# Angling Survey, Crown Open Water, Little Main Restigouche River, New Brunswick 

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## ABSTRACT

Peppar, J.L. 1977. Angling survey, Crown Open water, Little Main Restigouche River, New Brunswick. Fish. Mar. Serv. MS Rep. 1441:24 p.

In 1975, the lower seven-mile stretch of the Little Main Restigouche River was converted from "Crown Reserve" to "Crown Open" status. A creel census was conducted in this area over the 1975 and 1976 angling seasons. Angling was monitored closely to assess effort, catch and the effectiveness of a mid-season closure placed on the fishery each year. In addition, characteristics and interests of the anglers utilizing the resource were | recorded through the use of a questionnaire.

The creel census gathered catch and effort data from 40 percent and 91 percent of the anglers observed in 1975 and 1976, respectively. Total estimated catch in 1975 was 40 Atlantic salmon and 42 brook trout and, in 1976, 87 Atlantic salmon and 125 brook trout.

Key words: Atlantic salmon, creel census, questionnaire, angler residence, effort, harvest, quality, run timing, spawning escapement, juvenile density

## resume

Peppar, J.L. 1977. Angling survey, Crown Open water, Little Main Restigouche River, New Brunswick. Fish. Mar. Serv. MS Rep. 1441:24 p.

En 1975, la section de la rivière Little Main Restigouche, s'étendant de l'embouchure jusqu'a sept milles en amont, a été converti du statut "Réservée la Couronne" a celui de "Libre de la Couronne". Le denombrement des poissons pris par les pécheurs y a eté fait durant la saison de pêche à la ligne de 1975 et de 1976. La pêche sportive y a été etroitment suivie chaque annee afin de déterminer l'importance des prises, l'effort de pêche et les conséquences de la femeture de la pêche à la mi-saison. Les caractéristiques et les goats des pêcheurs ont ete etablis à l'aide d'un questionnaire.

Le dénombrement des prises a permis de recueillir des donnés sur $40 \%$ et 918 des pêcheurs pour les annés 1975 et 1976 respectivement. Au cours de ces deux mêmes annees, les prises totales se sont élevées respectivement à $40^{\circ}$ et 87 saumons de l'Atlantique, et a 42 et 125 ombles de fontaine.

In 1975, the New Brunswick Department of Natural Resources converted the lower seven-mile stretch of the Little Main Restigouche River (the former Upper Restigouche Crown Reserve) from "Crown Reserve" status to "Crown Open" status, allowing it to be angled for Atlantic salmon by any licensed New Brunswick resident (Fig. l). A regulation to this effect was officially confirmed on April 2, 1975 (New Brunswick Fisheries Act Regulation 75-26, by Order-in-Council 75-232).

The adoption of the Crown Open status for the former Upper Restigouche Crown Reserve was seen as a move by the Province of New Brunswick to increase the opportunity for more public salmon angling in the Restigouche River system. This stretch of open water is the only one of its kind in the Restigouche system. Conversion to Crown Open status offered to any licensed New Brunswick angler rather unlimited sport fishing for salmon, especially when compared to the former reserve system. Under the reserve status each angler had to take his chance in a lottery draw, and then, if successful. could fish only three days and on pre-specified dates.

Following a review of available biological data (outlined in this report) and discussions with New Brunswick Fish and Wildlife Branch and federal Conservation and Protection Division personnel, the Resource Branch recommended that no increase in large salmon exploitation be allowed at this time in the Restigouche system. Because of concern that the opening of the former Upper Restigouche Crown Reserve to public angling could result in greatly increased fishing pressure and harvest of salmon, the Fisheries and Marine Service reduced the salmon angling season on the Little Main Restigouche. Angling was closed June 23-July 13 in 1975, and June 21-July 11 in 1976, to help ensure adequate spawning escapement of early-run large salmon. The angling season for the remainder of the Restigouche system remained from June 1 to August 31, in both years.

This report details results of a creel census conducted by Resource Branch personnel over the open angling periods during the 1975 and 1976 seasons. Angling on this seven-mile stretch of Crown Open water was monitored closely over both seasons to assess effort, catch and effectiveness of the closure. In addition to the gathering of catch statistics, characteristics and interests of the anglers utilizing the resource were afforded through the use of a questionnaire.

## AREA OF STUDY

The creel census covered the lower seven-mile stretch of the Little Main Restigouche River (formerly the Upper Restigouche Crown Reserve). The lower limit of this section of river is delimited by the Montgomery Bridge (adjacent to the New

Brunswick Forest Service Ranger Station) and the upper limit (Mile 7) is just below the mouth of Jardine Brook.

## METHODS AND MATERIALS

Two casuals or students were employed to conduct the field survey. Department facilities located outside of Kedowick, New Brunswick (Hales Brook Camp), were utilized as headquarters; these facilities are handy to the study area-about 3.2-4.8 kilometers downriver of the Montgomery Bridge, the lower limit of the Crown Open stretch. The creel censuses were conducted during the two open angling periods each year, June 1-22 and July 14 -August 31 in 1975, and June 1-20 and July 12-August 31 in 1976.

Censusing conducted was either "active" or "passive". Active censusing involved surveying the stretch of river by canoe or inflatable boat, and censusing fishermen while they were on the water. Passive censusing involved stationing the census clerks at access points to the river and censusing fishermen as they entered or left the water. These access points were mostly confined to three locations: lower end of the open stretch (Montgomery Bridge), accessible by any vehicle; Mile 4 of the open stretch, accessible by four-wheel drive vehicle or similar rough-terrain vehicle; and Mile 7 (upper limit of the open stretch), accessible by rough-terrain


FIG. 1. Restigouche River system, New Brunswick, showing location of Little Main Restigouche Crown Open water.
vehicle only. Thus, total access to the Crown Open stretch of the Little Main Restigouche was limited and could be overed for the purpose of the creel census. If the two types of censusing mentioned, active censusing was favoured and was included in the survey as much as water conditions and time would allow.

Work schedules of the census clerks were arranged to ensure that at least one was on duty each day of the week (7-day week), and that both were on duty on weekends. By staggering hours of work, as many hours of daylight as possible were covered each day.

