

Biodiversity and Human Impact



L1 Biotic and abiotic components

Understanding ecosystems is like unravelling the intricate web of life on our planet. Whether it's the buzzing life of a rainforest or the serene solitude of a desert, ecosystems are a tapestry woven by two main components: abiotic and biotic factors. Let's embark on a scientific adventure to comprehend these components and the fascinating ways they interact within different environmental conditions.

1. Abiotic and Biotic Components:

Every ecosystem is a dynamic community where living (biotic) and non-living (abiotic) elements coexist. Picture a forest - the trees, the soil, the sunlight, and the air are abiotic components. Now, add in the animals, plants, and microorganisms; these are the biotic components. Together, they create a delicate balance, a dance of life.

2. Environmental Conditions Across Ecosystems:

Ecosystems come in various shapes and sizes, each with its unique set of environmental conditions. For example, a rainforest is hot, humid, and receives abundant rainfall, whereas a desert is dry and scorching. These diverse conditions determine what kinds of organisms can thrive there. Animals, plants, and microbes have adapted over time to fit into specific niches within their ecosystems.

3. Environmental Conditions Within Ecosystems:

Zoom in closer, and you'll notice that even within the same ecosystem, there are microenvironments with distinct conditions. In a pond, some areas might have more sunlight, while others are shaded. Some parts may be shallow, and others deep. These microenvironments offer different habitats for various species. Some organisms may prefer the shallow, sunlit regions, while others thrive in the deeper, darker areas. It's like having different neighbourhoods within a city, each with its own unique charm.

4. Animals Changing Their Environment:

Animals, in their quest for survival and comfort, often play an active role in shaping their environment. Beavers, for instance, build dams that alter the flow of rivers, creating new habitats for themselves and other organisms. Similarly, earthworms burrow through soil, enhancing its fertility. These changes, often unintentional, showcase how animals become unintentional architects, moulding their surroundings to better suit their needs.

5. Changes in Environmental Conditions and Population Change:

Imagine a scenario where a once green and flourishing meadow experiences a sudden increase in temperature. The grass may wither, and the water sources may dry up. This shift in environmental conditions can impact the organisms living there. Some species may struggle to survive, while others that can better adapt might thrive. This delicate balance between environmental conditions and living organisms is crucial for maintaining healthy populations within ecosystems.

Bringing It All Together:

In essence, ecosystems are like intricate puzzles where abiotic and biotic pieces fit together to form a harmonious picture. Recognizing these components and understanding their interactions is fundamental to appreciating the complexity of nature. As you delve deeper into the world of science, keep in mind that every organism, no matter how small, plays a vital role in maintaining the delicate balance of ecosystems.

So, whether you're exploring a rainforest, a desert, or a pond in your local park, observe the abiotic and biotic elements at play. Marvel at the adaptability of life in different environments, and ponder the ways in which animals, knowingly or unknowingly, shape their homes. Finally, grasp the interconnectedness of environmental conditions

and population dynamics, realizing that changes in one part of an ecosystem can ripple through the entire community.

As you continue your scientific journey, always remember you are not just studying science; you are unlocking the secrets of the living world around you.

Independent Practice

1. What are the main differences between abiotic and biotic components in an ecosystem? (Answer in 2-3 sentences)
2. Give an example of an animal that changes its environment and explain how it does so. (Answer in 2-3 sentences)
3. Describe a microenvironment within a forest ecosystem and explain how it might differ from the surrounding areas. (Answer in 2-3 sentences)
4. How do changes in environmental conditions impact the populations of living organisms in an ecosystem? (Answer in 2-3 sentences)

Extended Answer Question (8 minutes):

5. Imagine you are a scientist exploring a new ecosystem. Describe the abiotic and biotic components you might encounter, and explain how these components work together to create a balanced environment. Additionally, discuss the potential challenges faced by organisms in adapting to different environmental conditions within this ecosystem. (Answer in detail, considering various aspects, and take your time to explain the interactions and challenges. Aim for a response of about 8 minutes.)

L2 Biodiversity and threats

Insert explanation.

Independent practice

Insert 14 questions including two extended writing questions.

L4 Title

Insert explanation.

Independent practice

Insert 14 questions including two extended writing questions.

L5 Title

Insert explanation.

Independent practice

Insert 14 questions including two extended writing questions.

L6 Title

Insert explanation.

Independent practice

Insert 14 questions including two extended writing questions.

