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STATUS OF ATLANTIC SALMON IN SALMON FISHING AREA 15,
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by

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Abstract

This document summarizes data on spawning escapement targets, harvests, surveys of abundance, and hatchery stocking of Atlantic salmon in rivers of Salmon Fishing Area 15.

Angling catch in SFA 15 was estimated to be 4741 small and 3537 large salmon. These estimates indicate that retained landings of small salmon were up by 21% (bright salmon) and 67% (kelts) relative to the 1989-1993 means. First Nation landings were 348 large and 29 small salmon, a decrease of 17 and 70% respectively, compared to the 5-year means.

Spawning targets were not met in the Nepisiguit and Restigouche rivers. Spawning targets were probably met in the Big Tracadie and Jacquet rivers. Research and harvest data for the Eel, Middle, Pokemouche and Tetagouche rivers were insufficient to determine if spawning escapement targets were met. No spawning targets have been set for the Bass, Caraquet, Little Tracadie, and Nigadoo rivers, although research and/or harvest data were collected for salmon stocks of these rivers.

Résumé

Le présent document fournit un résumé des données sur les échappées-cibles de reproducteurs, sur la récolte et sur les relevés d'abondance de saumon de l'Atlantique dans la zone de pêche du saumon 15, ainsi que sur l'empoisonnement des rivières de cette zone par des saumons d'écloserie.

On a estimé à 4 741 petits et 3 537 grands saumons les prises des pêcheurs sportifs dans la ZPS 15. Ces estimations indiquent que les prises de petits saumons qui ont été gardées étaient en hausse de 21 % (saumons frais) et de 67 % (saumon noir) par rapport aux moyennes de 1989-1993. Les débarquements des Premières nations se chiffraient à 348 grands saumons et à 29 petits saumons, ce qui représente une baisse de 17 % et 70 % respectivement par rapport à la moyenne sur cinq ans.

Les échappées-cibles de reproducteurs n'ont pas été atteintes dans la Nepisiguit et dans la Restigouche. Elles l'ont probablement été dans la Big Tracadie et dans la Jacquet. En ce qui concerne les rivières Eel, Middle, Pokemouche et Tetagouche, on n'a pu si elles avaient été atteintes, faute de données suffisantes. Aucune cible n'avait été fixée pour les rivières Bass, Caraquet, Little Tracadie et Nigadoo, quoique des données de recherche ou de récolte aient été rassemblées pour ces rivières.

Summary Sheet

STOCK: Jacquet River, SFA 15

TARGET: 2,724,000 eggs (320 large salmon, 180 small salmon)

REARING AREA: 1,135,000 m²

	1989	1990	1991	1992	1993	1994	MIN ¹	MAX ¹	MEAN ²
Angling (bright salmon)									
Large (Released)	42	58	23	95	--	100	23	105	55
Small (Retained)	70	82	56	105	--	33	33	110	78
Spawning escapement									
Large	--	--	--	--	--	493	--	--	--
Small	--	--	--	--	--	486	--	--	--
Total returns									
Large	--	--	--	--	--	595	--	--	--
Small	--	--	--	--	--	613	--	--	--
% egg target met (large salmon only)									
	--	--	--	--	--	154	--	--	--

1 MIN and MAX of years 1984-1994

2 MEAN of years 1989-1993

Landings: Small and large salmon angling catches were lower and higher than average, respectively.

Data and assessment: Salmon spawning escapement has been estimated from returns to a counting fence in conjunction with harvest statistics. Poaching mortalities are conservatively estimated at 16% for large and 14% for small salmon (based on the Restigouche assessment).

State of the stock: The estimated spawning escapement of large salmon was 493 in 1994, well above requirements for the system. Small salmon spawning escapement of 486 was also above requirements. The estimated egg deposition was 54% above target.

1 - Introduction

This document summarizes data on harvests, surveys of abundance, spawning escapement targets and hatchery stocking of Atlantic salmon in rivers of Salmon Fishing Area (SFA) 15 (Fig. 1). Rivers discussed in this document are the Bass, Big Tracadie, Caraquet, Eel, Jacquet, Little Tracadie, Middle, Nepisiguit, Nigadoo, Pokemouche, Restigouche system (Kedgwick, Upsalquitch, Patapedia, Restigouche) and Tetagouche. Data have been collected by a variety of government and non-government agencies and not all types of data are available for all rivers. For consistency with previous reports on SFA 15, harvest data for the Nepisiguit River and the New Brunswick portion of the Restigouche watershed are included; however, research documents on stock status of salmon in the Restigouche and Nepisiguit Rivers should be consulted for specific stock assessment information.

In this report, salmon are subdivided into two size classes: small and large. Small salmon are adults less than 63 cm in fork length (1SW, one sea-winter salmon or grilse). Large salmon are adults greater than or equal to 63 cm in fork length (MSW or multi-sea-winter salmon).

2 - Description of fisheries

Fisheries in SFA 15 are primarily angling fisheries. First Nations on the Restigouche and Nepisiguit Rivers have traditionally harvested salmon using gill nets. In 1994, the Pabineau Band provided aquaculture salmon to its members, to discourage gill netting in the Nepisiguit River.

As in other New Brunswick watersheds, there was no commercial fishery in SFA 15 in 1994.

Angling regulations and seasons were similar to those in 1993. As in other New Brunswick waters, anglers were obliged to release all large salmon back into the river. Catches of small salmon were restricted by season and daily bag limits to eight and two fish, respectively. Angling seasons are summarized in Table 1.

3 - Fishery Data

3.1 - Angling catch

Recreational catches, data sources and estimation procedures in 1984 to 1988 were summarized in O'Neil et al. (1985, 1986, 1987, 1989, and 1991). Note that the rivers referred to in the present

document as Caraquet and Big Tracadie are identified as South Caraquet and Tracadie in O'Neil et al.'s documents. Catch estimates for 1989 to 1993 and preliminary estimates for 1994 were obtained from S. O'Neil, DFO, Halifax, Nova Scotia.

Catches reported for the Kedgwick and Patapedia rivers included New Brunswick catch data only. The Kedgwick, Patapedia, Upsalquitch and Restigouche catches were summed as the Restigouche system.

Total retained landings of small salmon by anglers in SFA 15 were 4741 (4611 bright, 130 kelts; Table 2). These figures do not include catches of small salmon that were hooked-and-released. Retained landings of small salmon were up by 21% (bright salmon) and 67% (kelts) relative to the 1989-1993 means.

Angled small salmon landings (bright) increased relative to the 5-year mean in the Kedgwick, Patapedia, Upsalquitch, Restigouche, Tetagouche, Middle, and Big Tracadie rivers but decreased in the Jacquet and Nepisiguit rivers (Table 3). Small salmon landings (kelt) increased in the Jacquet, Tetagouche and Tracadie rivers and decreased in Middle River.

Reported catches of large salmon were 3537 (3468 bright, 69 kelt; Table 2). It should be noted, however, that hooked-and-released catches of large salmon were not consistently reported, and that salmon may be caught more than once by this method.

Angled large salmon catches (bright) increased in the Jacquet, Patapedia, Restigouche, Upsalquitch and Big Tracadie rivers but decreased in the Kedgwick and Nepisiguit rivers (Table 3). Large salmon catches (kelt) increased in the Big Tracadie River and decreased in the Jacquet River.

3.2 - First Nation catch

First Nation catches were reported by band wardens or fisheries coordinators to DFO personnel. When only total numbers were given, they were apportioned into small and large salmon using ratios of small and large catch available for subsets of the data provided by the band wardens. In SFA 15, weight was estimated by assuming individual weights of 1.5 kg and 6.4 kg for small and large salmon respectively. These weights are those used in past years and represent mean weights of salmon collected in a research trap formerly located at Dalhousie on Chaleur Bay.

First Nation harvests were 17% to 70% lower than the 1989-1993 means (Table 4). Harvests totalled 348 large and 29 small salmon.

3.3 - Unreported removals

Unreported marine catches were estimated by Conservation and Protection personnel. Unreported freshwater removals were estimated from poaching-and-disease mortality rates calculated for the Restigouche River, then extrapolated to SFA 15 using the ratio of the watershed area of the Restigouche River to the watershed area of the whole SFA. Weight estimates were carried out as described above for First Nation catch estimates.

Estimates of unreported removals were 2162 large and 2352 small salmon (Table 5). These figures represent a 4% reduction in large salmon and 19% increase in small salmon compared to the 5-year average.

4 - Research and fishery data, and status of stocks, by river

4.1 - General comments

Spawning targets have been set for only eight of the rivers discussed in this document (Table 6). In all cases, spawning targets were set assuming that all eggs come from large salmon and using a target egg deposition of $2.4 \text{ eggs} \cdot \text{m}^2$. Where surveys of rearing area were not available, rearing areas were estimated from the drainage area of the river, and the proportion of rearing area to drainage area for surveyed rivers in the same geographic area. Biological characteristics were sampled in the Restigouche and Nepisiguit rivers. Biological characteristics of other stocks were based on samples from the Restigouche River, except for Big Tracadie and Pokemouche rivers, which were based on Miramichi River stocks (Anon., 1978).

