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Thank You!

The *Stewardship Guide for the Lake Huron Coastline* was used as a model for the writing this manual, and consequently, sections have been reproduced with the appropriate permission.

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Eastern Georgian Bay Stewardship Guide

Introduction

Background

In 1991, Ontario farmers developed the Environmental Farm Plan (EFP) to address the environmental concerns arising from agricultural production. Since then it has become the basis for the *Lake Huron Stewardship Guide*, a program for the Huron-Bruce shorelines and the Bruce Peninsula.

Following the success of that program, the Canadian Committee for the Lake Huron Bi-national Partnership expanded the program to take in other areas of the Lake Huron Basin. The *Eastern Georgian Bay Stewardship Guide* is patterned after this program but is tailored to the unique ecological and community characteristics of Eastern Georgian Bay by addressing the risks, challenges and benefits of living along or near the coastal region.

What is the purpose of the Eastern Georgian Bay Stewardship Guide?

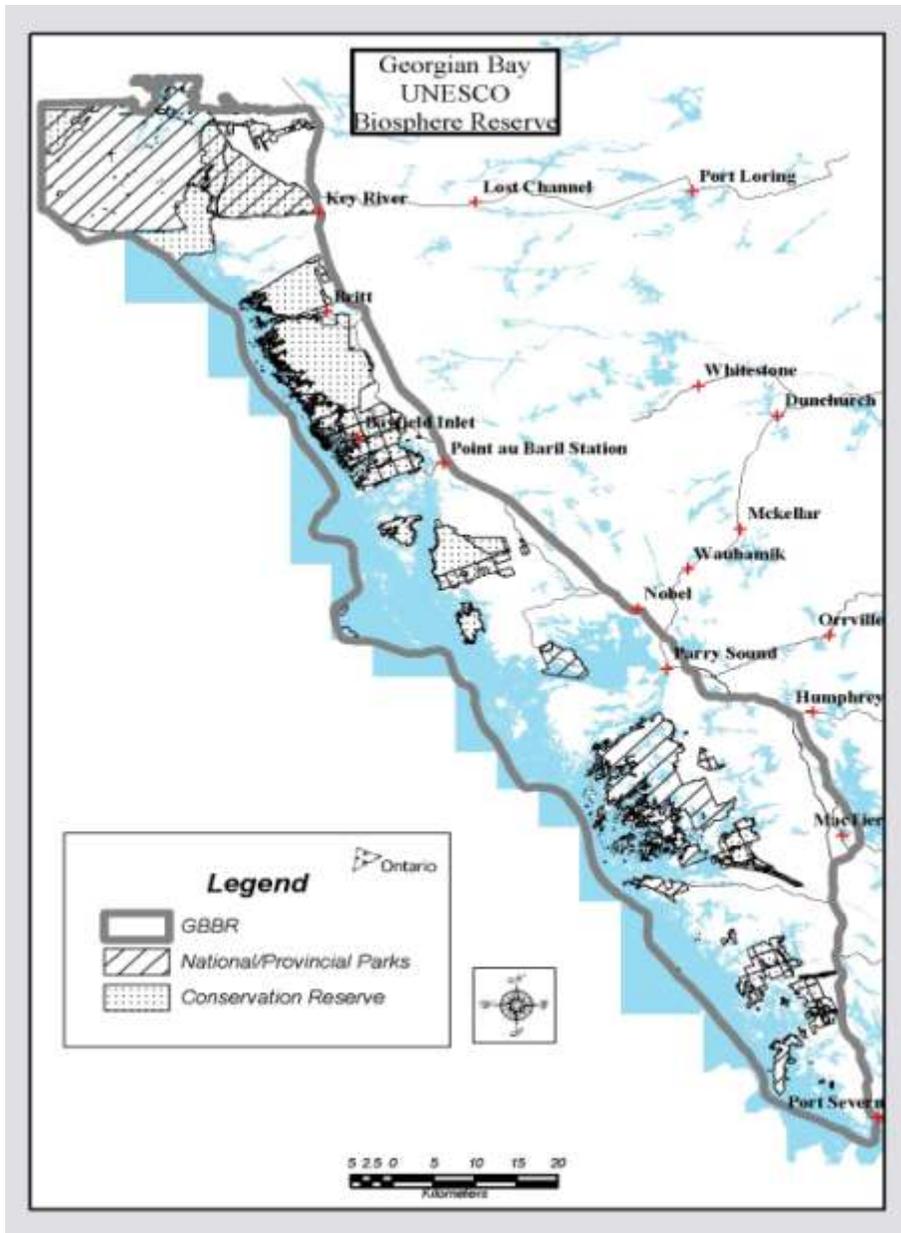
The objective of the Eastern Georgian Bay Stewardship program is to support healthy ecosystems through the care and protection of our shorelines and our water, both ground and surface water. This book will guide you through an environmental assessment of your property. The Guide will help you see your property and your actions in a new way. It asks you to think about your land, the buildings and structures on your land, and how your actions affect the larger landscape. It asks you to rate how you affect the environment and water quality around your property. Finally, it recommends resources to further your understanding of ways of maintaining your property in order to decrease the risks to precious natural resources.

