

7th Grade Ecology Unit

Benchmarks

Chapter 1: The Nature of Science

The Scientific World View

1A(6-8)#2: Scientific knowledge is subject to modifications as new information challenges prevailing theories and as a new theory leads to looking at old observations in a new way.

Scientific Inquiry

1B(6-8)#2: If more than one variable changes at the same time in an experiment, the outcome of the experiment may not be clearly attributable to any one of the variables. It may not always be possible to prevent outside variables from influencing the outcome of an investigation (or even to identify all of the variables), but collaboration among investigators can often lead to research designs that are able to deal with such situations..

Chapter 4: The Physical Setting

Processes that Shape the Earth

4C(6-8)#7: Human activities, such as reducing the amount of forest cover, increasing the amount and variety of chemicals released into the atmosphere, and intensive farming, have changed the earth's land, oceans, and atmosphere. Some of these changes have decreased the capacity of the environment to support some life forms.

Chapter 5: The Living Environment

Diversity of Life

5A(6-8)#3: Similarities among organisms are found in internal anatomical features, which can be used to infer the degree of relatedness among organisms. In classifying organisms, biologists consider details of internal and external structures to be more important than behavior or general appearance.

5A(6-8)#5: All organisms, including the human species, are part of and depend on two main interconnected global food webs. One includes microscopic ocean plants, the animals that feed on them, and finally the animals that feed on those animals. The other web includes land plants, the animals that feed on them, and so forth. The cycles continue indefinitely because organisms decompose after death to return food material to the environment.

Interdependence of Life

5D(6-8)#1: In all environments—freshwater, marine, forest, desert, grassland, mountain, and others—organisms with similar needs may compete with one another for resources, including food, space, water, air, and shelter. In any particular environment, the growth and survival of organisms depend on the physical conditions.

5D(6-8)#2: Two types of organisms may interact with one another in several ways: They may be in a producer/consumer, predator/prey, or parasite/host relationship. Or one organism may scavenge or decompose another. Relationships may be competitive or mutually beneficial. Some species have become so adapted to each other that neither could survive without the other.

Flow of Matter and Energy

5E(6-8)#1: Food provides molecules that serve as fuel and building material for all organisms. Plants use the energy in light to make sugars out of carbon dioxide and water. This food can be used immediately for fuel or materials or it may be stored for later use. Organisms that eat plants break down the plant structures to produce the materials and energy they need to survive. Then they are consumed by other organisms.

5E(6-8)#3: Energy can change from one form to another in living things. Animals get energy from oxidizing their food, releasing some of its energy as heat. Almost all food energy comes originally from sunlight.

Evolution of Life

5F(6-8)#2: Individual organisms with certain traits are more likely than others to survive and have offspring. Changes in environmental conditions can affect the survival of individual organisms and entire species.

Chapter 9: The Mathematical World

Shapes

9C(6-8)#4: The graphic display of numbers may help to show patterns such as trends, varying rates of change, gaps, or clusters. Such patterns sometimes can be used to make predictions about the phenomena being graphed.

Chapter 11: Common Themes

Constancy & Change

11C(6-8)#1: Physical and biological systems tend to change until they become stable and then remain that way unless their surroundings change.

Chapter 12: Habits of Mind

Values and Attitudes

12A(6-8)#2: Know that hypotheses are valuable, even if they turn out not to be true, if they lead to fruitful investigations.

12 A(6-8)#3: Know that often different explanations can be given for the same evidence, and it is not always possible to tell which one is correct.

Communication Skills

12D(6-8)#1: Organize information in simple tables and graphs and identify relationships they reveal.

12D(6-8)#2: Read simple tables and graphs produced by others and describe in words what they show.