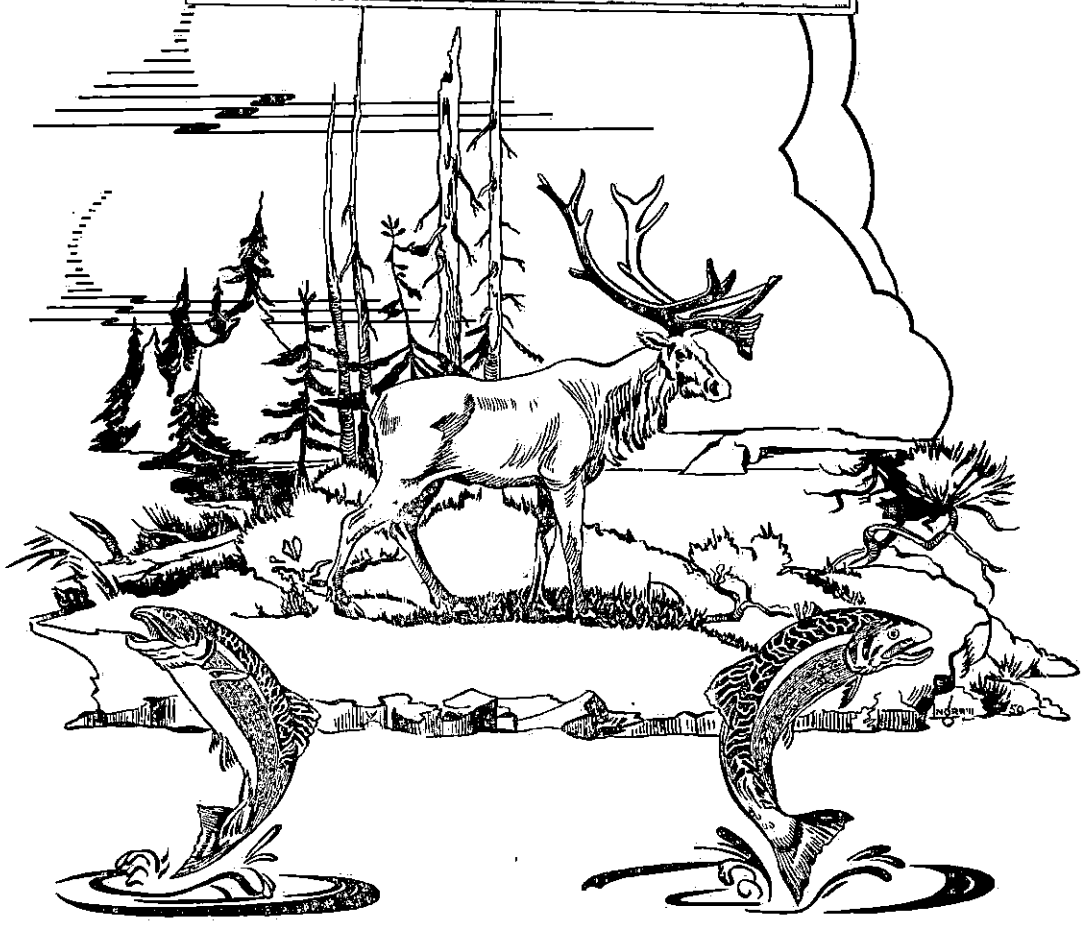
WILDLIFE MANAGEMENT BULLETIN

Prince Albert National Park Creel Census Analysis, Season 1948

by

V.E.F. Solman



DEPARTMENT OF RESOURCES AND DEVELOPMENT
DEVELOPMENT SERVICES BRANCH
CANADIAN WILDLIFE SERVICE
SERIES 3 OTTAWA NUMBER 1.
MAY 1950.

