

September 2008



MREAC and the Province of New Brunswick have launched in a partnership to classify waters within the Miramichi watershed. This community-based approach to water management will allow the watershed community to have a major role in the deciding the future management regime of water and water quality of the Miramichi River and her major tributaries.

New Brunswick has been working on water classification since the early nineties in other areas of the province. The program managers from the NB Department of Environment hope to bring in the first formally classified system with the St. Croix River this year. The St. Croix International Waterway has provided the communities lead on this effort.

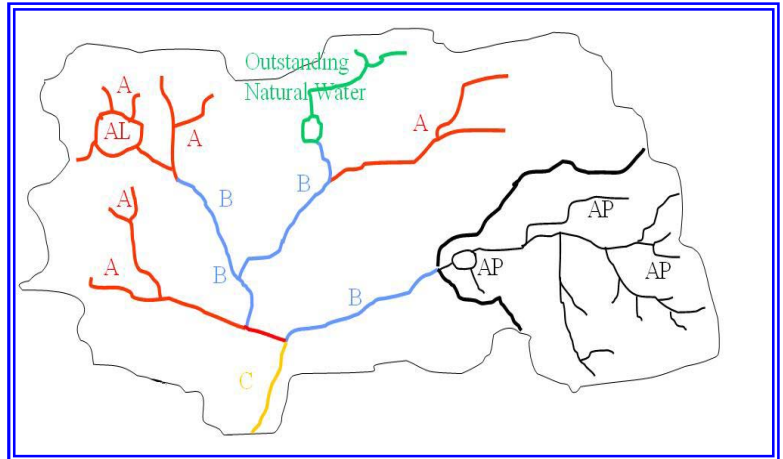
**Water Classification – Step-by-Step**

- identify and involve stakeholders
- gather water quality information
- assemble land and water use information
- set goals for water quality
- prepare and implement action plans

MREAC has endorsed the program due to the positive results the program will likely bring to the Miramichi. Due to the scale of the Miramichi with over 13,000 sq. km within its watershed the project is likely to extend over a minimum of four year. The program partners will proceed with a pilot study in 2008 on the Renous River. From 2009-2011 they will address the Southwest Miramichi, Northwest Miramichi, and the rivers and streams that flow into Miramichi Inner Bay. In its entirety the program will address the some thirteen major tributaries of the Miramichi and formalize this classification under the provincial classification system.

“The protection provided by water classification is the major incentive behind our interest” says Joel Corcoran, chairperson for MREAC.

*A Typical Classified Watershed—What it all means:*



Classification will guide the future of each water-course by determining what land/water uses are compatible and which are not, based on the assigned classification.

The Classes:	
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

Classification at the A level would preclude any activity that would compromise the high standards the classification implies. This might include road construction, bridges, industrial development or other infrastructure that would likely compromise the value assigned. Such developments may be allowed at a B or C level but not to the point of serious impacts on water quality. According to the process all “grades” of water classification must maintain acceptable

standards (see box). If you have any questions or would like more information, please do not hesitate to contact the MREAC office at (506) 778-8591.

# Special Edition—Water Classification—Miramichi

## Freshwater Mussels as Water Quality Indicators

An important early step in Water Classification is measurement and interpretation of existing water quality. Information and newly collected data on water quality can be used to build a picture of how the water quality may have changed in a watershed. Knowing the existing water quality helps a group make realistic decisions about the future of the watershed.

Freshwater mussels are recognized as an important part of a healthy aquatic ecosystem. As a key component in the structure of freshwater benthic environments, they play a vital role in the composition of aquatic food webs, nutrient cycling and energy flow. They also help maintain water quality as they are filter feeders and remove much sediment from the water column. Freshwater mussels are considered to be the most threatened taxonomic group in North America, as only 70 of the 281 recognized species in North America are considered to have stable populations. Although some rivers in New Brunswick have been surveyed for freshwater mussels, very few mussel surveys have been completed in the Miramichi River watershed. As a result, little is known about which species are present, and their abundance on distribution. Due to more limited access, the Northwest Miramichi River has never been surveyed. This MREAC study in 2008 will collect basic habitat information along with physical and chemical water quality data at each survey location to correlate with mussel abundance and variety.



A collection of Eastern Peral shell mussels (*Margaritifera margaritifera*) from the Renous River

The Brook Floater (*Alasmidonta varicosea*) is currently being assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and has



MREAC staff, Kara Baisley (top), Melissa Price (front), and Sandra Ross using viewing buckets to find freshwater mussels.

a National General Status Rank “may be at risk” in New Brunswick. Brook Floaters have recently been discovered in the Southwest Miramichi River, and there is one record from the Northwest Miramichi River. Freshwater mussel surveys in the Miramichi River will help delineate the extent of this rare species in the Miramichi watershed. Brook Floaters are declining throughout their range in the US due to pollution and alteration of river habitats. The Miramichi River may harbor an important segment of the global population of this species.

The information collected from this study will benefit people living in the Miramichi watershed, because it will enhance their knowledge of the freshwater biodiversity present in the Miramichi River system. It will also benefit citizens of New Brunswick by providing information on the environmental quality and wider bio-diversity of their province.

MREAC will be partnering with Ms. Kate Bredin who is writing the Status Report on a rare freshwater mussel, the Brook Floater, for the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).

