

**Silver Birch Lake
Pepin County
Baseline Lakes Monitoring
Fisheries Inventory
2002**

WBIC=2054600



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Abstract

Silver Birch Lake was surveyed using the WDNR lakes baseline monitoring strategy in the spring and summer of 2002. Yellow perch was the most common gamefish collected during the Esocid/Percid sampling run followed by northern pike. No walleye or sauger were collected during this survey. Currently the northern pike fishery contains a low-density, but quality sized fishery. The largest northern pike collected was 33.5 inches in length.

Bluegill was the most abundant gamefish collected followed by black crappie and largemouth bass during the Centrachid sampling run. Bluegill total annual mortality (A) was estimated at 64% for ages 3-5. In addition, only three bluegill greater than 7.5 inches were collected during this survey. Black Crappie total annual mortality (A) was estimated at 70% for ages 2-5. A modest number of black and white crappie greater than 10 inches were collected during this survey. Overall the panfish community is represented by moderate to high densities of bluegill, most of which are less than seven inches in length. In addition a low-density crappie fishery is present, with a modest number of quality sized crappie.

Panfish regulation changes could possibly enhance bluegill size structure and maintain the quality crappie fishery. Currently the most available option would be a bag reduction from 25 panfish in total to 10 panfish in total. Local angler input should be solicited to determine its acceptability.

The largemouth bass fishery on Silver Birch Lake is of poor quality. Largemouth bass (age 0-2) were underrepresented in the largemouth bass age distribution. Currently it is unknown what factors may be contributing to low recruitment of largemouth bass on Silver Birch Lake.

Introduction:

Silver Birch Lake is shallow 168-acre floodplain lake located southwest of Durand, in Pepin County along the lower Chippewa Riverway. It is isolated from the Chippewa River during baseflow periods but becomes connected to the Chippewa River during larger flood events. The last known survey of Silver Birch Lake occurred in 1992-1993. Silver Birch Lake is hypereutrophic and is listed as a 303d impaired waterbody. It is unknown what effect this condition is having on the current fish community. In 1994 an aeration project was initiated on Silver Birch Lake due to potential dissolved oxygen depletion during the winter months, which may have been responsible for partial winterkills. This survey is the first effort to document the status of the fishery following the aeration treatment.

Methods:

Fisheries staff from the lower Chippewa River Basin sampled Silver Birch Lake on the following dates using the techniques described below.

Nighttime Esocid/Percid Sampling

The entire lakeshore was sampled on 4-09-02. Sampling was targeted towards Esocids/Percids following the WDNR lakes baseline monitoring protocol (Stewart, 2001) using a pulsed DC mini-boomshocker operating at 400 volts and 12 amps. In addition a .5 mile index station was established where all species of fish seen were collected. Fish were identified and measured to the nearest tenth of an inch.

Nighttime Centrarchid Sampling

The entire lakeshore was sampled on 5-14-02. Sampling was targeted towards centrarchids following the WDNR lakes baseline monitoring protocol (Stewart, 2001) using a pulsed DC mini-boom shocker operating at 400 volts and 12 amps. In addition a .5 mile index station was established where all species of fish were collected. Fish were identified and measured to the nearest tenth of an inch. Scales were taken from bluegill and crappie in an effort to collect aging data and develop mortality estimates for this lake.

Mini-Fyke Net Sampling

Six mini-fyke nets were set on 8-13-02 at various locations along Silver Birch Lake. The nets were pulled on 8-14-02 and all fish collected were identified and counted by individual net. Sampling protocol is outlined in (Stewart, 2001).

