Rock Island and Black Oak Lakes

June 2003, Synoptic Trap-net Survey Report

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Executive Summary:

A *Synoptic Trap-net Survey* (STNS) was conducted on Rock Island and Black Oak Lakes (Geographic Townships of Shawanaga and Burpee) in June, 2003. The primary purpose of the survey was to assess the status of the near-shore fish community and in particular that of walleye, smallmouth bass and northern pike. This survey also duplicates the objectives of a *Fall Walleye Index Netting* (FWIN) survey conducted on these lakes in 2001, as part of an initiative to monitor the status of walleye populations throughout the Ministry's Southern Region. Our study affords the opportunity of comparing the two survey techniques. Results between these two surveys were not consistent, and are discussed within the report.

We compared our results with 23 other STNS surveys recently (since 1994) conducted in the Parry Sound Area. Over-all fish productivity as measured by *Catch-Per-Unit-Effort-by-weight* (CPUE-wt) for all species combined was "high", as per criteria defined in the report. The percentage of game fish in the total catch weight was average relative to our 23-survey comparative dataset.

Abundance indices for walleye were consistently high. According to criteria specified in the report, walleye relative abundance was "high". All age and size-classes were present in our sample indicating healthy and sustainable recruitment and mortality rates. Large and smallmouth bass indices of abundance were consistently below average – relative to our STNS dataset. Smallmouth bass were still rated as having "intermediate" abundance however. Northern pike indices of abundance were at or above average; but its abundance rating was also "intermediate".

We present a theoretical report card whereby we accord Rock Island and Black Oak Lakes an over-all rating of "B", primarily based on the healthy and robust walleye population present.

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1.0 Introduction

Rock Island Lake is a medium size lake (145 hectares) located entirely in Shawanaga Township. At its eastern extremity it is contiguous with Black Oak Lake, being separated by a narrows through which boats can easily pass. Black Oak Lake is smaller (88 ha.) in area. It is almost wholly located within Shawanaga Township except for the eastern extremity where the Shawanaga River enters, which is located in Burpee Township. From a fisheries perspective the two lakes form a single aquatic ecosystem as fish can readily pass from one lake to the other.

The lakes are part of the Shawanaga River watershed. Water enters at the eastern extremity of Black Oak Lake and exits at the western extremity of Rock Island Lake. There are no man-made dams on this river system. Although Black Oak Lake is smaller in size, it is deeper with a maximum depth of 19.5 meters (OMNR, 1975). Rock Island Lake has a maximum depth of 13.7 meters.

Typical of the Shawanaga River watershed, the colour of the water is a dark, yellow-brown with low light transparency. Secchi readings range from 2.4 – 2.5 meters (OMNR, 1975). Alkalinity levels are low (6.8 mg./l; OMNR, 1975) and pH is mildly acidic, typical of lakes on the Precambrian Shield. These lakes have moderate levels of nutrient enrichment and are best described as mesotropic. Both provide excellent habitat for walleye.

Rock Island Lake is readily accessible by vehicle from near-by Highway 69. There are two resorts – Shawanaga Lodge and Rock Island Resort, both of which provide access and cater to the general public. Black Oak Lake is also readily accessible, but only by boat from Rock Island Lake. Development is moderate on Rock Island Lake with approximately 25 cottages and two resorts. Black Oak Lake has only one cottage.

Walleye eyed-eggs were stocked in Rock Island Lake in 1949, ’51 and ’53 (OMNR; undated). There were also six plantings of smallmouth bass fingerlings between 1950 and 1964. It is unknown if these were introductory or supplemental stockings as the first inventory work was not done on these lakes until 1964. At that time, a cursory lake survey was conducted on Rock Island Lake. Two over-night gill-net sets caught 37 cisco, 36 rock bass, 20 walleye, 9 pike, 8 smallmouth bass, 4 pumpkinseed and one each of yellow perch, white sucker and “catfish” (probably brown bullhead) (OMNR, 1964). If in fact the earlier plantings had been to establish natural, self-sustaining walleye and smallmouth bass fisheries, they were indeed successful.

A provincially standard, Aquatic Habitat Inventory Survey (a.k.a. as a ‘lake survey’) was conducted on both Rock Island and Black Oak Lakes in 1975. In addition to the basin characteristics and water chemistry parameters noted above, they also documented the presence of log perch, bluntnose minnow, mimic shiner, Johnny darter and Iowa Darter as indigenous species (OMNR, 1975). Our survey provides the first documentation of the presence of largemouth bass.

As part of a Regional initiative to assess the status of walleye populations throughout the entire Southcentral Region of the Ministry of Natural Resources, a *Fall Walleye Index Netting* (FWIN) survey was conducted in 2001 on Rock Island and Black Oak Lakes. This survey design uses gill-nets and follows a standardized, provincial methodology intended specifically to assess the status of walleye populations. Rock Island and Black Oak Lakes were randomly selected and included in this study that encompassed 69 lakes throughout the Southcentral Region. Relative to the 69-lake dataset, Rock Island and Black Oak Lakes were found to have an “intermediate

abundance" of walleye and smallmouth bass, and a "low abundance" of northern pike (McIntyre, 2002).

Over a period of more than 20 years, the Parry Sound Area has developed its own technique of walleye assessment called the *Synoptic Trap-net Survey (STNS)*. This was the technique used in this particular study. It is a non-lethal survey technique that uses 8'-trapnets set for approximately a 24-hour duration. As part of the 2001 Regional FWIN study initiative cited above, 10 lakes from the Parry Sound area – including Rock Island and Black Oak, were included in that study. Fisheries staff in the Parry Sound Area, have been conscientiously conducting synoptic trap-net surveys (STNS) on those lakes that also had FWIN surveys conducted on them. The intent being to compare results between the FWIN and STNS surveys given they have the same purpose of walleye and near-shore fish population assessment.

Hence the purposes of this survey were:

- To compare results and determine correlation with the 2001 FWIN survey.
- Use the STNS methodology to ascertain the status of the near-shore fish community and particularly that of walleye, bass and pike.

2.0 Methods:

Synoptic trap-net surveys (STNS) are intended to provide a 'snapshot in time' of the status of the near-shore fish community and individual populations that comprise it. We used 8' trap-nets due to the non-lethal nature of the gear and its proven effectiveness at capturing walleye, smallmouth bass and northern pike – which were particular species of interest in this survey. We emphasize that catch results are not directly representative of the fish community and must be viewed with an understanding of 'species selectivity' of the gear.

Comment re *Species Selectivity* of 8' trap-nets:

We intend that our nets will act like "random predators", being set throughout the lake in all types of fish habitat such that the catch gives an over-all, generalized representation of the fish community. In actuality – this seldom if ever happens. Invariably there are biases in gear that favours a particular species or size of species being captured.

Relative to smaller size trap-nets, 8' nets fish in deeper water and result in a higher catches of walleye and smallmouth bass. Conversely, they grossly under-represent species such as rock bass, pumpkinseed and yellow perch that occupy shallow-water. Also, species such as largemouth bass, black crappie and brown bullhead are usually very abundant in localized habitats and "random searching" for them reflects this – a series of 'nil' catches followed by the occasional set in the right habitat that catches a large number. There seems to be little difference in the number of pike caught in various size trap-nets, but considerable differences in the size range of pike caught. These biases need to be considered when interpreting catch data.

A good measure of *species selectivity* of our 8'-trapnet gear is a statistic called the '*probability of capture'* – or the likelihood of a particular species being caught. In our comparative lakes data base consisting of 23 synoptic trap-net surveys, the *probability of capture* is 67.5% for walleye, 66.3% for smallmouth bass, 65.1% for common white sucker, 57.3% for pike, 53.0% for brown bullhead, 48.7% for rock bass, 39.1% for pumpkinseed and 6.7% for yellow perch (Appendix H). (These figures are 'averages' presented for illustrative purposes only. The *probability of capture* for any particular species can vary greatly between individual lakes) (Appendix H).