MREAC has been able to participate in this worthwhile program because of funding received from the New Brunswick Wildlife Trust Fund. For more information contact MREAC at (505) 778-859` or [mreac@nbnet.nb.ca](mailto:mreac@nbnet.nb.ca).



# Special Edition—Water Classification—Miramichi

## Insects as Water Quality Indicators

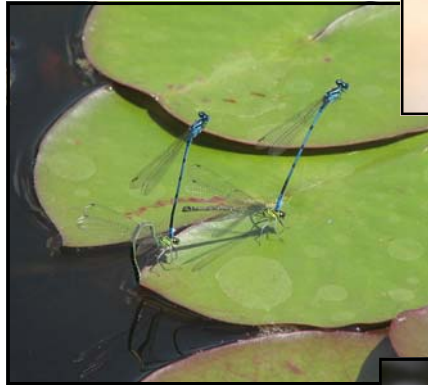
Water quality monitoring is key to the Water Classification process. One of the better indicators for water quality is a count of the variety and density of macro-invertebrates (insects) that live on the stream bottom. Various methods of sampling these organisms have been devised. MREAC has become familiar with kick-net sampling. In this a U shaped net is held against the stream bottom and with kicking and scraping of the stream bottom above, the net captures the creatures that are dislodged. A comparative analysis of these results in an index of stream health that will contribute to determining what water classification might be targeted for a given stream.

Science has shown us that healthy environments support a wider variety and some quite sensitive bugs. Conversely damaged ecosystems will have more limited variety and lower populations in general. Where the watercourse has been impacted by something that changes the habitat (e.g. acid rain, high metal content, reduced dissolved oxygen) the more sensitive organisms will be the first to die off. The healthy watercourses will provide a baseline against which to judge the degree of damage on impacted streams.

In 2008 MREAC is partnering in a study with Environment Canada and UNB on a study of various branches of the Miramichi River. A PhD candidate, Mr. Colin Curry has now collected thousands of bugs (typically as shown) and continues to learn about the variety and density of these insects related to their habitat conditions. As with most monitoring, the more samples the better in order to judge the status of the river ecosystem.



Mayfly



Damselfly



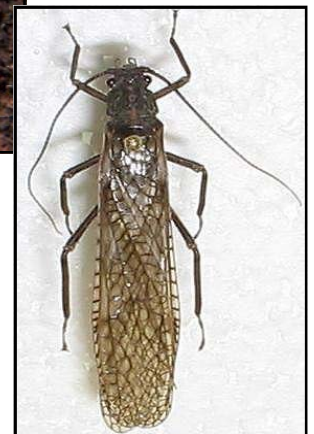
Dragonfly



Daryl Sullivan using a kick-net sampler on the Barnaby River



Caddisfly



Stonefly

## Bacteria Levels As A Water Quality Indicator

Despite a summer that many feel robbed us of a decent swimming weather, the Miramichi River Environmental Assessment Committee, in partnership with the New Brunswick Department of Health and Wellness, continued with its Swim Watch Program. This involves sampling water quality at twenty-nine different sites throughout the expansive Miramichi watershed from Porters Cove to Escuminac. Of interest, the erratic and unsettled weather of 2008 was reflected in the results. High levels of rainfall resulted in a more than usual load of contaminants being washed into the streams and ditches and finally into the major waterways that comprise the Miramichi River system. Despite the persistence of high counts of fecal coliform there were no consistent high levels that would result in beach closures.

For most of the 29 sites, even the higher counts would not have resulted in closures in that they did not achieve “unacceptable” levels (i.e. of >200 fecal coliforms/100 ml sample). Where unacceptable levels were noted in six samples to date (of approx. 110 samples), MREAC staff resampled as quickly as possible to determine if the problems were ongoing. In each case the results were down to an acceptable range.

As a lesson learned from this summer, even when the weather is warm, there is a greater risk of contamination after high rainfall events. The more stable periods of steady sunshine results in a more stable and improved water quality. As of 2008 the Miramichi has been sampling Miramichi beaches for 16 years and the long term assessment has been one of good water quality throughout the select sites we have monitored. This long term data set will be a valuable contribution to the Water Classification process. If anyone wishes to have more detail on water quality in the Miramichi watershed please contact us with the coordinates at the bottom of this page. Safe swimming everyone!



**River Watch  
Air Watch**

Please help protect the Miramichi Watershed and Airshed through the River/Air Watch program.

If you see anything that concerns you about the environmental health of the Miramichi region call:

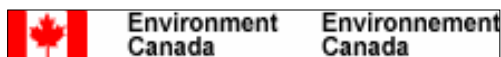
778-8591 or 1-800-567-4837  
(1-800-56RIVER)

This is a program of the Miramichi River Environmental Assessment Committee (MREAC)

In case of an environmental emergency call 1-800-565-1633

New Brunswick  
Your Environment. Our Future.

## Contributing Partners



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*A special thank you to our Executive & all our members for their continuing support.*

## Miramichi River Environmental Assessment Committee

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

Tel: (506) 778-8591 1-800-56RIVER

Fax: (506) 773-9755

E-mail: [mreac@nbnet.nb.ca](mailto:mreac@nbnet.nb.ca) Website: [www.mreac.org](http://www.mreac.org)