Results of a Fall Walleye Index Netting Survey Conducted on Lake Vernon in 2007

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Lake Vernon is located in the Town of Huntsville, in the Bracebridge administrative area. It is large (1500 ha) and deep (mean=13 m, max=43 m) but has fairly low water clarity (secchi = 3.1 m). Located on the North Muskoka River, it has a large watershed and is fed by two major tributaries, Big East River and Buck River. It is connected by navigable channels to two other lakes, Fairy and Peninsula. The three collectively are known as the Huntsville Lakes.

The native fish community was dominated by lake trout (*Salvelinus namaycush*), lake whitefish (*Coregonus clupeaformis*) and lake herring (*Coregonus artedii*). Recruitment of all three species failed some time around the 1970's. Whitefish and herring are now virtually extirpated and lake trout are supported by stocking. The lake, as many in the area, has a history of species introductions, intentional and otherwise; including smallmouth bass, rock bass rainbow smelt and northern pike.

In 1998, a Licence to Stock Fish was issued for Buck Lake, which is upstream of Fox Lake on the Buck River. Stocking of fingerling walleye occurred from to 1998 to 2001. Shortly thereafter, reports of walleye from Fox and Lake Vernon were received. In 2003, a small number of walleye were seen by MNR staff, on suitable spawning substrate at Hood Rapids on the Buck River. Evidence was mounting that a walleye population had become established in Lake Vernon and was expanding.

A Fall Walleye Index Netting (FWIN) survey was conducted on Lake Vernon in 2007 to quantify the abundance, distribution, and population structure of walleye in the lake.

Methods

The FWIN protocol (Morgan 2002) was followed. Gear consisted of gill net gangs comprised of 8 panels, each 1.8 m (6 ft) deep and 7.6 m (25 ft) long. Mesh sizes were 25, 38, 51, 64, 76, 102, 127 and 152 mm stretched measurement, sequentially arranged.

Nets were set in the fall when the surface water temperature was between 15 and 10 C. Nets were set for 24 hours periods. Effort was allocated, proportional to area, in two depth strata: 2-5 and 5-15 m deep. The 5-15 m stratum was divided into 5-10 m and 10-15 m sub-strata to ensure that the full depth range was sampled.

Sport fish were sampled for length, round weight, gender and maturity. Scales and dorsal spines were collected for age determination. Stomach contents were described. All other species were counted only.

Tissue samples were collected from walleye and pike and forwarded to the Ministry of the Environment for analysis of mercury content.

Ages reported are the actual assessed age at the time of sampling. One year can be added to reflect the number of growing seasons completed.

Data is stored as FISHNET3 project IA07_VER.

Results

Netting was conducted between October 15 and 19, 2007. Weather conditions were generally fair and the water temperature stable (14-13 C). Net set details are shown in Table 1 and Figure 1.

A total of 20 net sets were completed, eight in the shallow stratum and 12 in the deep; roughly proportional to the surface area in each stratum (Figure 1). A total of 466 fish of 15 species were

caught. Rock bass (*Amblopites rupestris*) and yellow perch (*Perca flavescens*) dominated the catch with 142 and 95 being caught, respectively. A total of 43 walleye were also caught (Table 2, Figure 2). One black crappie was caught which was the first record from the lake.

The walleye catch rate was 2.15/net (SE=0.69) in 11 different nets. The geometric mean catch rate was 1.16/net (SE=0.21). The catch rate varied by depth, with the highest catches in the 5-10 m range (4.25/net, n=8) and lower catches in the 2-5 m range (1.1/net, n=8). No walleye were caught in the four nets set deeper than 10 m. Walleye were caught in all areas of the lake except Hunters Bay; although only one net was set in that bay.

The walleye ranged in size from 334 to 690 mm TL with a mean of 490 mm (SE=15.5) and a wide range of sizes classes represented (Table 3 and 4, Figure 3). Ages ranged from 1 to 9 years old, with 8 different year classes being represented (Table 5, Figure 4). Early growth was extremely rapid with walleye reaching and average of 354 mm (n=10, S.E.=3.5) at age one (two growing seasons complete) and 481 mm (n=3, S.E.=13.1) at age 3. All male walleye were mature by age 2 and most females by age 3 (Table 6 and 7).

The concentration of mercury in the flesh of walleye varied with size (Figure 5). Generally, concentrations were around 0.5 ppm in fish less than 40 cm long increasing to over 3 ppm in very large fish.

Discussion

A self-sustaining walleye population has become established in Lake Vernon. Based on the age distribution, fish were present almost immediately after the initial stocking in Buck Lake and almost every year class since that time is represented it the catch. All fish five years old and younger were naturally reproduced, as the last documented stocking in Buck Lake would have been 6 years old in 2007.

Walleye abundance is considered low to moderate overall when compared to catch rate in other lakes in the District (Figure 6). However, the population is probably still growing. Lake Vernon provides good habitat for walleye in the form of a variety of depths and structure, fairly low water clarity and the availability of river spawning locations. Conversely, it also has a diverse fish community, including rock bass, rainbow smelt, and now, black crappie; species which have the potential to affect walleye recruitment. To date, recruitment has occurred regularly, suggesting that walleye will not be greatly limited by larval predators in this large system.

Typical of a new introduction, the walleye in Lake Vernon are growing very rapidly, particularly at younger ages, and have good condition; well above the averages for the region (Figure 7 and 8). Smelt are probably a major forage contributing to the rapid growth. The slowing of growth at older ages is probably due to fish maturing and devoting more energy to gametes and possibly due to a lack of larger bodied prey such as lake herring. As the population comes into balance with the available habitat, the extreme rate of growth may ease somewhat, but continued rapid growth is often observed in large lakes with smelt.

