



Eastern Georgian Bay Stewardship Council

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2011 Synoptic Trap-net Survey Report for the Magnetawan River (Britt / Byng Inlet Area) of Eastern Georgian Bay

October, 2011

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**Andrew Austin with walleye captured during the Magnetawan River
Synoptic Trap-net survey**

Executive Summary:

In the late spring of 2011, the Eastern Georgian Bay Stewardship Council (EGBSC) in partnership with the Magnetawan First Nation and the Ministry of Natural Resources, attempted to conduct an End-of-Spring-Trap-Net (ESTN) survey on the Magnetawan River of Eastern Georgian Bay.

Part way through - the survey was beset by exceptionally high winds that forced us to deviate from the survey design. Several nets could not be moved or attended on a daily basis, consequently fishing for two consecutive nights. One net was damaged and rendered unserviceable. The survey was terminated prematurely and did not meet the sampling criteria of the ESTN protocol. Nonetheless, 18 net sets comprising 24 net-nights of fishing effort were completed. To the extent possible, we have utilized the data collected to meet the original objectives of the survey.

We captured 15 fish species comprising a grand total of 513 fish weighing 794 kilograms. Over-all Catch-Per-Unit-Effort (CPUE) was 21.4 fish per net set; below the lowest in the Georgian Bay ESTN reference data and well below the mean of 66.7. This indicates an over-all low abundance of fish in the area.

Relative to the ESTN reference data set, the abundance of redhorse sucker, channel catfish and muskellunge was high. The abundance of smallmouth bass and gar was “average”, or equivalent to the mean CPUE in the reference data set for these species. The abundance of walleye and pike was low. That of white sucker, largemouth bass, carp, bowfin, pumpkinseed and yellow perch was exceptionally low.

We used Probability-of-Catch (POC) to determine how widely various species were distributed throughout the study area. Smallmouth bass were caught in 87% of net sets, followed by redhorse sucker (62%), walleye and rock bass (46% each); muskellunge (37%); northern pike and gar (33% each); brown bullhead and channel catfish (21%); and all other species less than 10% each.

Catch-Per-Unit-Effort (CPUE) and size sampling data for smallmouth bass suggests a healthy and stable population with good levels of recruitment and a moderate mortality rate.

The walleye catch rate (CPUE) was low – suggesting low abundance. Size sampling for walleye produced a distinctly bi-modal distribution of fish “under-500 grams” and “over-2000 grams” in weight. Notwithstanding low abundance, the small spawning population is displaying some measure of successful reproduction and recruitment. This is a good harbinger for possible future rehabilitation efforts.

A remarkable 16 muskellunge were captured; many of trophy size. Relative to the Georgian Bay ESTN reference data set, our muskellunge CPUE of 0.7 is the highest, indicating a high abundance.

Over-all, fish community composition in the Magnetawan River was typical of other areas of Georgian Bay. Two thirds (66%) of the fish biomass caught was comprised of non-game fish – predominantly redhorse sucker (49%). One third of the biomass caught was comprised of game fish: primarily muskellunge (14%) and smallmouth bass (12%). Walleye comprised 3.7% and northern pike 3.2%.

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1.0 Introduction

In an effort to assist the Upper Great Lakes Management Unit (UGLMU) of the Ministry of Natural Resources in monitoring the fish community throughout Eastern Georgian Bay, the Eastern Georgian Bay Stewardship Council (EGBSC) has attempted to annually conduct a standard ESTN (End-of-Spring-Trap-Net) survey for this purpose.

In 2011, the Magnetawan River of Eastern Georgian Bay in the vicinity of Britt and Byng Inlet was selected for survey. Although numerous fisheries surveys – both angler and netting surveys, have been conducted since the early 1980s, a standardized (i.e. Provincially approved), base-line survey to monitor the fish community and in particular the walleye population, has never been completed. (Unfortunately, this survey failed to meet the sampling specifications of the ESTN survey.)

This survey was also prompted by reports from the Magnetawan First Nation that walleye abundance in the Magnetawan River was exceedingly low. It was intended this survey could provide the basis of any “before treatment” assessment of walleye population status prior to rehabilitation efforts being conducted in the future.

2.0 Methods

2.1 Field Procedures:

Survey procedures were attempted as specified in the Ministry's Manual of Instructions for End-of-Spring-Trap Netting (ESTN) (Skinner and Ball; 2004), with the exception of procedures specified for net set location.

Due to the known difficulties in pre-selecting netting sites according to the ESTN manual, net locations were selected in accordance with the following guidelines:

- Nets were to be approximately evenly dispersed throughout the study in an effort to fish various fish habitats in the proportion to which they occurred. The intention here was that habitats fished would be representative of the whole study area.
- The site had to be suitable for the net to fish effectively. (Consequently – factors such as: contour of the lake bottom, absence of obstructions, depth, sufficient lead length, etc. were mandatory considerations.)
- Nets were to be set far enough apart (> 400 m) such that they were not competing with each other.
- Avoid areas of potential conflict where there is human habitation.
- Avoid areas where nets could act as a navigational hazard.

The ESTN survey protocol calls for 30 live-capture, 6' trap-net sets. Netting locations are to be randomly selected and nets are to be set for over-night duration (approximate 24-hour). Surveys are conducted during the spring when water temperatures range from 12 – 18 degree Celsius. Due to severe complications from inclement weather, we were unable to meet the above specifications.

Exceptionally high winds wreaked havoc with our netting schedule; forcing us to leave three nets set for two-nights duration. Furthermore, three sets that could be sampled – could not be moved, thereby fishing the same location for more than one night.

The foregoing problems caused us to modify our set numbering as shown in Table 1. Where nets were sampled and re-set in the same location – a suffix “b” was added to the site number. For instance (as per Table 1): data associated with net sets #15b, 17b and 18b represents the second net-night fished at site #15, 17 and 18.

