Lower Toppenish Creek Juvenile Steelhead Survival, Monitoring and Restoration Strategies

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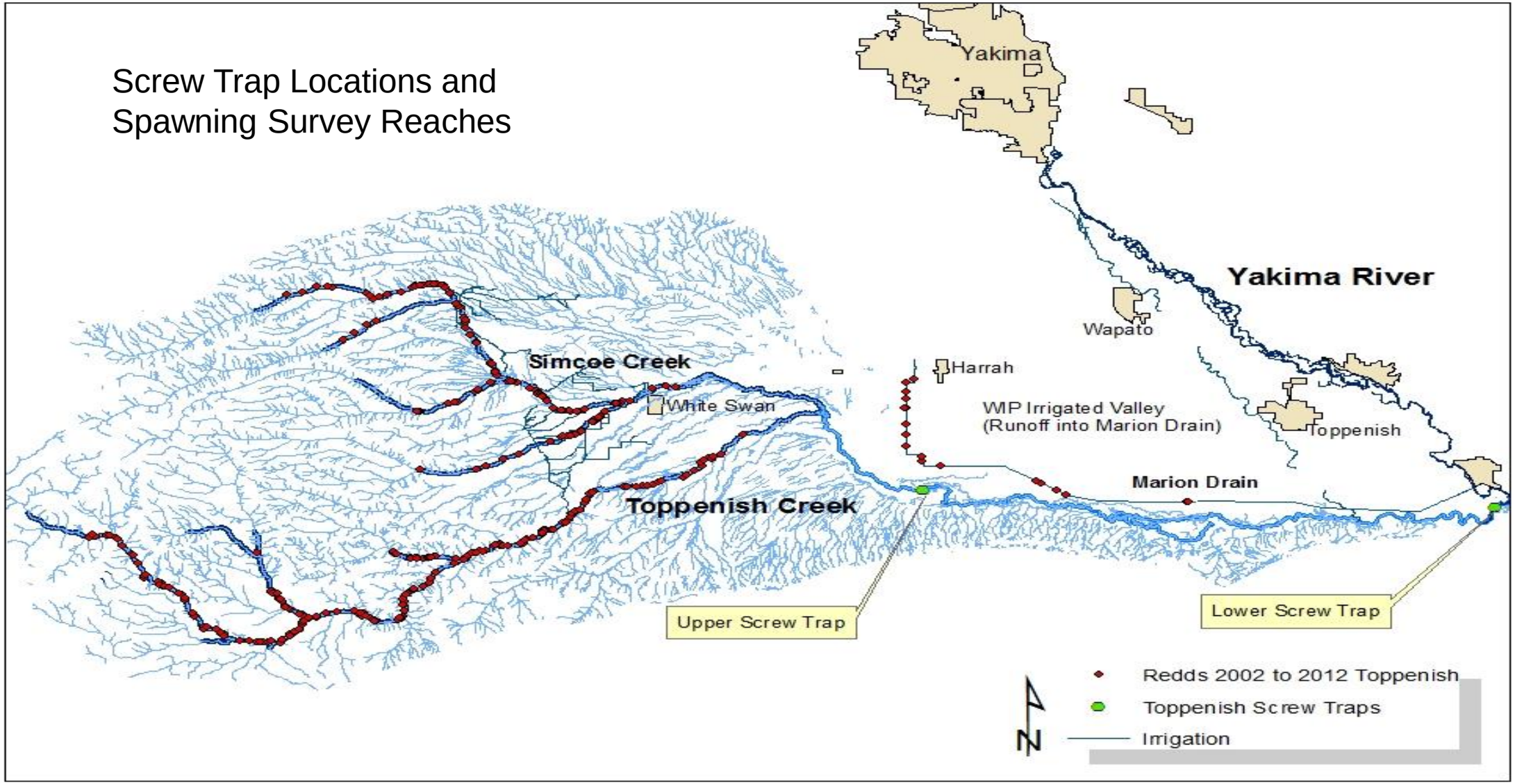
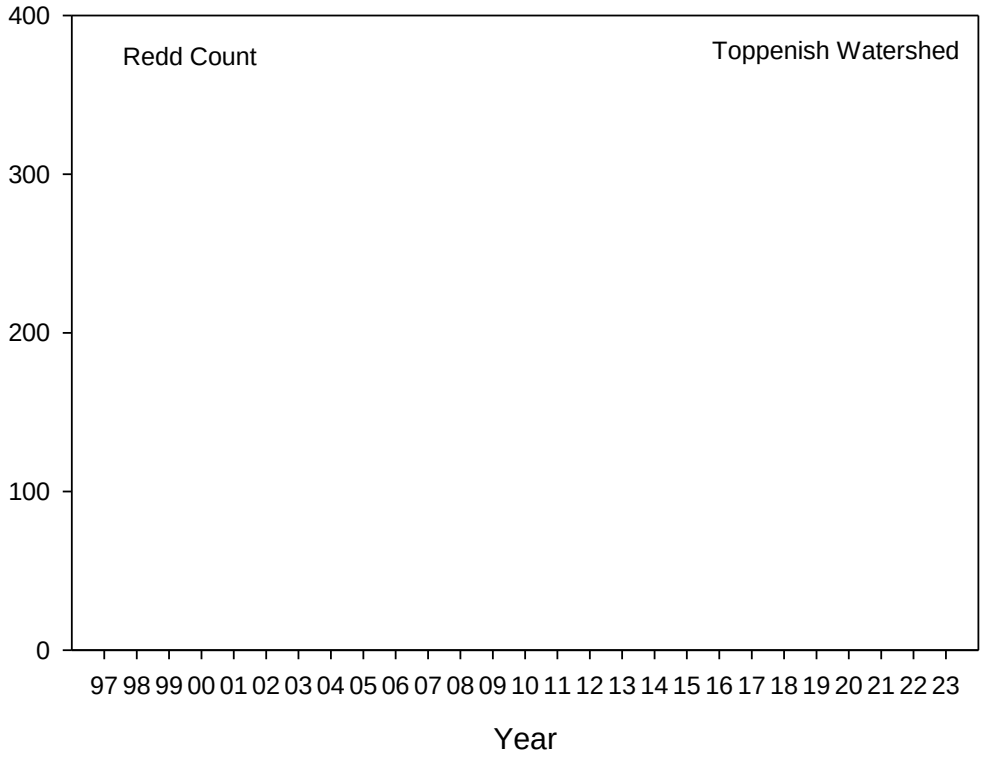
Yakama Nation Fisheries


