Lyons Ferry Fish Hatchery - General Practices for rearing Fall Chinook Salmon

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WDFW, Lyons Ferry Fish Hatchery
Contents

- Trapping and Spawning
  - Who, What, When, Where and Why?
- Co-Managers
  - Priority of egg distribution
- Hatchery Issues
  - Rearing space, density and disease
Trapping

Trapping begins 1st week of September
Adults are collected at LFH and Lower Granite Dam (LGR)
LGR collection is alternated with Nez Perce Tribe (NPT)
Female distribution is key-
   LFH (70%) and NPT (30%)
Trapping cont’d

LFH trapping occurs daily

A mechanized system allows us to be “hands off” during the trapping process

Trapping continues until an appropriate number of fish are held to meet production goals
Spawning

Begins around the 20\textsuperscript{th} of October
Broken up into two days
  LFH and LGR
Usually lasting seven weeks
  \(< 7 \text{ weeks} = \text{misrepresent the run}\)
  \(> 7 \text{ weeks} = \text{growth issues (sub yearlings)}\)
Spawning cont’d

20 people involved in process

**Biologists and sci-techs**

Data and tag recovery, DNA and scale sampling

**Fish Health**

virology sampling (BKD, IHN, IPN, VHS)
Still spawning

Fish culturists

Handle the spawning activities

This year NOAA also

DNA and otoliths
Pre-Fertilization

Both male and females are identified by-
VIE (left red)
Unmarked/untagged
Ad only (few if any)
Stray (KO’d)
Maintain genetic integrity
Fertilization

Unless the left red VIE is present, all fish are considered unknown until the CWT is recovered and read.

No CWT and no clips is considered unmarked/untagged (wild).

Further scale and DNA samples are tested to verify this.
Let the gamete mixing begin!

Known left red males and females are mixed together

Same for the unmarked/untagged if milt is available, if unavailable other males can be used

Let me show you a picture
Volunteers

LF female  ➔ LF male  ➔ AD only male
AD only female  ➔ AD only male  ➔ LF male
unm/untag female  ➔ unm/untag male
wire tagged stray female  ➔ Kill outright
LOST tag (no VIE) female  ➔ LF male  ➔ AD only male

Incorporate jacks in broodstock up to 15%.
Split each LF male (not jacks) and hold to use for LGR day

CULLING FISH TO REDUCE STRAYS
Culling adults/jacks

at LFH (same protocol as 2006)

LGR

♀ female  ➔ LF male  ➔ AD only male
AD only female  ➔ AD only male  ➔ LF male
unm/untag female  ➔ unm/untag male (only time can use one)
wire tagged stray female  ➔ Kill outright
LOST tag (no VIE) female  ➔ LF male  ➔ AD only male

Incorporate jacks in broodstock up to 15%
Use Wild origin males based on PIT tag data
Reuse LF origin males as last resort.
Post-Fertilization

Fertilized eggs are sent to “dirty room”
Disinfected and water hardened in iodophor solution of 100ppm for one hour
Eggs are laid down individually in incubation trays (one female per tray)
Eggs can still be culled at this point depending on the data received back from DNA and scale sampling
During incubation

Virology results come back indicating various levels of BKD (ELISA)


Females with BL must be used for the yearling program

Eyed-eggs being shipped must come from BL or Low females

All remaining tested and untested females are the sub-yearling program.
During Incubation

Snake River Lab sends data to LFH regarding the results of origin.

After picking, the eggs are grouped together according to origin, ELISA results, and programs (yearlings vs. sub-yearlings).
The numbers of it all-

Egg-take goal is 4.9 million eggs

900,000 for the yearling program

1.8 million for the sub-yearling program

1,728,000 eyed-eggs shipped out to various co-managers
<table>
<thead>
<tr>
<th>Rearing Facility</th>
<th>Priority</th>
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</thead>
<tbody>
<tr>
<td>Lyons Ferry 900,000</td>
<td>1 – 4</td>
</tr>
<tr>
<td>Lyons Ferry 1.8 million</td>
<td>5-8,10,11</td>
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<tr>
<td>Oxbow 200,000</td>
<td>9</td>
</tr>
<tr>
<td>Umatilla 800,000</td>
<td>15 &amp; 17</td>
</tr>
<tr>
<td>DNFH/Irrigon 328,000</td>
<td>12 &amp; 14</td>
</tr>
<tr>
<td>Lyons Ferry*400,000</td>
<td>13 &amp; 16</td>
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* Raised at Irrigon
**Yearlings**

**LFH** 450,000 on-station release in April @ 10 FPP

225K AdCWT+VIE  225K CWT+VIE

**NPT** 450,000 reared at LFH to 12 FPP

Transferred to 3 acclimation sites in Feb/Mar

Each 150K group is marked 70K AdCWT and 80K CWT only

All CWT groups have distinct numbers
Sub-Yearlings

\underline{LFH}

200K On-station release \textit{@} 50 FPP
AdCWT

200K Direct stream plant \textit{@} 50 FPP
AdCWT

Plants occur in June
Sub-Yearlings

NPT

Reared at LFH to 75 FPP
Shipped to 3 acclimation sites in May
Captain John Rapids  500K
300,000 Unmarked
100,000 AdCWT
100,000 CWT Only
Sub-Yearlings

Big Canyon   500K
    Same as the Captain John group

Pittsburg Landing  400K
    200,000 Unmarked
    100,000 AdCWT
    100,000 CWT Only
Issues, What Issues?

**Water**

Well water is used throughout the hatchery
Constant 53 degrees F
Contains Manganese
Has caused Bacterial Gill Disease in the past
Issues, What Issues?

**Rearing Facilities**

- **28 raceways**: 10ft x 100ft x 2.8ft
- **5 raceways**: 10ft x 88.5ft x 3.5ft
- **2 adult ponds**: 18ft x 150ft x 4.3ft
- **2 adult ponds**: 21ft x 150ft x 4.3ft
- **1 “lake”**: 90ft x 1,100ft x 10ft
A few more issues

Ponding starts mid-Jan, fish are 1000 FPP, continues thru mid-Feb.

Densities do not exceed .08 on fish smaller than 100 FPP (lots of splitting).

Tagging on the subs starts the beginning of April (150 FPP).

Transfer to NPT 1st week of May at 75 FPP.
.....issues

We ship out the previous brood yearlings in Feb and Mar also.

Ponds are vacuumed weekly to reduce the risk of disease.

CV’s are taken to ensure everybody is getting their groceries.
Winding down

Summertime allows us to catch our breath
  Repair incubation trays
  Pressure wash raceways
Tagging the yearling groups begins in Sept, continuing thru Oct
AND THEN.....

It’s time to spawn again!!