All fish captured were enumerated (Table 1). All 15 species captured were randomly size sampled (Appendix C - G). Almost all fish were live released at the site of capture. Set number 16 was a chaotic lift under trying conditions of high winds. Approximately 10 redhorse suckers were either dead in the net or inadvertently killed in the lifting process.

Field operations commenced May 28 and terminated June 3, 2011. Total fishing effort expended was 24 net-nights at 18 different net set locations (Table 1).

The study area extended from the most easterly navigable portion on the Magnetawan River of Eastern Georgian Bay (see Figure 1a; approximately – the CPR railway trestle) to the open waters of Georgian Bay – just west of Clark Island (see Figure 1b).

Figure 1a. East Portion of study area with net locations indicated

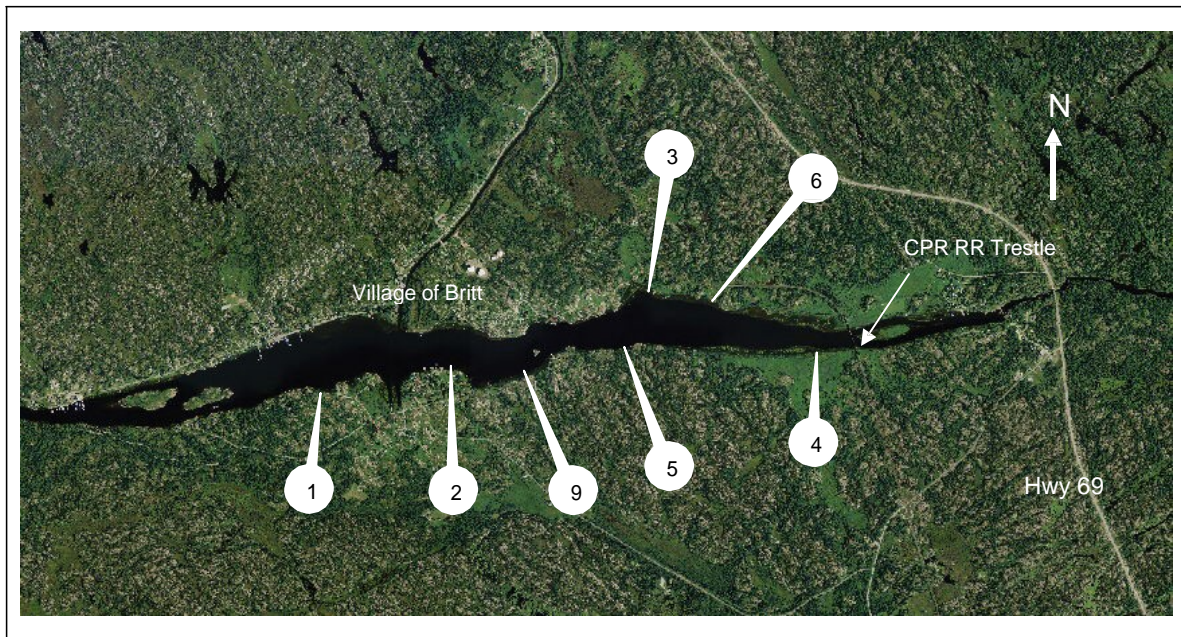
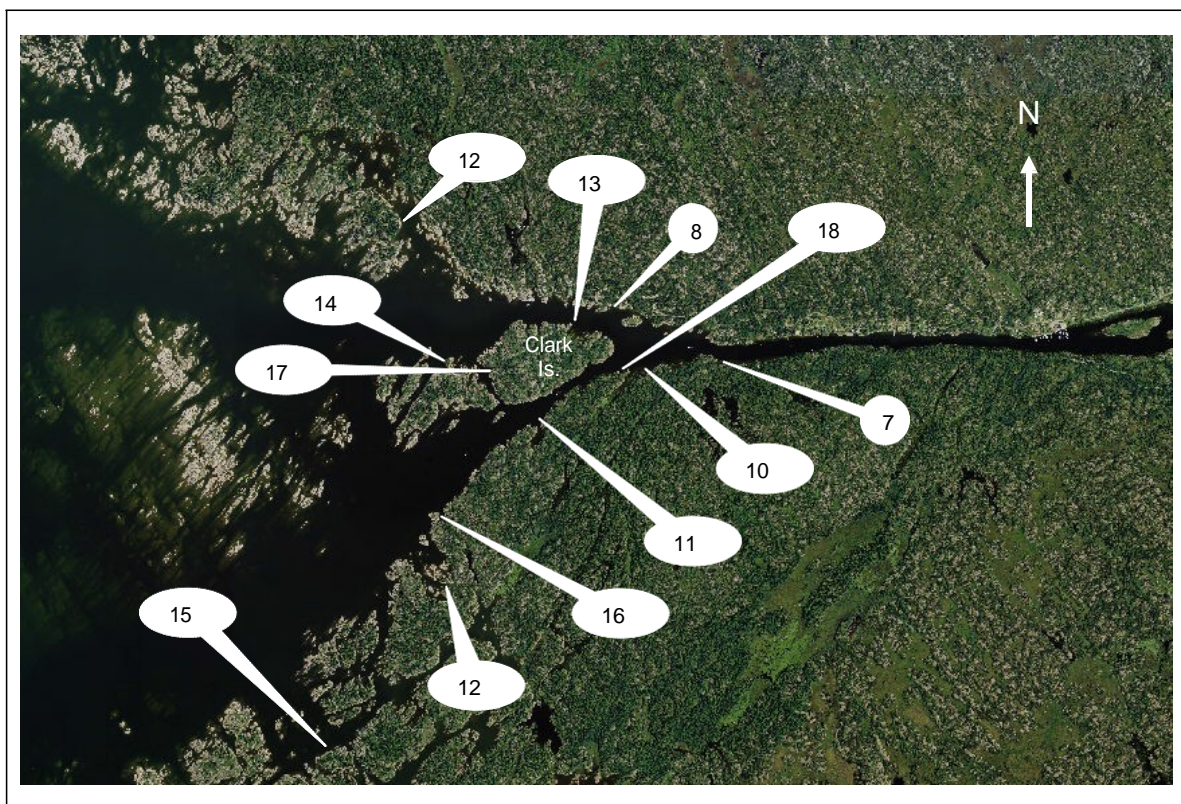


Figure 1b. West Portion of study area with net locations indicated.



