# ECOSYSTEMS

**to affect:** *riguardare, aver effetto su qualcosa*
**to blend:** *mescolare*
**to graze:** *pascolare*
**grassland:** *prateria*
**hierarchical:** *gerarchico*
**to harm:** *far male, ferire*
**to make up:** *costituire, essere composto*
**moss:** *muschio*

The central principle of ecology is that each **living organism** has a constant relationship with every other element that makes up its environment. The system that includes all living organisms (**biotic factors**) in an area as well as its physical environment (**abiotic factors**) functioning together as a unit is called **ecosystem**. Ecosystems can be of any size, for example, a rock and the moss growing on it might be considered an ecosystem. This rock might be on a plain, with many other rocks, small grass and grazing animals – this is an ecosystem. This plain might be in the tundra, which is also an ecosystem. Ecosystem boundaries are not marked by rigid lines. They are often separated by **geographical barriers** such as deserts, mountains, oceans, lakes and rivers. As these borders are never rigid, ecosystems tend to blend into each other. Ecosystems can be roughly divided into:

- **terrestrial ecosystems** (forests, plains, mountains and so on)
- **freshwater ecosystems** (lakes, rivers, wetlands)
- **marine ecosystems** (seas and oceans).

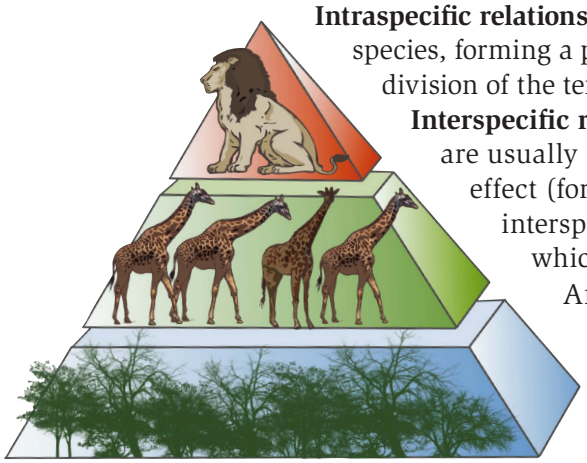
Ecological factors that affect a given environment are usually divided into two groups, **abiotic** and **biotic**:

- **abiotic factors** include water, air, soil, temperature and light.
- **biotic factors** are considered as either intraspecific or interspecific relations.

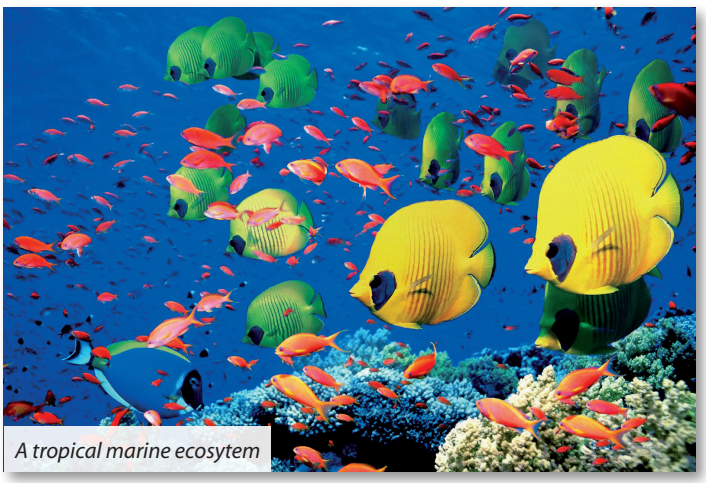
**Intraspecific relations** are those that are established between individuals of the same species, forming a population. They are relations of cooperation or competition, with division of the territory and sometimes organization in hierarchical societies.

**Interspecific relations** are the interactions between different species and are usually described according to their beneficial, detrimental or neutral effect (for example, mutualism or competition). The most significant interspecific relation is the relation of predation (to eat or to be eaten), which leads to the essential concept in ecology of **food chain**.

Anytime a "stranger" living thing or an external factor (such as rise in temperature) is introduced in an ecosystem, it can be disastrous to that ecosystem. This is because this new organism or factor can distort the **natural balance** of the interaction and potentially harm or destroy the ecosystem.



*An example of ecological pyramid*



*A tropical marine ecosytem*

*A freshwater ecosytem: Victoria Falls (Zimbabwe)*

D. Bottero, R. Beolé - *Ecosystems*
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### Endangered species

There are an estimated 10 to 100 million species of living things on earth. Today, humans are destroying species faster than at any other time in the Earth's history. It has been estimated by scientists that 70,000 species a year are being destroyed.

## 1 Answer the following questions.

1. What is the central principle of Ecology?
2. What is an ecosystem?
3. How wide can an ecosystem be?
4. How can ecosystem boundaries be marked?
5. What can an ecosystem be roughly divided into?
6. What are the factors that affect an ecosystem?
7. What are the specific abiotic factors?
8. What are the biotic factors in an ecosystem?
9. Why can an external factor be considered a danger to an ecosystem?
10. What is the most significant interspecific relation in an ecosystem?

## 2 BIODIVERSITY. Listen and complete the table with the information required.

1. Definition .....
2. Levels of study .....
3. Difference of biodiversity .....
4. Contribution of biodiversity to
   - **a.** Economy: .....;
   - **b.** Medicine: .....;
   - **c.** People: .....;
5. Main threat to biodiversity .....
6. Human activities .....

## 3 BIOMES. Label the paragraphs choosing from the following *headings*. Then, find questions for the *answers* (a-e) given after the text.

### HEADINGS

1. Climatic factors
2. Definition of biome
3. Systems of classifying biomes
4. Main categories of biomes
5. The role of biodiversity

☐ **Biomes** are geographically defined areas of ecologically similar conditions.
☐ There are five main categories of biomes on earth:

- **Desert Biomes.** They are hot and dry deserts, semi-arid deserts, coastal deserts and cold deserts.
- **Aquatic Biomes**. Aquatic biomes are classified into two groups: freshwater biomes (lakes and ponds, rivers and streams, wetlands) and marine biomes (oceans, coral reefs and estuaries).
- **Forest Biomes**. They are tropical rainforest and temperate and boreal forests (also called the *taiga*).
- **Grassland Biomes**. There are two main types of grassland biomes: savannah grasslands and temperate grassland.
- **Tundra Biomes**. There are two major tundra biomes: the artic tundra and the alpine tundra.

☐ **Climate** is a major factor determining the distribution of terrestrial biomes. Among the important climatic factors are: latitude, humidity and elevation. Increasing elevation causes a distribution of habitat types similar to that of increasing latitude.
☐ The most widely used systems of classifying biomes correspond to latitude and humidity.
☐ Biodiversity generally increases from the poles towards the equator and increases with humidity.

### ANSWERS

- **a.** Five main categories.
- **b.** Aquatic biomes.
- **c.** Alpine tundra.
- **d.** Latitude, humidity and elevation.
- **e.** From poles towards the equator.




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