



# WASHINGTON BUMBLE BEES IN HOME YARDS AND GARDENS

Home Garden Series

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# Washington Bumble Bees in Home Yards and Gardens

Bumble bees, with their robust bodies, colorful bands of “fur” and audible “buzz” while in flight are the most well recognized of the native bees in Washington State. Equipped with pollen-collecting hairy bodies and “pollen baskets” on their hind legs for transport, plus the ability to “buzz pollinate” flowers when necessary, bumble bees are effective pollinators of many crops, (Figure 1) home garden plants, ornamentals, and native plants. Some researchers are concerned that bumble bee diversity and abundance in North America are in decline. WSU Extension is hopeful that public awareness and appreciation of bumble bees and their role in pollination will encourage homeowners to better conserve and protect bumble bees in home landscapes here in the Pacific Northwest.

This publication will help readers recognize bumble bees, understand their general life cycle, and suggest things homeowners and the general public can do to encourage these fascinating and beneficial insects.



Figure 1. Bumble bee pollinating blueberry bloom. Photo by Dave Pehling, WSU Extension Snohomish County.

Bees are just one of the families in the order Hymenoptera that also includes ants, wasps, and sawflies. Washington State has at least 23 species of bumble bee, but several of them have similar black, yellow, or reddish markings, so identification can be difficult. To add to the difficulty, considerable variation exists within species and, in some species, the males can look quite different from the female workers and queen bumble bees of the same species. Online keys are available to help with identification (Koch et al. 2012).

In western Washington some of the most common species may include the black-tailed bumble bee (*Bombus melanopygus*; Figure 2), the fuzzy-horned bumble bee (*B. mixtus*) (Figure 3.), and the Vosnesensky, or yellow-face bumble bee (*B. vosnesenskii*; Figure 4). Common eastern Washington species may include the red-belted bumble bee (*B. rufocinctus*; Figure 5), the Nevada bumble bee (*B. nevadensis*; Figure 6.), and the yellow bumble bee (*B. fervidus*; Figure 7).

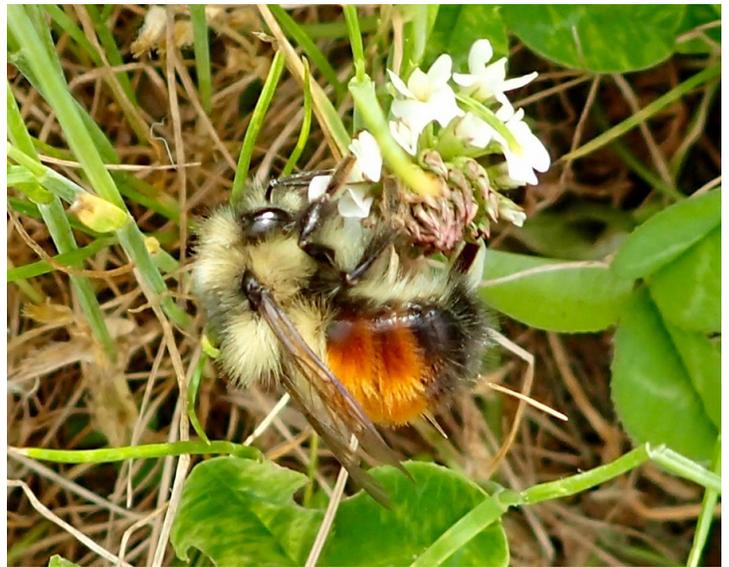


Figure 2. Black-tailed bumble bee, *B. melanopygus*. Northern form. Photo by David Hofeditz, WSU Snohomish County Master Gardener Volunteer.



Figure 3. Fuzzy-horned bumble bee, *B. mixtus*. Photo by David Hofeditz, WSU Master Gardener Volunteer.



Figure 4. Vosnesensky bumble bee, *B. vosnesenskii*. Photo by Joseph V. Higbee, Creative Commons..



Figure 5. Red-belted bumble bee, *B. rufocinctus*. Photo by Jeanne Dammarell, Bugguide.net.



Figure 6. Nevada bumble bee, *B. nevadensis*. Photo by Bob Hammon, Colorado State University, Bugwood.org.