2.2 Data Analysis

Regrettably, we were forced to terminate the survey prematurely and did not meet the sampling specifications of a standard ESTN survey. To the extent possible we have used the data collected to meet the original objectives of the survey.

Our survey does not meet the standard of the ESTN protocol. Nonetheless, the ESTN survey design is the closest to the one we adopted and consequently the most appropriate for comparison purposes. The reader should be aware that the validity of comparison between our results and those of the Eastern Georgian Bay ESTN data set is compromised however.

3.0 Results

We captured 15 species of fish comprising a grand total of 513 fish and 792 kilograms (Table 1).

Table 1. Catch Summary – 2011 Magnetawan River Synoptic Trap-net Survey

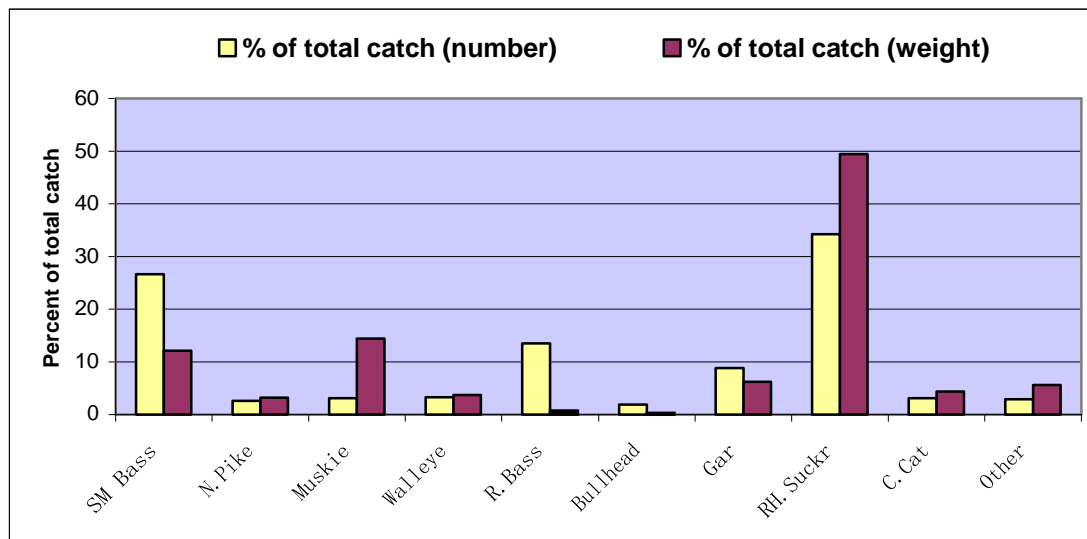
Net Set No.	Effort Net-nights	SM Bass	N.Pike	Muskie	Walleye	R.Bass	Bullhead	Gar	RH.Suckr	C.Cat	Other Species	
1	1	5		2	2	5	1				1 LM Bass	
2	1										1 carp	
3	1	4		3		2		1	4	1	1 carp	
4	1	1					1					
5	1	4		2					6	1	1 carp	
6	1	18	1			10	2	23			2 bowfin	
7	1	4		1	1							
8	1	23	1	2	4	5			18		1 bowfin	
9	1	7		1				15			1 carp	
											1 wt.sucker	
10	1	8	2		1	22	5	1	3		1 pumpksd	
11	1	11	1			5			2			
12	1	7	3	2	1			2	14	12	2 wt.sucker	
13	1	8			1			1	27			
14	1	2							2			
15	2	15			3	8	1		30		2 wt.sucker	
16	2				1				41	1		
17	1	3	1		2	2		1	7			
18	1	6		2	1	6		1	6	1	1 y.perch	
15b	1	7	2		1				8			
17b	1	2	2			1			3			
18b	2	1		1		3			4			
Total	24	136	13	16	18	69	10	45	175	16	15	513
% of total catch (number)		26.6	2.6	3.1	3.3	13.5	1.9	8.8	34.2	3.1	2.9	100
Total Catch Weight (kg)		95.744	25.532	113.840	29.106	6.003	2.140	48.960	391.300	34.720	44.595	791.940
Mean Wt. (gr)		704	1964	7115	1617	87	214	1088	2236	2170	2973	1544
% of total catch (weight)		12.1	3.2	14.4	3.7	0.7	0.3	6.2	49.4	4.4	5.6	100.0
CPUE (no. / net set)		5.7	0.5	0.7	0.7	2.9	0.4	1.9	7.3	0.7	0.6	21.4
CPUE (wt. / net set)		3.989	1.064	4.743	1.213	0.025	0.089	2.040	16.304	1.447	1.670	32.997
Probability of Capture		87.50%	33.30%	37.50%	45.80%	45.80%	20.80%	33.30%	62.50%	20.80%	45.80%	

3.1 Catch Composition:

Our total catch number of 513 fish, was dominated by redhorse sucker (34.2%), smallmouth bass (26.6%), rock bass (13.5%) and gar (8.8%). Eleven other species comprised the remaining 17% (Figure 2 and Table 1).

Our total catch weight of 792 kilograms, was dominated by redhorse sucker (49.4%), muskellunge (14.4%), smallmouth bass (12.1%) and gar (6.2%). Eleven species comprised the remaining 18% of the total catch weight (Figure 2 and Table 1).