The Guide has two sections – an **Introduction to the Natural and Cultural History of Eastern Georgian Bay** and **Worksheets & Action Plans**. As you complete the worksheets, you will learn what you are doing right, and where you can modify your actions to help protect our natural environment. The worksheets provide basic background information, helpful tips and recommend resources to further your understanding on each topic.

By taking steps to protect your shoreline and water quality, you are making a wise investment as a property owner. You will also help preserve Ontario's natural legacy for future generations.

No individual can single-handedly solve the issue of water quality or environmental deterioration but collectively we can make a difference.

Eastern Georgian Bay Stewardship Guide



Is this Guide for you?

This Guide is intended for residents, cottagers and property owners along the eastern shore of Georgian Bay from Port Severn in the south to Killarney in the north. The focus is on the communities and landscapes west of Highways 400 and 69, coastal Georgian Bay and the adjacent lakes. This area encompasses the Georgian Bay Biosphere Reserve, a UNESCO designated area committed to sustainable development and conservation.

A Brief Natural and Cultural History of Eastern Georgian Bay

Physical Geography

The Lake Huron/Georgian Bay watershed and shoreline contains some very significant cultural and ecologically rich features and places, the result of thousands of years of evolution, glacial activity and human development. The following is a brief description of how this landscape came to be

Along the eastern shore of Georgian Bay lie the 30,000 islands, the largest freshwater archipelago in the world. Georgian Bay is one of the three basins that make up Lake Huron, the fifth largest freshwater lake on the planet. Over two hundred kilometres long, Georgian Bay is almost the same size as Lake Ontario and is big enough to be one of the world's 20 largest lakes. Georgian Bay is separated from the rest of Lake Huron by the Bruce Peninsula to the west and Manitoulin Island to the north. It is often referred to as the sixth Great Lake and is noticeably different from Lake Huron in terms of landscape and ecology. It even creates its own weather, waves, and currents.

The characteristic Georgian Bay landscape was shaped by the sheets of ice that covered the entire Great Lakes Basin 70,000 years ago. The glaciers advanced in four major lobes, following the depressions in which the Great Lakes now sit. These lobes extended well beyond the present lakes. In southern Ontario, the three major lobes were associated with the Ontario, Erie and Huron basins and smaller lobes advanced out of Georgian Bay and the Lake Simcoe lowlands.

About 10,500 year ago, the melting glaciers formed Lake Algonquin, which covered the areas of the present Lake Michigan, Lake Huron and Georgian Bay. It drained through the French and Mattawa river valleys. This outlet was formed when the French and Mattawa valleys, which had been depressed

about 200 metres by the glaciers, became free of ice. During the initial stages of this outflow to the east, a small lake remained in each of the Michigan, Huron and Georgian Bay basins. Over a few thousand years, as the melting increased, these small lakes grew in size to form one large lake known as Lake Nipissing.

About 6,000 years ago, the waters of Lake Nipissing drained through three different outlets, the French-Mattawa valleys, the Mississippi, and Lake St. Clair. Uplift in the northeast caused the flow in the French River Valley to be reversed. Eventually the St. Clair route became the only outlet for Lake Nipissing leading to the drainage of all the Great Lakes down the St. Lawrence Valley and the shape of the lakes we know today. The Great Lakes Basin continues to rise at a rate of 7.5 cm every 100 years.

