

# One Fish, Two Fish, 15,000 Fish

Brook Trout Suppression for Bull Trout  
Recovery in the Upper Malheur

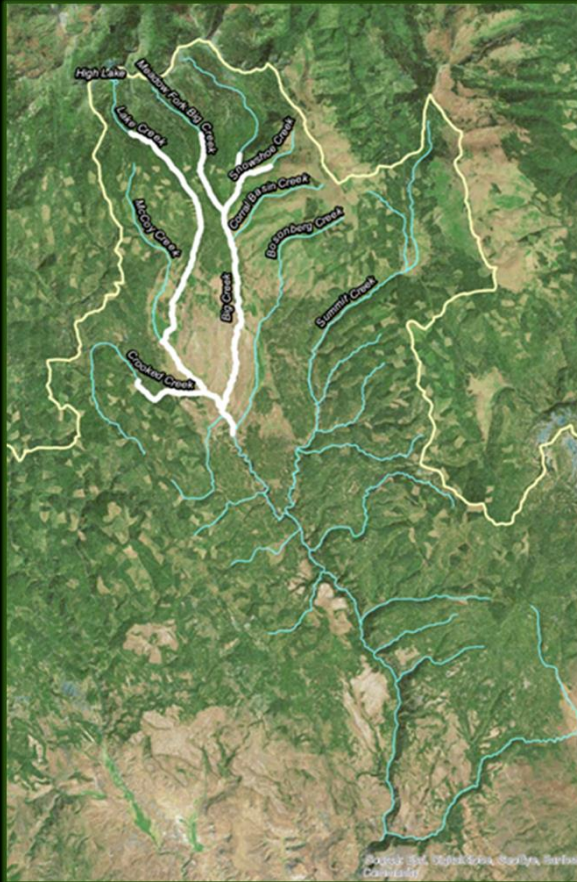
Brandon Haslick  
Burns Paiute Tribe

# Brook vs. Bull- What's the Big Deal?



- ▶ Competition for space/resources
- ▶ Fertile hybrids
- ▶ Predation

# Brook Trout in the Upper Malheur



Bull Trout



Brook Trout

- ▶ Agency-introduced into High Lake in the 1930s
- ▶ Unauthorized stockings in mountain streams
- ▶ Effective upstream to downstream colonizers
- ▶ All suitable habitat by 1990s



# Bull Trout Recovery Chronology

- ▶ 1997: Malheur bull trout forum convened
- ▶ 1998: Bull trout listed as 'Threatened' under ESA
- ▶ 2010-11: Pilot years mechanical removal (High Lake, Lake Creek)
- ▶ 2012: First year of 5-year removal study
- ▶ 2013: TAC formed
- ▶ 2015: Final Recovery Plan adopted- brook trout listed as primary threat