Prince Albert National Park
~~Creel Census Analysis,~~
Season 1948

V.E.F. Solman

DATE	ISSUED TO
30/5/20	F Dionne 13/6

CWSC 1076

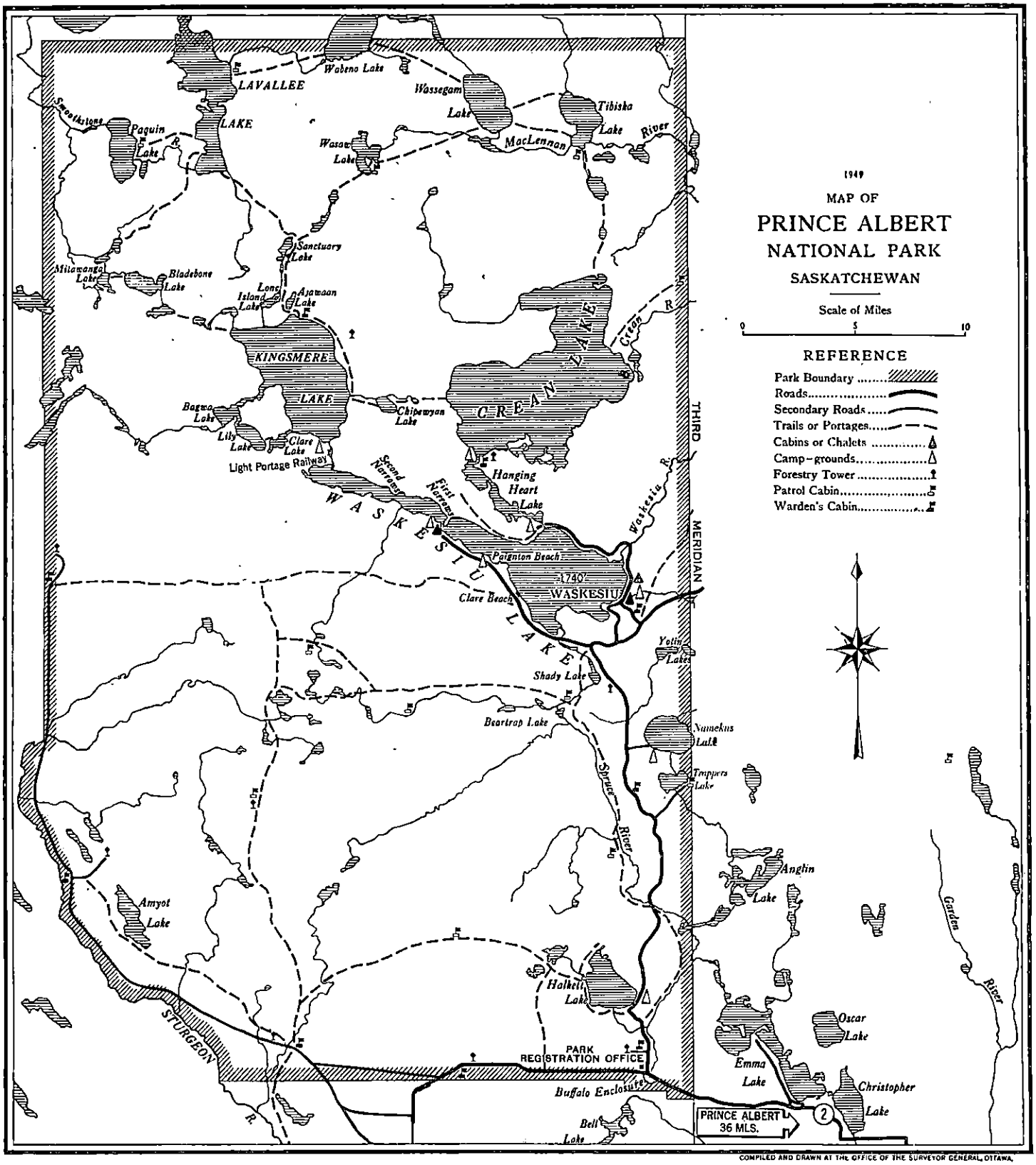
Prince Albert National Park
Creel Census Analysis
Season 1948

by

Victor E.F. Solman

TABLE OF CONTENTS

PAGE


1949
MAP OF
PRINCE ALBERT
NATIONAL PARK
SASKATCHEWAN
Scale of Miles
0 5 10
REFERENCE
Park Boundary
Roads
Secondary Roads
Trails or Portages
Cabins or Chalets
Camp-grounds
Forestry Tower
Patrol Cabin
Warden's Cabin
LAVALLEE LAKE
Waheno Lake
Wassegam Lake
Tibiska Lake
MacLennan River
Smeaton
Paquin Lake
Wasaw Lake
Sanctuary Lake
Milawanga Lake
Bladebone Lake
Long Island Lake
Ajawaan Lake
KINGSMERE LAKE
CREAN LAKE
Crean R.
Bagwa Lake
Lily Lake
Clare Lake
Chibewyan Lake
Light Portage Railway
Second Narrows
First Narrows
Hanging Heart Lake
WASKESIU LAKE
Waskesiu R.
THIRD MERIDIAN
Paignton Beach
1740'
WASKESIU
Clare Beach
Yoltin Lakes
Shady Lake
Beartrap Lake
Namekus Lake
Trappers Lake
Spruce River
Anglin Lake
Garden River
Amyot Lake
Halkett Lake
Oscar Lake
Emma Lake
Christopher Lake
STURGEON R.
PARK REGISTRATION OFFICE
Buffalo Enclosure
Bell Lake
PRINCE ALBERT 36 MLS.
2
COMPILED AND DRAWN AT THE OFFICE OF THE SURVEYOR GENERAL, OTTAWA.

PRINCE ALBERT NATIONAL PARK

CREEL CENSUS ANALYSIS

SEASON 1948

During each year since 1940, anglers visiting Prince Albert National Park have reported, on cards prepared for this purpose, details regarding the fish they have caught, the method of capture, the time required for capture and other related information.

SUMMARY

The number of completed creel census cards received in 1948 was 1,946, the same as in 1947. On 117 of the completed cards no water areas was specified so the value of the data provided by these cards was reduced.

The number of fishing trips (efforts) recorded in the creel census as well as the number of fish recorded caught, by months, are summarized below:

Month	Number of efforts (fishermen)	Number of fish caught	Fish per effort (fisherman)
Unspecified	91	336	3.7
May	146	612	4.2
June	638	2,587	4.1
July	1,238	4,260	3.4
August	598	1,515	2.5
September	35	104	3.0
Totals	2,746	9,414	3.4

In the following tables details regarding fish caught from all water areas reported upon are summarized.

The total number of efforts was probably greater than recorded, with the result that the number of fish per effort may have been less than recorded.

Summary for each species of fish for each lake.