The glaciers also shaped our landscape as soil was scraped from some areas and glacial till deposited in other areas. The rocks were scoured and polished. Depressions were left that formed lakes and wetlands. The result is our unique landscape of barren rocks, shallow soils and gently rolling ridges.

Most of the rocks we admire along the coast today are gneiss, which were formed one billion years ago during a series of mountain building events which baked, squeezed, stretched and twisted the rock. These colourful metamorphic rocks are the eroded remains of those mountains.

Today, the land along Lake Huron and Georgian Bay continues to undergo change, incorporating recreational and residential land uses and activities.

For more information: *Shaped by the West Wind* by Clare Campbell. 2005, UBC Press.

Local Ecology: Our Natural Neighbourhood

Georgian Bay's cobalt blue waters, windswept pines and smooth gneiss rocks captivate both visitors and residents. The beauty of our landscape is renowned through the works of many artists including the Group of Seven. It is a place where people enjoy being outdoors.

Ecologically speaking, we live in a rich and diverse neighbourhood. With 30,000 plus islands, over 5,000 kilometres of shoreline, rock barrens, mixed forests, hundreds of lakes and a wealth of wetlands, the eastern Georgian Bay coast has a remarkable variety of habitat and wildlife. The coastal wetlands of Georgian Bay are among the highest quality on the Great Lakes and provide important nesting areas for birds, turtles, and amphibians. This area is recognized as one of the most biologically diverse regions in the province and is globally recognized as a UNESCO world biosphere reserve. The appeal of retreating to water for rest and relaxation is increasing in popularity. Year round rather than seasonal use of properties is becoming more common. We need to be aware of how our activities and behaviour affect our natural neighbourhood. As individuals and communities our actions can help maintain and restore habitat. Taking care of the health of our land and water is important for the well being of wildlife and future generations. Taking the time to create your own stewardship action plan is an excellent first step.

Getting to Know Your Natural Neighbourhood

Georgian Bay is famous for its islands. From the outer reefs and islets, to the larger forested islands and mainland areas, there are a range of ecological functions. This diversity of islands also supports a number of important habitats that contribute to the many unique and special species on eastern Georgian Bay.



Eastern Foxsnake (Endangered) credit Gary Allen

Important Habitats

- Wetlands are the filter between land and water. They act as water purifiers, cleaning surface and groundwater before it enters Georgian Bay. There are four types of wetlands found in our area: swamp, marsh, bog and fen. This mixture of wetlands provides diverse habitats. It is estimated that more than 2/3 of all lake species reproduce in wetlands and the near shore areas, including birds, fish, reptiles and amphibians. Coastal wetlands provide nesting sites for many colonial nesting birds (e.g. herons, terns and gulls).
- Shorelines of the coast and inner islands can provide habitat for uncommon plant species such as Virginia Meadow Beauty and Carolina Yellow-eyed Grass. These plants are referred to as Atlantic Coastal species and, as the name implies, are normally found along the eastern seaboard. In eastern Georgian Bay they are found in undisturbed areas with gently sloping sand and gravelly shorelines where seasonal water level changes naturally occur. Sun exposed cobble beaches and rocky shores provide excellent habitat for reptiles, such as Common Map Turtle (Special Concern), Northern Watersnake and the Eastern Foxsnake (Endangered).
- Vernal Pools or spring ponds are temporary pools of water. They may vary in size but are often quite small. Vernal pools are found in low lying areas and hold water primarily in the spring and sometimes in the fall. Since they lack fish predators, they become essential in the reproduction of many species of amphibians and insects.

Take Action

Would you like to Adopt a Wetland? Contact Georgian Bay Forever to find out how you can assist in wetland research on Georgian Bay at www.georgianbayforever.org

Rock barrens and rock outcrops are found throughout the biosphere reserve. Only a limited number of plants and animals can survive in these harsh conditions, cycles of heat, cold and drought. Low growing plants such as lichens and Common Juniper are typical species. Stunted White Pine and Red Oak are also found. Birds like the Prairie Warbler and the Common Nighthawk favour these areas. Despite the name, the Common Nighthawk is now considered to be a threatened species. Ontario's only lizard, the Five-lined Skink (Special Concern), are also concentrated in these areas.