Collection of the data presented in this report has been carried out by a number of government and non-government organizations. Not all types of data are available for all rivers. The organization (other than DFO) providing the data is identified.

For electrofishing studies of juvenile abundances, there were some differences between methodologies used by DFO and other organizations. All the juvenile abundances mentioned in this document were obtained at sites enclosed by barrier nets. Juvenile abundances were estimated by removal using either the Zippin method (DFO) or the DeLury method (Nepisiguit Salmon Association). Length-frequency distributions were used to establish juvenile age classes for the Restigouche sites sampled by DFO. For the rivers sampled by the Nepisiguit Salmon Association, juvenile age categories were established using fixed size cutoffs (0+ parr, $\leq 5.5 \text{ cm}$; 1+ parr, $5.6-10.5 \text{ cm}$; 2+ parr, $\geq 10.6 \text{ cm}$), which may lead to misclassification of some parr.

4.2 - Bass River

Spawning target: None.

Angling season: Kelts, Apr. 15-May 15
Bright salmon, June 1-Oct. 31

Angling catch: Unknown.

Spawner surveys (DNRE): Bass River was surveyed for the first time in 1994. As in other systems, salmon were visually surveyed from canoes in autumn and apportioned into large and small salmon. Only one small and four large salmon were observed in the survey done on October 28, 1994 (Table 7).

Redd surveys (DNRE): Redds were counted during the spawner survey of October 28, 1994. Redd abundance was also low; only 17 redds were observed (Table 8).

Counting fence data: None.

Juvenile surveys: None.

Juvenile stocking and broodstock collection: None.

Status of stocks: Spawner and redd counts indicated that the spawning stock was very small in 1994. No angling data have been collected for this river during the previous three decades and the level of exploitation of the stock is unknown.

4.3 - Big Tracadie River

Spawning target: 1,442,000 eggs; 140 large and 140 small salmon (Table 6).

Angling season: Kelts, Apr. 15-May 15
Bright salmon, June 1-Oct. 31 (above Lord and Foy Brook, June 1-Oct. 15)

Angling catch: Kelts, 32 small and 29 large salmon
Bright salmon, 40 small and 69 large salmon (Table 3)

Spawner surveys (DNRE): Big Tracadie River was surveyed for the first time in 1994. In total, 303 salmon (191 large, 112 small) were sighted in the Big Tracadie River on October 25. Almost one-third of these fish were observed in a pool in tidal waters (Table 7).

Redd surveys (DNRE): In 1994, 370 redds were counted in the Big Tracadie River (Table 8).

Counting fence data: None.

Juvenile surveys: None.

Juvenile stocking and broodstock collection: Salmon eggs were provided by the Charlo Salmonid Enhancement Centre to the Val Comeau Angling Club for satellite rearing in 1993 and 1994 (Table 9). In 1993, 6,000 0+ parr were distributed in the vicinity of the satellite rearing site. In 1994, 22,000 salmon fry were reared and distributed. Of these, 16,000 were distributed at the rearing site, and 6,000 in the South Branch of the Big Tracadie River (Table 9).

Four salmon were collected as broodstock in October, 1994. Broodstock collections in 1992-1993 provide the only data on biological characteristics of salmon in this river, although they do not constitute a random sample since the "best" specimens are chosen as broodstock. The majority of the salmon collected as broodstock smoltified at 2 years of age, and about 14% smoltified at 3 years of age. Large female salmon returned after 2 to 3 years at sea. No female small salmon (1 sea-winter) were used as broodstock, although there were several small male salmon. The one male large salmon that had been aged had been at sea two years. None of the aged fish used as broodstock were previous spawners.

Status of stocks: Salmon angling catches in this river have consistently increased over the past decade. Spawner counts of 191 large and 112 small salmon suggest that spawning escapement in 1994 was at or above the target of 140 large and 140 small salmon. Enhancement of the salmon stock by satellite rearing is probably not necessary for target spawning escapement to be met.

4.4 - Caraquet River

Spawning target: None.

Angling season: Kelts, Apr.15-May 15
Bright salmon, June 1-Oct. 31

Angling catch: Kelts, 10 small and 30 large salmon
Bright salmon, 25 small and 25 large salmon (Table 3)

Juvenile stocking and broodstock collection: None.

Spawner surveys (DNRE): The Caraquet River has been surveyed four times since 1986 (Table 7). Forty-seven salmon were sighted in the Caraquet River in 1994, about half the maximum recorded count (89 fish in 1986), but similar to counts in the other two years reported. Visibility in the river was poorer in 1994 than in the other years surveyed.

Redd surveys (DNRE): Redd counts have been carried out in six years since 1985 (Table 8). In November 1994, 271 redds were observed.

Mean numbers of redds observed in November of previous years were 184 redds (N=3).

Counting fence data: None.

Juvenile surveys: None.

Status of stocks: There is no spawning target for this river so stock status cannot be evaluated. Angling data were recorded in 1994 but not during the previous two decades. Spawner counts in October were about half those observed in 1986, but redd counts in November were the highest recorded.

4.5 - Eel River

Spawning target: 1,013,000 eggs; 120 large and 70 small salmon (Table 6).

Angling season: Kelts, Apr. 15-May 15
Bright salmon, July 1-Oct. 31

Angling catch: Unknown.

Juvenile stocking and broodstock collection: None.

Spawner surveys: None.

Redd surveys: None.

Counting fence data (DNRE): None in 1994. In 1992, counting fences were operated on the Main Stem Eel River and the South Branch Eel River at the Forks in Eel River Crossing. Fences operated from July 3 to October 17, 1992.

At the Main Stem fence, 53 salmon parr, 19 large salmon and 15 small salmon were caught. Scale samples taken from 10 large salmon showed 53% of them to be previous spawners. Seven percent of small salmon, and 68% of large salmon, were female.

At the South Branch fence, 9 salmon parr, 2 large salmon and 3 small salmon were caught. Both large salmon were repeat spawners and both were female. One of the three small salmon was female.

Juvenile surveys (DNRE): None in 1994. Sixteen sites in the Eel River watershed were electrofished in 1992. Mean densities of parr in the South Branch were 0.5 parr·100 m⁻² and in the Main Branch there were 3.0 parr·100 m⁻². It was estimated that the number of juvenile salmon in the South Branch was 588, and in the Main Branch was 4412 (Ross, 1992). The largest parr observed in the Eel River watershed were 9.3-10.4 cm in length.

Status of stocks: Unknown in 1994. Ross (1992) calculated that from the estimated 4997 salmon parr electrofished on the Eel River

system in 1992, a maximum of 399 adult salmon returns could be expected. If this abundance is typical of other years and all fish survived to spawn then the spawning target of 120 large and 70 small salmon could be met. However, salmon entering the river to spawn must negotiate a dam near the mouth of the river. Many do not succeed in entering the river. Many others are killed by spearing, jigging and other forms of fishing at or near the dam. In 1992, only 21 large and 18 small salmon were counted at the fences at Eel River Crossing, suggesting that mortalities were high and spawning escapement was considerably below target.

4.6 - Jacquet River

Spawning target: 2,724,000 eggs; 320 large and 180 small salmon (Table 6).

Research Recommendation: Estimates of target egg deposition in the Jacquet River should be re-evaluated using biological data collected from fish at the barrier fence, and habitat estimates may also require revision.

Angling season: Kelts, Apr. 15-May 15
Bright salmon, June 1-Oct. 31 (above Halfway Pool,
June 1-Oct. 15)

Angling catch: Kelts, 20 small and 10 large salmon
Bright salmon, 33 small and 100 large salmon (Table 3)

Juvenile stocking and broodstock collection: None.

Spawner surveys (DNRE): During a spawner survey carried out from canoes on September 14, only 29 small and 1 large salmon were observed. At this time, 211 small salmon had been released from the barrier pool for anglers. DNRE's estimate of legal angling to date was 36 small salmon. Most of the fish were observed within 5 km of the barrier. A gill net spanning the entire river in 45 cm of water, 5 km above the barrier, was seized during the visual survey. The net was collapsed and had algae growing on it.

Redd surveys (DNRE): Redd surveys have been carried out in 13 years since 1971. In 1994, 420 redds were observed (Table 8). The majority of redds were counted in a 15-km stretch from Doyles Pool to Pumphouse Pool which had only been surveyed once before, in 1971, making year-to-year comparisons difficult.

Counting fence data (DNRE): In 1994, a barrier fence was installed for the first time on the Jacquet River, at Big Rock Pool. The fence operated from July 7 to November 9. In total, 595 large and 613 small salmon returned to the fence (Table 10, Fig. 2). Mortalities of 10 small and 1 large salmon were recorded. The large salmon run was held at the barrier pool until October 23 (Table 10,

Fig. 3). Small salmon were released throughout the summer and autumn, but most were released in October (Table 10, Fig. 3). Virtually all angling in the system took place above the fence.

The Jacquet River is evidently a late-run river (Table 10, Fig. 2). The majority of fish (74% of large and 44% of small salmon) reached the fence after October 1, although 19% of small salmon had arrived by the end of August.

Of the 340 small salmon for which sex was externally determined, 11.1% were female. Average length of 476 small salmon was 55.9 cm.