Figure 7. Yellow bumble bee, *B. fervidus*. Photo by Gary Alpert, Harvard University, Bugwood.org.

## Apiphobia – Fear of Bees?

Many people are afraid of any sort of bee, but is this fear really deserved for bumble bees? Most of our PNW bumble bee species are very mild in temperament and are NOT going to attack anyone unless their nest is seriously disturbed or threatened (Figure 8). Of course, bumble bees may sting in self-defense if they accidentally get caught in your clothing or you



Figure 8. Bumble bee resting on finger. Photo by Dave Pehling, WSU Extension Snohomish County.

happen to step on them while they are busy tending a flower. Unlike honey bees, the bumble bee sting is not barbed so they are capable of stinging more than once. Nevertheless, you can reduce your risk of bumble bee stings by acting calmly in the presence of bumble bees and not swatting at them. If you have a nest in your yard that concerns you, you can avoid the area near the nest for a couple months until the bumble bees finish their yearly life cycle. During the spring and summer foraging period, you might even enjoy watching the bees as they work in your home landscape or garden. At the end of their annual life cycle, the old queen and worker bees remaining in the nest die (Figure 9).



Figure 9. Expired bumble bee nest with dead queen. Photo by Dave Pehling, WSU Extension Snohomish County.

## Bumble Bee Facts

- Temperature regulation – Bumble bees are capable of operating in cool weather when other bees cannot fly. By flexing their flight muscles they can raise their body temperature by several degrees and their furry bodies help insulate them from the cold. Thus, bumble bees do well in cooler regions of the state and are some of the first pollinators active in the spring. Queen bumble bees actually “sit” on their first egg cluster like a mother hen and heat it to speed emergence of the first generation.
- Buzz pollination – Some plants, particularly tomatoes, peppers, and other plants in the Solanaceous nightshade family, have “sticky” pollen and require stimulation in order for the flower to release pollen grains. Bumble bees grab the flower and vibrate their bodies with a loud “buzz” (this movement is known as sonication) which shakes the pollen grains from the flower.
- Parasitic bumble bees – A few bumble bee species, known as “cuckoo bumble bees,” have taken to a lifestyle as colony parasites. Queens of these species invade established young bumble bee colonies and take them over, usually killing the colony’s queen. The remaining worker bees of the original colony then raise the cuckoo bumble bee’s young, which includes new queens and drones (male bees).
- Greenhouse pollination – Bumble bees are the best pollinators of greenhouse tomatoes. Around 37% of all fresh tomatoes sold in U.S. retail stores are now grown in greenhouses...a \$481 million value. Because of this, supplying commercial bumble bee colonies to greenhouse crop producers is a thriving business. Unfortunately, this business venture has been implicated in the spread of disease and the decline of some of our native species (Winter et al. 2006).

## Life Cycle

Bumble bee colonies are annual in cycle. Thus, bumble bee colonies start anew each spring from overwintering young queens that mated the previous summer.

Bumble bee queens may come out of hibernation very early in the spring or late winter (we have seen queens flying the first weekend of January in mild years). They do not look for nest sites until more plants are in bloom – usually February and March, depending upon the temperature and species (Johansen 1967; Koch et al. 2012).

While questing or searching for nest sites (Figure 10), large queens slowly fly around houses or stumps or crawl around in the garden looking for a suitable location. Colonies are usually established in old mouse nests, bird nests, house insulation or other places, above or below ground where dry, fluffy nest material is available. Some bumble bee species have even been observed carrying additional material into the nest (Johansen 1967).