Results

Esocid Percid Run and .5 Mile Index Run

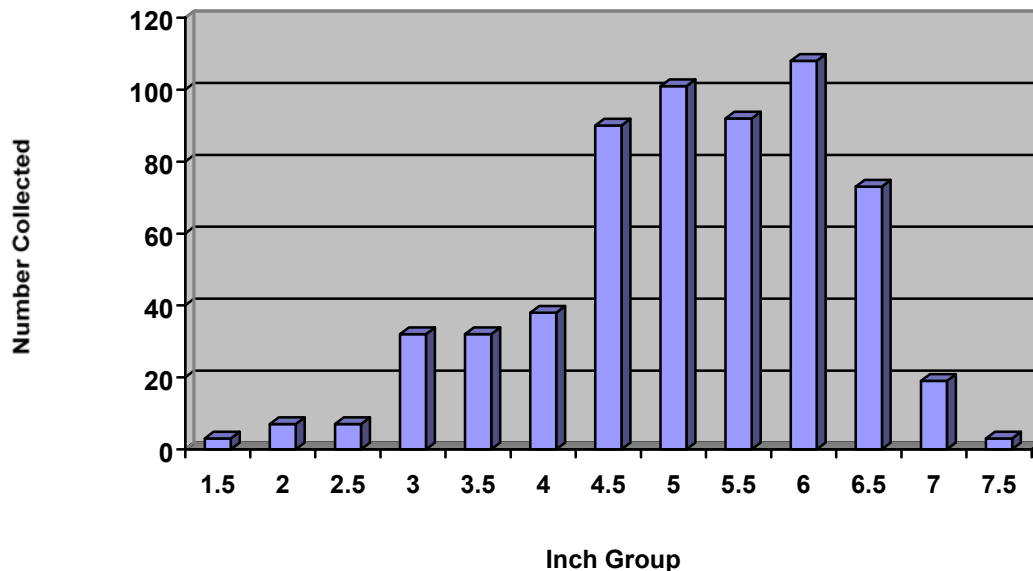
Yellow perch (*Perca flavescens*) was the most common fish collected (n=108) during this sampling event followed by northern pike (*Esox lucius*). No walleye (*Stizostedion vitreum*) or sauger (*Stizostedion canadense*) were captured. Northern pike ranged from 14.5-33.5 inches in length. Northern pike (n=12) catch per hour was 3.6 and 4.3 during the esocid/percid and index runs respectively. Northern pike abundance appears to be adequate for Silver Birch Lake and is represented by a few quality sized fish. Yellow perch catch per hour was 27 and 72 during the esocid/percid and index runs, respectively. Few quality-sized yellow perch were collected. Yellow perch greater than 8 inches represented only 8% and 3% of the total yellow perch catch during the esocid/percid and esocid/percid index runs respectively.

Centrarchid Run and .5 Mile Index Run

Bluegill

Bluegill (*Lepomis macrochirus*) was the most common fish captured during this sampling event (n=605). Catch per hour for bluegill was 161 and 322 fish per hour during the centrarchid and index runs respectively. Only three bluegill greater than 7.5 inches were collected. The length distribution for bluegill is presented in (Figure 1). Bluegill total annual mortality (A) was estimated using a standard catch curve. Bluegill total annual mortality is estimated at 64% for ages 3-5, r-square .91. Age and growth information from the sub-sampled fish is also consistent with the statewide average indicating that the lake does not have a stunted bluegill fishery (Appendix A). PSD₆ is 35 and RSD₇ is 4.

Figure 1: Bluegill Length Distribution, Silver Birch Lake, Pepin County, WI. (n=605)



Black and White Crappie

Black crappie (*Pomoxis nigromaculatus*) were the second most abundant fish collected (n=119) during this sampling event. Catch rate for black crappie was 30 and 54 fish per hour during the centrarchid and centrarchid index runs, respectively. Black crappie length distribution is presented in (Figure 2). Black crappie total annual mortality (A) was calculated using a standard catch curve for ages 2-5. Total annual mortality was estimated at 70%, r-squared =.92. Age and growth information from sub-sampled black crappie indicates that black crappie growth rates are consistent with the statewide average (Appendix A). PSD₈ is 43 and RSD₉ and RSD₁₀ values are 10 and 4, respectively.

White crappie (*Pomoxis annularis*) were the fourth most abundant fish collected (n=41). Catch rate for white crappie was 8.3 and 8.8 fish per hour during the centrarchid and centrarchid index runs, respectively. Length distribution for white crappie is presented in (Figure 2). Mortality estimates were not calculated due to a small sample size. Age and growth information suggests that white crappie have very fast growth rates ranging from 8.7-11.2 inches at age 3. Trophy white crappie (>13 inches) were absent during this sampling event, but it should be noted that a 14.1 inch white crappie was collected in Silver Birch Lake during the Esocid/Percid run earlier in the survey period.

