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**Densities of juvenile Atlantic salmon  
(*Salmo salar*) in inner Bay of Fundy  
rivers during 2000 and 2002 with  
reference to past abundance inferred  
from catch statistics and  
electrofishing surveys**

**Densités du saumon atlantique  
(*Salmo salar*) juvénile dans les  
rivières de l'intérieur de la baie de  
Fundy en 2000 et en 2002, et  
comparaison avec les abondances  
passées estimées à partir de  
statistiques de capture et de relevés  
de pêche électrique**

A. Jamie F. Gibson, Peter G. Amiro, and Kimberly A. Robichaud-LeBlanc

Diadromous Fish Division, Science Branch  
Department of Fisheries and Oceans  
P.O. Box 1006, Dartmouth, N.S.  
Canada, B2Y 4A2

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## ABSTRACT

Inner Bay of Fundy (iBoF) Atlantic salmon are presently listed as endangered by COSEWIC. During 2002, an extensive electrofishing survey was undertaken to estimate the abundance of juvenile Atlantic salmon in iBoF rivers. Five organizations (the Department of Fisheries and Oceans, the Nova Scotia Department of Agriculture and Fisheries, Fort Folly First Nation, the University of New Brunswick and Parks Canada) electrofished a total 117 sites in 36 iBoF rivers in 2000 and a total of 246 sites in 43 iBoF rivers in 2002. In 2000, during the first pass of these surveys, a total effort of c. 87,000 seconds of shocking time was applied over c. 79,000 m<sup>2</sup> of habitat, resulting in the capture of 7,091 fish including 557 Atlantic salmon. In 2002, during the first pass of these surveys, a total effort of c. 157,000 seconds of shocking time was applied over c. 136,000 m<sup>2</sup> of habitat, resulting in the capture of 10,371 fish including 1,956 Atlantic salmon. Of 34 rivers without live gene bank (LGB) support, fry were not found in 30 of these rivers and parr were absent in 22. Where salmon were present in rivers without LGB support, mean densities of fry and parr were low relative to past surveys. Mean densities of fry and parr in each New Brunswick iBoF river were less than 5.2 and 3.8 fish per 100 m<sup>2</sup>. In Nova Scotia iBoF rivers, fry were totally absent and mean densities of parr were less than 7.1 fish per 100 m<sup>2</sup>. At this time, estimates of densities of wild juvenile salmon in rivers with LGB support are confounded by the presence of captive-reared fish, although densities are also low at sites within these rivers that are distant from LGB release sites.

The results of this survey are placed in context by comparison with results of previous electrofishing surveys and catches in the recreational fishery. These comparisons, together with the analyses of temporal trends for the Stewiacke and Big Salmon rivers, clearly indicate that the decline is not limited to just a few rivers. Data collected during the last few years indicate that the decline in abundance that lead to the listing of this complex by COSEWIC is continuing.

## RÉSUMÉ

Le COSEPAC considère actuellement le saumon atlantique de l'intérieur de la baie de Fundy (IBF) comme étant en voie de disparition. En 2002, un vaste relevé de pêche électrique a été effectué pour estimer l'abondance du saumon atlantique juvénile dans les rivières de l'IBF. Cinq organisations (ministère des Pêches et des Océans, ministère de l'Agriculture et des Pêches de la Nouvelle-Écosse, Première nation de Fort Folly, Université du Nouveau-Brunswick et Parcs Canada) ont effectué de la pêche électrique à 117 sites dans 36 rivières de l'IBF en 2000 et à 246 sites dans 43 rivières de l'IBF en 2002. En 2000, le premier passage de ce relevé a consisté en un effort total d'environ 87 000 secondes de choc électrique sur environ 79 000 m<sup>2</sup> d'habitat, ce qui a permis de capturer 7 091 poissons, dont 557 saumons atlantiques. En 2002, le premier passage du relevé a consisté en un effort total d'environ 157 000 secondes de choc électrique sur environ 136 000 m<sup>2</sup> d'habitat, ce qui a permis de capturer 10 371 poissons, dont 1 956 saumons atlantiques. Aucun alevin n'a été observé dans 30 des 34 rivières sans apport de la banque de gènes vivants (BGV), et aucun tacon n'a été trouvé dans 22 de ces rivières. Dans les rivières sans apport de la BGV où le saumon était présent, les densités moyennes d'alevins et de tacons étaient faibles par rapport à celles observées lors des relevés antérieurs. Dans les rivières néo-brunswickoises de l'IBF, les densités moyennes d'alevins et de tacons étaient inférieures à 5,2 et à 3,8 par 100 m<sup>2</sup>, respectivement. Dans les rivières néo-écossaises de l'IBF, les alevins étaient complètement absents, tandis que les densités moyennes de tacons étaient inférieures à 7,1 par 100 m<sup>2</sup>. À l'heure actuelle, les estimations de la densité du saumon atlantique juvénile sauvage dans les rivières recevant un apport de la BGV sont incertaines en raison de la présence de poissons élevés en captivité, mais les densités sont également faibles aux sites de ces rivières qui sont éloignés des sites de libération de saumons de la BGV.

Les résultats de ce relevé sont comparés avec les résultats de relevés antérieurs de pêche électrique et les captures de la pêche récréative. Ces comparaisons, de même que les analyses des tendances temporelles observées dans les rivières Stewiacke et Big Salmon, indiquent clairement que le déclin ne se limite pas à quelques rivières. Les données recueillies depuis quelques années indiquent que le déclin de l'abondance (qui a incité le COSEPAC à désigner ce complexe de populations de saumon comme « en voie de disparition ») se poursuit.

## **Introduction**

Atlantic salmon (*Salmo salar*) of the inner Bay of Fundy (iBoF) were designated "endangered" by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) in May 2001. This assemblage includes salmon native to rivers in the Bay of Fundy, north of the Saint John River, NB, and north of the Annapolis River, NS, exclusive of these rivers (Figure 1). Salmon are known to have occupied at least 32 rivers in this area (DF0 2003).

During 2002, an extensive electrofishing survey was undertaken to determine the abundance of juvenile Atlantic salmon in iBoF rivers and determine whether significant numbers still remained in any of the rivers. Herein, we report the results of this survey, together with the results of electrofishing surveys conducted in 2000. We interpret these results by comparing them with the results of other electrofishing surveys and recreational catch data for these rivers.

## **Methods**

### *Electrofishing Surveys*

Three organizations contributed to the electrofishing survey in 2000: the Department of Fisheries and Oceans (DFO), the Nova Scotia Department of Agriculture and Fisheries (NSDoAF), and the University of New Brunswick (UNB). In total, 117 sites were electrofished in 36 iBoF rivers (Figure 2).

Four organizations contributed to the electrofishing survey in 2002: DFO, NSDoAF, Fort Folly First Nation (FFFN) and Parks Canada (FNP PC). In total, 246 sites were electrofished in 43 rivers (Figure 3). Rivers that had a reported recreational salmon catch, or where past electrofishing indicated the presence of salmon, were selected for the survey, although some other rivers were added opportunistically (absence of data does not imply the absence of populations).

In both years, electrofishing was conducted with a backpack electrofisher by a crew size of two to four people. Barrier nets were used in a few of the multiple-pass surveys, but not at most sites. Salmonids were targeted at some sites but not others. Details of both the 2000 and 2002 surveys, including site coordinates, area, electrofishing effort and catch, are provided in Appendix II. In the following analyses, if area or effort were not recorded, the average value for all sites was applied to these sites.

### *Analysis of Electrofishing Catchability*

Analysis of electrofishing data collected at low abundance presents problems not encountered at higher abundance. For example, when few or no fish are captured at an electrofishing site, mark-recapture and depletion methods are not applicable, yet statistical inference about population density may still be required. In these instances, population densities can be estimated if the probability of capturing a fish within the site

is known or can be estimated. Herein we use empirical Bayes methods (Carlin and Louis 1996, Efron 1996) to derive the probability density for the electrofishing catchability (the probability that a fish present at an electrofishing site will be captured on a single pass through that site) using mark-recapture data collected during the 2000 and 2002 surveys. We then use the mode of the resulting distribution to calculate densities of Atlantic salmon from the electrofishing data reported in this document.

Mark-recapture (MR) experiments were carried out at 44 sites during the 2000 and 2002 surveys (Table 1). Typically, one day separated the marking and recapture passes, although the length of time between passes was sometimes longer. Barrier nets were not used in these experiments. On the Harrington River, MR experiments were carried out on five adjoining sites (each 100m long) to evaluate the potential for fish moving into and out of a site. Marking occurred on August 27<sup>th</sup> and the recapture pass on August 30<sup>th</sup>. Of 74 marked recaptures, only one fish was captured outside the site in which it was marked. This fish was captured in an adjacent site.

The probability that a fish present within a site is captured during a single electrofishing pass ( $p$ ) is bounded to the interval  $[0,1]$ . We mapped  $p$  to the real line using a logistic transformation:

$$q = \text{logit}(p) = \log\left(\frac{p}{1-p}\right).$$

Let  $i$  index each mark-recapture experiment and assume we have  $N$  experiments. We assumed that  $q_i$ 's (the logistic transformed probability that a fish is captured) are drawn from a normal distribution determined by the parameters  $\eta$ . For the normal distribution,  $\eta$  is the mean and standard deviation of the probability distribution for  $q$ . Denoting the data (the number of fish marked, the number observed for marks, and the number of marked recaptures) as  $\mathbf{x}$ , the maximum likelihood estimates of  $\eta$  are the values of  $\eta$  that maximize the marginal sampling density,  $d_\eta(\mathbf{x})$ , given by:

$$d_\eta(\mathbf{x}) = \int g_\eta(q) f_q(\mathbf{x}) dq.$$

Here,  $g_\eta(q) = \prod_1^N g_\eta(q_i)$  and is the probability of observing the  $q_i$ 's given the density

$g_\eta(\cdot)$  and  $f_q(\mathbf{x}) = \prod_1^N f_{q_i}(x_i)$  is the probability of observing the data  $x_i$  given  $q_i$ .

$f_{q_i}(x_i)$  was calculated using the hypergeometric distribution. The hypergeometric distribution gives the probability of observing  $R$  marked recaptures, given a population of size  $N$ ,  $M$  marked fish in the population and  $C$  fish captured and examined for marks, when sampling is carried out without replacement (Gazey and Staley 1986).

### *Past Abundance*

We are compiling data for Atlantic salmon on iBoF rivers that can be used as evidence of former abundance and for analyzing population dynamics. In this document

we summarize data compiled to date. We have also included recreational catch data from DFO reports and databases. Data are those reported by O'Neil and Swetnam (1984), O'Neil et al. (1985), O'Neil et al. (1986), O'Neil et al. (1987), and O'Neil et al. (1989), and from the DFO recreational salmon fishery database. Large salmon ( $\geq 63$  cm fork length (FL)) and small salmon ( $< 63$  cm FL) were recorded separately in some years. Prior to and including 1984, numbers harvested were those reported by fishery officers, whereas from 1985 to 1990, the numbers released and harvested were estimated from Salmon License Stub returns. Effort was estimated in rod days where any portion of a day fished by one angler was recorded as one rod day.

## Results

### *Analysis of Electrofishing Catchability*

For Atlantic salmon, the estimated probability distribution for  $q$  has a mean of -0.289 and standard deviation of 0.457. For comparison, the mean and standard deviation for individual  $q_i$ 's are -0.091 and 2.162 respectively (MR surveys where  $p=0$  or 1 were assigned values for  $q$  of -4.0 and 4.0 for this calculation because the logits of 0 and 1 are undefined). This comparison shows that, in this example, the mean and standard deviation of the electrofishing catchability would be overestimated if the likelihoods for the individual  $q_i$ 's are not taken into account (Figure 4). The probability density for  $q$  suggests that 42.8% of salmonids were captured during a single electrofishing pass, with 5<sup>th</sup> and 95<sup>th</sup> percentiles of its probability density equal to 26.1% and 61.3% respectively. Based on this analysis, a catchability of 42.8% was used to obtain point estimates for salmon densities at each electrofishing site in the remainder of this document.

For comparison, we calculated the probability densities for  $q$  using data for Atlantic salmon only, brook trout\* only, and for all salmonids combined. During these surveys, the mean catchability for brook trout was lower than that for Atlantic salmon (Table 2).

### *Electrofishing Surveys*

During the 2000 survey, a total of 117 sites were electrofished on 36 rivers, including 94 single-pass surveys, 18 mark-recapture surveys and 5 multiple-pass surveys. During the first pass of these surveys, a total effort of c. 87,000 seconds of shocking time was applied over c. 79,000 m<sup>2</sup> of habitat, resulting in the capture of 7,091 fish including 557 Atlantic salmon (Appendix II). Atlantic salmon were captured at 49 of the 117 sites. Where Atlantic salmon were found, densities ranged between 0.1 and 8.1 fish per 100 m<sup>2</sup>, the later being on the Big Salmon River (Table 3). Atlantic salmon were not found in 15 of the 36 rivers.

During the 2002 survey, a total of 246 sites were electrofished in 43 rivers, including 193 single-pass surveys, 26 mark-recapture surveys and 27 multiple-pass

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\*Scientific names are provided in Appendix I.

surveys. During the first pass of these surveys, a total effort of c. 157,000 seconds of shocking time was applied over c. 136,000 m<sup>2</sup> of habitat, resulting in the capture of 10,371 fish including 1,956 Atlantic salmon (Appendix II).

More Atlantic salmon were captured in rivers with live gene bank (LGB) support than any other species (Figure 5). This may result from both electrofishing sites and LGB release sites being selected partially on the basis of ease of access, and therefore some overlap in site selection is highly probable. Where sites overlap, the resulting densities may not reflect relative abundance throughout the watershed. Blacknose dace were the most frequently captured species in rivers without LGB support, followed by brook trout and American eel (Figure 5).

Atlantic salmon were not captured in 22 of the 43 rivers included in the 2002 survey (Figure 7, Table 4). Nine of the 43 rivers are LGB supported. The remaining 12 rivers have remnant unsupported populations (Figure 7). Densities in these unsupported rivers are very low. Within Nova Scotia, the Harrington River was the only river without LGB support with estimated densities exceeding 1 salmon per 100 m<sup>2</sup> in 2002 (Table 4). All salmon captured in this river were age-1 parr, indicating that reproduction in this river is not ongoing annually. No salmon were captured in this river in 2000 (Table 3). Within New Brunswick, the Black and Irish rivers contained the highest densities of juvenile salmon in 2002 (Figure 7, Table 4). The high densities of Atlantic salmon in the Demoiselle (one site) Chiganois (two sites), Folly (four sites) and Big Salmon rivers (seven sites) reflect the low number of sites surveyed and their close proximity to the LGB release sites. Median densities in the Stewiacke, Folly, Petitcodiac and Debert rivers, all LGB supported, were 0 fish per 100 m<sup>2</sup> (Figure 7, Table 4). No age-0 salmon were captured in Nova Scotia rivers without LGB support in 2002 (Table 4), implying that very little or no natural reproduction occurred in these rivers in 2001. Of the non-LGB rivers in New Brunswick, age-0 salmon were captured in the Black River, Bains Brook, Irish River and Upper Salmon River, but not the other seven non-LGB rivers (Table 4).

### *Past Abundance*

In this section, we review DFO data pertaining to the past abundance of Atlantic salmon in iBoF rivers included in the 2000 and 2002 electrofishing surveys. The catch in the recreational fishery, and juvenile densities estimated by electrofishing in previous years are provided in Appendix III. Electrofishing data is held by many governmental, non-governmental, non-profit and academic organizations. Data compilations are ongoing and the data presented in Appendix III are those compiled by March 2003.

#### Pereaux and Habitant rivers

No Atlantic salmon catch or historic electrofishing data were found for these rivers. Salmon were not captured at three electrofishing sites in these rivers during 2002 (Table 4). Brook trout was the only salmonid captured in these rivers during the electrofishing surveys (Appendix II).



### Cornwallis River

Catch data for the recreational Atlantic salmon fishery are available for 23 years between 1960 and 1990 (Table 5). Reported catches ranged between 0 and 34 fish and were highest in the mid-1980s (Figure 8). No salmon were captured in this river at three electrofishing sites in 2000 and five electrofishing sites in 2002 (Table 4, Appendix II), although fry and parr were present in the river in 1979 (Appendix III). Other salmonids captured while electrofishing in this river were brown and brook trout (Appendix II).

### Gaspereau River

Atlantic salmon recreational catches on this river were reported for all years between 1960 and 1990 (Table 5). Catches ranged between three and 92 fish and were highest in the late 1980s (Figure 9). This river is both a donor and recipient river in the LGB program. Counts of salmon ascending a fish ladder bypassing the White Rock Generating Station (the furthest station downstream of five generating stations) are available for the years 1996 to 2002 (DFO 2003). Electrofishing at one site in 2000 caught 34 juvenile salmon resulting in a density of 2.4 fish per 100 m<sup>2</sup> (Table 3, Appendix II). Electrofishing at eight sites in 2002 caught 52 juvenile salmon resulting in an estimated density of 0.7 fry and 1.2 parr per 100 m<sup>2</sup> (Table 4, Appendix II). Brook trout was the only other salmonid captured in this river during the 2000 and 2002 electrofishing surveys (Appendix II).

### Halfway River

No catch or historic electrofishing records were found for Atlantic salmon in the Halfway River. No salmonids were captured at two electrofishing sites on this river during the 2002 survey (Table 4, Appendix II).

### Avon River

We did not find catch or historic electrofishing data for salmon in the Avon River. No salmonids were captured at the three sites that were electrofished in 2002 (Table 4, Appendix II).

### St. Croix River

No Atlantic salmon catch or historic electrofishing data were found for this river. Electrofishing at four sites in 2000 caught five juvenile salmon resulting in a density of 3.9 fish per 100 m<sup>2</sup> (Table 3, Appendix II). Brook trout were also captured during these surveys (Appendix II).

### Kennetcook River

We did not find records of a recreational salmon catch for the Kennetcook River. Electrofishing in 1978 (six sites) provided estimates of the mean density of fry and parr of 13.1 and 13.1 fish per 100 m<sup>2</sup>. Salmon densities in 1983 (17 sites) were estimated as 9.0 fry and 6.1 parr per 100 m<sup>2</sup> (Figure 10). No juvenile salmon were captured at three sites electrofished in 2000 (Table 3, Appendix II). Only one Atlantic salmon parr (age-2) was captured while electrofishing at seven sites on this river in 2002 (Table 4, Appendix II), resulting in an estimated density of 0 fry and 0.03 parr per 100 m<sup>2</sup> (Table 4). Brook trout were captured in this river during both the 2000 and 2002 surveys (Appendix II).

### Shubenacadie River

The recreational salmon catch on the Shubenacadie River, reported for 27 years between 1960 and 1990, ranged between 0 and 298 fish (Table 5) and were highest in the mid-1980s (Figure 11). Electrofishing surveys on the Shubenacadie River were conducted in three years between 1969 and 1980. Average densities of juvenile salmon ranged between 5.4 fry and 4.5 parr per 100 m<sup>2</sup> at six sites in 1977, to 82.0 fry and 9.0 parr per 100 m<sup>2</sup> at nine sites in 1980 (Appendix III). Electrofishing at two sites in 2000 resulted in the capture of 13 parr, whereas electrofishing at seven sites in 2002 resulted in the capture of five parr (Table 4, Appendix II). No fry were captured in either year. Parr densities in 2000 and 2002 averaged 2.2 and 0.3 fish per 100 m<sup>2</sup>. Brook trout were captured in this river during both 2000 and 2002 electrofishing surveys (Appendix II).

### Stewiacke River

The Stewiacke River salmon population is the most extensively studied of the NS iBoF rivers and catch records exist for all years between 1960 and 1990. Average salmon catches in the recreational fishery exceed those in other rivers (Table 5). Catches ranged from 0 to 1,980 salmon, with both catch and effort being the highest in the mid-1980s (Figure 12). Parr densities show a consistent decline from the mid-1980s to 2001 (Figure 12). Gibson and Amiro (2003) estimate a decline in abundance of salmon in this river of over 99.5% during the last 30 years. This river is both a donor and recipient river in the LGB program. Brown and brook trout were captured in this river during both the 2000 and 2002 electrofishing surveys (Appendix II).

### Salmon River (Truro)

Salmon catches in the recreational fishery in the Salmon River were reported for 19 years from 1960 to 1990, and averaged 70 fish during those years (Table 5). No salmon were caught while electrofishing on this river in 2000 or 2002 (Appendix II), although both fry and parr were captured during electrofishing surveys in four years between 1972 and 1990 (Figure 13). Fry and parr densities averaged 25.5 and 20.2 fish per 100 m<sup>2</sup> respectively during those four years. Brook trout were not captured in this river during the 2000 electrofishing surveys, but were present at four of six sites surveyed in 2002 (Appendix II).

### North River (Truro)

The reported recreational catch of salmon in the North River ranged between two and 153 fish annually (Table 5) between 1964 and 1990 (25 years reported). Effort on this river was highest during the late 1980s (Figure 14). Only one juvenile salmon was caught while electrofishing at four sites on this river in 2000 (Appendix II). Mean juvenile densities in 2002 were 0.0 fry and 0.4 parr per 100 m<sup>2</sup> (Table 4). In comparison, densities of fry and parr in 1990 were 32.9 and 17.7 fish per 100 m<sup>2</sup>. Other salmonids captured during the 2000 and 2002 electrofishing surveys were brown, rainbow and brook trout (Appendix II).

### Chiganois River

We did not find records of recreational salmon catches on the Chiganois River. However, electrofishing surveys conducted in 1972 and 1973 indicate the presence of salmon in this river (Figure 15). This river is a recipient river in the LGB program. No salmon were caught while electrofishing at two sites on this river in 2000. The higher juvenile salmon densities reported in 2002 (Table 4) are the result of electrofishing in close proximity to LGB release sites. Brook trout were captured in this river during the electrofishing surveys in 2000, but not in 2002 (Appendix II).

### Debert River

The recreational catch on the Debert River is reported for 26 years from 1965 to 1990. The catch has been highly variable: between two and 230 fish annually (Figure 16, Table 5). No electrofishing was conducted in this river in 2000, but an electrofishing survey in 1980 reported mean fry and parr densities of 45.6 and 7.2 fish per 100 m<sup>2</sup>, based on two sampling sites. This river is a recipient river in the LGB program. Juvenile salmon were captured at two of three electrofishing sites on the Debert River in 2002 (Appendix II). One of these was an LGB release site where 63 fish were captured. The two salmon captured at Debe003 possibly strayed from this site. Only one brook trout was captured in this river during the 2002 electrofishing surveys (Appendix II).

### Folly River

The recreational catch on the Folly River is reported for 25 years between 1965 to 1990. Its catch is also variable, between four and 356 fish annually (Figure 17, Table 5). We did not find electrofishing data for this river prior to 1997 at which time mean densities were 0.4 fry and 1.7 parr per 100 m<sup>2</sup> (Appendix III). In 2000, two salmon parr were captured at one electrofishing site and densities dropped to 0.0 fry and 0.7 parr per 100 m<sup>2</sup> (Table 3, Appendix II). This river is a recipient river in the LGB program. Juvenile salmon were only caught at one of four sites electrofished in 2002 and the high fry density encountered at this site (6.0 fish per 100 m<sup>2</sup>) may be the result of electrofishing near an LGB release site. Brook trout were captured in this river during both the 2000 and 2002 electrofishing surveys (Appendix II).

### Great Village River

The recreational catch of Atlantic salmon on the Great Village River was reported for 20 years between 1966 and 1990, and varied between 0 and 42 salmon (Table 5). The highest catch occurred in 1967 (Figure 18). No fry were captured in this river during either the 2000 or 2002 electrofishing survey. Parr densities which averaged 7.1 fish per 100 m<sup>2</sup> in 2000 (Table 3) dropped to 0.3 fish per 100 m<sup>2</sup> in 2002 (Table 4), the lowest for which we have records (Figure 18). Other salmonids captured in this river during both the 2000 and 2002 electrofishing surveys were brown and brook trout (Appendix II).