Of the 342 large salmon for which sex was externally determined, 79.8% were female. Average length of 358 large salmon was 79.2 cm.

The entire run of large salmon was released from the barrier pool on October 23. The large numbers of redds seen in the lower reaches of the river (Doyles Pool to Pumphouse Pool; Table 8) probably mean that the salmon did not move far upstream due to extremely low water.

Juvenile surveys: None in 1994. In 1984, parr were abundant only at sites in the lower 20-25 km of the main Jacquet River (Table 11, Fig. 4).

Status of stocks: Subtracting the reported 1994 angling mortalities (6 large salmon based on an assumed 6% hook-and-release mortality of 100 released large salmon, plus a retained catch of 33 small salmon) from the barrier fence releases (594 large salmon, 603 small salmon), the maximum possible spawning escapement would be 588 large salmon and 570 small salmon. If poaching and disease account for 16% of the large and 14% of the small salmon passing the fence (based on poaching and disease estimates used in the Restigouche assessment), 493 large and 486 small salmon would remain. If these figures are correct, target spawning escapement (320 large salmon, 180 small salmon) was exceeded in 1994. The extent of poaching in the Jacquet River was not quantified but is believed to be an important source of mortality. Poaching in 1994 was probably less than in previous years since large salmon were held at the barrier pool until late October. Poaching of large salmon would have to remove 45% of the 594 large salmon remaining before hook-and-release mortality in order for spawning escapement to be below the target level.

4.7 - Little Tracadie River

Spawning target: None.

Angling season: Kelts, Apr. 15-May 15
Bright salmon, June 1-Oct. 31

Angling catch: Kelts, none.
Bright salmon, 3 small and 8 large salmon (Table 3)

Juvenile stocking and broodstock collection: None.

Spawner surveys: None.

Redd surveys: None.

Counting fence data: None.

Juvenile surveys: None.

Status of stocks: Unknown. There is no spawning target for this river. An angling catch of 11 fish was recorded in 1994. No angling data had been reported for this river since the late 1960's.

4.8 - Middle River

Spawning target: 2,280,000 eggs; 270 large and 150 small salmon (Table 6).

Angling season: Kelts, Apr. 15-May 15
Bright salmon, June 1-Oct. 31

Angling catch: Kelts, 30 small, unknown large salmon
Bright salmon, 90 small, unknown large salmon (Table 3)

Juvenile stocking and broodstock collection: None.

Spawner surveys: None.

Redd surveys: None.

Counting fence data: None.

Juvenile surveys (Nepisiguit Salmon Association): Four to six sites have been electrofished annually since 1983 (Table 12). Abundances of 0+ parr and of 2+ parr in 1994 were the second-highest ever recorded. Abundance of 1+ parr was the lowest in five years.

Status of stocks: There is insufficient data on the abundance of adult salmon to determine if the target spawning escapement is being met. Angling catch on this river increased relative to the 5-year average in 1994. Electrofishing data suggest that juveniles are relatively abundant.

4.9 - Nepisiguit River

Data: See Locke et al. (in prep.) for a detailed assessment of the Nepisiguit River salmon stock.

Status of stocks: Only 59% of the spawning target was achieved in 1994. Large salmon spawning escapement (773), estimated from angling catch, barrier fence counts, and redd counts, was well below the requirement of 1363 fish. Small salmon spawning escapement (587) was also less than the requirement (690 fish). Angling catches were the lowest recorded since 1985.

4.10 - Nigadoo River

Spawning target: None.

Angling season: Kelts, Apr. 15-May 15
Bright salmon, June 1-Oct. 31

Angling catch: Kelts, 18 small, unknown large salmon
Bright salmon, 30 small, unknown large salmon (Table 3)

Juvenile stocking and broodstock collection: None.

Spawner surveys: None.

Redd surveys: None.

Counting fence data: None.

Juvenile surveys (Nepisiguit Salmon Association): Electrofishing data (Table 13) are inconclusive because of the small sample size (n=1). The river was electrofished for the first time in 1994.

Status of stocks: Unknown. No trends in angling data are observed since data had not been collected since the late 1960's.

4.11 - Pokemouche River

Spawning target: 595,000 eggs; 60 large and 60 small salmon (Table 6).

Angling season: Kelts, Apr. 15-May 15
Bright salmon, June 1-Oct. 31

Angling catch: Unknown.

Juvenile stocking and broodstock collection: None.

Spawner surveys (DNRE): Pokemouche River was surveyed for the first time in 1994. Salmon abundance (6 large, 0 small) was very low.

Redd surveys (DNRE): Redd counts were done for the first time in

1994. Only 22 redds were observed (Table 8).

Counting fence data: None.

Juvenile surveys: None.

Status of stocks: Unknown. Angling data are not collected. Spawner and redd counts suggest the salmon stock is very small.

4.12 - Restigouche River

Data: See Locke et al. (in prep.) for a detailed assessment of the Restigouche River salmon population.

Status of stocks: Salmon egg deposition and large salmon spawning escapement in the Restigouche system increased by a factor of two or three in 1994 relative to 1993 levels. The magnitude of the increase, and the absolute abundance of salmon in the Restigouche system relative to target levels were controversial and different assessment methods were not in agreement.

A mark-recapture experiment indicated that egg deposition target was met (most probable value was 137% of target, with 95% confidence limits of 105-218%). Large salmon spawning escapement was 16,000 (12,000-26,000) which met or exceeded the target of 12,200 large salmon. Small salmon spawning escapement of 17,000 (12,000-29,000) exceeded the requirement of 2,600 fish.

More conservative estimates were obtained from an angling-based methodology with assumed exploitation rates of 0.3 and 0.5. Egg deposition by this methodology was 56-101% of target. Large salmon escapement (6,000-12,000) was less than target. Small salmon escapement (5,000-11,000) exceeded target. The mark-recapture estimate is probably more scientifically defensible, but the angling-based estimate is more conservative for management purposes.

Minimum population estimates obtained from visual surveys of spawners agreed with the angling-based estimate with exploitation rate of 0.5. Calibration and evaluation of these and other methodologies used to assess salmon in the Restigouche system must be a research priority in 1995.

4.13 - Tetagouche River

Spawning target: 718,000 eggs; 80 large and 50 small salmon.

Angling season: Kelts, Apr. 15-May 15
Bright salmon, June 1-Oct. 31

Angling catch: Kelts, 20 small and unknown large salmon
Bright salmon, 78 small and unknown large salmon

(Table 3)

Spawner surveys: None.

Redd surveys: None.

Counting fence data: None.

Juvenile surveys (Nepisiguit Salmon Association and Pabineau First Nation): Parr densities in the Tetagouche River, particularly of 0+ and 1+ age classes, have increased by an order of magnitude in 1989-1994 relative to 1984-1988 (Table 14).

Juvenile stocking and broodstock collection: Salmon fry (50,000) of Nepisiguit River origin were distributed to the Tetagouche River in 1994 (Table 9). The area to which these fry were distributed, above the falls, is not accessible to natural spawning of wild stocks and is not included in the calculation of the spawning target.

Status of stock: Unknown. Angling catch and CPUE increased in 1994 relative to the 5-year mean. Juvenile abundances have been relatively high for the past six years. Stocking of juveniles is probably not required for this river to meet its spawning target.

5 - Research Recommendations

Insufficient data are available to determine if spawning escapement has been met on most of the rivers in SFA 15. As well, spawning targets have not been set for many rivers. The logistics of collecting complete information on all the rivers are formidable. Priorities should be set as to which rivers contain important salmon stocks to be monitored. Apart from angling statistics, the only rivers in SFA 15 in which DFO currently conducts research are the Nepisiguit and Restigouche. Collection of data on the other rivers has been, and will continue to be, dependent upon provincial agencies and private clubs.

6 - Literature cited

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Table 1. Angling seasons in rivers of SFA 15, 1994.

River -----	Kelt season -----	Bright season -----
Restigouche	none	June 1-Aug. 31
Upsalquitch		
Kedgwick		
Patapedia		
Nepisiguit	none	June 1-Oct. 7
Big Tracadie	Apr.15-May 15	June 1-Oct. 31
Caraquet		with the following exceptions:
Jacquet		(1) Jacquet River above Halfway
Little Tracadie		Pool, June 1 - Oct. 15
Middle		(2) Big Tracadie River above Lord and
Nigadoo		Foy Brook, June 1-Oct. 15
Tetagouche		
Tracadie		
Pokemouche		
Bass		
Eel		

Table 2. Annual angling catch, SFA 15. Large salmon hook-and-release catch was not consistently reported; mean was not calculated since only part of the large salmon catch was reported.

Year	Bright salmon			Kelts		
	Small	Large	Total	Small	Large	Total
1984	2113	1822	3935	0	3	3
1985	3639	3629	7268	66	11	77
1986	5961	5390	11351	64	16	80
1987	5386	3746	9132	66	61	127
1988	7278	5238	12516	62	57	119
1989	3652	3993	7645	50	37	87
1990	4277	3222	7499	61	49	110
1991	2894	2541	5435	61	70	131
1992	5157	3752	8909	162	59	221
1993	3111	1843	4954	54	32	86
1994	4611	3468	8079	130	69	199
Mean (89-93)	3818	--	--	78	--	--
1994 cf. Mean	+21%	--	--	+67%	--	--

Table 3. Annual summaries of catch (including retained and hooked-and-released salmon) and effort (rod-days) for Salmon Fishing Area 15. Large salmon hook-and-release catch was not consistently reported; catch-per-unit-effort (CPUE), % large salmon and mean were not calculated if only part of the large salmon catch was reported.

