

**Thompson Lake
Pepin County
Baseline Lakes Monitoring
Fisheries Inventory
2001
MWBC = 2055200**



**Heath M. Benike
Rivers Specialist, Wisconsin Department of Natural Resources
West Central Region
Lower Chippewa River Basin
December 2001**

Abstract

Thompson Lake was surveyed using the lakes baseline monitoring strategy in the spring and summer of 2001. Northern pike was the most common gamefish collected during the Esocid/Percid sampling run followed by yellow perch. No walleye or sauger were collected during this survey. Currently the northern pike fishery contains a low density, but quality sized fishery. Bluegill was the most abundant gamefish collected followed by black crappie and largemouth bass during the Centrachid sampling run. Bluegill total annual mortality was estimated at 88%. In addition, no bluegill greater than 7.5 inches were collected during this survey. Black Crappie total annual mortality was estimated at 85% and no black crappie greater than 10 inches were collected during this survey.

Nongame fish species collected during this survey included, white sucker, carp, spotted sucker, gizzard shad, bowfin, burbot, spotfin shiner, golden shiner, mimic shiner, yellow bullhead and brook silverside.

Overall the panfish community is currently sub-optimal. PSD values indicate that the bluegill and black crappie fishery is currently borderline sustainable and RSD values indicate that larger adult bluegill and black crappie are likely harvested before they reach larger size ranges.

Future regulation changes could enhance the current size structure of bluegill and black crappie in Thompson Lake. Reduction in bag limits and an initiation of a minimum size limits for one or both species would likely be needed to see any appreciable impact on the overall size structure of bluegill and black crappie in Thompson Lake. If local support for such change are not warranted, it is recommended that the current regulation remain in effect knowing that the current regulation will produce a sub-optimal bluegill and black crappie fishery.

Introduction:

Thompson Lake is a small 42-acre floodplain lake located west 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 periods of run-off events when discharge at the USGS Durand gauge approaches 40,000 cubic feet per second (Benike personal observation, 2001). Over the last twenty years 65% of time, the peak annual discharge at Durand has exceeded 40,000 cfs (USGS website data). Although floodwaters enter into Thompson Lake on a regular basis, from personal observations the Chippewa River creates a backwater effect by flooding adjacent woodlands versus becoming a major floodflow channel of the Chippewa River during flooding events. The last known survey of Thompson Lake occurred in October of 1991.

Methods:

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

4-24-01

The entire lakeshore was sampled. Sampling was targeted towards Esocids/Percids following the lake baseline monitoring protocol 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.

5-2-01

The entire lakeshore was sampled. Sampling was targeted towards centrachids following the lakes baseline monitoring protocol 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 black crappie in an effort to collect needed aging data and develop mortality estimates for this lake.

8-30-01

Ten, thirty meter electrofishing stations were set up to collect small forage fish species using a DC stream shocker with three electrodes operating at 250 volts and 6 amps. All fish collected were identified and counted.

9-5-01

Four mini-fyke nets were set at various locations along Thompson Lake. The nets were pulled on 9-6-01 and all fish collected were identified and counted by individual net.

Results

Esocid Percid Run and .5 Mile Index Run

Northern pike was the most common fish collected during this sampling event followed by yellow perch. No walleye or sauger were captured. Northern pike ranged from 19.0-31.5 inches in length. Northern pike catch per hour ranged from 3.95 to 7.83 during the esocid/percid and index runs respectively. Northern pike abundance appears to be adequate for Thompson Lake and is represented by a few quality sized fish. Yellow perch catch per hour ranged from 2.26 to 15.65 during the esocid/percid and index runs respectively. Yellow perch numbers were generally low and were represented by mostly males, which were of sub-optimal size.

Centrarchid Run and .5 Mile Index Run

Bluegill

Bluegill was the most common fish captured during this sampling event. Catch per hour for bluegill was 309 to 484 fish per hour during the centrarchid and index runs respectively. No bluegill greater than 7.5 inches were collected. The length distribution for bluegill is presented in (Figure 1). Bluegill mortality estimates were calculated in (Figure 2). Bluegill total annual mortality is estimated at 88% for ages 3-5, r-square .95. Age and growth information from the sub-sampled fish are also consistent with the statewide average indicating that the lake does not have a stunted bluegill fishery. PSD values are 17 and RSD_6 and RSD_7 are 17 and 0.4 respectively.