### Portapique River

The recreational salmon catch, reported for 26 years in the Portapique River, was highest in the late 1960s and declined through the 1970s and 1980s, ranging between three and 120 salmon (Table 5, Figure 19). Juvenile salmon were captured at two sites in 2000, but none were captured at any of six sites electrofished in 2002 (Appendix II).

Average densities of juvenile salmon in 1978 were 35.0 and 14.7 fry and parr per 100 m<sup>2</sup>, respectively (Appendix III). Brook trout were captured in this river during both the 2000 and 2002 electrofishing surveys (Appendix II).

#### Bass River

We did not find reports of the recreational catch from the Bass River. Juvenile salmon were not caught in this river in either the 2000 (three sites) or 2002 survey (four sites) (Appendix II). However, brook trout were captured in this river during both years (Appendix II).

#### Economy River

In the 25 years of its reporting, the recreational salmon catch on the Economy River has varied widely, ranging from 4 to 194 fish between 1966 and 1990 (Table 5, Figure 20). Only one fry and one parr were captured at two sites electrofished in 2000, and no juvenile salmon were captured at three sites electrofished during 2002 (Table 3 and 4, Appendix II). Brook trout were captured in this river during both the 2000 and 2002 electrofishing surveys (Appendix II).

#### North River (Cumberland County)

We did not find records of recreational catch or historic electrofishing data for this river. A single site electrofished in this river in 2002 did not reveal the presence of any juvenile salmon, but brook trout were captured during this survey (Table 4, Appendix II).

#### Harrington River

Juvenile salmon were not caught by electrofishing in the Harrington River in 2000 (Table 3, Appendix II), although in 2002 the river had the highest mean density (7.14 parr per 100 m<sup>2</sup>) of any NS iBoF river without LGB support (Table 4). All salmon captured in 2002 were age-1. We did not find records of a recreational catch or other electrofishing data for the Harrington River. Brook trout were captured in this river during both the 2000 and 2002 electrofishing surveys (Appendix II).

#### Moose River

No records of recreational catch or historic electrofishing data were found for the Moose River. Only one site was electrofished in this river during 2002 and no salmonids were captured (Tables 4, Appendix II).

#### Parrsboro River

No records of recreational catch were found for the Parrsboro River. From 1995 to 1997, the Parrsboro River was stocked with both fry and smolt of Gaspereau River origin (Gibson et al. 2003a). Juveniles captured by electrofishing in 2000 (Table 3) and 2002 (Table 4) may be progeny of the released fish. Brook trout were captured in this river during the 2000 and 2002 electrofishing surveys (Appendix II).

### Diligent River

No records of recreational catch were found for the Diligent River. No juvenile salmon were captured during electrofishing in either 2000 (two sites) or 2002 (one site) (Table 3 and 4, Appendix II). Brook trout was the only salmonid captured during the 2000 and 2002 electrofishing surveys (Appendix II).

### Ramshead River

No Atlantic salmon catch data were found for this river. Salmon were not captured at one electrofishing site in this river during 2002 (Table 4, Appendix II). Brook trout was the only salmonid captured in this river during the electrofishing survey (Appendix II).

### Apple River

Salmon in the Apple River in the 1930s are described by Huntsman (1942). Average densities of juvenile salmon electrofished at three sites in 1981 were 17.0 fry and 39.5 parr per 100 m<sup>2</sup> (Appendix III). However, salmon were not captured at any of the three sites electrofished in 2000 (Table 3) or the four sites electrofished in 2002 (Table 4). We did not find records of the recreational fishery salmon catch for this river. Brook trout were captured in this river during both the 2000 and 2002 electrofishing surveys (Appendix II).

### River Hebert

We did not find records of recreational catch or historic electrofishing data for this river. Electrofishing at three sites in River Hebert in 2000 resulted in the capture of two parr (Table 3) and a mean density of 0.2 parr per 100 m<sup>2</sup> (Appendix II). No fry were captured. Salmon were not captured while electrofishing at four sites in 2002 (Table 4). Brook trout were captured in this river during the electrofishing surveys in both years (Appendix II).

### Maccan River

Recreational catch data is available for 26 years on this river and was highest in the late 1970s (Figure 21), ranging between 6 and 291 fish between 1965 and 1990 (Table 5). No salmon were captured by electrofishing at four sites in 2000 (Table 3). However, 13 parr were captured in 2002 when nine sites were electrofished, resulting in a mean density of 0.07 fish per 100 m<sup>2</sup> (Table 4). In comparison, historic densities of juvenile salmon in the Maccan River ranged from 60.2 fry and 19.6 parr per 100 m<sup>2</sup> in 1966 to 21.6 fry and 14.0 parr per 100 m<sup>2</sup> in 1977. Other salmonids captured in this river during the 2000 and 2002 electrofishing surveys were brown and brook trout (Appendix II).

### Tantramar River

No Atlantic salmon catch data were found for this river. No salmonids were captured at one site electrofished in 2000 (Table 3, Appendix II).

### Carters Brook

No Atlantic salmon catch or historic electrofishing data were found for this river. Salmon were not captured at three electrofishing sites in this river during 2002 (Table 4, Appendix II). Brook trout was the only salmonid captured in this river during the electrofishing surveys (Appendix II).

### Memramcook River

No Atlantic salmon catch data were found for this river. No salmon were captured at two sites electrofished in 2000 and nine sites in 2002 (Table 3 and 4, Appendix II). Brook trout was the only salmonid capture in this river during the electrofishing surveys (Appendix II).

### Petitcodiac River

The recreational salmon catch on the Petitcodiac River was reported in 21 years between 1960 and 1987, and ranged between 0 and 304 fish (Table 5). Catches were highest in the late 1960s (Figure 22). Seven to ten sites have been electrofished annually on the Petitcodiac since 1996 (Appendix III). Surveys at eight sites in 2000 caught only three salmon, whereas the 2002 survey caught 75 juvenile salmon at a single site from eight sites electrofished, resulting in densities of 1.5 fry and 0.4 parr per 100 m<sup>2</sup> (Table 3 and 4, Appendix II). However, this river is a recipient river in the LGB program and recent electrofishing results (Figure 22) may be effected by LGB releases. Brook trout were captured in this river during the 2000 and 2002 electrofishing surveys (Appendix II).

### Demoiselle River

We did not find records of recreational catch or historic electrofishing data for this river. Electrofishing at a single site in 2000 did not capture any salmonids (Appendix II). The Demoiselle River is a recipient river in the LGB program. Captive-reared fry were released into this river in 2002 (Gibson et al. 2003a). The high density of juvenile salmon recorded at the one site surveyed in 2002 (Table 4) is the result of electrofishing at an LGB release site. Brook trout were captured at this site during the 2002 electrofishing survey (Appendix II).

### Crooked Creek

We did not find records of recreational catch or historic electrofishing data for this river. One site was electrofished in Crooked Creek in both 2000 and 2002 (Appendix II). Although six juvenile salmon were captured in 2000, resulting in a mean density of 1.0 fish per 100 m<sup>2</sup>, no salmon fry or parr were captured in 2002 (Table 3 and 4, Appendix II). Brook trout were captured at this site during the 2002 electrofishing survey (Appendix II).

### Shepody River

We did not find records of recreational catch or historic electrofishing data for this river. The Shepody River was not electrofished in 2000 and only one site was electrofished in 2002 (Appendix II). No salmon were captured during this survey (Table

4). Other salmonids captured during the 2002 survey were rainbow and brook trout (Appendix II).

#### Upper Salmon River (Alma)

The reported recreational catch of salmon on the Upper Salmon River is available for 24 years between 1966 and 1990, and ranges between 3 and 211 fish (Table 5). The highest catches were in the late 1960s and 1970s, after which the reported catches declined (Figure 23). The numbers of adult salmon observed in the fall of the year in the Upper Salmon River was recorded for 22 years between 1963 and 1994 (Amiro 2003). The highest recorded count was 1,200 fish in 1967 and 900 fish were counted in 1979 (Amiro 2003). Counts from 1991 to 1994 did not exceed 50 fish (Amiro 2003). No historic electrofishing data was found for the Upper Salmon River. However, during 2002, Parks Canada electrofished 32 sites in this river of which ten contained juvenile salmon (Appendix II). The mean density of fry and parr at these sites were 0.03 and 0.3 fish per 100 m<sup>2</sup> (Table 4). Brook trout were also captured in this river during the surveys (Appendix II).

#### Point Wolfe River

Recent recovery efforts on the Point Wolfe River centered around the provision of fish passage at a dam at the mouth of the river in 1984 (Alexander and Galbraith 1982). As part of the recovery efforts, fry and age-0 parr (Saint John and Big Salmon River origin) were released into this river between 1982 and 1985 (Semple and Mercer 1987). The numbers of adult salmon observed in the fall of the year in the Point Wolfe River was recorded for eight years between 1985 and 1994 (Amiro 2003). The highest recorded count was 200 fish in 1985, whereas counts in 1992 to 1994 were seven and eight salmon respectively (Amiro 2003). During 2002, 24 sites were electrofished in the Point Wolfe River (Appendix II). Although fry were not captured at any of these sites, the mean density of parr was 1.1 fish per 100 m<sup>2</sup> (Table 4). Electrofishing surveys in the mid 1980s and early 1990s indicate higher but variable abundance of both fry and parr (Figure 24, Appendix III). Brook trout were captured in this river during the 2002 electrofishing surveys (Appendix II).

#### Goose River

No records of recreational catch or historic electrofishing data were found for this river. Electrofishing surveys in 2000 (two sites) and 2002 (three sites) did not capture any salmon, but brook trout were captured in the Goose River in 2002 (Table 3 and 4, Appendix II).

#### Quiddy River

No Atlantic salmon catch data were found for this river. No salmonids were captured at two sites electrofished in 2000 (Table 3, Appendix II).

#### Little Salmon River

We did not find records of recreational catch or historic electrofishing data for the Little Salmon River. Two sites electrofished in 2000 captured 17 juvenile salmon, resulting in a density of 1.2 fish per 100 m<sup>2</sup> (Table 3). Only one site was electrofished in

2002 (Appendix II). No fry were captured and the density of parr at that site was 0.3 fish per 100 m<sup>2</sup> (Table 4). One brook trout was captured in this river during the 2002 survey (Appendix II).

#### Big Salmon River

The Big Salmon River salmon population is the most extensively studied of the New Brunswick iBoF populations (Jessop 1975, Jessop 1986, Gibson et al. 2003b). Recreational catch data are available for 37 years between 1954 and 1990, and ranged between 6 and 1,321 fish (Table 5, Appendix III). Average salmon catches in the recreational fishery exceed those in all other New Brunswick rivers and are exceeded in the inner Bay of Fundy complex only by the Stewiacke River, Nova Scotia (Table 5). Catches were variable, peaking in 1979 and declining thereafter (Figure 25). Parr and fry densities are also variable from the late 1960s to present (Figure 25, Appendix III). Mean juvenile densities in 2000 were 1.3 fry and 8.1 parr per 100 m<sup>2</sup>, whereas mean densities in 2002 were 18.3 fry and 24.3 parr per 100 m<sup>2</sup> (Table 3 and 4). Gibson et al. (2003b) estimated a decline in abundance of salmon in this river of about 95% during the last 30 years. This river is both a donor and recipient river in the LGB program. As such, juvenile salmon densities in this river are potentially effected by the release of captive-reared fish into the river and the high densities reported in 2002 may not be indicative of wild production. A single brook trout was captured in this river during the 2002 electrofishing surveys (Appendix II).

#### Irish River

No records of recreational catch or historic electrofishing data were found for the Irish River. However, two sites electrofished on this river in 2000 resulted in a mean density of 0.9 fish per 100 m<sup>2</sup> (Appendix II, Table 3). Three sites were electrofished on the Irish River during the 2002 survey (Appendix II) and resulting mean densities of fry and parr were 5.2 and 0.2 fish per 100 m<sup>2</sup> (Table 4). Brook trout were not captured in this river during the 2000 electrofishing surveys but were in 2002 (Appendix II).

#### Mosher River

No Atlantic salmon catch or historic electrofishing data were found for this river. No salmonids were captured at one site electrofished in 2000 (Table 3, Appendix II).

#### Bains Brook

No records of recreational catch or historic electrofishing data were found for Bains Brook. Three sites electrofished on this river in 2000 captured 36 juvenile salmon resulting in a mean density of 6.6 fish per 100 m<sup>2</sup> (Table 3, Appendix II). At the one site electrofished in 2002, densities of fry and parr were estimated to be 1.3 and 3.8 fish per 100 m<sup>2</sup>, respectively (Table 4, Appendix II). Although no other salmonids were captured during the 2000 electrofishing surveys, brook trout were captured at the one site surveyed in 2002 (Appendix II).



### Gardner Creek

We did not find records of recreational catch or historic electrofishing data for Gardner Creek. Two sites were electrofished on this river in 2000 (Appendix II). Mean density of juvenile salmon captured was estimated at 2.0 fish per 100 m<sup>2</sup> (Table 3). One site was electrofished on Gardner Creek in 2002 (Table 4). Brook trout was the only salmonid captured at this site (Appendix II).

### Emerson Creek

No Atlantic salmon catch or historic electrofishing data were found for this river. No salmonids were captured at two site electrofished in 2000 (Table 3, Appendix II).

### Black River

The recreational salmon catch on the Black River was reported in 19 years between 1960 and 1986, and ranged between 0 and 162 fish (Table 5, Appendix II). Catches were highest in the mid 1980s (Figure 26). No historic electrofishing data were found for the Black River, however electrofishing in 2000 (one site) resulted in a density of 2.4 juvenile salmon per 100 m<sup>2</sup> (Table 3). Three sites were electrofished on this river in 2002 (Appendix II). Mean densities of fry and parr were 3.7 and 3.8 fish per 100 m<sup>2</sup> respectively (Table 4). Brook trout were also captured in this river during the 2002 electrofishing surveys (Appendix II).

### Mispec River

We did not find records of recreational catch or historic electrofishing data for the Mispec River. Electrofishing at two sites in 2000 resulted in a density of 1.1 fish per 100 m<sup>2</sup> (Appendix II, Table 3). No other salmonids were captured in 2000 (Appendix II). One site was electrofished on Mispec River in 2002 (Appendix II). No salmon were captured (Table 4). Brook trout was the only salmonid captured in 2002 (Appendix II).

## **Discussion**

An extensive electrofishing survey was undertaken in 2002 to estimate the abundance of juvenile Atlantic salmon in iBoF rivers. Overall, juvenile salmon were either at very low abundance or absent at sites in rivers without LGB support. Of 34 rivers without LGB support, fry were not found in 30 of these rivers implying little or no reproduction in these rivers in 2001. Parr were absent in 22 of the 34 rivers without LGB support. Salmon densities in rivers without LGB support are for the most part the lowest on record. Where salmon were present in rivers without LGB support, mean densities of fry and parr in each New Brunswick iBoF river were less than 5.2 and 3.8 fish per 100 m<sup>2</sup>. In Nova Scotia iBoF rivers, fry were totally absent and mean densities of parr were less than 7.1 fish per 100 m<sup>2</sup>. At this time, estimates of densities of wild juvenile salmon in rivers with LGB support are confounded by the presence of captive-reared fish. Densities at sites within these rivers that are distant from LGB release sites are also low.

In the analysis presented, a electrofishing catchability coefficient of 42.8% was applied to all electrofishing surveys to estimate densities at each site. This coefficient was estimated using empirical Bayes methods that provide the probability density for the probability of catching a fish. If the 5<sup>th</sup> and 95<sup>th</sup> percentiles of the prior for this coefficient were used to estimate population density, estimated densities would be increased or decreased by a factor of about 1.5. The conclusion that densities of juvenile Atlantic salmon in iBoF rivers are at low levels would not change as a result.

The empirical Bayes methods used here to estimate the probability of catching a salmonid while electrofishing is a flexible method that may also be used with other electrofishing data types. The method substantially reduced the variance of the probability density for electrofishing catchability in comparison with simply calculating the mean and variance of the individual catchabilities. In this document, we used mark-recapture data to derive the probability density. The method could also be applied to multiple pass (depletion) data, or mark-recapture and depletion data combined. Additionally, covariates such as crew size, water depth or substrate type could also be included via regression structures and used to predict the mean and variance of the probability distribution (Efron 1996). This approach is a general version of a mixed effects model and if used, could potentially result in further reductions in the variance of the electrofishing catchability coefficient. This would result in greater certainty in the population estimates, but given the points in the preceding paragraph, would not be expected to alter the conclusion that very few salmon are present in iBoF rivers.

We placed the results of the electrofishing surveys in context by comparison with results of previous electrofishing surveys and catches in the recreational fishery. These "historic" data provide further evidence that salmon were once abundant in iBoF rivers. The results of the 2000 and 2002 electrofishing surveys indicate this is no longer the case. These comparisons clearly indicate that the declines indicated by the analyses of temporal trends for the Stewiacke River (Gibson and Amiro 2003) and Big Salmon River (Gibson et al. 2003b) are not limited to a few rivers. Additionally, data collected during these surveys imply that the declines that led to the listing of this complex by COSEWIC are ongoing.

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Table 1. Number of Atlantic salmon, brook trout and brown trout marked (M), examined for marks (C) and marked recaptures (R) during 44 mark-recapture experiments on inner Bay of Fundy rivers during 2000 and 2002.

River	Site ID	Year	Atlantic salmon			brook trout			brown trout		
			M	C	R	M	C	R	M	C	R
Great Village River	GrVi005	2000	15	18	8	26	25	10	0	0	0
Great Village River	GrVi006	2000	26	25	12	5	5	4	0	0	0
Portapique River	Port006	2000	5	3	2	7	7	1	0	0	0
Stewiacke River	STEW1.1	2000	4	3	0	2	0	0	1	0	0
Stewiacke River	STEW30.1	2000	20	14	9	11	5	0	1	0	0
Stewiacke River	STEW30.2	2000	14	8	4	13	1	0	1	0	0
Stewiacke River	STEW30.3	2000	5	9	4	8	7	3	1	1	1
Stewiacke River	STEW32.2	2000	3	2	1	9	10	3	19	7	2
Stewiacke River	STEW33.1	2000	3	4	2	3	0	0	0	0	0
Stewiacke River	STEW34.4	2000	3	3	2	13	6	2	0	0	0
Stewiacke River	STEW34.5	2000	5	4	4	18	10	4	1	1	0
Stewiacke River	STEW34.6	2000	8	6	5	7	7	1	0	0	0
Stewiacke River	STEW36.1	2000	6	9	5	1	0	0	6	5	2
Stewiacke River	STEW4.10	2000	13	8	6	2	0	0	2	0	0
Stewiacke River	STEW4.11	2000	5	4	1	0	0	0	2	1	1
Stewiacke River	STEW4.12	2000	5	5	2	0	0	0	3	1	0
Stewiacke River	STEW8.1	2000	6	4	3	60	49	25	42	13	7
Stewiacke River	STEW8.2	2000	1	2	1	69	62	33	28	22	9
Great Village River	GrVi005	2002	1	1	1	5	5	0	0	0	0
Great Village River	GrVi006	2002	1	1	0	17	14	10	0	0	0
Harrington River	Harr001	2002	2	3	1	17	36	14	0	0	0
Harrington River	Harr002	2002	10	29	0	5	12	0	0	0	0
Harrington River	Harr003	2002	19	16	1	12	46	3	0	0	0
Harrington River	Harr004	2002	10	8	2	35	32	13	0	0	0
Harrington River	Harr005	2002	23	20	7	31	27	6	0	0	0
Harrington River	Harr006	2002	31	36	15	27	61	13	0	0	0
Harrington River	Harr007	2002	28	30	5	29	42	9	0	0	0
Maccan River	Macc007	2002	2	5	2	4	19	1	2	0	0
Maccan River	Macc008	2002	1	5	1	1	0	0	0	1	1
North River (Truro)	NorTr006	2002	1	1	0	1	1	0	0	0	0
Stewiacke River	STEW1.1	2002	2	1	0	1	3	0	0	0	0
Stewiacke River	STEW1.2	2002	1	1	0	3	0	0	0	0	0
Stewiacke River	STEW23.0	2002	9	9	4	1	6	0	1	1	1
Stewiacke River	STEW30.1	2002	6	5	1	9	3	0	0	0	0
Stewiacke River	STEW30.2	2002	7	5	3	4	2	1	0	0	0
Stewiacke River	STEW30.3	2002	6	11	5	11	3	0	0	1	0
Stewiacke River	STEW33.1	2002	5	6	2	2	2	1	0	0	0
Stewiacke River	STEW33.2	2002	3	3	2	2	4	1	0	0	0
Stewiacke River	STEW34.4	2002	3	1	1	0	9	2	0	0	0
Stewiacke River	STEW34.5	2002	5	4	2	9	20	4	0	0	0
Stewiacke River	STEW34.6	2002	2	3	2	5	9	3	1	0	0
Stewiacke River	STEW39.0	2002	54	63	32	4	10	0	11	10	2
Stewiacke River	STEW5.2	2002	2	1	1	11	10	4	0	0	0
Stewiacke River	STEW6.1	2002	19	18	14	0	1	0	0	0	0

Table 2. A comparison of the empirical Bayes priors for logit of the catchability ( $p$ ) calculated using only the Atlantic salmon data, only the brook trout data, and the Atlantic salmon, brown trout and brook data combined. The logit( $p$ ) was assumed normally distributed when estimating the prior. "n" is the number of mark-recapture experiments in each data set. Raw data are presented in Table 1.

Data	n	logit( $p$ )		$p$
		mean	std. dev.	
Atlantic salmon only	44	-0.289	0.457	0.428
brook trout only	43	-0.898	0.831	0.291
salmonid data combined	43	-0.619	0.574	0.350

Table 3. Summary statistics for the densities of Age-0 and Age-1 and older Atlantic salmon (number per 100 m<sup>2</sup>) estimated by electrofishing on inner Bay of Fundy rivers during 2000. "Stocked" indicates whether (y) or not (n) the river has received captive-reared salmon between 1996 to 2000. "N" is the number of electrofishing sites. Densities marked with astericks (\*) denote life stage unknown.

River	stocked	N	Age-0					Age-1 and older				
			mean	std. dev.	min	max	median	mean	std. dev.	min	max	median
Mispec River	n	2	0.00	0.00	0.00	0.00	0.00	*1.08	0.00	0.00	0.00	0.00
Black River	n	1	0.00		0.00	0.00	0.00	*2.38		0.00	0.00	0.00
Emerson Creek	n	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gardner Creek	n	2	0.00	0.00	0.00	0.00	0.00	*1.99	0.00	0.00	0.00	0.00
Bains Brook	n	3	0.00	0.00	0.00	0.00	0.00	*6.60	0.00	0.00	0.00	0.00
Mosher River	n	1	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00
Irish River	n	2	0.00	0.00	0.00	0.00	0.00	*0.93	0.00	0.00	0.00	0.00
Big Salmon River	y	5	1.29	1.50	0.00	3.28	0.70	8.14	7.54	0.70	16.40	6.56
Little Salmon River	n	2	0.00	0.00	0.00	0.00	0.00	*1.22	0.00	0.00	0.00	0.00
Quiddy River	n	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Goose River	n	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crooked Creek	n	1	0.00		0.00	0.00	0.00	*1.04		0.00	0.00	0.00
Demoiselle Creek	y	1	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00
Petitcodiac River	y	8	0.00	0.00	0.00	0.00	0.00	0.13	0.26	0.00	0.69	0.00
Memramcook River	n	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tantramar River	n	1	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00
Maccan River	n	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
River Hebert	n	3	0.00	0.00	0.00	0.00	0.00	0.19	0.33	0.00	0.57	0.00
Apple River	n	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diligent River	n	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Parrsboro River	y	2	0.00	0.00	0.00	0.00	0.00	0.90	0.45	0.58	1.22	0.90
Harrington River	n	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Economy River	n	2	0.17	0.24	0.00	0.34	0.17	0.17	0.24	0.00	0.34	0.17
Bass River	n	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Portapique River	n	2	0.00	0.00	0.00	0.00	0.00	1.03	0.98	0.34	1.72	1.03
Great Village River	n	2	0.00	0.00	0.00	0.00	0.00	7.07	2.68	5.17	8.97	7.07
Folly River	y	1	0.00		0.00	0.00	0.00	0.69		0.69	0.69	0.69
Chiganois River	y	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
North River (Truro)	n	4	0.00	0.00	0.00	0.00	0.00	0.04	0.09	0.00	0.17	0.00
Salmon River (Truro)	n	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stewiacke River	y	33	0.00	0.00	0.00	0.00	0.00	1.14	1.62	0.00	6.90	0.69
Shubenacadie River	n	2	0.00	0.00	0.00	0.00	0.00	2.08	2.94	0.00	4.16	2.08
Kennetcook River	n	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
St. Croix River	n	4	0.00	0.00	0.00	0.00	0.00	*3.89	0.00	0.00	0.00	0.00
Gaspereau River	y	1	0.00		0.00	0.00	0.00	*2.40		2.40	2.40	2.40
Cornwallis River	n	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 4. Summary statistics for the densities of Age-0 and Age-1 and older Atlantic salmon (number per 100 m<sup>2</sup>) estimated by electrofishing on inner Bay of Fundy rivers during 2002. LGB (live gene bank) indicates whether (y) or not (n) the river has received captive-reared salmon since 1996. "N" is the number of electrofishing sites.

