Results of the Open Water Lake Trout Angling Effort Survey Conducted on Kawagama Lake in 2007

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File Report

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A survey of lake trout angling effort was conducted on Kawagama Lake during the open water season of 2007. The survey was done in partnership with the Kawagama Lake Cottage Association (KLCA).

No previous estimates of open water effort have been made. Open water effort for lake trout has typically been relatively low on the large Muskoka lakes, (S. Sandstrom, MLFAU pers. comm.). In contrast, it was suspected that considerable summer effort was occurring on Kawagama Lake, based on observations during recent Summer Profundal Index Netting (SPIN) surveys.

Winter creel surveys were conducted in 1989, 1994 and 2001. In the first two surveys, lake trout effort and harvest were quite high. Effort was much lower in the 2001 survey, after implementation of a protected slot size limit (40-55 cm) in the mid-1990's. A winter creel survey is planned for 2008.

The purpose of this survey was to obtain a preliminary estimate of open water lake trout effort; to determine if open water effort is significant enough to monitor and to obtain baseline estimates that could be used to help design future surveys.

Methods

A stratified roving design was used as detailed in Table 1. A single season was used even though the legal season for smallmouth bass, only other major sport fish species in the lake, was closed for much of the season. This was done as lake trout was the primary species of interest and to minimize the number of the sample days. Since volunteers were used to conduct the counts; it was not known during the design phase how much volunteer effort would be available; it was felt to be risky to create strata for which volunteers may not be available.

No previous estimates of effort existed; therefore sampling intensity was based on a guess of expected mean activity. Figure 1 in Stronks (1994) was used to estimate a suitable number of sample days (24 days chosen). A balanced design was used with equal number of activity counts scheduled for each space and day type. Effort counts were scheduled to occur throughout the fishing day; starting at 9:00, 12:00, 16:00 or 19:00 (Appendix).

Table 1 Sample strata, open water effort survey, Kawagama Lake, 2007.

	Name	Description
Season	01	May 19 – Sep 3
Period	01	07:00 – 21:00
Space	01	Main Lake (2211 ha); excluding Minden Bay (485 ha)
	02	Fletcher Bay (455 ha)
Mode	01	Targeted lake trout effort
	02	Non-lake trout effort
Day type	01	Week day
	02	Weekend day

Effort counts were completed by volunteers from the KLCA. MNR provided field forms with pre-assigned locations, dates and count times and instructions for conducting the counts (Appendix). Counts were conducted by travelling the assigned area by boat and distinguishing as to whether parties were fishing for lake trout or other species. This was a subjective determination based on the fishing method and location. The travel route and boat locations were marked on a map.

Minden Bay was excluded from the count areas as it is believed that lake trout effort there would be low. The surface area of Minden Bay was included as part of the main basin when calculating relative effort for lake trout; but not for non-trout effort (effort cold not be assumed to be low).

Data are stored in FISHNET2 as project SC07_KAW.

Results and Discussion

A total of 24 activity counts were scheduled for each basin; 12 on week days and 12 on weekend days. Twenty-three were actually completed in the main basin and 21 in Fletcher Bay. All missed counts were on week days. Counts were done by 13 different individuals.

In the main basin, the mean activity count for lake trout was 2.4 parties for week days and 4.2 parties on weekends. Overall effort was 3.0 parties. Using an estimated party size of 2.0 (Lester et al), the total effort was 8966 angler hours or 3.3 ang-hr/ha.

In Fletcher Bay, the mean activity count for lake trout was 0.4 parties for week days and 1.8 parties on weekends. Overall effort was 0.9 parties. The total effort was 2659 angler hours or 5.8 ang-hr/ha.

For the whole lake, the average activity was 3.8 parties, resulting in a total of 11,612 ang-hr (3.7 ang-hr/ha) of effort directed at lake trout.

Table 2 Estimated lake trout angling effort, Kawagama Lake, open water, 2007.

