

Kootenai River Native Fish Conservation Aquaculture Program to Restore White Sturgeon and Burbot



Kootenai Tribe of Idaho Update to TMT

December 1, 2021

*by
Shawn Young & Nathan Jensen*



Burbot LN



1989

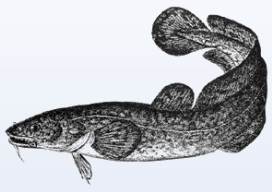


1989 - Present

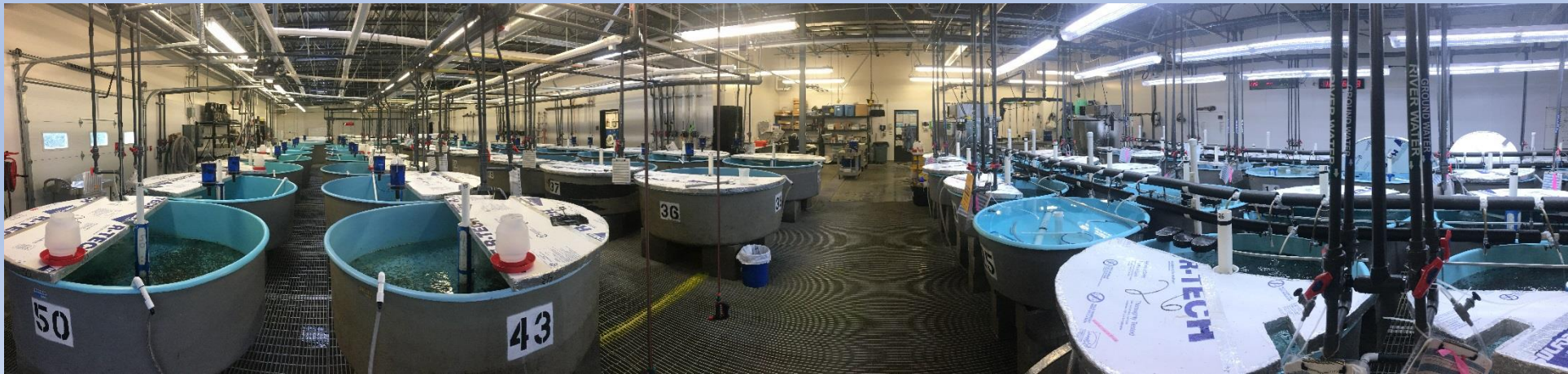
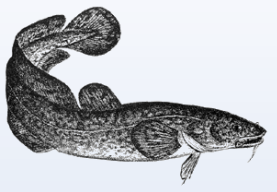


2015

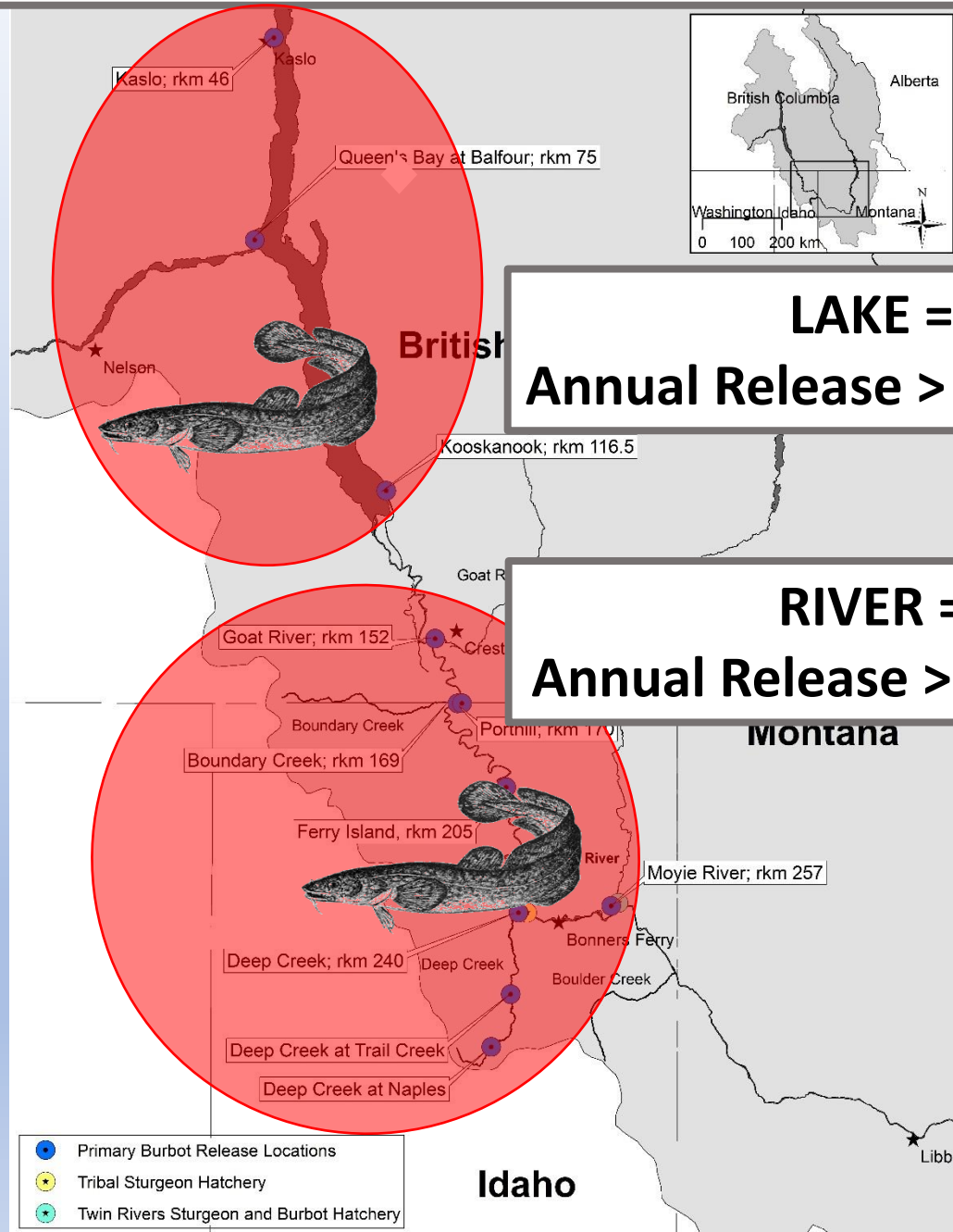




1. *Rebuild population abundance*



RECOVERY AREAS – ADULT ABUNDANCE GOALS



LAKE = 20,000
Annual Release > 100,000 juveniles

RIVER = 17,500
Annual Release > 125,000 juveniles

- Primary Burbot Release Locations
- ★ Tribal Sturgeon Hatchery
- ★ Twin Rivers Sturgeon and Burbot Hatchery