River and Year	Kelts						Bright salmon					
	Small	Large	Total	Effort	CPUE	%Large	Small	Large	Total	Effort	CPUE	%Large
<u>Caraquet</u>												
1984	-	-	-	-	-	-	-	-	-	-	-	-
1985	-	-	-	-	-	-	-	-	-	-	-	-
1986	-	-	-	-	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-	-	-	-	-
1988	-	-	-	-	-	-	-	-	-	-	-	-
1989	-	-	-	-	-	-	-	-	-	-	-	-
1990	-	-	-	-	-	-	-	-	-	-	-	-
1991	-	-	-	-	-	-	-	-	-	-	-	-
1992	-	-	-	-	-	-	-	-	-	-	-	-
1993	-	-	-	-	-	-	-	-	-	-	-	-
1994	10	30	40	168	0.24	75	25	25	50	500	0.10	50
Mean (89-93)	-	-	-	-	-	-	-	-	-	-	-	-
1994 cf. Mean	-	-	-	-	-	-	-	-	-	-	-	-
<u>Jacquet</u>												
1984	0	3	3	50	0.06	100	39	-	39	275	0.14	-
1985	6	-	6	25	0.24	-	34	52	86	270	0.32	60
1986	10	6	16	50	0.32	38	76	105	181	355	0.51	58
1987	15	50	65	120	0.54	77	45	27	72	165	0.44	38
1988	16	42	58	180	0.32	72	110	70	180	320	0.56	39
1989	13	25	38	165	0.23	66	70	42	112	330	0.34	38
1990	20	32	52	75	0.69	62	82	58	140	330	0.42	41
1991	15	35	50	150	0.33	70	56	23	79	295	0.27	29
1992	20	15	35	90	0.39	43	105	95	200	455	0.44	48
1993	-	-	-	-	-	-	-	-	-	-	-	-
1994	20	10	30	90	0.33	33	33	100	133	720	0.18	75
Mean (89-93)	17	27	44	120	0.41	60	78	55	133	353	0.37	39
1994 cf. Mean	+18%	-63%	-32%	-25%	-20%	-45%	-58%	+82%	0%	+104%	-51%	+92%

Table 3. Continued.

River and Year	Kelts						Bright salmon					
	Small	Large	Total	Effort	CPUE	%Large	Small	Large	Total	Effort	CPUE	%Large
<u>Kedgwick</u>												
1984	-	-	-	-	-	-	145	154	299	1126	0.27	52
1985	-	-	-	-	-	-	326	172	498	1441	0.35	35
1986	-	-	-	-	-	-	561	476	1037	1103	0.94	46
1987	-	-	-	-	-	-	575	394	969	1147	0.84	41
1988	-	-	-	-	-	-	803	676	1479	1203	1.23	46
1989	-	-	-	-	-	-	207	528	735	1266	0.58	72
1990	-	-	-	-	-	-	300	244	544	1148	0.47	45
1991	-	-	-	-	-	-	277	400	677	970	0.70	59
1992	-	-	-	-	-	-	417	303	720	1195	0.60	42
1993	-	-	-	-	-	-	231	102	333	567	0.59	31
1994	-	-	-	-	-	-	453	205	658	1192	0.55	31
Mean (89-93)	-	-	-	-	-	-	286	315	602	1029	0.59	50
1994 cf. Mean	-	-	-	-	-	-	+58%	-35%	+9%	+16%	-7%	-38%
<u>Little Tracadie</u>												
1984	-	-	-	-	-	-	-	-	-	-	-	-
1985	-	-	-	-	-	-	-	-	-	-	-	-
1986	-	-	-	-	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-	-	-	-	-
1988	-	-	-	-	-	-	-	-	-	-	-	-
1989	-	-	-	-	-	-	-	-	-	-	-	-
1990	-	-	-	-	-	-	-	-	-	-	-	-
1991	-	-	-	-	-	-	-	-	-	-	-	-
1992	-	-	-	-	-	-	-	-	-	-	-	-
1993	-	-	-	-	-	-	-	-	-	-	-	-
1994	0	0	0	0	0.00	0	3	8	11	58	0.19	73
Mean (89-93)	-	-	-	-	-	-	-	-	-	-	-	-
1994 cf. Mean	-	-	-	-	-	-	-	-	-	-	-	-

Table 3. Continued.

River and Year	Kelts					Bright salmon						
	Small	Large	Total	Effort	CPUE %Large	Small	Large	Total	Effort	CPUE %Large		
<u>Middle</u>												
1984	-	-	-	-	-	-	-	-	-	-	-	
1985	30	-	30	105	0.29	-	52	-	52	425	0.12	
1986	33	-	33	117	0.28	-	81	-	81	564	0.14	
1987	30	-	30	115	0.26	-	50	-	50	295	0.17	
1988	25	-	25	80	0.31	-	32	-	32	169	0.19	
1989	25	-	25	80	0.31	-	53	-	53	287	0.18	
1990	15	-	15	90	0.17	-	50	-	50	244	0.20	
1991	26	-	26	45	0.58	-	66	-	66	271	0.24	
1992	100	-	100	210	0.48	-	104	-	104	240	0.43	
1993	20	-	20	92	0.22	-	64	-	64	213	0.30	
1994	30	-	30	180	0.17	-	90	-	90	280	0.32	
Mean (89-93)	37	-	37	103	0.35	-	67	-	67	251	0.27	
1994 cf. Mean	-19%	-	-19%	+75%	-51%	-	+34%	-	+34%	+12%	+19%	
<u>Nepisiquit</u>												
1984	-	-	-	-	-	-	600	150	750	3015	0.25	20
1985	-	-	-	-	-	-	229	-	229	1734	0.13	-
1986	-	-	-	-	-	-	800	500	1300	3600	0.36	38
1987	-	-	-	-	-	-	800	500	1300	4250	0.31	38
1988	-	-	-	-	-	-	1000	600	1600	5000	0.32	38
1989	-	-	-	-	-	-	600	490	1090	4000	0.27	45
1990	-	-	-	-	-	-	500	300	800	3400	0.24	38
1991	-	-	-	-	-	-	700	300	1000	3700	0.27	30
1992	-	-	-	-	-	-	800	270	1070	4700	0.23	25
1993	-	-	-	-	-	-	470	258	728	3300	0.22	35
1994	-	-	-	-	-	-	370	250	620	3700	0.17	40
Mean (89-93)	-	-	-	-	-	-	614	324	938	3820	0.25	35
1994 cf. Mean	-	-	-	-	-	-	-40%	-23%	-34%	-3%	-32%	+14%

Table 3. Continued.

River and Year	Kelts					Bright salmon					
	Small	Large	Total	Effort	CPUE %Large	Small	Large	Total	Effort	CPUE %Large	
<u>Nigadoo</u>											
1984	-	-	-	-	-	-	-	-	-	-	-
1985	-	-	-	-	-	-	-	-	-	-	-
1986	-	-	-	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-	-	-	-
1988	-	-	-	-	-	-	-	-	-	-	-
1989	-	-	-	-	-	-	-	-	-	-	-
1990	-	-	-	-	-	-	-	-	-	-	-
1991	-	-	-	-	-	-	-	-	-	-	-
1992	-	-	-	-	-	-	-	-	-	-	-
1993	-	-	-	-	-	-	-	-	-	-	-
1994	18	-	18	70	0.26	30	-	30	170	0.18	-
Mean (89-93)	-	-	-	-	-	-	-	-	-	-	-
1994 cf. Mean	-	-	-	-	-	-	-	-	-	-	-
<u>Patapedia</u>											
1984	-	-	-	-	-	19	25	44	156	0.28	57
1985	-	-	-	-	-	55	53	108	132	0.82	49
1986	-	-	-	-	-	55	99	154	169	0.91	64
1987	-	-	-	-	-	107	37	144	162	0.89	26
1988	-	-	-	-	-	80	77	157	195	0.81	49
1989	-	-	-	-	-	31	35	66	211	0.31	53
1990	-	-	-	-	-	38	22	60	237	0.25	37
1991	-	-	-	-	-	16	16	32	136	0.24	50
1992	-	-	-	-	-	66	36	102	206	0.50	35
1993	-	-	-	-	-	19	9	28	220	0.13	32
1994	-	-	-	-	-	73	31	104	126	0.83	30
Mean (89-93)	-	-	-	-	-	34	24	58	202	0.29	41
1994 cf. Mean	-	-	-	-	-	+115%	+29%	+79%	-38%	+186%	-27%

Table 3. Continued.

