**Interactions Among Living Things**

 Every organism has some unique characteristics that enable it to live in its environment. In response to their environment, species evolve, or change over time. The changes that make organisms better suited to their environment occur by a process called **natural selection.** Individuals whose characteristics are best suited for their environment tend to survive and produce offspring. The offspring inherit those characteristics and also live to reproduce. Individuals that are poorly suited to the environment are less likely to survive and reproduce. The poorly suited characteristics may disappear from the population over time. The results of natural selection are **adaptations**, the behaviors and physical characteristics of species that allow them to live successfully in their environment. For example, the cheetah’s speed enables him to be able to catch his food. The hawk’s keen eye sees fish from far distances.

Moths can be varying colors of black or white. What happens to the moth population as the environment they are in changes?

 Every organism has a variety of adaptations that are suited to its specific living conditions. These adaptations create a unique role for the organism in its ecosystem. An organism’s particular role, or how it makes its living, is called its **niche**. *A niche includes the type of food the organism eats, how it obtains this food, which other species use it as food, when and how the organism reproduces, and the physical conditions it requires to survive.* By having its own way to hunt for food, and the type of food it eats, and its own kind of shelter, organisms do not have to compete as much. However, two populations CANNOT occupy the same niche at

Niche -the job of an organism in an ecosystem

 the same time in an ecosystem.

**STOP:** **COMPARE the niche of three organisms in a forest ecosystem.**

 Some adaptations involve how organisms interact. There are **three** major types of interactions among organisms: *competition, predation, and symbiosis*. **Competition** is the struggle between organisms to survive in a habitat with limited resourceswhich is the opposite of **cooperation** among members of a population as they try to help each other, as in when monkeys pick each other’s fleas or when wolves work together to capture their prey. **Predation** is an interaction in which one organism kills and eats another organism. The organism that does the killing is the predator. The organism that is killed is the prey. Predators have adaptations that help them catch and kill their prey. Prey organisms have adaptations that help them avoid being caught and eaten. Predation can have a major effect on the size of a population.

 Predator and Prey

 **Symbiosis** is a close relationship between two species that benefits at least **one** of the species. The three types of symbiotic relationships are *mutualism, commensalism, and parasitism*. **Mutualism** is a relationship in which **both** species benefit.

Mutualism

**STOP: Look at the picture for mutualism. Why do you think this symbiotic relationship is mutualistic?** **Is this cooperation?**

**Write your answer here \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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Bee taking nectar from a plant.

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Barnacles getting a free ride on a whale's tail.

**Commensalism** is a relationship in which ***one*** species benefits and the other species is *neither helped nor harmed*. Barnacles are normally sessile or non-moving sea creatures. They rely on currents to bring food past them in order to eat. However, some barnacles have attached themselves to the sides of various sea life, such as whales. These barnacles benefit by receiving transportation all over the ocean which exposes them to more currents and feeding opportunities than they would normally experience. The whale neither benefits nor is harmed by the barnacles.

Commensalism

**What does sessile mean?** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Parasitism** involves one organism living on or inside another organism and **harming** it. The organism that benefits is called a parasite, and the organism it lives on or in is called a host.



**Why is parasitism sometimes called a non-mutualistic symbiotic relationship? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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 *Word analysis :*

non-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

mutualistic \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Parasitism

 symbiotic \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Maggots from a fly on a blue martin.

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **Interactions Among Living Things**

1. The changes that make organisms better suited to their environment occur by a process called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

2. What are the results of natural selection?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. What are some examples of how adaptations enable organisms to survive better in their environments? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. What is an organism’s niche?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. True or False? Both lions and tigers can have their niche in the same ecosystem.

6. Name three ways organisms interact with each other in an ecosystem.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7. What is the main reason organisms compete with each other in an ecosystem? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

8. Give an example of when organisms cooperate with each other. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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9. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is an interaction in which one organism kills and eats another organism.

10. Give an example of a predator-prey relationship. Identify the predator and the prey.

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11. What is symbiosis? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

12. Name and **describe** the three types of **symbiotic** relationships.

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b.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

c.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

13. What does sessile mean? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

14. A clown fish’s (Nemo) habitat is within a sea anemone’s tentacles. What kind of interaction is this? Explain.

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