Figure 1: Bluegill Length Distribution, Thompson Lake, Pepin County, WI

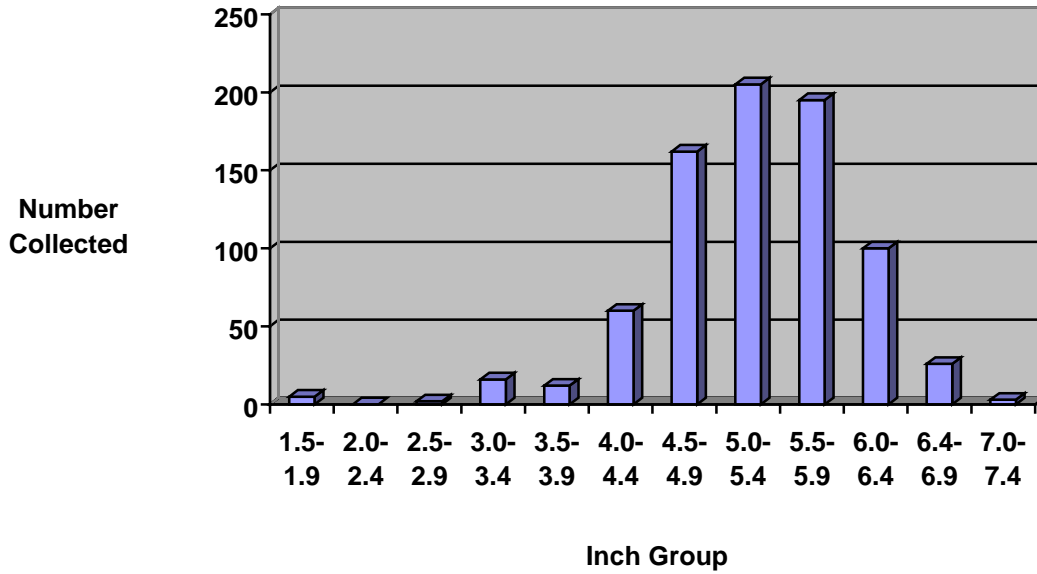
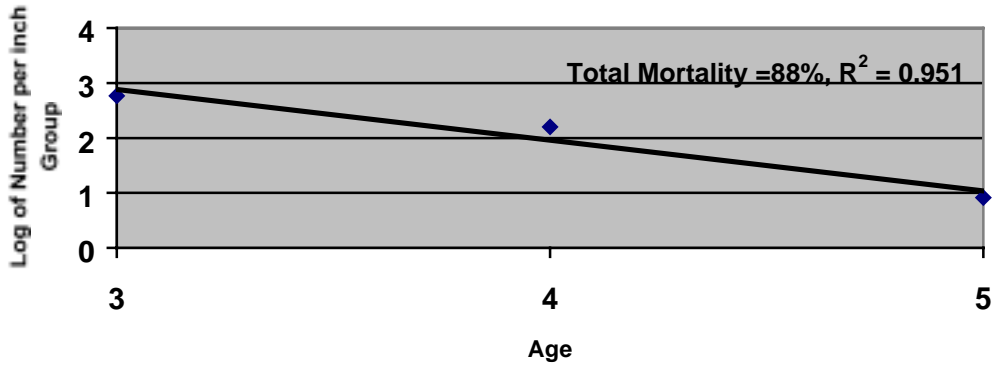


Figure 2: Bluegill Catch Curve, Thompson Lake, Pepin County, Spring 2001; Ages 3-5



Black Crappie

Black crappie were the second most abundant fish collected during this sampling event. Black crappie length distribution is presented in (Figure 3). No black crappie greater than ten inches were collected during this run. Black crappie mortality estimates were calculated for ages 3-5 (Figure 4). Total annual mortality was estimated at 85%, r-squared = .99. Age and growth information from sub-sampled black crappie indicates that

black crappie growth rates are consistent with the statewide average. PSD values are 5 and RSD₈ and RSD₉ values are 5 and 2 respectively.

Figure 3: Black Crappie Length Distribution, Thompson Lake, Pepin County, WI.

