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Cover Art: Steve Hilt, Minocqua, WI
Fish Graphics: Virgil Beck, Stevens Point, WI
INTRODUCTION

Fish populations can fluctuate due to natural forces (weather, predation, competition), management actions (stocking, regulations, habitat improvement), inappropriate development (habitat degradation), and harvest impacts. Wisconsin Department of Natural Resources fisheries crews regularly conduct fishery surveys on area lakes and reservoirs to gather the information needed to monitor changes, identify concerns, evaluate past management actions, and to prescribe good fishery management strategies. Netting and electrofishing surveys are used to gather data on the status of fish populations and communities (species composition, population size, reproductive success, size/age distribution, and growth rates). But the other key component of the fishery that we often need to measure is the harvest.

On many lakes in the Ceded Territory of northern Wisconsin, harvest of fish is divided between sport anglers and the six Chippewa tribes who harvest fish under rights granted by federal treaties. The tribes harvest fish mostly using a highly efficient method, spearing, during a relatively short time period in the spring. Every fish in the spear harvest is counted – a complete “census” of the harvest.

We also measure the sport harvest to assess its impact on the fishery. But because it would be highly impractical and very costly to conduct a complete census of every angler who fishes on a lake, we conduct creel surveys.

A creel survey is an assessment tool used to sample the fishing activities of anglers on a body of water and make projections of harvest and other fishery parameters. Creel survey clerks work on randomly-selected days and shifts, forty hours per week during the open season for gamefish from the first Saturday in May through the first Sunday in March, except during the month of November when fishing effort is low and ice conditions are often unsafe. The survey is run during daylight hours, and shift times change from month to month as day length changes.

Creel survey clerks travel their lakes using a boat or snowmobile to count numbers of anglers on a lake at predetermined times, and to interview anglers who have completed their fishing trip to collect data on what species they fished for, catch, harvest, lengths of fish harvested, marks (finclops or tags), and hours of fishing effort. Collecting completed-trip data provides the most accurate assessment of angling activities, and it avoids the need to disturb anglers while they are fishing.

A computer program is used to make projections of total catch and harvest of each species, catch and harvest rates, and total fishing effort, by month and for the year in total. Keep in mind that these are only projections based on the best information available, and not a complete accounting of effort, catch, and harvest. Accurate projections require that we sample a sufficient and representative portion of the angling activity on a lake. The accuracy of creel survey results, therefore, depends on good cooperation and truthful responses by anglers when a creel clerk interviews them.

You may have encountered a DNR creel survey clerk on a recent fishing trip. We appreciate your cooperation during an interview. The survey only takes a moment of your time and it gives the Department valuable information needed for management of the fishery.
This report provides projections of:
1. Overall fishing effort (pressure)
2. Fishing effort directed at each species
3. Catch and harvest rates
4. Numbers of fish caught and harvested

Also included are:
- A physical description of Two Sisters Lake;
- Discussion of results of the survey;
- Detailed summaries, by species, of fishing effort, catch, and harvest.

**GENERAL LAKE INFORMATION**

**Location**
Two Sisters Lake is located in Oneida County in the Town of Lake Tomahawk

**Physical Characteristics**
Two Sisters Lake is a 719-acre drainage lake with a maximum depth of 63 feet. Littoral substrate consists primarily of sand, with lesser amounts of muck, and gravel. Two Sisters Lake is a soft water lake with slightly acidic, clear water of moderate transparency.

**Seasons Surveyed**
The period referred to in this report as the 2011-12 fishing season ran from May 7, 2011 through March 4, 2012. The open water creel survey ran from May 4 through October 31, 2011 and the ice fishing creel survey ran from December 1, 2012 through March 4, 2012.

**Weather**
Ice-out on Two Sisters Lake was around April 30, 2011. Fishable-ice formed on Two Sisters Lake in mid December.

