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

Google Earth - Miramichi River System

MREAC
MIRAMICHI RIVER ENVIRONMENTAL ASSESSMENT COMMITTEE

http://www.mreac.org/

NOTES - Miramichi Watershed.pdf

MISSION

The Miramichi River Environmental Assessment Committee is a community based multi-stakeholder organization dedicated to the continual improvement of environmental quality of the Miramichi River ecosystem with emphasis on the Miramichi watershed.

MREAC will accomplish this mission by:

- Constructive consultation, cooperation and partnering with government, industry, municipalities and other stakeholders wherever possible.
- Supporting the advancement and application of scientific knowledge.
- Promoting and supporting an appropriate level of enforcement of environmental regulation.
- Active involvement in independent environmental monitoring.
- Promoting the responsible use of technology in environmental improvement.
- Celebrating and promoting the Miramichi River's environmental qualities and values as appropriate to sustain a healthy sense of pride and stewardship.
- Venturing beyond our ecosystem boundary when needed to understand external factors impacting our watershed, to gain useful knowledge and promote sharing of information and technological exchange.

QUICK FACTS

Location: Northeast New Brunswick, Canada

Eco Regions: Maritime Lowlands, Chaleur Uplands and Northern New Brunswick Highlands

Lenght of River: Southwest Miramichi River is 250 km, stretching from Miramichi Bay to Boiestown, NB and Northwest Miramichi River is 122 km, when combined with the estuarine portion totals a length of 440 km.

Size of Watershed: 13,465 sq km, 23% of New Brunswick's land mass, where 300 sq km is estuary and the remainder is freshwater

Depth of River: The inner channel averages 4 m in depth, where the navigation channel averages 6-10 m in depth

Tides: Estuary tides range from 0.2 - 1.2 m

Population: Approximately 57,000 people in the watershed, including 2,000 Aboriginals from 3 major First Nations Communities (2006 Census data)

Geology: Silurian and Ordovician rocks of the Miramichi Highlands, Carboniferous near the estuary shoreline and Sandstone found throughout the watershed

Protected Natural Areas (PNA):

- Bay Du Vin Island (PNA Class 2)
- Big Rocky Brook (PNA Class 2)
- Black River (PNA Class 2)
- Cains River (PNA Class 2)
- Dungarvon Whooper Spring Woodlot (PNA Class 2)
- Goodfellow Brook (PNA Class 2)
- Gover Mountain (PNA Class 2)
- Kennedy Lakes (PNA Class 2)
- Shinnickburn (PNA Class 2)
- Portage Island National Wildlife Sanctuary

American Eel

Species At Risk (SAR):

- Piping Plover (Endangered)
- Striped Bass (Threatened)
- American Eel (Special Concern)
- Wood Turtle (Threatened)
- Brook Floater (Special Concern)
- Prototype Quillwort (Special Concern)

Wood Turtle

Common Fish: Atlantic Salmon, Brook Trout, Sea Lamprey, American Eel, Alewife, Buleback Herring, American Shad, Rainbow Smelt, Atlantic Tomcod, Striped Bass, Dace, Chubs Sticklebacks, Flounder (Sand, Smooth and Yellowtail), and Capelin

Crustacean/Shellfish: Lobster, Oysters, Mussels, Quahogs and Soft-shelled Clams

Wildlife: Black Bear, Moose, White-tailed Deer, Bobcat, Coyote, Fisher, Beaver, Muskrat, Weasel, Rabbit, Racoon, Skunk, Squirrel, Mink and River Otter

