

EXCERPTS FROM DNR REPORT ON 2009 FISH SURVEY

SUMMARY

Fish populations in Clark Lake appear to be in a state of change.

- Walleye numbers are down since 1994 based on population estimates, but walleye relative abundance (CPE) appears to be increasing. Walleye reproduction is evident and length at age is above state averages although there are few large walleye in the lake. Harvest may be impacting the size of walleye in Clark Lake.
- Smallmouth bass numbers are stable and largemouth bass continue to be part of the fishery. Bass populations appear to be reproducing well.
- The northern pike population appears to be declining in the lake. Few northern pike are large in size and harvest or poor recruitment may be affecting their size distribution.
- Panfish are increasing in number. Stocking of yellow perch by the Clark Association may have improved the yellow perch population in the lake. Growth of panfish in Clark Lake appears to be good.
- Forage minnows are common in the lake near Logan Creek, but lack of suitable habitat in other areas of the lake, limit their abundance. Increased spatial distributions of plants would benefit forage fish as well as other species.
- Carp although present in the lake, were low in number and do not seem to be a problem at this time.
- During spring netting we collected fish as part of the statewide surveillance for the viral hemorrhagic septicemia (VHS) virus. For the fish that we submitted all test results were negative for VHS. But since we captured two steelhead in Clark Lake, it demonstrated that Lake Michigan fish can enter the lake over the dam exposing Clark Lake fish populations to VHS. Because of this, the lake is now on the list of waters considered to be VHS positive.

DISCUSSION

The 2009 fisheries survey on Clark Lake characterized the fish populations of the lake using multiple fisheries assessment gear during multiple seasons. Each gear type was efficient in capturing certain fish species and fish sizes. The use of multiple gears during different sampling seasons provided a clearer picture of the entire fish community and fish population characteristics of individual species within the lake.

A total of 1,426 fish were collected during the fisheries surveys of Clark Lake with rock bass, bluegill and walleye the most common species (Tables 1, 11 and 14). Other species were captured in much lower numbers.

Gamefish

In 2009 walleye were the most abundant gamefish captured during surveys as they have been since the 1969 survey. However, during this time period walleye CPE as measured by fyke catch has been variable (Table 16). These variations in CPE may be due to variations in walleye year class strength (good or bad spawning years) or caused by fyke net placement which may influence our walleye catch (Table 16). CPE in 2009 was the highest measured since the 1981 survey and continues the trend of increasing walleye CPE since 1984.

We noted few large walleye in any of our 2009 surveys and few young of year walleye in our fall survey unlike previous surveys conducted in the 1960's and 1970's that found abundant large walleye and the 1994 and 2005 surveys that captured many young of year in the fall (Tables 1, 11 and 14) . The number of small size fish (under 400 mm) captured in 2009 indicates that some level of reproduction is occurring and that walleye are recruiting into the population but perhaps not to historic levels (Table 2). Population estimates of spawning age fish continues to decline. The 2009 population estimate (PE) of 881 for spawning walleye (Table 1) is much less than previous PE's that varied between 1,500 and 3,000 (Hogler et al 2005). The presence of few large walleye in our surveys and declining spawning PE's suggest that total annual mortality (natural and angler) is probably high. Based on the walleye spring length frequency it appears that harvest is removing fish larger than 500 mm and that much of the harvest is likely focused on female walleye. Growth (length at age) is above statewide averages at all ages indicating sufficient forage levels for the current walleye population in the lake (Table 4).

Table 16. Summary of fyke net surveys, numbers of fish and catch per net night (CPE) from Clark Lake 1969-2009. The 1969-1994 data is after Lychwick (1995).

Species	1969	1976	1981	1984	1994	2005	2009
Walleye	142 (2.84)	458 (6.94)	388 (6.06)	393 (3.97)	209 (2.79)	225 (3.21)	235 (4.12)
Northern Pike	23 (0.46)	114 (1.73)	97 (1.51)	51 (0.52)	86 (1.15)	66 (0.94)	29 (0.51)
Smallmouth Bass	12 (0.24)	13 (0.20)	19 (0.30)	6 (0.06)	13 (0.17)	72 (1.03)	9 (0.16)
Largemouth Bass	3 (0.06)	2 (0.03)	5 (0.08)	1 (0.01)	3 (0.04)	0 (0.0)	2 (0.04)
Rock Bass	38 (0.76)	86 (1.30)	318 (4.97)	88 (0.99)	201 (2.68)	182 (2.6)	512 (8.98)
Yellow Perch	328 (6.56)	46 (0.70)	22 (0.34)	17 (0.17)	9 (0.12)	37 (0.53)	54 (0.95)
Bluegill	10 (0.03)	34 (0.52)	112 (1.75)	132 (1.33)	13 (0.17)	20 (0.29)	302 (5.3)
Bullhead sp.	7 (0.14)	6 (0.10)	5 (0.08)	28 (0.28)	118 (1.58)	6 (0.09)	0 (0.0)
Carp	1 (0.02)	6 (0.09)	50 (0.78)	5 (0.05)	18 (0.24)	4 (0.06)	0 (0.0)
Sucker sp.	69 (1.38)	159 (2.41)	216 (3.38)	70 (0.71)	204 (2.71)	82 (1.17)	13 (0.23)
Bowfin	2 (0.04)	5 (0.08)	20 (0.31)	2 (0.02)	7 (0.09)	5 (0.07)	1 (0.02)