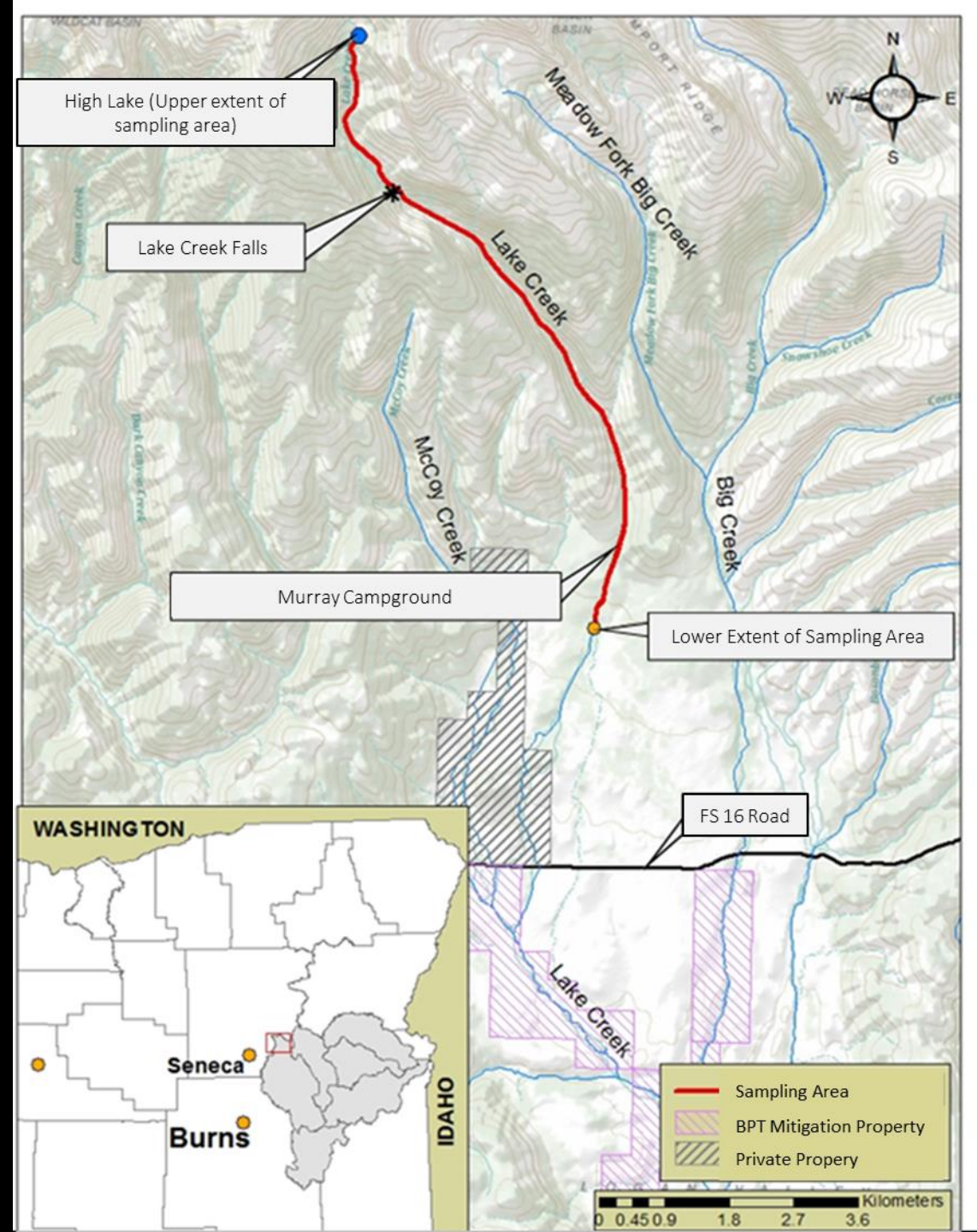




# Lake Creek-2012

## Year 1 of 5-yr. Study

- ▶ One of two major sources of the Malheur River
- ▶ Drains High Lake, a brook trout seed source
- ▶ Considered a recruitment stronghold
- ▶ Approximately 8-km study site
- ▶ 25 100-meter sites visited
- ▶ Attempted both mark-recapture and depletion electrofishing
- ▶ 2012 Brook trout population size: 11,797 (9,362-14232 95% CI)





# Concurrent Gillnetting in High Lake (1 week)



# High Lake Removals (5-yr. Study + 2 Pilot Years)

Year	Population Estimate	Brook Trout Removed
2010	6621	2206
2011	3965	807
2012	1802	711
2013	WILDFIRE	WILDFIRE
2014	3477	1782
2015	WILDFIRE	WILDFIRE
2016	-	1130



# Lake Creek Shocking?

Year	Brook Trout Removed
2012	1232
2013	2752
2014	1240
2015	1606
2016	791
2017	1240
<b>TOTAL</b>	<b>8861</b>

2017 population estimate of 8200 (5833-10567 95% CI)  
Approximately 30% drop from 2012



