AQUATIC MACROINVERTEBRATES

What are aquatic macroinvertebrates?

Aquatic macroinvertebrates, also known as water bugs, are tiny, visible bugs without backbones. These water bugs play an important part in the food chain and the overall health of the water supply.

Why monitor water bugs?

Aquatic macroinvertebrates are good indicators of the health of their aquatic habitat because they have different tolerances to pollution. Most species of water bug can be classified as either pollution tolerant, mid-tolerant or intolerant. Looking at the types of bugs found in a sample from a particular area can provide information on the water quality for that location. Some examples of pollution intolerant water bugs include mayflies, stoneflies, caddisflies and beetles. Mid-tolerant water bugs may include sideswimmers, snails, clams, and dragonflies. Pollution tolerant water bugs may include true flies, worms and leeches.

Two of the volunteers from Lac Pelletier sampling water bugs on a popular beach.

Water Bugs and Data Collection

Two groups in the Swift Current Creek watershed have been monitoring water bugs as part of the data collection for the Prairie Water Care program offered through Saskatchewan Watershed Authority (see *Know Your Watershed* Volume 1 Number 3 for more information on these groups):

- The Swift Current Prairie Water Care group started collecting data in 1998 and usually collect water bugs in 8 months of the year
- The Lac Pelletier Prairie Water Care group started collecting data in 2001 and collect water bugs in 4 months of the year

The volunteers collect samples of water bugs by putting out a net and stirring up the bottom sediment from the lake or the creek. The sediment and bugs get caught in the screen. The volunteers sort the water bugs according to pollution tolerance (tolerant, mid-tolerant and intolerant).

CADDISFLY

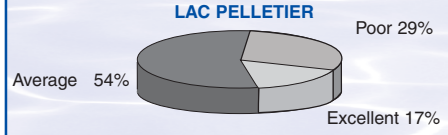
Did You Know ...

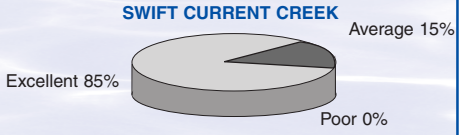
Caddisflies need high oxygen content in the water in order to survive. Low oxygen levels could be related to too many nutrients dissolved in the water or by high levels of sedimentation.

Results from 2001-2002 Assessments

The results from the 2001-2002 water bug samples indicate that the water quality, determined by the types of water bugs found in the samples, is rated better in the creek than at the lake. However, the data was collected by two different groups who may use different techniques for recording the types of bugs in each pollution tolerance category (tolerant, mid-tolerant and intolerant).

Are the bug communities different between the creek and the lake? This question, along with many others, will be addressed in the upcoming Swift Current Creek Watershed Monitoring Project.





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Agriculture and Agri-Food Canada | Agriculture et Agroalimentaire Canada | Canada | CARDS

Swift Current Creek Watershed Stewards

Know Your Watershed

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RIPARIAN HEALTH ASSESSMENT

What is a riparian area?

A riparian area is the transition zone between the waters edge and upland vegetation that acts as a filter, sponge, and retaining wall. The vegetation along the riparian area is lush green and made up of water loving species. These native plants are resilient to the natural environment that they inhabit, making them more adaptive to the environment than other plant life. A series of intertwined root systems from the vegetation acts like twine around a bale, holding the soil together and preventing erosion. Vegetation also serves to dissipate or slow down water velocities allowing for absorption and filtration of water.

Riparian Assessment Data Collection

The Saskatchewan Wetland Conservation Corporation conducted 59 riparian zone assessments along Bone Creek and Swift Current Creek throughout 1999 and 2000. These assessments covered 11 questions relating to riparian zone vegetation types, vegetation use, and land-use along a specific floodplain and stream bank area. For each question, the assessment sites were scored using a point system with predefined categories. The total site score, adding the score from each individual question, illustrates the riparian health as follows:

RIPARIAN HEALTH ASSESSMENTS	WHAT DO THESE SCORES MEAN?
Non-Functional 0 - 60%	o The assessed area needs attention to address the main areas of concern o Cannot perform or is not able to perform riparian functions
Functional At Risk 60 – 80%	o Many riparian functions are still being performed but the area is showing signs of stress
Functional 80 -100%	o Riparian Area is performing functions as expected

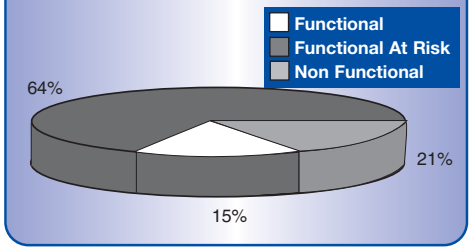
Why monitor a riparian area?