Not only is there *species selectivity* with respect to *catchability*, but there is also *size selectivity* within species. Walleye, smallmouth bass and northern pike young-of-the-year, yearling and two-year olds are seldom caught, yet we know they are the most abundant age classes in the population.

Notwithstanding the fact that these biases exist, we account for them by trying to remain consistent in how we assess individual populations and fish communities. We use the same nets on comparison lakes such that the netting biases are consistently applied to all lakes. In actuality, we are not truly comparing the **fish communities** of lakes, but rather the **catch results** – acknowledging that those results are not directly representative of the abundance of individual species within the fish community. Consequently, our survey design is intended to give a measure of species abundance in the catch – "relative" to what has been observed on a number of similarly surveyed lakes.

The field crew selected net-set locations in accordance with the following guidelines:

- Nets were to be approximately evenly dispersed throughout the lake in an effort to fish various fish habitats in the proportion of which they occurred in the lake. The intention here is that the catch would reflect the 'whole lake' as accurately as possible.
- 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 considered.)
- Nets were to be set far enough apart 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.

Nets set locations are indicated in Figure 1.

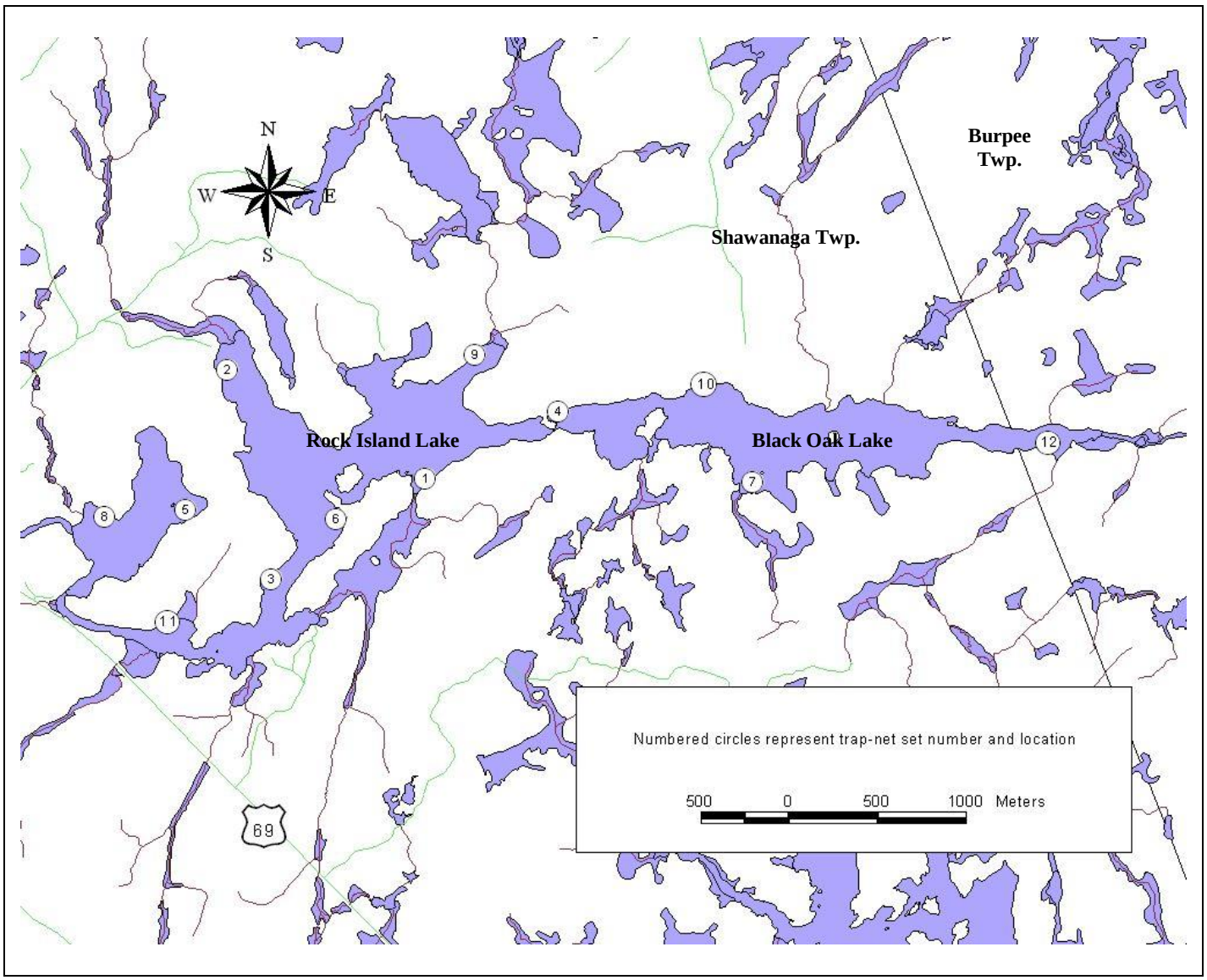
Field operations were conducted from June 9 - 13, 2003. In this report, the unit of effort is recorded as a "net set" – and approximates a set of 24-hour duration. Nets were relocated daily.

Complete catch enumeration was conducted for all sets (Appendix A).

Biosampling data consisting of total length, fork length and round weight determination was conducted for all game fish (Appendix B – D). Mean weights were determined for non-game fish species (Appendix E).

Age determination for walleye was by the scale reading method. As there were no *known-age* walleye in these lakes – we had no method of validating the accuracy of our scale aging. Campbell and Babaluk (1979) concluded that scale aging consistently underestimate the true age of walleye – particularly in older age classes. The reader should bear in mind, our mean age determination (Appendix B) probably underestimates the true mean age of walleye that we sampled.

Figure 1. Rock Is. and Black Oak Lakes Synoptic Trap-net Survey Net Set Locations



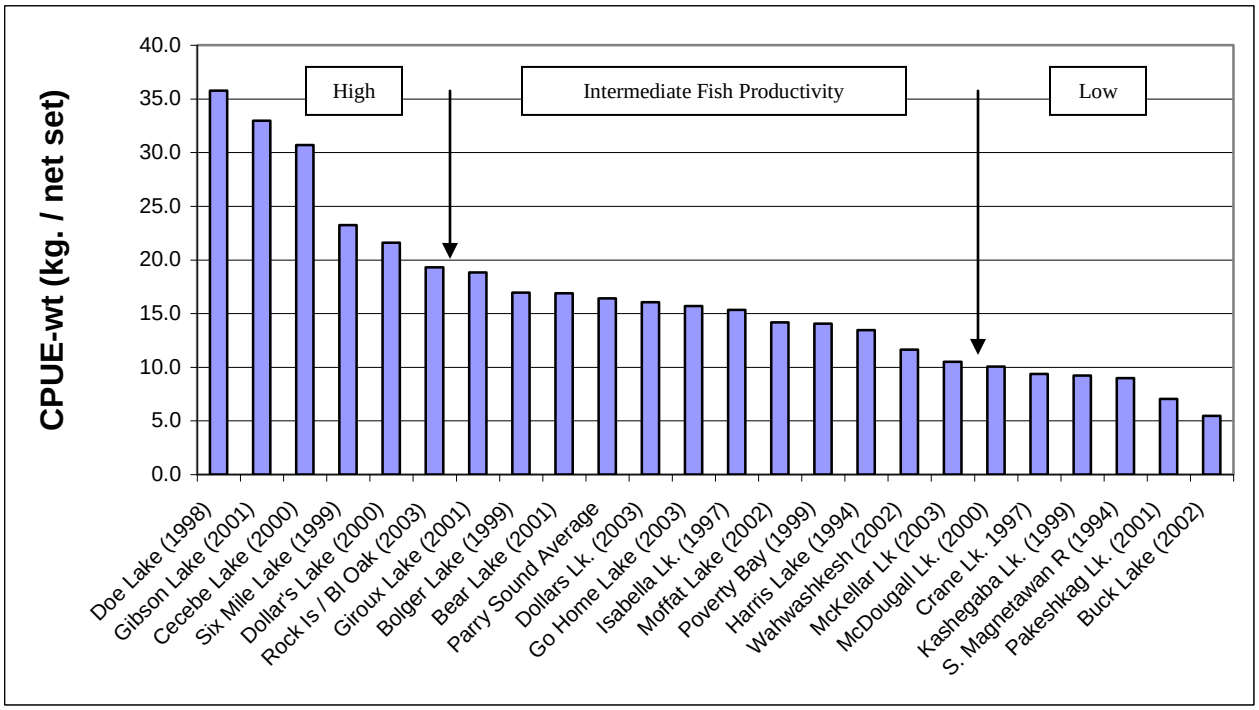
3.0 Results and Discussion:

3.1 Over-all Fish Productivity Index

From 12 overnight trap-net sets, we captured: 69 walleye, 64 common white sucker, 19 smallmouth bass, 12 northern pike, 10 rock bass, 7 brown bullhead, 3 largemouth bass, 2 pumpkinseed and 1 cisco. Cumulatively, our total catch weight was 231.719 kilograms, for an over-all *Catch-Per-Unit-Effort-by-weight* (CPUE-wt) of 19.31 kg. / net set (Appendix A). In our 23-survey dataset of similar and recently conducted surveys, this index of over-all fish productivity ranks 6th (Appendix F).

We consider lakes ranked in the top 25% to have high over-all fish productivity and those in the lower 25% to have low productivity. The middle 50% we consider intermediate. Rock Island and Black Oak are the last lakes ranked in the top 25% so consequently we consider them to have high over-all fish productivity relative to our comparative lakes database (Figure 2).

Figure 2. Overall index of fish productivity as measured by Catch-Per-Unit-Effort by weight (CPUE-wt) for all species caught. Presented are 23 synoptic trap-net surveys conducted between 1994 and 2003.



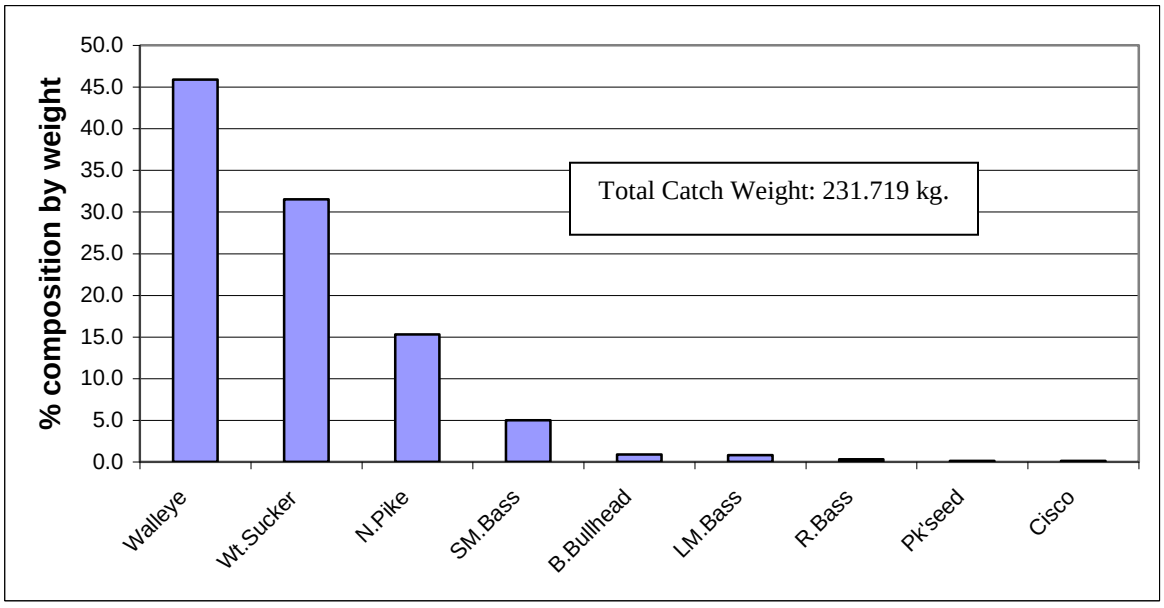
3.2 Catch Composition:

The total weight of fish caught during the survey was 231.719 kg. (Appendix A). Walleye accounted for 45.9% of the total catch weight followed by common white sucker (31.5%), northern pike (15.3%), smallmouth bass (5.0%) and largemouth bass, brown bullhead, rock bass, pumpkinseed and cisco at less than 1% each (Appendix A and Figure 3).

Game fish (walleye, large and smallmouth bass and pike) accounted for 67% of the total catch weight. This is just above the average of 62% in our 23-survey comparative lake database and is indicative of typical game-fish composition in the catch.

Walleye alone accounted for 45.9% of the total catch weight, well above the average of 23.8% in our comparative dataset (Appendix F).

Figure 3. Catch composition by weight from the McKellar Lake Synoptic Trapnet Survey conducted during the summer of 2003. (See Appendix A for total catch weight by species)



3.3 Walleye

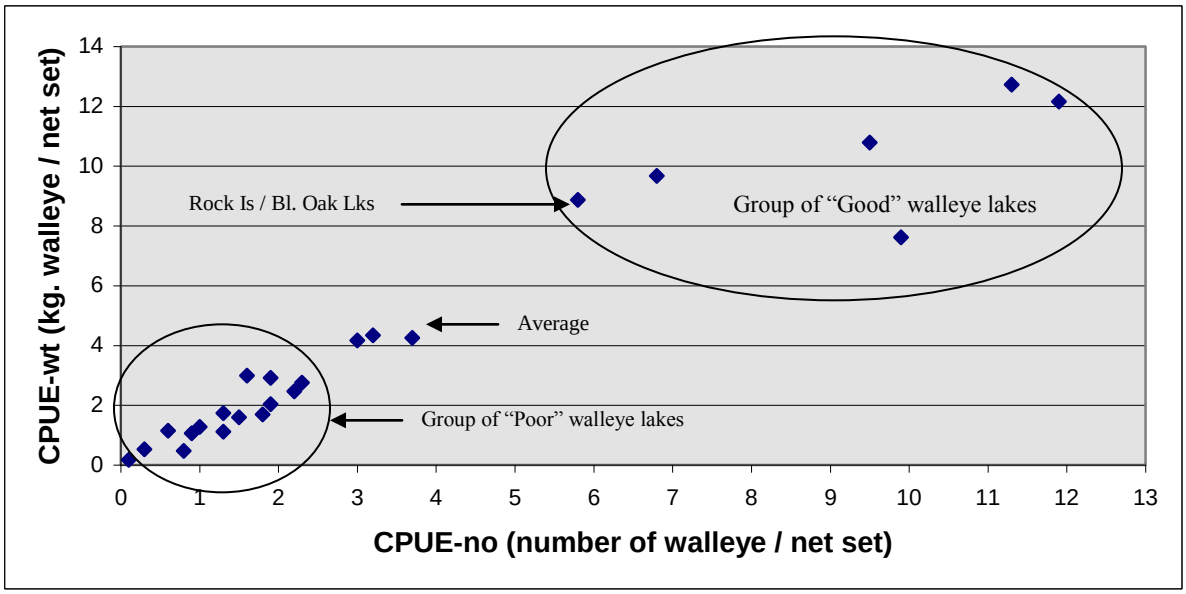
3.3.1 Catch-Per-Unit-Effort by number (CPUE-no) and weight (CPUE-wt):

We captured a total of 69 walleye in 12-overnight trap-net sets for a *Catch-Per-Unit-Effort-by-number* (CPUE-no) of 5.8 walleye per net set ± 3.6 ($p<0.05$) (Appendix A). We draw attention to the high degree of variability in our walleye catch results reflected in the broad range of our 95% confidence interval (9.4 – 2.2 walleye per net set). In our comparative lakes database, this index

of walleye abundance ranks 6th out of 23-surveys (Appendix G). If we calculate walleye CPUE by weight, we caught 8.873 kg. / trap-net set (Appendix A). This ranks 5th in our 23-survey comparison dataset (Appendix F).