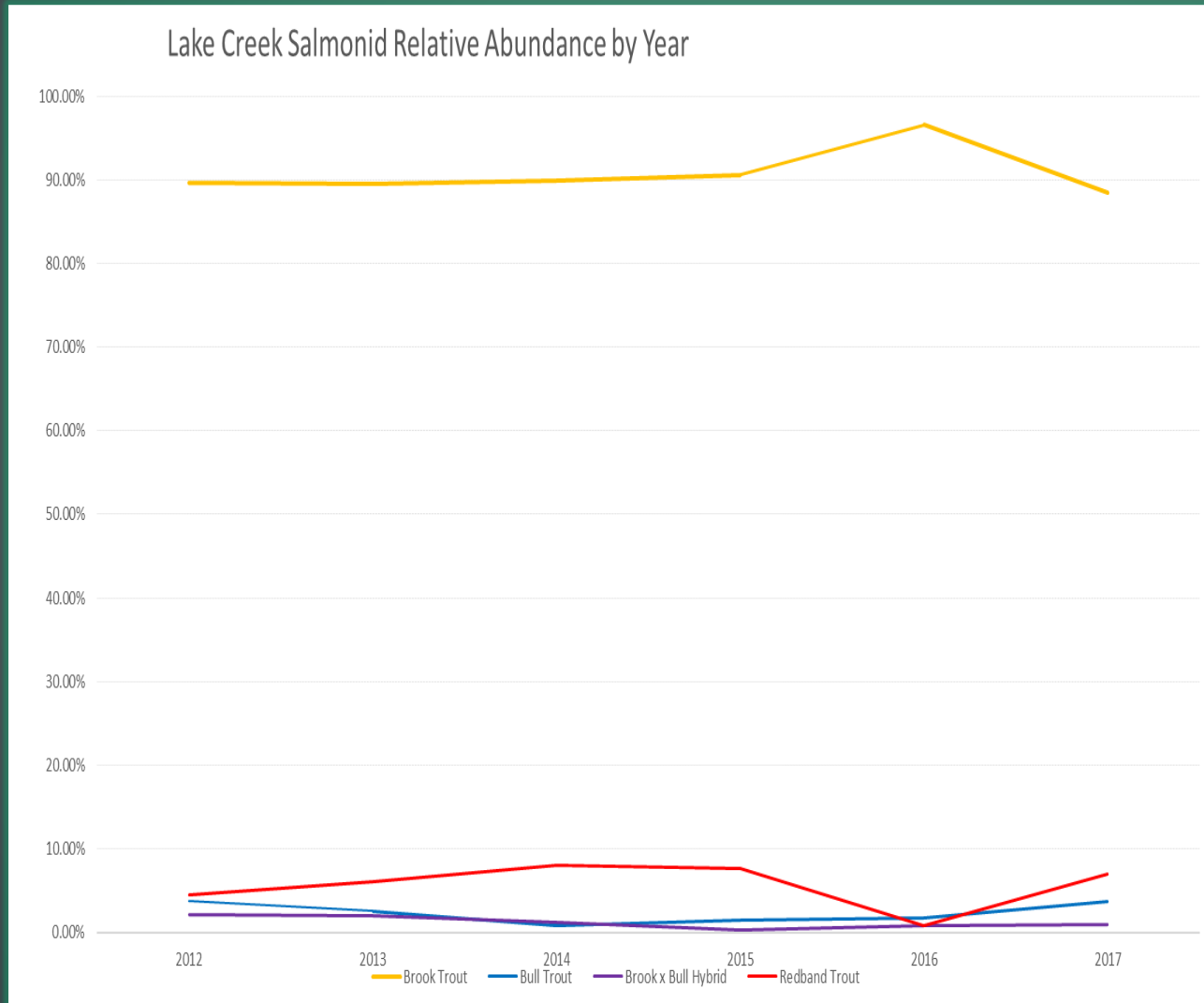
# Why was Lake Creek so challenging?

