Blackstone Lake
Synoptic Trapnet Survey, 2005

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(Revised)

Executive Summary:

In June of 2005, a synoptic trapnet survey was conducted on Blackstone Lake. This survey partially duplicated a similar survey conduced in 1993. The primary purpose of our survey was to ascertain the current status of the walleye population relative to that observed in 1993. A secondary purpose of the survey was to assess the over-all status of the near-shore fish community and the individual fish species that comprise it.

The over-all fish productivity as measured by Catch-Per-Unit-Effort by weight (CPUE-wt) for all species combined was 11.223 kg per nets set; or approximately average for Parry Sound Area lakes. Our catch was dominated by muskellunge, smallmouth bass and walleye. They respectively comprised 50.5%, 24.0% and 16.2% of the total catch weight of 101.01 kilograms. All other remaining species (northern pike, white sucker, rock bass, pumpkinseed and black crappie) comprised only 9.3% of the total catch weight.

Although walleye CPUE by number was much lower in 2005 (0.9 ±0.7; $p<0.05$) than 1993 (4.6 ± 2.6; $p<0.05$), the two were not statistically different (t-test @ $p<0.05$). We cite biosampling and catch data from this and other recent surveys on Blackstone Lake that indicate chronically poor levels of walleye spawning and recruitment success.

Smallmouth bass abundance as measured by CPUE-no was essentially unchanged between surveys. We caught more muskellunge and fewer pike in this survey, but the numbers were too small between surveys to formulate any conclusions about relative abundance. Rock bass were much more frequently caught in 2005. We also caught one black crappie; a species that was not present in 1993.

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1.0 Introduction:

Blackstone Lake is a moderate size (516 hectare) lake with a maximum depth of 58 meters (190') and a mean depth of 20.1 meters (66') (OMNR, 1969). It is part of the small Blackstone River watershed with its headwaters in the Geographic Township of Christie and drains into Georgian Bay at Blackstone Harbour. The water level is indirectly controlled by the down-steam Crane Lake Dam, operated by the Ministry of Natural Resources. The lake is readily accessible by road and is well developed. In 1999, there were 102 cottages, 20 resort units and 42 undeveloped (vacant) lots (Scheifer, 2001). Two private resorts on the lake also function as public access points. Approximately 60% of the shoreline is in private ownership.

The lake is oligotrophic in nature, with a total phosphorus level of 2 µg/l (MOE, 2000), secchi readings in excess of 5 meters and total dissolved solids (TDS) of 19 mg/l (Scheifer, 2001). This in conjunction with the deep nature of the lake (mean depth 20.1 m) makes Blackstone Lake highly suited to lake trout and marginal for walleye.

The lake has a very diverse fish community consisting of 22 documented species. Inventory survey work conducted in 1955 (Anderson and Harvey, 1955) documented the presence of smallmouth bass, largemouth bass, walleye, northern pike, rock bass, pumpkinseed, lake herring, brown bullhead, yellow perch, common white sucker, emerald shiner and bluntnose minnow. Muskellunge were also reported as being present although none were caught during the survey. In 1969, a "Lake Survey" further documented the presence of smelt, logperch and now stocked lake trout (OMNR, 1969). Electrofishing work conducted on the lake in the late 1980s and early 1990s added johnny darter, mottled sculpin and common shiner to the list of inhabiting species (Thurston, 1991). In the spring of 2005, black crappie was documented as being present, probably through an unauthorized introduction (McIntyre, 2005).

There is somewhat inconclusive documentation regarding the original composition of the fish community in Blackstone Lake and whether or not smallmouth bass, muskellunge and northern pike were introduced species. Hart (2004), presents compelling evidence that indicates all these species were originally present in downstream Crane Lake. By virtue of the Blackstone River connection between the two lakes, it is reasonable to conclude they were also native species to Blackstone Lake. Lake trout and black crappie are documented introduced species to the lake. It is uncertain – but likely, that smelt are an introduced species in Blackstone Lake (Scott and Crossman, 1973).

Blackstone Lake has a diverse and varied history of fish management activities.

1. Fisheries assessment work includes:
    - inventory surveys (base-line data) conducted in 1955 and 1969
    - near-shore community assessment (trapnet) surveys in 1993 and 2005 (this survey)
    - electrofishing surveys to assess walleye stocking success between1989 and 1991
    - non-intensive creel data collected in the summer of 1974 and an intensive winter creel survey in 1994
    - walleye spawning index assessment surveys in 1996 and 2005
    - lake trout stocking assessment (SLIN survey) in 2005.

2. Habitat enhancement work has included:
   - walleye spawning bed enhancement work at Blackstone Creek (inlet from Third Lake) in 1974
   - further enhancement of this site in 1983
   - yet additional enhancement of this site in 1989
   - enhancement of the Rat Lake Creek (inlet from Oldfield Lake) walleye spawning site in 1991.
3. Fish Stocking: A prolific stocking record consisting of:
   - walleye (supplemental plantings) from 1939 – 1956; more recently rehabilitative walleye plantings from 1985 - 1988
   - smallmouth bass (introductory plantings?) from 1939 – 1954
   - muskellunge (introductory or supplemental plantings?) from 1953 – 1962
   - lake trout (artificial put-grow-take plantings) from 1957 to present day.
4. Fish Regulation changes:
   - implemented all-year closure for walleye in 1989
   - implement spring fish sanctuary for Blackstone Creek in 1982
   - In 1994, walleye angling was re-opened with a reduced season and a daily catch limit of 1
   - In 1999, adoption of protected slot size, daily catch limit of 2 (1 for conservation licence) and revert to Division standard for season length.
5. Water Quality Monitoring including:
   - 1980 MOE water quality study
   - 1989 MOE spring phosphorus monitoring study
   - OMNR monitoring of dissolved oxygen / temperature profiles in 1996, 2000 and 2002
   - Township of the Archipelago Water Quality Monitoring Report – 2000 (Scheifer, 2001).

