Jun 26th, 4:30 PM - 5:30 PM

Concurrent Sessions C: Prioritization - Strategic Fish Passage Barrier Prioritization in the Tillamook - Nestucca Subbasin, Oregon

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Prioritizing Fish Passage Barrier Removal at the Subbasin-scale: A Strategy for the Tillamook-Nestucca Subbasin

Steve Pilson and Dan Shively, U.S. Fish and Wildlife Service

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USFS: Jim Capurso, Jason Wilcox
Oregon Fish Passage Task Force: Dave Heller
BLM: Al Doelker, Matt Walker
Nestucca-Neskowin Watershed Council: Alex Sifford

Invaluable Technical Expertise:
Jesse O‘Hanley, Duncan Hornby
Outline

• Background: Tillamook-Nestucca Fish Passage Partnership
• Barrier Analysis Methods and Assumptions
• Results
• Products/Conclusions
Tillamook-Nestucca Fish Passage Partnership

• Began with a mix of federal and state stakeholders
• Move away from business-as-usual approach
• Organize projects strategically and with landscape/population-level goals
• Utilize new techniques for prioritizing (e.g. O’Hanley & Tomberlin, 2005; O’Hanley, 2011)
Subbasin Setting
Goal

Determine where on the landscape fish passage restoration could make the most impact on fish populations. ("Optimize habitat gain")
Methods

General Approach:

• Build off existing local knowledge, datasets, and work
  – TEP Culvert Surveys
  – Oregon Fish Passage Barrier Database
  – Oregon Fish Habitat Distribution Layers
  – Local biologist knowledge
  – Extrapolate cost estimates from previous projects

• Run barrier data through an optimization model – Jesse O’Hanley’s APASS
APASS Inputs Needed

- **BARID & DSID** – Where are they, upstream/downstream relationship
- **CAND** – culverts, dams, tidegates vs. waterfalls
- **PASS** – how much of a barrier?
- **USHAB** – how much habitat is upstream to next barrier or end of anadromy?
- **COST** – how much would it cost to restore passage for juvenile salmonids?
Analysis

• To arrive at rankings, ran APASS in “batch mode,” letting it iteratively solve for best solution at cost increment, then arranged output in frequency order.
• Broke ties by ordering from downstream to up, and then by cost/mile.
• Did this for 3 tiers
  – Projects already planned (20)
  – Short-term investment package (66)
  – Long-term investment package (189)
Barriers
Results

• A rough guide to where and in what order restoration of fish passage should take place.
• Honors the work of local partners by respecting their already planned/initiated projects and recent prioritization of 63 culvert barriers as being most important to address
• Provides a way of quantifying progress at the subbasin scale, that of the two bays, or individual watersheds – Can we achieve population-level distribution goals?
Results – Whole Subbasin, Weighted Mileage

Cumulative Mileage Reconnected

Miles of Passage Restored

Amount Spent

Deferred projects

Planned projects

Long-term investment

Short-term investment package

Amount Spent

Millions

0.00

100.00

200.00

300.00

400.00

500.00

600.00

700.00

800.00

900.00

1000.00

1100.00

1200.00

1300.00

1400.00
Results – Whole Subbasin, Act. Mileage

Cumulative Mileage Reconnected

Miles of Passage Restored

Amount Spent

Millions
Population Level Results – Tillamook Bay System

Cumulative Mileage Reconnected

- Actual Mileage
- Weighted Mileage

Miles of Passage Restored

Amount Spent

Millions
## Trask River: Specific Results

### Cumulative Mileage Reconnected

<table>
<thead>
<tr>
<th>Site #</th>
<th>Road</th>
<th>Stream</th>
<th>Est. Cost</th>
<th>Upstream Habitat</th>
<th>Species Benefitted</th>
</tr>
</thead>
<tbody>
<tr>
<td>D4</td>
<td>NA</td>
<td>E Fk S Fk Trask R.</td>
<td>$500,000</td>
<td>20.9 mi</td>
<td>Co, SthdW, CCT</td>
</tr>
<tr>
<td>1402</td>
<td>S Fk Trask Rd</td>
<td>Unnamed Trib</td>
<td>$45,500</td>
<td>0.7 mi</td>
<td>Co, CCT</td>
</tr>
<tr>
<td>1448</td>
<td>E Fk Bypass</td>
<td>Bales Cr</td>
<td>$13,000</td>
<td>1.1 mi</td>
<td>CCT</td>
</tr>
<tr>
<td>1094</td>
<td>Brickyard Rd</td>
<td>Unnamed Trib</td>
<td>$357,500</td>
<td>10.5 mi</td>
<td>Co, SthdW, CCT</td>
</tr>
</tbody>
</table>

*Co = coho, ChF = fall Chinook, SthdW = winter steelhead, Chm = chum, CCT = coastal cutthroat trout*
Trask River: Specific Results

Barrier Removal Priorities
- ✭ Planned
- ✭ Package
- ✭ 50% Reconnection
- ◼ 80% Reconnection
- ◼ 90% Reconnection
- • Remaining Barriers
- --- TN_Obstructed_Streams

Trask River
Concerns/Caveats

“All models are wrong, but some are useful.” – George E.P. Box, statistician

- Not all barriers are equal, some may pass fish in most flows
- Stream mileage is not a substitute for amount of actual usable habitat for a species
- Costs are estimated and may vary
- Our prioritization is economics-based; other factors such as habitat quality, infrastructure condition, or socio-political considerations will likely be important
Conclusions

• This process/analysis yields several key benefits:
  – Understanding of Overall Context
  – Barrier-Specific Cost Estimates
  – Landscape-scale Roadmap for Reconnecting Habitat
  – Ability to develop an investment portfolio targeting species-specific population level goals

• This approach joins valuable on-the-ground work to its wider context in a way that will help in telling/selling the fish passage restoration story of the subbasin
Questions?

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