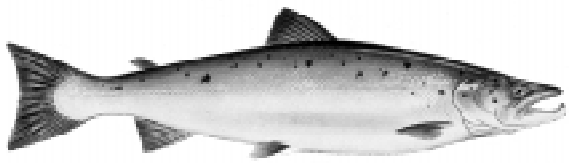
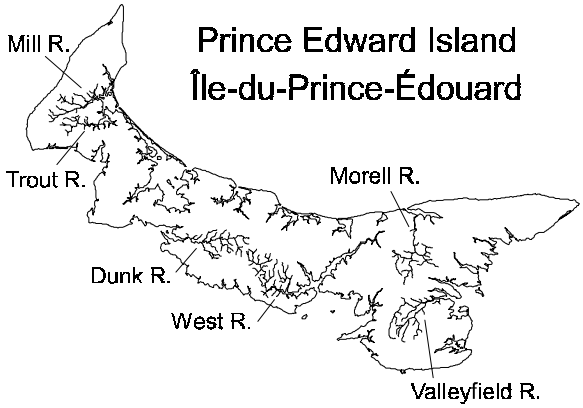


Atlantic Salmon
Prince Edward Island
SFA 17



Background

Prince Edward Island's original Atlantic salmon runs were largely eliminated in the 19th century by habitat destruction and overexploitation. Since the mid 1980s, community groups and government agencies have targeted several streams for intensive habitat enhancement and regular stocking. Most stocked fish are 2+ smolts which have spent a year in open ponds where they are fed artificial foods. However they are also exposed to predation, environmental variation, and natural food.

The salmon rehabilitation program has been most successful on the Morell River, which currently accounts for the bulk of PEI's returning salmon, harvested salmon, and salmon rod-days. Most salmon on the Morell are small (<63 cm; 85%), hatchery-reared (95%), and early-run (85%). Enhancement and stocking efforts have also been directed at the Mill, Trout, Dunk, West, and Valleyfield rivers, but returns on these rivers are lower than those of the Morell.

Salmon returns are considered to have met conservation requirements if fish reaching spawning grounds are sufficiently numerous to produce 2.4 eggs/m^2 of juvenile rearing habitat. However, runs of salmon to PEI rivers are largely independent of wild spawning because most returning fish are of hatchery origin.

Summary

- The run measured at Leards Pond on the Morell River declined from 1996 to 1997. However, the decrease may have been related to migratory changes due to the opening of a spillway, rather than to a fall in returns to the river.

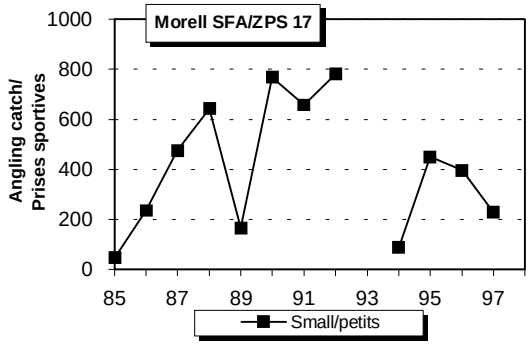
- Potential egg deposition above Leards Pond, unadjusted for harvest by humans, was estimated at two thirds of conservation requirements.

- Future returns to PEI rivers are likely to be similar to those of past years because runs are largely dependent on hatchery stocking.

The Fishery

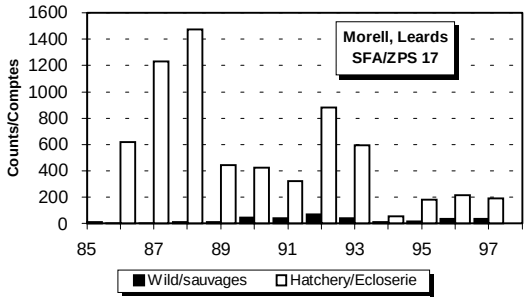
The basic salmon angling season on Prince Edward Island is 15 June - 15 September, but other seasons apply in some rivers. Salmon fishing begins on the Morell on 1 June. Closure dates vary from 14 October to 30 November, depending on the location. The daily bag limit on PEI is one small salmon, with a seasonal limit of seven. Retention of large salmon is not permitted.

