
WETLAND POLICY PAPER

October 2008



Muskoka
WATERSHED COUNCIL

WETLAND POLICY PAPER

EXECUTIVE SUMMARY

Mission Statement

The Mission of the Muskoka Watershed Council is “to champion watershed health”. Healthy wetlands are the foundation of a healthy watershed.

Muskoka Watersheds Wetlands

The underpinning of Muskoka's life and economy is excellent water quality. Approximately thirteen percent of Muskoka's area is covered by wetlands, distributed unevenly. Because of this wonderful resource, Muskoka does not suffer from severe flooding and enjoys excellent water quality and healthy natural areas. We need to be vigilant *now* to prevent reduction in the extent of Muskoka's wetlands that will impact on both the Muskoka lifestyle and economy.

Muskoka Watersheds Report Card

The Muskoka Watersheds Report Card gave wetland protection a grade of 'C' noting that relatively few wetlands had been evaluated and therefore did not come under the provincial policy statement that protects provincially significant wetlands. The Report Card also noted that there were no programs to undertake the evaluation of additional wetlands. In addition, it noted that while municipal policy provides some protection for wetlands through the development process, if there is no development application under consideration then wetlands are vulnerable to being filled and developed at a later date. Since the release of the Report Card in August 2007, some municipalities have passed by-laws to control site alteration activities, such as filling of wetlands, in limited geographic areas.

Muskoka Watershed Council Position on Wetlands

Muskoka Watershed Council supports the protection and preservation of all wetlands and encourages agencies and organization to identify, evaluate and take protective measures to ensure the long-term health of these essential ecosystems.

Guiding Principles

Four guiding principles form the basis of Muskoka Watershed Council's policy position:

- Wetlands are critical to sustaining surface and groundwater quality and quantity and therefore, essential to the well-being of humans and all other forms of life.
- Wetlands are core components of the natural heritage systems.
- Wetlands should be managed on a watershed and subwatershed basis.
- Wetland loss should be avoided.

To pursue these guiding principles the Muskoka Watershed Council will:

- promote appreciation of wetlands through education, demonstration projects and events;
- encourage wetland evaluations by third parties and partner organizations;
- report to the public on wetland health and protection;
- advocate for wetland protection through municipal planning processes and encourage private land acquisition by land trusts and other conservation-minded bodies; and
- communicate the importance of wetlands through education initiatives, support of best practices in management and development.

