Hamilton Conservation Authority

WATERSHED Report Card

Land Use:
Land use activities can contribute to water quality issues and can also increase flooding during storms or thawing periods.

Riparian Buffers:
Riparian buffers are strips of trees, shrubs and grasses that run along creeks and streams and protect them from pollution and erosion.

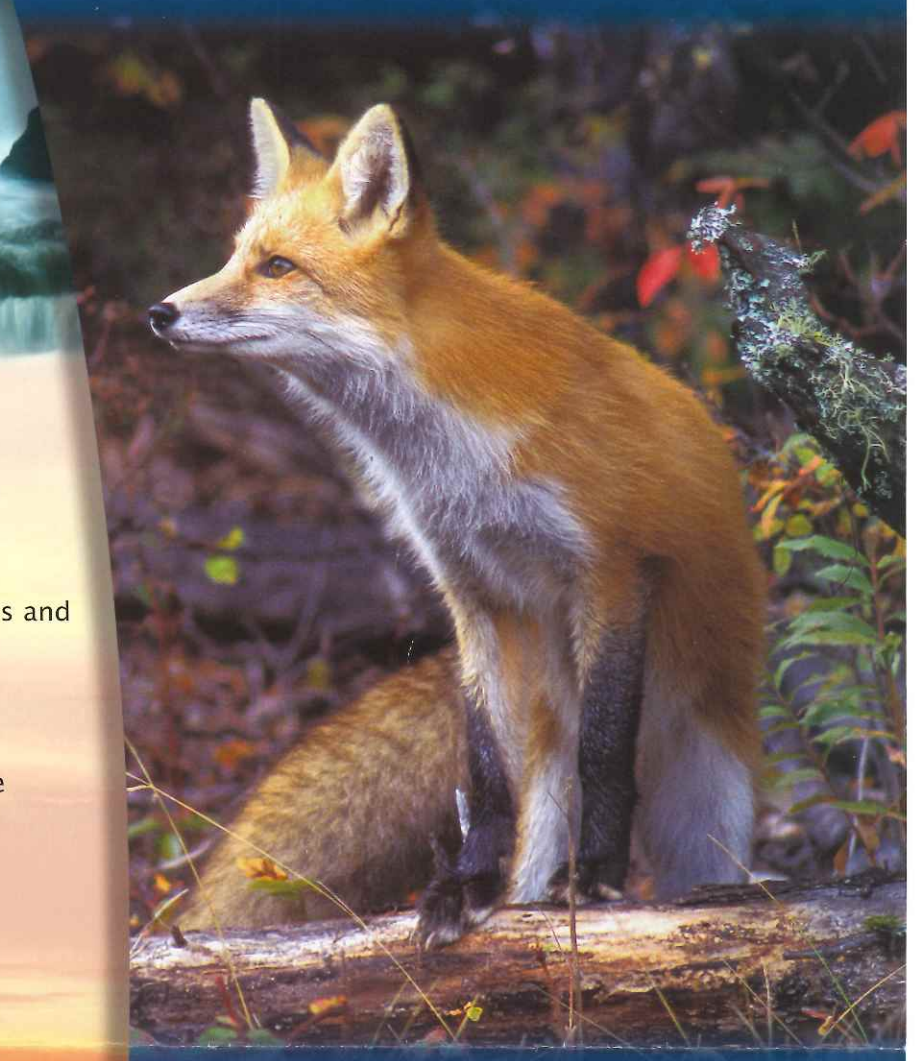
Water Quality:
Water quality monitoring tells us how changes in the environment affect the amount of bacteria, metals, oxygen, and nutrients that are in our water.

Fisheries:
The types and numbers of fish found in our creeks are good indicators of watershed health.

Reporting on the Health of the Hamilton Conservation Authority's Watersheds

Since healthy streams contribute to healthy communities, Hamilton Conservation Authority (HCA) is dedicated to maintaining and improving the health of our streams and their watershed.

It is important to report on the health of HCA's watershed as it will help its residents understand the condition of their local stream systems and assess the watershed's overall state of health. The Report Card will also help the HCA in meeting the goals of its Conservation Strategy (2007-2011).



This is HCA's first Watershed Report Card and it will be used as a starting point against which future report cards can be compared to identify trends in reported data. This will also allow HCA to identify any data gaps in its current monitoring program.