River	LGB	N	Age-0					Age-1 and older				
			mean	std. dev.	min	max	median	mean	std. dev.	min	max	median
Mispec River	n	1	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00
Black River	n	3	3.66	3.96	0.00	7.87	3.11	3.83	4.78	0.00	9.18	2.31
Gardner Creek	n	1	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00
Bains Brook	n	1	1.27		1.27	1.27	1.27	3.81		3.81	3.81	3.81
Irish River	n	3	5.20	9.01	0.00	15.60	0.00	0.22	0.38	0.00	0.65	0.00
Big Salmon River	y	7	18.27	21.97	0.00	47.11	2.35	24.33	19.90	4.42	63.87	25.62
Little Salmon River	n	1	0.00		0.00	0.00	0.00	0.34		0.34	0.34	0.34
Goose River	n	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Point Wolfe River	n	24	0.00	0.00	0.00	0.00	0.00	1.07	1.23	0.00	3.84	0.43
Upper Salmon River	n	32	0.03	0.10	0.00	0.43	0.00	0.26	0.57	0.00	2.53	0.00
Shepody River	n	1	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00
Crooked Creek	n	1	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00
Demoiselle Creek	y	1	32.82		32.82	32.82	32.82	18.96		18.96	18.96	18.96
Petitcodiac River	y	8	1.53	4.33	0.00	12.25	0.00	0.41	1.16	0.00	3.29	0.00
Memramcook River	n	9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Carters Brook	n	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maccan River	n	9	0.00	0.00	0.00	0.00	0.00	0.07	0.15	0.00	0.43	0.00
River Hebert	n	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Apple River	n	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ramshead River	n	1	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00
Diligent River	n	1	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00
Parrsboro River	y	3	0.00	0.00	0.00	0.00	0.00	0.53	0.46	0.00	0.86	0.73
Moose River	n	1	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00
Harrington River	n	7	0.00	0.00	0.00	0.00	0.00	7.14	2.94	4.38	12.15	5.84
North River	n	1	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00
Economy River	n	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bass River	n	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Portapique River	n	6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Great Village River	n	6	0.00	0.00	0.00	0.00	0.00	0.25	0.32	0.00	0.79	0.15
Folly River	y	4	5.96	11.92	0.00	23.84	0.00	0.10	0.20	0.00	0.40	0.00
Debert River	y	3	0.43	0.48	0.00	0.94	0.34	0.00	0.00	0.00	0.00	0.00
Chiganois River	y	2	4.16	5.61	0.19	8.12	4.16	0.00	0.00	0.00	0.00	0.00
North River (Truro)	n	6	0.00	0.00	0.00	0.00	0.00	0.40	0.46	0.00	0.97	0.30
Salmon River (Truro)	n	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stewiacke River	y	40	0.00	0.00	0.00	0.00	0.00	2.69	7.99	0.00	38.44	0.13
Shubenacadie River	n	7	0.00	0.00	0.00	0.00	0.00	0.30	0.52	0.00	1.22	0.00
Kennetcook River	n	7	0.00	0.00	0.00	0.00	0.00	0.03	0.09	0.00	0.24	0.00
Avon River	n	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Halfway River	n	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gaspereau River	y	8	0.77	1.00	0.00	2.98	0.62	0.95	1.18	0.00	3.41	0.53
Cornwallis River	n	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Habitant River	n	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pereaux River	n	1	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00



Table 5. Summary statistics for the Atlantic salmon recreational catch (number caught) and fishing effort (rod days) for 17 inner Bay of Fundy rivers, from 1960 to 1990 (1954 to 1990 for the Big Salmon River). "N" is the number of years for which data are available. Data for Nova Scotia rivers are the number of fish that were caught and for New Brunswick rivers are the number of fish harvested.

River	N	Catch					Effort				
		mean	std dev	min	max	median	mean	std dev	min	max	median
Big Salmon, NB	37	373.1	321.6	6	1,321	281	4,860.1	7,645.8	320	41,317	2,358
Black River, NB	19	29.2	41.7	0	162	12	566.6	728.6	40	2,625	244
Cornwallis, NS	23	4.2	7.1	0	34	2	92.2	59.8	21	240	90
Debert, NS	26	68.9	57.0	2	230	62	263.8	185.7	15	660	241
Economy, NS	25	63.0	54.0	4	194	58	213.2	167.5	15	645	200
Folly, NS	25	96.0	90.9	4	356	73	321.8	205.9	15	810	330
Gaspereau, NS	31	27.3	22.8	3	92	23	369.0	142.2	88	665	360
Great Village, NS	20	7.9	10.6	0	42	4	29.8	28.6	4	110	16
Maccan, NS	26	105.2	68.1	6	291	94	513.1	327.7	20	1,272	412
North (Truro), NS	25	57.3	51.6	2	153	40	194.2	154.3	10	497	164
Petitcodiac, NB	21	48.8	73.4	0	304	20	251.9	229.5	50	1,020	180
Portapique, NS	26	36.2	32.6	3	120	20	128.4	110.2	13	390	89.5
Salmon (Truro), NS	19	70.5	56.6	4	192	54	298.4	240.4	47	1,006	210
Shubenacadie, NS	27	94.7	84.9	0	298	72	607.6	528.8	4	1,890	464
Stewiacke, NS	31	575.3	491.9	0	1,980	474	2,983.5	2,227.5	35	9,267	2,347
Upper Salmon, NB	24	76.1	62.3	3	211	66	288.8	133.4	35	613	311

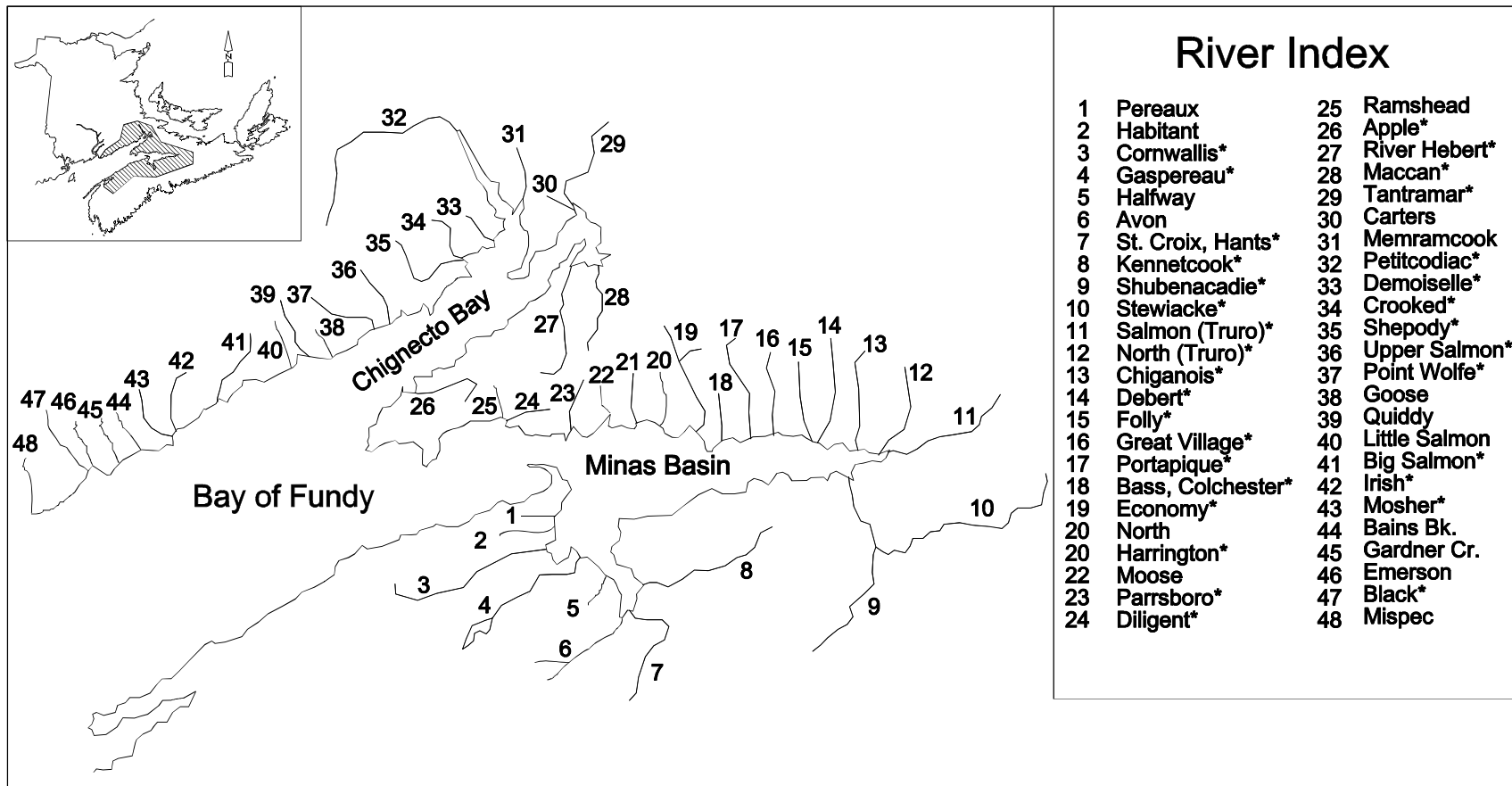


Figure 1. Map showing the approximate locations of inner Bay of Fundy rivers. Asterisk denotes those 32 rivers in which salmon are known to have inhabited.

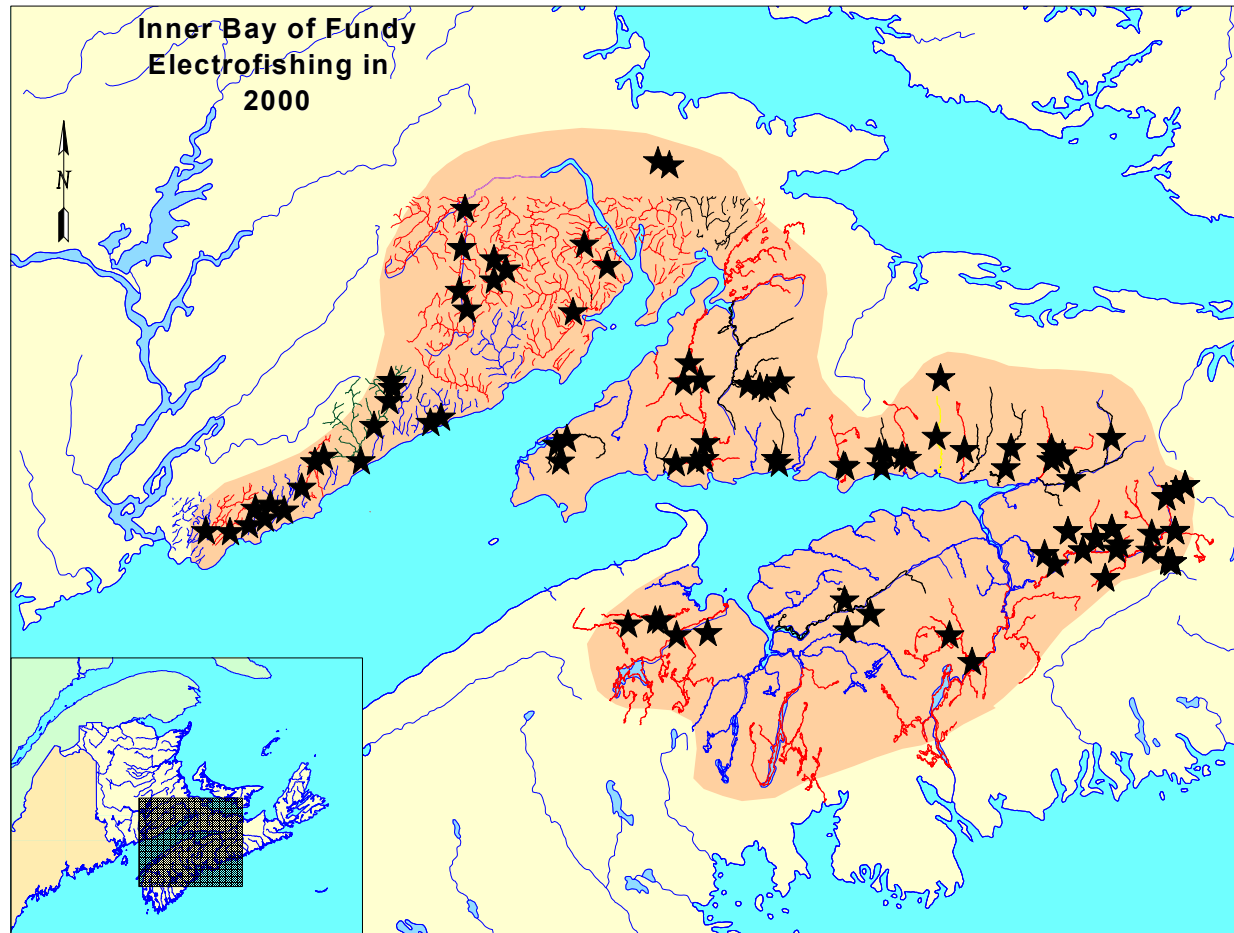


Figure 2. Map of electrofishing sites (stars) on inner Bay of Fundy rivers during 2000 surveys.

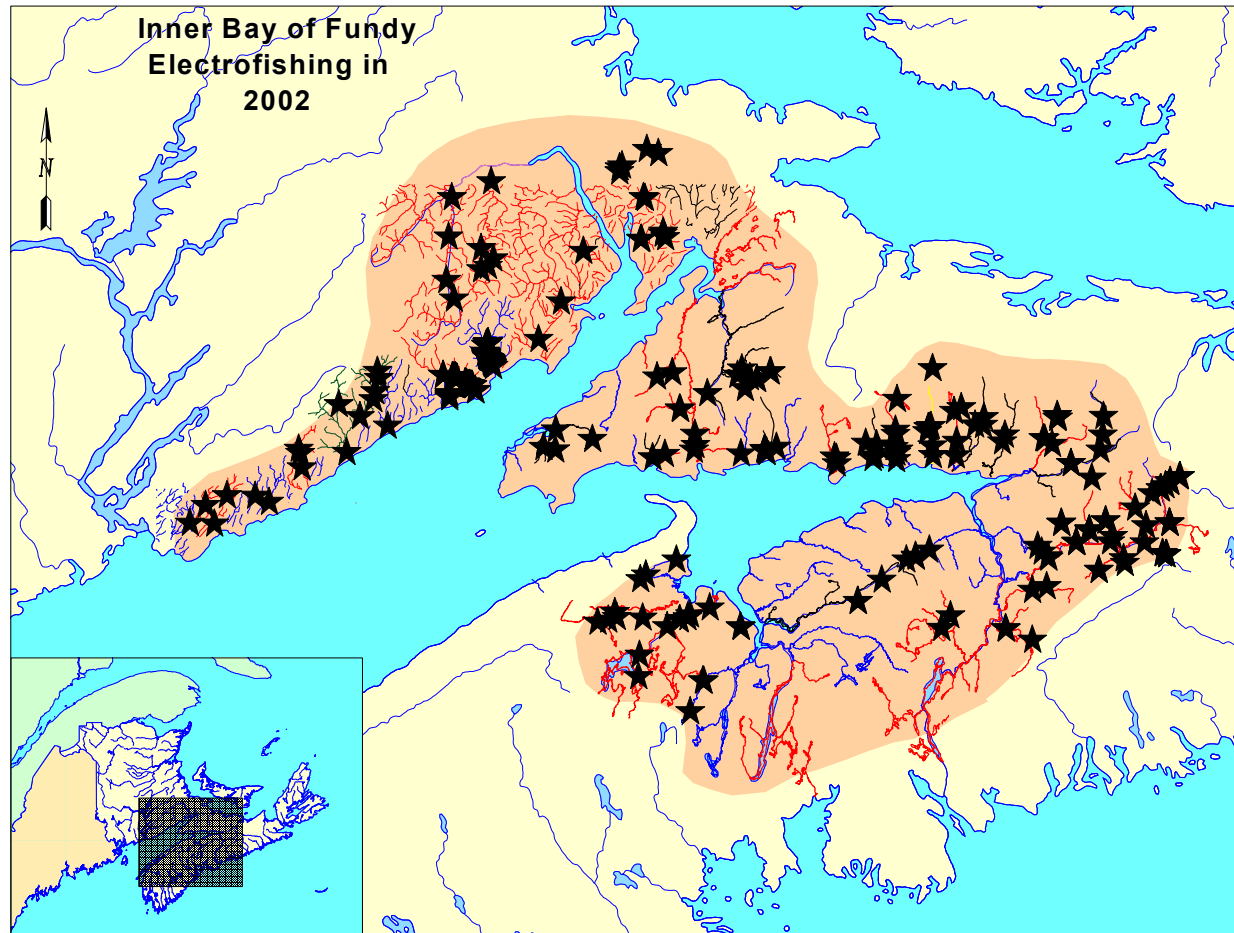


Figure 3. Map of electrofishing sites (stars) on inner Bay of Fundy rivers during 2002 surveys.

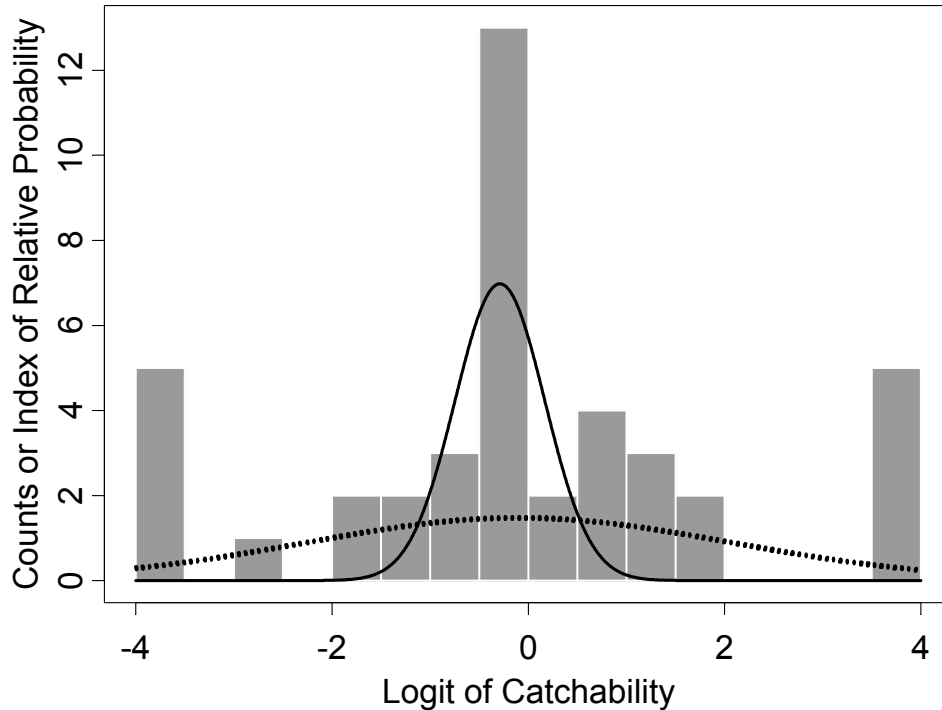


Figure 4. Histogram of the logit's of the individual electrofishing catchabilities for salmonids from 19 mark-recapture experiments on inner Bay of Fundy rivers during 2002. The dashed line shows the normal distribution based on the mean and variance of the logit's. The solid line shows the empirical Bayes estimate for the prior density for the logit's obtained by maximizing the marginal sampling density. The bars at the extreme left and right of the graph are MR surveys in which none (coded -4) or all (coded 4) of the marked fish were captured during the recapture pass (these surveys have low numbers of marked fish).

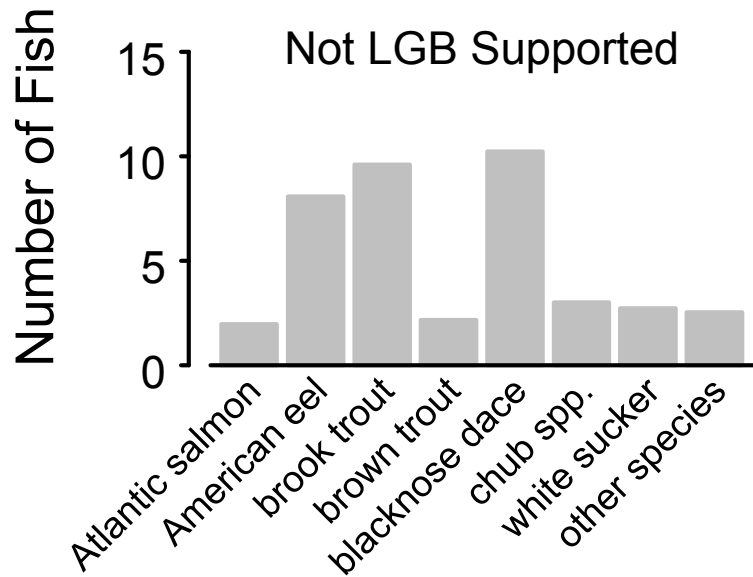
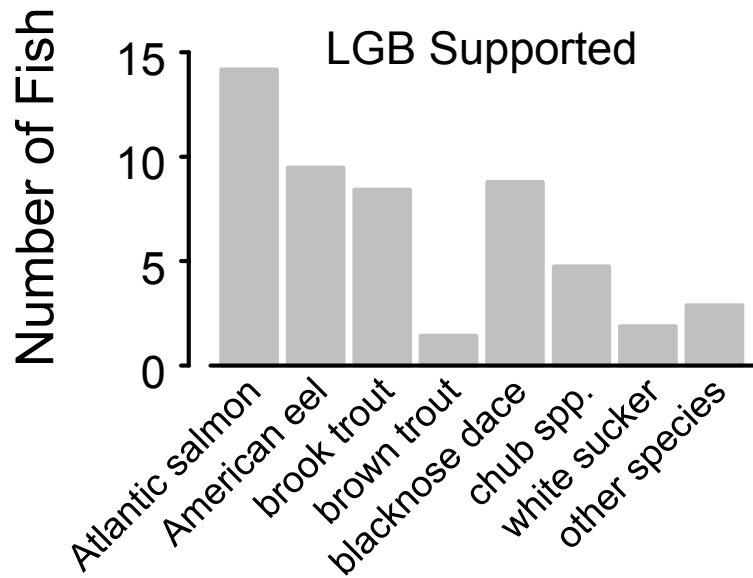


Figure 5. Mean number of fish per site captured during the first pass while electrofishing at 172 sites on inner Bay of Fundy Rivers during 2002. LGB (live gene bank) supported are rivers into which juvenile Atlantic salmon have been released since 1996. Sites where non-salmonid species were not recorded are not included.

