

# Fish Friends - 2019

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# Introduction

- Atlantic Salmon – History, Importance
- Atlantic Salmon – Life Cycle, Dangers
- Trout
- Programs – MSA
- Tank Care

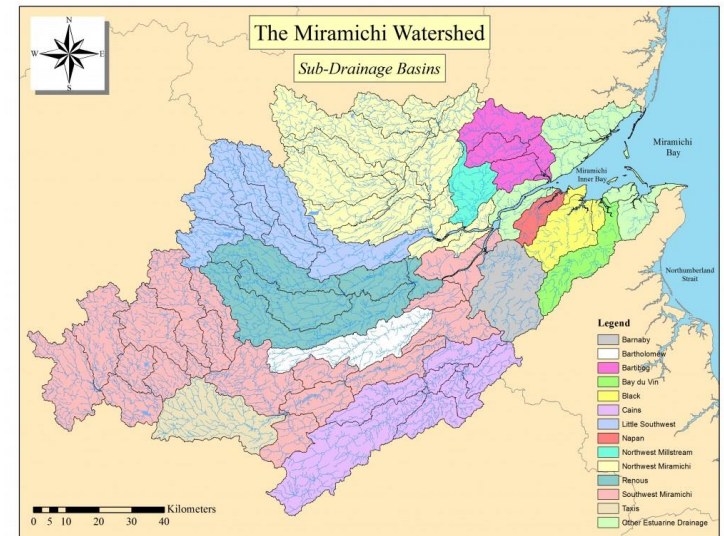


# Atlantic Salmon *History and Importance*

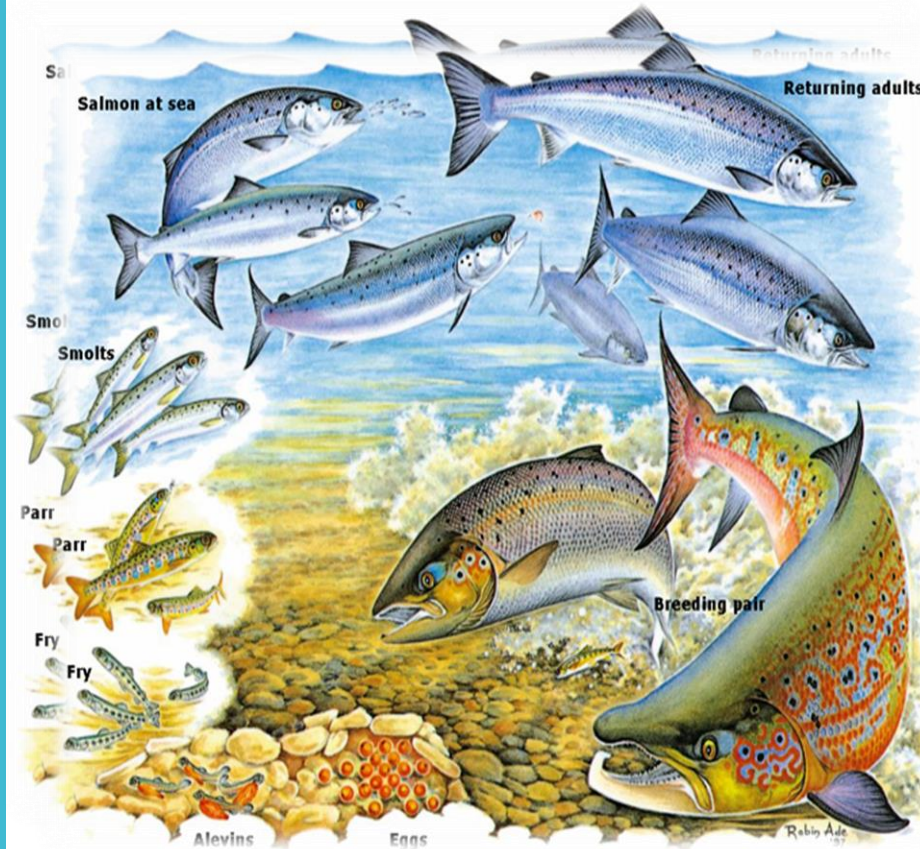
- Mi'kmaq First Nations followed Atlantic salmon
- Worked hard for their food and told stories of their bounty
- 1650, the first white man arrived in Miramichi bringing a new way of life including trade
- Caused over exploitation, careless destruction of stocks and environment
- Ineffective conservation strategies or action
- Atlantic salmon provide opportunities to empower people with the ability to provide for their families
- They provide a sense of community
- With their loss we could see a decrease in quality of life in a social as well as economic manner

# Atlantic Salmon *History and Importance*

- Miramichi watershed covers 13, 547 km<sup>2</sup>
- Produces 20% or more of all North America's salmon.
- The estuary is a trap for sediment, nutrients as well as chemical and mining run off
- Habitat destruction from deforestation, over-fishing and poaching, and climate change are taking their toll on the salmon population.



