

Natural South Marysburgh

Spittlebugs Have Arrived

Well, they're here, and you have likely seen them—those frothy globs of phlegm oozing down the stalks of weeds and other plants in fields. Cleverly hidden inside this dollop of mucous is a tiny insect known to many of us as a "spittlebug". If you gently part the froth with a twig, the creature hidden inside can be seen. But you may need a magnifying glass to see the orangey speck clearly. As to exact species—who knows? There are over 20,000 species of spittlebugs.

It is actually the insect and not the plant that is excreting this fluid, although the plant does play an important role in its creation. But these are not adult spittlebugs, they are the immatures, or nymphs, and each one inside this frothy mass is happily chewing away on the plant. Adult spittlebugs, some of which are known as froghoppers, feed on plants too, but are a bit more refined in their habits, and don't drool all over the place.

So, what's going on in there, and why the disgusting table manners when they eat? There are different theories. We do know that it is the insect that is responsible for the foam, and we know it is derived from a fluid voided from the abdomen and from a mucilaginous substance excreted by epidermal glands. Some think the bubbles result from excess air ingested by the insect during feeding, and others believe it is excreted for a reason—to protect it from being visible to predators since very few would be willing to probe this goopy stuff anyway, while others think it is a means of keeping the insect cool and moist. It could be for all those reasons. Sometimes our discoveries in nature are best left as mysteries.

How those bubbles are formed is another unanswered question. One theory says that the excreted fluid is mixed with air in a highly developed abdominal chamber into which a number of spiracles open. Others believe that the air is introduced not internally, but externally, as the fluid trickles down over the abdomen.

Now here is the interesting part. Most insects that feed on sap, choose the phloem, the plant tissue responsible for moving food throughout the plant. These plant tissues contain what could be best described as sieve tubes to perform this function. However, spittlebugs feed on the xylem, the tissue that transports only water to the plant's extremities—certainly not as rich in nutrients as the phloem. The spittlebug then, must get its sustenance from somewhere, and it does this by

processing large quantities of sap to meet its needs, getting it almost entirely from amino acids. The more amino acids in the xylem, the better the survival rate of the spittlebugs. If you look closely, you will notice that spittlebugs are more prevalent in fields of hay—alfalfa, clovers—all of these legumes, which are nitrogen fixers.

The spittlebugs we now are seeing have overwintered as egg masses on some of the same plants on which they are now feeding. Even the egg masses are glued together with froth. Upon hatching in the spring, they appear as orange microscopic objects that move to humid sections of the plant and begin to feed and froth. During the course of their development, they will moult several times, changing colour as they go, eventually turning to green, whereupon they moult again, this time as an adult. Breaking out of this gooey mess, they continue to feed on plants, never really depending too much on flight. Mostly we see them hopping like frogs in front of us whenever we walk through a meadow of tall grass.

The adult spittlebug is even more amazing. At a mere six millimetres in length, the adult frog hopper is almost able to literally "leap tall buildings", Superman style, accelerating from the ground with a force that is 400 times greater than gravity. Compare that to the jump of a human which is only two to three times that of gravity. For a small insect, that's a lot of G's when you consider that humans can pass out after experiencing about five G's. The secret is in the frog hopper's ability to catapult. Over ten percent of the insect's body mass is in its two leg muscles, and it's these muscles that propel it.

Absolutely amazing stuff when you consider that we likely learned how to use catapults only a few thousand years ago, but these tiny insects evolved their own catapults inside their own bodies millions of years ago. And while humans might take several minutes to prepare a catapult and cock it into position, the frog hopper can be ready in a millisecond.

So, don't waste your time pursuing a frog hopper on the premise you can catch one between leaps. It likely has more energy than any of us could hope to have. You're far better off parting the froth on the plants and examining one of them in the nymph stage.



Spittlebug feeding on plant. Photo by Barry Kant

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