Illinois
Department of
Natural Resources
One Natural Resources Way • Springfield, Illinois 62702-1271
http://dnr.state.il.us
Rod R. Blagojevich, Governor

Mayor Frank Loffredo
Village of Lake Villa
65 Cedar Ave.
Lake Villa, IL 60046

Dear Mayor Loffredo:

Enclosed is a report generated from the lake survey we conducted on Deep Lake last October 2012. The report gives general observations about the fishery and contains a list of species we collected along with their minimum, maximum and average sizes. Our sampling is a snapshot of the fishery vulnerable to our gear-types on the day (or two) we're there. Not all fish are vulnerable to our gear-types or inhabit the areas we're sampling at the time, day, or season we're there. Sampling variation exists and should be kept in mind when looking over the report. Some fish are caught by fishermen more efficiently than we can sample them so sometimes fishing reports are good indicators of how well a "fishery" is doing. Our goal for glacial origin lakes, like yours, is to collect glacial indicator species and sportfish so we get a well rounded idea of how things have changed or better yet, not changed, because glacial lakes in Illinois are best represented when their water quality, plant diversity and fish diversity stay the same.

If you have questions, need interpretations, or would like to discuss any part of the report please feel free to call.

Please feel free to forward copies to interested Lake Committee members or resident's.

Sincerely,

Frank Jakubicek- District Fisheries Biologist
Illinois Department of Natural Resources
8916 Wilmot Rd.
Spring Grove, IL 60081
815/675-2319

ILLINOIS DEPARTMENT OF NATURAL RESOURCES
DIVISION OF FISHERIES

SUPPLEMENTAL SURVEY

County: Lake
T 46N **R** 10E **S** 33
Directions: Northeast of Lake Villa North side of Rt. 134
Date of Inspection: 10/25/2012

Water (Name) Deep Lake **Owner** Multiple

Address of Owner _____ **Phone of owner** _____

Lessee _____
Keith McKenzie (Lake Committee) - 847/356-8526
Persons(s) contacted) Frank Loffredo (Mayor) **Identification** Mayor

Address of contact Village of Lake Villa, 65 Cedar Ave., Lake Villa 60046 **Phone of contact** 847/356-6100

Water classification (check) State ___ **Pub-Coop** __ **Pub-Other** XXX **Organ** ___ **Commer** __ **Stream** ____

1. **Survey initiated by:** Frank Jakubicek
2. **Water size:** 200.0 **Acres or** _____ **Miles.**
3. **Date of last inspection or work on water:** 2003
4. **Purpose of survey:** Fish Population Survey
5. **Observations, comments, recommendations:**

During 60 minutes of daylight (D/C) electrofishing a total of 294 fish from 17 species were collected (Table 1). D/C gear is more efficient than A/C at collecting fish so we've begun shifting our sampling to that gear type. Fish are drawn toward the electrodes instead of just being "stunned" so we are able to see more species, dip more fish, and ultimately provide a better snapshot of the fishery from our sampling.

Largemouth bass were collected at a rate of 0.95 fish /minute compared to 0.3 fish/minute in 2003. The increase was probably related to the gear efficiency mentioned above versus an actual increase in bass abundance. Management goals target a bass catch rate of 1.0 fish per minute (60 bass per hour) so we came very close to matching our target goal. Fish ranged in length from 3.3" to 16.4" long which was similar to the last survey but Population indices such as Proportional Stock Density (PSD) varied. PSD's help managers define the size distribution of the sample. For a balanced fishery consisting of a good mix of mature and immature fish the general recommendation is for the index is to fall between 40 and 60. The PSD for your lake's sample was 46, down from 90. The difference between survey data was that more fish between 8" long and 12" long were collected so the sample was more in balance than the last one. The 2003 PSD of 90 suggests we collected more fish over 12" long than between 8" and 12" so the PSD was a high number. When more mature fish and fewer immature fish are collected the PSD skews upward. When more immature fish are collected compared to mature, the PSD is skewed downward. With an even mix between the two the value is 50. Figure 1. shows the samples population indices in graphic form. There appears to be a fairly steep decline in abundance between 13" and 14" in length. Declines like this suggest fish are being harvested as they approach 14 inches long.

