Tucannon River
Steelhead Management
and Challenges from Overshoot
at Columbia and Snake River Dams

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Southeast Washington

- Columbia River
- Walla Walla River
- Touchet River
- Lyons Ferry FH
- LGO
- LGR
- Asotin Creek
- Grande Ronde River
- Tucannon FH
- Curl Lake AP

Oregon
Idaho
Hatchery Production

- **Lyons Ferry Stock (Harvest Mitigation for LSRCP)**
  - Out-of-Basin Stock
  - 1983-2010 (100K-160K Smolts Annually)
  - Release locations progressively moved downstream out of prime rearing areas of SPCH and SH for ESA concerns

- **Tucannon Stock (Conservation and Harvest for LSRCP)**
  - In-Basin Stock (derived from natural origin returns)
  - 2001-2013 (50K-75K Smolts) – Not marked for harvest, Upper basin release locations
  - 2014-Present
    - 50K (Conservation) – Not marked, Upper basin release
    - 50K-100K (Harvest) – Marked for harvest, Mid-basin release
Management Questions

What is the Status/Trend of Wild Origin Steelhead Returns?

Can we operate the Hatchery Program with limited impacts to the natural population?

Historical Monitoring

Adults

- Spawning Surveys **
- Adult Trapping at Tucannon FH **
- Fishery Creel Surveys

Juveniles

- Electrofishing
- Smolt Trapping
Adult Monitoring Efforts

Spawning Ground Surveys
1986 to 2010 - Unreliable
(Intermittent, poor conditions, limited survey areas for many years, H:W composition unknown)

Adult Trapping
Hatchery Trap to high in the basin
Floating Weirs - disabled by high spring flows
Redirection of Adult Monitoring Efforts

Increase PIT Tagging

Hatchery and Wild origin for estimating smolt-to-adult survival to the Snake River at Ice Harbor Dam

Addition of instream PIT Tag Array – 2005

+3 More in 2011
Tucannon Adult Steelhead Movements Based on PIT Tags
# Overshoot and Dispersion Based on Adult PIT Tag Detections

<table>
<thead>
<tr>
<th>Stock '05 - '16 Run Years</th>
<th># of PITs Detected at IHR Dam</th>
<th>Initial Overshoot Rate to LGR</th>
<th>Fallback Rate to Tucannon from LGR</th>
<th>% Total to Tucannon from IHR</th>
<th>% above LGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wild</td>
<td>378</td>
<td>64%</td>
<td>20%</td>
<td>40%</td>
<td>50%</td>
</tr>
<tr>
<td>Tucannon</td>
<td>1,127</td>
<td>63%</td>
<td>28%</td>
<td>46%</td>
<td>44%</td>
</tr>
<tr>
<td>Lyons Ferry</td>
<td>833</td>
<td>62%</td>
<td>21%</td>
<td>32%</td>
<td>48%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2,338</strong></td>
<td><strong>63%</strong></td>
<td><strong>24%</strong></td>
<td><strong>40%</strong></td>
<td><strong>46%</strong></td>
</tr>
</tbody>
</table>

Calculations based on detections only – Not adjusted by PIT Array efficiencies – Lower Tucannon River array efficiencies generally 80-95%
Escapement to Tucannon River
Based on Last Known PIT Detection

Spawn Year

Number of Fish Returning

- Hatchery (Stray)
- Hatchery (LFH-Tuc)
- Hatchery (Tucannon)
- Wild (Stray)
- Wild (Tucannon)
Spatial Distribution of Steelhead within Tucannon
2011 to 2016 Run Years

TFH
Adult Trap
(2008+)

MTR
Temp Trap
(2000-2007)

UTR

LTR

Snake River

Tucannon River
## Spatial Distribution of Steelhead within Tucannon
### 2011 to 2016 Run Years

<table>
<thead>
<tr>
<th>Source</th>
<th>Harvestable</th>
<th>Non-Harvestable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wild (Tucannon) N=92</td>
<td>68%</td>
<td>15%</td>
</tr>
<tr>
<td>Wild (Stray) N=69</td>
<td>16%</td>
<td>23%</td>
</tr>
<tr>
<td>Hatchery (Tuc Cons) N=188</td>
<td>14%</td>
<td>28%</td>
</tr>
<tr>
<td>Hatchery (Tuc Harv) N=21</td>
<td>38%</td>
<td>43%</td>
</tr>
<tr>
<td>Hatchery (LFH-Tuc) N=39</td>
<td>6%</td>
<td>44%</td>
</tr>
<tr>
<td>Hatchery (Stray) N=110</td>
<td>5%</td>
<td>17%</td>
</tr>
</tbody>
</table>

**Legend:**
- **TFH:** Adult Trap (2008+)
- **UTR:** Temp Trap (2000-2007)
- **MTR:** Non-Harvestable
- **LTR:** Harvestable
Where have all the anglers gone?
Fishery Changes

Number of Fish Harvested

Run Year

Last Release of LFH stock SH


0 200 400 600 800 1,000 1,200 1,400 1,600 1,800
Management Questions

What is the Status/Trend of Natural Steelhead Returns?
- Depressed (200-300/year)
- Losing ~40-50% to upstream locations

Can we operate the Hatchery Program with limited impacts to the natural population? – **Difficult to answer**
- Gaining ~40-50% from other natural populations (mainly Mid-C)
- Large # of hatchery fish from other locations (~1/2 of total return)
- Can we find a way to increase harvest when intended hatchery and stray hatchery fish are present?
- What’s the chance that some of the “other hatchery” programs will change in the future?
- Do we need an adult trap in the lower river for hatchery SH management? (3 other listed species in the basin)
Straying Natural and Hatchery Steelhead
into the Tucannon River (2009-2016)

Natural

Hatchery

Walla/Touchet  Mid C Tribs  + LGR
26%  46%  28%

Lyons Ferry  Up Col
27%  1%  25%  1%
Lyons Ferry Stock Hatchery Program

- Lyons Ferry
- LGO
- LMN
- Curl Lake
- AP
- IHR

160K Smolts Annually
SPCH ESA Listing
SH Survival Studies
Pending SH ESA Listing

2000 Endemic Program
LFH to 100K Smolts

2010 Last Release
Current Endemic Stock Hatchery Program

- **2000 - present**: Conservation - 50K
- **2011 - present**: Harvest - 100K

Locations:
- Columbia River
- Snake River
- LMN
- LGO
- TFH
- IHR