**Sportfishing Regulations**
The following seasons, daily bag limits, and length limits were in place on Two Sisters Lake during the 2011-12 fishing season:

<table>
<thead>
<tr>
<th>Species</th>
<th>Season</th>
<th>Bag limit</th>
<th>Length limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Largemouth Bass</td>
<td>5/7-6/17</td>
<td>Catch&amp;Release</td>
<td></td>
</tr>
<tr>
<td>Smallerough Bass</td>
<td>6/18-3/4</td>
<td>5</td>
<td>14&quot;</td>
</tr>
<tr>
<td>Musky</td>
<td>5/28-11/30</td>
<td>1</td>
<td>40&quot;</td>
</tr>
<tr>
<td>Northern Pike</td>
<td>5/7-3/4</td>
<td>5</td>
<td>none</td>
</tr>
<tr>
<td>Walleye</td>
<td>5/7-3/4</td>
<td>3*</td>
<td>15&quot;</td>
</tr>
<tr>
<td>Panfish</td>
<td>year round</td>
<td>25</td>
<td>none</td>
</tr>
<tr>
<td>Rock Bass</td>
<td>year round</td>
<td>none</td>
<td>none</td>
</tr>
</tbody>
</table>

* The statewide bag limit was 5 walleye, but due to tribal declarations it was reduced on Two Sisters Lake.

**SPECIES CATCH AND HARVEST INFORMATION**

Angling, catch, and harvest information is summarized for each species in Table 2 and Figures 1-10. Table 2 also includes a comparison of these statistics with the previous creel survey. Information presented about species whose fishing season extends beyond March 4 should be considered minimum estimates. Each species page has up to five graphs depicting the following:

1. **PROJECTED FISHING EFFORT**
   Total calculated number of hours during each month that anglers spent fishing for a species.

2. **PROJECTED SPECIFIC CATCH AND HARVEST RATES**
   Calculated number of hours it takes an angler to catch or harvest a fish of the indicated species. Only information from anglers who were...
specifically targeting that species is reported.

3. **PROJECTED CATCH AND HARVEST**
   Calculated number of fish of the indicated species caught or harvested by all anglers, regardless of targeted species.

4. **LENGTH DISTRIBUTION OF HARVESTED FISH**
   All fish of a species that were measured by the clerk during the entire creel survey season.

5. **LARGEST AND AVERAGE LENGTH OF HARVESTED FISH**
   Monthly largest and average length of harvested fish of a species. Only those fish measured by the creel survey clerk are reported.

**CREEL SURVEY RESULTS AND DISCUSSION**

**Survey Logistics**
The creel survey went well. We encountered no unusual problems conducting the survey or calculating the projections contained in the report. This was the sixth time the department conducted a creel survey on Two Sisters Lake. The last creel survey took place in 2008-09.

**General Angler Information**
Anglers spent 13,563 hours or 18.9 hours per acre fishing Two Sisters Lake during the 2011-12 season (Table 1). That was less than the Oneida County average of 37.8 hours per acre. July was the most heavily fished month (6.0 hours per acre). Fishing effort was lightest in December (0.3 hours per acre) for those months when the entire month was creeled.

**RESULTS BY SPECIES**

**Walleye** (Table 2, Figure 1)
Walleyes received the most fishing effort during the 2011-12 season. Anglers spent 5,674 hours targeting walleyes. The greatest fishing effort for walleyes was in July (1412 hours). December had the least amount of walleye fishing effort (251 hours).

Total catch of walleyes was 274 fish with a harvest of 233 fish. Highest catch (66 fish) occurred and harvest (66 fish) occurred in May. Anglers fished 20.7 hours to catch and 24.5 hours to harvest a walleye during 2011-12.

The mean length of harvested walleyes was 20.0 inches and the largest walleye measured was a 28.2 inch fish.

**Northern Pike** (Table 2, Figure 2)
Fishing effort directed at northern pike was 986 hours during the 2011-12 season. Northern pike fishing effort was greatest in July (234 hours).

Total catch of northern pike was 457 fish with a harvest of 129 fish.

The mean length of harvested northern pike was 29.6 inches and the largest northern pike measured was a 34.5 inch fish.

**Muskie** (Table 2, Figure 3)
Anglers spent 3,565 hours targeting muskellunge during the 2011-12 season. Muskellunge fishing effort was greatest in July (892 hours).

