Relationships Among Living Things

Many of the interactions in an ecosystem are related to how organisms obtain and use resources. A resource is any product of the environment that is used by organisms. Changes in the availability of a resource can affect the survival or organisms.

Competition

Competition occurs when organisms try to use the same resources. Living things compete with each other for resources in all ecosystems. Living things with similar needs compete for resources such as food, shelter, water, sunlight, and living space. Organisms or the same species also compete with one another for mates.

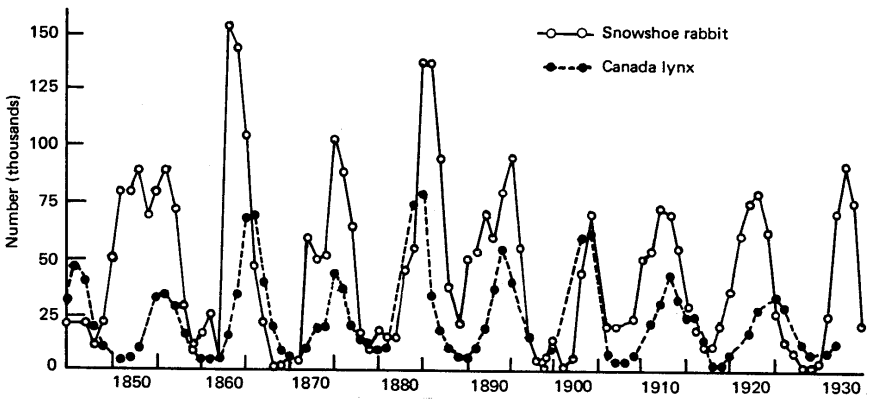
Competition for basic resources such as food, water, and living space, may involve the same or different populations. For example, all the hawks in a desert compete with other hawks for food. The hawks also compete with snakes for food. At the same time, all the animals in the desert compete with each other and with plants for water. In a dense forest, plants compete with each other for the living space that allows them to get the sunlight they need for food and growth.

Each organisms in an ecosystem must compete with other organisms for resources. Some organisms get the resources they need, others do not. Those that get the resources they need survive. Organisms that do not get enough resources either move away or die. In some cases, a change in the availability of even one resource in an ecosystem can affect the number and types of organisms the ecosystem can support.

Predation

Many ecosystem interactions involve food. **Predation**, for example, is a relationship in which one animal hunts, kills, and eats another. Animals that kill and eat other animals are **predators**. The animals that they kill and eat are **prey**. Think of an ecosystem with mice and snakes. The snakes in this ecosystem are predators; the mice are their prey.

Predator-prey relationships help keep an ecosystem in balance. For example, if an ecosystem has too many predators, the prey population will go down. Less food is then available for predators. As a result, some predators will either move away or die. As fewer prey are killed, they can reproduce more and increase their numbers. The decrease in the number of predators lets the prey population increase. As you can see from the graph, population sizes of predators and prey affect each other. When the rabbit population grows, there is food for more lynx. The lynx population may increase as a result.



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Symbiosis

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

A relationship in which both species benefit is called **mutualism**. The relationship between a butterfly and a flowering plant is an example of mutualism. The butterfly benefits because the flower is providing it with food in the form of nectar. The flowering plant benefits because the butterfly is carrying its pollen to another flower.

In some cases of mutualism, two species are so dependent on each other that neither could live without the other. This is true for some species of acacia trees and stinging ants in Central and South America. The stinging ants nest only in the acacia tree, whose thorns discourage the ants' predators. The tree also provides the ants' only food. The ants, in turn, attack other animals that approach the tree and clear competing plants away from the base of the tree. To survive, each species needs the other.

Commensalism

A relationship in which one species benefits and the other species is neither helped nor harmed is called **commensalism**. A red-tailed hawk and a saguaro cactus are an example of commensalism. The hawk benefit from the relationship because the cactus gives them a place to build their nest. The cactus is not affected by the hawks.

Commensalism is not very common in nature because two species are usually either helped or harmed a little by any interaction. For example, by creating a small hole for its nest in the cactus stem, the elf owl slightly damages the cactus.

Parasitism

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 in is called a **host**. The parasite is usually smaller than the host. In a parasitic relationship, the parasite benefits from the interaction while the host is harmed.

Some common parasites are fleas, ticks, and leeches. These parasites have adaptations that enable them to attach to their host and feed on its blood. Other parasites live inside the host's body, such as tapeworms that live inside the digestive systems of dogs, wolves, and some other mammals.

Unlike a predator, a parasite does not usually kill the organism it feeds on. Is the host dies, the parasite loses its source of food. An interesting example of this rule is shown by a species of mite that lives in the ears of moths. The mites almost always live in just one of the moth's ears. If they live in both ears, the moth's hearing is so badly affected that it is likely to be quickly caught and eaten by its predator, a bat.

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