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Native Bees Are Valuable Crop Pollinators

Prepared by Princeton University and the
Xerces Society for Invertebrate Conservation

Farmers need insect pollinators to produce many different types of marketable fruits and vegetables. Worldwide, animal pollinators are required for over 70 percent of crops, including apples, almonds, berries, melons, and sunflowers, among others. In the United States, this produce represents 15 to 30 percent of the foods and beverages we consume. Even crops that self-pollinate, such as tomatoes, peppers and eggplants, often produce more, larger, or higher-quality fruit when cross-pollinated by insects. Today, the European honey bee usually gets credit for providing this service; however, recent research is demonstrating that our native bees also are important pollinators and may serve as an insurance policy for growers when honey bees are hard to acquire.

BEES ARE CRITICAL POLLINATORS FOR FRUIT AND VEGETABLE PRODUCTION


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Honey bees currently form the cornerstone of agricultural pollination in the U.S.; however, they are not the only, nor always the best, pollinators for a given crop type. Native bees also pollinate crops, although their presence often goes unnoticed by growers. These wild bees are superior pollinators for selected crops and sometimes enhance the quality of pollination provided by honey bees. For example, while bumble bees pollinate tomatoes, blueberries, and cranberries very effectively, honey bees do not. In other crops, wild bees cause honey bees to move between pollenizer and female rows more often, thus making honey bees more effective pollinators.

Most farmers currently rent honey bee colonies to provide crop pollination. Due to declines in the bee keeping industry, honey bee colonies can be in short supply when needed most. Various problems (diseases, low price of honey, maintenance costs, and even Africanized bees) are likely to further discourage bee keeping in the future. Native bees already occur on most farms, contribute to current crop yields, *and* can provide an insurance policy for farmers' pollination needs. Their value is clearly illustrated by researchers in California's Central Valley, who have found over fifty species of native, unmanaged bees providing pollination services to fourteen different crops.

ESTABLISHING A HEALTHY POPULATION OF NATIVE BEES ON YOUR LAND

If your farm is near natural areas, you may already have strong populations of native bees nearby that visit your crops. In addition, farm management on and around your land will help determine the abundance of native pollinators. To increase populations of these wild bees on your land, three resources must be in place: nesting sites, a variety of flowering plants that provide pollen and nectar, and a refuge from insecticides. All of these resources can occur in small patches or in marginal areas of your farm, such as around tailwater ponds or in hedgerows.

Ensuring adequate nest sites is an easy thing to do. Be on the look out, and try to protect native bee nests already established on your property. Ground nests often occur in well-drained, bare, sandy loam soils that are not tilled year-after-year. Tunnel-nesting bees use holes in old snags or pithy twigs. You can also make artificial nest sites for native bees by boring holes in lumber or creating patches of clear ground.

Providing forage areas may be as simple as leaving weedy borders or allowing cover crops to bloom. Growing a diverse array of crops, rather than a single crop, and planting patches of native flowers will also help to attract valuable pollinators. Ideally, these forage patches should include flowers that bloom before and after the crop for which you need pollination. Finally, if you must use pesticides, you can still reduce impacts on pollinators in simple ways. (1) Apply pesticides when bees are no longer visiting the field (pest insects often remain on the crop during the night). (2) Switch to pesticides that are less toxic to bees. (3) Adopt IPM practices for selected crops.

A MORE PRODUCTIVE AND SUSTAINABLE FUTURE

We all desire the most efficient, cost-effective and reliable pollination strategy. Our native bees may be an important part of this strategy and, with a small effort, may improve the reliability and effectiveness of pollination for a variety of crops.

Your farm could provide a haven for native bees that will give you greater crop yields, reduce your costs for renting honey bees, and provide you with back-up when honey bees are in short supply or won't visit your crops. These same habitat enhancements can also support other beneficial insects, shade irrigation ditches and streams, conserve water and reduce erosion, buffer winds, and beautify your farm. By "growing" these wild bees in addition to your crops, you will support sustainable agriculture and help native bee populations, as well as the native and crop plants they service!

FOR MORE INFORMATION

More information about providing habitat for pollinators is available from the Xerces Society, Princeton University, and the Bee Works.

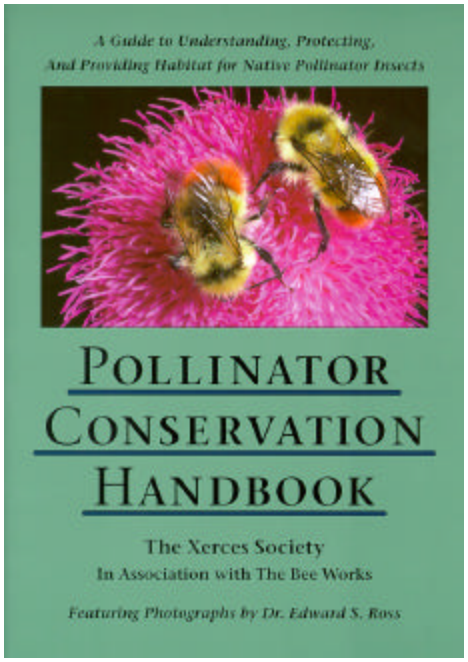
Available now:

- *Pollinator Conservation Handbook* (145 pages)
- *Farming for Bees: Guidelines for Providing Native Bee Habitat on Farms* (34 pages)
- Xerces Society Pollinator Conservation fact sheets for farms and natural areas

Coming Winter 2005:

- Watermelon, Tomatoes, and Sunflower Fact Sheets
- Tools for assessing crop pollination by native bees

You'll also find details of what we do, how to join the Xerces Society, and links to a wealth of information about insects and invertebrates at *www.xerces.org.*



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