

## READING A RIVER

READING A RIVER,

**NOTES - Reading A River.pdf**

READING A SCALE,

**Magic on the River - MODULE 3**

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:

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- *Water 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*

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*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.*

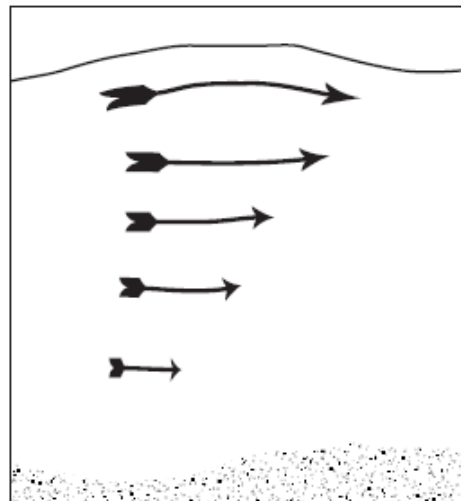
*Atlantic salmon also use their ability to sense current in order to find upwellings below rapids and waterfalls. These upwellings allow them to boost their speed as they power up over the obstacle on their migration back upstream as adults.*

## Get To Know the Flow — Puzzling out Currents

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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?

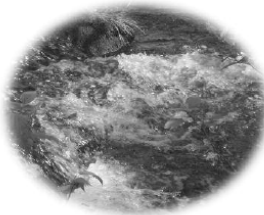
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A **current seam** occurs where two different current speeds meet and run alongside each other for a while before merging into one (see page 51). Current seams offer ideal places for fish to rest and have access to a variety of food. Trout will lie 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

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**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 Rieckevoort

**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.

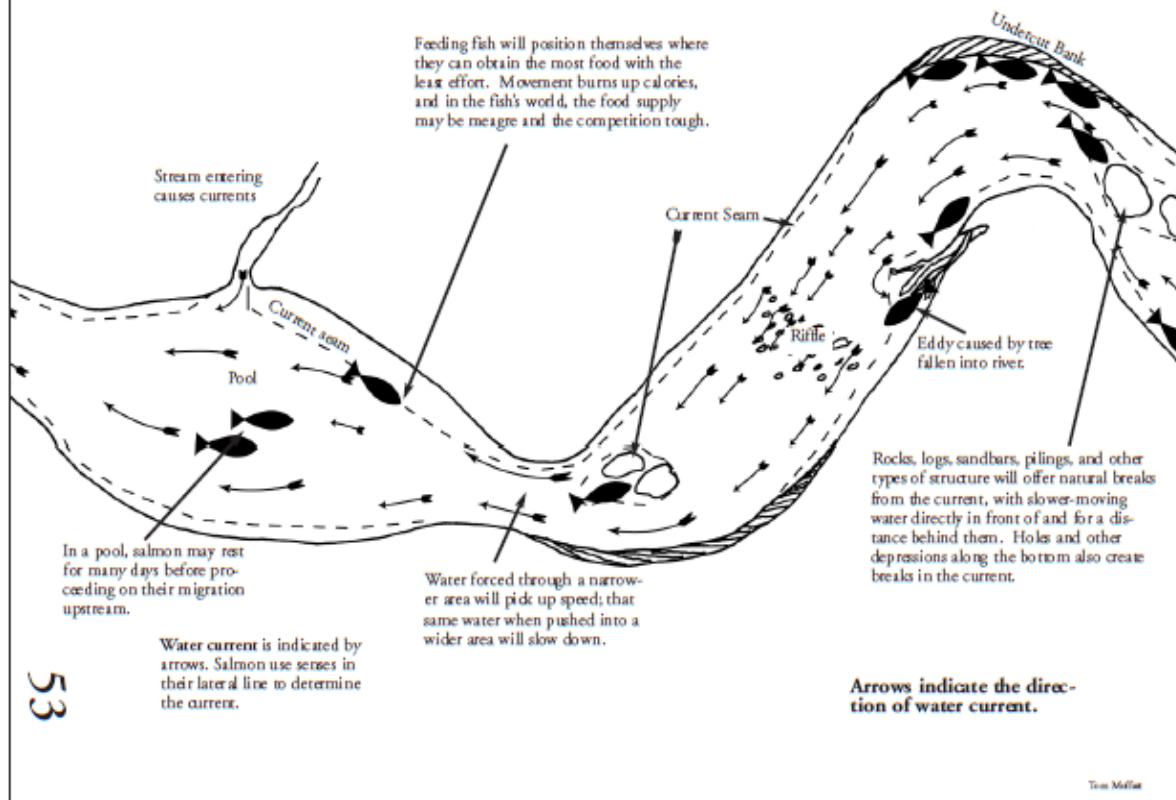
**Riffle:** An area where friction breaks up a stretch of water. Riffles are usually caused by beds of small to medium sized boulders.



### 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.

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

Pool

Current Seam

Riffle

Undercut Bank

Eddy caused by tree fallen into river

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.

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.

Water current is indicated by arrows. Salmon use senses in their lateral line to determine the current.

