



Curriculum Units by Fellows of the Yale-New Haven Teachers Institute
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Microcosms in the Biosphere and How They Affect Humans

Guide for Curriculum Unit 92.05.11
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The Earth is made up of many environments which range from the coldest climate to the warmest, from the forest to the desert, from the water to the land, under the ground and in the air. Nestled in all of these environments is some form of life. These organisms, whether large or microscopic, interact with other organisms in their environment and community. To learn about these environments, scientists divide the world into separate units called ecosystems. Ecosystems consists of living and non-living things that interact with one another in a given area.

An ecosystem is defined by the ecologist who is studying it. A fresh water ecosystem may include all wild life in the system, microorganisms, plants in and around the systems, pollutants in and around the systems, and many things associated with the system, while keeping in mind that ecosystems overlap and affect one another.

My unit will deal primarily with habitat of marine organisms; three types of symbiosis; commensalism; mutualism, and parasitism, to the atmosphere and back to the earth; water pollution which is caused by water runoff and debris; hypoxia in the Long Island Sound which is in most oxygen-depleted areas. The organisms will suffer stress and will eventually suffocate. This can result in fish and other mobile animals leaving the area. This results in oxygen depletion, toxic contamination, pathogen contamination, floatable debris, and education vocabulary.

The students will also develop mini ecosystems using a square meter garden. The students will study microscopic organisms from various systems and study how they react to toxins (i.e. gasoline, oil, soap, etc.) and will affect organisms. My unit will also include resources, lesson plans, bibliographies for teachers and students, a vocabulary list, suggested field trip with Quinnipiac Schooner, Inc. around the Long Island Sound, lots of hands-on activities, and the garden ecosystem may be used year round. This unit will be used in the seventh and eighth grade science classes for two weeks and the ecosystems study will be ongoing.

Ecosystems are not difficult to find. They are all around you.

(Recommended for Earth Science (grade 8), Life Science (grade 7), and Biology, grades 8 through 9)

Key Words

Ecosystems Ecology Environmental Science

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