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Fédération du Saumon Atlantique

Wild Salmon. Wild Rivers

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Research in action...

 Rick Cunjak - How Salmon Overwinter.docx



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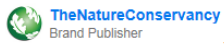
The CRI has recruited internationally respected researchers dedicated to developing aquatic science

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Top Nature Cams

Nature Cams: The Best Kind of Reality TV!

posted on Nov. 4, 2014, at 5:54 p.m.



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1. Salmon Cam: A Live Look at Migratory Fish



Atlantic salmon (*Salmo salar*)



Atlantic salmon creating nest and spawning

Description



The Atlantic salmon (*Salmo salar*), 'the leaper', has been called the king of fish, due primarily to its spectacular ability to clear seemingly insurmountable obstacles. The large body is long and hydrodynamic, measuring up to 150 centimetres in length and weighing up to 39 kilograms. Adult Atlantic salmon are usually silvery-grey with some black spotting, but become reddish with purple spots in the breeding season, when males also develop a hooked lower jaw for fighting.

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Atlantic Salmon and Migration

Each river has its own characteristic “run” of Atlantic salmon. In some rivers the salmon arrive early, while in others the run does not begin until autumn. Yet other rivers may have both spring and fall runs of Atlantic salmon. Some see the run heaviest in July, and then taper off.

For a river of interest to you:

- Learn about the characteristics of the river’s particular run
- Learn about the conservation needs for salmon on that particular river
- Learn how to read those stretches of a particular river that are of interest to you.

How Do Salmon and Trout Navigate?

In rivers they likely use their keen sense of smell, along with some visual clues. In the ocean, it is speculated that salmon may use polarized light and have a built-in magnetic compass.

It has been established scientifically that rainbow trout do have microscopic magnetic compass structures in their olfactory bulb organs. Their ‘compass’ consists of several granules of magnetite iron fused together, creating a form of needle. The pressure from the needle on cell structures gives the rainbow trout the sense of direction. This research was conducted at the University of Auckland, New Zealand.

How Does a Salmon Jump?

Atlantic salmon sense upwellings below a waterfall or rapids (see sidefact opposite). They will then move towards the bottom. When they feel ready for the effort, they accelerate to more than 20 mph in the upwelling area.

This allows wild Atlantic salmon to leap waterfalls as high as 12 feet (3.5m) high.

Since the direction of the Atlantic salmon’s leap is not always in exactly the right direction, they may need to make several attempts at leaping an obstacle.



Magnificent Migrations

Wild Atlantic salmon have several strategies for survival:

- *Travel to productive ocean feeding grounds:* Many Atlantic salmon runs head to waters off Greenland and Labrador once they reach the ocean. In Europe, salmon make a similar journey, some to Greenland waters, others to feeding grounds near the Faroe Islands.
- *Remain inshore, and return to spawn sooner:* Most grilse probably do not travel as far as Greenland waters, and return to their original river after a single winter at sea.
- *Remain in freshwater:* Landlocked Atlantic salmon are the same species, but tend to remain smaller, and most do not travel to the ocean. Instead they use a lake or river as a feeding ground, then ascend streams in order to spawn.

ATLANTIC SALMON - WHERE THE RIVERS ARE...

While it can be generally said that Atlantic salmon live in rivers from the Connecticut to Labrador, and up the St. Lawrence as far as Lake Ontario, they no longer live in all the rivers they once inhabited.

Below is an over view of the rivers where Atlantic salmon are presently found.