## Atlantic salmon 2000

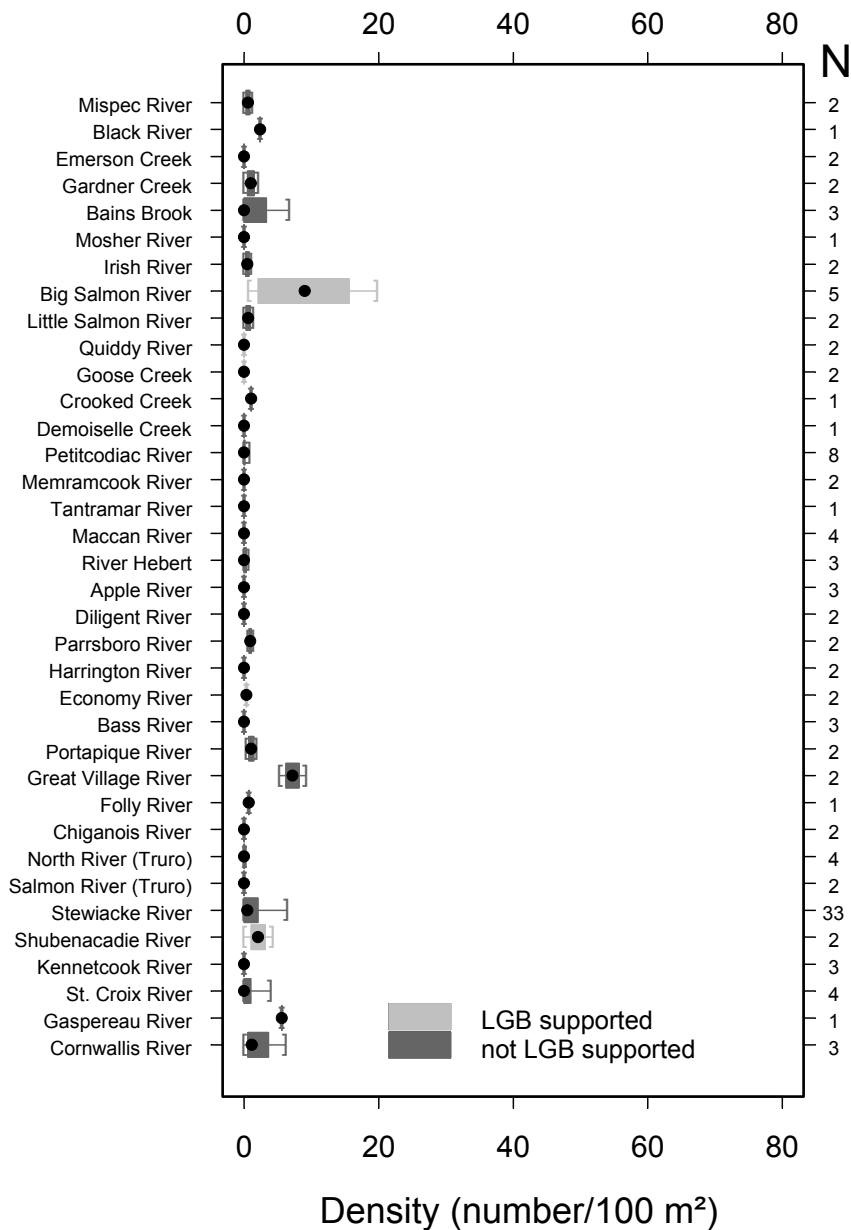


Figure 6. Box plots showing the density of Atlantic salmon in 36 inner Bay of Fundy rivers based on electrofishing at 117 sites during 2000. The dot shows the median density and the box shows the inter-quartile spread. The whiskers are drawn to the minimum and maximum. LGB (live gene bank) supported are rivers into which juvenile Atlantic salmon have been released since 1996. “N” is the number of sites that were electrofished in each river.

## Atlantic salmon 2002

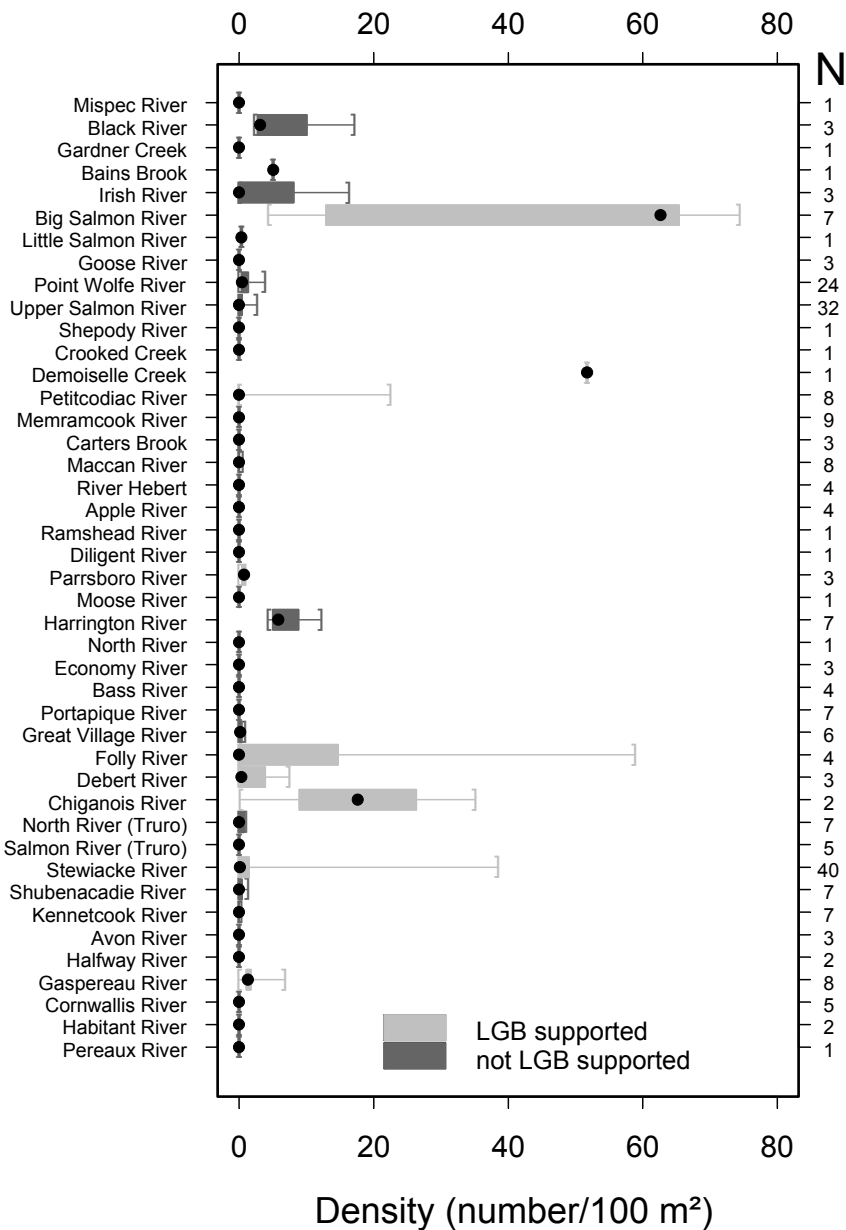


Figure 7. Box plots showing the density of Atlantic salmon in 41 inner Bay of Fundy rivers based on electrofishing at 233 sites during 2002. The dot shows the median density and the box shows the inter-quartile spread. The whiskers are drawn to the minimum and maximum. LGB (live gene bank) supported are rivers into which juvenile Atlantic salmon have been released since 1996. "N" is the number of sites that were electrofished in each river.



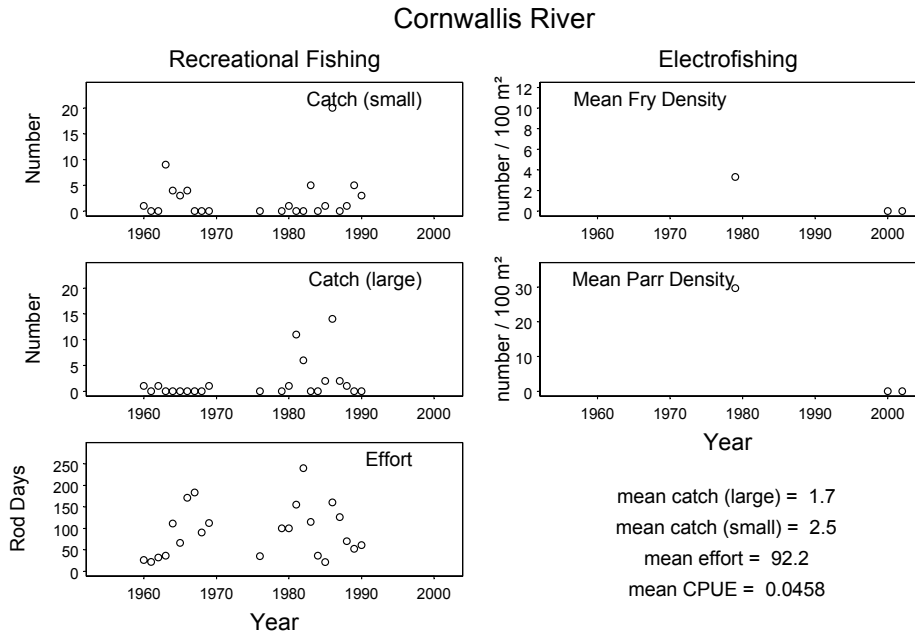


Figure 8. Atlantic salmon recreational catch and fishing effort, and estimates of the densities of salmon fry and parr obtained by electrofishing on the Cornwallis River, NS.

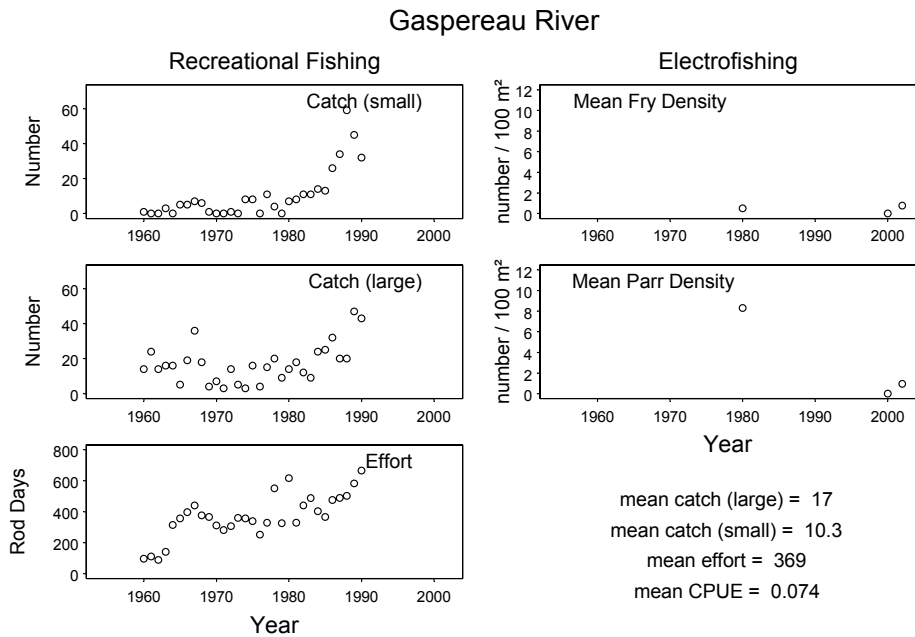


Figure 9. Atlantic salmon recreational catch and fishing effort, and estimates of the densities of salmon fry and parr obtained by electrofishing on the Gaspereau River, NS.

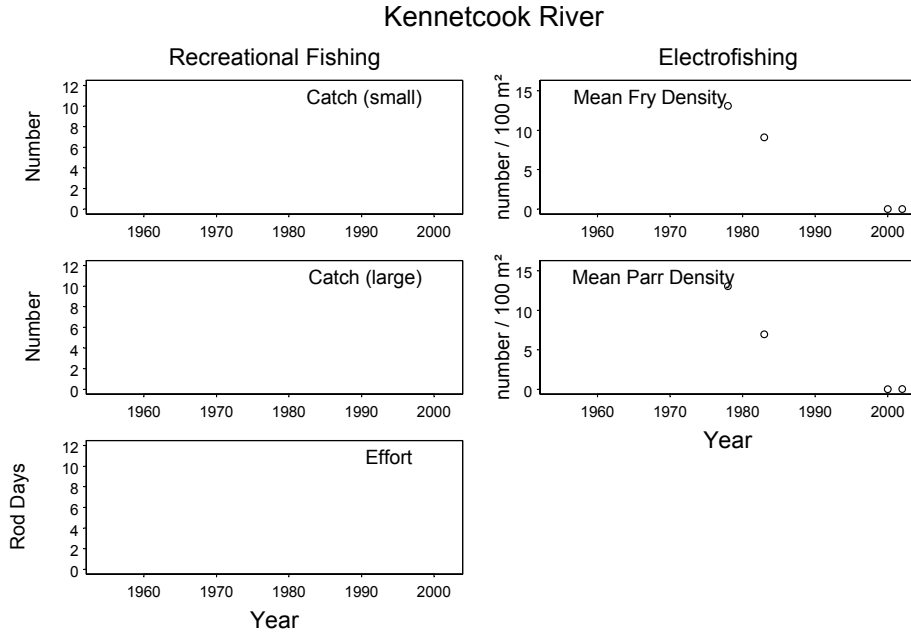


Figure 10. Estimates of the densities of Atlantic salmon fry and parr obtained by electrofishing on the Kennetcook River, NS. The recreational catch and fishing effort for salmon were not reported for this river.

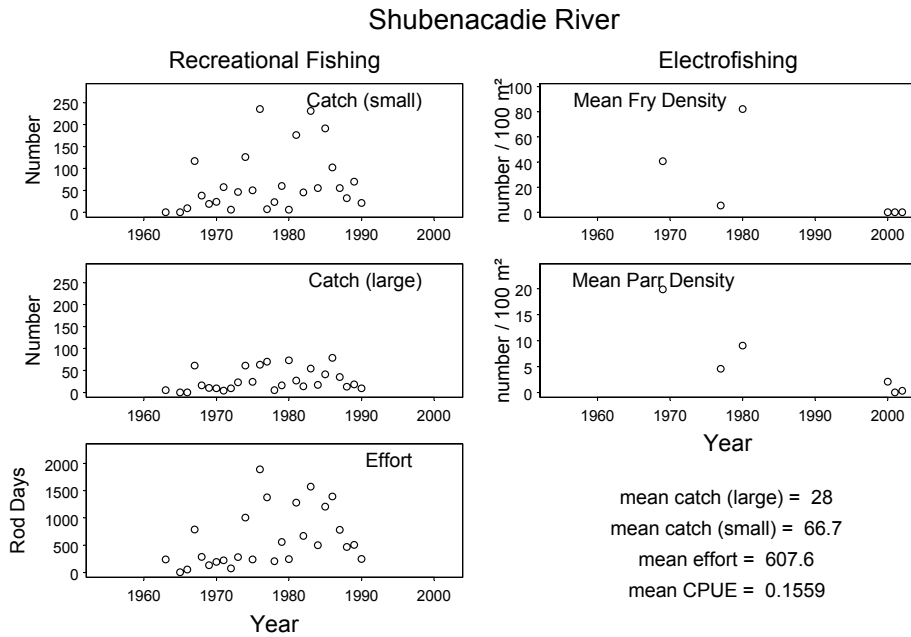


Figure 11. Atlantic salmon recreational catch and fishing effort, and estimates of the densities of salmon fry and parr obtained by electrofishing on the Shubenacadie River, NS.

### Stewiacke River

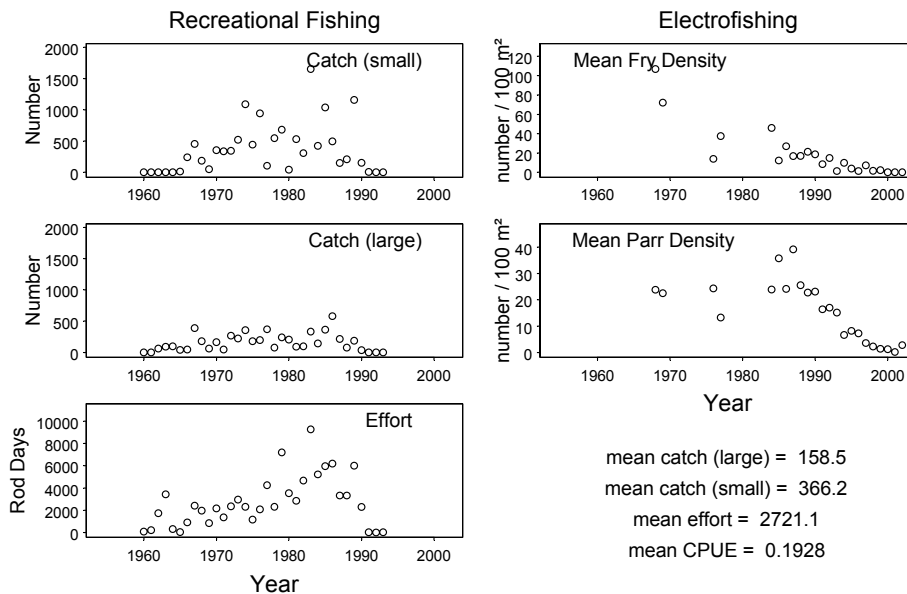


Figure 12. Atlantic salmon recreational catch and fishing effort, and estimates of the densities of salmon fry and parr obtained by electrofishing on the Stewiacke River, NS.

### Salmon River (Truro)

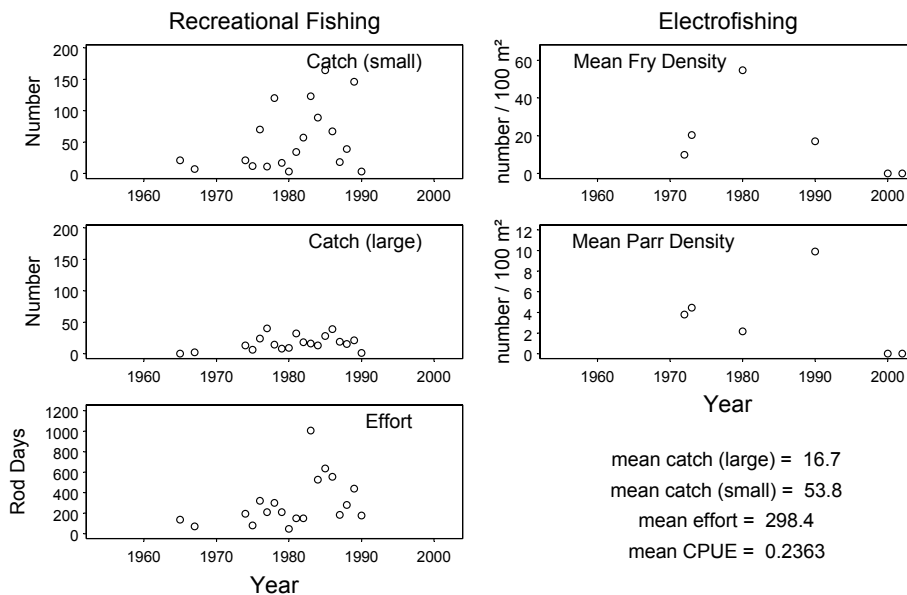


Figure 13. Atlantic salmon recreational catch and fishing effort, and estimates of the densities of salmon fry and parr obtained by electrofishing on the Salmon River, Colchester Co., NS.

### North River (Truro)

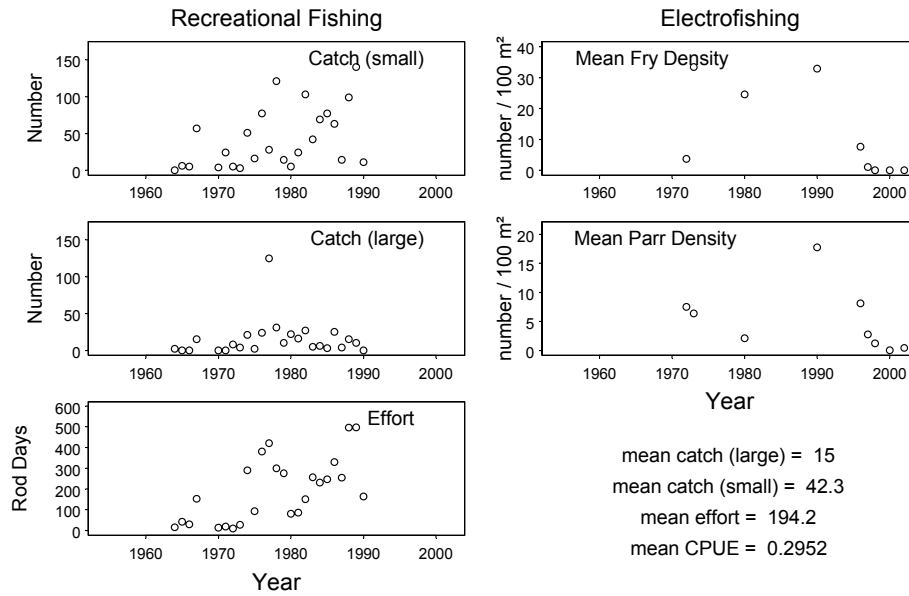


Figure 14. Atlantic salmon recreational catch and fishing effort, and estimates of the densities of salmon fry and parr obtained by electrofishing on the North River, Colchester Co., NS.

### Chiganois River

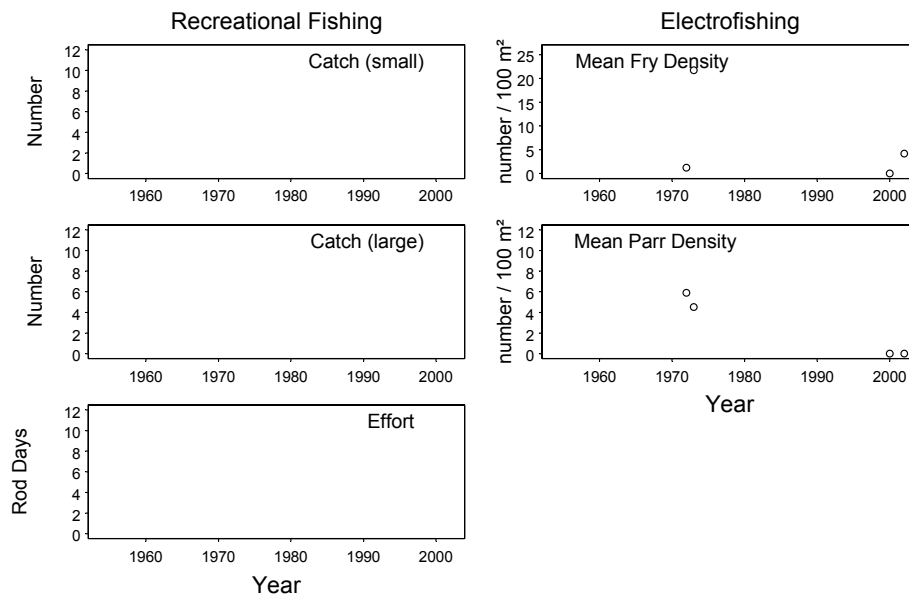


Figure 15. Estimates of the densities of Atlantic salmon fry and parr obtained by electrofishing on the Chiganois River, NS. The recreational catch and fishing effort for salmon were not reported for this river.