2012/02/12 17:22:30

E

1.8 C

2012/02/12 16:46:59

E

1.8 C

Co-manager Spawning Team on Moyie Lake, BC, Canada

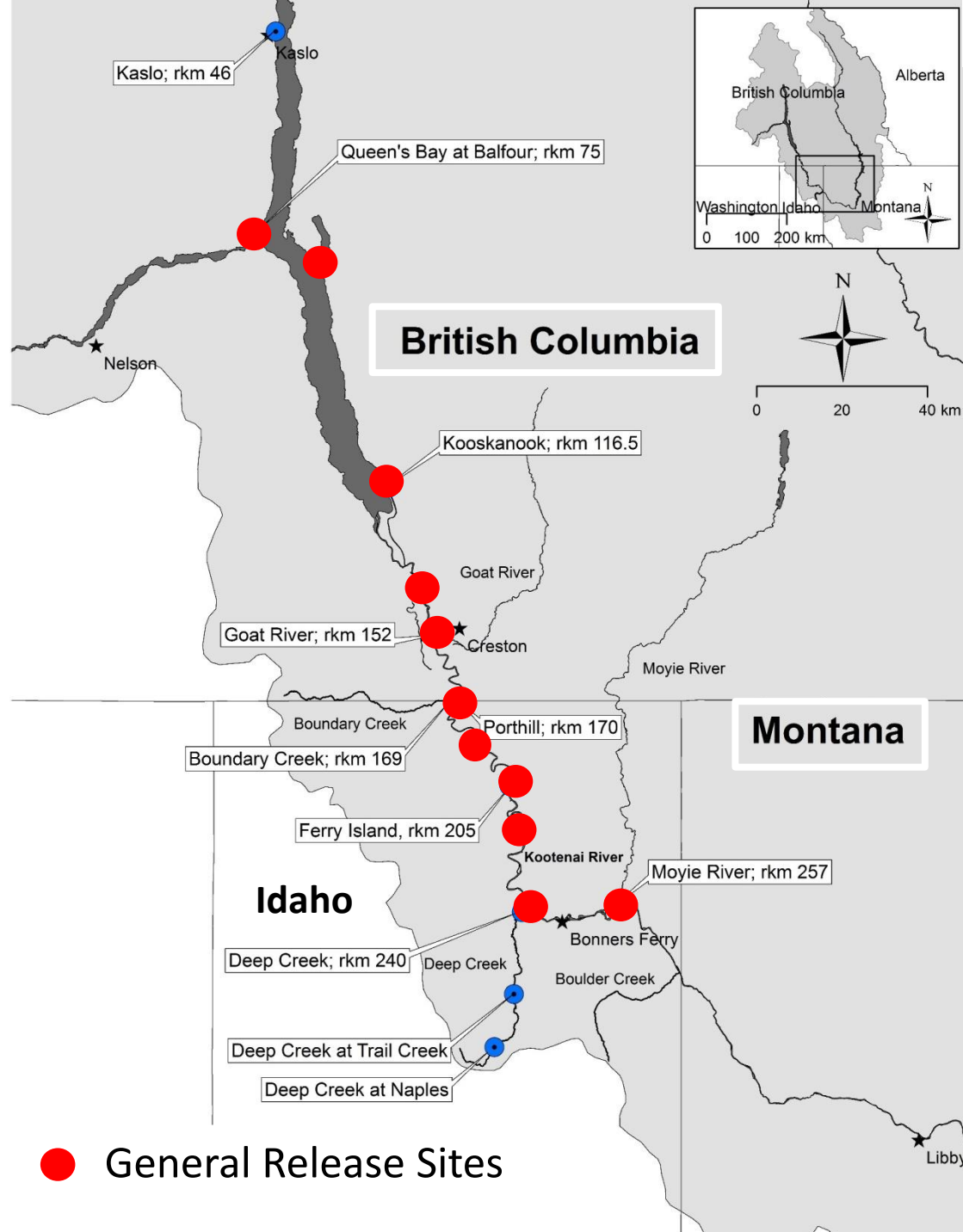


Co-manager River Broodstock Collection



Volitional Spawning In-hatchery





KTOI Staff Releasing Burbot



Example of Lower Tributary Release Sites



Habitat Project – Floodplain Reconnect



10 Years Program Development

+

13 Years of Releases

Released: (approximately)

1,650,000 juveniles



10 Years Program Development + 13 Years of Releases



Released: (approximately)

