

**Assessment of the Status  
of the Sport Fishery for Walleye  
at Floatingstone Lake, 1997.**

Conducted as part of the  
Walleye Monitoring Program  
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## ABSTRACT

To recover or maintain Alberta's walleye fisheries, a new walleye management strategy was implemented in 1996. In 1996, the walleye fishery at Floatingstone Lake was classified as a collapsed walleye fishery and a zero (0) daily bag limit was implemented. In order to monitor the status of the walleye fishery at Floatingstone Lake, a creel survey was conducted during May to August 1997. Since the last creel survey conducted in 1985, the estimated number of anglers had declined 93% from 19840 to 1372 anglers. Angler effort declined by 94% from 76.9 angler-hours / ha to 4.8 angler-hours / ha. During the 1997 survey, only 5 walleye were reported released in 505 hours of angling.

Historical information mentions that Floatingstone Lake was pretty much fished out in 1975 and shamefully overused since around 1960 (Chipeniuk 1975).

Based on the absence of walleye in the sport-fishery sample, historical information and the criteria used to classify walleye stocks in Alberta the walleye population in Floatingstone Lake should retain the classification of "collapsed".

## **ACKNOWLEDGEMENTS**

The creel survey attendants at Floatingstone Lake, Leanne Boykiw and Keith Tachuk, deserve full credit for the success of this study. The scarcity of anglers and near total lack of fish certainly made Floatingstone one of the more uninteresting creel surveys during 1997 walleye monitoring program. The survey would have suffered if it were not for their patience and dedication.

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## INTRODUCTION

Walleye (*Stizostedion vitreum*) populations in Alberta have been subjected to heavy fishing pressure for many years. Most populations show signs of over-harvest, with some experiencing significant declines. Previous management strategies have focused on province-wide regulations designed to manage the walleye harvest at an average fishery. Fisheries receiving heavier than average exploitation have not been adequately protected with these regulations and consequently many have declined or collapsed. To recover these fisheries and to maintain the stable fisheries, a new walleye management strategy was implemented in 1996 (Berry 1995). This strategy requires that each walleye population is evaluated as to its degree of exploitation and is then placed in one of these categories: collapsed, vulnerable, or stable. The fishery is assigned a standard sport fishing regulation based on this status (Sullivan 1994). In early 1996, the walleye fishery at Floatingstone Lake was assigned a collapsed status. A zero (0) daily bag limit on walleye was therefore implemented at the fishery.

This report describes the creel survey conducted at Floatingstone Lake during the summer of 1997. The purpose of the survey was to monitor the walleye sport fishery and verify the status of the population and fishery

## METHODS

### Study Site Description

Floatingstone Lake (TWP 60, RNG 11, W4M) is approximately 30 km north-west of the town of St. Paul. Floatingstone Lake has a surface area of 570 hectares and a maximum depth of 19.8 metres. Public access is very good via a secondary road to the south shore. The shoreline is heavily developed with numerous cottage sub-divisions. The trophic status of Floatingstone Lake is hypereutrophic. Floatingstone Lake is in the Beaver River Basin.

### Methods of Study

One creel survey crew (two technicians) collected information from both Floatingstone Lake and Vincent Lake between 17 May - 17 August 1997. At Floatingstone Lake, the crew was stationed at the Floatingstone Lake Recreation Area. A schedule of 5 survey days at Floatingstone Lake (Fridays through Tuesdays) was followed by 5 survey days (Wednesdays

through Sundays) at the alternate site (Vincent Lake). This cycle was repeated 7 times during the study.

The survey technicians interviewed each angler returning to the survey site during all survey days (24 h survey). Anglers were approached and asked a series of questions concerning their time spent angling, the numbers of each species caught or released, species sought, their gear types, and their use of electronic equipment. A subjective evaluation of their skill level was also made. Children and anglers with little equipment, knowledge or seriousness were considered to be novice anglers. Professional anglers demonstrated clear superiority in equipment and knowledge (and usually had their sponsors emblazoned on their hats, coats and boats). All other anglers were classified as having a moderate skill.

