

Where Do Insects Go in Winter?

by Danae Wolfe



Left: Monarch butterflies that have migrated south to overwinter congregate on a eucalyptus. Above: A woolly bear caterpillar seeks cover by burrowing under leaf litter.

THE CHILL OF winter has a firm grip over much of the country. While I long for warmer days that draw me outdoors to photograph insects and spiders, for now, I'll take solace in capturing portraits of intricate snowflakes. But this is a good time to consider, "Where do all the bugs go when it gets cold, and when can I expect to see them again?"

Insects in temperate regions have different ways of coping with cold weather. While some flee for warmer climates, others stay put and find ways of keeping warm and cozy. Here's a peek into how some bugs spend the winter.

MIGRATORY MARVELS

As snowbirds flock to warmer climates during winter months, so too do certain bugs. Due to their short lifespans, many

insects engage in a movement pattern called **multigenerational migration**, unlike that of animals in which the same individual makes a complete cyclical journey. For monarch butterflies (*Danaus plexippus*) in the northern United States and Canada, which head south to Mexico for the winter, the entire year-long cycle happens over about four generations—one southward and usually three or four on the way north after winter. So when we welcome these critters back to our gardens each spring, we're actually encountering the great grandchildren of those individuals that migrated south in the fall. Pretty cool, right?

Some species of dragonflies—like the green darner (*Anax junius*)—also fly south seeking warmer weather. For those individuals that reached maturity over the summer months in their northern territory, the mi-

gration south usually begins sometime between July and October. Once they reach their destination in the southern United States, Mexico, or the Caribbean, adults lay the eggs that become the parents of those that will eventually fly north in the spring.

Migratory species are sensitive to changes in their environment. If, for example, monarch butterflies cannot find their host plant, milkweed (*Asclepias* spp.), along their northward migration in the spring, new generations would fail to survive. Monarchs need access to milkweed along their entire migratory journey to ensure that the several generations of their offspring can make the long migration north each spring. Gardeners can help monarchs by including milkweed in their landscapes.

For dragonflies, warmer year-round temperatures, prompted by climate

change, could result in less need for their migration, which would throw food webs off balance as the insect is an important predator of other arthropods, including mosquitoes, and they are an important food source for toads, newts, fish, and other wildlife. These ecosystem changes could manifest in ways we might not easily observe or understand until it is too late to save affected species.

BRAVING THE COLD

For the insects that stay in place over the winter, different species have different ways of coping with the cold. Many overwinter as larvae, nymphs, or pupa while some adults enter a hibernationlike state.

Woolly bear caterpillars—which turn into Isabella tiger moths (*Pyrrharctia isabella*)—burrow into leaf litter and overwinter as larvae under an insulating layer of leaves and snow. Mayflies, dragonflies, and stoneflies—all of which have aquatic nymphal life stages—overwinter as nymphs in their watery homes. These insects crawl out of ponds and streams in spring and attach themselves to nearby vegetation before emerging as adults.

Other insects overwinter as pupa in cozy cocoons. After spending the warmer summer months feeding on vegetation, giant silkworm moth caterpillars (family Saturniidae) construct pupal cases—or cocoons—where they will remain throughout the winter before undergoing metamorphosis and emerging as adults in the spring.

WHERE WINTERS ARE WARM

Where the weather stays warm in winter—like Florida—bugs can survive and reproduce year-round. Generations of insects in these regions have not likely evolved migratory patterns because they simply haven't needed them. For example, monarchs in southern Florida are non-migratory. If it does happen to grow cold, some populations of insects will simply die off while others seek warmth indoors or in other safe spaces. —D.W.

Some insects enter **diapause**, a state of dormancy where they stop foraging, feeding, and reproducing during winter. While bumblebee colonies, for example, die off in late fall or early winter as temperatures drop, queen bees brave the cold by burrowing under the surface of the ground, enter diapause, and overwinter there until spring. Gardeners may see queens foraging again in the spring when warmer temperatures lure them out. Other bees spend their winter nestled in hollow stems to insulate themselves from the cold. Beneficial insects like syrphid flies, parasitic wasps, and lacewings also overwinter in hollow stems.

THE BUZZ ON SPRING CLEANUP

It's always tempting to clean up the garden as winter turns to spring, but given what we now know, I invite you to con-

sider how you might adapt your activities to be a better steward for bugs.

As aforementioned, many insects overwinter in leaf litter, in underground burrows, or in hollow stems left standing from the previous year's blooms. Cleaning up the garden too soon means you could be removing beneficial insects from the garden along with your garden debris.


Rather than beginning spring clean-up on the first warm day, try to hold off until insects have had time to emerge from their winter slumber. Generally, this means waiting until there have been



Hollow stems, like these of baptisia, can be used for winter shelter by insects such as sweat bees, parasitic wasps, and lacewings.

at least seven consecutive days of temperatures above 50 degrees Fahrenheit.

If that's too much waiting, you can cut woody plant stems at ground level and move them to an inconspicuous location in the garden. Rake leaves into small piles and let a few piles remain to allow overwintering insects to emerge. Also consider holding off on mulching garden beds to allow ground-nesting insects to emerge.

Understanding insect life cycles can help empower gardeners to make more sustainable and ethical decisions in the garden. With just a few simple garden stewardship practices, we can help the next generation of beneficial bugs thrive. 

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An adult mining bee (*Andrena* sp.) emerges in spring from its underground abode.