

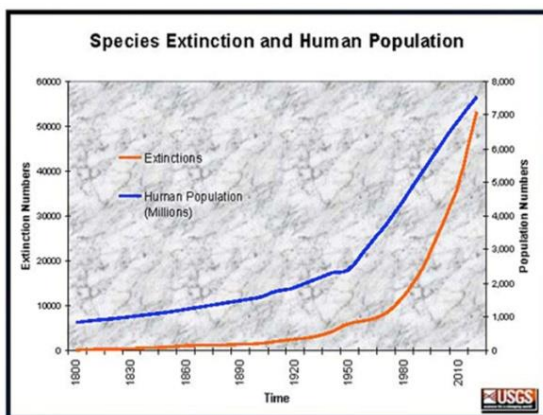


Emerging Issues in Watershed Health

Biodiversity Loss What it is and why it matters to Muskoka

In Muskoka, we enjoy a rich natural environment of forests, rural lands and water. We value our natural environment and recognize that in many ways, our environment is our economy. Caring for our environment is almost second nature, and the Muskoka Watershed Council (MWC) exists to further that stewardship.

Beginning late in 2011, MWC commenced a study of biodiversity in Muskoka. We have all heard of biodiversity, but what is it, and why does its loss matter, especially here where our environment is seemingly in such good condition?



Globally, biodiversity is being lost at a rate which causes many biologists to claim that we are entering the sixth mass extinction event since the appearance of multicellular life 540 million years ago. The fifth mass extinction took out the last of the dinosaurs 65 million years ago. We could see half of all animals and plants become extinct by 2100.

Biodiversity

Biodiversity refers to the variety or variability of life in our environment. It is simplest to think of the sheer numbers of different kinds (species) of plant and animal present, but biodiversity also includes the genetic variability each of these species contains, and the several ways species can be assembled to form our forests, meadows, wetlands, rivers and lakes. Muskoka is a place of moderately high biodiversity; not as rich as a rainforest, but far richer than the tundra, and also richer than many other places in central and southern Ontario where the impact of human activities has been greater.

Biodiversity Loss

Globally, we are losing biodiversity primarily because of the growing pressures of human activities on the natural environment. Where species are not being driven to extinction, there is often erosion of genetic variability because abundances of species are being reduced. This loss of biodiversity is taking place in Muskoka, as elsewhere, and we have our complement of endangered species.



Blanding's Turtle
Photo by Mike Oldam, MNR

Muskoka is home to 35 species of plant or animal that are listed as threatened, endangered, or of special concern. They are rare, and could disappear completely over the next few decades.

Examples of threatened species include bald eagle, bobolink, whip-poor-will, Blanding's turtle, hog-nosed snake, and branched bartonia. Endangered species include foxsnake, massasauga rattlesnake, spotted turtle, butternut tree, and lake sturgeon.

Why Does It Matter?

Biodiversity confers resilience on an ecosystem. The richness of a highly biodiverse system ensures that there are many alternative ways to get ecological tasks completed. The ecosystem continues to function well in hot years and cold, in wet years and dry, because different species can step up when conditions are most favorable for them, but perhaps less favorable for others.

What is meant by ecosystem function? Every ecosystem is a network of interactions among species that collectively permit the continued production of goods and services. Goods are things like fish and trees that people may harvest. Services are ecological processes that do things that are vital for health and well-being, such as purifying the air, breaking down pollutants, removing CO₂ from the atmosphere, purifying the water in our streams and lakes, ameliorating the weather, and ensuring that rain percolates into the ground instead of running off over the surface to cause flooding and erosion.

In an ecosystem of reduced biodiversity, there is less resilience and therefore less ability to continue to function as conditions vary. For example, bees and other pollinating insects have been declining in numbers in recent years. As ecosystems lose their pollinators, the approximately 50%



of plants requiring insect pollination, including many of our fruit crops, are less successful at setting seed. This has serious implications for the plants and also for people who use those crops. With a rich diversity of pollinators, the chance decline of one species, perhaps because of a disease outbreak, is compensated for by others, and the pollination service continues to be performed.