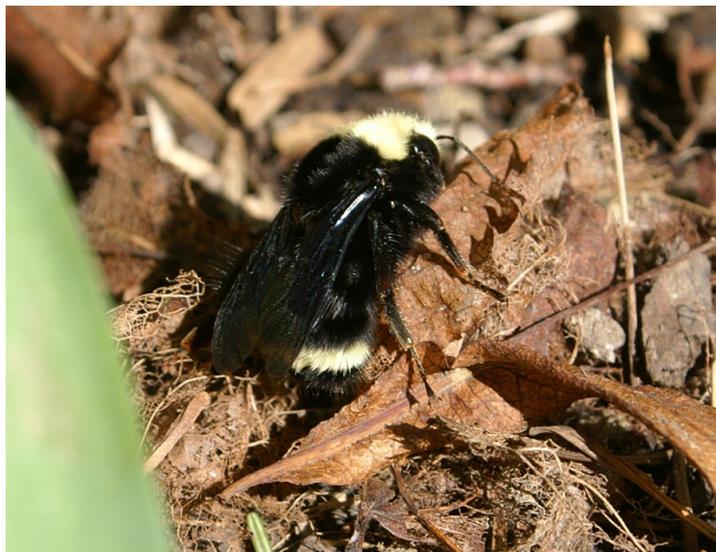


Figure 10. “Questing” yellow-face bumble bee queen. Photo by Dave Pehling, WSU Extension Snohomish County.

The young queen makes a small cavity in the insulating material where she makes a wax “honey pot” which she fills with nectar. A small globular wax nest is made alongside in which the queen deposits a cluster of eggs. She then broods the eggs like a mother hen, warming the eggs and larvae with her body by flexing her flight muscles. The initial workers consist of small bees, which take over the nest building and maintenance. Following broods, with better nutrition, consist of larger workers. Unlike honey bees, bumble bees do not exhibit age-dependent division of labor and workers at any time may engage in brood rearing, nectar gathering, or pollen collection (Cameron 1989). The average life span of some species of adult bumble bee workers is about four to six weeks in natural conditions (Goulson 2003). After several brood cycles, the colony reaches full size with anywhere from less than a dozen to several hundred workers (Johansen 1967). The final generations raise new queens and drones for the next year’s colonies. Mating usually takes place on the ground and both males and females, depending on species, may mate more than once. Male bumble bees die in the fall.

The original colony slowly declines and dies out – sometimes as early as May or June, or as late as October, depending upon the species. (Koch et al. 2012; Johansen 1967). The deserted

wax nest is soon eaten by wax moths and other scavengers. Since the colony does not survive over the winter, bumble bees make only enough honey to get through the season (Heinrich 1979).

## Bumble Bees in Decline

Bumble bee populations are declining in many areas due to habitat destruction, pesticide misuse, and disease. Unregulated importation of commercial bumble bee colonies may have contributed to declines in some areas due to disease-carrying bees escaping from the commercial boxes (Winter et al. 2006). Some formerly common species, such as the western bumble bee (*B occidentalis*), are now rare in Washington and at least one species, Franklin’s bumble bee (*B franklini*), may now be extinct (Hatfield et al. 2012; Koch et al. 2012).

## Help Bees by Improving Habitat

Honey bees and native bees, including bumble bees, require a diverse landscape for survival (Figure 11). Huge swaths of manicured grass lawn are biological deserts as far as bees and other pollinators are concerned.

Planting a variety of bee-friendly flowering plants that bloom from late winter through fall (one of the BEST ways to help all bee species) and CAREFUL use of pesticides (insecticides, herbicides, fungicides, and miticides) only when needed are a couple of the easiest ways to help bees and other pollinators.

Bumble bees also need nest sites. Leaving an area of the yard “wild,” with tall grasses and other cover can provide nesting sites for some species. Ornamental bunch grasses often provide good nest sites (Hatfield et al. 2012).

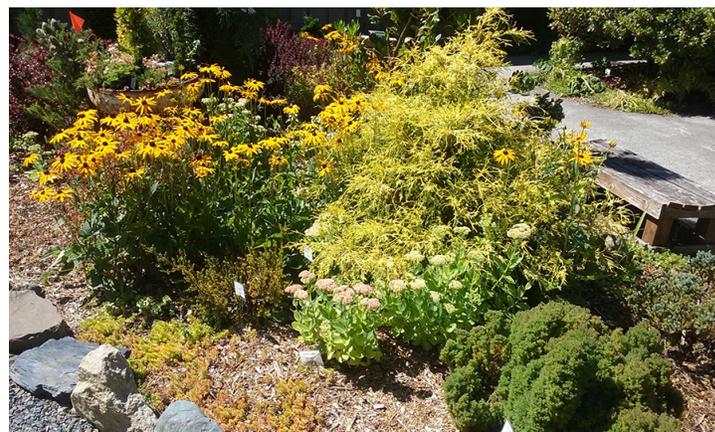


Figure 11. Bumble bee habitat. Photo by Dave Pehling, WSU Extension Snohomish County.

