

Biodiversity

A PROFILE FOR COMMUNITY ACTION



Biodiversity Now

The biodiversity of ecosystems, species and their genetic makeup are vital to the health of this planet.

Currently, more than 11,000 species of plants and animals are facing extinction in the near future, largely because of expanding human populations and their activities.

The combined pressures of over-exploitation of natural resources, pollution, climate change, urbanization and industrialization are threatening the world's biodiversity and, in turn, life on this planet.



What is Biodiversity?



- Biodiversity is an abbreviation of biological diversity.
- It is the variety of life on Earth and the processes and relationships that sustain it.

There are three different levels of biodiversity:

- **Ecosystems:** units of the natural environment that consist of complex and dynamic interactions between all living and non-living components within a given area. Examples include marshes, coral reefs, prairies, deserts, forests, and even backyards.
- **Species:** each species is a group of living creatures with unique characteristics. There are millions of species on Earth, from microscopic bugs to blue whales.
- **Genes:** genetic diversity refers to the different combination of genes within species. Gene variety allows organisms to adapt to a wide variety of conditions.

Why Should We Protect It?

- **Humans depend on it:** plants and animals provide us with food, and plants are still the primary source of medicine for many people, as well as the basis for many modern pharmaceuticals.
- **All life depends on it:** ecosystems provide essential services such as pollination, air and water purification and climate regulation.
- **It's good insurance:** ecosystems that contain a diversity of genes and species are much more resilient and able to adapt to pests, disease and changing climate.
- **Biodiversity means jobs and money:** millions of people work in agriculture, fishing, forestry, pharmaceuticals and ecotourism industries.
- **It's spiritually important:** many species are part of our cultural heritage, and nature is important to spiritual beliefs and psychological well-being.
- **It's an ethical obligation:** all species have a right to exist, regardless of their usefulness to human life.

Why Are We Losing It?



- Deforestation, dams and urban sprawl destroy habitat.
- Habitat fragmentation breaks large populations into smaller groups and alters light, wind and temperature.
- Exotic or invasive species compete with native species.
- Over-harvesting of resources for industry or human use (water, wood, fish, mining).
- Unsustainable harvesting of endangered species.
- Human population growth and increased consumption have led to unsustainable exploitation of natural resources for food, shelter and other materials and increased demands for water, creating serious strains on the earth's biodiversity.
- Pollution such as industrial waste, acid rain, heavy metals, and hormone-mimicking chemicals kill and weaken organisms.
- Climate change alters environmental conditions faster than some species can adapt.

Current State of Biodiversity



- Since 1900, 75% of worldwide genetic diversity of agricultural crops has been lost.
- A total of 11,046 species of plants and animals are threatened around the world, in almost all cases as a result of human activities. This includes 24% of mammal species and 12% of bird species.
- In the last 500 years, human activity has forced 816 species to extinction (or extinction in the wild). Many species are lost before they are even discovered.
- The rainforests of Central and South America, equatorial Africa, and Southeast Asia are home to at least half of the world's species and are quickly disappearing
- Madagascar has more Critically Endangered and Endangered species than anywhere in the world. Many of its species exist nowhere else in the world and more than 90% of its original vegetation has already been lost.

Current State of Biodiversity

Cont'd.



- COSEWIC is the Committee on the Status of Endangered Wildlife in Canada. It was established in 1977 to develop a national listing of species at risk, based on scientific evidence.
- According to COSEWIC, there are over 364 endangered species in Canada. COSEWIC has no legislative or management power - it can only make recommendations to provincial and territorial governments.
- Several North American ecosystems are threatened including the St. Lawrence river, North American tallgrass prairie, Midwest oak savanna, and many wetlands. The main culprits are pollution, urban sprawl, and conversion to agriculture.

We All Need a Place to Live

80% of the species designated by COSEWIC as at risk of extinction are threatened by loss of habitat and human disturbance, a situation repeated worldwide.

