Environmental Science

CH 10 Biodiversity

Activity:

10/12 What is Biodiversity? CH 10.1
Obj. TSW understand how important Biodiversity is. P. 76 NB

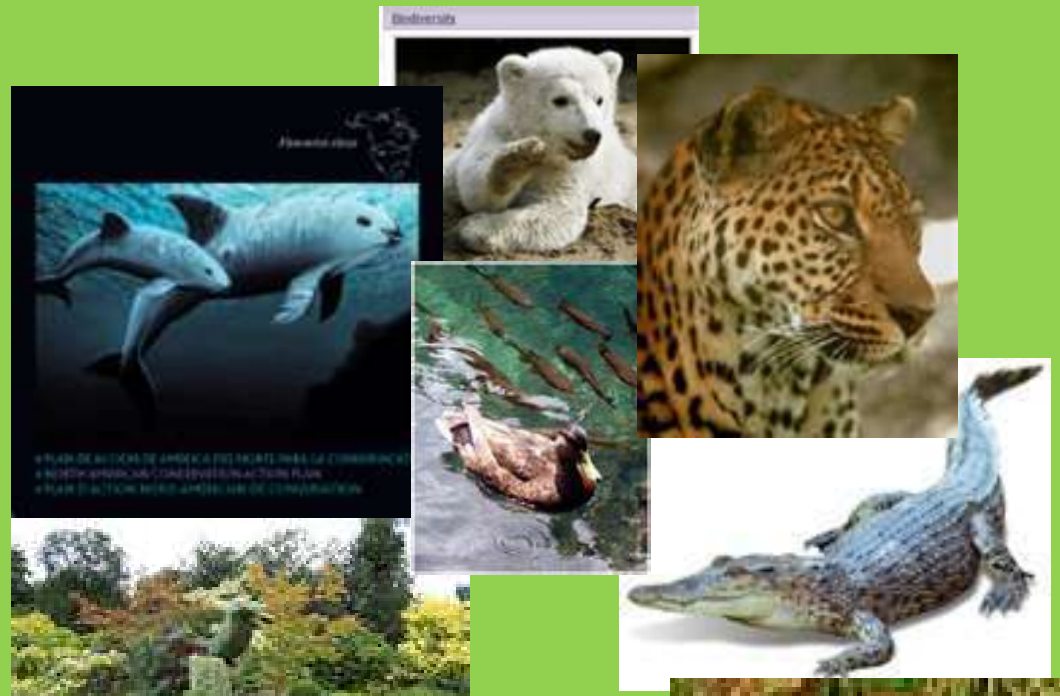
1. What is Biodiversity?
2. What is a keystone species?
3. Name 3 Common Medicines derived from plants.

Keystone Species

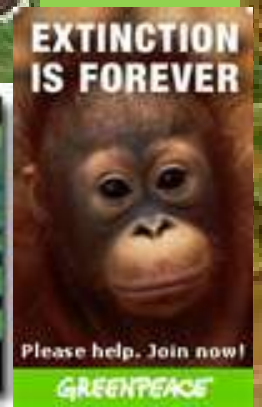
- Sea Otters
- Wolves
- How wolves changed the Rivers (Yellowstone)

10/13 Biodiversity at Risk CH 10.2

4/30 Obj. Stds. will know biodiversity is the sum total of different kinds of organisms and how it is threatened. P.78NB



1. Explain the difference between threatened species and an endangered species.
2. Why is biodiversity important?
3. Explain how humans cause extinctions.



