
WA/BC AFS: 20 March 2018

Colville Confederated Tribes
Casey Baldwin: Sr. Research Scientist
Support, funding, and credit

Additional credit to:
Kirk Truscott- Anadromous Division Mngr.
Pat Phillips- former CJH Manager
Mike Rayton- Selective Harvest Subdivision Lead
Andrea Pearl- CJH M&E Lead Biologist
Randy Friedlander-CCT F&W Director
Joe Peone- Former CCT F&W Director
Jerry Marco- Retired Anadromous Div. Mngr.
Steve Smith- Consultant
D.J. Warren and Associates, Inc.
Lars Mobrand-Consultant
Many others…….
Overview

- Hatchery reform principles (general)
- CJH production details and approach
- Harvest and hatchery integration
- Population performance
Hatchery Reform Principles

Via the HSRG (Hatchery Scientific Review Group) http://hatcheryreform.us

**HSRG Summary Conclusions:**

- Manage hatchery broodstocks to achieve proper genetic integration with, or segregation from, natural populations;
- Promote local adaptation of natural and hatchery populations;
- Minimize adverse ecological interactions between hatchery- and natural-origin fish;
- Minimize effects of hatchery facilities on the ecosystem; and
- Maximize survival of hatchery fish.
The Purpose of the CJH Program is to:

- Increase Chinook salmon harvest consistent with the natural production goals
- Support re-colonization of habitat

- Summer/fall Chinook
- Spring Chinook
The Goals for Okanogan Basin Summer-Fall Chinook Population:

Conservation or Natural Production Goals:

- At least 7,500 total spawners and 5,250 natural origin spawners
- Increase temporal and spatial diversity of spawning/rearing
- High PNI (>0.67), low pHOS (<0.3) so that the natural environment is driving adaptation

Program size:

- Segregated (up to 900k smolts)
- Integrated (up to 1.1 M smolts)
Timeline

- **1989-present**: (Similkameen Pond program) (PUD mitigation)
- **2001**: Began planning and NPCC/BPA processes for CJH
  - Several HSRG members on the planning team
- **2008**: Began testing purse seine MSF
  - HGMP approved
- **2010**: Testing ‘local’ brood collection (purse seine)
  - NPCC/BPA 3 step process complete, began construction
- **2012**: 100% local brood collection
- **2013**: Construction complete/ribbon cutting
  - First official CJH brood collection
- **2014**: First release of segregated subyearlings from CJH
- **2017**: First year of adult returns (4 yr olds)
Summer / fall Chinook

Integrated
800k yearlings
300k subyearlings

Mid-river acclimation sites added to spread out spawning and increase use of under-utilized potential habitat in lower reaches

Segregated
500k yearlings &
400k sub-yearlings
Key program change:
Broodstock collection location

New program collects fish at the mouth of the Okanogan and in the Okanogan

Old program used MeOk composite from Wells Dam
Broodstock Collection

The Dream Catcher
Brood collection and mark-selective fishing

Natural origin fish are collected for brood or released, hatchery origin fish are collected for brood or harvested.
Okanogan Adult Fish Weir
Integrated Program
pNOB Goal: 30-100% ; 5 yr mean = 89%

Segregated Program

- Stepping stone, uses returns from the integrated program. (~75-80%)
Biological Targets
(5 yr running mean)

- > 0.67 PNI
- < 0.30 pHOS
- > 5,250 NOS (>7500 total spawners)

Or else?
- More aggressive/additional MSF
- The integrated program shrinks or ceases
  - < 2,000 NOS the brood collection is reduced
  - 800 NOS = no integrated program
Tribal purse seine, tangle nets, hoop and dip nets, hook and line

Adipose fin clip allows for release of natural origin fish and harvest of hatchery fish
Sport fishery transitioned into mark-selective as CJH came online

- 200?-2010: 2 adult salmon per day
- 2011-2012: 3 total, only 1 wild
- 2013-2016: 3 hatchery only
- 2017: Started out hatchery only then added 1 wild mid-season
Combined Terminal Fisheries
2011-2017

Released > 25,000 wild Chinook for spawning

Harvested > 20,000 hatchery fish to reduce pHOS
Recent Performance (abundance, diversity)
Population Performance

Natural Spawning Escapement

- Escapement
- Natural Origin Spawners
- Hatchery Origin Spawners
- NOR escapement objective
- Total escapement objective
Spatial distribution,

2017 compared to avg
Spatial Distribution (Omak pond) homing fidelity

![Map showing spatial distribution and estimated spawners]

- Estimated spawners for Omak Pond Origin:
  - 01: [Value]
  - 02: [Value]
  - 03: [Value]
  - 04: [Value]
  - 05: [Value]
  - 06: [Value]
  - S1: [Value]
  - S2: [Value]

- Estimated spawners for Similkameen Pond Origin:
  - 01: [Value]
  - 02: [Value]
  - 03: [Value]
  - 04: [Value]
  - 05: [Value]
  - 06: [Value]
  - S1: [Value]
  - S2: [Value]
Conclusions: CJH-Hatchery Reform Principles

How will the CCT and co-managers achieve it?

- **Segregated program for harvest**
  - Physically and hydraulically segregated terminal location (Columbia River)
  - Minimize stray rate to the natural population (< 5% of spawner composition)
  - Uniquely marked (ad-clip, no wire)
  - Minimal use of natural origin fish for broodstock
    - uses 1st generation returns from the integrated program

- **Integrated program for harvest and conservation**
  - There must be at least 2,000 wild spawners production will be reduced
  - At less than 800 wild spawners the production is 0
  - Change brood collection points and maintain high % wild fish in broodstock (89% pNOB)
  - Low % hatchery fish on spawning grounds (<20% pHOS)
  - The RIVER has the majority of influence on adaptation, NOT the HATCHERY
“The regulation of the times, methods, and apparatus of the fisheries should be such as to assure the largest opportunity practicable for reproduction under natural conditions.”

“Artificial propagation should be invoked as an aid and not as a substitute for reproduction under natural conditions”

Marshall McDonald 1894
U.S. Commissioner of Fish and Fisheries
Extra slides
Terminal Sport Fishery  
*(Catch area 545 Wells Dam to CJD)*

<table>
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<th>Year</th>
<th>Natural-origin fish released</th>
<th>Hatchery-origin fish harvested</th>
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<tr>
<td>Year</td>
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