The surveys were conducted by talking to the anglers and obtaining information pertaining to number of hours fished, and numbers and weights of all fish caught. These data were recorded on creel-report forms (Appendices A and B) for later analysis. In addition, anglers were asked to complete a questionnaire (Appendices $C$ and D) pertaining to their residence and angling interests. Responses to these questionnaires are summarized in the results section of the report.

## BIOLOGICAL BACKGROUND DATA AND PAST ANGLINC HISTORY

Background data on the Little Main Restigouche is limited, especially with regards to the lower seven-mile stretch, or former Upper Restigouche Crown Reserve. ?ver the period 1971-75, personnel of the lew Brunswick Fish and Wildlife Branch conducted spawning surveys (redd counts) on the Crown Reserve and two major tributaries Spawning escapements appear to have increased to this part of the Restigouche River system since institution of the commercial fishing ban in 1972, as evidenced by the increased number of redds observed since 1971. Results (Alan Madden, pers. comm.) are presented in the following table.

|  | Red d C o unt s |  |  |
| :--- | :---: | :---: | :---: |
| Year Crown Feserve Jardine Brook | Counamitz River |  |  |
| 1971 | 73 | 12 | 14 |
| 1972 | 197 | 97 | 75 |
| 1973 | 723 | no data | 115 |
| 1974 | 460 | 202 | 112 |
| 1975 | 771 | no data | no data |
|  |  |  |  |

Personnel of the Resource Branch have gathered run-timing data through tag returns from adult salmon angled on the Little Main Restigouche, and juvenile salmon population estimates have been made above the former reserve stretch and on the najor tributaries.

Angling returns (1972-75) from salmon tagged at the Restigouche sampling trap (operated near Dalhousie, New Brunswick, each year since established in 1972) are
summarized in the following table conly returns from those tagged and recaptured in the same year).

| Pecapture <br> location | Year | Date tagged | Date recaptured |
| :---: | :---: | :---: | :---: |
| Mile 4, Crown Peserve | 1972 | June 20 | July 15 |
|  | 1974 | June 19 | July 2 |
| Iittle Main Pestigouche | 1972 | June 16 | July 9 |
|  | 1972 | June 27 | July 28 |
|  | 1973 | June 18 | July 8 |
|  | 1973 | June 18 | Aug 8 |
|  | 1975 | June 5 | No date |
|  | 1975 | Jure 30 | No date |
|  | 1975 | June 30 | Aug 2 |
|  | 1975 | July 1 | Aug 23 |
|  | 1975 | July 9 | Aug 16 |
| Boston Brook | 1973 | June 15 | July 11 |

Salmon recaptured in the Little Main Restigouche were tagged primarily in the mid- to late-June period, each year. Recaptures were made throughout July and August, one as late as August 23 (in 1975).

The following table summarizes mean juvenile salmon densities obtained by annual electroseining surveys during 197275 (six sites total/year):

| Stage | Mean juvenile densities per $83.6 \mathrm{~m}^{2}\left(/ 100 \mathrm{yd}^{2}\right)$ |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | 1972 | 1973 | 1974 | 1975 |
| Little Main Restigouche River |  |  |  |  |
| Fry | 1.1 | 7.2 | 42.2 | 33.1 |
| Small parr | <1 | <1 | 9.5 | 8.5 |
| Large parr | $<1$ | <1 | <1 | 1.6 |
| Jardine Brook |  |  |  |  |
| Fry | $<1$ | 7.7 | <1 | 11.1 |
| Small parr | 1.2 | 1.7 | 10.6 | 8.3 |
| Large parr | $<1$ | 1.7 | <1. | 2.5 |
| Gounamitz River |  |  |  |  |
| Fry | 5.8 | 31.4 | 12.8 | 7.4 |
| Small parr | 1.4 | <1 | 6.5 | 2.7 |
| Large parr | $<1$ | $<1$ | <1 | <1 |

The year 1973 was the first that any changes were expected in juvenile salmon levels resulting from increased escapements to the river in 1972, the first year of the commercial fishing ban. As shown in the table, increased fry levels were observed in this part of the system in 1973 and increased small parr levels in 1974.

Selected statistics from past angling seasons (1972-74) on the Crown Reserve are summarized (Table 1). Data were obtained from internal sumaries prepared by the New Brunswick Fish and Wildiffe Branch. Salmon harvest in the Little Main Festigouche
is primarily during the late-June to midto late-August period. Angling success, however, appears to be highly related to water conditions, especially those experienced late in the season. Low water levels, usually encountered after lateJuly, normally result in poorer angling quality for the remainder of the season.

TABLE 1. Upper Restigouche River Crown Reserve salmon angler harvest-selected statistics from 1972-74 seasons (N.B. Fish \& Wildlife Branch).

| Statistic | 1972 | $\frac{\text { Year }}{1973}$ | 1974 |
| :---: | :---: | :---: | :---: |
| Seascn | Jun 5Aug 30 | Jun 4Aung 31 | Jun 3 Aug 31 |
| Potential anglers | 100 | 112 | 124 |
| Potential rod days | 300 | 336 | 372 |
| Angling harvest reported <br> - grilse <br> - large salman <br> - trout | $\begin{array}{r} 181 \\ 99 \\ 262 \end{array}$ | $\begin{array}{r} 22 \\ 32 \\ 222 \end{array}$ | $\begin{array}{r} 43 \\ 43 \\ 490 \end{array}$ |
| No. reporting anglers who fished | 91 | 91 | 98 |
| Mean no. fish per rod_day. | 1.03 | 0.23 | 0.28 |
| Mean no. fish per angler | 3.10 | 0.68 | 0.87 |
| No. successful anglers | 77 | 36 | 36 |
| Percent successful anglers | 85.6 | 39.6 | 36.7 |

1"Fish" denotes grilse and large salmon.
${ }^{2}$ Successful in catching at least one grilse or large salmon.

## RESULTS

## WEEKLY SALMON AND TROUT HARVEST

Weekly catches of salmon and trout taken over the 1975 season by the 152 anglers interviewed are summarized (Table 2). The total harvest of 16 salmon was comprised of 75\% grilse and 25\% large salmon. Most grilse were caught between July 14 and August 3, and all large salmon (with one exception) were taken during the week of July 21-27. No salmon were caught after August 10. A total of 17 trout was harvested between June 9-22.

