Potomac River White Perch, Marone americana, Gill Net Study 10-12 March, 1992

Herbert M. Austin
Virginia Institute of Marine Science

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Potomac River White Perch, Morone american
Gill Net Study

10-12 March, 1992

Potomac River Fisheries Commission
and the
Virginia Institute of Marine Science

Marine Resources Report 92-3
Prepared for the Commission by
Herbert M. Austin
Virginia Institute of Marine Science
College of William and Mary
8 May, 1992
Potomac River White Perch

Gill Net Study

Potomac River Fisheries Commission

and the

Virginia Institute of Marine Science

History

The Executive Secretary, Mr. Kirby Carpenter, of the Potomac River Fisheries Commission was approached prior to the 7 February 1992 regular meeting of the Commission by several people wishing to have small mesh gill net fishery for white perch (Morone americana) placed on the agenda for the meeting. In response, Mr. Carpenter and staff prepared a historical white perch landings summary for the Commissioners. Basically, this review showed that about 60% of the white perch landings taken between 1976 and 1982 were taken by gill net prior to the implementation of the striped bass (Morone saxatilis) interstate management regulations. The pound net caught the bulk of the remaining fish, and showed a downward trend during the period 1976 to 1991.

At the 7 February 1992 meeting, Mr. William Rice, of the Charles County Waterman's Association, proposed to the Commission that an experimental white perch gill net fishery be initiated to see if white perch could be taken without violating the striped bass management regulations.

The Commission authorized an experimental spring white perch gill net fishery during 9-28 March, 1992, three days a week, using the gear detailed below; all catch data were to be provided to the Commission for analyses, and an observer would be allowed aboard during the fishery (Appendix I). The Executive Director requested that the Virginia Institute of Marine Science provide the observer and data analysis of the fishery.

Methods

Each fisherman set 2 six hundred-foot 3 1/2" mesh gill nets of monofilament or multifilament twine (#69 or #104). Sets were made between 10 and 12 March, 1992 (Table 1). Location of sets is shown in Figure 1. Nets were fished in a normal manner as for commercial operations. All fish were measured and either retained or released. In addition, rockfish or striped bass were noted as alive or dead when released (Table 1 & 2).

Data were tabulated and provided to the Virginia Institute of Marine Science (VIMS) through the Potomac River Fisheries Commission (PRFC). Data were entered into the VIMS PRIME computer to generate graphics of length frequencies of selected species, and the relationship between perch and striped bass catches.
Results

Catch, species and size composition for all fish taken during 10-12 March, 1992 are presented in Table 1. The study was discontinued after this date because of the large by-catch of striped bass. Figures 2-10 are length frequencies of the more abundant species.

Figure 11 shows the relationship between white perch and striped bass catches. Statistically, there is no relationship. Overall, the survival rate of striped bass was 59% (Table 4). Some fish recorded as "dead" in the mid-river (Cedar Pt) catches may have been fish that died in the previous day's fishing. The actual percentage of twice-caught dead fish could not be determined. But, taking them into account could change the overall percentages slightly to over a 60:40 alive:dead ratio.

Discussion and Conclusions

A gill net fishery for white perch, using 3 1/2" mesh, in the Potomac River during spring will take a substantial striped bass by-catch. This by-catch will range from five or six striped bass for three or four white perch to a wide range of from 80 striped bass for 10 white perch to 20 striped bass to 45 white perch (Figure 11). Speir (1987) found that drift gill net by-catch of striped bass was 46% which is within the range found here. There are insufficient data to provide an "equation" that will allow a prediction of how many striped bass will be caught for each white perch. Of any spring (cold water) striped bass by-catch, approximately 60% can be released alive when nets are fished for 24 hours. Speir (1985) found attended March gill net striped bass by-catch mortalities on the order of 16-24%; and suggested that this rate was lower than for unattended nets. It may be that the higher mortality rates (40% compared to 16-24%) observed here are because the nets were unattended for at least 24 hours during this study.

There are up- and down-river differences. At the up-river stations white perch were smaller as they ranged six to 10 inches with most in the 10-12 inch range. At both the mid-river and down-river stations the perch were 8-12 inches, most 10-12 inches. The up-river stations also yielded striped bass in the 6-12 inch and 18-24 inch ranges, and none in the 12-18 inch range. Mid-river stations yielded most striped bass in the 12-24 inch range, most 12-16 inches; and the down-river stations, bass in the 12-16 inch range.
Acknowledgements

The author wants to acknowledge Captains Davis, Owens, Boarman and Burch for their care in data collection. Captain Owens and his crew were most helpful and courteous to me while I got in their way.
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| Table 4 | Survival of striped bass, M. saxatilis, by-catch taken in white perch, M. americana gill net fishery, 10-12 March, 1992, Potomac River. |
Table 1
"Lower River"
Yellow Bank-Swan Point, MD

Species and Size Composition, 600 ft x 9 ft multifilament Anchored Net, 3 1/2" mesh.
Captains: J. Burch and B. Boarman

