Navigation and Ecosystem Sustainability Program

Melvin Price Locks & Dam
Fish Passage

Balancing Restoration Goals with Design and Function

Jason Farmer
Mel Price Locks & Dam
Annual Number of Days (1993-2008)
That MP L&D is in Open River Condition

Open River at Mel Price

Year

Days per Year
0 20 40 60 80 100 120 140 160 180 200
# Migratory Fish Species of the UMR

<table>
<thead>
<tr>
<th>Species</th>
<th>Species</th>
</tr>
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<tbody>
<tr>
<td>American eel</td>
<td>Alabama shad</td>
</tr>
<tr>
<td>spotted sucker</td>
<td>flathead catfish</td>
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<tr>
<td>silver lamprey</td>
<td>skipjack herring</td>
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<tr>
<td>shorthead redhorse</td>
<td>white bass</td>
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<tr>
<td>lake sturgeon</td>
<td>gizzard shad</td>
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<tr>
<td>black redhorse</td>
<td>yellow bass</td>
</tr>
<tr>
<td>pallid sturgeon(^A)</td>
<td>threadfin shad</td>
</tr>
<tr>
<td>golden redhorse</td>
<td>northern pike</td>
</tr>
<tr>
<td>longnose gar</td>
<td>blue sucker(^B)</td>
</tr>
<tr>
<td>silver redhorse</td>
<td>smallmouth bass</td>
</tr>
<tr>
<td>silver redhorse</td>
<td>smallmouth</td>
</tr>
<tr>
<td>shovelnose sturgeon</td>
<td>buffalo</td>
</tr>
<tr>
<td>northern hog sucker</td>
<td>largemouth bass</td>
</tr>
<tr>
<td>goldeneye</td>
<td>bigmouth buffalo</td>
</tr>
<tr>
<td>white sucker</td>
<td>sauger</td>
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<tr>
<td>mooneye</td>
<td>quillback</td>
</tr>
<tr>
<td>channel catfish</td>
<td>walleye</td>
</tr>
<tr>
<td>paddlefish(^B)</td>
<td>highfin carpsucker</td>
</tr>
<tr>
<td>blue catfish</td>
<td>freshwater drum</td>
</tr>
</tbody>
</table>

\(^A\) federally listed endangered species

\(^B\) candidate for federal listing
Major Challenges

- **Challenge:** Fish passage must be available and conducive for all migratory species of fish 95% of the average year

- **Challenge:** Hinge point control creates 7 feet of head fluctuation

- **Challenge:** Open river system starts below dam and fluctuates greatly, especially due to the Missouri River influence

- **Challenge:** Entrance should stay as close to the dam as possible

- **Challenge:** Structural integrity above and beneath the overflow dam must be preserved
Questions?

- **Question:** How do we overcome hinge point fluctuations?
- **Question:** How do we overcome tail water fluctuations?
- **Question:** What entrance elevation would allow the passage to always be accessible?
- **Question:** How do we locate the passage close to the dam without compromising geotechnical stability?
- **Question:** How can the passage be made conducive to all migratory species?
Pool 26

“Forest of Piers”

Rock Riffles (0.7’ elevation drop between each)

419.0 NGVD

394.3 NGVD
St. Louis District
Forest of Piers
Bulkhead Section
Riffles and Pools
What is Next?

- Deep soil borings above and below the overflow dam
- Seepage and slope stability analysis on borings
- Development of multiple alternatives
The Next Challenges/Questions

• How wide does the passage need to be?
• How close does it **NEED** to be to the dam **versus** how close **CAN** it be?
• How should the bulkhead be constructed so that it mimics natural conditions and does not repel fish?
• What shape should the piers be?
Continuous Perennial Streams
Above Mel Price Lock & Dam, Between Lock 25 and Starved Rock Lock

Legend
- Water Body
- Missouri Lock & Dam
- Illinois Lock & Dam
- Missouri Counties
- Illinois Counties
- Iowa

Map showing areas around Mel Price Lock & Dam, including Starved Rock Lock, Peoria Lock, and La Grange Pool.
Questions?