Weekly catches of salmon and trout taken over the 1976 season by the 494 anglers interviewed are also summarized (Table 3). The total harvest of 79 salmon was comprised of 768 grilse and $24 \%$ large
salmon. Grilse were taken throughout the angling period after the closure was lifted, and the majority of large salmon were caught during August. The total harvest of 114 trout was taken during the months of June and July, the majority during June.

TABLE 2. Weekly salmon and trout harvest, Little Main Restigouche River Crown Open, 1975.

|  | Number of salmon |  |  |  |
| :--- | :---: | :---: | :---: | :---: |
| Period | Grilse | Large <br> salmon | Totals | No. of <br> trout |
| Jun 2-8 | 0 | 0 | 0 | 0 |
| Jun 9-15 | 0 | 0 | 0 | 15 |
| Jun 16-22 | 0 | 1 | 1 | 2 |
| Jun 23-Jul $13^{1}$ | - | - | - | - |
| Jul 14-20 | 5 | 0 | 5 | 0 |
| Jul 21-27 | 0 | 3 | 3 | 0 |
| Jul 28-Augg 3 | 6 | 0 | 6 | 0 |
| Aug 4-10 | 1 | 0 | 1 | 0 |
| Aug 11-17 | 0 | 0 | 0 | 0 |
| Aug 18-24 | 0 | 0 | 0 | 0 |
| Aug 25-31 | 0 | 0 | 0 | 0 |
| Totals | 12 | 4 | 16 | 17 |

${ }^{1}$ Area closed to angling.

TABLE 3. Weekly salmon and trout harvest, Little Main Restigouche River Crown Open, 1976.

| Period | Number of salmon |  |  | No. of trout |
| :---: | :---: | :---: | :---: | :---: |
|  | Grilse | $\begin{aligned} & \text { Large } \\ & \text { salmon } \end{aligned}$ | Totals |  |
| Jun 1-6 | 0 | 1 | 1 | 24 |
| Jun 7-13 | 0 | 0 | 0 | 45 |
| Jun 14-20 | 0 | 1 | 1 | 22 |
| Jun 21-Jul $11{ }^{1}$ | - | - | - | - |
| Jul 12-18 | 19 | 0 | 19 | 8 |
| Jul 19-25 | 3 | 0 | 3 | 1 |
| Jul 26-Aug 1 | 13 | 2 | 15 | 12 |
| Aug 2-8 | 5 | 0 | 5 | 0 |
| Aug 9-15 | 3 | 6 | 9 | 0 |
| Aug 16-22 | 10 | 4 | 14 | 2 |
| Aug 23-29 | 6 | 5 | 11 | 0 |
| Aug 30-31 | 1 | 0 | 1 | 0 |
| Totals | 60 | 19 | 79 | 114 |

${ }^{1}$ Area closed to angling.

## ,SALMON ANGLING QUALITY

Of the 152 anglers interviewed over the 1975 season, 11 ( 7.28 ) were successful in catching at least one grilse or large salmon (Table 4). This represents an average of 0.11 fish/angler, or 0.03 fish/ hour fished.

Of the 494 anglers interviewed over the 1976 season, 70 (14.28) were successful in catching at least one grilse or large

TABLE 4. Salmon angling quality, Little Main Restigouche River Crown Open, 1975.

${ }^{1}$ "Fish" denotes both grilse and large salmon.
${ }^{2}$ Area closed to angling.
salmon (Table 5). This represents an average of 0.16 fish/angler, or 0.05 fish/ hour fished.

CHRONOLOGICAL DISTRIBUTION OF SALMON HARVEST

Weekly catches and cumulative totals of salmon harvested over the 1975 season are summarized (Table 6). All large
salmon had been angled by July 27 , and $42 \%$ of the grilse catch had been taken by this date. All grilse had been captured by August 10 .

Harvest of both large salmon and grilse in 1976 was distributed more evenly over the entire angling season, than in 1975 (Table 7). Few fish were taken before the angling closures-June 23 -July 13 in 1975 and June 2l-July 11 in 1976.

TABLE 5. Salmon angling quality, Little Main Restigouche River Crown Open, 1976.

| Period | Numbers of fish ${ }^{1}$ angled |  |  | Number of anglers interviewed | $\frac{\text { Successful anglers }}{\text { Numbers }}$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\begin{aligned} & \text { Totals } \\ & \text { per week } \end{aligned}$ | Average per hour fished | Average per angler |  |  |  |
| Jun 1-6 | 1 | 0.02 | 0.20 | 5 | 1 | 20.0 |
| Jun 7-13 | 0 | 0.00 | 0.00 | 20 | 0 | 0.0 |
| Jun 14-20 | 1 | 0.01 | 0.07 | 15 | 1 | 6.7 |
| Jun 21-Jul 11 ${ }^{2}$ | - | 0.06 | - | - | - | - |
| Jul 12-18 | 19 | 0.06 0.05 | 0.18 | 103 | 18 | 17.5 |
| Jul 19-25 | 3 | 0.07 | 0.12 | 25 | 3 | 12.0 |
| Jul 25-Aug 1 | 15 | 0.07 0.04 | 0.19 | 77 | 12 | 15.6 |
| Aug 2-8. | 5 | 0.04 0.09 | 0.09 | 54 | 5 | 9.3 |
| Aug 9-15 | 9 | 0.05 | 0.23 | 40 | 7 | 17.5 |
| Aug 16-22 | 14 | 0.05 0.08 | 0.14 | 98 | 12 | 12.2 |
| Aug 23-29 | 11 | 0.08 | 0.25 | 44 | 10 | 22.7 |
| Aug 30-31 | 1 | 0.05 | 0.08 | 13 | 1 | 7.7 |
| Totals | 79 | 0.05 | 0.16 | 494 | 70 | 14.2 |

[^0]TABLE 6. Chronological distribution of salmon harvest, Little Main Restigouche River Crown Open, 1975.