<table>
<thead>
<tr>
<th>Species</th>
<th>2-4</th>
<th>4-6</th>
<th>6-8</th>
<th>8-10</th>
<th>10-12</th>
<th>12-14</th>
<th>14-16</th>
<th>16-18</th>
<th>18-20</th>
<th>20-22</th>
<th>22-24</th>
<th>24-26</th>
<th>26-28</th>
<th>28-30</th>
</tr>
</thead>
<tbody>
<tr>
<td>herring, Alosa</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>65</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>white perch, Morone americana</td>
<td>2</td>
<td>17</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>striped bass, M. saxatilis (ALIVE)</td>
<td>1</td>
<td>1</td>
<td>53</td>
<td>9</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>striped bass, M. saxatilis (DEAD)</td>
<td></td>
<td>1</td>
<td>15</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Table 2

"Mid-River"
Pope's Creek - Upper Cedar (VA Side)

Species and Size Composition, 600 ft x 6 ft monofilament Anchored Net, 3 1/2" mesh. Twine Size: #69.
Captain: W. M. Owens

<table>
<thead>
<tr>
<th>Species</th>
<th>Size Range (Total Length in Inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2-4  4-6  6-8  8-10  10-12  12-14  14-16  16-18  18-20  20-22  22-24  24-26  26-28  28-30</td>
</tr>
<tr>
<td>herring, Alosa</td>
<td>3  4  3</td>
</tr>
<tr>
<td>menhaden, Brevoortia tyrannus</td>
<td>5  1  1</td>
</tr>
<tr>
<td>gizzard shad, Dorosoma cepedianum</td>
<td>28 54 10</td>
</tr>
<tr>
<td>catfish, Ictaluridae</td>
<td>2  4</td>
</tr>
<tr>
<td>white perch, Morone americana</td>
<td>37 42</td>
</tr>
<tr>
<td>striped bass, M. saxatilis (ALIVE)</td>
<td>1 33 21 18  19  7  9  4</td>
</tr>
<tr>
<td>striped bass, M. saxatilis (DEAD)</td>
<td>36 34 23 13  5  8</td>
</tr>
</tbody>
</table>
**Table 3**

"Upper River"
Maryland Point Observatory (MD Side)

Species and Size Composition, 600’ x 8’ monofilament Anchored Net, 3 1/2” mesh. Twine Size: #104.
Captain: Donald C. Davis

<table>
<thead>
<tr>
<th>Species</th>
<th>Size Range (Total Length in Inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2-4 4-6 6-8 8-10 10-12 12-14 14-16 16-18 18-20 20-22 22-24 24-26 26-28 28-30</td>
</tr>
<tr>
<td>herring, <em>Alosa</em></td>
<td>2 3 3(buck) 1(roe)</td>
</tr>
<tr>
<td>shad, <em>Alosa sapidissima</em></td>
<td><strong>34 Bu unmeasured</strong></td>
</tr>
<tr>
<td>gizzard shad, <em>Dorosoma cepedianum</em></td>
<td>1 1</td>
</tr>
<tr>
<td>catfish, Ictaluridae</td>
<td></td>
</tr>
<tr>
<td>black bass, <em>Micropterus</em></td>
<td>1</td>
</tr>
<tr>
<td>white perch, <em>Morone americana</em></td>
<td>16 29</td>
</tr>
<tr>
<td>striped bass, <em>M. saxatilis</em> (ALIVE)</td>
<td>6 4 1 5 2</td>
</tr>
<tr>
<td>striped bass, <em>M. saxatilis</em> (DEAD)</td>
<td>3 3</td>
</tr>
</tbody>
</table>
Table 4

<table>
<thead>
<tr>
<th>Location</th>
<th>Total</th>
<th>Alive</th>
<th>Dead</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Upper River&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maryland Point Observatory (MD Side)</td>
<td>26</td>
<td>19</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(73%)</td>
<td>(27%)</td>
</tr>
<tr>
<td>&quot;Mid-River&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pope's creek - Upper Cedar (VA Side)</td>
<td>231</td>
<td>112</td>
<td>119</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(48%)</td>
<td>(52%)</td>
</tr>
<tr>
<td>&quot;Lower River&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yellow Bank - Swan Point (MD Side)</td>
<td>84</td>
<td>67</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(80%)</td>
<td>(20%)</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>341</td>
<td>198</td>
<td>143</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(59%)</td>
<td>(41%)</td>
</tr>
</tbody>
</table>
List of Figures

Figure 1  Location of sampling stations, Potomac River, 10-12 March, 1992.

Figure 2  Number and size of white perch, *Morone americana*, taken below Maryland Pt. Observatory (MD side) on 10-12 March, 1992.

Figure 3  Number and size of alive and dead striped bass, *Morone saxatilis*, taken below Maryland Pt. Observatory (MD side), 10-12 March, 1992.

Figure 4  Number and size of alive and dead striped bass, *M. saxatilis*, taken at Pope’s Creek, MD (VA side), 10 March, 1992.

Figure 5  Number and size of alive and dead striped bass, *M. saxatilis*, taken at Pope’s Creek, MD (VA side), 11 March, 1992.