- ▶ 1 or 2 pieces of woody debris
- ▶ Extensively braided



- ▶ Truncated 2-month timeframe

# Over 15,000 brookies later... so what?





# Checkmate? Or Reload?



2016: Malheur Bull Trout Working Group convened  
2017: TAC and QW Consulting publish the Upper Malheur Bull Trout  
Conservation Strategy  
-chemical eradication key component

# Treatment Specifics

- ▶ Success= careful planning and complete eradication
- ▶ Pre-treatment salvage
- ▶ Non-target monitoring
- ▶ Natural and artificial barriers
- ▶ Two consecutive years of treatment each reach
- ▶ Post-treatment native trout stocking
- ▶ 10-year timeframe
- ▶ eDNA to confirm success
- ▶ **Extensive education and outreach is paramount to long term success**



# Treatment Concerns

Water quality/human health

Livestock

Non-target species

Angling opportunities

Treatment containment

Wilderness

Likelihood of success

Overkill?

Migration (barriers)

Climate change





# Education and Outreach



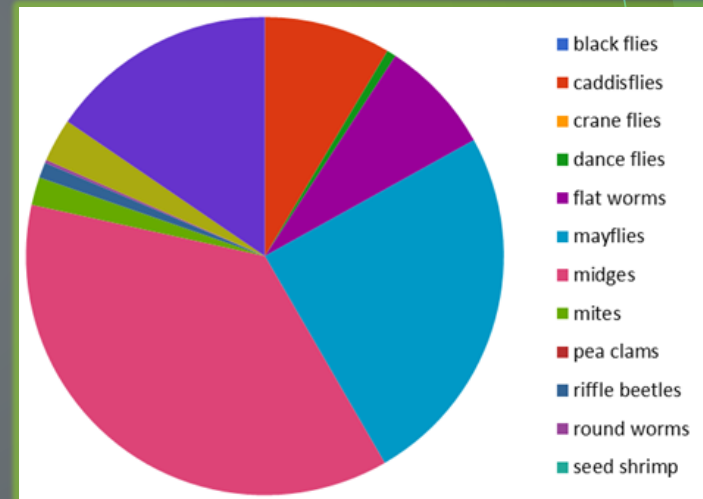
Samara Group Developed:  
- 'Help Native Fish' logo  
and messaging  
- stickers, brochures,  
water bottles, pens,  
posters

Harney County Fair  
Grant County Fair  
Idaho AFS  
John Scharff Migratory Bird  
Festival

Interactive Fish ID Game

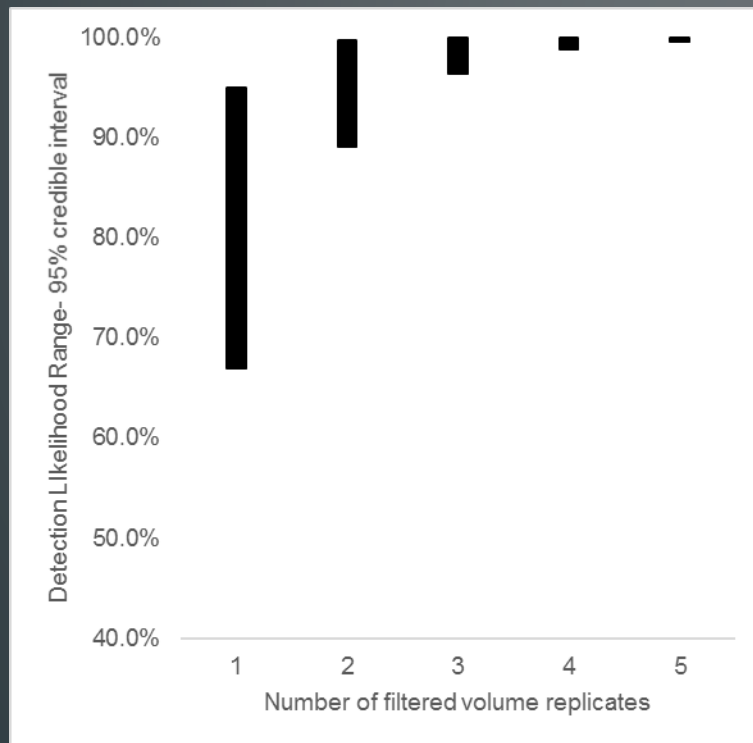
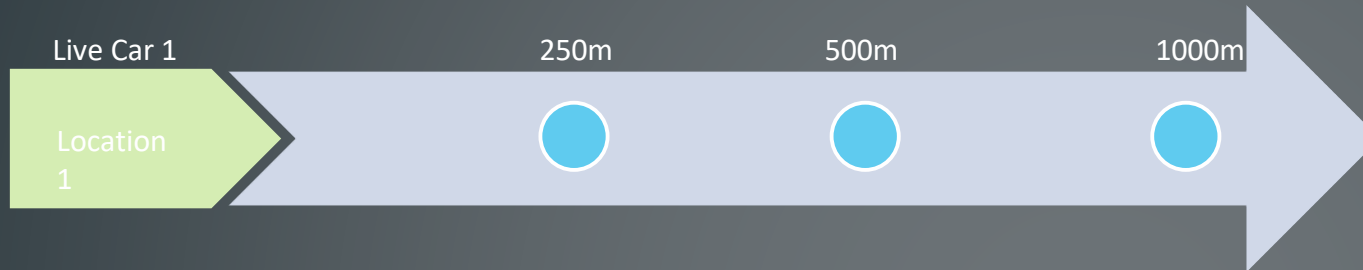


