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 From: Ken Clodfelter
 Date: 2-20-08
 Subject: Fish Survey

Lost Nation Lake Survey Report for 2004

Lost Nation was surveyed on September 6, 2007 by Ken Clodfelter and Rick O'Neil. The sampling method was DC electrofishing. A total of two, 30 minute electrofishing runs were conducted for a total of 60 minutes. The stations sampled were not the typical stations. As a result the efficiency was not as good because of the extremely shallow shoreline in these areas. However, the bluegill and largemouth bass survey was quite similar to the 2004 survey. The main difference was the gizzard shad number dropped from 17.2 per minute to 4.6 per minute. We collected a total of 504 fish in 60 minutes or 8.4 fish per minute. If you exclude the shad the catch rate of 3.8 fish per minute is identical to the 2003 survey.

Largemouth Bass Table comparing results of last 5 samples

LMB	LMP	Rating	2007	2004	2003	2002	2001
PSD	40-60	Good	74.2	65.2	88.9	72.0	70.0
RSD14	15-25	Good	64.2	50.0	68.9	36	51
RSD15	5-15	Good	32.9	43.4	37.8	38.8	16.0
Wr	90-110	Good	102.3	101.2	99.2	109.0	104.0
CPUEALL	>60F/Hr	Good	80	73	61	143	287
CPUE>12"	>30F/Hr	Good	52	30	53	68	40
YAR	1-5	Poor	0.2	0.4	0.0	0.1	3.3

Bluegill Table comparing results of last 5 samples

BLG	LMP	Rating	2007	2004	2003	2002	2001
PSD	20-40	Good	46.0	48.1	45.0	33	35.5
RSD7	10-15	Good	15.3	7.1	14.3	8.4	4.0
RSD8	5-10	Poor	0.0	0.0	0.0	0.0	0.0
Wr	90-110	Good	103.7	105.8	104	107	97.0
CPUEALL	60-300	Good	101	158	104	260	430
CPUE > 6"	>45/Hr	Good	46	74	47	90	98

Largemouth Bass:

A total of 80 largemouth bass were collected ranging in size from 2.5 to 18.6 inches, with 56.3 of the largemouth greater than 14 inches and 28.8 % greater than 16 inches. The lake has an excellent bass population with a lot of larger bass present. The body condition or Relative Weight (Wr) is excellent. Especially for the larger bass. The body condition of the smaller bass was average. This is to be expected because of competition for food between the small bass and the gizzard shad. The only problem with the bass population is the poor recruitment of the small bass. If you look at the bass table and go across to the YAR this is the Young Adult Ratio in a lake we would like to see this value be between 1-5. The last year this was achieved was 2001. With very little vegetation cover, largemouth bass recruitment may be a problem. There is no indication that significant over harvesting is occurring. There is ample brood bass that are in excellent body shape that should produce adequate bass to keep the bass population strong. If you notice two weak year class in a row, then you may want to stock 900 bass fingerlings greater than 5 inches.

Bluegill:

The bluegill population has remained very consistent for the last few years. They have found in lakes with consistently good bluegill populations the PSD should be between 20 and 50. The PSD is calculated by totaling all the bluegill collected that are at least 3 inches long and dividing them by those that are at least 6 inches. As stated before this value should be between 20 and 50 percent. On your BLG Table this is the PSD column. You can see yours have been in the desire range every years. The lake has a good population of 7 inch bluegill also. The only criteria that wasn't in the desired range was the percent of bluegill at least 8 inches. The failure to achieve the RSD8 is quite common in lakes with both shad and green sunfish. The interspecific competition for food causes a decrease growth rate of bluegill especially the first two years. The lake should have good bluegill fishing in 2008 as the number of bluegill at least 7 inches was up in 2007.

Walleye , Northern Pike and Muskellunge:

None of these fish species were collected in are sample. However this is to be expected because of the sample location and time of sample. The best area to sample these fish species is electrofishing by the dam and the best time is at night. The walleye especially likes to stay in the deep water during the daytime. The best time and method to sample all 3 species is in April using either gill nets or trap nets. All three of these species are going to have to be maintained by supplemental stocking. We don't get any natural recruitment even on are larger State Lakes. I would recommend the same number and sizes that you have stocked before. We don't recommend stocking both northern pike and muskie. With no vegetated marshy areas I would recommend the muskie but that is my personal preference. Both of these run the risk of escaping over the spillway during high waters. I have sampled a few nice muskie just East of the Grand DeTour bridge in the Rock River that I figured came from Lost Lake. Previous surveys have shown the walleye population to be fairly strong. With gizzard shad in the lake all three of these species are important predators. Walleye feed heavily on gizzard shad.

Channel Catfish:

The channel catfish population appears to be fine. We collected 13, that ranged from 1/3 of a pound to greater than 5.5 pounds. All sizes were fat and fast growing. You would expect this in a lake that has a lot of shad. The catfish will predate fairly heavy on the shad. I don't have the stocking records for the last three years but if you haven't stocked any since then, it appears you are getting successful recruitment in your lake.

Crappie:

Crappie are very difficult to sample by electrofishing because they occupy the deeper water the majority of the time. Your lake has both black and white crappie. The best time to sample crappie is the end of April or early May by trap nets. At this time of the year they are in close to the shore spawning. Previous surveys have shown the lake to have a decent crappie population. Crappie fishing will vary with dominant year classes of crappie. As a huge year class gets older the crappie fishing will be great. Then you may not have another year class for a few years and the crappie fishing will be poor until another big year class is produced.