NEWFOUNDLAND

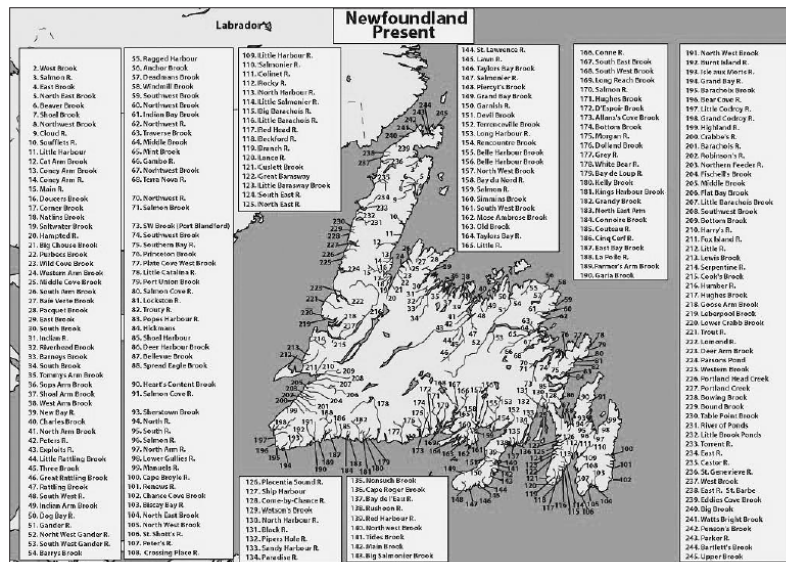
Newfoundland offers ideal habitat for Atlantic salmon. It has a large number of rivers of medium length with large uninhabited areas on the rivers' upper reaches. However, 5 rivers have lost their salmon populations.

In the mid 1990's, the range of Atlantic salmon in Newfoundland was substantially increased by opening large amounts of suitable habitat in four rivers - Torrent (223), Exploits (43), Terra Nova (68), and

Rocky (42) Rivers.

Newfoundland's rivers are also known for their waterfalls, and places such as Big Falls on the Humber, in the southwest, are wonderful locations for watching Atlantic salmon leap.

It is likely that Newfoundland's rivers were the first New World salmon rivers to be fished by Europeans, but no solid evidence exists for this.



LABRADOR

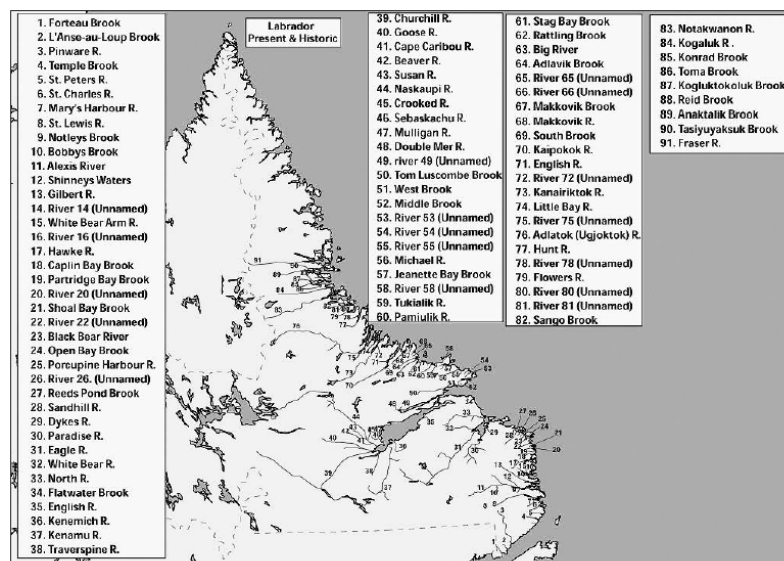
Labrador, along with Ungava Bay in Québec, represents the most northerly area in North America for Atlantic salmon. The Fraser River (# 91 on the map) is considered to be the most northern Atlantic salmon river in Labrador, although Dr. Rex Porter-Department of Fisheries and Oceans, St. John's, Newfoundland-reports that DFO Fisheries Officers have observed salmon occasionally in a few rivers above the Fraser, as far as the North River which is about a third of the way between the Fraser River and Cape Chidley (the northern tip of Labrador). Cold hardy, anadromous Arctic Char, however, are found as far as Cape Chidley in all northern Labrador rivers.

The vast majority of the rivers in Labrador still lie in a

pristine state, due mainly to the remoteness and low population density, which may account, in part, for the fact that Labrador is the only area in North America where no river - at least from the Fraser southward - has ever lost its salmon.

