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TO: Spring Lake File

FROM: Steve Hogler

SUBJECT: 2010 Spring Lake Fish Survey

Spring Lake is a small eight acre lake located sixteen miles southwest of Manitowoc in southern Manitowoc County. It has a maximum depth of 23 feet and the bottom is dominated by muck. The lake is lightly developed with a small number of year round and seasonal residences along the shoreline. Peeters (1987) summarized the limited amount of fishery work that had been conducted on the lake. Peeters indicated that surveys conducted in 1957, 1961 and 1985 found that the fishery was dominated by largemouth bass and bluegill. Largemouth bass were fairly abundant for the size of the lake and had a good size structure. Bluegill were very numerous and most (80-90%) were less than 6 inches (150 mm) in length. Other captured panfish species were also less than 6 inches in length. Peeters also indicated that bluegill were slow growing and that substantial northern pike stocking had not resulted in the establishment of a pike population or improved panfish growth rates.

2010 Survey Results

Spring Lake was surveyed on the night of May 17 following state protocols for Tier 1 bass lakes. The water temperature at the time of the survey was 60 F. During 26 minutes of electrofishing the entire shoreline was shocked and all fish netted. All fish were identified, measured and a subsample of largemouth bass and bluegill had scales removed to allow us to estimate age and growth. We captured 166 individual fish representing eight species during shocking (Table 1). Overall our catch per effort (CPE) was 276.67 fish per mile shocked or 383.37 fish per hour. The dominant species in our catch were bluegill and largemouth bass. Other species were captured in much lower abundances (Table 1).

Table 1. Catch summary of the May 17 electroshocking survey of Spring Lake.

Species	Number	Size Range (mm)	CPE (Fish/Mile)	CPE (Fish/Hour)
Largemouth Bass	30	187-425	50.00	69.28
Northern Pike	1	364	1.67	2.31
Bluegill	116	68-187	193.33	267.90
Pumpkinseed Sunfish	3	160-174	5.00	6.93
Green Sunfish	2	80-115	3.33	4.62
Hybrid Sunfish	3	133-170	5.00	6.93
Yellow Bullhead	9	190-311	15.00	20.79
Brown Bullhead	2	280-335	3.33	4.62
Total	166		276.67	383.37

The thirty largemouth bass ranged in size from 187 mm to 425 mm and had an average length of 323 mm (Table 2). Nine of the thirty captured bass (30.0%) were longer than the 355 mm (14") size limit but only one bass was greater than 400 mm (16").

Table 2. Length frequency distribution of fish captured during electroshocking from Spring Lake.

Length (mm)	Largemouth Bass	Northern Pike	Bluegill	Pumpkin-seed	Green Sunfish	Hybrid Sunfish	Yellow Bullhead	Brown Bullhead
60			1					
70			15					
80			16		1			
90			29					
100			22					
110			14		1			
120			6					
130			6			1		
140			2			1		
150			1					
160			3	2				
170				1		1		
180	1		1					
190	2						1	
200								
210	1							
220	1						3	
230							1	
240								
250								
260								
270	1						3	
280								1
290	1							
300	1							
310	2						1	
320	1							
330	3							1
340	5							
350	3							
360	2	1						
370	2							
380	2							
390	1							
400								
410								
420	1							
430								
440								
450								
Number	30	1	116	3	2	3	9	2
Ave. Length	323	364	102	167	98	148	249	308
S.D.	62.26	--	21.73	7.02	24.75	19.66	37.11	38.89

Scale samples taken from the bass that we captured indicated that age 2 through age 6 bass were present in our sample (Table 3). Age 3 bass were the most common aged bass in our sample followed by ages 4 and 2.

Table 3. Age distribution of largemouth bass aged with the use of scales from Spring Lake captured during the May 2010 electroshocking survey.

Length (mm)	Number	Age						
		1	2	3	4	5	6	7
150								
160								
170								
180	1		1					
190	2		2					
200								
210	1		1					
220	1		1					
230								
240								
250								
260								
270	1			1				
280								
290	1			1				
300	1			1				
310	2			2				
320	1			1				
330	3			3				
340	5			4	1			
350	3			1	1	1		
360	2				1		1	
370	2				1	1		
380	2				2			
390	1				1			
400								
410								
420	1					1		
430								
440								
450								
Number	30	0	5	14	7	3	1	0
Ave. Length	323		203	325	371	382	365	
S.D.	62.26		15.69	21.44	17.14	38.43	--	

Growth of largemouth bass as measured by length at age was good and was consistently greater than statewide length at age averages (Table 4). The exception was for age 6 bass in which only a single fish was aged and likely underestimates the length at age for that year class.

