Environment Canada
Canadian Parks Service
Atlantic Region

Environnement Canada
Service canadien des parcs
Région de l'Atlantique

1994 FISH MANAGEMENT RESEARCH REPORT

SH328
N53
1994

Natural Resource Conservation
Kejimkujik National Park

Canada

1994 FISH MANAGEMENT
RESEARCH REPORT

Robert Nicholas
Park Warden
Resource Conservation
December, 1994.

Parks Canada
National Library
111 Water St. East
Cornwall, ON
K6H 6S3

Parcs Canada
Bibliothèque nationale
111, rue Water Est
Cornwall, ON
K6H 6S3

TABLE OF CONTENTS

LIST OF FIGURES.

LIST OF TABLES.

EXECUTIVE SUMMARY.

This report summarizes fish-related research conducted at Kejimkujik in 1994, the first year of a three year study designed to provide park managers with information needed to manage fishery resources.

The 1994 lower Mersey River creel census was the first to be conducted since 1984. It found mean brook trout length, a commonly used indicator of stock health, remained unchanged from the earlier census. The mean number of trout caught per angler per hour, which is used as an indicator of population size, may have been lower than in other years, although data from 1994 will have to be pooled with results from 1995 and 1996 before this can be tested formally. Other data were also collected, such as the number of fish released alive, other species caught, the kind of tackle used, method of travel within the study area and the number of anglers per party. It is recommended that the creel census be repeated in 1995 and 1996.

Three lakes were surveyed in 1994 to determine if brook trout were present. All the lakes had trout in 1971/72 when Kerekes (1975) conducted the original fish survey. If trout were not found, acid rain would be a potential explanation since other trout stressors are not known or thought to affect the study lakes. The most significant finding was that trout were not captured in Luxton Lake, even though we used the same dates and sampling methods as Kerekes. Indeed, we spent a longer time at each lake and used additional sampling methods. These results are only tentative; extensive follow up work will be necessary in 1995 to verify them. It is also recommended that a parallel study be carried out in 1995 on several lakes targeting white perch, another acid sensitive species.

A pilot fish counting fence was installed on Rogers Brook for a 40 day trial period in the fall of 1994. The fence did not appear to block the movement of aquatic organisms or cause unacceptable fish mortality. The limited data collected suggested trout started their spawning migration on October 22, while, simultaneously, smaller fish of various species were trapped while heading downstream. Very little fish movement was detected during periods of low water; by contrast, each heavy rainfall brought significant fish movement. The fence should be run in 1995 and 1996 to collect information on the number of adults returning to spawn, the timing of runs and information relating to the movement of other species.

A survey of the Peskowesk watershed planned for 1994 did not proceed due to the unavailability of the designated angler. The census was designed to determine if the proposed catch and release angling regulations are successful. A meeting should be held by the authors of the Fish Management Plan to choose an alternative method, which should be implemented in 1995.

A water quality plan and other research studies described in the parks' Fish Management Plan (Nicholas et al. 1994) should be carried out as time permits.

1.0 INTRODUCTION

The purpose of this report is to describe research carried out in 1994 at Kejimkujik National Park dealing with fish. The overall aim of the study is to provide managers with the information they need to effectively manage fish stocks, particularly those subjected to recreational harvesting. The year 1994 was the first of a three year study recommended in the parks' recent Fish Management Plan (Nicholas et al. 1994). Detailed experimental methodologies and results will be presented in this report, along with recommendations for the last two years of the study.

A preliminary data analysis will also be conducted, but a formal analysis will not be done until data from 1995 and 1996 are available, since data from all three years must be pooled to give a fuller picture of fish stock health. Fisheries statistics from a single year are frequently misleading since fish growth rates and population sizes are drastically affected by annual variations in water temperature etc.

Three studies were carried out in 1994 with the assistance of two summer students. Brook trout (Salvelinus fontinalis) were central to all these studies as this fish receives the vast majority of angling pressure in Kejimkujik. The first study was an expanded version of the creel census conducted from 1977 to 1984 (Drysdale et al. 1986), and was designed to allow park managers to assess the health of brook trout stocks in the heaviest fished area of the park. The former census provided the basis for angling regulation changes in the mid 1980s. Other stock assessment methods were tried alongside the creel census and will briefly be discussed in this report.

The second study was a lake survey which determined if trout are still present in three acidic lakes that had trout in the early 1970s. An absence of trout could suggest acid rain is harming park fish.

The third study involved the installation and operation of a fish counting fence on an important trout spawning brook, to test its effectiveness in capturing fish and to ensure the fence does not cause unacceptable fish mortality or block the movement of other aquatic organisms. The fence would be used to monitor the number of spawners entering the brook on a long term basis if significant problems are not found. The Fish Management Plan (Nicholas et al. 1994) should be consulted for necessary background information on these studies.

2.0 LOWER MERSEY CREEL CENSUS

The health of a fish stock is frequently assessed by analyzing fish caught by anglers. The average body length is related to angling pressure because anglers prefer to keep larger fish. A lightly fished stock therefore has larger fish than a heavily fish waterbody (Gigliotti & Taylor 1990). A decreasing mean body length over time would suggest a declining stock, since large fish are frequently the most important spawners and predators of competing species. The same logic underlies the rational for determining fish age by collecting scales. The Catch Per Unit Effort (C.P.U.E.), which is the number of fish caught per angler per hour is another indicator of stock health. A declining C.P.U.E. over time means anglers are catching fewer fish per hour, which may, in turn, suggest the population size is decreasing. Theoretical problems with each of these indicators are discussed in the Fish Management Plan (Nicholas et al. 1994), as is the problem of fish moving in and out of the study area. The Plan also discusses the reasons for conducting the study in the lower Mersey River area, and describes alternative population assessment techniques such as live fish traps, which were tried in 1994. The results were not impressive but more effort should be directed towards this method in 1995, since it would give higher quality indicators than a creel census if it was feasible.

2.1 Methodology.

A very detailed creel census field manual was prepared for the workers and can be found in Appendix 1 of the Fish Management Plan. The same appendix also has examples of field data sheets.

2.2 Results & Discussion.

All data collected in 1994 are shown in Appendixes 1 to 3. Each appendix has a sheet(s) which describe the parks' database structure and defines each variable. Appendix 1 presents data relating to the population structure (body size etc.) of brook trout, while Appendix 2 lists the C.P.U.E. information as well as the type of tackle used by each angler. Appendix 3 shows a wide variety of miscellaneous data, such as the interview location, time and date, and others such as party size, method of travel, put in area, other species caught and the precise location within the study area that each brook trout was caught.

The census was conducted from Friday through Sunday each week for a 6 week period in 1994 (April 29 to June 12), and on Monday for the long weekend in May. The average number of interviews per day was 4.5 (for Friday), 6.0 (Saturday), 6.8 (Sunday) and 6.0 for Monday.

The time of each interview was analyzed to determine the best time for employees to be on the river, in order to meet the maximum number of parties. In 1994 the census was run from 0830 to 2030 hours. The number of interviews was fairly constant for each hour of the day, except for the period from 0830 to 1100 hours, during which few anglers were seen. It is tempting to shorten the daily hours of the census so that river coverage could be extended to 4 days a week. It is not recommended that this be done at the present time; 1994 was a very cool and wet spring and anglers may have been waiting for temperatures to warm up before heading out. For the time being, new hours of 0900 to 2100 hours should result in a few more anglers being interviewed.

2.2.1 Catch Characteristics.

A total of 650 brook trout were caught during census hours in 1994; 251 were kept while 399 were released.

The average Fork Length of the 242 brook trout measured was 24.0 cm. This value is well within the range of means seen in the past creel census (mean body length from 1977 to 1984 ranged from 22.5 to 26.8 cm, after Drysdale et al. 1986).

Scales were collected from all 242 fish and otoliths from 50. These will be used to determine age at a later date.

The 236 anglers interviewed spent an average of 3.52 hours fishing on each trip in 1994. The average number of brook trout kept per trip was 1.06 fish and the number released was 1.69, for a total of 2.75 caught per trip. The resulting average C.P.U.E. was 0.30 brook trout (kept) for each hour of angling. This value does not lie within the range of C.P.U.E. reported in the creel census conducted from 1977 to 1984 (range 0.47 to 1.37). However, the differences may not be significant due to high intrinsic variation of C.P.U.E. within a given year, due to variable fishing skill, reproductive success, etc. The best way to overcome this problem is to increase sample size by pooling results from 1994 to 1996 and comparing them with results from 1977-84.

The majority of all fish kept (73 %) were caught in the Eel Weir area, which runs from George Lake downstream to Loon Lake. An additional 8 % were caught in Kejimkujik Lake, 7 % around Hemlock Island and another 8 % in the Mersey River below Loon Lake falls. Only 4 % were caught in the combined areas of George Lake, Loon Lake and below the park. Accessibility appears to be the main factor why the Eel Weir received most of the angling pressure.

Other fishes were also caught, including 67 yellow perch, four suckers and one white perch, but none were kept. Most perch were 7 to 10 cm in length. No brown trout were caught (or recognized as such) during census hours, but several large ones were reportedly caught on weekdays in Kejimkujik Lake off Norway Island.

A Type II one way anova was applied to 1994 fish length data to see if mean length varied from one week to the next. If significant differences in mean length over time is detected, it could suggest that different stocks of fish run through the Eel Weir. There was a significant ($P < 0.01$) added variance component among weeks, indicating fish of certain weeks were larger than those of other weeks. The maximum size difference was 4.1 cm, but a Type II test does not allow significant differences to be tested for between particular weeks. However, the smallest fish were caught towards the end of the survey. This is opposite of what would be expected based on normal growth over the 6 week census period, although size-specific mortality due to harvest may be responsible. A similar analysis should be conducted in 1995 and 1996.

Table 1. Type II one way Anova testing for an added variance component among weeks for fish length.

SOURCE OF VARIATION	df	SS	MS	F
Among Groups	6	20209	3368	3.317**
Within Groups	235	238609	1015	
Total	241	258818		

$F_{.05[6,235]} = 2.17$; $F_{.01[6,236]} = 2.96$.

Note: variances were close to being significantly heterogeneous with an F Max test; this should be tested in the future.

2.2.2 Angler Characteristics.

One third (33) % of the 236 anglers primarily used fly fishing tackle. Three percent used bait while 2 % relied on artificial lures. The majority of anglers, 62 %, utilized a combination of tackle. By far the most common was the spinner-worm combination.

A total of 110 parties participated in the census. The average number of anglers in a party was 2.1. Only 9 % of parties had more than 3 anglers.

Approximately 61 % of the 110 parties interviewed travelled on foot after arriving in the area, while 33 % used motor boats. Only 6 % used nonmotorized watercraft.

No anglers refused to participate in an interview in 1994. Contacts were made which should assure the success of the census for the next two years. The proposed angling regulation changes (fly fishing-only catch and release in the western district of the park) were explained to most of the regular anglers. Response was 80 - 90 % in favour, but concern was expressed by many that the new rules would be extended to the entire park. Based on the preliminary analysis just discussed, there appears to be little reason to consider this option at the present time.

3.0 LAKE SURVEY

In the early 1970s the distribution of fishes in Kejimkujik was studied (Kerekes 1975) along with the water chemistry of park lakes (Kerekes & Schwinghamer 1973). It was noted that trout occur in most lakes with a pH of 4.8 or greater, and that they did not occur in lakes of pH 4.7 or less (Kerekes 1982). Luxton, Little Kempton and High Lakes were the most acidic lakes with trout in Kerekes work. All can be considered marginal trout lakes due to their low pHs, and trout could easily be extirpated from these lakes if the pH were to drop further. The purpose of the lake survey was to revisit these three lakes to determine if they still contain trout 20+ years later. If trout are not found, acid rain would be the prime suspect since these lakes are not subject to other known trout stressors. The pH would be measured and compared to Kerekes' values. Table 2 shows several characteristics of the three study lakes. High and Little Kempton Lakes are both small and shallow while Luxton is larger and deeper. All are headwater lakes.