Five-foot rotary screw trap
Operated from October-June.
7 days per week

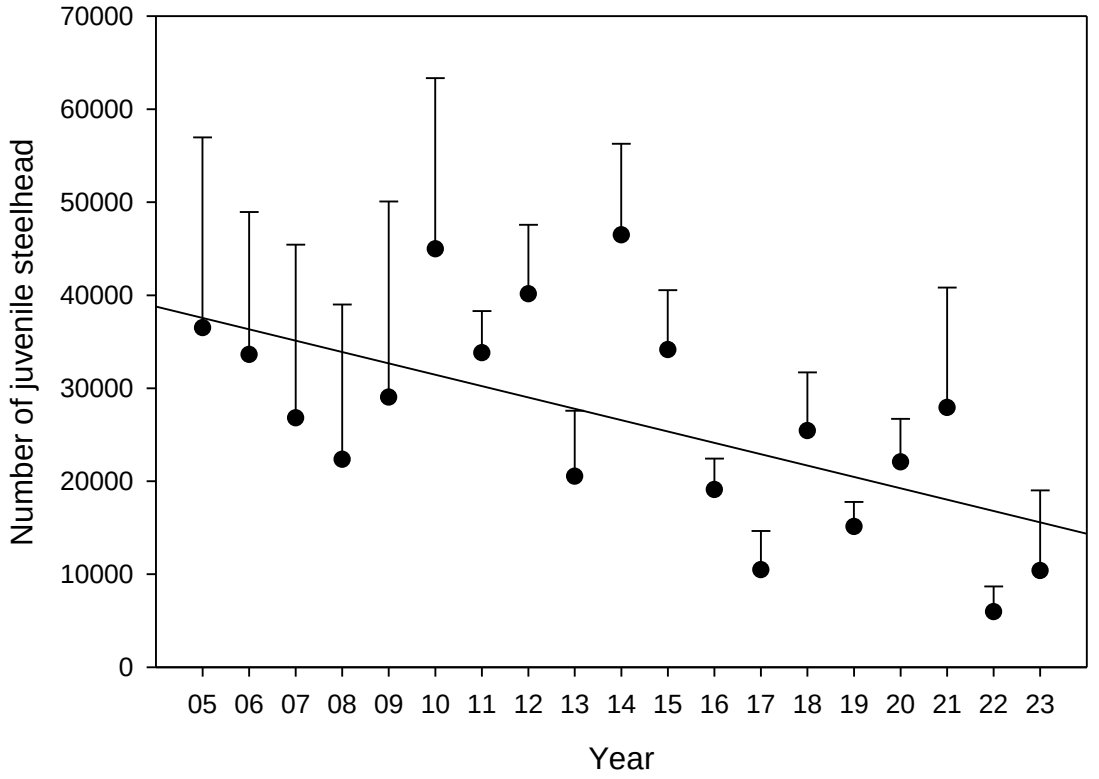
Steelhead Juveniles Weighed and Measured, Scales collected for aging and Juveniles PIT tagged.

