

Bees and Butterflies and Blooms in Winter?

Readers: This column was originally run several years ago. I am running a revised version now, even though it is not yet even the beginning of winter, to alert everyone to be on the lookout for activity on warm days, even in the winter.

Just outside our window we planted an Elbow Bush 10 or 12 years ago. The Elbow Bush (*Forestiera pubescens*), is also called Spring Herald because it blooms before just about anything else. One winter it was blooming on January 30. This winter it didn't begin to show blooms until Valentine's Day.

The blooms on the Elbow Bush are not really showy, no real petals, just little clusters of tiny yellowish knobs on 2-3 mm stalks. Otherwise, these shrubs are not very noteworthy except that the leaves and branches are strikingly opposite and the longer stems have an arching shape that sometimes reaches back toward the ground.

But, it turns out that if you are an overwintering insect, you probably think the spring herald is about the greatest thing around. Most insects spend the winter either as an egg or pupa or other similar dormant state and then emerge as a larva or adult in the spring. But some insects overwinter as adults and use several mechanisms to survive freezing conditions.

Well, this Valentine's Day was a warm bright, sunny, calm day and the Elbow Bush was crowded with insects! In terms of numbers, most of the insects I observed were bees. I am not good enough at identifying bees to know for sure, but to me they all looked like regular European honeybees. Honeybees survive the winter in their hives/colonies by living off the honey they have stored and using that energy to survive cold weather.

But bees were not the only insects I saw on the bush. There were at least two species of butterflies that I saw on the bush in just a short span of time. There was an American snout and a checkered-skipper feeding on the nectar while I was watching, and I later saw a red admiral fly by. Although I haven't seen any sulfur butterflies on the Elbow Bush, I would not have been surprised to see them as they are frequently around on warm winter days.

Exactly how tiny little insects like these can survive long spells of cold weather without food is a mystery to me, even though I have read about how their body chemistry keeps them from freezing.

But an equally interesting mystery is how do these insects find the elbow bush when it starts to bloom? The obvious answer, and I think the scientifically correct one, is that they find it by scent.

But let's think about what has to happen for that to work. First the individual blooms must produce a chemical compound (or maybe several) that the insect can detect. The individual blooms of the elbow bush are about the size of this capital "O" in this sentence, and the chemical cannot be more than a tiny fraction of that size. Granted, there are thousands of blooms on the bush. Now the olfactory sensors of the insects are truly microscopic. So we are talking about a truly microscopic sensory organ detecting really miniscule amounts of a compound in the air and tracing it to its source.

If the breeze is not too strong and is blowing in a constant direction, then there should be a trail of scent downwind of the bush. If the insect gets a whiff of it, it can fly back and forth across the trail to stronger amounts of the scent to find the bush, just like a bloodhound tracks the scent of a person. But if the wind is strong or gusting, it may be really hard to find the source of the scent.

Of course for the bees, once one bee finds the bush, it can go back to the hive and do a "dance" and "tell" the others how to find it.

I remember years ago as a chemist reading about an experiment where male gypsy moths were used as the detector in an analytical instrument called a chromatograph which separates different components of mixtures. Male gypsy moths have large bushy antennae. A very tiny sample from female moths was injected into the instrument and when the sex-attractant pheromone came out of the instrument, the male antennae would vibrate wildly. It works in nature too.

Clearly a lot of our fellow creatures have powers and abilities beyond anything we can imagine. There are no "dumb animals".

Until next time...

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