| Period | Numbers harvested |  | Cumulative totals |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Numbers of fish |  | Percent of harvest |  |
|  | Grilse | Large salmon | Grilse | Large salmon | Grilse | Large salmon |
| Jun 2-8 | 0 | 0 | 0 | 0 | 0 | 0 |
| Jun 9-15 | 0 | 0 | 0 | 0 | 0 | 0 |
| Jun 16-22 | 0 | 1 | 0 | 1 | 0 | 25 |
| Jun 23-Jul 13 ${ }^{1}$ | - | - | - | - | - | - |
| Jul 14-20 | 5 | 0 | 5 | 1 | 42 | 25 |
| Jul 21-27 | 0 | 3 | 5 | 4 | 42 | 100 |
| Jul 28-Aug 3 | 6 | 0 | 11 | 4 | 92 | 100 |
| Aug 4-10 | 1 | 0 | 12 | 4 | 100 | 100 |
| Aug 11-17 | 0 | 0 | 12 | 4 | 100 | 100 |
| Aug 18-24 | 0 | 0 | 12 | 4 | 100 | 100 |
| Aug 25-31 | 0 | 0 | 12 | 4 | 100 | 100 |
| Totals | 12 | 4 | 12 | 4 |  |  |

${ }^{1}$ Area closed to angling.

TABLE 7. Chronological distribution of salmon harvest, Little Main Restigouche River Crown Open, 1976.

| Period | Numbers harvested |  | Cumulative totals |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Numbers of fish |  | Percent of harvest |  |
|  | Grilse | Large salmon | Grilse | Large salmon | Grilse | Large salmon |
| Jun 1-6 | 0 | 1 | 0 | 1 | 0 | 5 |
| Jun 7-13 | 0 | 0 | 0 | 1 | 0 | 5 |
| Jun 14-20 | 0 | 1 | 0 | 2 | 0 | 11 |
| Jun 21-Jul $11{ }^{\text {a }}$ | - | - | - | - | - | - |
| Jul 12-18 | 19 | 0 | 19 | 2 | - 32 | 11 |
| Jul 19-25 | 3 | 0 | 22 | 2 | 37 | 11 |
| Jul 26-Aug 1 | 13 | 2 | 35 | 4 | 58 | 21 |
| Aug 2-8 | 5 | 0 | 40 | 4 | 67 | 21 |
| Aug 9-15 | 3 | 6 | 43 | 10 | 72 | 53 |
| Aug 16-22 | 10 | 4 | 53 | - 14 | 88 | 74 |
| Aug 23-29 | 6 | 5 | 59 | 19 | 98 | 100 |
| Aug 30-31 | 1 | 0 | 60 | 19 | 100 | 100 |
| Totals | 60 | 19 | 60 | 19 |  |  |

${ }^{1}$ Area closed to angling.

## SUMMARY OF ANGLING EFFORT

Weekly effort data over the 1975 season were also collected (Table 8) on 377 anglers observed. Forty percent (152) of these anglers were interviewed. They fished a total of 529 hours, with most of this effort expended during July 14-August 3. The estimated total number of hours fished by all anglers was 1, 383 hours.

Weekly effort data for the 1976
season (Table 9) was tabulated for 542 observed anglers. Ninety-one percent of these anglers were interviewed. They fished a total of 1,489 hours, mostly immediately after lifting of the closure and spread quite evenly throughout the remainder of the season. The estimated total number of hours fished by all anglers was 1,742 hours.

TABLE 8. Summary of angling effort, Little Main Restigouche River Crown Open, 1975.
$\left.\begin{array}{lccc}\hline \text { Period } & \text { Numbers of anglers } \\ \text { Observed } & & \begin{array}{c}\text { Interviewed }\end{array} & \begin{array}{c}\text { By anglers } \\ \text { interviewed }\end{array} \\ \hline \text { Estimated total, } \\ \text { all anglers }\end{array}\right]$

[^1]TABLE 9. Sumary of angling effort, Little Main Restigouche River Crown Open, 1976.

| Period | Numbers of anglers |  | Hours fished |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |
|  | observed | Interviewed | interviewed ${ }^{\text { }}$ | all anglers |
|  |  | - 5 |  |  |
| Jun 1-6 | 9 | 5 | 51.00 | 92 |
| Jun 7-13 | 24 | 20 | 69.50 | 83 |
| Jun 14-20 | 48 | 15 | 81.75 | 262 |
| Jun 21-Jul $11{ }^{2}$ | - | - | - | - |
| Jul 12-18 | 105 | 103 | 315.00 | 321 |
| Tul 19-25 | 25 | 25 | 57.75 | 58 |
| rul 26-Aug 1 | 77 | 77 | 224.25 | 224 |
| Aug 2-8 | 55 | 54 | 138.75 | 141 |
| Aug 9-15 | 43 | 40 | 95.25 | 102 |
| Aug 16-22 | 99 | 98 | 259.75 | 262 |
| Aug 23-29 | 44 | 44 | 145.50 | 146 |
| Aug 30-31 | 13 | 13 | 50.50 | 51 |
| Totals | 542 | 494 | 1,489.00 | 1,742 |

${ }^{1}$ Minimum, some anglers refused to specify.
${ }^{2}$ Area closed to angling.

## ESTIMATES OF TOTAL SALMON AND TROUT HARVESTS

The creel census on the Little Main Restigouche River Crown open during the 1975 angling season gathered catch and effort data from $40 \%$ of the total number of anglers observed. They harvested 16 salmon (l2 grilse and 4 large salmon) and 17 trout.

This represents at least $40 \%$ of the total harvest from the Crown Open; thus, the total harvest from the Crown Open in 1975 was estimated to be at least 40 salmon ( 30 grilse and 10 large salmon) and 42 trout.

The creel census during the 1976 angling season gathered catch and effort data from $91 \%$ of the total number of anglers observed. They harvested 79 salmon
(60 grilse and 19 large salmon) and 114 trout.

This represents at least $91 \%$ of the total harvest from the Crown Open; thus, the total was estimated to be at least 87 salmon ( 66 grilse and 21 large salmon) and 125 trout.