# Atlantic salmon Life Cycle

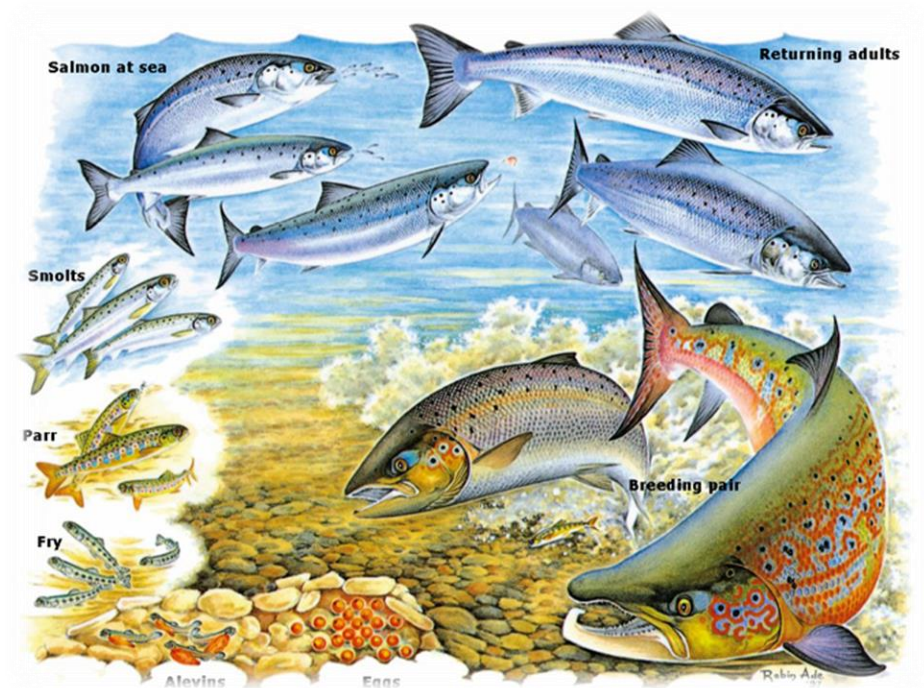


- Anadromous species – most of their growth is in salt water but, adults return to spawn in native freshwater streams after a 2 – 7 year trip at sea
- The eggs incubate through the winter months and hatch as alevins in spring
- Alevins move deeper into substrate when they feed off their yolks
- Grow into fry
- 30 – 79 mm in length depending on available food and water temperatures



# Atlantic Salmon *Life Cycle*

- After a year or two the salmon have grown into parr
- Between 80 and 120 mm
- Depending on available food and water temperatures
- 2 – 4 more years the salmon have grown into smolt.
- Begin their long journey to sea during spring freshet and when waters have reached at least 10 °C



# Atlantic Salmon *Dangers*

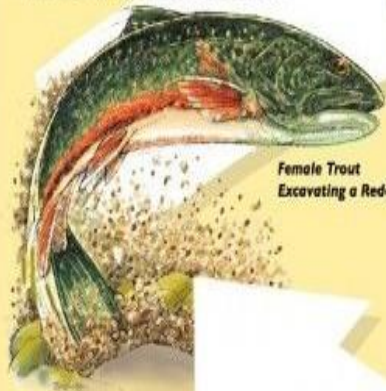
- Eggs are preyed upon by water fowl, juvenile salmon and trout
- Juvenile Atlantic salmon are preyed upon by waterfowl and other fish species and snakes
- Adult salmon are prey to whales, dolphins, seals, sea lions and other fish
- Anthropogenic sources of loss include habitat degradation from dams, culverts, over-fishing, logging industry



# Trout Life Cycle

## FALL:

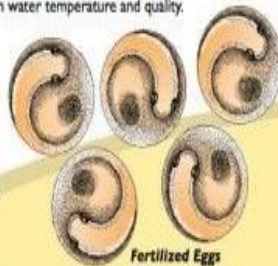
Adult females (2 to 5 years of age) select a spot for a nest, called a redd. A gravel stream bottom with a steady flow from underneath is an ideal location. Using her tail, the female clears a pit to lay the eggs. Female trout ranging between 5 to 10 inches in length will lay between 20 and 400 eggs. The male brook trout fertilizes the eggs as they sink to the stream bottom. After being fertilized, the eggs are then covered with gravel by the female. About 1 to 2 percent of the eggs will survive to adulthood.



