

ECOLOGICAL RELATIONSHIPS

All organisms interact with others (and with their environment) to meet their basic needs. **Symbiosis** is a relationship in which two different organisms live in a close association with each other. Several important relationships include mutualism, commensalism, and parasitism.

- **Mutualism** is a symbiotic relationship in which both species are helped. For example, there is a species of ants that live on a particular type of acacia tree. The ants protect the tree by eating other insects that try to eat the tree. The ants also clear away debris from the tree trunk, which gives it room to grow. In return, the ants receive shelter and nectar from the tree. Another example of mutualism exists between you and bacteria. *E. coli* provides vitamins for your body, and in return, you provide nutrients and shelter (in your intestines) for the bacteria.
- **Commensalism** is a symbiotic relationship where one species is helped and the other species is neither harmed nor helped. For example, Spanish moss grows on the branches of large trees. The moss is helped because the trees provide a safe place to live with plenty of sunlight, but the larger trees are not harmed or helped.
- **Parasitism** is a symbiotic relationship where a **parasite** benefits by harming a **host**. For example, a flea is a parasite of dogs. Parasites do not usually kill their hosts, because without a host, the parasite would die.

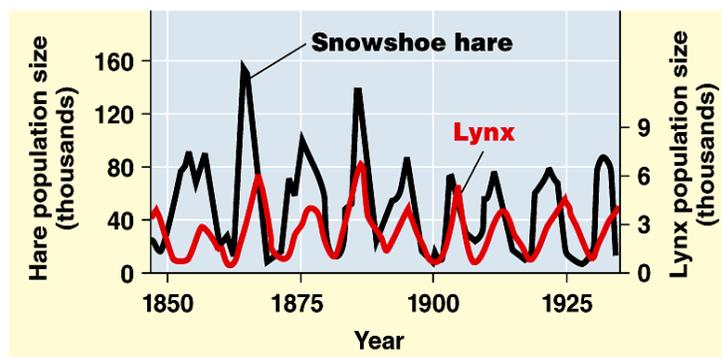


While not true symbioses, competition and predation are also important interactions.

Competition is an interaction between two or more species that use the same resources.

Predation is when one organism eats another. For example, hawks kill and eat other animals (like mice). Hawks are **predators** and mice are **prey**. Predation is an important relationship because it provides the predator with the energy it needs to carry out life functions. Predation also controls the size of predator and prey populations. If the predators over-hunt its prey, the population of prey will decrease. Eventually, as the predators run out of food, the predator population will also decrease. With fewer predators, the number of prey will be able to increase. For these reasons, we often see a cycle of population increases and decreases over time.

The relationship between population size of predator (lynx) and prey (snowshoe hare) is evident in the graph below:



PRACTICE

Certain fungi live underground in threadlike nets surrounding the roots of plants. The fungi get food from the roots, and the nets allow plants to extend their roots; this helps the plants get minerals from the soil.

1. What type of relationship do the fungi have with the plants?
 - A. Predation
 - B. Parasitism
 - C. Commensalism
 - D. Mutualism
2. Predict what would happen to the plants if the fungi died off.
 - A. The plants would thrive
 - B. The plants would not be affected
 - C. The plants would grow more slowly
 - D. The plants would become extinct

3. How does parasitism differ from predation?
 - A. Parasitism does not occur among mammals
 - B. Parasitism does not usually result in the death of an organism
 - C. No organism is harmed in a parasitic relationship
 - D. No organism is harmed in a predator-prey relationship
4. _____ is when one organism eats another. For example, bears are _____ and fish are _____.
5. A parasite is often a pathogen. What does a pathogen do?
 - A. provide benefits
 - B. search for prey
 - C. kill its host
 - D. cause disease
6. Birds live in close association with bison. As the bison walk, they kick up insects that the birds can eat. The bison are unaffected by the birds. This is an example of _____.
 - A. Parasitism
 - B. Commensalism
 - C. Mutualism
7. Tapeworms can live in your intestines. They receive nutrients and can make you very sick. This is an example of _____.
 - A. Parasitism
 - B. Commensalism
 - C. Mutualism
8. Insects feed on nectar produced by flowers. When the insects land on the flowers, they pick up pollen and spread the pollen to other flowers, helping the plant reproduce. This is an example of _____.
 - A. Parasitism
 - B. Commensalism
 - C. Mutualism