

Bio-What?!

Bio-What?! What the heck is a “Biodiversity”!? In a recent study, only two out of ten adults reported having heard about or knowing about “the loss of biological diversity.” Yet the loss of biodiversity is probably the most serious environmental threat facing the planet right now. In this activity students learn about biodiversity and find out that our very survival as a species depends upon its preservation.

Time Required: 30-40 minutes

Materials:

- Biodiversity transparencies

Instructions for the Teacher:

1. Ask students:

What does the word “biodiversity” mean?

Break this word into two parts for the students: “bio” means life and “diversity” is a synonym for variety. Tell your students: ***Every time a species goes extinct, we lose some of our biodiversity.***

Ask your students:

Why might it be important to save a species from extinction?

Why do we need biodiversity?

Answers might include: to learn about it, it may keep other species alive, it may be beautiful to look at, it may be the “right” thing to do.

2. Brainstorm with your class *why biodiversity is valuable.*

Write the class responses on the board.

3. Using the overheads on the following pages, ask students to take notes as you go through the six main reasons why biodiversity should be preserved. The following descriptions elaborate on each of these reasons.

Seven Reasons to Protect Biodiversity

Biodiversity Belongs

Biodiversity can be beautiful and can give us aesthetic pleasure: we like seeing wild animals, strange plants, or pretty flowers.

All humans have a right to exist; shouldn't *all* animals and plants have the same right? We are all products of a complex,



miraculous system that created life on earth. Humans should respect other forms of life and make sure our actions don't destroy them.

Biodiversity helps us heal ourselves

Many animals and plants may hold the key to some marvelous new invention or medicine. For example, willow trees gave us Acetylsalicylic acid, or ASA, the active ingredient in Aspirin. How many people use *Echinacea* to stop colds?

Biodiversity keeps natural areas together

The loss of animals or plants from an ecosystem affects other species in the food chain – breaking up the natural functions of the ecosystem. This may eventually lead to negative impacts on surrounding natural areas and to the human population

Biodiversity attracts tourists

Ecotourism may well be the best hope for the survival of protected areas, as it offers a positive economic argument for the preservation of nature.

Biodiversity helps life to continue on earth

The more species there are, the more adaptability there will be to changing conditions like global climate change. There were little warm-blooded rat-like mammals scurrying around at the time of the dinosaurs; this diversity may have contributed to their survival while all the dinosaurs became extinct. Evolutionary expansion or 'radiant evolution' into the vacant niches left by the dinosaurs allowed mammal biodiversity to soar.

Biodiversity gives us food

Since humans need a variety of different plants and animals to breed crops and animals suitable for use on farms, a decrease in biodiversity means that scientists have fewer species to choose from when they try to develop new food sources. For example, when a fungus wiped out 15% of the American corn crop in 1970, biologists bred resistant hybrids from a species of Mexican wild corn. The loss of animals or plants from an ecosystem will affect other species in the food chain, which may in turn affect humans.

Biodiversity helps us preserve OUR diversity

The large number of human cultures that exist, complete with their own languages and customs, add to the diversity of the human experience and enrich us as a species. The loss of biodiversity threatens these cultures, particularly those that live close the land, whether it be in Alberta or in the forests of the Amazon.

Biodiversity belongs



The plants and animals with which we share this planet have a right to exist - whether or not they are useful to humans. Do you think it is fair for humans to make another species become extinct?

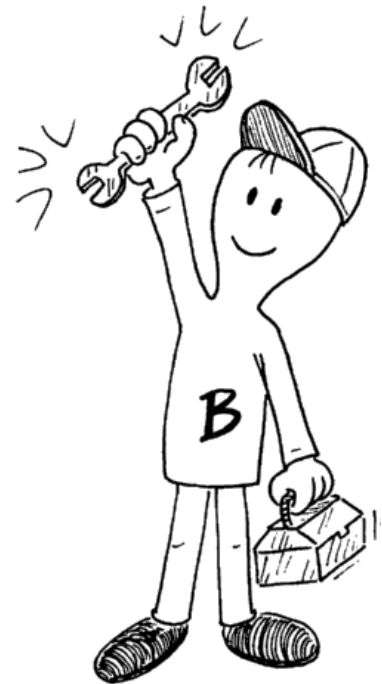
Biodiversity helps us heal ourselves

Over a hundred different species of plants are known to provide medicine for humans. 40% of the medicines found in pharmacies are derived from plants. Without the Rosy Periwinkle, many more children would die from Childhood Leukemia. Does the cure for cancer or the common cold lie in a local plant? Perhaps – that’s why it’s important to preserve plant biodiversity.