As time permitted during the survey period, sport fish retained by anglers were sampled for biological information. The fork length of each fish was recorded to the nearest millimetre; the weight was recorded to the nearest ten grams; and one or more skeletal structures were removed to determine the age of the fish. For this purpose, the left pelvic fin and operculum of walleye, the left cleithrum of northern pike (*Esox lucius*), and the operculum and or anal fin of yellow perch (*Perca flavescens*) were collected. Ages were determined following Mackay *et al.* (1990). Sex and state of maturity of each fish was determined following Olynyk (1980). Stomach contents were removed and classified as to number and species of vertebrates, and approximate number and order of invertebrates. The complete biological data set for walleye is reported in this study. Biological data for other species are partially reported in the Appendices, with the full data set stored in the Alberta Conservation Association (ACA) Fisheries Section and the Alberta Natural Resources Service (NRS), Fisheries Management Branch files, Edmonton Metropolitan office.

All field data were recorded in pencil on field data forms (Appendix 4). Data were transcribed into computer files (Lotus 1-2-3 format) by commercial keypunch services using double entry verification. Prior to analysis, all data were again subjected to verification procedures. These involved calculating frequency distributions of all creel survey parameters and using field diaries and notes to verify outlying values. Biological samples were verified by plotting weight measurements against the dependent variable of length, and length measurements against the dependent variable of age. Outlying values were investigated and eliminated if measurement error was suspected.

To determine sport fishery parameters specific to the creel survey site, the following procedure was used:

- creel data categories (i.e. # anglers, # hours fishing, # walleye harvested) were separated into daily weekday totals. Weekdays included Monday (day 1) through Thursday (day 4). Weekends included Friday (day 5) through Sunday (day 7) and long weekends (day 8) either on a Monday or a Friday.
- totals, means and standard deviations of # anglers / weekdays, # hours / weekdays and # walleye harvested / weekdays were calculated using Lotus 123 @functions: total (@SUM), mean (@AVG), and standard deviation (@STD). Standard error (SE) for each category was calculated by ( $\text{@STD of each category} / (\text{@SQRT (n days surveyed)})$ ).
- to estimate parameters for days NOT surveyed, the above means and SE of those categories were multiplied by the # weekdays not surveyed and added to the observed parameters.
- the same procedure was used for weekend days.
- estimated # anglers, # hours fishing and # walleye harvested for weekdays and weekend days were added for total estimates.
- variances of these estimates were combined following Pollock et al. (1994) for stratified sampling, by adding the separate estimates of variances.
- 95% confidence intervals for estimated # anglers, # angling hours and # walleye harvested were calculated using  $t_{0.05(df)} \times \text{SE}$ .

At many surveyed lakes, anglers could access the lake from sites other than the creel survey site. In these instances, an estimate of the total use of the fishery was extrapolated from the proportion of angler numbers using the creel survey site compared to those observed during entire-lake surveys. These entire-lake surveys were conducted over several time periods and consisted of driving a boat over the entire lake and interviewing all anglers encountered. Angler use estimates for this survey were based on entire-lake surveys conducted in 1985. Total use estimators of the fishery were then calculated by simple extrapolation. Variances of these combined estimates were calculated following Pollock et al. (1994).

All statistical analyses and graphics were done on an IBM - type personal computer (Intel Pentium, 133 MHz) using Lotus 1-2-3 Release 5 and Microsoft Office '97. All frequency analysis was conducted using Microsoft Office '97 (Excel spreadsheet). All data and analyses are stored in spreadsheet format on the ACA / NRS Edmonton Metropolitan office Fisheries computers and on Iomega Zip 100 MB disk cartridges.



