Difference Between Biotic and Abiotic Factors

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Key Difference - Biotic vs Abiotic Factors

Ecosystem is a biological community in which living organisms and physical environments are interconnected to each other. It can be considered as a complex network which has many interactions with each other. It includes all living things, their interactions and all non living things in the environment. It is the foundation for the energy flow and biogeochemical cycles. Every organism in the ecosystem has its own niche and a role to play for the existence of the ecosystem. Ecosystem has two major components named biotic component and abiotic component. They are also called biotic factor and abiotic factor. **Biotic factor of the ecosystem includes all living organisms** while **abiotic factor includes all non living things in the ecosystem.** This is the key difference between biotic and abiotic factors.

What are Biotic Factors?

The word biotic refers to the living organism. Hence, the biotic factors of an ecosystem refer to all living organisms in the ecosystem. It includes plants, animals, birds, fungi, bacteria, protozoa, etc. All these organisms work together in an ecosystem. These living organisms largely depend on the abiotic factors of the ecosystem. The small biotic unit of an ecosystem is species. The success or the failure of a species depends on the adaptations of that species, competition and the resources available in the ecosystem. Different species in the community interact with each other for the resources in the environment. When the resources are limited, only the competent species will remain in the environment, and they will be selected by natural selection.

Biological organisms in an ecosystem show complex interactions such as symbiosis, parasitism, mutualisms, competition, predation, etc.

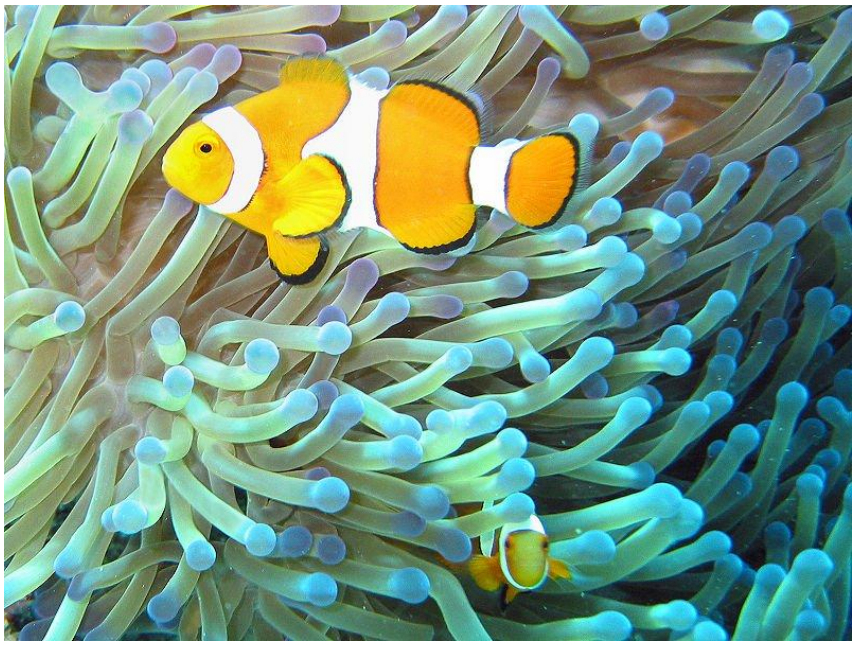

Figure 01: Biotic factors of the ecosystem

What are Abiotic Factors?

Abiotic factor is a major component of an ecosystem. It includes all the non living things present in the ecosystem. Non living physical and chemical elements belong to the abiotic component. Abiotic factors are sunlight, oxygen, hydrogen, nitrogen, phosphorus, temperature, water, soil, minerals, other gasses, salinity, humidity, wind, etc. Abiotic factors are derived from atmosphere, lithosphere, and hydrosphere. Abiotic factors are an essential part of an ecosystem since biotic factor of the ecosystem totally depend on the abiotic factor. However, abiotic factor does not dependent on the biotic factor. It provides the foundation for interactions between living organisms of the ecosystem. If one abiotic factor is limited in the ecosystem, it affects the stability of the ecosystem and to species. For example, if water is removed in a pond (ecosystem), all the aquatic organisms will be affected.

Figure 02: Abiotic factor of an ecosystem – Water

What is the difference between Biotic and Abiotic Factors?

Biotic vs Abiotic Factors	
Biotic factors are the living organisms of an ecosystem.	Abiotic factors are the non living components of an ecosystem.
Examples	
Biotic factors include plants, bacteria, fungi, birds, worms, animals, etc.	Abiotic factors include sunlight, water, air, chemical elements, minerals, soil, temperature, etc.
Dependency	
Biotic factors depend on the abiotic factors.	Abiotic factors do not depend on biotic factors.
Adaptations	
Biotic factors adapt to the environment.	Abiotic factors do not change or adapt to the environment.

Summary - Biotic and Abiotic Factors

Ecosystem can be defined as all living and nonliving components of a given geographic area. All living organisms found in an ecosystem is known as biotic factor and all nonliving components are considered as abiotic factors. This

is the key difference between abiotic and biotic factors. Abiotic and biotic factors of an ecosystem are related to each other. Biotic factor depends on the abiotic factor of the ecosystem. When the abiotic and biotic components are balanced properly, the ecosystem remains stable.

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