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TO: Paul Peeters

FROM: Steve Hogler
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SUBJECT: 2008 Forestville Millpond Fish Survey

The Forestville Millpond (WBIC-95700) is a 65 acre impoundment of the Ahnapee River located in southern Door County (WDNR 2001). The millpond has a maximum depth of 6 feet, an average depth of 2 feet and is located in an agricultural watershed. Records indicate that the first dam was constructed at this location in 1877 and the river has been impounded the majority of years since (Door County SWCD 1996). The current dam was reconstructed in 1982.

The fishery found in the millpond has alternated between a desirable mix of northern pike, largemouth and panfish to one dominated by bullhead and carp (Lychwick 1984). The make-up of fish community has been driven by poor water quality due to the shallow nature of the millpond and excess nutrients from the watershed. High nutrient levels have lead to algae blooms which have then been followed by frequent winter kills caused by low dissolved oxygen as the algae decomposed over winter. Following the fish kills, the millpond was restocked with a desirable mix of fish.

Following reconstruction of the dam in 1982, Fish Management proposed and carried a project to rotenone the millpond to remove undesirable fish species to be followed by restocking. Although the entire stream above the millpond was not treated to remove carp, it was believed that the vast majority of carp found in the impoundment were removed by the rotenone treatment. From 1985 to 1993 largemouth bass and from 1985 to 1990 northern pike were restocked into the lake to reestablish the fishery. But by 1996, several large fish kills had occurred on the millpond. Both were attributed to low dissolved oxygen levels in the millpond likely caused by excess nutrients entering the millpond which fueled large algae blooms and the resultant decomposition of the dead algae.

Methods and Results:

Following state lake sampling protocols, Forestville Millpond was surveyed on the evening of May 6, 2008 to assess the lake's gamefish populations. During the 1.5 hours of electrofishing, the entire shoreline was surveyed and an attempt was made to net all observed fish. All landed fish were identified, measured to the nearest millimeter and scales collected from largemouth bass before being released. Carp, white sucker and bullhead we counted if netters could touch the fish, but they were not boated.

During the 1.5 hours of shocking we captured 421 individual fish representing 8 species. Total CPE was 280.7 fish per hour or 179.9 fish per mile shocked. Carp dominated the catch followed by largemouth bass with fewer fish of other species captured (Table 1).

Table 1. Abundance and CPE of fish captured during 2008 spring electrofishing on the Forestville Millpond.

Species	Number	CPE (#/hour)	CPE (#/mile)
Common Carp	300	200.0	128.2
Largemouth Bass	57	38.0	24.4
Black Crappie	23	15.3	9.8
Bluegill	19	12.7	8.1
Yellow Perch	10	6.7	4.3
White Sucker	6	4.0	2.6
Northern Pike	4	2.7	1.7
Black Bullhead	2	1.3	0.9
TOTAL	421	280.7	179.9

Gamefish

Largemouth bass were the most common gamefish captured during this survey (Table 1). The 57 bass ranged in length from 222 mm to 447 mm and had an average length of 360 mm (Table 2). Thirty-three of the fifty-seven captured bass (57.9%) were longer than the 356 mm minimum size limit imposed on anglers. Scale samples were collected from all captured bass. Analysis of the scales indicated that in our sample, captured bass ranged from 2 through eight years of age (Table 3). Most bass were either age 4 or age 5, with fewer bass in the other age categories. Comparison to statewide length at age information found on the state fish database indicates that at ages 2 through 5, bass collected during this survey were longer at each age than an average bass across Wisconsin (Table 4). At ages 6 and 7 their growth was similar to state averages, while at age 8 the single bass was less than the state average length. Since there was only a single fish aged at age 8, growth information should be viewed cautiously.

Only four northern pike were captured during this survey. The pike ranged in length from 388 mm to 712 mm and had an average length of 563 mm (Table 2).

Panfish

Black crappie were the most abundant panfish captured during this survey (Table 1). The 23 crappie ranged in length from 74 mm to 340 mm and had an average length of 241 mm (Table 5). Most of the crappie were between 200 mm and 250 mm, with few small fish captured.

Bluegill and yellow perch were also captured during electrofishing (Table 1). The 19 bluegill ranged in length from 37 mm to 197 mm and had an average length of 120 mm (Table 5). The 10 captured yellow perch had an average length of 188 mm (Table 5).

Other Species

Common carp was the most abundant species seen during our survey (Table 1). The 300 fish that were counted should be viewed as a minimum number because in one small bay an extremely large number of rolling carp were avoided. White sucker and bullhead were also seen in low numbers but could not be netted. Forage minnows were not observed during the survey.