Table 2. Location, size and depth of High, Little Kempton and Luxton Lakes.

	High L.	Kempton L.	Luxton L.
Latitude	44 21	44 22	44 22
Longitude	65 16	65 11	65 21
Lake Surface Area (ha)	3.81	2.51	54.1
Lake Drainage Area (km^2)	1.1	0.8	4.7
Max. Length (km)	0.44	0.34	1.07
Max. Width (km)	0.13	0.10	1.02
Mean Depth (m)	1.50	1.42	2.81
Maximum Depth (m)	2.75	2.50	8.50

3.1 Methodology.

Kerekes (1975) sampled each park lake with gill nets for one night in his original fish survey. It was decided that a full working week (4 days x 9.5 hours per day) would be spent on each lake in the current study and that a wider variety of sampling methods would be used. Consequently, the current study should have a greater chance of detecting a given species that Kerekes' work.

Each lake was sampled with a beach seine, trap net and minnow traps. Beach seining has been used in Kejimkujik to capture trout and was used in shallow areas over hard substrates where smaller trout may be expected to occur. Dawn and dusk are the best times to seine for summer trout as they usually retreat to deeper water when the sun rises. The seine was 10 m long and had 3 x 6 mm meshing. The trap net (a fyke design) was set against the shoreline to capture fish moving along the shore in shallow water, as trout frequently do at dawn and dusk. The trap net was checked in the middle of the day and moved to a new location daily. Angling was also utilized and proved to be the best method for capturing trout in lakes. A variety of tackle, including flies, artificial lures and bait were used. The 6 baited minnow traps were set down the centre of each lake to sample bottom fish.

Inlet and outlet streams were sampled with an electrofisher. Streams are important juvenile trout nursery areas and electrofishing is the best way to sample them. The presence of juveniles would suggest the area is not marginal for trout since young trout are more susceptible to aquatic acidification than older fish. The above mentioned sampling methods do not kill fish, and all captured fish were returned to the water quickly.

Gillnets, which are usually lethal, were used only after all the above methods failed to capture a single trout. It was necessary to employ gillnets since Kerekes used them. The nets were checked every 2 hours to minimize mortality, and were pulled from the water if a single trout was caught. The net was 30 m long and had variable stretched meshing of 1.0 to 3.0 inches. The water was quite warm by July and trout may have been retreating to deeper holes in the day and moving out to feed in the shallows only at night. Consequently, the net was set overnight in the deepest hole of the lake near the bottom.

Surface water temperature and surface pH was determined for each lake. Samples were collected daily around noon at several locations for each lake. Outflow and inflow streams were also sampled daily. The pH was determined in the parks' laboratory each day with a Radiometer PHM-80 meter. Since Luxton Lake was too remote to leave each day, a single set of water samples collected on the last day was analyzed.

3.2 Results.

3.2.1 High Lake.

High Lake was visited from July 5 - 8, 1994. Figure 1 shows the locations of sampling sites in and around the lake. Surface water temperature varied from 22 to 26°C, and the outflow stream was a degree or two cooler. The single inflow stream was very cool at 14 - 17°C. pH values were determined for July 7 and 8. The pH of two lake locations and the outflow stream ranged from 4.91 - 5.02. By contrast, the inflow stream was more basic at 5.28 - 5.32. The lake bottom was mostly rocky/sandy and had good cover.

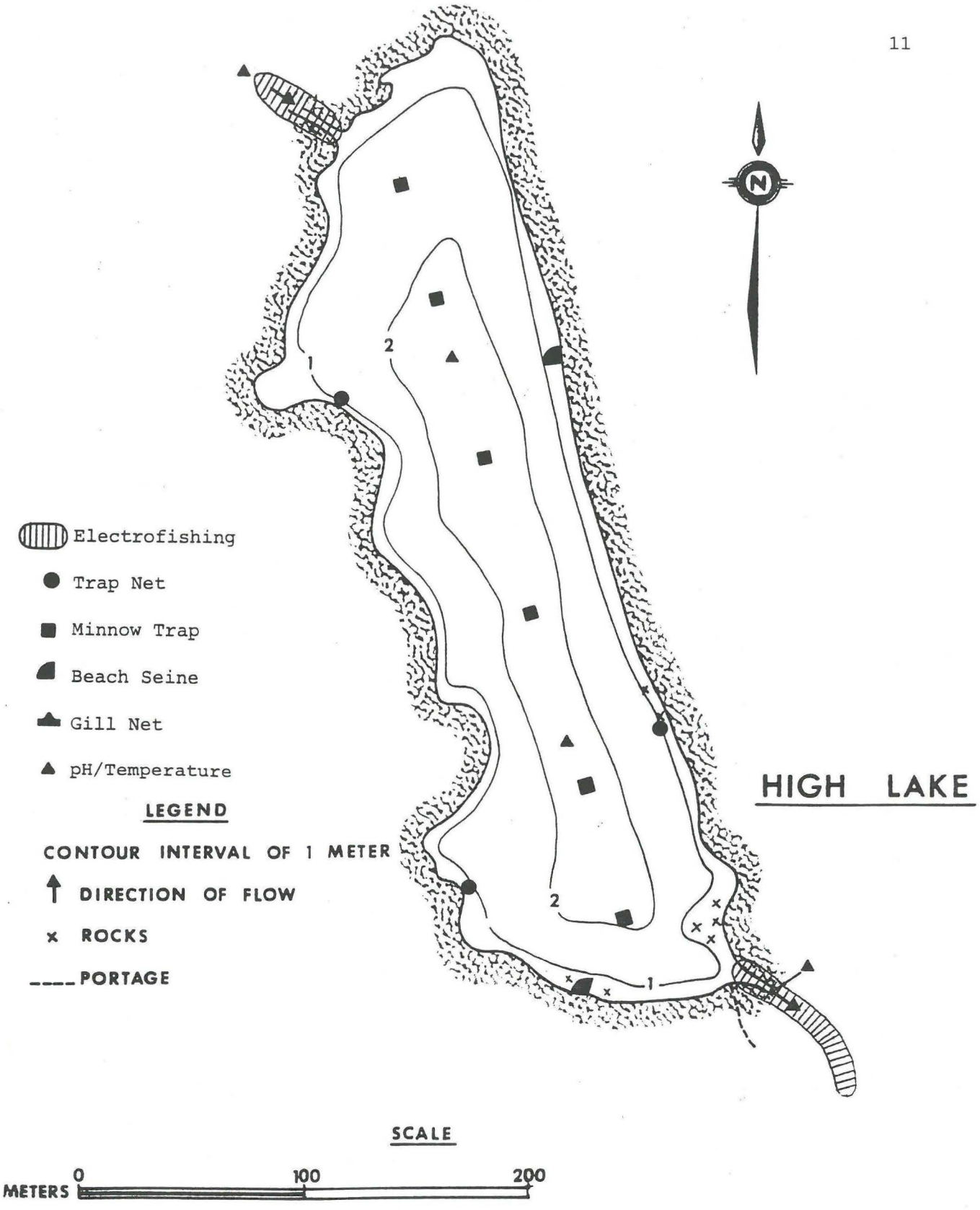

Figure 1. Map of High Lake showing the location of sampling sites. Map from Kerekes & Schwinghamer (1973a)

A total of 6.4 man-hours were spent angling in the lake. Three brook trout ranging in length from 18.0 to 20.1 cm were caught. One had adult coloration, one had parr markings suggesting it was immature and the remaining fish had elements of both adult and parr coloration. 57 yellow perch (Perca flavescens) were also caught.

Electrofishing the outlet resulted in the capture of 26 trout parr ranging in length from 5.5 to 7.1 cm, and one larger parr of 14.2 cm. One golden shiner (Notemigonus crysoleucas), 2 banded killifish (Fundulus diaphanus) and 1 brown bullhead (Ictalurus nebulosus) were also obtained. Nothing was caught in the inflow stream despite it having better temperature and pH than elsewhere. This was likely due to poor habitat; the inflow ran through an open sphagnum bog with a soft bottom and had little cover or current. By contrast, the outflow stream had the desired sandy bottom, a good current and abundant cover.

Several sweeps with the beach seine produced nothing other than 6 killifish. Each of the 6 minnow traps were set for a total of 70 hours over 3 nights and yielded 31 yellow perch and 10 bullheads. The trap net was in the water for a total of 65 hours over three nights and trapped 28 yellow perch, 68 bullheads, 95 shiners and 12 killifish. Gill nets were not used since brook trout were captured by angling.

3.2.2 Little Kempton Lake.

This lake was visited from July 12 - 15 and on the night of July 18/19. Sample locations are shown in Figure 2. Lake surface temperatures ranged from 24 - 25°C, while the outflow was 2 degrees cooler. The only inflow was 14°C. pH values for the two lake sites ranged from 4.87 - 5.00. The outflow was slightly more acidic at 4.71 - 4.77, while the inflow was 4.42 - 4.45. The lake and its streams were

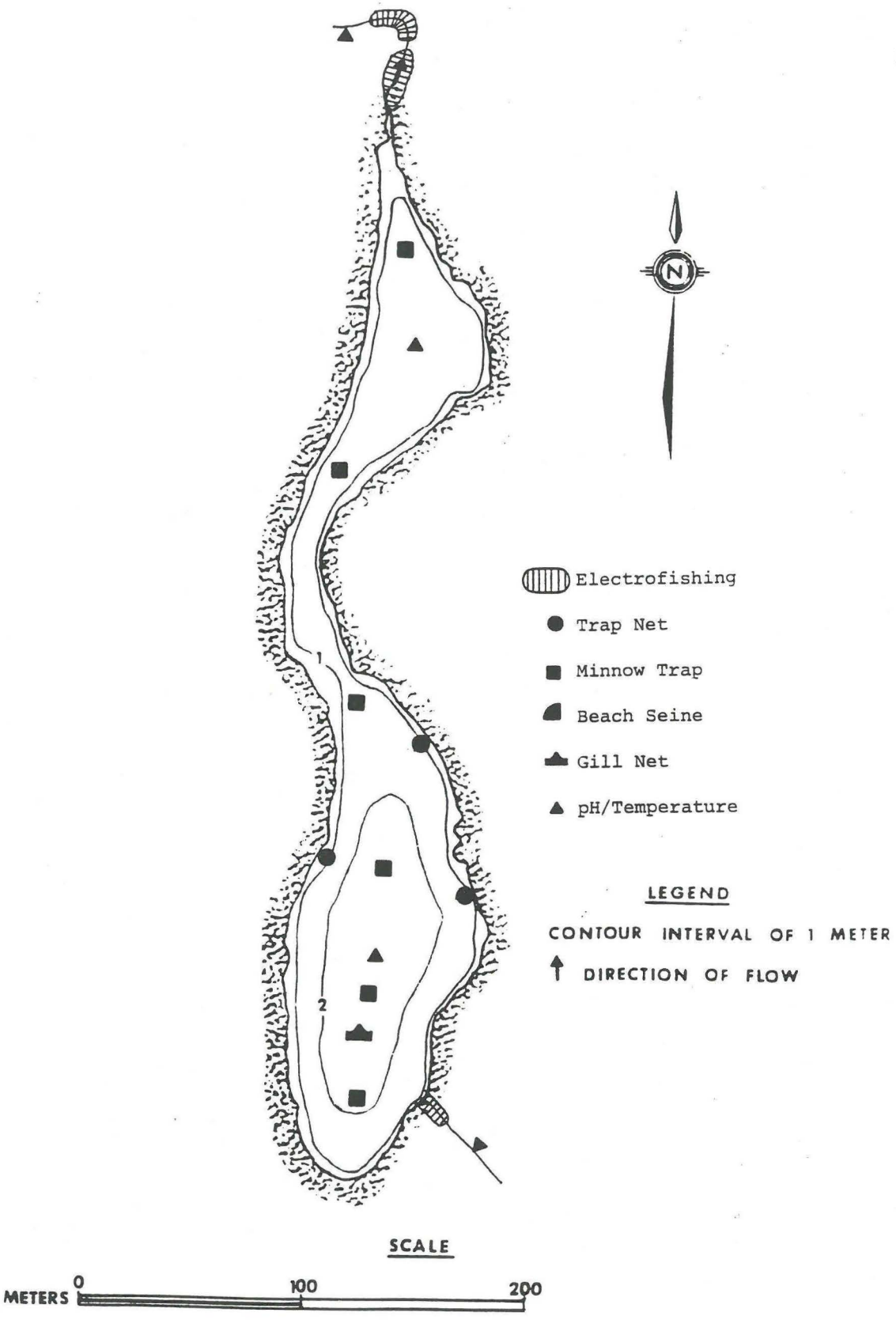

Figure 2. Map of Little Kempton Lake showing the location of sampling sites. Map from Kerekes & Schwinghamer (1973a)

surrounded by bogs on all sides and had soft bottoms with little cover, not very suitable for trout. The outflow stream disappeared into the ground several hundred meters from the lake.

