

Fourteen Island Lake - MNR Fish Survey Report 2008

2008 Assessment on Fourteen Island Lake

Table 1. FWIN survey data from Fourteen Island Lake, October 2008.

Fish Species	Total Catch (numbers of fish)	Mean of fish/net	no. of nets containing at least one fish	% of total catch
Yellow perch	64	5.3	58	28.1
Bluegill	62	5.2	58	27.2
Golden shiner	34	2.8	42	14.9
Smallmouth bass	16	1.3	50	7.0
Rock bass	15	1.2	58	6.6
Walleye	14	1.2	50	6.0
Pumpkinseed	10	0.8	42	4.4
Northern pike	9	0.7	50	3.9
Largemouth bass	3	0.2	17	1.3
White sucker	1	0.1	8	0.04

Walleye ranged in size from 29 to 65 cm. Two of the fish were immature young-of-the-year and the rest were mature adults. The mean fork length and mean weight of adult fish is 53.1 cm and 1.8 kg, respectively. Ages of all fish ranged from age-1 to age-19 with a mean age of 9.7 years. Ten of the fish were males, three were females and the sex could not be determined from one of the age-1 fish.

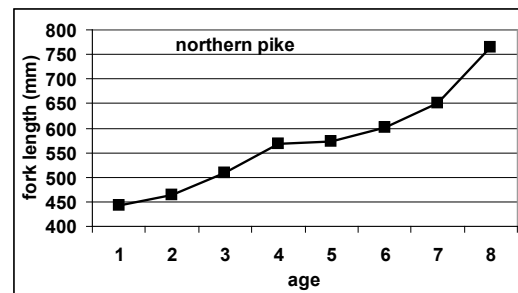
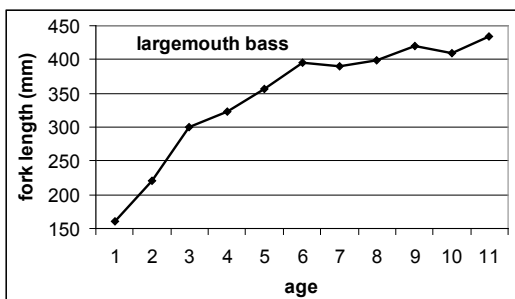
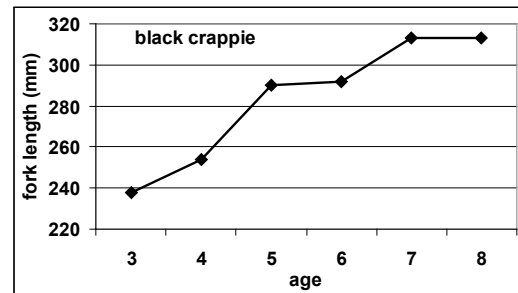
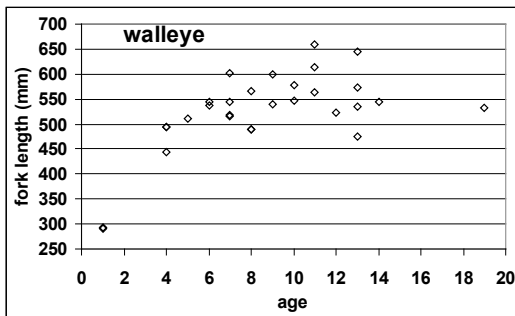


Figure 1. Fork Length and age of individual walleye. Mean size at age of largemouth bass, black crappie and northern pike from 2007 NSCIN & 2008 FWIN surveys on Fourteen Island Lake.