18,000,000 larvae

10 Years Program Development

+

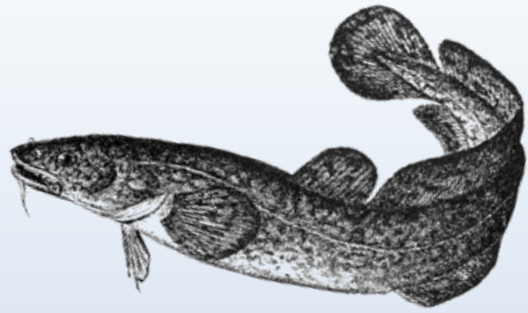
13 Years of Releases



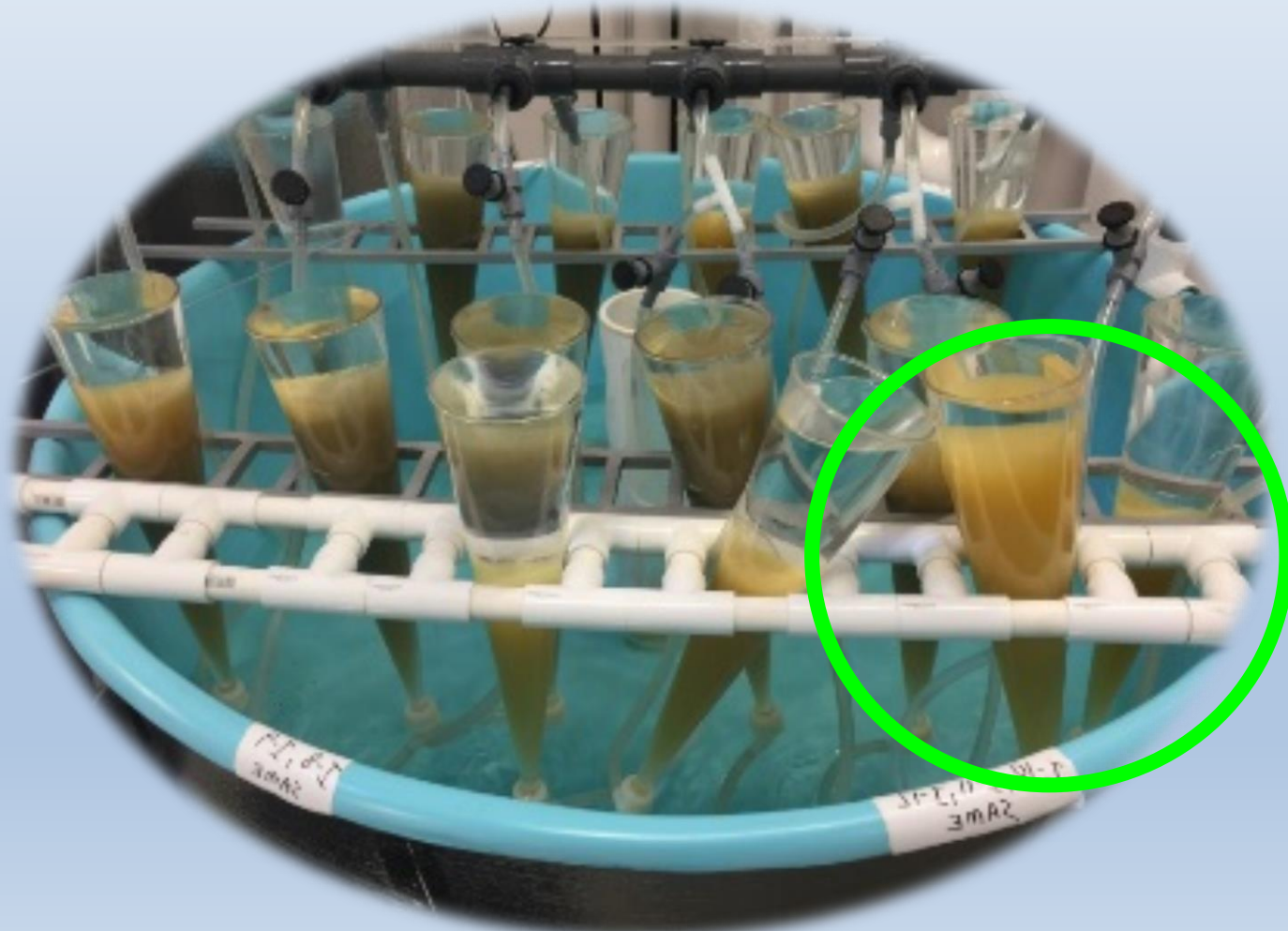
Released: (approximately)