Female Trout  
Excavating a Redd

## WINTER:

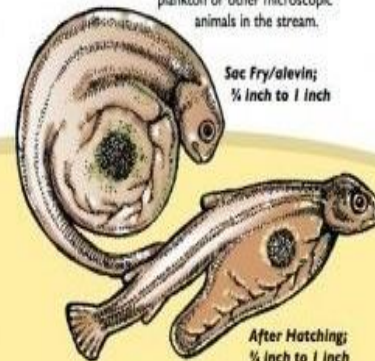
Fertilized eggs develop. Within about two weeks, the egg develops eyes (eyed egg-stage). The egg gets oxygen from the water flow around it. Nutrition for the trout comes from the egg yolk. Water temperatures must stay within the 35 to 55 degree range for brook trout. At this stage, the trout are very sensitive to changes in water temperature and quality.



Fertilized Eggs  
(Eyed Egg-Stage);  
1/4 inch or less in diameter

## SPRING:

Developing eggs, still in the redd, hatch from February to March. Hatch date depends on stream temperature and quality. Fry, still living in the gravel, live off the yolk sac (sac fry or alevin). When the sac is used up, the fry emerge from the gravel to begin eating. This usually happens between March and April. Fry will eat plankton or other microscopic animals in the stream.

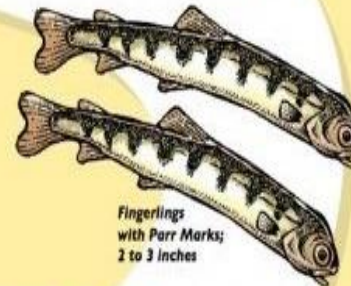


Sac Fry/alevin;  
1/4 inch to 1 inch

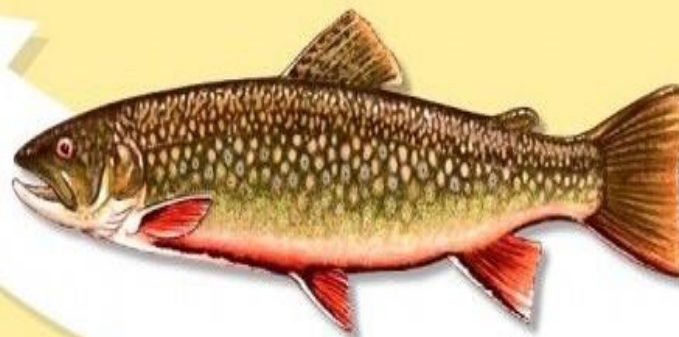
After Hatching;  
1/4 inch to 1 inch

## SUMMER:

To hide from predators, young trout spend time in shallow water hiding under and around rocks. They eat small insects and plankton. Young trout grow quickly and reach 2 to 3 inches long by the end of the summer. As the fry continue to develop, vertical lines called parr marks begin appearing along their body. These bars help camouflage the young trout and protect them from predators. When the trout have parr marks, they are called fingerlings or parr.



Fingerlings  
with Parr Marks;  
2 to 3 inches



## BROOK TROUT ADULT:

They are Pennsylvania's state fish and only native trout. A brook trout's body is dark green with light "wormy" lines across the top. Their fins are orange with white edges. Red spots with bluish halos dot the body, and their belly appears orange in color. The tail is nearly square.

Adult;  
5 to 10 inches



# MSA *History*



- Oldest operating Atlantic salmon hatchery in Canada
- First buildings and ponds constructed in 1873
- Salmon eggs were collected and incubated that very year
- Since then, has been operated continuously growing trout and salmon
- Today the hatchery has many new features and has shifted its priorities to research

MSA  
Programs  
*Beaverdams*





MSA Programs  
*Electrofishing*  
*Smolt Tracking*



# Tank Care

- Make sure water hovers around 4°C
- Remove dead eggs every one to two days – helps with fungus
- Keep the tank shaded – eggs and alevins like the dark
- When yolk is almost gone – introduce food
- Release

