

## Notes: Environmental Science 3.3 Biodiversity

Biodiversity describes the number of different species living in an area.

### **The Value of Biodiversity**

Biodiversity is an economic benefit, as well as helping strengthen an ecosystem.

#### **Economic Value**

In many areas with the large biodiversity, like rainforests and savannas, ecotourism provides jobs and income for the community.

#### **Ecological Value**

All species within an ecosystem are connected in some way to one another.  
Examples: food source, help in reproduction, provide shelter, etc.

Keystone species are species that are particularly important, because they may help with the survival of many other species.

Examples: Sea stars prevent overpopulation of mussels, which would eliminate other mollusks in given area.

### **Factors Affecting Biodiversity**

#### **Area**

A larger area will contain more species than a smaller area.

#### **Climate**

In general, biodiversity increases as you move toward the equator. The equatorial rainforests cover only 7% of the Earth's landmasses, but contain more than half of the species on Earth. This is probably because of the climate (constant warm temperatures and a large amount of rain). This allows for a continuous growing season.

#### **Niche Diversity**

Coral reefs are an example of an environment that provides many different niches for organisms to live in. Coral reefs make up only 1 % of the ocean area, but contain 20% of the ocean's species.

## **Gene Pool Diversity**

Diversity within a species is important. The genes that make up an organism carry the genetic information for that organism which determines, size, coloration, the ability to fight disease, etc.

A large gene pool, or genetic diversity within a species helps a species survive changes in the environment, such as climate changes, diseases, etc.

## **Extinction of Species**

Extinction is the disappearance of all organisms in a species from the Earth.

Endangered species are species that are in danger of becoming extinct in the near future.

Threatened species are species that could become endangered in the near future.

Protecting endangered and threatened species is one way to protect the Earth's biodiversity.

## **Causes of Extinction**

Extinction can be caused through competition for resources, disease, and environmental changes.

Humans can also cause extinction of species through various means.

### **Habitat Destruction**

Habitat destruction is the major cause of human related extinction.

As humans change the environment they move into they displace animals from their homes. Examples: clear cutting forests, filling in wetlands, etc.

Habitats may also be fragmented, or broken into smaller parts. This may interrupt migration patterns of animals, and well as not providing an area large enough to provide food.

### **Poaching**

Illegally killing animals or removing them from the environment is known as poaching. Some animals are killed for their fur, meat, claws, etc. Other are captured and sold to pet suppliers.

## **Pollution**

Pollutants associated with humans may outright kill animals, affect their reproduction, affect the food chain, or cause birth defects.

## **Exotic Species**

Introducing a new species into an ecosystem can cause huge problems. If the new species does not have any predators, it can become over populated or kill other animals undeterred.

## **Protecting Biodiversity**

### **Captive Breeding**

Some animals are bred in zoos and wildlife preserves to boost the population and increase genetic diversity.

### **Law and Treaties**

Laws may be passed in a country to protect animals and plants from extinction.

Treaties, or agreements between countries, may also help to protect animals and plants from extinction.

### **Habitat Preservation**

By protecting an entire ecosystem, we can easily help biodiversity. One way this has been done in the U.S as well as other countries is through the establishment of national parks and preserves.

