Lyons Ferry Hatchery and Production of Snake River Fall Chinook: A Qualified Success Story.

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Washington Department of Fish and Wildlife
SPECIAL REPORT

LOWER SNAKE RIVER
FISH AND WILDLIFE
COMPENSATION PLAN

Lower Snake River,
Washington and Idaho

U. S. ARMY ENGINEER DISTRICT, WALLA WALLA, WASHINGTON
JUNE 1975
Lower Snake River Fish and Wildlife Compensation Plan - 1976

- **Fall Chinook**
  - 18,300 adults/year
- **Tucannon Spring Chinook**
  - 1,132 adults/year to the river
- **Summer Steelhead**
  - 4,656 adults/year to project rivers
- **In-place and in-kind (genetic integrity)**
- **Resident fish – fishing opportunity**
  - 67,500 angler days
LFH Fall Chinook Production Goals
(18,300 adults)

• 9.16 million subyearling smolts (101,880 lbs)
  – about 90 fpp (80 mm)
  – expected smolt-to-adult return (SAR) of 0.2%
• Idaho Power Co. mitigation for Hells Canyon Complex
  – for 1.3 million eyed eggs
  – due after LFH reached 80% of capacity
• Program to be built from Endemic Snake Chinook
Snake River Fall Chinook Salmon Population and ESU Structure

- One remaining population
  - Lyons Ferry Hatchery genetics very similar to natural-origin (endemic brood program)
  - Reduced distribution within assessable habitat

- Two extinct populations
  - Marsing Reach
  - Salmon Falls
Fall Chinook Egg Bank Program

Goals

• To maintain the population through artificial propagation until LFH could become operational.
• Accelerate LFH startup by having multiple brood sources.
• To monitor and maintain the genetic integrity of the stock.
• Involved – NMFS, USFWS, WDFW (Old WDF)
Sources of Broodstock for Lyons Ferry Hatchery During the First 4 Years
Stock Composition at Lyons Ferry based on CWT expansions
• All 1989 brood juveniles were marked with CWT or BWT and released as subyearlings, and would not be used for broodstock.

• No more incorporation of wild (unmarked) fish into broodstock.

• Began trapping at LGR Dam in 1990 to:
  – reduce strays spawning naturally.
  – estimate stray rate at LGR.
  – supplement broodstock for LFH.

• This Action moved Fall Chinook into a more collaborative forum that required better co-manager involvement.
Co-Management History

• NPT initiates a fall Chinook study in the lower Clearwater – 1988
• NPT formulates a plan for the construction and operation of NPT Hatchery – cir. 1988
• Numerous research projects in region prompts interested parties to initiate fall Chinook Technical meetings to improve coordination – cir. 1991.
• Snake River Chinook listed under ESA in 1992 – Federal co-managers get involved.
Co-Management History
(continued)

• NPT envisions modified LFH fall Chinook program by addition of 3 FCAP facilities above LGR Dam – cir. 1994.

• Fall Chinook Technical coordination meetings become regular and biannual (Prior to this time, most “coordination” was conducted under the US v OR forum).

• FCAP facilities begin operation with fish from LFH - 1996
Co-Management History (continued)

• Cooperative research initiated to address issues of adult returns (yearling and subyearling performance), straying, and spawning ground survey refinement – circ. 1996.

• Co-managers agree on the need for a Snake basin Chinook management plan. Believe the plan can affect decisions regarding management under ESA – circ. 2002.

• NPTH begins operation – 2003.
Co-Management Success

- Completion of a draft Snake River Hatchery Management Plan detailing production priorities, broodstock management, disease management, etc. (Cooperators = WDFW, NPT, CTUIR, USFWS, IDFG, IPC, NOAA, ODFW)

- Result – Draft presented in *US v OR*, and production priorities adopted for long term implementation.
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<thead>
<tr>
<th>Priority</th>
<th>Rearing Facility</th>
<th>Number</th>
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<td>4</td>
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<td>Direct stream evaluation Near Captain John Rapids</td>
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</table>

**TOTAL**

- **Yearlings**: 900,000
- **Subyearlings**: 3,528,000
Co-Management Success

• Adoption of a consolidated basin wide marking plan for hatchery production (WDFW – NPT – IDFG – IPC – with buy off by NOAA Fisheries)

• Result – significant improvement in ability to reconstruct the run of Chinook that escape above LGD to spawn.
Estimated Contributions of Fall Chinook Adult Returns to Lower Granite Dam, 1975-2006

Chinook listed under ESA

Original chart – Jay Hesse
### Management Actions Past and Present

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<th>Past</th>
<th>Present</th>
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<tr>
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<tr>
<td>Harvest</td>
<td>Reduction in Take</td>
<td>Reduction in Take</td>
</tr>
</tbody>
</table>

* Slide Courtesy of Jay Hesse and Billy Connor*
## Cooperative and Joint Management Effort

| Hatcheries | Lower Snake River Compensation Plan | WDFW  
NPT  
IPC  
CTUIR  
ODFW  
IDFG |
|------------|------------------------------------|------|
|            | BPA/NPCC  
IPC  |

| Monitoring and Evaluation | Lower Snake River Compensation Plan  
BPA/NPCC  
BLM  
IPC  
COE  
PSC (Southern Boundry Fund) | Redd Counts (NPT, IPC, USFWS, WDFW)  
Juvenile behavior and survival (USFWS, NPT, USGS, NOAA)  
Hatchery performance (WDFW, NPT)  
Run Reconstruction (WDFW, NPT, NOAA, UofI, USvOR-TAC) |
So after all the cooperative efforts to meet co-managers needs and desires, and building the program back from the brink of the 1989 stray disaster –

We are now successful – right??
Fall Chinook Returns to the Snake River: Natural and LSRCP Production

- **Fish**
- **LSRCP Goal**
- **Habitat Capacity**
- **TRT Interim**

Graph showing the following:
- 18,300 Fish in 1984
- 18,300 Fish in 1988
- 18,300 Fish in 1992
- 18,300 Fish in 1996
- 2,500 Fish in 2000
- 2,500 Fish in 2004
Things we now know

• Fall Chinook abundance has increased, but the extent to which that will be maintained and can be attributed to recent changes in management vs merely improvements in ocean productivity is uncertain.

• Hatchery releases upstream of Lower Granite Dam have increased the abundance of spawners in natal habitat, with assumed contribution to increased production.

• Adult abundance via annual run-reconstruction of fish to Lower Granite Dam. (Close to mitigation and minimum viability abundance!)
What we don’t know that could hurt us!

- The contribution/influence of hatchery fish on natural fish productivity
- The productive capacity of remaining habitat
- Whether hatchery programs are affecting the life history structure of the natural population
- Long-term viability of an ESU with only a single extant population spatial structure and diversity
What Qualifies our Success?

• Can hatcheries be part of the ESA solution, or will they continue to be considered part of the problem?

• Can Mitigation due to the States and Tribes be pursued in an ESA world? How do you implement potentially conflicting Congressional Mandates?

• Collaborative Approach is the only way to eventually answer these questions.
Contributors

• Jay Hesse – NPT
• Bill Arnsberg – NPT
• Debbie Milks – WDFW
• Billy Connor - USFWS
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LOWER SNAKE RIVER
COMPENSATION PLAN
Hatchery Program

U.S. FISH & WILDLIFE
SERVICE

Bonneville
Power Administration
QUESTIONS?