Biodiversity keeps natural areas together...

....and natural areas (ecosystems) provide us with essential services like clean air and fresh water. Every time we lose a species from an ecosystem, we change the way the whole system works. If this goes on for too long, the area loses its ability to provide us with ecosystem services.



Biodiversity attracts tourists



Tourism is the most rapidly growing industry in the world; ecotourism (which helps people enjoy nature and ecosystems) is the most rapidly growing kind of tourism! All kinds of places - from Canmore to Costa Rica - need to preserve biodiversity to keep their economy strong.



Biodiversity helps life to continue on earth

Biodiversity is life's insurance policy and helps evolution to take place. For example, biodiversity helped usher in the Age of Mammals 65 million years ago, when the dinosaurs became extinct!

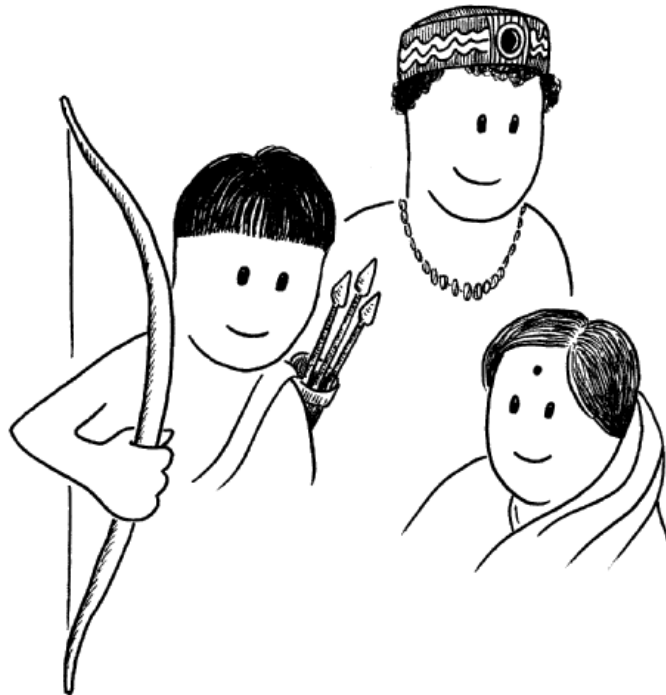
Biodiversity gives us food

Twenty species of plants (wheat, rice, corn, potatoes, barley, cassava, sorghum, etc.) give us 80% of the food we eat. If disease or insect pests attack these crops, we'll need the more resistant varieties of these plants that are currently growing wild.



Biodiversity helps preserve cultural diversity

The large number of human cultures that exist, complete with their own languages and customs, add to the diversity of the human experience and enrich us as a species. The loss of biodiversity also threatens these cultures, particularly those that live close to the land.



An Uncertain Future

Large mammals and carnivores are indicators of ecosystem health. Using a number of maps, students compare the historical and present distribution in North America of several large carnivores, and try to deduce what changes have occurred within the ecosystems in which they lived.

Time Required: 40 minutes

Materials:

- transparency copies of all illustrations, including distribution maps for wolverine, cougar, wolf, and grizzly bear
- paper copy of the Present Distribution of Grizzly Bears map for each group of students

Instructions for the Teacher:

1. Ask the students:

What is a carnivore? What is a predator?

A carnivore is an animal that eats meat. A predator is an animal that hunts other animals for its food. While most carnivores are predators, some, such as the wolverine, are scavengers, eating animals that are already dead.

