lake

What's Next?

- Resample positive streams bull trout via eDNA
- Coordinate snorkel surveys
- Reanalyze 2017 samples for brook trout eDNA
- Sample other Yakima River tributaries

Acknowledgements

- Funding- Yakima Basin Integrated Plan
- USFWS
- USFS
- Bull Trout Working Group
 - Yakima Basin Fish and Wildlife Recovery Board
- Cassandra Weekes





Questions?



08/17/2017