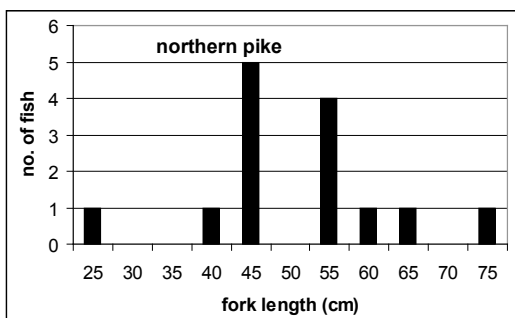
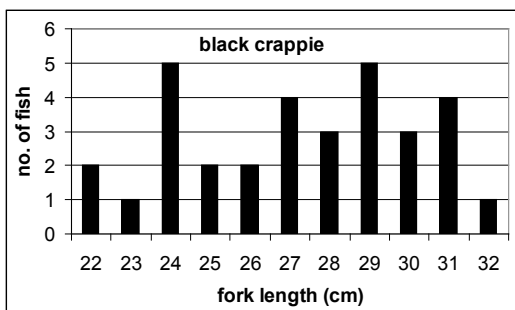
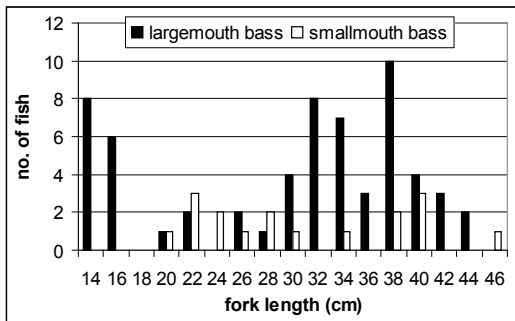
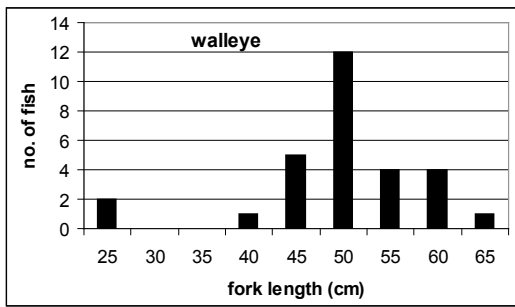


Figure 2. Size composition of walleye, bass, black crappie and northern pike from 2007 NSCIN & 2008 FWIN surveys on Fourteen Island Lake

Water Quality

Temperature and oxygen reading were obtained from the same two sites sampled in 2007. This is considered a critical period for most cold water inhabiting fish species. Site 1 corresponds to the deepest hole of the lake (36 m) located easternmost basin. Sampling equipment utilized was only capable of obtaining measurements to a 30 m depth. Site 2 sampling occurred within a 20 meter hole at the west end of the lake off the mouth of the entrance to Mink (Sigsworth) Lake.

A secchi disc depth reading of 7.8 m was also obtained. This gives us indication of the water clarity in Fourteen Island Lake. Total dissolved solids and pH were measured at 103 mg/L and 6.97, respectively.

Management Discussions

A FWIN survey was carried out in 2008 in order to confirm walleye catch numbers from the 2007 NSCIN survey.

It is now evident that walleye abundance is low in Fourteen Island Lake with average catches from NSCIN and FWIN of 1.2 and 1.4 fish per net, respectively. There does appear to be some limited walleye recruitment as witnessed by the two young-of-the-year walleye captured in FWIN. Additionally, four walleye from the 2002, 2003 and 2004 year classes are present in net catches even though no stocking occurred in those years (Figure 3). However, no walleye were present in net catches from the 2005, 2006 or 2007 year classes. This would suggest that recruitment is irregular at best.

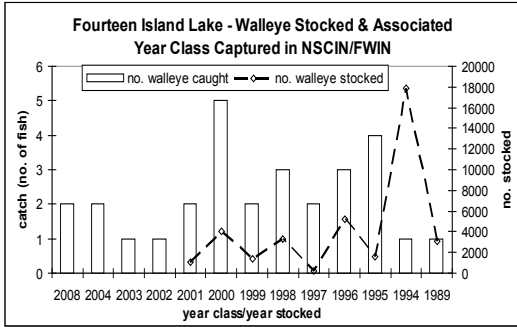


Figure 3. Year class of walleye captured in 2007 NSCIN & 2008 FWIN surveys and numbers stocked in those years.

