

For More Information

This brochure is a companion to *Conserving Bumble Bees*, a comprehensive set of conservation guidelines. *Conserving Bumble Bees* includes detailed information about managing and creating habitat, including specific management techniques, regional plant recommendations, and regional bumble bee ID guides. The guidelines can be downloaded from xerces.org/bumblebees.

Follow us on Facebook for program updates and other news: facebook.com/bumblebeeatlas.org.

Additional Resources

Identification and community science:
bumblebeewatch.org

USDA Forest Service identification guides:
xerces.org/bumblebees/identification

Conservation guidance and plant lists:
xerces.org/pollinator-resource-center/wildflower.org/project/pollinator-conservation



BUMBLE BEE CONSERVATION

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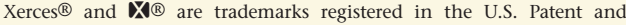
The Xerces Society is a nonprofit organization that protects wildlife through the conservation of invertebrates and their habitat. Established in 1971, the Society is a trusted source for science-based information and advice. Our team draws together experts from the fields of habitat restoration, entomology, botany, and conservation biology with a single focus—protecting the life that sustains us.



The Xerces Society for Invertebrate Conservation
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Status of Bumble Bees

Evidence from North America, Europe, and Asia suggests that many bumble bee species have recently undergone dramatic declines. Bumble bees face many threats including disease, habitat loss, overgrazing, pesticide use, and climate change. The illustrations in this brochure feature two North American species that have experienced marked population declines, the American bumble bee (*Bombus pensylvanicus*) on the cover and the rusty patched bumble bee (*Bombus affinis*) inside. Protecting and restoring existing habitat and creating new habitat are the best ways to conserve these and other bumble bees.

Creating Habitat for Bumble Bees

There are three things that bumble bees need in the landscape to thrive: flowers from which to gather pollen and nectar, a place to nest, and a sheltered location to overwinter.

Flowers. Bumble bees eat pollen and nectar, and need access to a diversity of flowers throughout their life cycle. Of particular importance is providing blooms both early and late in the season. For specific plant recommendations in your region, see the Xerces Society publication *Conserving Bumble Bees* or visit www.xerces.org/lbj.

Nest Sites. Most bumble bees nest underground, usually in abandoned holes made by ground squirrels, mice, or rats, but occasionally they nest above ground in abandoned bird nests. Some species nest on the surface of the ground (in grass tussocks) or in empty cavities (hollow logs, dead trees, under rocks, etc.). In gardens, nests are often found in compost piles or unoccupied bird houses. Maintaining a variety of the habitat features listed above will help support healthy bumble bee colonies.

Overwintering Sites. Queens typically overwinter in small cavities just below or on the ground surface, utilizing loose soil and leaf litter. They have also been noted overwintering in woodpiles and rock walls, as well as in sheds. To help provide essential overwintering sites, maintain a diversity of these features in your landscape.

Managing Your Habitat

Management practices that protect existing habitat are as important as creating new habitat. Even in gardens you can adopt some of these practices. *Conserving Bumble Bees* has more detailed guidance.

Mowing, fire, and grazing. These are all widely used and valuable tools for maintaining the open, meadow-like conditions that bumble bees prefer. However, do not mow, burn, or graze more than 1/3 of the site per year.

Pesticides. We strongly recommend against the use of pesticides, but also realize that targeted herbicide and insecticide applications can be effective management tools to control invasive species and pests. For situations when pesticides cannot be avoided, we recommend that you choose targeted formulations with the least toxic ingredients, follow the manufacturer's directions, apply the pesticide as directly and locally as possible, and apply when bumble bees are not active (either after dark or during winter). Also, avoid the use of systemic (e.g., neonicotinoid) and broad-spectrum (e.g., organophosphate and pyrethroid) pesticides.

Conserving Bumble Bees

Conserving Bumble Bees is a detailed set of conservation guidelines produced by the Xerces Society and available at xerces.org/bumblebees. The guidelines provide land owners and managers with in-depth information, including region-specific plant lists and detailed recommendations on how to implement management that minimizes risks to bumble bee colonies, while maintaining flower-rich foraging areas, and secure nesting and overwintering sites. This brochure is a companion to the guidelines; it illustrates the bumble bee life cycle and offers a brief overview of appropriate seasonal management practices.

Bumble Bee Watch

Get involved in bumble bee conservation by joining Bumble Bee Watch, our community science project, which helps us understand the status of bumble bees and gather more data on their nesting biology, at bumblebeewatch.org.

Spring – Early Summer

Include early-blooming plants and maintain a diversity of flowers in your landscape.

To protect overwintering queens, avoid early raking or mowing. Raking is best done in April and May.

To provide secure nesting sites, keep large patches of land unmowed and untilled. Healthy ground-nesting mammal populations help create future nesting sites.

Because queens are still foraging and colonies are usually very small, avoid the use of pesticides.

Summer – Fall

Include mid- and late-blooming plants such as goldenrod, milkweed, and aster in your landscape.

Leave leaf litter, downed wood, and uncut bunch grasses to serve as potential overwintering sites.

As colonies are producing new queens at this time of year, avoid using pesticides. If pesticides are necessary, choose products that are less harmful to bumble bees, and do not use them at times when bees are active or when plants are flowering.

Winter

Late fall and winter are the best times for mowing. Cut with the mower deck at the highest safe level to avoid disturbing overwintering queens.

To protect overwintering queens, continue to leave large sections of untilled ground.

Small, controlled burns are okay, but burn less than $\frac{1}{3}$ of available land annually, and leave unburned patches as a refuge for animals.

If needed, this is the best time to use a targeted herbicide treatment for invasive species.



The overwintered queen emerges, begins searching for a nest site, and forages for pollen and nectar. Once a nest site is established, she begins laying eggs.

After the initial brood emerges, worker bees do the foraging. The queen now stays in the nest, where her sole duty is to lay eggs and rear young.

In late summer, the colony switches from producing worker bees to producing new queens and males, the reproductive members of the colony. After mating, the males die and the new queens begin searching for overwintering sites.

The colony dies in late fall, leaving only the new queens to overwinter, usually just below the soil surface.