## RESULTS

### Angler Survey

During 17 May - 17 August 1997, 254 anglers were interviewed (Table 1 and Appendix 1). The total number of anglers was estimated at 1372, with an estimated effort of 4.8 angler-hours / ha (Table 2). Based on data from the 1985 survey, the creel site was estimated to receive 50% of the total angler effort. Only 5 walleye were reported released in 505 hours of angling. Distributions of released walleye are shown in Appendices 1.2. Biological samples were collected from 51 pike (Appendix 2), and 2 perch (Appendix 3).

Table 1. Observed catch rates of anglers; Floatingstone Lake, 1985 and 1997.

<b>CREEL DATA</b>	<b>1985</b>	<b>1997</b>
# days surveyed	70	30
# anglers interviewed	7 612	254
# angling hours reported	16 823	505
# angling hours estimated	43 847	2 716
<b>WALLEYE DATA</b>		
Walleye kept / angler-hour (HCUE)	0.065	N/A
Walleye rel. (<38 cm TL) / angler-hour	N/A	0.006
Walleye rel. (38 - 50 cm TL) / angler-hour	N/A	0.004
Walleye rel. ( >50 cm TL) / angler-hour	N/A	0.0
Total walleye rel. / angler-hour	0.012	0.010
<b>NORTHERN PIKE DATA</b>		
Pike kept / angler-hour	0.069	0.131
Pike rel. (<50 cm TL) / angler-hour	N/A	0.024
Pike rel. (>50 cm TL) / angler-hour	N/A	0.012
Total pike rel. / angler-hour	0.035	0.036
<b>YELLOW PERCH DATA</b>		
Perch kept / angler-hour	0.702	0.004
Perch rel. (<20 cm TL) / angler-hour	N/A	0.008
Perch rel. (>20 cm TL) / angler-hour	N/A	0.00
Total perch rel. / angler-hour	0.348	0.008

Table 2. Angler survey summary; Floatingstone Lake, 1997.

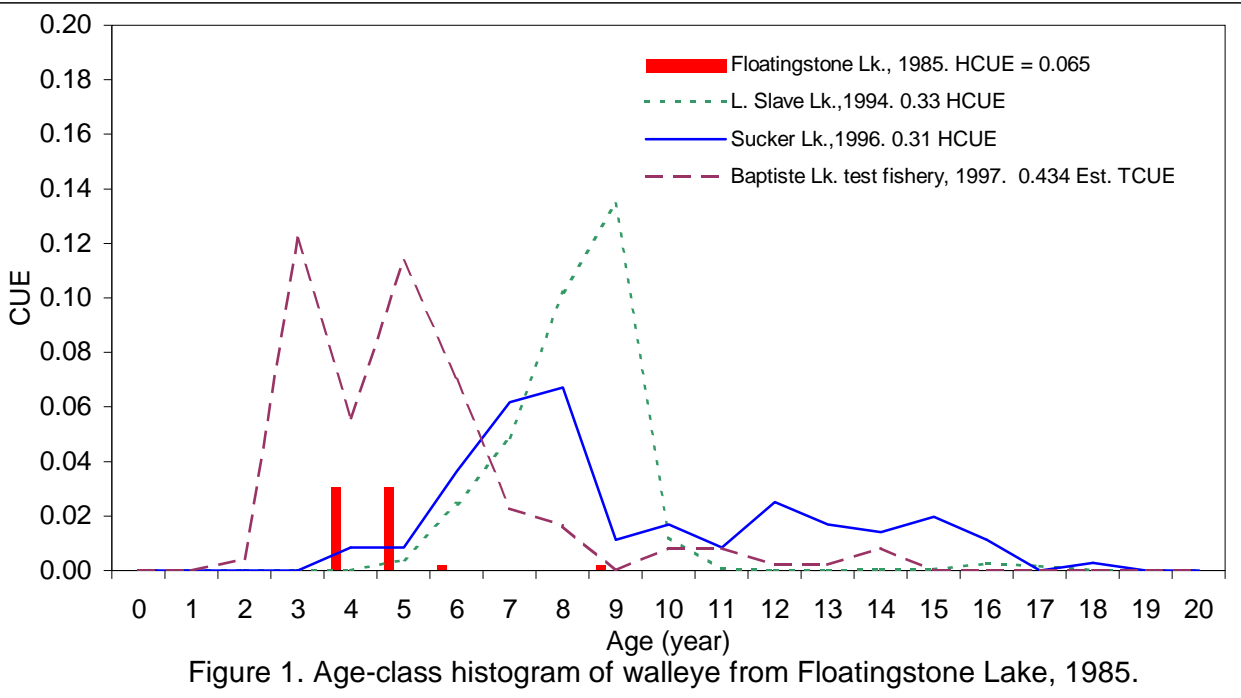
PARAMETER	1985 EST.	REPORTED (1997)	ESTIMATED (1997)
# Anglers	19 840	254	1 372 (+-35.7%)
# Hours	43 847	505	2 716 (+-35.4%)
Hours / hectare	76.9	1.9	4.8 (+-35.4%)
# walleye harvested	3 119	N/A	N/A