Importance to nature

#1. Biodiversity is the variety of life or the different types of species

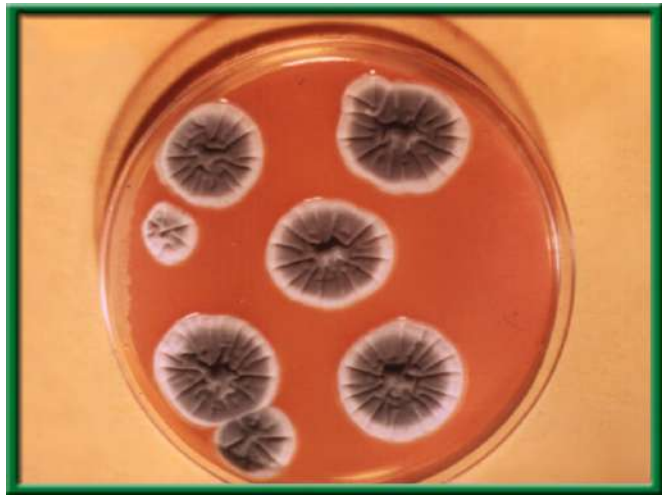
- Living things are interdependent.
  - Living things can be niches for other living things.
  - Populations are adapted to live together in communities.

#2. Biodiversity brings stability

- Biodiversity can bring stability to an ecosystem.
- A pest could easily destroy all the corn in a farmer's field, but it would be far more difficult for a single type of insect or disease to destroy all individuals of a plant species in a rain forest.
- Ecosystems are stable if their biodiversity is maintained.

#2. Importance to people

- Preserving biodiversity ensures there will be a supply of living things, some of which may provide future drugs.



Penicillium

Loss of Biodiversity

- Extinction is the disappearance of a species when the last of its members dies.

- Extinction is a natural process and Earth has experienced several mass extinctions during its history.

Loss of Biodiversity

- A species is considered to be an endangered species when its numbers become so low that extinction is possible.