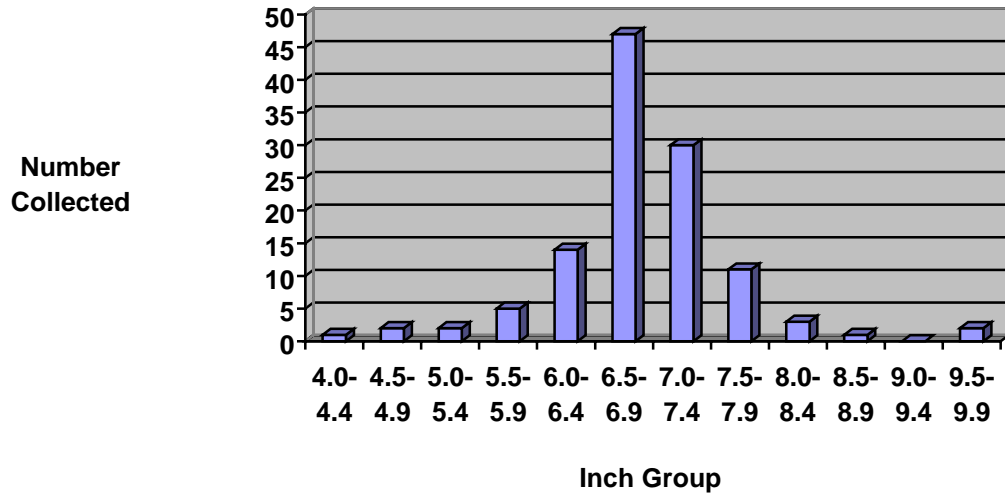
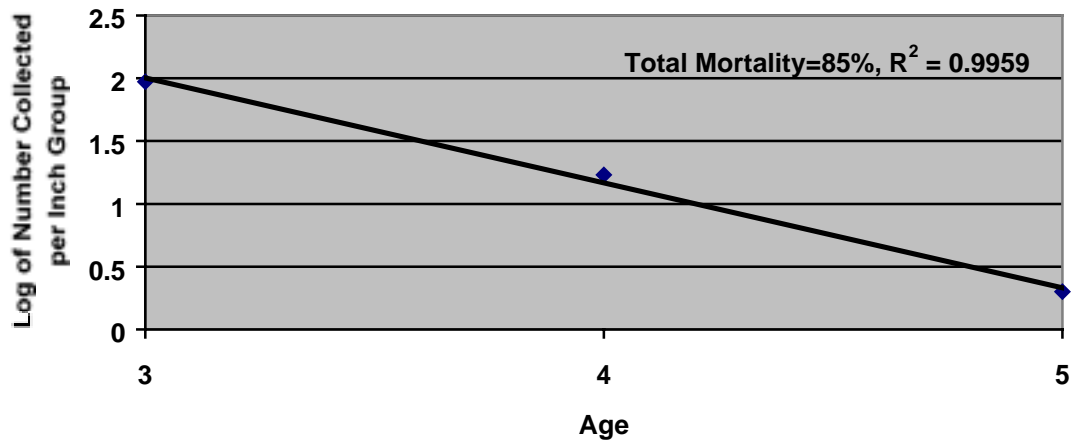


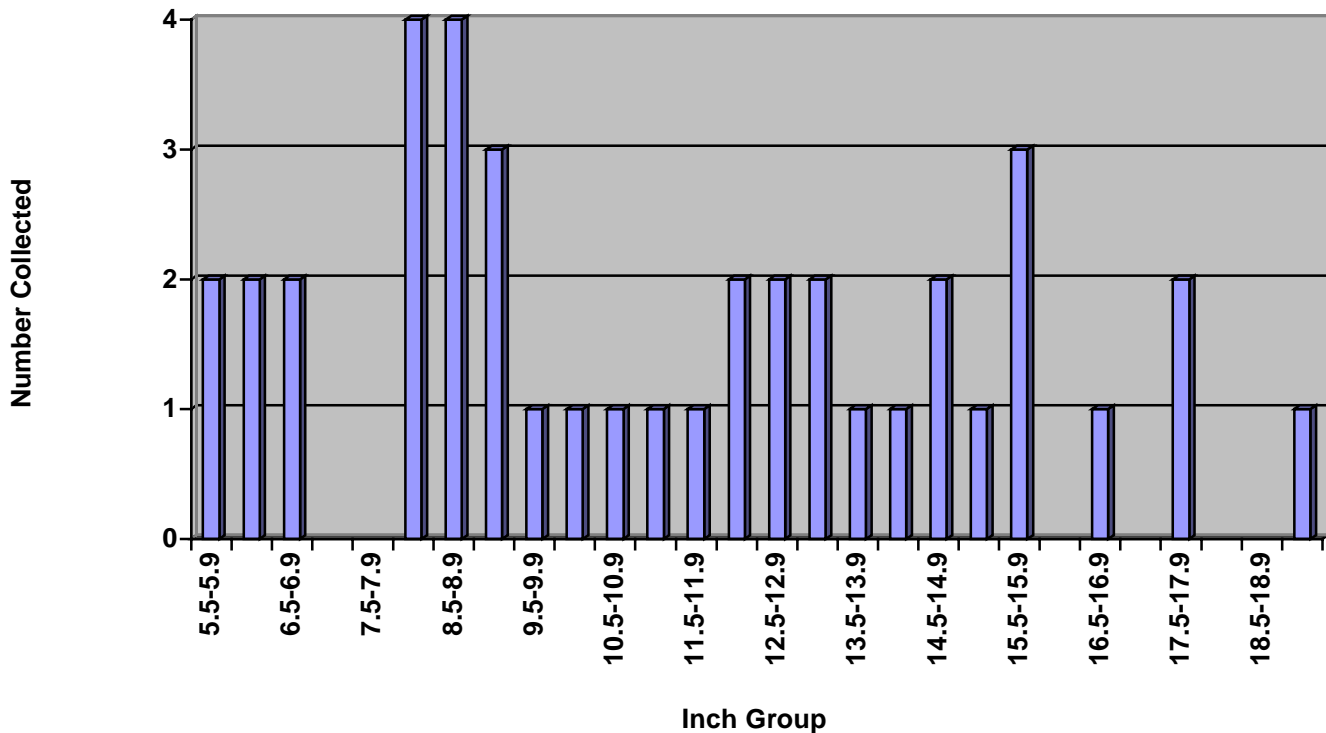
Figure 4: Black Crappie Catch Curve, Thompson Lake, Pepin County. Spring 2001, Ages 3-5.