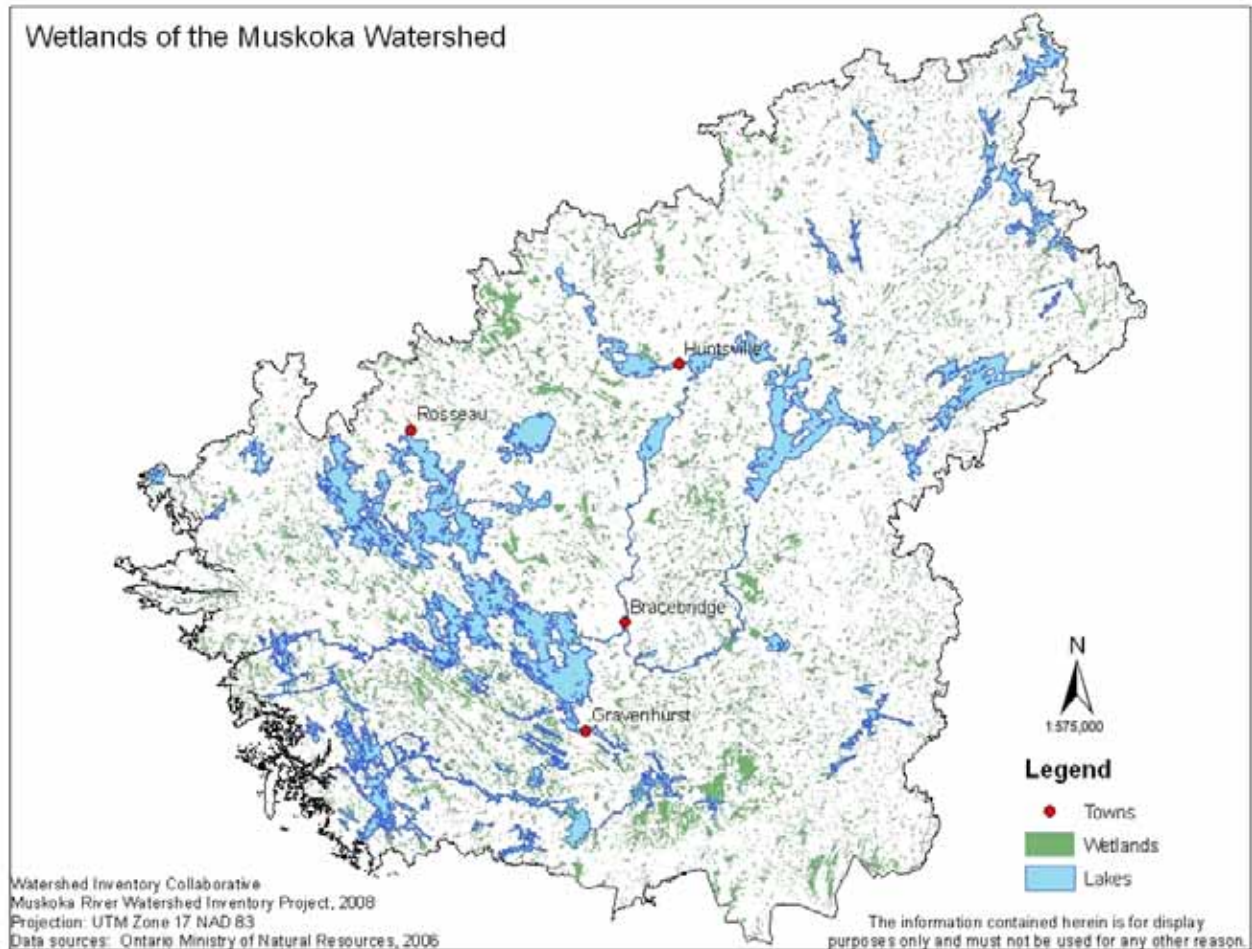
Principles for Municipal Policy

As municipalities prepare and implement planning documents, including official plans, zoning by-laws, and development applications, Muskoka Watershed Council will encourage them to incorporate policy, regulations and implementation measures that:

- Encourage sustainable management of all wetlands.
- Manage wetlands as parts of larger ecosystems recognizing the diversity and connectivity of natural features in the area.

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- Maintain the long-term ecological function and biodiversity of wetland systems.
- Restore or, where possible, improve linkages between and among wetlands, surface water and groundwater features.
- Prohibit development and site alteration in areas designated as Provincially Significant Wetlands.
- Define adjacent lands based on ecological function.



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Background

Wetlands are defined as “lands that are seasonally or permanently flooded by shallow water as well as lands where the water table is close to or at the surface. In either case the presence of abundant water has caused the formation of hydric soils and has favoured the dominance of either hydrophytic or water tolerant plants. The four major types of wetlands are swamps, marshes, bogs and fens”.¹

Wetlands have been recognized by all levels of government as being important components of a healthy environment. The Federal government, through the National Round Table on the Economy and the Environment, considers wetland loss an indicator of environmental health.² The Provincial government has taken many steps to identify and protect wetlands, the most notable being the adoption of a protective policy statement in the mid 1990's.³

Wetlands are essential ecosystems and parts of ecosystems. Wetlands do not function in isolation and require the physical and biological interaction with the surrounding lands in order to continue to function and provide benefits. In conjunction with the surrounding land, wetlands create regional hydrological systems that help control surface water flow, purify the water, maintain soil moisture levels, and recharge both groundwater and surface water sources. Ninety percent (90%) of wildlife that rely on wetlands also live in upland areas for a portion of their life. Forty percent (40%) of endangered species rely on both the wetland and the surrounding land for all or a portion of their life cycle. Therefore, in order to ensure the continued functioning of wetland environments, consideration must be given to the wetland and the surrounding land as changes are proposed.

Types of Wetlands in Muskoka

In Muskoka, wetland types include swamps, bogs, fens, and marshes. A “marsh” is a wetland type without woody vegetation and features grasses, rushes, reeds, sedges, and other herbaceous plants. A “swamp” is a wetland type with a substantial amount of woody vegetation such as cedar, Black spruce, Silver maple, willows and hemlock. A “fen” is a wetland type that accumulates peat deposits. Fens are less acidic than bogs and have some flow through of water. A “bog” is a wetland type that accumulates acidic peat and has no flow of water through it.⁴

Swamps⁵

Wetland areas are often composed of several wetland types. The diversity of wetland types in one area adds to its biodiversity and ecological value. A wide range of wooded wetland communities can be found in Muskoka. On clay and sandy substrates, deciduous forest swamps commonly include Red and Silver maple, Black ash, cedar and less commonly Balsam fir.

