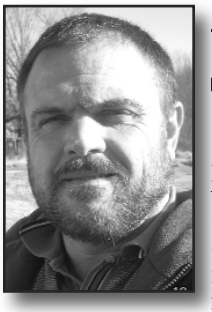
It's Been A Cold Winter: Will Any Insects Survive To Bug Us Next Year?



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This question is asked of me every spring. Will there be many < insert pest species here> survive the winter? While it might appear to be a simple correlation to come up with a good answer, insects simply don't always follow the rules of cold winter, poor survival.

Let's look at a few examples

Japanese beetles escape the cold by spending the winter underground in a state of hibernation, or more correctly "diapause." They generally spend their third larval life stage around the frost line underground. If the ground temperature doesn't change too fast, they can move up or down in the soil profile to protect themselves. When it warms up the following spring, they simply resume their activities like nothing had happened. They can even delay finishing their life cycle if there wasn't enough time to finish development in the first year. When this happens, they simply hunker down for another winter and emerge as adults early in the second year summer. This happens often at the northern limits of their range.

The Colorado potato beetle is normally well adapted for survival of cold winters. Late in the summer, diapause is initiated by the decreasing day length, colder temperatures and decreasing food availability. Adult beetles then burrow underground to escape the winter cold. While above ground temperatures may fall below that minimum where they cannot survive, they are snug and well since ground temperature simply doesn't experience the extremes that air temperature can. They do much better if there is a good snow cover on the ground since snow will insulate the soil and actually keep the ground warmer than it would be if the ground were bare. Survival can further be altered by adding or removing ground moisture. If the soil is good and moist, then the beetle will not survive cold extremes well. Dry soil will enhance their survival.

Soybean aphids, although they are very soft bodied arthropods, are able to successfully over winter in northern states such as Iowa and Wisconsin. How? While aphids may seem to be simple, their life cycles are frequently complicated. In the late season, some winged soybean aphids switch from feeding on soybeans to buckthorn bushes. On soybeans, the aphids don't bother to mate, lay eggs or even produce males; they simply reproduce asexually and quickly. On buckthorn, however, males are produced, they mate with the females and she will then lay eggs that can easily survive the winter. When things warm up again the following year, the eggs hatch and the young aphids reproduce for a couple of generations on the buckthorn plants before winged versions of the aphids move back onto soybeans to continue the life cycle. Confused yet?

Some insects migrate. Monarch butterflies are probably the most well known practitioner of this strategy. Monarchs found east of the Rocky Mountains start life deep in the mountains of central Mexico, close to the tree line. They begin moving north in late February. As they travel, females lay eggs on milkweed plants. This first generation dies long before any of them reach the U.S. border. The eggs hatch, larvae feed and new adults are produced. They continue north, laying eggs along the way. This generation will generally make it to the central portions of the United States. Their eggs hatch and develop into the third generation that will venture the farthest away from their overwintering grounds. As the days begin to shorten, this generation becomes obsessed with returning to the mountain home that none have seen, yet they fly the entire distance back to hang out with their fellow monarchs in the near freezing coolness that enables them to survive to repeat the cycle next year.

There are many other examples. At least one species of leaf beetle, Phyllodecta laticollis, can freeze solid and yet can thaw to live another day. Others such as the multicolored Asian lady beetle move indoors to spend the winter with their unwilling human benefactors.

So, I can say with great confidence that next year I'm sure there will be pest species here, but how many? I won't hazard a guess. Δ

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