Ten hours of angling produced 23 yellow perch, while electrofishing the streams resulted in only one bullhead. Seining could not be employed as the bottom was too soft. No fish were found in any of the minnow traps. The trap net was in the water for 66 hours over 3 nights and yielded 20 yellow perch, 35 bullhead and 41 shiners.

Since no trout were caught using live-capture techniques the gill net was employed on the night of July 18/19 for a total of 6 hours. 6 yellow perch and 2 killifish were captured.

3.2.3 Luxton Lake.

Luxton Lake was visited from July 26 - 30 (see Figure 3). The water temperature at 3 lake sites and at the outflow on July 30 was 24°C. The one inflow found (on the west shore of the lake) was 21°C. The pH of the lake and outflow ranged from 4.76 - 4.78 while the inflow was 4.58. The lake had lots of hard bottom and cover.

19 hours of angling produced only 19 yellow perch. No fish were caught by electrofishing the outflow stream or by seining several hard bottomed areas. The trap net was in the water for 31 hours and caught 31 yellow perch. The minnow traps were more productive, catching 190 yellow perch.

Since no trout were caught using the above methods, the gill net was set for 6 hours on the night of July 28/29, and yielded 22 yellow perch. The net was set off the bottom in the deepest hole in the lake.

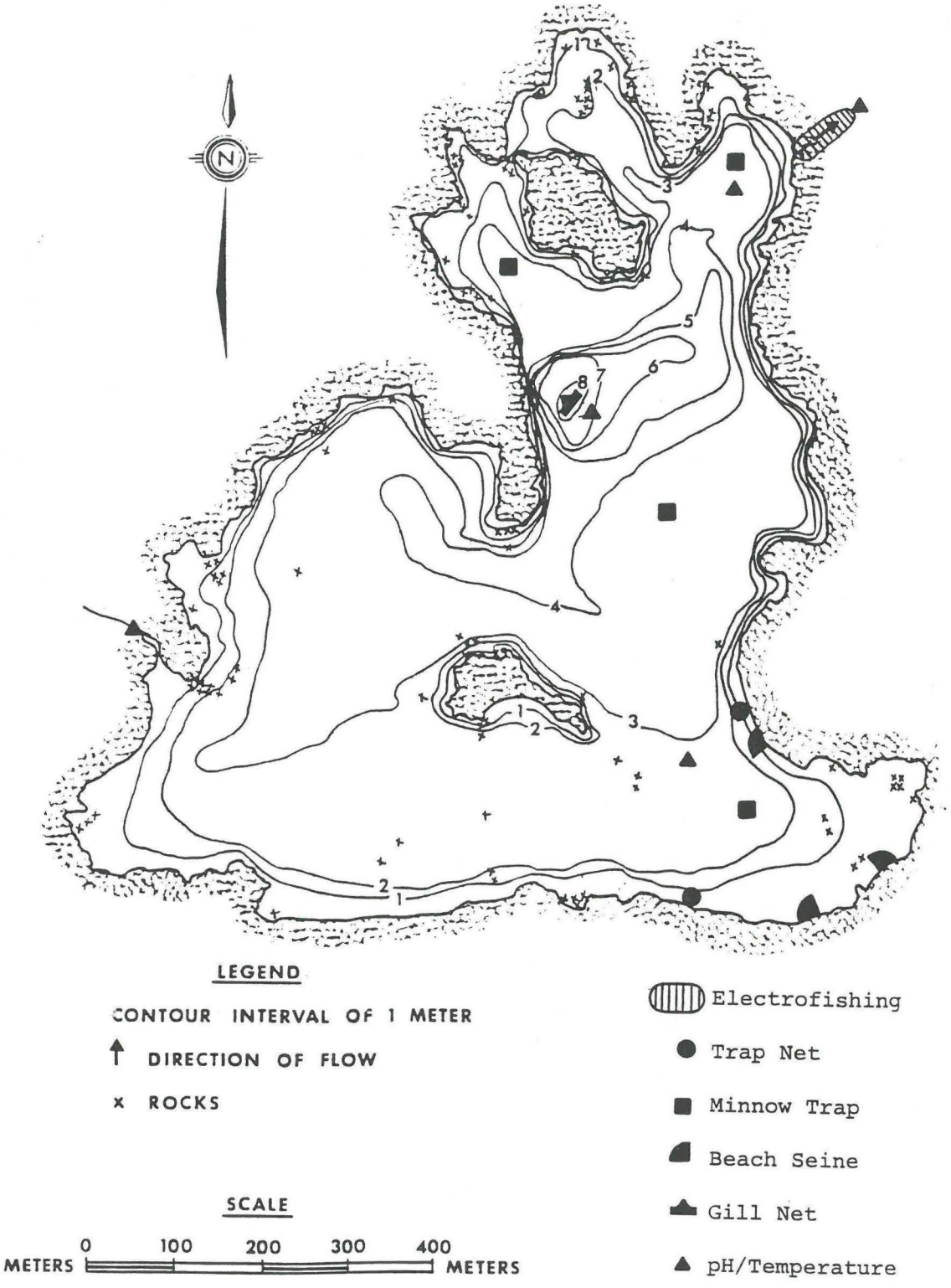

Figure 3. Map of Luxton Lake showing the location of sampling sites. Map from Kerekes & Schwinghamer (1973a)

3.3 Discussion.

Table 3 compares pHs from the Kerekes & Schwinghamer (1973) survey with those from the current study. Values from 1994 are consistently lower. However, Kerekes took only 1 - 3 samples per lake in the summer months. pH varies from month to month (it peaks in summer), so our data could not be compared with Kerekes results from other months. The small sample size prevents definitive conclusions, but the results are suggestive.

Table 3. Comparisons of pH values from the early 1970s with those obtained in 1994 for the 3 study lakes. Ranges of pH values given by Kerekes for July and August of 1971 and 1972 are shown, with number of samples in brackets. Current data were all collected in July, 1994.

	High Lake	Kempton Lake	Luxton Lake
Kerekes	5.12-5.17 (2)	5.36 (1)	4.92-5.11 (3)
Current	4.95-5.02 (4)	4.87-5.00 (8)	4.76-4.78 (3)

Kerekes (1975) found brook trout in all three lakes using gill nets in July and August of 1971 and 1972. In this study only High Lake was seen to have brook trout even though we used similar sampling dates and equipment. We also spent more time on each lake and used additional sampling methods, such as angling, trap nets, electrofishing and minnow traps. The lack of trout from Little Kempton Lake is not surprising; Kerekes captured only one brook trout from this lake and was surprised in view of the poor habitat.

Luxton Lake is a different matter, however. It is much larger and deeper than the other two lakes (see Table 1) and has quite a deep hole, at least by park standards. Kerekes (1982) found park trout did not occur in lakes with a pH lower than 4.8. This figure becomes very relevant when examining Table 2. pH values in the early 1970s ranged from 4.92 - 5.11. Those in the current study ranged from 4.76 - 4.78, which is just below the critical level of pH 4.8. If the current pH figures are accurate, Luxton Lake may have lost its brook trout due to environmental acidification. This is only conjecture, however, since the number of data points are too small to reach definitive conclusions. Other factors, such as variable water temperature, may also explain why we could not find brook trout. One of the most important studies for 1995 will be to re-sample Luxton Lake on a larger scale, taking numerous pH samples and sampling the lake in late spring when the water is cooler as well as in summer when the pH peaks. An EARP was prepared for the 1995 study and can be seen in Appendix 5.

The only sampling method which caught trout in lakes was angling. The trap net captured more species, especially small fishes. Electrofishing worked well in the streams while the minnow traps and beach seining were of limited usefulness. Gillnets will capture trout, especially when placed at a depth which corresponds to the optimal temperature of the species, but were not successful in 1994. This may have been due to an absence of trout or because temperature profiles were not taken.

Another point of note is that we found golden shiners in Little Kempton Lake, while Kerekes did not.

4.0 ROGERS BROOK FISH COUNTING FENCE

It appears that brooks in the eastern part of Kejimkujik offer better spawning potential for brook trout, due to a higher pH, than those to the west. This is one of the reasons why Rogers and Grafton Brooks were closed to angling in 1987 (Drysdale et al. 1986). It would be desirable to count the number of adults returning to these brooks each year to spawn. Fish numbers could be monitored on a long term basis to ensure a sufficient number of adults are returning. A fish counting fence would provide this information and could corroborate the creel census. The fence would indicate the health of a single important spawning stock while the census would examine numerous undefined stocks brought together by unknown factors (perhaps good feeding or water conditions), and which are heavily fished. A fence would provide other important information, such as the timing of runs, the size/age structure of spawners (which would be analyzed in the same manner as for the creel census) and information relating to the movement of non-game fishes. Like the creel census, the fence could be run for three consecutive years, once per decade.

There are several potential problems with a fish fence which could render it unsuitable for a National Park. A fence could block the movement of fish and other aquatic organisms, and cause mortality of trapped animals. Consequently, a trap was installed and operated for 40 days in 1994 on a trial basis to test and ensure the trap did not cause unacceptable problems. No serious problems were encountered and Appendix 4, which contains the EARP and the follow up report for the Rogers Brook fish counting fence, should be consulted for more details. The EARP also contains background material not explained here, and contains a sketch of the trap showing how it operates.

4.1 Methodology.

The Fish Management Plan (Nicholas et al. 1994) recommended that a detailed field manual suitable for workers be written after the fence has been in operation for a full year. The manual should be attached to the 1995 Fish Management Research Report.

4.2 Results and Discussion.

Some biological data was collected in 1994 while operating the fence on a trial basis from September 24 to November 2. It was seen that very few fish entered the trap when water levels were low. By contrast, a heavy rain always resulted in fish being trapped. Even though water levels stayed high for several days after a rain, most fish were caught while the waters were rising or cresting. This observation needs verifying next year as there were only 3 significant rainfalls during the 40 day trial period. There were other rainfalls from 5 to 10 mm, but they did not raise the water level noticeably and did not result in fish movement.

We will first examine only those fish heading upstream. The first rainfall was on September 28 and 29 (46 mm was recorded at the parks' weather station) and resulted in 3 trout parr being caught. No adults were seen. The next heavy rainfall (26 mm) was on October 22 and 23 and resulted in 51 trout captured, almost all of which were adults. The adults exhibited prime spawning coloration and sperm ran from a few males when handled. The spawning run had begun.

The last heavy rainfall (66 mm) from November 1 - 3 resulted in a run of large fish which filled the trap. Since different setups were being tested, the temporary trap in place on that night was only 1 x 1 x 3 feet in size. Others trout were seen trying to jump over the trap since it was

clogged with an unknown number of fish. All fish were released alive and the trap was disabled so the remaining fish could freely swim around it since we were not collecting serious biological data in 1994.