Coniferous swamp forests are common in most parts of Muskoka, usually on organic mats at least one metre thick. Black spruce is dominant in many of these community types, often associated with tamarack and Balsam fir. A dense shrub understory of Specked alder, Labrador tea, Northern wild raisin, Mountain holly and Red osier dogwood is often present. The ground layer often has a carpet of Sphagnum and other mosses, and heath plants such as cranberries, snowberries and kalmia. These areas will also be home to herbaceous wildflowers such as Yellow Clintonia, Canada mayflower, bunchberry, starflower, and goldthread.

¹ Government of Ontario, Provincial Policy Statement, Queen's Printer, 2005
(<http://www.mah.gov.on.ca/Page1485.aspx>)

² National Roundtable on the Environment and the Economy, 2005-2006 Departmental Performance Report (<http://www.tbs-sct.gc.ca/dpr-rmr/0506/NRTEE-TRNEE/nrtee-trnee-eng.pdf>)

³ Government of Ontario, Provincial Policy Statement, Queen's Printer, 1996

⁴ Wikipedia, wetland definitions. <http://en.wikipedia.org/wiki>

⁵ Reid and Bergsma Natural Heritage Evaluation of Muskoka, February 1994, pg. 24, 25

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Nutrient-poor peat lands support poor fens, including floating shrub mats of leatherleaf and Sweet gale, herb-rich mats with Virginia chain fern and Pitcher plants on open graminoid mats. Scattered, stunted Black spruce or tamarack are often present on the open mats. These poor fens are usually ringed by an alder–Black spruce thicket swamp and a zone of open water up to 2 metres called a “lag”. Wild calla and other aquatic submergents and emergents occupy this zone.

Thicket swamps are a common component of wetland systems in Muskoka, often along the transition zone to drier ground. Alder thickets and winterberry-Mountain holly-Northern wild raisin thicket swamps are especially common. In the southern section of the District, buttonbush-Silky dogwood-Water willow thickets also occur.

It may be several years before a created swamp becomes partially functional and a few decades may pass before trees have had sufficient time to grow and improve the newly-created swamp’s function.

*Bogs and Fens*⁶

Bogs and fens are rare habitats in the lower Great Lakes and are highly susceptible to changes in nutrient and water inputs, making them very difficult to rehabilitate once disturbed. The best management strategy for these types of wetlands is to protect them by securing their water sources and not altering their watersheds.

*Marsh Communities*⁷

Along the edges of lakes and ponds, marsh communities often soften the transition from water to land. In deeper water zones, submergent aquatic communities and floating-leaved species such as Bullhead lily, Water shield, and infrequently Wild rice gives way in shallower water to more diverse emergent marsh communities of pickerelweed, rushes, bur-reed, and sedges. On seasonally-flooded drier sites, beaver meadows of Canada bluejoint, boneset, Rough-stemmed goldenrod, and other herbs occur, often with scattered shrubs of meadowsweet and Sweet gale.

One shoreline community which is relatively widespread in Muskoka is Atlantic Coastal Plain Flora, typified by Virginia meadow-beauty, Slender yellow-eyed grass, Water wort, and related species. This disjunct community occurs on sandy shorelines where fluctuating water levels prevent the invasion of shrubby species that might otherwise occupy the site.

Marshes are more readily restored due to their dynamic water and nutrient regime, and related higher primary productivity. A newly-created marsh exhibits some functions within a year or two.

Importance of Wetlands

Wetlands and the area that surrounds them provide continuous, sustainable environmental, economic and social benefits that contribute to the high quality of life in Muskoka. For convenience, wetland values are generally grouped into biological, hydrological and socio-economic benefits; however, many of the values contribute to all three broad categories.