Please leave rocks in their natural location.

- Large mixed forests are found on the large inner islands and shoreline. These areas tend to have deeper soils and support tree species such as Sugar Maple, American Beech, Hemlock, and Yellow Birch. The large trees hold water, reduce erosion, and build soil. The forested areas influence the local climate by providing shade, increasing humidity and reducing winds. This area retains large areas of forests, and as a result, interior forest species such as the Red-shouldered Hawk and the Pileated Woodpecker are found here. The forests also provide habitat for White-tailed Deer, Black Bear, Eastern Wolf (Special Concern) and Fishers.

For more information on which species at risk rely on these habitats, please go to Section 10.

Where do we fit in?

Broad Scale: a Watershed Perspective

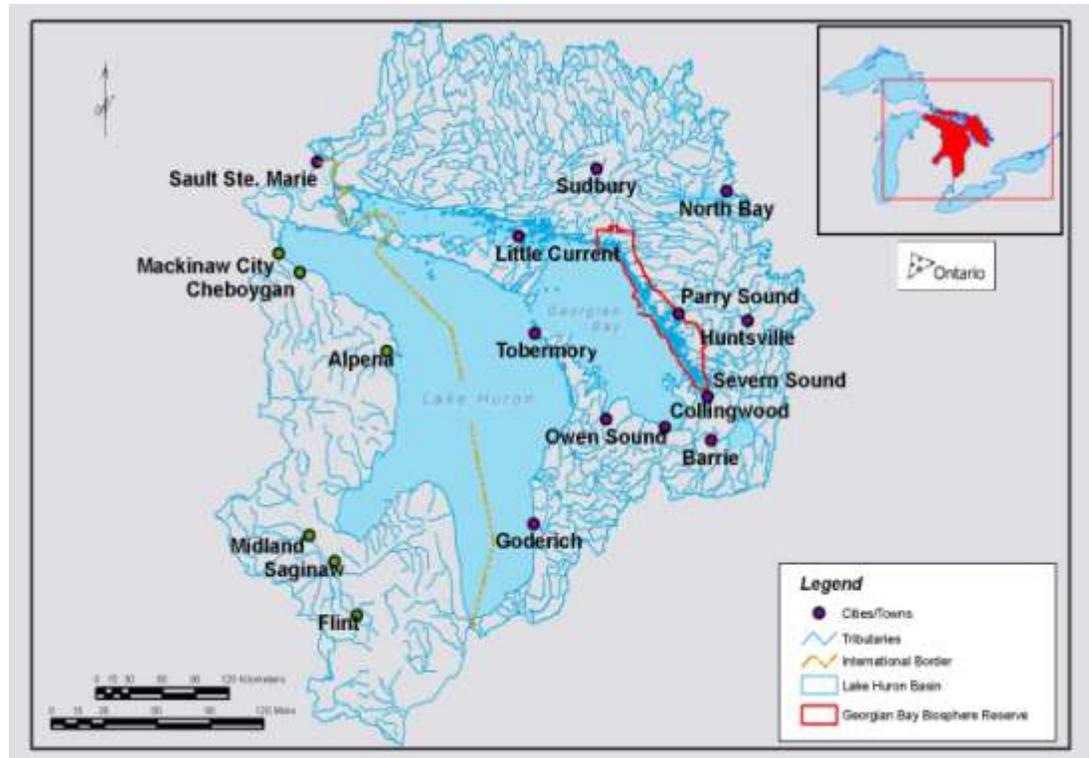
What is a Watershed?

A watershed is the entire land/water area that drains into a body of water such as an ocean, lake, river, or pond. The boundaries of a watershed are formed by the highest points in the landscape— they are like the edges of a bathtub or sink—any water that falls within it will drain into the same water body.

On its journey downwards, the water within a watershed can pass through different landscape features such as streams, rivers, lakes, bogs and marshes.