Another possible factor for the success of salmon in Labrador is the proximity of the feeding grounds off West Greenland (for 2 sea-year salmon), and the Labrador Sea (for 1 sea-year, i.e. grilse), resulting in fewer risks for migrating salmon. There is, however, a counterbalancing factor of juvenile salmon in northern Labradors requiring several summers of growth before they become smolt to begin the all-important migration to the sea.

Of the 91 rivers shown for Labrador, 28 are scheduled for salmon angling.



NOVA SCOTIA

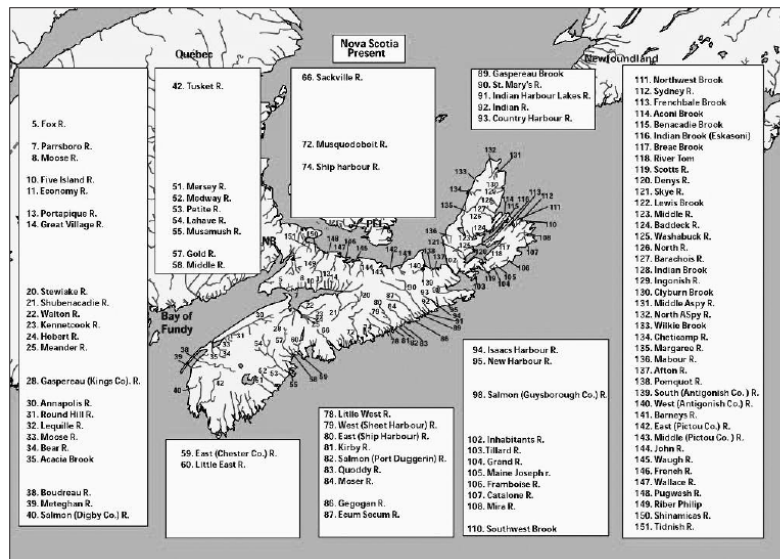
Nova Scotia's salmon rivers are generally short, rather than being part of long, and are without the complex watersheds found in many New Brunswick river systems.

Particular issues overshadow Nova Scotia salmon rivers. No other region, not even Lake Ontario and the upper part of the St. Lawrence River, where all its original salmon rivers lost their salmon, can match the 52 rivers in Nova Scotia whose salmon stocks were extirpated, mainly due to acid rain, an environmentally negative factor unique to Nova Scotia. Only three of of Nova Scotia's salmon rivers have been restored.

In the Inner Bay of Fundy many rivers have been

declared endangered, and surveys have shown wild Atlantic salmon have entirely disappeared from some of these. As for New Brunswick's Inner Bay of Fundy runs, these salmon do not stray far beyond the Bay of Fundy instead of migrating long distances to Labrador or Greenland waters as do Outer Bay of Fundy salmon.

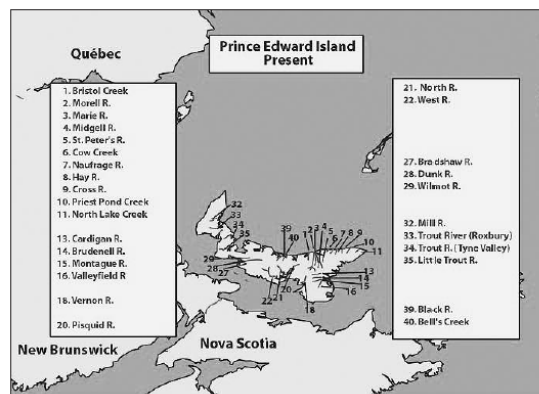
Salmon runs in the north of the province, in rivers exiting to the Gulf of St. Lawrence, are generally healthy, examples being the Margaree in Cape Breton, and River Philip on the mainland, not far from the NB border.



PRINCE EDWARD ISLAND

Prince Edward Island has a large number of short rivers supporting modest Atlantic salmon populations. A recent survey by the University of Prince Edward Island shows that many rivers thought to be devoid of salmon actually have modest populations of juvenile salmon, and potentially these salmon populations could increase significantly. Currently only the Morell, Dunk and West Rivers have enough salmon to support angling.