### Debert River

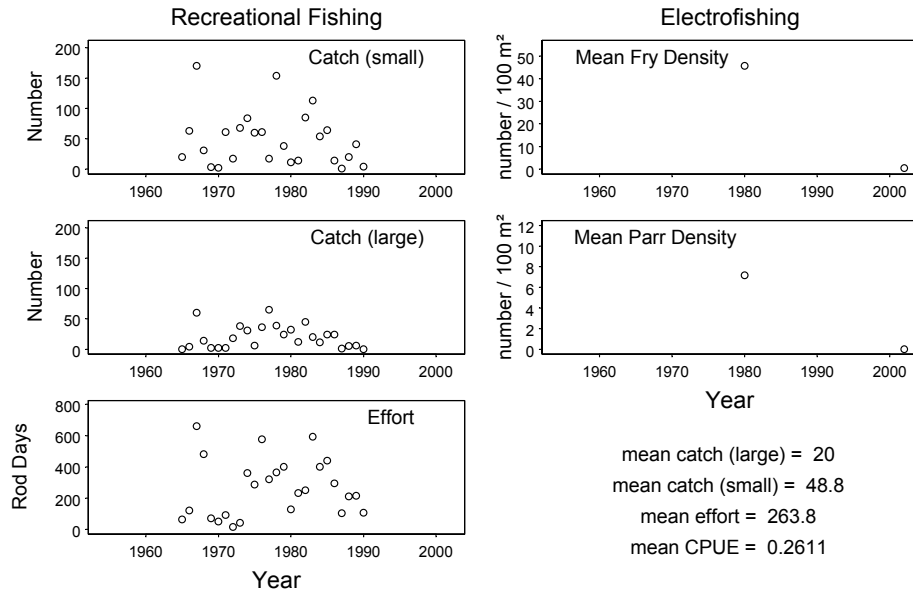


Figure 16. Atlantic salmon recreational catch and fishing effort, and estimates of the densities of salmon fry and parr obtained by electrofishing on the Debert River, NS.

### Folly River

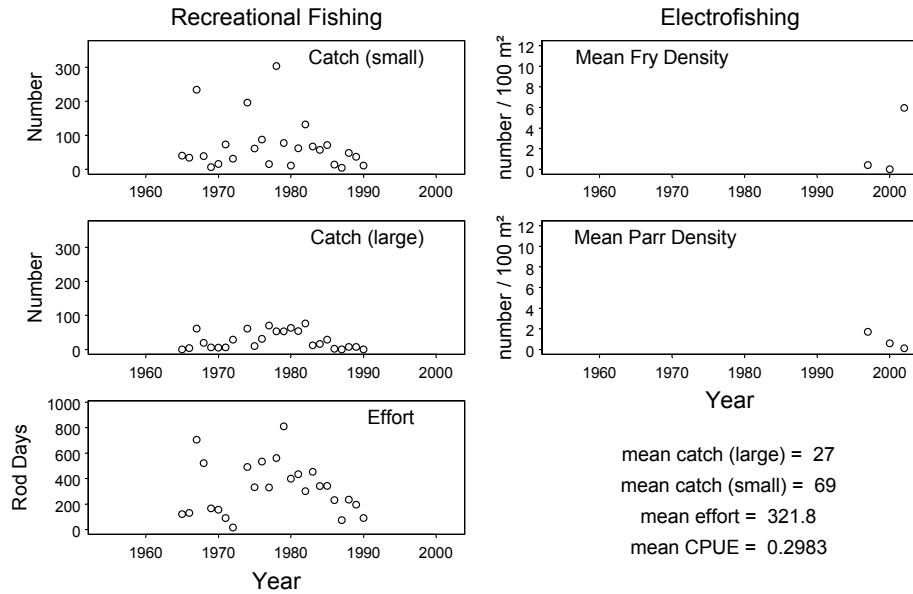


Figure 17. Atlantic salmon recreational catch and fishing effort, and estimates of the densities of salmon fry and parr obtained by electrofishing on the Folly River, NS.

### Great Village River

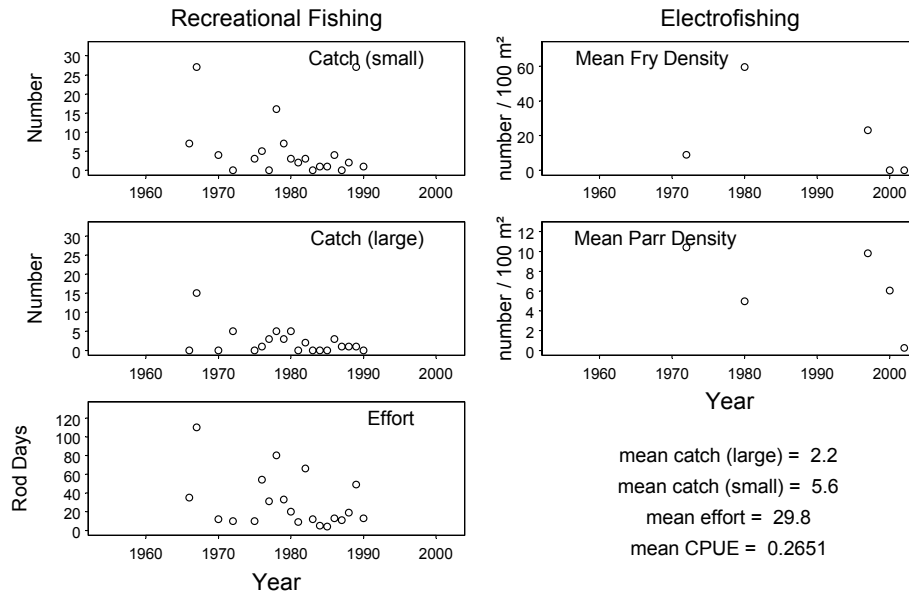


Figure 18. Atlantic salmon recreational catch and fishing effort, and estimates of the densities of salmon fry and parr obtained by electrofishing on the Great Village River, NS.

### Portapique River

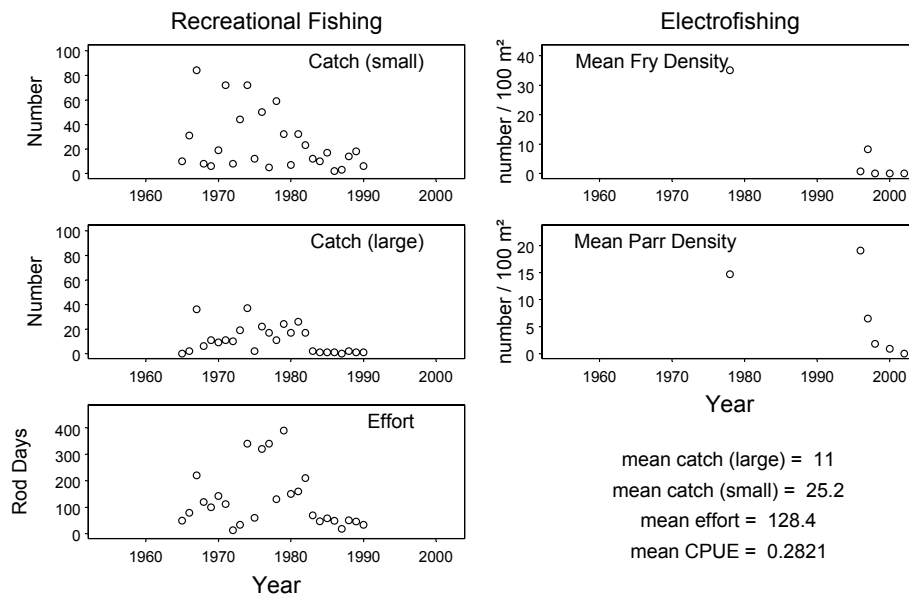


Figure 19. Atlantic salmon recreational catch and fishing effort, and estimates of the densities of salmon fry and parr obtained by electrofishing on the Portapique River, NS.

### Economy River

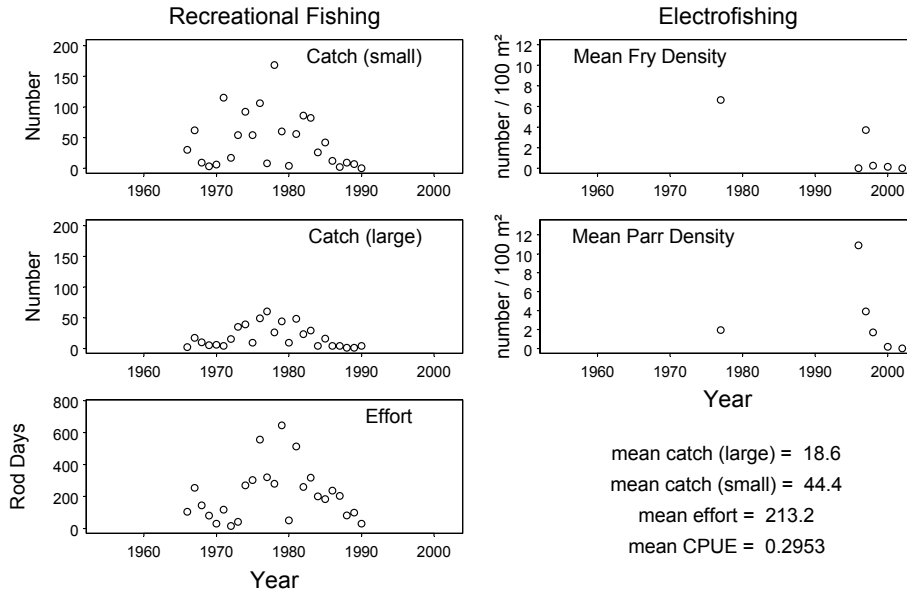


Figure 20. Atlantic salmon recreational catch and fishing effort, and estimates of the densities of salmon fry and parr obtained by electrofishing on the Economy River, NS.

### Maccan River

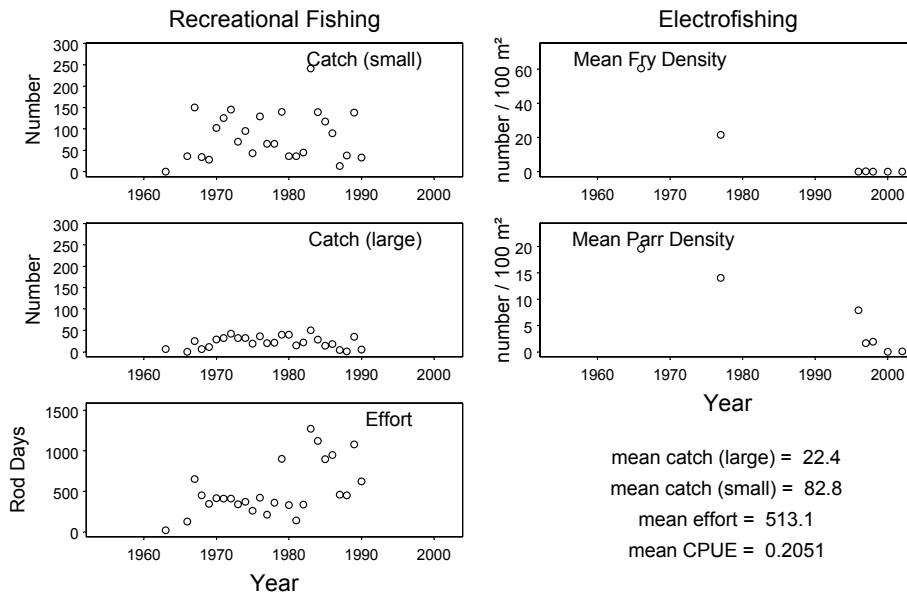


Figure 21. Atlantic salmon recreational catch and fishing effort, and estimates of the densities of salmon fry and parr obtained by electrofishing on the Maccan River, NS.

### Petitcodiac River

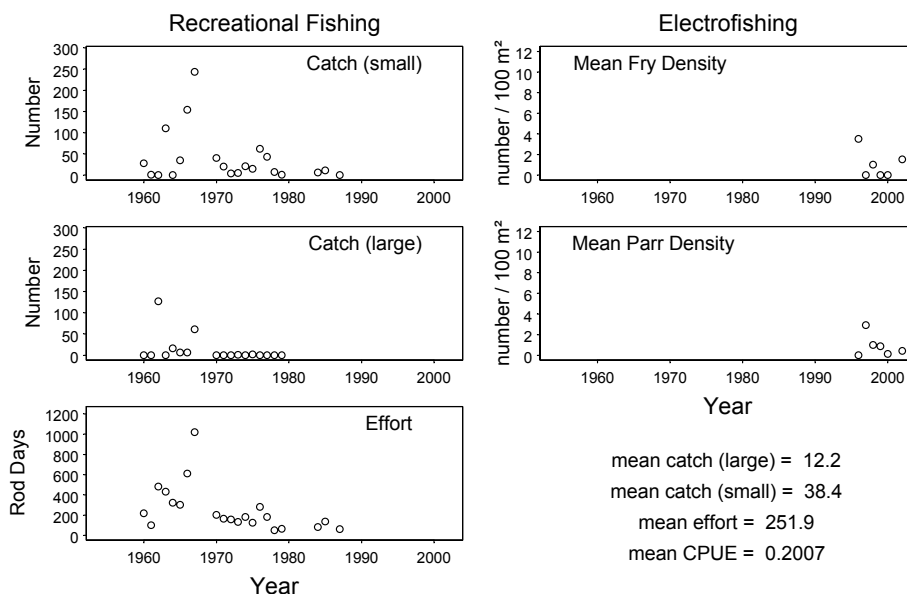


Figure 22. Atlantic salmon recreational catch and fishing effort, and estimates of the densities of salmon fry and parr obtained by electrofishing on the Petitcodiac River, NB.

### Upper Salmon River

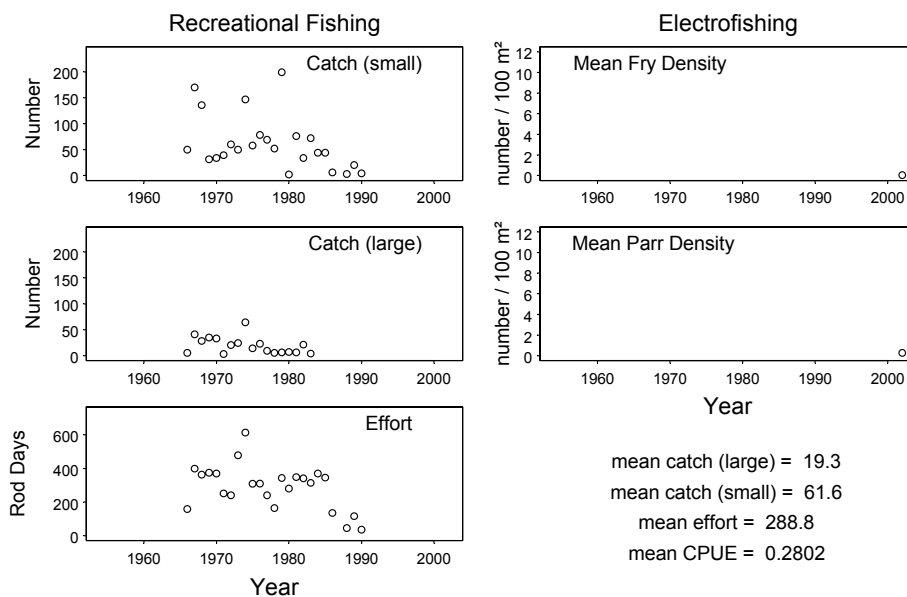


Figure 23. Atlantic salmon recreational catch and fishing effort, and estimates of the densities of salmon fry and parr obtained by electrofishing on the Upper Salmon River, NB.



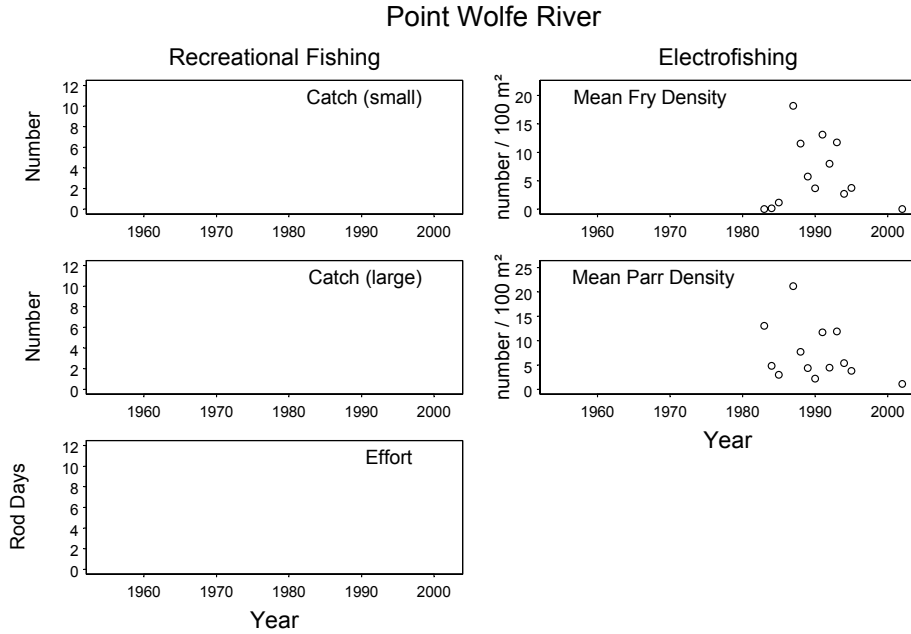


Figure 24. Estimates of the densities of Atlantic salmon fry and parr obtained by electrofishing on the Point Wolfe River, NB. The recreational catch and fishing effort for salmon were not reported for this river.

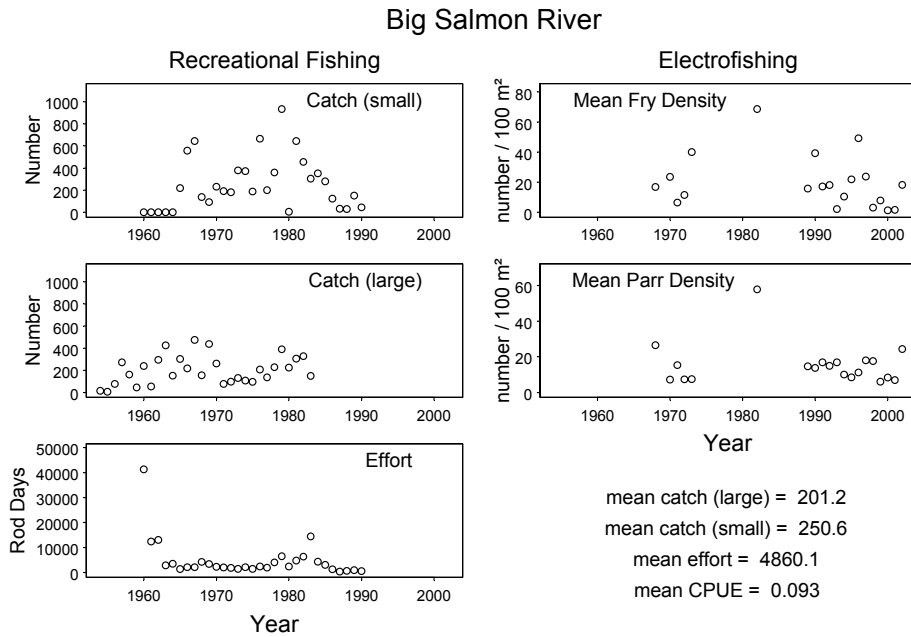


Figure 25. Atlantic salmon recreational catch and fishing effort, and estimates of the densities of salmon fry and parr obtained by electrofishing on the Big Salmon River, NB.

### Black River

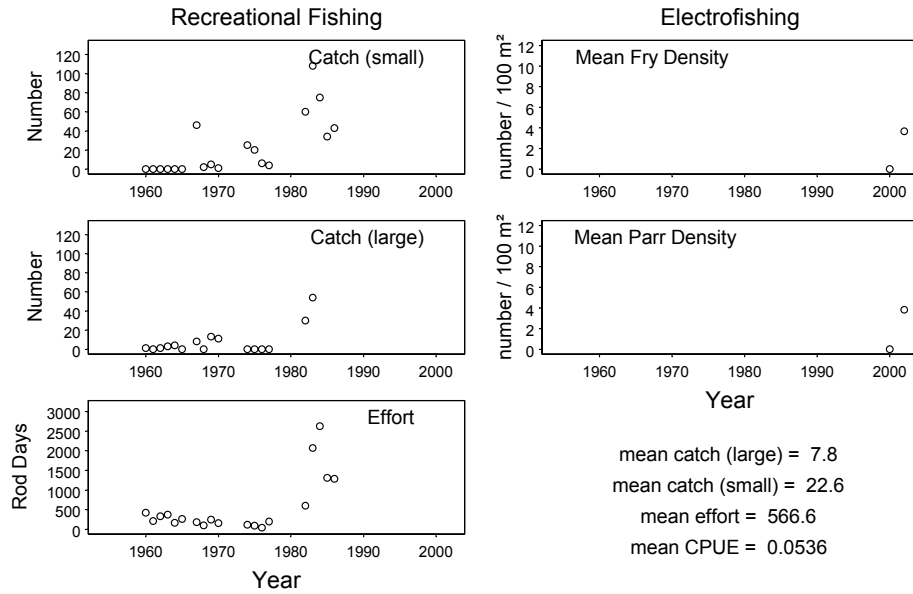


Figure 26. Atlantic salmon recreational catch and fishing effort, and estimates of the densities of salmon fry and parr obtained by electrofishing on the Black River, NB.

Appendix I. Common and scientific names of fish species referred to in this report.

Common Name	Scientific Name
Atlantic salmon	<i>Salmo salar</i>
American eel	<i>Anguilla rostrata</i>
brook trout	<i>Salvelinus fontinalis</i>
brown trout	<i>Salmo trutta</i>
rainbow trout	<i>Oncorhynchus gairdneri</i>
white sucker	<i>Catostomus commersoni</i>
blacknose dace	<i>Rhinichthys atratulus</i>

Appendix II. Summary of electrofishing surveys on inner Bay of Fundy rivers during 2000 and 2002. Site ID's correspond with the Diadromous Fish Division (DFD) electrofishing database. The catch is the number of fish captured on the first pass of the survey. Organization codes are: "DFD BIO" = DFO Diadromous Fish Division, Maritime Region, Bedford Institute of Oceanography location, "DFD MON" = DFO Diadromous Fish Division, Maritime Region, Moncton location, "FNP PC" = Parks Canada (Fundy National Park), "FFFN" = Fort Folly First Nation, "NSDoAF" = Nova Scotia Department of Agriculture and Fisheries and "UNB" = University of New Brunswick. Other species include: white perch, smallmouth bass, sunfish spp., banded killifish, brown bullhead, slimy sculpin and 32 unidentified specimens. Salmonids only were targeted at sites marked with an asterisk.