River and Year	Kelts					Bright salmon					
	Small	Large	Total	Effort	CPUE %Large	Small	Large	Total	Effort	CPUE %Large	
<u>Restigouche</u>											
1984	-	-	-	-	-	827	1147	1974	4551	0.43	58
1985	-	-	-	-	-	1702	2831	4533	7236	0.63	62
1986	-	-	-	-	-	2902	3558	6460	7070	0.91	55
1987	-	-	-	-	-	2913	2362	5275	6887	0.77	45
1988	-	-	-	-	-	3905	3134	7039	7577	0.93	45
1989	-	-	-	-	-	1777	2363	4140	6104	0.68	57
1990	-	-	-	-	-	2316	2201	4517	7466	0.61	49
1991	-	-	-	-	-	1291	1570	2861	6511	0.44	55
1992	-	-	-	-	-	2336	2451	4787	6706	0.71	51
1993	-	-	-	-	-	1578	1209	2787	7359	0.38	43
1994	-	-	-	-	-	2204	2272	4476	7152	0.63	51
Mean (89-93)	-	-	-	-	-	1860	1959	3818	6829	0.56	51
1994 cf. Mean	-	-	-	-	-	+18%	+16%	+17%	+5%	+13%	0%
<u>Tetagouche</u>											
1984	-	-	-	-	-	-	-	-	-	-	-
1985	18	-	18	75	0.24	55	-	55	431	0.13	-
1986	10	-	10	45	0.22	76	-	76	519	0.15	-
1987	15	-	15	70	0.21	65	-	65	315	0.21	-
1988	15	-	15	60	0.25	28	-	28	138	0.20	-
1989	10	-	10	65	0.15	54	-	54	290	0.19	-
1990	23	-	23	136	0.17	55	-	55	267	0.21	-
1991	16	-	16	40	0.40	68	-	68	288	0.24	-
1992	30	-	30	60	0.50	112	-	112	260	0.43	-
1993	12	-	12	42	0.29	61	-	61	203	0.30	-
1994	20	-	20	105	0.19	78	-	78	249	0.31	-
Mean (89-93)	18	-	18	69	0.30	70	-	70	262	0.27	-
1994 cf. Mean	+11%	-	+11%	+52%	-37%	+11%	-	+11%	-5%	+15%	-

Table 3. Continued.

River and Year	Kelts						Bright salmon					
	Small	Large	Total	Effort	CPUE	%Large	Small	Large	Total	Effort	CPUE	%Large
<u>Big Tracadie</u>												
1984	-	-	-	-	-	-	-	-	-	-	-	-
1985	12	11	23	30	0.77	48	11	14	25	107	0.23	56
1986	11	10	21	30	0.70	48	13	22	35	107	0.33	63
1987	6	11	17	45	0.38	65	12	16	28	123	0.23	57
1988	6	15	21	46	0.46	71	24	22	46	337	0.14	48
1989	2	12	14	41	0.34	86	24	20	44	220	0.20	45
1990	3	17	20	62	0.32	85	31	22	53	210	0.25	42
1991	4	35	39	88	0.44	90	17	37	54	153	0.35	69
1992	12	44	56	193	0.29	79	37	36	73	340	0.21	49
1993	22	32	54	181	0.30	59	44	44	88	347	0.25	50
1994	32	29	61	194	0.31	48	40	69	109	474	0.23	63
Mean (89-93)	9	28	37	113	0.34	80	31	132	62	254	0.25	51
1994 cf. Mean	+256%	+4%	+65%	+72%	-9%	-40%	+29%	+116%	+76%	+87%	-8%	+24%
<u>Upsalquitch</u>												
1984	-	-	-	-	-	-	483	346	829	1465	0.57	42
1985	-	-	-	-	-	-	1175	507	1682	1690	1.00	30
1986	-	-	-	-	-	-	1397	630	2027	1756	1.15	31
1987	-	-	-	-	-	-	819	410	1229	1935	0.64	33
1988	-	-	-	-	-	-	1296	659	1955	2101	0.93	34
1989	-	-	-	-	-	-	836	515	1351	1804	0.75	38
1990	-	-	-	-	-	-	905	375	1280	2313	0.55	29
1991	-	-	-	-	-	-	403	195	598	1600	0.37	33
1992	-	-	-	-	-	-	1180	561	1741	1859	0.94	32
1993	-	-	-	-	-	-	644	221	865	2021	0.43	26
1994	-	-	-	-	-	-	1212	508	1720	1833	0.94	30
Mean (89-93)	-	-	-	-	-	-	794	373	1167	1919	0.61	32
1994 cf. Mean	-	-	-	-	-	-	+53%	+36%	+47%	-4%	+54%	-6%

Table 3. Continued.

River and Year	Kelts						Bright salmon					
	Small	Large	Total	Effort	CPUE	%Large	Small	Large	Total	Effort	CPUE	%Large
<u>Restigouche River System (Kedgwick, Patapedia, Restigouche, Upsalquitch)</u>												
1984	-	-	-	-	-	-	1474	1672	3146	7298	0.43	53
1985	-	-	-	-	-	-	3258	3563	6821	10499	0.65	52
1986	-	-	-	-	-	-	4915	4763	9678	10098	0.96	49
1987	-	-	-	-	-	-	4414	3203	7617	10131	0.75	42
1988	-	-	-	-	-	-	6084	4546	10630	11076	0.96	43
1989	-	-	-	-	-	-	2851	3441	6292	9385	0.67	55
1990	-	-	-	-	-	-	3559	2842	6401	11164	0.57	44
1991	-	-	-	-	-	-	1987	2181	4168	9217	0.45	52
1992	-	-	-	-	-	-	3999	3351	7350	9966	0.74	46
1993	-	-	-	-	-	-	2472	1541	4013	10167	0.39	38
1994	-	-	-	-	-	-	3942	3016	6958	10303	0.68	43
Mean (89-93)	-	-	-	-	-	-	2974	2671	5645	9980	0.56	47
1994 cf. Mean	-	-	-	-	-	-	+33%	+13%	+23%	+3%	+21%	-9%
<u>SFA 15 Totals</u>												
1984	0	3	3	50	-	-	2113	1822	3935	10588	-	-
1985	66	11	77	235	-	-	3639	3629	7268	13466	-	-
1986	64	16	80	242	-	-	5961	5390	11351	15243	-	-
1987	66	61	127	350	-	-	5386	3746	9132	15279	-	-
1988	62	57	119	366	-	-	7278	5238	12516	17040	-	-
1989	50	37	87	351	-	-	3652	3993	7645	14512	-	-
1990	61	49	110	363	-	-	4277	3222	7499	15615	-	-
1991	61	70	131	323	-	-	2894	2541	5435	13924	-	-
1992	162	59	221	553	-	-	5157	3752	8909	15961	-	-
1993	54	32	86	315	-	-	3111	1843	4954	14230	-	-
1994	130	69	199	807	-	-	4611	3468	8079	16454	-	-
Mean (89-93)	78	-	-	381	-	-	3818	-	-	14848	-	-
1994 cf. Mean	+67%	-	-	+112%	-	-	+21%	-	-	+11%	-	-

Table 4. Summary of First Nation harvests of salmon (by size class) in SFA 15.

River	1989	1990	1991	1992	1993	1994	(89-93)	94 cf. mean
<u>Restigouche</u>								
Large	568	471	252	464	293	348	410	-15%
Small	151	120	10	2	0	29	57	-49%
<u>Nepisiquit</u>								
Large	na	na	na	na	50	0	--	--
Small	na	na	na	na	200	0	--	--
<u>SFA 15 TOTALS</u>								
Large	568	471	252	464	343	348	420	-17%
Small	151	120	10	2	200	29	97	-70%
Wt. (kg)	3862	3194	1628	2973	2495	2271	2830	-20%

Table 5. Estimates of unreported removals of Atlantic salmon (by size class) in SFA 15.

Year	Small		Large		Total	
	Number	Kg	Number	Kg	Number	Kg
1988	3320	4980	3010	19264	6330	24244
1989	1720	2580	2473	15827	4193	18407
1990	2628	3942	3032	19405	5660	23347
1991	1455	2183	2132	13645	3587	15828
1992	2396	3594	2393	15315	4789	18909
1993	1655	2483	1180	7552	2835	10035
1994	2352	3528	2162	13837	4514	17365
Mean (89-93)	1971	2956	2242	14349	4213	17305
1994 cf. Mean	+19%	+19%	-4%	-4%	+7%	+0%

Table 6. Rearing area and spawning requirements for Atlantic salmon in rivers of SFA 15, from Anon. (1978), Randall (1984) and Locke et al. (1994).

River	rearing area (m ² x10 ³)	eggs required ^b (x10 ³)	<u>spawning requirements</u>	
			large salmon	small salmon
Restigouche	29,768	71,443	12,200	2,600
Nepisiguit	3,973	9,535	1363	690
Jacquet	1,135	2,724	320	180
Middle	950 ^a	2,280	270	150
Big Tracadie	601	1,442	140	140
Eel	422 ^a	1,013	120	70
Tetagouche	299	718	80	50
Pokemouche	248	595	60	60

Table 7. Atlantic salmon spawner counts conducted by DNRE on rivers of SFA 15, 1985-1994.