PEI is the most agricultural province in eastern Canada, and pesticide and soil runoff impact many rivers. Two million tons of soil enter the rivers annually, and since 1994 there have been two dozen fishkills due to pesticide runoff. Bringing these problems under control has the potential for greatly increasing the number of wild Atlantic salmon in PEI rivers.



NEW BRUNSWICK

In general all rivers connected to the Bay of Fundy have critically low populations of salmon, particularly the Inner Bay of Fundy rivers (rivers occurring clockwise, east of the St. John River, ending with the Annapolis River in Nova Scotia). Thirty-two of these rivers have been declared endangered with respect to their salmon populations by COSEWIC (Committee on the Status of Endangered Wildlife in Canada), of which 10 are in New Brunswick. A special case of a salmon river in trouble is the Petitcodiac River (#70 in map), the fourth most productive New Brunswick salmon river in the 1950s, whose salmon run has been almost extirpated by tidal gates installed at the river's mouth.

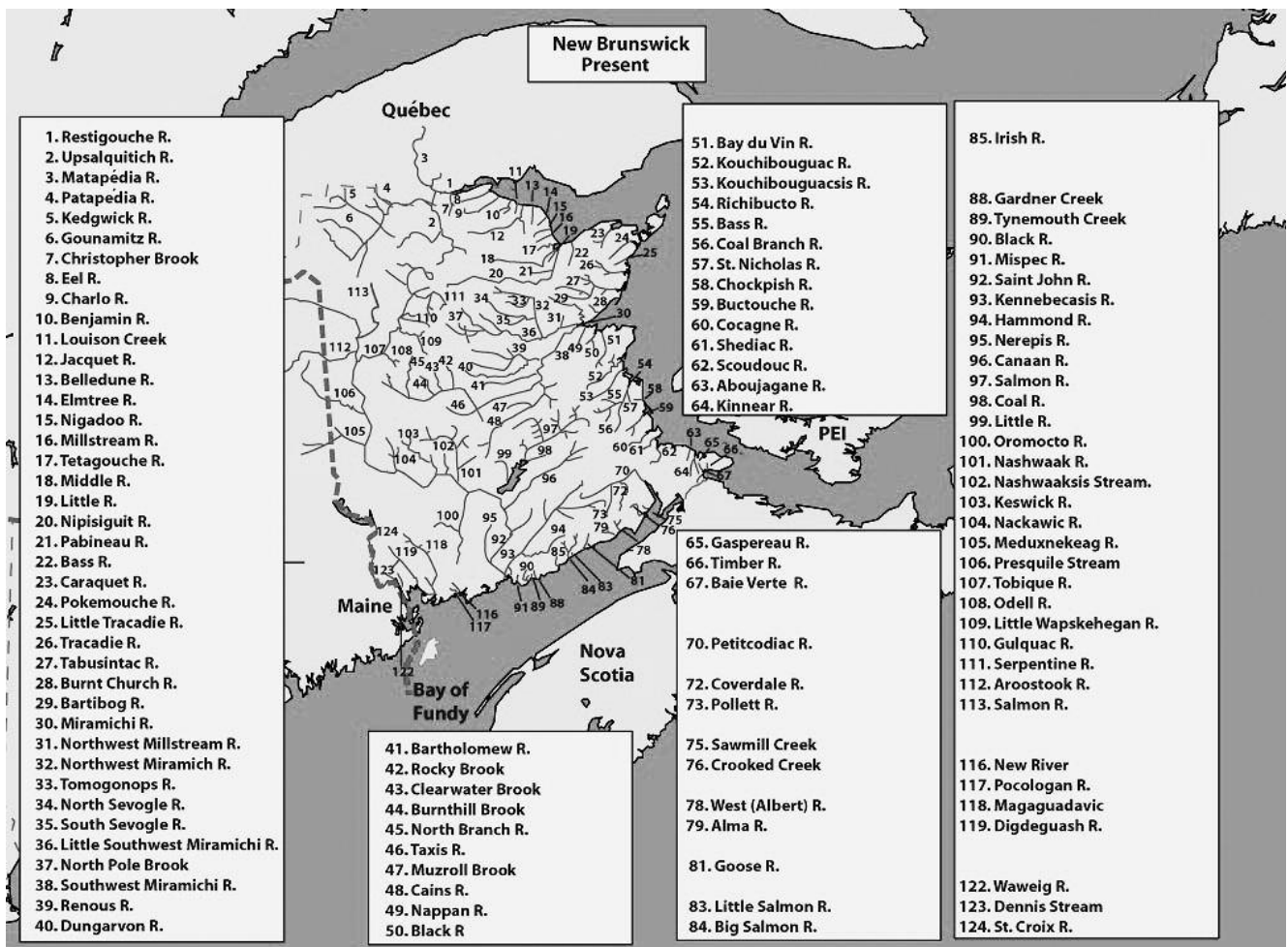
Recent research indicates that salmon from the Inner Bay of Fundy rivers migrate no further than the Gulf

