



REVEALING SECRETS ABOUT... **the birds and the bees**

POLLINATION: An Essential Ecosystem Service

Our Future Depends on Pollination

- Many people think only of allergies when they hear the word *pollen*. But pollination—the transfer of pollen grains to fertilize the ovaries of flowers—is an essential part of a healthy ecosystem. While some plants are self-pollinated or wind-pollinated, most flowering plants require help from pollinators to produce fruit and seed.
- Pollinators come in all shapes and sizes. Over 100,000 invertebrate species—such as bees, moths, butterflies, beetles, and flies—serve as pollinators worldwide. At least 1,035 species of vertebrates, including birds, mammals, and reptiles, also pollinate many plant species.
- Pollinators play a significant role in the production of more than 150 food crops in the United States—from almonds, apples and alfalfa, to melons, plums, and squash. Almost all fruit and grain crops require pollination to produce their crop.

Valuation of Pollination Services

- In Alabama, a *single* southeastern blueberry bee pollinates approximately \$75 worth of berries by visiting nearly 50,000 blueberry flowers in a year.
- The most important pollinator for agricultural purposes is the honeybee. One estimate of the annual benefit of managed honeybees to American consumers—when they supplement the services provided by native pollinators—is \$1.6 billion. When native pollinators are not available to service crops, the estimated value of managed honeybees rises to \$8.3 billion. The benefit of all other pollinators to US agriculture is estimated between \$4.1 and \$6.7 billion annually.
- Declines in pollinator activity could have serious economic repercussions throughout the United States. In 1994, for example, honeybee shortages caused by parasites and pesticides forced almond growers in California to import bees from distant states to ensure adequate pollination of their \$800 million crop.

“Predicting the effects of the loss of a particular pollinator is extremely difficult, but it is important to remember that no species exists in isolation. Each is part of an ecological web, and as we lose more and more pieces of that web, the remaining structure must eventually collapse.” — KEARNS AND INOUE



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Are Pollinators in Decline?

- Evidence suggests that some populations of pollinators are diminishing. The US Fish and Wildlife Service lists over 50 pollinator species as threatened or endangered, and wild honeybee populations have dropped 25 percent since 1990. Continued declines in pollinator activity could mean rising costs for pollinator-dependent fruits and vegetables and the disruption of entire ecological systems.
- One of the greatest threats to pollinators is habitat destruction caused by changes in land use. When people convert wild lands for domestic uses the food and nesting requirements of many pollinators are disrupted.
- Pesticides are also a major threat to insect pollinators, although precautions such as better regulation, avoidance of overspray, and changes in the type and timing of pesticide use can reduce the threat.
- The number of domestically-managed honeybee colonies in the United States has decreased by 50 percent since 1945. This problem stems largely from pesticides and recently introduced parasites and diseases, but may also be affected by an invasion of Africanized honeybees. The decline highlights the danger of overreliance on a single species, such as the honeybee, for pollination services.

What You Can Do

- Create your own pollinator-friendly garden using a wide variety of native flowering plants. Encourage the planting of native flowers in open spaces and outside public buildings.
- Reduce the level of pesticides used in and around your home.
- Encourage local clubs or school groups to build artificial habitats such as butterfly gardens, bee boards, and bee boxes.
- Support agriculture enterprises with pollinator-friendly practices such as farms that avoid or minimize pesticide use.
- Encourage government agencies to take into account the full economic benefits of wild pollinators when formulating policies for agriculture and other land uses. Stress the need to develop techniques for cultivating native pollinator species for crop pollination.
- Bring the importance of biological diversity to the attention of your state and national representatives. Stress that diversity includes beneficial native insects. Be prepared to provide local or regional examples of important species.
- Support funding for research on pollinators and the economic benefits they provide.

FOR MORE INFORMATION

This fact sheet is part of a series of materials on ecosystem services available through the Ecological Society of America and the Union of Concerned Scientists' "Communicating Ecosystem Services Project." For more information about the project, contact:

- **Ecological Society of America**, 1707 H Street, NW, Suite 400, Washington DC 20006
202-833-8773 • ces@esa.org • esa.sdsc.edu
- **Union of Concerned Scientists**, Two Brattle Square, Cambridge, MA 02238
617-547-5552 • ssi@ucsusa.org • www.ucsusa.org



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ADDITIONAL RESOURCES:

- The Arizona-Sonora Desert Museum, Forgotten Pollinators Campaign, www.desertmuseum.org/fp/
- USDA-ARS Bee Biology and Systematics Lab, www.LoganBeeLab.usu.edu/
- Kearns, C.A., and D. Inouye. 1997. "Pollinators, Flowering Plants and Conservation Biology," *BioScience* 47: 297-397.