- Grizzly bears need large areas to live (200-600 km² for females and 900-1800 km² for males), can only survive in relatively undisturbed areas, and are threatened by continual loss of their habitat to humans.
- Bald eagles prefer solitude when breeding and often abandon their nests when human disturbance comes too close. Eagles prefer sea coasts and lakeshores, where suitable nest trees are available. Human development and deforestation threaten their populations.
- Woodland Caribou are a threatened migratory species dependent on old-growth forests. Their survival requires land management practices which provide sufficient undisturbed habitat and migration corridors.



We All Need a Place to Live

Cont'd.



- Salmon need pure, well-oxygenated cold water and are one of the first species to suffer when water quality is degraded by pollution or riverbank erosion. Hydroelectric dams are another threat - if they cannot get back to their spawning grounds, salmon populations cannot survive.
- Giant pandas live in dense bamboo and coniferous forests at altitudes of 5,000 to 10,000 feet in China. Due to the great demand for land and natural resources in this heavily populated country, their habitat has been greatly reduced, and there are probably less than 1,000 giant pandas left in the wild.
- Monarch butterflies, a migratory species whose habitat ranges from Canada to Mexico, exemplify the need for international cooperation on species management and habitat protection.

Federal Actions to Protect Biodiversity Should Include:

- Protect, repair and rehabilitate natural and semi-natural ecosystem habitats.
- Implement a strong federal act to protect species at risk.
- Abide by and strengthen biodiversity protection agreements such as the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) and the Convention on Biological Diversity (CBD).
- Adopt park management policies to protection over recreation, maintain and restore ecological integrity through preservation of natural resources and processes.
- Certify sustainable forests and organic foods.
- Preserve genetic resources through ex-situ preservation (outside of natural habitats):
 - Animal biodiversity, to a lesser extent, in zoos.
 - Plant seeds and animal tissues in genebanks.
 - Plant genetic resources in botanical gardens and arboretums.



Municipal Actions to Protect Biodiversity Should Include:

- Adopt local habitat restoration programs. For example: reclaiming marshes or streams and urban reforestation.
- Implement monitoring programs to protect local wildlife.
- Discourage urban sprawl (low-density suburbs and increased vehicle traffic inflict damage on the environment).
- Use a diverse selection of native plants for new developments.
- Provide incentives for habitat protection and enhancement, such as tax rebates, land covenants and grants
- Save, protect and create green space.
- Enforce water protection for aquatic habitats.
- Ban use, storage and disposal of chemicals harmful to the environment.



Personal Actions to Protect Biodiversity Should Include:

In The Home



- Buy recycled paper and you'll save forests - look for 'EcoLogo' indicating the paper is at least 50% recycled with 10% post-consumer content. A higher post-consumer content is even better.
- Recycle whatever products your blue box program will accept and work for a comprehensive program including plastic and organic waste.
- Don't pour used motor oil or chemicals down storm drains - you're polluting local waterways and harming human health and wildlife.
- Use biodegradable cleaners - help prevent toxic build-up in lakes, rivers and oceans.



Personal Actions to Protect Biodiversity Should Include:

On The Table

- Encourage farmers to grow a diversity of foods. Buy less common fruits and vegetables to support local farmers.
- Buy shade-grown coffee to help protect bird habitat.
- Choose organically grown fruits and vegetables - get started with 20% of your produce purchases organic and work up from there.
- Don't buy seafood or fish that comes from depleted stocks or has been harvested by bottom trawling. This includes Atlantic cod, BC shrimp, tiger prawns, Canadian lobster, farmed salmon, bluefin tuna, scallops, and sole.
- Avoid genetically modified foods (GMOs). They are a threat to biodiversity and perhaps human health.