The Lake Huron/Georgian Bay watershed forms part of the larger Great Lakes-St. Lawrence Watershed.

The first step in protecting aquatic ecosystems is to better understand your place in this watershed. Become familiar with local natural features and understand how they function in relation to this watershed and to aquatic health.



Why should you be concerned?

YOU live in the Georgian Bay Watershed. Your actions and those of your neighbours affect the aquatic health of this watershed.

Georgian Bay's 30,000 Islands

Where Are You Located?

The Outer Islands

- Generally relatively small, low islands (less than 1 hectare.)
- Exposed to ice, wind and water erosion
- Vulnerable to high water levels
- Low level of biodiversity

Habitat Types

- Bedrock shoreline
- Rock Barrens

Typical Species

- Limited plant species, e.g. lichens
- Cold water fish species including Lake Trout
- Colonial nesting birds, e.g. gulls, terns and cormorants

Human Influence

- Generally limited impact, minimal use by recreational boaters/fishers.
- Some outer islands are being developed.
- Colonial nesting birds are susceptible to disturbance by people and their pets during nesting season.



Georgian Bay's 30,000 Islands

Where Are You Located? *(continued)*

The Intermediate Islands

- Medium sized (1-5 hectares.)
- Sheltered by outer islands
- Provide “stepping stones” for migrating species
- Higher level of biodiversity

Habitat Types

- Wetlands including small marshes (typically on lee side) spring ponds and small “perched” bogs (rocky depressions filled with sphagnum moss)
- Bedrock/cobble and small natural sand beaches
- Rock outcrops/barrens
- Some forest cover

Typical Species

- Tree species such as White Pine and Red Oak.
- Some small to medium sized mammals including Raccoon, Porcupine and Red Fox
- Common amphibians such as American Toad and Green Frog and numerous reptile species including endangered Spotted Turtles and Eastern Foxsnakes
- Many species of song and shoreline birds, e.g. Pine Warbler, Tree Swallow, Spotted Sandpiper

Human Influence

- Increasing level of impact from cottage development, boat traffic and recreational camping.



Credit Parks Canada

Georgian Bay's 30,000 Islands

Where Are You Located? *continued*

The Inner Islands, Mainland Shoreline and Adjacent Lakes

- Includes the lee side of large islands
- Relatively protected from storms
- Highest level of biodiversity

Habitat Types

- All wetland types and spring ponds
- Bedrock/cobble and natural sand beaches
- Rock outcrops/barrens
- Large mixed forests

Typical Species

- Significant fish spawning and rearing habitat
- Variety of mammals including Moose and Eastern Wolf
- High diversity of reptiles and amphibians (33 species)
- Range of birds including forest interior species such as Red-shouldered Hawk, Barred Owl and Pileated Woodpecker
- High number of plant species, including rare Atlantic Coastal species

Human Influence

- Generally the highest level of impact on water quality and wildlife habitat with cottage, resort, marina developments, urbanization, roads, recreational boating and camping.



Our Neighbourhood Changes Naturally

Natural disturbances have always been part of the ecology of the eastern Georgian Bay coast.

- Wind, water and ice continue to shape this area. Western facing shores and small islands are particularly vulnerable to these forces. Soil and plants are sparse to non-existent on these exposed sites. Inland, weather events such as strong winds and ice storms create openings in the forest canopy which can benefit species such as deer. The decaying downed trees provide habitat for a range of species from fungi and insects to small mammals, snakes and salamanders.
- Naturally occurring cycles of insect infestations, such as the Forest Tent Caterpillar, also influence the forest. The feeding caterpillars weed out young and weak trees. The standing dead trees provide habitat for species like woodpeckers and provide nesting sites for other birds and mammals.
- Beavers play an essential role to the ecology of this area. When they cut trees and build dams, it changes both the type of aquatic habitat and forest available. When beavers flood an area, they create important habitat for many species of fish, birds, amphibians, reptiles and plants. Mammals such as Moose and River Otter also benefit from these ponds. When the ponds drain, the resulting beaver meadows are areas of nutrient rich soil which foster a flush of new plant growth.
- Water levels in Georgian Bay fluctuate both seasonally and over multiple-year cycles with weather patterns having a significant influence. For example, a mild winter leads to higher evaporation rates in the spring, late fall and winter. Naturally occurring, cyclic water-level fluctuations are essential for the maintenance of high quality coastal wetlands.