Wetlands and their surrounding area:

- Are important for the control and storage of surface water and the recharge and discharge of groundwater;
- Maintain and improve water quality, aid in flood control, and protect shorelines from erosion;
- Trap sediments which would otherwise fill watercourses;

⁶ ibid

⁷ ibid

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- Support and initiate complex food chains which are ultimately essential for a broad spectrum of living organisms, including humans;
- Provide important habitat for a wide variety of plants and animal species;
- Immobilize some contaminants and nutrients;
- Reduce other contaminants to less damaging compounds;
- Assist in maintaining water quality in adjacent lakes and streams that support fish populations;
- Provide valuable resource products such as timber, fish and wild rice on a sustainable basis;
- Contribute substantial economic and social benefits to the municipality through trapping, hunting, fishing and outfitters;
- Sequester carbon; and
- Provide active and passive recreational opportunities, including canoeing, bird watching, hunting and fishing.

Although all wetlands have importance, it is broadly recognized that larger wetlands that support regional hydrological systems or are home to rare, threatened and endangered species require an extra level of protection.

Economic Value of Wetlands

Valuing the economic benefits of wetlands can help set priorities and allocate spending on conservation initiatives. Valuation can also be used to consider the public's values of wetland systems and encourage public participation in certain initiatives. For instance, valuation may be applicable in environmental assessment (EA) processes. More specifically, valuation could assist EA decision-making by providing a reference value against which other economic factors could be compared in order to determine the significance of environmental effects - the bottom-line in most EAs.

Establishing an economic value for an abstract concept such as the ecological services of a wetland is difficult. Commonly, the open market puts dollar values on society's goods and services. In the case of wetlands, there is no direct market for services such as clean water, maintenance of biodiversity, and flood control. There is, however, a growing recognition that such natural benefits do have real economic value and that these values need to be included in decision-making processes.

The first step in addressing the full economic picture of wetland benefits is to recognize that the non-market benefits wetlands produce are every bit as important as more traditional commodity (good) values.

Table 1 gives examples of economic wetland benefits. In many ways, the economic benefits received from wetlands are comparable to the benefits received from social services such as public schooling, health care and municipal infrastructure.

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Table 1: Examples of Economic Wetland Benefits⁸

USE BENEFITS			NON-USE BENEFITS
Direct Use Benefits	Indirect Use Benefits	Option Benefits	Existence Benefits
<ul style="list-style-type: none"> ● recreation <ul style="list-style-type: none"> - boating - birding - wildlife viewing - walking - fishing ● trapping-hunting ● commercial harvest <ul style="list-style-type: none"> - nuts - berries - grains - fish - peat - forestry 	<ul style="list-style-type: none"> ● nutrient retention ● water filtration ● flood control ● shoreline protection ● groundwater recharge ● external ecosystem support ● micro-climate stabilization ● erosion control ● associated expenditures, e.g., travel, guides, gear, etc. 	<ul style="list-style-type: none"> ● potential future uses (as per direct and indirect uses). ● future value of information, e.g., development of new pharmaceuticals based on wetland species, educational opportunities for children and adults. 	<ul style="list-style-type: none"> ● biodiversity ● culture ● heritage ● bequest value

Unfortunately, to date, society has generally only realized the benefit of wetland services after they have disappeared. Problems with flooding, lost recreational opportunities, reduced fish populations and more costly water treatment are examples of costs understood only after a wetland ecosystem has been degraded or destroyed.

The idea behind putting an economic value on wetland benefits before ecosystem-altering decisions are made is to recognize the potential costs up front and thereby put wetland-related decisions on a more economically sound footing. In considering the value of natural areas such as wetlands, one is trying to determine people's willingness to pay for benefits ranging from aesthetic beauty to recreational opportunities to clean water.

If ecosystem values are as real as other economic values, why do economic decisions tend to favour the destruction of natural ecosystems rather than their retention?

Economists trace this problem to the failure of markets to reflect the full or true cost of goods or services. In the case of a wetland, the calculation of the economic value of filling in a wetland to build housing does

⁸ Modified from Barbier, E.B., M. Acreman, and D. Knowler. 1997. Economic Valuation of Wetlands, A Guide for Policy Makers and Planners. Ramsar Convention Bureau, Gland, Switzerland.

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not, in most cases, include costs such as loss of water quality or flood control because these services do not have readily available dollar values. These ecosystem services are provided for free - they do not have to be purchased. It is only when these services are lost that actual monetary costs are incurred. So paradoxically, the zero price for wetland services is of very high value to human well-being. Since it is difficult for an individual owner to receive direct monetary benefit for the benefits which a wetland provides to others (e.g., downstream water quality improvement or providing habitat for waterfowl which migrate elsewhere), the true value of such benefits is generally not taken into account in land use decisions.

