Splake Stocking Assessment of Clear Lake
2012

File Report

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Clear Lake is a small (107 ha) but relatively deep (28 m) lake located in Perry Township (Figure 1). Access to this lake can be found by taking Highway 11 north of Novar to Highway 592 and travelling 6 km north on Highway 592 to Clear Lake Rd. A public boat launch located at the end of Clear Lake Road.

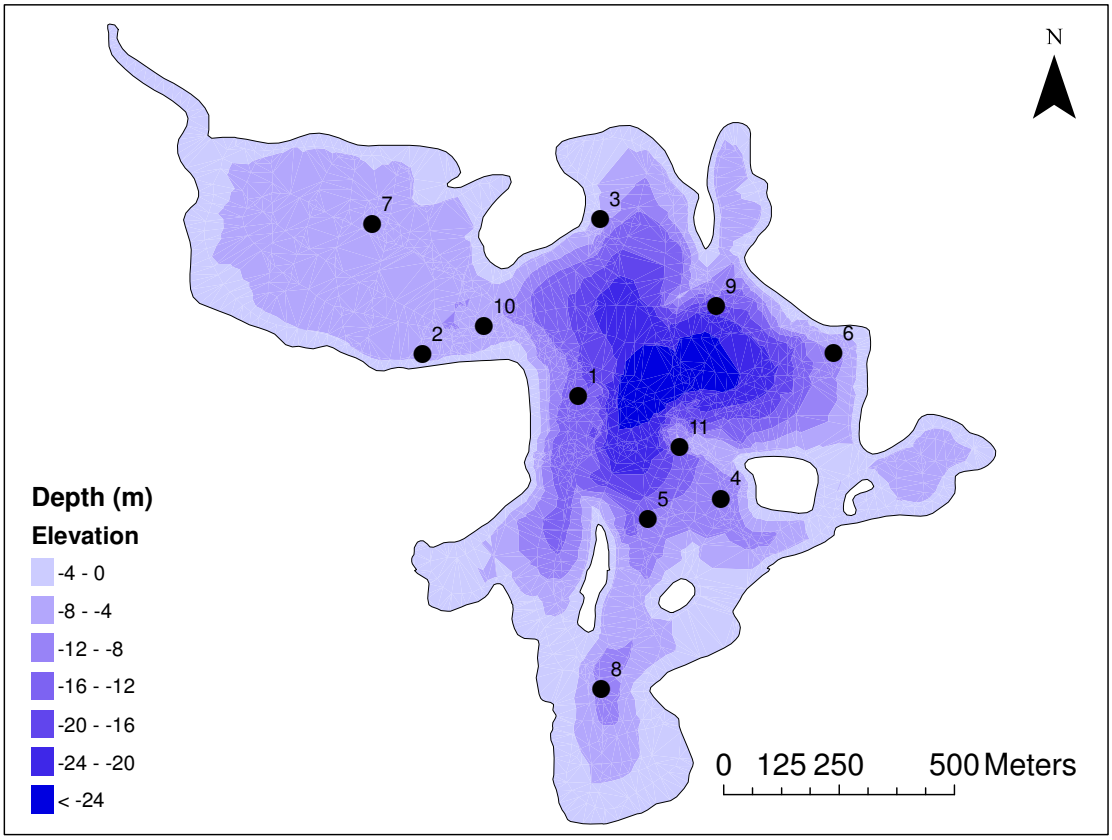


Figure 1 Map showing bathymetry and net set locations, Clear, Lake, 2012.

The lake has been stocked with splake on a regular basis since 1983. Assessments in 1985 and 2010 captured only small numbers of stocked fish (Gillespie 1985, Powell 2010) and anecdotally, the fishery was poor. In 2011, the scheduled stocking of spring yearlings was delayed and the fish were stocked in the fall (Table 1) at a larger size, as a trial to determine if better returns would be realized by stocking larger fish.

An assessment was conducted in 2012 using similar methods as were used in 2010 to determine whether stocking splake as fall yearlings resulted in improved survival as compared to fish stocked in the spring.

Table 1 Recent splake stocking history, Clear Lake.

Year	Number	Age	Mean Weight (g)
2001	4000	spring yearling	58
2003	4000	spring yearling	
2005	4000	spring yearling	30
2007	2000	spring yearling	56
2009	2000	spring yearling	37
2011	2000	fall yearling	90

METHODS

The methods used were similar to those used in 2010.

Aspects of the Brook Trout Index Netting (BTIN, Monroe 2005) and Summer Profundal Index Netting (SPIN, Sandstrom et al 2007) gear and protocols were used. The intent was to use a variety of gear to maximize the chance of detecting all of the major fish species that were present, with an emphasis on mesh sizes expected to catch splake.

The BTIN gear consisted of two monofilament gill nets. Some net details were not recorded but they consisted of 2 or 3 panels, each 15 m long, of 2.0 or 2.5 inch mesh. One net was set for a period of 2 hours during the day at a depth of about 6 m. Two more nets were set overnight focusing on depths ranging from 4 to 8 m.