DAY TYPE	SPACE	ACTIVITY COUNTS	AVERAGE ACTIVITY (PARTY)	ESTIMATED ACTIVITY (ANGLER HOURS)	SURFACE AREA (HA)	ESTIMATED ACTIVITY (ANGLER HOURS/HA)	ACTIVITY VARIANCE
week day	Main	11	2.4	4766	2696	1.8	0.2
week day	Fletcher Bay	9	0.4	895	455	2.0	0.1
weekend	Main	12	4.2	4200	2696	1.6	0.5
weekend	Fletcher Bay	12	1.8	1764	455	3.9	0.4
all	Main	23	3.0	8966	2696	3.3	
all	Fletcher Bay	21	0.9	2659	455	5.8	
all	all	44	3.8	11612	3151	3.7	

Notes: Area of main basin includes Minden Bay
Estimated angler hours is based on a mean party size of 2.0

Estimates of effort not directed at lake trout can be found in the Appendix.

This survey was the first attempt to quantify the amount of open water angling effort on Kawagama Lake. The use of volunteers to collect data had the benefits of being low cost and building relationships with lake users. The limitations included possible problems with quality control and bias, difficulty in finding volunteers to implement a random schedule and not being able to implement some aspects of a typical survey without extensive training (eg. conducting personal interviews). In this case, the approach was effective in obtaining an initial estimate of fishing effort.

The overall estimate of 3.7 ang-hr/ha of effort directed at lake trout is moderately high, and much greater than the current level of winter effort. A more intense survey should be done to further

describe the summer fishery. It will be important to consider the summer fishery when making any management decisions that may affect anglers.

References

Lester, N.P., M.M. Petzold, W.I. Dunlop, B. Monroe, S. Orsatti, T. Schaner, and D. Wood. 1991. Sampling Ontario lake trout stocks: issues and standards. Lake Trout Synthesis, Ont. Min. Nat. Resour., Toronto. 117 p.

Stronks, R. 1994. A simplified version of sample size determination for roving creel surveys. FAU Network Report 1994-2. Ontario Ministry of Natural Resources, Peterborough.

Appendix

Sample Schedule

Date	DOW	Type	Count Start Time
May 19	**Saturday**	WE	19:00
May 20	**Sunday**	WE	12:00
May 21	**Monday**	WE	
May 22	Tuesday	WD	
May 23	Wednesday	WD	
May 24	Thursday	WD	
May 25	Friday	WD	
May 26	**Saturday**	WE	
May 27	**Sunday**	WE	
May 28	Monday	WD	19:00
May 29	Tuesday	WD	
May 30	Wednesday	WD	
May 31	Thursday	WD	
Jun 01	Friday	WD	
Jun 02	**Saturday**	WE	
Jun 03	**Sunday**	WE	16:00
Jun 04	Monday	WD	
Jun 05	Tuesday	WD	19:00
Jun 06	Wednesday	WD	
Jun 07	Thursday	WD	
Jun 08	Friday	WD	
Jun 09	**Saturday**	WE	
Jun 10	**Sunday**	WE	
Jun 11	Monday	WD	16:00
Jun 12	Tuesday	WD	
Jun 13	Wednesday	WD	
Jun 14	Thursday	WD	
Jun 15	Friday	WD	
Jun 16	**Saturday**	WE	
Jun 17	**Sunday**	WE	
Jun 18	Monday	WD	
Jun 19	Tuesday	WD	
Jun 20	Wednesday	WD	
Jun 21	Thursday	WD	
Jun 22	Friday	WD	
Jun 23	**Saturday**	WE	
Jun 24	**Sunday**	WE	
Jun 25	Monday	WD	
Jun 26	Tuesday	WD	19:00
Jun 27	Wednesday	WD	
Jun 28	Thursday	WD	16:00
Jun 29	Friday	WD	
Jun 30	**Saturday**	WE	
Jul 01	**Sunday**	WE	
Jul 02	**Monday**	WE	12:00
Jul 03	Tuesday	WD	
Jul 04	Wednesday	WD	
Jul 05	Thursday	WD	9:00
Jul 06	Friday	WD	9:00
Jul 07	**Saturday**	WE	
Jul 08	**Sunday**	WE	19:00
Jul 09	Monday	WD	
Jul 10	Tuesday	WD	
Jul 11	Wednesday	WD	