Anecdotal records on Ministry files suggest that walleye fishing was excellent on Blackstone Lake prior to the 1930s and fair to good up to the 1950s. In 1972, interviews with knowledgeable local residents attributed the decline in the walleye population to:

- the construction of a sawmill on Blackstone Creek resulting in the fouling of the downstream walleye spawning bed (circa 1934);
- dredging of walleye spawning beds between Blackstone and Crane Lakes to permit the barging of hardwood sawlogs (timing not specified);
- inappropriate water level manipulations during the walleye spawning and incubation period from the Crane Lake dam (constructed circa 1930);
- fishing pressure (even in the 1940s);
- smelt introduction in the early 1960's – even though the walleye population had reportedly been in decline for decades prior to this.

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The primary purpose of this survey was to assess the current status of the walleye population in Blackstone Lake, especially in light of restrictive, exception fishing regulations that were implemented in 1999 (i.e. prohibited slot size 46 – 70 cm; daily catch limit of 2 for sport fish licence holders and 1 for conservation licence). It is anticipated these exception regulations will be revoked in 2007 and replaced with new and also restrictive regulations that will apply to all walleye lakes in the Parry Sound Area and the Southern Region of MNR.

We duplicated select portions of the 1993 synoptic trapnet survey on Blackstone Lake in order to compare indices of walleye population status between that survey and this one.

Although an assessment of the walleye population was the primary purposes of this survey, it also afforded an opportunity to assess the status of the near-shore fish community and fish species that comprise it.

2.0 Methods:

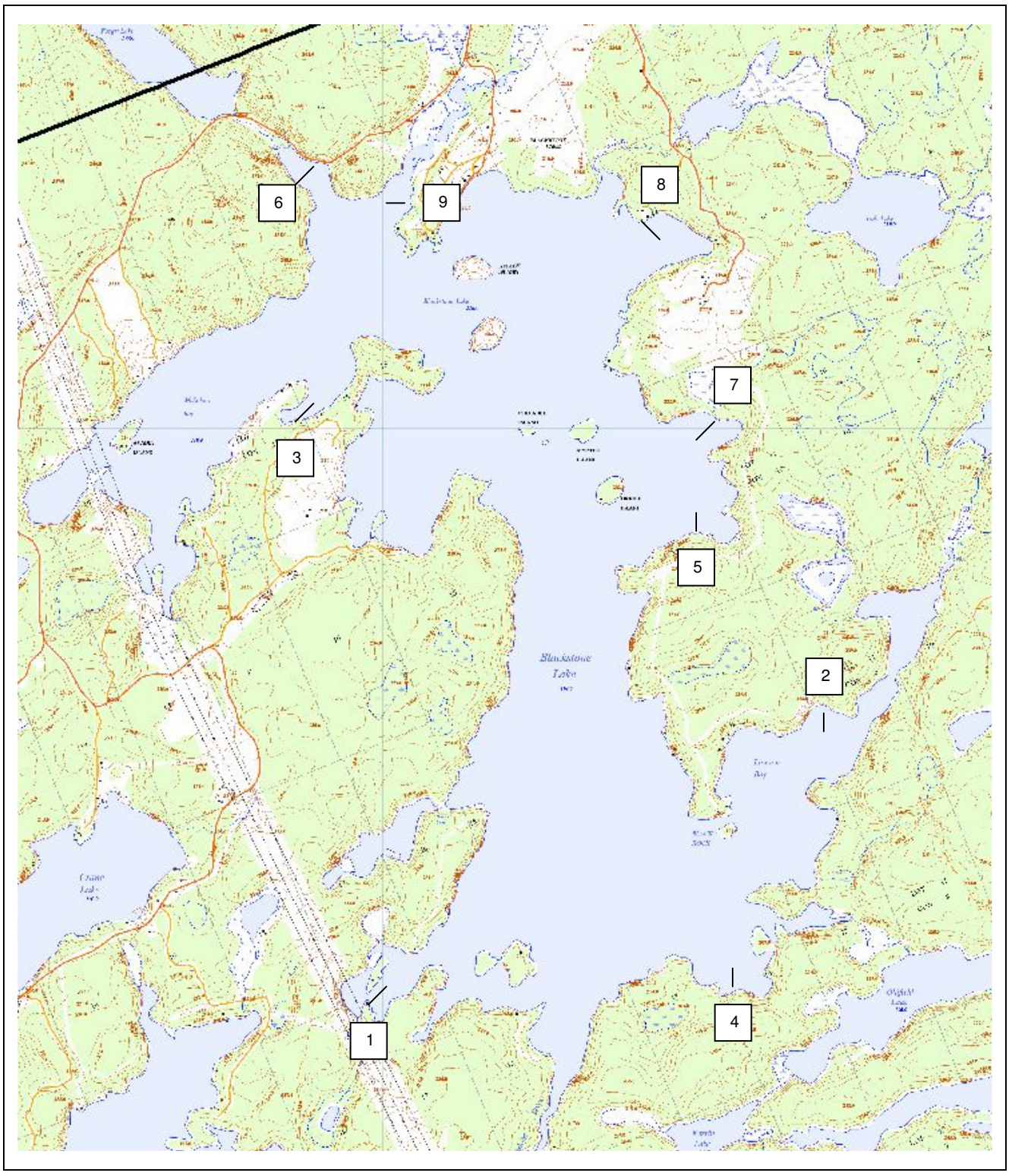
This survey was intended to partially duplicate a synoptic 8'-trapnet survey conducted in 1993, consequently our methodology was largely dependent on that previously used. We used 8'-trapnets exclusively. All nets were set and relocated daily. Our unit of sampling effort was "one net night", of approximately of 24-hour duration. The survey was conducted from June 20 – 23 to coincide with the sampling dates of the 1993 survey.

