Interagency Fish Passage Steering Committee

Annual Report of Activities

John Hannon, USBR
Fish Passage Program Background

• Temperature related impacts expected to increase

• High elevation habitat potentially suitable for salmonid production exists above CVP dams
  – Potential refuge for cold water fish

Evaluate reintroduction of listed species upstream of Shasta, Folsom, and New Melones
# Steering Committee Membership

<table>
<thead>
<tr>
<th>Agency</th>
<th>Lead</th>
<th>Alternate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bureau of Reclamation</td>
<td>Mike Chotkowski</td>
<td>John Hannon</td>
</tr>
<tr>
<td>National Marine Fisheries Service</td>
<td>Jeff McLain</td>
<td>Garwin Yip</td>
</tr>
<tr>
<td>US Fish and Wildlife Service</td>
<td>Jim Smith</td>
<td>Donnie Ratcliff</td>
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<tr>
<td>Department of Fish and Game</td>
<td>Alice Low</td>
<td>George Heise</td>
</tr>
<tr>
<td>Department of Water Resources</td>
<td>Leslie Pierce</td>
<td>Randy Beckwith</td>
</tr>
<tr>
<td>US Forest Service</td>
<td>Mike Chapel</td>
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<tr>
<td>Academic member</td>
<td>Lisa Thompson</td>
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Fish Passage Actions – Near Term
2010 - 2016

• NF1. Form Interagency Fish Passage Steering Committee
• NF2. Evaluate Habitat Above Dams
• NF3. Fish Passage Pilot Plan
• NF4. Pilot Reintroduction Program – Includes 7 actions
• NF5. Comprehensive Fish Passage Report
Fish Passage Actions – Long-term
2016+ if determined feasible and desirable

• LF1. Long-term Funding and Support for the Interagency Fish Passage Steering Committee.

• Long-term fish passage program
  – LF2.1. Adult and Juvenile Fish Passage Facilities
  – LF2.2. Supplementation and Management Plan
  – LF2.3. Adult and Juvenile Release Locations and Facilities
  – LF2.4. Monitoring and Evaluation Plan
## Upstream Habitat (mainstems)

<table>
<thead>
<tr>
<th>Reservoir</th>
<th>River Mainstem</th>
<th>Full pool elevation</th>
<th>Stream miles from full pool to first definite known barrier</th>
<th>Elevation at base of barrier</th>
<th>Average gradient</th>
<th>Lake miles from dam to trib</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shasta</td>
<td>Sacramento</td>
<td>1,067’</td>
<td>37.4</td>
<td>3,100’</td>
<td>1.03%</td>
<td>21</td>
</tr>
<tr>
<td>Shasta</td>
<td>McCloud</td>
<td>1,067’</td>
<td>23.3</td>
<td>2,440’</td>
<td>1.12%</td>
<td>22.5</td>
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<tr>
<td>Shasta</td>
<td>Pit</td>
<td>1,067’</td>
<td>1.75*</td>
<td>~1,072’</td>
<td>0.05%</td>
<td>29</td>
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<tr>
<td>Folsom</td>
<td>American North/Middle</td>
<td>466’</td>
<td>5.6 to confluence</td>
<td>540’ @ confluence</td>
<td>0.25%</td>
<td>15</td>
</tr>
<tr>
<td>Folsom</td>
<td>North Fork American</td>
<td>540’ @ confluence</td>
<td>2.1</td>
<td>580’</td>
<td>0.36%</td>
<td>15</td>
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<tr>
<td>Folsom</td>
<td>Middle Fork American</td>
<td>540’ @ confluence</td>
<td>23.75</td>
<td>1,100’</td>
<td>0.41%</td>
<td>15</td>
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<tr>
<td>Folsom</td>
<td>South Fork American</td>
<td>466’</td>
<td>19.6</td>
<td>970’</td>
<td>0.49%</td>
<td>10</td>
</tr>
</tbody>
</table>
Activities to date

• Steering Committee formed
• First meeting in summer 2010
• Funding requested for FY 2012
• Upstream habitat evaluation subgroup formed
• Habitat evaluation goal and tasks identified
• Existing information collection ongoing
  – water temperatures, hydrographs, upstream dam operations, stream habitat survey data, fish barriers, access to the river/land ownership/contacts, fish population data
• Habitat evaluation reconnaissance above Shasta
Potential Abundance Tradeoffs Associated with Transporting Fish Above Dams

- **Equal Survival Above and Below Dams**
  - Expected Returns Above Dam
  - Expected Returns Below Dam

- **Lower Survival of Transported Fish**
  - Expected Returns Above Dam
  - Expected Returns Below Dam

- **Climate Impacts Below Dam**
  - Expected Returns Above Dam
  - Expected Returns Below Dam

Graphs show the relationship between the proportion of spawners transported and the adult return index, with different scenarios for survival and climate impacts.
Habitat Evaluation Goal

• Determine whether sufficient habitat exists upstream of Shasta and Folsom dams for a reasonable number of the target species to reproduce
  – Target species
    • Shasta = winter-run and spring-run Chinook
    • Folsom = steelhead
    • Recovery plan includes more
  – Minimum capacity number set at 1,000 adults in priority tributary
Habitat Evaluation Team Tasks

1. Check accessibility for people
2. Determine accessibility for fish
3. Locate and quantify spawning habitat and significant adult holding and rearing habitat patches.
4. Determine reaches with suitable temperatures.
5. Evaluate hydrograph suitability
6. Identify top priority tributary in each watershed.
Use Test Fish to Evaluate Suitability/Productivity of Habitat and capture/transport methods

- Likely fall-run Chinook in Shasta
- Capture, transport and release adults in top priority tributary stream
- Monitor spawning activity
- Estimate juvenile production
- Identify areas of juvenile concentration for volitional passage or collector site
Willamette BO juvenile collection design requirement document
• In-river
• In-reservoir
• At-dam

DWR compiling a white paper documenting technologies used or planned for upstream, through reservoir, and downstream fish passage at large dams

Willamette Downstream Fish Passage Design Requirements Report
Final Submittal
Contract W9127N-10-D-0002, T.O. 003

(Photos courtesy of Bonneville Power Administration)
American River

• American River steelhead almost entirely Nimbus Hatchery stock.
  – Nimbus Hatchery steelhead are not considered a part of the ESU

• RPA Action II.6.1
  – Genetic screening to determine most appropriate broodstock source for Nimbus
  – Study potential to replace Nimbus steelhead stock with more appropriate sources.
McCloud River Habitat

Moderate gradients

Largest Spawning Habitat Patch

Adult Holding Habitat
0.4% gradient between base of Shasta Dam and top of reservoir in McCloud Arm
~10 miles of McCloud R. provides temperatures suitable for winter-run incubation.
Upper Sacramento River Habitat

Spawning Habitat near Box Canyon Dam

Sacramento River – Potential Adult Holding

Cantara Loop reach

Railroads and highways parallel stream
Upper Sacramento River Habitat

Half-mile reach with springs entering

Shallow reaches in upper river
Reconnaissance Upstream of Shasta
Initial Impressions

• McCloud River
  – “Wilder” – high quality riparian habitat – accessibility challenges
  – Moderate gradients, large substrates
  – Offers cold water

• Sacramento River
  – Lower gradients, smaller substrates
  – Longer mainstem reach, higher elevations
  – Easy access
  – Need more water temperature data
Keswick Adult Trap
American River Potential Adult Collection and Release Sites

• North Fork/Middle Fork confluence

Nimbus Hatchery Weir and Adult Raceway
Questions?

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