It might be assumed that trout would run under the cover of darkness to avoid predators, but in 1994 traps that were emptied in the morning had spawners in them by noon on at least one occasion. It appears that trout congregate in a deep pool 50 m downstream or in the Mersey River at the mouth of Rogers Brook waiting for heavy rain. When water levels rise a certain amount they may come upstream irregardless of the time of day. This theory should be tested more thoroughly in future years.

A very few immature trout (they may well have been precocious parrs) and one 16 cm creek chub were also trapped while heading upstream.

A very different picture emerged when fish moving downstream were examined. The 32 trout ranged in length from 10 - 22 cm, with most being 10 - 15 cm. All except a couple were parr. Sixty-seven yellow perch (most 7 - 12 cm), 4 killifish, 1 golden shiner, 2 small suckers and one bullhead were also caught heading downstream. It appears that small fish, including parr, head downstream at the same time adult trout head upstream. The smaller fish may have been washed downstream by the heavy rains, or they may have been chased out by the spawning trout.

5.0 PESKOWESK SURVEY.

The 1994 Fish Management Plan (Nicholas et al. 1994) recommended the western half of Kejimkujik National Park be set aside as a catch and release, fly fishing only fishery, due to concerns regarding aquatic acidification. It is important to determine if these new regulations will improve the trout resource. Planned indicators of stock status to be employed included mean body size and others.

The survey was scheduled to begin in 1994, but did not proceed due to the unavailability of the designated angler in both the spring and fall. The new regulations are expected to go into effect in 1996. Consequently, the Peskowesk survey must be conducted in 1995 to collect baseline data. A meeting between the authors of the Fish Management Plan should be held to consider other options, such as volunteers, a second creel census, etc.

6.0 RECOMMENDATIONS.

1) The creel census should be continued in 1995 and 1996, as described in Appendix 1 of the Fish Management Plan (Nicholas et al. 1994). Alternative census techniques should be simultaneously explored, but only if time permits.

2) The pH regime and the occurrence of trout in Luxton Lake should receive considerable attention immediately after the creel census and again in July or August. Temperature profiles should be prepared and used to set the gill net.

3) The lake survey should be expanded to include several lakes with white perch, since this fish is known to be sensitive to aquatic acidification. Snake Lake and Channel Lake are suggested candidates.

4) The Rogers Brook fish counting fence should be operated in 1995 and 1996. It should remain in the water as long as possible. Full biological data should be collected and all terms of the EARP should be met. A field manual for workers should be written and attached to the 1995 Fish Management Research Report.

5) A survey of Peskowesk watershed fish should be conducted in 1995 and run for 5 years.

6) A water quality monitoring plan should be written in 1994 or 1995.

7) Other studies described in the Fish Management Plan should be undertaken as time permits.

7.0 REFERENCES.

Drysdale, C., J. Bacon, G. Corbett & H. McCormack. 1986. Interim gamefish management plan, Kejimkujik National Park. Canadian Parks Service. 38p.

Gigliotti, L.M. & W.M. Taylor. 1990. The effects of illegal harvest on recreational fisheries. N. Amer. J. Fish Manag. 10:106-110.

Kerekes, J, & P. Schwinghamer. 1973. Aquatic Resources Inventory, Part 4, Selected limnological measurements. Canadian Wildlife Service. 113p.

Kerekes, J, & P. Schwinghamer. 1973a. Aquatic Resources Inventory, Part 3, Hydrographic maps, area and volume curves. Canadian Wildlife Service. 109p.

Kerekes, J. 1973. Aquatic Resources Inventory, Part 7, Distribution of fishes. Canadian Wildlife Service. 97p.

Kerekes, J. 1982. Fish distribution in Kejimkujik National Park. In J. Kerekes (ed.) Kejimkujik Calibrated Catchment Program. Report of Proc. Nov. 18, 1981: 57-60.

Nicholas, R., C. Drysdale & G. Corbett. 1994. Fish Management Plan, Kejimkujik National Park. Canadian Parks Service. 52p.

Appendix 1.

Population Structure Database

This database contains measurements and information specific to each brook trout kept by anglers. Each entry represents one brook trout and can be linked to the Miscellaneous Information Database and to the Catch Per Unit Effort Database by the sheet number.

Structure for database: **CRELPOP.DBF**

Field	Field Name	Type	Width	Dec	Index
1	SHEETNO	Numeric	3		N
2	LENGTH	Numeric	4	1	N
3	WEIGHT	Numeric	4		N
4	SCALENO	Numeric	4		N
5	AGE	Numeric	2		N

Detailed data description of each field in the CRELPOP database

SHEETNO Index number of data sheet.

LENGTH Fork Length. Measured from the tip of snout to the fork in the tail. (See Fig. 1.0). Unit of measure is centimetres.

WEIGHT Whole Weight. Measured in grams, mass of trout prior to gutting, head and tail intact.

SCALENO Scale envelope number. Scale samples are taken for aging. Scales were taken consistently from the left side, just above the lateral line, directly below the front base of the dorsal fin (See Fig. 1.0).

AGE Age of fish, units are years. Not available at time of entry.

Population Structure Database

Sheet #	Fork Length (cm.)	Whole Weight (g.)	Scale Envelope #	Age (yr.)
1	26.7	236	1	0
3	25.6	208	2	0
3	24.4	184	3	0
4	34.0	470	4	0
5	27.4	274	5	0
5	35.4	534	6	0
5	24.6	206	7	0
5	22.2	147	8	0
5	24.6	197	9	0
5	24.1	185	10	0
5	23.1	157	11	0
5	32.0	449	12	0
5	30.1	382	13	0
5	23.9	187	14	0
5	24.0	192	15	0
5	22.8	158	16	0
5	23.5	174	17	0
6	22.4	133	18	0
6	22.3	132	19	0
7	25.8	211	20	0
7	22.9	144	21	0
7	26.0	216	22	0
8	24.6	193	23	0
8	22.7	152	24	0
8	24.8	186	25	0
8	25.1	190	26	0
8	22.3	194	57	0
8	22.1	151	58	0
8	22.2	149	59	0
8	25.1	206	60	0
9	24.2	191	27	0
9	19.7	94	28	0
9	27.1	219	29	0
9	20.4	99	30	0
9	21.6	123	31	0
9	23.3	160	32	0
9	25.2	194	33	0
10	24.3	191	34	0
10	23.4	184	35	0
10	24.8	204	36	0
10	21.9	133	37	0
10	21.1	111	38	0
10	26.4	245	39	0
10	21.7	122	40	0
10	23.6	155	41	0
10	25.3	203	42	0
10	22.9	151	43	0
10	21.3	115	44	0

Population Structure Database

Sheet #	Fork Length (cm.)	Whole Weight (g.)	Scale Envelope #	Age (yr.)
10	20.5	99	45	0
10	21.4	115	46	0
10	20.7	104	47	0
10	18.5	81	48	0
11	24.6	182	49	0
11	21.6	134	50	0
11	21.3	135	51	0
11	23.4	162	52	0
11	20.0	111	53	0
11	21.4	112	54	0
11	22.2	170	55	0
11	25.9	209	56	0
12	28.9	307	61	0
13	26.9	264	88	0
13	28.3	265	89	0
13	24.1	163	99	0
13	24.6	175	91	0
13	28.7	283	92	0
14	22.5	147	93	0
14	20.0	87	94	0
14	25.5	196	95	0
14	20.6	104	96	0
14	24.4	182	98	0
14	24.0	185	97	0
17	21.9	143	62	0
17	19.8	115	63	0
17	23.5	164	64	0
17	23.8	215	65	0
17	28.5	294	66	0
17	21.1	130	67	0
17	23.7	204	68	0
17	20.4	126	69	0
17	28.5	335	70	0
17	21.7	149	71	0
18	23.6	180	72	0
18	25.7	240	73	0
18	28.6	330	74	0
18	23.0	153	75	0
18	25.4	188	76	0
18	25.9	209	77	0
18	25.3	204	78	0
18	24.1	165	79	0
18	22.3	149	80	0
18	29.8	294	81	0
19	29.8	355	82	0
19	30.9	385	83	0
19	28.8	293	84	0
19	23.7	186	85	0

Population Structure Database

Sheet #	Fork Length (cm.)	Whole Weight (g.)	Scale Envelope #	Age (yr.)
19	23.7	178	86	0
19	23.8	184	87	0
20	19.9	103	90	0
20	19.1	82	100	0
20	24.6	178	101	0
21	24.8	183	102	0
22	21.6	134	103	0
22	23.2	170	104	0
22	22.1	149	105	0
22	19.7	91	106	0
23	23.3	176	107	0
25	20.6	106	108	0
25	23.7	152	109	0
25	25.6	212	110	0
25	28.6	267	111	0
26	26.0	0	112	0
26	26.7	0	113	0
26	34.5	0	114	0
27	24.9	204	115	0
27	30.7	416	116	0
27	22.2	168	117	0
27	22.0	122	118	0
27	22.8	153	119	0
27	22.6	145	120	0
28	22.7	167	121	0
28	23.4	144	122	0
28	20.2	116	123	0
28	20.2	110	124	0
28	21.0	121	125	0
28	26.7	242	126	0
28	21.7	130	127	0
28	25.2	225	128	0
29	19.3	0	129	0
29	19.2	0	130	0
31	22.8	173	131	0
32	22.8	131	132	0
32	23.5	158	133	0
33	25.1	209	134	0
33	26.4	239	135	0
33	26.8	264	136	0
33	23.1	178	137	0
33	20.9	113	138	0
33	24.4	193	139	0
33	20.2	113	140	0
38	31.4	340	141	0
40	22.6	0	142	0
40	20.6	0	143	0
43	25.7	243	144	0

Population Structure Database

Sheet #	Fork Length (cm.)	Whole Weight (g.)	Scale Envelope #	Age (yr.)
43	26.9	250	145	0
43	26.2	239	146	0
43	22.1	146	147	0
44	28.8	301	148	0
44	23.1	162	149	0
45	26.9	267	150	0
46	30.2	334	151	0
47	24.9	180	152	0
50	29.7	419	153	0
51	27.6	296	154	0
52	25.2	0	155	0
53	23.8	172	156	0
53	22.7	150	157	0
56	29.2	314	158	0
56	24.8	200	159	0
56	23.8	187	160	0
57	22.1	157	161	0
57	23.1	166	162	0
57	21.1	116	163	0
57	19.8	109	164	0
57	22.6	168	165	0
57	24.5	222	166	0
59	21.2	135	167	0
59	23.2	162	168	0
59	24.3	195	169	0
59	21.3	115	170	0
60	21.4	134	171	0
63	25.2	0	172	0
63	32.4	0	173	0
63	24.6	0	174	0
63	29.6	0	175	0
63	26.4	0	176	0
63	29.0	0	177	0
63	26.7	0	178	0
65	24.9	236	179	0
66	18.4	82	180	0
66	21.9	130	181	0
67	19.1	82	182	0
68	24.6	202	183	0
69	23.0	150	184	0
69	20.8	113	185	0
71	29.6	333	186	0
72	21.2	143	187	0
73	31.2	407	188	0
73	30.8	389	189	0
73	27.7	270	190	0
73	22.9	170	191	0
73	20.6	126	192	0