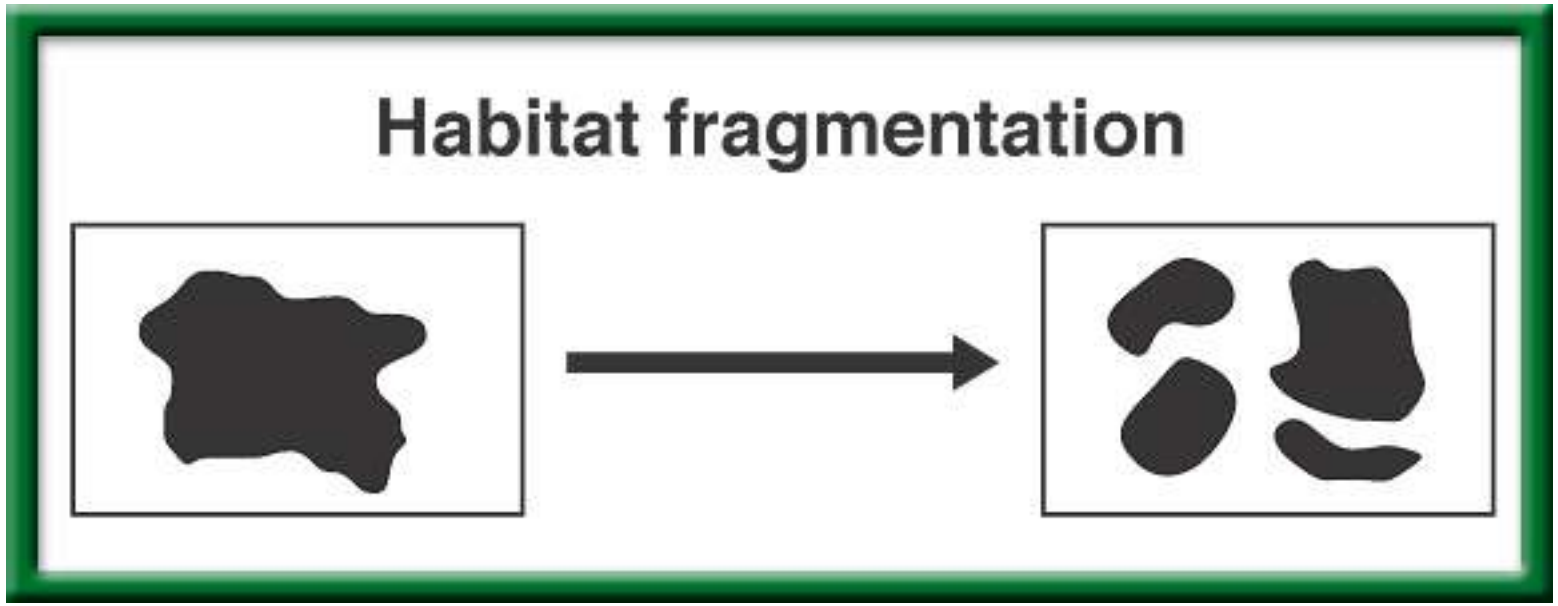
Loss of Biodiversity

- When the population of a species is likely to become endangered, it is said to be a threatened species.

#3. Habitat loss

- One of the biggest reasons for decline in biodiversity is habitat loss.

#3. Habitat Fragmentation



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RESOURCES

Habitat fragmentation

- Habitat fragmentation is the separation of wilderness areas from other wilderness areas.

Edge and size

- The edge of a habitat or ecosystem is where one habitat or ecosystem meets another.

Edge and size

- If a road is cut through a wooded area, the shape of the wooded area changes and the edge is changed.
- Now there is less distance between the edge and the interior. Some plants might die out.

Habitat degradation

- Another threat to biodiversity is habitat degradation, the damage to a habitat by pollution.
- Three types of pollution are air, water, and land pollution.

#3. Habitat degradation

- Pollutants enter the atmosphere in many ways—including volcanic eruptions and forest fires.

Habitat degradation

- Burning fossil fuels is also a major source of air pollutants such as sulfur dioxide.

- Acid precipitation—rain, snow, sleet, and fog with low pH values—has been linked to the deterioration of some forests and lakes.

Water pollution

- Water pollution degrades aquatic habitats in streams, rivers, lakes, and oceans.

- A variety of pollutants can affect aquatic life.

Water pollution

- Excess fertilizers and animal wastes are often carried by rain into streams and lakes.

- The sudden availability of nutrients causes algal blooms, the excessive growth of algae.