Table 2. Length frequency of largemouth bass and northern pike captured during 2008 spring electrofishing on Forestville Millpond.

Length (mm)	Northern Pike	Largemouth Bass
220		1
230		
240		1
250		1
260		2
270		
280		1
290		1
300		5
310		2
320		1
330		4
340		4
350		2
360		2
370		4
380	1	4
390		5
400		7
410		6
420		3
430		
440		1
450		
460		
470		
480		
490		
500		
510		
520		
530		
540		
550		
560		
570	1	
580	1	
590		
600		
610		
620		
630		
640		
650		
660		
670		
680		
690		
700		
710	1	
Total	4	57
Ave. Length	563	360
S.D.	133.2	52.4

Table 3. Age distribution of largemouth bass captured during spring electrofishing on Forestville Millpond.

Length (mm)	Total Number	Age						
		2	3	4	5	6	7	8
220	1	1						
230								
240	1		1					
250	1		1					
260	2		2					
270								
280	1		1					
290	1		1					
300	5		1	4				
310	2		1	1				
320	1			1				
330	4			2		2		
340	4			2	2			
350	2			1	1			
360	2				2			
370	4			1	1	1		1
380	4			2	2			
390	5			2	3			
400	7			1	2	2	2	
410	6				2	2	2	
420	3				1	2		
430								
440	1						1	
Total	57	1	8	17	16	9	5	1
Ave. Length	360	222	279	348	385	393	415	374
S.D.	52.4	--	24.4	35.7	23.8	34.6	18.1	--

Table 4. Comparison of statewide length at age averages to those of Forestville Millpond for largemouth bass.

Largemouth Bass	AGE 1	AGE 2	AGE 3	AGE 4	AGE 5	AGE 6	AGE 7	AGE 8	AGE 9
2008	--	222	279	348	385	393	415	374	--
State Average	97	165	229	290	338	384	414	447	454

Table 5. Length frequency of panfish captured during 2008 spring electroshocking on Forestville Millpond.

Length (mm)	Bluegill	Black Crappie	Yellow Perch
30	1		
40			
50	1		
60			
70		1	
80	1		
90	2		
100	1		
110	1		
120	1		
130	7		1
140	1		
150	2	1	1
160			1
170			1
180			1
190	1		
200		1	2
210		2	2
220		1	2
230		7	
240		2	
250			
260		1	
270		2	
280		2	
290			
300		1	
310		1	
320			
330			
340		1	
350			
Total	19	23	11
Ave. Length	120	241	188
S.D.	37.8	53.8	30.7

Discussion and Conclusions:

It appears that poor water quality continues to be an issue in the millpond. With the dominance of carp in our catch, it is likely that turbid water and low dissolved oxygen levels have influenced the make-up of the fish community in the millpond.

The largemouth bass population appears to be doing well. Growth based on length at age comparisons with state averages indicates that bass are growing at or above state rates in the millpond. Nearly 58% of the captured fish were greater than the minimum size limit however; few small (younger) bass were captured. This may indicate poor reproduction or survival of bass eggs or fry which may be due to episodes of poor water quality or predation of fry by panfish.

The northern pike catch was less than expected. The undeveloped portions of the shoreline of the millpond along with upriver sections of the Ahnapee River should provide ample spawning

habitat for northern pike. It is not clear if northern pike were successfully reintroduced into the millpond following the rotenone treatment or if angler harvest has been too high sustain the population. Additional stocking of northern pike may be needed to improve the abundance of pike in the millpond.

Panfish numbers were also lower than expected based on pre-treatment surveys. Weather conditions such as cold water or a strong storm front moving through the area may have affected our catch, although angler harvest may also influence the abundance of panfish in the millpond. It is likely that we captured yearling black crappie, bluegill and yellow perch in our catch which is an indication that panfish are successfully reproducing in the lake. Panfish, especially black crappie show the potential of reaching large size in this productive millpond.

Poor water quality continues to influence the fish community in the millpond. Past history has shown that unless sediment and nutrient sources are controlled, any fish management activities may only achieve limited success over a short period of years. Two or three years of northern pike stocking should be considered to improve pike abundance in the millpond and upper Ahnapee River, however because of poor water quality in the millpond the chance of successful reintroduction must be evaluated before preceding.

References:

- Door County SWCD. 1996. Final Report to the Wisconsin Lake Management Planning Grant for the Forestville Millpond. Door County Soil and Water Conservation Department. Sturgeon Bay, Wisconsin. 28 pages.
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