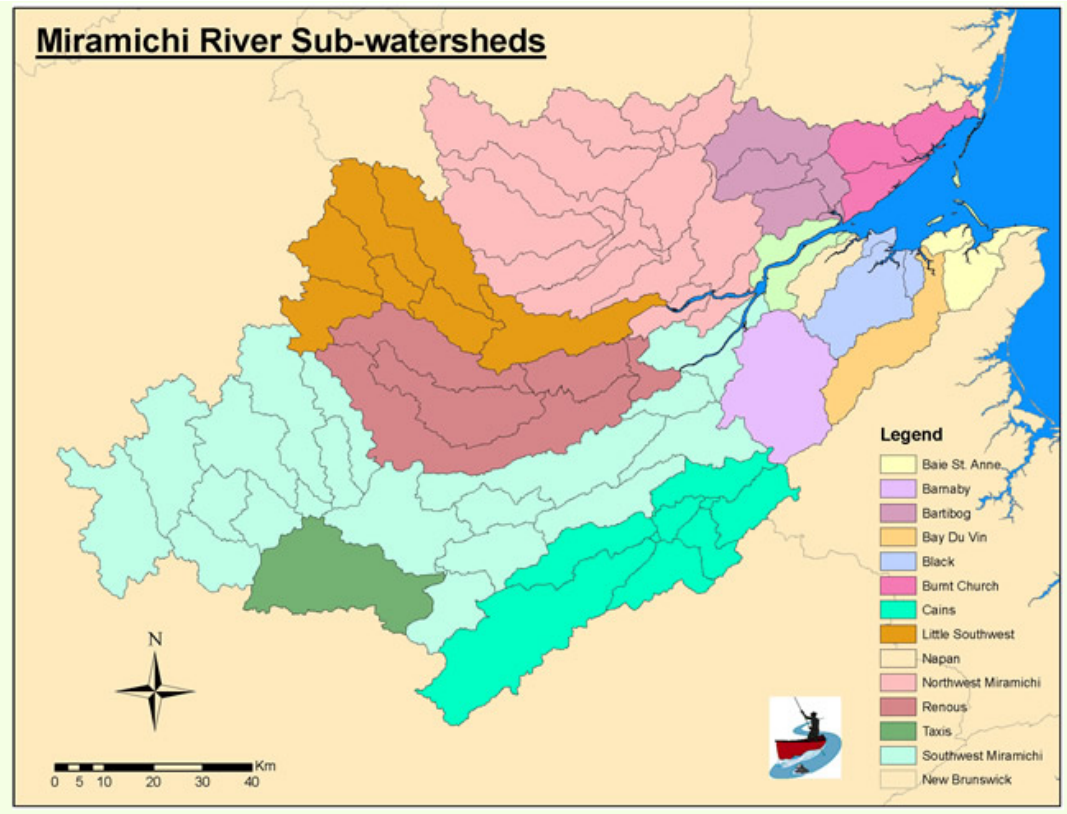
Resource Utilization: Mining, Forestry, Agriculture, Fisheries, Peat Extraction, Ecotourism, Recreation and Tourism

Kennedy Lakes

Data complied from New Brunswick Department of Natural Resources, New Brunswick Department of Environment, Statistics Canada, Environment Canada, COSEWIC and MREAC.

Header photos contributed by Nelson Cloud, Melissa Price and Kara Baisley

http://www.mreac.org/subwatersheds.html



http://canadianriversinstitute.com/

READING A RIVER

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Magic on the River - MODULE 3

READING A RIVER,
READING A SCALE,
KNOW THE FLY ROD THAT MATCHES YOU

Introducing the 21st Century Angler!

What makes a 21st century angler? First, there needs to be an awareness of the resource, that is, how plentiful, how fragile, and how vulnerable it is to others who may not be so aware. For instance, for the Atlantic salmon, it is a struggle for survival today more than ever.

Wouldn't it be wonderful to stand at the edge of a river and "know", with a quick glance, that it is indeed, the right (or wrong) place to angle? It is possible to learn this skill that is so often thought as being reserved for "old wise men of the river". The key is patience, perseverance, and common sense.

Why is "Reading the Water" an Integral Part of the Experience?

It is a truly rewarding experience to approach a stream, survey it, and then to cast your line to immediately catch a fish.

For an experienced angler, this isn't just a chance occurrence. It comes from effectively surveying an area to determine if fish inhabit this space. Like solving a puzzle, reading the water requires common sense and an analytical approach.

