

# What do we mean by Tools?

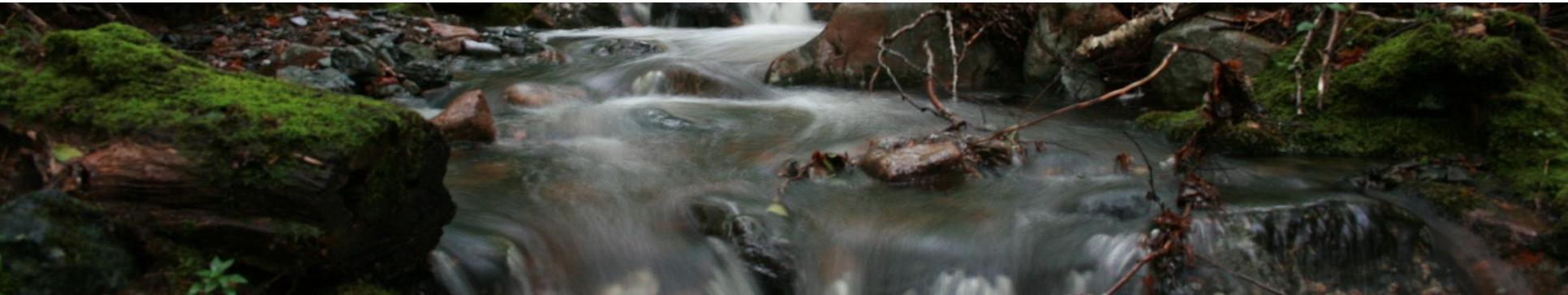


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# What Are Tools?

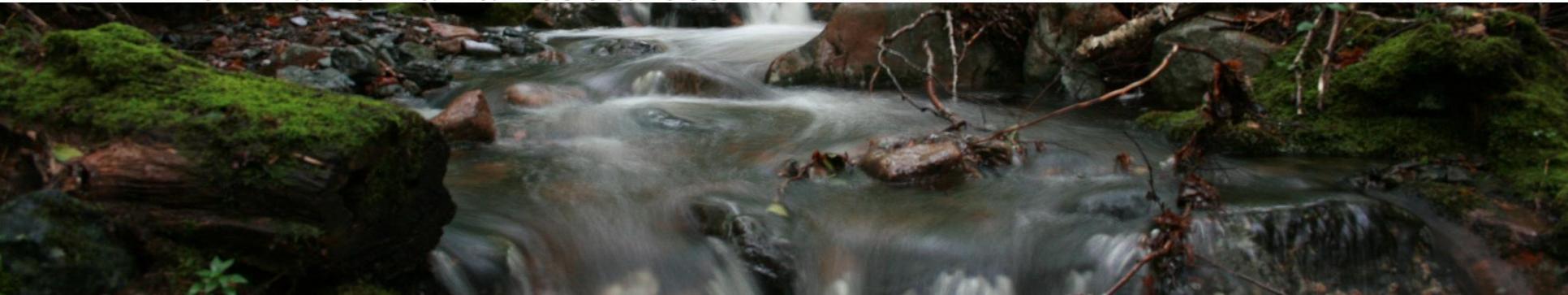
Tools are resources that can help planners minimize the impacts of land-based activities on the marine environment

Some tools help with decision making; others with tracking trends. Others represent best practices.