6. **Biologist:** Frank Jakubicek **Date of Report:** 02/06/2013

F.M. 5.0

Table 1. Catch Summary Deep Lake, 10/25/2012

SPECIES	NUMBER	PERCENT	LENGTH (In) MINIMUM	AVERAGE	MAXIMUM
LARGEMOUTH BASS	57	19.4	3.3	8.5	16.4
SMALLMOUTH BASS		0.0			
BLUEGILL	93	31.6	1.6	4.9	8.3
PUMPKINSEED SUNFISH	11	3.7	4.6	6	6.8
GREEN SUNFISH		0			
LONGEAR SUNFISH		0			
REDEAR SUNFISH	55	18.7	5.2	8.2	10
WARMOUTH		0			
BLACK CRAPPIE	2	0.7	8.6	10	11.5
WHITE CRAPPIE		0			
WALLEYE	1	0.3	15.8	15.8	15.8
YELLOW PERCH	11	3.7	3.6	4.9	6.8
LOGPERCH		0			
JOHNNY DARTER		0			
IOWA DARTER*		0			
MUSKELLUNGE		0			
TIGER MUSKIE		0			
NORTHERN PIKE		0			
GRASS PICKERAL	26	8.8	4.8	8.3	12.9
CHANNEL CATFISH		0			
FLATHEAD CATFISH		0			
BLACK BULLHEAD		0			
BROWN BULLHEAD	3	1.0	11.3	11.8	12.1
YELLOW BULLHEAD	3	1.0	8	9.1	11.2
BOWFIN	2	0.7	26.8	27	27.1
CARP	3	1.0	11.2	21.8	29.4
GRASS CARP		0			
GOLDFISH		0			
GOLDEN SHINER		0			
EMERALD SHINER		0			
BLACKCHIN SHINER*	4	1.4	1.6	1.8	2.1
BLACKNOSE SHINER*		0			
FATHEAD MINNOW		0			
BLUNTNOSE MINNOW	5	1.7	1.8	2.2	3.1
BROOK SILVERSIDE	1	0.3	2.8	2.8	2.8
BANDED KILLIFISH*	1	0.3	1.7	1.7	1.7
GIZZARD SHAD		0			
WHITE SUCKER		0			
LAKE CHUBSUCKER	16	5.4	8	9.1	10.9
SPECIES = 17 TOTAL=	**294**	**100.0**			
*E&T Species					

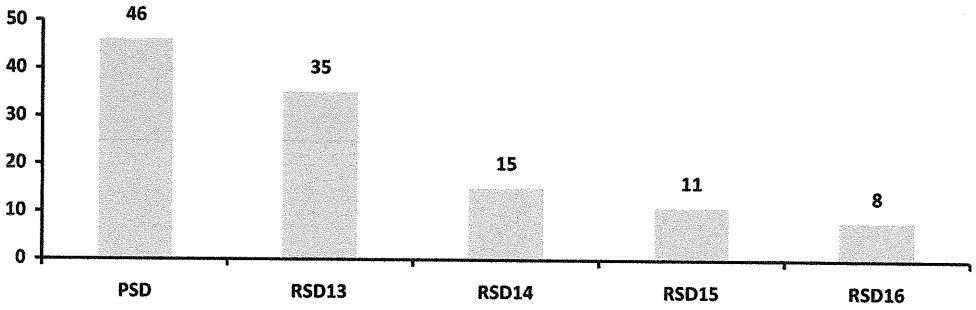

Figure 1 Population indices for largemouth bass in Deep Lake

Declines like this are indicative of fish leaving the system because of some variable and the most likely variable is always fishing harvest. The State of Illinois does not have a 14" length limit on largemouth bass but the public has the perception we do so inherently fishermen choose this length when they don't really

know what the regulations are, or perhaps the Village of Lake Villa and the Lake's adjacent Homeowners Associations have worked out an education campaign and an enforceable length limit close to this. Because bass become sexually mature around 12", a 14" length limit gives them two extra attempts (two years) at reproduction before they reach 14". These are the types of concepts that are brought into consideration when the State establishes regulations.

Bluegill were the dominant species in the sample and ranged in size from 1.6 to 8.3 inches long. We could have dipped significantly more bluegill but we generally dip the representative size groups so the population is represented then save tank space for other species and all predators. Bluegill are multiple spawners so their reproductive success isn't based on a single spawning event, like other species, and their abundance is almost never in question. Management goals for bluegill usually rely heavily on making sure enough predator presence is in the lake to control their prolific reproductive potential. According to our data, 5% of the bluegill catch were over 7.5" and 2% were over 8" long. These data were similar to the previous survey with 1.8% exceeding 8" in 2003. Fishermen target bluegill over 6" long and really enjoy catching fish over 8" so when we collect 8" bluegill we feel the lake is in good shape.