## Plants for Bumble Bees

Pollinators of all kinds need nectar and pollen all season. Clustered plantings are more attractive to pollinators than scattered blooms. Provide flowers from early spring to late in the fall. Numerous lists for “bee-friendly” plants are available, but be sure to select plants that are adapted to your zone. Be aware that some lists may include plants that are concerns due to their invasive, non-native weedy growth. If you are not familiar with a plant, you can get more information from your local chapter of WSU Master Gardener volunteers or cross reference the plant with the [Washington Noxious Weed Board website](#). The Pollinator Partnership’s [“Regional Planting Guides” website](#) is useful for suggestions on what to plant as well as other habitat needs.

## Nest Boxes

Bumble bees will also use a variety of artificial nests (Figures 12, 13, and 14), placed above or below ground and supplied with loose, fibrous nest material, but occupancy rates are seldom over 30%. See the Additional Resources section for links to plans for nest boxes.



Figure 12. Birdhouse bumble bee box. Photo by Dave Pehling, WSU Extension Snohomish County.



Figure 13. Wooden bumble bee box (can be placed underground with a tunnel to the surface). Photo by Dave Pehling, WSU Extension Snohomish County.



Figure 14. Simple cardboard bumble bee box. (Protect from rain.) Photo by Dave Pehling, WSU Extension Snohomish County.

## Bottom Line...

To help native pollinators of ALL kinds, you can:

- Provided bee-friendly flowers throughout the year
- Provide nesting habitat
- Eliminate unnecessary pesticide use. Use pesticides **ONLY** when necessary and absolutely never on blooming plants! ALWAYS carefully read and follow all label directions!

## Additional Resources

Bumble Bee Links.

<http://ext100.wsu.edu/snohomish/bumblebee-links/> Includes links to nest box plans.

Evans, E., I. Burns, and M. Spivak. 2007. *Befriending Bumble Bees*. University of Minnesota.

Hooven, L., R. Sagili, and E. Johansen. 2013. How to Reduce Bee Poisoning from Pesticides. Pacific Northwest Extension Publication PNW 591. Oregon State University. <https://pubs.wsu.edu/ItemDetail.aspx?ProductID=14994&SeriesCode=&CategoryID=&Keyword=bee+poison>

Lady Bird Johnson Wildflower Lists of Plants of Value to Bumble Bees. [http://www.wildflower.org/collections/collection.php?collection=xerces\\_bumble](http://www.wildflower.org/collections/collection.php?collection=xerces_bumble)

Lawrence, T. 2015. *Pollination and Protecting Bees and Other Pollinators*. <http://cru.cahe.wsu.edu/CEPublications/FS174E/FS174E.pdf>

Regional Planting Guides. Pollinator Partnership. <http://www.pollinator.org/guides.htm>

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Goulson, D. 2003. *Bumblebees – Their Behaviour and Ecology*. Oxford University Press.

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Winter, K., L. Adams, R. Thorp, D. Inouye, L. Day, J. Ascher, and S. Buchamann. 2006. *Importation of Non-Native Bumble Bees into North America: Potential Consequences of Using *Bombus terrestris* and Other Non-Native Bumble Bees for Greenhouse Crop Pollination in Canada, Mexico, and the United States*. <http://cues.cfans.umn.edu/old/pollinators/pdf-BBcolony/2006nonativebee.pdf>



Use pesticides with care. Apply them only to plants, animals, or sites as listed on the label. When mixing and applying pesticides, follow all label precautions to protect yourself and others around you. It is a violation of the law to disregard label directions. If pesticides are spilled on skin or clothing, remove clothing and wash skin thoroughly. Store pesticides in their original containers and keep them out of the reach of children, pets, and livestock.

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