Lake	Number of fish reported caught	Number of fish with hrs. reported	Hours	Hours per fish	Efforts	Fish per effort	Maximum length (inches)
			PIKE				
Waskesiu	3,151	2,780	2,613.5	0.9	780	4.0	41
Crean	1,427	1,327	1,413.2	1.1	297	4.8	41
Heart	2,020	1,955	1,520.1	0.8	551	3.7	39
Kingsmere	318	205	430.5	2.1	79	4.0	41
Namekus	400	374	426.2	1.1	118	3.4	39
Anglin	22	22	15.0	0.7	5	4.4	25
Wassegam	4	4	15.0	3.8	3	1.3	35
Ajawaan	1	1	0.5	0.5	1	1.0	14
Sandy	2	2	7.0	3.5	1	2.0	26
Fish	3	3	5.0	1.7	1	3.0	22
Bagwa	21	---	---	-	3	7.0	33
Unspecified	494	409	401.5	1.3	119	3.3	39
Totals	7,863	7,082	6,839.5	1.0	1,958	4.0	41
			YELLOW PIKEPERCH (PICKEREL)				
Waskesiu	574	505	661.0	1.3	174	3.3	41
Kingsmere	224	169	333.5	2.0	53	4.2	31
Heart	130	126	236.7	1.9	73	1.8	25
Crean	191	156	358.0	2.3	85	2.3	39
Ajawaan	1	1	0.5	0.5	1	1.0	14
Bagwa	6	3	4.0	1.3	2	3.0	21
Unspecified	117	97	132.5	1.4	23	5.1	27
Totals	1,243	1,057	1,726.2	1.6	411	3.0	41
			LAKE TROUT				
Kingsmere	213	162	529.0	3.3	99	2.1	38
Wassegam	51	21	39.0	1.9	12	4.3	27
Crean	1	1	2.0	2.0	1	1.0	35
Totals	265	184	570.0	3.1	112	2.4	38

Lake	Number of fish reported caught	Number of fish with hrs. reported	Hours	Hours per fish	Efforts	Fish per effort	Maximum length (inches)
			SMALLMOUTH BASS				
Waskesiu	5	5	16.5	3.3	4	1.3	19
			WHITEFISH				
Waskesiu	3	3	11.0	3.7	3	1.0	19
Unspecified	1	1	25.0	25.0	5	0.2	19.5
Kingsmere	3	3	20.0	6.7	1	3.0	---
Totals	7	7	56.0	8.0	9	0.8	19.5
			BURBOT				
Unspecified	2	2	20.0	10.0	1	2.0	---
			TULLIBEE				
Unspecified	2	2	---	--	6	0.3	---
			PERCH				
Waskesiu	2	2	8.5	4.3	2	1.0	---
Kingsmere	1	-	-	-	1	1.0	9
Totals	3	2	8.5	4.3	3	1.0	9
			SUCKER				
Waskesiu	1	1	4.0	4.0	1	1.0	---
			UNSPECIFIED SPECIES				
Waskesiu	10	9	128.5	14.3	58	0.2	---
Crean	-	-	99.5	-	21	-	---
Kingsmere	1	-	6.0	-	5	-	---
Heart	6	6	302.5	50.4	151	0.1	23
Unspecified	6	6	21.0	3.5	6	1.0	---
Totals	23	21	557.5	26.6	241	1.0	23

Number of lakes fished by anglers reporting	11
Total number of fish reported caught	9,414
Total number of fish (Pike and Pikeperch) reported released alive, contrary to regulations	47
Total number of fish retained by anglers	9,367
Average number of fish taken, per effort	3.43
Average time required to take a fish, hours	1.04

DETAILED ANALYSIS

WASKESIU LAKE

The angling success reported from this lake has been analyzed by months and the results are presented in the following table:

Month	Number of fish reported caught	Number of fish with hrs. reported	Hours	Hours per fish	Efforts	Fish per effort	Maximum length (inches)
			PIKE				
May	228	223	190.5	0.9	48	4.8	39
June	892	799	798.0	1.0	179	5.0	41
July	1,405	1,295	1,084.5	0.8	380	3.7	41
August	495	360	408.0	1.1	131	3.8	37
September	34	19	29.0	1.5	14	2.4	31
Unspecified	97	84	103.5	1.2	28	3.5	33
Totals	3,151	2,780	2,613.5	0.9	780	4.0	41
			YELLOW PIKEPERCH				
May	106	105	112.5	1.1	26	4.1	37
June	335	289	380.0	1.3	90	3.7	29
July	99	86	141.0	1.6	44	2.2	41
August	9	6	18.5	3.1	9	1.0	21
September	5	--	---	-	1	5.0	19
Unspecified	20	14	9.0	0.6	4	5.0	41
Totals	574	500	661.0	1.3	174	3.3	41

Month	Number of fish reported caught	Number of fish with hrs. reported	Hours	Hours per fish	Efforts	Fish per effort	Maximum length (inches)
			SMALLMOUTH BASS				
July	3	3	4.5	1.5	2	1.5	19
August	1	-	-	-	1	1.0	13
Unspecified	1	1	12.0	12.0	1	1.0	-
Totals	5	4	16.5	3.3	4	1.3	19
			WHITEFISH				
June	2	2	7.0	3.5	2	1.0	19
July	1	1	4.0	4.0	1	1.0	-
Totals	3	3	11.0	3.7	3	1.0	19
			SUCKER				
July	1	1	4.0	4.0	1	1.0	-
			PERCH				
July	1	1	4.5	4.5	1	1.0	-
August	1	1	4.0	4.0	1	1.0	11
Totals	2	2	8.5	4.3	2	2.0	11
			UNSPECIFIED FISH				
June	4	3	38.0	12.7	13	0.3	-
July	-	-	41.0	-	24	-	-
August	6	6	34.5	5.8	15	0.4	-
September	-	-	15.0	-	5	-	-
Unspecified	-	-	-	-	1	-	-
Totals	10	9	128.5	14.3	58	0.2	-

PIKE. As may be noted from the above table fishing for pike was most productive of large catches in June and quick catches in July.

Individual length measurements were recorded for 515 out of 3,667 pike reported caught in 1947 and for 1,133 out of 3,051 pike reported caught in 1948. The length analysis of the catch in terms of numbers and percentages of the total number of fish measured is summarized for the 2 years in the following table.