Figure 6  Number and size of alive and dead striped bass, *M. saxatilis*, taken above Cedar Pt (VA side), 12 March, 1992.

Figure 7  Number and size of white perch, *M. americana*, taken between Pope’s Creek and Upper Cedar (VA side), 10-12 March, 1992.

Figure 8  Number and size of gizzard shad (mud shad), *Dorosoma cepedianum*, taken between Pope’s Creek and Upper Cedar (VA side), 10-12 March, 1992.

Figure 9  Number and size of white perch, *M. saxatilis*, taken between Yellow Bank and Swan Point (MD side), 10-12 March, 1992.

Figure 10 Number and size of alive and dead striped bass, *M. saxatilis*, taken between Yellow Bank and Swan Point (MD side), 10-12 March, 1992.

Figure 11 Striped bass, *M. saxatilis*, and white perch, *M. americana* caught simultaneously in a gill net, 10-12 March, 1992. All areas, Maryland Pt to Swan Point, Potomac River.
WASHINGTON D.C.

MARYLAND POINT OBSERVATORY
D. C. DAVIS

POPE'S CREEK - UPPER CEDAR
W. M. OWENS

YELLOW BANK - SWAN POINT
J. BURCH / B. BOLTZMAN

SAMPLING STATION LOCATIONS

1 Maryland Point Observatory
   D. C. Davis

2 Popes Creek - Upper Cedar
   W. M. Owens

3 Yellow Bank - Swan Point
   J. Burch / B. Boltzman

POTOMAC RIVER WHITE PERCH
Morone americana
Gill Net Study
10-12 March, 1992
POTOMAC RIVER WHITE PERCH
GILL NET STUDY

BELOW MARYLAND PT OBSERVATORY (MD SIDE)

Legend

0 5 10 15 20 25 30 35 40

TOTAL LENGTH (INCHES)

10-12 MARCH, 1992
D. C. DAVIS
POTOMAC RIVER WHITE PERCH
GILL NET STUDY

BELOW MARYLAND PT OBSERVATORY (MD SIDE)

Legend
- STRIPED BASS
- STRIPED BASS RELEASED ALIVE
- STRIPED BASS RELEASED DEAD

TOTAL LENGTH (INCHES)

10-12 MARCH, 1992
D. C. DAVIS
POTOMAC RIVER WHITE PERCH
GILL NET STUDY

POPES CREEK, MD (VA SIDE)

Legend
• STRIPED BASS
  RELEASED ALIVE

<table>
<thead>
<tr>
<th>Total Length (inches)</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-8</td>
<td>1</td>
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<tr>
<td>8-10</td>
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<td>10-12</td>
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<tr>
<td>12-14</td>
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<tr>
<td>14-16</td>
<td>5</td>
</tr>
<tr>
<td>16-18</td>
<td>6</td>
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<tr>
<td>18-20</td>
<td>7</td>
</tr>
<tr>
<td>20-22</td>
<td>8</td>
</tr>
<tr>
<td>22-24</td>
<td>9</td>
</tr>
<tr>
<td>24-26</td>
<td>10</td>
</tr>
</tbody>
</table>

10 MARCH, 1992
W. M. OWENS
POTOMAC RIVER WHITE PERCH
GILL NET STUDY

POPE'S CREEK, MD (VA SIDE)

Legend
- STRIPED BASS RELEASED ALIVE
- STRIPED BASS RELEASED DEAD

TOTAL LENGTH (INCHES)

11 MARCH 1992
W. M. OWENS
POTOMAC RIVER WHITE PERCH
GILL NET STUDY

ABOVE UPPER CEDAR (VA SIDE)

TOTAL LENGTH (INCHES)

Legend
- STRIPED BASS
- RELEASED ALIVE
- STRIPED BASS
- RELEASED DEAD

12 MARCH, 1992
W.M. OWENS
POTOMAC RIVER WHITE PERCH
GILL NET STUDY

POPE'S CREEK - UPPER CEDAR (VA SIDE)

Legend

| WHITE PERCH |

TOTAL LENGTH (INCHES)

10-12 MARCH, 1992
W. M. OWENS
POTOMAC RIVER WHITE PERCH GILL NET STUDY

POPE'S CREEK - UPPER CEDAR (VA SIDE)

10-12 MARCH, 1992
W. M. OWENS
POTOMAC RIVER WHITE PERCH GILL NET STUDY

YELLOW BANK - SWAN POINT (MD SIDE)

Legend

WHITE PERCH

TOTAL LENGTH (INCHES)

10-12 MARCH, 1992
J. BURCH & B. BOARMAN
POTOMAC RIVER WHITE PERCH
GILL NET STUDY

YELLOW BANK - SWAN POINT (MD SIDE)

Legend
- STRIPED BASS
  RELEASED ALIVE
- STRIPED BASS
  RELEASED DEAD

TOTAL LENGTH (INCHES)

10-12 MARCH, 1992
J. BURCH & B. BOARMAN
POTOMAC RIVER WHITE PERCH GILL NET STUDY

STRIPE BASS CATCH WITH WHITE PERCH

10-12 MARCH 1992