Using catch data from the 1993 survey (Thurston, et al. 1993), we preferentially selected 9 sets that had the best walleye catches from that survey. These sets were duplicated in this survey; the locations of which are shown in Figure 1.

Complete catch enumeration was conducted for all sets (Appendix A-1). Biosampling (determination of total length, fork length, round weight and scale sample collection) was conducted for all walleye and smallmouth bass captured (Appendix C-1 and C-2). Biosampling of esocids (northern pike and muskie) excluded scale collection as this is an inaccurate method of age determination for these species (Appendix C-3). Mean weight was determined for all other species captured (Appendix C-3).

Age determination was by the scale reading method.

Figure 1. Trapnet Set Locations Fished During the Synoptic Trapnet Survey on Blackstone Lake, 2005. (Note: Sets are duplicates of ones that successfully captured walleye during the 1993 Synoptic Trapnet Survey.)



3.0 Results and Discussion:

3.1 Catch Summary:

Our fishing effort of nine overnight trapnet sets captured a total of 128 fish consisting of: 65 smallmouth bass, 43 rock bass, 8 walleye, 7 muskie, 2 common white sucker, 1 northern pike, 1 pumpkinseed and 1 black crappie (Appendix A-1).

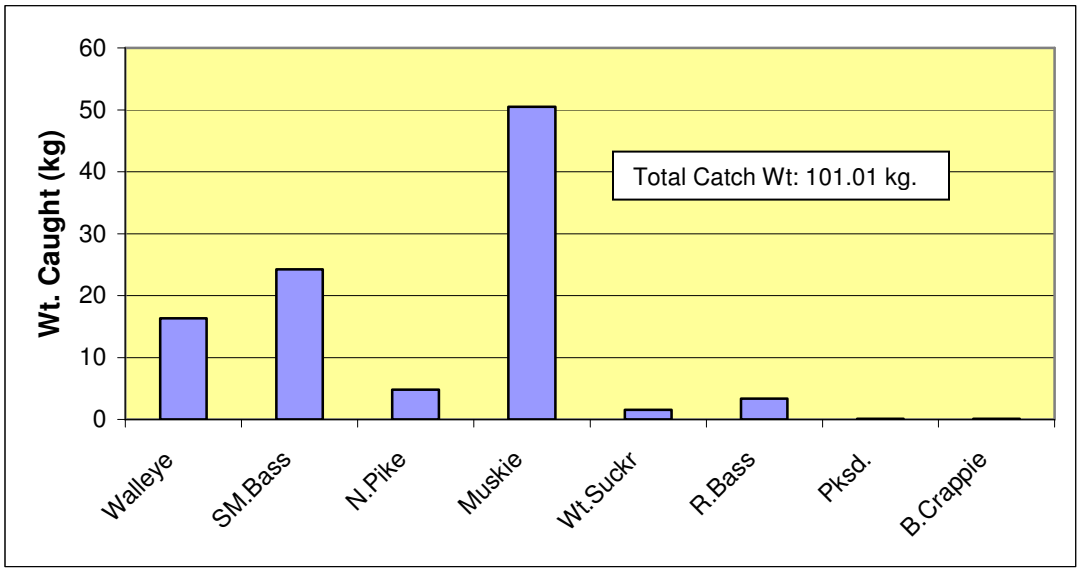
Black crappie is a recently introduced species to Blackstone Lake, presumed to have arrived by an unauthorized introduction (McIntyre, 2005).

3.2 Productivity (CPUE-wt):

We caught a total of 101.01 kg. of fish for an overall Catch-Per-Unit-Effort by weight (CPUE-wt) of 11.223 kg. per net set. This is slightly below the Parry Sound Average of 16.404 kg per net set, based on 23 similar surveys conducted between 1994 and 2003 (Appendix B). However, because it is well within the 50% of median values for the dataset, we consider fish productivity on Blackstone Lake to be "approximately average".

By weight, our catch was dominated by muskie, smallmouth bass and walleye, which comprised 50.5%, 24.0% and 16.2% of the total catch weight of 101 kg (Appendix A-1 and Figure 2). All other remaining species (northern pike, white sucker, rock bass, pumpkinseed and black crappie) comprised only 9.3% of the total catch weight.