Screw Trap Locations and
Spawning Survey Reaches

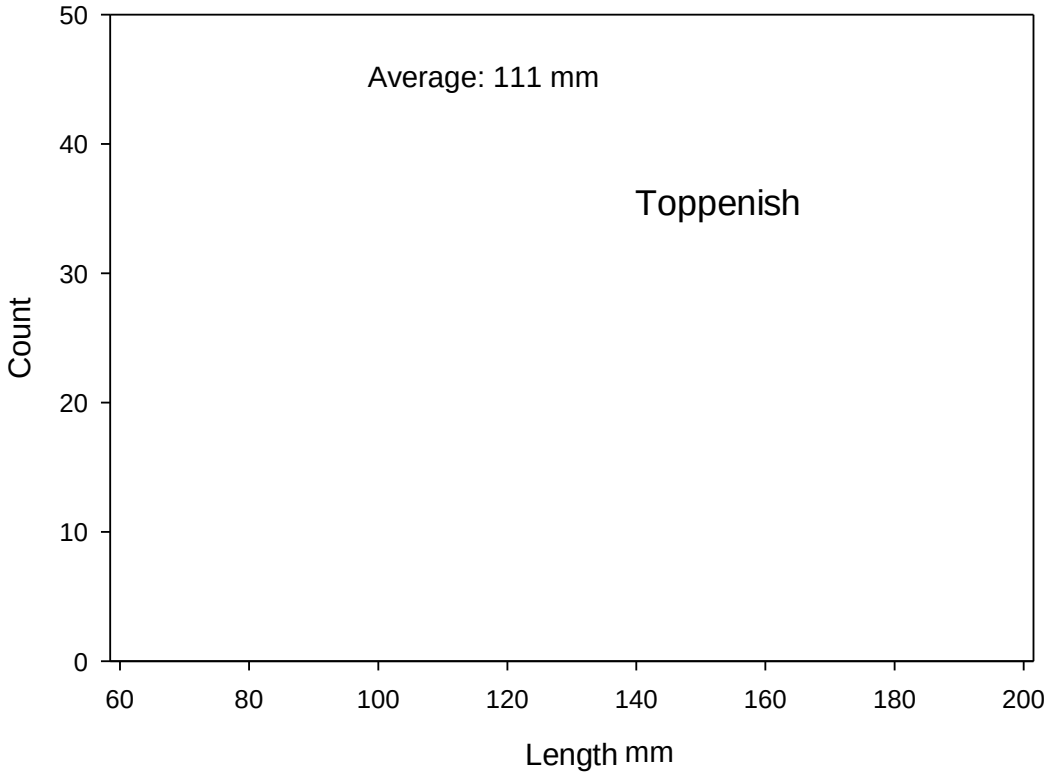




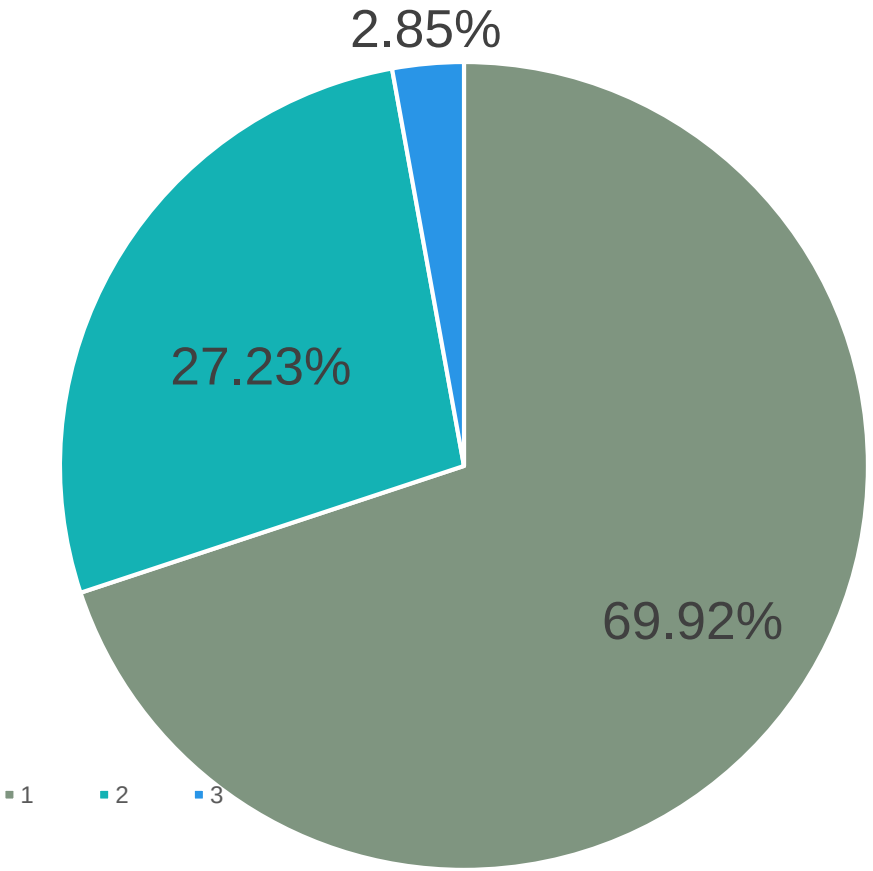
Steelhead redd counts in the Toppenish Watershed from 1997-2023