River	Year	Date	Salmon		Total	Visibility	Comments
			Small	Large			
Bass	1994	Oct. 28	1	4	5	very good	Max Ronald's to tidal waters
Caraquet	1986	Oct. 22	42	47	89	good	Innishannon picnic site to tidal waters
	1987	Oct. 20	25	33	58	good	
	1989	Oct. 23	12	24	36	good	
	1994	Oct. 25	12	35	47	fair	
Jacquet	1994	Sept. 14	29	1	30	very good	3 small salmon between Kettle Hole and Halfway Pool (8 km); remainder from Halfway Pool to Salmon Barrier (15 km)
Pokemouche	1994	Oct. 24	0	6	6	very good	
Big Tracadie	1994	Oct. 25	79	125	204	----	Duke's camp to tidal waters
	1994	Oct. 25	33	66	99	----	Tidal pool

Table 8. Atlantic salmon redd counts conducted by DNRE on the Jacquet, Bass, Caraquet, Pokemouche and Big Tracadie Rivers, 1971-1994.

River	Year	Redds, Kettle Hole to Doyles Pool	Redds, Doyles Pool to Pumphouse Pool	Total Redds	Comments
Jacquet	1971	9	18	27	
	1972	35			
	1973	52			
	1974	58			
	1977	40			
	1980	87			
	1984	16			high water, unskilled observers
	1985	70			
	1986	51			
	1987	106			
	1988	124			
	1993	180			
	1994	81	339	420	

River	Year	Date	Redds	Visibility	Stretch
Bass	1994	Oct 28	17	very good	Max Ronald's to tidal Obstruction 1/2 km above bridge
Caraquet	1985	Nov 11	236	good	Stretch for all years: Innishannon picnic site to tidal
	1986	Oct 22	152 ^a	good	
	1987	Oct 20	51 ^a	good	
	1989	Nov 8	201	good	
	1990	Nov 5	116	poor	
	1994	Nov 14	271	fair	
Pokemouche	1994	Nov 15	22	fair	
Big Tracadie	1994	Nov 11&14	370	--	Pokemouche landing to tidal

^a - Redd count performed one month earlier than others.

Table 9. Atlantic salmon enhancement projects in SFA 15, 1992-1994. For Nepisiguit and Restigouche Rivers, see Locke *et al.* 1995 (in prep.).

(a) Annual broodstock collections and juvenile distributions.

River	Year	Broodstock collection			Juvenile distributions		
		male	female	# of eggs	life stage	number	%marked
Big	1992	3	4	27,134	---	0	---
Tracadie	1993	2	5	23,848	0+ parr	22,118	100
	1994	1	3	25,989	0+ parr	22,000	73
Tetagouche	1994	0	0	0	0+ parr	50,000	0

(b) Biological characteristics of broodstock from the Big Tracadie River, 1992-1993.

Year	Sex	Total length (cm)	Weight (kg)	Age (years)	
				F.W.	S.W.
1992	F	79.0	4.80	2	2
	F	74.1	3.80	2	2
	F	77.0	4.50	2	2
	F	78.0	4.20	2	2
	M	59.0	1.80	3	1
	M	58.9	1.90	3	1
	M	98.0	8.70	2	-
1993	F	75.0	4.45	2	2
	F	76.0	4.85	2	2
	F	72.1	3.45	2	2
	F	88.3	6.55	2	3
	F	89.5	6.10	2	3
	M	82.6	4.45	2	2
	M	61.1	1.80	2	1

Table 10. Returns, mortalities and releases of Atlantic salmon at the Jacquet River counting fence in 1994.

Date	Returns to fence		Mortalities		Releases above fence	
	Small	Large	Small	Large	Small	Large
July 13-15	3	0	0	0	3	0
July 16-31	45	6	8	0	39	0
Aug. 1-15	48	10	1	0	47	0
Aug. 16-31	18	4	1	0	16	0
Sept. 1-15	124	62	0	0	121	0
Sept. 16-30	105	72	0	0	101	0
Oct. 1-15	159	262	0	0	53	0
Oct. 16-31	106	170	0	0	228	586
Nov. 1-10	5	9	0	1	5	9

Table 11. Electrofishing data, Jacquet River, 1984 (Ritchie, 1989). Sites are listed from downstream to upstream locations within each tributary (Figure 4). Sites 9 (Big Hole Brook), 12 (Lower South Branch), 19 (Lower McNair Brook), 18 (Upper South Branch) and 13 (Upper McNair Brook) were located at the confluence of these tributaries with the main Jacquet River.

Site	Date	Mean abundance $\cdot 100\text{m}^{-2}$		
		0+ parr	1+ parr	2+ parr
1-Jacquet R.	Aug. 9	8.53	5.38	0.92
16-Jacquet R.	Aug. 26	1.0	15.3	3.1
17-Jacquet R.	Aug. 27	3.0	5.3	1.7
14-Jacquet R.	Aug. 23	0.4	3.2	0.4
15-Jacquet R.	Aug. 25	0	0	0
23-Jacquet R.	Aug. 30	0	0	0
9-Big Hole Bk.	Aug. 16	9.00	18.10	9.30
3-Big Hole Bk.	Aug. 11	0	0	0
12-Lower South Br. Jacquet R.	Aug. 22	4.3	5.3	0.7
8-Lower South Br. Jacquet R.	Aug. 18	0	0	0
20-Carl Gulch	Aug. 29	0	0	0
19-Lower McNair Bk.	Aug. 28	0.3	1.9	0.6
2-Lower McNair Bk.	Aug. 10	0	0	0
18-Upper South Br. Jacquet R.	Aug. 28	0	3.4	2.1
22-tributary, Upper South Br.	Aug. 29	0	0	0
21-tributary, Upper South Br.	Aug. 28	0	0	0
13-Upper McNair Bk.	Aug. 23	0	1.9	0
7-Upper McNair Bk.	Aug. 14	0	0	0
6-Rocky Bk.	Aug. 14	0	0	0
10-Tongue L. Bk.	Aug. 19	0	0	0
11-Head L. outflow	Aug. 21	0	0	0

Table 12. Electrofishing data, Middle River (from Nepisiguit Salmon Association).

Year	No. of sites	Mean abundance · 100 m ⁻²		
		0+ parr	1+ parr	2+ parr
1983	6	38.2	6.4	1.4
1984	5	4.3	6.6	0.3
1985	6	0.6	4.0	1.6
1986	6	0.7	1.6	0.9
1987	5	35.0	3.4	0.2
1988	5	33.0	8.7	0.0
1989	6	25.0	7.6	1.7
1990	6	5.4	22.9	0.0
1991	5	10.6	20.8	0.0
1992	5	81.6	12.4	5.1
1993	4	20.0	17.8	1.4
1994	4	66.4	10.4	2.5

Table 13. Electrofishing data, Nigadoo River (from Nepisiguit Salmon Association).

Year	No. of sites	Mean abundance · 100 m ²		
		0+ parr	1+ parr	2+ parr
1994	1	7.3	6.8	4.4

Table 14. Electrofishing data, Tetagouche River (from Nepisiguit Salmon Association).

Year	No. of sites	Mean abundance · 100 m ²		
		0+ parr	1+ parr	2+ parr
1983	2	27.1	5.4	1.0
1984	2	2.7	0.0	0.0
1985	2	5.6	0.7	0.0
1986	2	0.9	0.5	0.0
1987	3	6.6	0.6	0.0
1988	3	7.2	1.7	0.0
1989	4	36.2	5.2	0.1
1990	4	71.7	6.2	0.0
1991	4	24.5	8.1	0.0
1992	4	43.2	3.9	1.5
1993	4	63.5	6.7	1.1
1994	4	55.2	5.6	0.0

