

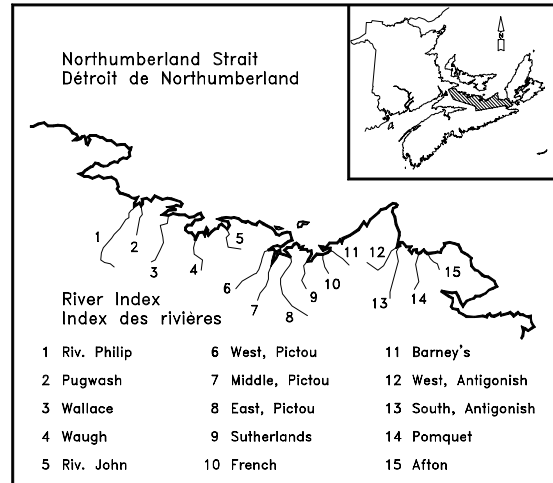
## Atlantic Salmon Northumberland Strait Nova Scotia part of SFA 18

### Background

*Fifteen rivers on the Northumberland Strait shore of Nova Scotia support Atlantic salmon stocks. Stock status information for 1996 is provided for nine of these stocks based on the conservation requirements and escapements calculated either from mark-and-recapture experiments (East River, Pictou and River Philip) or capture (exploitation) rates in the angling fishery. Additional information is provided on East River, Pictou; River Philip; and West River, Antigonish, which contributes to understanding of the status of the stocks in this area.*

*The eggs required to meet the conservation requirement for the Northumberland Strait area rivers are expected to come exclusively from large ( $\geq 63$  cm) salmon. Small ( $< 63$  cm) salmon are required to provide a 1:1 ratio of males to females in the spawning stock. East River, Pictou stock characteristics (large 75% female; small 95% male) were used to estimate the required spawners for East River, Pictou; John; Philip; Sutherlands; Wallace; Waugh; and West, Pictou rivers. South River stock characteristics (large 50% female; small 97% male) were used to estimate the number of spawners for the South and West, Antigonish, rivers.*

*The Atlantic salmon stocks of the Northumberland Strait area typically enter rivers in late autumn, usually after September 15. Aboriginal and sport fisheries occur on several rivers in the area.*

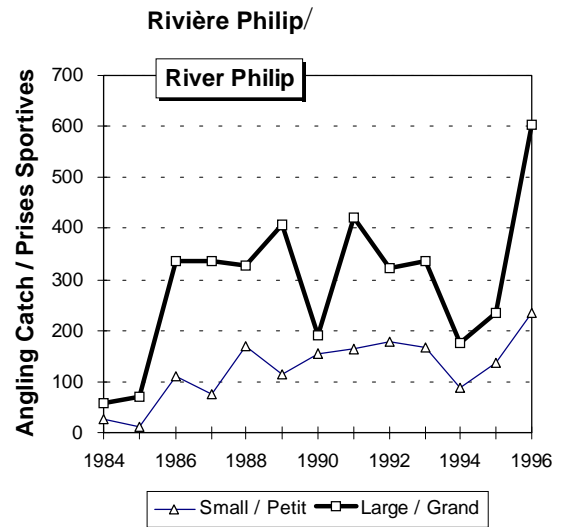
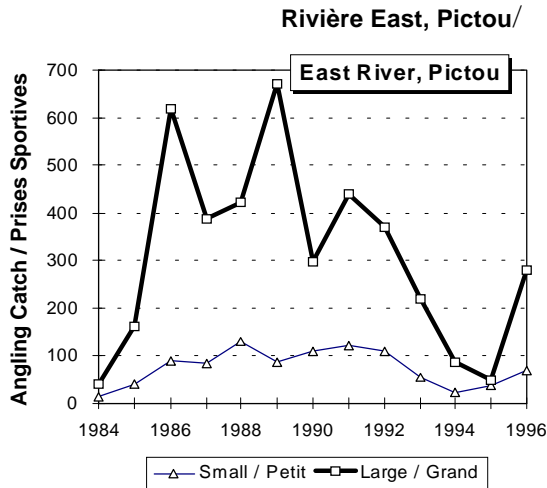


### The Fishery

Salmon angling seasons on the Northumberland Strait rivers have not changed for several years and were open from September 1 to October 31.