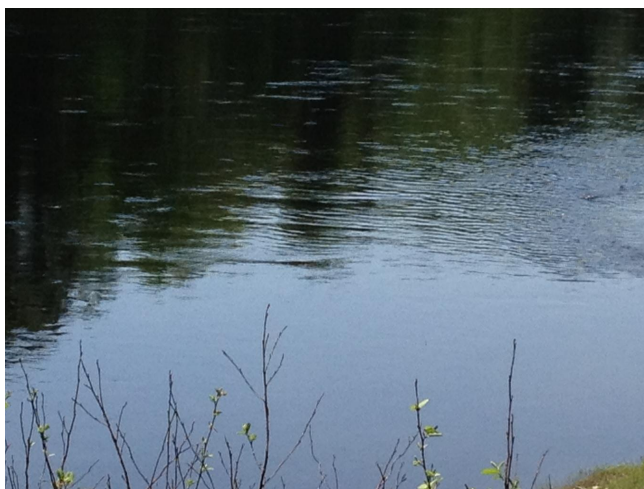
Arrows indicate the direction of water current.

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Tom Mullan

**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.



# HERE IS WHAT A RIVER NEEDS TO GIVE TO A SALMON OR TROUT...

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## Oxygen

- *Fish will thrive in oxygen-rich waters.* Most animals cannot exist long without a supply of oxygen
- Wave action, riffles, wind, and green plants all help dissolve oxygen into the water.
- Stagnant, very warm, weed-choked water tends to have less oxygen and, as a result, fewer life forms than cool, clean, moving water.
- **Indicators** - an abundance of riffles in a stream, bright green healthy plants in a pond, or a rich variety of readily seen life forms all indicate a healthy body of water.



Mayfly nymph

illustrations by J. O. Pennanen



Caddisfly nymph

## Food

- *A healthy population of fish will exist only where there is a good food supply.*
- Some species have definite dietary preferences and are built to capture and eat a particular type of forage in a specific manner that is easiest for them.
- The main food items of interest to the fly fisher are baitfish of all sizes and shapes; *crustaceans*, such as crayfish and shrimp; *aquatic creatures* such as leeches and frogs, as well as insects like mayflies and stoneflies; *terrestrial creatures* that fall in the watersomewhat, such as worms, caterpillars, and mice, plus insects such as grasshoppers and crickets; *miscellaneous items* such as eggs, mulberries, etc.



Damselfly adult



Caddisfly adult



Mayfly adult



Dragonfly nymph

## Shelter

- *In the more confined quarters of lakes, streams, rivers, or inshore habitat, fish will usually be found confidently but cautiously feeding somewhere near an area that will provide them sanctuary if threatened.*
- On streams and lakes, this protection will come in the form of undercut banks, deadfalls (trees that have fallen into the water), weed beds, sharp drop-offs, or rock ledges.

## Comfort

- *A single body of water is likely to have a variety of temperature readings.*
- Fish will choose an area in which to feed that is within a preferred temperature range.
- Freshwater fish are usually classified into either coldwater or warmwater categories.
- Shallow water can change temperature quickly. Sun, wind, cooler evenings, and tide changes all can have a dramatic effect on water temperature in a short time.
- Deeper water will tend to be cooler and maintain a steady temperature longer.
- Temperature will also be affected by the existence of springs, inlets, power plant discharges, dam releases, and currents.



## Water: Temperatures and Levels

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### Temperature

How warm or how cold the water happens to be on a particular day will affect whether or not a fish will choose to take a fly. In summer, when temperatures reach an excessive level, it is a good idea to choose to fish earlier in the day or in a location that would be cooler for the fish. Similarly, when temperatures are colder, fish will tend to "slow down", particularly in the early morning and late in the day. Fish do not seem to become active until mid-morning to early afternoon.

*To become a knowledgeable angler, therefore, is more than being able to cast your line well; it is necessary to read water, and the natural conditions that are present.*

It is a good idea to carry a thermometer as part of your fishing gear. If you are unsure whether you should fish on a particularly hot (or cold) day, take a temperature of the water, just to be sure. Water warmer than 23 degrees Celsius is dangerous for salmon, as any excessive energy bursts can leave them at a higher risk of post-release mortality.

Dr. Bruce Tufts, Atlantic Salmon Journal, Summer 2002

### Water Levels

During certain times of the year, some rivers will experience lower or higher than normal levels. It is important to recognize when a river's levels are not at the optimum, as this will affect angling.

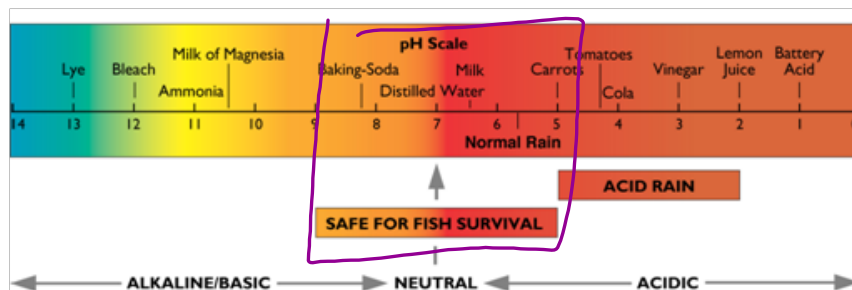
A few things to keep in mind:

- Salmon will most likely not take a fly when water levels are excessively high; salmon begin to take again when the water begins to drop and they start to hold in pools and runs;
- A salmon will likely take a fly better in shallow to moderate water (2-8 ft) versus deep pools
- If water levels are excessively low, it is probable that salmon will likely be held in pools or runs that have adequate depths.

Bruce Boudreau  
<http://members.attcanada.ca/~salmon/primer8.htm>

# The pH Scale

The pH Scale: The color distribution of the chart represents the indicator colors of pHydrion paper that is used to determine the pH of liquids.



## Attachments

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Magic on the River.pdf

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NOTES - Healthy Rivers.pdf