Figure 2. Catch Composition (by Weight) from the 8' Synoptic Trapnet Survey Conducted on Blackstone Lake, 2005.

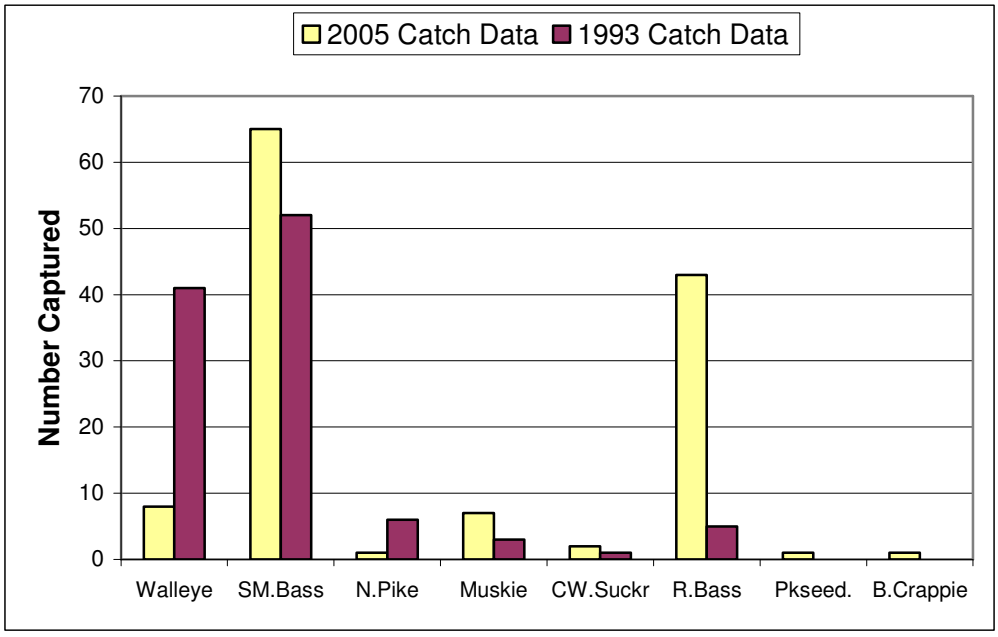


We caution our readers that catch composition (by either weight or number) is not truly representative of community structure. Eight-foot trapnets have variable 'catchability' for various species as well as size selectivity within species. Our results are further

complicated (and potentially biased) by the fact that a very small number of large fish (i.e. muskie) has a dramatic effect on catch composition by weight.

Unfortunately, we are unable to compare overall productivity (CPUE-wt) and catch composition (by weight) observed on Blackstone Lake in 1993 with this survey. The report for the 1993 survey (Thurston, et al; 1993) does not contain weight data for fish sampled, nor were we able to find this information in the fisheries project archives. We are therefore forced to compare only numbers of various fish species caught between surveys. We compare only catch data from 9 identical net sets between surveys (Figure 3).

Figure 3. Catch Comparison (by number) from nine identical trap net sets fished in 1993 and 2005 on Blackstone Lake.



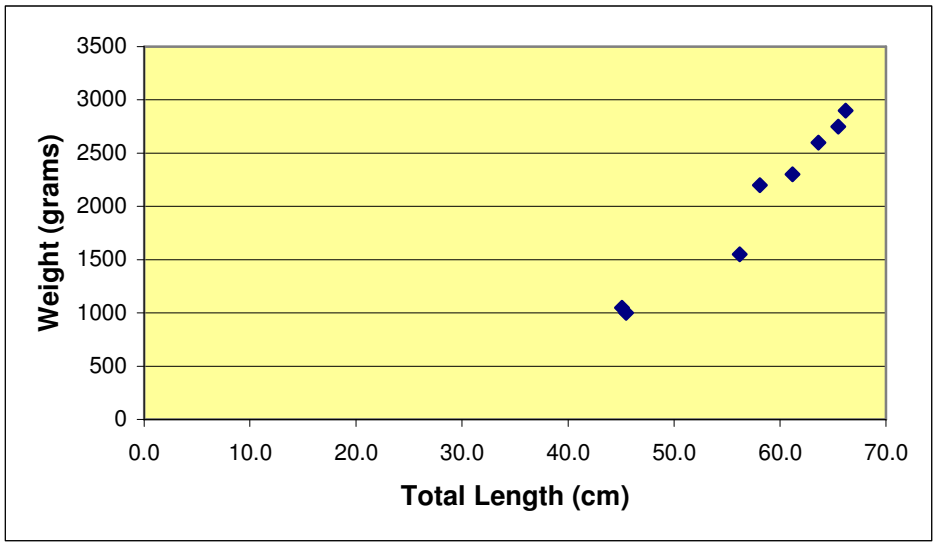
3.3 Walleye

In 1993 the walleye catch was 41 fish with a Catch-Per-Unit-Effort (CPUE) of 4.6 ± 2.6; $p<0.05$ (Thurston, et al; 1993 and Appendix A-2). In 2005 the catch dropped to only 8 walleye with a CPUE of 0.9 ± 0.7; $p<0.05$ (Figure 2 and Appendix A-1). Notwithstanding that the decrease in walleye abundance seems quite dramatic between surveys, the two means are NOT significantly different (t test @ $p<0.05$). This is largely attributable to the high variability in the 1993 catch data for walleye (Appendix A-2) as well as the small sample size (number of net sets) for each survey. Notwithstanding these indices of walleye abundance are not statistically different, we express concern that our sampling methodology has a very low degree of sensitivity and is ineffective at detecting small to moderate changes in species abundance – which may have occurred.