When we consider these two related indices of walleye abundance for our 23-survey dataset, we see that walleye lakes typically fall into two distinct categories (Figure 4). A group of lakes clusters well below the average for these two indices and we refer to these as "poor" walleye lakes. Another group clusters well above the average and we refer to these as "good" walleye lakes. Rock Island and Black Oaks Lakes fall within the cluster of good walleye lakes.

Figure 4. Walleye abundance indices (CPUE-wt and CPUE-no) for 23 synoptic trap-net surveys recently conducted in the Parry Sound Area.



We note that there are 15 lakes in the "poor" category and only six in the "good" category. Two lakes fall very close to the average, which itself is represented by a data-point in Figure 4.

3.3.2 Probability of Capture

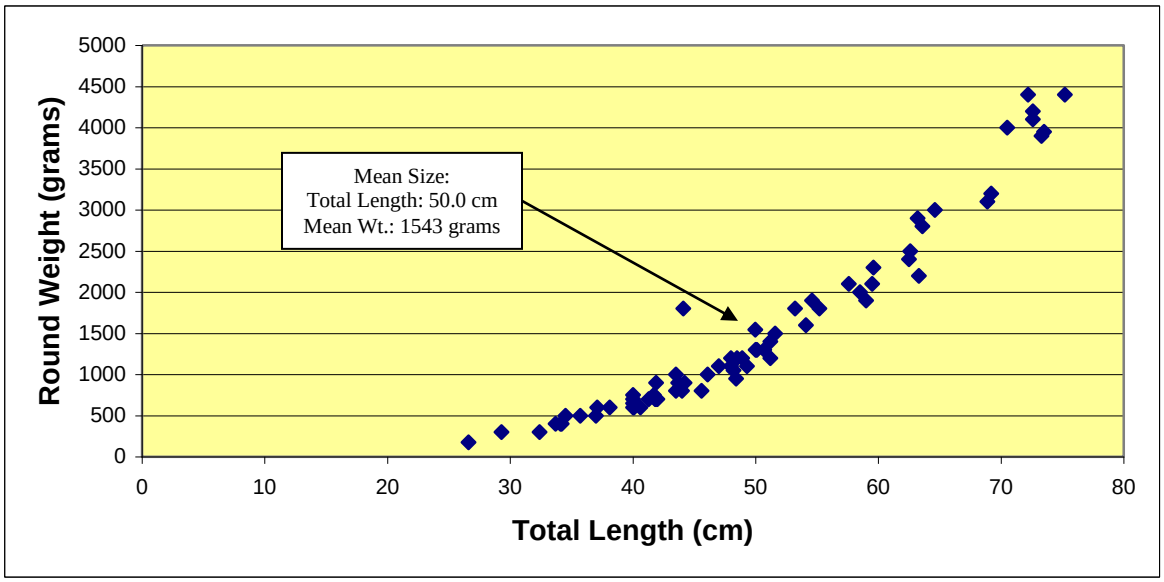
Another index of walleye abundance we use is the "probability of capture", or the likelihood that any individual net will capture at least one walleye. We captured at least one walleye in all 12 net sets (Appendix A), hence our probability capture was 1.000 or 100%. This probability of capture is well above the 67.5% average in our 23-survey comparative dataset (Appendix H).

3.3.3 Walleye Size and Age Distribution:

From 69 walleye captured during the survey, we calculated a mean total length of 50.0 cm. and mean weight of 1543 grams (3.4 lbs.) (Appendix B).

Most encouraging in the size distribution was the fact that all size classes were present. There was a good abundance of small size walleye, indicating recent successful recruitment and reproduction in the population (Figure 5). Furthermore, the good representation of larger size walleye is a good indicator of moderate annual mortality.

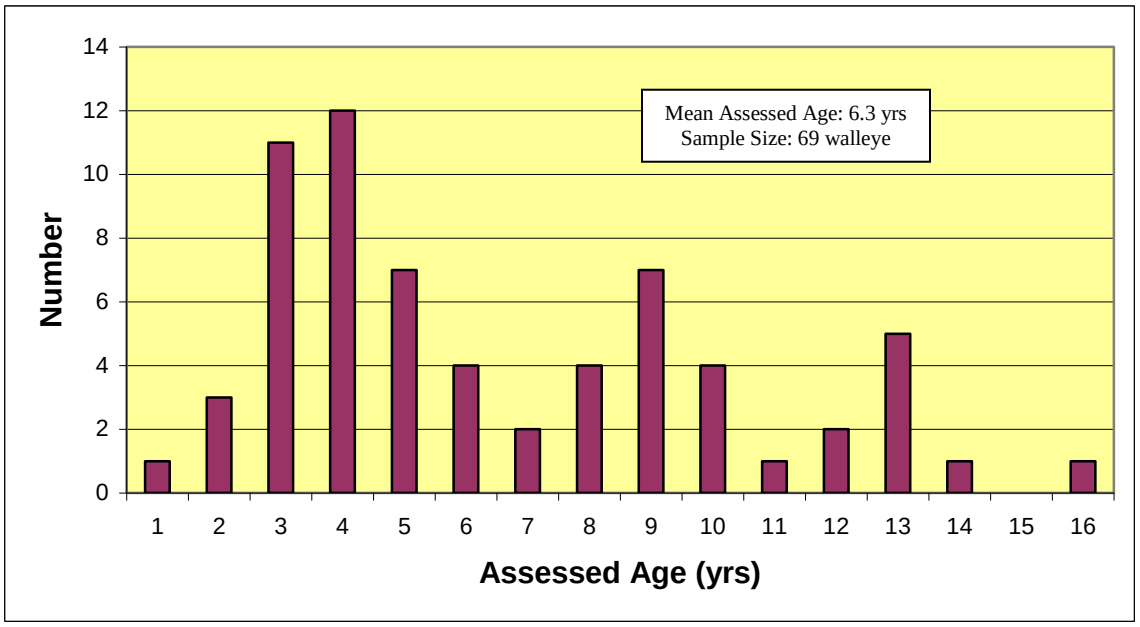
Figure 5. Size distribution of walleye, Rock Island and Black Oak Lakes synoptic trap-net survey, June 2003. (Sample Size = 69)



The mean age of our 69-walleye sample was 6.3 years (Appendix B). Our age assessment produced a rather unusual age-class structure (Figure 6). The 2000 and 2001 age-classes (age 3 and 4) are well represented and indicate good recruitment to the spawning population. The scarcity of 1 and 2 year old fish is undoubtedly related to the selectivity of the gear and is not indicative of the actual abundance of these age-classes.

We used the scale-reading method of age determination which is well known for underestimating the age of walleye – especially in older age-classes. (Campbell and Babaluk, 1979). Because we have no known-age fish in our sample, we are unable to validate the accuracy of our age assessment. Notwithstanding the known inaccuracies of our aging technique, both our age and size distribution show a wide range with all age and size-classes well represented. We interpret this as a very positive indication that reproduction, recruitment and mortality rates currently being experienced by this walleye population are well within the acceptable range for a healthy, natural and self-sustaining population.

Figure 6. Age distribution of walleye, McKellar Lake synoptic trapnet survey.



3.4 Smallmouth and Largemouth Bass

Small and largemouth bass comprised a rather small proportion of the catch. Smallmouth accounted for only 5.0% of the total catch weight and largemouth only 0.8% (Appendix A).

