

FOUR PRINCIPLES TO HELP BEES AND BUTTERFLIES

Pollinator Conservation



Brown-belted bumble bee (*Bombus griseocollis*), metallic green sweat bee (*Agapostemon splendens*) exiting ground nest, "Pesticide Free" garden, and pollinator habitat with sign.

The Importance of Pollinators

Pollinators are essential to our world. Bees, butterflies, hummingbirds, moths, wasps, flies, beetles, even a few bats are some of the animals that move pollen between flowers, enabling them to produce seeds.

The ecological service these pollinating animals provide is necessary for the reproduction of over 85% of the world's flowering plants. The resulting seeds and fruits provide food for countless other animals ranging from songbirds to grizzly bears.

Pollinators are also essential to human life. More than 2/3 of the world's crop species, whose fruits and seeds together provide over 30% of the foods and beverages that we consume, require the presence of a pollinator. The United States alone grows more than 100 crop plants that need pollinators. Without pollinators, there would be no apples, pumpkins, blueberries, or many other fruits and vegetables. Only wind-pollinated crops such as corn and wheat would remain.

Bees are the primary pollinator for most wildflowers and crops in temperate North America. Worldwide, there are an estimated 20,000 species of bees, with over 3,600 species native to the United States and Canada. The non-native European honey bee (*Apis mellifera*) is the most common domesticated pollinator in the United States. However, native pollinators are often adapted for specific plants, resulting in more efficient pollination and the production of larger and more abundant fruits and seeds.

Pollinators at Risk

In many areas pollinators are in decline. The loss of honey bees due to pests, diseases, and other factors has been widely publicized in recent years.

While the loss of honey bees is alarming, many of our wild native bees are also disappearing. For example, in the mid-1990s, the yellow-banded bumble bee (*Bombus terricola*) was the most abundant bumble bee in northern Wisconsin. Ten years later it made up less than 1% of the state's bumble bees. In Oregon, Franklin's bumble bee (*B. franklini*) has likely gone extinct during the same period.

Pollinators are a keystone species group; the persistence of a large number of other species depends upon them. As pollinators disappear, the effect on the health and viability of crops and native plant communities can be disastrous.



Our Bring Back the Pollinators campaign is based on four principles: grow pollinator-friendly flowers, protect bee nests and butterfly host plants, avoid pesticides, and spread the word. You can participate by taking the

Pollinator Protection Pledge and registering your habitat on our nationwide map of pollinator corridors.

www.bringbackthepollinators.org

Four Principles To Help Pollinators

Protecting, enhancing, or providing habitat is the best way to conserve pollinators. Whether you tend a small flower box in the city or maintain a large rural garden, there are practical steps you can take to improve the health, abundance, and diversity of your local pollinators.

1. Create a Diversity of Bloom

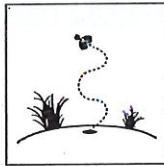
Bees, butterflies, and other beneficial insects need abundant nectar and pollen sources throughout the growing season. Select native plants wherever possible. Cultivate a landscape with a diversity of flowering plants that are known to provide abundant pollen and nectar for pollinators.



Try to provide blooming plants from early spring to fall, with at least three species of flower in bloom each season. Note that some ornamental plants have been selected for traits that are attractive to people, rather than pollinators. Avoid pollenless cultivars and double-petaled varieties of ornamental flowers.

2. Protect Nests and Egg-Laying Sites

Native bees use untidy areas of the garden to nest such as open sandy ground, brush piles, and old tree stumps and snags. Consider leaving some of these for wildlife habitat. Supplement nesting opportunities with mason bee houses or bundles of hollow plant stems.



Butterflies often need specific host plants to feed on during their caterpillar stage. For example the caterpillars of monarch butterflies feed exclusively on the leaves of various milkweeds. Protect or plant the host plants of butterflies native to your area.

3. Don't Use Pesticides

Pesticides can be important tools for protecting crops and controlling invasive species, however most lawn and garden pest problems can be solved without such chemicals. Keep in mind that even "organic-approved" insecticides can harm pollinators and other wildlife.



Herbicides, while usually not directly lethal to insects, can reduce plant diversity, including the diversity of weedy, noninvasive wildflowers that provide essential pollen and nectar for bees, butterflies, and hummingbirds.

4. Spread the Word

Let your friends and neighbors know you're providing habitat with a pollinator habitat sign. Talking to your community will encourage more people to join this important effort, helping even more pollinators! You can also sign the Pollinator Protection Pledge at www.bringbackthepollinators.org.



Bees at a Glance

- ⊕ Unlike honey bees which form large social units, the majority of our native bees live as solitary individuals, with each female constructing her own nest. She collects nectar and pollen to provision it with food for her offspring. The only native bees to form social colonies are bumble bees and a few species of sweat bees.
- ⊕ Most native bees are usually very gentle and unlikely to sting unless grabbed or stepped on. Only honey bees, bumble bees, and a few of the social wasps such as yellowjackets (which are not significant pollinators) are likely to sting when their nests are disturbed.
- ⊕ The economic value of pollinator-dependent crops in the United States was estimated to be between \$18-\$27 billion in 2003. If this calculation is expanded to include indirect products, such as the milk and beef from cattle fed on alfalfa, pollinators may be responsible for more than twice this dollar amount.



Solitary small carpenter bee (*Ceratina* sp.) nesting in blackberry cane.



Gentle cellophane bees (*Colletes* sp.) nest in the ground—often in lawns!

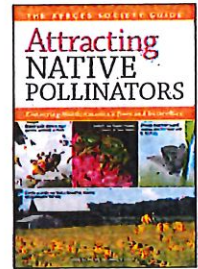


Mining bees (*Andrena* sp.) are important pollinators of apples and other crops.

Learn More

Attracting Native Pollinators

Our best-selling book highlights the role of native pollinators in natural ecosystems, gardens, and farms. This comprehensive guide includes information about pollinator ecology, detailed profiles of over 30 common bee genera, and habitat designs for multiple landscapes with over 50 pages of fully illustrated regional plant lists. Available in bookstores everywhere, and through www.xerces.org/books.



The Xerces Pollinator Conservation Resource Center

Our Pollinator Conservation Resource Center includes regional information on pollinator plants, habitat conservation guides, nest management instructions, bee identification and monitoring resources, and directories of native pollinator plant nurseries. www.xerces.org/pollinator-resource-center

Pollinator Plant Lists

Regional lists of plants that are attractive to native bees, bumble bees, honey bees, and other pollinators, that are well-suited for small-scale plantings in gardens, on business and school campuses, in urban greenspaces, and in farm field borders.

<http://www.xerces.org/pollinator-conservation/plant-lists>

Acknowledgements

PHOTO CREDITS: Brown-belted bumble bee by Rich Hatfield, The Xerces Society; metallic green sweat bee by Drew Marold*; "Pesticide Free Zone" garden by Anuj Rajbhandari*; pollinator habitat by Sara Morris, The Xerces Society; small carpenter bee and mining bee by Nancy Lee Adamson, The Xerces Society; and cellophane bee by Rob Cruickshank*. *Via flickr.com under Creative Commons license. ARTWORK CREDITS: Ground nest icon by Kaitlyn Rich, based on Grass icon by Bryn Mackenzie and Bee icon by Juan Sebastian Rickenmann. From The Noun Project: Flower designed by Adam Zubin. Spray Bottle designed by Julieta Felix. Habitat sign designed by Margo Conner. Leafy plant icon designed by Nestor Arellano..

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