

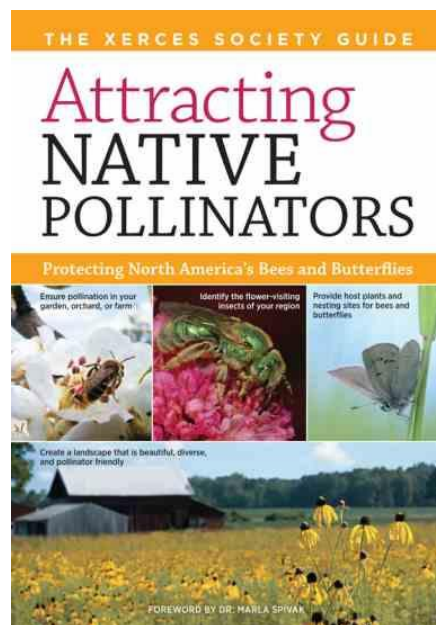
How to Attract Bees and Other Native Pollinators with a Foraging Habitat

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By The Xerces Society

By designing a habitat with a diverse array of the right plants, planted in the right places, you can support and attract bees and other native pollinators.



“Attracting Native Pollinators” (Storey Publishing, 2011) is a comprehensive guidebook for people who want to protect and encourage the activity of the native pollinators of North America. *Cover Courtesy Storey Publishing*

Pollinators like bees, wasps, butterflies, and moths are a key part of our ecosystem — pollinating 70 percent of flowering plants — but they face many threats to their health and habitat. In Attracting Native Pollinators (Storey Publishing, 2011), The Xerces Society takes a proactive, practical, and straight-forward approach to dealing with this dilemma. In this excerpt from Chapter 6, they describe how to support and attract bees and other native pollinators by designing a foraging habitat.

If you want to focus on how to attract bees and other native pollinators, one effective way is to increase the flowers available to them. The best way to do this is by cultivating a landscape that includes a diverse range of plants to provide pollen and nectar throughout the local growing season. Such habitat can take the form of designated pollinator meadows (“bee pastures”),

butterfly gardens, hedgerows of flowering trees and shrubs, streamside and rangeland revegetation efforts, and even flowering cover crops or pollinator lawns.

Foraging Habitat Design

Once you have determined the location, shape, and size of your pollinator habitat, you can focus on the specifics of the planting, such as plant selection, plant density, how plants are organized, and the inclusion of grasses for weed control and soil stabilization.

Planting Layout

Research suggests that flower groupings (clumps) of at least 3 feet (1 m) in diameter of an individual species are more attractive to pollinators than species that are widely and randomly dispersed in smaller clumps. Large clumps of individual species are easier for flying pollinators to find in the landscape, especially in the case of small urban habitats or small pollinators with flight ranges as short as 500 feet (152 m). For a natural look, these clumps can be distributed at random in a landscape, rather than in regularly spaced straight lines. In a large area of habitat, planting clumps may be impractical and not necessarily important so long as flowering plants are abundant.

Large, rounded planting blocks minimize the edge around the plantings and thus reduce susceptibility to invasion by weeds. Rounded blocks also blend better into many landscapes, although square or angular plant groupings may be well-suited to formal gardens. Linear corridor plantings (along a fence line, hedge, or road) are often more practical.

Flight Range

The flight range of native pollinators is a necessary consideration for restoration and management of pollinator habitat. The distance a pollinator can fly varies among species, and thus the distance between food and nesting sources must be carefully considered. This may be most important for bees because — unlike butterflies, flies, and beetles — they transport pollen and nectar to a nest and therefore are locked into visiting the flowers surrounding their nest. Other pollinators may forage much more widely, roaming across the landscape in search of food or egg-laying sites, sometimes over many miles — even hundreds of miles, as in the case of monarch butterflies.

The ideal habitat design has nesting and forage resources in the same area. Bees are able to adapt to landscapes in which nesting and forage resources are separated, as long as these two key habitat components are not too far apart.

The distance a bee can fly between nest site and forage area is related to its size. Small species may fly no more than 500 feet (152 m) while larger species such as bumble bees may fly more than a mile (1.6 kilometers). A general rule of thumb in habitat design is to have flowers no more than a few hundred feet (100 m) from potential nesting areas. With bumble bees, however, blueberry and cranberry farmers sometimes seek to establish habitat some distance from the field. When learning how to attract bees and support their populations in more heavily managed

farm landscapes, you should work to have a patchwork of blooming plants, including flowering crops and wild plants on field margins or in-field insectary plantings, separated by no more than 500 feet (152 m).

The quality and size of habitat patches also affects pollinator populations. If habitat patches are too small to support pollinator populations and the distance between patches is greater than the foraging range of those species, the populations may suffer declines or the pollinator community composition may change. On the other hand, pollinators can survive in fragmented habitat if suitable nesting sites are available and if foraging sources are located within their flight range.

Plant Diversity

Diversity is a critical factor in the design of pollinator plantings. Natural flower-rich habitats may have 50 or 100 species, but for most conservation areas, as few as 10 carefully chosen plant species will provide a good foundation. Gordon Frankie, a professor at the University of California in Berkeley, and his students have found that when eight or more species of plants are grouped together at a single site, they tend to attract a significantly greater abundance and diversity of bee species. From this foundation, a richer habitat can develop with subsequent plantings, or by colonization from nearby natural areas.

In some studies, pollinator diversity continues to rise with increasing plant diversity and starts to level out only when 20 or more different flower species occur at a single site. With several plant species flowering at once, and a sequence of plants flowering through the growing season, habitats can support a wide range of native pollinators. If there are particular pollinators you wish to support, identifying and planting their key host plants may increase their abundance.

The size of the pollinators, the length of their tongues, and the accessibility of nectar or pollen within the flower are all factors in determining the floral preferences of diverse pollinators. Including a diversity of plants with different flower sizes, shapes, and colors, as well as varying plant heights and growth habits, will support the greatest numbers and diversity of pollinators.

Diverse plantings that resemble natural native plant communities are the most likely to resist pest, disease, and weed epidemics. Plant species found in association with each other in local natural areas are likely to have the same light, moisture, and nutrient needs and are more likely to thrive when grouped together. Thus, it is very useful to look around at natural areas in your community to see what plants are growing together, and which of these flowers seem to have the most visitors.

Bloom Time Succession

To provide a continuous food supply, choose at least three different pollinator plants within each of the three blooming periods: spring, summer, and fall. Under this plan, at least nine blooming plants should be established in pollinator enhancement sites; more is even better.

Include early and late bloomers. When learning how to attract bees and support their populations, it is especially important to plant flowers that bloom in the very early spring. These

flowers are a critical resource for early emerging bees such as bumble bee queens, mining bees, and mason bees. An abundance of early to mid- spring blooming flowers also will help jumpstart populations of the handful of native bee species — such as bumble bees and some sweat bees — that produce multiple generations each year. These bees can be very abundant.

Adequate forage available early in the season will increase reproductive success and lead to more bees in the middle and end of the year. Early forage also may encourage bumble bee queens that are emerging from hibernation to start their nests nearby, or simply increase the success rate of nearby nests. It is equally important to include plants that flower late in the season to ensure that queen bumble bees are strong and numerous going into winter hibernation.

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