Figure 2. Catch composition of the 2011 Britt/Byng Inlet survey by number and weight.
(Note: Total catch number: 513; total catch weight: 791.940 kg.)

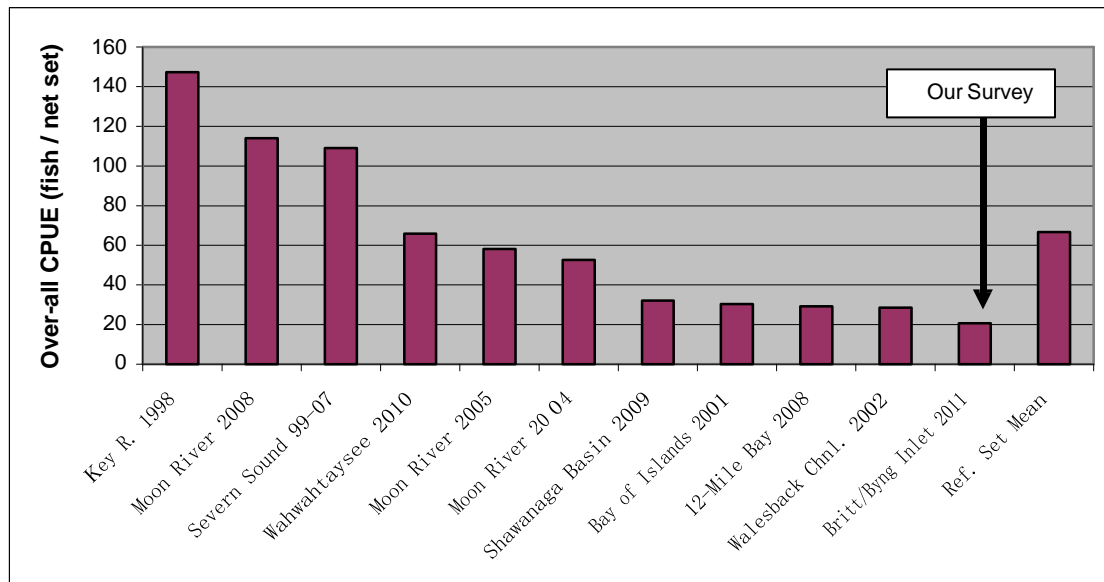


3.2 Catch-Per-Unit-Effort (CPUE):

Over-all Catch-Per-Unit-Effort (CPUE) in term of number was 21.4 fish per net set (Table 1). In terms of weight, over-all CPUE was 32.997 kg. per net set.

Relative to the ESTN reference data set, consisting of 10 Georgian Bay areas sampled since 1998, our overall CPUE-no of 21.4 fish per set is below the lowest in the data set and more than three times less than the average (21.4 in our survey vs. the ESTN mean of 66.7) (Figure 3). This clearly indicates over-all fish abundance in the Magnetawan River is low relative to other areas sampled on Georgian Bay.

Figure 3. A comparison of over-all CPUE by number (CPUE-no) for ESTN surveys conducted on Georgian Bay from 1998 – 2010.



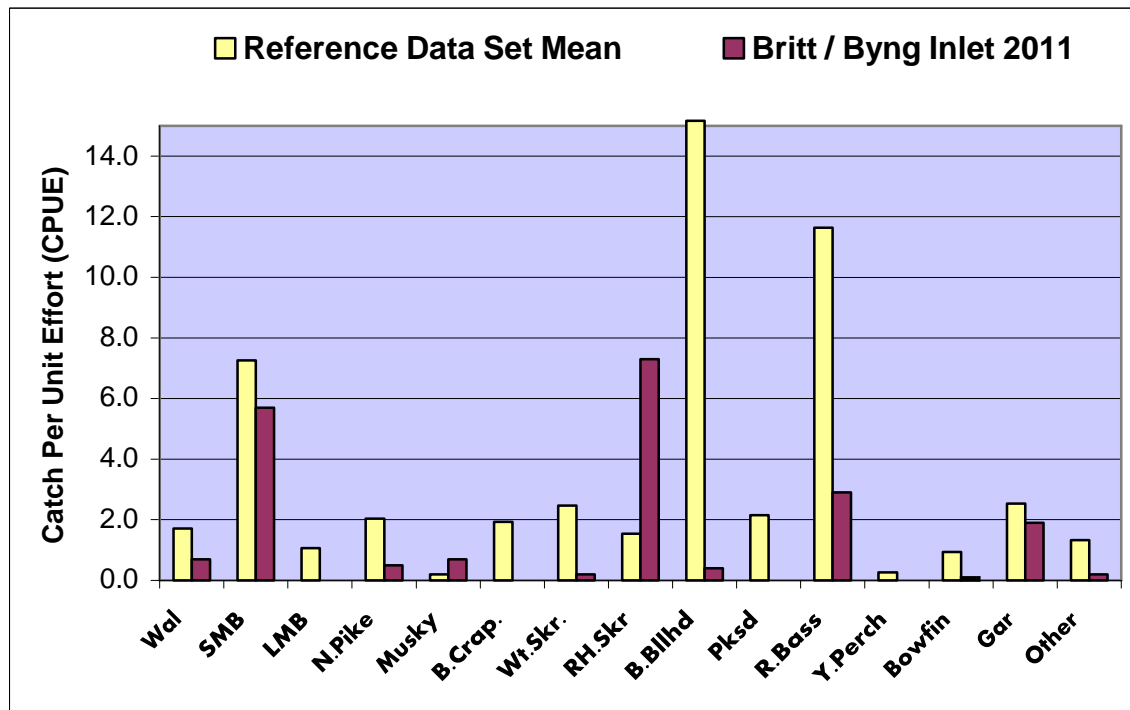
Unfortunately the reference data set does not include CPUE by weight (CPUE-wt).