Another index of abundance is “probability of catch” (POC), or the likelihood that any individual net set is likely to catch at least one walleye. (POC can also be expressed as the percentage of nets that caught at least one walleye.) In 1993, all 9 sets captured walleye for a POC of 100% (Appendix A-1). In 2005, five of the nine sets captured walleye for a POC of 56% (Appendix A-1). We have to admit to bias in this statistic for 1993, as only sites that captured walleye were preferentially selected for duplication in the 2005 survey.

We sampled all 8 walleye captured (Appendix C-1 and Figure 4). Mean total length was 57.7 cm and mean weight 2,044 grams.

Figure 4. Size Distribution of Walleye Captured During the Synoptic 8’-Trapnet Survey on Blackstone Lake, 2005. (Sample Size = 8 walleye)



We were particularly interested in the age and size data for captured walleye. An *Index Walleye Spawners Survey* conducted in the spring of 2005 on Blackstone Lake had indicated the spawning population was clearly dominated by large female walleye with a mean total length of 70.4 cm (N=37) (McIntyre, 2005). Even the males were exceptionally large, averaging 60.0 cm total length (N=5). These observations raised significant concerns of reproductive and recruitment failure by walleye. Although Biosampling data from this survey (Figure 4) is of little comfort in quelling these concerns, we did capture two walleye whose total length was in the mid 40 cm size range and they were assessed as 5 year old fish. Furthermore, one small walleye that was 25.7 cm in total length and weighed 155 was ‘gilled’ in wing of set number 6. This fish was not included in the catch count because it was not captured by the intended method. Also, a Spring Littoral Index Netting (SLIN) survey was conducted on Blackstone Lake in late April of 2005 (in preparation). Although the SLIN survey was intended to index lake trout abundance, one walleye, 18.5 cm in total length was captured in 70’ of water. This, in conjunction with the above mentioned three ‘small’

walleye captured in this survey does indicate a very small level of successful reproduction and recruitment in recent years.

The above indices of walleye abundance (CPUE and POC), in conjunction with Biosampling data, suggest there may be a reduction in walleye abundance associated with chronic low levels of reproduction and recruitment. However, the weight of evidence is not overwhelming and the reliability of this conclusion based on this survey alone is rather low. Further support of this conclusion is provided by the *Index Walleye Spawners Survey* conducted in the spring of 2005 (McIntyre, 2005). This survey compared results with those of a similar survey conducted in 1996. Again there was a reduction in CPUE from 17.3 in 1996 to 7.0 in 2005, but it was not statistically significant ($p<0.05$). There was however an alarming shift in size distribution to much larger male and female spawning walleye that clearly indicated recruitment failure for several recent year classes. The results from these two surveys combined would lead a cautious and prudent manager to be concerned that walleye abundance on Blackstone Lake has likely been in decline due to poor levels of reproduction and recruitment over the past decade.

Finally, for walleye, we observed a secchi reading[(1)] in excess of 5 meters during this survey. Waters with this high degree of transparency are not favourable for walleye, which prefer secchi readings between >1.0 and 2.0 meters (Kerr, et al. 1997). To a large extent, we have a lake more suited to lake trout which just happens to have walleye in it. Despite anecdotal reports that walleye were once abundant in Blackstone Lake (pre 1940s), we are skeptical that Blackstone Lake can ever produce a quality fishery based on a high abundance of walleye. This limiting habitat feature (high transparency) in conjunction with a highly competitive and predatory fish community will probably render walleye a secondary role as a top predator in the fish community. Esocids (pike and muskie) and smallmouth bass will likely remain dominant top predators.

The 1993 Synoptic Trapnet Survey (Thurston, et al. 1993) for Blackstone Lake represents the first base-line, assessment data for the near-shore fish community. The Ministry's management objective for Blackstone Lake is to maintain a walleye population approximately equivalent to that observed in 1993. The recent and unwelcome presence of black crappie, a competitor with and predator upon walleye, will be an impediment to the achievement of this objective.

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1. Secchi reading: A measure of water transparency; the depth in meters that an 8" disc painted black and white in quadrants can be seen.

3.3.1 Walleye Regulations:

Despite 5 years of walleye closure (1989 – 1994), followed by very restrictive, exception regulations to present day; the walleye population on Blackstone Lake has shown little or no response. Clearly, existing exception regulations in conjunction with spawning habitat enhancement work and fish stocking have not rehabilitated this population.