Steelhead out-migrant abundance at the River Mile 26 screw trap from 2005-2023

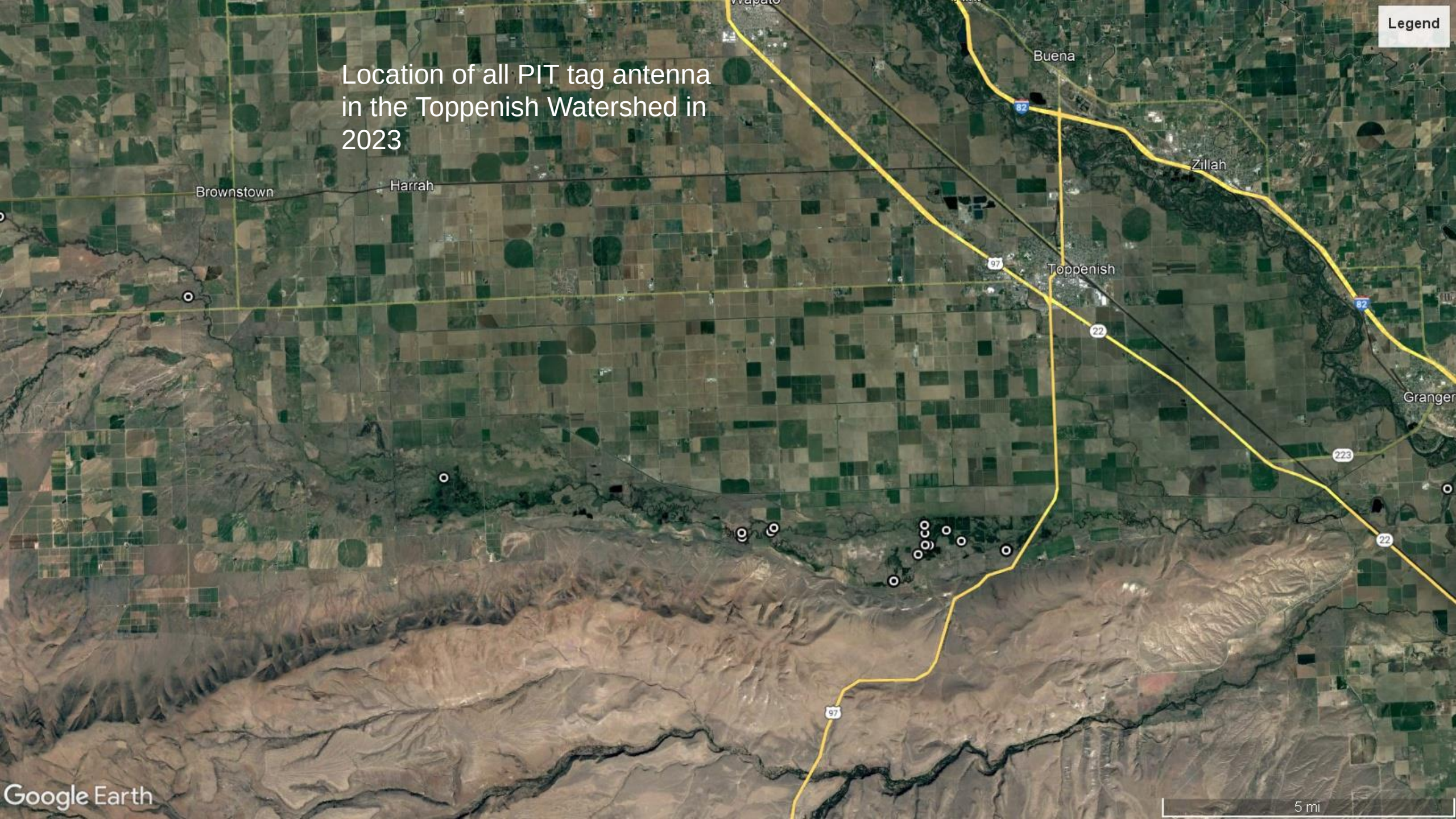


Length-frequency distribution of steelhead captured at the Toppenish Creek River Mile 26 Screw Trap in 2022