Some key characteristics of streams:

- W*ater runs downhill.* Everything else follows from this basic fact.
- Depending on the *shape* of the streambed and its drop in elevation, this will determine the stream's changes in depth and speed.
- The *character* of the streambed will create areas that vary the speed and direction of the flow.
- Streambeds can consist of *bedrock, mud, clay, gravel, boulders and various other debris.*

Salmon Sense Currents

Atlantic salmon and trout are able to sense currents through sensing organs within their ***lateral line.*** *Through most of its life in streams, Atlantic salmon are 'programmed' to face up-current, and hold their position.*

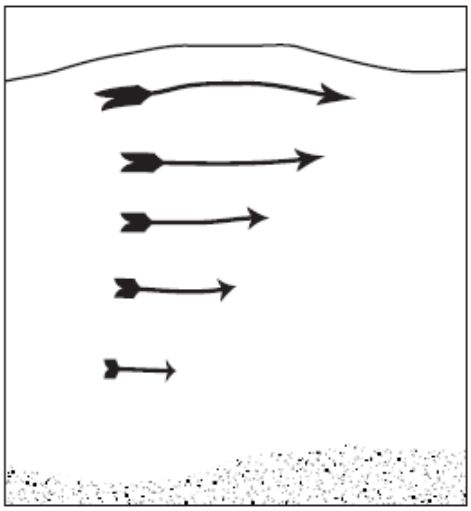
However, changes in the hormone balance while Atlantic salmon are becoming smolt change that behaviour to swimming down-current, especially during night-time.

Atlantic salmon also use their ability to sense current in order to find upwellings below rapids and waterfalls. These upwellings allow them to boost their speed as they power up over the obstacle on their migration back upstream as adults.

Get To Know the Flow — Puzzling out Currents

Learning the basic rules about water flow will help you understand a stream. It will help you understand where food accumulates, where salmon and trout swim, and where they will lie quietly, using the least energy.

- While water tries to flow smoothly, the stream edge and bottom cause resistance. This makes water currents fastest near the surface, and away from the edges of the stream.
- Turns in a streambed, obstructions such as boulders or trees all help to break up the stream's currents into many different currents. As they flow downstream, over time they will eventually merge. New obstacles almost always continue to break up this even flow into more swirling currents.



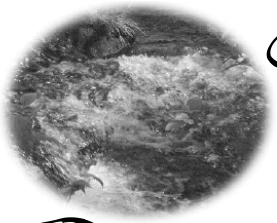
First rule: *Currents are likely to flow faster near the surface than near the bottom of a stream.*

What is a Current Seam?

A **current seam** occurs where two different current speeds meet and run alongside each other for a while before merging into one (see page 51). Current seams offer ideal places for fish to rest and have access to a variety of food. Trout will lie in the slower water, taking advantage of the fact that food dislodged or pushed along by the faster water will be swept by them. Salmon in migration upstream do not eat, but will still take advantage of these areas to reduce energy use.

It would take more effort, and hence burn more precious calories, to fight the current and chase after a meal. Unless competition is fierce, a fish—especially a large fish—will seek out the easiest, most economical way to eat. In moving water, feeding fish will usually lie facing upstream where there is shelter from the moving water and the current will bring dinner within easy reach.