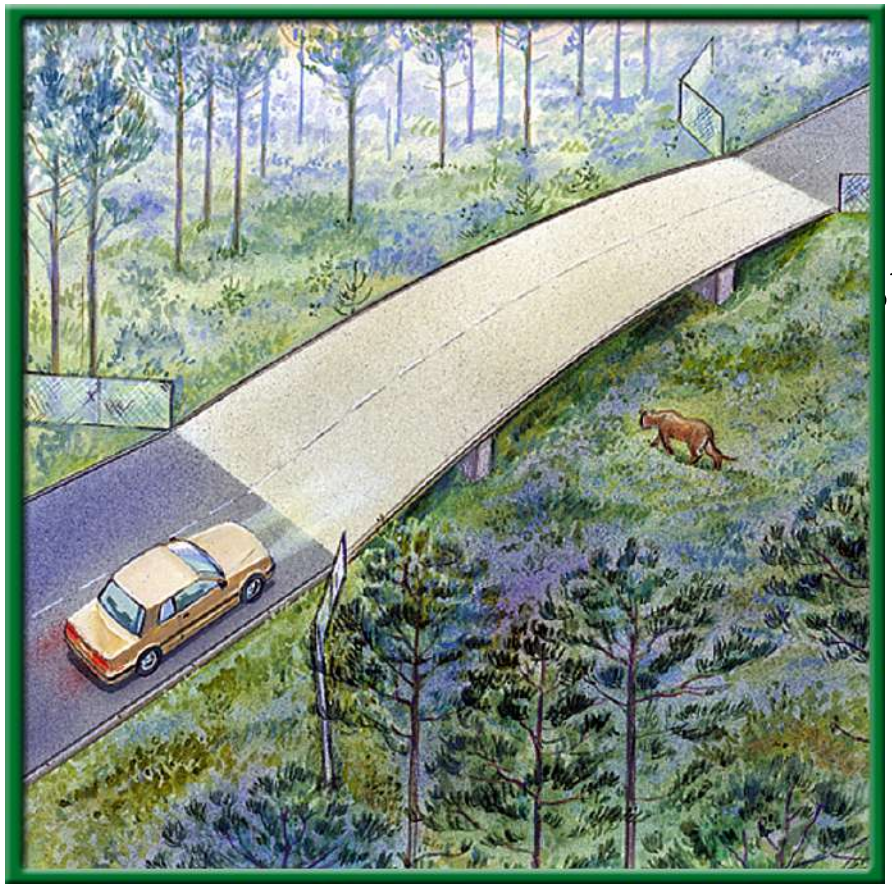
Land pollution

- Trash, or solid waste, is made up of the cans, bottles, paper, plastic, metals, dirt, and spoiled food that people throw away every day.

Habitat corridors

- A general strategy for protecting the biodiversity of an area probably is to protect the largest area possible.
- However, research is showing that keeping wildlife populations completely separate from one another may be resulting in inbreeding within populations.

Habitat corridors



Therefore, another strategy for preserving biodiversity is to connect protected areas with habitat corridors.

#3. Invasive species

- Species that do not belong, and take over, crowding out or out competing the native species.

#3. Global Warming – Climate Change

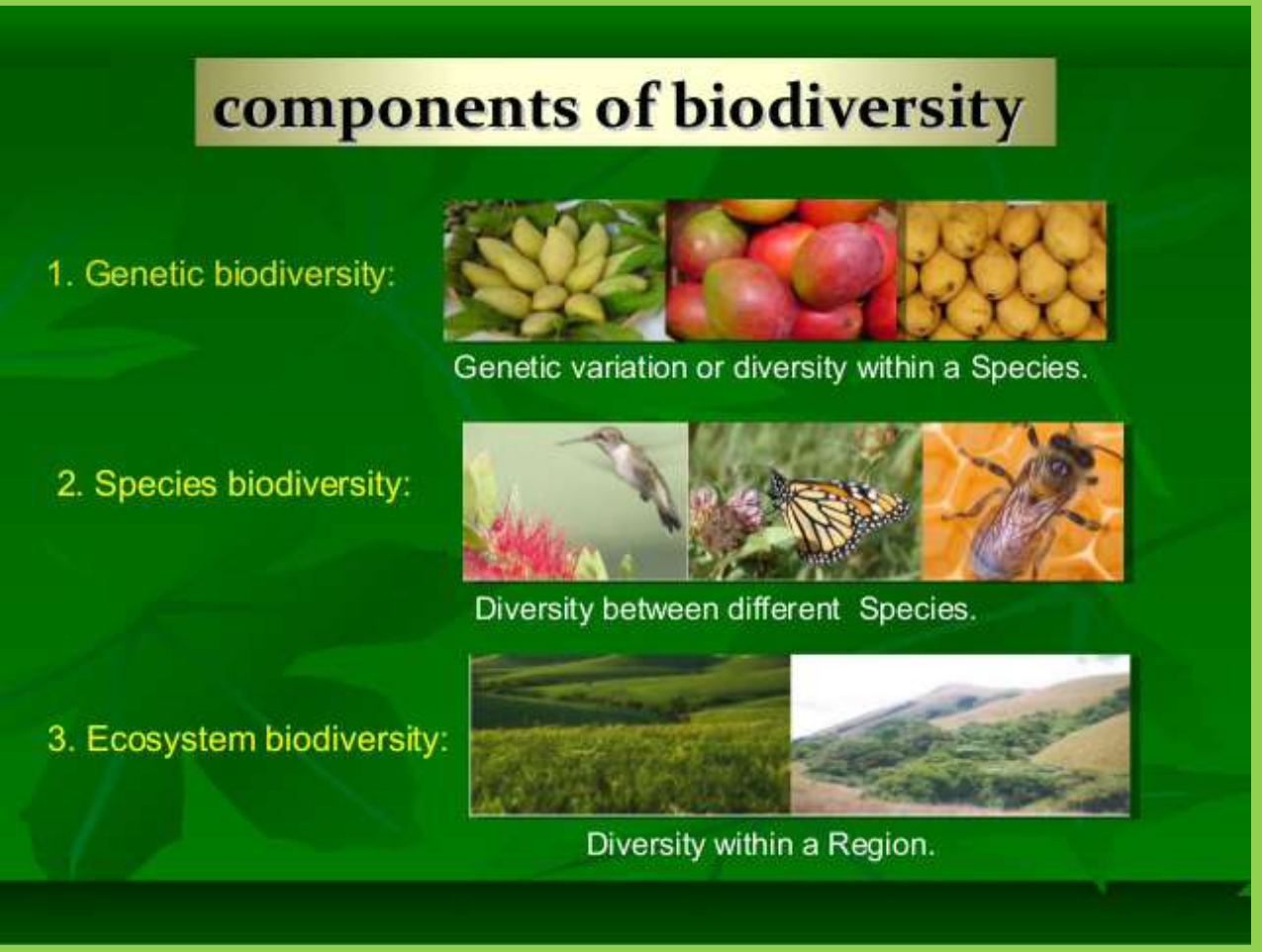
- Rise in CO2 concentration
- Increase melting of Polar ice caps
- Increase average temperature of ocean
- Increase in severe weather events