It is expected that the population will expand to Fairy, Peninsula and Mary Lake. Anecdotal reports of angler catches have already been received from the Muskoka River in Huntsville and Mary Lake. Several walleye were observed over suitable spawning habitat below the Huntsville dam in 2008. Monitoring of the population expansion should be done through a formal monitoring program.

Walleye have been observed over suitable spawning habitat at the mouth of the Buck River. The Big East River is the larger of the two tributaries and is passable by fish for many kilometres up to approximately McArthur Chute, just downstream of the Distress dam. An effort should be made to

document the use of the river by walleye; its' suitability as spawning and nursery habitat is largely unknown.

Fish in lakes in the Buck River and North Muskoka River system have the reputation for having high levels of mercury contamination. Severe consumption advisories are in place for many species that have been tested (MOE 2007). For example, in Buck Lake, it is recommended that the general population not consume any walleye greater than 35 cm. The levels measured in Lake Vernon are more moderate. Walleye less than 35 cm have no restriction and fish may be consumed in limited quantity up to about 55 cm by the general population. Restrictions are more conservative for the sensitive population. These limits are similar to many other walleye lakes in the area. The very rapid early growth may partly explain the moderate values observed.

Lake trout have been stocked into Vernon and the other Huntsville Lakes for many years; very little natural recruitment currently occurs. A creel survey conducted in the winter of 2008 found that there was very little angling effort for lake trout in Lake Vernon. Given the increase in the walleye population as a top predator in the community and provision of a new angling opportunity, the role of lake trout stocking in the lake should be reviewed.

Black crappies were documented in the lake for the first time. Their source is presumed to be the Buck River system as well. Crappies were documented in Buck Lake in 2002 (McIntyre 2002). Like walleye, they can be expected to spread throughout the Huntsville Lakes chain. Crappies have already been established in Lake Muskoka, downstream, since the early 1990's, where they have apparently not become very abundant. Given the similarity in habitat, they will probably not become abundant in the Huntsville lakes either.

Conclusion

A reproducing population of walleye has become established in Lake Vernon. The population has already become quite robust with regular recruitment occurring. It is expected that the population will grow in abundance throughout the Huntsville Lake system and provide a major new walleye resource for the area.

References

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Morgan, G.E., M.D. Malette, R.S. Kushneriuk and S.E. Mann. 2003. Regional summaries of walleye life history characteristics based on Ontario's Fall Walleye Index Netting (FWIN) program 1993 to 2001. Diagnostics and Sampling Standards Working Group, Percid Community Synthesis. Ont. Min. Nat. Resourc. Peterbourough.

Table 1 Net set summary, Lake Vernon FWIN, 2007

sample_number	sample_site	index_gear_item	gear_use_type	start_date	start_time	end_date	end_time	effort_duration	utm_start	gear_depth_min	gear_depth_max	water_temp_at_net_set	crew_at_net_lift	gear_unit_depth_1
1	West Basin	FWIN Sequential	2 - Large mesh to shore	2007/10/15	10:30	2007/10/16	10:20	23.8	176315845021492	5.0	10.0	14	thomas, scholten, schosser	7.5
2	West Basin	FWIN Sequential	1 - Small mesh to shore	2007/10/15	11:00	2007/10/16	11:45	24.8	176322405022549	10.9	12.8	14	thomas, scholten, schosser	11.8
3	West Basin	FWIN Sequential	0 - Standard	2007/10/15	12:00	2007/10/16	12:10	24.2	176298735024094	5.2	8.8	13.5	thomas, scholten, schosser	7.0
4	West Basin	FWIN randomized	0 - Standard	2007/10/15	12:55	2007/10/16	13:03	24.1	176309805023945	2.5	3.6	14	thomas, scholten, schosser	3.0
5	West Basin	FWIN Sequential	1 - Small mesh to shore	2007/10/15	13:50	2007/10/16	14:03	24.2	176327445023549	2.0	5.3	14	thomas, scholten, schosser	3.6
6	West Basin	FWIN Sequential	1 - Small mesh to shore	2007/10/16	10:10	2007/10/17	10:15	24.1	176306405021826	2.2	5.5	12	thomas, scholten, lindenburger	3.8
7	West Basin	FWIN Sequential	0 - Standard	2007/10/16	11:40	2007/10/17	12:02	24.4	176321785023350	5.9	7.3	12	thomas, scholten, lindenburger	6.6
8	West Basin	FWIN Sequential	2 - Large mesh to shore	2007/10/16	12:05	2007/10/17	12:49	24.7	176313075022796	10.2	13.2	12	thomas, scholten, lindenburger	11.7
9	East (Main) Basin	FWIN Sequential	1 - Small mesh to shore	2007/10/16	13:25	2007/10/17	13:42	24.3	176328025020343	5.0	10.6	12	thomas, scholten, lindenburger	7.8
10	East (Main) Basin	FWIN randomized	0 - Standard	2007/10/16	14:20	2007/10/17	15:20	25.0	176333415022097	2.5	3.6	12	thomas, scholten, lindenburger	3.0
11	East (Main) Basin	FWIN Sequential	2 - Large mesh to shore	2007/10/17	10:05	2007/10/18	10:10	24.1	176328445021116	2.2	5.0	13	thomas, mills, zwicker	3.6
12	East (Main) Basin	FWIN Sequential	0 - Standard	2007/10/17	11:52	2007/10/18	11:05	23.2	176340045021556	11.5	12.8	13	thomas, mills, zwicker	12.2
13	East (Main) Basin	FWIN Sequential	1 - Small mesh to shore	2007/10/17	13:15	2007/10/18	12:15	23.0	176346215019304	6.1	6.9	13	thomas, mills, zwicker	6.5
14	East (Main) Basin	FWIN Sequential	1 - Small mesh to shore	2007/10/17	13:35	2007/10/18	13:30	23.9	176353005020700	5.0	11.0	13	thomas, mills, zwicker	8.0
15	East (Main) Basin	FWIN Sequential	1 - Small mesh to shore	2007/10/17	15:10	2007/10/18	15:00	23.8	176357445021303	2.1	5.0	13	thomas, mills, zwicker	3.6
16	East (Main) Basin	FWIN randomized	0 - Standard	2007/10/18	10:00	2007/10/19	10:00	24.0	176363295019771	3.2	4.9	13	thomas, mills, clayton	4.0
17	East (Main) Basin	FWIN Sequential	0 - Standard	2007/10/18	11:25	2007/10/19	10:55	23.5	176358025021028	10.0	14.3	13	thomas, mills, clayton	12.2
18	East (Main) Basin	FWIN Sequential	1 - Small mesh to shore	2007/10/18	13:15	2007/10/19	12:45	23.5	176384815020374	5.4	9.6	13	thomas, mills, clayton	7.5
19	East (Main) Basin	FWIN Sequential	1 - Small mesh to shore	2007/10/18	14:35	2007/10/19	14:00	23.4	176360285020357	5.0	9.5	13	thomas, mills, clayton	7.2
20	East (Main) Basin	FWIN Sequential	1 - Small mesh to shore	2007/10/18	15:25	2007/10/19	15:35	24.2	176322005020800	2.3	6.0	13	thomas, mills, clayton	4.2

