

Ecology Notes

Ecology is the study of the interactions between organisms and their surroundings.

A habitat is where an organism lives in.

A population is a group of organisms of the same species living in a habitat.

An ecological community/biotic environment is all the populations of different species in a habitat living and interacting with one another.

An ecosystem is a community of different organisms interacting with the abiotic environment.

Ecology consists of the study of the biotic environment (all the living things that an organism interacts with) and the abiotic environment (physical, non-living factors that affects organisms).

Features of an abiotic environment

The features of an abiotic environment will determine the types of plants in a region and since animals rely on plants for food either directly (herbivores/omnivores) or indirectly (carnivores/omnivores), the animals are determined by the plants present and thus, the features of an abiotic environment determines the animals present. These plants and animals have to be adapted to the physical features of an abiotic environment to survive.

- Light intensity- Affects the rate of photosynthesis and growth in plants and thus affects the rate of growth of animals as animals are dependent on plants for food indirectly or directly.
- Temperature- Affects the rate of enzyme reactions and metabolic rate of organisms.
- Water availability- Important for survival. Some animals are adapted to regions with low water availability, e.g. camels can survive many days without drinking.
- Oxygen content- Oxygen is needed for aerobic respiration, which produces ATP for cellular activities. Some organisms are adapted to live in areas with low oxygen content, e.g. mangrove plants have special breathing roots that project above the mud surface and have openings for gas exchange.
- Salinity of soil and water- Affects the water potential of the soil and water. Organisms in low salinity/high water potential have to constantly remove excess water while those in high salinity/low water potential have to conserve water.
- pH of soil and water- Affects the rate of enzyme reactions and thus, organisms are sensitive to the pH level. Extreme changes can denature these enzymes.

All organisms in a biotic environment are dependent on other organisms and the populations that each type of organism makes up are all interdependent. A change in one population will affect the other populations in that community, such as a decrease in population numbers for plants would cause the population number of animals that consume those plants to decrease as there is less food for those