



## Focusing on the Southwest Miramichi in Water Classification

The Miramichi River watershed (or drainage basin) covers about 23% of the land mass of New Brunswick, approaching some 14,000 km<sup>2</sup>. For the purpose of provincial Water Classification (see pg. 4), MREAC is dividing the Miramichi watershed into three sections in order to better manage the program. These are the Norwest Miramichi, Southwest Miramichi and the Miramichi Bay (or estuary) drainage area. The Southwest Miramichi is being the first section to undergo the process.

The Southwest Miramichi River tributary has the larger of the three drainage area, covering an area of 7,700 km<sup>2</sup>. This area includes the villages of Blackville, Doaktown, Renous, Boiestown and Juniper, and many other smaller hamlets, having a combined population close to 7,000. It also includes other major tributaries of the Southwest Miramichi River including the:

- Barnaby River
- Bartholomew River
- Cains River
- Dungarvon River
- Renous River
- Taxis River

This river system has much private property. Many outfitters have constructed lodges and offer some of the world's best fly-fishing opportunities for Atlantic salmon fishing as well as for Brook Trout. Canoeing, swimming, hunting and, more recently, river tubing, are other recreational activities. For all of these activities, good surface water quality is important. This essential ingredient, these veins of the earth, are vital in maintaining the health of the ecosystem and for human health.



North Pole Stream, Little Southwest Miramichi River

Special features of the Southwest Miramichi include the Atlantic Salmon Museum in Doaktown, where Miramichiers celebrate this "King of fish" and the fishing it offers. Visitors learn about the salmon and the many conservation efforts to sustain a healthy and growing population.

Other fame associated with this branch of the Miramichi is found in Boiestown at the Boiestown Woodsman's Museum. Here the legend, lore and romance (in hindsight) of lumberjacks and lumber camps is featured, including the mystery around the Dungarvon Whooper.

Residents have powerful incentives to maintain a high standard of environmental integrity on the SW Miramichi.

## Freshwater Mussel Surveys



Kate Bredin, Sandra Ross & Melissa Price conducting mussel surveys on Guagus Lake

Freshwater mussels are recognized as an important part of a healthy aquatic ecosystem. Within the freshwater benthic environments, they play a vital role in the composition of aquatic food webs, nutrient cycling and energy. They also help maintain water quality as they are filter feeders and remove much sediment from the water column. Having a better understanding of their population size and distribution can offer important information in determining the water quality condition of a waterway, thus offering river managers important additional information in the water classification process.

With support from the New Brunswick Wildlife Trust Fund, MREAC has recently completed its second year of freshwater mussel surveys on the Miramichi River, focusing in 2009 on the Southwest Miramichi.

Combining this data with previous work by biologist and mussel specialist, Ms. Kate Bredin, MREAC is developing insights on the variety, population size and distribution of mussels on the Southwest Miramichi drainage area in specific and the entire Miramichi watershed in general.

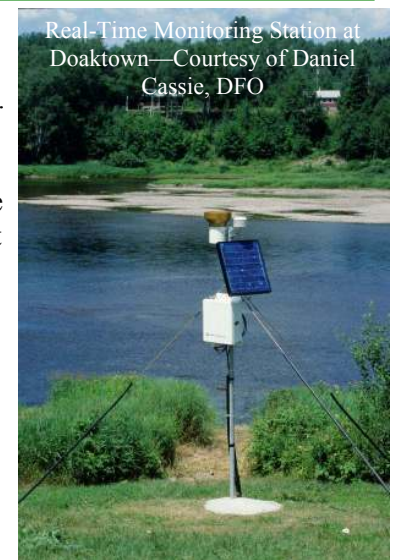
MREAC completed 11 survey sites on the Southwest Miramichi drainage area this year (2009) in addition to two sites surveyed in 2008. Fifteen other sites were completed earlier by Ms. Bredin, bringing the total to 28 sites. Four known species of freshwater mussels are known to dwell in the Southwest Miramichi and her tributaries; Eastern Pearlshell (*Margaritifera margaritifera*), Eastern Elliptio (*Elliptio complanata*), Eastern Lampmussel (*Lampsilis radiata radiata*) and Brook Floater (*Alasmidonta varicosea*).