Table 2 Catch summary, Lake Vernon FWIN, 2007.

sample_number	Black Crappie	Brown Bullhead	Golden Shiner	Lake Trout	Longnose Sucker	Northern Pike	Pumpkinseed	Rainbow Smelt	Rock Bass	Smallmouth Bass	Spottail Shiner	Trout-perch	Walleye	White Sucker	Yellow Perch
1	0	3	0	0	0	0	0	1	11	5	1	0	10	2	20
2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	3
3	1	1	0	0	0	7	1	0	1	0	0	0	0	0	2
4	0	1	1	0	0	2	4	0	4	1	11	0	0	0	7
5	0	5	0	0	0	0	1	0	20	1	7	1	2	1	1
6	0	5	0	0	0	2	0	0	10	1	15	1	1	3	9
7	0	4	0	0	0	1	1	0	4	1	0	1	4	2	5
8	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2
9	0	0	0	0	0	2	1	0	16	6	0	1	7	2	3
10	0	0	0	0	0	0	0	0	2	0	0	0	0	2	4
11	0	0	0	0	0	1	0	0	7	0	0	0	1	0	2
12	0	0	0	0	0	0	0	1	1	0	0	0	0	0	9
13	0	2	0	0	0	0	0	0	8	0	0	0	1	2	6
14	0	0	0	2	1	2	0	0	2	7	0	0	9	0	0
15	0	2	0	0	0	0	0	0	1	0	0	0	3	1	2
16	0	2	0	1	0	2	0	0	21	2	0	0	0	2	0
17	0	0	0	1	0	3	0	1	1	0	0	0	0	2	4
18	0	0	0	0	0	3	12	0	21	0	0	0	0	0	14
19	0	1	0	0	0	3	0	0	8	6	0	0	3	4	1
20	0	1	0	0	0	1	0	0	4	4	0	2	2	0	1

Total	1	27	1	4	1	29	20	5	142	34	34	6	43	24	95
Mean	0.05	1.35	0.05	0.20	0.05	1.45	1.00	0.25	7.10	1.70	1.70	0.30	2.15	1.20	4.75
S.D.	0.22	1.69	0.22	0.52	0.22	1.73	2.75	0.55	7.21	2.43	4.22	0.57	3.10	1.20	5.06
S.E.	0.05	0.38	0.05	0.12	0.05	0.39	0.62	0.12	1.61	0.54	0.94	0.13	0.69	0.27	1.13
Lower 95% CL	0.00	0.61	0.00	0.00	0.00	0.69	0.00	0.01	3.94	0.63	0.00	0.05	0.79	0.68	2.53
Upper 95% CL	0.15	2.09	0.15	0.43	0.15	2.21	2.21	0.49	10.26	2.77	3.55	0.55	3.51	1.72	6.97
Median	0	1	0	0	0	1	0	0	4	0.5	0	0	1	1	3
Geo. Mn	0.04	0.88	0.04	0.13	0.04	0.99	0.42	0.17	4.26	0.94	0.49	0.21	1.16	0.89	3.19

Table 3 Descriptive statistics, by species, Lake Vernon FWIN 2007.

Fork Length

	Black Crappie	Brown Bullhead	Golden Shiner	Lake Trout	Longnose Sucker	Northern Pike	Pumpkinseed	Rainbow Smelt	Rock Bass	Smallmouth Bass	Spottail Shiner	Trout-perch	Walleye	White Sucker	Yellow Perch
n	1	27	1	4	1	29	20	5	141	34	27	5	43	23	92
Mean	240.0	254.9	145.0	490.0	478.0	676.7	165.3	170.0	144.3	264.8	101.9	113.6	463.9	352.4	180.6
Min	240.0	159.0	145.0	447.0	478.0	450.0	120.0	141.0	98.0	140.0	95.0	105.0	317.0	205.0	148.0
Max	240.0	340.0	145.0	524.0	478.0	840.0	191.0	235.0	252.0	486.0	111.0	123.0	659.0	530.0	264.0
S.D.		47.6		33.2		101.7	20.1	37.1	29.5	90.9	4.1	7.6	96.3	107.7	22.6

Total Length

	Black Crappie	Brown Bullhead	Golden Shiner	Lake Trout	Longnose Sucker	Northern Pike	Pumpkinseed	Rainbow Smelt	Rock Bass	Smallmouth Bass	Spottail Shiner	Trout-perch	Walleye	White Sucker	Yellow Perch
n	1	27	1	4	1	29	20	5	140	34	27	5	43	23	92
Mean	250.0	259.1	160.0	536.3	512.0	713.2	172.2	183.2	148.9	278.7	112.6	124.4	489.7	376.1	188.7
Min	250.0	163.0	160.0	490.0	512.0	478.0	125.0	153.0	100.0	150.0	106.0	116.0	334.0	218.0	153.0
Max	250.0	345.0	160.0	572.0	512.0	883.0	200.0	257.0	260.0	512.0	120.0	135.0	690.0	571.0	274.0
S.D.		47.9		35.5		105.3	21.0	42.0	30.2	95.5	3.5	8.1	101.5	116.7	23.7