There are a few factors that contribute to market failure when it comes to natural systems.

1. **Distribution of costs and benefits between owners and non-owners**

Unlike other assets, a wetland may deliver more benefits to the community than to an individual owner. Compared to the general community, the individual owner may receive only a small proportion of benefits, such as groundwater replenishment, and therefore will tend to undervalue these benefits. The owner may even feel economically penalized for preserving a wetland for the good of the community and may see more immediate value in developing the wetland, for which the community will bear most of the costs in terms of lost benefits.

2. **The tragedy of the commons**

With a widely shared resource there is little incentive for an individual to curb activities to benefit others. For example, a wetland may support large populations of frogs, but without any sort of limits or fees, there is no incentive for any individual harvester to limit the number of frogs taken for bait, food or classroom dissection. Overharvesting would result in a rapidly shrinking frog population and the reduction of a specific benefit for everyone who uses the wetland.

3. **Missing costs**

The market price of a good may not reflect all of the production costs. For example, if a company freely discharges its waste into a stream that feeds into a wetland, the economic damage done to the wetland, whether it's fewer fish produced or impaired water quality, is not reflected in the market price of the company's goods. The market does not include the lost economic value of the wetland in the company's production costs.

4. **Cumulative effects**

When taken together, a combination of relatively small incremental changes to a wetland or a number of wetlands within a watershed can have more dramatic effects than those recognized when individual changes are made. These cumulative effects result from past, planned and future changes and are difficult to recognize and assess physically as well as economically in part because of the dynamic nature of ecosystems.

5. **Limited understanding of science**

The ability to measure value is also limited by scientific understanding of the ecological functioning of wetlands. Biologists, hydrologists and engineers do not yet fully appreciate or understand all of the benefits that wetlands provide to protect ecosystem stability. This lack of scientific understanding undervalues wetland benefits and contributes to market failure.

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Wetlands in Muskoka

Wetland loss and degradation have been significant, particularly in southern Ontario. In Muskoka we are fortunate to be stewards of relatively intact ecosystems with many healthy and functioning wetlands. A high proportion of Great Lakes fish and wildlife species, including many species at risk across Muskoka, inhabit wetlands during part of their life cycles.

Wetlands are the kidneys of the watershed and clean our water before it reaches lakes and rivers. In excess of thirty provincially significant wetlands have so far been identified in Muskoka, but there is no program to evaluate additional wetlands. As development occurs across the watershed, programs are required to ensure that wetlands remain well distributed across each sub-watershed.

Experience in the Great Lakes basin has shown that in order to reduce flooding and protect base flows⁹, wetlands need to comprise a minimum of ten percent of a watershed. In the Muskoka River watershed we still enjoy a wetland area of about 13% of the land area exclusive of lakes, or 170,750 hectares¹⁰. Evaluated, provincially significant wetlands account for just 4,554 hectares or 2.6% of the total wetland area in Muskoka. Many of the wetlands in the watershed are in relatively undeveloped or remote areas, which mask the importance for wetland protection in subwatersheds where more development pressure is experienced. It will be important, as development occurs, to ensure that wetlands in smaller subwatersheds are protected and continue to provide a wide range of ecological services. By maintaining this natural balance we can work with the natural system to strengthen nature's capacity to cope with change and development pressure.

Wetland Locations

Wetlands are beneficial anywhere within a watershed; however, particular ecological functions can be met by maintaining or restoring wetlands in key locations, such as:

1. Headwater areas to protect the sources of streams;
2. Groundwater recharge areas for maintaining stream flow and temperature;
3. Floodplains for flood attenuation and water storage; and
4. Shoreline areas for fish production.

Large swamps tend to have a greater variety of habitats, which in turn tends to support more wildlife species. Marshes also benefit from this effect in terms of "interspersions" or juxtaposition of different marsh communities (e.g., emergent versus submerged vegetation). Smaller marshes will be less likely to have multiple marsh communities of sufficient size for use by wildlife. However, wetlands of various sizes and types will be used by wildlife, including small wetlands used by breeding amphibians and seasonally flooded wetlands used for fish spawning.