(Number #)
(Percentage %)

Length range in inches	1947 #	1947 %	1948 #	1948 %
10-11	-	-	8	0.7
12-13	13	2.5	7	0.6
14-15	79	15.3	73	6.4
16-17	42	8.2	98	8.6
18-19	154	29.8	178	15.7
20-21	100	19.4	223	19.7
22-23	13	2.5	192	16.9
24-25	34	6.6	166	14.7
26-27	18	3.5	84	7.5
28-29	16	3.1	51	4.5
30-31	15	2.9	16	1.4
32-33	9	1.8	15	1.3
34-35	9	1.8	5	0.4
36-37	2	0.4	8	0.7
38-39	6	1.1	3	0.3
40-41	4	0.8	4	0.4
over 41	1	0.2	2	0.2

It will be noted from the above table that while 26.0 percent of the pike were taken before they had reached a length of 18 inches in 1947, in 1948 the percentage was only 16.3. A length of 18 inches was found to correspond to the age at which some pike reached sexual maturity by Rawson[1] as a result of his investigation of the pike population.

Rawson recommended that no pike should be taken from the lake of length less than 24 inches. In 1947, 77.7 percent of the pike captured, for which lengths were recorded were less than 24 inches in length while in 1948 68.6 percent were less than this length.

---

1. Rawson, D.S. 1932. The Pike of Waskesiu Lake, Saskatchewan. Trans. Am. Fish. Soc., 62: 323-330

Rawson pointed out that at least 50 percent of pike of 24 inches and greater length would have had the opportunity of spawning twice.

The increase in the percentage of pike which reached maturity and which may have spawned twice as indicated by the 1948 creel census returns in contrast to the 1947 returns indicates the healthy condition of the pike population of this lake. As long as the percentage of mature fish in the population sampled by anglers does not fall below the 1947 level there will be little likelihood of over-exploitation of pike by anglers.

YELLOW PIKEPERCH. As may be noted from the foregoing table, fish of this species were taken in the shortest time and in the largest number per angler during the month of May. As the season progressed fishing for this species became progressively less productive, the highest fishing effort and lowest return per angler having been recorded in September.

Individual lengths were recorded for 250 of the 574 pikeperch taken during 1948 and for 124 of the 893 taken during 1947. The length analysis of the catch, in terms of numbers and percentages of the total number of fish measured is summarized for the 2 years in the following table.

(Number #)
(Percentage %)

Length range in inches	1947 #	1947 %	1948 #	1948 %
8-9	-	-	1	0.4
10-11	2	1.6	8	3.2
12-13	3	2.4	10	4.0
14-15	32	25.8	45	18.0
16-17	32	25.8	38	15.2
18-19	33	26.7	73	29.2
20-21	12	9.7	51	20.4
22-23	3	2.4	7	2.8
24-25	4	3.2	8	3.2
26-27	3	2.4	7	2.8
28-29	-	-	1	0.4
40-41	-	-	1	0.4

It was pointed out in the analysis of the 1947 creel census that it is unlikely that pikeperch mature in some areas at a length of less than 15 inches and that they will have spawned twice before a length of 18 inches is reached. In 1947, 17 percent of the pikeperch reported taken were caught before they had reached a length of 15 inches and 55 percent were taken before they had reached a length of 18 inches. In 1948 the percentage of fish less than 15 inches in length taken by anglers reporting was almost identical to that observed in 1947, but the catch of fish less than 18 inches in length had decreased to only 41 percent of the total measured catch.

This appears to indicate that the rate of exploitation of pikeperch was lower in 1948 than in 1947. The reported catch dropped from 893 in 1947 to 574 in 1948 and the fishing effort increased during the same period from 0.9 to 1.3 hours per fish. The number of fish taken per angler remained almost constant at approximately 3.3. The smaller number of fish reported taken in 1948, in longer time per fish and of larger size may indicate the large contribution to the angling catch of a single year-class of fish. The fish of this year-class, due to normal growth, would have a greater average length in 1948 than in 1947. The year-class would also include a smaller number of fish which may explain the reduced total reported catch and the increase in fishing effort.

More data, from future creel census operations will be needed before the degree to which angling is dependent on single successful year-classes may be fully understood. For the present, however, it seems safe to assume that exploitation of the stock of pikeperch in Waskesiu Lake has not yet reached a level of intensity which is likely to have a pronounced effect on future angling.

SMALLMOUTH BASS. Only 5 fish of this species were reported taken by anglers from the lake during 1948. In spite of intensive efforts on the part of the Limnologist, no specimens were secured. The 5 bass reported caught were

recorded as involving a fishing effort of 16.5 hours. It should be noted that almost all angling directed toward the capture of pikeperch and some of that directed toward the capture of pike is potential bass angling. For this reason the amount of time involved in the capture of the 5 bass was probably in the order of thousands of hours rather than the 16.5 reported. The fact that the effort required to produce the capture of 3,051 pike and 574 pikeperch resulted in the capture of only 5 bass indicates the relative scarcity of this species.

Since substantial numbers of adult and young bass were introduced to the lake over a period of years it appears that survival has not been great and that reproduction, if it occurred at all, has been largely unsuccessful. It would seem probable that through temperature and other conditions, the lake is unsuited to the production of bass and that the bass at present in the lake will disappear during the next few years.

OTHER SPECIES. Although fish of at least three other species were reported taken by anglers from Lake Waskesiu during the 1948 angling season, the numbers taken were too small to justify any conclusions regarding the populations.