Other Species:

Other fish species collected were carp, white bass, golden shiner and bluntnose minnow. We collected 6 carp between 3.5 and 10.5 pounds. The good news is that we haven't seen any recruitment in the last 3 years. Encourage the removal of any carp caught. They have a high reproduction rate and they keep the water turbid which prevents weed growth, light penetration and hurts the growth rate of the predators in your lake (except channel catfish) because they are all sight feeders.

Management Recommendations:

1. Keep regulations as they are. They are doing a good job at this time of keeping your predator x prey in balance.
2. Continue stocking the walleye and muskie as you have been doing. Both species will have to be maintained by supplemental stockings. Neither will successfully reproduce in your lake. If you haven't been stocking catfish the last few years they appear to be reproducing at a level high enough to maintain their population levels.
3. Encourage carp removal: have carp tournaments, allow bow fishing in May and June in the shallow water areas where spawning occurs and do not return any carp caught angling.
4. I am not real familiar with the lake but I don't remember seeing much structure in the lake. I would recommend building some fish cribs on the ice where there is adequate depth and it would not interfere with other water activities.

5. To get a better handle on the stocking success of the walleye or muskie you may want to have a group of anglers maintain an angler diary or have a short creel form at the boat ramp anglers can fill out and drop in a survey box

6. The smallmouth bass population because of a lack of spawning habitat is probably going to have to be maintained also by supplemental stocking. We didn't go by the dam but there was no evidence of natural reproduction in are sample.

7. Because you don't have control of what enters your lake from the watershed the supplemental stockings are especially important. You have to maintain a large predator population to control the shad, carp, quillback, golden shiners, white suckers and silver redhorse coming into your lake.

Overall, you are to be commended for doing a good job of managing your lake. The lake has a good sport fishery and the suggestions above are to help you maintain or improve the sport fishery. If you have any questions my email is: ken.clodfelter@illinois.gov

DEFINITIONS OF FISH POPULATION STRUCTURAL INDICES

After checking hundreds of ponds and lakes researches have found that ponds and lakes with real good sport fisheries had certain indices values in common. Some of these are listed below with a brief definition what they stand for:

PROPORTION STOCK DENSITY (PSD) - Is a method of analyzing length- frequency data; it is defined as the percentage of "stock " size fish (length at which maturity is achieved) that are of "quality" size (the size which most anglers prefer to catch).

For bluegill the stock size is 3 inches and the quality size is 6 inches. They found the PSD value should be around 20-40 in balanced ponds. By this we mean that of the bluegill that are at least 3 inches 20 to 40 percent of them should also be at least 6 inches. Values a lot high than 40 indicates a pond that has a high proportion of large bluegill but few small bluegills. This may be fine while they last but the bluegill population will eventually crash. A pond with an extremely low PSD value is dominated by small bluegill. This pond's bluegill population may never grow to 6 inches, they may stunt out. So what we are trying to achieve is a predator- prey balance in the pond.

For largemouth bass the stock size is 8 inches and the quality size is 12 inches. They have found in good ponds or lakes the PSD value should be between 40 and 60. By this we mean that of the bass that are at least 8 inches 40 to 60 percent should also be greater than 12 inches. Again a pond with a high PSD is dominated by a high proportion of large bass and a low PSD indicates a pond with a lot of small bass and few large bass.

RELATIVE STOCK DENSITY (RSD)- The percentage of any given size group in relation to "stock" size. In situations where length limits are applied, RSD can be used for evaluation purposes. RSD is like PSD but you are comparing the stock size with a large size. In your case I used 14 inches because this is the minimum size length limit on largemouth bass. If the 14 inch minimum length limit is working you should be able to keep the RSD14 value between the goal of 10 and 25. This helps insure that an adequate number of brood fish are present for reproduction and to control the number of intermediate size bluegill.

For bluegill I used RSD7 because I wanted to see what effect the 7 inch minimum length limit is going to have on the bluegill population. A 7 inch length limit was implemented put to see if we could increase the average size of bluegill with out hurting the predator-prey balance. If the regulation works some 8 inch bluegill ought to also enter the creel.

CPUE= CATCH PER UNIT EFFORT- We convert all electrofishing samples to 1 hour so we can compare samples. For instance one year we may electrofish for 1 hour but the next year only for ½ hour. We would double the totals for the ½ hour sample so the samples would be comparable.

CPUE>12= We are looking at the number of bass 12 inches or greater that are collected in a 1 hour sample. We like to see this be at least 30 bass per hour.

CPUE > 6= We are looking at the number of bluegill 6 inches or larger that are collected in one hour. We like to see this value be 60 or greater.

YOUNG TO ADULT RATIO (YAR)= An index which evaluates the reproductive success of a given population. Balanced populations in lakes have a ratio of 1:10, while small ponds are 1:3.

RELATIVE WEIGHTS (WR)= An index of condition compares the actual weight with the standard or average weight for the state for a specific fish species of the same length and is an indication of the body condition or “plumpness” of the fish.

> 105= excellent condition

95 to 104= good condition

85 to 94= fair condition

<84= poor condition



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