Name: _____ Date: _____ Group: _____

The Desert Ecosystem

1 The Sun is rising on a spring day in the Mojave Desert. During the day, the temperature will rise to over 40˚C (102˚F). During the year, only 33 cm (13 inches) of rain will fall. It is hard to imagine any life flourishing in this extreme environment, but many plants and animals find a way to thrive. The desert ecosystem supports a variety of organisms. The foundation of all biotic life in the desert is the creosote bush, which is the most common producer in the Mojave. It gets its energy from photosynthesis and provides food to many consumers in the desert, including beetles, mice, and rats. In turn, the mice and rats are eaten by snakes, and the snakes are eaten by hawks.

2 Producers are those organisms that use sunlight, water, and carbon dioxide to make their own food, while consumers are those organisms that need to eat other organisms for food. In the desert, the creosote plant, the Mojave yucca, the beavertail cactus, and other plants are the producers that keep consumers fed. They rely on abiotic factors to survive. Without these non-living factors, like sunshine, water sources, land, rocks, soil, and air, producers cannot produce.

3 The kangaroo rat is a small mammal that lives in the Mojave Desert. These furry animals and their coyote predators are xerocoles—animals adapted to live in the desert. Coyotes consider kangaroo rats to be tiny, tasty snacks. Coyotes are an important organism in the desert because they keep the rodent population under control. In terms of organization, an individual coyote organism is part of a population, meaning all of the coyotes in the Mojave Desert. A community is formed when a population of coyotes exists with populations of other organisms that live in the same place at the same time. Since the coyote is so widespread within the desert, most desert life is a part of its community. The kangaroo rat, the creosote plant, and the red-tailed hawk are all members of the coyote's community. The ecosystem includes all of the living and non-living things that interact with each other in an environment.

4 The most salient factors in the desert ecosystem are abiotic—the Sun and water. All living organisms in the desert have adapted to the Sun's relentless glare and intense heat. The Sun has also shaped the terrain by ensuring that the only producers who can survive must do so by being spread out far enough that they do not have to compete for water. To prevent overcrowding, fully mature creosote bush will not leave enough water in the nearby soil for a seed to germinate. Only seeds that land far away from mature plants can get enough water to grow. Each desert organism has to find ways to get enough water and relies on others for getting the things it needs to survive.

5 Although the desert ecosystem is very large, there are smaller habitats within the desert, such as the creosote bush, which supports an ecosystem all its own. Its leaves provide a microhabitat of shelter and food for beetles, millipedes, and grasshoppers, which are then eaten by mice and rats. The rodents like to make their burrows in the loose soil underneath the bushes' leaves because they help to hide the entrances. In the creosote bush ecosystem, arthropods, rodents, and the shrub interact within the environment of the creosote bush. These organisms cannot exist in the same manner outside of that habitat. They rely on the ecosystem within the creosote bush to provide for their needs.

6 Studying the desert's foliage and animals gives us insight into this unique ecosystem. In the desert, each plant and animal exists in a delicate balance in order to conserve water and survive despite the raging Sun. Together, they form the diversity and beautiful colors of the desert.

1 Which of these is an example of an abiotic factor?

A creosote plant

B rocky desert soil

C kangaroo rat

D coyote

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2 Based on the context of paragraph 4, what are **salient** factors?

A important factors

B ignorable factors

C interesting factors

D intended factors

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3 Which of these is an example of a biotic factor?

A hot desert sun

B Mojave River

C acrid desert air

D Mojave grasshoppers

4 Which words in the story help the reader understand the meaning of the word **flourish** in Paragraph 1?

A “Many plants”

B “The desert ecosystem”

C “Find a way to thrive”

D “Harsh environment”

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5 Which level of organization do all of the Mojave grasshoppers in a creosote bush microhabitat form?

A organism

B population

C ecosystem

D community

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6 What would be the most likely result of the death of all creosote bushes in the Mojave Desert?

A more coyotes

B more red-tailed hawks

C an overflow of Mojave grasshoppers

D the eventual death of many organisms in its ecosystem