SPIN gear consisted of gill nets that were 64 m long by 1.8 m high and had eight panels of the following stretch mesh sizes; 2.25, 2.50, 2.75, 3.00, 3.50, 4.00, 4.50 and 5.00 in. The mesh sizes were randomly arranged. SPIN nets were initially set for 2 hour periods focusing on depths ranging from 4 to 15 m. Two nets were set overnight at depths ranging from 5 to 9 m. Both BTIN and SPIN nets were set perpendicular to shore.

Captured fish species were measured for fork length and age structures were taken from splake and smallmouth bass.

A Secchi disc measurement was taken to determine water clarity and a temperature and dissolved oxygen profile was collected to determine suitable habitats for net placement.

Bathymetric data was collected using a GPS depth sounder.

RESULTS and DISCUSSION

Netting was conducted on September 10 and 11, 2012. The lake was thermally stratified with preferred temperature and oxygen conditions for splake (<16^{o}C and > 4 ppm D.O.) occurring from about 9 to 13 m deep (Table 2). The Secchi disc depth was 7 m; relatively high water clarity.

Table 2 Temperature and dissolved oxygen profile, Clear Lake, September 10, 2012.

Depth (m)	Temp. (^{o}C)	D.O. (ppm)
0.5	20.6	8.1
1	20.6	8.2
2	20.6	8.3
3	20.6	8.3
4	20.6	8.2
5	20.6	8.3
6	20.6	8.4
7	20.5	8.4
8	19.9	8.8
9	17.7	10.3
10	14.9	10.5
11	12.6	9.7
12	11.0	7.4
13	9.6	4.5
14	8.8	3.1
15	8.4	2.5
16	7.9	1.7
17	7.6	1.2
18	7.3	0.9
19	7.0	0.6
20	6.9	0.5
21	6.7	0.5
22	6.5	0.4
23	6.5	0.4
24	6.4	0.4

A total of 11 net sets were completed (Table 3, Figure 1). One daytime, two-hour BTIN set was unsuccessful in catching any fish. Two overnight BTIN sets caught eight splake, five smallmouth bass, seven rock bass, two burbot and one white sucker (Table 4).

Six daytime SPIN net sets were successful in catching two splake, 14 smallmouth bass and three white suckers. Two overnight sets caught three splake, eight smallmouth bass, five rock bass, four burbot and eight white suckers.

Table 3 Net set details, Clear Lake, 2012.

Effort	Gear	Set Date	Easting	Northing	Depth (Start) (m)	Depth (End) (m)	Set Time	Lift Time	Duration (hrs)	Comment
1	SPIN	10-Sep-12	635754	5040602	12.0	14.0	10:40	12:40	2:00	
2	SPIN	10-Sep-12	635417	5040693	4.7	7.2	11:00	13:00	2:00	
3	SPIN	10-Sep-12	635802	5040985	4.0	13.0	11:20	13:21	2:01	
4	SPIN	10-Sep-12	636063	5040380	6.0	10.1	11:40	13:42	2:02	
5	SPIN	10-Sep-12	635905	5040335	5.5	9.3	12:00	14:00	2:00	
6	SPIN	10-Sep-12	636307	5040695	5.3	10.4	12:20	14:20	2:00	
7	BTIN	10-Sep-12	635308	5040975	6.1	6.4	12:35	14:37	2:02	
8	SPIN	10-Sep-12	635804	5039968	8.0	9.1	13:10	09:37	20:27	over night
9	SPIN	10-Sep-12	636053	5040798	5.3	20.5	13:18	10:19	21:01	over night
10	BTIN	10-Sep-12	635550	5040753	5.9	7.0	14:50	10:33	19:43	over night; 2 panel
11	BTIN	10-Sep-12	635974	5040492	4.3	13.8	14:57	10:49	19:52	over night; 3 panel

Table 4 Catch summary for Clear Lake, 2012.

Effort	Gear	splake	white sucker	burbot	rock bass	smallmouth bass
1	SPIN	1				2
2	SPIN					
3	SPIN		1			5
4	SPIN		2			1
5	SPIN	1				2
6	SPIN					4
7	BTIN					
8	SPIN	3	8	4		5
9	SPIN				5	3
10	BTIN				2	2
11	BTIN	8	1	2	5	3
Total		13	12	6	12	27

The 13 splake ranged from 200 to 370 mm fork length (Table 5). All but one appeared to be fish that were stocked as fall yearlings in 2011, ranging from 200 to 335 mm fork. The other was larger (370 mm, 740 g) and the result of an earlier stocking event.

Table 5 Size characteristics (fork length), by species, Clear Lake, 2012.