In 2009, the relative abundance (CPE) of smallmouth bass declined from the 2005 level (Table 16). The decline was from the highest smallmouth bass CPE measured for Clark

Lake (since 1969) to a level consistent to those measured before 2005 and likely represents the average population level for bass in Clark Lake given the current abundance of walleye. Smallmouth bass and walleye abundances may be linked because they compete for food resources and adult fish of one species may prey on the young of the other species. Electroshocking surveys caught a number of small fish indicating that smallmouth bass have been successful in spawning. Growth appears to be good for smallmouth bass (Table 4).

Although largemouth bass were rarely captured during spring surveys in 2009, they continue to persist in low, but stable numbers in Clark Lake.

The number of northern pike that we capture during our surveys continued to decline in 2009 and was the lowest number captured during fyke netting since 1969 (Table 16). The lack of large pike during spring surveys could indicate that our nets are set in poor locations to capture spawning pike or may indicate a decline in the northern pike population of the lake. Since large pike were rarely captured during electrofishing surveys and young of year pike were not captured in fall surveys it is likely that the northern pike population has declined in the lake (Tables 12 and 15). The decline may be due to a combination of harvest of large adult pike and variable spawning success which is not unusual for northern pike. From our analysis of pike age, it appears that several year classes (ages 4, 6 and 7) appear to be under-represented which is an indication of variable spawning success (Table 5). Since many northern pike may spawn in Logan Creek, low water in the creek caused by several years of low rainfall may have negatively impacted pike spawning success. Increased rain and snowfall the past several years may have led to improved spawning conditions which may result in better spawning success and increased numbers of northern pike in the future. Length at age indicates northern pike in Clark Lake are growing slightly slower than statewide average growth (Table 4).

Panfish

Panfish populations in Clark Lake appear to be increasing (Tables 1, 11 and 14). CPE for rock bass and bluegill are at the highest level of the past four decades (Table 16). Yellow perch CPE although still lower than 1969 CPE continues to improve. The sharp increase in panfish number may be due to sampling (fyke net locations) or to actual increases in panfish numbers due to environmental changes, likely due to increases in the size of offshore plant beds. Likely both contributed to the increases in panfish numbers we captured during 2009.

Increasing yellow perch numbers are likely due to survival of perch stocked by the Clark Lake Association and from progeny produced by fish from these stockings. It is unknown if current levels of recruitment will sustain the perch population in the face of angler harvest and nearshore habitat disturbance.

Other Species

Several other species were captured that are worth noting. The white sucker population in the lake has declined since 1994 and sucker relative abundance (CPE) was the lowest measured since 1969 (Table 16).

Forage minnows were abundant near the outlet of Logan Creek, but were scarce in other parts of the lake. It is likely the aquatic plant beds and Logan Creek provide excellent habitat for minnows while limited plant cover in other parts of the lake limit their abundance.

The bullhead and bowfin populations appear to be lower in the lake in 2009 than in previous years (Table 16). Carp were captured in low number during all electrofishing surveys and appear to be similar in number to earlier surveys. Carp do not appear to be a problem in the lake.

RECOMMENDATIONS

- Investigate changing the walleye size and bag limit to improve the number and size structure of walleye in Clark Lake. Several different regulations could be used to manage walleye in the lake. The lack of large walleye and good numbers of small fish suggests a regulation of no minimum size, a protected slot of 14"-18" (no harvest) and 1 fish over 18" and a daily total bag of 3 walleye. Another regulation that could improve walleye number and size distributions is an 18" minimize size and 3 daily bag. Since it is not clear if anglers would support any regulation change, any future rule proposal would need to be discussed with local anglers to gather local support before rule submittal.
- As another way to reduce walleye harvest, investigate the public sentiment for eliminating motor trolling on Clark Lake.
- Encourage the recolonization of shallow water aquatic plants by establishing no wake areas or by temporary placement of wave and turbidity barriers to get plants started. Reestablishment of aquatic plants is necessary to have a healthy stable fish community in the lake.
- Encourage shoreline residents to reestablish natural shorelines. This will also help plant communities as well as many other animal populations.
- Monitor the movement and abundance of invasive species in Clark Lake. If these species get firmly established in the lake, more changes in the fish community are likely.