Population Structure Database

Sheet #	Fork Length (cm.)	Whole Weight (g.)	Scale Envelope #	Age (yr.)
76	18.6	83	193	0
78	32.4	440	194	0
81	25.3	192	195	0
82	21.9	135	196	0
82	18.4	76	197	0
82	31.5	340	198	0
82	20.2	99	199	0
82	23.5	166	200	0
83	18.0	82	201	0
83	20.7	109	202	0
83	27.0	294	203	0
84	19.2	91	204	0
85	19.4	0	205	0
85	25.6	0	206	0
85	19.3	0	207	0
85	23.0	0	208	0
88	19.6	119	209	0
88	23.5	202	210	0
89	22.2	121	211	0
89	19.6	89	212	0
89	22.6	149	213	0
89	25.9	0	214	0
94	28.1	302	215	0
94	21.2	132	216	0
102	21.9	0	217	0
103	24.1	196	218	0
103	22.3	146	219	0
103	21.1	124	220	0
103	21.7	135	221	0
104	23.4	140	222	0
105	19.7	96	223	0
105	25.8	195	224	0
107	21.2	132	225	0
107	20.0	103	226	0
107	24.7	204	227	0
107	23.9	160	228	0
107	23.4	165	229	0
107	25.1	170	230	0
107	21.8	136	231	0
107	19.1	86	232	0
107	21.2	118	233	0
107	26.3	198	234	0
110	21.5	126	235	0
110	28.6	259	236	0
110	25.3	209	237	0
110	23.9	163	238	0
110	26.6	241	239	0
110	22.7	142	240	0

Population Structure Database

Sheet #	Fork Length (cm.)	Whole Weight (g.)	Scale Envelope #	Age (yr.)
110	25.9	230	241	0
110	24.3	239	242	0

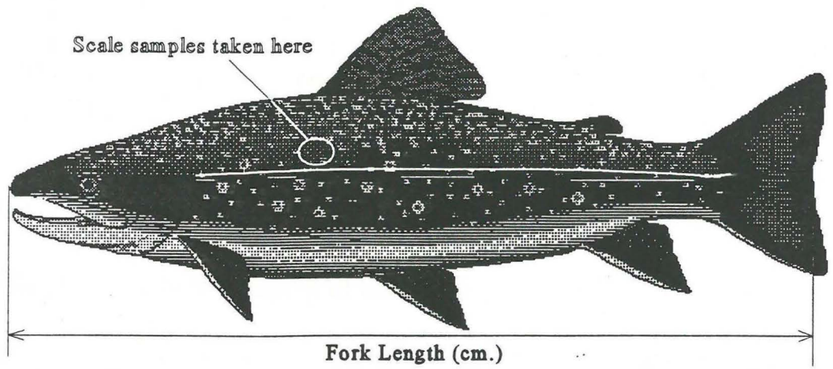

Figure 1.0 Brook Trout showing fork length measurement and scale sample location.

Appendix 2.

CPUE - Catch Per Unit Effort Database

This database contains information pertaining to angling success. The total number of brook trout caught (kept and released) divided by the number of hours fished can be used to estimate relative fish abundance. Each entry represents one angler, and can be linked to the Miscellaneous Information Database and to the Population Structure Database by the sheet number.

Structure for database: **CRELCPUE.DBF**

Field	Field Name	Type	Width	Dec	Index
1	SHEETNO	Numeric	4		N
2	EFFORT	Numeric	4	2	N
3	KEPT	Numeric	1		N
4	RELEASED	Numeric	2		N
5	TOTAL	Numeric	2		N
6	TACKLE	Character	1		N

Detailed data description of each field in the CRELCPUE database

SHEETNO — Index number of data sheet.

EFFORT — Hours spent fishing (not including commute time, etc.). Entered in decimal hours.

KEPT — Indicates number of brook trout kept.

RELEASED — Indicates number of brook trout released.

TOTAL — Sum of brook trout kept and released.

TACKLE — Primary tackle used for the majority of angling. Abbreviations used are as follows:
F = Artificial fly
B = Natural Bait
L = Artificial Lure
C = Combination

Catch Per Unit Effort Database

Sheet #	Effort	# Kept	# Released	Total #	Tackle
1	1.00	1	0	1	C
2	2.50	0	1	1	C
2	2.50	1	0	1	C
2	2.50	1	0	1	F
3	3.50	1	0	1	F
3	3.50	1	0	1	C
4	2.00	0	0	0	B
4	2.00	1	0	1	F
5	6.50	2	0	2	F
5	6.50	5	0	5	C
5	6.50	4	0	4	F
5	6.50	2	0	2	C
6	5.50	1	2	3	C
6	5.50	1	2	3	C
7	2.25	3	0	3	F
8	2.50	4	3	7	C
8	5.00	4	7	11	C
9	3.00	3	0	3	C
9	3.00	1	0	1	C
9	3.00	3	1	4	C
10	4.00	5	0	5	C
10	4.00	5	2	7	C
10	2.00	5	2	7	C
11	4.00	4	4	8	F
11	4.00	4	5	9	C
12	2.50	1	0	1	C
12	1.00	0	0	0	C
13	2.00	2	1	3	C
13	2.00	3	1	4	F
13	2.50	0	0	0	C
13	2.50	0	0	0	C
14	3.50	3	5	8	F
14	3.50	3	0	3	C
15	1.00	0	4	4	F
15	1.00	0	0	0	C
16	3.00	0	0	0	F
16	3.00	0	4	4	C
17	7.50	4	1	5	B
17	7.50	4	1	5	C
17	7.50	2	0	2	C
18	9.00	5	0	5	F
18	9.00	5	0	5	F
19	9.00	4	1	5	C
19	9.00	2	2	4	F
20	8.00	3	10	13	F
20	1.50	0	0	0	C
21	1.00	0	0	0	C
21	1.00	0	0	0	C

Catch Per Unit Effort Database

Sheet #	Effort	# Kept	# Released	Total #	Tackle
21	1.50	1	0	1	L
22	2.00	2	1	3	C
22	2.50	2	6	8	C
23	4.50	2	10	12	C
24	5.00	0	6	6	C
24	5.00	0	2	2	F
24	5.00	0	1	1	F
25	4.00	3	3	6	F
25	4.00	1	1	2	F
25	4.00	0	0	0	F
26	2.00	3	2	5	F
27	6.50	4	7	11	C
27	6.50	2	0	2	C
28	3.50	3	2	5	C
28	3.50	0	0	0	C
28	3.50	0	0	0	C
28	1.00	1	1	2	C
28	3.50	4	3	7	C
29	2.00	1	1	2	C
29	2.00	2	4	6	C
30	3.00	0	0	0	C
30	3.00	0	0	0	C
30	3.00	0	0	0	C
31	2.00	1	0	1	F
32	4.50	1	5	6	C
32	4.50	1	3	4	C
33	3.00	3	1	4	C
33	3.00	2	0	2	C
33	3.00	2	0	2	C
34	1.00	0	0	0	L
35	1.50	0	0	0	C
36	1.25	0	0	0	C
36	1.25	0	0	0	C
37	1.50	0	0	0	C
37	1.50	0	0	0	C
38	2.00	0	1	1	C
38	2.00	0	0	0	C
38	2.00	1	0	1	C
38	2.00	0	0	0	C
38	2.00	0	0	0	C
39	2.50	2	0	2	C
39	2.50	0	0	0	C
40	4.00	0	1	1	C
40	4.00	1	2	3	C
40	4.00	1	2	3	C
40	4.00	0	0	0	C
40	4.00	0	0	0	C
41	1.50	0	0	0	B

Catch Per Unit Effort Database

Sheet #	Effort	# Kept	# Released	Total #	Tackle
41	1.50	0	0	0	C
41	1.50	0	0	0	C
41	1.50	0	0	0	F
41	1.50	0	0	0	F
41	1.50	0	0	0	B
41	1.50	0	0	0	B
42	3.00	0	0	0	C
42	3.00	0	0	0	C
43	4.00	2	1	3	F
43	4.00	2	1	3	C
44	6.50	0	5	5	F
44	6.50	2	0	2	F
45	3.00	1	0	1	C
45	3.00	0	0	0	C
46	3.00	1	0	1	C
46	3.00	0	0	0	F
46	3.00	0	1	1	C
46	3.00	0	1	1	C
46	3.00	0	0	0	F
47	5.00	0	6	6	C
47	5.00	1	0	1	C
48	5.50	0	17	17	F
49	4.00	0	0	0	C
49	4.00	0	0	0	C
50	5.50	1	0	1	C
50	5.50	0	0	0	C
50	5.50	0	0	0	C
51	7.50	1	2	3	F
51	7.50	0	0	0	C
52	7.00	1	6	7	F
53	9.00	2	0	2	F
54	4.00	0	38	38	F
55	2.00	0	2	2	C
55	2.00	0	1	1	F
56	3.00	2	2	4	C
56	3.00	1	0	1	C
56	3.00	0	2	2	C
57	5.00	0	2	2	C
57	5.00	3	2	5	C
57	5.00	3	0	3	C
57	5.00	1	0	1	C
57	5.00	0	0	0	C
58	5.00	0	2	2	F
58	5.00	0	1	1	F
59	8.00	2	4	6	L
59	8.00	2	4	6	F
60	1.00	1	0	1	F
60	1.00	0	3	3	C

Catch Per Unit Effort Database

Sheet #	Effort	# Kept	# Released	Total #	Tackle
61	1.50	0	3	3	F
62	1.00	0	0	0	C
62	1.00	0	0	0	C
63	8.25	3	2	5	F
63	8.25	4	2	6	C
64	1.50	0	0	0	F
64	1.50	0	0	0	F
65	3.00	1	0	1	C
66	2.25	1	2	3	F
66	2.25	1	1	2	C
67	3.00	1	0	1	C
68	7.00	1	8	9	F
68	7.00	0	7	7	F
69	5.50	2	4	6	C
69	5.50	0	6	6	C
70	2.25	0	1	1	C
70	2.25	0	0	0	C
71	7.00	1	2	3	C
72	8.00	1	0	1	C
72	8.00	0	0	0	C
72	8.00	0	0	0	C
73	2.50	2	3	5	C
73	2.50	3	0	3	F
74	1.00	0	0	0	C
74	1.00	0	0	0	C
75	1.00	0	1	1	C
75	1.00	0	0	0	C
76	1.00	1	0	1	F
76	1.00	0	0	0	F
77	5.00	0	12	12	F
77	5.00	0	8	8	F
78	4.00	0	3	3	F
78	4.00	1	0	1	C
79	2.00	0	1	1	F
79	2.00	0	0	0	C
80	1.00	0	2	2	F
80	1.00	0	2	2	F
80	1.00	0	0	0	F
81	1.00	1	4	5	F
82	6.00	3	4	7	F
82	6.00	2	6	8	F
83	3.50	3	2	5	C
84	1.25	1	0	1	F
84	1.25	0	0	0	F
84	1.25	0	0	0	F
85	3.50	4	2	6	C
85	3.50	0	6	6	F
86	1.75	0	1	1	C

Catch Per Unit Effort Database

Sheet #	Effort	# Kept	# Released	Total #	Tackle
86	1.75	0	0	0	F
87	5.50	0	3	3	F
87	5.50	0	3	3	F
88	3.50	2	3	5	B
89	2.50	2	0	2	C
89	2.50	1	0	1	C
89	2.50	1	0	1	C
89	2.50	0	0	0	C
89	2.50	0	0	0	C
90	2.00	0	0	0	C
90	2.00	0	0	0	C
91	1.50	0	0	0	C
91	1.50	0	0	0	C
92	2.00	0	0	0	F
93	2.00	0	0	0	C
94	1.00	2	1	3	F
95	1.75	0	2	2	C
96	2.50	0	1	1	F
96	2.50	0	1	1	F
97	2.25	0	0	0	C
97	2.25	0	0	0	C
97	1.50	0	0	0	C
97	1.50	0	0	0	F
98	1.75	0	0	0	F
98	1.75	0	0	0	F
99	1.25	0	1	1	F
100	2.00	0	3	3	C
100	2.00	0	4	4	C
101	1.50	0	3	3	F
101	1.50	0	3	3	F
102	2.50	1	0	1	C
103	7.00	1	4	5	F
103	7.00	3	8	11	F
104	1.25	1	0	1	F
105	1.50	2	0	2	C
106	7.00	0	0	0	C
106	7.00	0	0	0	C
106	7.00	0	0	0	C
107	6.50	5	3	8	C
107	6.50	5	7	12	C
108	2.00	1	0	1	L
109	1.25	0	0	0	C
110	7.50	4	12	16	C
110	7.50	4	15	19	C

Appendix 3.