Redear sunfish are part of the panfish component that have succeeded in Deep Lake and are probably targeted by fishermen since some of these fish approach ¾ of a pound and fight like crazy on light line. They thrive in sand bottom lakes with feed on snails, small crayfish and other aquatic invertebrates. Redear ranged in size from 5.2" to 10 inches long and were abundant in the 8" to 9" size suggesting some successful reproduction 4 or 5 years ago. Redear become sexually mature at about 7" long so the population should expand and fishermen should notice the difference 4 or 5 years from now.

Only two black crappie were collected during this survey but they were reasonable size at 8.6" and 11.5". Crappie tend to inhabit water deeper than we can efficiently collect them so they generally make up a small percentage of our sample when we only electrofish. Crappie are vulnerable in early spring in fyke (trap) nets but at that time of the year we concentrate our sampling toward broodstock for the State Hatchery system and rarely spend time sampling other lakes. Generally speaking if we collect a few crappie while electrofishing, the population is doing fine and if they're longer than 10", fishermen are "happy" with the crappie fishery.

No northern pike were collected but sampling conditions were very difficult. The day we surveyed Deep Lake the wind was gusting near 30 mph so collecting "low abundance" fish like northern pike, where the dipper may only have a second or two to identify it and reach for it, was very difficult. The north and east shorelines were gusty, bouncy and we had to move fairly quickly to keep the boat under control. Northern pike are a good, native predators of panfish and are good to have in our lakes balance out panfish species and provide sportfishing opportunities to fishermen. Northern pike become sexually mature around 20" long so the Statewide regulation of 24" gives them 2 extra seasons of potential reproduction before they become vulnerable to harvest.

Other species collected included lake chubsuckers, grass pickerel, yellow perch, blackchin shiners, banded killifish, and bowfin, common carp, yellow and brown bullhead. As you know, black chin shiners and banded killifish are State Listed E&T species and special considerations must be taken to avoid "take" of this species ("Take" is defined as causing mortality). Most of the above species are common in local impoundments (except blachchin shiners and banded killifish) and they maintain themselves through natural reproduction but never become too abundant or cause too many problems; they are part of a healthy, diverse fishery and most people never notice their presence. Common carp should be removed whenever possible, they have the ability to cause more problems than benefits in most situations so as fishermen catch them, they should consume them, dispose of them or compost them.

Conclusion

Our sample contained several glacial indicator species, as outlined by the Chicago Wilderness. It was nice to see an abundance of grass pickerel and lake chubsuckers, two E&T species; blackchin shiners and banded killifish, and a brown bullhead in one hour of sampling. Species diversity is one thing that sets Deep Lake apart from many of Illinois' lakes and a reason to manage the vegetation conservatively. Our glacial indicator

species thrive in situations where vegetation is diverse and water is clear. Reducing vegetation with herbicides tends to shift the system toward planktonic algae and more turbid water. Like a ball rolling down hill, this further reduces light penetration and shifts to plants toward those that are more tolerant and less desired.

Historically, longnose gar have been collected in Deep Lake but we did not collect any this survey. Occasionally fishermen catch one hook and line so although they're rare, they are still present and help build on the strong, diverse predator base that helps balance forage species like bluegill, redear, black crappie and yellow perch. In the presence of a lot of vegetation, many forage species have the potential to over-populate and upset the balance of a fishery.

Recommendations

1) Post a one fish per day creel, 15 inch length limit for largemouth bass. (This helps provide enough mature fish in system to maintain their population through natural reproduction).

2) Post a spawning "no harvest" regulation for largemouth bass in May to protect male fish guarding their nests.

3) Encourage fishermen to remove carp whenever possible.

4) Check with local fishermen to see if they regularly catch northern pike and what size. Occasional stockings needed to keep the population abundant. (A typical stocking rate is 2 fish/acre (8" - 10" fingerlings).

5) Establish a Management Plan for Aquatic Vegetation so the various Associations and the Village of Lake Villa work in a coordinated manor and competing practices don't diminish the integrity of Deep Lakes diverse plant community. Glacial lake qualities are why people are drawn to the lake and what makes it unique in our area, too large or too many herbicide treatments will forever change the system to something lesser.