27,000,000 fertilized eggs



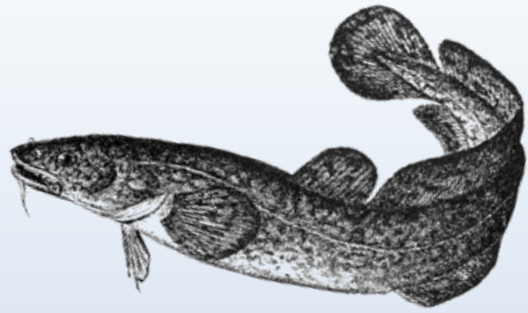


10 Years Program Development + 13 Years of Releases

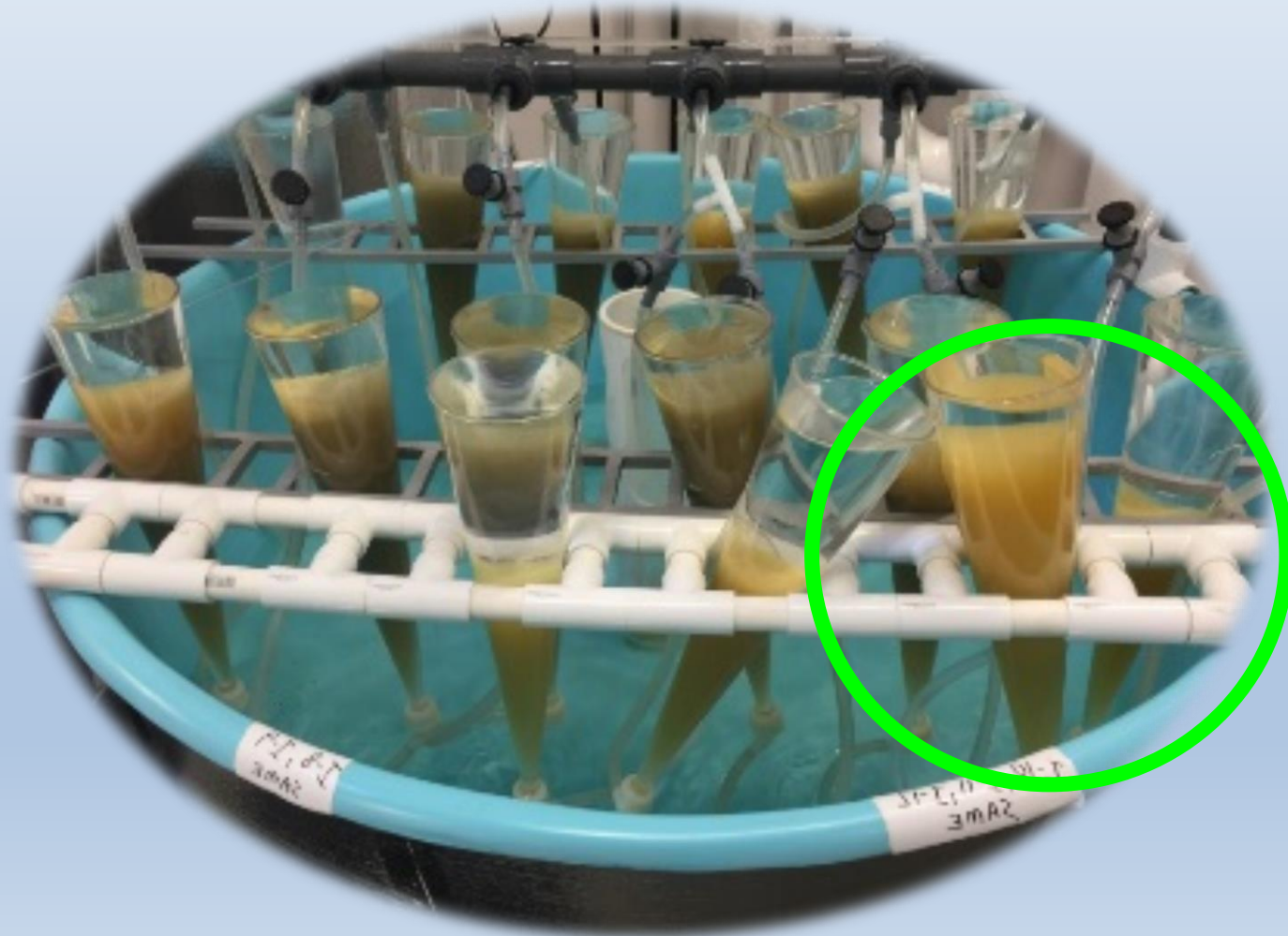


Guess how many eggs are in just this 1-L egg incubator.....

(Hint: there are 800 mL of eggs.....)



10 Years Program Development + 13 Years of Releases



Answer = ~1 million eggs



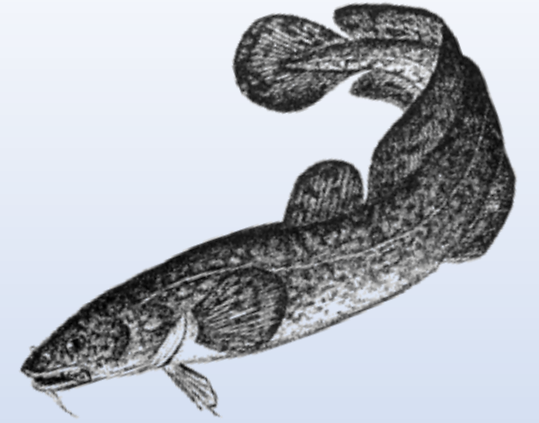
10 Years Program Development + 13 Years of Releases



- ✓ 0.3% survival from newly-hatched larvae
- ✓ 10% survive during Age-0+ to Age-1+ post-release
- ✓ 80–90% annual survival to Age-8
- ✓ Estimated ~50,000 adults

(IDFG, Ross et al. 2018; Hardy et al. 2020)



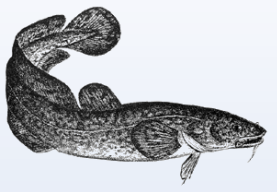
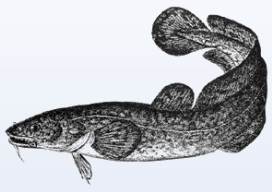


Program Status

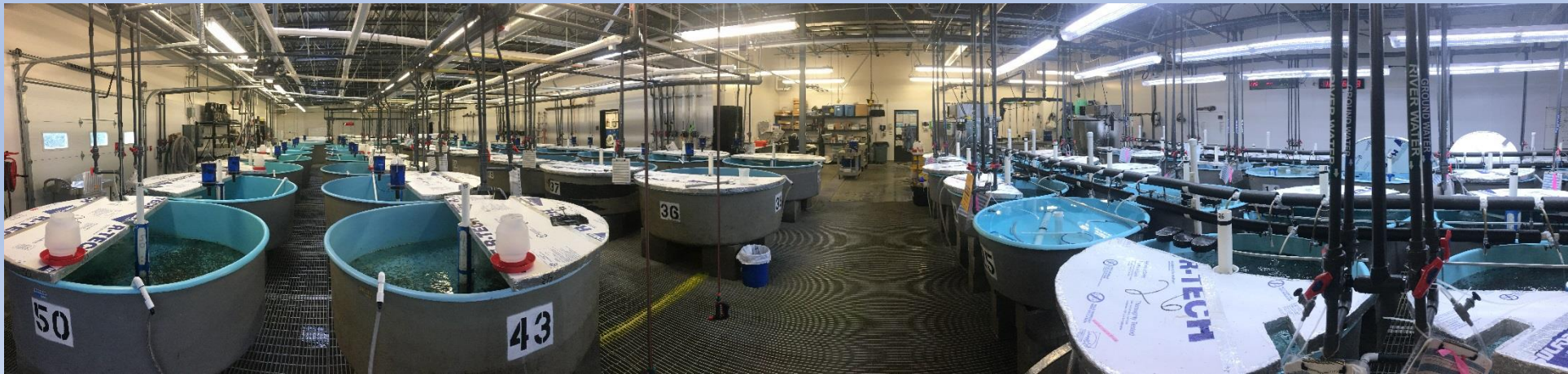
“Ward off extinction”

Balance aquaculture production with genetic management and ecosystem carrying capacity.

Restore a self-sustaining Sturgeon and Burbot populations in the Kootenai River Ecosystem.



