



# Mosquitoes



Adult Asian tiger mosquito

## description

Mosquitoes are small (~1/4 inch) flies that play an important role in food webs, but can become a nuisance when abundant, and in worst cases spread disease such as West Nile Virus. Only females bite because the extra protein and iron is necessary to produce the eggs



Mosquito larvae in aquatic stage

## habitat

Reducing mosquito populations is best approached before they become adults. Awareness of how to how to limit breeding sites can drastically reduce their numbers around our homes without harming other living things. Asian tiger mosquitoes rarely need to fly more than 50 feet to bite and their average lifetime flight distance is less than 200 yards!

## Least Toxic Solutions...

### Reduce Mosquito Breeding Sites

- Eliminate persistent standing water near the home such as poorly drained gutters, buckets, A/C condensate, old tires, tarps, potted plant saucers, and other small containers
- Replace water every day in pet dishes, and at least once every four days in bird baths
- Repair leaky outside faucets and pipes
- Ensure that tree cavities do not hold water for more than four days
- Store buckets, wheelbarrows, pots and other containers upside down



### Manage Potential Habitat

- Install screens on rain water harvesting cisterns and French drains
- *Gambusia affinis*, a mosquito eating fish, can be bought at some local nurseries for placement in water gardens and small ponds
- Use products with *Bacillus thuringiensis* var. *israeliensis* to control mosquitoes in rain barrels and other small containers of water near your home. These products are much less likely to affect pollinators, other beneficial insects and wildlife. These products are not effective in large or flowing waters, so do not use in creeks or ponds

### Prevent Bites

- Be aware that peak activity for many mosquito species occurs at dusk and dawn
- Wear light-colored, loose-fitting clothing when outside, and minimize skin exposure
- Keep window and door screens on your home in good condition
- Sitting in the strong air current of a fan can reduce getting bit because mosquitos are weak fliers.
- Mosquito repellents can be effective when used properly. Apply to clothing and exposed skin according to label instructions. Once indoors, wash treated skin with soap and water. For recommendations on effectiveness and precautions, research reputable websites, such as EPA [www2.epa.gov/insect-repellents](http://www2.epa.gov/insect-repellents) or the CDC [www.cdc.gov/westnile/faq/repellent.html](http://www.cdc.gov/westnile/faq/repellent.html)
- Citronella candles can provide short-term relief within a radius of about 6 feet per candle outdoors. Do not use indoors

**Check with your vet about keeping your pets protected from mosquitoes that can carry heartworms**

*If you feel that your mosquito problem is not alleviated by the above recommendations, then consider having a professional from the City of Austin Rodent and Vector Control program audit your home (<http://www.austintexas.gov/department/rodent-and-vector-control>) ; 512-978-0370*

**The American Academy of Pediatrics provides recommendations for using insect repellents on children**

For more information, visit the Center for Disease Control website at [www.cdc.gov](http://www.cdc.gov)

## The two best things you can do to avoid mosquito bites when outdoors:

- 1) Wear insect repellent and
- 2) Empty all outdoor items around your house that hold any amount of water

**Avoid electric bug zappers, mosquito foggers, and misters - they may inadvertently hurt or kill beneficial insects and other wildlife. Studies have shown "bug zappers" are not effective on mosquitoes.**



Green anole: Wendy VanDyk Evans, Bugwood.org



Neon skimmer



Black-chinned hummingbird

## Least Toxic Products...

### Larvicides:

- *Bacillus thuringiensis* var. *israeliensis*, (Bti) is a bacterium which is the active ingredient in products called mosquito "dunks" or "plunks". The bacteria release a biological larvicide that kills aquatic mosquito larvae in small stagnant pools of water, such as rain barrels and water gardens that are intended to hold water for more than a few days. These products are much less likely to affect beneficial insects like pollinators. These products are not effective in large or flowing waters, so do not use in creeks or big ponds
- *Bacillus sphaericus* is a bacterium that is specific to mosquitoes. It is more effective in polluted water than Bti, but has more limited efficacy against some types of mosquitoes
- Insect growth regulators, such as methoprene can prevent the larvae from turning into an adult

### Adulticides:

Since pesticides vary greatly in toxicity, they should be used very selectively, if at all, and only during the peak time for disease, (July-September) and when mosquitoes are actually present

Pyrethrins and pyrethroids are common active ingredients in residential indoor and outdoor foggers and sprays

- Pyrethrins – a mixture of six chemicals extracted from *Chrysanthemums*. It is a natural insecticide that excites the nervous system and leads to paralysis and death of the insect. They can breakdown within hours or up to days of being exposed to air and sunlight
- Pyrethroids – are synthetic versions of pyrethrins; they last longer and are more light-stable than pyrethrins. They are relatively low cost, are fast-acting, kill insects at low doses and have a lower toxicity to animals and birds compared to organophosphates. Examples are: permethrin, lambda-cyhalothrin, deltamethrin, cyfluthrin, and bifenthrin
- Since pyrethrins and permethrin are toxic to all insects, they may kill beneficial insects such as honeybees, ladybugs, butterflies and other non-target species. In addition, permethrin is very highly toxic to fish
- Piperonyl butoxide is a synergist commonly present in some pesticide formulations. It is moderately to highly toxic to fish, amphibians, and other

aquatic organisms; it is persistence in soil and sediment. May be carcinogenic

- Caution: if pyrethroids are applied to or get in waterways they are toxic to aquatic creatures. They stick tightly to soil, and are being found more frequently in the sediments of urban creeks and streams. Toxicity to aquatic life can affect the food web, impacting birds and mammals too

For more information about mosquitoes see our Creekside Story blog "Call the SWAT team!"

[www.austintexas.gov/blog/call-swat-team](http://www.austintexas.gov/blog/call-swat-team)

For more information about pesticide-related subjects including health risks and toxicology, see The National Pesticide Information Center (NPIC) <http://npic.orst.edu/> (EPA has a cooperative agreement with Oregon State University, which operates NPIC)

See the pesticide label for specific information on its use, storage and disposal. The label is the law.

[www.growgreen.org](http://www.growgreen.org)

City of Austin  
**WATERSHED PROTECTION**  
512-974-2550

TEXAS A&M  
**AGRI LIFE EXTENSION**  
512-854-9600

### Why grow green?

The Grow Green program is based on Integrated Pest Management (IPM) principles that encourage the LEAST TOXIC approach to pesticide and fertilizer use. The goal is to reduce the amount of landscape chemicals that degrade water quality when they run off into waterways or leach into our groundwater.

Grow Green is a partnership between the City of Austin Watershed Protection Department and Texas AgriLife Extension Service.  
Call 512-974-2550 or 512-854-9600 for more information.