# Baseline Data Collection



# eDNA Project- Treatment Success?

## Have brook trout been introduced elsewhere?



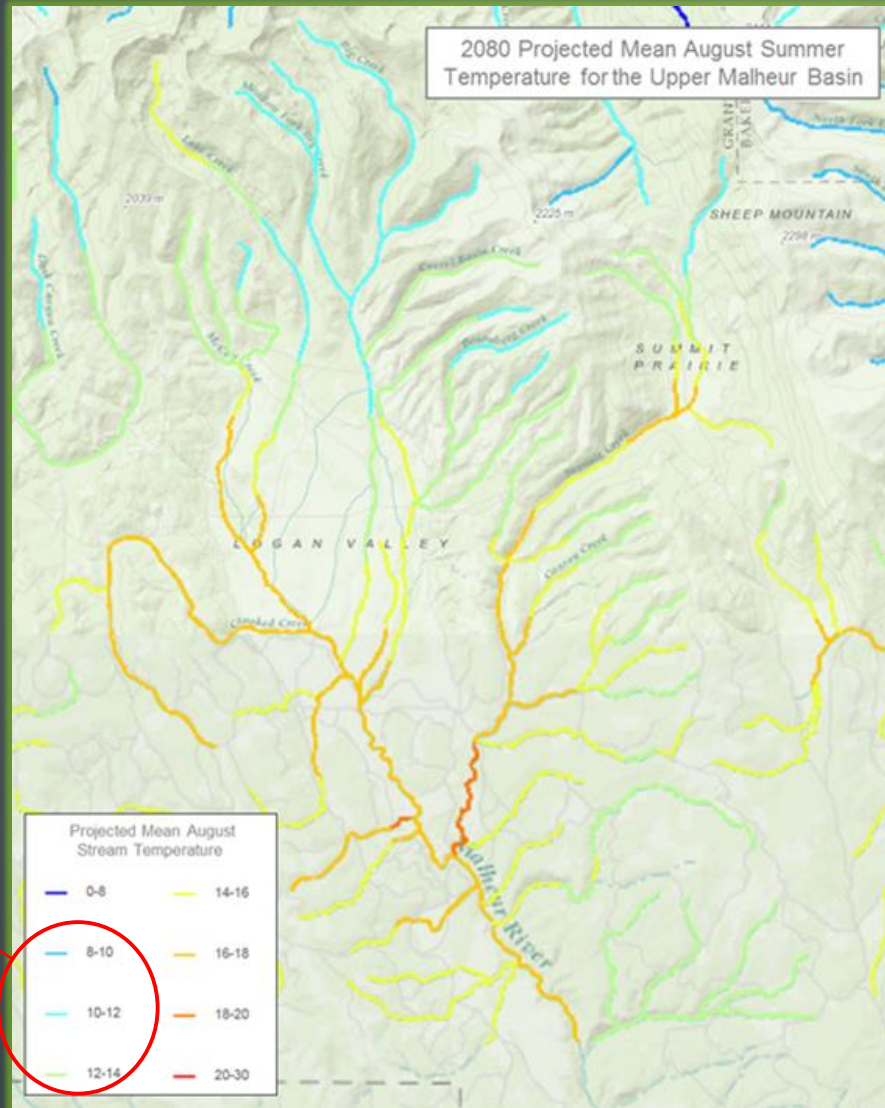
- ▶ Tested different hydrologic conditions (flows, temperature, gradient, etc.)
- ▶ Tested live vs. dead fish
- ▶ Tested amounts of water sampled to produce varying detection probabilities of a single fish
  - ▶ 1L=84%
  - ▶ 2L=93%
  - ▶ 3L=97%
  - ▶ 4L=99.5%

