East Fork Owyhee River Retains the Capacity to Support Salmon and Steelhead Runs

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Mt. Hood Environmental
Acknowledgments

**Shoshone-Paiute Tribe**
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- Carol Perugini
- Dewey Thomas

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- Forrest Carpenter
- Kevin Ceder
- Phil Gaskill
Data Source Acknowledgments

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➢ Nevada Department of Wildlife
➢ Nevada Department of Water Resources
➢ Idaho Department of Water Resources
➢ Trout Unlimited
EF Owyhee Salmon and Steelhead Reintroduction
Habitat features influence fish production potential
The Unit Characteristic Method

- Observed Parr densities by unit type
- Unit Composition
  - Wood
  - Complexity
  - Depth
  - Substrate
  - Surface Area
  - Raw Capacity
- Reach
  - Alkalinity
  - Temp
  - % Fines
  - Turbidity
- Stream
  - Overwinter Survival
  - Smolt Capacity
• 3 Mainstem Reaches
• 5 Tributaries
• ~15% (12 Miles) of Total Habitat Area Surveyed
EF Owyhee River Average Daily Temperature 2013
Mainstem (19-20°C)

Tributaries (17-18°C)

Scalar Value

MWAT (deg C)
## Rearing Capacity

<table>
<thead>
<tr>
<th>Location</th>
<th>Redband/Steelhead</th>
<th>Spring Chinook</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mainstem 1</td>
<td>17,510</td>
<td>11,440</td>
</tr>
<tr>
<td>Mainstem 2</td>
<td>6,110</td>
<td>5,280</td>
</tr>
<tr>
<td>Mainstem 3</td>
<td>2,650</td>
<td>1,820</td>
</tr>
<tr>
<td>Skull</td>
<td>1,320</td>
<td>2,760</td>
</tr>
<tr>
<td>Slaughterhouse</td>
<td>190</td>
<td>490</td>
</tr>
<tr>
<td>Van Duzer</td>
<td>130</td>
<td>320</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>27,910</strong></td>
<td><strong>22,110</strong></td>
</tr>
</tbody>
</table>
Flow Influence on Habitat Conditions

Hogan and Church (1989)
Habitat Data

Hydraulic Model

UCM

Flow

Capacity

Graph showing the relationship between flow and capacity with UCM as the intermediate variable.
Flow Effects on Carrying Capacity

Redband Steelhead Rearing Capacity

- Capacity (1,000 parr)
- Flow (CFS)
- MWAT (deg C)
  - 16
  - 18
  - 20
  - 22

Mainstem 1
# Water Year Effects

<table>
<thead>
<tr>
<th></th>
<th>Wet Year</th>
<th>Dry Year (2013)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Redband/steelhead</td>
<td>Chinook</td>
</tr>
<tr>
<td>Mainstem</td>
<td>55,360</td>
<td>51,330</td>
</tr>
<tr>
<td>Tributaries</td>
<td>1,640</td>
<td>3,570</td>
</tr>
</tbody>
</table>

**Mainstem and Tributaries**

- **Wet Year**
  - Redband/steelhead: 55,360
  - Chinook: 51,330
- **Dry Year (2013)**
  - Redband/steelhead: 26,510
  - Chinook: 18,530
  - Tributaries: 1,640
  - Tributaries: 3,570
Habitat Limiting Factors

➢ High summer water temperature
➢ Low summer flow
➢ High volume of fine sediments
➢ Impaired water quality
➢ Passage impediments
Ongoing Research/Assessment

➢ Resident redband trout genetics
➢ Evidence of migratory life-histories
➢ Population abundance of native redband trout
➢ Continued temperature monitoring
➢ Tributary flow monitoring

Photo Credit: http://idahoalpinezone.com