

Environmental Studies

Guide Questions

Unit Two: Terrestrial Ecosystems

Topic #2: Ecological Succession

Introduction

- (1) Define Ecological Succession.
- (2) Besides plant species, what two other changes take place during succession?
- (3) Explain what happens during ecological succession in a pond or lake?
(Aquatic Ecosystems)

Types of Succession

- (4) Define Primary Succession, and Name two places where it occurs.
- (5) Define Secondary Succession, and name three places where it occurs.
- (6) Which of the two types of succession occurs more rapidly? Why?
- (7) Both Primary and Secondary succession are examples of autotrophic succession, Explain.
- (8) What is the main source of energy during Heterotrophic Succession? Give an example.
- (9) List in order the types of organisms involved in the stages during the decay of a fallen log (dead wood).
- (10) Why does the community of living things change during the stages of ecological succession?

Succession on Rocky Surfaces

- (11) What kind of organisms are the pioneers during succession on bare rock? Explain the symbiotic relationship in lichens. (Give the name and 2 kinds of organisms)
- (12) What type of lichens are the first to colonize rock surfaces? How do they begin the breakdown of the rock?
- (13) Next the foliose lichens join the crustode lichens on the rock. What do they do to the rock, and what do they form from the crumbled rock?

- (14) When mosses join the two types of lichens, what does this do to develop soil?
- (15) What types of plants appear with the fruticose lichens to further develop the soil layer? What kinds of seed-bearing plants follow?
- (16) After sun-loving shrubs appear, what kinds of trees appear? What tree species are often found in the climax forest stage at the end of the succession process?

Succession from Bank Soil to Woodlot

- (17) Which of the two main types of succession begins in bank soil?
- (18) What kinds of pioneer plants first colonize the bank soil?
- (19) Name the next two stages, after pioneer weeds and grasses. Give examples of plants in each of these stages.
- (20) (fig. 4-14) Reorganize the following stages from the general path of succession in our region of the northeastern United States: Sun-Loving Trees and Vines, Grassy Meadow, Shade-Tolerant Trees and Shrubs, Pioneer Plants, Old Field Community, Sun-Loving Shrubs, Shade-Loving Trees and Shrubs.
- (21) At what stages does succession stop in the following areas: Prairies, St. Lawrence River Valley, Minnesota, Smoky Mountains in Tennessee and North Carolina, California, British Columbia, and Boreal Forest of USA and Canada.
- (22) During sand dune succession in the Great Lakes Region (fig. 4-7), what species of trees come after shrubs, and before pines?
- (23) Define Ecotone (fig. 4-15).
- (24) In table 4-4, involving a plot study of secondary succession, explain changes in the following:
 - A. Air Temperature
 - B. Relative Humidity
 - C. Wind Speed
 - D. Light Intensity
 - E. Soil Organic Content
 - F. Golden Rod Plants
 - G. Maple Trees