#3. Overharvesting of Resources

Biodiversity Activity Page 43 NB
Read your article, take notes on the white board. Present your findings about the Biodiversity in your Ecosystem

- What are some abiotic & biotic characteristics of your ecosystem?
- What is an example of Biodiversity in your Ecosystem?
- What does it say about California's Biodiversity?

10/14 The Future of Biodiversity CH 10.3
Obj. TSW explain the advantage of protecting entire ecosystems rather than individual species. P. 80 NB



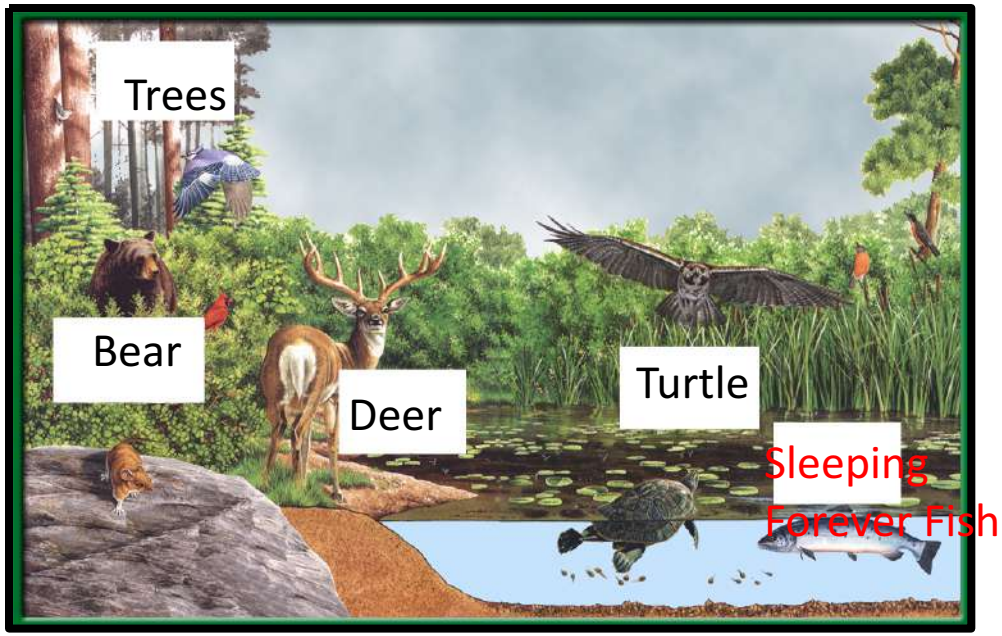
1. List some efforts to save individual species.
2. How is preserving ecosystems and habitats effective?
3. What are some international efforts to preserve Biodiversity?

