

Students are responsible for all notes and activities handwritten in class for all quizzes and tests as well as for a notebook grade at the conclusion of each chapter. The information below is taken from the SC Department of Education Science Support Documents which can be found at https://www.ed.sc.gov/apps/cso/standards/supdocs_k8.cfm?#area_5. All classroom activities and topics of study for this chapter are based on the standards listed below.

5-2.2 Summarize the composition of an ecosystem, considering both biotic factors (including populations, to the level of microorganisms, and communities) and abiotic factors.

It is essential for students to know that an **ecosystem** contains all of the organisms and their nonliving surrounding environment that contribute to the functioning of the ecosystem. An example of an ecosystem is an estuary, including all of the animals, plants, water, soil, air, and sunlight present and the interactions among them.

- The living parts of the ecosystem are called the **biotic factors** and include populations and communities of organisms.
- The nonliving parts of the ecosystem are called the **abiotic factors** and include the temperature, water, soil, air, and sunlight.

The living organisms in an environment can be grouped in two ways:

Population

- All members of one kind of organism that live in a particular area.
- Some examples of a population may be all of the white-tailed deer in a forest, all rainbow trout in a stream, or all of the bald cypress trees in the swamp.
- *Microorganisms* are living things that can be a single-celled or multi-celled organism that is too small to be seen without at least a 10x magnifier.

Communities

- A group of different populations of organisms.
- Some examples of communities are all of the squirrels, acorn trees, and grass in a park; all of the microorganisms in a pond; or all of the cacti, rattlesnakes, and scorpions in the desert.

5-2.3 Compare the characteristics of different ecosystems (including estuaries/salt marshes, oceans, lakes and ponds, forests, and grasslands).

It is essential that students to know that there are different types of ecosystems (terrestrial and aquatic). These ecosystems can be divided into two types according to their characteristics:

Terrestrial

- Land-based ecosystems include forests and grasslands.
- *Forests* have many trees (with needles or with leaves), shrubs, grasses and ferns, and a variety of animals. They usually get more rain than grasslands. Temperatures in the forests may vary depending on where the forest is located.
- *Grasslands* have fertile soil and are covered with tall grasses. They usually get a medium amount of rain, but less than forests. Temperatures may also vary depending on where the grassland is located. Some examples of animals that live in the grasslands are prairie dogs, bison, and grasshoppers.

Aquatic

- Water-based ecosystems may be fresh water (lakes and ponds) or saltwater (oceans, estuaries and saltwater marshes).

- *Lakes and ponds* are bodies of freshwater that are surrounded by land. Ponds are usually shallower than lakes and the temperature of the water usually stays the same from top to bottom. Plants and algae usually grow along the edges where the water is shallow. Some examples of animals may be different types of fish, amphibians, ducks, turtles, or beavers.

- *Oceans* are large bodies of saltwater divided by continents. Oceans have many types of ecosystems depending on the conditions (sunlight, temperature, depth, salinity) of that part of the ocean.

---Most organisms live where the ocean is shallow (from the shoreline to the continental shelf) because sunlight can reach deep and the water is warm making food is abundant. Some examples of organisms that live in the shallow ocean may be drifters (jellyfish or seaweed), swimmers (fish), crawlers (crabs), and those anchored to the ocean floor (corals).

--- Some organisms live in the open ocean, near the surface or down to the deep ocean bottom. Plankton float in the upper regions of the water. Some organisms swim to the surface to find food or for air (whales, turtles, sharks) while others stay live closer to the bottom (certain fish, octopus, tubeworms).

Estuaries

-are found where the freshwater rivers meet the oceans. They are saltier than a river, but not as salty as the ocean. The amount of salt (salinity) changes as the tides come in and out. Estuaries contain *salt marshes* with grasses and marsh plants adapted to this changing water. Some examples of animals that live in the estuaries/salt marshes may be crabs, shrimp, birds such as blue heron and egrets, and muskrats.