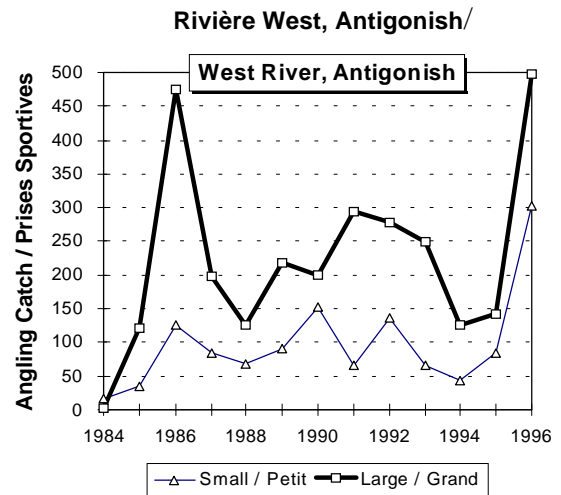
The Atlantic salmon sport catch on these rivers, as estimated from license stubs, was 471 small salmon ( $< 63$ cm fork length) retained, 352 small salmon released, and 1,985 large salmon ( $\geq 63$ cm fork length) released. The preliminary total angling catch of 2,808 fish in 1996 was three times the 1995 catch of 909 fish and twice the 1991-1995 average catch of 1,450 fish. On every river with reported catch, the number of large salmon released was higher in 1996 than in 1995. The total catch of large salmon in 1996 was 360% and 190% of the 1995 figure and the previous 5-year mean, respectively.

The sport catch of large salmon on East River, Pictou in 1996 (281 fish) was higher than in 1995 and 21% above the five-year (1991-95) mean of 233 fish. Small salmon catch (harvest and release) by anglers improved in 1996 (69 fish) for the second year in a row, and was equal to the five-year average catch of 70 fish.

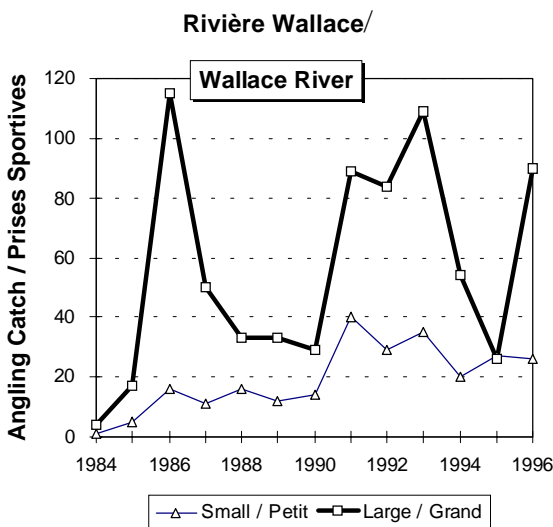
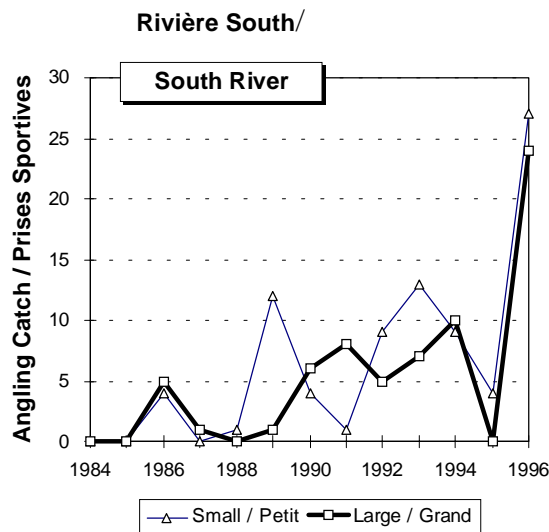
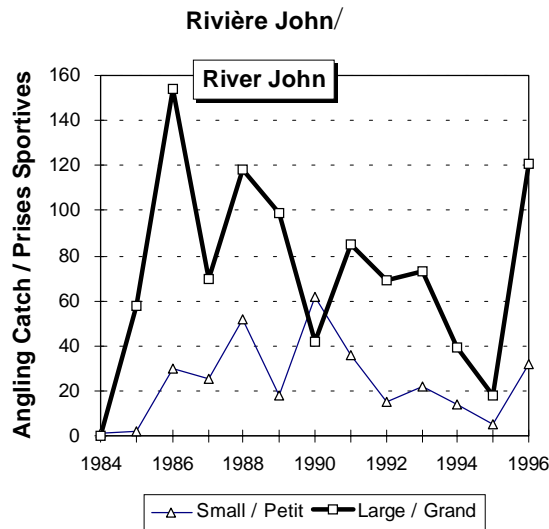


The catch of small salmon in West River, Antigonish in 1996 (302 fish) was the highest of the 1984-1996 period. In 1996, 498 large salmon were reported released as compared with the 142 angled in 1995 and the 1991-95 average catch of 217 fish.