Personal Actions to Protect Biodiversity Should Include:

In The Garden

- Plant some heritage seeds in your garden so that older varieties of plants are not lost. Share them with others.
- Make room for native species in your backyard.
- Make your garden chemical free - it is healthier for your family and pets, birds, butterflies, bees and other species.
- Encourage wildlife to make your garden their home or place of refuge - plant thickets and hedges, leave a brush pile, include mossy logs, and create a diverse landscape with varying heights of vegetation. Bird feeders and bird baths are good too.
- Join the effort to control invasive species - do not plant them in your garden and support efforts to remove them.
- Preserve any wetlands that exist on your property or in your community, they provide important habitat that is quickly disappearing across North America.



Community Success Stories

Seedy Saturday (Canada)

www.seedysaturday.ca



- Annual event in cities across Canada where people buy and sell open-pollinated varieties of vegetables, fruit, flower, grain and herb seeds, as well as learn about gardening techniques (examples: grafting apples, how to start seeds, how to save and share them).
- Most seed companies sell hybrid seeds, created by crossing parent plants that are not the of the same variety. This can create desirable characteristics, but their seeds revert to one of the parent plants.
- Genetically modified seeds reduce bio-diversity and introduce modified organisms into the environment.
- Seeds from open-pollinated varieties can be saved and shared and will produce the same plants.
- Heirloom varieties have stood the test of time and demonstrated the benefits of genetic diversity. Because of their desirable traits - taste, productivity and resistance to pests and weather - people have saved them for generations.

Sponsored by Seeds of Diversity
www.seeds.ca

Community Success Stories

Documenting Kenya's Medicinal Plants (Kenya)

World Agroforestry Centre (ICRAF) www.worldagroforestrycentre.org



- With only one university-trained doctor for every 30,000 to 40,000 Kenyans, most people rely on medicinal plants to cure their ailments. Traditional healers are not passing on their knowledge, and deforestation, due mostly to agricultural practices and population pressures, is threatening the plants.
- Volunteers get cultural training and are taught how to interview herbalists and gather plant samples. They interview indigenous herbalists and record their knowledge. Rare and endangered plants are collected and transferred to ensure survival and are screened for potential medicinal properties.
- Cooperation between scientists and communities is reflected in the strong support from local governments and associations.



Community Success Stories

Papua New Guinea Project

The Coral Reef Alliance (CORAL) www.coral.org



- On the eastern edge of the "Coral Triangle," Papua New Guinea hosts some of the world's richest marine biodiversity. It has more species of fish, invertebrates, and corals than any other marine region in the world, including a large population of threatened species found nowhere else in the world.
- Reefs are damaged by tourist activity (trampling, boat collisions). Unsustainable fishing, sedimentation and garbage pollution threaten marine life and smother reefs.
- CORAL educates and trains community leaders and businesses in coral reef ecology, sustainable fishing and development of conservation projects.
- CORAL develops environmental briefings and guidelines for tourism business clients and to raise awareness.
- Community partnerships were established to create an Ecotourism Training Program for alternative livelihoods for local fishermen.
- Community members involved in CORAL programs have taken action such as centralizing the town dump.

Why Care About Biodiversity?

Because life depends on it! We rely on nature for food, clothing, shelter and other resources. Declining biodiversity is an urgent issue for all life.

If we are to effectively reverse the decline we need to change our attitudes to the environment around us, our view of the world as a vast storehouse of “natural resources” for us to exploit.

Protecting biodiversity is about more than piecemeal efforts at the genetic, species or ecosystem levels - it must involve a fundamental shift in how modern societies perceive and live in nature.

We must become better environmental stewards and respect the inherent right of all species to exist.

We all have important roles to play as consumers, voters, citizens, parents of future generations, and, above all, as one species among millions inhabiting our planet.