Round Weight

	Black Crappie	Brown Bullhead	Golden Shiner	Lake Trout	Longnose Sucker	Northern Pike	Pumpkinseed	Rainbow Smelt	Rock Bass	Smallmouth Bass	Spottail Shiner	Trout-perch	Walleye	White Sucker	Yellow Perch
n				4		29				32			43		
Mean				1494		2506				402			1480		
Min				1050		700				30			355		
Max				1900		4300				1450			4150		
S.D.				389		1020				408			999		

Age

	Black Crappie	Brown Bullhead	Golden Shiner	Lake Trout	Longnose Sucker	Northern Pike	Pumpkinseed	Rainbow Smelt	Rock Bass	Smallmouth Bass	Spottail Shiner	Trout-perch	Walleye	White Sucker	Yellow Perch
n				4		29				32			43		
Mean				5.8		5.4				4.1			3.8		
Min				5.0		2.0				1.0			1.0		
Max				6.0		12.0				12.0			9.0		
S.D.				0.5		3.0				2.6			2.7		

Table 4 Total length composition, by species, Lake Vernon FWIN, 2007.

Total Length (mm)	Black Crappie	Brown Bullhead	Golden Shiner	Lake Trout	Longnose Sucker	Northern Pike	Pumpkinseed	Rainbow Smelt	Rock Bass	Smallmouth Bass	Spottail Shiner	Trout-perch	Walleye	White Sucker	Yellow Perch
76-100									2						
101-125							1		36		27	3			
126-150							2		42	2		2			
151-175		2	1				7	4	37	1					34
176-200		1					10		16	3					29
201-225		3							5	10				4	24
226-250	1	6							1	1					4
251-275		4						1	1	1				2	1
276-300		5								3					
301-325		3								3				5	
326-350		3								1			5		
351-375										3			4	1	
376-400										2			1	1	
401-425										1			2	1	
426-450										2			2	2	
451-475													5	1	
476-500				1		2							7	1	
501-525					1					1			3	2	
526-550				1		1							1	1	
551-575				2									3	2	
576-600						1							3		
601-625						1							1		
626-650						3							3		
651-675						2							2		
676-700						1							1		
701-725						2									
726-750						3									
751-775						5									
776-800						1									
801-825						5									
851-875						1									
876-900						1									
Grand Total	1	27	1	4	1	29	20	5	140	34	27	5	43	23	92

Table 5 Age composition and mean total length-at-age, Lake Vernon FWIN, 2007.

Age	n	mean	min	max	S.E.
0					
1	10	354.5	334	376	3.5
2	11	460.2	425	490	4.2
3	3	481.3	416	529	13.1
4	3	543.0	497	577	9.2
5	2	537.0	500	574	11.7
6	6	547.3	493	633	12.7
7	4	597.5	520	657	13.0
8					
9	4	657.8	630	690	6.2
10					
11					
12					

Table 6 Walleye maturity, by total length, Lake Vernon FWIN, 2007.

	Female		Male	
TL (mm)	Immature	Mature	Immature	Mature
300-349	2		2	1
350-399	1		1	3
400-449	1			2
450-499	4	3		5
500-549		1		3
550-599		1		3
600-649		2		1
650-699		1		
Total	8	8	3	18

Table 7 Walleye maturity, by age, Lake Vernon FWIN, 2007.

	Female		Male	
Age	Immature	Mature	Immature	Mature
1	3		3	4
2	4	2		5
3		2		1
4				1
5				1
6	1	2		3
7		2		2
8				
9				1
Total	8	8	3	18