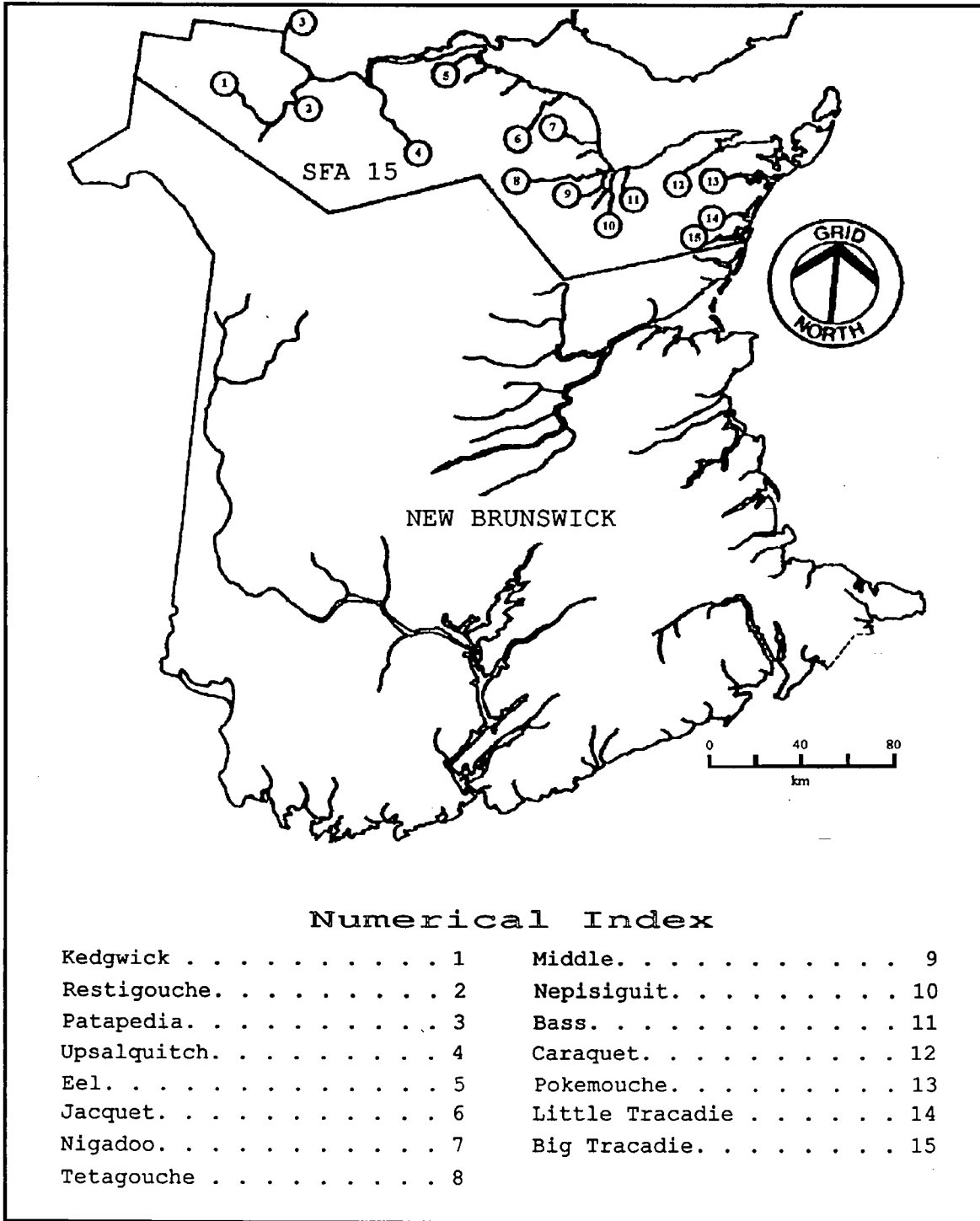


Figure 1. Atlantic salmon rivers of SFA 15, discussed in this document.

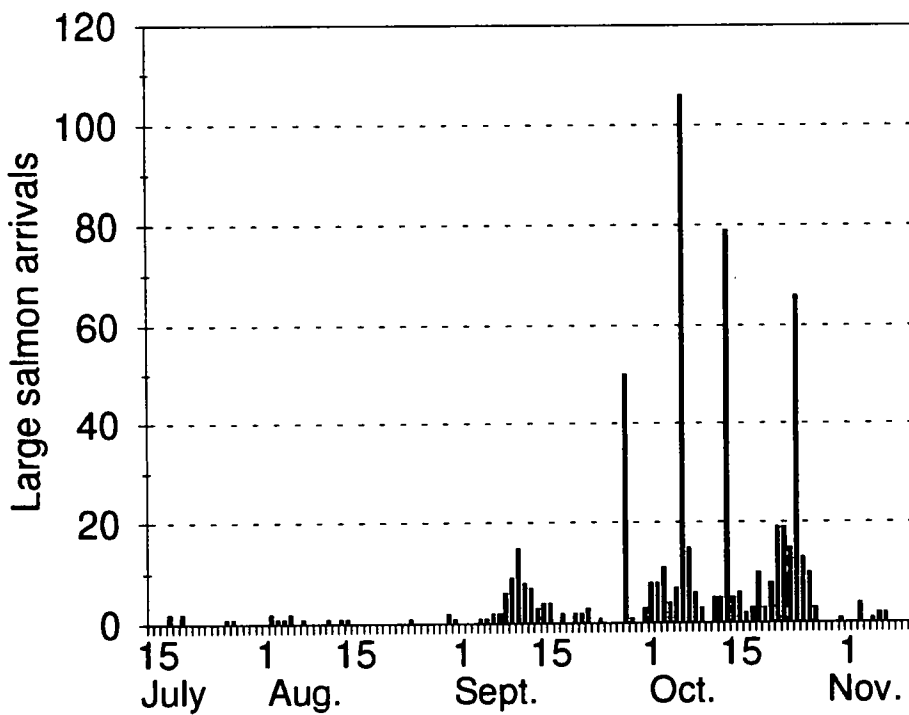
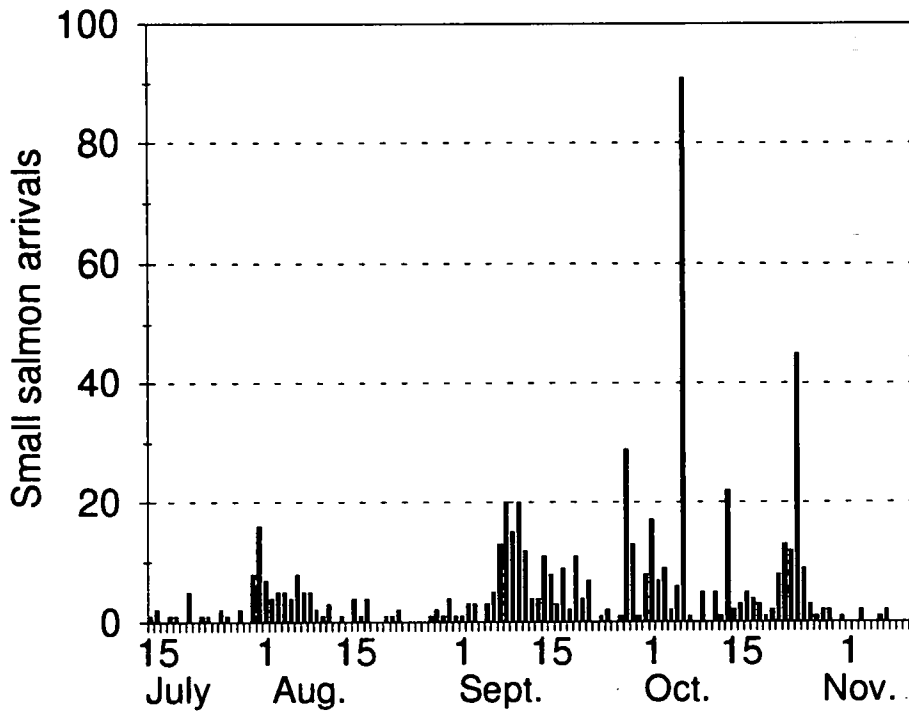


Fig. 2. Returns of Atlantic salmon to the Jacquet River counting fence in 1994.

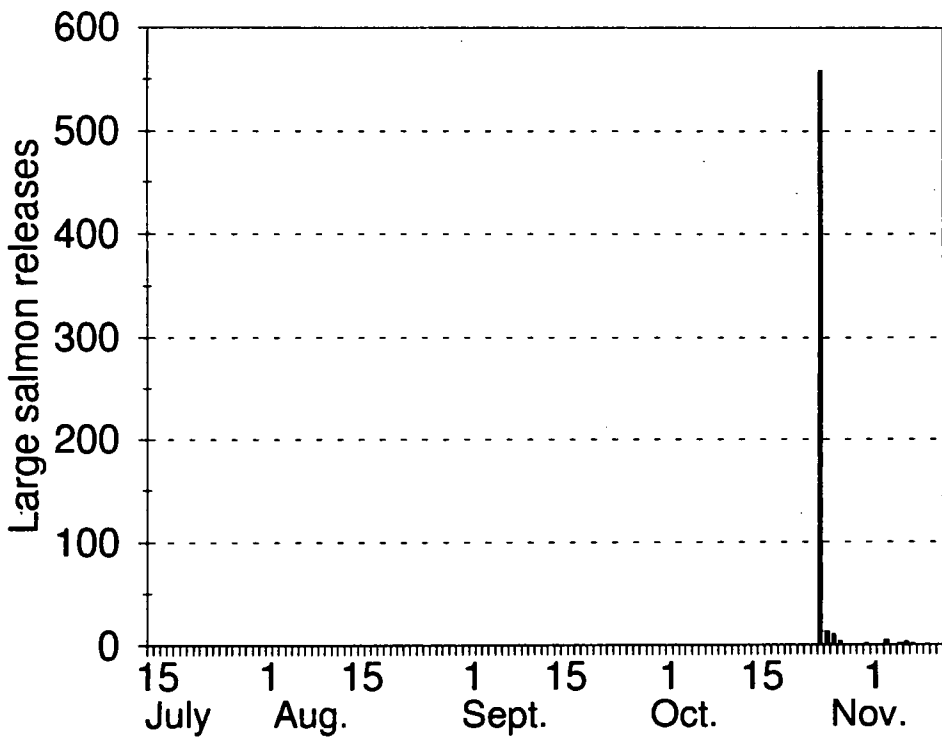
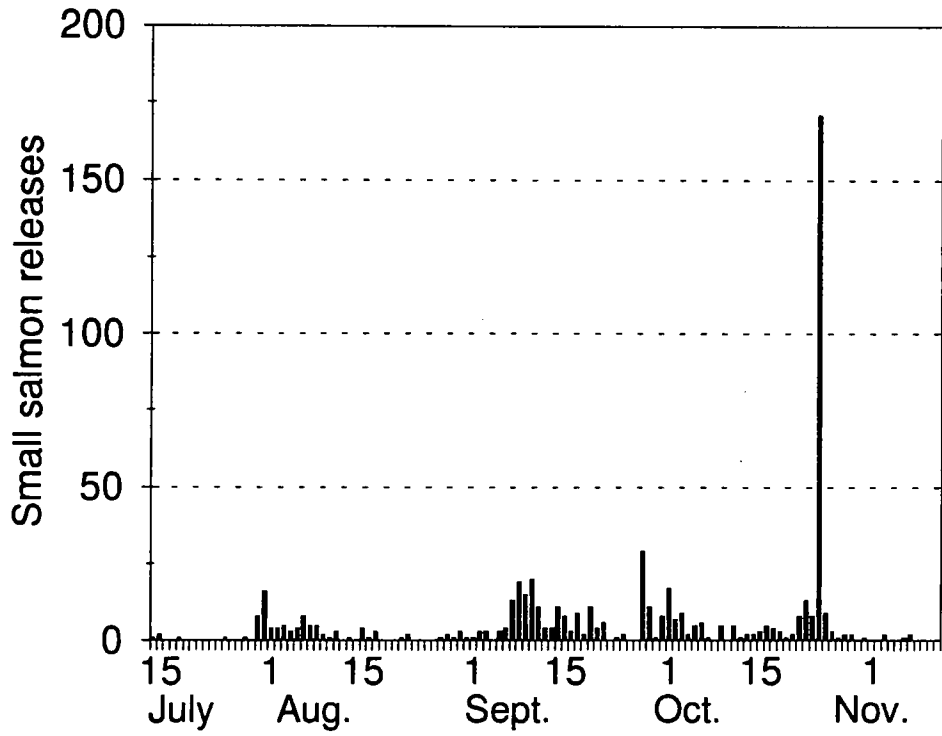