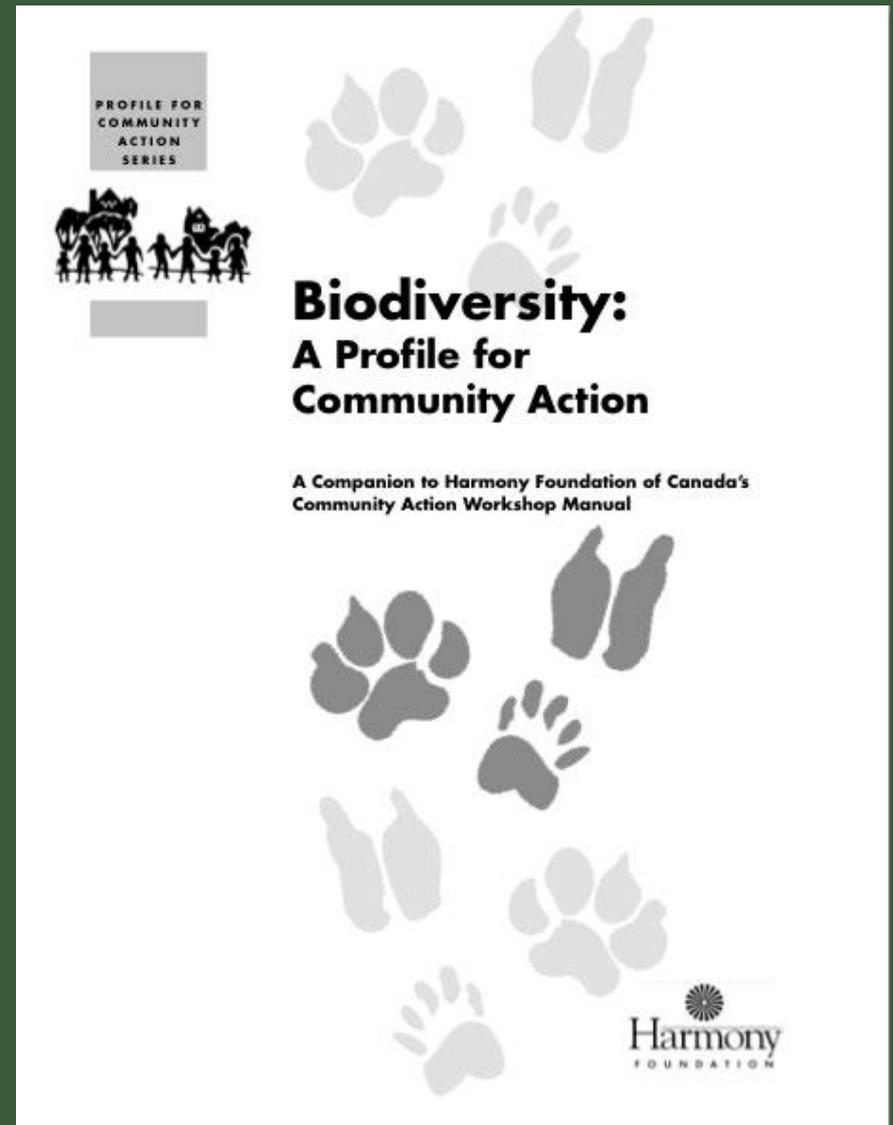
Selected Biodiversity Resources

- Canadian Biodiversity Information Network
www.cbin.ec.gc.ca
- Canadian Environmental Network
www.cen-rce.org
- Canadian Wildlife Service
www.cws-scf.ec.gc.ca
- Conservation International
www.conservation.org
- Genetic Resources in Action International (GRAIN)
www.grain.org
- Food and Agriculture Organization of the United Nations
www.fao.org/biodiversity
- World Conservation Monitoring Centre
www.unep-wcmc.org

Environmental Education in Action!

Harmony Foundation is dedicated to achieving progress through cooperation and education. Harmony's training programs and educational resources encompass environmental values and practical skills for positive action on environment and development issues.

www.harmonyfdn.ca



Based on Harmony Foundation's
Biodiversity: A Profile for Community Action