Figure 2: Black and White Crappie Length Distribution, Silver Birch Lake, Pepin County, WI.

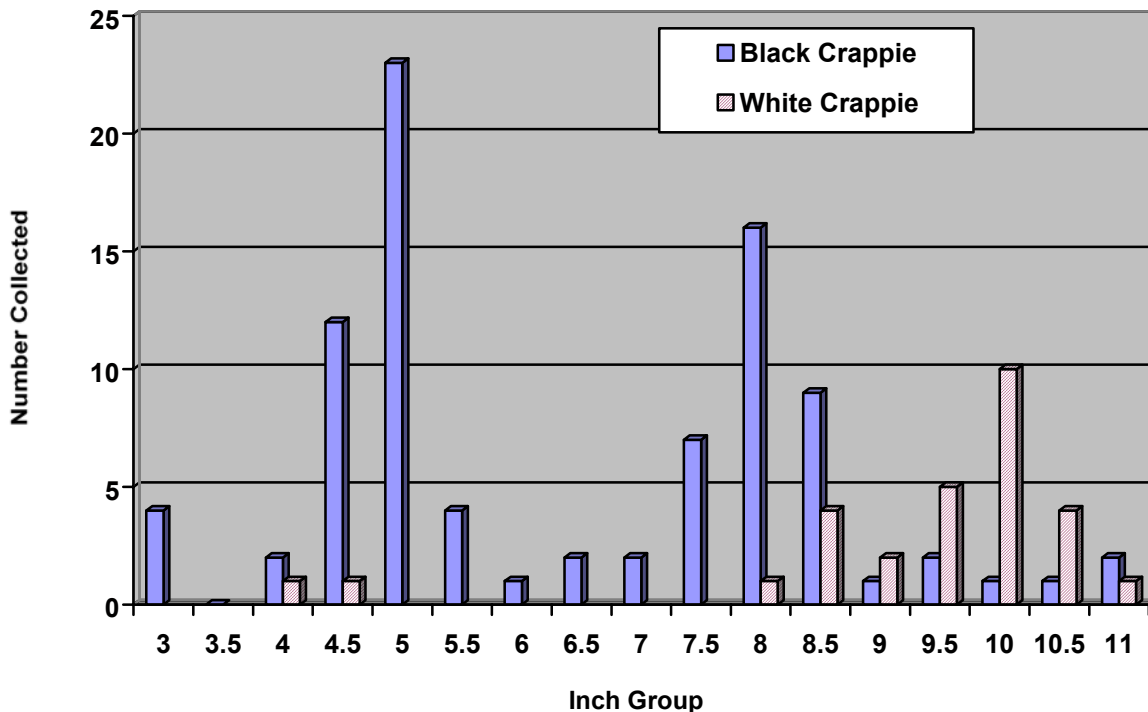
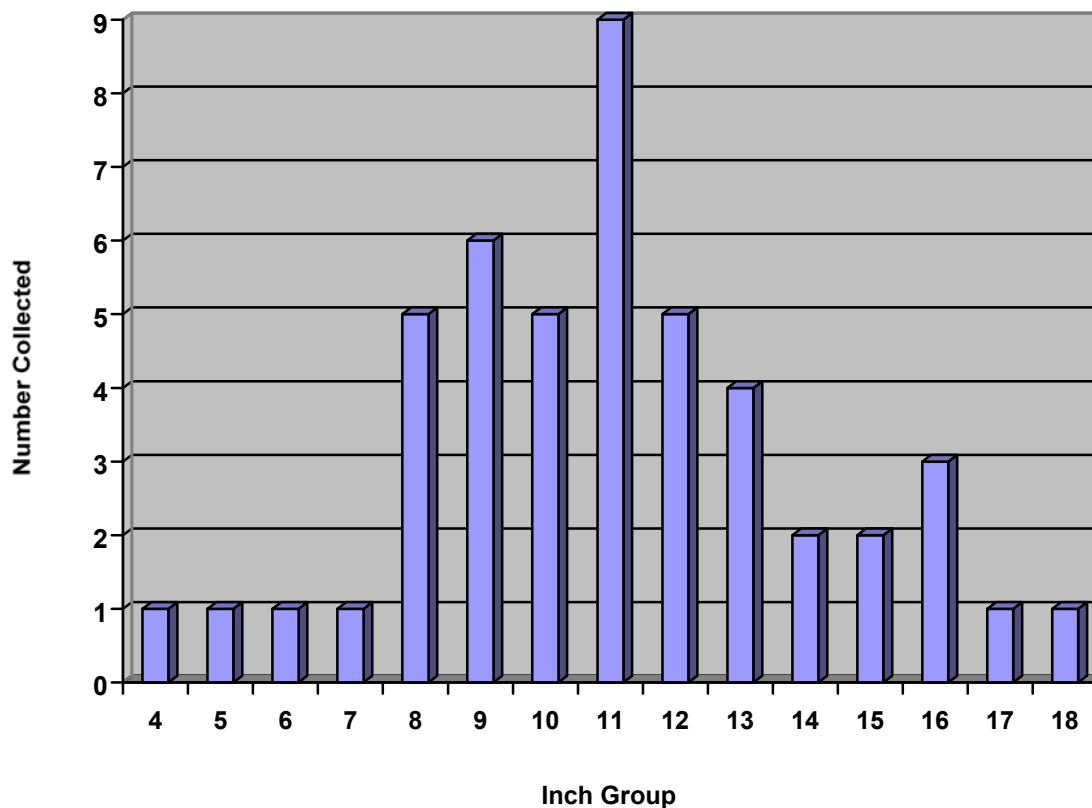


