Understanding fish movement in the lower Boardman (Ottaway) River

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http://www.glfc.org/fishpass.php
What is FishPass?

An innovative project to enhance fish passage and connectivity between the Boardman River and Lake Michigan while removing invasive or non-desirable fishes through controlled sorting.
What will FishPass Do?

- **Replace** deteriorating Union Street Dam with an improved barrier featuring a fish-sorting channel and a nature-like river channel.

- Optimize various sorting technologies and techniques **below a barrier** to maximize efficiency of passing desirable fishes and removing invasive fishes.

- **Develop** into a living laboratory with a strong education & outreach center.

- **Convert** to permanent selective fishway completing the Boardman River Restoration Project.

**FishPass = Barrier with selective capacity**
Space use of resident and migratory fishes in the lower Boardman River before installation of a selective fish passage facility

Main Goals: Baseline movement data
- Changes in use of space in response to selective fish passage
- Provide a starting point for implementation
Methods:

- Radio & passive integrated transponder (PIT) telemetry
- Dual Frequency Identification Sonar (DIDSON)

Methods:

- 4 PIT antenna across trap-and-transfer weir
- DIDSON
- Radio receiver & 2 Yagi antennas at E. Grandview Pkwy Bridge
- 2 Radio receivers with underwater antennas below Union Street Bridge
- 2 PIT antennas at fishway entrance
Telemetry: fish tagging

- Monitoring fish movement with bio-telemetry requires tagging fish with appropriate tags
  - DIDSON does not!
  - Other samples also collected

- Fish collected during electrofishing surveys and at salmon weir
Telemetry: fish tagging

- PIT Tags: 23 mm

- Radio Tags

<table>
<thead>
<tr>
<th>Species</th>
<th>N</th>
<th>N (PIT)</th>
<th>N (RT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown Trout</td>
<td>15</td>
<td>14</td>
<td>0</td>
</tr>
<tr>
<td>Common Carp</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>White Sucker</td>
<td>12</td>
<td>12</td>
<td>7</td>
</tr>
<tr>
<td>Norther Pike</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Rainbow Trout</td>
<td>23</td>
<td>15</td>
<td>2</td>
</tr>
<tr>
<td>Rock Bass</td>
<td>10</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>Small Mouth Bass</td>
<td>14</td>
<td>14</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>79</strong></td>
<td><strong>70</strong></td>
<td><strong>17</strong></td>
</tr>
</tbody>
</table>

* Two Surveys complete in 2018
Telemetry: Data

• Some fish leave the river and come back
Telemetry: Data

- Some fish move a lot!
Telemetry: Data

• Some don’t
Telemetry: Data
Summary:

- Fish exhibit natural movement patterns
  - Generalized but are often site specific
  - Provides a starting point for sorting whole fish assemblages

Migration timing of select target species in the Boardman River. Timing data adapted from Goodyear et al. (1982), Biette et al. (1981) and Velez-Espino et al. (2011).
Contact us

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