Words to Help You Understand Currents



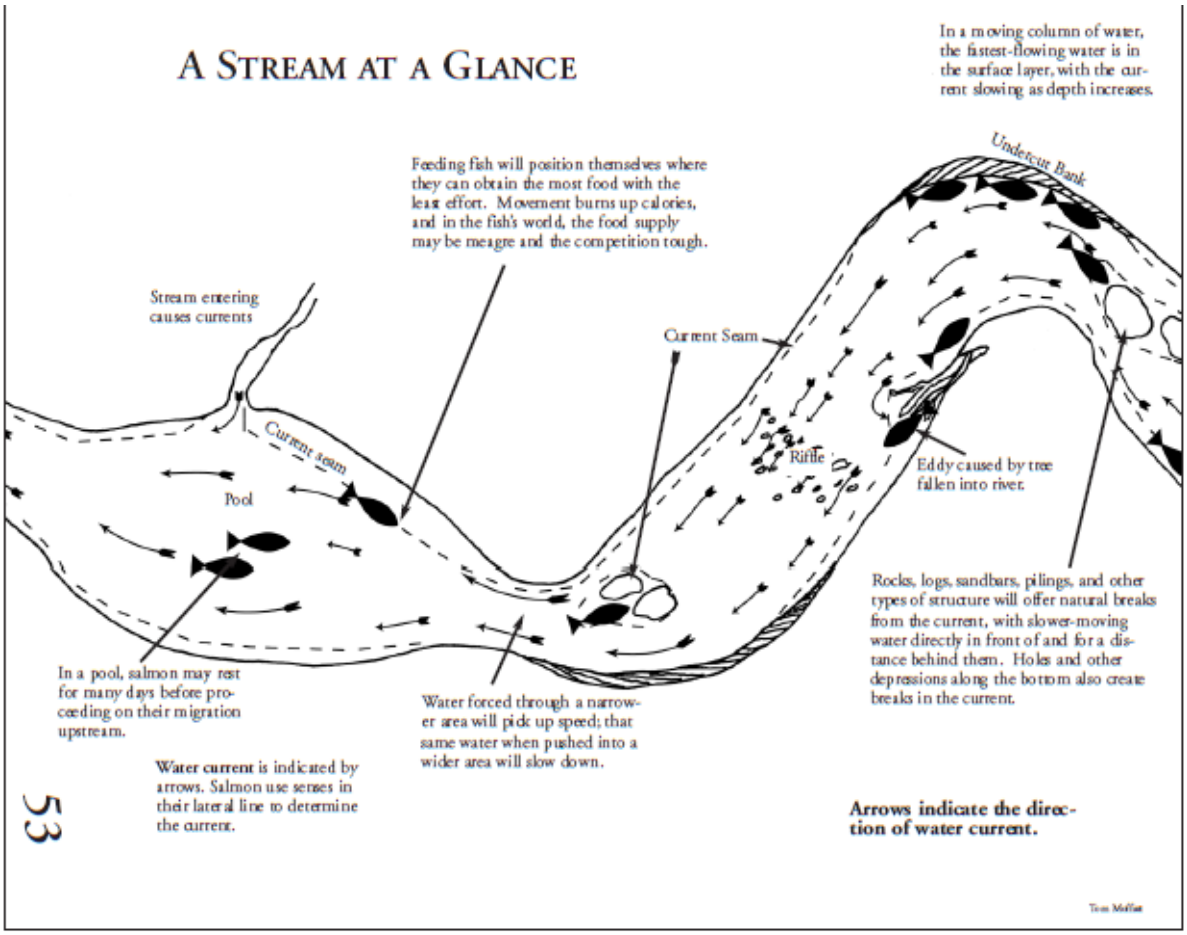
Eddy: A submerged boulder or log is the first place most anglers learn to look for fish. The obstruction slows down water and creates an eddy, a slow, swirling area on the downstream side.

Undercut: An area where the bank overhangs the water, is another good place to look for trout. Undercuts are usually formed on the outside of a curve, where fast moving water cuts the channel more deeply than it does on the inside. There is usually a nice, deep lie at the bottom of the channel.

Gilbert van Ryckevorsel

Pools are wide, deep sections of water. Salmon usually rest in the slow water at the bottom of the pool. They tend to feed at the head or tail of the pool, because there is a constriction there to funnel food items together.

Riffle: An area where friction breaks up a stretch of water. Riffles are usually caused by beds of small to medium sized boulders.


A Stream at a Glance
In a moving column of water, the fastest-flowing water is in the surface layer, with the current slowing as depth increases.
Undercut Bank
Feeding fish will position themselves where they can obtain the most food with the least effort. Movement burns up calories, and in the fish's world, the food supply may be meagre and the competition tough.
Stream entering causes currents
Current Seam
Current seam
Pool
Riffle
Eddy caused by tree fallen into river.
Rocks, logs, sandbars, pilings, and other types of structure will offer natural breaks from the current, with slower-moving water directly in front of and for a distance behind them. Holes and other depressions along the bottom also create breaks in the current.
In a pool, salmon may rest for many days before proceeding on their migration upstream.
Water forced through a narrower area will pick up speed; that same water when pushed into a wider area will slow down.
Water current is indicated by arrows. Salmon use senses in their lateral line to determine the current.
Arrows indicate the direction of water current.
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Tom Moffat

Clues to Look for in Streamside Exploration:

1. Direction of stream flow
2. Disturbance of the surface to give hints on water speed, stream bottom unevenness
3. Speed of stream flow in different stream areas, and where eddies and other areas of calm water exist
4. Stream curvature, that affects current speed
5. Riffle areas
6. Where is it likely that side streams or springs flow into the stretch of stream or river.
7. Imagine the ways in which higher water flows and levels, and lower water flows and levels, will impact the stream bottom.That may help in planning other trips to the stream.

Attachments

My Places.kmz

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Magic on the River.pdf

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