The One Certainty is Change – MWC's Biodiversity Study

MWC's study revealed that the Muskoka environment has always changed, but since European colonization, that change has been driven by human activities. We

initially clear-cut the forests, cleared the land, contaminated and fouled the lakes and rivers, and then we learned to be more environmentally responsible and



Photo by John McQuarrie

our land and water became far less polluted. Muskoka was largely spared the industrial development that impacted some parts of southern Ontario, although we live with continued pressure to develop more land for more buildings, especially around our lakes and rivers. Road salt run-off to streams, aerial deposition of acid rain and mercury, and now the warming and drying due to climate change also continue to impact our natural environment including its biodiversity.

One of the most damaging changes at present is due to our desire to build roads. We are progressively carving up large patches of habitat into ever smaller pieces, and as we do this, we hasten biodiversity loss. Roads can be lethal, nearly impenetrable barriers to many organisms that live here, so when we divide large spaces, we isolate small populations of mammals, reptiles, and plants, while opening up the inner sections of forest turning them into forest edge. These changes have direct impacts on biodiversity. The number of species at risk in Muskoka will likely grow.

Our long-time residents have a deep understanding of the landscape which is Muskoka. Many of them also have a deep respect for the land, and an awareness that, as owners, they have a responsibility to care for it.

Our conversations with long-time residents were heart-warming and revealing. These were people who used the



land and the waterways, logging, trapping, fishing and farming. Some had entered the tourist economy in more recent years, and understood how much our economy depends

on the quality of the environment. They also had seen change in the past, understood many of the changes that occurred, and expressed concern for what the future might bring.

Our conversations invigorated us to continue MWC efforts to ensure that this understanding of our shared environment, and this knowledge that we have a responsibility to care for it, will be transferred to the young and to the newcomer and seasonal resident. Many of us share a lake, a river or a favorite hiking trail, and we all share the fantastic scenery, the sunsets and the autumn colors. We have to develop effective ways to collaborate and cooperate in caring for these shared places, retaining their biodiversity and the resilience it brings. We have to, because our own quality of life depends upon it.

Taking Action to Advance Ontario's Biodiversity Strategy Across Muskoka

Ontario's Biodiversity Strategy, developed by the Ontario Biodiversity Council with the support of the Ministry of Natural Resources, provides a guiding framework for coordinating the conservation of Ontario's rich variety of life and ecosystems. Muskoka Watershed Council will:

Engage People

Engage with local government, relevant Ontario government ministries, local businesses and industry, especially the tourism and construction sectors, schools, lake associations, and members of the Muskoka community, to advance understanding of biodiversity and to encourage action to curtail biodiversity loss.

Muskoka Watershed Council Action:

1. Engage People
2. Reduce Threats
3. Enhance Resilience
4. Improve Knowledge

Reduce Threats

Provide informed comment on Official Plans and other policy documents with respect to impacts on species at risk; encourage action by individuals, businesses and governments to adapt to climate change while maintaining biodiversity.

Enhance Resilience

Fight for protection of wetlands and large forested areas; encourage the use of porous land surfaces, vegetated buffer strips, and other natural methods for managing rainwater and erosion; help develop new incentives to encourage stewardship of private lands; campaign for the rights of all native species to live and let live in Muskoka.

Improve Knowledge

By means of a coordinated program of public lectures, school programs, brochures, websites, Facebook pages, Twitter feeds, video spots and any and all other methods, communicate about biodiversity and its value with the people of Muskoka so we become the best informed community on this topic in Ontario.

When we understand how our ecosystems function, we are in a position to manage our impacts, and assist them in functioning well

We cannot all be expected to become environmental scientists, but we can all appreciate the extent to which we depend in our lives on the environment around us. Many of us chose to live all or part of our lives in Muskoka because of this environment. If we lead by example and teach our children to respect the natural world and to recognize the good things it provides us, it is only a short step to embrace the idea that caring for it, becoming good environmental stewards, is not only the right thing to do, it is basic common sense and self-interest. By taking steps to reduce our impact on Muskoka's environment, we help it sustain itself, preserving its biodiversity no matter how the world may change. That's good for us, and it's also good for those species at risk.

Public Action:

1. Teach our children to respect nature and lead by example.
 - a. Leave native vegetation intact.
 - b. Reduce your reliance on the car.
 - c. Protect species at risk and their habitat.
2. Reduce your impact on Muskoka's environment.

To learn more about biodiversity in Muskoka, and why it matters, go to www.muskokawatershed.ca and download the position paper *Muskoka's Biodiversity: Understanding our Past to Protect our Future*