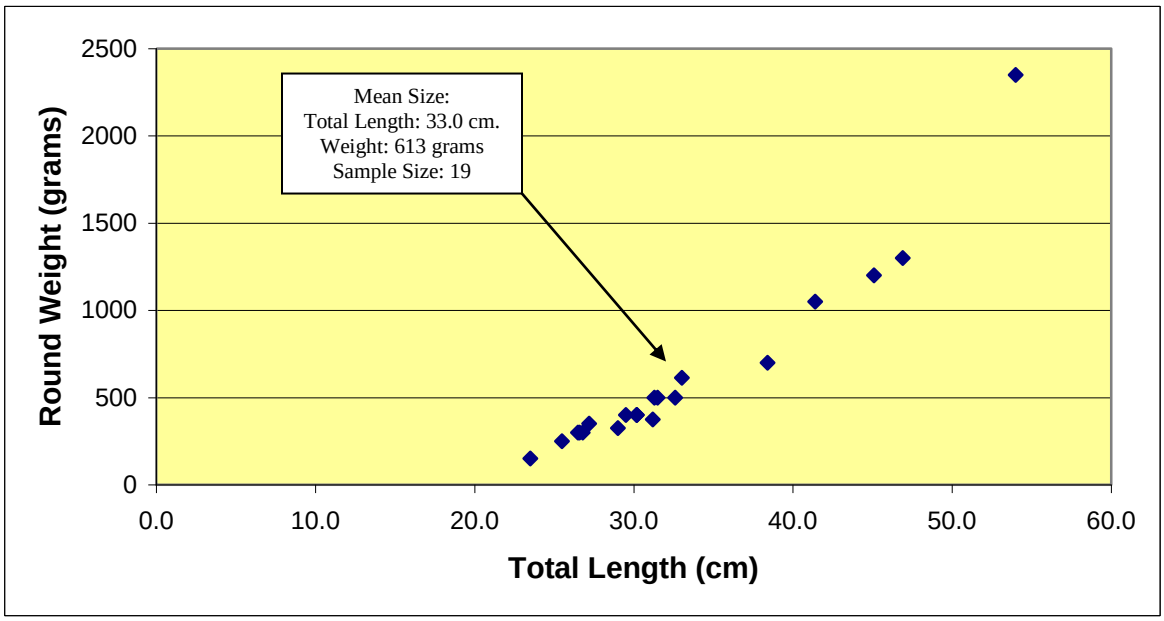
Our smallmouth bass CPUE-no was 1.6 fish / net set, well below the average of 4.8 in our 23-survey STNS dataset (Appendix G). This index of abundance ranks 16th out of 22 surveys. (One survey did not catch any smallmouth bass and hence our sample size is reduced to 22.) Although our smallmouth bass CPUE-no was well below average, it fell within the middle 50% of values in our STNS database (Appendix G), rating it as having "intermediate" abundance.

A similar trend was evident for CPUE-wt (Appendix F). We caught 0.971 kg. of smallmouth / set, well below the STNS average of 2.854 kg. / set (Appendix F).

The smallmouth probability of capture was 58%, also below the comparative dataset average of 66% (Appendix H).

The size-class distribution of smallmouth (Figure 7) suggests reasonably good recruitment. Mortality appears high, as suggested by the poor representation of larger size-classes. Although smallmouth bass are not a dominant species in the near-shore fish community, they are probably maintaining themselves at a low but sustainable level. Because our survey was conducted in mid-June (June 9th – 13th), during the bass spawning period, our catch results may be biased towards a low figure. Spawning activities may reduce travel distances and foraging activity, thereby reducing the likelihood of a bass contacting our trap-net gear.

Figure 7. Size distribution of smallmouth bass caught during the Rock Island and Black Oak Lakes synoptic trap-net survey, June 2003.



Our meagre catch of only three largemouth bass (Appendix A) is clearly indicative that this species is a minor component of the near-shore fish community. The low abundance of largemouth bass in our catch is probably most attributable to limited habitat for this species on a lake-wide basis. However, we did fish individual sites with good largemouth bass habitat features.

3.5 Northern Pike

We captured 12 pike in 12 net sets for a CPUE-no of 1.0 pike per set ± 0.61 ($p<0.05$) (Appendix A). This index of abundance is very similar to the average of 1.1 pike per net set in our STNS database, and ranks 10th out of 23 surveys. This CPUE-no value falls within the central 50% in our database according it a rating of "intermediate" abundance of pike.

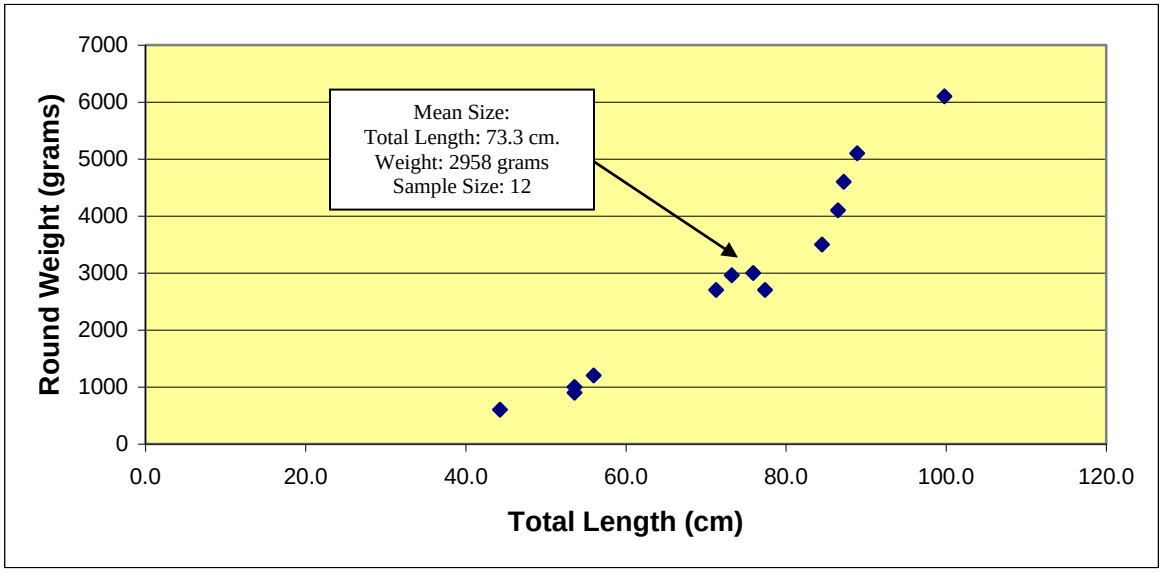
Our pike CPUE-wt was 2.958 kg. / set (Appendix A), considerably higher than the average of 1.952 kg. / set in the dataset. Although the abundance (number) of pike on Rock Island and Black Oak Lakes was close to average, their size was considerably above.

Our observed northern pike probability of capture was 66.7%, slightly higher than the average of 57.3% in our comparative survey dataset.

We sampled 12 northern pike and determined a mean total length of 73.3 cm. and mean weight of 2958 grams (6.5 lbs) (Appendix D). This is a large mean size for northern pike. Almost half the pike we captured were longer than 80 cm! Although the reproductive and recruitment rates may be low – as suggested by the scarcity of small fish, the presence of several large fish suggests

mortality may also be low and surviving fish are likely to live to a considerable age. We caution that our small sample size reduces the reliability of inferences with respect to reproduction, recruitment and mortality rates.

Figure 8. Size distribution of northern pike captured during the Rock Island and Black Oak Lakes synoptic trap-net survey, June 2003.



3.6 Other 'non-game' fish species:

Most notable of the other non-game fish species caught in this survey is common white sucker. We captured 64 suckers that comprised 31.5% of the total weight of all fish caught. Next to walleye, suckers formed the most significant part of the catch in terms of weight.

Our sucker CPUE-no was 5.3 fish / net set ± 4.0 ($p<0.05$) (Appendix A), well above the average of 3.1 in our comparative dataset (Appendix G). Similarly, our CPUE-wt was 6.085 kg. / set (Appendix A), also well above the average of 3.701 (Appendix F). Clearly, the abundance of common white sucker on Rock Island and Black Oak Lakes is high relative to our 23-survey, STNS dataset.

