

## **Phragmites is a Monoculture**

Scientific Definition: *Vegetation composed of a single species*

### **Monocultures Eliminate Biodiversity**

Exotic plant invaders that form monocultures and exclude native plants are often the most detrimental to native diversity and the hardest to eradicate. To generate a monoculture the invader must garner more resources than resident natives and, once established, persist despite high densities of non-specific neighbours.

As the invasive plant spreads other plant species are suppressed and eventually can no longer survive in the environment. The density of the plant growth, the absence of ground light and the toxins spread by the monoculture species render the habitat unviable for insect, bird and small animal life. Eventually nothing remains but the large and spreading stands of the one species. All diversity is eliminated.

Phragmites is a monoculture. Its spread has accelerated and the rate of acceleration increases each year. It is destroying our rare and special environment. It is rapidly encroaching on to the dunes, replacing and destroying the unique dune grasses which protect our beaches and provide a sheltered environment for plant, insect and bird life, much of it rare and unique to these beaches. Much of the work that has been done to preserve our dunes is now at risk from the growth of Phragmites.

<https://www.lakehuron.ca/dune-conservation>

Phragmites can be seen all over our county - in the ditches, fields, by the side of the roads. Wherever it is biodiversity has been, or is in the process of being, eliminated. Our wetlands, forests and beaches are unique, providing an environment that is biologically rich, diverse and unique. They must be protected.

[https://caroliniancanada.ca/legacy/Publications/LC\\_Final\\_Factsheet\\_070425.pdf](https://caroliniancanada.ca/legacy/Publications/LC_Final_Factsheet_070425.pdf)

## **Biodiversity**

### **Definition**

Biodiversity is the existence of many different kinds of plants and animals in an environment. Biodiversity is the variety of life.

## Why It Matters

Biological diversity is the intricate net that holds our planet together. It is the vast range of species that greatly enhances the productivity of an ecosystem. An ecosystem is a complex system in which all living organisms interact with each other and their surroundings. Each species has its niche or role it plays in its ecosystem, so taking away one species disrupts an entire ecosystem.

<http://conservingbiodiversity.yolasite.com>

## The Importance of Biodiversity

Biodiversity is extremely important to people and the health of ecosystems. A few of the reasons are:

- Biodiversity allows us to live healthy and happy lives. It provides us with an array of foods and materials and it contributes to the economy. Without a diversity of pollinators, plants and soils, our supermarkets would have a lot less produce.
- Most medical discoveries to cure diseases and lengthen life spans were made because of research into plant and animal biology and genetics. Every time a species goes extinct or genetic diversity is lost, we will never know whether research would have given us a new vaccine or drug.
- Biodiversity is an important part of ecological services that make life livable on Earth. They include everything from cleaning water and absorbing chemicals, which wetlands do, to providing oxygen for us to breathe
- Biodiversity allows for ecosystems to adjust to disturbances like extreme fires and floods. If a reptile species goes extinct, a forest with 20 other reptiles is likely to adapt better than another forest with only one reptile.
- Genetic diversity prevents diseases and helps species adjust to changes in their environment.
- Simply for the wonder of it all. There are few things as beautiful and inspiring as the diversity of life that exists on earth.

<http://www.nwf.org/wildlife/wildlife-conservation/biodiversity.aspx>

Biodiversity boosts ecosystem productivity where each species, no matter how small, has an important role to play.

For example,

- A larger number of plant species means a greater variety of crops.
- Greater species diversity ensures natural sustainability for all life forms.
- Healthy ecosystems can better withstand and recover from a variety of disasters.

And so, while we dominate this planet, we still need to preserve the diversity in wildlife.

A healthy biodiversity provides a number of natural services for everyone:

**Ecosystem Services**, such as

- Protection of water resources
- Soils formation and protection
- Nutrient storage and recycling
- Pollution breakdown and absorption
- Contribution to climate stability
- Maintenance of ecosystems
- Recovery from unpredictable events

**Biological resources**, such as

- Food
- Medicinal resources and pharmaceutical drugs
- Ornamental plants
- Breeding stocks, population reservoirs
- Future resources
- Diversity in genes, species and ecosystems

**Social benefits**, such as

- Research, education and monitoring
- Recreation and tourism
- Cultural values

This is quite a lot of services we get for free!

The cost of replacing these (if possible) would be extremely expensive. It therefore makes economic and development sense to move towards sustainability.

A report from Nature magazine also explains that genetic diversity helps to prevent the chances of extinction in the wild (and claims to have shown proof of this).

To prevent the well known and well documented problems of genetic defects caused by in-breeding, species need a variety of genes to ensure successful survival. Without this, the chances of extinction increases.

And as we start destroying, reducing and isolating habitats, the chances for interaction from species with a large gene pool decreases.

Species depend on each other. While there might be “survival of the fittest” within a given species, each species depends on the services provided by other species to ensure survival. It is a type of cooperation on mutual survival and is often what a “balanced ecosystem” refers to.

<http://www.globalissues.org/article/170/hy-is-biodiversity-important-who-cares>

## Threats to Biodiversity

Extinction is a natural part of life on Earth. Over the history of the planet most of the species that ever existed evolved and then gradually went extinct. Species go extinct because of natural shifts in the environment that take place over long periods of time, such as ice ages.

Today, **species are going extinct at an accelerated and dangerous rate**, because of non-natural environmental changes caused by human activities. Some of the activities have direct effects on species and ecosystems, such as:

- Habitat loss/degradation
- Over exploitation (such as overfishing)
- Spread of Non-native Species/Diseases

Some human activities have indirect but wide-reaching effects on biodiversity, including:

- Climate change
- Pollution

All of these threats have put a serious strain on the diversity of species on Earth. According to the International Union for Conservation of Nature (IUCN), globally about one third of all known species are threatened with extinction. That includes 29% of all amphibians, 21% of all mammals and 12% of all birds. If we do not stop the threats to biodiversity we could be facing another mass extinction with dire consequences to the environment and human health and livelihood.

<http://www.nwf.org/wildlife/wildlife-conservation/biodiversity.aspx>

## Biodiversity in Lake Huron

Lake Huron is an ecologically rich and globally significant ecosystem but its biodiversity is at risk. Invasive species, climate change, water pollution, rapid and poorly planned residential and industrial growth, altered hydrology, and incompatible agricultural, fishery, and forestry practices are all having a negative effect. Degradation and loss of historical habitat has been identified as a major stressor to Lake Huron and its watershed.

The Lake Huron Biodiversity Conservation Strategy is an international initiative designed to identify what actions are needed to protect and conserve the native biodiversity of Lake Huron. The most critical biodiversity threats and needs of the lake were determined through a collaborative, science-based process. The recommended strategies are meant to restore and conserve a functioning ecosystem.

By applying a biodiversity focus to synthesize and prioritize existing related efforts, the strategy reaffirms and advances complementary plans and initiatives. This project will increase awareness and collaboration among organizations and communities active in

biodiversity conservation with the the Lake Huron watershed and provide a lake-wide context to local conservation activities. The project was led by the Nature Conservancy, Environment Canada, Michigan Department of Natural Resources and Environment, Michigan Natural Features Inventory, Michigan Sea Grant and the Nature Conservancy of Canada.

<https://www.conservationgateway.org/ConservationByGeography/NorthAmerica/wholesystems/greatlakes/Pages/lakehuron.aspx>

A link to the colour brochure: **Lake Huron Biodiversity Conservation Report**

<https://www.conservationgateway.org/ConservationByGeography/NorthAmerica/UnitedStates/Michigan/Documents/Final-LHBCS-Brochure-LowRes.pdf>