On River Philip, anglers caught an estimated 233 small salmon, 172 of which were harvested. This catch level is well above the 1995 level (138 fish) and the five-year mean catch of 147 small salmon. A total of 604 large salmon were released in River Philip in 1996 as compared with 235 in 1995 and 298 on average over the period 1991-95.



Angling catches in the River John, South River and Wallace River also showed significant increases over 1995. Greatest increases were noted in the catches of large salmon.



Anglers fishing the other smaller rivers in the area are few and catches are low.

Five Aboriginal groups (Indian Brook, Millbrook, Pictou Landing and Afton First Nations, and the Native Council of Nova Scotia) either harvested salmon from Northumberland Strait rivers or had the rivers listed in their respective fishing plans or licenses. Pictou Landing reported harvesting 49 large and 11 small salmon on East River, Pictou. Millbrook First Nation harvested 45 large and 2 small fish on River Philip. Similar to previous years, the total harvest by Aboriginal groups in 1996 was low.

**Resource Status**

Mark-and-recapture methods were used to estimate stock status for East River, Pictou and River Philip. Adult salmon were captured in seine nets and marked with highly visible streamer tags and released. Snorkel divers floated the rivers and counted the number of marked and unmarked fish.

The estimated escapement of large salmon on East River, Pictou was 195% of the 271 large salmon conservation requirement. The small salmon escapement was 107% of the 57 fish required to provide a 1:1 ratio of males to females in the spawning stock. On River Philip, escapements also exceeded requirements; the large salmon escapement was 292% of the required 358 fish and the small salmon escapement was 125% of the required 75 fish.

The mean catch rate for the angling fishery for East River, Pictou and River Philip was estimated to be 0.60 from the population estimates and the estimated angling catch.

Snorkel divers conducted a survey of Sutherlands River after the close of the angling fishery and observed large and small salmon numbers which were 236% and 380% of the desired conservation levels, respectively.

Escapement estimates to the other rivers in the area were derived using the catch rate of 0.60 and the angling catch derived from the license stub reported catches. Escapement estimates indicate spawners were sufficient to meet conservation requirements on River John; Waugh River; West River, Antigonish; and West River, Pictou. The number of fish angled on those rivers was considerably higher in 1996 than in 1995. Using the same method, the estimated numbers of spawners in the South and Wallace rivers were estimated to be below the conservation requirements in spite of both having yielded higher catches in 1996 than in 1995.

Estimated escapements to the Wallace River were below the conservation requirement for the second consecutive year. Juvenile salmon densities in the Wallace River in 1996 were lower than those noted in recent years in the other rivers in the area.

The average juvenile densities in West River, Antigonish in 1996 exceeded 160 fry and 80 parr per 100m<sup>2</sup>. This suggests that the conservation requirement has been met or exceeded in West River in recent years.

### ***Environmental Considerations***

The September and October mean daily discharge on Middle River, Pictou, which is at the midpoint of the Northumberland Strait area, was high in 1996 relative to levels 1989-95. These increased water levels appear to have advanced river entry time and

thereby probably contributed to anglers catching proportionally more fish in September of 1996 than in recent years (1989-95).

### ***Outlook***

#### **Short term**

Based on past performance as indicated by recent large and small salmon returns and juvenile densities, returns in 1997 can be expected to exceed conservation requirements in all rivers except the Wallace River and possibly the South River. Although the status of the latter is uncertain because of the paucity of information, any deficiency relative to conservation requirements would be in large salmon rather than small salmon. Similarly, the Wallace River stock should return a surplus of grilse, but less than the required number of large salmon. Surpluses of both large and small salmon, to varying degrees, should be available in the other rivers in 1997.

#### **Long term**

Except for the Wallace River stock, and possibly the South River stock, the stocks in the area are in "good shape" and should continue to yield surpluses to conservation requirements in the foreseeable future, assuming no significant decrease in marine survival. Surpluses should be available as both large and small salmon but vary among stocks and annually.

### ***Management Considerations***

The returns of fish to the Northumberland Strait rivers are late in the autumn and anglers often have only two weeks to fish for them. Consequently, recreational fishing practices do not appear to be having a detrimental effect on these stocks. Current

regulations governing harvest may be too restrictive on some of the Northumberland Strait Nova Scotia area rivers.

The return estimates for the South River are based on a low number of angler reports and thereby insufficient to be conclusive about the status of the stock. Nevertheless, the low estimated escapement supports the use of caution in the 1997 fishing plan.

Low return estimates in 1995 and 1996 for the Wallace River stock, plus moderate juvenile densities, indicate there should be no directed harvest of large salmon in 1997.

Despite the apparent healthy status of most of the stocks in Northumberland Strait rivers, caution is recommended when allocating surpluses considering the uncertainty of the forecasts and the inability to adjust the fisheries in-season.

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### ***References***

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