1. Rebuild population abundance
2. *Experimental early life stage releases to investigate habitat dynamics*

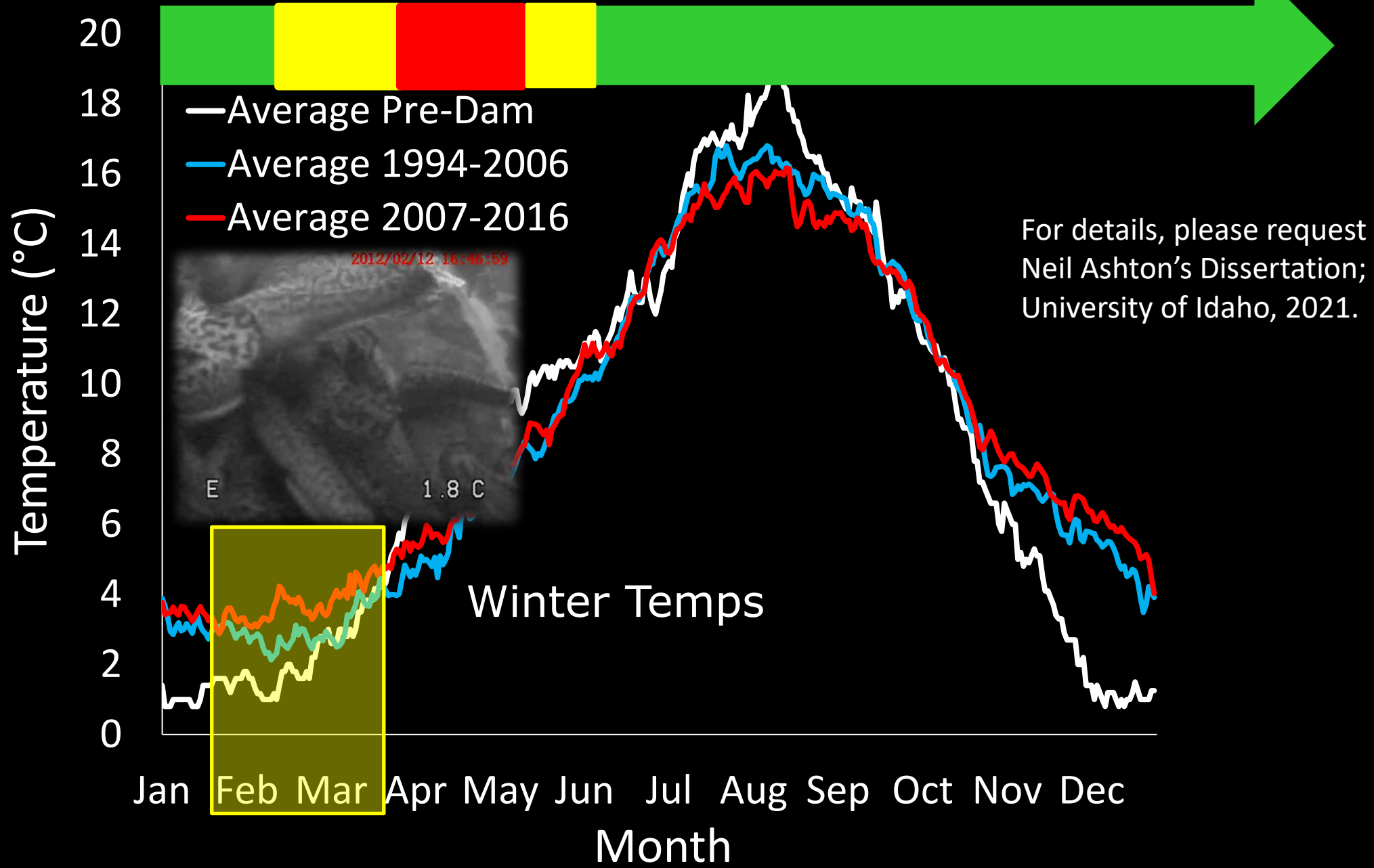




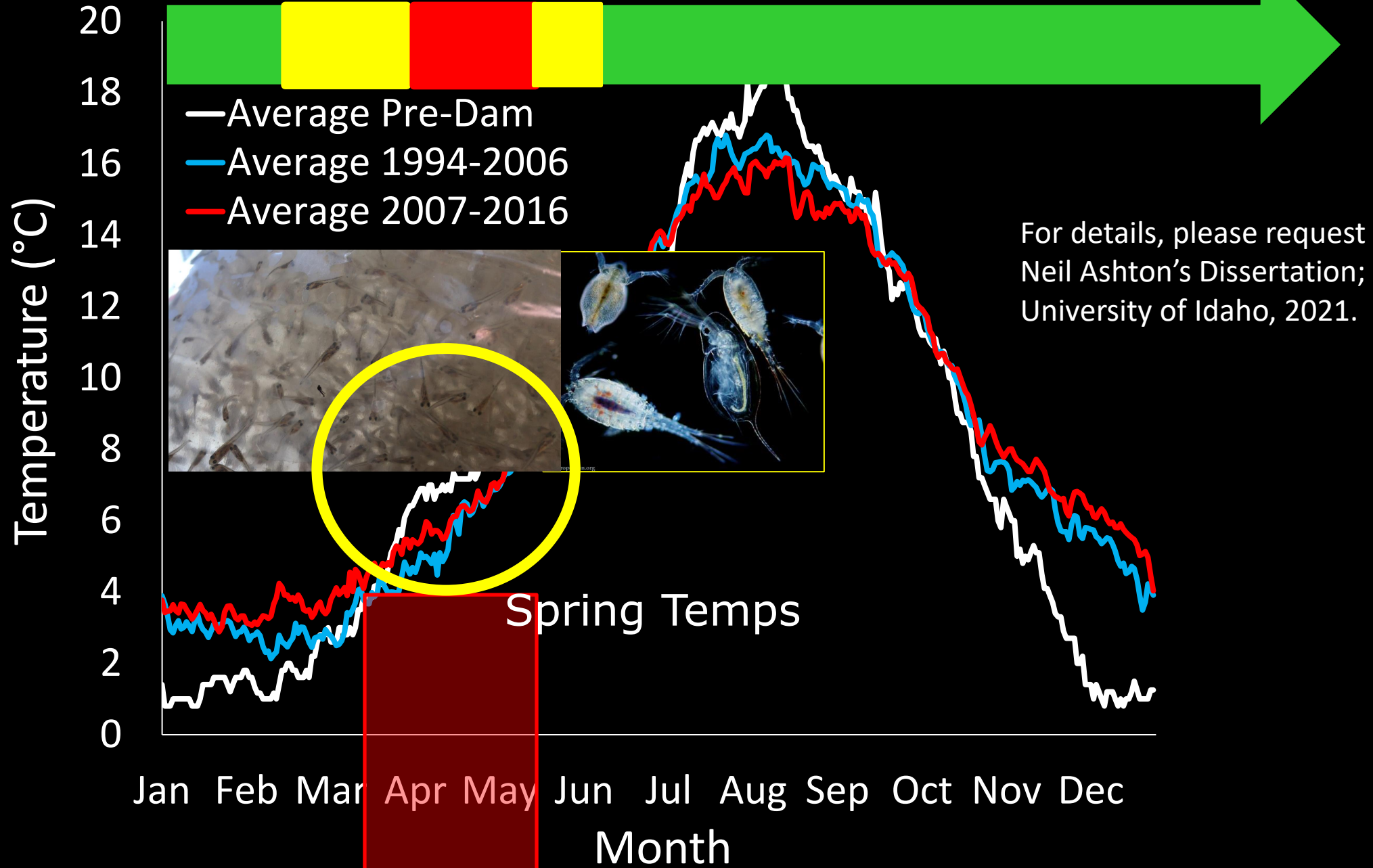
Picture of Kootenai Tribe of Idaho staff releasing larval burbot



