

No Mosquito Spraying



The Connection

While some trees such as oaks are pollinated by wind, most trees need the help of insects and birds to fruit. Some of Atlanta's most common trees such as cherries, plums, persimmons, linden, paw paw, maples, sweetgum, serviceberry, and black gum all need insects for pollination. While mosquitos are uncomfortable and can carry diseases (all important things to avoid), spraying for mosquitos harms other pollinators and even friendly amphibians such as salamanders! Give alternative mosquito control a try and stop spraying. Consider trying these other less harmful ways to control your mosquito population.



Take Action

Do not spray for mosquitoes for 1 year and earn 1 acorn.

Acorns



Instructions

- ☐ Do not spray for mosquitoes on the property (alternative methods suggested below)

Mosquito Spraying Alternatives

Mosquito Biology and Health Risks

It is first important to understand a little about mosquito biology when choosing mosquito prevention options and then balance those options against your health risks. First, there are 63 species of mosquitoes in the State of Georgia but only 10 -12 of these species are considered pests to humans, and not all of them are found in the Atlanta Area. Only *some* of these species carry diseases of concern to humans living in Georgia including the most common diseases such as West Nile, LaCrosse, Eastern equine, and Zika. Of course, there are many other mosquito-transmitted diseases around the globe, but these are the most likely diseases of concern for the greater Atlanta area (Gray and Noblet, 2016).

For Zika, the *Aedes aegypti* and *Aedes albopictus* species of mosquitoes are the primary spreaders of this virus in Georgia and are generally known as the “yellow fever mosquito” or “tiger mosquito” respectively. For West Nile, the *Culex pipiens* species is the primary spreader and is generally known as the “house mosquito.” For LaCrosse, the *Aedes triseriatus* species of mosquitoes are the primary spreader and are generally known as the “eastern tree-hole mosquitoes.” For Eastern equine, the *Culiseta melanura* species of mosquito is the primary spreader and is generally known as the “black-tailed mosquito.” (Gray and Noblet, 2016) and (Center for Disease Control and Prevention, 2021b).

We recommend consulting the CDC for the most up-to-date information however below is a summary from 2020 using the most recent data available at the time of writing. In the state of Georgia locally acquired statistics are found at wwwn.cdc.gov/arboNET/Maps/ADB_Diseases_Map/index.html:

- Eastern equine (0) cases with (0) deaths (ArboNET, 2021)
- La Cross Virus (1) case with (0) deaths (ArboNET, 2022)
- West Nile Virus (8) cases with (1) death (ArboNET, 2021b)
- Zika Virus (0) cases with (0) deaths (Center for Disease Control and Prevention, 2021)

Generally, adult female mosquitoes lay eggs (~100-200 eggs) near water (not directly in water and often on the inner walls of containers) which hatch in a few days to months once covered with water. It takes the mosquito hatchling as few as 5 and as much as 9 days to develop into a flying adult and emerge from the water. You might be surprised to learn that adult mosquitoes do not exclusively consume blood, but instead, nectar on flowers, and only the females feed on blood to produce eggs. Adult male mosquitoes typically live short lives, ~6 days but females can live for weeks or months (depending on the species). During the day mosquitoes often rest in shady places around shrubs near the ground, but they do not breed there (Gray and Noblet, 2016).

Some mosquitoes are not strong fliers, meaning they cannot fly well during heavy wind and usually seek shelter under windy conditions but they can fly across some distance. Mosquitoes can fly a variable amount depending on the species. Most mosquitoes can fly 0.5 - 1.5 miles from where they hatched but some species only fly a few hundred feet (a couple of blocks). They also prefer different types of habitats, and food sources, and are active at different times. Below are some of the common species of mosquitoes in the Atlanta area (or are the species that might carry diseases). Keeping an eye on what type of mosquitoes you have can help you identify if it is a problem you can control locally on the property (especially by working in tandem with neighbors), or if they are mosquitoes that might be flying in from further away.

Aedes aegypti (yellow fever mosquito)



"Adult yellow fever mosquito, *Aedes aegypti* (Linnaeus), showing the white "lyre" shape on the dorsal side of the thorax. Photograph by Paul Howell and Frank Hadley Collins, Center for Disease Control Public Health Image Library" (Zetteland Kaufman, 2019)

- Activity Time: Day-biting but most active at dawn and dusk
- Habitat: Highly associated with human environment "container-habiting"
- Eggs: laid on sides of containers
- Preferred Blood Meal: humans
- Flight Range: A few hundred feet (a couple of blocks)
- Disease Concern: Zika, LaCrosse, Eastern equine
- Appearance: They appear striped on their legs and look similar to *Aedes albopictus* (see below) but with violin markings the middle of the thorax (upper body).