### Status of the Walleye Fishery

Only 5 walleye were reported released by the sport-fishery in over 500 hours of angling (0.010 walleye released / hr). Five comparative test fisheries conducted at other fisheries during the 1996 walleye monitoring surveys indicate that release rates reported by anglers were exaggerated and that there was possibly a negative correlation between the reported release rate and the observed catch rates (Sullivan 1996). The reported release rates on walleye are indicative of a walleye stock with a collapsed status.

Historical information indicates that Floatingstone Lake once supported a walleye population. It is said to have been commercially fished to an ace of its life in 1965 - for beer money (Chipeniuk 1975).

The density of walleye in 1985 (Figure 1) was extremely low. The age-class distribution was narrow and completely unstable. The release rate for walleye in 1985 (0.012 released / hr) was basically the same as the 1997 release rate for walleye. Applying the criteria used to classify status of walleye fisheries (Sullivan 1994), the walleye in Floatingstone Lake walleye were collapsed in 1985. Based on the results of the 1997 survey, the walleye population in Floatingstone Lake is still collapsed and probably near extirpation.



## DISCUSSION

Based on the criteria used to classify walleye stocks in Alberta the walleye population in Floatingstone Lake was collapsed. A release rate of 0.01 walleye / hr was reported and possibly false information. Angler numbers and angling effort between 1985 and 1997 declined dramatically. Chipeniuk (1975) reports shameful overuse since 1960 and nonsensical commercial harvest in 1965. In 1985, the walleye population appeared to be unstable, composed of low to moderate numbers of small walleye representing few year-classes and having extremely low numbers of mature walleye and being subjected to intense fishing pressure (Sullivan 1987). This information suggests that the walleye population in Floatingstone Lake was pushed to collapse between 1960 and 1985.

In 1989, a province-wide regulation modification reduced bag limits from 5 to 3 walleye per day and a 38 cm TL size limit was imposed. These regulations have been ineffective in preventing the continued collapse and possibly the extirpation of walleye from Floatingstone Lake. It is recommended that the existing regulation of a zero (0) daily bag limit for a collapsed walleye fishery not change.

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## APPENDICES

Appendix 1.1. Daily summary of angler survey data. [Floatingstone Lake, 1997]

