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Flowers and Pollinators

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INTRODUCTION

Pollination is one of the most fascinating processes in the natural world. Pollination is how flowering plants reproduce. The process involves the transfer of pollen from the male parts to the female parts of the same or another plant. For some plants, this movement of pollen requires the action of another organism, a pollinator. The movement of pollen must occur for the plant to become fertilized and produce fruits, seeds, and young plants. Some plants are self-pollinating, while others may be fertilized by pollen carried by wind or water.

Still, other flowers are pollinated by insects and animals - such as bees, wasps, moths, butterflies, birds, flies and small mammals, including bats. Insects and other animals such as bats, beetles, and flies visit flowers in search of food, shelter, nest-building materials, and sometimes even mates. Some pollinators, including many bee species, intentionally collect pollen. Others, such as many butterflies, birds and bats move pollen accidentally. Pollen sticks on their bodies while they are drinking or feeding on nectar in the flower blooms and is transported unknowingly from flower to flower resulting in pollination.

Plants and their pollinators form a mutualistic relationship, a relationship in which each benefits from the other. In the plant-pollinator relationship, the pollinator benefits by feeding on food rewards provided by the flower, primarily nectar and pollen. In return, the plant benefits as the pollinator moves from flower to flower, transferring pollen as it forages for the food rewards. This movement of pollen allows the plant to reproduce and to exchange genetic information with other plants. Most flowering plants require relationships with pollinators to reproduce. Unfortunately, pollinator populations worldwide are in decline, which negatively affects the flowering plants that depend on them. It also means trouble for humans, as we all depend on the services of pollinators in many different ways, from the food we eat to the air we breathe. This decline in pollinator populations is due in part to human practices that have contributed to a loss of wild and flower-rich habitat. By changing some of our practices, such as how we manage flowering plants in our gardens and farms, we can help conserve these vital pollinator species.

When a pollen grain moves from the anther (male part) of a flower to the stigma (female part), pollination happens. This is the first step in a process that produces seeds, fruits, and the next generation of plants. This can happen through self-pollination, wind and water pollination, or through the work of vectors that move pollen within the flower and from bloom to bloom. Pollination is a very important part of the angiosperm life cycle. It can happen two different ways. Self-pollination is when pollen moves from one flower to another on the same plant, or even from an anther to a stigma on the same flower. Self-pollination has the advantage of occurring easily – plants need little or no outside help to move the pollen. But, any new plants produced are genetically identical to the parent plant. If something bad happens, like a drought, the identical plants have a reduced chance for survival. Cross-pollination occurs when pollen, and thus genetic information, is transferred from one plant to another. It relies heavily on outside help from pollinators. Birds, bees, and butterflies are some of the best-known pollinators, but they're not the only ones. Ants, beetles, moths, bats, and even non-living factors like water and wind can also do the job. Relying on outside help is in some ways more risky compared to the sure thing of self-pollination. But, it's estimated pollinators assist about 80 per cent of flowering plants with reproduction. Sometimes, plants even block fertilization from their own pollen, and flowers often have special traits to attract specific pollinators. What makes cross-pollination so important? It allows two parent plants to combine their genetic information. Their offspring may inherit desirable traits from both parents, or have fewer undesirable ones. If the offspring are hardier, or at least different from their parents, the chance of some plants in the group surviving an event likes a drought and continuing to reproduce increases. The relationship of angiosperms and pollinators is unique in the plant world, and it's helped them become very successful.

IMPORTANCE OF POLLINATORS

Somewhere between 75% and 95% of all flowering plants on the earth need help with pollination – they need pollinators. Pollinators provide pollination services to over 180,000 different plant species and more than 1200 crops. That means that 1 out of every three bites of food you eat is there because of pollinators. If we want to talk dollars and

cents, pollinators add 217 billion dollars to the global economy, and honey bees alone are responsible for between 1.2 and 5.4 billion dollars in agricultural productivity. In addition to the food that we eat, pollinators support healthy ecosystems that clean the air, stabilize soils, protect from severe weather, and support other wildlife

STATUS OF POLLINATORS

Pollinator populations are changing. Many pollinator populations are in decline and this decline is attributed most severely to a loss in feeding and nesting habitats. Pollution, misuse of chemicals, disease, and changes in climatic patterns are all contributing to shrinking and shifting pollinator populations. In some cases there isn't enough data to gauge a response, and this is even more worrisome.

CONCLUSION

There are three key areas where knowledge and data management are crucial to supporting the role of pollinators in conservation and sustainable use of biodiversity in all ecosystems: i) Knowledge about the status of pollinators; ii) Knowledge about the risks to human well-being generated by pollinator decline and iii) Knowledge about what the best responses are, and where and when they should be implemented.

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