FEB MAR APR MAY JUN JUL AUG SEP OCT



FEB MAR APR MAY JUN JUL AUG SEP OCT



NIMZ RANCH FLOODPLAIN RECONNECT



NIMZ RANCH RECONNECTION EXPERIMENTS 2018

RESULTS

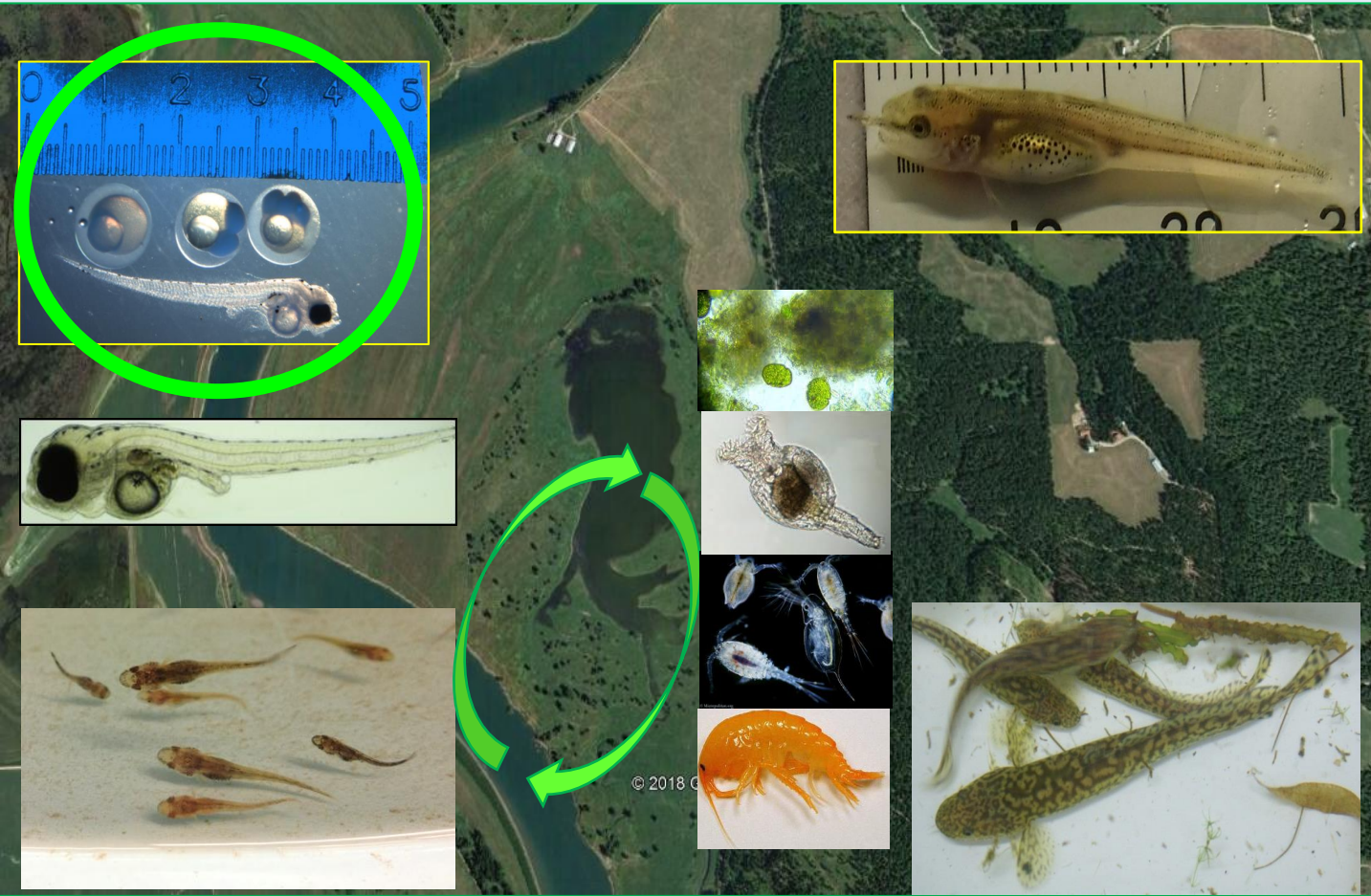
✓ Survival & Transport to river

Much higher than expected!

2021 Hatchery Broodstock:

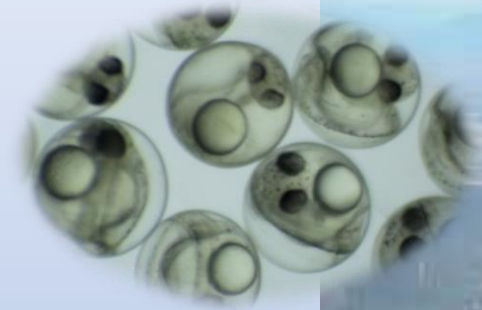
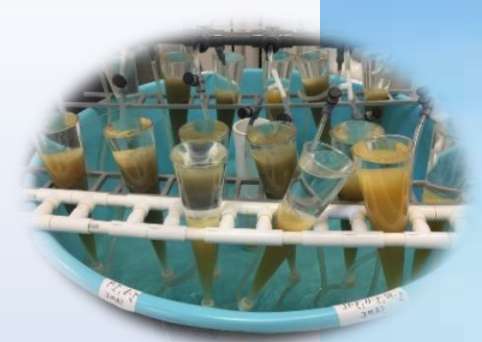
* 40% (100 of 240 adults) are assigned by PBT back to.....