Table 4. Average length at age as determined by scales for fish captured during electroshocking on Spring Lake. Average length at age from WDNR (1990) and are in mm.

Species	AGE 1	AGE 2	AGE 3	AGE 4	AGE 5	AGE 6
Largemouth Bass 2010		203	325	371	382	365
(State Averages)	(97)	(165)	(229)	(290)	(338)	(383)
Bluegill 2010	81	103	138	175		
(State Average)	(64)	(97)	(122)	(147)	(167)	(183)

Panfish were commonly captured during shocking with bluegill the most numerous (Table 1). The 116 bluegill ranged in length from 68 mm to 187 mm and had an average length of 102 mm (Table 2). Only five of the 116 (4.3%) captured bluegill had lengths greater than 150 mm (6") and most were less than 100 mm (4").

Age was determined for a subsample of bluegill that we captured. Ages from that sample ranged from age 1 through age 4 (Table 5). Age 2 bluegill were the most common age bluegill with other age classes much less common. Length at age for bluegill from Spring Lake was greater at all ages than statewide averages indicating average to good growth (Table 4).

Table 5. Age distribution of captured bluegill from electroshocking on Spring Lake that uses the length and age of subsampled fish to expand the age distribution across the entire bluegill catch.

Length (mm)	Number	Age				
		1	2	3	4	5
60	1	1				
70	15	15				
80	16	13	3			
90	29	3	26			
100	22		22			
110	14		13	1		
120	6		2	4		
130	6		1	5		
140	2			2		
150	1			1		
160	3			2	1	
170						
180	1				1	
190						
200						
Number	116	32	67	15	2	0
Ave. Length	102	81	103	138	175	
S.D.	21.73	7.16	9.99	14.86	14.14	

We also captured other panfish including pumpkinseed sunfish, green sunfish and hybrid sunfish although in much lower number than bluegill (Table 1). They were similar in size to bluegill and had average lengths of 167 mm, 98 mm and 148 mm respectively. Most of these fish were less than 150 mm (6") in length.

In addition to the largemouth bass and panfish we captured yellow bullhead and brown bullhead (Table 1). Yellow bullhead had an average length of 249 mm and brown bullhead had an average length of 308 mm (Table 2).

Discussion

Spring Lake continues to be a bass-bluegill lake. Largemouth bass continues to be the dominant (if not only) gamefish in the lake. The number of bass we captured in 2010 was similar to what was caught in previous surveys (Peeters 1987). Growth was average to slightly better than average. However, the size of bass captured in 2010 was less than in previous surveys. The largest bass caught in 2010 was 425 mm while in 1985 the largest bass was 508 mm and in 1961 the largest bass was 533 mm (Peeters 1987). Since growth is average or better suggests that recruitment is low and the current level of fishing pressure may be harvesting many of the legal size bass in the lake. If harvest begins to affect recruitment, more conservative bass limits may be needed to protect the largemouth bass population in the lake.

Panfish continue to dominate the fish community of the lake, although most were small in size. Past surveys indicated that bluegill were abundant, small and somewhat slow growing (Peeters 1987). The 2010 survey also captured mostly small (under 150 mm) bluegill, but length at age analysis indicated average or better growth for bluegill. Perhaps the larger minimum size limit for bass established since the last survey has increased predation on small bluegill, reducing their number and improving growth. The lack of bluegill longer than 200 mm in length may indicate substantial angler harvest of bluegill after they reach 150 mm in length.

Also of note was the lack of yellow perch and forage fish captured during the 2010 survey. All previous fish surveys of Spring Lake captured good numbers of yellow perch. The lack of yellow perch is puzzling. Possible reasons for the lack of perch include poor recruitment, over harvest or that perhaps the perch were suspended in deeper water that we did not survey. The panfish population either through recruitment failure or angler harvest may be declining based on four widely temporally scattered surveys. Their number should be watched to determine if any additional protection is warranted.

Despite the declines in size noted for bass, slightly decreasing panfish numbers highlighted by the absence of yellow perch, the fish population in Spring Lake appears to be stable. It is recommended that Spring Lake should remain on the Tier 1 lake survey rotation to more frequently monitor the fish populations found in the lake.

References

Peeters, P. 1987. Letter describing survey results from Spring Lake. WDNR. Unpublished. 3 pages.

WDNR 1990. Fish Management Reference Book. WDNR. Unpublished. Madison, WI.