DATE	# Anglers	# Hours	# WALL Released < 38 cm	# WALL Released 38 - 50 cm	# WALL Released > 50 cm	# NRPK Kept	# NRPK Released < 50 cm	# NRPK Released > 50 cm	# YLPR Kept	# YLPR Released < 20 cm	# YLPR Released > 20 cm
<b>30 Totals</b>	<b>254</b>	<b>505</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>66</b>	<b>12</b>	<b>6</b>	<b>2</b>	<b>4</b>	<b>0</b>
17-May-97	2	6	0	0	0	0	0	0	0	0	0
18-May-97	5	10	2	0	0	0	2	0	0	0	0
19-May-97	0	0	0	0	0	0	0	0	0	0	0
20-May-97	0	0	0	0	0	0	0	0	0	0	0
31-May-97	18	54.5	0	0	0	5	0	0	0	0	0
1-Jun-97	0	0	0	0	0	0	0	0	0	0	0
2-Jun-97	0	0	0	0	0	0	0	0	0	0	0
3-Jun-97	2	4	0	0	0	0	0	0	0	0	0
13-Jun-97	3	5	0	0	0	2	1	0	0	0	0
14-Jun-97	9	23	0	2	0	5	1	4	0	0	0
15-Jun-97	3	8	0	0	0	0	0	0	0	0	0
16-Jun-97	0	0	0	0	0	0	0	0	0	0	0
17-Jun-97	1	2	0	0	0	0	0	0	0	0	0
27-Jun-97	3	1.5	0	0	0	0	0	0	0	0	0
28-Jun-97	27	55	0	0	0	6	0	1	0	0	0
29-Jun-97	15	31	0	0	0	3	0	0	0	0	0
30-Jun-97	19	35.5	0	0	0	7	1	1	0	0	0
1-Jul-97	11	31	0	0	0	4	0	0	0	0	0
12-Jul-97	23	34	0	0	0	14	1	0	0	2	0
13-Jul-97	27	57	0	0	0	15	0	0	0	0	0
14-Jul-97	14	24.5	0	0	0	2	1	0	0	0	0
15-Jul-97	2	6	0	0	0	0	0	0	0	0	0
26-Jul-97	12	11	0	0	0	0	0	0	0	0	0
27-Jul-97	15	22	0	0	0	0	1	0	0	0	0
28-Jul-97	3	3	0	0	0	1	0	0	0	0	0
29-Jul-97	0	0	0	0	0	0	0	0	0	0	0
9-Aug-97	22	39.5	0	0	0	2	3	0	0	0	0
10-Aug-97	15	32.5	1	0	0	0	1	0	2	2	0
11-Aug-97	3	9	0	0	0	0	0	0	0	0	0
12-Aug-97	0	0	0	0	0	0	0	0	0	0	0

Appendix 1.2. Catch frequency distribution of released walleye. [Floatingstone Lake, 1997]

# WALL Released	# Anglers	% Anglers	# WALL Released	% WALL Released
0	251	98.8	0	0.0
1	1	0.4	1	20.0
2	2	0.8	4	80.0
3	0	0.0	0	0.0
4	0	0.0	0	0.0
5	0	0.0	0	0.0
Totals	254	100	5	100

Appendix 1.3. Methods of anglers and catch statistics for walleye. [Floatingstone Lake, 1997]

<b>METHOD</b>	# Anglers	% Anglers	# Hours	WALL Released	Released CUE
Artificial	227	92.3	453.5	4	0.009
Commercial Baitfish	2	0.8	4	0	0.000
Seined Baitfish	0	0.0	0	0	
Leeches	1	0.4	2.5	0	0.000
Dewworms	0	0.0	0	0	
Scent baits	0	0.0	0	0	
Miscellaneous	16	6.5	27	1	0.037
<b>TOTALS</b>	<b>246</b>	<b>100.0</b>	<b>487</b>	<b>5</b>	

Appendix 1.4. Skill level of anglers and catch statistics for walleye. [Floatingstone Lake, 1997]

<b>SKILL</b>	# Anglers	% Anglers	# Hours	WALL Released	Released CUE
Novice	19	7.6	28	0	0.000
Average	231	92.4	459	5	0.011
Professional	0	0.0	0	0	
<b>TOTALS</b>	<b>250</b>	<b>100</b>	<b>487</b>	<b>5</b>	

Appendix 1.5. Target species of anglers and catch statistics for walleye. [Floatingstone Lake, 1997]

<b>TARGET</b>	# Anglers	% Anglers	# Hours	WALL Released	Released CUE
Walleye	0	0.0	0	0	
Northern Pike	53	21.4	99	0	0.000
Yellow Perch	20	8.1	34	1	0.029
Any species	175	70.6	350	2	0.006
<b>TOTALS</b>	<b>248</b>	<b>100</b>	<b>483</b>	<b>3</b>	