Figure 3: Length Distribution, Largemouth Bass, Silver Birch Lake, Pepin County, WI, Spring 2002 (n=47).



Largemouth Bass

Largemouth bass (*Micropterus salmoides*) were the third most abundant fish collected during this sampling event (n=47). Catch per hour was 14 and 7 fish per hour during the centrarchid and index runs respectively. Largemouth bass length distribution is presented in (Figure 3). The length distribution shows that largemouth bass are represented throughout a complete size range, but age 0-2 largemouth bass (<8 inches) make up only 9% of the total catch. This fact likely indicates that recruitment of largemouth bass is likely sub-optimal or that during our sampling runs we did not effectively sample younger year classes of largemouth. Growth rates are at or near the statewide average for most year classes (Appendix A).

Non-gamefish

The most abundant non-game fish collected was emerald shiner (*Notropis atherinoides*) at 154 fish/hour. Other fish collected included white sucker (*Catostomus commersoni*), gizzard shad (*Dorosoma cepedianum*), spotted sucker (*Minytrema melanops*), freshwater drum (*Aplodinotus grunniens*), bigmouth buffalo (*Ictiobus cyprinellus*), yellow bullhead (*Ictalurus natalis*), common carp (*Cyprinus carpio*), burbot (*Lota lota*), sand/mimic shiner (*Notropis stramineus/volucellus*) and golden shiner (*Notemigonus crysoleucas*). The non-game fish assemblage is more characteristic of the fish assemblage that is found in the nearby Chippewa River.

Small Fish Assemblage (SFA)

Mini-Fyke Net Assemblage.

Mini-Fyke net settings provided little additional information on the forage fish community. The only new fish documented using mini-fyke nets were the pugnose minnow (*Notropis emiliae*) and a larval stonecat (*Noturus sp.*). Pugnose minnow are present in the lower Chippewa River and likely come into Silver Birch Lake during flood events and likely are self sustaining within Silver Birch Lake. A total species list is presented in Table 2.

Management Recommendations

1. Further investigations should be conducted to determine if largemouth bass recruitment is sub-optimal. The information collected suggests that largemouth bass recruitment is poor. Largemouth bass (< 8 inches) are underrepresented in the largemouth bass length distribution.
2. Bluegill size structure could possibly be improved by initiating a 10-bag limit in total for panfish. Local angler input should be solicited to determine its acceptability.
3. The Department should work with the local partners in an effort to improve water quality conditions in Silver Birch Lake.

Appendix A: Gamefish mean length at age, Silver Birch Lake, 2002.

