

*“Blood is really warm,  
it's like drinking hot chocolate  
but with more screaming.”*

— Ryan Mecum, *Zombie Haiku: Good Poetry for Your...Brains*

The calendar gives me the tantalizing promise that summer comes around every year at about the same time, but I don't completely believe it until I experience it. Now that it is here again, after months of waiting, I'm grateful. However early summer holds just enough downsides to keep us humble. After all, if everything was always rainbows and unicorns, wouldn't we soon forget how much we are blessed?

One of the things I could do without this time of year are tiny little arachnids that live off of my favorite creatures' bodily fluids. No, this time I'm not talking about [Varroa destructor](#), I'm talking about ticks that get on humans. At my place, I have to travel through tall grass to get to my bee hives. In May and June that often results in me picking up unwanted hitchhikers who want to suck my blood. I don't want them to do that. What can be done? If we can devote volumes on how to keep miniature vampires off of our honey bees, shouldn't we take a minute to discuss how to keep their cousins off of us as we try to bee-keep?

### The problem

It isn't just that ticks don't respect our desire to not share with them (“no” means “no!”). If that were the case, we could have a little sympathy for their condition; after all, they have to feed somehow. The really worrisome thing about ticks is that they transmit disease. The [Centers for Disease Control](#) (CDC) says that ticks carry a mind-boggling number of pathogens and associated diseases, most that I had never even heard of. They include:

- Anaplasmosis
- Babesiosis
- Borrelia mayonii infection
- Borrelia miyamotoi infection
- Bourbon virus infection
- Colorado tick fever



In a behavior called **questing**, ticks climb to the top of grass blades or leaf tips, hold out their front legs and patiently wait for a victim to pass by. Photo: Centers for Disease Control

- Ehrlichiosis
- Heartland virus infection
- Lyme disease
- Powassan disease
- Rickettsia parkeri rickettsiosis infection
- Rocky Mountain spotted fever
- STARI (Southern tick-associated rash illness)
- Tickborne relapsing fever (TBRF)
- Tularemia
- 364D rickettsiosis
- alpha-gal allergy (red meat allergy)

A few of these diseases are tick-species-specific and aren't found in our area, but we have plenty to go around. Of the eight tick species described by CDC (American dog tick, blacklegged tick, brown dog tick, Gulf Coast tick, Lone Star tick, longhorned tick, Rocky Mountain wood tick and Western blacklegged tick), North Carolina has all of them except for two: Rocky Mountain wood tick and Western blacklegged tick.

The Asian longhorned tick is a new one. It was first found in the US in 2017 and in North Carolina in 2018. As of February 2020, it is in eleven states, from Connecticut to Arkansas. Its spread is reminiscent of the rapidity with which Varroa mites raced across the US, not by their own power but by being carried by their hosts.

### How ticks do their thing

If they weren't such nasty little creatures, there would be a lot to admire in the way that ticks successfully go about their tick business. They are fit-for-purpose and have the patience of Job.

Ticks have four life stages: egg, larvae, nymph and adult. The larvae, nymph and adult stages all look the same – they look like ticks – but larvae and nymphs are smaller than adults. Also, larvae only have six legs instead of eight.

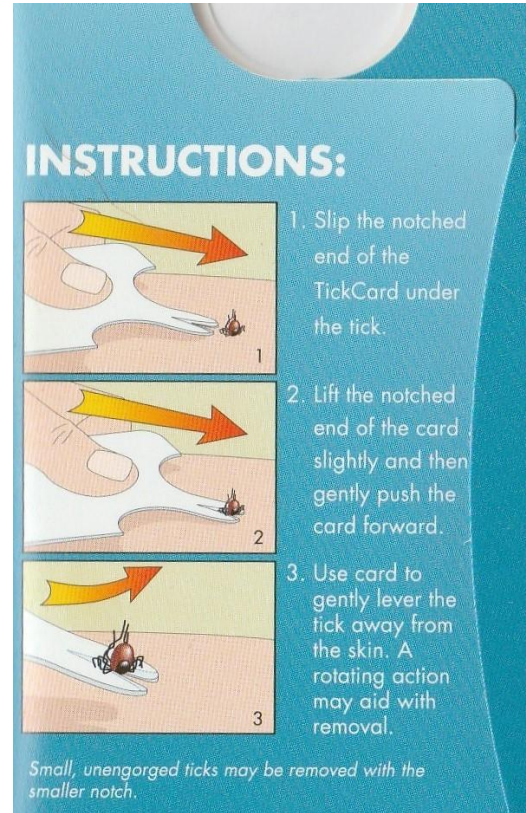
In each of the stages (except for egg), the tick must consume a blood meal in order to progress to the next stage. In most species, but not all, the blood meal is taken from a different animal each time.

