



BIODIVERSITY

- The number and variety of species in an ecosystem
- In Canada, biodiversity includes over 71,000 species of plants and animals.

BIODIVERSITY

- Biodiversity is not uniform across Earth. Tropical regions are rich in variation whereas Polar regions support fewer species.
- Worldwide, about 1.6 million species have been described – but scientists know there many more to go!

Group	Percentage
Vertebrates	1%
Other invertebrates	12%
Fungi	4%
Plants/algae	18%
Other insects	13%
Others	6%
Beetles	22%
Flies	9%
Wasps	8%
Butterflies/moths	7%

BIODIVERSITY IS IMPORTANT

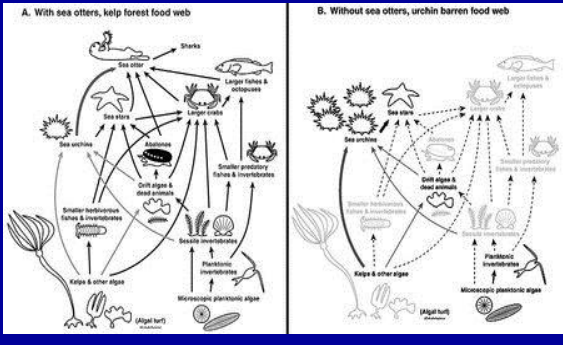
1. The “domino effect”
 - The loss of a single species can cause a chain reaction in food webs.
2. Ecosystems services
 - Species work together to maintain oxygen levels, remove carbon dioxide, cycle nutrients, purify water, and more!

Increase in Biodiversity = Healthy ecosystem.
 Decrease in Biodiversity = Greater chance of Ecosystem Collapse.



- Decrease in the Sea Otter (predator)
 - Means an increase in Sea Urchins
 - Causes a decrease in Kelp (form of seaweed)
 - Results in a decrease in Fish (rely on seaweed for habitat and food)

- Protecting the Sea Otters caused an increase in Fish which balanced out the food chain & therefore the ecosystem.



WHAT SPECIES ARE AT RISK?

- Any animal, plant, or other organism that is considered at serious risk of extinction.
- Extinction, the removal of species on Earth, happens naturally but is occurring at a rate never before seen due to human activities.
- In Canada, there are 693 species in various degrees of risk & 15 extinct species as of May, 2014 according to COSEWIC (Committee of the Status of Endangered Wildlife in Canada).

CLASSIFICATION FOR SPECIES AT RISK

1. Extinct

- species not found anywhere on Earth
- EXAMPLES:



Blue Walleye -1965

Passenger Pigeon - 1914



2. Endangered

- species that is close to extinction in all parts of Canada or in a significantly large location.
- EXAMPLES:

Beluga Whale



Swift Fox



Atlantic Salmon



3. Extirpated

- Any species that no longer exists in one part of Canada, but can be found in other areas
- EXAMPLES:
Greater Prairie Chicken



= no longer on the Canadian Prairies but found in North Central United States

4. Threatened

- Any species that is likely to become endangered if factors that make it vulnerable are not reversed.
- EXAMPLES:
Wood Bison (small number)



Anatum Peregrine Falcon
(captive breeding is helping to restore population.)



5. Vulnerable

- Any species that is at risk because of low or declining numbers at the fringe of its range or in some restricted area.
- EXAMPLES:

White tail Deer



Blue Heron

Which at-risk category is the most devastating?

Answer: **Extinction**



WHY ARE SPECIES AT RISK?

1. Habitat Loss

- Removal of habitat for agriculture, urbanization, roads, pipelines, etc.
- Isolated patches won't do!



2. Over-Exploitation

- Too much hunting, fishing, or trapping may cause a species to become severely endangered or even extinct due to the rate in which the species is being used.



EXAMPLE:

- The Atlantic cod was over-harvested, to the point of being endangered.

3. Pollution

- Toxic chemicals are finding their way into more and more water habitats.



- Toxic chemicals do not only affect water. Acids, metals, and other poisonous compounds rain down on land habitats too, often thousands of miles from their source.

4. Invasive Species

- Alien species are plants or animals that are introduced to an area by humans, either accidentally or on purpose.
- Alien species which out-compete native species are called invasive species.



- Purple loosestrife, a plant originally from Europe & Asia, is now found across Canada.
- It clogs habitats, and is a threat to some species who live in these habitats.

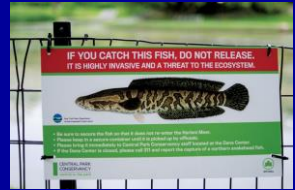
4. Invasive Species

- Zebra mussels in SK



4. Invasive Species

- Northern Snakehead



WHY SAVE SPECIES AT RISK?

1. Medicinal

- Plants and animals are responsible for a variety of useful medications.
- In fact, about forty percent of all prescriptions written today are composed from the natural compounds of different species.



2. Agricultural

- There are an estimated 80,000 edible plants in the world. Humans depend upon only 20 species of these plants, such as wheat and corn, to provide 90% of the world's food.



- They also provide humans with the means to develop new crops that can grow in inadequate lands such as in poor soils or drought-stricken areas to help solve the world hunger problem.

3. Ecological

- Plant & animal species are the foundation of healthy ecosystems.
- When species become endangered, it is an indicator that the health of these vital ecosystems is beginning to unravel.
- Humans depend on ecosystems such as coastal estuaries, prairie grasslands, and ancient forests to:
 - purify their air
 - clean their water
 - supply them with food



4. Commercial

- Various wild species are commercially raised, directly contributing to local and regional economies.



- Commercial & recreational salmon fishing in the Pacific Northwest provides 60,000 jobs and \$1 billion annually in personal income, and is the center of Pacific Northwest Native American culture.

5. Aesthetic/Recreational



- Plant & animal species and their ecosystems form the basis of job-intensive tourism industry.

- They also supply recreational, spiritual, and quality-of-life values as well.