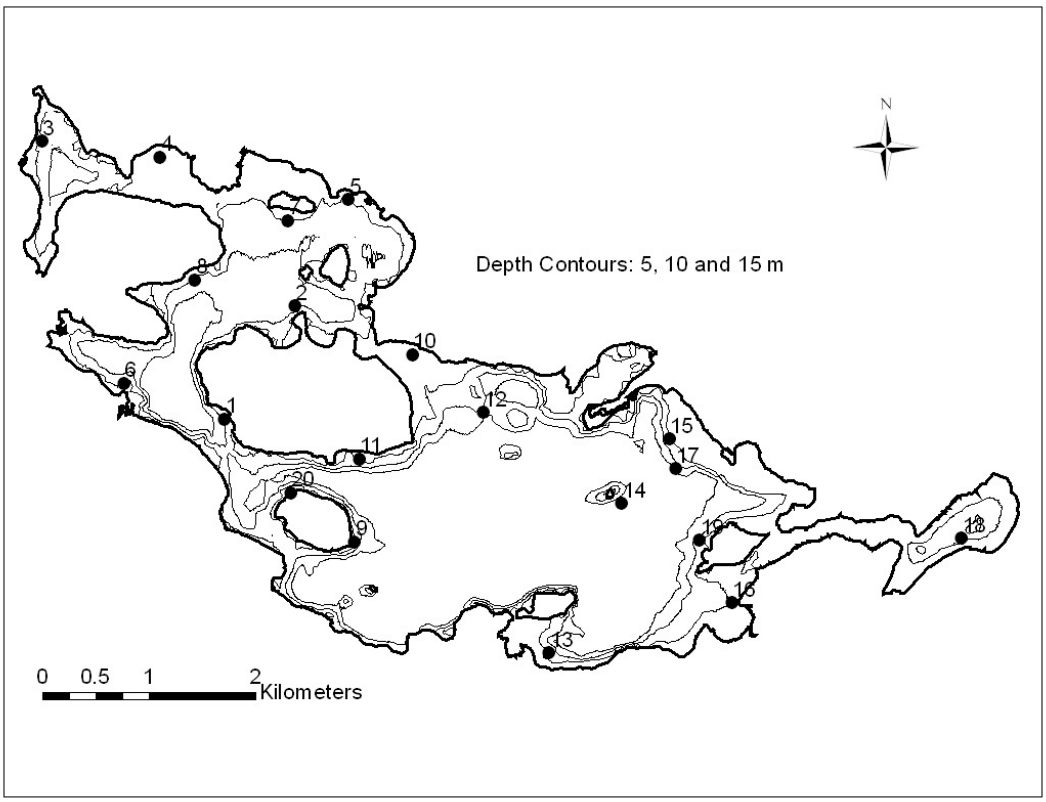


Figure 1 Lake Vernon net set locations and bathymetry, FWIN, 2007. Depths in metres.

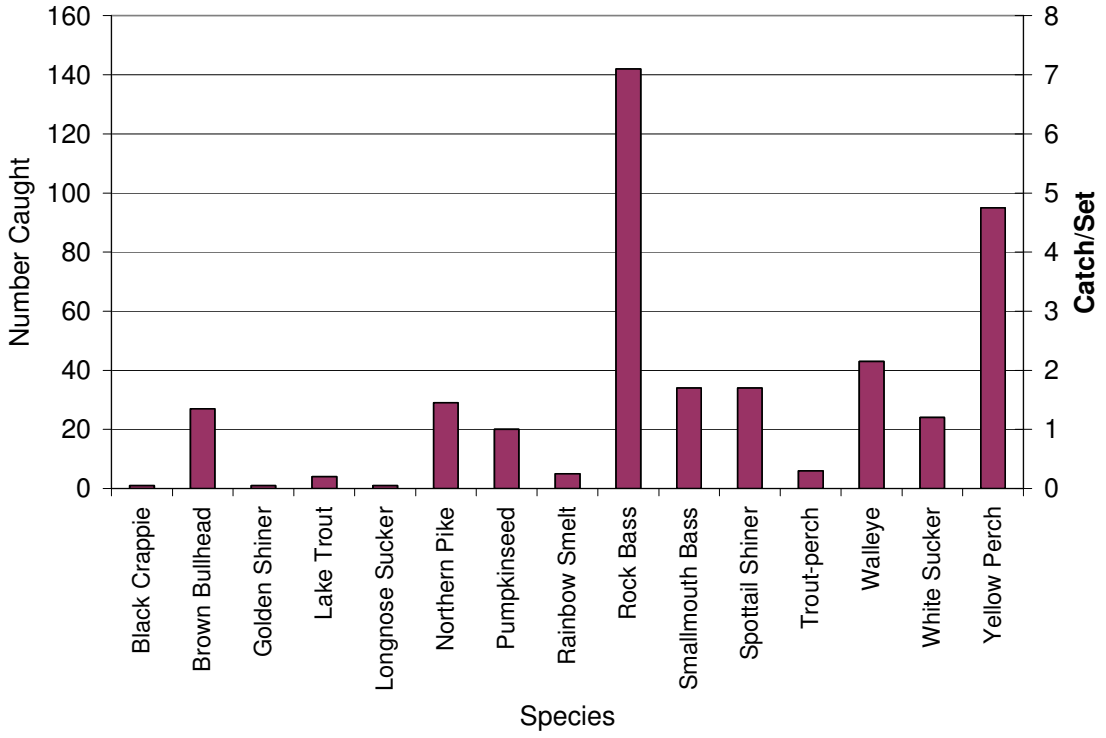


Figure 2 Catch composition (total catch and arithmetic mean catch-per-net), Lake Vernon FWIN, 2007.

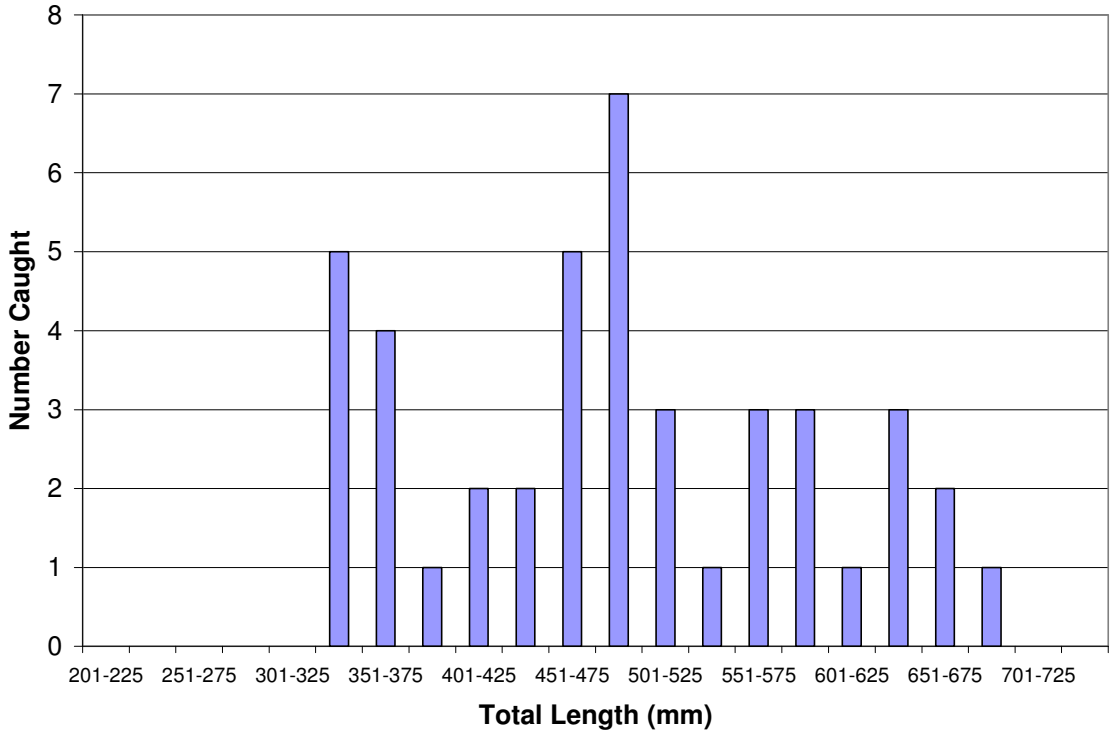


Figure 3 Total length distribution of walleye, Lake Vernon FWIN, 2007.