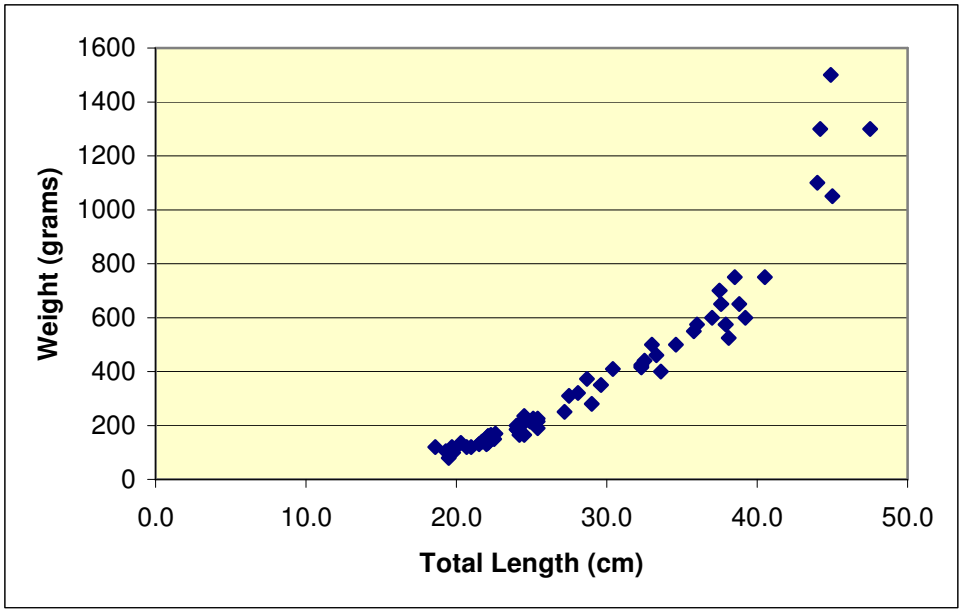
Existing exception regulations for Blackstone Lake will be revoked in 2007 and replaced with the generic standards for Fisheries Management Zone 15, which includes Blackstone Lake and the Parry Sound Area. Although we are unsure at the time of writing this report, exactly what those new regulations will be, we do know they will be very restrictive in nature. Regional Fisheries Staff (Dan Taillon; pers. comm.) have indicated they will be designed to meet the rehabilitative needs of Southern Region walleye populations that are generally in a depressed state.

3.4 Smallmouth Bass

In this survey we captured 65 smallmouth bass for a CPUE of 7.2 ± 7.3 ($p<0.05$) bass per net set (Appendix A-1). The exceptionally wide confidence limits are indicative of high variability in the catch data. This is essentially the same as the CPUE of 5.8 ± 4.3 ($p<0.05$) observed in 1993 (Appendix A-2). We consider smallmouth bass abundance to be essentially unchanged between surveys.

We sampled all 65 smallmouth bass captured (Appendix C-2). Mean total length was 28.7 cm and mean weight 373 grams. The wide distribution and ample representation of all size classes in the catch indicate good levels of reproduction and recruitment as well as sustainable levels of mortality (Figure 5).

Figure 5. Size Distribution of Smallmouth Bass Captured During the Synoptic Trapnet Survey on Blackstone Lake, 2005. (N=65)



3.5 Northern Pike and Muskellunge

We captured only 1 northern pike in this survey, compared to 6 captured from the same net sets in 1993 (Appendix A-1 and A-2). These numbers are too small to draw any reliable conclusions, but there is the "suggestion" that pike numbers may be decreasing.

Conversely however, we captured 7 muskellunge in this survey compared to 3 from the same sets in 1993. Again – numbers are exceptionally small, but there is the "suggestion" that muskellunge may have increased over the past decade.

3.6 Other Species:

The other species captured in this survey included common white sucker, rock bass, pumpkinseed and black crappie. All of these, with the exception of rock bass were captured in very low numbers (Appendix A-1). We note no significant change in the abundance of these species between surveys except for rock bass, and the fact that black crappie were not present in the lake in 1993. Forty-three (43) rock bass were captured in 2005 compared to only 5 in the same sets made in 1993.

One subjective but encouraging observation of note made during this survey was the seeming high abundance of minnows in near-shore areas.

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Appendix A-1. Catch Summary for the 2005 Blackstone Lake Trapnet Survey.

Net Set No.	Effort (Net-nights)	Catch Walleye	SM.Bass	N.Pike	Muskie	C.W. Sucker	Rock Bass	Pumpkin-seed	Black Crappie
1	1	0	0	1	0	0	0	0	0
2	1	2	7	0	0	0	6	0	0
3	1	0	1	0	0	0	11	0	0
4	1	2	0	0	1	0	3	0	0
5	1	2	6	0	4	0	2	0	0
6	1	0	17	0	0	0	2	0	0
7	1	1	0	0	0	0	0	0	0
8	1	0	28	0	1	0	19	1	0
9	1	1	6	0	1	2	0	0	1
Total	9	8	65	1	7	2	43	1	1
CPUE-no (no. / net set)		0.9	7.2	0.1	0.8	0.2	4.8	0.1	0.1
Standard Error		0.309	3.174	0.111	0.434	0.222	2.139	0.111	0.111
Standard Deviation		0.928	9.523	0.333	1.302	0.667	6.418	0.333	0.333
Confidence Level (95.0%)		0.713	7.320	0.256	1.001	0.512	4.934	0.256	0.256
Sample Size		9	9	9	9	9	9	9	9
Probability of Catch (%)		62.5	75.0	11.1	44.4	11.1	75.0	11.1	11.1
Total Catch Weight (kg)		16.350	24.240	4.800	50.500	1.550	3.365	0.105	0.100
CPUE-wt (kg / net set)		1.817	2.693	0.533	5.611	0.172	0.374	0.012	0.011
% of total catch weight		16.2	24.0	4.7	50.0	1.5	3.3	0.1	0.1

Appendix A-2. Catch Summary for duplicate sets from the 1993 Blackstone Lake Trapnet Survey.