River	Site ID	Latitude	Longitude	Organization	Area (m <sup>2</sup> )	Month	Day	Shocking Time (s)	Catch												
									Atlantic salmon	American eel	brook trout	brown trout	rainbow trout	white sucker	blacknose dace	chub spp.	other cyprinids	stickleback spp.	others		
<b>2000</b>																					
Apple	App1005	45.47217	64.76721	DFD BIO	1500	10	12	912		3	6										
Apple	App1006	45.42263	64.78857	DFD BIO	210	10	12	283			25										
Apple	App1007	45.45932	64.79885	DFD BIO	360	10	12	389		7	3								4	1	
Bains Br.	Bain001	45.31528	65.65059	UNB	1275	9	21	2498	36												
Bains Br.	Bain002			UNB		10	11	423													
Bains Br.	Bain003	45.36530	65.59620	UNB	225	10	11	445													
Bass	Bass002	45.43960	63.77280	DFD BIO	576	10	17	833		1	16										
Bass	Bass004	45.41010	63.78510	DFD BIO	384	10	17	356		3											
Bass	Bass005	45.44261	63.79186	DFD BIO	156	10	17	367			33										
Big Salmon	BSR001	45.42310	65.41098	DFD MON	333	8	30	754	1	7											
Big Salmon	BSR002	45.50070	65.36990	DFD MON	179	8	31	748	14												
Big Salmon	BSR003	45.55490	65.32280	DFD MON	285	8	29	1122	47	26										83	
Big Salmon	BSR004	45.58390	65.31160	DFD MON	285	8	28	1511	20	43							8			18	
Big Salmon	BSR005	45.59890	65.31600	DFD MON	334	8	29	1135	5	5										76	
Black	Blk003	45.26790	65.81999	UNB	1473	10	3	2028	15												
Chiganois	Chig012	45.40760	63.39637	DFD BIO	5040	8	23			212	3			50	23	124					
Chiganois	Chig013	45.45169	63.37980	DFD BIO	1040	8	23			161				17		56					
Cornwallis	Corn005	45.06560	64.57640	NSDoAF	75			360			68			1						4	
Cornwallis	Corn006	45.07442	64.49149	NSDoAF	804			999	21	50	7	3		13						1	6
Cornwallis	Corn007	45.07462	64.47625	NSDoAF	414			672	2	10	136	31									2
Crooked Cr.	Croo001	45.74937	64.74845	UNB	1350	10	5	1853	6												
Demoiselle Cr.	Demo004	45.85092	64.64193	UNB	253	9	26	546													
Diligent	Dili001	45.41900	64.42720	DFD BIO	440	10	13	836		4	56										
Diligent	Dili002	45.42241	64.36644	DFD BIO	450	10	13	797		3	10										
Economy	Econ002	45.41050	63.89740	DFD BIO		8	16		1	77	8						19				1

Appendix II (con't)

River	Site ID	Latitude	Longitude	Organization	Area (m <sup>2</sup> )	Month	Day	Shocking Time (s)	Catch											
									Atlantic salmon	American eel	brook trout	brown trout	rainbow trout	white sucker	blacknose dace	chub spp.	other cyprinids	stickleback spp.	others	
Economy	Econ003	45.41340	63.90320	DFD BIO		8	16		1	28							2			
Emerson Cr.	Eme001	45.28315	65.76061	UNB	244	9	19	590												
Emerson Cr.	Eme002	45.31913	65.74081	UNB	176	9	20	273												
Folly	Foll004	45.44760	63.52580	DFD BIO		8	10		2	23	1			6	672					
Gardner Cr.	Gard001	45.32822	65.69370	UNB	820	9	20	2016	7											
Gardner Cr.	Gard002	45.29765	65.71084	UNB	528	9	19	679												
Gaspereau	Gasp009	45.04197	64.42462	NSDoAF	1413			2190	34	15	5						2	1		
Goose Cr.	Goo001	45.51867	65.16079	UNB		10	13	600												
Goose Cr.	Goo002			UNB	100	9	18													
Great Village	GrVi005	45.60500	63.60030	DFD BIO		8	10		33	12	53				35					
Great Village	GrVi006	45.47690	63.61330	DFD BIO		8	10		51	39	10				88	1				
Harrington	Harr008	45.42817	64.11411	DFD BIO	490	10	13	470												
Harrington	Harr009	45.41789	64.10548	DFD BIO	602	10	13	570												
Hebert (River)	Heber003	45.59580	64.40440	DFD BIO	400	10	12	650			2			2			16	8		
Hebert (River)	Heber005	45.60000	64.35040	DFD BIO	826	10	12	1190	2	17				2			8			2
Hebert (River)	Heber006	45.63783	64.38549	DFD BIO	675	10	12	780		24				6			1	19		
Irish	Iris002	45.42107	65.55450	UNB	1500	10	11	1907	6											
Irish	Iris004	45.43306	65.52729	UNB	170	10	3	343												
Kennetcook	Kenn019	45.05278	63.89151	NSDoAF	276			813		11				5			1			5
Kennetcook	Kenn020	45.11842	63.90016	NSDoAF	333			763		10	149			5			2			
Kennetcook	Kenn021	45.08932	63.81964	NSDoAF	320			527		10	12			7			13			
Little Salmon	LSR002			UNB	3267	10	12	2269	17											4
Little Salmon	LSR003			UNB	100	9	18													
Maccan	Macc004	45.58160	64.14270	DFD BIO	220	10	12	335			2	13			10					
Maccan	Macc006	45.59810	64.10190	DFD BIO	266	10	12	442		1		21								
Maccan	Macc007	45.58520	64.16470	DFD BIO	153	10	12	302		1		8			40					
Maccan	Macc008	45.59050	64.20290	DFD BIO	210	10	12	300		2	2	2			3					
Memramcook	Mem001	46.07122	64.44755	UNB	258	9	27	488												
Memramcook	Mem002	46.08000	64.48300	UNB	570	9	27	726												
Mispec	Misp001	45.26995	65.89529	UNB	1080	11	3	1008	5											
Mispec	Misp002			UNB	500	11	3	490												
Mosher	Mos001			UNB		10	11	400												
North (Truro)	NorTr003	45.45200	63.25370	DFD BIO	864	10	17	579			1	1								
North (Truro)	NorTr008	45.42546	63.25435	DFD BIO	1350	10	17	577	1	2	3								52	

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River	Site ID	Latitude	Longitude	Organization	Area (m <sup>2</sup> )	Month	Day	Shocking Time (s)	Catch											
									Atlantic salmon	American eel	brook trout	brown trout	rainbow trout	white sucker	blacknose dace	chub spp.	other cyprinids	stickleback spp.	others	
North (Truro)	NorTr009	45.43837	63.21945	DFD BIO	313	10	17	561								500				
North (Truro)	NorTr010	45.43277	63.24046	DFD BIO	390	10	17	461				1								
Parrsboro	Parr001	45.46270	64.33470	DFD BIO	960	10	13	1260	5	2	46									2
Parrsboro	Parr004	45.42820	64.33760	DFD BIO	400	10	13	546	1		7				1					1
Petitcodiac	Peti001	45.97549	65.08589	DFD MON		9	8	373		23										
Petitcodiac	Peti002	45.89019	65.09600	DFD MON		9	8	373		15	1									1
Petitcodiac	Peti003	45.79631	65.10267	DFD MON		9	8	640	1	9										
Petitcodiac	Peti004	45.75552	65.07946	DFD MON	423	9	8	552			13									
Petitcodiac	Peti005	45.81897	64.99546	DFD MON		9	7	692		3	10									2
Petitcodiac	Peti006	45.84281	64.95770	DFD MON		9	7	627	2	3	55									2
Petitcodiac	Peti007	45.86542	64.99533	DFD MON		9	7	988		15	7									3
Petitcodiac	Peti009	45.89746	64.71318	UNB	140	9	26	400												
Portapique	Port006	45.42830	63.70550	DFD BIO		8	14		8	20	14						12			
Portapique	Port007	45.43380	63.72050	DFD BIO		8	16		1	24	5						30			
Quiddy	Qui001	45.50723	65.19394	UNB	1047	10	2	700												
Quiddy	Qui002			UNB	40	9	18	1950												
Salmon (Truro)	SalTr006	45.38415	63.19208	DFD BIO	2800	8	23			14					1	12				
Salmon (Truro)	SalTr007	45.47430	63.06710	DFD BIO	1152	8	23			34						176				
Shubenacadie	Shub002	45.04190	63.57250	DFD BIO	730	17	18	847	13		2				9		6			1
Shubenacadie	Shub008	44.98351	63.50168	DFD BIO	420	10	18	456		27					1					36
St. Croix	Stc001			NSDoAF	390			877												
St. Croix	Stc002			NSDoAF	300			782	5	4	50									1
St. Croix	Stc003			NSDoAF	832			1090		51					20		5			
St. Croix	Stc004			NSDoAF	428			630		21					10		15			
Stewiacke	STEW1.1	45.37036	62.83703	DFD BIO	304	7	18		7	11	3	1			5		16			1
Stewiacke	STEW1.2	45.37092	62.83519	DFD BIO	234	7	18		2	2	4				1		5		1	
Stewiacke	STEW15.1	45.20194	62.87858	DFD BIO	567	7	6			5	62	8								
Stewiacke	STEW15.2	45.20208	62.87731	DFD BIO	388	7	6		2	5	80	7								
Stewiacke	STEW15.3	45.20136	62.87703	DFD BIO	379	7	6			9	88	26								
Stewiacke	STEW18.1	45.26939	63.20267	DFD BIO	380	7	26	300		6	28									
Stewiacke	STEW18.2	45.27000	63.20178	DFD BIO	368	7	26	300		7	11									
Stewiacke	STEW19.1	45.27458	63.06572	DFD BIO	273	7	28	300			8									
Stewiacke	STEW19.2	45.27500	63.06514	DFD BIO	210	7	28	300		1	10									
Stewiacke	STEW27.4	45.19708	63.24344	DFD BIO	1251	7	28	300		35					2				3	

Appendix II (con't)

River	Site ID	Latitude	Longitude	Organization	Area (m <sup>2</sup> )	Month	Day	Shocking Time (s)	Catch											
									Atlantic salmon	American eel	brook trout	brown trout	rainbow trout	white sucker	blacknose dace	chub spp.	other cyprinids	stickleback spp.	others	
Stewiacke	STEW29.1	45.22747	63.15622	DFD BIO	450	7	4	300		10	34	9								16
Stewiacke	STEW29.2	45.22817	63.15594	DFD BIO	447	7	28	300		3	15	3					1			
Stewiacke	STEW29.3			DFD BIO		7	28	300		4	22						1			
Stewiacke	STEW30.1	45.25394	63.11664	DFD BIO	904	7	19		34	50	18	2		6		24				1
Stewiacke	STEW30.2	45.25483	63.11603	DFD BIO	1009	7	19		22	92	14	1		6		13				
Stewiacke	STEW30.3	45.25547	63.11550	DFD BIO	562	7	19		15	44	16	2		3		9				1
Stewiacke	STEW31.1	45.16594	63.08574	DFD BIO		8	9	300		2	6	1		1						1
Stewiacke	STEW31.2	45.16748	63.08556	DFD BIO		8	9	300		1	2			1				1		
Stewiacke	STEW32.2	45.22708	62.94544	DFD BIO	453	7	7		5	4	28	50								1
Stewiacke	STEW33.1	45.34425	62.89408	DFD BIO	791	7	13		7	2	3			4		8				
Stewiacke	STEW33.2	45.34433	62.89603	DFD BIO	1112	7	13		2	3				1		4				
Stewiacke	STEW34.4	45.35792	62.86594	DFD BIO	674	7	20		6	6	24					19				
Stewiacke	STEW34.5	45.35928	62.86561	DFD BIO	578	7	20		9	11	36	2		10		36				
Stewiacke	STEW34.6	45.36036	62.86581	DFD BIO	695	7	20		14	15	16					21				
Stewiacke	STEW35.1	45.22933	63.05133	DFD BIO	478	8	21		1	8	1	4		1		6				
Stewiacke	STEW36.1	45.24097	63.04244	DFD BIO	809	7	12		15	11	2	46		4		3				3
Stewiacke	STEW38.0	45.21975	63.27536	DFD BIO	1561	7	25			16				3			4			
Stewiacke	STEW4.10	45.27075	62.86806	DFD BIO	482	7	27		21	15	2	3		3		5				
Stewiacke	STEW4.11	45.27017	62.86767	DFD BIO	472	7	27		9	7		3				2				
Stewiacke	STEW4.12	45.26944	62.86711	DFD BIO	907	7	27		10	26		7		3		4	3			24
Stewiacke	STEW6.1	45.26439	62.94028	DFD BIO		7	7			1	101	59								2
Stewiacke	STEW8.1	45.20425	62.88933	DFD BIO	984	8	2		10	3	124	79		1						
Stewiacke	STEW8.2	45.20325	62.88831	DFD BIO	761	8	2		3	2	199	152								
Tantramar	Tan001	45.04700	64.32800	UNB	140	9	27	225												
<b>2002</b>																				
Apple	AppI001	45.43410	64.80240	DFD BIO	529	8	15	390		10	37									
Apple	AppI002	45.42860	64.76610	DFD BIO	158	8	15	161		2	24									
Apple	AppI003	45.47200	64.76440	DFD BIO	945	8	15	386		19										
Apple	AppI004	45.45140	64.65160	DFD BIO	42	8	15	109			7									
Avon	Avon001	44.86130	64.34920	DFD BIO	389	8	9	290		1						1				
Avon	Avon002	44.92740	64.30750	DFD BIO	234	8	9	201		1				1		5				
Avon	Avon003	44.92820	64.30970	DFD BIO	432	8	9	243		1				1		9				2
Bains Br.	Bain001	45.31528	65.65059	DFD MON	368	7	30	590	8	6	16									

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River	Site ID	Latitude	Longitude	Organization	Area (m <sup>2</sup> )	Month	Day	Shocking Time (s)	Catch											
									Atlantic salmon	American eel	brook trout	brown trout	rainbow trout	white sucker	blacknose dace	chub spp.	other cyprinids	stickleback spp.	others	
Bass	Bass001	45.44300	63.80660	DFD BIO	95	7	29	119			14									
Bass	Bass002	45.43960	63.77280	DFD BIO	341	7	29	440		9	25									
Bass	Bass003	45.41560	63.77910	DFD BIO	474	7	29	325		22	67									
Bass	Bass004	45.41010	63.78510	DFD BIO	332	7	29	185		3										1
Big Salmon	BSR001	45.42310	65.41098	DFD MON	370	8	27	716	8	14										
Big Salmon	BSR002	45.50070	65.36990	DFD MON	199	8	20	672	21	11						1				
Big Salmon	BSR003	45.55490	65.32280	DFD MON	239	8	21	1071	36	31						330				
Big Salmon	BSR004	45.58390	65.31160	DFD MON	289	8	19	1282	123	8	1					80				
Big Salmon	BSR005	45.59890	65.31600	DFD MON	347	8	19	1460	177	5						27				
Big Salmon	BSR006	45.52682	65.43527	DFD MON	227	8	22	968	104	1										
Big Salmon	BSR007	45.53780	65.32830	DFD MON	188	8	21	1328	89	16							214			
Black	Blk001	45.32943	65.78110	DFD MON	301	7	25	447	4		23						28			
Black	Blk002	45.30858	65.84705	DFD MON	356	7	25	432	26		3						29			
Black	Blk003	45.26790	65.81999	DFD MON	405	7	29	297	4		1						2			
Carters Br.	Cart001	45.88863	64.42647	FFFN	177	7	25	325			6				1					
Carters Br.	Cart002	45.89630	64.43400	FFFN	132	7	25			3	6									
Carters Br.	Cart003	45.90070	64.43240	FFFN	41	7	25	122			10									
Chiganois	Chig001	45.44600	63.38520	DFD BIO	719	7	17	1012	108	9					2		14			
Chiganois	Chig002	45.46090	63.37640	DFD BIO	1232	7	22	388	1	6					1			12		2
Cornwallis	Corn001	45.06430	64.49600	DFD BIO	884	8	26	450		8	9	14			3					
Cornwallis	Corn002	45.05530	64.63520	NSDoAF	149	8	21	402		3	31	7								1
Cornwallis	Corn003	45.05980	64.60230	NSDoAF	152	8	21	410			27	56			2					
Cornwallis	Corn004	45.07630	64.58180	NSDoAF	149	8	21	321		5	1	1								
Cornwallis	Corn005	45.06560	64.57640	NSDoAF	238	8	21	427			76									7
Crooked Cr.	Croo001	45.74937	64.74845	DFD MON	375	8	19	579		2	6			3						13
Debert	Debe001	45.48190	63.44390	DFD BIO	1989	7	17	878	63	14					1		75			
Debert	Debe002	45.48260	63.46870	DFD BIO	168	7	22	115			1						5			
Debert	Debe003	45.49880	63.44160	DFD BIO	1391	7	22	405	2								13			
Demoiselle Cr.	Demo001	45.85923	64.67934	DFD MON	320	9	27	869	71		25									
Diligent	Dili001	45.41900	64.42720	DFD BIO	102	8	14	228			55									
Economy	Econ001	45.39850	63.89610	NSDoAF	1086	7	30	300		9							15			
Economy	Econ002	45.41050	63.89740	DFD BIO	1575	7	30	300		22							35			
Economy	Econ003	45.41340	63.90320	DFD BIO	1117	7	30	688		15	4				3		14			
Folly	Foll001	45.52030	63.51150	DFD BIO	779	7	23	370		2	5						7			



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River	Site ID	Latitude	Longitude	Organization	Area (m <sup>2</sup> )	Month	Day	Shocking Time (s)	Catch											
									Atlantic salmon	American eel	brook trout	brown trout	rainbow trout	white sucker	blacknose dace	chub spp.	other cyprinids	stickleback spp.	others	
Folly	Foll002	45.51220	63.53380	DFD BIO	280	7	23	141			7									
Folly	Foll003	45.41590	63.52750	DFD BIO	637	7	24	228		3				3	23					
Folly	Foll004	45.44760	63.52580	DFD BIO	588	8	12	2037	148	10						101				
Gardner Cr.	Gard001	45.32822	65.69370	DFD MON	448	7	30	529		3	11					6				
Gaspereau	Gasp001	45.06070	64.38120	DFD BIO	384	8	8	250	1	6				2						2
Gaspereau	Gasp002	45.06040	64.38200	DFD BIO	334	8	8	197	2	4										
Gaspereau	Gasp003	45.06510	64.35750	DFD BIO	1494	8	8	805	8	20				1					4	
Gaspereau	Gasp004	45.07100	64.34970	DFD BIO	1140	7	8	607	18	19				5					1	1
Gaspereau	Gasp005	45.08610	64.28870	DFD BIO	391	8	26	420	2	4	39									
Gaspereau	Gasp006	45.04570	64.42070	DFD BIO		9	4	778	16	12										
Gaspereau	Gasp007	44.98360	64.50600	DFD BIO	571	9	4	432	5	1				4						2
Gaspereau	Gasp008	44.93740	64.50930	DFD BIO	272	9	4	209						1						1
Goose	GSR00A	45.55083	65.09408	FNP PC		10	16	550			12									
Goose	GSR00B	45.54609	65.09390	FNP PC		10	16	465			7									
Goose	GSR00C	45.54160	65.09374	FNP PC		10	16	417			9									
Great Village	GrVi001	45.47740	63.60950	DFD BIO	591	7	24	193	2	3	1					13				
Great Village	GrVi002	45.47930	63.60520	DFD BIO	386	7	24	140		2	4					3				
Great Village	GrVi003	45.46830	63.61700	DFD BIO	350	7	24	205		3	16	1				10				
Great Village	GrVi004	45.41640	63.59890	DFD BIO	607	7	24	222		3	1					15			1	
Great Village	GrVi005	45.60500	63.60030	DFD BIO	773	7	24	796	2	30	18					212	1			
Great Village	GrVi006	45.47690	63.61330	DFD BIO	550	7	24	984	1	10	46					110				
Habitant	Habi001	45.14760	64.50360	NSDoAF	73	8	21	706		1	43						18			3
Habitant	Habi002	45.15770	64.48610	NSDoAF	40	8	21	590			27									
Halfway	Half001	45.04390	64.19280	DFD BIO	282	8	9	130		4				2			3			
Halfway	Half002	45.04550	64.19390	DFD BIO	273	8	9	210		3							4			1
Harrington	Harr001	45.42510	64.11380	DFD BIO	87	8	13	148	5		53									
Harrington	Harr002	45.42320	64.11300	DFD BIO	614	8	13	348	41	9	17									
Harrington	Harr003	45.42720	64.11710	DFD BIO	1013	8	13	428	35		63									
Harrington	Harr004	45.42800	64.11860	DFD BIO	400	8	27	470	18	8	67									
Harrington	Harr005	45.42870	64.11920	DFD BIO	500	8	27	592	46	12	59									
Harrington	Harr006	45.42960	64.11950	DFD BIO	810	8	27	634	70	9	90									
Harrington	Harr007	45.42960	64.11950	DFD BIO	865	8	27	635	59	11	71									
Hebert (River)	Heber001	45.51670	64.37990	DFD BIO	395	8	16	162		2				3		3				
Hebert (River)	Heber002	45.51740	64.38180	DFD BIO	298	8	16	242		7						2			1	

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River	Site ID	Latitude	Longitude	Organization	Area (m <sup>2</sup> )	Month	Day	Shocking Time (s)	Catch											
									Atlantic salmon	American eel	brook trout	brown trout	rainbow trout	white sucker	blacknose dace	chub spp.	other cyprinids	stickleback spp.	others	
Hebert (River)	Heber003	45.59580	64.40440	DFD BIO	242	8	16	233		5	1			7	2			3		
Hebert (River)	Heber004	45.58690	64.45130	DFD BIO	613	8	16	340		17				6	14			12		
Irish	Iris001	45.38990	65.54987	DFD MON	489	7	31	672		1	21									2
Irish	Iris002	45.42107	65.55450	DFD MON	359	7	31	484	25	1	10									6
Irish	Iris003	45.43030	65.55900	DFD MON	302	7	31	472		2	20						5			
Kennetcook	Kenn001	45.19010	63.68110	DFD BIO	642	7	12	474		19	1			3		6				
Kennetcook	Kenn002	45.19830	63.65290	DFD BIO	252	7	12	416		20				2		3	11			2
Kennetcook	Kenn003	45.10040	63.83190	DFD BIO	974	7	11	432	1	11										2
Kennetcook	Kenn004	45.10040	63.83060	NSDoAF	328	8	22	793		27	9			20		39	26			
Kennetcook	Kenn005	45.14640	63.75730	NSDoAF	149	8	22	608		39				17		33	24			
Kennetcook	Kenn006	45.21160	63.61000	NSDoAF	121	8	22	381		11				18		21	2		4	
Kennetcook	Kenn007	45.19610	63.65190	NSDoAF	137	8	22	528		9	13			2		11				
Little Salmon	LSR001	45.48029	65.28427	DFD MON	691	8	1	602	1	7	1							1		
Maccan	Macc001	45.55070	64.29620	DFD BIO	574	8	21	395		9		7				18				
Maccan	Macc002	45.60420	64.18960	DFD BIO	173	8	21	289		11				2	22				1	5
Maccan	Macc003	45.56160	64.18010	DFD BIO	99	8	20	171		5	13	1								
Maccan	Macc004	45.58160	64.14270	DFD BIO	781	8	20	694		23		16				30				
Maccan	Macc004	45.58160	64.14270	DFD BIO		8	7	300		3	1	29				5				
Maccan	Macc005	45.59780	64.10010	DFD BIO	629	8	20	633		28	5	14								
Maccan	Macc006	45.59810	64.10190	DFD BIO	752	8	9	300		10	1	13								
Maccan	Macc007	45.58520	64.16470	DFD BIO	1094	8	7		7	35	23	78				44				
Maccan	Macc008	45.59050	64.20290	DFD BIO	1377	8	7	1166	6	18	2	1		3	16			1		1
Memramcook	Mem001	46.07122	64.44755	FFFN		7	26	297						15					1	
Memramcook	Mem002	46.08000	64.48300	FFFN		7	26	248		4				10	1					
Memramcook	Mem003	45.97390	64.48907	FFFN		7	29	319		6	10			1						
Memramcook	Mem004	45.97563	64.49373	FFFN		7	29	620		3	10									
Memramcook	Mem005	46.04013	64.56735	FFFN	85	10	4	259						10	12	3				
Memramcook	Mem006	46.04415	64.55995	FFFN	202	10	4	338		1	5			13						
Memramcook	Mem007	46.03175	64.56838	FFFN		7	26	467		4				29	1					1
Memramcook	Mem008	45.88552	64.50000	FFFN		10	4	358			8									
Memramcook	Mem009	45.88463	64.50188	FFFN		10	4				3			3				1		
Mispec	Misp001	45.26995	65.89529	DFD MON	306	7	29	427			5					7		1	1	
Moose	Moos001	45.42010	64.19240	DFD BIO	674	8	21	324		16						29			1	
North	NorCum001	45.43450	64.08250	DFD BIO	371	8	3	293		10	10									

Appendix II (con't)

