ESA Recovery Plans for Columbia Basin Salmon & Steelhead

Marine Mammal Task Force
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Presentation Overview

- Overview of ESA recovery plans
- Content and status of Columbia Basin salmon recovery plans
- How plans address marine mammals
Recovery Plan Elements

- Where are we now?
  - Current status of populations and ESUs
  - Limiting factors/threats

- Where do we want to be?
  - Recovery (delisting) criteria—biological and threats*

- How do we get there?
  - Strategies and actions*
  - Cost estimates*

- How do we know that we’re there?
  - RM&E—Identify key questions
  - Adaptive Management

* ESA Requirement
Columbia Basin Recovery Plan Components

- Tributary Subbasin Analyses and Actions
  - Tributary habitat, tributary hydro, hatcheries, tributary harvest
- Ocean and Mainstem Harvest
- Mainstem Hydro Module
  - Summarizes effects of mainstem Columbia River dams on Columbia Basin ESUs
  - Refers to Hydropower BiOp for hydro recovery actions
- Estuary Module
  - Evaluates limiting factors and identifies recovery actions for estuary and plume— including predation
Columbia Basin Recovery Plan Components

- **Analytical elements:**
  - Comprehensive analysis of limiting factors
  - Gap between current and target population status
  - Life cycle analysis estimating current impacts of major limiting factors and impact reductions needed to fill gap

- **Actions:**
  - Tailored to limiting factors identified for each population
  - Addressing full life cycle and all limiting factors – Hs + ecological interactions
Common to All Columbia Basin Plans

• In general, all plans conclude:
  • No single factor accounts for species declines. All are in bad shape because of multiple factors
    – All plans identify predation as a limiting factor – generally one of the smaller impacts
  • Cannot get to recovery by addressing single factors
  • Most species need so much improvement that even small increments are crucial
  • Need some improvement from all limiting factor categories, including predation, to reach recovery goals
  • Important not to let any limiting factor increase
## Proposed Estuary Module: Prioritization of Limiting Factors

<table>
<thead>
<tr>
<th>Limiting Factor</th>
<th>Limiting Factor Priority</th>
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<tbody>
<tr>
<td>Flow-related estuary habitat changes</td>
<td>8</td>
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<tr>
<td>Flow-related changes in access to off-channel habitat</td>
<td>8</td>
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<tr>
<td>Reduced macrodetrital inputs</td>
<td>8</td>
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<tr>
<td>Water temperature</td>
<td>8</td>
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<tr>
<td>Flow-related plume changes</td>
<td>8</td>
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<tr>
<td>Bankfull elevation changes</td>
<td>7</td>
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<tr>
<td>Sediment/nutrient-related estuary habitat changes</td>
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<tr>
<td><strong>Native pinnipeds</strong></td>
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<tr>
<td>Short-term toxicity</td>
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<tr>
<td>Native birds</td>
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<tr>
<td>Bioaccumulation toxicity</td>
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<tr>
<td>Native fish</td>
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<tr>
<td>Increased microdetrital inputs</td>
<td>5</td>
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<tr>
<td>Sediment/nutrient-related plume changes</td>
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<tr>
<td>Stranding</td>
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<tr>
<td>Exotic plants</td>
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<tr>
<td>Introduced invertebrates</td>
<td>4</td>
</tr>
<tr>
<td>Exotic fish</td>
<td>4</td>
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</tbody>
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*Note: Limiting Factor Priority is indicated by color.*
Estuary Recovery Actions

- Module identifies 23 actions that target estuary limiting factors
- Evaluates actions by potential to benefit both stream and ocean type salmonids
- Most important actions for stream type salmonids:
  - Protect/restore riparian areas
  - Adjust the timing, magnitude, and frequency of flows
  - Remove pile dikes
  - Protect remaining high-quality off-channel habitat
  - Breach or lower dikes and levees
  - Manage pikeminnow, smallmouth bass, walleye and catfish
  - **Reduce predation by pinnipeds**
  - Redistribute Caspian terns
  - Redistribute cormorants
Estuary Module Conclusions

- Estuary is crucial to both ocean- and stream-type salmonids
- Meaningful survival improvements in estuary will require implementation of all 23 management actions to the extent possible
- Marine mammal predation a significant factor in estuary
  - Extent of marine mammal predation throughout estuary identified as critical uncertainty