Red Headed Woodpecker
(Threatened)
Credit Ted Krug

Credit Parks Canada



Beaver
Credit Ted Krug

Past & Present Human Influences

Although eastern Georgian Bay retains many of the qualities of a wilderness area, this landscape has changed as a result of human behaviour. Historical impacts of Aboriginal people were minor and limited to areas around their seasonally used camps.

- The first significant landscape changes began in the mid 1800's with extensive logging. By the early 1900's much of this area was deforested. High intensity fires were common since much of the slash was left on the ground. These fires damaged the shallow soils and led to increased erosion. The forests that we see today are secondary growth.
- Commercial fishing followed a similar history to the logging industry. In the late 1800's approximately two million pounds of fish (White Fish, Yellow Pickerel and Lake Trout) were harvested per year in Georgian Bay. By 1960, the harvest was reduced to 98 thousand pounds. Unsustainable harvests and the introduction of sea lamprey led to decline of commercial fishing in Georgian Bay.
- The "cottage industry" began in the late 1800's and continues to grow in eastern Georgian Bay. Recreational boating, camping and fishing are also popular activities. This has led to an increase in habitat loss and fragmentation as more buildings, roads and trails are constructed. Species that are particularly sensitive to habitat fragmentation include Eastern Wolf (Special Concern), Lynx, Red-Shouldered Hawk, and several species of reptiles. Development can restrict the natural movement patterns of wildlife leading to isolated populations that are vulnerable to a number of stresses including in-breeding. Other impacts associated with recreational and residential property development include the discharge of sewage and other forms of pollution, an increase in non-native species, and the death of wildlife by pets, vehicles and boats. Island ecosystems can be particularly vulnerable to human disturbance. A number of bird species, such as loons, herons and terns will not nest successfully when people frequent an area.
- There are now more than 160 non-native species in the Great Lakes. Many of these species have been introduced by ocean going ships dumping ballast water into the Great Lakes. Invasive species lack natural predators and may displace some native species. They can also bring foreign diseases that negatively impact native species. Once established, invasive species can be very expensive to control.
- Climate change is a natural phenomenon but we are responsible for accelerating the rate of change. Some species will prosper in our area with warmer conditions and others will be negatively impacted. Greater and more frequent extreme weather events are predicted. The effect of global warming on water levels is unclear; some experts predict lower water levels while others indicate it may result in higher water levels. Any changes in water levels beyond historical norms will result in a loss of wetland habitat and potential shoreline erosion problems.

FYI

For more information on climate change and the predicted impacts for Ontario, please go to www.gogreenontario.ca

Past & Present Human Influences *(continued)*

- Recreational and commercial boating also impacts water quality with combustion residues from marine engines, oil and gasoline spills, and the discharge of contaminated water into the Bay.
- Excessive algae episodes, which are sometimes but not always associated with human impact, have occurred in areas such as Sturgeon Bay. The presence of blue-green algae means that contact with the water is not safe. Remediation can require many years to accomplish, can be very expensive and may not produce the desired results.
- In comparison with the lower Great Lakes, Lake Huron and Georgian Bay have relatively good water quality. In the past, people were comfortable taking water directly from Georgian Bay; however, it is recommended that all drinking water be treated. The greatest threat to drinking water safety comes from tiny microbes, including bacteria, viruses and parasites found in human and animal waste. Future increases in the number of homes, cottages, marinas and boats on Georgian Bay may reduce water quality, especially in confined inner bays and near shore areas. Water quality is jeopardized by nutrient leaching from septic systems, shoreline erosion, runoff from fertilizers, herbicides and pesticides on lawns, and spills of solvents or other toxic materials. Taking the steps outlined in Worksheets #2-9 will help maintain good water quality which is crucial for our health and the continued safe enjoyment of the waters of Georgian Bay.



