

The Pollination Department

BACKGROUND ECOLOGY INFORMATION



Major Concepts

- Plants require help from animals, wind or rain to mate and reproduce.
- Plants give animals rewards, such as pollen and nectar, as a lure to visit flowers.
- Plants and animals have adapted to work together.
- Pesticides, when applied inappropriately to crops, kill many beneficial insects, such as pollinators.
- Pollinators are essential for fruits, seeds, or new generations of flowering plants.
- Pollinators are threatened by habitat loss and lack of host plants.
- Some pollinators migrate each year to cope with climate and food issues.

Pollination - When Plants Need a Hand

Many of the free services that are provided by ecosystems are dependent upon plants, but plants themselves are dependent upon other animals or environmental factors for their survival. The environment provides nutrients, water, and energy to make individual plants grow, but plants also need help in order to reproduce. This is one way that plants are very different than animals.

Animals are able to move and perform other behaviors that allow them to search out their mates and reproduce. Plants can't move, so they must rely upon animals, water, or wind to carry their reproductive cells from one plant to another to ensure reproduction. When plants, like trees, can live for hundreds of years, we sometimes take for granted the idea that they will always be there. If plants cannot successfully produce offspring, our forests or our favorite tree near our home or school may become the last of its kind.

How does this free service work?

Plants produce two different kinds of cells, female cells or eggs, and male cells or sperm. Male cells are transported in pollen which is produced in a special part of the flower called the anther. Pollen moves to another flower, and lands on a part called the stigma. The pollen opens up on the stigma and the sperm travels down into the ovary where it joins with the egg. The egg develops into a seed and the whole ovary matures into a fruit. Fruit can take many forms such as a fleshy fruit, a nut, or a capsule.

How does the pollen move from one plant to another? The flower part called the anther opens up to make the pollen accessible to animals, such as insects, birds, bats, and mice, or to wind or water. On animals, the pollen is picked up on a part of the body. When the animal visits another flower, it brushes against the sticky female flower part, the stigma. The pollen gets left behind. Some plants produce a lot of pollen which is carried away and moves through the environment in the wind or the water. Much of the pollen gets lost, deposited on leaf surfaces, sidewalks, or grass. A small fraction actually does reach another flower of the same species and it is able to produce a seed.

Why do the animals visit the flowers? Plants provide rewards for the animals. Nectar is what most animals want since it provides sugar that is a source of energy for them. Some animals, such as bees, also collect pollen from the plant, which they use as a source of protein to feed to their developing young.

Why is pollination important?

Without pollination, most of the food for people and many other animals would not be produced. We would have no corn, rice, wheat, mangoes, avocados, strawberries, tomatoes, green beans, or pumpkins. Mice would have no grass seed, squirrels would have no acorns, and bears would have no wild berries to eat. Pollination is another example of how all parts of the ecosystem depend upon one another to survive.

Pollination on you School Site and in your Community

It is possible to see the pollination team at work almost year round. Summer is the busiest season, but even in winter some plants begin to flower and produce seeds. To see the department at work, take the children out and see how many flowering plants they can find and if they can identify the flower parts, in particular the anthers, pollen and stigma. Finally, see if they can find any fruits developing on the plants.



Threats	Stewardship Actions
<p>Pesticides: Inappropriate use of pesticides can kill or sicken animal pollinators.</p>	<p>Global Bans on Dangerous Pesticides: Nations are attempting to limit production and use of dangerous pesticides all over the world.</p>
<p>Herbicides: People use these chemicals to kill plants they consider to be weeds. But even weeds may produce flowers that make nectar for pollinators.</p>	<p>Planting of Native Species: Native species are promoted for use in home landscaping and forest production. These species attract pollinators and are well adapted to the area.</p>
<p>Endangered Species: A large number of plants and animals are disappearing because of the loss of their natural habitat. When forests are cut down or water is drained from wetlands, the species that lived in those areas disappear. Both plants and their pollinators can be endangered.</p>	<p>Habitat Conservation Plans: Federal, state and local government officials work with community leaders to implement land and water use plans to protect endangered species.</p>

Quiz Yourself

1. Most of the trees on our school site (oak, pine, etc.) are dependent upon _____ for pollination.
2. Name five organisms (Pollination Department workers) that move pollen from plant to plant.
3. The activities of man have forced many species to the point of extinction. List two ways in which this is happening.
4. What benefits or rewards do plants provide for their flower visitors?
5. In plants, male reproductive cells are called _____ and female cells are called _____.