Legislation

There is no specific wetlands legislation in Ontario or Canada. Wetlands receive indirect protection through Ontario's *Planning Act*, *Fish and Wildlife Conservation Act*, *Municipal Act*, *Endangered Species Act*, *Lakes and Rivers Improvement Act*, *Conservation Land Act*, *Conservation Authorities Act*, *Environmental Assessment Act*, and *Ontario Water Resources Act*. Wetlands are also specifically recognized in the natural heritage protection measures of Ontario's *Planning Act*. However, other legislation, such as the provincial *Tile Drainage Act*, still works against wetland conservation by permitting wetland drainage for agricultural purposes. In most cases, the installation of municipal drains significantly alters the local water cycle, resulting in dramatic changes to wetland area and function.

⁹ Base flow is the portion of stream flow that comes from groundwater and not runoff.

¹⁰ Muskoka Watershed Inventory

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At the federal level, the *Canada Wildlife Act*, *Fisheries Act*, *Migratory Birds Convention Act*, *Species at Risk Act*, and *Canadian Environmental Assessment Act* provide some protection for wetlands through species and habitat conservation measures.

Municipal Wetland Policy

The *Ontario Planning Act* requires that municipal official plans and development decisions be consistent with provincial policy statements issued under Section 3 of the Act. The Natural Heritage policy that addresses wetlands states:

2.1.3 *Development and site alteration* shall not be permitted in:

- a. *significant habitat of endangered species and threatened species;*
- b. *significant wetlands* in Ecoregions 5E, 6E and 7E; and
- c. *significant coastal wetlands.*

The watersheds of Muskoka are located in Ecoregion 5E and, therefore, are subject to provincial policy 2.1.3. (b) and (c) which prohibits development and site alteration in significant wetlands. The Official Plan of the Muskoka District Area requires that regard is given to the preservation and protection of all wetlands which, arguably, is more restrictive than the provincial policy which is limited to significant wetlands only. The Official Plan goes on to state, however, that limited development, compatible with wetlands, may be permitted in wetlands where the integrity of the wetland can be preserved and the suitability of the lot is confirmed by a site evaluation report. Although this policy provides general direction to preserve and protect wetlands, it does not prohibit development. In practice, there is more flexibility in the implementation of this policy in wetlands that have not been evaluated or which have been determined not to be significant. Each Area Municipality has implemented this strategic policy approach through more specific policy in local official plans.

All municipalities prohibit development within provincially significant wetlands as required by the Provincial Policy Statement. Other wetlands are provided a lesser degree of protection, which varies from municipality to municipality. Generally, a municipality will require a report, prepared by a qualified biologist that demonstrates how development can occur without a negative impact on the wetland features or functions. Again, generally, where a wetland has not been identified as being of provincial significance, some level of development is often permitted.

In most local municipalities, where there is no development application, there is currently no control over filling or altering wetland habitat. The exception would be in the waterfront area of the Townships of Seguin and Muskoka Lakes where they have adopted a tree cutting and site alteration by-law, and in the waterfront area of the Township of Lake of Bays where they have adopted a development permit by-law. The Town of Bracebridge is currently considering a tree cutting and site alteration by-law for a limited area of the municipality that would address the issue of filling in wetlands in selected areas. Other local municipalities should be encouraged to consider similar regulation in vulnerable areas of their municipality.

Conclusion

Wetlands are an important component of the Muskoka landscape. They are the kidneys of the watershed and ensure that we continue to enjoy excellent water quality. Approximately thirteen percent of Muskoka's area is covered by wetlands.

How much wetland is enough? That question is better answered with another question – How much change can we afford or want to see on the Muskoka landscape? Research on this question has been carried out in southern Ontario where over 70% of natural wetlands have already been lost. In that situation, studies have shown that when wetlands are restored to comprise about 10% of a watershed,

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flooding is greatly reduced and base flows are better maintained. No research was found that demonstrates the impact of decreasing wetlands in a watershed from the natural level of 13% to the 10% restoration objective of southern Ontario. It is likely, however, that such a significant reduction in wetland area would result in a loss of many wetland values such as flood control, water purification, and native biodiversity.

In order to limit negative impacts on both the Muskoka lifestyle and economy, municipalities, landowners and individuals have a collective responsibility to protect and preserve wetlands across the Muskoka's watersheds.

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