

# An Overview on Life Science of Ecology

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## Commentary

Ecology is the study of the relationships between living organisms, including humans, and their physical environment; it seeks to understand the vital connections between plants and animals and the world around them. Ecology also provides information about the benefits of ecosystems and how we can use Earth's resources in ways that leave the environment healthy for future generations. The many specialties within ecology, such as marine, vegetation, and statistical ecology, provide us with information to better understand the world around us. This information also can help us improve our environment, manage our natural resources, and protect human health [1]. The following examples illustrate just a few of the ways that ecological knowledge has positively influenced our lives. Lyme disease is a potentially serious bacterial infection that is transmitted to humans by certain ticks. Ecological studies have found that people are more likely to get Lyme disease when acorns are plentiful. Why? Because mice and deer, which carry the disease and the ticks, feed on acorns. More acorns usually mean more mice and deer, providing a favorable environment for large populations of ticks to flourish [2]. Knowing the connections between acorns, deer, mice, and ticks, ecologists are able to predict the likelihood of infection and let people know when they need to be more careful when outdoors. Some of our nation's most cherished species, such as the bald eagle and peregrine falcon, as well as countless other less familiar species, like the Virginia Big-Eared Bat and the American Burying Beetle, have either been brought back from the brink of extinction or their populations have been stabilized. These successes are the result of successful captive breeding efforts, reintroduction methods, and a greater understanding of species, in part because of ecological research. Biological control is a technique that uses the natural enemies and predators of pests to control damage to crops [3]. It is based in part on knowing the ecology of pests, which is used to understand when and where they are the most vulnerable to their enemies. Biological control alleviates crop damage by insects, saves money, and decreases problem associated with pesticides. Ecological research has shown that estuaries are nursery grounds for fish populations that live in coastal waters, an important reason to protect these areas. Ecological research has also identified obstacles, such as dams, that fish encounter when returning to their breeding areas. This information has been used to help design structures for fish so they can move around these obstacles to reach their breeding areas. An ecosystem is any geographic area that includes all of the organisms and nonliving parts of their physical environment. An ecosystem can be a natural wilderness area, a suburban lake or forest, or a heavily used area such as a city [4]. The more natural an ecosystem is, the more ecosystem services it provides. These include cleansing the water and air, pollinating crops and other important plants, and absorbing and detoxifying pollutants (soils and plants). Short for biological diversity, biodiversity is the range of variation found among microorganisms, plants, fungi, and animals. Some of this variation is found within species, such as differences in shapes and colors of the flowers of a single species of plants. Biodiversity also includes the richness of species of living organisms on earth. Many environmental organizations have developed educational materials that focus on species and ecosystems, and offer tips on becoming involved in community activities that relate to the environment. Finally, professional ecological organizations can connect you with scientific

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