## RESPONSES TO QUESTIONNAIRES

Use of the questionnaire was more limited than the general creel form, because of the time involved in its administration and the possibility of its use being an annoyance to any angler engaged in the act of fishing. In 1975, the questionnaire was completed by 27 (18\%) of the 152 anglers interviewed; and, in 1976, by 122 (25\%) of the 494 anglers interviewed.

Responses to the questionnaires have been compiled by question (Tables 10 to 24 ).

## Angler Residence

Angler questionned were from 9 different counties (Table 10)-representing 6 cities, 5 towns, 12 villages and 7 communities (Table ll). The majority of anglers came from Restigouche County, mostly from the city of Campbellton, the town of Dalhousie, and the villages of Kedgwick and St. Quentin.

TABLE 10. Question 1: Residence (county) locations of anglers utilizing resource.

| Residence location (county) | $\begin{aligned} & \begin{array}{l} \text { Number of } \\ \text { responses } \end{array} \\ & 1975 \quad 1976 \end{aligned}$ |  | Percent of $\frac{\text { total response }}{1975} \frac{1976}{197}$ |  |
| :---: | :---: | :---: | :---: | :---: |
| Carleton | 3 | 14 | 11.1 | 11.5 |
| Gloucester | - | 3 | - | 2.5 |
| Madawaska | - | 11 | - | 9.0 |
| Nor thumberland | 5 | - | 18.5 | - |
| Restigouche | 14 | 71 | 51.9 | 58.2 |
| Saint John | - | 4 | - | 3.3 |
| Victoria | 3 | 8 | 11.1 | 6.6 |
| Westmorland | - | 2 | - | 1.6 |
| York | 2 | 9 | 7.4 | 7.4 |
| Totals | 27 | 122 |  |  |

TABLE 11. Question 2: Residence (city, town, village or community) locations of anglers utilizing resource.

| Residence | Number of <br> responses | Percent of <br> total response |
| :--- | :---: | :---: |
| location | (specific) | 1975 |
|  | 1976 | 1975 |


| $\begin{aligned} & \text { City } \\ & \text { Bathurst } \end{aligned}$ | - | 3 | - | 2.5 |
| :---: | :---: | :---: | :---: | :---: |
| Campbellton | 1 | 27 | 3.7 | 22.1 |
| Edmundston | - | 10 | - | 8.2 |
| Fredericton | 2 | 6 | 7.4 | 4.9 |
| Moncton | - | 1 | - | 0.8 |
| Saint Johm | - | 4 | - | 3.3 |
| Town |  |  |  |  |
| Dalhousie | 3 | 9 | 11.1 | 7.4 |
| Grand Falls | 2 | 2 | 7.4 | 1.6 |
| Hartland | - | 1 | - | 0.8 |
| Newcastle | 4 | - | 14.8 | - |
| Woodstock | 1 | 9 | 3.7 | 7.4 |
| Village |  |  |  |  |
| Atholville | - | 2 | - | 1.6 |
| Bristol | - | 1 | - | 0.8 |
| Centreville | 2 | - | 7.4 | - |
| Charlo | 1 | - | 3.7 | - |
| Florenceville | - | 2 | - | 1.6 |
| Harvey | - | 2 | - | 1.6 |
| Kedgwick | 3 | 20 | 11.1 | 16.4 |
| Nackawic | - | 1 | - | 0.8 |
| Perth-Andover | 1 | 5 | 3.7 | 4.1 |
| St. Jacques | - | 1 | - | 0.8 |
| St. Quentin | 3 | 9 | 11.1 | 7.4 |


| Tide Head | - | 3 | - | 2.5 |
| :--- | :---: | :---: | :---: | :---: |
| Community |  |  |  |  |
| Arthurette | - | 1 | - | 0.8 |
| Black Point | 2 | - | 7.4 | - |
| Burnt Church | 1 | - | 3.7 | - |
| Flatlands | - | 1 | - | 0.8 |
| Johnville | - | 1 | - | 0.8 |
| Lakeville | - | 1 | - | 0.8 |
| Point La Nim | 1 | - | 3.7 | - |
| Totals | 27 | 122 |  |  |

Angler Interest in Sport Fishing
The majority (52\%-79\%) of anglers questionned, responded that they normally sport fish (anywhere) up to 20 days each year (Table 12).

TABLE 12. Question 3: How many days do you normally fish (anywhere) each year?
Number of days

spent angling \begin{tabular}{c}
Number of <br>
responses <br>
1975

$\quad$

Percent of <br>
total response
\end{tabular}

| $1-5$ | 1 | 31 | 3.7 | 25.8 |
| :--- | ---: | ---: | ---: | ---: |
| $6-10$ | 4 | 28 | 14.8 | 23.3 |
| $11-15$ | 3 | 24 | 11.1 | 20.0 |
| $16-20$ | 6 | 12 | 22.2 | 10.0 |
| $21-25$ | 3 | 9 | 11.1 | 7.5 |
| $26-30$ | 7 | 8 | 25.9 | 6.7 |
| $31-35$ | - | 3 | - | 2.5 |
| $36-40$ | 1 | - | 3.7 | - |
| $41-45$ | 1 | - | 3.7 | - |
| $46-50$ | - | 3 | - | 2.5 |
| $51-55$ | - | 2 | - | - |
| $56-60$ | 1 | - | 3.7 | 1.7 |
| $61-65$ | 27 | 120 |  | - |
| Totals |  |  |  |  |

## Predicted Angling Effort

Approximately $70 \%$ of the anglers responded that they had fished, or intended to fish, at least three days on this Crown Opes Water (Table 13).

## Past Angling Experience on This Water

Eighty-five percent of the anglers questionned in 1975 had not fished this water as a Crown Reserve; $49 \%$ of those questionned in 1976 had fished the water as Crown Open in 1975 (Table 14).

Change in Angling Effort Due to Change in Angling Status of the Water

Had the angling status of this section of river not changed from Crown Reserve to Crown Open, each angler (up to a limit) would have had an equal chance for three days of fishing. In formulating responses to this question it was assumed,
then, that any response over three days (number of days minus three) would be an estimate of additional days spent angling due to the change in angling status of the water. At least $70 \%$ of the anglers questioned in 1975 did not feel that they were spending any additional time angling this water in 1975, as compared to previous years, based on the assumption given above (Table 15). However, fishing opportunity on the former reserve was controlled by draw, and not all of these anglers would have been successful (possibly) in the draw. Therefore, for many of these anglers, it is assumed that the 2-3 days spent angling the Crown Open in 1975 was the result of the change in angling status of the water.

