Session B1 - Biological and Engineering Studies of American Eel Anguilla Rostrata at the Conowingo Project

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BIOLOGICAL AND ENGINEERING STUDIES OF AMERICAN EEL AT CONOWINGO PROJECT

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For:
Fish Passage 2012
The 2nd National Conference on Engineering & Ecohydrology for Fish Passage
Location of Elver ramps and eels pots fished in Conowingo Spillway Reach
## Comparison of Sampling Efforts in 2010 and 2011

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sampling Dates:</strong></td>
<td>June 14 to September 30</td>
<td>June 24 (West); July 1 (East) to September 6</td>
</tr>
<tr>
<td><strong>East Spillway Ramp:</strong></td>
<td>158 elvers</td>
<td>539 elvers</td>
</tr>
<tr>
<td><strong>West Spillway Ramp:</strong></td>
<td>8 elvers</td>
<td>561 elvers</td>
</tr>
<tr>
<td><strong>Total elvers collected:</strong></td>
<td>166</td>
<td>1,100</td>
</tr>
<tr>
<td><strong>East eel pots:</strong></td>
<td>1 yellow eel</td>
<td>0</td>
</tr>
<tr>
<td><strong>West eel pots:</strong></td>
<td>90 yellow eels</td>
<td>59</td>
</tr>
<tr>
<td><strong>Moon Phases:</strong></td>
<td>4 full and 3 new moon periods</td>
<td>2 complete lunar cycles</td>
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</tbody>
</table>
2011 Study Objectives and Test Conditions

- Year two of upstream migration study.
- Construct ramps and collect migrating elvers/yellow eels below Conowingo Dam in Spillway area.
- Utilize two different substrates per ramp, and introduce heavier attraction flow.
- West side elver ramp begins operation on June 24, 2011.
- Due to structural damage to Conowingo Dam caused by heavy spring rains, East ramp construction is delayed and moved to adjacent location. East side elver ramp begins operation on July 1, 2011.
- Two different sized mesh eel pots are fished every week from both ramp locations.
Elvers ramps are checked three times a week, with the eel pots checked after second fishing day.

Water temperature, rain amount, and lunar fractions are recorded daily.

Average water temperature for the study was 82.3°F/27.9°C, with a low of 73.7°F/23.2°C on 9/3/11, and a high of 90.8°F/32.7°C on 7/24/11.

Study implemented during two complete lunar cycles.

Conducted three night surveys in spillway to document areas of elver congregation.
2011 Results

- A total of 1159 eels were collected at Conowingo Dam in 2011. 1100 were classified as elvers and 59 as adult eels.

- The west ramps collected 561 elvers. 405 of these were collected on the Enka Mat ramp with an average length of 124.8 mm. The remaining 156 were collected on the Akwa Drain ramp with an average length of 124.3.

- The East ramps collected 539 elvers. 133 of these were collected on the Enka Mat Ramp with an average length of 123.3 mm. The remaining 406 were collected on the Akwa Drain ramp with an average length of 126.1.

- 77 eels (46 elvers, 31 yellows) were frozen and processed for otolith aging.

- 1007 elvers collected by the Conowingo Dam spillway ramps were given to USFWS for transportation upstream.
Results of Otolith Aging

Number of Eels

Age
Night Surveys Conducted in Conowingo Spillway
Plateau Where Large Numbers of Elvers Observed