To get a picture of the overall health of the watershed, many factors need to be considered, including ***water quality***, human ***land use activities***, ***fisheries***, and the presence of ***riparian buffers***. These factors were selected for their importance in determining the health of the watershed. The evaluation of current conditions is represented on a sub-watershed level using the most up-to-date information available.

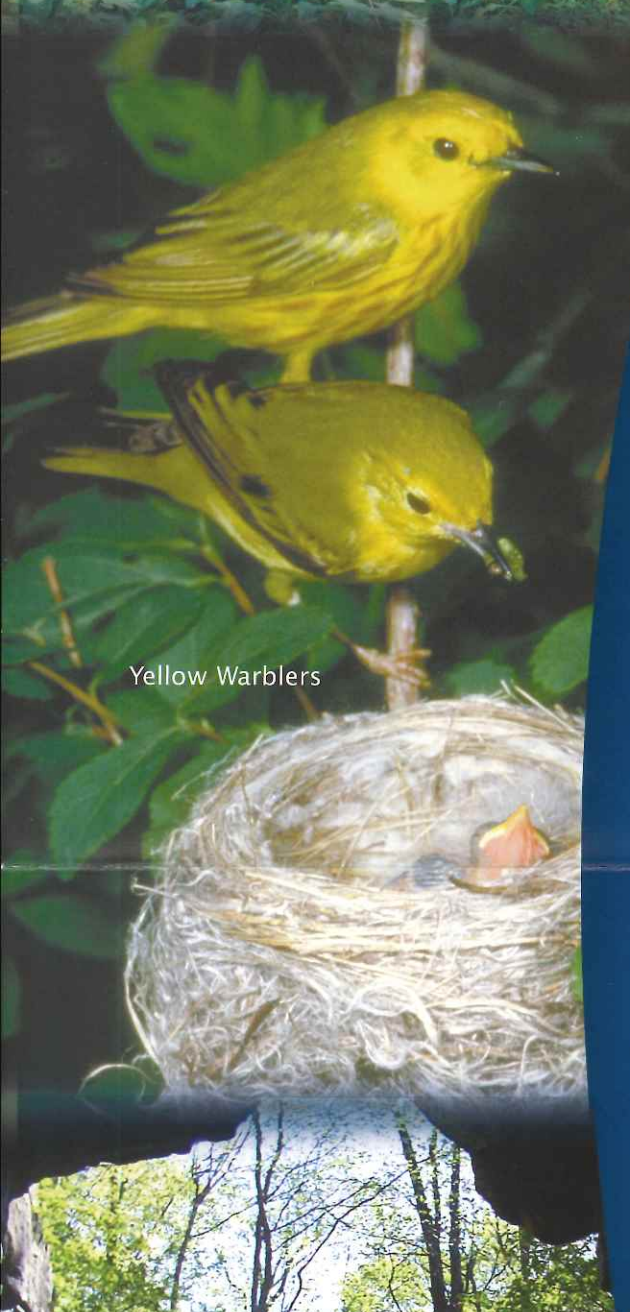
What is a Watershed?

A watershed is the area of land that is drained by a river, stream or other body of water. Similar to the branches of a tree, streams are connected and each drains into a larger stream, eventually forming one main trunk. A subwatershed is the area drained by the smaller branches of the larger system. Since all things are connected, HCA manages natural resources on a watershed basis by providing sound ecological advice when making land management decisions.

Hamilton Conservation Authority

Healthy Streams...Healthy Communities!