TABLE 13. Question 5 (1975), 4 (1976): How many days do you plan to fish in this area (total number of days in the Crown Open water)?

| Number of angling days | $\begin{aligned} & \text { Number of } \\ & \text { responses } \\ & 1975 \quad 1976 \end{aligned}$ |  | Percent of $\frac{\text { total response }}{1975} \frac{1976}{197}$ |  |
| :---: | :---: | :---: | :---: | :---: |
| 0 | - | 2 | - | 1.7 |
| 1 | 1 | 20 | 3.7 | 16.7 |
| 2 | 14 | 48 | 51.9 | 40.0 |
| 3 | 4 | 12 | 14.8 | 10.0 |
| 4 | - | 5 | - | 4.2 |
| 5 | 2 | 3 | 7.4 | 2.5 |
| 6 | 2 | 6 | 7.4 | 5.0 |
| 7 | - | 8 | - | 6.7 |
| 10 | - | 4 | - | 3.3 |
| 14 | 1 | 4 | 3.7 | 3.3 |
| 15 | - | 6 | - | 5.0 |
| 16 | 1 | - | 3.7 | - |
| 17 | 1 | - | 3.7 | - |
| 20 | - | 2 | - | 1.7 |
| 71 | 1 | - | 3.7 | - |
| Totals | 27 | 120 |  |  |

TABLE 14. Question 6 (1975), 5 (1976): Did you fish this water when it was a Crown Reserve? Did you fish this Crown Open stretch in 1975 ?

|  | Number of <br> responses | Percent of <br> Response | 2375 | 1976 |
| :--- | ---: | ---: | ---: | ---: |

TABLE 15. Question 7 (1975): How many days do you estimate you are staying longer because there is now "open fishing" available here?

| Number <br> of days | Number of <br> responses 1975 | Percent of total <br> response 1975 |
| :--- | ---: | :---: |
| 0 | 19 |  |
| 2 | 2 | 70.4 |
| 3 | 2 | 7.4 |
| 11 | 1 | 7.4 |
| 13 | 1 | 3.7 |
| 14 | 1 | 3.7 |
| 68 | 1 | 3.7 |
| Totals | 27 |  |

Angler Interest in Status of Restigouche Angling Waters

The majority of anglers questionned (748) felt that more of the Restigouche should be open to public angling (Table 16). Of those who responded affirmatively to this question, $508-80 \%$ felt that more of the public angling should be in the form of "Crown open", as opposed to "Crown Reserve".

TABLE 16. Question 8 (1975), 6 (1976): Do you feel that more of the Restigouche should be open to public angling for salmon? If yes, as "Crown Reserve" or "Crown Open"? If no, why?

| Response | Number of responses |  | Percent oftotal response  <br> 1975 1976 |  |
| :---: | :---: | :---: | :---: | :---: |
|  | 1975 | 1976 |  |  |
| No | 6 | 23 | 22.2 | 18.9 |
| Yes | 20 | 91 | 74.1 | 74.6 |
| No opinion | 1 | 8 | 3.7 | 6.6 |
| Totals | 27 | 122 |  |  |
| If yes: |  |  | Percent of ye | es respanse |
| As Crown Reserve | e 2 | 32 | 10.0 | 35.2 |
| As Crown Open | 16 | 45 | 80.0 | 49.5 |
| As both | 2 | 5 | 10.0 | 5.5 |
| As either | - | 3 | - | 3.3 |
| No opinion | - | 6 | - | 6.6 |
| Totals | 20 | 91 |  |  |

Anglers preferred Species and Type of Angler Utilizing the Resource

Eighty-five to ninety-three percent of the anglers questionned stated that their most preferred species to catch was salmon, as opposed to trout (Table 17). In 1975, 963 of the anglers questionned stated that they were on this water to angle for salmon (Table 18). The majority of the anglers $(448-608)$ considered themselves to be predominantly salmon anglers, as opposed to trout anglers (Table 19).

TABLE 17. Question 9 (1975), 8 (1976): What species of fish do you most prefer to catch?

|  | Number of <br> responses | Rercent of <br> total response |  |  |
| :--- | ---: | ---: | ---: | ---: |
| Response | 1975 | 1976 | 1575 | 1976 |
| Salmon | 25 | 104 | 92.6 | 85.3 |
| Trout | 2 | 9 | 7.4 | 7.4 |
| Either | - | 7 | - | 5.7 |
| No opinion | - | 2 | - | 1.6 |
| Totals | 27 | 122 |  |  |

TABLE 18. Question 10 (1975): What species of fish are you most interested in catching here?

| Response | Nunber of <br> responses 1975 | Percent of tatal <br> response 1975 |
| :--- | :---: | :---: |
| Salmon | 26 | 96.3 |
| Trout | 1 | 3.7 |
| Totals | 27 |  |

TABLE 19. Question 11 (1975), 7 (1976): In your opinion, are you predominantly a salmon angler or a trout angler?

|  | Number of <br> responses | Fercent of <br> total response |  |  |
| :--- | :---: | :---: | :---: | :---: |
| Response | 1975 | 1976 | 54 | 59.3 |
| Salmon | 16 | 44.3 |  |  |
| Trout | 11 | 37 | 40.7 | 30.3 |
| Both | - | 31 | - | 25.4 |
| Totals | 27 | 122 |  |  |

## Type of Angling Conducfed

Fifty-nine percent of the anglers questionned in 1975 stated that they were fishing from the shoreline of the river; whereas, in 1976, the majority (65\%) were fishing from a boat on the river (Table 20). The majority (63\%-78\%) responded that they prefer fishing from a boat, as opposed to shoreline fishing.

Predicted Angling Effort This Year and Next Year

In 1975, $56 \%$ of the anglers questionned stated that they would return to angle again the same year, and $67 \%$ would consider returning to angle in 1976 (Table 21).

