

INTERDEPENDENT

**NO MAN IS AN ISLAND, ENTIRE
OF ITSELF; EVERY MAN IS A
PIECE OF THE CONTINENT, A
PART OF THE MAIN.**

JOHN DONNE



Section 16.4 Vanishing Species

I. Biological Diversity

= *the variety of species in a specific area.*

Where is biodiversity found?

*The richest environment for biodiversity all seem to be warm places, i.e. **tropical rainforests, coral reefs, and large tropical lakes**



II. Importance of Biodiversity

A. Importance to nature

1. Living things are *interdependent*.
2. If the symbiotic relationships among organisms are *broken due to the loss of one species*, then the remaining *species will also be affected*.

B. Biodiversity brings stability

- * Ecosystems are stable if their biodiversity is *maintained*.

C. Importance to people

1. Humans depend on other organisms for their needs. Ex: *Oxygen, food, clothing, etc.*
2. Active compounds found in drugs/medicine are usually derived from other living things.
Ex: *Penicillin, quinine, cyclosporine*
3. **Preserving** biodiversity ensures there will be a supply of *living things*, which may provide future drugs.

III. Loss of Biodiversity

1. **Extinction** = *the disappearance* of a species when the *last of its members dies*.

2. **Endangered species** = *when a species numbers become so low that extinction is possible.*

Ex: California condor,
many sea turtles



3. **Threatened species** = when the population of a species is likely to *become endangered.*

Ex: African elephant



IV. Threats to Biodiversity

A. Habitat loss -

greatest affect on populations



B. Habitat fragmentation

= *the separation of wilderness areas* from other areas.

*This can contribute to:

1. Increased *extinction* of local species.
2. Disruption of *ecological processes*.
3. New opportunities for *invasions* by other species.
4. Changes in *overall biodiversity*.



C. Habitat degradation

= *the damage to a habitat by pollution.*

Ex: Air, water, and land pollution, *acid* precipitation, *UV* waves



1. Water pollution

Ex: Excess *fertilizers* and animal *wastes*, detergents, heavy metals, and industrial *chemicals*.



2. Land pollution

- The average American produces about *1.8* kg of solid wastes daily.
- The use of *pesticides* and *other chemicals* can lead to degradation.

Ex: *DDT* was banned in 1972



D. Invasive species (*exotic species*)

1. These are species that are introduced *on purpose* or *by accident* to a new area.

Ex: Goats to Santa Catalina Island (**48** native plant species disappeared).

2. When this happens, they can grow *exponentially* and can cause serious harm to *native* species in this area.

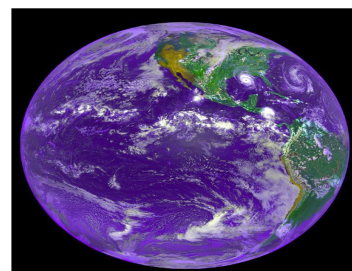


Section 16.5 Conservation

Conservation Biology = the study and Implementation of methods to protect biodiversity.

**Natural resources* = those parts of the natural environment that are useful or necessary for living things.

Ex: *sunlight, water, air, and plant and animal resources.*



I. Legal protections of species

A. US Endangered Species Act became law in **1973**.

-It made it **illegal** to harm any species on the endangered or threatened list, and made it illegal for **federal agencies** to fund any project that would **harm** organisms on their lists.



B. Worldwide, the Convention on International Trade in Endangered Species (CITES) has established **lists** of species for which international trade is **prohibited** or **controlled**. (Endorsed by more than 120 countries.)



-A listed species is often called an **umbrella species**.

- **the habitat** in which the species lives must be **protected**
- **other species** are **protected** because they share the ecosystem

II. Preserving habitats

A. Natural preserves and parks were created.

Ex: In **1872** the first national park was created = ***Yellowstone National Park***



B. Habitat corridors

= ***protected strips of land*** that allow the ***migration*** of organisms from one wilderness area to another.



III. Working with people

A. Parks and protected areas hire people to maintain and manage these areas.

Ex: *Park Rangers and Game Wardens*



B. Some areas are used for *sustainable use* only. We can harvest some of the natural *resources* without doing any harm.

Ex: Harvesting Brazil nuts in the Amazon

IV. Reintroduction and species preservation programs

A. Black-footed ferrets once numbered in the tens of thousands, but *widespread destruction of their habitat and food supplies* (prairie dogs) in the 1900s brought them to the brink of extinction. Only *18 remained in 1986*.

Today, they are making a *comeback*, with approximately 750 black-footed ferrets *in the wild*, and another 250 living in *captive breeding facilities* (2008).




B. Captivity

*Some species no longer exist in the wild, but *humans* maintain a small number of individual organisms.

Ex: *Ginkgo tree*

C. Protecting plant species

**Seed banks* have been established for the survival of plants.



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- 1 Why are animals kept in zoos?
- 2 What are some problems of keeping animals in zoos?