We made no effort to sample common white sucker other than to determine a mean weight, which was 1141 grams (2.5 lbs.) (Appendix E).

Brown bullhead, rock bass, pumpkinseed and cisco were also present in the catch, but cumulatively these species accounted for less than 2% of the total catch weight. These species are seldom abundant because they are not particularly susceptible to 8'-trap-netting gear. Nonetheless, their abundance in terms of CUPE-no and CPUE-wt is well below the average in our comparative survey dataset (Appendix F and G).

4.0 Summary of Synoptic Trap-net Survey Results:

Table 1. Comparison of fisheries assessment indicators between McKellar Lake and Parry Sound Area comparative lakes database reference values.

Indicator	Rock Island and Black Oak Lakes	Reference Value 'Area Average'	Grade	Comments
Overall Productivity CPUE-wt (all species)	19.31 kg. / set ranks 6th out of 23 surveys	16.404 kg. / set	C+	Overall productivity only slightly above average but in top 25% of comparative surveys
Game fish - % of total catch weight	67%	61.9%	C	Slightly above average
Walleye Abundance CPUE-no. CPUE-wt Probability of Capture % of total catch weight	 5.8 (ranks 6th of 23) 8.873 kg (ranks 5th) 100 % 45.9%	 3.5 walleye / set 4.101 kg. / set 67.5 % 25.0%	 B B+ A A	Indices of walleye abundance are high relative to 23-survey comparative dataset
Walleye Size Structure Walleye Age Structure	Mean TL 50.0 cm. Mean 6.3 yrs.		B B	All age and size-classes present indicating sustainable recruitment and mortality rates
Smallmouth Bass CPUE-no CPUE-wt % of total catch weight Probability of Capture	 1.6 (ranks 16th of 22) 0.971 kg. (18th of 22) 5.0% 58.3%	 4.78 fish / set 2.854 kg. / set 17.3% 66.3%	 D D D C-	CPUE-no low but within central 50% for 'intermediate' rating. Indices of abundance well below average.
Largemouth Bass CPUE-no % of total catch weight	 0.3 fish / set 0.8 %	 1.2 fish / set 4.9%	 D D	Indices of abundance Below average
Northern Pike CPUE-no CPUE-wt % of total catch weight Probability of Capture	 1.0 (ranks 10th of 23) 2.958 kg. (6th of 23) 15.3 % 66.7%	 1.1 fish / set 1.952 kg. / set 11.9% 57.3%	 C B C C+	Indices of abundance at or above average. 'Intermediate' abundance rating.
Non-game fish % of total catch weight	 33%	 38.0%	 C	Common wt. sucker abundance high and accounts for almost all of coarse fish biomass.

Over-all Rating: B

Relative abundance indices for walleye are high; age/size structure suggests healthy and sustainable levels for recruitment and mortality. Walleye are dominant in catch composition. Pike appear to be doing 'average' relative to our comparative dataset; population appears healthy and sustainable. Small and largemouth bass indices of abundance are low relative to our STNS database; however smallmouth rate as having 'intermediate' relative abundance.

5.0 Comparison of STNS Results with 2001 FWIN Results:

One of the primary objectives of this survey was to compare results with those of the 2001 Fall Walleye Index Netting (FWIN) survey. Because both surveys had the objective of assessing the status of walleye and other near-shore fish species, we would expect the results to be very similar. We are dismayed and somewhat concerned to report that many results between the two surveys were not consistent.

In both survey types, the criteria used to define species abundance was the same. Mean catch rate, or *Catch-Per-Unit-Effort by number* (CPUE-no.) was determined for individual fish species for each survey type. Relative abundance was considered "high" if the species CPUE-no fell into the top 25% of the CPUE-no generated for either the STNS of FWIN datasets. Species abundance was considered "low" if the CPUE-no fell into the lower 25%. If the CPUE-no fell within the middle 50%, then it was considered to be "intermediate" with respect to relative abundance. Species abundance according to these criteria for the two surveys is shown in Table 2.

Table 2. Comparison of species abundance according to the 2001 FWIN survey and the 2003 STNS survey conducted on Rock Island and Black Oak Lakes.

Survey Type and Year	Category for Index of Relative Abundance		
	Walleye	**Smallmouth Bass**	**Northern Pike**
2001 FWIN Survey	Intermediate	Intermediate	Low
2003 STNS Survey	High	Intermediate	Intermediate

In both surveys, 12 net-sets were made. The FWIN survey used over-night gill-net sets whereas we used over-night trap-net sets. Some further anomalies between the surveys included:

- Our (STNS) survey caught 3 largemouth bass; the FWIN survey caught none.
- The FWIN survey caught 8 yellow perch; our survey caught none.
- The FWIN survey caught 96 cisco; our survey caught 1. (Undoubtedly, gear-type was responsible for this anomaly.)

The catch between surveys was very similar for brown bullhead, rock bass and pumpkinseed.

We find the inconsistencies in the above results rather disconcerting. We are left wondering: 'Which survey most accurately reflects the actual population status within these lakes?' At this point in time we don't have an answer to this question.

(Note: It is planned that a more in-depth analysis comparing the results of FWIN and STNS for lakes in the Parry Sound Area will be reported upon later in 2004.)

6.0 Literature Cited:

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Appendix A.

Catch summary for Rock Island and Black Oak Lakes Synoptic Trap-net Survey, June 2003.

Set No.	Date Set 2003	Date Lifted 2003	Catch (number) Walleye	S.mouth Bass	L.mouth Bass	Northern Pike	C.white Sucker	Brown Bullhead	Rock Bass	Pumpkin-seed	Cisco
1	Jun-09	Jun-10	7	0	0	1	4	0	1	0	0
2	Jun-09	Jun-10	7	4	0	1	4	1	0	0	0
3	Jun-09	Jun-10	2	0	0	0	0	0	0	0	0
4	Jun-10	Jun-11	5	2	0	2	0	0	0	0	0
5	Jun-10	Jun-11	21	2	0	0	12	1	0	0	0
6	Jun-10	Jun-11	1	0	0	0	0	0	0	0	0
7	Jun-11	Jun-12	10	5	0	3	16	0	0	2	0
8	Jun-11	Jun-12	6	2	0	1	17	1	1	0	0
9	Jun-11	Jun-12	1	0	0	1	0	0	0	0	0
10	Jun-12	Jun-13	5	3	3	1	6	4	6	0	1
11	Jun-12	Jun-13	3	1	0	2	5	0	2	0	0
12	Jun-12	Jun-13	1	0	0	0	0	0	0	0	0
Sum (Total)			69	19	3	12	64	7	10	2	1
CPUE-no (no. / net set)			5.8	1.6	0.3	1.0	5.3	0.6	0.8	0.2	0.1
Standard Error			1.615	0.499	0.250	0.275	1.827	0.336	0.505	0.167	0.083
Confidence Level(95.0%)			3.554	1.099	0.550	0.606	4.021	0.740	1.112	0.367	0.183
Standard Deviation			5.594	1.730	0.866	0.953	6.329	1.165	1.749	0.577	0.289
Count (Sample Size)			12	12	12	12	12	12	12	12	12
Mean Weight (gr)			1543	613	633	2958	1141	310	75	90	140
Total Wt. Caught (kg)			106.475	11.650	1.900	35.500	73.024	2.170	0.680	0.180	0.140
% of total catch biomass			45.9	5.0	0.8	15.3	31.5	0.9	0.3	0.1	0.1
CPUE-wt (kg / net set)			8.873	0.971	0.158	2.958	6.085	0.18	0.057	0.15	0.012

Grand total biomass caught:	231.719 kg.
All Sp. CPUE-wt	19.31 kg. / net set

Appendix B.

Walleye Biosampling Data – Rock Is. & Black Oak Lakes Synoptic Trap-net Survey, 2003.