Partners: NRCS, Cramer Fish Sciences

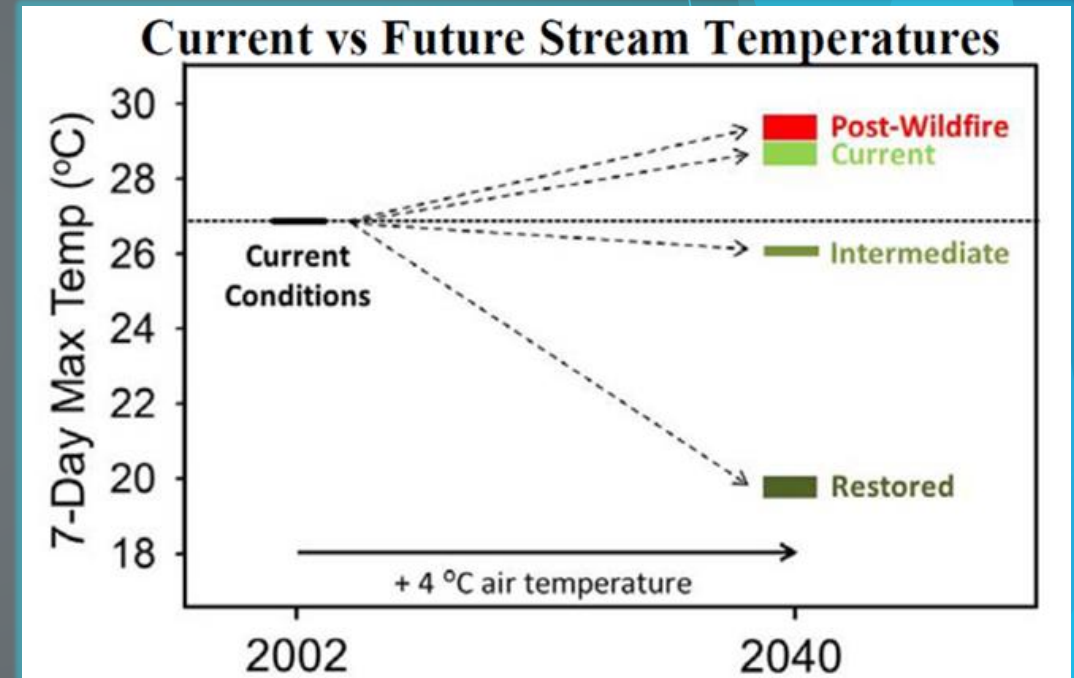


# Climate Change Concerns

## Are bull trout in the Upper Malheur a lost cause?



Meet Oregon DEQ standards for BUT rearing and migration



Steve Wondzell, USFS, PNW Research Station

# But there is hope...



Upper Malheur= Groundwater-driven  
BPT has planted over 150,000 riparian trees since 2008  
Stage Zero Restoration in Logan Valley  
USFS is restoring other riparian habitats in the Upper Malheur  
Benefits go beyond bull trout





# Questions?