3.3 Species CPUE-no

In our survey, redhorse sucker had the highest CPUE-no (7.3 per net set) followed by smallmouth bass (5.7), rock bass (2.9), gar (1.9), and the remaining 11 species at less than 1 fish per net set (Table 1).

Relative to the ESTN reference data set, redhorse sucker stands out as being more abundant in the Magnetawan River than elsewhere on Georgian Bay (see Figure 4). Conversely, brown bullhead and rock bass are much less abundant in the Magnetawan River area than elsewhere on Georgian Bay. The abundance of smallmouth bass and gar is “average” or approximately equivalent to the Georgian Bay reference data set mean CPUE for these species.

Figure 4. Comparison of species CPUE-no from the Britt/Byng Inlet survey with the ESTN Georgian Bay reference data set mean.



It is considerably more difficult – and subject to interpretation error to comment on the relative abundance of species that typically have low catch rates (CPUE). As catch rates diminish, the magnitude of the difference between surveys for these species is small. (For instance: it is highly unlikely that a CPUE of 0.5 for walleye in Area A represents half the population size for Area B that has a walleye CPUE of 1.0. These indices are too small and too close in value to make such a conclusion.) We do however wish to point out some salient observations that do arise for other species.

Our walleye CPUE of 0.7 is the second lowest in the 10-surveys reference data set whose mean is 1.7 walleye per net set (Figure 4 and Appendix A). It would appear that walleye abundance throughout Eastern Georgian Bay is low; and particularly low in the Magnetawan River area.

Our northern pike CPUE of 0.5 is the lowest in the 10 survey reference data set whose mean is 2.0 pike per net set (Figure 4 and Appendix A). This suggests pike abundance is low in the Magnetawan River relative to elsewhere on Georgian Bay.

Our muskellunge CPUE of 0.7 is the highest in the 10 survey reference data set whose mean is 0.2 muskie per net set (Figure 4 and Appendix A). These low catch rates reflect the scarcity of muskie in ESTN nets. Nonetheless, our CPUE is more than three times the reference data set mean and probably represents a high abundance of muskie relative to elsewhere on Eastern Georgian Bay.

Our channel catfish CPUE 0.7 was remarkably high relative to the Georgian Bay reference data set. This species is so infrequently caught elsewhere on Eastern

Georgian Bay that is lumped in with “other” species category and a species specific CPUE is not kept. Channel catfish abundance is high in the Magnetawan River relative to elsewhere on Eastern Georgian Bay.

We did not capture any black crappie or pumpkinseed; species that are found elsewhere on Georgian Bay – generally in low number but in occasional pockets of high number. Very few largemouth bass, carp, bowfin and yellow perch were caught (Table 1 and Appendix A), indicating these species are of low abundance in the Magnetawan River. Generally they are not caught in high number elsewhere in Georgian Bay with the exception of localized pockets.

3.4 Probability of Capture

Probability-of-Capture (POC) is the likelihood that at least one of an individual species will be captured in a trap-net. (We express POC in terms of the percentage of nets that captured a particular species.)

POC is occasionally used as an index of abundance, but it more effectively indicates how widely distributed a particular species is in a study area.

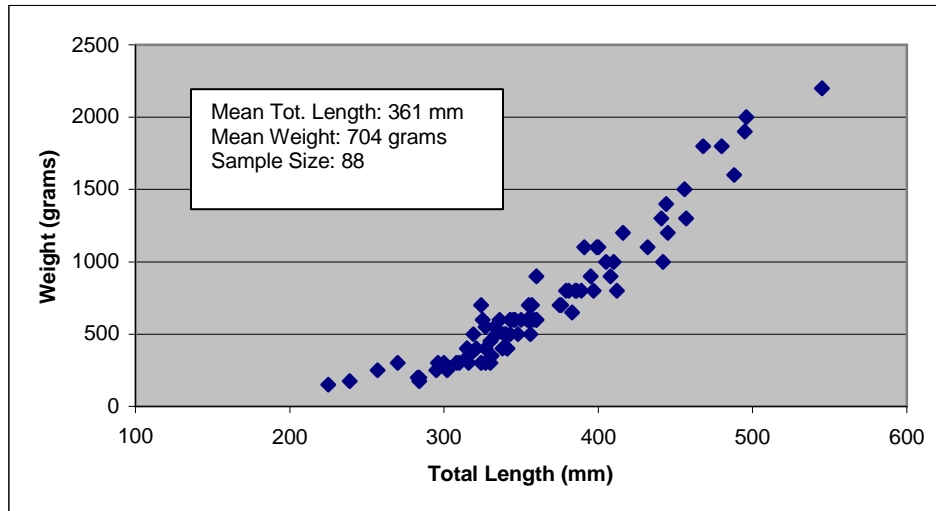
Smallmouth bass had the highest POC at 87% (Table 1; i.e. 87% of net sets caught at least one smallmouth bass) indicating wide distribution throughout the study area. Redhorse sucker had a POC of 62%; rock bass and walleye both had POC of 46%. Muskie POC was 37%; northern pike and gar 33% each; and brown bullhead and channel catfish – 21%. All other species (largemouth bass, carp, bowfin, pumpkinseed and yellow perch) had POC less than 10%.

3.5 Size-Sampling Data:

3.5.1 Smallmouth Bass:

We randomly size-sampled 88 smallmouth bass and determined a mean total length of 361 mm and mean weight of 704 grams (Appendix C and Figure 5).

Figure 5. Size distribution of smallmouth bass



The mean size of smallmouth bass captured in this survey was essentially equivalent to that found in our reference data set comprising 10 surveys along the eastern shore of Georgian Bay (see Appendix B).

The wide size distribution of smallmouth bass sampled, including the good representation of younger and older fish indicates successful recruitment is occurring and mortality is not excessive.