TABLE 21. Question 13 (1975): Do you plan to fish this area again this year? Again next year?

| ResponseNumber of <br> responses 1975 | Percent of total <br> response 1975 |  |
| :--- | ---: | ---: |
| Again this year: |  |  |
| Yes | 15 | 55.6 |
| No | 11 | 40.7 |
| Probably | 1 | 3.7 |
| Totals | 27 |  |
| Again next year: |  |  |
| Yes | 18 | 66.7 |
| No | 2 | 7.4 |
| Maybe | 7 | 25.9 |
| Totals | 27 |  |

## Change in Angling Status of Water as Reason for Utilizing the Resource

The majority of anglers (57\%-82\%) questionned stated that they would not have made the trip to this water had it not been for the open public angling available (Table 22).

TABLE 20. Question 12 (1975), 9 (1976): What type of fishing are you doing on this trip? What type do you prefer?

| Type of angling | $\begin{aligned} & \text { Number } \\ & \text { responses } \\ & 1975 \end{aligned}$ | $\begin{aligned} & \text { of } \\ & \frac{\text { (doing) }}{1976} \end{aligned}$ | $\begin{gathered} \text { Perc } \\ \text { total } \\ \hline 1975 \end{gathered}$ | cent of $\frac{\text { responses }}{1976}$ | $\begin{array}{r} \begin{array}{r} \text { Number } \\ \text { responses } \end{array} \\ 1975 \end{array}$ | $\begin{aligned} & \text { of } \\ & \text { (prefer) } \\ & 1976 \end{aligned}$ | $\begin{gathered} \text { Perc } \\ \text { total } \\ \hline 1975 \end{gathered}$ | cent of $\frac{\text { responses }}{1976}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Shoreline | 16 | 40 | 59.3 | 32.8 | 5 | 41 | 18.5 | 33.6 |
| Boat | 11 | 79 | 40.7 | 64.8 | 21 | 77 | 77.8 | 63.1 |
| Other | - | 3 | - | 2.5 | 1 | 3 | 3.7 | 2.5 |
| No Opinion | - | - | - | - | - | 1 | - | 0.8 |
| Totals | 27 | 122 |  |  | 27 | 122 |  |  |

TABLE 22. Question 14 (1975), 10 (1976): If there was no "open fishing", would you have made this trip anyway?

|  | Number of <br> responses |  | Percent of <br> total response |  |
| :--- | :---: | :---: | :---: | :---: |
| Response | 1975 | 1976 |  | 1975 |
| No | 22 | 70 | 81.5 | 57.4 |
| Yes | 5 | 52 | 18.5 | 42.6 |
| Totals | 27 | 122 |  |  |

## Angler Interest in Status of Water

Seventy-five percent of the anglers questionned in 1976 stated that they would apply to fish this water should it be returned to Crown Reserve status (Table 23).

TABLE 23. Question 11 (1976): If this stretch of water was returned to Crown Reserve status, would you apply to fish?

| Response | Number of <br> responses | Percent of total <br> response 1976 |
| :--- | :---: | :---: |
| No | 27 | 22.1 |
| Yes | 92 | 75.4 |
| No opinion | 3 | 2.5 |
| rotals | 122 |  |

Predicted Angling Effort Next Year if Water Still Crown Open

Ninety-one percent of the anglers questionned in 1976 stated that they intend to fish this water in 1977 should it remain in Crown Open status (Table 24).

TABLE 24. Question 12 (1976): Do you plan to fish this area again next year if it remains crown Open water?

| Response | Number of <br> responses 1976 | Percent of total <br> response 1976 |
| :--- | ---: | :---: |
| No | 6 | 4.9 |
| Yes | 111 | 91.0 |
| No opinion | 5 | 4.1 |
| Totals | 122 |  |

## EFFECTIVENESS OF MID-SEASON ANGLING CLOSURES

The entire Little Main Restigouche River was closed to angling over the periods June 23-July 13 in 1975 and June 2l-July 11 in 1976, to help ensure escapement of early-run large salmon to the headwater areas.

In 1975, the extreme low-water conditions encountered early in the season prevented Resource Branch personnel from making a direct assessment of numbers of salmon in the areas above the Crown open stretch. However, wardens with the conservation and Protection Division (equipped with 26-ft canoes, necessary for such lowwater conditions) were able to provide some data from a 15 -mile stretch, extending approxinatelif from Boston Brook downriver to the Crown open water. Waters above the Crown open stretch are under lease and/or freehold to irving interests.

On July 1, 1975, the wardens reported that they observed a total of 139 salmon and 30 grilse within the Crown Open area. Two to three weeks later, only a few fish were observed over the same stretch of water. Thus, it is assumed that most of these salmon had migrated further upstream, with a proportion probably going to angling in these waters.

Results of the creel census in 1975 show only one salmon angled (by those anglers censused) before the closure was initiated, June 23. Immediately after opening the waters to angling again on July 14, the salmon angling quality improved. Fius, it is assumed the salmon seen in the waters above the crown Open stretch during the closure had entered this portion of the system during the closure and, therefore, avoided exploitation by angiing. Based on this limited data, it is felt that the closure did effect an escapement of large salmon (and grilse) to the headwater areas and, therefore, the closure was considered worthwhile in meeting its objective.

In 1976, assessment of numbers of salmon was zade by observation at the head of the Crown Open water (i.e.. Montgomery Bridge) and throughout by canoe, by personnel of the Resource Branch and Conservation and Protection Division.

During the period of the angling closure (June 21-July 11) a total of 96 large salmon and 39 grilse were observed in the Crown Open area. Assuming that these fish were ascending the river, the closure was then successful in allowing an escapement of large salmon to the headwater areas, the original objective in establishing the closure.

## DISCUSSION

With conversion of the Upper Restigouche Crown Reserve into Crown Open angling, large potential increases in
angling effort and harvest of salmon were possible. During the last three years as a Crown Reserve (1972-74), the potential number of anglers who could cililize the resource of the reserve rangec from 100-124 per season. However, actual recorded angling pressure ranged from 91-98 anglers per season. Total salmon harvest ranged from a high of 280 fish in 1972 to a low of 54 fish in 1973.