Fig. 3. Releases of Atlantic salmon above the Jacquet River counting fence in 1994.

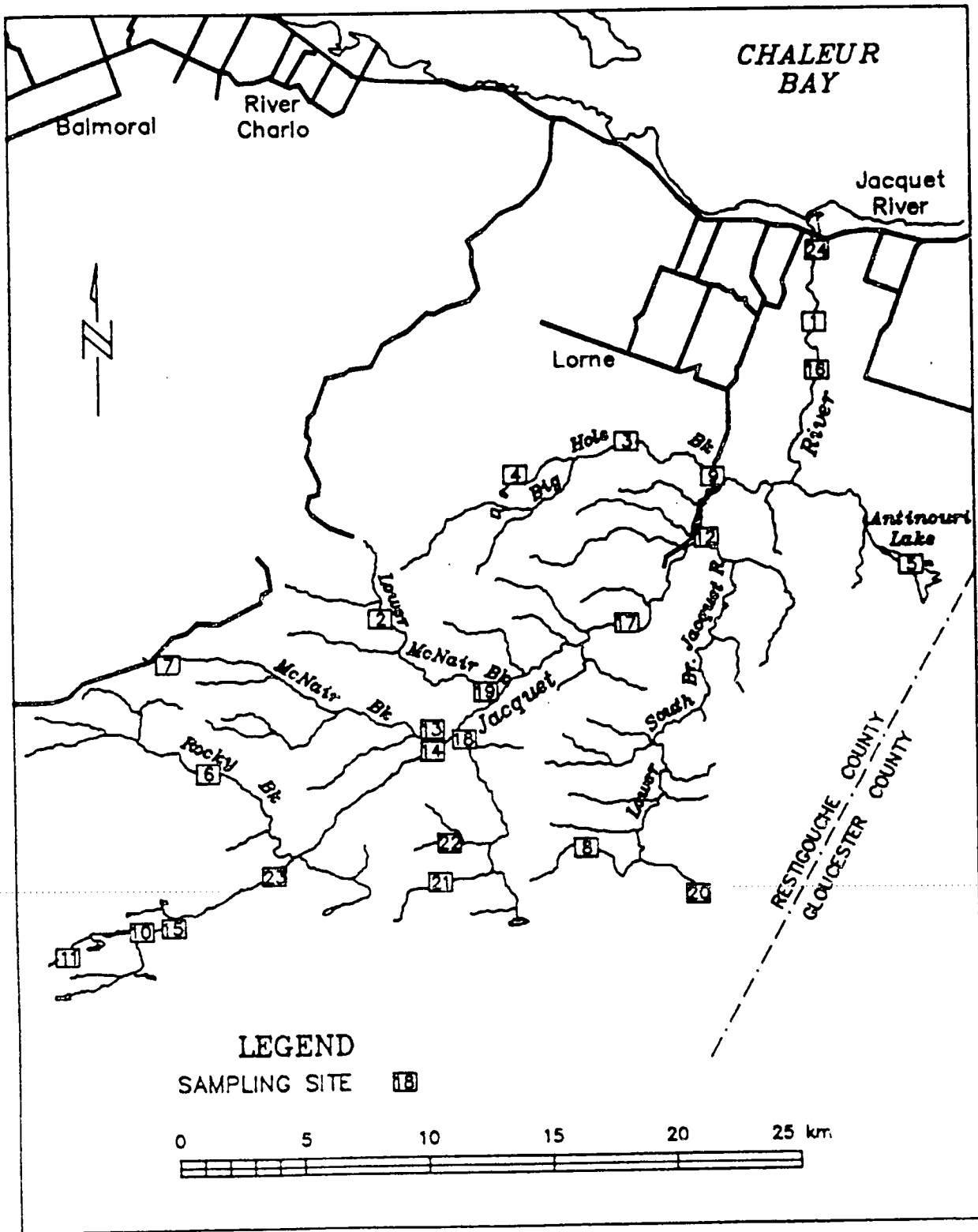


Fig. 4. Location of electrofishing sites on the Jacquet River, 1984 (from Ritchie, 1989).

Appendix 1. SFA 15 speckled trout broodstock removals and stocking records for 1994.

River	Broodstock collected	Eggs	Juvenile distributions		Location
			Stage	Quantity	
Nepisiguit	93	45,518	1+	4,500 800	Main River Portage Lake
Island Lake	67	10,300			
Big Tracadie	---	---	0+	17,000	Val Comeau satellite rearing site
Little Tracadie	161	20,438	0+	4,400	Pont Landry
Pokemouche ^a	na	na	1+	27,000	8 km above tidal portion
Caraquet ^a	na	na	1+	10,000	South Branch

^a Trout stocked by DNRE. Others were stocked by DFO.

Appendix 2. Trout spawner and redd counts for the Caraquet River. Data provided by DNRE.

Year	Spawner survey date	Number of spawners	Redd survey date	Number of Redds	Visibility
1985	Nov. 12	4	Nov. 12	42	Good
1986	Oct. 22	90	Oct. 22	94	Good
1987	Oct. 20	76	Oct. 20	90	Good
1988	----- no data -----				
1989	Oct. 23	62	Nov. 8	103	Good
1990	Nov. 5	34	Nov. 5	34	Poor
1991-93	----- no data -----				
1994 ^a	Oct. 25	271	Nov. 11	no data	Fair

^a spawner count may include trout stocked in June as 1+.

Appendix 3. Minutes of Science Workshop on Salmonids of Salmon Fishing Area 15.
December 8, 1994, Tracadie-Sheila.

Present:

Andrea Locke, DFO (Moncton)
Paul Cameron, DFO (Charlo SEC)
Alan Madden, DNRE
Bill Hooper, DNRE
Leon Lanteigne, SenPac Consultants

1. General comments:

- Mixup in time/place of meeting and list of invitees; salmon association representatives had apparently not been notified.

2. Landings:

- A. Locke presented salmon landings collected through DFO C&P; A. Madden commented that trends in landings in Middle and Tetagouche rivers seemed unrealistic.

3. Stocking:

- P. Cameron summarized stocking and enhancement activities (see attached)
- B. Hooper described stocking of 1+ trout to Caraquet and Pokemouche rivers. Approximately half of the trout stocked in the Pokemouche were probably angled this summer, following stocking in mid-July.
- spawner counts by A. Madden covered the stretch in the Caraquet that was stocked.

4. Spawner counts

- Data were summarized by A. Madden; several rivers were surveyed for the first time in 1994.
- Very few salmon in either Bass or Pokemouche rivers. L. Lanteigne says a C&P officer reported 100 salmon in tidal waters of the Pokemouche before spawning. Electrofishing by B. Hooper in early 1970's never recorded more than 6 salmon parr. L. Lanteigne also has not seen parr on this river.
- About 2/3 of the Big Tracadie was surveyed at the peak of trout spawning. There are probably 30% more salmon and trout present than what was counted.

4. Other

- L. Lanteigne hopes to conduct a study of trout bycatch in the eel fishery next year. Preliminary study suggests that most bycatch occurs during spring.
- A. Madden has submitted proposals to install counting fences on the Caraquet, Big Tracadie and Pokemouche in 1995. These counting fences would operate for 14-20 weeks.