River	Site ID	Latitude	Longitude	Organization	Area (m <sup>2</sup> )	Month	Day	Shocking Time (s)	Catch											
									Atlantic salmon	American eel	brook trout	brown trout	rainbow trout	white sucker	blacknose dace	chub spp.	other cyprinids	stickleback spp.	others	
North (Truro)	NorTr001	45.44070	63.23040	DFD BIO	944	8	22	459			8				3	33				
North (Truro)	NorTr002	45.43750	63.60080	DFD BIO	332	8	22	251			2					38				
North (Truro)	NorTr003	45.45200	63.25370	DFD BIO	978	8	22	458			1				1	27				
North (Truro)	NorTr004	45.50340	63.21480	DFD BIO	390	8	22	383	1		2					152				
North (Truro)	NorTr005	45.49730	63.21490	DFD BIO	242	8	22	189	1				1							
North (Truro)	NorTr006	45.49770	63.21260	DFD BIO		7	26	776	3		56	3			2	60	34			
North (Truro)	NorTr007	45.45310	63.25760	DFD BIO		7	26	300												
Parrsboro	Parr001	45.46270	64.33470	DFD BIO	222	8	21	236			1	25								
Parrsboro	Parr002	45.43850	64.33290	DFD BIO	318	8	21	323	1		6	14			18					
Parrsboro	Parr004	45.42820	64.33760	DFD BIO	272	8	21	355	1		70				5	2				
Pereaux	Pere001	45.19000	64.39200	NSDoAF	32	8	21	278				13								
Petitcodiac	Peti001	45.97549	65.08589	DFD MON	656	9	25	536			1					5				
Petitcodiac	Peti002	45.89019	65.09600	DFD MON	607	9	25	648			1					15	1			
Petitcodiac	Peti003	45.79631	65.10267	DFD MON	670	9	25	679								18				
Petitcodiac	Peti004	45.75552	65.07946	DFD MON	782	9	25	709	75			3				35				
Petitcodiac	Peti005	45.81897	64.99546	DFD MON	551	9	26	1020			4	3			2		12	19	3	11
Petitcodiac	Peti006	45.84281	64.95770	DFD MON	371	9	26	972				15				20	21			74
Petitcodiac	Peti007	45.86542	64.99533	DFD MON	919	9	26	1357				1			1	48	16	3	1	
Petitcodiac	Peti008	46.00993	64.96445	DFD MON	509	9	27	536								25		1	1	
Point Wolfe	PWR001*	45.55643	65.01292	FNP PC	308	8	20	3411			3	6								
Point Wolfe	PWR002*	45.55772	65.01357	FNP PC	280	9	5	4499			10	9								
Point Wolfe	PWR003*	45.57067	65.03209	FNP PC	238	9	3	4863	4		13	5								
Point Wolfe	PWR004*	45.58735	65.08284	FNP PC	198	9	19	2831	11		2	3								
Point Wolfe	PWR005*	45.58723	65.08408	FNP PC	279	9	18	2404	3		2	5								
Point Wolfe	PWR006*	45.57012	65.03090	FNP PC	344	8	29	3956	3		5	7								
Point Wolfe	PWR00A*	45.56906	65.02800	FNP PC		8	29	288												
Point Wolfe	PWR00B*	45.56881	65.02686	FNP PC		8	29	416	1		1	1								
Point Wolfe	PWR00C*	45.56869	65.02489	FNP PC		8	29	386			2	1								
Point Wolfe	PWR00D*	45.56858	65.02311	FNP PC		8	29	447			5									
Point Wolfe	PWR00E*	45.56769	65.02217	FNP PC		8	29	291	1			1								
Point Wolfe	PWR00F*	45.57072	65.03643	FNP PC		8	29	473	3		1	4								
Point Wolfe	PWR00G*	45.57263	65.04034	FNP PC		8	29	464	4											
Point Wolfe	PWR00H*	45.57303	65.04292	FNP PC		8	29	479	1			3								
Point Wolfe	PWR00I*	45.57398	65.04520	FNP PC		8	29	468	1			4								

Appendix II (con't)

River	Site ID	Latitude	Longitude	Organization	Area (m <sup>2</sup> )	Month	Day	Shocking Time (s)	Catch										
									Atlantic salmon	American eel	brook trout	brown trout	rainbow trout	white sucker	blacknose dace	chub spp.	other cyprinids	stickleback spp.	others
Point Wolfe	PWR00J*	45.58661	65.08006	FNP PC		9	18	375	1	2	2								
Point Wolfe	PWR00K*	45.58600	65.07891	FNP PC		9	18	377	1		2								
Point Wolfe	PWR00L*	45.58614	65.07697	FNP PC		9	18	326											
Point Wolfe	PWR00M*	45.58678	65.07458	FNP PC		9	18	299	1	1	1								
Point Wolfe	PWR00N*	45.58575	65.07322	FNP PC		9	19	421	2		1								
Point Wolfe	PWR00O*	45.58408	65.07117	FNP PC		9	19	397	3										
Point Wolfe	PWR00P*	45.58353	65.06942	FNP PC		9	19	403	2	1	1								
Point Wolfe	PWR00Q*	45.59012	65.11303	FNP PC		10	16	1374	9										
Point Wolfe	PWROOR*	45.59030	65.11303	FNP PC		10	16	866	9										
Portapique	Port001	45.47150	63.71500	DFD BIO	1281	8	5	378		5	3					13			
Portapique	Port002	45.40770	63.71280	DFD BIO	774	8	5	248		4	2								
Portapique	Port003	45.42180	63.71180	DFD BIO	222	8	5	256		5	8					4			
Portapique	Port004	45.46230	63.71440	DFD BIO	683	8	5	453		6	8					32			
Portapique	Port005	45.53810	63.70990	DFD BIO	205	8	5	270		1	23					11			
Portapique	Port006	45.42830	63.70550	DFD BIO	786	7	29	813		39	5					32			
Portapique	Port007	45.43380	63.72050	DFD BIO	1000	7	29	300											
Ramshead	Rams001	45.41170	64.46530	DFD BIO	142	8	14	2.7			54								
Salmon (Truro)	SalTr001	45.39900	63.17270	DFD BIO	1281	8	5	378		5	2					14			
Salmon (Truro)	SalTr001	45.39900	63.17270	DFD BIO	524	9	13	503			18			5	11			9	
Salmon (Truro)	SalTr002	45.36770	63.10820	DFD BIO	392	9	13	253			17				3				
Salmon (Truro)	SalTr003	45.46090	63.07390	DFD BIO	1736	7	16	1376		28	2			3	38			1	2
Salmon (Truro)	SalTr004	45.42840	63.08130	DFD BIO	933	7	16	395		3				1	22				
Salmon (Truro)	SalTr005	45.50130	63.07180	DFD BIO	2813	7	16	920		16				1	27			4	1
Shepody	Shep001	45.66820	64.81790	DFD MON	239	8	19	521			31			2					48
Shubenacadie	Shub001	45.06910	63.54490	DFD BIO	271	9	5	197	1	5	3			7		35			2
Shubenacadie	Shub002	45.04190	63.57250	DFD BIO	599	9	5	420		19				11		7		5	
Shubenacadie	Shub003	45.12440	63.29220	DFD BIO	250	9	3	252		9				11		9		18	
Shubenacadie	Shub004	45.01640	63.29200	DFD BIO	543	9	3	322		13	1			12		24			1
Shubenacadie	Shub005	45.04020	63.37340	DFD BIO	367	9	3	343		38				1		3			
Shubenacadie	Shub006	45.04130	63.37460	DFD BIO	402	9	3	469		15	3					4			
Shubenacadie	Shub007	45.13240	63.24720	DFD BIO	767	9	3	478	4	29				6		32		4	
Stewiacke	STEW1.1	45.37036	62.83703	DFD BIO	304	7	18	650	3	2	4					47			
Stewiacke	STEW1.2	45.37092	62.83519	DFD BIO	234	7	18	610	2	1	3			1		8			
Stewiacke	STEW1.1	45.16786	63.08614	DFD BIO	764	7	8	300		4	1		3						

Appendix II (con't)

River	Site ID	Latitude	Longitude	Organization	Area (m <sup>2</sup> )	Month	Day	Shocking Time (s)	Catch										
									Atlantic salmon	American eel	brook trout	brown trout	rainbow trout	white sucker	blacknose dace	chub spp.	other cyprinids	stickleback spp.	others
Stewiacke	STEW11.2	45.16758	63.08672	DFD BIO	1013	7	8	300		10	6	3	1	1				2	
Stewiacke	STEW13.3	45.33367	62.92169	DFD BIO		7	18	1162	8	12	22		1						
Stewiacke	STEW15.1	45.20194	62.87858	DFD BIO	567	7	9	300		4	12	1							
Stewiacke	STEW15.2	45.20208	62.87731	DFD BIO	388	7	9	300		1	25	3							
Stewiacke	STEW15.3	45.20136	62.87703	DFD BIO	379	9	9	300		1	11	8							
Stewiacke	STEW18.1	45.26939	63.20267	DFD BIO	380	7	9	300		21	35								1
Stewiacke	STEW18.2	45.27000	63.20178	DFD BIO	368	7	9	300		8	26								
Stewiacke	STEW19.1	45.27458	63.06572	DFD BIO	273	7	16	615	3	11	20		2			22			
Stewiacke	STEW19.2	45.27500	63.06514	DFD BIO	210	7	8	300		4	8		1			6			
Stewiacke	STEW23.0	45.35108	62.88019	DFD BIO	1799	8	1		18	30	8	2	10			29	3		
Stewiacke	STEW27.1	45.19428	63.24183	DFD BIO	1531	7	10	300		56			32			12			
Stewiacke	STEW27.4	45.19708	63.24344	DFD BIO	1251	7	10	300		42			15			3			
Stewiacke	STEW29.1	45.22747	63.15622	DFD BIO	450	7	8	300		5	43								
Stewiacke	STEW29.2	45.22817	63.15594	DFD BIO	447	7	10	774	1	9	31					5			
Stewiacke	STEW29.4	45.22903	63.15547	DFD BIO	317	7	8	300		8	27					1			
Stewiacke	STEW30.1	45.25394	63.11664	DFD BIO	904	7	12	1401	11	18	12		7		19				1
Stewiacke	STEW30.2	45.25483	63.11603	DFD BIO	1009	7	12	1233	12	27	6		3		14				
Stewiacke	STEW30.3	45.25547	63.11550	DFD BIO	562	7	12	746	19	42	14	1	2		26				
Stewiacke	STEW32.2	45.22708	62.94544	DFD BIO	453	7	5	300		2	7	3							
Stewiacke	STEW33.1	45.34425	62.89408	DFD BIO	791	7	17	951	11	9	6		1		12		6		
Stewiacke	STEW33.2	45.34433	62.89603	DFD BIO	1112	7	18	973	6	4	6				2				
Stewiacke	STEW34.4	45.35792	62.86594	DFD BIO	674	7	19	791	4		34				3				
Stewiacke	STEW34.5	45.35928	62.86561	DFD BIO	578	7	19	1371	9	4	65				21				
Stewiacke	STEW34.6	45.36036	62.86581	DFD BIO	695	7	19		5	4	44	1			11				
Stewiacke	STEW35.1	45.22933	63.05133	DFD BIO	478	7	8	300		25			6		12			1	1
Stewiacke	STEW36.1	45.24097	63.04244	DFD BIO	809	7	16	1589	26	28	37	28	3		11			6	
Stewiacke	STEW37.0	45.20714	63.26264	DFD BIO	1086	7	10	300		18	1		6		5				
Stewiacke	STEW38.0	45.21975	63.27536	DFD BIO	1561	7	10	300		28					21		1		
Stewiacke	STEW39.0	45.19289	63.00961	DFD BIO	371	7	4	1974	117	16	18	21			1				1
Stewiacke	STEW4.10	45.27075	62.86806	DFD BIO	482	7	11	876		11	1	5			3				
Stewiacke	STEW4.11	45.27017	62.86767	DFD BIO	472	7	11	653	1	21	1	5			3				
Stewiacke	STEW4.12	45.26944	62.86711	DFD BIO	907	7	11	1177	1	23	9	11	3		9		1		
Stewiacke	STEW40.0	45.18264	63.00603	DFD BIO	468	7	25	1275	129	5	53	19							5
Stewiacke	STEW5.2	45.30267	62.97400	DFD BIO	1263	8	8	1271	3	6	27								

Appendix II (con't)

River	Site ID	Latitude	Longitude	Organization	Area (m <sup>2</sup> )	Month	Day	Shocking Time (s)	Catch									
									Atlantic salmon	American eel	brook trout	brown trout	rainbow trout	white sucker	blacknose dace	chub spp.	other cyprinids	stickleback spp.
Stewiacke	STEW6.1	45.26439	62.94028	DFD BIO		8	8	1236	37	33	1	3	6		8	2		
Stewiacke	STEW8.1	45.20425	62.88933	DFD BIO	984	7	8	300			10	9						
Stewiacke	STEW8.2	45.20325	62.88831	DFD BIO	761	7	8	300			9	16						
Upper Salmon	USR007*	45.62821	64.97619	FNP PC	411	8	21	4367		20	6							
Upper Salmon	USR008*	45.62750	64.97456	FNP PC	169	8	23	2687		13	2							
Upper Salmon	USR00A*	45.62755	64.97353	FNP PC		8	21	1011		2	2							
Upper Salmon	USR00B*	45.62675	64.97050	FNP PC		8	21	308		4	1							
Upper Salmon	USR00C*	45.62567	64.96856	FNP PC		8	21	280		2	2							
Upper Salmon	USR00D*	45.62428	64.96692	FNP PC		8	21	266		2								
Upper Salmon	USR00E*	45.62328	64.96536	FNP PC		8	23	275		1								
Upper Salmon	USR00F*	45.62206	64.96489	FNP PC		8	23	293		2								
Upper Salmon	USR00G*	45.62056	64.96522	FNP PC		8	23	289		2								
Upper Salmon	USR00H*	45.61817	64.96531	FNP PC		8	23	259			1							
Upper Salmon	USR00I*	45.61747	64.96444	FNP PC		8	23	272		3	1							
Upper Salmon	USR00J*	45.61592	64.96286	FNP PC		8	23	254										
Upper Salmon	USR00K*	45.61422	64.96228	FNP PC		8	23	250		2	2							
Upper Salmon	USR00L*	45.61292	64.96144	FNP PC		8	23	256		1	3							
Upper Salmon	USR00M*	45.62861	64.97650	FNP PC		8	21	295		2	3							
Upper Salmon	USR00N*	45.62913	64.97710	FNP PC		8	21	336		2	4							
Upper Salmon	USR00O*	45.63070	64.97909	FNP PC		8	21	339	1									
Upper Salmon	USR00P*	45.63290	64.97955	FNP PC		8	21	496	1	2	3							
Upper Salmon	USR00Q*	45.63498	64.98022	FNP PC		8	21	409		1	3							
Upper Salmon	USR00R*	45.63528	64.97851	FNP PC		8	23	250										
Upper Salmon	USR00S*	45.63716	64.97936	FNP PC		8	23	222		1	2							
Upper Salmon	USR00T*	45.63813	64.98071	FNP PC		8	23	498	4	5	1							
Upper Salmon	USR00U*	45.63920	64.98207	FNP PC		8	23	409	1	1	2							
Upper Salmon	USR00V*	45.64044	64.98260	FNP PC		8	23	302	1		2							
Upper Salmon	USR00W*	45.66136	64.97381	FNP PC		8	26	269		1								
Upper Salmon	USR00X*	45.66025	64.97383	FNP PC		8	26	277	2	1	2							
Upper Salmon	USR00Y*	45.82658	64.97453	FNP PC		8	26	253		6	1							
Upper Salmon	USR00Z*	45.65975	64.97581	FNP PC		8	26	269	2	4								
Upper Salmon	USR012*	45.60962	64.95827	FNP PC	317	9	6	3866		35	6							
Upper Salmon	USR013*	45.65491	64.98035	FNP PC	277	8	26	3830	4	18	3							
Upper Salmon	USR014*	45.65552	64.97999	FNP PC	297	8	27	3100	2	18	6							
Upper Salmon	USR0AA*	45.65917	64.97664	FNP PC		8	26	276	1	6	1							

Appendix III. Reported recreational catches of Atlantic salmon and fishing effort for inner Bay of Fundy rivers, and the densities of juvenile salmon (number/100 m<sup>2</sup>) in these rivers estimated by electrofishing. For Nova Scotia rivers, the catch is the number caught whereas in New Brunswick it is the number harvested. Rod days are the number of days during which an angler fished for part or all of that day. Asterisk (\*) denotes combined age-1 and older parr.

River	Year	Recreational Fishing			Electrofishing						
		number caught		effort rod days	N	Age-0		Age-1		Age-2	
		small	large			mean	std. dev.	mean	std.dev.	mean	std.dev
Apple River	1981				3	17.0	29.4	39.5	59.8		
Apple River	2000				3	0.0	0.0	0.0	0.0	0.0	0.0
Apple River	2002				4	0.0	0.0	0.0	0.0	0.0	0.0
Avon River	2002				3	0.0	0.0	0.0	0.0		
Bains Brook	2000				3	0.0	0.0	*6.6	0.0		
Bains Brook	2002				1	1.1		3.3			
Bass River	2000				3	0.0	0.0	0.0	0.0	0.0	0.0
Bass River	2002				4	0.0	0.0	0.0	0.0		
Big Salmon River	1954		14								
Big Salmon River	1955		6								
Big Salmon River	1956		76								
Big Salmon River	1957		270								
Big Salmon River	1958		161								
Big Salmon River	1959		44								
Big Salmon River	1960	0	238	41317							
Big Salmon River	1961	1	52	12421							
Big Salmon River	1962	0	293	13027							
Big Salmon River	1963	0	424	2810							
Big Salmon River	1964	0	150	3490							
Big Salmon River	1965	218	303	1336							
Big Salmon River	1966	558	217	2055							
Big Salmon River	1967	645	474	2060							
Big Salmon River	1968	137	154	4227	3	16.9	19.5	14.7	4.8	11.8	6.1
Big Salmon River	1969	93	436	3390							
Big Salmon River	1970	231	260	2235	4	23.6	30.7	1.2	2.4	6.0	3.5
Big Salmon River	1971	191	75	1990	5	6.4	8.1	11.1	14.2	4.2	2.9
Big Salmon River	1972	182	96	1812	5	11.5	6.0	3.2	3.6	4.1	4.7
Big Salmon River	1973	378	130	1465	5	40.0	41.0	4.5	3.0	3.0	2.4
Big Salmon River	1974	373	106	2079							
Big Salmon River	1975	187	94	1411							
Big Salmon River	1976	664	207	2358							
Big Salmon River	1977	200	136	1870							
Big Salmon River	1978	360	228	4050							
Big Salmon River	1979	932	389	6495							
Big Salmon River	1980	5	223	2365							
Big Salmon River	1981	645	304	4735							
Big Salmon River	1982	456	328	6300	3	68.5	70.3	47.8	30.9	10.1	
Big Salmon River	1983	304	149	14440							
Big Salmon River	1984	351		4315							
Big Salmon River	1985	278		2971							
Big Salmon River	1986	124		1295							
Big Salmon River	1987	31		320							
Big Salmon River	1988	30		640							
Big Salmon River	1989	150		866	5	15.7	11.0	12.0	8.8	2.7	3.0
Big Salmon River	1990	45		517	5	39.3	40.2	12.0	8.5	1.8	1.9
Big Salmon River	1991				4	17.1	14.7	14.0	9.1	2.8	4.2
Big Salmon River	1992				4	18.1	12.0	13.3	8.6	1.7	2.3

Appendix III (con't)

River	Year	Recreational Fishing			Electrofishing						
		number caught		effort rod days	N	Age-0		Age-1		Age-2	
		small	large			mean	std. dev.	mean	std.dev.	mean	std.dev
Big Salmon River	1993				3	2.3	1.4	12.5	14.3	4.4	4.0
Big Salmon River	1994				4	10.4	11.9	6.7	3.3	3.3	3.5
Big Salmon River	1995				4	21.8	18.4	6.4	7.4	2.0	1.3
Big Salmon River	1996				5	49.2	38.6	10.7	5.5	0.5	0.6
Big Salmon River	1997				5	23.7	19.5	16.6	10.3	1.4	0.9
Big Salmon River	1998				5	3.1	2.8	13.2	15.5	4.4	4.7
Big Salmon River	1999				5	7.8	13.5	3.9	4.5	2.2	3.0
Big Salmon River	2000				5	1.3	1.5	*8.1	7.5		
Big Salmon River	2001				5	1.6	2.3	6.5	5.9	0.4	0.9
Big Salmon River	2002				7	18.3	22.0	24.3	20.0		
Black River	1960	0	1	420							
Black River	1961	0	0	210							
Black River	1962	0	1	330							
Black River	1963	0	3	370							
Black River	1964	0	4	160							
Black River	1965	0	0	260							
Black River	1967	46	8	180							
Black River	1968	2	0	100							
Black River	1969	5	13	244							
Black River	1970	1	11	157							
Black River	1974	25	0	118							
Black River	1975	20	0	90							
Black River	1976	6	0	40							
Black River	1977	4	0	195							
Black River	1982	60	30	600							
Black River	1983	108	54	2070							
Black River	1984	75		2625							
Black River	1985	34		1310							
Black River	1986	43		1287							
Black River	2000				1	0.0		*2.4			
Black River	2002				3	3.7	4.0	3.8	4.8		
Carters Brook	2002				3	0.0	0.0	0.0	0.0		
Chiganois River	1972				5	1.2	1.3	5.9	3.3		
Chiganois River	1973				6	21.7	21.9	4.5	3.6		
Chiganois River	2000				2	0.0	0.0	0.0	0.0		
Chiganois River	2002				2	4.2	5.6	0.0	0.0		
Cornwallis River	1960	1	1	26							
Cornwallis River	1961	0	0	22							
Cornwallis River	1962	0	1	32							
Cornwallis River	1963	9	0	36							
Cornwallis River	1964	4	0	111							
Cornwallis River	1965	3	0	66							
Cornwallis River	1966	4	0	171							
Cornwallis River	1967	0	0	183							
Cornwallis River	1968	0	0	90							
Cornwallis River	1969	0	1	112							
Cornwallis River	1976	0	0	35							
Cornwallis River	1979	0	0	100	1	3.3		29.7			
Cornwallis River	1980	1	1	100							
Cornwallis River	1981	0	11	155							
Cornwallis River	1982	0	6	240							



Appendix III (con't)

River	Year	Recreational Fishing			Electrofishing						
		number caught		effort rod days	N	Age-0		Age-1		Age-2	
		small	large			mean	std. dev.	mean	std.dev.	mean	std.dev
Cornwallis River	1983	5	0	115							
Cornwallis River	1984	0	0	36							
Cornwallis River	1985	1	2	21							
Cornwallis River	1986	20	14	160							
Cornwallis River	1987	0	2	126							
Cornwallis River	1988	1	1	70							
Cornwallis River	1989	5	0	52							
Cornwallis River	1990	3	0	61							
Cornwallis River	2000				3	0.0	0.0	0.0	0.0		
Cornwallis River	2002				5	0.0	0.0	0.0	0.0		
Crooked Creek	2000				1	0.0		*1.0			
Crooked Creek	2002				1	0.0		0.0			
Debert River	1965	20	0	63							
Debert River	1966	63	4	120							
Debert River	1967	170	60	660							
Debert River	1968	31	14	480							
Debert River	1969	3	2	70							
Debert River	1970	2	2	49							
Debert River	1971	61	2	90							
Debert River	1972	17	18	15							
Debert River	1973	68	38	41							
Debert River	1974	84	31	360							
Debert River	1975	60	6	286							
Debert River	1976	61	36	576							
Debert River	1977	17	65	320							
Debert River	1978	154	39	364							
Debert River	1979	38	24	400							
Debert River	1980	11	32	128	2	45.6	17.5	7.2	0.9		
Debert River	1981	14	12	232							
Debert River	1982	85	45	250							
Debert River	1983	113	20	592							
Debert River	1984	54	11	399							
Debert River	1985	64	24	439							
Debert River	1986	14	24	293							
Debert River	1987	1	1	103							
Debert River	1988	20	5	210							
Debert River	1989	41	6	214							
Debert River	1990	4	0	106							
Debert River	2002				3	0.4	0.5	0.0	0.0		
Demoiselle Creek	2000				1	0.0		0.0			
Demoiselle Creek	2002				1	32.8		19.0			
Diligent River	2000				2	0.0	0.0	0.0	0.0	0.0	0.0
Diligent River	2002				1	0.0		0.0			
Economy River	1966	30	2	105							
Economy River	1967	62	17	254							
Economy River	1968	9	10	144							
Economy River	1969	3	5	80							
Economy River	1970	6	6	30							
Economy River	1971	115	4	117							
Economy River	1972	17	15	15							
Economy River	1973	54	35	41							

