King County Fish Passage Restoration Program: Barrier Prioritization Method

Snohomish Basin Salmon Recovery Technical Committee Meeting
Dec. 1, 2020

Evan Lewis
evlewis@kingcounty.gov
206-477-9738 office
206-482-4401 cell
Overall Prioritization Objective

A useful, credible evaluation of the relative salmon benefits of fish passage restoration at a barrier site.

Workshop held on Oct. 13 to determine what we should revise in the prioritization method so participants feel we have a valid scoring system.
Test Basins: Bear & Cherry Creeks
First Draft for Prioritization Scoring
# Draft Barrier Priority Metrics

<table>
<thead>
<tr>
<th>Barrier Severity</th>
<th>Amount of Upstream Habitat</th>
<th>Upstream and Downstream Barriers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Habitat Quality of Upstream Basin</td>
<td>Potential Use by Chinook or Lake Sammamish Kokanee</td>
<td></td>
</tr>
</tbody>
</table>

Highest Possible Total Score

100 Points

MAX SCORE
Scoring for Draft Barrier Prioritization
[max. possible score = 100]

- Habitat Quality (% impervious area), 7
- Habitat Quality (% forested), 8
- Chinook or Lake Samm. Kokanee Benefits, 5
- Upstream Barriers, 5
- Downstream Barriers, 15
- Habitat Quantity, 30
- Barrier Severity, 30
## Draft Barrier Severity Metric

<table>
<thead>
<tr>
<th>% Passability</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>0% or “Barrier = Yes, Passability = Unknown”</td>
<td>30</td>
</tr>
<tr>
<td>33%</td>
<td>20</td>
</tr>
<tr>
<td>67%</td>
<td>10</td>
</tr>
<tr>
<td>100%</td>
<td>0</td>
</tr>
</tbody>
</table>

### Workshop Input

*Max. score is too high and swamps out other criteria.*

*Testing out max. score reduced to 10 pts. or not including barrier severity.*
Draft Habitat Quantity

More upstream habitat gets a higher score.

Includes measure of coho rearing intrinsic potential for each 200m stream segment.

Workshop Input

Testing out increasing points in this category to increase scores for sites with a lot of upstream habitat.
# & Severity of Other Barriers in the Path of Fish

Sites with fewer and less severe barriers down- and upstream get a higher score.

<table>
<thead>
<tr>
<th>Downstream Max Score</th>
<th>Upstream Max Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 pts</td>
<td>5 pts.</td>
</tr>
</tbody>
</table>

**Workshop Input**

*Downstream connectivity seems to be working well.*

*Remove or adjust metric for upstream connectivity.*
<table>
<thead>
<tr>
<th>Draft Land Cover in Upstream Basin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher % Forested gets a higher score (2016 C-CAP)</td>
</tr>
<tr>
<td>% Forested Max Score</td>
</tr>
<tr>
<td>8 pts</td>
</tr>
</tbody>
</table>

**Workshop Input**

**Metrics appear to be about right scoring. Could test scoring this metric higher.**
**Draft**

**Benefits for Chinook or Lake Sammamish Kokanee**

| Site in Existing or Potential Chinook Habitat (juvenile or adult) | 5 |
| Site in Existing or Potential Habitat for Lake Sammamish Kokanee |

**Workshop Input**

*Metrics appear to be working well, but:*

- **Verify boundaries set to determine areas with benefit for Chinook or kokanee.**
- **Test increasing point bonus from 5 to 10 points (focus on Chinook barriers that typically occur lower on larger waterways).**
### KC Sites w/ Overall Score: FPS-165

<table>
<thead>
<tr>
<th>Stream Name</th>
<th>Overall Score</th>
<th>Barrier Passability Score</th>
<th>Downstream Barrier Score</th>
<th>Upstream Barrier Score</th>
<th>Habitat Quantity Score</th>
<th>Habitat Quantity Value</th>
<th>Percent Forest Score</th>
<th>Percent Forest Value</th>
<th>Percent Impervious Score</th>
<th>Percent Impervious Value</th>
<th>Chinook Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unnamed</td>
<td>55</td>
<td>30</td>
<td>15</td>
<td>5</td>
<td>2</td>
<td>1.10</td>
<td>3</td>
<td>48.48</td>
<td>0</td>
<td>19.22</td>
<td>0</td>
</tr>
</tbody>
</table>
Barrier severity drives the priority scores for similar sites along NE Cherry Valley Rd.

These sites score very high even though very little upstream habitat. Highlights how the barrier severity metric swamps other components.
Intuitively, downstream barriers should be higher priority than barriers further upstream. This is another area showing how barrier severity drives the draft priority scores.
• Reducing barrier severity scores helps improve scoring order for sites along same stream.

• Testing increasing habitat quantity maximum score to highlight site blocking more upstream habitat.

• Testing different approaches for upstream barriers/connectivity
  • Distance to next upstream barrier: closely spaced barriers would get lower score.
  • Barriers/basin area: higher barrier density would get lower score.

• Expand coho rearing intrinsic potential to entire county.

Evaluating updated scoring options in December and will seek input on promising updates in January 2021.