Of these, the Brook Floater is a rare species of freshwater mussels that is currently being assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), and currently has a National General Status Rank of “special concern” in New Brunswick. This species has been found in the Southwest Miramichi, and recently MREAC discovered two new tributaries with Brook Floater populations, making this river a vital habitat for this species of mussel. An important part of its future survival will be to maintain a healthy river ecosystem.

## Real-Time Monitoring

Technology has provided valuable new opportunities in monitoring the environment. The station pictured to the right provides water quality information directly to the interested manager while historically monitoring was a collection of dated information. The obvious value of such information is the potential for immediate response in case of a calamitous event or impact on the river system. This formative technology is not widespread but is currently operative on the Southwest Miramichi in Doaktown, NB. The information is accessible via computer to stakeholders in Moncton and in the City of Miramichi.

This proven technology is just beginning to become a common-place and will find more and more application as we continue to find the resources to care for our vital river heritage.



Real-Time Monitoring Station at Doaktown—Courtesy of Daniel Cassie, DFO

## Reading the River Bottom

Stream health and water quality can be measured in part by the macro-invertebrates (i.e. large insects) that spend part of their lives in the stream. Water Classification will include such information gathered in benthic or river bottom sampling. The New Brunswick Department of Environment, as a partner in Water Classification will provide the expert assessment of benthic life and compare this with past data as an indicator of relative stream health and whether it is improving or degrading.



Damselfly



Stonefly

The larvae stage of insects such as mayflies, damselflies, dragonflies, caddisflies and stoneflies are all found along stream beds. As such these large insects are commonly used as the indicator species in this work. Samples are collected using an in-stream kick net. Collected insects are sorted and identified by specialists trained in this science. The presence or absence of these species as well as their relative abundance will help diagnose the health of the river. Some species are sensitive to pollution while others are quite tolerant. A highly impacted river will have few to none of these insects and therefore indicate poor water and habitat quality. Such factors may impact water classification ranking.



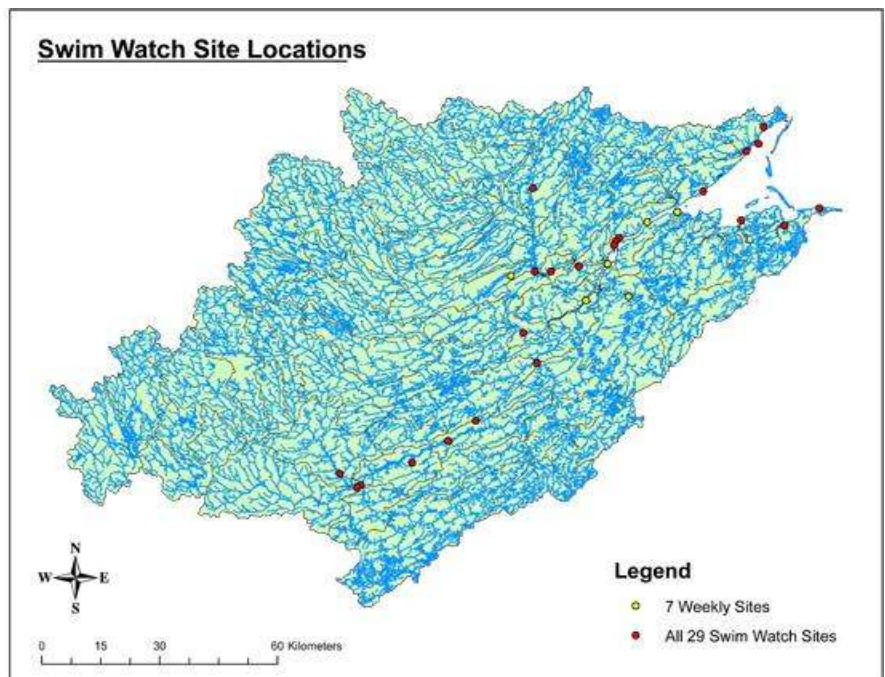
Caddisfly

## Swim Watch Program

Swim Watch is one of MREAC's longest running programs, beginning in 1993. Its purpose is to target common recreational areas and test the water quality to make sure the *E. coli* (fecal bacteria) levels are safe for recreational use. MREAC staff use the Guidelines for Canadian Recreational Waters.