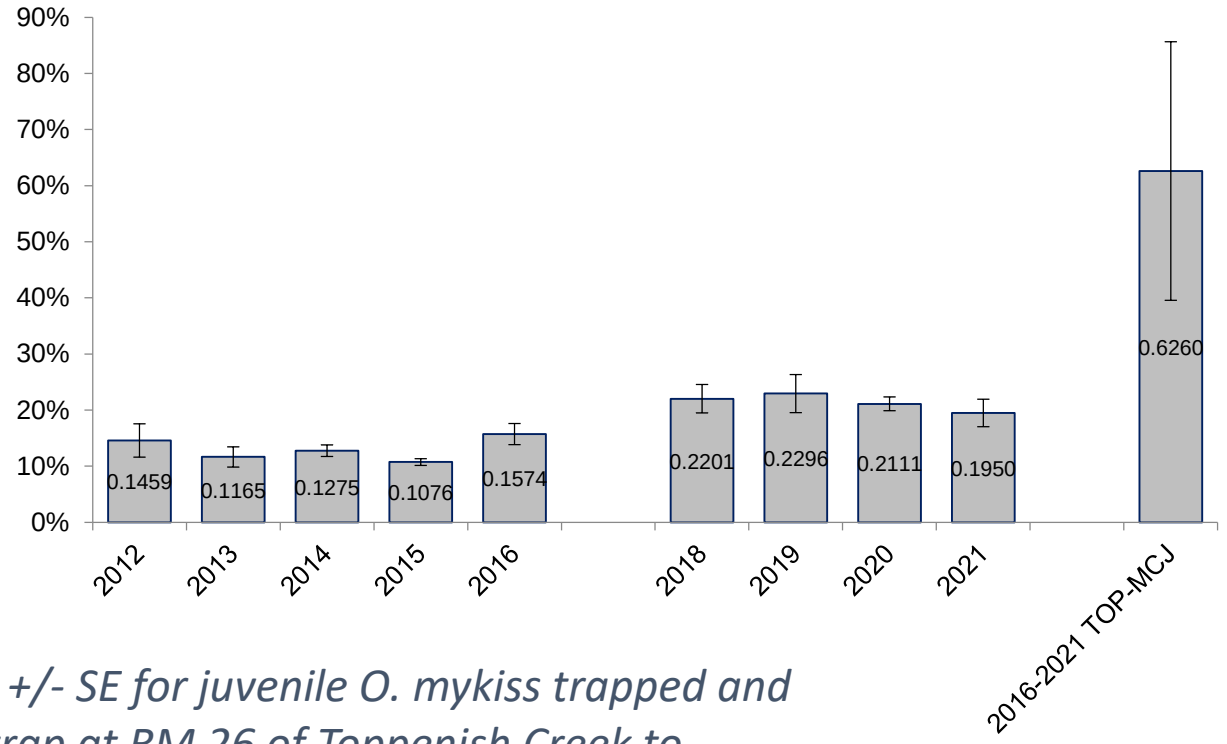


Age proportions of steelhead captured in the River Mile 26 Screw Trap (pooled for years 2004 to 2023)

PIT tag antennas located through out the lower Toppenish Creek Watershed to assess reach survival in Toppenish Creek and survival in off-channel habitats.


Location of all PIT tag antenna in the Toppenish Watershed in 2023
Legend
Buena
Zillah
Brownstown
Harrah
Toppenish
Granger
82
97
22
223
Google Earth
5 mi


25 Miles
Unit 2
TOP
Toppenish
Granger
97
22
82
12
223
Google Earth
Image Landsat / Copernicus



Survival probabilities +/- SE for juvenile O. mykiss trapped and tagged in the screw trap at RM 26 of Toppenish Creek to detection in lower Toppenish Creek (TOP) in the years 2012-2021, and survival probability from TOP to the McNary juvenile bypass (MCJ) pooled over the outmigration years 2016-2021.