# Types of Tools

- Monitoring
- Mapping
- Community participation
- Best Management Practices
- Regulation
- Restoration
- Education
- Information and resources



# (1) Monitoring Tools

Track changes in water quality and quantity

- Issue: from data collection to policy making

Eg. Community Based Environmental Monitoring Network (SMU) or NB watershed classification

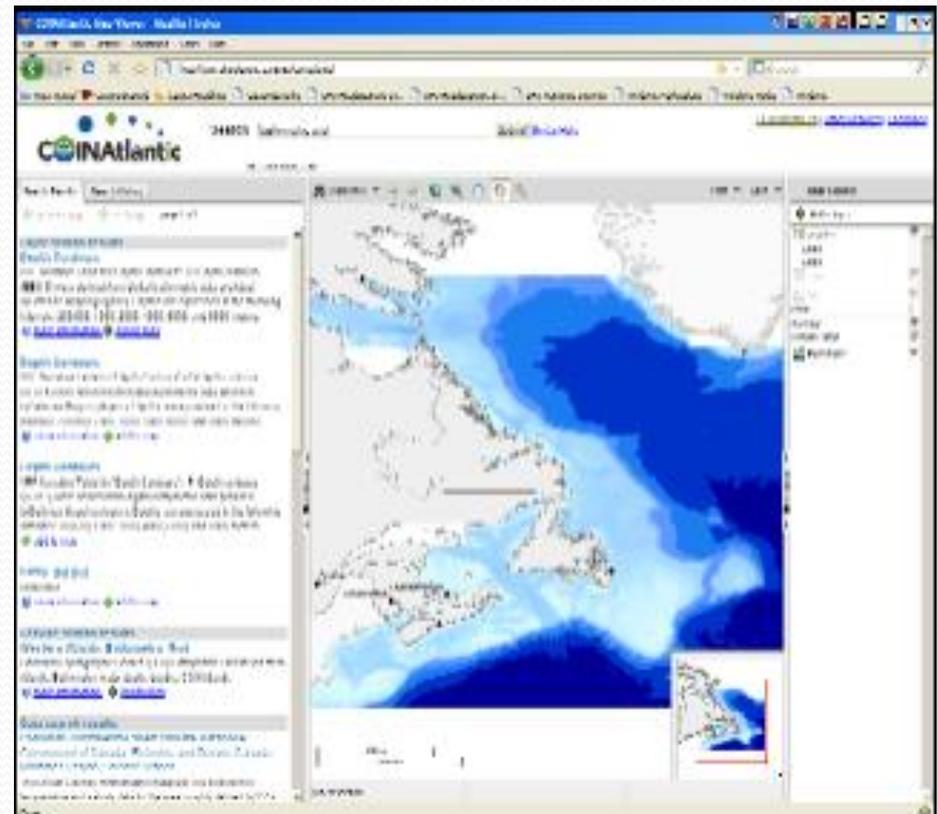


## (2) Mapping Tools

View and forecast spatial information

Issue: Capacity and data gaps

Eg. COIN Atlantic  
provide open access to  
data, information and  
applications relevant  
to Atlantic Canada



# (3) Community Participation

- Creates local awareness and support

Issue: capacity and time

Eg: Community meetings or community visioning



## (4) Best Management Practices

- Guidelines and incentives
- Issue: knowledge and compliance

Eg: Property owners  
collective pump outs



# (5) Regulations

Regulations clarify what is allowed and not allowed and enable penalties for non-compliance.

Issue: Political will and compliance

Federal Waste water Treatment Guidelines

- Provincial on site and waste water regulations
- Municipal Waste water districts