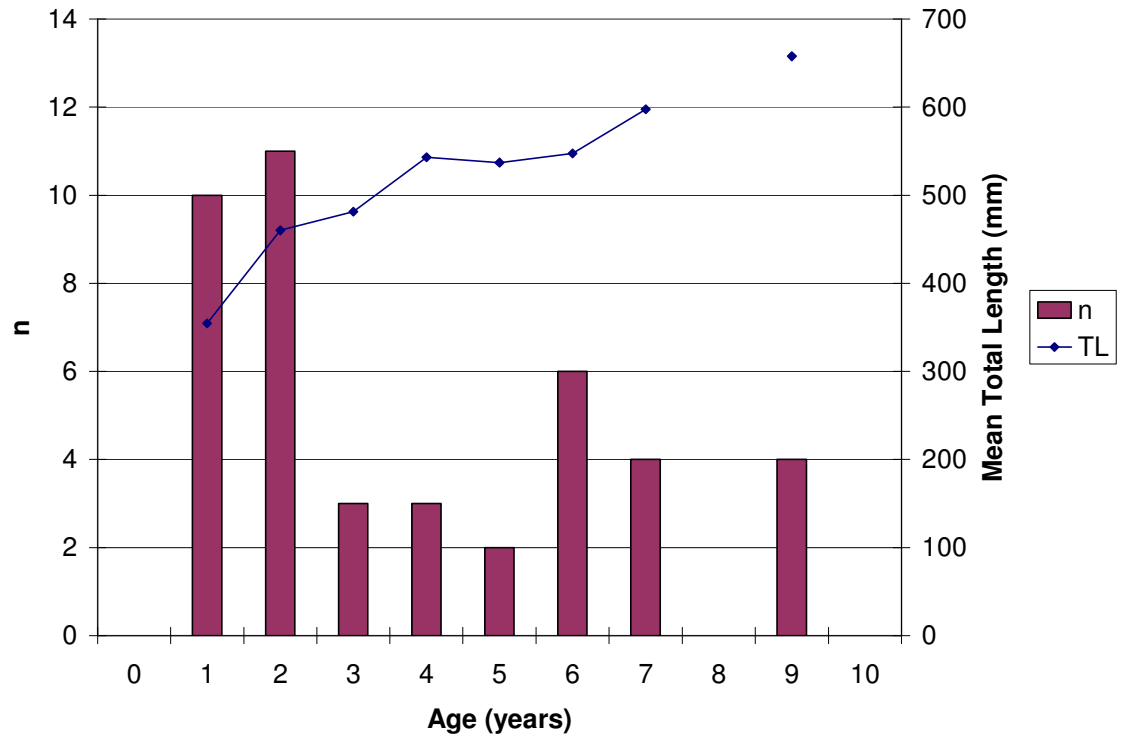


Figure 4 Age distribution and mean total length-at-age of walleye, Lake Vernon FWIN, 2007.

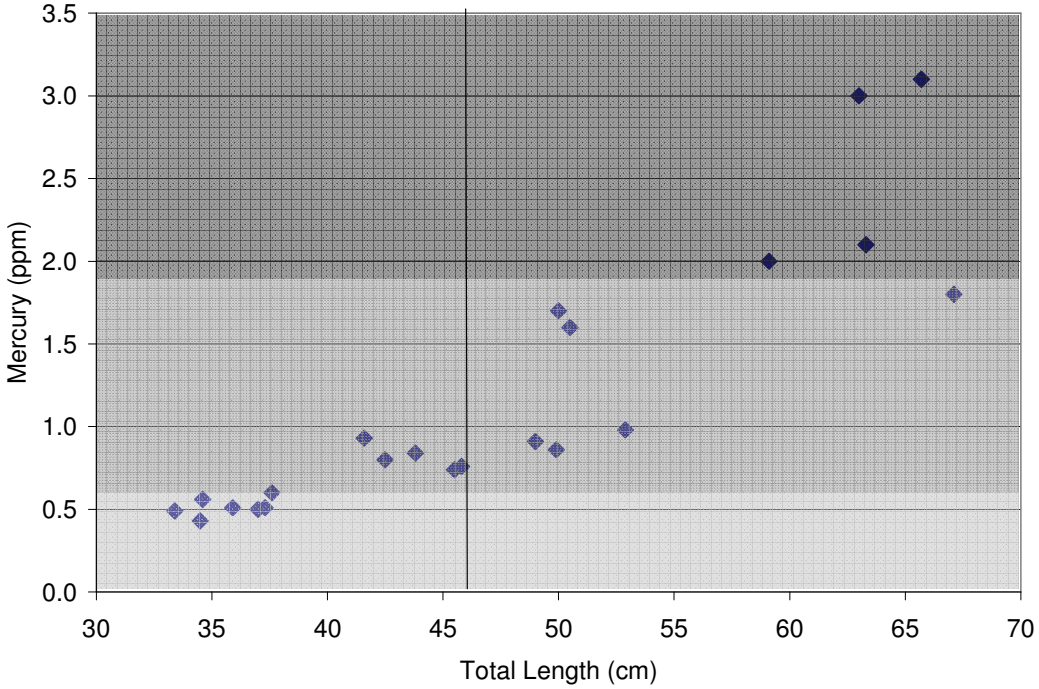


Figure 5 Mercury concentration in walleye, Lake Vernon FWIN, 2007. Light shading indicates no restrictions on consumption by general population; medium shading indicates some restriction and dark shading indicates that no consumption is recommended.