CREAN LAKE

An analysis by months, of the angling catch from this lake is presented in the following table:

Month	Number of fish reported caught	Number of fish with hrs. reported	Hours	Hours per fish	Efforts	Fish per effort	Maximum length (inches)
			PIKE				
May	61	52	57.0	1.1	12	5.1	41
June	375	317	237.7	0.8	84	4.5	39
July	767	734	725.5	1.0	138	5.6	41
August	220	220	357.0	1.6	60	3.7	37
September	4	4	36.0	9.0	3	1.3	21
Totals	1,427	1,327	1,413.2	1.1	297	4.8	41
			YELLOW PIKEPERCH				
May	7	7	6.0	0.9	4	1.8	23
June	93	63	121.0	1.9	41	2.3	39
July	79	74	195.5	2.6	33	2.4	39
August	12	12	35.5	3.0	7	1.7	21
Totals	191	156	358.0	2.3	85	2.3	39
			LAKE TROUT				
June	1	1	2.0	2.0	1	1.0	35
			UNSPECIFIED SPECIES				
May	-	-	16.0	-	4	-	-
June	-	-	9.5	-	4	-	-
July	-	-	50.0	-	8	-	-
August	-	-	24.0	-	5	-	-
Totals	-	-	99.5	-	21	-	-

PIKE. It will be noted from the foregoing table that the most productive angling for this species was done in June and July in terms of fishing effort and in May and June in terms of numbers of fish per angler. Angling became progressively less productive toward the autumn. Some of the better angling areas for this species lie near the northwest extremity of the lake. The autumn winds, by increasing wave action render these areas almost inacessible to anglers during

much of the autumn. This undoubtedly contributes to the poor quality of the angling reported at that time.

The popularity of angling for pike in this lake has increased in recent years as indicated in the following table:

Year	Number of pike reported caught	Hours per fish
1940	844	0.9
1941	798	1.4
1942	195	1.4
1943	99	1.0
1944	49	1.4
1945	234	0.6
1946	411	1.4
1947	1,834	1.0
1948	1,427	1.1

It will be noted from the above table that the number of pike taken by anglers has increased considerably since the end of the war. The fishing effort has undergone several minor changes, but there appears to be no pronounced trend, as yet. The increase in the catch of pike may have occurred as a result of the decrease in availability to anglers of lake trout, for which the lake was famous prior to 1940.

In view of the large areas of the lake which provide habitat suitable for pike, and in view of the low fishing effort which has been maintained for the past 9 years there appears to be little likelihood that the stock of pike will be depleted by angling, unless the intensity of angling undergoes a marked increase in the future.

Further support to this view is lent by a consideration of the size composition of anglers' catches. In the following table there are given for the years 1947 and 1948 the lengths of those fish for which measurements were recorded, and the percentages these lengths represented of the total catch of accurately recorded fish.

(Number #)
(Percentage %)

Length range in inches	1947 #	1947 %	1948 #	1948 %
8-9	1	0.3	-	-
10-11	2	0.7	-	-
12-13	2	0.7	8	1.2
14-15	19	6.2	47	7.1
16-17	29	9.5	30	4.5
18-19	61	20.0	69	10.4
20-21	128	42.0	141	21.3
22-23	--	-	106	16.1
24-25	12	3.9	120	18.2
26-27	25	8.2	15	2.3
28-29	2	0.7	39	5.9
30-31	19	6.2	64	9.7
32-33	--	-	3	0.4
34-35	--	-	14	2.1
36-37	4	1.3	-	-
38-39	--	-	5	0.8
40-41	1	0.3	-	-

These figures show a wide spread of sizes without an undue proportion of small fish, a condition suggestive of proper utilization of the fish population.

YELLOW PIKEPERCH. The largest monthly total number of pikeperch and the greatest numbers per angler were taken in July. The time required for the capture of each fish increased steadily during the season, as is usually the case with this species.

A comparison with data from previous years suggests that a marked increase in pikeperch angling has taken place in the last two years in Crean Lake as is shown in the following table. This apparent increase may be due to some extent to more complete creel census returns.

Year	Number of Pikeperch	Hours per fish	Fish per effort
1942	26	1.3	-
1943	18	0.8	-
1944	2	2.3	-
1945	1	2.0	-
1946	6	3.8	-
1947	126	5.4	1.0
1948	191	2.3	2.3

It should be noted that the total number of pikeperch caught and the number of pikeperch taken per effort was greater in 1948 than in 1947 while in the same period the total catch of pike decreased from 1,834 to 1,427, and the number of pike per effort decreased from 6.0 to 4.8. The number of hours per fish have decreased for both species.

The length analysis of the catch, in terms of numbers and percentages of the total number of fish measured, is summarized in the following table for 1947 and 1948. Only those fish are included for which accurate measurements were given. The range of lengths reported was 10-21 inches in 1947 and 12-39 inches in 1948 on cards on which individual lengths were not reported.

(Number #)
(Percentage %)

Length range in inches	1947 #	1947 %	1948 #	1948 %
10-11	2	6.5	-	-
12-13	4	12.8	9	9.6
14-15	9	29.0	42	44.7
16-17	7	22.6	24	25.5
18-19	7	22.6	11	11.7
20-21	2	6.5	7	7.4
22-23	-	-	-	-
24-25	-	-	1	1.1

In both 1947 and 1948 the largest percentage of fish taken were within the 14-15 inch class. In 1947 a little less than 50 percent and in 1948 a little more than 50 percent of the catch were less than 16 inches long. It is probable, therefore, that half the fish taken had spawned not more than once, if at all. This suggests a potentially dangerous condition, and is in marked contrast to the conditions observed in Waskesiu Lake. However, it may represent only the presence of one or two particularly successful year-classes, or the availability of smaller fish due to some factor such as weather. These suggestions are supported to some extent by the increase in pikeperch catch coincident with the decrease in pike catch.