Total Length (cm)	Fork Length (cm)	Round Weight (gr)	Assessed Age (yrs)	Total Length (cm)	Fork Length (cm)	Round Weight (gr)	Assessed Age (yrs)
50.1	47	1300	6	48.5	45.7	1200	6
72.6	69.1	4200	16	42	38.8	700	3
57.6	54.8	2100	9	63.3	59.6	2200	10
58.5	55.6	2000	8	68.9	65.6	3100	13
48.4	45.5	950	4	55.2	52	1800	10
46.1	44.5	1000	5	44.1	41.6	1800	8
69.2	66.1	3200	13	59	56	1900	9
32.4	30.2	300	2	73.3	70.7	3900	12
37	35	500	2	59.5	56.8	2100	9
40.1	37.8	600	3	48	44	1100	4
40.6	38.3	600	3	41.7	39.4	750	3
48.2	44.5	1050	5	41.8	39.7	700	4
40	38.1	600	3	54.1	51.7	1600	8
41.9	39.4	700	3	38.1	36	600	3
43.5	41	800	4	33.7	31.9	400	2
73.5	70.5	3950	13	40	37.8	650	3
70.5	66	4000	13	41.3	39.4	700	4
45.6	43.4	800	4	48.9	46.4	1200	4
63.2	59.8	2900	9	34.2	32.3	400	2
26.6	25	175	1	35.7	34.6	500	2
53.2	50.2	1800	8	34.1	32.3	400	2
50.7	48	1300	6	64.6	61.2	3000	10
40	37.9	750	3	44.2	41.8	900	5
54.6	51.3	1900	9	50	46.6	1300	7
72.2	69.1	4400	14	62.5	59.9	2400	10
34.5	32	500	3	51.2	48.9	1200	5
43.7	41.3	900	4	37.1	35.1	600	3
51.6	49.7	1500	6	72.6	68.5	4100	12
47	44.3	1100	5	49.3	45.9	1100	5
48	45	1200	5	75.2	72.2	4400	13
41.9	39.6	900	4	63.6	60.9	2800	11
43.5	41.4	1000	4	51.2	48.3	1400	7
40	37.5	700	4	62.6	59.8	2500	9
44	41.4	800	4	59.6	57.1	2300	9
29.3	27.6	300	2				

Mean	50.0	47.3	1543.1	6.3
Standard Error	1.474	1.421	138.114	0.447
Confidence Level(95.0%)	2.941	2.836	275.602	0.891
Standard Deviation	12.241	11.805	1147.262	3.710
Total Wt. (gr.)			106475	
Count (Sample Size)	69	69	69	69

Appendix C.

Large and Smallmouth Bass Biosampling Data – Rock Island and Black Oak Lakes Synoptic Trap-net Survey, June 2003.

Smallmouth Bass				Largemouth Bass		
Total Length (cm.)	Fork Length (cm.)	Round Weight (grams)		Total Length (cm.)	Fork Length (cm.)	Round Weight (grams)
46.9	44.5	1300		39.0	37.8	900
45.1	42.8	1200		36.4	34.9	700
30.2	28.6	400		29.5	28.5	300
30.2	28.5	400				
54.0	51.0	2350				
31.2	29.6	375				
29.0	27.3	325				
29.5	27.7	400				
25.5	24.0	250				
27.2	26.0	350				
26.6	25.5	300				
31.5	29.6	500				
41.4	38.6	1050				
26.5	25.1	300				
23.5	22.4	150				
32.6	31.1	500				
38.4	36.5	700				
26.8	25.3	300				
31.3	29.7	500				
33.0	31.3	613.2	Mean	35.0	33.7	633.3
1.900	1.790	121.581	Standard Error	2.835	2.747	176.383
3.992	3.761	255.433	Confidence Level (95.0%)	12.196	11.821	758.917
8.282	7.803	529.961	Standard Deviation	4.910	4.759	305.505
		11650	Total Catch Wt. (gr)			1900
19	19	19	Sample Size	3	3	3

Appendix D.

Northern Pike Biosampling Data – Rock Island and Black Oak Lakes Synoptic Trap-net Survey, June 2003.

	Total Length (cm)	Fork Length (cm)	Round Weight (gr)
	53.6	50.1	1000
	77.4	73.0	2700
	99.8	94.8	6100
	44.3	41.5	600
	84.5	80.1	3500
	53.6	50.0	900
	75.9	71.8	3000
	56.0	53.1	1200
	88.9	84.7	5100
	87.2	83.5	4600
	86.5	83.2	4100
	71.3	67.7	2700
Mean	73.3	69.5	2958.3
Standard Error	5.062	4.922	519.390
Confidence Level (95.0%)	11.142	10.833	1143.171
Standard Deviation	17.536	17.049	1799.221
Sum			35500
Count (Sample Size)	12	12	12

Appendix E.

Mean Weights for Non-game fish species captured in the Rock Island and Black Oak Lakes Synoptic Tap-net Survey, May 2003

	Common Wt. Sucker		Brown Bullhead		Rock Bass		Pumpkinseed		Cisco	
	No.	Wt.	No.	Wt.	No.	Wt.	No.	Wt.	No.	Wt.
	4	6000	1	250	1	75	2	180	1	140
	13	18100	4	1300	6	480				
	17	14700			2	125				
Total	34	38800	5	1550	9	680	2	180	1	140
Mean		1141		310		75		90		140

Appendix F.

CPUE-wt for synoptic Trap-net surveys recently conducted in the Parry Sound Area.

Survey	(kg. / 8' trapnet set) Walleye	S.M. Bass	L.M. Bass	Bl. Crappie	N. Pike	C.W. Sucker	Br. Bullhd.	Rock Bass	Pump-kseed	All Species *	Rank
Bear Lake (2001)	7.619	1.268			3.547	1.443	2.609	0.383	0.061	16.896	9
Bolger Lake (1999)	10.790	4.250	0.050		1.290	0.030	0.270	0.220	0.030	16.930	8
Buck Lk (2002)	1.694	1.542	0.129	0.424	1.746					5.535	23
Cecebe Lake (2000)	12.154	4.700			3.990	3.636	4.727	0.254	1.200	30.706	3
Crane Lk. 1997)	2.986	2.443			0.136			0.064	0.007	9.369	19
Doe Lake (1998)	12.727	11.115			0.954	5.573	1.521	1.530	2.336	35.756	1
Dollar's Lake (2000)	1.112	1.503	1.994	0.661	1.621	2.869	8.479	0.136	0.107	21.610	5
Dollars Lake (2003)	1.595	2.903	1.475	1.725	1.072	3.865	1.476	0.132	0.106	16.044	10
Gibson Lake (2001)	4.265	4.866	0.738	3.255	1.097	2.683	3.952	0.089	0.016	32.966	2
Giroux Lake (2001)	9.670	2.010			1.600	4.490	1.020	0.020		18.820	7
Go Home Lake (2003)	1.329	2.632	0.621		2.157	3.925	0.502	0.516	0.380	15.694	11
Harris Lake (1994)	2.909	0.722	0.485		0.752	7.783	0.481	0.184	0.144	13.460	15
Isabella Lk. (1997)	0.530	4.203			3.630	5.895	0.415	0.620	0.050	15.343	12
Kashegaba Lk. (1999)	1.060	4.880	0.480		1.340		0.530	0.740	0.180	9.210	20
McKellar Lk (2003)	1.735	0.295	0.092		3.571	4.250	0.308	0.240		10.492	17
McDougall Lk. (2000)	2.460	0.961		0.291	1.948	2.358	0.685	0.028		10.061	18
Moffat Lk. (2002)	0.467	0.628			3.578	8.610	0.900	0.000		14.183	13
Pakeshkag Lk. (2001)	0.167				3.508	0.892	2.375	0.061	0.014	7.025	22
Poverty Bay (1999)	2.757	3.976	2.871		0.164	3.150	0.920	0.113	0.098	14.049	14
Rock Is / Bl Oak (2003)	8.873	0.971	0.158		2.958	6.085	0.180	0.057	0.015	19.310	6
S. Magnetawan R (1994)	2.035	1.355	0.112		1.067	3.708	0.214	0.137	0.342	8.970	21
Six Mile Lake (1999)	1.145	3.242	2.044	1.140	1.133	2.350	2.538	0.211	0.513	23.227	4
Wahwashkeksh (2002)	4.236	2.330	0.148	0.160	2.031	0.425	1.901	0.242	0.135	11.637	16
CPUE-wt.	4.101	2.854	0.814	1.094	1.952	3.701	1.714	0.272	0.319	16.404	
Standard Error	0.838	0.505	0.243	0.415	0.248	0.509	0.435	0.073	0.137	1.677	
Standard Deviation	4.019	2.367	0.911	1.097	1.192	2.278	1.993	0.342	0.579	8.043	
Confidence Level(95.0%)	1.738	1.050	0.526	1.015	0.515	1.066	0.907	0.152	0.288	3.478	
Count	23	22	14	7	23	20	21	22	18	23	

