

Kissing Bugs and Chagas Disease in NC

By now, you've probably heard news reports out of Texas, and now North Carolina, about a "deadly" insect, the kissing bug. The bug is native to the southern United States, South America, Central America and Mexico, and can carry a parasite *Trypanosoma cruzi* that causes Chagas disease.

Kissing bugs tend to bite sleeping people on the thin skin near their eyes or mouths, hence the nickname. Unfortunately, the bugs also defecate at the site of the bite. These feces can enter the wound when a person scratches or rubs their face, and if the bug was infected *T. cruzi*, infection with Chagas disease can follow.

There are at least two species of kissing bugs that are native to North Carolina: *Triatoma sanguisuga* and *T. lecticularia*. But before you panic, it's important to know that most cases of Chagas disease are actually from rural areas in the New World tropics. Cases of Chagas disease in the United States are rare; most cases of Chagas disease have been diagnosed from people who traveled here from outside the country. In fact, since 1955, only seven verified cases of native-infected Chagas have been reported in the United States, and none of those occurred in North Carolina. One reason they are not frequently encountered is because kissing bugs are nocturnal and prefer to hide during the day.

There are many other insects in North Carolina that look similar and can be mistaken for kissing bugs. Kissing bugs belong in the family Reduviidae. Other bugs in this family are similar in appearance, but

they feed on plants and other insects and can inflict a painful bite when disturbed. However, only kissing bugs are known to transmit the Chagas parasite. Kissing bugs feed on a diversity of wild and domestic animals including wild rodents, other wild mammals, domestic dogs, and humans. You can find some common insects that are mistaken for kissing bugs by visiting the [NCSU Plant Disease and Insect Clinic blog](#).

So, what exactly do kissing bugs look like? Kissing bugs are around one inch in length when fully grown and somewhat flattened.



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The Eastern blood-sucking conenose (AKA kissing bug), *Triatoma sanguisuga*, is native to NC and much of the southern and middle U.S.

The sides of their abdomen and thorax are striped, alternating black and orange/red. (see photo above). The legs of kissing bugs are thin compared to most assassin bugs. The front of the head is elongate and the mouthpart is long and thin. They also have a prominent spine on the back of the thorax.

Kissing Bugs, cont.

To reduce the chance of kissing bugs entering the home, work on excluding them. Some of the following may help to seal the home to keep the bugs outside:

- Cut back trees and shrubs so they do not touch or overhang the house
- Don't stack firewood or other items directly against the house
- Install weather stripping around loose fitting doors and windows
- Seal cracks and gaps in the foundation with caulk
- Close up weep holes with copper mesh
- Use stainless steel mesh wire to block larger access points in the attic
- Make sure window screens aren't torn or ripped
- Turn off outside lights at night. If that is not possible, use "bug bulbs" or try LED bulbs that have a wavelength less attractive to insects

If you think you've encountered a kissing bug, trap the bug in a container without touching it. Fill the container with rubbing alcohol or freeze the bug. Take the bug to your county cooperative extension center, health department or university lab for proper identification.

Did you know?



The ant-mimic spider *Aphantochilus rogersi* feeds on the turtle ant (*Cephalotes atratus*) it mimics. Like most spiders, *Aphantochilus rogersi* dissolves the tissues of its prey with infected venom and then sucks up the slurry (Ecuador).



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What's That Smell? The True Odor of The Odorous House

You've probably told many clients that the odorous house ant smells like rotten coconut when it's crushed, after which your client inevitably give you a "look" – one that tells you they think it's disgusting that you readily squish ants!

While the freshly crushed odorous house ant does produce a definite odor, describing it as "rotten coconut" never said a lot to me, namely because I have never smelled a rotten coconut! I have always thought the odorous house ant produced a clean smell, almost like glass cleaner, with more of a "punch." In an effort to provide more accurate information on just how the odorous house ant smells, Clint Penick and Adrian Smith conducted a recent study investigating the volatile compounds released by the odorous house ant and the items most commonly associated with their scent.

The vast majority of online sources identify the odor of the odorous house ant as "coconut-like" (Fig. 1A). This ran counter to the results of a smell test that Penick and Smith conducted as part of their study. In the smell test, participants most identified the smell of a freshly crushed odorous house ant as "blue cheese," followed by "other" as a close second (Fig. 1B). The most common write-in candidate for "other" was cleaning spray (very similar to way I have always described the smell of odorous house ants!).