Aedes albopictus (tiger mosquito)



"Adult Asian tiger mosquito, *Aedes albopictus* (Skuse). Photograph by J.L. Castner, the University of Florida." (Rios and Maruniak, 2018)

- Note: *this is probably the most common species in human areas around Atlanta*
- Activity Time: Day-biting but most active at dawn and dusk
- Habitat: Highly associated with human environment "container-habiting"
- Eggs: laid on sides of containers
- Preferred Blood Meal: humans
- Flight Range: A few hundred feet (a couple of blocks)
- Disease Concern: Zika (but less likely than *Aedes aegypti*), Eastern equine
- Appearance: They appear striped on their legs and look similar to *Aedes aegypti* (see below) but with a center white strip down the middle of the thorax (upper body).

Anopheles quadrimaculatus (malaria mosquito)



“Adult female common malaria mosquito, *Anopheles quadrimaculatus* Say. Photograph by Sean McCann, the University of Florida.” (Rios and Connelly, 2018)

- Activity Time: Mostly night-biting right after sunset
- Habitat: Freshwater streams, ponds, lakes
- Eggs: laid on the water’s surface
- Preferred Blood Meal: mammals including humans (not frequently)
- Flight Range: less than 1 mile
- Disease Concern: Malaria (but not in the US where the disease is eradicated)
- Appearance: They appear dark brown and covered in hairs

Culex pipiens and *Culex quinquefasciatus* (northern and

southern house mosquito)



"Adult female northern house mosquito *Culex pipiens* Linnaeus. Photograph by Lawrence E. Reeves, University of Florida." (Alomar, Burkett-Cadena, and Mathias, 2020).

- Activity Time: Night-biting but most during the hours around sunset
- Habitat: Stagnant bodies of water with organic matter (natural or artificial)
- Eggs: laid on the surface of the water
- Preferred Blood Meal: they prefer birds but will bite humans
- Flight Range: Up to 2 miles
- Disease Concern: West Nile Virus
- Appearance: They appear light brown but with some banding on the abdomen (lower body).

Aedes triseriatus (Eastern tree hole mosquito)



“Adult female *Aedes triseriatus*. Credit: N. D. Burkett-Cadena, UF/IFAS”
(Buckner and Lounibos, 2021).

- Activity Time: Day-biting but most active during dawn and dusk
- Habitat: Wooded areas with tree cavities that hold water or artificial containers
- Eggs: laid on sides of container or hole
- Preferred Blood Meal: they prefer small mammals like squirrels but will bite humans
- Flight Range: Few hundred yards
- Disease Concern: LaCrosse
- Appearance: They appear black and silver striped on their body with solid black legs.

Culiseta melanura (black-tailed mosquito)



"Adult female Culiseta melanura. Photograph by C. Roxanne Connelly, the University of Florida." (Buckner, Showman, and Connelly, 2019).

- Activity Time: Mostly night-biting but most during the hours around sunset and sunrise
- Habitat: Lowland swampy acidic water, must be near a wetland
- Eggs: laid on the water's surface
- Preferred Blood Meal: they prefer birds but will bite humans
- Flight Range: 2-5 miles
- Disease Concern: Eastern equine
- Appearance: They appear light brown with a bluntly rounded abdomen

What is Mosquito Spraying?

Regardless of whether the insecticide is "naturally derived" or not, it is still an insecticide aimed at killing insects. Typically these are pyrethroids with traditional ones being synthetic and "green" ones being botanically derived, but chemically they are the same. While some insecticides are better suited for targeting mosquitoes with less collateral damage, this does not mean they will not kill other insects flat out. Despite what the service claims, they cannot prevent the effect it will have on other insects like fireflies, butterflies, beetles, bees, or even birds and amphibians. For these reasons, it is important to choose other tactics before resorting to mosquito spraying. To start, check out the suggested prevention and protection tips below. (Xerces Society, n.d.).