of Maine, if even that far, before returning to spawn.

Outer Bay of Fundy rivers such as the St. John, Magaguadavic, and St. Croix have seen a critical decline in numbers since 1990.

Rivers exiting into the Gulf of St. Lawrence are in somewhat better shape than those in the Bay of Fundy. The Miramichi River is capable of producing more Atlantic salmon than any other river in North America. The Restigouche is noted for its large salmon which spend two, sometimes more, years at sea before returning to spawn.

While 17 rivers lost their salmon, in only three - the St. Croix, Aroostook and the Nipisiguit - have salmon runs been restored.



NB River Maps...

Information hard to find....for free

Why put up a site with so much useful information for a NB Salmon angler?

How to use these maps



Restigouche River System Map

Dungarvon River Map

Main Southwest Miramichi River Map

Bartholomew River Map

Nepisiguit River Map

Cains River Map

Little Southwest Miramichi River Map

Renous River Map

Northwest Miramichi River Map

Let's Take a Tour of the Miramichi River System...

Google Earth - Miramichi River System



NEW ENGLAND

Salmon populations are in grave difficulty in New England's rivers. New England has a number of long and complex river systems, including the Kennebec, Penobscot, Merrimack and Connecticut. In southern New England, major restoration efforts remain on the Connecticut and Merrimack River systems.

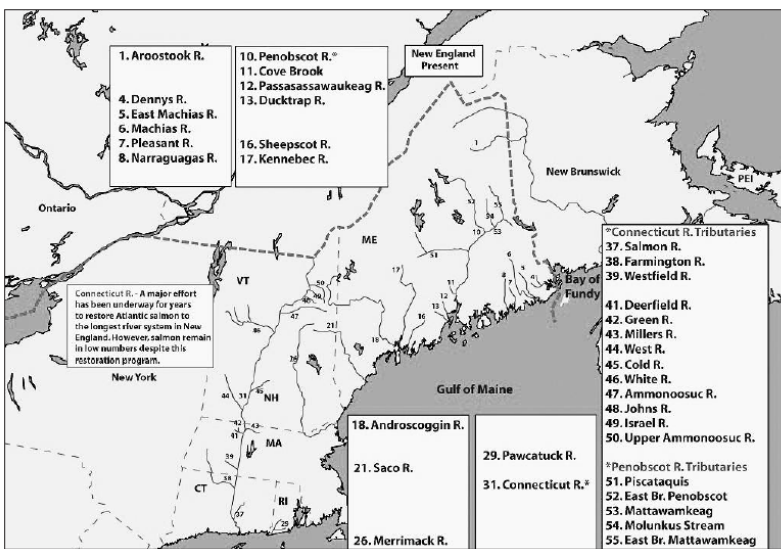
In eight - all in Maine - Sheepscot, Ducktrap, Cove Brook, Pleasant, Narraguagus, Machias, East Machias and Dennys - the salmon are considered still wild (i.e. genetically correspond to historic populations). The populations of these rivers have been declared endangered by the U.S. Federal Government. In the other rivers, stocking of hatchery fish has kept salmon swim-

ming in the rivers, but still at critically low levels.