# (6) Restoration Tools

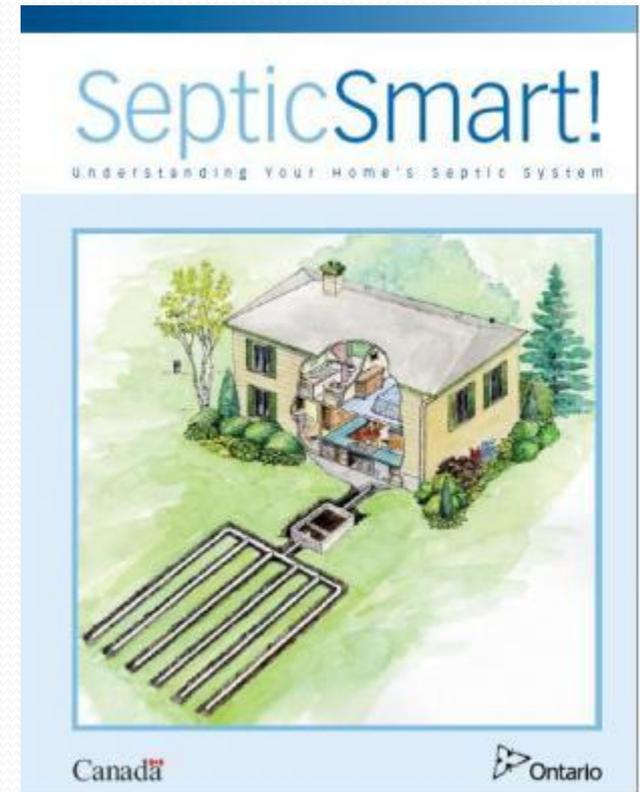
- Bring back the natural ecological services and productivity of a damaged ecosystem.
- Issue: Mandate and money
- Eg. ACAP St. Croix Clam bed



# (7) Education Tools

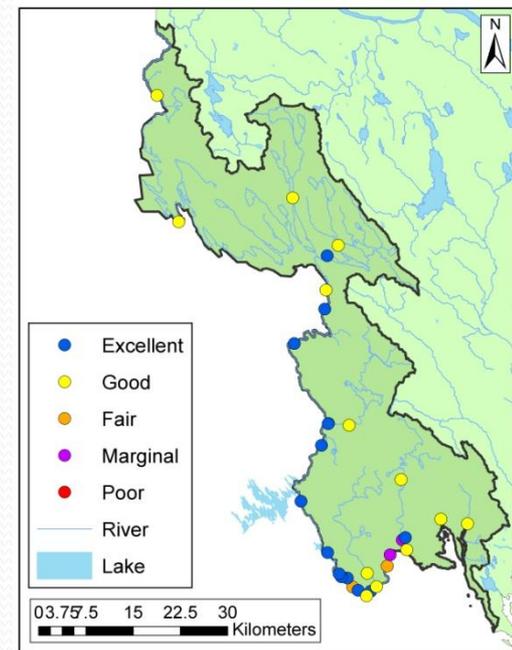
Education tools increase awareness and stewardship.

Issue: Links to implementation



# (8) Information and Resources

- East Coast Environmental Law Information Library
  - Legislation, case law and publications
- New Brunswick Department of Environment
  - Watershed fact sheets

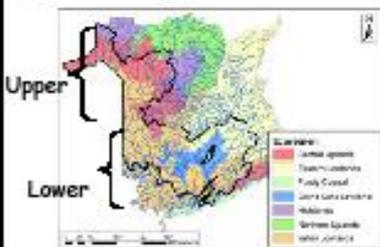


## Location

The Saint John River originates in Somerset County, Maine and empties into the Bay of Fundy. The river drains an area of approximately 55 500 km<sup>2</sup> (about half of which lies in Canada). The principal tributaries of the Saint John River are the Aroostook, Madawaska, Nashwaak, Oromocto, St. Francis, Kennebecasis, Conan and Tobique rivers.



## Physical Setting and Climate



The upper Saint John watershed has an average summer temperature between 16 and 18°C, while average winter temperatures range from -8 to -12°C. This portion of the watershed receives about 1100 mm of precipitation annually. The lower Saint John watershed has an average summer temperature between 16 and 18°C, while average winter temperatures range from -6 to -9°C. This portion of the watershed receives about 1200 mm of precipitation annually.