NIMZ RANCH 2018 Releases
Pre-feeding larvae dominate



* KTOI Conservation Aquaculture and Wildlife Mitigation Programs collaborating with IDFG and IDFG Eagle Genetics Lab

Future Habitat Solutions



Late Winter / Spring Water Management





Late Winter / Spring Water Management

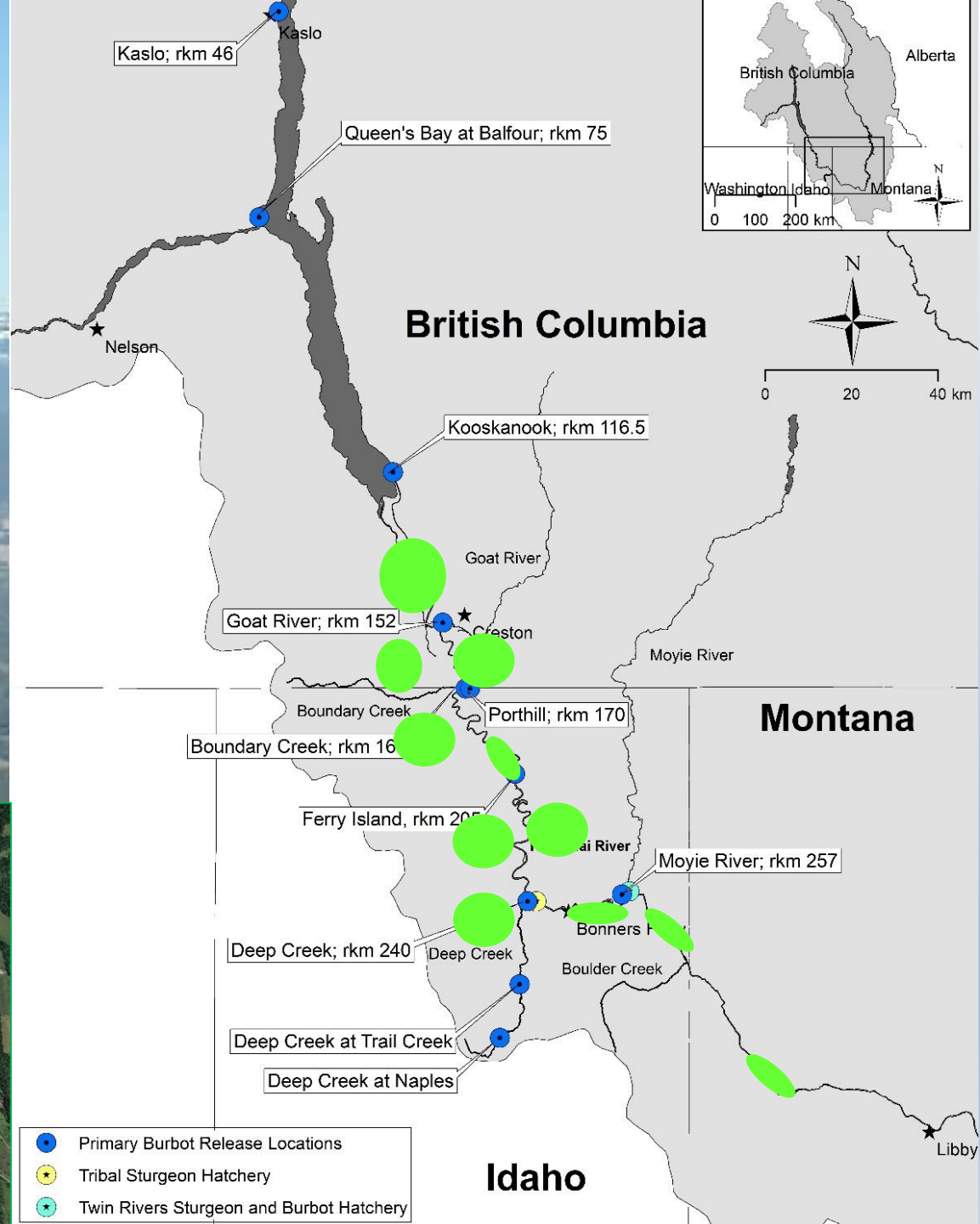
- ✓ **Libby Dam Discharge & Spring Freshets**
- ✓ **Kootenay Lake Water Management**



Since 1890's.....

- > 100,000 acres of floodplain disconnected.
- 60,000 acres of wetlands converted.

Habitat Restoration Programs / Targeted Actions taking place to reverse this condition.



HABITAT,



HABITAT, HABITAT,



**HABITAT,
HABITAT,
HABITAT**





Spring / Early Summer Water Management

- ✓ **Libby Dam Discharge & Spring Freshets**
- ✓ **Kootenay Lake Water Management**

