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Sept-Iles, Québec**

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Steelhead Trout (*Salmo gairdneri*) on the North Shore of the Gulf of St. Lawrence, near Sept-Îles, Québec

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Fourteen steelhead trout (*Salmo gairdneri*) were captured in the Matamek and Moisie rivers on the North Shore of the Gulf of St. Lawrence, near Sept-Îles, Québec, in the late summer and early fall of 1979. Steelhead trout are not indigenous to this area. The relatively large numbers of fish taken and their presence in these two rivers on the North Shore may indicate an expanding distribution and a potential threat of colonization in this area of pristine Atlantic salmon (*Salmo salar*) habitat.

Key words: steelhead trout, *Salmo gairdneri*; geographic range, exotic fish

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À la fin de l'été et au début de l'automne 1979, on a capturé 14 truites arc-en-ciel (*Salmo gairdneri*) dans les rivières Matamek et Moisie sur la Côte-Nord du golfe du Saint-Laurent près de Sept-Îles, au Québec. La truite arc-en-ciel n'est pas indigène de cette région. Le nombre relativement élevé de poissons capturés, ainsi que leur présence dans ces deux rivières de la Côte-Nord peuvent être un signe d'une distribution en voie d'expansion et une menace possible de colonisation dans cette région d'habitat encore non touché du saumon atlantique (*Salmo salar*).

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THE North Shore of the St. Lawrence River in the Province of Quebec has a number of self-sustaining Atlantic salmon (*Salmo salar*) rivers which remain relatively undisturbed by development. The salmon forms an important part of the life style and economic well-being of the region by supporting commercial, sport, and native peoples' fisheries.

Biologists on the North Shore are concerned with the potential effects of introductions of nonnative salmonids on native populations of Atlantic salmon. The report of an established population of coho salmon (*Oncorhynchus kisutch*) in a New Brunswick stream (Symons 1978) has heightened this concern.

In 13 yr of operation of the Matamek Research Station on the North Shore only three stray salmonids have been captured. All were steelhead trout (i.e. sea-run rainbow trout, *Salmo gairdneri*), with one each taken in 1973, 1974, and 1976 (Gibson 1974, 1977). These incidents generated little concern because of the small number of fish and the long time intervals between captures. Here we report on the capture of

14 steelhead trout on the North Shore in late summer and early fall, 1979.

Study area — The Matamek and Moisie rivers are located on the North Shore of the Gulf of St. Lawrence about 25 km east of Sept-Îles, Québec. The Matamek River, a sixth-order stream (Strahler 1957), drains a basin of 687 km². The Moisie River is a ninth-order stream with a drainage basin of 19 811 km². Terrestrial vegetation is dominated by balsam fir (*Abies balsamea*) and black and white spruce (*Picea mariana* and *P. glauca*). The spruce/fir vegetation and lack of buffering capacity in the Precambrian Shield which forms a large part of the North Shore contribute a natural acidity to river water in the region. The pH ranges from 6.31 to 6.87 in the Moisie River, and 4.81 to 6.03 in the Matamek River.

The Matamek River supports a small population of Atlantic salmon (60 return spawners in 1979), which is limited to the lower reaches of the river by an impassable waterfall 5.8 km upstream. Salmon parr occur with brook trout (*Salvelinus fontinalis*) throughout their range in the Matamek River. The Moisie River is probably the best salmon river on the North Shore. Salmon range in this river is estimated at 380 km: the size of the adult run is large but unmeasured. Other salmonids occurring within the salmon range include whitefish (*Prosopium cylindraceum*) as well as resident and

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anadromous populations of brook trout.

Materials and methods — Fish were captured by seining, angling, gill netting, and in a fish ladder on the Matamek River 0.9 km upstream from the estuary. The fork length (FL), weight, sex, and state of maturity for each fish were determined, and a sample of scales from 13 of the 14 fish was taken for aging.

Results and discussion — Steelhead trout were captured between August 5 and October 3, with 11 of the 14 fish being taken between August 23 and September 4. Most steelhead (12) were captured in the Matamek River from August 5 to September 14. Our sampling of the Moisie River was limited. Despite this, on September 4 we captured a steelhead ~ 30 km upstream from the Moisie Estuary. A second steelhead was taken on October 3 in a gill net spanning the mouth of a Moisie River tributary 11 km upriver from the estuary.

The mean fork length and weight (range in parentheses) of these fish were 30.1 cm (27.2–34.2) and 321.1 g (203.5–464.2), respectively. There were eight males and six females; none mature or maturing. Five fish migrated to sea at age 2+, eight fish at 3+, and none had yet overwintered at sea. One fish showed typical hatchery erosion of the dorsal, left and right ventral, and caudal fins. Five fish bore what we considered to be distinct left ventral, dorsal (LVD) finclips. The remaining fish were unmarked. We have been unable to locate a recent record for LVD finclips for *S. gairdneri* in either the northeastern United States, Maritime Canada, or the Provinces and states bordering the St. Lawrence Seaway into the Great Lakes.

Biologists for the Province of Quebec reported a similar influx of steelhead trout in rivers on the South Shore of the St. Lawrence Estuary at about the same time as the appearance on the North Shore (Y. Côté, Ministère du Loisir, de la Chasse et de la Pêche, Québec, Qué., personal communication). This suggests a point of origin equidistant from both coasts, probably somewhere upstream in the St. Lawrence seaway or Great Lakes where extensive stockings of *S. gairdneri* in areas with access to the sea have occurred (MacCrimmon 1971).

There is a clear possibility of colonization of the North

Shore by steelhead trout. In addition to those captured in the Matamek and Moisie rivers another steelhead was taken at Rivière aux Rochers ~ 153 km east of the Matamek River (P. Bertrand, Ministère du Loisir, de la Chasse et de la Pêche, Sept-Îles, Qué., personal communication). It is evident these fish were widely distributed in the area.

Colonization of the North Shore by steelhead trout could be detrimental to populations of Atlantic salmon. Juvenile steelhead and salmon occupy similar habitats and use similar resources. Recent experiments indicate juvenile steelhead will displace salmon parr from favorable habitats in areas of sympatry (Gibson 1980). Salmon populations would presumably decline following colonization. However, the natural acidity of the water in the region may prevent successful reproduction by steelhead (Fromm 1980; Power 1980), and the lack of gonadal development in the fish we captured precluded breeding, at least in 1979.

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