*** - Note: Not all species caught are necessarily listed here. Consequently "All Species" weight may not necessarily be the sum of those species shown in this table. "All species" weight comes from individual reports.**

Appendix G.

CPUE-no for Synoptic Trap-net Surveys Recently Conducted in the Parry Sound Area, 1994 – 2003.

Survey	Walleye	S.M. Bass	L.M. Bass	Black Crappie	N. Pike	C.Wt. Sucker	Brown Bullhead	Rock Bass	Pump-kseed	Yellow Perch
Bear Lake (2001)	9.9	1.6			2.6	2.1	4.5	2.6	0.2	
Bolger L. (1999)	9.5	9.5	0.1		0.7	0.1	1.0	3.1	0.6	
Buck Lake (2002)	1.8	1.3	0.1	0.8	0.9					
Cecebe Lk. (2000)	11.9	5.2			2.5	3.4	6.4	2.3	5.3	
Crane Lk (1997)	1.6	7.1			0.1			0.7	0.1	
Doe Lk. (1998)	11.3	13.0			0.7	4.5	3.9	17.8	11.1	
Dollar's Lake (2000)	1.3	3.1	2.3	1.9	0.8	2.4	23.8	1.2	1.1	0.8
Dollars Lake (2003)	1.5	5.0	1.5	4.8	0.6	3.2	3.6	1.7	1.7	
Gibson Lake (2001)	3.1	6.7	0.9	9.1	1.0	2.3	12.7	0.7	0.1	
Giroux Lake (2001)	6.8	1.8			2.1	3.5	3.7	0.3		0.1
Go Home Lk. (2003)	1.0	3.7	0.9		0.6	2.8	1.4	3.9	3.7	
Harris Lk. (1994)	1.9	1.1	0.5		0.7	7.8	1.8	1.0	2.3	0.0
Isabella Lake (1997)	0.3	7.0			1.2	5.1	1.5	5.7	0.2	
Kashegaba L. (1999)	0.9	10.9	0.9		0.7	0.0	1.9	10.3	3.0	
McKellar Lake (2003)	1.3	0.3	0.1		1.3	2.8	0.8	2.0		
McDougall L. (2000)	2.2	1.5		0.8	1.3	1.5	1.6	0.4		
Moffat Lake (2002)	0.8	0.4			1.6	5.7	1.7	0.1		0.1
Pakeshkag Lk (2001)	0.1				2.0	1.8	13.5	0.8	0.3	0.1
Poverty Bay (1999)	2.3	12.1	4.6		0.3	7.0	3.8	2.4	1.4	
Rock Is / Bl Oak (2003)	5.8	1.6	0.3		1.0	5.3	0.6	0.8	0.2	
S. Mag. R. (1994)	1.9	2.3	0.1		0.7	2.6	1.5	1.3	2.1	0.0
Six-Mile L. (1999)	0.6	5.9	4.6	4.7	0.8	1.7	9.4	2.0	4.4	
Wahwashkesh L. (02)	3.1	4.0	0.2	0.5	1.3	0.3	4.6	2.4	0.6	
CPUE-no (no. / net set)	3.5	4.8	1.2	3.2	1.1	3.1	4.9	2.9	2.1	0.2
Standard Error	0.775	0.822	0.419	1.197	0.136	0.464	1.238	0.855	0.647	0.125
Confidence Level(95.0%)	1.607	1.708	0.904	2.929	0.283	0.967	2.583	1.779	1.365	0.321
Standard Deviation	3.716	3.853	1.566	3.167	0.654	2.125	5.674	4.012	2.745	0.306
Count	23	22	14	7	23	21	21	22	18	6

Appendix H.

Probability of capture of select species from recently conducted Parry Sound Area synoptic trap-net surveys.

Survey & year	Walleye	SM Bass	LM Bass	Bl. Crappie	N. Pike	C.Wt. Sucker	Br Blhd.	Pump-kseed	Rock Bass	Yellow Perch	# sets
Bear Lake (2001)	0.765	0.470			0.705	0.529	0.647	0.059	0.529		17
Bolger Lake (1999)	0.823	0.882	0.588		0.470	0.059	0.294	0.294	0.588		17
Buck Lake (2002)	0.500	0.417	0.083	0.417	0.500						12
Cecebe Lake (2000)	1.000	0.909			0.818	0.818	0.636	0.818	0.636		11
Crane Lk. 1997)	0.611	0.888			0.111			0.111	0.500		18
Doe Lake (1998)	0.970	0.941			0.470	0.794	0.529	0.941	0.205		34
Dollars Lake (2003)	0.727	0.909	0.454	0.636	0.454	0.636	0.727	0.454	0.636		11
Dollar's Lake (2000)	0.666	0.833	0.625	0.500	0.583	0.708	0.458	0.375	0.416		24
Gibson Lake (2001)	0.666	0.866	0.400	0.933	0.733	0.800	0.733	0.067	0.400		15
Giroux Lake (2001)	1.000	0.333			0.666	0.750	0.333		0.166	0.083	12
Go Home Lake (2003)	0.625	0.583	0.391		0.458	0.583	0.458	0.208	0.541		23
Harris Lake (1994)	0.516	0.387	0.322		0.484	0.871	0.501	0.612	0.355		31
Isabella Lk. (1997)	0.333	0.800			0.600	0.900	0.400	0.200	0.900		10
Kashegaba Lk. (1999)	0.467	1.000	0.466		0.533		0.467	0.667	1.000		15
McDougall Lk. (2000)	0.846	0.538		0.461	0.692	0.615	0.307		0.154		13
McKellar Lk. (2003)	0.667	0.083	0.083		0.750	0.583	0.250		0.500		12
Moffat Lake (2020)	0.333	0.167			0.833	0.917	0.833		0.083	0.083	12
Pakeshkag Lk. (2001)	0.083				0.750	0.417	0.833	0.250	0.416	0.083	12
Poverty Bay (1999)	0.714	0.857			0.286	1.000	0.857	0.428	0.571		7
Rock Is / Bl Oak (2003)	1.000	0.583	0.083		0.667	0.583	0.333	0.083	0.333		12
Six Mile Lake (1999)	0.722	0.967	0.866	0.700	0.433	0.667	0.933	0.866	0.666		30
S. Magnetawan R (1994)	0.714	0.510	0.081		0.510	0.673	0.204	0.489	0.551	0.020	49
Wahwashkesh (2002)	0.788	0.667	0.151	0.030	0.670	0.121	0.394	0.121	0.575		33
Mean	0.675	0.663	0.353	0.525	0.573	0.651	0.530	0.391	0.487	0.067	
Standard Error	0.048	0.058	0.069	0.106	0.036	0.054	0.048	0.068	0.048	0.016	
Confidence Level(95.0%)	0.100	0.120	0.151	0.259	0.075	0.113	0.101	0.143	0.100	0.050	
Count	23	22	13	7	23	20	21	18	22	4	