Jose Ponce, KTOI Hatchery Manager



Dan Aitken, KTOI Sturgeon Technician



KTOI Staff Preparing Female



Mark Elliston, KTOI Technician



Adaptive Management

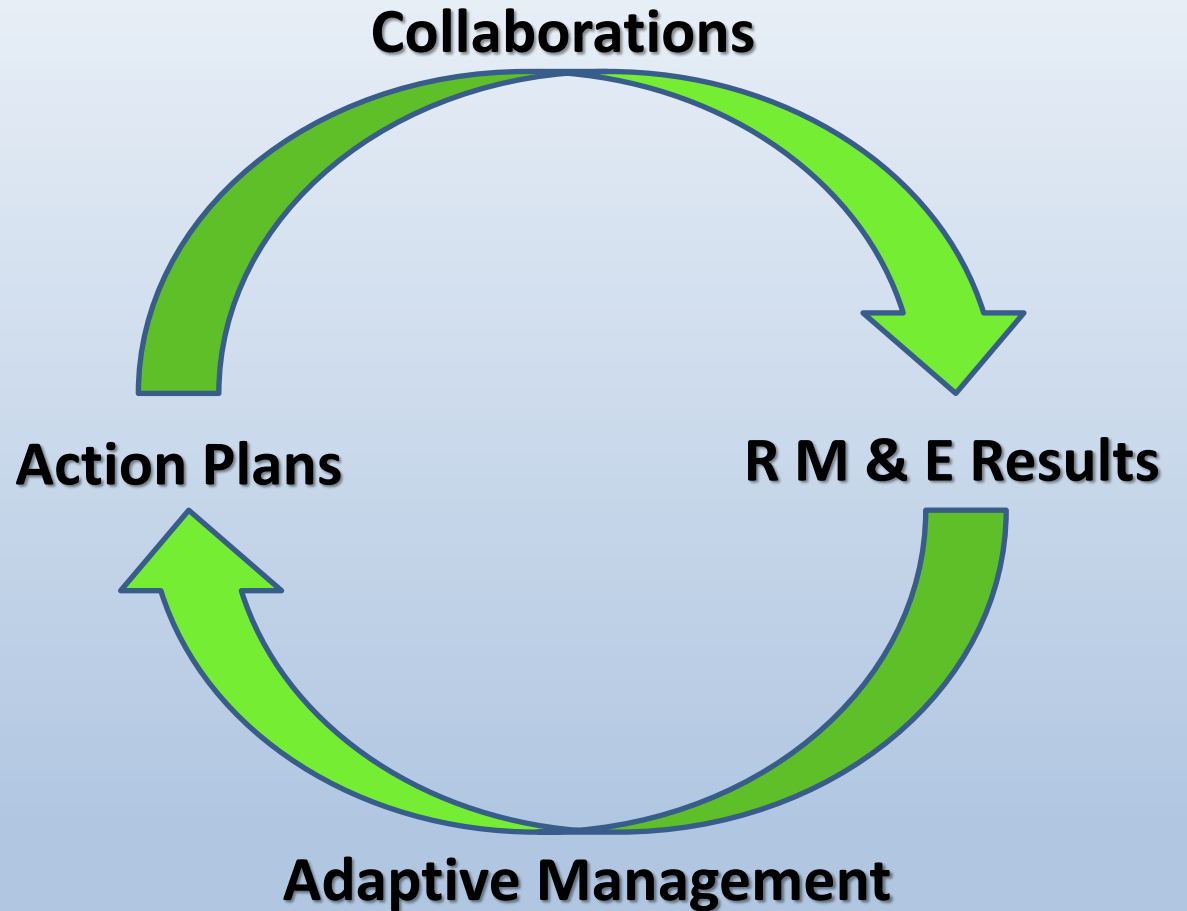


Diagrams created by Alison Squier, Professional Facilitator

Learning Opportunities

Contributing Programs

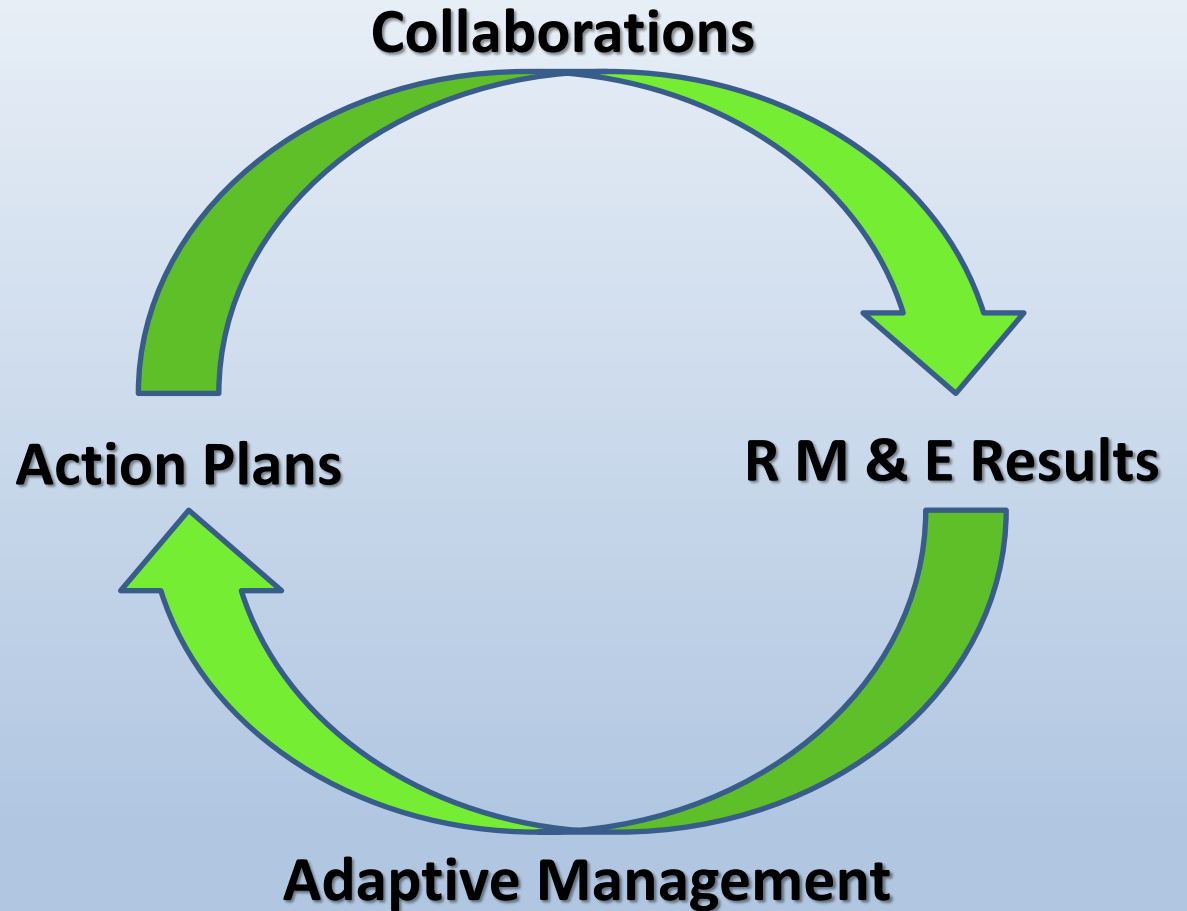
- ✓ Conservation Aquaculture
- ✓ Research, Monitoring and Evaluation
- ✓ Habitat Restoration
- ✓ Nutrient Enhancement
- ✓ Terrestrial & Riparian / Wildlife
- ✓ Contaminants Monitoring



Learning Opportunities

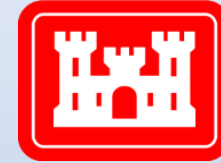
Contributing Programs

- ✓ Conservation Aquaculture
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- ✓ Habitat Restoration
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- ✓ Terrestrial & Riparian / Wildlife



Considering operational priorities and the needs of modern society

Collaboration!



We thank Bonneville Power Administration &
Northwest Power and Conservation Council



Committment!