Based on our smallmouth bass CPUE (5.7 bass / net set; Table 1), and the good size distribution in our sample (Figure 5), we conclude the smallmouth population is stable and healthy in the Magnetawan River of Eastern Georgian Bay.

3.5.2 Northern Pike

We size sampled all 11 northern pike captured. Mean total length was 637 mm and mean weight was 1964 grams (4.3 lbs.) (Appendix D). This mean size is equivalent to the mean in our reference data set of ESTN surveys in 10 areas of Eastern Georgian Bay (Appendix B).

We had too small a sample (11 pike) to comment on size distribution and implications relating to recruitment and mortality.

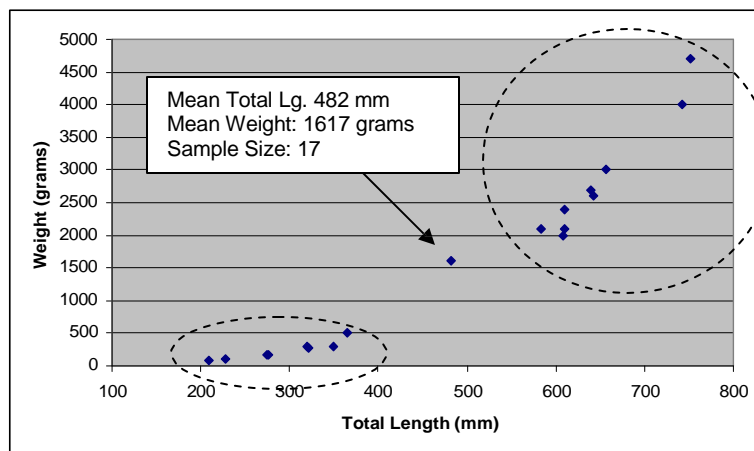
3.5.3 Muskellunge

We captured 16 muskellunge and size sampled 14 (Appendix E). This size sampling was largely ineffective (inaccurate) because many of the fish captured exceeded our weight scale capacity of 10 kg. Furthermore, we were not equipped to length measure many of the exceedingly large fish without inflicting harm. In many instances, the weight of muskie was simply estimated.

3.5.4 Walleye

We captured 18 walleye and size sampled 17 (Appendix F). (One walleye inadvertently escaped while being sampled.) Mean total length was 482 mm and mean weight 1617 grams (3.6 lbs). This is very similar to the ESTN reference data set mean of 532 mm and 1736 grams (Appendix B).

Figure 6. Size distribution of walleye sampled from the 2011 Magnetawan River Synoptic Trap-net Survey.



We noted a very distinct bi-modal distribution of walleye in size sampling. Eight walleye were quite small – less than 500 grams; and nine walleye were quite large – greater than 2000 grams (Figure 6). The mean size fell between these two size groups.

We are very encouraged by the small-size grouping of walleye. This clearly demonstrates a measure of success reproduction and recruitment to the population in recent years – albeit small. The large-size grouping clearly indicates a remnant spawning population still exists in the Magnetawan River. Together, these two observations suggest key ingredients for natural rehabilitation of this population is in place. Furthermore, recent assessment of spawning habitat in the Magnetawan River suggests spawning habitat is in good condition, although concerns are expressed with respect to flow management related to upstream dams (McIntyre, 2011). Similar concerns were previously expressed by Kujala (1987).

3.5.5 Other Species

Mean weight was determined for 10 other species (redhorse sucker; rock bass; gar; common white sucker; channel catfish; brown bullhead; carp; bowfin; largemouth bass and yellow perch) captured during the survey (Appendix G).

Mean weight was generally typical for these fish species captured elsewhere on Georgian Bay. Somewhat exceptional however was the large mean size of 13 common white sucker sampled: 2973 grams (6.5 lbs).

4.0 Acknowledgements

This survey was made possible through the dedicated commitment and assistance of many partners. We would like to acknowledge and thank:

- Magnetawan First Nation – Samantha Noganosh and Norman Jones, who assisted with netting operations
- Britt / Byng Inlet Anglers Association - Don Judd, who assisted with netting operations. The Britt / Byng Inlet Anglers Association also provided funding to support logistical needs of the project
- Georgian Bay Biosphere Reserve - Angela Mills, who assisted with netting operations
- Parry Sound office of the Ministry of Natural Resources - Bart Brown, Jim Palmer, Ken Molyneaux and Andrew Austin, who assisted with netting operations. The MNR were also vital to the project, providing netting and boating equipment as well as a vehicle.
- Upper Great Lakes Management Unit of the Ministry of Natural Resources – for providing technical and supervisory support.

5.0 Literature Cited

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Skinner, A. and H. Ball; 2004. Manual of Instructions – End of Spring Trap Netting (ESTN). Queen's Printer for Ontario. 52 p. + forms.

Appendix A. Comparison of Species CPUE (no. / net set) between the Georgian Bay ESTN Reference Data set and the 2011 Magnetawan River Synoptic Trap-net Survey