Net Set No.	Effort (Net-nights)	Walleye	SM.Bass	N.Pike	Muskie	C.W. Sucker	Rock Bass	Pumpkin-seed
2	1	12	11	2	0	1	2	0
3	1	7	3	0	0	0	0	0
4	1	2	3	1	3	0	0	0
10	1	3	15	1	0	0	1	0
11	1	7	6	0	0	0	0	0
14	1	2	1	0	0	0	0	0
17	1	3	12	0	0	0	2	0
19	1	2	1	0	0	0	0	0
20	1	3	0	2	0	0	0	0
Total	9	41	52	6	3	1	5	0
Catch Per Unit Effort		4.6	5.8	0.7	0.3	0.1	0.6	0.0
Standard Error		1.144	1.847	0.289	0.333	0.111	0.294	0.000
Standard Deviation		3.432	5.540	0.866	1.000	0.333	0.882	0.000
Confidence Level (95.0%)		2.638	4.259	0.666	0.769	0.256	0.678	0.000
Sample Size		9	9	9	9	9	9	9
Probability of Catch (%)		100.0	88.9	44.4	11.1	11.1	33.3	0.0

Appendix B. Catch-Per-Unit-Effort by Weight (CPUE-wt) for 8' Synoptic Trapnet Surveys recently (1994 – 2003) conducted in the Parry Sound Area

				(kg. / 8' trapnet set)							
Survey	**Walleye**	**S.M. Bass**	**L.M. Bass**	**Bl. Crappie**	**N.Pike**	**Muskie**	**C.W. Sucker**	**Br. Bullhd.**	**Rock Bass**	**Pump-kseed**	**All**
Bear Lake (2001)	7.619	1.268	0.000	0.000	3.547	0.0	1.4	2.6	0.4	0.061	16.930
Bolger Lake (1999)	10.790	4.250	0.050	0.000	1.290	0.0	0.0	0.3	0.2	0.030	16.930
Buck Lk (2002)	1.694	1.542	0.129	0.424	1.746	0.0	0.0	0.0	0.0	0.000	5.535
Cecebe Lake (2000)	12.154	4.700	0.000	0.000	3.990	0.0	3.6	4.7	0.3	1.200	30.661
Crane Lk. 1997)	2.986	2.443	0.000	0.000	0.136	3.7	0.0	0.0	0.1	0.007	9.369
Doe Lake (1998)	12.727	11.115	0.000	0.000	0.954	0.0	5.6	1.5	1.5	2.336	35.756
Dollar's Lake (2000)	1.112	1.503	1.994	0.661	1.621	0.0	2.9	8.5	0.1	0.107	18.482
Dollars Lake (2003)	1.595	2.903	1.475	1.725	1.072	0.0	3.9	1.5	0.1	0.106	14.349
Gibson Lake (2001)	4.265	4.866	0.738	3.255	1.097	0.0	2.7	4.0	0.1	0.016	20.961
Giroux Lake (2001)	9.670	2.010	0.000	0.000	1.600	0.0	4.5	1.0	0.0	0.000	18.810
Go Home Lake (2003)	1.329	2.632	0.621	0.000	2.157	0.0	3.9	0.5	0.5	0.380	12.062
Harris Lake (1994)	2.909	0.722	0.485	0.000	0.752	0.0	7.8	0.5	0.2	0.144	13.460
Isabella Lk. (1997)	0.530	4.203	0.000	0.000	3.630	0.0	5.9	0.4	0.6	0.050	15.343
Kashegaba Lk. (1999)	1.060	4.880	0.480	0.000	1.340	0.0	0.0	0.5	0.7	0.180	9.210
McKellar Lk (2003)	1.735	0.295	0.092	0.000	3.571	0.0	4.3	0.3	0.2	0.000	10.491
McDougall Lk. (2000)	2.460	0.961	0.000	0.291	1.948	0.0	2.4	0.7	0.0	0.000	8.731
Moffat Lk. (2002)	0.467	0.628	0.000	0.000	3.578	0.0	8.6	0.9	0.0	0.000	14.183
Pakeshkag Lk. (2001)	0.167	0.000	0.000	0.000	3.508	0.0	0.9	2.4	0.1	0.014	7.017
Poverty Bay (1999)	2.757	3.976	2.871	0.000	0.164	0.0	3.2	0.9	0.1	0.098	14.049
Rock Is / Bl Oak (2003)	8.873	0.971	0.158	0.000	2.958	0.0	6.1	0.2	0.1	0.015	19.297
S. Magnetawan R (1994)	2.035	1.355	0.112	0.000	1.067	0.0	3.7	0.2	0.1	0.342	8.970
Six Mile Lake (1999)	1.145	3.242	2.044	1.140	1.133	0.8	2.4	2.5	0.2	0.513	15.081
Wahwashkeksh (2002)	4.236	2.330	0.148	0.160	2.031	0.0	0.4	1.9	0.2	0.135	11.608
Mean CPUE-wt	4.101	2.730	0.496	0.333	1.952	0.2	3.2	1.6	0.3	0.249	16.403
Standard Error	0.838	0.498	0.169	0.161	0.248	0.2	0.5	0.4	0.1	0.110	1.677
Standard Deviation	4.019	2.388	0.809	0.770	1.192	0.8	2.5	2.0	0.3	0.527	8.044
Sample Variance	16.152	5.703	0.655	0.593	1.420	0.6	6.1	3.9	0.1	0.277	64.704
Confidence Level (95.0%)	1.738	1.033	0.350	0.333	0.515	0.3	1.1	0.8	0.1	0.228	3.478
Sample Size (# net sets)	23	23	23	23	23	23.0	23.0	23.0	23.0	23	23