A licence stub survey estimated a retained catch of 374 small salmon for PEI in 1997, including 230 on the Morell. Estimated rod days totaled 6,121, including 3,048 on the Morell. Angling catch was the fourth lowest of the 12 year time series. An agreement between the Department of Fisheries and Oceans and the PEI Native Council allowed for a harvest of 400 small salmon on the Morell River in 1996. One small salmon was taken.



Resource Status

Direct counts of wild and hatchery salmon ascending the fishway at Leards Pond, on the Morell's West Branch, are as follows:



Some fish enter Leards Pond by an unknown route that circumvents the counting facility. Mark-recapture experiments indicated trapping efficiencies of 40% in 1996 and 94% in 1997. Arrivals at Leards Pond, adjusted for these efficiencies, were 623 in 1996 and 246 in 1997. Trapping efficiencies were not measured in earlier years.

Trapping efficiency in 1997 may have been affected by a change in methods. Prior to 1997, the main spillway at Leards Pond was blocked by a barrier fence to divert fish into the fishway where they were counted. This barrier was not erected in spring 1997 because of erosion at the fence site. Instead a fence and trap were installed at the pond outlet to capture fish that ascended the spillway. In late June/early July, fish captured in the Leards Pond fishway showed signs of physical trauma including scale loss, small-scale bleeding within the skin, and flesh wounds that exposed underlying muscle tissue. Laboratory examination found no evidence that these wounds were caused by disease.

It was determined that fish had been injuring themselves in unsuccessful attempts to ascend the spillway. At the time the injuries appeared, water depth over the spillway was too low for fish to remain upright and swimming actions would have caused fish to strike their bodies and tails against the concrete substrate. After 9 July, when access to the spillway was blocked, the severity of lesions on incoming fish

diminished with time, and no new lesions were seen.

Direct mortality due to injuries incurred at the spillway appeared to be small. However, some fish which unsuccessfully attempted to ascend the spillway may have fallen back downstream and spawned elsewhere in the river. If so, counts at Leards Pond would have been depressed below what they would have been in the absence of the spillway problem. In addition, injuries incurred at the spillway may decreased the ability of fish to circumvent the counting facilities, thus increasing trap efficiency. For these reasons, the decrease in numbers of fish estimated to have entered Leards Pond in 1996 and 1997 may not reflect trends in actual returns of salmon to the Morell's West Branch.

Potential egg deposition above Leards Pond was calculated from estimated numbers of fish entering Leards Pond, minus broodstock removals. No adjustments were made for harvest by humans. Potential deposition was 122,086 eggs, which is 68% of conservation target.

Outlook

The Cardigan hatchery was divested from the Department of Fisheries and Oceans in fall 1997 under terms that provide for ongoing stocking programs. Salmon runs on the Morell and other PEI rivers will depend largely on the continued release of semi-naturally reared 2+ smolts from the stocking program.

Management Considerations

The Leards spillway is a hazard to migrating salmon and barriers should be maintained during the salmon run.

The 1997 salmon run above Leards Pond fell short of conservation requirements, in contrast to the previous year in which potential egg deposition was more than double requirements. However, the shortfall in 1997 may be due to migration changes induced by the spillway rather than to a reduction in numbers of fish returning to the river. Most returning Morell salmon are of hatchery origin and attainment of conservation requirements has limited impact on future returns. Therefore, no change is recommended in management regimes for Morell salmon.

Prince Edward Island salmon face habitat destruction due to agricultural, forestry, and road construction practices. In contrast to previous years, no major pesticide-related fish kills were reported in 1997. For the first time in three years the Profits Pond semi-natural rearing facility did not suffer a complete fish kill.

It is recommended that the state of salmon habitat on Prince Edward Island be subject to comprehensive scientific review.

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