

## **Ticks and Mosquitoes Are Going to Have a Field Day, Even If We Are Not (2020)**

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*The usual disclaimer: this document should not be considered actual medical advice. Questions or concerns should be discussed with one's health-care provider.*

**Why is this an issue?** There are 4 species of ticks and 3 species of mosquitoes in Virginia that are known to spread disease to humans. Ticks and mosquitoes are the top two insect vectors of human disease. We are human; we wander around in tall grass; we wander around near pools of water and piles of leaves; we smell good to bugs. We are hams; we operate outside for long periods, including dawn, dusk, night.

**Executive summary:** Avoid ticks and mosquitoes. Do careful tick checks. Remove ticks carefully. Remain alert for fevers, *with or without rashes*, after exposure

**Set-up tips:** Not in tall grass. Not near piles of leaves or compost heaps.

**Style tips for the bug-averse:** Do not apply insect repellents (e.g. DEET) under clothing. Apply insect repellent to exposed skin and repellent and/or insecticide (e.g. permethrin) to clothes. Wear long-sleeved shirts and long pants (yes, I know it is hot and humid). Tuck pants into socks/boots. Wear light-colored clothing (makes ticks easier to spot). Ticks start on your shoes and crawl up, but if your pants are tucked in, they have to work harder to find your skin, and they are more exposed to the permethrin (see below), and if you tuck your shirt into your pants, they have an even longer walk. Mosquitoes do not bite through clothing.

**Insect repellents:** DEET (~30%, e.g. Deep Woods Off®) is traditionally considered the best bet. It can be toxic to babies and to the elderly (uh, if the shoe fits...), although recent opinion is that it is less toxic than initially thought. Consumer Reports (CR) has tested a number of nonDEET repellents and found several to be as effective as DEET against ticks. These are based on picaridin 20% or lemon eucalyptus 30%. CR has also evaluated mosquito repellents and again found DEET and picaridin to be effective. I have no conflicts of interest to report, but I note that CR recommended: Sawyer Fisherman's Formula Picaridin®, Repel Lemon Eucalyptus®, Repel Scented Family®, and Natrepel 8 hour®. Some other organizations (e.g. apparently, the FDA) suggest that picaridin is less effective against ticks than it is against mosquitoes. If you are using both insect repellent and sunscreen, apply the sunscreen first.

**Insecticides:** Recommended: permethrin, which is less toxic than DEET, can be sprayed on clothing or purchased built in, and lasts through several washings. It is apparently not as effective as a repellent, but it may kill bugs that have landed on you your clothing before they get a chance to bite (like on that long crawl up your tucked in long pants).

**If you notice a tick, remove it on-site. Gentle removal!** Do not squeeze the tick. Rocky Mountain Spotted Fever and tularemia have been contracted by squishing. Do not apply Vaseline®. Do not apply gasoline, ether, or lighter fluid. Do not apply a lighted cigarette or the antenna tip of a keyed-down HT. Definitely do not apply gasoline, ether, or lighter fluid and then apply a lighted cigarette. If the tick's head remains in place, do not manipulate it.

**Afterward:** Remove clothing promptly (really though, do this at home, not on-site), which facilitates a careful tick check, and which can be more effective (and more fun) with help. Note especially the thigh, groin, axilla, and scalp. Launder clothing, to remove any DEET (and sweat – remember those long sleeves), and dry on high heat in order to kill any ticks. Bathe within 2 hours (for esthetics if nothing else). Circle any tick bites, and follow them daily. Some initial redness and itching around a bite do not in themselves indicate a serious problem, but an expanding area of redness should elicit attention. Promptness is indeed a virtue, but note that ticks must be attached for: >24 hours to transmit Lyme disease, 24 hours for ehrlichiosis and anaplasmosis (Rocky Mountain Spotless Fevers), 2-6 hours for Rocky Mountain Spotted Fever, but probably only 15 minutes for Powassan (very rare for now).

**Bonus topics:** New tick in town (this one is real): *Haemaphysalis longicornis*, the Asian Longhorned Tick, can spread 5 infections. *Vespa mandarinia*, the Giant Asian Hornet, more fancifully, the Murder Hornet (this one is of little concern, yet!). A Japanese delicacy, but a real threat to honeybees. Red meat allergy, occurring 3-6 hrs after eating, generally manifests as rash, sometimes stomach pain, or rarely, difficulty breathing.

**Final words:** Don't confuse ticks with chiggers, which are larval mites and although annoying, do not spread disease ***Take seriously any fever in Virginia in the summertime even without a rash or history of tick bite!*** This advice precedes COVID-19 but is still true, even if you have been practicing careful social distancing. Local transmission of Zika or dengue is not yet a problem in Virginia, but with the large number of imported cases, it is probably only a matter of time. Stay tuned. Virginian mosquitoes have already spread West Nile and chikungunya locally. Good luck at Field Day. 73.