Total catch of muskellunge was 79 fish. Highest catch (24 fish) occurred in September. Anglers fished 78.1 hours to catch a muskellunge during 2011-12.
**Smallmouth Bass** (Table 2, Figure 4)  
Fishing effort targeted at smallmouth bass was 2,771 hours during the 2011-12 season. Smallmouth bass fishing effort was greatest in July (1464 hours).

Total catch of smallmouth bass was 3,419 fish with 354 harvested. Highest catch (1,509 fish) occurred in July. Anglers fished 1.7 hours to catch a smallmouth bass during 2011-12.

**Largemouth Bass** (Table 2, Figure 5)  
Fishing effort directed at largemouth bass was 1,776 hours during the 2011-12 season. Largemouth bass fishing effort was greatest in July (661 hours).

Total catch of largemouth bass was 1,776 fish with a harvest of 141 fish. Highest catch (536 fish) occurred in May. Anglers fished 1.9 hours to catch a largemouth bass during 2011-12.

**Panfish (Table 2, Figures 6-10)**  
**Bluegills** were the most sought after panfish species during the survey. Fishing effort directed at bluegills was 2,929 hours.

Total catch of bluegills was 5,172 fish with 1,439 harvested. The mean length of bluegills harvested was 7.8 inches.

**Yellow perch** were the second most sought after panfish species during the survey. Fishing effort directed at yellow perch was 2,570 hours.

Total catch of yellow perch was 1,081 fish with 726 harvested. The mean length of yellow perch harvested was 9.1 inches.

**Black crappies** were the third most sought after panfish species during the survey. Fishing effort directed at black crappies was 1,883 hours.

Anglers 1,016 black crappies and harvested 750 fish. The mean length of black crappies harvested was 10.7 inches.

Pumpkinseeds and rock bass were also caught during the 2011-12 season.

**ACKNOWLEDGMENTS**

Completion of this survey was possible because of the efforts of the technical staff of the fisheries management and Treaty Fisheries Unit. Treaty staff responsible for ensuring completion of this survey included Jeff Blonski, Joelle Underwood, Marty Kiepke, Jason Halverson, and Tim Tobias. Dave Stahmer and Bob Consolo were the creel clerks on Two Sisters Lake during the survey period.

We also thank all the anglers who took the time to offer information about their fishing trip to the survey clerk. Without their cooperation the survey would not have been possible.

The department thanks the cooperators, Don Nierode family, who generously allowed the department to keep a boat and snowmobile on their property during this survey.

This creel report was reviewed by John Kubisiak and Dennis Scholl of the Wisconsin Department of Natural Resources, Woodruff, Wisconsin.

Additional copies of this report and those covering other local lakes can be obtained from the Woodruff DNR or online at:

http://dnr.wi.gov/fish/ceded/reports.html
Table 1. Sportfishing effort summary, Two Sisters Lake, 2011-12 season.

<table>
<thead>
<tr>
<th>Month</th>
<th>Total Angler Hours</th>
<th>Total Angler Hours/Acre</th>
<th>Oneida County Average Hours/Acre</th>
<th>Statewide Average Hours/Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>May</td>
<td>2032</td>
<td>2.8</td>
<td>5.3</td>
<td>5.8</td>
</tr>
<tr>
<td>June</td>
<td>1689</td>
<td>2.3</td>
<td>7.1</td>
<td>6.1</td>
</tr>
<tr>
<td>July</td>
<td>4340</td>
<td>6.0</td>
<td>8.1</td>
<td>6.4</td>
</tr>
<tr>
<td>August</td>
<td>2214</td>
<td>3.1</td>
<td>6.2</td>
<td>5.4</td>
</tr>
<tr>
<td>September</td>
<td>1001</td>
<td>1.4</td>
<td>3.7</td>
<td>3.8</td>
</tr>
<tr>
<td>October</td>
<td>1100</td>
<td>1.5</td>
<td>1.7</td>
<td>1.6</td>
</tr>
<tr>
<td>December</td>
<td>251</td>
<td>0.3</td>
<td>1.3</td>
<td>1.7</td>
</tr>
<tr>
<td>January</td>
<td>511</td>
<td>0.7</td>
<td>1.7</td>
<td>1.5</td>
</tr>
<tr>
<td>February</td>
<td>420</td>
<td>0.6</td>
<td>1.7</td>
<td>1.3</td>
</tr>
<tr>
<td>March</td>
<td>6</td>
<td>0.0</td>
<td>0.3</td>
<td>**</td>
</tr>
<tr>
<td>*Summer Total</td>
<td>12376</td>
<td>17.2</td>
<td>32.8</td>
<td>29.1</td>
</tr>
<tr>
<td>*Winter Total</td>
<td>1187</td>
<td>1.7</td>
<td>5.0</td>
<td>4.5</td>
</tr>
<tr>
<td>Grand Total</td>
<td>13563</td>
<td>18.9</td>
<td>37.8</td>
<td>33.6</td>
</tr>
</tbody>
</table>

