Session C6- Restoring habitat, improving passage and implementing hatchery reform in the Klickitat Subbasin: a Yakama tribal approach

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Restoring Habitat, Improving Passage and Implementing Hatchery Reform in the Klickitat Subbasin

– a Yakama Tribal Approach

Fish Passage Conference 2011
Amherst, Massachusetts

Bill Sharp, Research Scientist
Yakama Nation Fisheries – YKFP
Presentation Outline:

Tribal Perspective to Resource Management

Yakama Nation Fisheries Program

Klickitat Subbasin Activities:

• Prioritized Habitat Actions
• Passage Improvements
• Hatchery Reforms
The Yakama People - keeping tradition alive
Policy Framework Guiding
Yakama Nation Fisheries Program

Honor, Protect, Restore

TREATY of 1855

ARTICLE 3.

. . . . “The exclusive right of taking fish in all the streams, where running through or bordering said reservation, is further secured to said confederated tribes and bands of Indians, as also the right of taking fish at all usual and accustomed places . . . .”
Policy Framework Guiding Klickitat Subbasin Actions

**NOAA’s Mitchell 1938, EIS – late 2011**
First federal response to declining Columbia Basin runs
EIS Hatchery Operation/Production affects on listed species

**US v OREGON 1974:**
1974 tribes have an absolute right to Columbia River
fishery and thus are entitled to a fair share of the fish

**Northwest Power Act 1980:**
Address and begin to mitigate for impacts of hydroelectric
operation on Fish & Wildlife

**Fish Accord Agreement 2008:**
Secured long term funding for hatchery & habitat actions
Scientific Framework Guiding Klickitat Hatchery Reforms

Yakima/Klickitat Fisheries Project (1982):
Cle Elum Supplementation & Research Facility scientific findings used to guide Columbia Basin Hatchery Reform.

Hatchery Scientific Review Group:
Design and operate hatchery programs in a scientifically defensible manner.

Clear, specific, quantifiable harvest and conservation goals for natural & hatchery populations.

Monitor, evaluate and adaptively manage hatchery programs.
Location of the Klickitat Basin and the Columbia Gorge Province in Washington and Oregon
Primary Monitoring Activities

- Spawner surveys (reid counts)
- Adult monitoring at Lyle Falls Fishway
- Juvenile outmigration monitoring (rotary screw traps)
- Juvenile and resident salmonid population surveys
- Biological/Demographic sampling:
  - Scale sampling
  - Genetic sampling
  - Pathogen sampling
Klickitat Watershed Enhancement Project

Identify & Prioritize Restoration Reaches.
Protect, Restore, and Enhance Priority Reaches to Increase Riparian, Wetland and Stream Habitat Values.

Project Partners:
Washington Dept. Fish & Wildlife
Mid-Columbia RFEG
Columbia Land Trust
Washington Dept. of Natural Resources
Yakama Nation Water Program
Washington State Parks & Recreation
Multiple Conservation District
BIA Forestry and BIA Range
private individuals
Segment 7.13

Constructed floodplain inundated at ~2-year recurrence flow (Jan 2011)
Castile Falls Monitoring Facility

Passage Improvements Completed

- 2004 – 2005
- 55 Miles of High Quality Habitat
- Reduced Fishway O&M

Monitoring Facility

- Digital Imagery & PIT Detection
Castile Falls Fish Passage

Passage Improvements 2004 – 2005
Entrance Velocity 4-8 ft/sec.
Depth of Entrance 2-8 ft.
Head Diff between pools ~1 ft
Max velocity in slot weirs 8 ft./sec.
Klickitat Spring Chinook Redd Counts above Castile Falls, 1989-2010

Improvements at non-functioning Castile Falls fish ladders completed in 2005
Lyle Falls Fishway #5 Passage & Monitoring Facility

- Construction Underway
- R,M&E Facility
- Meet NOAA passage criteria
- Brood collection
- Lamprey passage
- 90+ highly skilled jobs
Fishway Exit & Water Intake

- Nine 10’ Traveling Screens
- Hydraulically Driven motors, 2000 psi
- High pressures wash, 120 psi
- Air burst, 120 psi
- Screen water for operation
Adult Transportation Channel
Auxiliary Water Line

- 350’ long
- PIT Detection Array
- 110 cfs Aux. Water
Fish Lift & Mechanical Crowder

- 56,000 gallon reservoir
- Two 40 hp pumps
- Water-to-water
- 20,000 gallons/lift
- ~ 10 minute fill time
Adult Entrance & Work Up Facility & Eelway
Klickitat Hatchery - Facility Transition

- Transfer operation of Mitchell Act facilities from WDFW to the Yakama Nation.

- Klickitat Hatchery
- Castile Falls Fishway
- Lyle Falls Fishway
Hatchery Reform Basics:

- Proper Broodstock Collection
- Optimal Rearing Densities
- Natural Rearing Techniques
- Volitional Release
Klickitat River Anadromous Species

Native Stocks:
- I. Spring Chinook
- II. Steelhead

Introduced Stocks:
- I. Fall Chinook
- II. Coho

- All stocks have existing artificial (hatchery) production
  - Programs designed for harvest augmentation
Klickitat Subbasin Hatchery Production & Reform Efforts

Spring Chinook
- 600K yearling smolt release
- Integrated Program
- 800K yearling smolt release

Summer Steelhead
- 100K Skamania direct plants
- 120K from local brood
- 70K conservation program

Fall Chinook (URB) LWS NFH
- 4M sub-yearling smolt
- 2M/2M sub-yearling smolt from local brood

Coho Lewis River Hatchery
- 1.2M yearling smolt release
- 2.5M Washougal direct plants
- 1M sub-yearling smolt from local brood

- Klickitat Hatchery (Rm 43)
- Wahkiacus hatchery (Rm 17)
- Castile Falls (Rm 60.7)
- Lyle Falls adult trap
Model Results: Klickitat Spring Chinook

Total Runsize to Columbia River Mouth

- Observed: 2524
- Current: Modeled: 2496
- Future: Modeled: 7022

Runsize Scenario
- Total Runsize to Columbia River Mouth
- Spring Chinook

Klickitat Spring Chinook: Natural Escapement

- Observed: 300-350
- Current: Modeled: 319
- Future: Modeled: 877

Runsize Scenario
- Spring Chinook

Tribal Harvest (Zone 6 & Klickitat Terminal Fisheries)

- Observed: 1079
- Current: Modeled: 996
- Future: Modeled: 2310

Runsize Scenario
- Spring Chinook
Reconditioning Program

- Most (>90%) are females
- Held and fed for 6-8 months
- Released in mid-late October (beginning of upstream migration peak)
- Select own mates, where to spawn, when to spawn

Summary: Reconditioning vs In-River Migration
Average 4-Fold Increase in Repeat Spawners

- RC Kelts Released
- RC Kelts to Spawning Grounds
- Left In River
Acclimation – Bring Fish Back to Historic Habitats

Example: Natural acclimation of hatchery coho
Summary

- **Construction Projects Wrap Up:**
  - Castile Falls Monitoring Station – Summer 2011
  - Lyle Fishway Passage/Monitoring Project – Summer 2011

- **EIS & Klickitat Master Plan Underway:**
  - Draft – Spring 2011
  - BPA & YN Updating NPCC (Step Review)
  - Final – Fall 2011

- **To Do List:**
  - Wahkiacus Hatchery Funding
  - Advance Engineering Design
Questions
ykfp.org/klickitat

Project Funding:
BPA
NOAA
Yakama Nation