Miscellaneous Information Database:

This database contains miscellaneous information taken from the anglers. Each entry in this database represents information from one party, and was recorded on one datasheet.

Structure for database: **CRELMISC.DBF**

Field	Field Name	Type	Width	Dec	Index
1	SHEETNO	Numeric	3		N
2	DATE	Date	8		N
3	TIME	Numeric	4		N
4	ANGLERS	Numeric	1		N
5	TRIPFIN	Logical	1		N
6	TRAVEL	Character	15		N
7	PUTIN	Character	10		N
8	INTSITE	Character	10		N
9	OTHERSPP	Character	15		N
10	KEJILAKE	Numeric	2		N
11	HEMLOCK	Numeric	2		N
12	GEORGE	Numeric	2		N
13	EELWIER	Numeric	2		N
14	LOONLAKE	Numeric	2		N
15	BLRATTLE	Numeric	2		N
16	BELOWPK	Numeric	2		N

Detailed data description of each field in the CRELMISC database

SHEETNO — Index number of data sheet.

DATE — Date interview was conducted. Entered as MM/DD/YY.

TIME — Time of interview. Entered as a four digit number based on 24 hour clock.

ANGLERS — Number of anglers fishing in the party.

TRIPFIN — Y if trip was finished, N if trip was not finished.

TRAVEL — Primary method of conveyance. Indicates the method of travel used by the majority of anglers in a party. Defined on data sheet to be either **Motor Boat, Nonmotor Boat,** or **On Foot**. Only these terms should be used in the database

PUTIN — Location from which party started trip. Use either **Keji Lake, Eel Wier,** or **Below Park.**

INTSITE — Location where interview was conducted. Use either **Keji L., Hemlock, George, Eel, Loon, Rattle,** or **Below Park**.

OTHERSPP — Fish species caught other than brook trout. Convention used is an abbreviation followed by the quantity in brackets. Abbreviations used are as follows:

YP = Yellow Perch	WP = White Perch
Suck = White Sucker	Bull = Brown Bullhead
GS = Golden Shiner	Brown = Brown Trout
Kill = Banded Killifish	Eel = American Eel
LW = Lake Whitefish	CC = Creek Chub

(Example: YP(1) for one yellow perch)

KEJILAKE — Indicates the number of Brook trout kept by anglers from Kejimkujik Lake, north of Hemlock Island.

HEMLOCK — Indicates the number of Brook trout kept by anglers between Kejimkujik and George Lakes, including the Eastern and Western Runs.

GEORGE — Indicates the number of Brook trout kept by anglers from George Lake.

EELWIER — Indicates the number of Brook trout kept by anglers between George and Loon Lakes.

LOONLAKE — Indicates the number of Brook trout kept by anglers from Loon Lake.

BLRATTLE — Indicates the number of Brook trout kept by anglers from Loon Lake Falls, south, to the Park boundary.

BELOWPK — Indicates the number of Brook trout kept by anglers from the Mersey River, below the Park boundary.

Miscellaneous Information Database

Sheet #	Date	Time	# Anglers	Trip Fin.	Travel	Put In	Interview Site	Other Species	KL	HI	GL	EW	LL	BR	BP
1	04/29/94	848	1	Y	On Foot	Keji Lake	Eel	YP(1)	0	0	0	1	0	0	0
2	04/30/94	1145	3	Y	Motor	Keji Lake	Hemlock		0	0	0	3	0	0	0
3	04/30/94	1155	2	N	Motor	Keji Lake	Hemlock		1	1	0	0	0	0	0
4	04/30/94	1221	2	N	Motor	Keji Lake	Hemlock		0	0	0	1	0	0	0
5	05/01/94	1628	4	N	Motor	Below	Loon		0	0	0	0	0	12	1
6	05/06/94	1430	2	N	Motor	Below	Eel		0	0	0	1	1	0	0
7	05/06/94	1450	1	N	Motor	Below	Eel		0	0	0	0	0	1	2
8	05/06/94	1636	2	Y	On Foot	Eel Wier	Eel		0	0	0	8	0	0	0
9	05/06/94	1649	3	Y	On Foot	Eel Wier	Eel		0	0	0	7	0	0	0
10	05/06/94	1812	3	Y	On Foot	Eel Wier	Eel		0	0	0	15	0	0	0
11	05/06/94	1837	2	Y	On Foot	Eel Wier	Eel		0	0	0	8	0	0	0
12	05/06/94	1920	2	Y	On Foot	Eel Wier	Eel		0	0	0	1	0	0	0
13	05/07/94	1055	4	N	Motor	Keji Lake	Hemlock		0	5	0	0	0	0	0
14	05/07/94	1115	2	Y	On Foot	Eel Wier	Eel		0	0	0	6	0	0	0
15	05/07/94	1200	2	Y	On Foot	Eel Wier	Eel		0	0	0	0	0	0	0
16	05/07/94	1805	2	Y	On Foot	Eel Wier	Eel	YP(1)	0	0	0	0	0	0	0
17	05/07/94	1810	3	Y	Motor	Eel Wier	Eel	Suckers(2)	0	0	0	10	0	0	0
18	05/07/94	1835	2	Y	Motor	Eel Wier	Eel		7	0	0	3	0	0	0
19	05/07/94	1845	2	Y	Motor	Eel Wier	Eel		0	2	0	4	0	0	0
20	05/07/94	1940	2	Y	On Foot	Eel Wier	Eel		0	0	0	3	0	0	0
21	05/07/94	2000	3	Y	On Foot	Eel Wier	Eel		0	0	0	1	0	0	0
22	05/08/94	1055	2	Y	On Foot	Eel Wier	Eel		0	0	0	4	0	0	0
23	05/08/94	1215	1	Y	On Foot	Eel Wier	Eel		0	0	0	2	0	0	0
24	05/08/94	1225	3	Y	On Foot	Eel Wier	Eel	YP(3)	0	0	0	0	0	0	0
25	05/08/94	1320	3	Y	Motor	Eel Wier	Eel		0	0	0	4	0	0	0
26	05/08/94	1600	1	Y	On Foot	Eel Wier	Eel		0	0	0	3	0	0	0
27	05/08/94	1640	2	Y	Motor	Eel Wier	Eel		4	0	0	2	0	0	0
28	05/08/94	1745	5	Y	On Foot	Eel Wier	Eel		0	0	0	8	0	0	0
29	05/13/94	1120	2	Y	On Foot	Eel Wier	Eel		0	0	0	3	0	0	0
30	05/13/94	1400	3	Y	Motor	Eel Wier	George		0	0	0	0	0	0	0
31	05/13/94	1455	1	Y	Motor	Below	Eel		0	0	0	0	1	0	0
32	05/13/94	1510	2	Y	On Foot	Eel Wier	Eel		0	0	0	2	0	0	0
33	05/13/94	1800	3	Y	Motor	Eel Wier	Eel		0	0	0	7	0	0	0
34	05/13/94	1930	1	Y	On Foot	Eel Wier	Eel		0	0	0	0	0	0	0
35	05/13/94	1935	1	Y	On Foot	Eel Wier	Eel		0	0	0	0	0	0	0
36	05/14/94	1015	2	Y	On Foot	Eel Wier	Eel		0	0	0	0	0	0	0
37	05/14/94	1030	2	N	On Foot	Eel Wier	Eel	YP(2)	0	0	0	0	0	0	0
38	05/14/94	1110	X5	Y	On Foot	Eel Wier	Eel		0	0	0	1	0	0	0
39	05/14/94	1610	2	Y	Nonmotor	Eel Wier	Eel	YP(3)	0	0	0	1	1	0	0
40	05/14/94	1915	5	Y	Nonmotor	Eel Wier	Eel		0	0	0	0	2	0	0
41	05/15/94	950	7	Y	On Foot	Eel Wier	Eel		0	0	0	0	0	0	0
42	05/15/94	1310	2	Y	On Foot	Eel Wier	Eel		0	0	0	0	0	0	0
43	05/15/94	1505	2	Y	Motor	Eel Wier	Eel		0	0	0	4	0	0	0
44	05/15/94	1625	2	Y	Motor	Eel Wier	Eel		2	0	0	0	0	0	0
45	05/15/94	1710	2	Y	On Foot	Eel Wier	Eel		0	0	0	1	0	0	0
46	05/20/94	1440	5	Y	On Foot	Eel Wier	Eel		0	0	0	1	0	0	0
47	05/20/94	1450	2	Y	On Foot	Eel Wier	Eel		0	0	0	1	0	0	0

Miscellaneous Information Database

Sheet #	Date	Time	# Anglers	Trip Fin.	Travel	Put In	Interview Site	Other Species	KL	HI	GL	EW	LL	BR	BP
48	05/20/94	1720	1	Y	Motor	Eel Wier	Eel		0	0	0	0	0	0	0
49	05/21/94	1255	2	N	Motor	Below	Eel		0	0	0	0	0	0	0
50	05/21/94	1530	3	Y	Motor	Eel Wier	Eel		1	0	0	0	0	0	0
51	05/21/94	1645	2	Y	Motor	Eel Wier	Eel		0	0	0	1	0	0	0
52	05/21/94	1735	1	Y	On Foot	Eel Wier	Eel		0	0	0	1	0	0	0
53	05/21/94	1905	1	Y	Motor	Eel Wier	Eel		0	2	0	0	0	0	0
54	05/22/94	1245	1	Y	On Foot	Eel Wier	Eel		0	0	0	0	0	0	0
55	05/22/94	1520	2	Y	Motor	Eel Wier	Eel	YP(1)	0	0	0	0	0	0	0
56	05/22/94	1550	3	Y	Motor	Eel Wier	Eel		2	0	1	0	0	0	0
57	05/22/94	1725	5	Y	Motor	Eel Wier	Eel	YP(5)	0	0	0	0	0	7	0
58	05/22/94	1910	2	Y	On Foot	Eel Wier	Eel	YP(1)	0	0	0	0	0	0	0
59	05/22/94	2000	2	N	Motor	Eel Wier	George		0	0	0	4	0	0	0
60	05/23/94	1145	2	Y	On Foot	Eel Wier	Eel	Sucker(1)	0	0	0	1	0	0	0
61	05/23/94	1230	1	Y	On Foot	Eel Wier	Eel		0	0	0	0	0	0	0
62	05/23/94	1315	2	Y	On Foot	Eel Wier	Eel		0	0	0	0	0	0	0
63	05/23/94	1615	2	Y	Motor	Eel Wier	Eel		2	0	0	5	0	0	0
64	05/23/94	1730	2	Y	On Foot	Eel Wier	Eel		0	0	0	0	0	0	0
65	05/23/94	1945	1	N	On Foot	Eel Wier	Eel	Sucker(1)	0	0	0	1	0	0	0
66	05/27/94	1115	2	Y	On Foot	Eel Wier	Eel		0	0	0	2	0	0	0
67	05/27/94	1250	1	Y	On Foot	Eel Wier	Eel	YP(3)	0	0	0	1	0	0	0
68	05/27/94	1545	2	Y	Motor	Eel Wier	Eel		0	0	0	1	0	0	0
69	05/27/94	1555	2	Y	On Foot	Eel Wier	Eel	YP(1)	0	0	0	2	0	0	0
70	05/28/94	1620	2	Y	On Foot	Eel Wier	Eel		0	0	0	0	0	0	0
71	05/28/94	1805	1	Y	Motor	Eel Wier	Eel		0	1	0	0	0	0	0
72	05/28/94	1900	3	Y	Motor	Eel Wier	Eel		0	0	0	1	0	0	0
73	05/29/94	1145	2	Y	Motor	Eel Wier	Eel		0	4	0	1	0	0	0
74	05/29/94	1435	2	Y	On Foot	Eel Wier	Eel		0	0	0	0	0	0	0
75	05/29/94	1450	2	Y	Nonmotor	Eel Wier	Eel		0	0	0	0	0	0	0
76	05/29/94	1530	2	Y	On Foot	Eel Wier	Loon		0	0	0	0	1	0	0
77	05/29/94	1620	2	Y	On Foot	Eel Wier	Eel		0	0	0	0	0	0	0
78	05/29/94	1655	2	Y	On Foot	Eel Wier	Eel	YP(3)	0	0	0	1	0	0	0
79	05/29/94	1810	2	Y	On Foot	Eel Wier	Eel		0	0	0	0	0	0	0
80	05/29/94	1925	3	Y	On Foot	Eel Wier	Eel		0	0	0	0	0	0	0
81	05/29/94	1935	1	N	On Foot	Eel Wier	Eel		0	0	0	1	0	0	0
82	05/29/94	2000	2	Y	Motor	Eel Wier	Eel		0	0	0	5	0	0	0
83	06/03/94	1335	1	Y	Motor	Eel Wier	Eel		0	0	0	3	0	0	0
84	06/03/94	1940	3	Y	On Foot	Eel Wier	Eel		0	0	0	1	0	0	0
85	06/04/94	1150	2	Y	On Foot	Eel Wier	Eel	YP(5)	0	0	0	4	0	0	0
86	06/04/94	1300	2	Y	On Foot	Eel Wier	Eel		0	0	0	0	0	0	0
87	06/04/94	1405	2	Y	On Foot	Eel Wier	Eel		0	0	0	0	0	0	0
88	06/04/94	1410	1	Y	On Foot	Eel Wier	Eel		0	0	0	2	0	0	0
89	06/04/94	1445	5	Y	On Foot	Eel Wier	Eel	YP(6)	0	0	0	4	0	0	0
90	06/04/94	1630	2	Y	Nonmotor	Keji Lake	Eel	YP(1)	0	0	0	0	0	0	0
91	06/04/94	1645	2	Y	Nonmotor	Eel Wier	Eel		0	0	0	0	0	0	0
92	06/04/94	1700	1	Y	On Foot	Eel Wier	Eel	YP(1)	0	0	0	0	0	0	0
93	06/04/94	1805	1	Y	On Foot	Eel Wier	Eel	YP(3)	0	0	0	0	0	0	0
94	06/04/94	1900	1	Y	On Foot	Eel Wier	Eel		0	0	0	2	0	0	0