Appendix 1.6. Angler use of electronic gear and catch statistics for walleye. [Floatingstone Lake, 1997]

<b>ELECTRONICS</b>	# Anglers	% Anglers	# Hours	WALL Released	Released CUE
None	174	70.2	322	5	0.016
Depth Sounder	73	29.4	155	0	0.000
G.P.S.	0	0.0	0	0	
Depth Sounder + G.P.S.	1	0.4	6	0	0.000
Other	0	0.0	0	0	
<b>TOTALS</b>	<b>248</b>	<b>100</b>	<b>483</b>	<b>5</b>	



Appendix 1.7. Summary of entire lake surveys; Floatingstone Lake, 1985.

Date	# Anglers Surveyed	# Anglers Using Survey Site	Ratio of use
7 July	28	19	1.47
	44	34	1.29
	36	16	2.25
	58	20	2.9
28 July	56	28	2.0
	56	17	3.29
	31	12	2.58
10 August	43	39	1.53
	55	36	1.47
	Mean Ratio = 2.003	SE = 0.2296	n = 7 (high and low values deleted)

Appendix 2. Biological data from sport-caught pike. [Floatingstone Lake, 1997]

Sample #	Fork Length (mm)	Weight (g)	Age (years)	Sex 1 = immature 3 = mature females 8 = mature males	Month	Day
mean =	543.9	1417.7	4.6			
1	545	1600	8	8	5	31
2	636	2100	6	8	5	31
3	510	1200	3	3	6	13
4	480		3		6	13
5	536	1250	4		6	13
6	661	2300	9		6	14
7	507	1100	3		6	14
8	562	1600	6		6	14
9	577	1800	5		6	14
10	506	1150	4		6	28
11	590	1800	6		6	28
12	515	1200	3		6	28
13	455	900	3		6	28
14	504	1000	4		6	28
15	500	1000	4		6	29
16	625		6	3	6	29
17	585	1400	5	8	6	29
18	515	1300	3		6	30
19	623	1900	7	3	6	30
20	575	1500	6		7	1
21	450	900	3	3	7	1
22	571	1700	5	3	7	1
23	521	1400	4	3	7	1
24	540	1350	6	3	7	12
25	504	1250	3	3	7	12
26	413	750	3	8	7	12
27	515	1350	3	3	7	12
28	600	1700	5	8	7	12
29	580	1700	5		7	12
30	458	900	3	3	7	12
31	584	1700	8	3	7	12
32	570	1450	6		7	12
33	470	900	4		7	12
34	529	1250	3		7	12
35	555	1400	4		7	12
36	614	1900	4	8	7	12
37	478	1150	4	3	7	13
38	589	1550	6	3	7	13
39	467	1000	4	3	7	13
40	563	1700	5	3	7	13
41	570	1550	3	3	7	13
42	510	1100	3	3	7	13
43	515	1200	4	8	7	13

Appendix 2. Biological data from sport-caught pike, con't. [Floatingstone Lake, 1997]

<b>Sample #</b>	<b>Fork Length (mm)</b>	<b>Weight (g)</b>	<b>Age (years)</b>	<b>Sex</b>	<b>Month</b>	<b>Day</b>
44	590	1800	5	3	7	13
45	585	1500	5	3	7	13
46	532	1400	4	8	7	13
47	578	1700	5	3	7	14
48	525	1250	4		7	14
49	586	1650	5	3	7	28
50	554		6	3	8	9
51	615	1800	4		8	9

Appendix 3. Biological data from sport-caught perch. [Floatingstone Lake, 1997]

Sample #	Fork Length (mm)	Weight (g)	Age (years)	Month	Day
mean =	246.5	225.0	4.0		
1	249	250	4	8	10
2	244	200	4	8	10

Appendix 4. Creel survey form. [Floatingstone Lake, 1997]