Appendix III (con't)

River	Year	Recreational Fishing			Electrofishing						
		number caught		effort rod days	N	Age-0		Age-1		Age-2	
		small	large			mean	std. dev.	mean	std.dev.	mean	std.dev
Economy River	1974	92	39	270							
Economy River	1975	54	9	302							
Economy River	1976	106	49	556							
Economy River	1977	8	60	320	3	6.6	4.3	1.9	1.5		
Economy River	1978	168	26	280							
Economy River	1979	60	44	645							
Economy River	1980	4	9	50							
Economy River	1981	56	48	512							
Economy River	1982	86	23	260							
Economy River	1983	82	29	317							
Economy River	1984	26	4	200							
Economy River	1985	42	16	183							
Economy River	1986	12	4	236							
Economy River	1987	2	4	203							
Economy River	1988	9	1	82							
Economy River	1989	7	1	99							
Economy River	1990	0	4	30							
Economy River	1996					0.0		10.9			
Economy River	1997				1	3.7		3.9			
Economy River	1998					0.3		1.7			
Economy River	2000				2	0.2	0.2	0.2	0.2		
Economy River	2002				3	0.0	0.0	0.0	0.0		
Emerson Creek	2000				2	0.0	0.0	0.0	0.0		
Folly River	1965	40	0	120							
Folly River	1966	34	4	129							
Folly River	1967	234	61	705							
Folly River	1968	39	19	520							
Folly River	1969	6	6	165							
Folly River	1970	16	5	155							
Folly River	1971	73	6	90							
Folly River	1972	31	29	15							
Folly River	1974	196	61	490							
Folly River	1975	61	10	331							
Folly River	1976	87	31	534							
Folly River	1977	15	70	330							
Folly River	1978	303	53	560							
Folly River	1979	77	53	810							
Folly River	1980	11	63	398							
Folly River	1981	62	54	435							
Folly River	1982	132	76	300							
Folly River	1983	67	12	453							
Folly River	1984	57	16	340							
Folly River	1985	71	29	342							
Folly River	1986	14	2	231							
Folly River	1987	4	0	74							
Folly River	1988	48	7	234							
Folly River	1989	37	7	195							
Folly River	1990	11	0	90							
Folly River	1997				1	0.4		1.7			
Folly River	2000				1	0.0		0.0			
Folly River	2002				4	6.0	11.9	0.1	0.2		

Appendix III (con't)

River	Year	Recreational Fishing			Electrofishing						
		number caught		effort rod days	N	Age-0		Age-1		Age-2	
		small	large			mean	std. dev.	mean	std.dev.	mean	std.dev
Gardner Creek	2000				2	0.0	0.0	*2.0	0.0		
Gardner Creek	2002				1	0.0		0.0			
Gaspereau River	1960	1	14	96							
Gaspereau River	1961	0	24	110							
Gaspereau River	1962	0	14	88							
Gaspereau River	1963	3	16	141							
Gaspereau River	1964	0	16	313							
Gaspereau River	1965	5	5	357							
Gaspereau River	1966	5	19	396							
Gaspereau River	1967	7	36	439							
Gaspereau River	1968	6	18	376							
Gaspereau River	1969	1	4	365							
Gaspereau River	1970	0	7	310							
Gaspereau River	1971	0	3	281							
Gaspereau River	1972	1	14	306							
Gaspereau River	1973	0	5	360							
Gaspereau River	1974	8	3	357							
Gaspereau River	1975	8	16	338							
Gaspereau River	1976	0	4	251							
Gaspereau River	1977	11	15	329							
Gaspereau River	1978	4	20	551							
Gaspereau River	1979	0	9	325							
Gaspereau River	1980	7	14	615	3	0.5	0.5	8.3	2.1		
Gaspereau River	1981	8	18	328							
Gaspereau River	1982	11	12	440							
Gaspereau River	1983	11	9	487							
Gaspereau River	1984	14	24	403							
Gaspereau River	1985	13	25	366							
Gaspereau River	1986	26	32	475							
Gaspereau River	1987	34	20	488							
Gaspereau River	1988	59	20	501							
Gaspereau River	1989	45	47	581							
Gaspereau River	1990	32	43	665							
Gaspereau River	2000				1	0.0		2.4			
Gaspereau River	2002				8	0.8	1.0	1.0	1.2		
Goose River	2000				2	0.0	0.0	0.0	0.0		
Goose River	2002				3	0.0	0.0	0.0	0.0		
Great Village River	1966	7	0	35							
Great Village River	1967	27	15	110							
Great Village River	1970	4	0	12							
Great Village River	1972	0	5	10	3	8.9	6.5	10.4	10.1		
Great Village River	1975	3	0	10							
Great Village River	1976	5	1	54							
Great Village River	1977	0	3	31							
Great Village River	1978	16	5	80							
Great Village River	1979	7	3	33							
Great Village River	1980	3	5	20	2	59.5	48.6	5.0	4.7		
Great Village River	1981	2	0	9							
Great Village River	1982	3	2	66							
Great Village River	1983	0	0	12							
Great Village River	1984	1	0	5							

Appendix III (con't)

River	Year	Recreational Fishing			Electrofishing							
		number caught		effort rod days	N	Age-0		Age-1		Age-2		
		small	large			mean	std. dev.	mean	std.dev.	mean	std.dev	
Great Village River	1985	1	0	4								
Great Village River	1986	4	3	13								
Great Village River	1987	0	1	11								
Great Village River	1988	2	1	19								
Great Village River	1989	27	1	49								
Great Village River	1990	1	0	13								
Great Village River	1997				1	23.1		9.8				
Great Village River	2000				2	0.0	0.0	*7.1	2.7			
Great Village River	2002				6	0.0	0.0	0.2	0.3			
Habitant River	2002				2	0.0	0.0	0.0	0.0			
Halfway River	2002				2	0.0	0.0	0.0	0.0			
Harrington River	2000				2	0.0	0.0	0.0	0.0			
Harrington River	2002				7	0.0	0.0	*7.1	2.9			
River Hebert	2000				3	0.0	0.0	*0.2	0.3			
River Hebert	2002				4	0.0	0.0	0.0	0.0	0.0	0.0	
Irish River	2000				2	0.0	0.0	*0.9	0.0			
Irish River	2002				3	5.2	9.0	0.2	0.4			
Kennetcook River	1978				6	13.1	10.2	13.1	10.2			
Kennetcook River	1983				17	9.1	9.3	6.9	8.2			
Kennetcook River	2000				3	0.0	0.0	0.0	0.0			
Kennetcook River	2002				7	0.0	0.0	0.0	0.0	0.0	0.1	
Little Salmon River	2000				2	0.0	0.0	*1.2	0.0			
Little Salmon River	2002				1	0.0		0.3				
Maccan River	1963	0	6	20								
Maccan River	1966	36	0	128	5	60.2	57.4	19.6	17.8			
Maccan River	1967	150	25	650								
Maccan River	1968	34	6	450								
Maccan River	1969	28	11	345								
Maccan River	1970	102	29	415								
Maccan River	1971	125	32	410								
Maccan River	1972	145	42	410								
Maccan River	1973	70	32	340								
Maccan River	1974	95	32	369								
Maccan River	1975	43	19	260								
Maccan River	1976	129	36	420								
Maccan River	1977	65	20	213	5	21.6	23.2	14.0	13.8			
Maccan River	1978	65	21	360								
Maccan River	1979	140	40	900								
Maccan River	1980	36	40	330								
Maccan River	1981	36	15	140								
Maccan River	1982	45	22	336								
Maccan River	1983	241	50	1272								
Maccan River	1984	139	28	1122								
Maccan River	1985	117	14	896								
Maccan River	1986	90	18	949								
Maccan River	1987	13	4	457								
Maccan River	1988	38	1	449								
Maccan River	1989	138	35	1078								
Maccan River	1990	33	5	621								
Maccan River	1996					0.1		7.9				
Maccan River	1997				4	0.3	0.5	1.7	1.4			

## Appendix III (con't)

River	Year	Recreational Fishing			Electrofishing						
		number caught		effort	N	Age-0		Age-1		Age-2	
		small	large	rod days		mean	std. dev.	mean	std.dev.	mean	std.dev
Maccan River	1998				4	0.0		1.9			
Maccan River	1999				4	0.0	0.0	0.0	0.0		
Maccan River	2000				4	0.0	0.0	0.0	0.0		
Maccan River	2002				8	0.0	0.0	0.1	0.1		
Memramcook River	2000				2	0.0	0.0	0.0	0.0		
Memramcook River	2002				9	0.0	0.0	0.0	0.0		
Mispec River	2000				2	0.0		*1.1			
Mispec River	2002				1	0.0		0.0			
Moose River	2002				1	0.0		0.0			
Mosher River	2000				1	0.0		0.0			
North River	2002				1	0.0		0.0			
North River (Truro)	1964	0	2	15							
North River (Truro)	1965	6	0	42							
North River (Truro)	1966	5	0	30							
North River (Truro)	1967	57	15	152							
North River (Truro)	1970	4	0	13							
North River (Truro)	1971	24	0	19							
North River (Truro)	1972	5	8	10	13	3.7	6.4	7.5	6.0		
North River (Truro)	1973	3	4	27	13	33.4	29.6	6.3	7.1		
North River (Truro)	1974	51	21	290							
North River (Truro)	1975	16	2	93							
North River (Truro)	1976	77	24	380							
North River (Truro)	1977	28	125	420							
North River (Truro)	1978	121	31	300							
North River (Truro)	1979	14	10	275							
North River (Truro)	1980	5	22	80	3	24.5	22.5	2.1	5.3		
North River (Truro)	1981	24	16	86							
North River (Truro)	1982	103	27	150							
North River (Truro)	1983	42	5	256							
North River (Truro)	1984	69	6	231							
North River (Truro)	1985	77	3	247							
North River (Truro)	1986	63	25	329							
North River (Truro)	1987	14	4	254							
North River (Truro)	1988	99	15	495							
North River (Truro)	1989	140	10	497							
North River (Truro)	1990	11	0	164	6	32.9	44.6	17.7	13.2		
North River (Truro)	1996					7.6		8.1			
North River (Truro)	1997				2	1.1	1.5	2.8	3.6		
North River (Truro)	1998					0.0		1.2			
North River (Truro)	2000				4	0.0	0.0	*0.0	0.1		
North River (Truro)	2002				6	0.0	0.0	0.4	0.5		
Parrsboro River	1993					0.4	0.6				
Parrsboro River	1994					0.3	0.7				
Parrsboro River	2000				2	0.0	0.0	0.9	0.4		
Parrsboro River	2002				3	0.0	0.0	0.5	0.5		
Pereaux River	2002				1	0.0	0.0	0.0	0.0		
Petitcodiac River	1960	28	0	218							
Petitcodiac River	1961	1	0	99							
Petitcodiac River	1962	0	127	482							
Petitcodiac River	1963	110	0	431							
Petitcodiac River	1964	0	16	321							

Appendix III (con't)

River	Year	Recreational Fishing			Electrofishing						
		number caught		effort rod days	N	Age-0		Age-1		Age-2	
		small	large			mean	std. dev.	mean	std.dev.	mean	std.dev
Petitcodiac River	1965	35	6	302							
Petitcodiac River	1966	154	6	611							
Petitcodiac River	1967	243	61	1020							
Petitcodiac River	1970	40	0	201							
Petitcodiac River	1971	20	0	162							
Petitcodiac River	1972	4	0	156							
Petitcodiac River	1973	5	1	131							
Petitcodiac River	1974	21	0	181							
Petitcodiac River	1975	15	2	125							
Petitcodiac River	1976	62	0	281							
Petitcodiac River	1977	43	0	180							
Petitcodiac River	1978	7	0	50							
Petitcodiac River	1979	1	0	63							
Petitcodiac River	1984	6		80							
Petitcodiac River	1985	11		136							
Petitcodiac River	1987	0		60							
Petitcodiac River	1996				8	3.5	5.6	0.0	0.0		
Petitcodiac River	1997				10	0.0	0.0	2.9	5.5		
Petitcodiac River	1998				9	1.0	2.6	1.0	1.8		
Petitcodiac River	1999				7	0.0	0.0	0.9	1.6		
Petitcodiac River	2000				8	0.0	0.0	0.1	0.3		
Petitcodiac River	2001										
Petitcodiac River	2002				8	1.5	4.3	0.4	1.2		
Point Wolfe River	1983				2	0.0	0.0	13.0	11.3		
Point Wolfe River	1984				5	0.1	0.3	4.8	6.1		
Point Wolfe River	1985				3	1.2	1.0	3.0	3.0		
Point Wolfe River	1987				5	18.1	6.7	21.2	22.4		
Point Wolfe River	1988				5	11.5	7.1	7.7	3.3		
Point Wolfe River	1989				5	5.7	9.2	4.3	4.2		
Point Wolfe River	1990				5	3.7	3.6	2.1	0.9		
Point Wolfe River	1991				5	13.1	11.8	11.7	5.5		
Point Wolfe River	1992				5	8.0	8.1	4.4	1.9		
Point Wolfe River	1993				5	11.7	15.2	11.9	10.6		
Point Wolfe River	1994				5	2.7	4.3	5.4	1.3		
Point Wolfe River	1995				5	3.7	5.5	3.8	4.1		
Point Wolfe River	2002				24	0.0	0.0	1.1	1.2		
Portapique River	1965	10	0	49							
Portapique River	1966	31	2	79							
Portapique River	1967	84	36	220							
Portapique River	1968	8	6	120							
Portapique River	1969	6	11	100							
Portapique River	1970	19	9	142							
Portapique River	1971	72	11	112							
Portapique River	1972	8	10	13							
Portapique River	1973	44	19	34							
Portapique River	1974	72	37	340							
Portapique River	1975	12	2	60							
Portapique River	1976	50	22	320							
Portapique River	1977	5	17	340							
Portapique River	1978	59	11	130	4	35.0	25.3	14.7	4.5		
Portapique River	1979	32	24	390							

Appendix III (con't)

River	Year	Recreational Fishing			Electrofishing						
		number caught		effort rod days	N	Age-0		Age-1		Age-2	
		small	large			mean	std. dev.	mean	std.dev.	mean	std.dev
Portapique River	1980	7	17	150							
Portapique River	1981	32	26	160							
Portapique River	1982	23	17	210							
Portapique River	1983	12	2	69							
Portapique River	1984	10	1	47							
Portapique River	1985	17	1	58							
Portapique River	1986	2	1	48							
Portapique River	1987	3	0	18							
Portapique River	1988	14	2	50							
Portapique River	1989	18	1	46							
Portapique River	1990	6	1	34							
Portapique River	1996					0.7		19.1			
Portapique River	1997				1	8.2		6.5			
Portapique River	1998				1	0.0		1.8			
Portapique River	2000				2	0.0	0.0	*1.0	1.0		
Portapique River	2002				6	0.0	0.0	0.0	0.0		
Quiddy River	2000				2	0.0	0.0	0.0	0.0		
Ramshead River	2002				1	0.0		0.0			
Salmon River (Truro)	1965	21	0	135							
Salmon River (Truro)	1967	7	2	72							
Salmon River (Truro)	1972				18	9.9	14.6	3.8	4.8		
Salmon River (Truro)	1973				21	20.3	25.8	4.4	5.8		
Salmon River (Truro)	1974	21	13	195							
Salmon River (Truro)	1975	12	6	80							
Salmon River (Truro)	1976	70	24	320							
Salmon River (Truro)	1977	11	40	210							
Salmon River (Truro)	1978	120	14	300							
Salmon River (Truro)	1979	17	8	210							
Salmon River (Truro)	1980	3	9	47	3	54.6	12.2	2.1	7.4		
Salmon River (Truro)	1981	34	32	150							
Salmon River (Truro)	1982	57	18	150							
Salmon River (Truro)	1983	123	16	1006							
Salmon River (Truro)	1984	89	13	526							
Salmon River (Truro)	1985	164	28	636							
Salmon River (Truro)	1986	67	39	556							
Salmon River (Truro)	1987	18	19	182							
Salmon River (Truro)	1988	39	15	280							
Salmon River (Truro)	1989	146	21	438							
Salmon River (Truro)	1990	3	1	177	6	17.0	20.4	9.9	7.4		
Salmon River (Truro)	2000				2	0.0	0.0	0.0	0.0		
Salmon River (Truro)	2002				5	0.0	0.0	0.0	0.0		
Shepody River	2002				1	0.0		0.0			
Shubenacadie River	1963	0	5	240							
Shubenacadie River	1965	0	0	4							
Shubenacadie River	1966	9	0	53							
Shubenacadie River	1967	117	61	784							
Shubenacadie River	1968	38	16	284							
Shubenacadie River	1969	19	10	134	6	40.6	62.3	19.9	29.8		
Shubenacadie River	1970	24	9	194							
Shubenacadie River	1971	57	4	220							
Shubenacadie River	1972	6	9	74							

Appendix III (con't)

River	Year	Recreational Fishing			Electrofishing							
		number caught		effort rod days	N	Age-0		Age-1		Age-2		
		small	large			mean	std. dev.	mean	std.dev.	mean	std.dev	
Shubenacadie River	1973	46	23	280								
Shubenacadie River	1974	126	61	1005								
Shubenacadie River	1975	50	24	239								
Shubenacadie River	1976	235	63	1890								
Shubenacadie River	1977	7	70	1374	6	5.4	7.4	4.5	3.9			
Shubenacadie River	1978	23	5	205								
Shubenacadie River	1979	60	16	560								
Shubenacadie River	1980	6	73	243	9	82.0	82.3	9.0	13.2			
Shubenacadie River	1981	176	27	1280								
Shubenacadie River	1982	45	14	670								
Shubenacadie River	1983	231	54	1575								
Shubenacadie River	1984	55	17	499								
Shubenacadie River	1985	191	41	1207								
Shubenacadie River	1986	102	79	1390								
Shubenacadie River	1987	55	35	783								
Shubenacadie River	1988	32	13	464								
Shubenacadie River	1989	70	18	505								
Shubenacadie River	1990	21	9	248								
Shubenacadie River	2000				2	0.0	0.0	*2.1	2.9			
Shubenacadie River	2001				6	0.0	0.0	0.0	0.0	0.0	0.0	
Shubenacadie River	2002				7	0.0	0.0	*0.3	0.5			
St. Croix River	2000				4	0.0	0.0	*3.9	0.0			
Stewiacke River	1960	0	0	75								
Stewiacke River	1961	0	0	204								
Stewiacke River	1962	0	59	1720								
Stewiacke River	1963	0	90	3410								
Stewiacke River	1964	0	99	298								
Stewiacke River	1965	14	39	35								
Stewiacke River	1966	241	47	901								
Stewiacke River	1967	452	389	2400								
Stewiacke River	1968	185	179	1950	11	106.6	76.7	23.8	30.2			
Stewiacke River	1969	48	62	838	9	72.1	82.6	22.5	15.5			
Stewiacke River	1970	355	163	2160								
Stewiacke River	1971	337	46	1357								
Stewiacke River	1972	343	265	2347								
Stewiacke River	1973	520	224	2954								
Stewiacke River	1974	1087	355	2310								
Stewiacke River	1975	442	180	1150								
Stewiacke River	1976	940	198	2070	4	13.9	8.0	24.3	9.4			
Stewiacke River	1977	104	370	4240	21	37.3	28.8	13.2	9.2			
Stewiacke River	1978	545	75	2300								
Stewiacke River	1979	681	239	7200								
Stewiacke River	1980	41	203	3520								
Stewiacke River	1981	531	89	2852								
Stewiacke River	1982	307	97	4655								
Stewiacke River	1983	1649	331	9267								
Stewiacke River	1984	425	141	5213	44	45.9	47.0	17.0	13.2	6.8	7.9	
Stewiacke River	1985	1038	361	5956	27	12.1	14.6	28.9	26.7	6.9	8.4	
Stewiacke River	1986	495	580	6181	38	26.8	30.7	16.0	13.0	8.2	9.0	
Stewiacke River	1987	148	215	3318	36	16.8	21.0	33.6	44.7	5.5	4.8	
Stewiacke River	1988	207	75	3321	29	16.9	23.1	18.5	9.0	7.0	5.2	



Appendix III (con't)

River	Year	Recreational Fishing			Electrofishing							
		number caught		effort rod days	N	Age-0		Age-1		Age-2		
		small	large			mean	std. dev.	mean	std.dev.	mean	std.dev	
Stewiacke River	1989	1157	184	6000	31	21.2	21.4	16.5	14.7	6.3	5.3	
Stewiacke River	1990	151	35	2285	31	18.7	28.2	19.7	16.7	3.3	3.2	
Stewiacke River	1991	6	0	19	31	8.4	10.2	12.3	10.2	4.1	3.2	
Stewiacke River	1992	1	0	3	37	14.9	24.4	15.0	12.2	2.0	2.1	
Stewiacke River	1993	2	0	9	35	1.3	3.9	12.6	14.1	2.5	2.5	
Stewiacke River	1994	0	0	0	35	9.7	11.8	2.9	2.6	3.7	4.2	
Stewiacke River	1995	0	0	1	30	3.9	6.6	6.5	6.7	1.7	1.3	
Stewiacke River	1996	0	0	0	35	1.2	2.7	5.3	4.9	1.9	1.7	
Stewiacke River	1997	0	0	0	31	7.2	12.3	1.4	2.1	2.1	2.1	
Stewiacke River	1998	0	0	0	37	1.5	4.2	1.9	2.3	0.3	0.5	
Stewiacke River	1999	0	0	0	32	2.1	8.6	0.7	1.1	0.7	1.0	
Stewiacke River	2000	0	0	0	33	0.0	0.0	*1.1	1.6			
Stewiacke River	2001	0	0	0	35	0.0	0.0	0.1	0.3	0.1	0.2	
Stewiacke River	2002	0	0	0	40	0.0	0.0	*2.7	8.0			
Tantramar River	2000				1	0.0		0.0				
Upper Salmon River	1966	50	5	158								
Upper Salmon River	1967	170	41	398								
Upper Salmon River	1968	136	28	363								
Upper Salmon River	1969	31	35	374								
Upper Salmon River	1970	34	33	369								
Upper Salmon River	1971	39	3	251								
Upper Salmon River	1972	60	20	240								
Upper Salmon River	1973	50	24	477								
Upper Salmon River	1974	147	64	613								
Upper Salmon River	1975	58	14	308								
Upper Salmon River	1976	78	23	310								
Upper Salmon River	1977	69	9	240								
Upper Salmon River	1978	52	5	163								
Upper Salmon River	1979	199	6	342								
Upper Salmon River	1980	2	7	280								
Upper Salmon River	1981	76	6	348								
Upper Salmon River	1982	34	21	341								
Upper Salmon River	1983	72	4	313								
Upper Salmon River	1984	44		370								
Upper Salmon River	1985	44		345								
Upper Salmon River	1986	6		135								
Upper Salmon River	1988	3		44								
Upper Salmon River	1989	20		115								
Upper Salmon River	1990	4		35								
Upper Salmon River	2002				32	0.0	0.1	0.3	0.6			