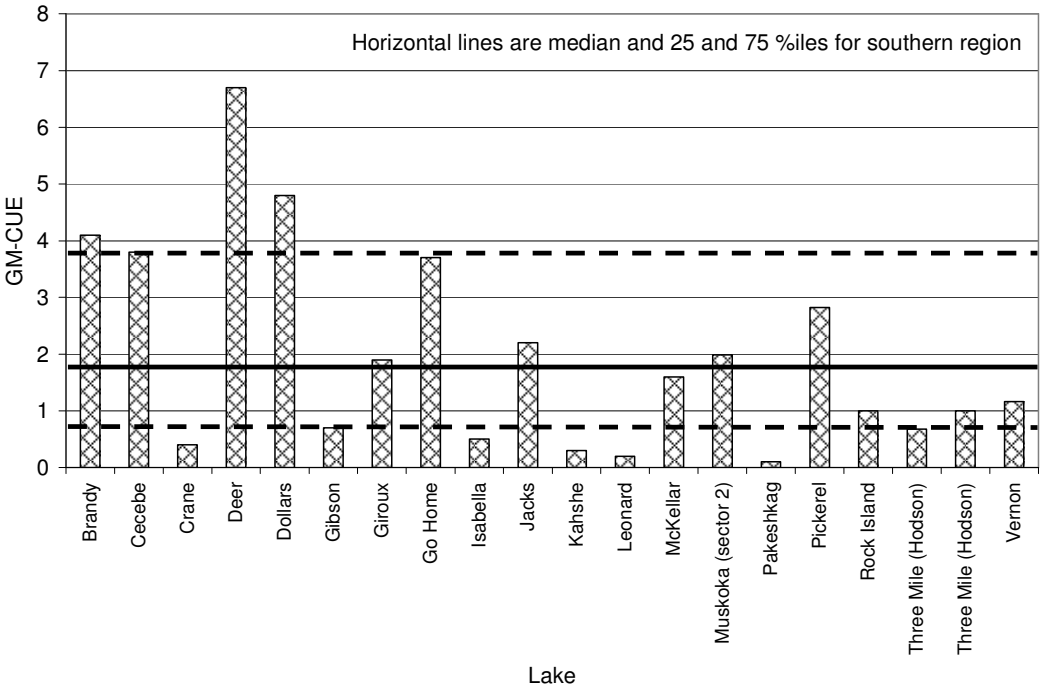


Figure 6 Geometric mean catch-per-net for walleye from FWIN surveys conducted in Parry Sound District, 2001-2007.

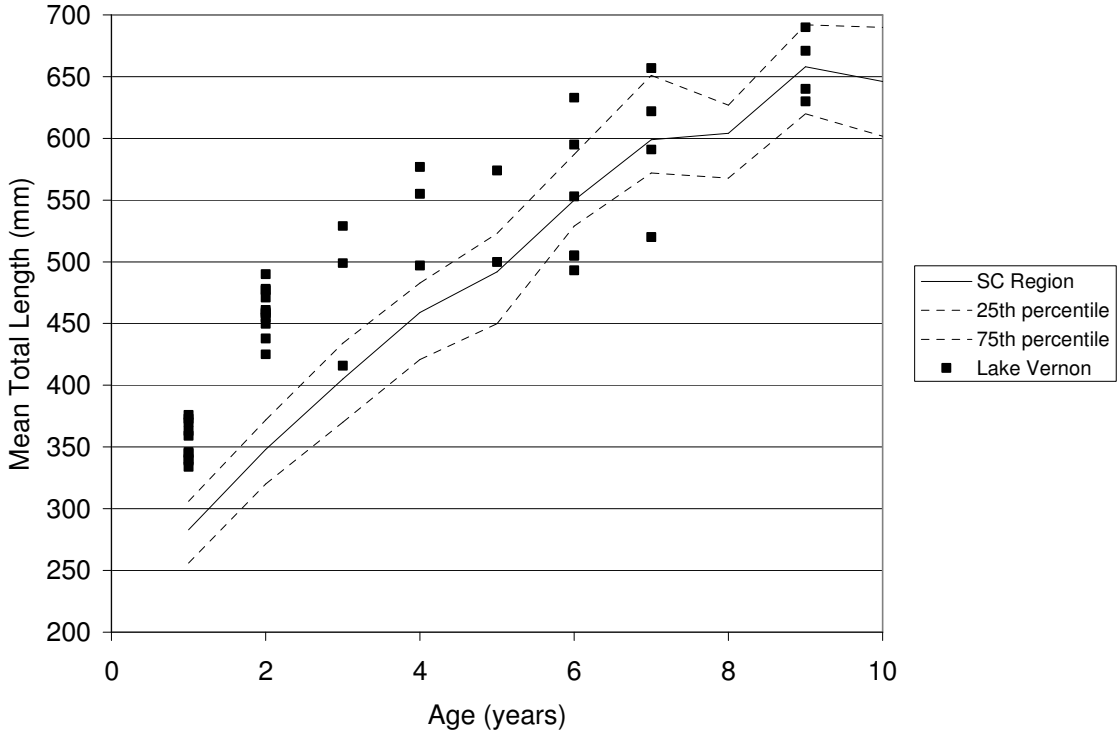


Figure 7 Female size-at-age, compared to southern region benchmarks, Lake Vernon FWIN, 2007.