Date	DOW	Type	Count Start Time
Jul 12	Thursday	WD	
Jul 13	Friday	WD	
Jul 14	**Saturday**	WE	9:00
Jul 15	**Sunday**	WE	
Jul 16	Monday	WD	
Jul 17	Tuesday	WD	
Jul 18	Wednesda	WD	
Jul 19	Thursday	WD	
Jul 20	Friday	WD	12:00
Jul 21	**Saturday**	WE	9:00
Jul 22	**Sunday**	WE	
Jul 23	Monday	WD	
Jul 24	Tuesday	WD	
Jul 25	Wednesda	WD	
Jul 26	Thursday	WD	
Jul 27	Friday	WD	
Jul 28	**Saturday**	WE	
Jul 29	**Sunday**	WE	16:00
Jul 30	Monday	WD	16:00
Jul 31	Tuesday	WD	
Aug 01	Wednesda	WD	
Aug 02	Thursday	WD	
Aug 03	Friday	WD	
Aug 04	**Saturday**	WE	9:00
Aug 05	**Sunday**	WE	
Aug 06	**Monday**	WE	
Aug 07	Tuesday	WD	
Aug 08	Wednesda	WD	
Aug 09	Thursday	WD	
Aug 10	Friday	WD	
Aug 11	**Saturday**	WE	
Aug 12	**Sunday**	WE	
Aug 13	Monday	WD	
Aug 14	Tuesday	WD	
Aug 15	Wednesda	WD	
Aug 16	Thursday	WD	
Aug 17	Friday	WD	12:00
Aug 18	**Saturday**	WE	12:00
Aug 19	**Sunday**	WE	
Aug 20	Monday	WD	
Aug 21	Tuesday	WD	
Aug 22	Wednesda	WD	9:00
Aug 23	Thursday	WD	
Aug 24	Friday	WD	
Aug 25	**Saturday**	WE	16:00
Aug 26	**Sunday**	WE	
Aug 27	Monday	WD	
Aug 28	Tuesday	WD	
Aug 29	Wednesda	WD	12:00
Aug 30	Thursday	WD	
Aug 31	Friday	WD	
Sep 01	**Saturday**	WE	
Sep 02	**Sunday**	WE	19:00
Sep 03	**Monday**	WE	

Period:	7:00	21:00
start	end	mid
7:00	10:30	9:00
10:30	14:00	12:00
14:00	17:30	16:00
17:30	21:00	19:00

Type	Days	Sample	Rate
WD	72	12	6.0
WE	36	12	3.0

Appendix
Field Form

Kawagama Lake Angler Effort Survey 2007

On the date, time and area of lake assigned:

- locate all boats in the area,
- distinguish boats as to whether they were actively fishing or not (do not include boats that are not actively fishing),
- distinguish boats as to whether they were fishing for lake trout or for other species,
- be sure to count each boat only once,
- do the count in as short a time as possible, preferably less than one hour,
- Record the actual times you started and finished each count.