Species	n	Mean	St. Dev.	Min.	Max
splake	13	294	39	200	370
white sucker	12	457	24	425	506
burbot	6	456	53	380	535
rock bass	12	169	17	145	200
smallmouth bass	27	323	80	180	475

The catch in 2012 was much different from 2010, despite an effort to replicate the net set locations and depths. Reasons for the differences include the difference in the length of the BTIN gear (shorter in 2012), difference in the time of year when netting occurred, differences in the precise locations and depths where the nets were actually set and random variation.

The day time BTIN set caught no fish in both years. The overnight sets in 2010 caught large numbers of rock bass. In 2012, a small number of rock bass were caught, but eight splake were caught. The sets in 2012 were deeper overall and probably accounts for most of the difference in the rock bass catch.

The day time SPIN sets caught small numbers of smallmouth bass, white sucker and one large splake in 2010. In 2012, a somewhat larger number of smallmouth bass were caught and two splake. The time of year may account for the higher bass catches in 2012; the deeper thermocline and tendency for bass to be deeper in the fall may have made them more vulnerable to the nets, compared to the spring.

The over night SPIN sets caught large numbers of rock bass and white suckers in 2010. In 2012, very few rock bass or suckers were caught, but several burbot and splake were caught. The reason for the reduced catch of rock bass and sucker isn't obvious but it possibly largely due to the depth at which the nets were set.

Overall, the catch of splake was much larger in 2012, than in 2010. The primary reason is probably because of better survival due to being stocked at a larger size in the fall. However, some of the difference may be due to greater vulnerability to being caught due to being a larger size at the time of netting (June in 2010 vs September in 2012).

The splake had grown to an average of about 250 g since being stocked in the fall at an average weight of 90 grams. The growth rate is not particularly good, though considerably more growth was likely to occur through the reminder of the fall, prior to the winter fishing season. The stocking rate was reduced from 4000/event to 2000/event in 2007. With the switch to stocking even bigger fish a further reduction in stocking rate may help improve growth. Once they reach a larger size they may be able to switch to a diet of larger fish such as smelt and rock bass and growth may improve. The single splake caught in 2010 was a large, robust individual, suggesting that adequate food for larger fish is available.

A low intensity creel survey was done in the winter of 2013 (Scholten 2013). It documented an apparent major increase in fishing activity, compared to the anecdotally low levels previously thought to occur on the lake. The estimated amount of effort in 2013 was 726 ang-hr (RSE+37%)

and a maximum of 9 huts were present. The estimated catch was only 12 (RSE=100%) splake but the anglers who were interviewed reported much improved catches over previous years.

In summary, the stocking of fall yearling splake in Clear Lake resulted much higher catches in index nets the following year as compared to when they were stocked as spring yearlings. A major improvement in the fishery has ensued. Continued stocking of fall yearlings is recommended, with a reduction in stocking density to maintain a reasonable growth rate.

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Appendix Detailed fish attributes, Clear Lake, September 10-11, 2012.

Effort	Species	Fish	FL	TL	RWT	Sex	Gonad	Stomach
1	83	3	275	296	200	2	10	
5	83	10	275	300	200	2	10	
8	83	20	310	325	280			UFR
8	83	23	280	305	225	9		UFR
8	83	24	315	335	300	2	10	UFR
11	83	54	370	400	740	1		small fish
11	83	58	200		185	2		empty
11	83	59	310		300	1		empty
11	83	60	280		150	9		empty
11	83	62	280		175	9		empty
11	83	63	290		285	1		2 fish
11	83	64	335		400	1		
11	83	65	300		280	9		
3	163	66	440					
4	163	69	450					
4	163	70	506					
8	163	15	480					
8	163	16	425					
8	163	17	485					
8	163	18	440					
8	163	19	435					
8	163	25	440					
8	163	26	460					
8	163	27	455					
11	163	61	465					
8	271	21	435					
8	271	22	445					
8	271	29	535					
8	271	31	445					
11	271	52	380					
11	271	57	495					
9	311	37	200					
9	311	39	150					
9	311	40	150					
9	311	41	155					
9	311	42	170					
10	311	43	160					
10	311	46	175					
11	311	50	145					
11	311	51	185					
11	311	53	170					
11	311	55	175					
11	311	56	190					
1	316	1	430	460	1500			
1	316	2	400	424	1300			
3	316	4	475	500	2300			
3	316	5	330	347	800			
3	316	6	230	244	250			
3	316	67	225					
3	316	68	330					
4	316	7	240	251	200			
5	316	8	315	330	500			
5	316	9	460	490	1700			
6	316	11	390	415	1200			

Effort	Species	Fish	FL	TL	RWT	Sex	Gonad	Stomach
6	316	12	370	395	1000			
6	316	13	415					
6	316	14	360					
8	316	28	380					
8	316	30	310					
8	316	32	280					
8	316	33	260					
8	316	34	380					
9	316	35	335					
9	316	36	310					
9	316	38	350					
10	316	44	180					
10	316	45	180					
11	316	47	250					
11	316	48	245					
11	316	49	285					