Evolution home

Predator-Prey Relationships

A predator is an organism that eats another organism. The prey is the organism which the predator eats. Some examples of predator and prey are lion and zebra, bear and fish, and fox and rabbit. The words "predator" and "prey" are almost always used to mean only animals that eat animals, but the same concept also applies to plants: Bear and berry, rabbit and lettuce, grasshopper and leaf.

Predator and prey evolve together. The prey is part of the predator's environment, and the predator dies if it does not get food, so it evolves whatever is necessary in order to eat the prey: speed, stealth, camouflage (to hide while approaching the prey), a good sense of smell, sight, or hearing (to find the prey), immunity to the prey's poison, poison (to kill the prey) the right kind of mouth parts or digestive system, etc. Likewise, the predator is part of the prey's environment, and the prey dies if it is eaten by the predator, so it evolves whatever is necessary to avoid being eaten: speed, camouflage (to hide from the predator), a good sense of smell, sight, or hearing (to detect the predator), thorns, poison (to spray when approached or bitten), etc.

This lizard (above), camoflauges by blending with the lichen on rocks, while the tortoise

(below), has a hard shell to deter would-be predators.

In this snowy environment, the polar bear is white to avoid being noticed as it approaches the seal, and the seal pup is white to avoid being noticed by the bear.

The fastest lions are able to catch food and eat, so they survive and reproduce, and gradually, faster lions make up more and more of the population. The fastest zebras are able to escape the lions, so they survive and reproduce, and gradually, faster zebras make up more and more of the population. An important thing to realize is that as both organisms become faster to adapt to their environments, their relationship remains the same: because they are both getting faster, neither gets faster in relation to the other. This is true in all predator-prey relationships.

Keen senses are an important adaptation for many organisms, poth predators and prey.

Another example of predator-prey evolution is that of the Galapagos tortoise. Galapagos tortoises eat the branches of the cactus plants that grow on the Galapagos islands. On one of the islands, where long-necked tortoises live, the branches are higher off the ground. On another island, where short-necked tortoises live, the branches are lower down. The cactuses, the prey, may have evolved high branches so that the tortoises, the predators, can't reach them.

(Note, however, not just in this case but in any case of co-evolution and evolution, that there is always more than one cause that forces an organism to adapt, and though it is likely that the higher branches are to avoid the tortoises, it is also possible that it was a different cause, such as the sun, the ocean, or a different organism.)

Symbiotic Relationships