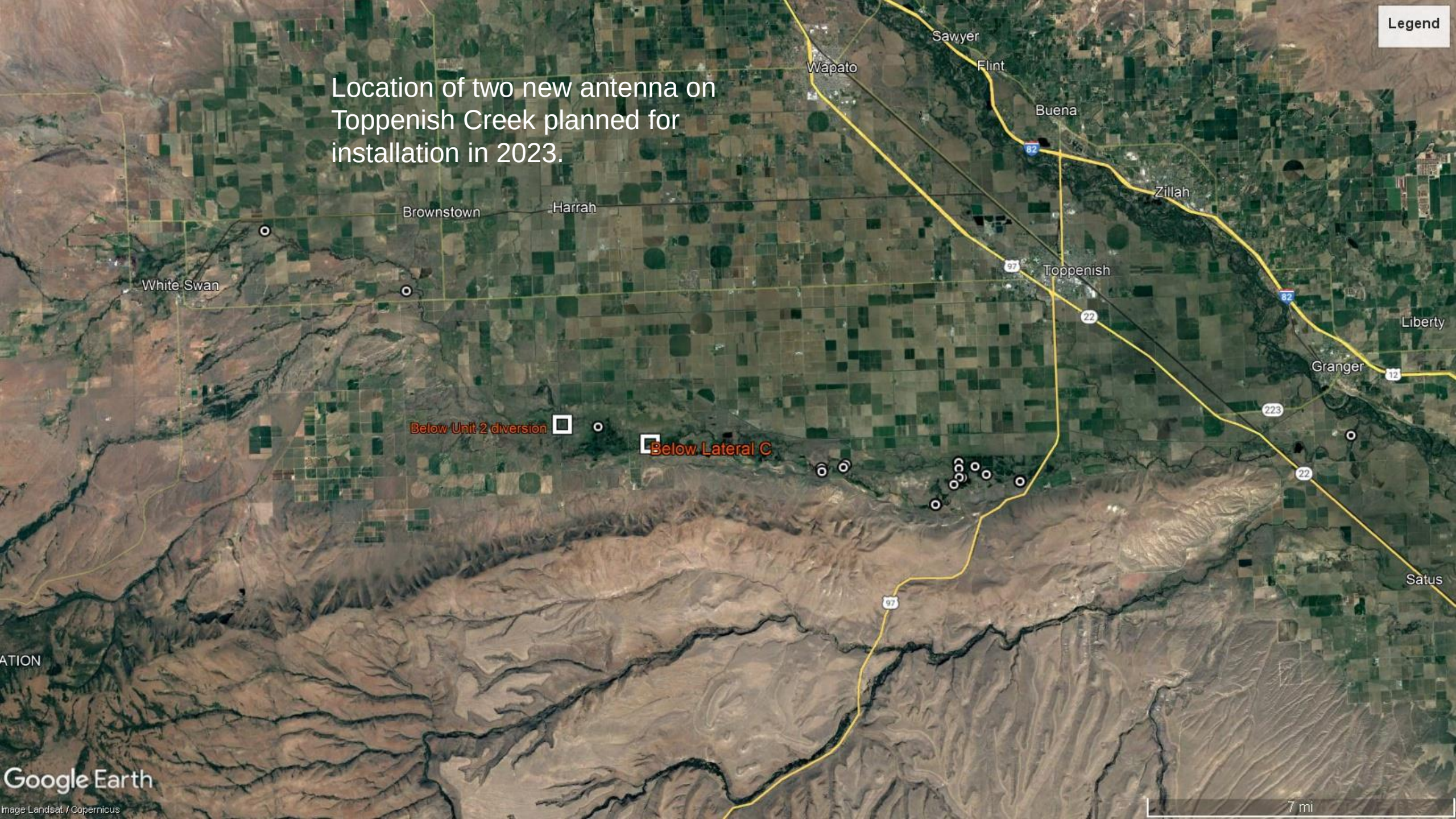
From David Lind Yakima Basin Recovery Plan Update Satus and Toppenish Populations draft

Improvement to Juvenile Monitoring planned for 2023.

- Installation of two PIT tag antennas
- Scanning flood plain areas for PIT tags to locate areas where stranding may be occurring

Other Possible Improvements to Juvenile Monitoring and Stranding Risk Assessment.