**"Summer" is May-October; "Winter" is December-March**

**Too few lakes have been surveyed in March to give a meaningful statewide average.**

**Total Angler Hours** is the estimated total number of hours that anglers spent fishing on Two Sisters Lake during each month surveyed.

**Total Angler Hours/Acre** is the total angler hours divided by the area of the lake in acres. This is useful if you wish to compare effort on Two Sisters Lake to other lakes.

**County Average Hours/Acre** is the average angler effort in hours per acre for county lakes that have been surveyed since 1990. This value can be useful in comparisons as well.

**Statewide Average Hours/Acre** is the average angler effort in hours per acre for inland lakes in the state surveyed between 1990 and 1995. This value can be used to compare Two Sisters Lake to other lakes statewide.
Table 2. Comparison of creel survey synopses, Two Sisters Lake, 2011-12 and 2008-09 fishing seasons.

<table>
<thead>
<tr>
<th>SPECIES</th>
<th>DIRECTED EFFORT (Hours)</th>
<th>PERCENT OF TOTAL</th>
<th>TOTAL CATCH</th>
<th>SPECIFIC CATCH RATE (Hrs/Fish)</th>
<th>TOTAL HARVEST</th>
<th>SPECIFIC HARVEST RATE (Hrs/Fish)</th>
<th>MEAN LENGTH OF HARVESTED FISH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walleye</td>
<td>5674</td>
<td>25.19%</td>
<td>274</td>
<td>20.7</td>
<td>233</td>
<td>24.5</td>
<td>20.0</td>
</tr>
<tr>
<td>Northern Pike</td>
<td>986</td>
<td>4.38%</td>
<td>457</td>
<td>8.0</td>
<td>129</td>
<td>12.7</td>
<td>29.6</td>
</tr>
<tr>
<td>Muskellunge</td>
<td>3565</td>
<td>15.83%</td>
<td>79</td>
<td>78.1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Smallmouth Bass</td>
<td>2771</td>
<td>12.30%</td>
<td>3419</td>
<td>1.7</td>
<td>354</td>
<td>9.2</td>
<td>16.4</td>
</tr>
<tr>
<td>Largemouth Bass</td>
<td>1776</td>
<td>7.88%</td>
<td>1776</td>
<td>1.9</td>
<td>141</td>
<td>12.6</td>
<td>16.2</td>
</tr>
<tr>
<td>Yellow Perch</td>
<td>2570</td>
<td>11.41%</td>
<td>1081</td>
<td>2.8</td>
<td>726</td>
<td>3.6</td>
<td>9.1</td>
</tr>
<tr>
<td>Bluegill</td>
<td>2929</td>
<td>13.00%</td>
<td>5172</td>
<td>0.7</td>
<td>1439</td>
<td>2.1</td>
<td>7.8</td>
</tr>
<tr>
<td>Pumpkinseed</td>
<td>59</td>
<td>0.26%</td>
<td>100</td>
<td>2.3</td>
<td>25</td>
<td>2.3</td>
<td>7.3</td>
</tr>
<tr>
<td>Rock Bass</td>
<td>311</td>
<td>1.38%</td>
<td>4304</td>
<td>0.9</td>
<td>230</td>
<td>1.4</td>
<td>8.4</td>
</tr>
<tr>
<td>Black Crappie</td>
<td>1883</td>
<td>8.36%</td>
<td>1016</td>
<td>1.9</td>
<td>750</td>
<td>2.6</td>
<td>10.7</td>
</tr>
</tbody>
</table>

* A blank cell in this column indicates that no fish of a given species were caught by anglers who specifically targeted that species.
** A blank cell in this column indicates that no fish of a given species were harvested by anglers who specifically targeted that species.