Temperature and oxygen data was collected again in 2008 as a means of accounting for annual variability that can occur (Table 2). The thermocline in Fourteen Island Lake is found from 6 to 10 meters depth. Deep-water habitat usually corresponds with depths below the thermocline. Temperature and oxygen levels in the deep-water are most critical for any potential cold water fish species such as trout but is can also be limiting for cool water species such as walleye that have light-sensitive eyes. Deep-water oxygen concentrations were quite low in 2008 which conforms with some historical readings.

However, there appears to be higher deep-water oxygen concentrations in some years such as were observed in 2007.

There are a few options available for managing a fishery in Fourteen Island Lake and they all have their merits.

One option involves the status quo. This entails doing nothing and managing the lake as a naturally sustaining centrarchid fishery. Trap net catches suggest that largemouth bass abundance is relatively high with an average catch 5.3 fish per net. Black crappie abundance appears to be relatively low for the species (3.2 fish per net) but these numbers still represent a fishery.

Another option involves enhancing walleye spawning habitat on the lake to provide more regular recruitment to the walleye fishery. There is still some significant brood stock present that could utilize enhanced spawning opportunities. Rehabilitation stocking for one or two years could be considered if enhanced spawning habitat was made available. Water clarity is likely to be a factor that limits walleye abundance in Fourteen Island Lake.

Table 2. Dissolved oxygen/temperature sampling from Fourteen Island Lake, August 9, 1993; August 27, 2007 and; September 26, 2008.

Depth	Site 1			Dissolved Oxygen			Site 2		Dissolved Oxygen	
	Temperature 1993	Temperature 2007	Temperature 2008	1993	2007	2008	Temperature 2007	Temperature 2008	2007	2008
1	22	23.3	20.1	11	8.8	7.8	22.7	19.8	9.7	7.7
2	21	23.1	20.1	10.8	8.8	7.8	23	19.8	9.4	7.6
3	21	23	20	10.8	8.8	7.8	22.9	19.8	9.2	7.6
4	20	22.7	20	10.8	8.7	7.7	22.7	19.8	9.1	7.5
5	20	22.4	19.9	10.6	8.1	7.4	22.6	19.5	8.7	7
6	20	20.2	19.7	10.4	7.4	7.2	21.4	19.3	8	6.9
7	15	16.3	17.8	10.4	8.8	3.7	17.1	17.8	6.9	3.2
8	9	13.4	15.9	8.6	8.2	2.4	13.5	13.6	6.6	0.4
9	6	11.1	12.8	9.2	6.1	1.7	12.5	10.8	6.2	0.3
10	4	9.8	11.3	8	5	1.1	10.5	9	6.2	0.3
11	4	9.4	10.1	8.6	4.1	0.9	9.7	8	6.4	0.3
12	4	8.6	9.2	6	3.8	0.7	8.7	6.8	6.3	0.4
13	4	8.2		2	4.3		8.2	6.9	6	0.4
14	3	7.5	8	1	4.5	1.3	7.6	6.5	5.5	
15	3	7.2		0.7	5.5		7.4		4.6	
16	3	6.5	7.3	0.7	6.1	1.1	6.6		3	
17	3	6.2		0.7	6.3		6.5		2.3	
18	3	5.7	6.9	0.7	6.2	0.6				
19	3	5.6		0.7	6.4					
20	3	5.3	6.8	0.5	6.2	0.3				
21		5.2			6.1					
22		5			5.8					
23		5			6.1			6.5		0.5
24		4.8			5.8					
25		4.8			5.4					
26		4.7			5.1					
27		4.6			4.3					
28		4.5			3.7					
29		4.5			2.6					
30		4.4			2.1					
34			6			0.3				

However, there may be potential to increase walleye abundance by allowing more regular recruitment to the fishery.

Another option entails introducing lake trout and managing the lake as an artificial Put-Grow & Take year round fishery sustained through stocking every 2-3 years. Natural recruitment would not likely occur due to limited suitable deep-water habitat in some years.

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