It is important to monitor the riparian area, for the health of both the people that drink the water and the wildlife that need it to survive. Monitoring of the riparian area is essential in determining water quality and the effect of land use management. The state of the riparian area is directly related to farming, irrigation, livestock, industrial, municipal and recreation impacts. A riparian area is responsible for carrying out many functions and can only perform these functions if the riparian area is healthy. These functions include:

- Protecting stream banks from erosion through deep binding root system that stabilize the banks
- Growing food for fish and wildlife
- Trapping runoff sediment before it reaches a creek
- Promoting water absorption and recharging groundwater reserves

Results from 1999 – 2000 assessments

Among the 59 riparian zone assessments performed within the Swift Current Creek Watershed, 9 sites were rated as Functional, 38 sites were rated as Functional At Risk and 12 sites were rated as Non-Functional. Thus, 79% of the sites assessed illustrated that the riparian zone was performing the expected functions such as protecting stream banks from erosion, trapping sediment and nutrients from runoff, and recharging groundwater reserves.



RIPARIAN ZONES & CREEK "BUGS"

Riparian zones can easily be seen from the air – you only have to look for the green area! These areas are "wetter than dry" but "drier than wet". The plants that live in the riparian zone tend to be water loving species...

Functional riparian zones will likely include woody vegetation (trees and shrubs) of all ages. Willows and chokecherries are examples of preferred shrubs in a riparian zone.

For more information on Riparian Health Assessment, visit www.cowsandfish.org

There are many examples of naturally eroded stream banks, especially as a creek meanders or turns and winds through the landscape.

A note from one of our sponsors...

Fisheries and Oceans Canada (DFO) would like to congratulate Swift Current Creek Watershed Stewards (SCCWS) on their achievements over the past 2 years and wish them continued success in the future. DFO is committed to working with public groups to increase the social and economic benefits derived by Canadians from productive fish habitats and the fisheries and aquatic resources they support, including clean, healthy water for humans. Stewardship groups, such as SCCWS, educate water users about issues and impacts which affect water quality and riparian health, and foster an attitude of individual responsibility toward watershed health.

Fisheries and Oceans Canada **Pêches et Océans Canada**

Of the eight strategies listed in DFO's Policy for the Management of Fish Habitat (1986), the SCCWS has incorporated three of the implementation strategies into their 2003-2004 project planning;

1) Public Information and Education: Promoting public awareness in the conservation, restoration and development of fish habitat,
2) Cooperative action: Encourage and support involvement by government agencies, public interest groups and the private sector to conserve, restore and develop fish habitats, and
3) Habitat Improvement: Initiate project and provide advice to other interested groups to restore and develop fish habitat in support of the net gain objective. Stewardship is a central theme to habitat protection and healthy aquatic and riparian systems. DFO is a proud supporter of the work of SCCWS in promoting environmental stewardship through their education and awareness initiatives. We look forward to future partnership efforts in monitoring, protecting, and restoring fish habitat to increase the overall water quality and stream health of the Swift Current Creek Watershed.

GRAB YOUR NET AND A BUCKET ...

To pass an afternoon at the creek or the lake catching water 'bugs', also called aquatic macroinvertebrates, all you need is a small net (like the ones for fish tanks) and a bucket to put your treasures in!

What Might You Find?

The horsehair worm can grow over a meter long although it is only a few millimeters thick. It was once thought that these worms came from horse hairs that fell into water.

Sideswimmers or scuds can be found in most water bodies. They live in – and eat - water weeds and algae. Many fish and other water creatures eat scuds as their favorite food.

Mayfly nymph about 1.5- cm long

Mayflies are an important source of food for fish so it's a good thing that there are over 300 species of mayfly in Canada. Some mayflies only live for ten minutes and some can live for up to ten days. An interesting thing about adult mayflies is that they don't eat!

Coil-shelled snail 0.2- 3 cm long

When ponds and stream freeze solid, snails hibernate to survive. They dig themselves into the mud and draw their bodies inside their shells. Then they secrete a thick layer of mucus to seal the opening of their shell from the cold.

http://www.sccws.com

THE SWIFT CURRENT CREEK WATERSHED STEWARDS

The Swift Current Creek Watershed Stewards (SCCWS) aim to:

(1) Educate water users of the watershed about issues and impacts which affect water quality,
(2) Monitor water quality and riparian health to assist in cooperative solutions regarding water management issues, and
(3) To foster an attitude of individual responsibility toward watershed stewardship.

The SCCWS encourages public participation in all of our meetings, workshops and educational products.

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