Ecology Vocab A to Z

1. Decomposer
2. Producer
3. Competition
4. Biotic
5. Habitat
6. Niche
7. consumer
8. Population Size
9. Abiotic
10. Ecology
11. Community
12. Biome
13. Limiting Factors
14. Predator

5/4 Ecosystems 2.1

Obj. TSW demonstrate that a vital part of an ecosystem is the stability of its producers, consumers and decomposers in their Ecology Study Guide and class discussion & Problem Solving Lab. P.46NB



1. Compare and Contrast **Heterotrophs** and **Autotrophs** with examples of each.
2. What **factors** make this picture an Ecosystem, name 3?
3. How are **decomposers** important to an ecosystem, name 3.

Biodiversity

- The number of species in a specific area
- Biodiversity increases as you move toward the equator
- Where are some places that would have more biodiversity?

Studying Biodiversity: Islets

- If I removed all of the organisms, minus the trees, from below what would happen? What organisms would come back first?
- *Insects and spiders would return first
- The farther away the islet was from the mainland, the longer it will take to re-populate (Less biodiversity)
- *larger the islet=more biodiversity! (draw graph)

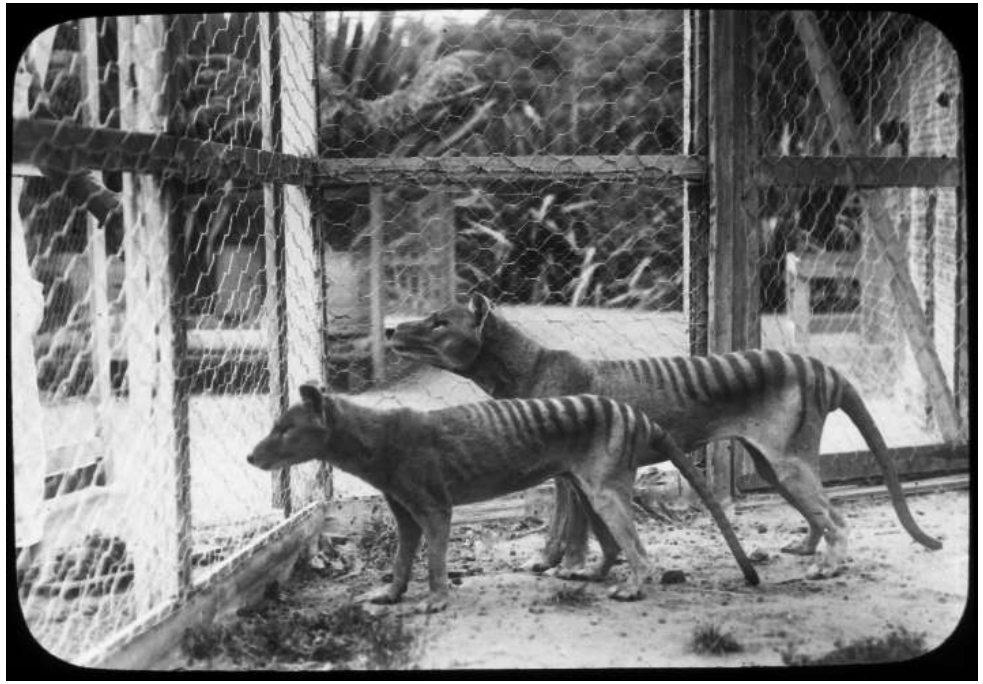
Importance of Biodiversity

- *Important to nature
  - *Living things → interdependent (animals could not exist without green plants)
  - Populations are adapted to live together in communities

- *biodiversity brings stability
  - A pest could easily destroy all of a farmer's corn crops, but it would be difficult for just one pest to destroy multiple kinds of vegetation.
  - Think about this like variation…
- *importance to people
  - Humans depend on other organisms for their needs…
  - Can you name some?