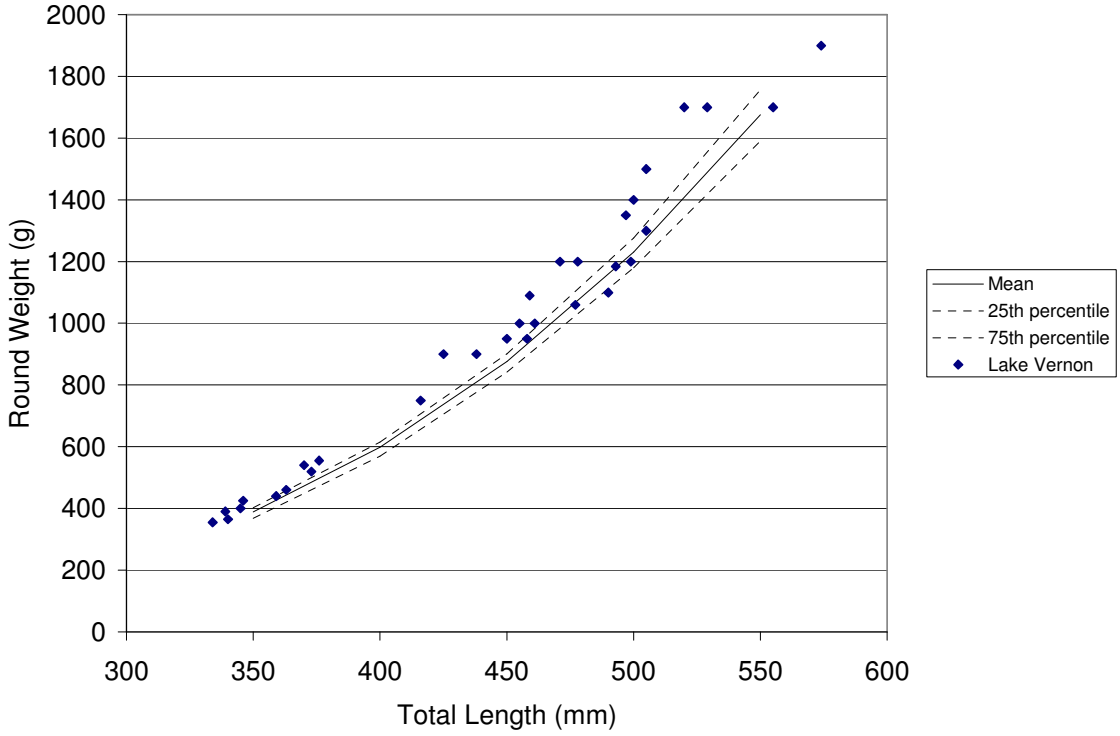


Figure 8 Female condition compared to southern region benchmarks, Lake Vernon FWIN, 2007.

Appendix Selected descriptive statistics for Southern Ontario walleye, based on 1993-2001 FWIN database (Morgan et al 2003).

		Mean	Minimum	Maximum	Median	5th percentile	25th percentile	75th percentile	95th percentile	Sample size
Surface Area (ha)		1209	45	13598	513	68	138	1219	5349	99
Mean Depth (m)		6	0.9	24.3	5.5	1.8	3.9	7.7	10.7	94
Max. Depth (m)		19.6	2.3	87.5	18.3	6.1	11.8	25	39.6	96
Secchi Depth (m)		3.6	0.2	7.3	3.5	1.1	2.4	4.6	6.7	96
Average Catch		2.8	0	27.7	1.7	0.1	0.7	3.8	8.3	100
GM-CUE > 450		0.6	0.0	8.1	0.4	0.1	0.2	0.7	1.8	98
Age Classes		5.6	1.0	13.0	5.0	1.0	4.0	7.0	11.0	95
Max Age		11.5	2.0	26.0	11.0	5.0	8.3	14.0	19.0	98
Shannon Index of Mature Females		0.43	0.00	0.96	0.45	0.00	0.29	0.63	0.84	90.00
Average Size (TL)		406	265	634	393	296	348	442	574	96
Female Total Length at Age	1	283	271	373	286	234	256	306	365	31
	2	348	286	482	337	300	320	372	429	51
	3	405	316	542	403	340	370	434	493	48
	4	459	378	590	460	401	421	483	566	26
	5	492	417	591	490	417	450	523	591	15
	6	550	477	644	542	477	529	587	644	13
	7	599	513	680	590	513	572	651	680	9
	8	604	538	682	612	538	568	627	682	8
	9	658	620	692	661	620	620	692	692	3
	10	646	567	701	658	567	602	690	701	4
Male Total Length at Age	1	275	226	364	271	231	245	301	347	30
	2	352	271	448	351	294	325	375	441	55
	3	394	318	505	388	336	368	416	480	62
	4	429	337	526	425	358	399	456	513	39
	5	444	363	529	442	363	416	474	529	16
	6	475	425	590	464	425	444	500	590	13
	7	479	429	619	475	429	451	494	619	15
	8	528	486	570	520	486	513	554	570	5
	9	517	486	585	497	483	492	565	585	7
	10									
Female Maturity by Age	10%	2.8	0.8	4.4	2.7	1.1	2.3	3.3	4.0	43
	50%	3.6	2.0	5.4	3.7	2.1	3.0	4.3	4.8	43
	90%	4.4	2.4	7.8	4.4	3.1	3.6	5.2	5.9	43
Female Maturity by Size	10%	413	292	532	420	345	392	434	472	43
	50%	445	368	557	441	374	417	475	491	43
	90%	477	382	581	477	419	441	512	540	43
Female Condition	350	389	355	439	387	359	368	402	436	33
	400	598	539	670	597	549	569	615	669	33
	450	876	778	976	877	785	842	901	973	33
	500	1231	1077	1369	1236	1080	1180	1276	1359	33
	550	1676	1435	1859	1694	1455	1591	1757	1845	33