The greatest remaining Atlantic salmon river in New England is the Penobscot. While numbers have been dropping, the run is still significant. Alas, many dams form barriers to salmon migration on the Penobscot and other New England rivers, and have had a devastating effect on populations.

In New England, many of the rivers have seen their salmon populations extirpated, and relatively few have seen some degree of restoration for those populations.

Note that in Maine, all angling for sea-run Atlantic salmon is closed. Angling for landlocked salmon is permitted in some lakes and rivers.

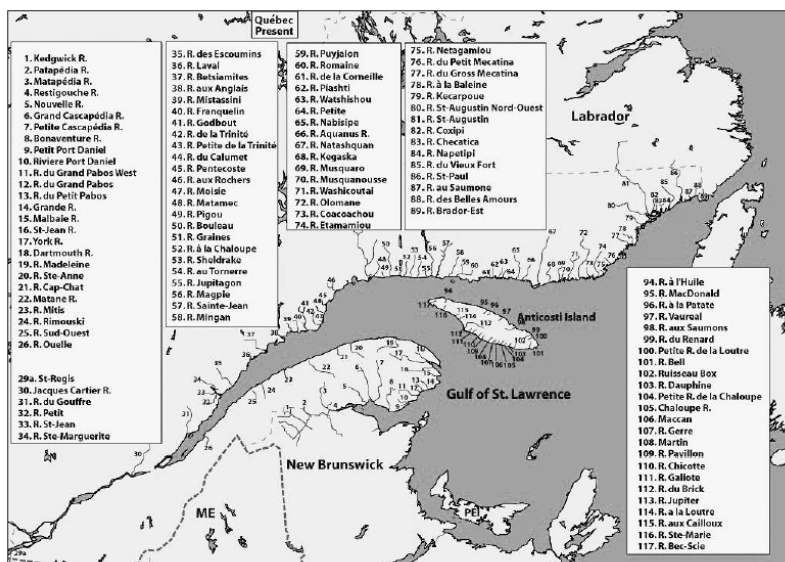


QUEBEC - SOUTH

Roaring salmon rivers of the North Shore, crystal-clear emerald green rivers in the Gaspé, and historic rivers of the St. Lawrence South Shore fished since the 1600s, show the array and diversity of salmon rivers in Québec.

While some Québec rivers are meeting spawning targets, not all is well. Five rivers branching from the upper portions of the St. Lawrence lost their salmon runs, some more than a century ago. In only one, the

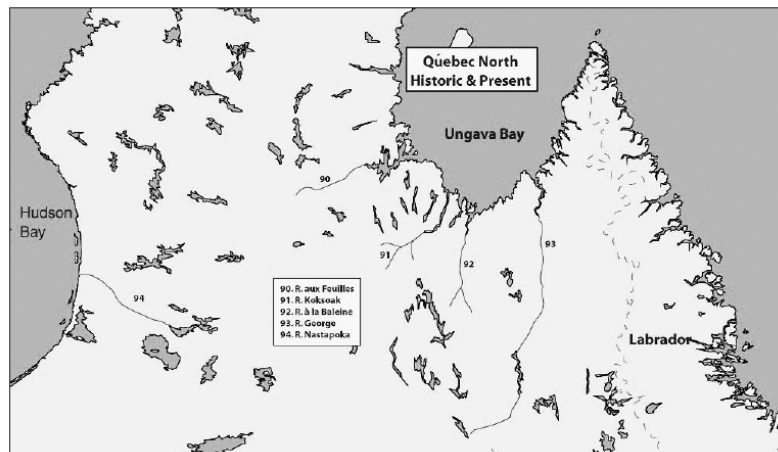
Jacques Cartier, was the salmon run restored. Hydro dams continue to be barriers to migration upstream and down on many other rivers. The St-Francis River, emptying into the St. Lawrence just downriver from Montreal, is thought to have been the most "upstream" St. Lawrence tributary to have had truly anadromous, i.e. sea-run, salmon.