How to use the Eastern Georgian Bay Stewardship Guide

The Worksheets & Action Plans

This section includes ten worksheets to help you evaluate your activities on your property.

Pick only the worksheets that apply to your property.

Read the introductory page and rate the topics that apply to you in the right hand column. For topics that don't apply, write the letters 'NA' (not applicable) in the rating box. If you don't know how you rate, mark the box with a question mark to remind yourself to get the necessary information.

For each topic, there are four descriptions of either natural conditions or current situations. Each has a number rating:

- 4 (Best)**
- 3 (Good)**
- 2 (Fair)**
- 1 (Poor)**

The Best (or 4) rating describes conditions that protect the environment and water quality or have the lowest potential for environmental damage. The Poor (or 1) rating describes conditions that have the highest potential to affect the environment negatively and which require remediation.

Note the condition that best describes your property. If you rank 1 or 2, mark that number in the matching box at the right hand side of the worksheet. The purpose of this rating system is not to tally the numbers in the right-hand column, but to identify areas in

need of improvement. A rating of 1 or 2 indicates areas of your property management in need of improvement to reduce the potential for environmental damage and water contamination. These are the topic areas you should address in an Action Plan. An Action Plan form is found at the end of each worksheet section. Often, the information in columns 4 and 3 can indicate how to improve your practices. As well, you can consult the Resources List at the end of each worksheet to find more information for developing your Action Plan. Remember, this is YOUR Action Plan. It must suit you and your property.

NOTES:

Bold, italic type indicates conditions that may violate provincial legislation. Federal laws or municipal bylaws may also apply. Contact your local municipal government office for more information.

Example of a completed worksheet question:

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
AVOID ATTRACTING NUISANCE WILDLIFE					
1. Food and waste scraps	All food/waste (including pet food and bird seed) is stored indoors in rodent/bear proof containers. Recyclables are rinsed and stored. Waste is taken to sanitary landfill. Compost is properly maintained. BBQ is cleaned and stored in a secure area	Garbage is temporarily stored outside, but in rodent/bear proof containers. Waste is taken to sanitary landfill.	Empty food and drink containers are rinsed. Garbage is stored in sealed containers in an out building. Waste is taken to sanitary landfill.	Compost is improperly maintained, or rodent/bear proof containers are not used. Waste is improperly disposed.	2

Example of a completed action plan:

Topic Number	Workshop Theme	My Rating	Short-term Action	Long-term Action
Living with Wildlife Topic 4	Food waste and scraps	2	Research options for composting and bear proof storage of garbage.	Purchase and properly install or build a bear proof garbage container or store garbage in a sealed container in a basement. Recyclables are stored in a secure fashion. Composting is carefully managed.

The Physical and Cultural Landscape: A Resource List

For more information....

Conservation and Stewardship

- **Fisheries and Oceans Canada**
867 Lakeshore Road
Burlington, ON L7R 4A6
referralsontario@dfo-mpo.gc.ca
- **Ministry of Natural Resources**
Parry Sound
7 Bay Street
Parry Sound P2A 1S4
705-746-4201
www.mnr.gov.on.ca
- **Ontario Stewardship**
www.ontariostewardship.org
- **Living by Water**
www.livingbywater.ca
- **Muskoka Watershed Council**
705- 645-7393
www.muskokaheritage.org/watershed
- **Georgian Bay Biosphere Reserve Inc.**
www.gbbr.ca
- **Invading Species**
1-800-563-7711
www.invadingspecies.com

- **Georgian Bay Islands National Park**
www.pc.gc.ca/pn-np/on/georg/index

Books:

- Dobson. C., and Beck, G.G. 1999. Watersheds.
Willowdale, ON: Firefly Books Ltd.

Water Quality

- **North Bay Parry Sound District Health Unit**
70 Joseph Street
Parry Sound P2A 2G5
705-746-5801
www.healthunit.biz

Cultural History

Ontario Public Libraries

- Search their website to find your local library:
www.culture.gov.on.ca/english/culdiv/library
- West Parry Sound District Museum
17 George Street Parry Sound
www.wpsdm.com
705-746-5365

Books:

- Barry, James, Georgian Bay, The Sixth Great Lake, 1978,
Boston Mills Press