LAKE TROUT. The capture of only one fish of this species provides few data for further analysis and merely indicates the poor quality angling for this species in this lake and the need for further investigation in the matter.

HEART LAKES

An analysis of the catch, by months, from these lakes is given in the following table:

Month	Number of fish reported caught	Number of fish with hrs. reported	Hours	Hours per fish	Efforts	Fish per effort	Maximum length (inches)
			PIKE				
May	8	8	5.0	0.6	1	8.0	7
June	371	364	206.2	0.6	71	5.2	31
July	1,182	1,133	745.6	0.7	294	4.0	37
August	453	444	554.3	1.3	182	2.5	37
September	6	6	9.0	1.5	3	2.0	39
Totals	2,020	1,955	1,520.1	0.8	551	3.7	39
			YELLOW PIKEPERCH				
May	2	2	5.0	2.5	1	2.0	6
June	50	48	71.5	1.5	24	2.1	25
July	64	62	136.2	2.2	42	1.5	17
August	14	14	24.0	1.7	6	2.3	17
Totals	130	126	236.7	1.9	73	1.8	25
			UNSPECIFIED SPECIES				
May	3	3	4.0	1.3	1	3.0	23
June	-	-	17.5	-	8	-	-
July	2	2	107.5	53.8	62	-	9
August	1	1	173.5	173.5	80	-	15
Totals	6	6	302.5	50.4	151	-	23

PIKE. From the foregoing table it is seen that although the greatest total number of pike were taken in July, they were taken more quickly and in larger catches per fisherman in June. The data for May are too limited to have much significance. The total number of pike taken through the season shows an increase of 462 over the total for 1947 while the number of fish per effort decreased from 4.2 to 3.7 and the number of hours per fish decreased from 0.9 to 0.8.

Individual measurements were recorded for 1,548 of the 2,020 pike captured and these lengths together with their percentage contribution to the total number of recorded lengths are tabulated below. Data from 1947 are included in this table. The range of lengths reported on cards on which individual lengths were not recorded was 10 to 30 inches in 1947 and 4 to 39 inches in 1948.

(Number #)
(Percentage %)

Length range in inches	1947 #	1947 %	1948 #	1948 %
10-11	1	0.2	10	0.7
12-13	18	4.3	44	2.8
14-15	37	8.8	420	27.1
16-17	57	13.5	763	49.3
18-19	231	54.9	238	15.4
20-21	75	17.8	58	3.7
22-23	2	0.5	6	0.4
24-25	-	-	3	0.2
30-31	-	-	1	0.1
36-37	-	-	5	0.3

It is evident from this table that the largest catches in 1948 included pike in the length ranges 14-15 inches and 16-17 inches as compared with the 18-19 inch group in 1947. Since there

is little sign of a large young year-class in 1947 it is unlikely that this increase in proportion of smaller fish is to be ascribed to a predominant year-class. While in 1947 only 26.8 percent of the fish taken were less than 18 inches in length, in 1948 this percentage had increased to 79.9.

Since the growth rate for pike in the Heart Lakes appears to be similar to that in Waskesiu Lake where 18 inches is the length at which pike may reach sexual maturity, it is probable that 80 percent of the fish taken in 1948 from the Heart Lakes had not spawned even once, and almost all the fish taken both in 1947 and in 1948 had spawned not more than once. If this is the case and if the angling pressure continues at its present high level in the Heart Lakes, a marked decrease in the pike population in these lakes may be expected within the next few years.

In contrast to this is the fact that the number of hours per fish, which had increased from 1942 to 1947, showed a slight decline in 1948. However, after the large catch in July, the number of hours per fish increased greatly and the number of fish per effort decreased greatly. These changes were more marked than those found in Waskesiu or Crean Lakes during 1948.

An additional point might be noted here. The small size of the fish taken from the Heart Lakes caused much dissatisfaction among anglers who were required to keep whatever

fish were caught and who, therefore, secured only a moderate sized catch of small fish.

According to information supplied by the fishery officer stationed at the Heart Lakes the majority of small-sized pike were caught in the more southern of the three Heart Lakes.

YELLOW PIKEPERCH. The largest monthly total catch of fish of this species was taken in July although in June and August catches were made more quickly and individual catches were larger. The total number of fish taken is somewhat larger than in 1947, but the number of fish per effort has decreased and the number of hours per fish has increased. This increase in number of hours per fish continues the trend which has been observed annually since 1941 when a low value of 0.4 hours per fish was recorded.

The following table gives the lengths of fish for which accurate measurements were recorded and the percentages of the total number of measured fish which each of these lengths represents. The length ranges for fish for which individual measurements were not recorded was 12-24 inches in 1947 and 6-25 inches in 1948.

(Number #)
(Percentage %)

Length range in inches	1947 #	1947 %	1948 #	1948 %
12-13	4	8.5	5	4.3
14-15	27	57.4	65	56.0
16-17	7	14.9	34	29.6
18-19	9	19.2	9	7.8
20-21	-	-	2	1.7

In both years the largest catches were made in the 14-15 inch class before the fish had had a chance to spawn more than once, and in many cases before they had spawned at all. This, together with an increase in the number of hours per fish, suggests that the fish population is not well balanced and that it should be closely watched in creel census data during the next few years. There has been no significant change in the relative proportions of the length groups from 1947 to 1948 comparable to that found in the pike, which may indicate that the pikeperch population is not being subjected to as great a degree of over-exploitation as in the case with the pike.