This annual program currently samples 7 sites weekly during the summer months. Another 22 sites (see map) will be sampled twice during the swimming season. After 17 years of running this program, MREAC now possesses an extensive background of water quality data at various sites throughout the watershed.

The Southwest Miramichi system has 10 of the current 29 sites. Along with *E. coli* results, water temperature and dissolved oxygen levels have also been collected for many years, contributing to the water quality database.



**MIRAMICHI RIVER  
ENVIRONMENTAL  
ASSESSMENT COMMITTEE**

PO Box 85  
21 Cove Road  
Miramichi, NB  
E1V 3M2

Phone: 506-778-8591  
Fax: 506-773-9755  
Email: mreac@nb.aibn.com  
Website: www.mreac.org

**Executive Committee**

|                     |                |
|---------------------|----------------|
| Mr. Patrick McMahon | President      |
| Vacant Position     | Vice-Chair     |
| Mr. Harold Parlee   | Secretary      |
| Mr. Denis Hare      | Treasurer      |
| Mr. Joel Corcoran   | Past President |

Contributing Partners:



Environnement  
Canada

Environment  
Canada



Your Environmental Trust Fund at Work



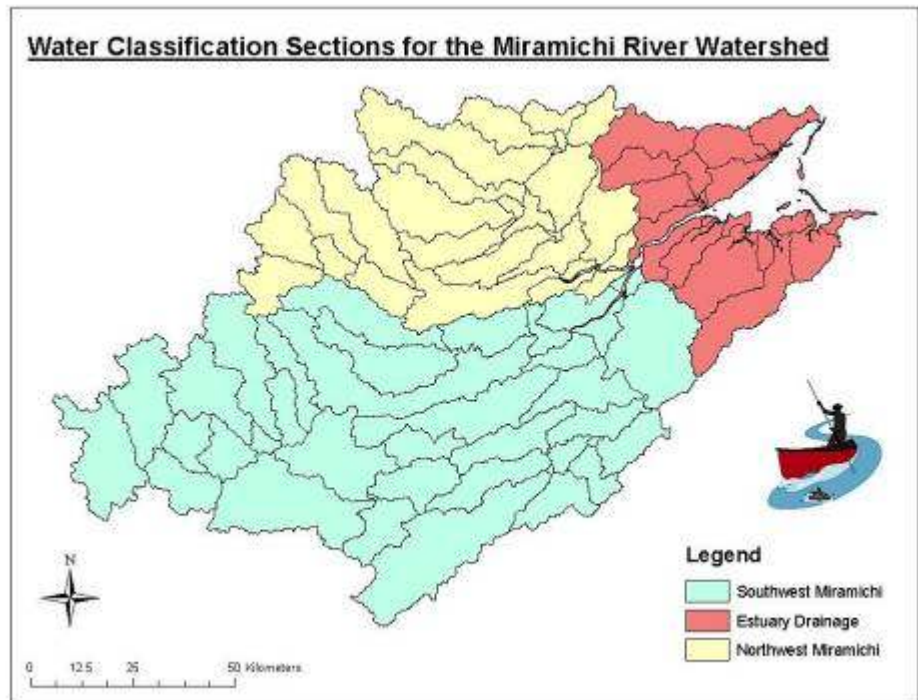
A special thank you to our Executive, Technical Advisory Group & all of our MREAC members for their continuing support!

**Overview of Water Classification**

In partnership with the Province of New Brunswick, MREAC is undergoing the Water Classification program of the Miramichi River. This community-based approach of water management will allow the watershed residents to have a major voice in deciding the future management regime of water and water quality of the Miramichi River and her major tributaries.

Classification will guide the future of each watercourse by determining what land/water uses are compatible and which are not, based on the assigned classification. Classification at the “A” would preclude any activity or developments that would compromise the higher standards that “A” classification implies. Such developments may be allowed at a “B” or “C” level. None of the classification levels allow for serious impacts on water quality. According to the process all “grades” of water classification must maintain acceptable standards.

If you have questions or would like more information, please contact the MREAC office at (506) 778-8591.



**Classification:**

|    |                                    |
|----|------------------------------------|
| O  | Outstanding Natural Waters         |
| AP | Designated Drinking Water Supplies |
| AL | Lakes not classified as O or AP    |
| A  | Excellent Water Quality            |
| B  | Good Water Quality                 |
| C  | Acceptable Water Quality           |