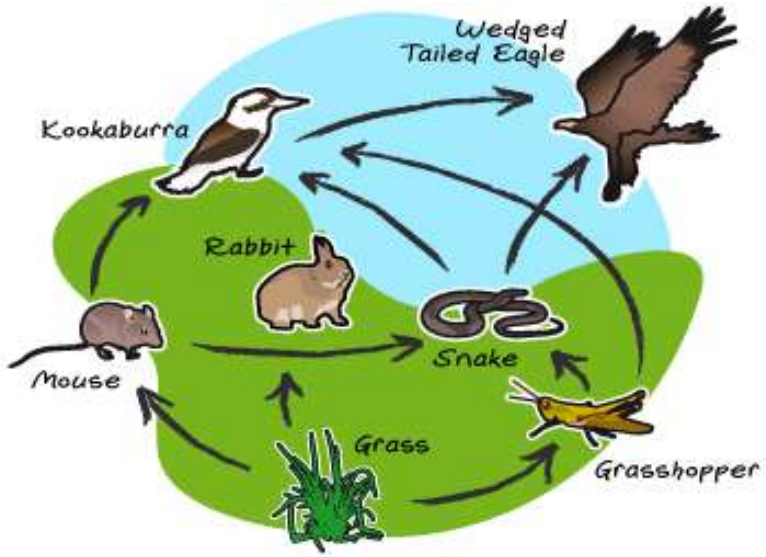
Loss of Biodiversity

- Extinction: the disappearance of a species when the last of its members dies
  - Natural process
  - But today its exceeding the rate it should be at due to: human needs, habitat loss, and land exploitation
- Endangered species: when its numbers become so low that extinction is possible



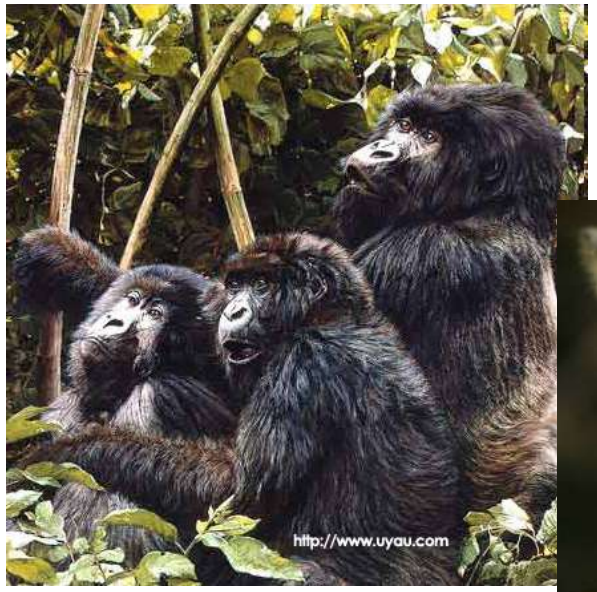
Ecosystem

- *ecosystem: made up of interacting populations (communities) and the abiotic factors
  - An ecosystem is generally an area within the natural environment



Abiotic and Biotic Factors

- ***abiotic components** are non-living chemical and physical factors in the environment
  - Ex. Rocks, soil, oxygen, carbon
- ***biotic components** are living factors
  - Ex. Plants, animals



Communities vs Populations

- *community→ collection of several interacting populations that inhabit a common environment
- *population→ group of organisms all of the same species which interbreed and live in the same place at the same time

Limiting Factors

- *any biotic or abiotic factor that restricts the existence, numbers, reproduction, or distribution of organisms
- *Ex. Sunlight, climate, temperature, water, nutrients/food, fire, soil chemistry, space, other organisms