KINGSMERE LAKE

Monthly summaries of reported catches of fish from this lake are recorded below:

Month	Number of fish reported caught	Number of fish with hrs. reported	Hours	Hours per fish	Efforts	Fish per effort	Maximum length (inches)
			PIKE				
May	74	74	111.0	1.5	14	5.3	41
June	50	43	109.5	2.5	16	3.1	37
July	119	79	197.0	2.5	35	3.4	33
August	34	3	1.0	0.3	7	4.9	27
September	17	-	---	-	2	8.5	39
Unspecified	24	6	12.0	2.0	5	4.8	29
Totals	318	205	430.5	2.1	79	4.0	41
			YELLOW PIKEPERCH				
May	4	4	6.0	1.5	1	4.0	17
June	77	76	133.5	1.8	12	6.4	27
July	118	85	181.0	2.1	32	3.7	31
August	2	1	1.0	1.0	2	1.0	15
September	6	-	---	-	1	6.0	19
Unspecified	17	3	12.0	4.0	5	3.4	19
Totals	224	169	333.5	2.0	53	4.2	31

Month	Number of fish reported caught	Number of fish with hrs. reported	Hours	Hours per fish	Efforts	Fish per effort	Maximum length (inches)
			LAKE TROUT				
May	80	80	151.0	2.0	24	3.3	37
June	47	44	208.0	4.7	23	2.0	37
July	52	34	141.5	4.2	35	1.5	37
August	29	4	14.0	3.6	13	2.2	38
Unspecified	5	-	---	-	4	1.3	(5 lbs.)
Totals	213	162	529.5	3.3	19	2.2	38
			WHITEFISH				
June	3	3	20.0	6.7	1	3.0	--

In addition to the fish listed above, 1 perch and 1 unspecified fish were taken by anglers.

PIKE. The greatest number of fish were taken in July, but in May the angler was able to take his fish in less time and to take more of them than in any other month (with the possible exception of September for which data are incomplete). The total catch corresponded very closely with that reported in 1947, but the number of hours per fish increased and the number of fish per effort decreased from the values reported in 1947.

Individual lengths of pike and the percentages of the total of accurately measured fish which the length groups represent are as follows for pike taken in 1948.

These figures indicate a well balanced population providing catches of good sized fish.

(Number #)
(Percentage %)

Length range inches	1948 #	%
12-13	1	1.0
14-15	-	-
16-17	7	6.9
18-19	-	-
20-21	38	37.6
22-23	10	9.9
24-25	13	12.8
26-27	3	3.0
28-29	4	4.0
30-31	22	21.8
32-33	1	1.0
34-35	-	-
36-37	1	1.0
38-39	-	-
40-41	-	-
over 41	1	1.0

YELLOW PIKEPERCH. The largest number of this species was taken in July, although in June with a higher number of fish per effort and a smaller number of hours per fish the angler might have considered the angling better. The total catch was greater than in 1947 with the number of fish per effort somewhat increased, and the number of hours per fish slightly decreased during 1948.

Lengths, and the percentages these lengths made of the total catch for which accurate measurements are given are shown below for 1948 only.

(Number #)
(Percentage %)

Length range inches	1948 #	%
14-15	4	10.8
16-17	4	10.8
18-19	20	54.1
20-21	5	13.5
22-23	-	-
24-25	1	2.7
26-27	1	2.7
28-29	1	2.7
30-31	1	2.7

These figures show satisfactory proportions of fish of various lengths in the population, with a definite peak at 18-19 inches. This gives a good-sized fish for the angler and one which has had an opportunity to spawn once and probably twice before capture.

LAKE TROUT. May is by far the best month for the capture of this species. At this time the fish are in relatively shallow water and are more readily accessible. The total number taken was 75 greater than in 1947 although the number of fish per effort decreased somewhat.

A consideration of the sizes of the trout taken shows a wide spread as indicated in the following table of lengths of measured fish and the percentage of the total which these lengths represent. Data are for 1948.

(Number #)
(Percentage %)

Length range inches	1948 #	%
12-13	1	0.7
14-15	2	1.4
16-17	4	2.7
18-19	17	11.8
20-21	7	4.9
22-23	10	7.0
24-25	41	28.5
26-27	14	9.7
28-29	17	11.8
30-31	17	11.8
32-33	4	2.7
34-35	3	2.1
36-37	6	4.2
38-39	1	0.7

From the data provided it appears that the population of trout in Kingsmere Lake is in a satisfactory condition and should continue to provide good angling, at least under the present intensity of utilization.

NAMEKUS LAKE

PIKE. The reported monthly catches of pike from this lake are given in the following table.

Month	Number of fish reported caught	Number of fish with hrs. reported	Hours	Hours per fish	Efforts	Fish per effort	Maximum length (inches)
June	24	24	19.0	0.8	3	8.0	29
July	217	197	211.7	1.1	70	3.1	39
August	112	112	140.5	1.3	33	3.4	31
September	18	18	15.0	0.8	4	4.5	27
Unspecified	29	23	40.0	1.7	8	3.6	31
	400	374	426.2	1.1	118	3.4	39

These records report the capture of nearly 300 pike more than the catch reported in 1947 and an increase of nearly 100 in the recorded efforts. This increase may be due in part, at least, to a better control of the creel census in 1948. At the same time the number of hours per fish has increased greatly and the number of fish per effort decreased considerably. In July the lake was fished most intensively and the greatest number of fish were taken.

A size analysis of the catch gives the following table, data based on the 1948 catch of fish for which accurate measurements were recorded.

