INVERTEBRATE CONSERVATION FACT SHEET

Farming with Pollinators

Increasing Profit and Reducing Risk

Pollinators are a critical part of profitable agriculture.

Native bees can provide all the pollination a crop needs.

Native bees are more efficient than honey bees at pollinating some crops.

Native bees can buffer against honey bee losses.

Bumble bees are important pollinators of raspberry and other cane crops (Photograph © Mace Vaughan)

Insect pollination is critical for the production of many important crops in the United States including alfalfa, almonds, apples, blackberries, blueberries, canola, cherries, cranberries, pears, plums, squash, sunflowers, tomatoes, and watermelons. Native pollinators, most importantly wild bees, provide free pollination services and enhance farm productivity and profitability through increased yields and improvements in crop quality. Native pollinators supplement services provided by managed pollinators and are an increasingly important resource in 21st century agriculture.

Native Pollinators Can Increase Crop Yields

There are approximately 4,000 species of native bees in North America, and—if adequate natural habitat is nearby—they can provide much of the pollination necessary for many crops, and in some cases all of it. For example:

- Over fifty species of native bees visit watermelon, sunflower, or tomato crops in California.
- Over eighty species of bees pollinate berry crops in Maine and Massachusetts.
- Native pollinators have been shown to nearly triple the production of cherry tomatoes in California.
- Wild native bees improve the pollination efficiency of honey bees in hybrid sunflower seed crops by causing the honey bees to move between male and female rows more often. The only fields that had 100 percent seed set were those with both abundant native bees and honey bees.
- If more than 30 percent of the area within 1.2 km of a field is natural habitat, native bees can deliver full pollination of watermelons in California's Central Valley.
- In the absence of rented honey bees, canola growers in Alberta, Canada, make more money from their fields if 30 percent of the land is left in natural habitat, rather than planting it all. This natural habitat supports populations of native bees close to fields and increases bee visits and seed set in adjacent crops.

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Photograph by USDA-ARS/Keith Weller


Photograph by USDA-ARS/Scott Bauer


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Native Bees Are Effective and Efficient Pollinators

Native bees are more effective than honey bees at pollinating flowers on a bee-per-bee basis.

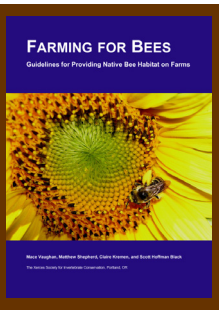
- Only 250 female orchard mason bees (also called blue orchard bees) are required to effectively pollinate an acre of apples, a task that would need 1.5 to 2 honey bee hives—approximately 15,000 to 20,000 bees.
- Many native bees, such as mason and bumble bees, will forage in colder and wetter conditions than honey bees.
- The range of foraging behaviors is more diverse among many species of native bees than in European honey bees. For example, honey bees foraging for nectar seldom contact the anthers (pollen-producing structure) in many orchard crops, unlike orchard mason bees that forage for both pollen and nectar.
- Some native bees specialize in one type of flower. Squash bees, for example, visit primarily cucurbits; the females begin foraging before dawn, and males spend the night in the flowers, resulting in efficient pollination and larger fruits.
- Unlike honey bees, bumble bees and other native bees perform buzz pollination (the bee grabs onto a flower's stamens and vibrates its flight muscles, releasing a burst of pollen from deep pores in the anther). This behavior is highly beneficial for the cross-pollination of tomatoes, peppers, cranberries, and blueberries, among other plants. Although tomatoes don't require a pollinator to set fruit, buzz pollination by bees results in larger and more abundant fruit.

Native Bees Can Buffer Against Pollinator Losses

If populations of one bee species decline because of natural cycles of parasites or disease, other native bee species can fill the gap and provide a stable, reliable source of pollination. Furthermore, if the beekeeping industry continues to have trouble because of pests and diseases, or the mysterious Colony Collapse Disorder, native bees can fill in when honey bees are in short supply or more expensive. Farms with strong populations of native pollinators may save money because they have less need for imported hives of honey bees

Native Pollinators Can Help Diversify the Farm

- Farms that provide habitat for native bees may promote themselves as wildlife-friendly or sustainable. When faced with many choices about where and from whom to purchase produce, consumers may choose farms that are "pollinator friendly" over others.
- If a small farm is open to tours or u-pick—an increasing trend, especially at berry patches—beautiful hedgerows and other improvements for wildlife can be promoted as an additional reason to visit the farm. A farm could even host a tour showcasing its resident, beneficial insects.
- Some species of wood-nesting bees may be reared in nest tubes and sold at local farmers markets or produce stands for home gardeners looking for efficient, local, and gentle (non-stinging) pollinators.



The Xerces Society has been a leader in pollinator conservation for more than a decade. For more information about how to conserve pollinator habitat on farms, read *Farming for Bees* and the *Pollinator Conservation Handbook*. These and other educational resources can be found on our website, www.xerces.org.