Fletcher Creek Conservation Area



Yellow Warblers

Eramosa Karst Conservation Area

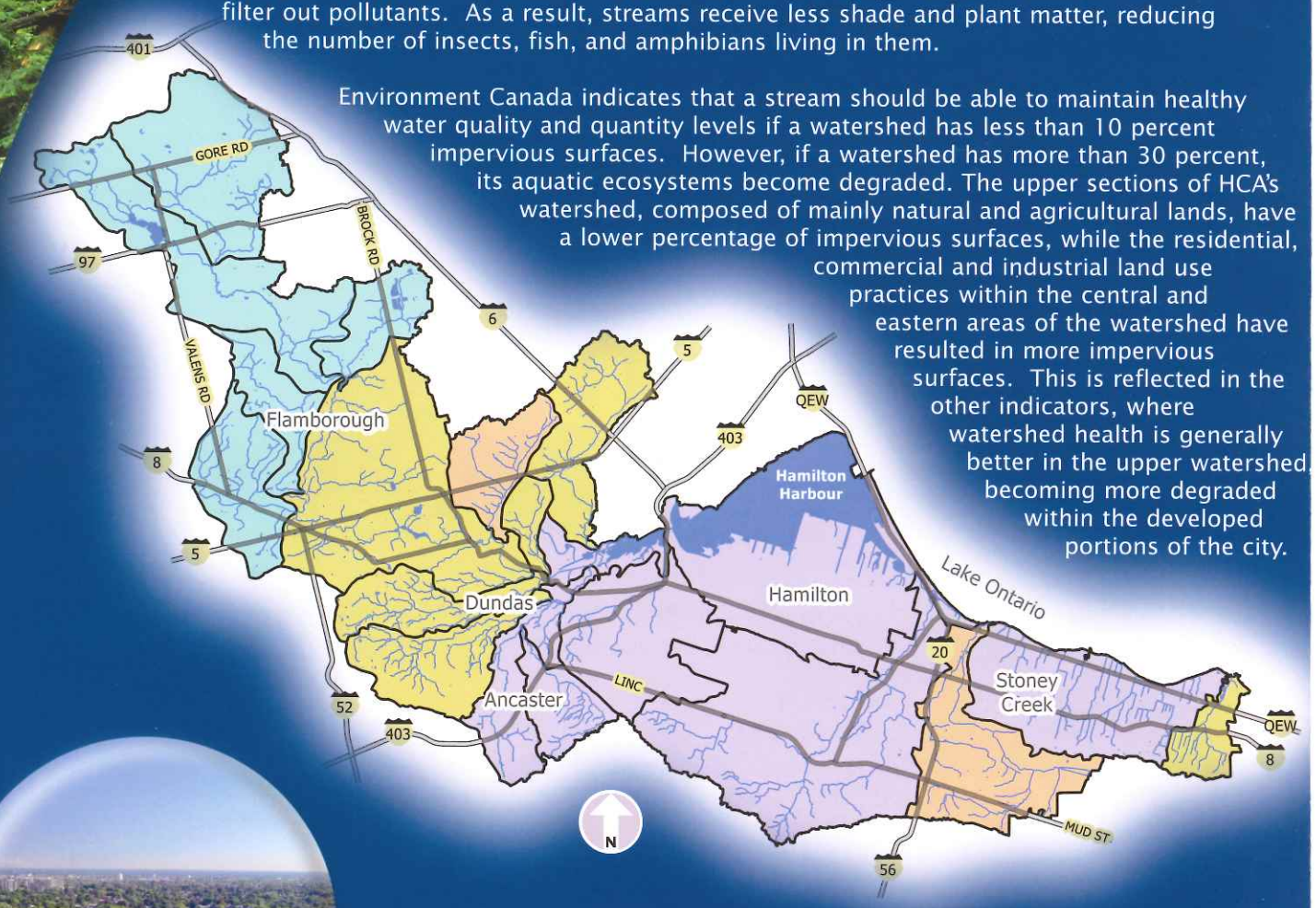
Landowner's farm in Flamborough

Land Use

The amount of impervious surfaces found in a watershed is a good indicator of the effects of urbanization, as it can affect the health of a stream by reducing water quality and increasing water quantity. A surface is impervious if it does not allow water to pass into the soil, such as pavement or rooftops.

When water seeps into the ground, it is naturally filtered of pollutants, and the amount of time it takes to get to a stream is slowed down, reducing stream-bank erosion and flooding. Impervious surfaces result in fewer plants and natural surfaces to filter out pollutants. As a result, streams receive less shade and plant matter, reducing the number of insects, fish, and amphibians living in them.

Environment Canada indicates that a stream should be able to maintain healthy water quality and quantity levels if a watershed has less than 10 percent impervious surfaces. However, if a watershed has more than 30 percent, its aquatic ecosystems become degraded. The upper sections of HCA's watershed, composed of mainly natural and agricultural lands, have a lower percentage of impervious surfaces, while the residential, commercial and industrial land use practices within the central and eastern areas of the watershed have resulted in more impervious surfaces. This is reflected in the other indicators, where watershed health is generally better in the upper watershed becoming more degraded within the developed portions of the city.