(Number #)
(Percentage %)

Length range inches	1948 #	%
14-15	6	3.5
16-17	-	-
18-19	18	10.5
20-21	39	22.8
22-23	-	-
24-25	84	49.2
26-27	10	5.8
28-29	11	6.5
30-31	3	1.7

The large number of large-sized pike taken is in marked contrast to the conditions found in other lakes in the park. Since this is the first year when adequate measurements of fish were recorded, the significance of this condition cannot be determined. It may represent the presence of a large and older year-class or since the number of hours per fish has increased and the number of fish per effort has decreased since 1947 it may reflect a more serious condition. The recorded production does not approach the expected carrying capacity of the lake, but since it is more difficult to control the census here than at various other lakes in the park it is probable that the actual poundage taken from the lake is much greater than that indicated. In all probability, however, it does not exceed the productivity of the lake. Although the fish taken are larger, the fishing in terms of number of hours per fish and number of fish per effort is not as good as the average for the Park.

WASSEGAM LAKE

PIKE. This lake was fished only in June. In that month 4 pike, 18-35 inches in length were taken in 15 hours by 3 efforts, that is in 3.8 hours per fish, with 1.3 fish per effort.

LAKE TROUT. In contrast with 1947 when lake trout were taken in May, June and August, trout were taken only in June in 1948. Fifty-one (51) trout were taken by 12 efforts, or 4.3 fish per effort, and these fish were taken in 1.9 hours each. The size range was from 5 to 34 lbs. These were larger fish than those taken in 1947, and the June catch in 1948 was very nearly the same as the whole season's catch in 1947. The number of hours per fish and fish per effort in June 1947 correspond very closely with the data for June, 1948.

BAIT ANALYSIS

An analysis was made of the fishing methods and the lures used in Waskesiu Lake for the capture of pike and pikeperch. Data were not recorded for all efforts. The following table summarizes the information obtained.

The success of fly tackle for pike is somewhat unexpected and is probably due to the fact that none but the most experienced anglers use this type of lure. The capture of pike on this light tackle would provide considerable sport and if its use could be encouraged additional enjoyment in pike fishing would be provided to the anglers.

Method	Lure	Number of fish	Number of hours	Hours per fish
		PIKE		
Unidentified	Spoons	683	580.2	0.9
Unidentified	Spinners	176	165.5	0.9
Unidentified	Plugs	93	72.5	0.8
Unidentified	Bait	12	9.0	0.8
Trolling	Unidentified	577	538.5	0.9
Trolling	Spoons	78	55.0	0.7
Trolling	Spinners	8	20.0	2.5
Casting	Unidentified	129	108.5	0.8
Casting	Spoons	2	2.0	1.0
Casting	Plugs	3	3.0	1.0
Casting	Bait	6	50.0	8.3
Casting	Fly	20	9.0	0.5
Still fishing		11	11.0	1.0
		PIKEPERCH		
Unidentified	Spoons	68	107.0	1.6
Unidentified	Spinners	77	72.0	0.9
Unidentified	Plugs	32	24.5	0.8
Unidentified	Bait	20	11.0	0.6
Trolling	Unidentified	12	22.0	1.8
Trolling	Spoon	1	4.0	1.4
Trolling	Spinner	1	6.0	6.0
Casting	Unidentified	23	45.0	2.0
Casting	Fly	1	4.0	4.0
Still fishing		27	8.0	0.3

If the above figures are grouped according to angling method the following table is obtained.

Method	Number of fish	Number of hours	Hours per fish
	PIKE		
Unidentified	964	827.2	0.9
Trolling	663	613.5	0.9
Casting	160	172.5	1.1
Still fishing	11	11.0	1.0
	PIKEPERCH		
Unidentified	197	214.5	1.1
Trolling	14	32.0	2.3
Casting	24	49.0	2.1
Still fishing	27	8.0	0.3

In the case of the capture of pike, trolling appears to be somewhat the more efficient method although the differences observed between the three identified methods are not great. Trolling is also the most commonly used method probably in part at least because the lake is readily fished from a boat and because the fishermen find it a more interesting method than the more stationary casting.

Pikeperch are taken very much more readily by still fishing than by other means, and also in slightly larger numbers. Trolling and casting are not significantly different in their effectiveness.

If the data are grouped by lure, rather than by method, the following table is obtained.

Lure	Number of Fish	Number of hours	Hours per fish
	PIKE		
Unidentified	706	647.0	0.9
Spoons	763	637.0	0.8
Spinners	184	185.5	1.0
Plugs	96	75.5	0.8
Bait	29	70.0	2.4
Fly	20	9.0	0.5
	PIKEPERCH		
Unidentified	35	67.0	1.9
Spoons	69	111.0	1.6
Spinners	78	78.0	1.0
Plugs	32	24.5	0.8
Bait	47	19.0	0.4
Fly	1	4.0	4.0

With the exception of flies, plugs were the most efficient lure for taking pike, closely followed by spoons. The latter also proved to be much the most popular lure used.

Although bait was the least successful lure for pike, it proved to be the most effective although not the most popular lure for pikeperch. Plugs were next in order of success for pikeperch. Spoons, one of the more successful lures for pike, were even less successful than spinners in the capture of pikeperch. The fly was used very little and thus in 1948 the plug proved the most generally successful lure with spoons being slightly more effective for pike and bait for pikeperch.

COMMENTS

Creel census returns for 1948 gave more complete information than in previous years and this reflects the increasing co-operation of the anglers and the careful work of all members of the park staff who assisted the anglers in the completion of their cards.

Data regarding individual lengths of fish and the time required for their capture were reported in much greater detail than ever before and this has permitted the preparation of a more complete and, therefore, much more valuable creel census analysis than was possible in any previous years.

The co-operation of all members of the park staff whose participation in this work contributed much to the success of the creel census is hereby greatfully acknowledged.