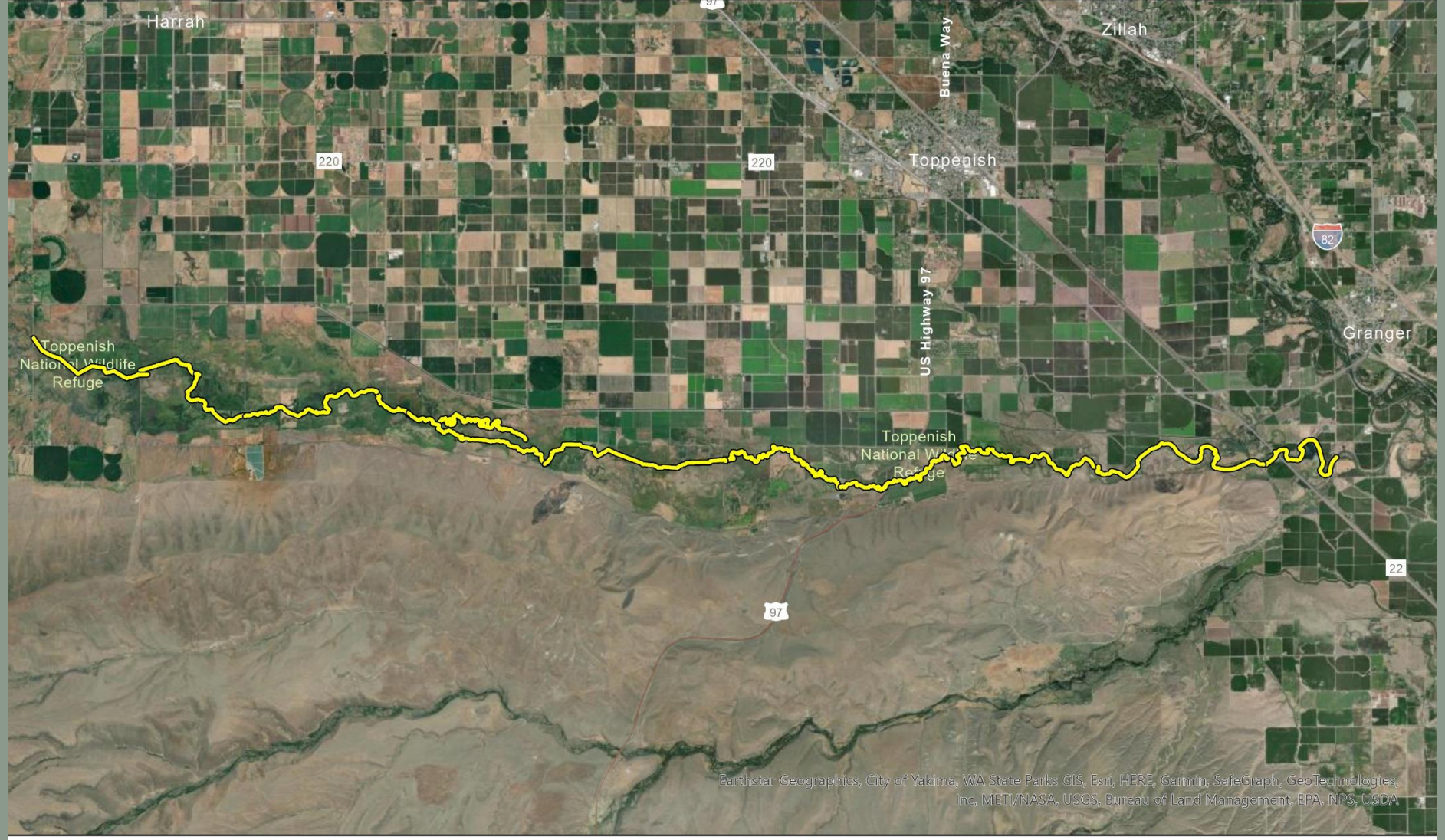
- Installation of additional PIT tag antennas at inlets and outlets of floodplain channels (might include portable units that could be easily relocated after several years of data collection).
- Micro-radio tag study to track tagged juveniles to specific overwintering habitat.
- Spatial model to identify areas with higher stranding risk during flood events.


Location of two new antenna on Toppenish Creek planned for installation in 2023.
Legend
Sawyer
Wapato
Flint
Buena
Zillah
Brownstown
Harrah
White Swan
Toppenish
Liberty
Granger
Below Unit 2 diversion
Below Lateral C
Satus
Google Earth
Image Landsat / Copernicus
7 mi


Legend
Below Unit 2 diversion
Below Lateral C
Mud Lake
Google Earth
75
3000 ft


Lateral C Road

COMING SOON!
Restoration activities to Mitigate Stranding on Lower Toppenish Creek