Miscellaneous Information Database

Sheet #	Date	Time	# Anglers	Trip Fin.	Travel	Put In	Interview Site	Other Species	KL	HI	GL	EW	LL	BR	BP
95	06/05/94	1110	1	Y	On Foot	Eel Wier	Eel	YP(3)	0	0	0	0	0	0	0
96	06/05/94	1230	2	Y	On Foot	Eel Wier	Eel		0	0	0	0	0	0	0
97	06/05/94	1315	4	Y	On Foot	Eel Wier	Eel	YP(12)	0	0	0	0	0	0	0
98	06/05/94	1330	2	Y	On Foot	Eel Wier	Eel		0	0	0	0	0	0	0
99	06/05/94	1445	1	Y	On Foot	Eel Wier	Eel		0	0	0	0	0	0	0
100	06/05/94	1510	2	N	Nonmotor	Keji Lake	Eel	YP(3)	0	0	0	0	0	0	0
101	06/05/94	1515	2	Y	On Foot	Eel Wier	Eel		0	0	0	0	0	0	0
102	06/05/94	1520	1	Y	Nonmotor	Eel Wier	Eel	YP(6)	0	0	0	1	0	0	0
103	06/05/94	1810	2	Y	Motor	Eel Wier	Eel		0	0	0	4	0	0	0
104	06/05/94	1815	1	Y	On Foot	Eel Wier	Eel		0	0	0	1	0	0	0
105	06/05/94	1940	1	Y	On Foot	Eel Wier	Eel		0	0	0	2	0	0	0
106	06/10/94	1555	3	Y	Motor	Eel Wier	Eel	WP(1)	0	0	0	0	0	0	0
107	06/10/94	1610	2	Y	On Foot	Eel Wier	Eel	YP(2)	0	0	0	10	0	0	0
108	06/10/94	1730	1	Y	On Foot	Eel Wier	Eel		0	0	0	1	0	0	0
109	06/11/94	1310	1	Y	On Foot	Eel Wier	Eel		0	0	0	0	0	0	0
110	06/12/94	1835	2	Y	Motor	Eel Wier	Eel	YP(1)	2	2	0	4	0	0	0

Appendix 4.

Postal 15/11/94
Removal 21/11/94

PARKS CANADA
RECORD OF SCREENING DETERMINATION AS PER SECTION 12 OF THE ENVIRONMENTAL ASSESSMENT AND REVIEW PROCESS GUIDELINES ORDER

1. Project Title: fish counting fence.
2. Location (Park, Site, Canal): Kejimkujik National Park
3. Project Description: Installation and operation of a fish counting fence on Rogers Brook.
4. Proponent: Resource Conservation
5. Proposed Commencement Date: September 22, 1994
6. Registration Date: October 28, 1994
7. Registration Number: KEJ94-16

12(a) The proposal is of a type identified by the list described under paragraph 11(a), in which case the proposal may automatically proceed; ☐

12(b) The proposal is of a type identified by the list described under paragraph 11(b); in which case, the proposal shall be referred to the Minister for public review by a Panel; ☐

12(c) The potentially adverse environmental effects that may be caused by the proposal are insignificant or mitigable with known technology; in which case the proposal may proceed or proceed with the mitigation, as the case may be; ☒

12(d) The potentially adverse environmental effects that may be caused by the proposal are unknown; in which case the proposal shall either require: ☐
1. Further study and subsequent rescreening or reassessment or, ☐
2. Be referred to the Minister for public review by a Panel; ☐

12(e) The potentially adverse environmental effects that may be caused by the proposal are significant; as determined in accordance with criteria developed by FEARO in cooperation with the initiating department, in which case the proposal shall be referred to the Minister for public review by a Panel; or, ☐

12(f) The potentially adverse environmental effects that may be caused by the proposal are unacceptable, in which case the proposal shall either be: ☐
1. Modified and subsequently rescreened or reassessed or ☐
2. Be abandoned. ☐

SCREENING APPROVED BY: W.L. Wamboldt TITLE: Park Superintendent DATE: 21 November 1994

FOR MORE INFORMATION:

CONTACT: Jordan Wentzell (Chief Park Warden)
ADDRESS: Kejimkujik National Park
PHONE: (902) 682-2770 FAX:

COMMENTS DUE BY: November 17, 1994

44

Summary and analysis of public comments:

No public comments Received

JW

Screening done by: Robert Nicholas, Park Warden

CONSIDERATION OF PUBLIC CONCERN AS PER SECTION 13 OF EARPGO:

13. Notwithstanding the determination concerning a proposal made pursuant to section 12, if public concern about the proposal is such that a public review by a Panel is desirable, the initiating department shall refer the proposal to the Minister of Environment for public review by a Panel.

PANEL REVIEW RECOMMENDED

☐

Remarks:

Approved by: W.L. Wamboldt

Title: Park Superintendent

Date: 21 November 1994

PROJECT FOLLOW-UP

...re and extent of potential residual impacts:

45

...he fish fence will enable park managers to better understand fishery resources as described in the 1994 Kejimkujik Gamefish Management Plan (Nicholas et al, 1994)

Project Surveillance Requirements: Trap will be checked daily during operating season.

Responsible Officer	Schedule
Robert Nicholas	1994: Sept. - Nov.; 1995: April - Nov.

Remarks:

Daily site visit will allow operator to assess unanticipated impacts.

Project Monitoring Requirements None

Responsible Officer	Schedule

Remarks:

Follow-Up Report: Attached Yes ☐ No ☒

Remarks: Follow-Up report will be written after the end of the 1994 operating season.

V BACKGROUND

Bibliography (Indicate √ if attached or consulted)

	Att	Cons.		Att	Cons.		Att	Cons.
Park Biophysical			Park Management Plan		X	PIP		
Project Location Plan			Sectoral Plan			Preliminary Design		
Unpublished Reports or Studies		X	Resource Description & Analysis			Final Design		
Others		X	Describe:					

People or Agencies Consulted

Name	Title	Date
Gary Corbett	Fish Biologist, ARO	various
Wes White	Scientist, DFO	various

Attachments: Yes No Please list:

Bibliography:

Nicholas, R. 1994. In Prep. Fish Management research report - 1994. Resource Conservation, Kejimkujik National Park.

Nicholas, R., C. Drysdale and G.N. Corbett, 1994. Fish Management Plan, Kejimkujik National Park, 1994, Resource Conservation

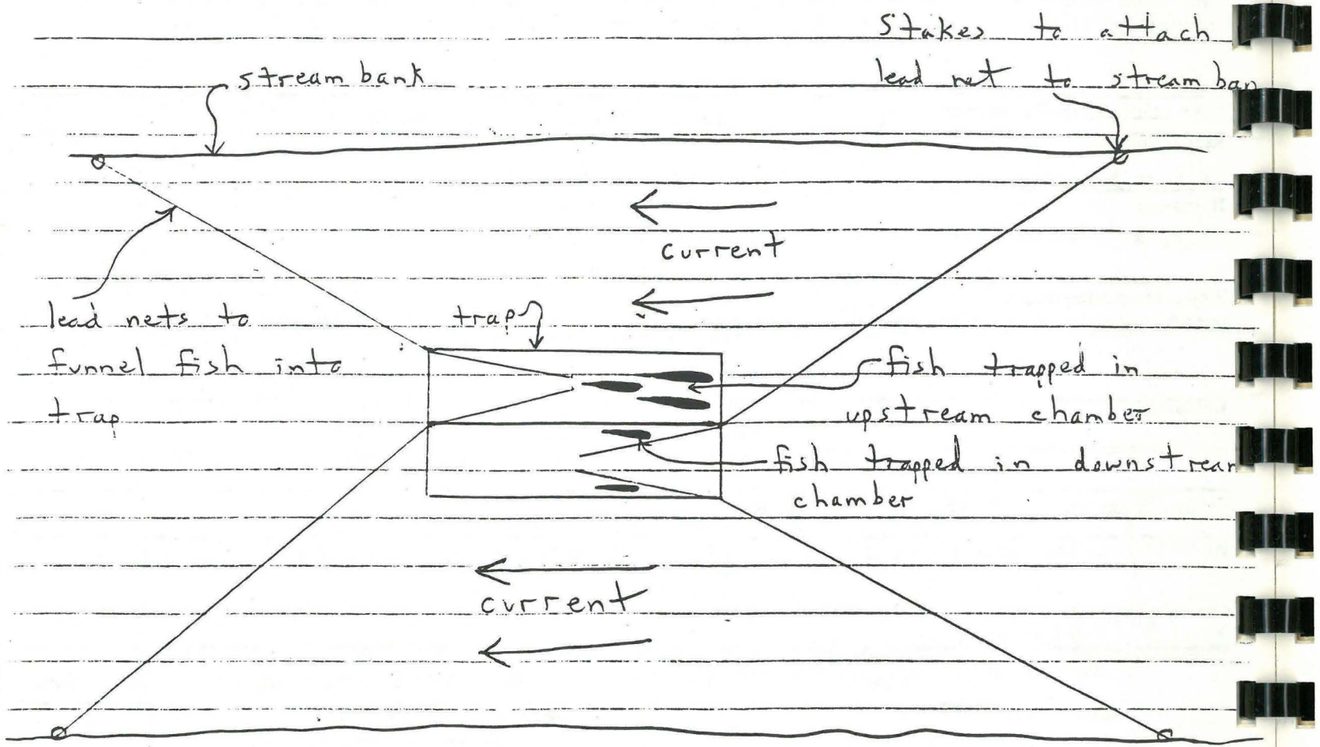

Figure 1. Aerial view of Rogers Bk. fish counting fence.

