

2014 Chief Joseph Hatchery Program
Annual Program Review

GENETICS, TAG - MARK PROGRAM (EDNA, PBT)

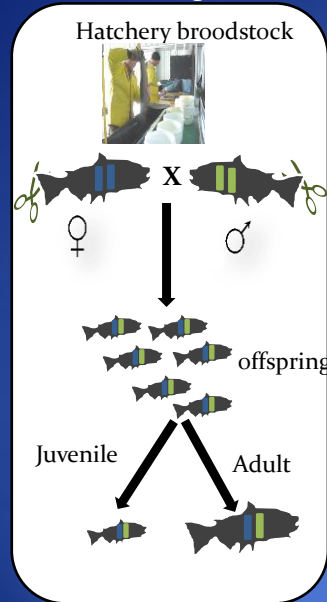
Matthew B. Laramie, USGS/CCT

2013 Update

- Environmental DNA project
 - Developed molecular assay to detect Chinook eDNA
 - High detection rates throughout Okanogan & Methow
 - Manuscript *submitted* Feb 2014 (*Biological Conservation*, Special Issue)
 - Best Practices manuscript *in prep.* (*Conservation Biology*)

What is parentage based tagging (PBT)?

Genetic tags (PBT)



- Genetic tagging of hatchery broodstock = can identify hatchery of origin and age for ANY offspring produced

- Passive mark (no handling of juveniles)

- Nearly 100% tagging rate of hatchery fish

- Eliminates issues with tag loss, tag detection, handling mortality

- Non-lethal sample to recover tag from offspring

- Stock contribution to various fisheries
- Survival trends
- Escapement estimates
- Origin of strays and kelts

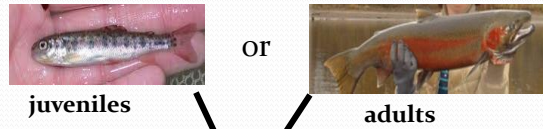
**Slide courtesy of CRITFC*

2014 Parentage-based tagging Program (PBT)

- Based on genetic samples, can assign/assess*:
 - Genetic diversity
 - Reproductive success/heritability of specific traits
 - Rearing treatment
 - Release strategy
 - Incubation tray

**With appropriate record keeping*

Sampling PBT-tagged offspring



juveniles

adults

Non-lethal
tissue
sample

Age Hatchery Parents

BY2008



**Slide courtesy of CRITFC*

2014 Parentage-based tagging Program (PBT)

- Okanogan sampling (2013):
 - Collected 691 Chinook samples
 - Missed spring Chinook sampling (?)

2014 Parentage-based tagging Program (PBT)

- Future sampling strategy:
 - Collect/archive tissue samples (tail punch)
 - GOAL: 100% of hatchery spawned adults + naturally spawned adults (% of population?)
 - Samples air dried (Whatman sheets = easy storage/shipping)
 - Required data: gender, spawn date
 - Optional data: length, mass, and... (more the better)

2014 Parentage-based tagging Program (PBT)

- CRITFC currently funded only for Snake River basin Chinook (sp., su/fa.) & steelhead
- Labs:
 - CRITFC, Hagerman Fish Culture Experiment Station (Hagerman, ID)
 - IDFG, Eagle Fish Genetics Laboratory (Eagle, ID)
 - USGS, Snake River Field Station Genetics Laboratory (Boise, ID)

2014 Parentage-based tagging Program (PBT)

- If/when funding is secured, CRITFC can analyze samples and establish genetic baseline
 - *even if we did nothing more than provide samples, we could use their baseline for future studies

2014 Parentage-based tagging Program (PBT)

- Further considerations:
 - Database development
 - Data availability (turnaround time vs. CWT)
 - Coordination with other agencies & hatcheries
 - Currently (2013) all hatcheries above Bonneville Dam collecting/archiving tissues for PBT

2014 Parentage-based tagging Program (PBT)

- CRITFC currently working on cost-comparison study (vs. coded wire tagging)
- How can we best use PBT? (data gaps?, current limitations?, research Q's?)