

Distinguish, differentiate, compare and explain what is the difference between the natural and artificial ecosystems. Comparison and Differences.

Difference between Natural and Artificial Ecosystems

There are several differences between natural and artificial ecosystems, including sustainability, diversity, and purpose. A natural ecosystem has a diverse amount of species and plants, whereas artificial ecosystems are limited. Natural ecosystems are self-sustaining and result from a spontaneous natural reaction, while artificial ecosystems require the assistance of humans.

Natural Ecosystem

A natural ecosystem is the result of interactions between organisms and the environment. For example, an ocean is classified as a marine ecosystem, which consists of algae, consumers and decomposers. A cycle occurs in this type of ecosystem that begins with algae converting energy via photosynthesis. After consumers feed on the algae, energy is transferred between the organisms. Once consumers die in this system, decomposers turn them into organic matter. This process occurs naturally over a period of time, whereas in an artificial ecosystem, human intervention is required.

In natural ecosystems, the soil represents an ecological reservoir containing seeds and an entire food web based on microbial activities. However, natural soils rarely form the basis of plant-based artificial ecosystems of living walls. This lack of a biological legacy or ecological memory may result in depauperate microbial communities. Under those circumstances, it could have profound effects on ecosystem functioning. Including greater biodiversity in living walls can improve their functionality.

Artificial Ecosystem

An artificial ecosystem is not self-sustaining, and the ecosystem would perish without human assistance. For example, a farm is an artificial ecosystem that consists of plants and species outside their natural habitat. Without humans, this ecosystem could not sustain itself. The plants and animals need the help of humans to eat and survive. Another major difference between a natural ecosystem and artificial ecosystems is diversity. Natural ecosystems contain more natural factors and organisms. The relationships between organisms, each other and the environment in this ecosystem are more complex than that of artificial ecosystems.

Living walls are artificial ecosystems. All living walls require human intervention in order to thrive, in the form of water and nutrient supply, and the management of pests and diseases. Indoor living walls also need the right kind of light. Engineered components, such as the irrigation system, are essential to the functioning of the system; for example, the kind of geotextile used in a hydroponic living wall system will directly influence the ability of the plants to receive the right amount of water. Engineered components also support and influence the biological components of the systems. Human design is thus an essential factor underlying all artificial ecosystems. Living walls feature relatively simple designs, compared with the obvious complexity of natural ecosystems.

Difference between Natural Ecosystem and Artificial Ecosystems

1. A natural ecosystem consists of many species of plants and animals. In artificial ecosystems, species diversity is low.
2. In a natural ecosystem, genetic diversity is very high. In an artificial ecosystem, genetic diversity is very low.
3. In a natural ecosystem, Sunlight is the energy source for plants and this energy drives all biological cycles. In an artificial ecosystem, Sunlight is the ultimate energy source for plants. However, artificial fertilizers and other nutrients are externally supplied to the soil.
4. In a natural ecosystem, Food chains are long and complex. In an artificial ecosystem, Food chains are simple and often incomplete. It is due to the killing of other species as pests or weeds.
5. In a natural ecosystem, Ecological succession takes place over time whereas in artificial, no ecological succession takes place.
6. Natural nutrient cycling exists in natural ecosystem whereas Incomplete nutrient cycling exists in an artificial ecosystem.

7. The natural ecosystem is naturally sustainable. An artificial ecosystem is unsustainable as most fertilizers are made from non-renewable fossil fuels. Furthermore, they add to water pollution, biomagnification, and other ecological disturbance.

Steady Run