REMARKS

The scientific objectives of the Rogers Brook fish counting fence are described in the Kejimkujik Gamefish Management Plan (Nicholas et al. 1994).

The trap is to be located about 20m downstream from the main Park road in an artificial channel created during road construction to realign the rivers' course. The trap has two compartments. One captures fish heading upstream while the second traps fish moving downstream (see Figure 1). The trap will be checked daily and animals will be removed, examined and released alive in the direction they were headed, ie a trout captured in the upstream compartment will be released above the trap after being examined. The trap site has a current year round. Salmonoid stream traps require a current to work; trout will usually not enter a trap placed in still waters and those that do can find their way out.

The problem with using a site with a current is erosion. Siltation and erosion were identified as potential problems due to both the installation and operation of the trap. A 10" deep hole 3' x 6' will be dug in the streambed to set the trap into. It is necessary to sink the trap into the streambed since the chosen site has only 3 or 4 inches of water. The trap will need reinstalling each spring since ice will require its annual removal. Mitigating measures for 1994 should include installing the trap in the fall when water levels are low, using hand tools to dig the hole and placing a silt trap below the work area.

The scientific literature suggests that trout wait for rising water levels before moving. If, based on 1994 trapping results, this is found to be the case at Kejimkujik it will not be necessary to dig a hole each year since the trap can be placed on the surface of the streambed. It would not matter if the trap ran dry at times if fish do not move during periods of low water.

Another problem could arise if leaves or other debris plug the lead nets of the trap, thereby diverting the rivers' current against the shoreline causing erosion. An appropriate cleaning schedule and methodologies should be developed to avoid this problem. A plastic barrier could be placed on the streambed or shoreline in vulnerable areas if water is seen to strike the bank directly.

The second major concern was that the trap could block fish movement. The initial trap design utilized a vertical entrance slit. The vertical slit in combination with sinking the trap into the streambed will allow fish to enter the trap during extremely low water levels. The problem with the vertical slit is that fish may be capable of escaping from the trap fairly easily. This should be looked for in 1994. If trout are seen darting from the trap when workers approach the area, it should be concluded that the trap is blocking fish movement. Conical entrances are known to retain fish better than vertical ones. In 1994 several raccoon traps should be fitted with conical entrances and placed in the

river to test how well fish are retained by this kind of trap. The problem with conical traps is that the entrance is located off the bottom. They therefore block fish movement during periods of low water. Consequently, vertical entrances should be used in 1994. If the conical entrances are seen to retain fish well and if fish are seen not to move during periods of low water, the vertical entrance should be replaced with conical entrances in 1995.

Blockage of other organisms should not be a problem. Mammals can easily walk around the trap. Turtles will be looked for each day and carried around the trap whenever seen. Amphibians and insects should be readily caught by the trap, and then released in the appropriate direction.

Fish may be stressed by energy loss associated with remaining in the current while they await removal. This could be a significant problem for small fish and non-salmonoids that are not used to remaining in flowing water. The trap should therefore have current barriers installed to create pockets of slower flowing water and should be checked at least daily. In periods of high water the current velocity will increase and the trap should be checked more frequently, preferably every 2 or 3 hours.

Fish could also be stressed during the examination, which includes measuring length and weight, tagging or clipping each trout and collecting scales. It will be the responsibility of the project coordinator to ensure all workers receive appropriate training on handling fish. Fish mortality caused by the trap and handling should be monitored in 1994, and the trap will have to be abandoned if mortality is significant.

Trout mortality will be high if they are handled during the warm summer months since Park trout are seriously stressed by warm waters. Based on the literature and Park angling trends, however, it is expected that trout will mainly move during the cool seasons of spring and fall, when they are very healthy. It is recommended that trout caught during the warm season (water temperature above 18 degrees Celsius) should be released without being examined.

The trap should be removed in 1994 as soon as the success of the above noted changes has been verified since biological data will not be collected in this year. In 1995 and 1996 the trap should be installed as early in the season as possible and left in as late as is feasible. This should identify the periods of peak movement and, by fin clipping, should distinguish between genuine migration and local movements. The resulting information can be used to identify the optimum periods of operations in subsequent years for long-term monitoring.

ENVIRONMENTAL ASSESSMENT AND REVIEW PROCESS
FOLLOW-UP REPORT

Project Title: Fish Counting Fence PIP No.:

Report Prepared By: Robert Nicholas Date: Jan. 2/95

List of Existing Screening(s) (by Registration No.): KEJ 94-16

File with Screening: _____ Previous Follow-up Report: N0

Period of Construction: From 07.09.94 To 24.09.94

Period of Surveillance: From 24.09.94 To 02.11.94

Distribution of Report:

Contractor: None

Status of Project: Completed

Attachments (specify): Remarks

1. Were all mitigation measures recommended in the screening and/or specifications implemented? Yes X No _____. If not, please explain on attached sheet(s).

2. a) Were all the mitigation measures that were implemented effective? Yes X No _____ Please detail measures that were not effective.

   b) How was effectiveness determined? Visual observations

3. a) Did activities or environmental impacts occur that had not been predicted or addressed in the environmental screening. Yes _____ No X

   b) Did environmental impacts occur that had been more, or less, severe (please specify) than predicted. Yes _____ No X _____

   Provide additional comments on attached sheet(s) such as how these unanticipated impacts were mitigated.

On attached sheet(s) please respond to the following:

4. Observations: Include how the screening process might have been improved; how environmental protection specifications or permits were complied with or might have been strengthened or altered; **highlight outstanding requirements.** Provide any additional comments or recommendations (e.g. construction practices, schedule, relationship or

Remarks

The fish fence was installed and operated from September 24 to November 2, 1994, on Rogers Brook as described in the screening report. It was seen that fish entered the trap only when water levels rose as a result of rainfall. It was also seen that the vertical entrance slit did not keep fish inside the trap; many were seen leaving the trap as workers approached the area. The problem was resolved by installing conical entrances. Fish could not escape from these traps.

Little fish mortality was recorded over the 40 day period. One bullhead and 21 yellow perch appeared to have been dead for days and probably died above the trap and were carried into it by the current. The fast currents of November 2 (after a heavy rainfall) may have been responsible for the death of one trout parr and 1 yellow perch, although other fish in the trap appeared to be fine. Current blocks should be placed in the trap next year so small fish can await removal while being out of the main current.

The trap blocked the movement of a large snapping turtle on September 25 and 27. The turtle was not seen after this date and it possibly walked around the trap. A snapper was seen above the trap on November 9 and was heading upstream. In the future, blocked turtles should be carried around the trap.

Daily cleaning of the trap prevented bank erosion. The bank should be lined with plastic next year in areas that are susceptible to erosion. All other terms of the EARP screening should be followed.

PARKS CANADA
RECORD OF SCREENING DETERMINATION AS PER SECTION 12 OF THE ENVIRONMENTAL ASSESSMENT AND REVIEW PROCESS GUIDELINES ORDER

1. Project Title: Lake Survey	
2. Location (Park, Site, Canal): Kejimkujik National Park	
3. Project Description: Scientific research to examine the effects of acidification on fish distribution.	
4. Proponent: Resource Conservation	
5. Proposed Commencement Date: June 15, 1995	
6. Registration Date: January 2, 1995	7. Registration Number: KEJ 95-01

12(a) The proposal is of a type identified by the list described under paragraph 11(a), in which case the proposal may automatically proceed; ☐

12(b) The proposal is of a type identified by the list described under paragraph 11(b); in which case, the proposal shall be referred to the Minister for public review by a Panel; ☐

12(c) The potentially adverse environmental effects that may be caused by the proposal are insignificant or mitigable with known technology; in which case the proposal may proceed or proceed with the mitigation, as the case may be; [X]

12(d) The potentially adverse environmental effects that may be caused by the proposal are unknown; in which case the proposal shall either require: ☐
1. Further study and subsequent rescreening or reassessment or, ☐
2. Be referred to the Minister for public review by a Panel; ☐

12(e) The potentially adverse environmental effects that may be caused by the proposal are significant; as determined in accordance with criteria developed by FEARO in cooperation with the initiating department, in which case the proposal shall be referred to the Minister for public review by a Panel; or, ☐

12(f) The potentially adverse environmental effects that may be caused by the proposal are unacceptable, in which case the proposal shall either be: ☐
1. Modified and subsequently rescreened or reassessed or ☐
2. Be abandoned ☐

SCREENING APPROVED BY: W.L. Wamboldt TITLE: Superintendent DATE:

FOR MORE INFORMATION:

CONTACT: Jordan Wentzell (Chief Park Warden)	
ADDRESS: Kejimkujik National Park	
PHONE: (902) 682-2770	FAX:

COMMENTS DUE BY: January 10, 1995

52

Summary and analysis of public comments:

Screening done by: Robert Nicholas, Park Warden

CONSIDERATION OF PUBLIC CONCERN AS PER SECTION 13 OF EARPGO:

13. Notwithstanding the determination concerning a proposal made pursuant to section 12, if public concern about the proposal is such that a public review by a Panel is desirable, the initiating department shall refer the proposal to the Minister of Environment for public review by a Panel.

PANEL REVIEW RECOM-MENDED ☐

Remarks:

Approved by:

Title: Park Superintendent | Date:

IV PROJECT FOLLOW-UP

Nature and extent of potential residual impacts: 53

The study will enable park managers to understand the potential effects of acid rain on fish distribution as described in the 1994 Fish Management Plan (Nicholas et al, 1994). Some fish will die as a result of gill netting as described in the Remarks section.

Project Surveillance Requirements: visits to study area

Responsible Officer	Schedule
Robert Nicholas	June 15 - July 15 and 2 weeks in August.

Remarks:
Site visits will allow officer to assess any unanticipated impacts.

Project Monitoring Requirements: None

Responsible Officer	Schedule

Remarks:

Follow-Up Report: Attached Yes ☐ No ☒

Remarks:
Any mortalities associated with the study will be described in the 1995 Fish Management Report.

V BACKGROUND

Bibliography (indicate √ if attached or consulted)

	Att	Cons.		Att	Cons.		Att	Cons
Park Biophysical			Park Management Plan		X	PIP		
Project Location Plan			Sectoral Plan			Preliminary Design		
Unpublished Reports or Studies		X	Resource Description & Analysis		X	Final Design		
Others								

Describe:

People or Agencies Consulted

Name	Title	Date
Joseph Kerekes	Scientist, C.W.S.	various
Clifford Drysdale	Park Ecologist	various

Attachments: Yes No Please list:

Bibliography:

Nicholas, R., C. Drysdale and G. Corbett. 1994. Fish Management Plan, Kejimkujik National Park, Resource Conservation.

Nicholas, R., 1994. Fish Management Research Report, Kejimkujik National Park. Resource Conservation.

REMARKS

The scientific objectives of the lake survey are described in the Fish Management Plan (Nicholas et al, 1994). The study was carried out in 1994 and the results (see Nicholas 1994) necessitate its expansion in 1995. Luxton Lake will be resampled on two occasions to determine if brook trout are present, once from June 15-30, and the other in July or August. Snake Lake and Channel Lake will also be surveyed in July and August for white perch. Detailed methodologies are given by Nicholas (1994) and should be consulted.

The only concern is that gill nets will be employed after, and only after, live capture techniques fail to catch the target species. Gill nets are usually lethal to fish. They should be checked every two hours to reduce mortality and the nets should be pulled from the water when a single individual of the target species is caught. These measures were in effect in 1994.

Parks Canada
National Library
111 Water St. East
Cornwall, ON
K6H 6S3

Parcs Canada
Bibliothèque nationale
111, rue Water Est
Cornwall, ON
K6H 6S3