2022 Kayak Surveys

N

Legend

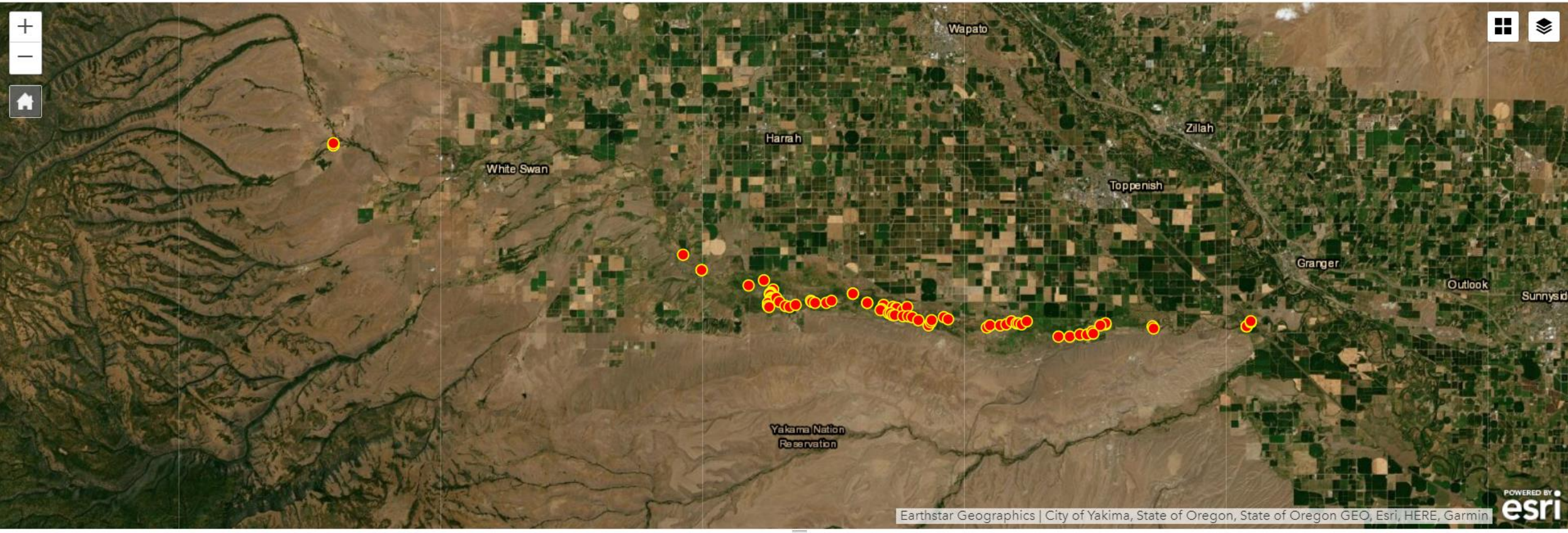
Kayak Surveys

0 1.75 3.5 7 10.5 14 Miles

ArcGIS Survey123 | My surveys | Organization | Help | Kelsey

YN_Fish_Passage_Mobile | Overview | Analyze | Data

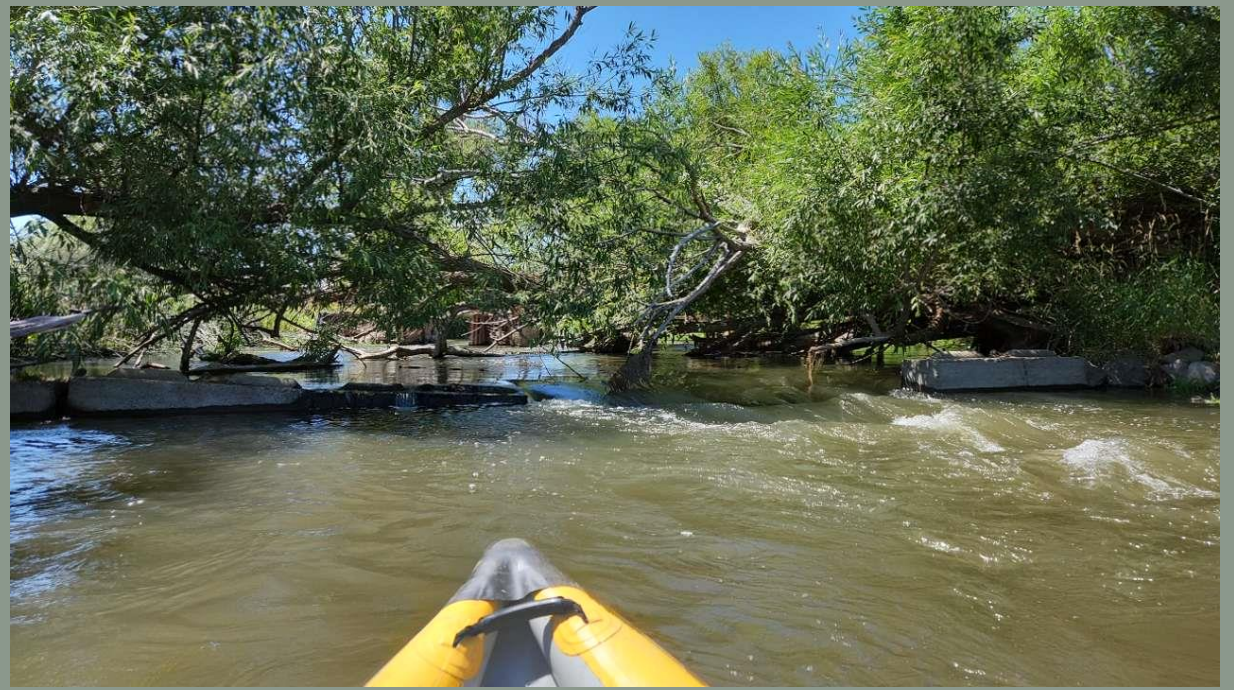
7/5/22 - 9/9/22 | Filter | Report | Export | Open in Map Viewer | Form view | 80/80



YN_Fish_Passage_Mo... | Culvert Information | Repeat_transport_dow... | Repeat_transport_upst... | Culvert Elevations | Additional Images | Diversion_Repeat

Piggott Dam

Royal Dam




flow down
creek
flow to ditch

Snake Creek

Future Restoration Activities and Strategies to Mitigate Stranding on Lower Toppenish Creek

- Additional fish screens where there are no other alternatives and monitoring data suggest high entrainment rates.
- Replacement of surface diversions with screened pumps to fill wetlands.
- Removal of levees that separate the stream channel from controlled wetlands and waterfowl habitat ponds. Redesign wetlands to drain back into the channel as flows drop.
- Isolate waterfowl habitat ponds that are located further from the channel and fill using pumps instead of unscreened surface diversions.
- Surface water control structure (head gates) to control the diversion rate and ramp down the diversion rate gradually at the end of the season to encourage fish to exit the wetland.

Questions?

Thanks to all Yakama Nation Staff, Members of the YN public, Tribal Council, Landowners and other Stakeholders that make this work possible