Mosquito Prevention

1. **Eliminate Standing Water**: mosquitoes can breed in any amount of standing water exposed to air. Check this list and prevent standing water in all possible locations including (DeKalb County Board of Health, 2021):

- a. Air conditioner
- b. Ashtrays
- c. Birdbaths
- d. Boat and boat cover
- e. Buckets, pans, or cans
- f. Miscellaneous containers
- g. Decorative water features, foundation, and ponds
- h. Ditches/lows spot in the yard/unfilled holes
- i. Drink cans, bottles, trash, litter, debris
- j. English Ivy: English Ivy has a large, waxy leaf that can hold water which some species of mosquitoes can breed in. To remove English Ivy you can reference our [remove Non-Native plants goal](#).
- k. Flat roofs on sheds/garages or other structures
- l. Flower pots and saucers
- m. Grill tops and grill covers
- n. Southern magnolia leaves (other trees and plant leaves are not a problem but Southern Magnolia leaves are big and glossy and can hold water longer)
- o. Pet bowls
- p. Rain barrels or cisterns (if open to the air)
- q. Sheet metal
- r. Swimming pools, spas, pool/spa covers, above-ground kiddie pools
- s. Tarps and plastic sheeting
- t. Tires
- u. Toys and play equipment
- v. Trash and recycling bin tops
- w. Truck beds or trailer beds or parked cars that do not move often and car covers
- x. Wheelbarrows or miscellaneous tools
- y. This can be rain barrels, birdbaths, buckets, pots without drainage holes, saucers, on top of AC appliances, tarps or plastic on the ground, long-standing puddles, clogged gutters, garden fountains, etc. Eliminate as many of these sources of water as possible and clean your gutters regularly.

2. **Use Mosquito Dunks:** for any remaining water locations that you cannot eliminate (see above), you should either manually drain regularly (every 3 days or so) OR add a product calls a mosquito dunk. This product is also an insecticide but, unlike pyrethroids, is a larvacide that targets the mosquito larvae living in the standing water. It will only affect any insect

larvae living in the water and has little collateral damage when in human-made garden water sources. For gutters, you need to put the dunks into small bags and clip them in place so they do not wash out of your gutters in the next rain. These should NEVER be added to natural water sources like creeks, streams, rivers, or ponds. These dunks can be purchased at any hardware store and should be distributed via the instructions on the package and typically need to be replaced monthly. In the Atlanta area, you should begin using these products once the temperature is warm in the spring (50 degrees as a daily low) and continue until frost.

3. **Use Ovitrap:** these traps work similarly to the mosquito dunks, by targeting the larvae but without the use of an insecticide. Instead, these traps are hung around the property and create an appealing environment for mosquitoes by enticing them with water. The adult mosquitoes lay their eggs on the moist mesh and once they hatch, the larvae fall through to the water. However, once the larvae emerge as adults they are trapped inside by the mesh barrier and die. These are reusable and you can even make your own (or a similar type of trap with dunks) with the options below.
 - a. Doug Tallamy Mosquito Trap:
www.youtube.com/watch?v=TqcDZDNtP-0&t=1s
4. **Talk with neighbors respectfully:** These techniques work better when neighbors are also on board with eliminating standing water, using mosquito dunks, and trying ovitraps.

Mosquito Protection

1. **Avoid activity time:** Most mosquitoes are the most active during dawn and dusk, if you are highly sensitive or have a lot of mosquitoes you can try to avoid these peak windows of time.
2. **Use screens:** prevent mosquitoes from coming inside by keeping windows and doors shut or applying screens to open windows and doors.
3. **Use a fan:** As mentioned in mosquito biology, some mosquitoes do not fly well in heavy wind. You can recreate this with a fan. If you have a deck or patio that you like to relax in, consider bringing out a box fan to help circulate the air.
4. **Apply insect repellent:** DEET is the strongest repellent and lasts the longest, however, both Picaridin and Oil of Lemon Eucalyptus are very effective at preventing bites when tested but you have to reapply more

frequently than DEET. Studies also show that DEET alternatives are more effective with some species of mosquitoes than others. It is recommended to use only EPA-registered insect repellents:

- a. DEET
 - b. Picaridin (known as KBR 3023 and icaridin outside the US)
 - c. IR3535
 - d. Oil of lemon eucalyptus (OLE)
 - e. Para-menthane-diol (PMD)
 - f. 2-undecanone
5. **Clothing:** You can wear long sleeves and pants or even mosquito net clothing to protect your skin from mosquitoes.
 6. **Citronella:** You can burn citronella oil to help deter mosquitoes but this is not highly effective at repelling all types of mosquitoes. For example, one study on citronella oil protected *Aedes* species for 1.5 hours versus 5 hours against *Culex* species (Kongkaew *et. al*, 2011).
 1. **Install a bat house:** Bats are primary predators of night-flying insects. They can eat as much as half their body weight or more each night. One bat can consume up to 300-500 or more mosquitoes and mosquito-sized insects in one hour. See the “Wildlife Houses” goal for more information.
 7. **Children:** The CDC has some special recommendations to protect children from mosquitoes and lists child-approved repellents on their website:
www.cdc.gov/zika/prevention/prevent-mosquito-bites.html

Printable Flyers from Beecatur



MOSQUITO SPRAYING KILLS BEES

Residential mosquito control is typically accomplished by spraying, fogging or misting broad-spectrum, non-targeted insecticides on plants and shrubs around the home. In addition to killing adult mosquitoes, these pesticide treatments can also kill many beneficial insects like bees, butterflies, moths, ladybugs, dragonflies, lightning bugs and more.

Don't Turn Your Backyard Into A Graveyard!

Urban and suburban habitats are vital to supporting numerous beneficial pollinator species. Before calling a mosquito control service, consider a variety of other pest management strategies first, including:

- Regularly eliminating sources of standing water (flower pots, pet bowls, etc.) where mosquitoes breed
- Keeping rain gutters clear of organic debris
- Adding mosquito "dunks" (BTI) to fountains, ornamental ponds, etc. (These larvicides kill mosquitoes before they become biting adults.)
- Maintaining your property to limit dense undergrowth that can harbor adult mosquitoes

Collateral Damage

It's easy to see the deadly effects of residential mosquito spraying on honey bee colonies belonging to backyard beekeepers. But the U.S. is home to some 4,000 species of native bees, most of which are solitary and nest in the ground or in plant stems. These bees and other pollinators are the unseen victims of mosquito barrier treatments and misting systems.



A local honey bee colony killed by common backyard mosquito spraying pesticides, verified by Georgia Department of Agriculture.

Don't Believe The Hype

Terms like "green," "biodegradable," "natural," "derived from flowers," etc. are often used to market residential mosquito control services. These buzz words are intended to make consumers feel more comfortable applying pesticide barrier treatments to their properties. Commonly used pyrethroid insecticides are enhanced, synthetic versions of natural pyrethrins, which – while originally derived from Chrysanthemum flowers – are deadly to most insects.

Protect Yourself From Mosquitoes

(The same way you protect yourself from the sun!)



< Protect Your Skin

You wouldn't go to the beach without your sunblock! Apply safe, effective insect repellents when outside during mosquito season. Don't like DEET? Choose a product containing Picaridin or Eucalyptus oil.

Timing is Everything

Just like you should avoid sun exposure during peak hours, avoid mosquitoes by limiting activities during times when mosquitoes are most active (dusk and dawn).



< Just Don't Do It

The very young and the very old should take extra precautions – whether out in the sun or being exposed to mosquitoes.



< Keep Your Cool

Relaxing under a fan is perfect on a hot, sunny day. Limit mosquito bites by keeping the air moving when chilling outdoors.



Dress Appropriately >

Rash guards and hats keep you sunburn free during a day at the pool. Protect yourself from biting mosquitoes by wearing loose fitting long sleeves or pants.

LEARN MORE:

BeecaturGA.com/mosquito-spraying



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From Our Partner: Beecatur Georgia

"In July 2016, the City of Decatur became the first Bee City USA in Georgia. The designation was a collaborative effort between the City of Decatur, Wylde Center, and community residents concerned about the welfare of bees. As a Bee City, Decatur affirms its support for creating sustainable habitats for pollinators and educating residents about the critical role bees play in our ecosystem. "Beecatur" plans and presents bee-related educational opportunities throughout the year.

Bee City USA® is an initiative of the Xerces Society for Invertebrate Conservation, an international nonprofit organization that protects wildlife through the conservation of invertebrates and their habitats. The Bee City USA program endorses a set of commitments, defined via city resolution, for creating sustainable habitats for pollinators, which are vital to feeding our planet." (Beecatur, n.d.). To learn more and get involved please visit:

- Website: www.beecaturga.com/

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