QUEBEC - NORTH

Being in a comparatively cold climate with a short summer season, it may take Atlantic salmon parr up to eight years before they become smolt and migrate to sea. In addition, some populations of these Atlantic salmon, such as in the Koksoak (#91) and the Nastapoka (see below), consist of some fish which spend the summer in the estuary like sea trout, and others which are truly anadromous, migrating to feeding grounds off west Greenland.

Note: Shown in the lower left corner on this map is another far northern river, the Nastapoka, about half way up the east coast of Hudson Bay, which has Atlantic salmon.



ONTARIO & NEW YORK

Up until probably the late 1700's, rivers flowing into Lake Ontario supported an extremely large population of Atlantic salmon. These runs, however, were very susceptible to the destruction of migration routes upstream and down by dams. By the 1880s few salmon were left.

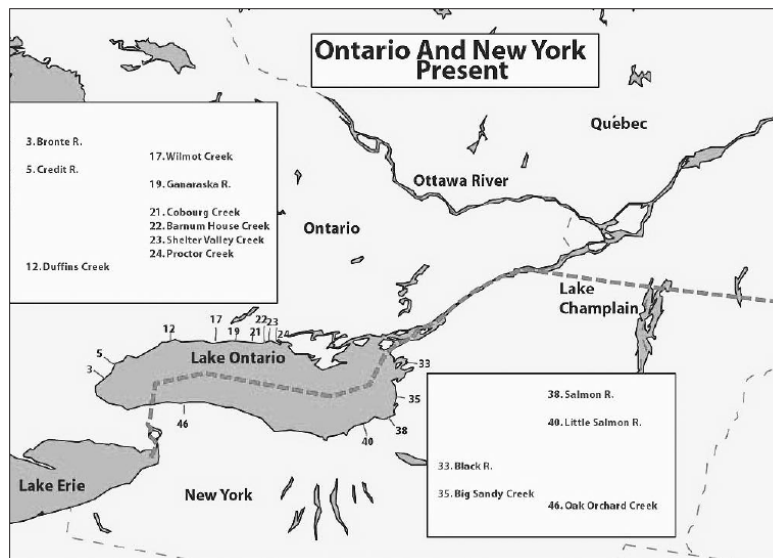
Did some of these Atlantic salmon migrate down the St. Lawrence to the Atlantic Ocean? The available evidence - a few scale samples from museum specimens - suggests not. Lake Ontario apparently served as the "ocean".

Atlantic salmon could not pass, of course, the impenetrable barrier presented by Niagara Falls. Thus they

were not found in the upper Great Lakes.

Recently there have been major efforts to restore Atlantic salmon to their ancestral streams around Lake Ontario, and presently they are found in 11 streams in Ontario and New York. Unfortunately introduced salmonids from the West Coast appear to be interfering with such restoration efforts by competing for habitat, food, and spawning sites.

It would be a major success to reintroduce Atlantic salmon into the Lake Ontario rivers on a self-sustaining basis, but it will be a difficult goal to reach.



Atlantic Salmon in North America

Historically, Atlantic salmon occurred in abundance in eastern North America: in Canada from Ontario eastward, and in the United States in all the New England states, and the State of New York. In all, **875** rivers had healthy populations of wild salmon, historically. Currently the number of Atlantic salmon rivers is down to **747** with populations reduced in size - substantially so in most cases.

This set of maps traces the fate of North America's Atlantic salmon rivers.



For detailed examination, it has been necessary to divide the salmon's natural range in North America into smaller areas. Because of its size, Québec has been further subdivided into two regions, north and south.

The salmon rivers have been categorized as follows:

HISTORIC - Originally had Atlantic salmon

EXTIRPATED - Original salmon population is lost

RESTORED - Atlantic salmon are now re-established in rivers which had lost their populations

PRESENT - Rivers currently having wild Atlantic salmon populations

ENDANGERED - Rivers whose Atlantic salmon populations have been officially declared endangered; applies only to rivers in New England (Maine), New Brunswick and Nova Scotia

Smolts abound: Making Atlantic salmon spawn in upstream habitat paying dividends

By John Holyoke, BDN Staff
Posted May 19, 2014, at 10:32 a.m.

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Attachments

Rick Cunjak - How Salmon Overwinter.docx

My Places.kmz