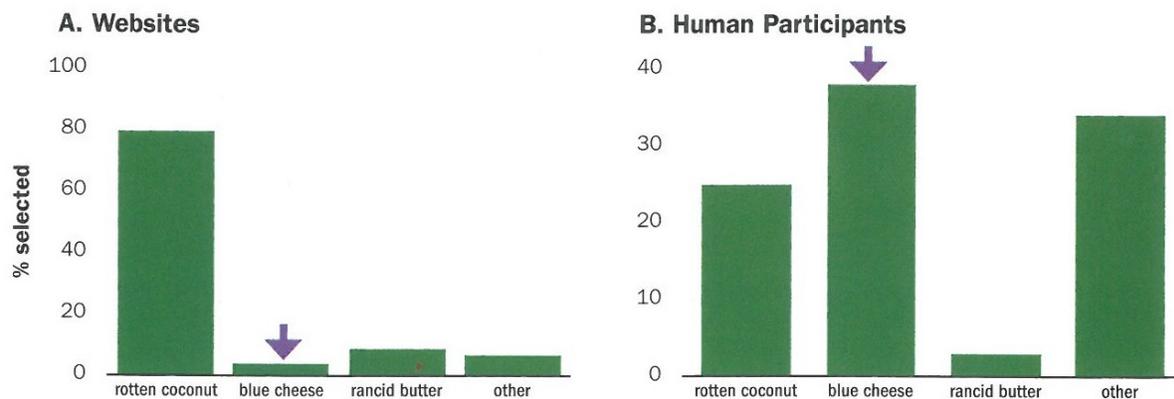


Fig. 1. While 80% of websites reported the scent of the odorous house ant as "rotten coconut" (a), most participants in the smell test chose "blue cheese" (b). Results are based on data collected from 53 Web sites and 143 participants from North Carolina's BugFest.

Odorous House Ants, cont.

When Penick and Smith also used gas chromatography-mass spectrometry to determine the exact chemical composition of the odorous house ant scent. They found that the major component of the odorous house ant scent was a methyl ketone (Fig. 2) that has actually been identified in other ant species as well. As it turns out, the most prominent compounds associated with blue cheese are also methyl ketones. No methyl ketones were found in fresh coconut. Once coconut turned rotten, however, it released the same methyl ketones found in blue cheese. Interestingly, the microbes that turn coconut oil rancid – *Penicillium* mold – are the very same microbes used to make blue cheese!

So, what exactly IS that smell? According to Penick and Smith's results, the odorous house ant odor points to blue cheese, with a cautious nod to rotten coconut. They emphasized cautious because it's not the "coconut" in rotten coconut that smells like the odorous house ant, but the "rotten." To sum up, odorous house ants do not smell like coconuts. They smell like blue cheese. Or you could say that they smell like coconuts that have been colonized by *Penicillium* mold that causes the coconut oil to produce an odor similar to blue cheese.

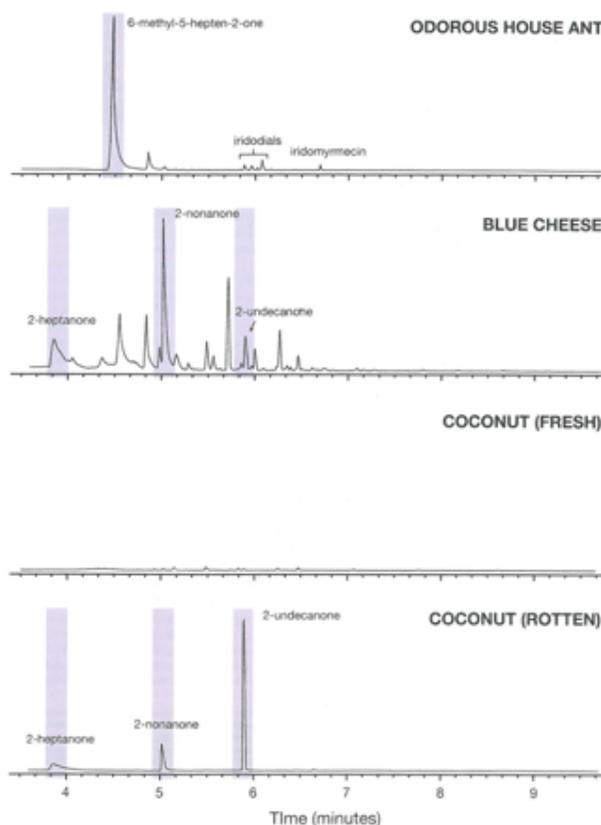


Fig. 2. Each peak from the gas chromatographs above corresponds with a specific chemical compound, and the size of the peak represents the relative abundance of that compound. Methyl ketones (shaded) were present in the odorous house ant, blue cheese, and rotten coconut, but fresh coconut had no prominent compounds.