Percentage of Impervious Surfaces (Data: 2000-2002)

Excellent: 0-5% | Good: 6-10% | Fair: 11-20% | Marginal: 21-30% | Poor: >30%

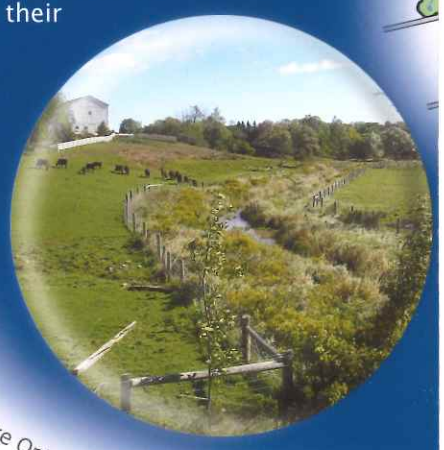
Riparian Buffers

Riparian buffers function as water filters. When it rains, buffers trap pollutants and eroded soil before they get into the creek. While keeping the creek water clean, buffers provide food, shelter and shade for fish, frogs, birds and small animals. They also stabilize creek banks, which helps prevent soil erosion.

Environment Canada's Habitat Guidelines recommend a 30-metre buffer along cold water creeks and a 15 - metre buffer along warm water creeks for these ecological features to perform their function. There are many creeks in our watersheds that do not meet these standards.

The 1999 map of HCA riparian buffer data shows that the area's urban creeks have insufficient riparian buffers when compared to these environmental standards. The upper subwatersheds of Spencer Creek and Red Hill Creek show an average amount of vegetation, but still do not have adequate riparian cover along these watercourses. The headwaters of Spencer Creek and the creeks within the Dundas Valley show sufficient riparian buffers. HCA is continually working to preserve these important ecological features.

It is HCA's goal that every creek, where possible, will meet the standards for riparian buffers as defined by its governing environmental organizations. HCA is committed to continuing efforts to work with private landowners to establish as wide a buffer as their property permits.



Riparian Buffer Cover - 30 metre or greater (Data: 1999)

Good: 75% or greater | Fair: 37.5 - 74.9% | Poor: <37.5%

Water Quality

Clean water is an important component of a healthy watershed ecosystem. It helps support diverse aquatic habitat, enhance recreation potential and improve the well-being of those who use it. It adds to the aesthetic appreciation of the natural environment.

HCA monitors surface water quality as part of the Provincial Water Quality Monitoring Network (PWQMN) and the Ontario Benthos Biomonitoring Network (OBBN). PWQMN water samples are collected from March to October at numerous locations across the watershed to analyze many chemicals, metals, sediment, bacteria, and temperature - all which can result from different land use practices. For this report, only the amounts E. coli bacteria and phosphorus are portrayed.

OBBN samples, which are a collection of small insects and other organisms that live within or attached to the bottom of streams, are collected in the spring and fall. Based on the types of organisms found, this collection can indicate what the water quality in that stream is like throughout the year.

Water quality in the Spencer Creek subwatersheds range from fair to good, with the best water quality found at its headwaters where natural land cover remains high. Water quality, similar to our fisheries, decreases in and around the urban and suburban centres due to little natural vegetation cover and a high amount of impervious surfaces. However, it appears that water quality is improving in many places as awareness of this valuable resource increases.

Water Quality (Data: PWQMN 2002-2006, benthos 1999-2004)

Provincial Water Quality Monitoring Station

Excellent | Good | Fair | Marginal | Poor | Insufficient Data

Fisheries

Fish are monitored by HCA because they respond sensitively to environmental change and are good indicators of watershed health. Like the air we breathe, water quality strongly influences the types and numbers of fish that are capable of living within it.

HCA has monitored fisheries in its watersheds since 1996. Currently 45 stations are routinely monitored by HCA using the Ontario Stream Assessment Protocol (OSAP). Fish are captured and recorded, and fish habitat is evaluated and mapped at each station. In total, 49 fish species have been identified as a result of routine data collection.

Fisheries data collected at each station are analyzed using an Index of Biotic Integrity (IBI) tailored to HCA's watershed. The index uses factors like species diversity, fish abundance, and the presence of key fish species to determine overall stream health.

Stream health is generally good in the upper subwatersheds where forest and wetland cover remain high. These conditions begin to degrade as agricultural and urban influences increase through Flamborough and toward urban Hamilton.

The eastern watersheds in Hamilton and Stoney Creek remain in a fair to degraded condition due to past urbanization, loss of natural land cover, and watercourse enclosures.

