

# **Basic Environmental and Botanical Terms and Concepts**

## **Environment**

The environment is the physical elements surrounding mankind, including soil, water, and air, which influence us and which we influence.

## **Environmental Science**

These are the sciences that revolve around human beings and their environment and are the product of the integration of human and natural studies. A student of environmental sciences may be a scientist in biology, earth sciences, chemistry, engineering, or medicine, provided that the different variables are linked to human beings and their surroundings.

## **Ecology**

Ecology is a branch of biology that studies the relationship of organisms to each other and their environment. If the study is limited to one type of plant species, it is called the “ecological self-study”, but if the environmental study is extended to include a group of clans or societies, it is called the “socio-environmental study”. Ecology depends on the investigation of abiotic factors (physical factors such as soil, weather and topography) and their impact on the biological component of the ecosystem.

## **Botanical Community**

This represents all plant species (similar or different) that live in a specific area or ecosystem. The botanical community often contains individual plants with varying capacities to tolerate and adapt to surrounding environmental conditions. Each botanical community contains a number of plant groupings that are dominated by a dominant species that may differ from one group to another; these groupings are called the “plant clan”.

## **Eco-system**

The eco-system consists of the biotic community and its abiotic environment, which includes climate, soil, water, air, nutrients, and energy. It is one of the most complex levels in nature.

## **Conservation Science**

This is a path of science that is concerned with "protecting, preserving, and improving". It includes preserving the innate life created by God Almighty, including plants, animals, environments, and all natural resources. It also includes the protection of cultural legacies to which peoples and tribes are accustomed, which regulates the consumption of natural resources to ensure their sustainability.

## **Study and evaluation of plant communities within their natural habitats**

To study plant communities, the researcher should make visits to vegetation areas called field patrols or field trips. Researchers undertake these trips within a specific environment, in a specific geographical area (deserts, mountains, forests, heritage sites) and during a specific time,

for research purposes, such as studies of plant or animal species or evaluating environments and recording threats.

### **Types of Botanical Ecological Studies**

- **Taxonomic Studies:** These are often called botanical surveys. These studies are based mainly on enumeration and recording of all types of plants found in an area. This type of study is characterized by the necessity of collecting and preserving plant samples for laboratory study, and it is one of the most important studies that achieve off-site conservation. Taxonomic studies have evolved to include studies of the genetic map of plant species.
- **Evaluation Studies:** This depends on studying the environments and their plant or animal species and the threats and negative impacts that they are exposed to, whether natural (drought, desertification, high temperatures, etc.), or due to human practices (such as camping, grazing, introduction of exotic species, etc.). Evaluation Studies seek to find out reasons, evaluate situations, and find appropriate solutions and alternatives.
- **Rehabilitation Studies:** This field is concerned either with the rehabilitation of degraded and threatened environments, or with the purpose of rehabilitating (botanical) species. It often combines taxonomic and evaluative studies. Rehabilitation operations may take place within the sites (such as the rehabilitation of plant species in their natural environment), or these endangered species may be transferred outside their sites to ensure their study and propagation (as in botanical gardens, including the QBG). The rehabilitation studies of wild plants depend on collecting seeds and plants from their sites, and then germinating and propagating them, to transfer them to their natural habitats again and make them adapt to natural conditions, or to grow them within botanical gardens.