



American Bumble Bee (*Bombus pensylvanicus*)

Landowner Guide

The American bumble bee (*B. pensylvanicus*) belongs to the subgenus *Thoracobombus*. It has a black head, three yellow bands on the thorax and a black posterior.

Historically, the American bumble bee (AMBB) occupied one of the most widespread ranges of all bumble bees in North America, from the eastern and central United States and southern Canada into the desert west and adjacent areas of California and Oregon. However, the AMBB has declined both locally and regionally, especially in the northeastern parts of its range, and is still becoming rarer. The species appears to no longer occur in New York, Maine, and Vermont.



American bumble bee by Kristy Baker (NYNHP)

Habitat loss and conversion, introduction of pathogens from managed bumble bee and honeybee colonies, and widespread use of pesticides over the past 30 years likely contributed to decreasing abundance of AMBBs. Bumble bee populations are uniquely susceptible to insecticides, particularly neonicotinoids, if the application overlaps with colony establishment in the spring. AMBBs are Critically Imperiled in New York and Imperiled in West Virginia and Maryland.

LIFE HISTORY

Like most *Bombus* species, AMBBs are highly social and form annual colonies consisting of a single queen, female workers, and males. Small compared to other *Bombus* species, AMBB colonies produce 60-120 individuals; however, the size of individuals colonies can increase with the availability of constant and diverse food.

The AMBB life cycle is shorter than other bees, due to its adaptations for warmer temperatures. Solitary queens emerge from overwintering sites in late May and June and immediately begin foraging to rebuild their body fat reserves. Once a queen finds a suitable nest site, she gathers pollen and nectar into stores upon which she lays worker eggs. As workers hatch and the colony grows, workers collect food, defend the nest, and care for the young. The queen remains in the nest throughout the summer laying eggs for additional workers, then lays eggs for males and new queens in late summer/early autumn. New queens and males emerge to mate, after which fertile queens feed heavily to build up their body fat reserves. New queens try to find overwintering sites by late September, while the old queen, workers, and males die.

HABITAT

AMBBs occupy grassland, farmland, and other open areas. Spring habitat contains some large, coarse, decayed woody debris for overwintering and undisturbed nesting sites in clumps of grass near native spring-blooming flowers; summer habitat includes highly diverse and patchy flowers and overall good vegetative cover; fall habitat contains flowers associated with open and agricultural areas. Land cover, agriculture, and landscape-scale conditions significantly influence habitat use.

NECTAR AND POLLEN PLANTS

As generalist foragers, bumble bees gather pollen and nectar from a wide variety of flowering plants close to their nests. Nearby pollen and nectar sources often determine where new queens establish their colony in the spring. Unlike honeybees, *Bombus* colonies consume food immediately because there is limited storage space in the nest.

AMBBs need constant and diverse flowers that bloom from May through September. Abundant floral resources in late summer and autumn influences the number, size and fitness of fertile males and allows new queens to build the body reserves needed to survive overwintering and start new colonies the following spring.

HABITAT NEEDS

Nesting habitat may limit AMBBs because suitable natural sites are hard to find and are often already claimed or stolen by other bees. AMBB nests mostly on the surface of the ground, among long grass or haystacks, but do occasionally nest underground. Grassy edge habitats are valuable nesting areas for AMBBs. Successful nests of *Bombus* species typically occur in undisturbed locations close to areas with highly diverse plants.

Overwintering habitat near spring flowers is critical for newly emerged queens to rapidly restore body fat and gain the energy to locate a suitable nest site and establish a new colony. Overwintering sites must remain undisturbed from late autumn through the spring while new queens hibernate. AMBB queens prefer decaying old logs more than underground burrows as overwintering habitat.

HABITAT RESTORATION AREAS IN PENNSYLVANIA

Primary

- Montgomery, Chester, Lancaster, York, Adams, Berks, Lebanon, Dauphin, and Cumberland Counties
- Centre, Mifflin, Juniata, Union, and Clearfield Counties
- Allegheny, Westmoreland, Washington, Fayette and Beaver Counties
- Erie and Crawford Counties

Secondary

- Tioga, Clarion, Columbia and Monroe Counties

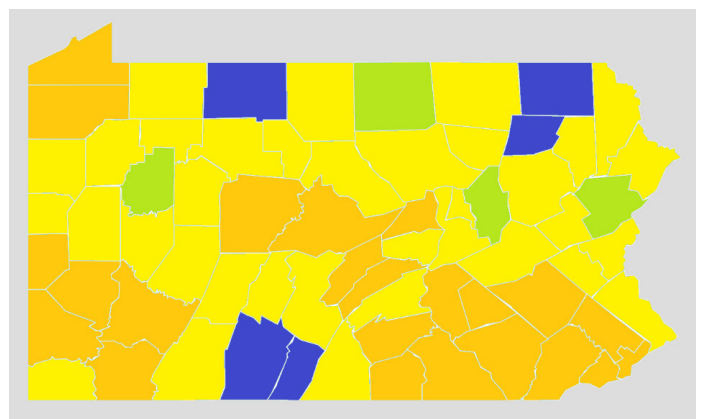


Figure 1. Historical areas (blue), priority occupied areas (1st-orange; 2nd-green) with expansion areas (yellow) based on Kilpatrick et al. (2020).