## Fish Community

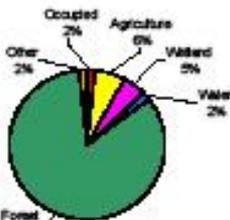
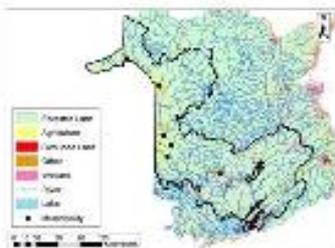
In the Saint John watershed there are approximately 28 species of fish. Examples of the species found are: Atlantic salmon, banded killifish, yellow perch, four spined stickleback, gaspereau, smallmouth bass, brown bullhead catfish, common shiner and white sucker (Canadian Rivers Institute).

## New Brunswick Watersheds

## Saint John River

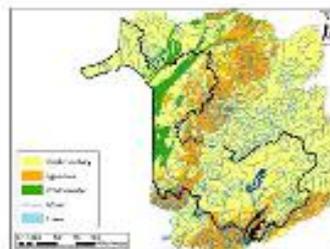
## Environmental Reporting Series 2007

### Land Use



Forested land and agriculture are the predominant land uses in the Saint John watershed.

### Geology



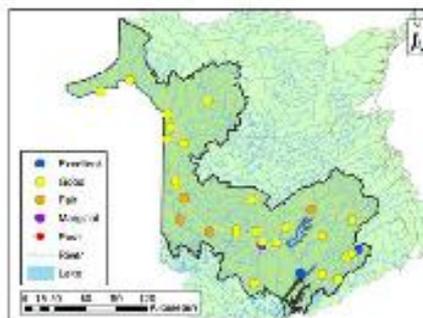
### Water Quality Survey (2003-2006)

The Water Quality Index (WQI) is a tool that allows water to be classified into different categories based on the CCME Guidelines for Freshwater Aquatic Life. The index is a number between 0 and 100, with zero representing poor water quality and 100 representing excellent water quality. The categories for the index are as follows:

Excellent: 95-100    Marginal: 45-64  
 Good: 80-94        Poor: 0-44  
 Fair: 65-79

The following parameters are included in the Water Quality Index: aluminum, ammonia, arsenic, chloride, copper, dissolved oxygen, iron, lead, nickel, nitrate, pH, sulphate, total phosphorus, and zinc.

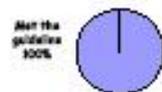
The map (right) depicts the location of the sample sites within the Saint John watershed and indicates the calculated WQI rating for each site.



### Key Indicators

In addition to using the CCME Water Quality Index, four key indicators of water quality were evaluated against available guidelines. E. coli is compared to recreational use guidelines, while the other indicators are compared with freshwater aquatic life guidelines.

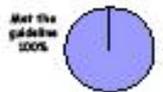
#### Dissolved Oxygen



#### E. coli



#### Nitrate



#### pH



## Community Involvement

There are numerous community groups that are involved with maintaining the ecological integrity of the Saint John watershed. These groups include the La Société d'Aménagement de la Rivière Madawaska et du lac Temiscaouata, Madawaska Watershed Association, the Nashwaak Watershed Association, Conan-Washademoak Watershed Association and the Kennebecasis Watershed Restoration Committee. Also, the Canadian Rivers Institute of the University of New Brunswick is currently conducting various research projects throughout the watershed.

The Saint John River is used for many activities such as camping, boating, and fishing.



## Summary

- Based on the WQI, 2 sites were excellent, 23 were good, 4 were fair and 1 was marginal.

- Fair and marginal water quality may be due to industrial discharges which are located at points throughout the watershed. These include a number of food processing plants and pulp and paper mills, numerous non municipal and municipal discharges as well as runoff from urban development. The removal of riparian vegetation (which leads to increased erosion) may have also contributed to the fair and marginal water quality results.

-Of the four key indicators, E.coli did not meet the guideline in 2% of the samples. In addition, pH did not meet the guideline in 4% of the samples.

## Additional Information

This watershed summary is based on data collected by the Department of Environment.

For additional information concerning this watershed, please contact the Department of Environment, Sciences and Reporting Branch, at (506) 457-4844.

Photos and maps by: Department of Environment.