Name: _____ Phone Number: _____

Date: _____ Start Time: _____ Sector: _____

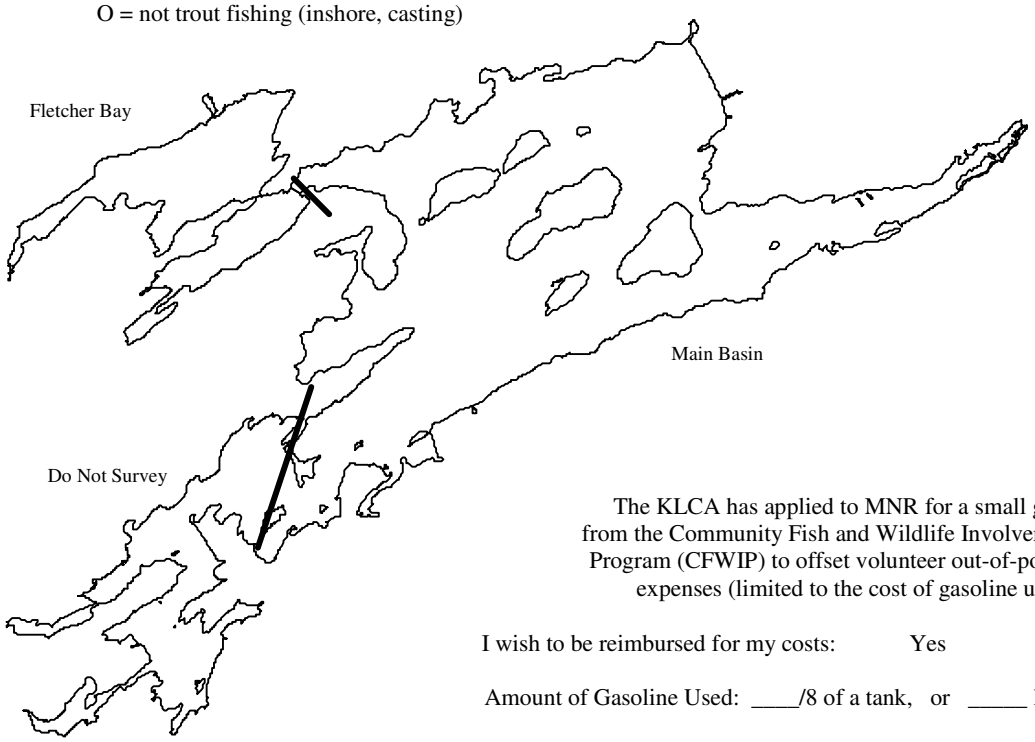
Weather Synopsis (wind, precipitation, temperature, cloud cover): _____

_____

Weather effect on Fishing Activity (circle one) No effect Some Effect Major Effect

Count Start Time	Count Stop Time	Boats Trout Fishing	Boats not Trout Fishing	Total

Draw the route you followed on the map
Mark locations of boats actively fishing with letters:
T = trout fishing (offshore, trolling, down rigging)
O = not trout fishing (inshore, casting)



The KLCA has applied to MNR for a small grant from the Community Fish and Wildlife Involvement Program (CFWIP) to offset volunteer out-of-pocket expenses (limited to the cost of gasoline used).

I wish to be reimbursed for my costs: Yes No

Amount of Gasoline Used: ____/8 of a tank, or _____ litres

Appendix
Summary Data

DAY TYPE	SPACE	TARGET	STRATUM DAYS	ACTIVITY COUNTS	DAY LENGTH	STRATUM HRS	AVERAGE ACTIVITY (PARTY)	ESTIMATED ACTIVITY (PARTY HOURS)	ESTIMATED ACTIVITY (ANGLER HOURS)	SURFACE AREA (HA)	ESTIMATED ACTIVITY (ANGLER HOURS/HA)	ACTIVITY VARIANCE
week day	Main	lake trout	72	11	14	1008	2.36	2383	4766	2696	1.8	0.223
week day	Main	non-lake trout	72	11	14	1008	1.09	1100	2199	2211	1.0	0.190
week day	Fletcher Bay	lake trout	72	9	14	1008	0.44	448	895	455	2.0	0.059
week day	Fletcher Bay	non-lake trout	72	9	14	1008	0.11	112	224	455	0.5	0.012
weekend	Main	lake trout	36	12	14	504	4.17	2100	4200	2696	1.6	0.513
weekend	Main	non-lake trout	36	12	14	504	2.83	1428	2856	2211	1.3	1.422
weekend	Fletcher Bay	lake trout	36	12	14	504	1.75	882	1764	455	3.9	0.350
weekend	Fletcher Bay	non-lake trout	36	12	14	504	0.75	378	756	455	1.7	0.153
all	Main	lake trout	108	23	14	1512	2.97	4483	8966	2696	3.3	
all	Main	non-lake trout	108	23	14	1512	1.67	2528	5055	2211	2.3	
all	Fletcher Bay	lake trout	108	21	14	1512	0.88	1330	2659	455	5.8	
all	Fletcher Bay	non-lake trout	108	21	14	1512	0.32	490	980	455	2.2	
all	all	lake trout	108	44	14	1512	3.84	5806	11612	3151	3.7	
all	all	non-lake trout	108	44	14	1512	2.00	3024	6048	2666	2.3	

Notes: Area of main basin includes Minden Bay for lake trout estimates only
Estimated angler hours is based on a mean party size of 2.0