Note: Only the most frequently caught species or those of particular interest are listed in the above table.

Appendix C-1. Walleye Biosampling Data – 2005 Blackstone Lake Synoptic 8'-Trapnet Survey.

Set No.	Total Lg.	Fork Lg.	Weight	Assessed Age
2	65.5	62.1	2750	13
2	45.5	43.5	1000	5
4	56.2	53.3	1550	7
4	61.2	58.2	2300	10
5	66.2	62.5	2900	12
5	63.6	61.0	2600	12
7	58.1	55.0	2200	9
9	45.1	42.5	1050	5
Mean	57.7	54.8	2043.8	9.1
Confidence Level(95.0%)	6.996	6.657	628.184	2.660
Standard Error	2.959	2.815	265.659	1.125
Standard Deviation	8.368	7.963	751.398	3.182
Total			16350	
Sample Size	8	8	8	8
6	25.7	24.2	155	2

(The above walleye is was 'gilled' and is not considered part of the catch count.)

Appendix C-2. Smallmouth Bass Biosampling Data – 2005 Blackstone Lake 8'-Synoptic Trapnet Survey.

Set No.	Total Lg.	Fork Lg.	Weight	Set No.	Total Lg.	Fork Lg.	Weight
2	45.0	42.3	1050	8	37.0	35.1	600
2	44.9	42.5	1500	8	39.2	36.7	600
2	22.1	21.3	160	8	35.8	33.3	550
2	37.6	35.5	650	8	38.1	35.7	525
2	32.5	30.4	440	8	30.4	28.9	410
2	20.3	19.5	135	8	33.3	31.4	460
2	40.5	38.1	750	8	24.5	23.1	235
3	38.5	36.1	750	8	29.6	27.7	350
5	18.6	19.3	120	8	27.5	26.2	310
5	19.7	18.6	120	8	24.5	22.8	165
5	19.8	19.0	110	8	24.0	22.8	185
5	22.5	21.4	150	8	24.1	22.8	180
5	24.2	22.9	165	8	28.1	26.4	320
5	24.9	23.8	215	8	22.6	21.3	170
6	32.3	30.9	425	8	22.1	21.1	160
6	38.8	36.5	650	8	19.3	18.3	105
6	32.3	30.7	415	8	33.6	31.5	400
6	32.3	30.6	420	8	22.1	20.8	135
6	33.0	30.9	500	8	25.1	23.8	225
6	24.0	22.9	200	8	29.0	27.3	280
6	24.2	23.9	205	8	25.4	24.3	215
6	24.6	23.5	225	8	22.3	21.4	165
6	37.5	35.3	700	8	34.6	32.7	500
6	44.0	41.5	1100	8	20.7	19.4	120
6	27.2	25.8	250	8	22.0	20.9	145
6	24.4	23.1	205	8	22.1	20.9	150
6	25.4	24.0	190	9	47.5	44.6	1300
6	19.8	18.8	100	9	21.5	20.2	130
6	21.0	19.7	120	9	22.0	20.6	130
6	19.6	18.8	105	9	37.9	35.7	575
6	21.7	20.7	140	9	19.5	18.7	80
8	36.0	33.9	575	9	25.4	24.5	225
8	44.2	41.4	1300				

Mean	28.7	27.1	372.9
Confidence Level(95.0	1.953	1.808	78.960
Standard Error	0.977	0.905	39.525
Standard Deviation	7.880	7.297	318.659
Sum			24240
Count	65	65	65

Appendix C-3. Biosampling Data for Other Species (N. Pike, Muskie, Black Crappie, Rock Bass, Common Wt. Sucker and Pumpkinseed) Sampled during the 2005 Blackstone Lake Synoptic 8'-Trapnet Survey.

Species	Set No.	Total Lg.	Fork Lg.	Weight	
N.Pike	1	92.0	89.1	4800	
Muskie	4	78.4	72.6	3000	
Muskie	5	90.0	85.0	5900	
Muskie	5	124.0	119.0	13600	* wt estimated
Muskie	5	98.0	94.0	7400	
Muskie	5	99.0	92.0	6100	
Muskie	8	95.0	89.5	5200	
Muskie	9	105.5	97.5	9300	
			Total	50500	
Black Crappie	9	20.0	19.3	100	

Weight Record only:	Mean	Total	Sample Size
Rock Bass	78.3	3365.0	43.0
Common Wt. Sucker	775	1550.0	2.0
Pumpkinseed	105	105.0	1.0