ESTN Survey & Yr.	Walleye	Smouth Bass	Lmouth Bass	N. Pike	Musky	Blk. Crappie	Wt. Suckr	Moxo. sp.	Br. Blthead	Pump-kinseed	Rock Bass	Yellow Perch	Bowfin	L.nose gar	Other	All	# species
Key R. 1998	3.1	1.8	0.1	1.4	0.0	9.8	9.0	11.8	91.2	7.3	8.4	0.5	1.9	0.7	0.2	147.2	18
Bay of Islands 2001	2.9	7.2	0.1	1.7	0.5	0.6	0.2	0.0	9.8	0.6	4.1	0.4	1.5	0.2	0.6	30.4	17
Moon River 2008	0.5	5.7	1.6	3.4	0.4	0.1	0.3	0.0	93.2	1.7	5.6	0.0	0.4	0.1	1.0	114.0	15
Moon River 2005	1.4	12.7	2.6	2.0	0.1	0.2	0.1	0.1	18.4	0.4	5.1	0.0	1.0	9.1	4.9	58.1	15
Moon River 2004	1.5	7.5	2.8	2.4	0.5	0.7	0.1	0.1	24.9	0.1	6.8	0.0	0.6	3.5	1.2	52.7	15
Walesback Chnl. 2002	1.5	1.4	0.0	2.0	0.0	0.0	11.4	0.0	5.5	0.0	5.0	1.1	0.3	0.0	0.3	28.5	12
Severn Sound 99-07	2.7	10.1	2.2	3.7	0.2	2.8	2.1	1.8	42.5	10.8	11.2	0.2	2.8	11.4	4.6	109.0	20
12-Mile Bay 2008	0.0	4.2	0.3	1.0	0.3	2.3	0.1	0.0	2.8	0.3	17.2	0.1	0.3	0.1	0.2	29.2	16
Shawanaga Basin 2009	3.2	7.6	0.3	1.3	0.1	2.8	1.4	1.5	8.2	0.3	4.5	0.3	0.5	0.1	0.1	32.2	17
Wahwahtaysee 2010	0.3	14.4	0.7	1.4	0	0	0	0.1	0.1	0	48.4	0	0.1	0.2	0.2	65.9	12
Mean CPUE (no. / net set)	1.7	7.3	1.1	2.0	0.2	1.9	2.5	1.5	29.7	2.2	11.6	0.3	0.9	2.5	1.3	66.7	15.7
Confidence Level(95.0%)	0.860	3.059	0.797	0.650	0.145	2.142	2.983	2.624	25.205	2.697	9.679	0.248	0.614	3.018	1.313	30.300	1.786
Standard Error	0.380	1.352	0.353	0.287	0.064	0.947	1.319	1.160	11.142	1.192	4.278	0.110	0.272	1.334	0.581	13.394	0.790
Standard Deviation	1.202	4.277	1.115	0.908	0.203	2.994	4.170	3.668	35.234	3.771	13.530	0.347	0.859	4.219	1.836	42.356	2.497
Sample Size	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Britt / Byng Inlet 2011	0.7	5.7	0	0.5	0.7	0	0.2	7.3	0.4	0	2.9	0	0.1	1.9	0.2	20.6	15

Appendix B. Comparison of Mean Size (total Length and weight) of Select Species between the ESTN Reference Data Set and the 2011 Magnetawan River Synoptic Trap-net Survey

Survey	N. Pike		Muskellunge		SMBass		LMBass		Walleye	
	TL (mm)	Wt. (gr)	TL (mm)	WT (gr)	TL (mm)	WT (gr)	TL (mm)	Wt (gr)	TL (mm)	Wt (gr)
Key R. 1998	633	1975	633	1700	324	607	308	719	387	607
Bay of Is. 2001	637	2033	1015	8373	358	815	486	1438	568	2117
Moon R. 2008	591	1402	1044	8914					554	1922
Moon R. 2005	672	1977	1055	8375	420	1062	427	1244	539	1719
Moon R. 2004	639	1768	1091	9646	416	1090	413	1195	585	2193
Serpent Hbr. 2002	660	2113			328	699			556	2091
Severn Sound ('99-07)	639	1732	1103	8692	402	1033	386	1019	529	1561
12-Mile Bay 2008	658	1918	1174	10680	360	734	360	722		
Wahwahtaysee 2010	717	2643			309	420	438	1067	584	1794
Britt / Byng Inlet 2011	637	1964		7115	361	704			482	1617
Mean	648	1952	1016	7937	364	796	403	1058	532	1736
Confidence Level(95.0%)	23.2	225.9	163.3	2277.0	31.3	174.6	53.3	246.8	48.2	368.4
Standard Error	10.254	99.846	66.741	962.943	13.585	75.701	21.800	100.853	20.900	159.763
Standard Deviation	32.427	315.741	176.580	2723.613	40.754	227.102	57.677	266.831	62.699	479.290
Count	10	10	7	8	9	9	7	7	9	9

Appendix C. Smallmouth Bass Size Data from the 2011 Magnetawan River Synoptic Trap-net Survey

Set No.	Total Lg. (mm)	Weight (grams)	Set No.	Total Lg. (mm)	Weight (grams)
13	355	600	12	410	1000
13	457	1300	12	343	500
13	360	600	12	445	1200
13	355	600	12	356	600
13	340	500	11	412	800
13	397	800	12	408	900
13	397	800	12	545	2200
13	442	1000	12	360	600
14	432	1100	12	389	800
14	300	300	12	350	600
15	300	300	12	358	600
15	333	550	12	334	500
15	386	800	12	441	1300
15	270	300	12	321	400
15	324	300	12	295	250
15	316	350	10	391	1100
15	381	800	10	468	1800
15	331	350	10	356	500
15	385	800	10	284	200
15	296	300	10	315	400
15	283	200	9	376	700
15	327	550	9	330	450
15	316	300	9	405	1000
15	284	175	9	319	500
15	327	400	9	395	900
15b	383	650	9	444	1400
15b	348	500	7	496	2000
15b	302	250	7	495	1900
15b	330	300	7	310	300
15b	308	300	7	341	400
15b	339	500	6	354	600
15b	375	700	6	338	400
17	488	1600	6	480	1800
17	324	700	6	357	700
17	343	600	6	416	1200
17b	340	500	6	456	1500
17b	257	250	6	343	600
18	345	600	5	325	600
18	346	600	5	336	600
18	327	300	1	355	700
18	341	400	1	399	1100
18	239	175	1	400	1100
18	225	150	1	315	400
12	360	900	1	379	800
Mean			361		
Median			349		
Standard Deviation			59.642		
Confidence Level(95.0%)			12.637		
Sample Size			88		
			704		
			600		
			443.016		
			93.866		
			88		