The creel census conducted in 1975 recorded a total of 377 anglers on the Crown Open water over the duration of the season and, in 1976, a total of 542 anglers over the same period of tine. In terms of numbers of anglers, then, the effort recorded in 1975 and 1976 was up 4-6 times that recorded in the previous three years. Total salmon harvest was 40 fish and 87 fish for 1975 and 1976, respectively. The salmon harvests for the two years of open angling then, despite the large increases in effort recorded, approximated the levels of harvest of the 1973 and 1974 Crown Reserve years.

The large increases in angling effort in 1975 and 1976 could well have meant an increase in the salmon catches over previous years. The Little Maim Restigouche is a rather small and clear stream (as compared to the Main Restigouche below the mouth of Kedgwick River) and, as such, is considered relatively easy ts exploit. However, this outcome was prevented by two factors: water conditions and the angling closures imposed.

In 1975, water conditions throughout the Restigouche (and Maritimes in general) were extremely poor for angling. Low-water conditions (with correspondingly higher than normal water temperatures) were experienced early in the season (by late June) and persisted throughout the remainder of the angling season. Ancling was slow and poor, as indicated jy catches throughout the system. The total angler harvest of salmon from the festigouche in 1975 was 3,290 fish, down 43 from that of 1974 (5,823 fish). This poorer catch is not considered to have been a result of reduced escapement to the system. Catches of salmon at the Resource Branch's sampling trap at the head of the Restigouche estuary were up considerably over 1974; and, in fact, the total catch of salmon at the trap in 1975 was the highest recorded since trapping was initiated in 1972. It is felt that the low-water conditions throughout the system over the summer may have disrupted upstream migration patterns and timing.

Observations made in 1975 of the waters above the Crown Open stretch did indicate that numbers of large salmon and grilse had migrated through the Crown Open water during the angling closure period. Thus, water conditions and the angling closure both contributed to the escapement of salmon to the headwater areas.

In 1976, water conditions on the Little Main Restigouche (and throughout
the system) were greatly improved for angling over those of 1975. Angling quality reflected this, with the catch of salmon from the Crown Open over two times that recorded in 1975 (and up an equivalent amount for the entire system as well). However, as in 1975, escapement was effected to the headwater areas through adoption of the angling closure.

Conversion of the lower seven miles of the Little Main Restigouche River from Crown Reserve to Crown Open status offered to any licensed New Brunswick angler rather unlimited sport fishing for salmon. This contrasts with the former reserve system, where each angler had to take his chance in a lottery draw and then, if successful, could fish for only three days on pre-specified dates. The extent of angling effort recorded on this stretch of river in 1975 and 1976 indicated the public's overwhelming response to this opportunity to utilize the resource.

Anglers fishing the Crown Open in 1975 and 1976 were generally in favour of the idea of adopting more open water for angling in the Restigouche River system. Of those anglers favouring the adoption of more open water, the majority felt that it should take the form of Crown Open water, as opposed to Crown Reserve.

Overall, the Crown Open stretch of the Little Main Restigouche for its first two years of operation appeared to be popular and attracted anglers from all over the province of New Brunswick. This stretch of open water, the only one of its kind in the Restigouche system, provided a salmon angling opportunity to many interested New Brunswick anglers, and especially to the local residents. For the first time, many local residents had the opportunity to angle for salmon. Their interest and cooperation over the two years of the survey was high, and the majority interviewed stated that they did intend to return to this water to fish again. Adoption of the Crown Open status appears to have been a successful move on the part of the province, and results of the surveys conducted would support continuation of the current angling status of this water.

## ACKNOWLEDGEMENTS

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M. Levesque, Fishery Officer, Kedgwick

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A. Madden, District Biologist, New Brunswick Fish and Wildlife Branch, Campbellton, who made available information pertaining to biological background and past angling history of the area.

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SECTION COVERED: ......................................................................... written description of section covered)

TOTAL NUMBER OF ANGLERS IN SECTION: $\qquad$

COMMENTS:

Date: $\qquad$ Location: $\qquad$

1. Residence (county):
2. Residence (city, town, village):
3. How many days do you normally fish (anywhere) each year?
4. How many days have you fished in this area?
5. How many days do you plan to fish in this area?
6. Did you fish this water when it was a Crown Reserve? What years?
7. How many days do you estimate you are staying longer because there is now "open fishing" available here?
8. Do you feel that more of the Restigouche should be
open to public angling? $\qquad$
if yes, as Crown Reserve or open water?
if no, why?
9. What species of fish do you most prefer to catch? $\qquad$
10. What species of fish are you most interested in hatching here? $\qquad$
11. In your opinion, are you predominantly a salmon angler or a trout angler
12. What type of fishing are you doing on this trip?

What type do you prefer?
Doing
$\qquad$
shoreline on river
boat on river
other
13. Do you plan to fish this area - again this year?
again next year?
14. If there was no "open fishing" here, would you have made this trip anyway? $\qquad$

## Creel Questionnaire: Little Main Restigouche. "Crown Open:

Date: $\qquad$ Location:

1. Residence (county):
2. Residence (city, town, village):
3. How many days do you normally fish (anywhere) each year?
4. How many days do you plan to fish in this area (total number of days in the Crown Open water)?
5. Did you fish this Crown Open stretch in 1975?
6. Do you feel that more of the Restigouche should be open to public angling for salmon?
if yes, as "Crown Reserve" or "Crown Open"?
if no, why?
7. In your opinion, are you predominantly a salmon angler or a trout angler?
8. What species of fish do you most prefer to catch?
9. What type of fishing are you doing on this trip? What type do you prefer?

Doing
Prefer
shoreline on river
boat (canoe) on river
other
10. If there was no "open fishing" here, would you have made this trip anyway?
11. If this stretch of water was returned to "Crown Reserve" status, would you apply to fish?
12. Do you plan to fish this area again next year if it remains "Crown Open" water?


[^0]:    ${ }^{1}$ "Fish" denotes both grilse and large salmon.
    ${ }^{2}$ Area closed to angling.

[^1]:    ${ }^{1}$ Area closed to angling.