Largemouth Bass

Largemouth bass were the third most abundant fish collected during this sampling event. Largemouth bass length distribution is presented in (Figure 5). The length distribution shows that largemouth bass are represented throughout a complete size range, but younger year classes are very poor, indicating that recruitment of largemouth bass is

Figure 5: Length Distribution, Largemouth Bass, Thompson Lake, Pepin County, WI



likely sub-optimal or that during our sampling runs we did not effectively sample younger year classes of largemouth bass.

Non-gamefish

The most abundant nongame fish collected was white sucker at 47 fish/hour, followed by carp at 24 fish/hour. Other fish collected included gizzard shad, spotted sucker, burbot and bowfin. The nongame fish assemblage is more characteristic of the fish assemblage that is found in the nearby Chippewa River. It is likely that this fish assemblage could change whenever floodwaters from the Chippewa River enter Thompson Lake.

Small Fish Assemblage (SFA)

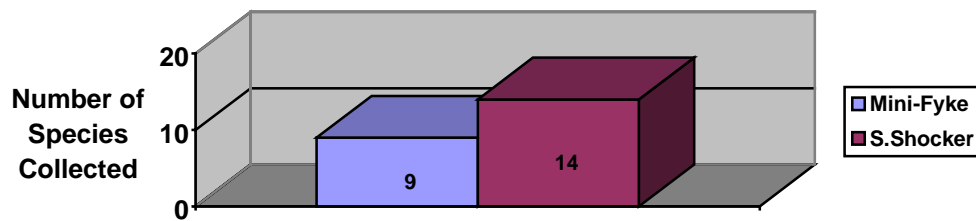
Mini-Fyke Net Assemblage.

Mini-Fyke net settings provided little additional information on the forage fish community. The only new fish documented using mini-fyke nets were the spotfin and golden shiner. Spotfin shiners are common in the lower Chippewa River and likely come into Thompson Lake during flood events and golden shiners are common on area lakes. A total species list is presented in Table 2.

Ministream Shocking.

Additional species that were documented using this sampling technique include pumpkinseed sunfish, yellow bullhead, brook silverside and mimic shiner. Overall ministream shocking provided a better representation of the overall fish assemblage (Figure 6) when compared to mini-fyke nets. A total species list is presented in Table 3.

Figure 6: Number of Species Collected During SFA Sampling Stations by Gear Type



Management Recommendations

1. Regulation changes for bluegill and black crappie should be considered. Mortality estimates are high for both species, growth rates are consistent with the statewide average and no bluegill greater than 7.5 inches were collected and no black crappie greater than 10 inches were collected. A ten-bag limit would likely not have any appreciable impact on the size structure of bluegill or black crappie due to Thompson's Lake small size. Initiating a reduced bag of 10 along with a minimum size limit on bluegill and or black crappie would likely be needed to enhance the existing size structure. Regulation proposals should be discussed with local anglers to determine their acceptability.
2. Further investigations should be conducted to determine if largemouth bass recruitment is sub-optimal. The information collected suggestion that largemouth bass recruitment is poor. Younger year classes of largemouth bass are underrepresented in the largemouth bass length distribution.

-
-
3. The Department should promote in-lake habitat improvement activities such as adding woody-debris to shoreline areas to enhance adult and juvenile fish cover.