CREEL YEAR: 2008-09

<table>
<thead>
<tr>
<th>SPECIES</th>
<th>DIRECTED EFFORT (Hours)</th>
<th>PERCENT OF TOTAL</th>
<th>TOTAL CATCH</th>
<th>SPECIFIC CATCH RATE (Hrs/Fish)</th>
<th>TOTAL HARVEST</th>
<th>SPECIFIC HARVEST RATE (Hrs/Fish)</th>
<th>MEAN LENGTH OF HARVESTED FISH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walleye</td>
<td>5321</td>
<td>40.88%</td>
<td>313</td>
<td>17.5</td>
<td>190</td>
<td>28.0</td>
<td>20.4</td>
</tr>
<tr>
<td>Northern Pike</td>
<td>341</td>
<td>2.62%</td>
<td>235</td>
<td>5.9</td>
<td>29</td>
<td>27.8</td>
<td>29.2</td>
</tr>
<tr>
<td>Muskellunge</td>
<td>1704</td>
<td>13.09%</td>
<td>48</td>
<td>40.0</td>
<td>8</td>
<td>227.3</td>
<td>45.3</td>
</tr>
<tr>
<td>Smallmouth Bass</td>
<td>1680</td>
<td>12.91%</td>
<td>2062</td>
<td>1.6</td>
<td>87</td>
<td>32.9</td>
<td>15.7</td>
</tr>
<tr>
<td>Largemouth Bass</td>
<td>1242</td>
<td>9.54%</td>
<td>1217</td>
<td>1.9</td>
<td>11</td>
<td>112.4</td>
<td>14.8</td>
</tr>
<tr>
<td>Yellow Perch</td>
<td>570</td>
<td>4.38%</td>
<td>320</td>
<td>2.7</td>
<td>120</td>
<td>4.9</td>
<td>8.5</td>
</tr>
<tr>
<td>Bluegill</td>
<td>1210</td>
<td>9.30%</td>
<td>2631</td>
<td>0.6</td>
<td>345</td>
<td>3.9</td>
<td>7.7</td>
</tr>
<tr>
<td>Pumpkinseed</td>
<td>141</td>
<td>1.08%</td>
<td>78</td>
<td>1.8</td>
<td>48</td>
<td>3.0</td>
<td>7.0</td>
</tr>
<tr>
<td>Rock Bass</td>
<td>240</td>
<td>1.84%</td>
<td>2134</td>
<td>0.6</td>
<td>260</td>
<td>0.9</td>
<td>7.4</td>
</tr>
<tr>
<td>Black Crappie</td>
<td>569</td>
<td>4.37%</td>
<td>366</td>
<td>1.6</td>
<td>336</td>
<td>1.7</td>
<td>11.0</td>
</tr>
</tbody>
</table>
Figure 1. Walleye sportfishing effort, catch, harvest, and length distribution, Two Sisters Lake, during 2011-12.
Figure 2. Northern pike sportfishing effort, catch, harvest, and length distribution, Two Sisters Lake, during 2011-12.
Figure 3. Muskellunge sportfishing effort, catch, harvest, and length distribution, Two Sisters Lake, during 2011-12.
Figure 4. Smallmouth bass sportfishing effort, catch, harvest, and length distribution, Two Sisters Lake, during 2011-12.
Figure 5. Largemouth bass sportfishing effort, catch, harvest, and length distribution, Two Sisters Lake, during 2011-12.
Figure 6. Yellow perch sportfishing effort, catch, harvest, and length distribution, Two Sisters Lake, during 2011-12.
Figure 7. Bluegill sportfishing effort, catch, harvest, and length distribution, Two Sisters Lake, during 2011-12.
Figure 8. Pumpkinseed sportfishing effort, catch, harvest, and length distribution, Two Sisters Lake, during 2011-12.
Figure 9. Rock bass sportfishing effort, catch, harvest, and length distribution, Two Sisters Lake, during 2011-12.
Figure 10. Black crappie sportfishing effort, catch, harvest, and length distribution, Two Sisters Lake, during 2011-12.