

Interactions, Plant-Vertebrate Encyclopedia Article

Interactions, Plant-Vertebrate

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Because plants can photosynthesize, they form the base of food chains in most **ecosystems**. During the past five hundred million years, vertebrates have evolved many methods of extracting energy from plants, which can have positive or negative impacts on individual plants and their populations.

A bronzy hermit hummingbird (*Glaucis aenea*) sips from a red passion flower (*Passiflora vitifolia*).

Positive interactions between plants and animals are called mutualisms. Familiar examples include pollination and **frugivory**, in which plants provide flowers containing nectar, pollen, and fruits with a fleshy pulp as food for animals, while animals disperse plant's pollen and seeds. Major vertebrate pollinators include a wide variety of birds (e.g., hummingbirds, orioles, and sunbirds) and many plant-visiting bats. Similarly, frugivorous vertebrates, including many kinds of birds, bats, and primates (and even certain fish in the Amazon River), consume fleshy fruits and move seeds to new locations. Many species of tropical trees and shrubs rely exclusively on vertebrates for pollination and/or seed dispersal.

In contrast, many vertebrates interact negatively with plants as **herbivores** and seed-eaters. Herbivory, which involves the consumption of leaves, roots, and stems, can reduce plant growth rates and seed production if it does not kill plants outright. Seed predation, in which animals destroy plant embryos, is a specialized form of herbivory. Herbivory is much more common in mammals than in birds. Ptarmigan and grouse are **avian** herbivores; rodents, rabbits, cows and their relatives, and horses and their relatives are mammalian herbivores. Seed-eating is much more common than herbivory in birds. (Examples include parrots, pigeons, finches, and sparrows.) Major mammalian seed-eaters are squirrels, rats, and mice. Whereas vertebrate mutualists are beneficial for certain economically important plants, vertebrate herbivores and seed-eaters can cause millions of dollars of damage annually to many economically important crops. Humans, too, are vertebrates, and the interactions of plants and humans, especially through agriculture, has had profound consequences for each.

See Also

Coevolution; Pollination Biology.

Bibliography

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