Appendix D. Size Sampling Data for Northern Pike Captured from the 2011 Magnetawan River Synoptic Trap-net Survey

Northern Pike	Total Length (mm)	Weight (grams)
	840	3900
	504	600
	485	1000
	634	2100
	794	2900
	800	4100
	583	900
	532	1200
	532	1100
	614	1700
	690	2100
Mean	637	1964
Standard Error	38.321	363.636
Standard Deviation	127.096	1206.045
Confidence Level(95.0%)	85.384	810.232
Sample Size	11	11

Appendix E. Size Sampling Data for Muskellunge Captured from the 2011 Magnetawan River Synoptic Trap-net Survey

Total Lg. (mm)	Weight (grams)	
> 1000	7600	
> 1000	11400	wt. estimated
> 1000	13600	wt. estimated
800	5000	
575	1400	
642	1900	
> 1000	13600	wt. estimated
757	3000	
878	3500	
> 1000	5300	tagged
> 1000	4300	tagged
> 1000	4000	tagged
> 1000	11400	wt. estimated
> 1000	13600	wt. estimated
99600	total	
7115	mean wt. (estimated)	

Note: Most muskie captured were exceptionally large fish for which we were ill-equipped to measure total length in excess of 1 metre (1000 mm) and weight in excess of 10 kg (10,000 grams). For fish in excess of this size, length was noted as > 1000 mm and weight was estimated.

Appendix F. Size Sampling Data for Walleye Captured during the 2011 Magnetawan River Synoptic Trap-net Survey

Set Number	Fork Length (mm)	Total Length (mm)	Round Weight (grams)	Comments
1	579	610	2100	
1	216	228	100	dead
7		209	75	
8		642	2600	tagged
8		610	2400	
8		656	3000	
8		640	2700	
10		274	170	
13	336	365	500	
15	302	322	275	
15	260	276	175	
15	329	349	300	
15b	715	743	4000	
16	575	608	2000	
17	304	320	300	
17	557	583	2100	
18	718	752	4700	
<hr/>				
Mean		482	1617	
Standard Error		46.521	362.952	
Confidence Level(95.0%)		98.621	769.423	
Standard Deviation		191.812	1496.489	
Count		17	17	

* Note: One walleye captured in set #12 accidentally escaped during sampling

Appendix G. Mean Weight Data for Other Species Captured during the 2011 Magnetawan River Synoptic Trap-net Survey

Species	Mean Weight (gr)	Sample Size
Red-horse Sucker	2236	69
Rock Bass	87	26
Gar	1088	17
Common wt. Sucker	2973	13
Channel Catfish	2170	10
Brown Bullhead	214	9
Carp	3700	3
Bowfin	3500	3
Largemouth Bass	1100	1
Yellow Perch	150	1
Pumpkinseed	75	1

Appendix H. Net Set Data Relating to Timing, Site Characterization and Environmental Conditions (Note: For substrate, cover and wave code – See Skinner and Ball, 2004.)

Set No.	Date & Time Set	Date & Time Lift	Substrate Code	Cover Code	Lead Lg. (m)	Angle to Shore	Gap Depth	Water Temp (C.)	Secchi Depth (m)	Cloud Cover	Wind Dir. & speed (k)	Wave Ht (Code)
1	May 28@11:20	May 29@14:30	4	2	46	90	2.4	15	Bottom	8	W 10	1
2	May 28@12:20	May 29@13:00	4	2	46	90	2.4	15	Bottom	7	W 15	1
3	May 28 @12:40	May 29@11:45	4	2	46	90	2.0	13	Bottom	3	S 5	1
4	May 28@13:00	May 29@10:40	4	2	46	70	2.2	15	2.1	3	W 4	1
5	May 29@11:30	May 30@10:20	4	2	46	90	3.0	16		4	calm	1
6	May 29@12:30	May 30@11:30	4	2	46	90	2.4	16	Bottom	6	W 10	1
7	May 29@14:20	May 30@13:30	1	2	46	90	1.8	16		8	W 15	1
8	May 29@nr:00	May 30@15:00	2	2	46	90	2.4	16	Bottom	3	W 10	1
9	May 30@10:30	May 31@09:30	4	2	46	90	1.8	16	Bottom	0	S 20	1
10	May 30@13:30	May 31@12:15	4	2	46	85	2.0	18	Bottom	1	SSW 7	1
11	May 30@14:20	May 31@13:40	1	2	40	90	2.2	16	1.8	1	SSW 10	1
12	May 30@16:00	May 31@11:00	4&5	1	46	85	2.0	18	Bottom	1	SW 25	1
13	May 31@10:30	June 1@09:30	4	2	46	90	2.1	17	2.0	5	W 15	2
14	May 31@12:00	June 1@11:00	4	2	46	90	1.9	16	2.1	3	W 20	2
15	May 31@13:15	June 2@10:00	4	1	46	90	2.4	15	1.5	0	N 40 - 50+	2
16	May 31@14:15	June 2@12:15	4	2	46	90	3.7	15	nr	0	N 30 - 40+	3
17	June 1@10:30	June 2@11:00	4	2	46	90	2.1	15	1.3	0	N 40 - 50+	1
18	June 1@13:00	June 2@13:30	4	1	46	90	1.9	15	Bottom	0	NNW 30 - 40	2
15b	June 2@10:30	June 3@10:00	4	2	46	90	2.2	17	2.2	0	WNW 5 - 10	1
17b	June 2@11:30	June 3@10:40	4	2	46	90	2.1	16	1.5	3	NW 10 - 15	1
18b	June 1@nr:00	June 3@nr:00	4	1	46	90	1.9	nr	nr	nr	nr	nr

Note: nr indicates "not recorded"