Stream Health (Data: 2001-2006)

Excellent | Good | Fair | Poor | Insufficient Data

What does this all mean?

By looking at the results on each map, it is obvious that the overall health of HCA's watershed shows a decreasing trend from the upper reaches toward the City core. Watershed health is generally much better in the upper subwatersheds in Flamborough and Puslinch, decreasing in health as agricultural land uses in lower Flamborough and urban land uses in Ancaster, Dundas, Hamilton, and Stoney Creek increase.

These results can be attributed to the large amount of remaining natural lands and riparian buffers which protect our water resources in those upper subwatersheds. As these valuable features are reduced, the quality of our water supply and the health of our fishery decrease in response. As public awareness about the value of these protective features increases through education and natural land stewardship, these results can be improved in time.

What can you do?

In the same way that our actions can accumulate and degrade our natural areas, our actions can also preserve and restore our natural environment. If we all make it a priority to improve our habits then we can improve the Hamilton area for future generations. Here's how you can make a difference:

Eliminate the use of fertilizers and pesticides on your property. These chemicals can easily contaminate our groundwater supply and our creeks.

Try gardening and landscaping with native plants. Plant native wildflowers and grasses instead of typical lawn grasses, or plant native trees and shrubs rather than exotic ornamental species. Native species are naturally adapted to our climate and soils. They require less maintenance and do not require watering as they are naturally drought resistant.

Don't dump garbage in natural areas. These items create hazards for children at play and for local wildlife. Instead, take advantage of the City of Hamilton's Waste Management Services. They offer a variety of free services to residents, including the disposal of household appliances/scrap metal, hazardous waste, yard waste and old furniture.

Do not encroach on natural areas adjacent to your property. Dumping yard waste into natural areas smothers young plants on the forest floor. Compost your yard waste or put it at the roadside for municipal waste collection.

Instead of expanding your lawn or garden into the natural area, try incorporating some of the natural area into your yard. Expand the natural area by allowing a portion of your yard to regenerate naturally or use the same plant species that you have found in nearby natural areas. Never remove plants from a natural area because they could be rare or endangered species.

Maintain or upgrade your septic system. Keeping your septic system in working order greatly reduces its potential to contaminate your groundwater supply. Remember to have your septic tank pumped out every two to three years.

Maintain and upgrade any groundwater wells on your property. Wells are direct access points for contaminants to enter our drinking water supplies. Old wells can also be safety hazards for people and wildlife. You have a responsibility to seal old abandoned wells that are on your property.

Want to get involved in improving your local environment and get information about some of the issues mentioned above? Contact the Hamilton Halton Watershed Stewardship Program at (905) 525-2181 x164 for more information.

Moving Forward: 2007 - 2011

Watershed Monitoring is Important to us All

HCA is committed to monitoring the health of our watersheds and reporting our results to the community every **five years** with a Watershed Report Card. Watershed monitoring is important because it helps identify where problems exist, develop strategies to help alleviate them, and track changes over time. It also allows us to identify healthy areas in our watersheds and protect them for future generations. HCA will continue to improve monitoring of its watershed as new regulations and technologies are developed.

Our Plan to Get Us There

HCA recently developed a five-year conservation strategy for 2007 through 2011. This strategy highlights our many goals for the management of our water resources, the protection of natural areas, and the improvement of environmental education and awareness in the community. With the development of our Business Plan in 2007, HCA will continue to protect our water resources, provide innovative and practical solutions to watershed management, and enhance the community's long-term environmental and economic prosperity.

Laying the Groundwork for Watershed Improvement

As part of its strategy, HCA has committed to developing Subwatershed Stewardship Action Plans for the Spencer Creek watershed. Over the next five years, these plans will aim to identify opportunities for the community - private landowners, community groups, special interest clubs, and schools - to take part in improving our natural resources for the benefit of water quality and habitat for fish and wildlife. Extensive stakeholder and community involvement will be key to the success of these plans.

Hamilton Conservation Authority

Contact Us:

Call 905-525-2181 or 905-648-4427

Fax 905-648-4622

Email: nature@conservationhamilton.ca

Website: www.conservationhamilton.ca

P.O. Box 7099, 838 Mineral Springs Road,

Ancaster, ON L9G 3L3

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Conservation ONTARIO Natural Champions

Hamilton-Halton Watershed Stewardship Program

Ontario Ministry of Natural Resources

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