Llano Estacado Master Naturalist Curriculum Guide

Unit 21: Urban Ecosystems

Only in our flights of fancy can we still keep nature divorced from the human environment. Out in the real world, our tentacles firmly entwine nature’s fabric.

Menno Schilthuizen

Unit Goals: After completing this unit, volunteers should be able to:

* clearly differentiate the meaning of urban ecosystems, urbanization, and urban sprawl,
* compare urban and natural ecosystems in terms of diversity, interrelationships, cycles and energy,
* understand the unique ecology or urban ecosystems in terms of impacts on abiotic and biotic characteristics, nutrient cycles, and the water cycle; green and gray spaces and plants and animals.
* determine the levels of plant and animal diversity in urban (ecosystems) when compared to natural ecosystems.

**Introduction** (p. 664 and 665)

1. Urban ecology is defined as the study of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ in cities, \_\_\_\_\_\_\_\_\_\_\_\_ in cities and the coupled \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ between humans and natural systems. The overarching goal of urban ecology is to understand how humans and ecological processes can coexist and help urban societies become more \_\_\_\_\_\_\_\_\_\_\_\_\_. (Marzluff et all 2008)

**Disconnection from Nature** (p. 665)

1. \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_coined the term nature deficit disorder to describe the growing public disconnection from nature.

**Ecological Principles of Ecosystem Structure and Function and the Ecology of Urban Ecosystems** (p.666-669)

1. What does DICE as applied to ecology stand for?
   1. Diversity
   2. Interrelationships
   3. Cycles
   4. Energy
2. Although the basic ecological principles are the same in natural and urban ecosystems, why is the effect of human activity so profound?
3. In the urban environment, humans can be considered a \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ because they have the capability of altering the biotic and abiotic components of the natural ecosystem.

**Urban Soils and Water Cycle** (p. 671-678)

1. List two ways to better take care of urban soils.
3. List two ways, that as individuals, we can impact the urban water cycle.



**Nutrient Cycling and Urban Food Webs** (p. 678-680)

1. Per capita food waste is roughly \_\_\_\_\_\_\_\_\_% of all edible food and \_\_\_\_\_\_\_\_% of municipal solid waste.
2. T or F We are close to being able to lessen or eliminate waste streams through recycling and waste to energy (WTE) facilities
3. What human throw away is a key component of urban food webs?
   1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Urbanization Effects on Biotic Structure and Function (**p. 680-696)

1. Name three types of urban plant communities.
2. T or F Generally, the prevalence of native species decreases as one move from the urban fringe to the city center.
3. List three reasons why lawns are ecologically expensive.
4. From the list on p. 683, name three characteristics of animals living in urban ecosystems.

1. T or F All vertebrate classes including fish, amphibians, reptiles, birds and mammals can be found in urban ecosystems.
2. Name three reasons why urban settings normally have higher bird abundances than wildland settings.

**Urban Gray Spaces** (p. 694-696)

1. T or F Wildlife interaction with gray spaces can be both positive and negative.
2. What type of altered habitat in urban gray spaces covers about 80% of a central urban area and what is it composed of? \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ , composed of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_and sealed surface such as \_\_\_\_\_\_\_\_\_\_\_and parking lots.

**Additional References**

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