Ticks hunt for prey by detecting vibrations, body heat, breath, body odors, moisture and even shadows. They climb to the tips of grasses and leaves along well-used trails and extend their front legs in a grasping stance, then patiently wait. If after days, weeks or months nothing comes by, the tick will retreat to a secluded, protected place until trying again next year.

When a target does brush past, the tick grabs hold. They'll climb upwards on the animal, seeking thin, tender skin. The tick's mouthparts are barbed, securing the tick to the victim. In addition, they produce a glue that binds the mouth to the victim's skin. To top it off, the tick spits out an anesthetic so that the victim isn't aware that it has been bitten.

Both male and female ticks feed on blood, although the female feeds longer, 8 to 12 days. She'll increase up to 100 times in size, ending up looking like a plump raisin, before falling off the host.

An engorged adult female then lays an egg mass, containing thousands of eggs, in a secluded place such as a crevice or underneath leaves. She then dies. The eggs hatch in about two weeks and everything starts over again. The whole life cycle can take a couple of months to a couple of years, depending on the species.



Instructions for using a Safecard.

### Removing ticks

Care should be taken when removing ticks that are attached and feeding. Carelessly grabbing a full one with your fingers can easily cause the tick's contents, diseases and all, to be pumped back into your own body. What we want to do is remove the entire thing without squishing it. Pointy-nose tweezers (not flat-nose ones) are great for this job; be sure to grab the tick by the head, not the body.

Another tool that has worked very well for me is called a Safecard. It looks like a credit card with a beveled V cut into one corner. Place it flat on the skin with the tick in the V, then push. The tick, including the head, is elegantly separated from the skin.

### Keeping them off in the first place

For an applied-to-you repellent, picaridin- and DEET-containing products are good choices. There are lots of other options too, but, as with any pesticide, make sure your choice is both legal and effective. EPA has a page specifically

devoted to choosing tick and mosquito repellents (<https://www.epa.gov/insect-repellents>).

If you have an ongoing need to be protected, clothing treated with permethrin is a great option. You can buy socks, gaiters etc. that are already treated or you can apply the treatment yourself. Since ticks start low and move up, treating shoes and socks may be all that is needed. A spray-on application should last six weeks and through six washings of the clothing. Note that permethrin should not be applied directly to your skin the way that DEET and other products are. It isn't that the permethrin is harmful to humans – it isn't – the problem is that it breaks down and loses effectiveness within 15 minutes on the skin so you aren't being protected.

Another option is a clip-on ultrasonic device like the product brand Tickless. It is about the size of a key fob and clips on the outside of your clothing. The advertisements say the device lasts up to 2 years. I have not used it personally so I don't know if it also disturbs our bees. If anyone has experience using one of these, I would love to know the answer! Perhaps they are great for camping and hiking but not in the bee yard.

### Getting rid of them entirely

One way to reduce the overall risk of being tick-bit is to keep the grass cut low in the areas of concern. Ticks' hunting behavior requires tall grass for it to be effective.

There are also acaricides that can be applied to a yard that kill ticks. Refer to the [2020 North Carolina Agricultural Chemicals Manual](#), Table 5-12B. *Community Pest Control – Mosquito Immatures and Other Pests* (page 145) for legal products, their application rates and precautions. Carefully compare those products with the [NCDA&CS Pesticide Toxicity to Bees "Traffic Light" reference guide](#). This guide is an extremely useful resource for beekeepers because not only does it categorize products with respect to whether they are highly toxic, mildly toxic and relatively nontoxic to honey bees, it includes the time, in hours,

that it takes for substances to become relatively nontoxic (the RT25 number). So, for example, a substance that is highly toxic to bees could still be a great choice if it is applied at dusk and becomes nontoxic in just a few hours. In that example, the bees would never be at risk but the ticks would be history. Conversely, while it is excellent as a clothing treatment (our bees shouldn't be on our socks), we should avoid using permethrin as a broadcast treatment in our apiary because it is highly toxic to bees and lasts a very long time.

### Even better information

For advice much better than the quick summary here, refer to the following experts:

- Centers for Disease Control ticks page: <https://www.cdc.gov/ticks/index.html>
- NCSU Extension page: <https://content.ces.ncsu.edu/ticks-and-tick-borne-diseases>
- Sawyer repellents FAQs: <https://sawyer.com/insect-repellents/faqs/>
- 2020 North Carolina Agricultural Chemicals Manual: <https://content.ces.ncsu.edu/north-carolina-agricultural-chemicals-manual>
- NCDA&CS Pesticide Toxicity to Bees "Traffic Light": <http://www.ncagr.gov/pollinators/documents/Bee%20Pesticide%20Risk%20Traffic%20Light%203-2-17.pdf>

*Special thanks to Patrick Jones, Deputy Director, NCDA&CS Structural Pest Control and Pesticides Division, for providing information on the NC Agricultural Chemicals Manual and the Toxicity to Bees Traffic Light reference guide.*

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