

# Public Health

Department of Entomology

## MOSQUITOES IN AND AROUND THE HOME

*Ralph E. Williams, Gary W. Bennett, and Catherine Hill, Purdue Extension Entomologists; and Michael J. Sinsko, Senior Medical Entomologist, Indiana State Dept. of Health*

More than 50 species of mosquitoes are present in Indiana. The biting of most species is simply annoying. However, certain species (especially in the genera *Culex* and *Aedes*) can threaten public health because of their ability to transmit viruses that cause human encephalitis. Several such viruses have caused disease outbreaks in various parts of the U.S. over the last few years. In 1975, a strain of virus produced an epidemic of St. Louis Encephalitis in Indiana causing illness and death in several counties. This virus is transmitted from birds to humans by mosquitoes. A limited number of mosquitoes can transmit the virus, and prime concern is centered on species of *Culex* mosquitoes.

Other mosquito-borne viruses that have been of concern in Indiana include those that are responsible for causing such diseases as La Crosse fever, Eastern equine encephalitis, and Western equine encephalitis. Recent concern has focused on the spread of West Nile virus. With this virus, like many of the other mosquito-borne encephalitis viruses, wild

birds serve as the reservoir. Mosquitoes feed on infected birds and transmit the virus to other birds. Infected birds may become ill and recover or may exhibit no noticeable symptoms. Wild birds may also die of the infection, however. Crow mortality has been high.

The virus becomes widespread in the wild bird population by midsummer, when mosquitoes are abundant. The likelihood that mosquitoes will become infected and transmit the virus to dead-end hosts such as people and horses is highest between July and late October. A few *Culex* species are the probable vectors of West Nile virus. *Aedes albopictus* (Asian tiger mosquito) is also of concern.

### WHERE AND HOW MOSQUITOES DEVELOP

Mosquitoes always develop in water, but the type of breeding place varies with the species of mosquito. Common breeding places are flood waters, woodland pools, slow-moving streams, ditches, marshes, and around the edges of lakes. Mosquitoes may also develop in tree cavities, rain barrels, fish ponds, bird baths, old tires, tin cans, guttering, and catch basins - in other words, in anything that holds water. The extensive breeding of mosquitoes in such



Female mosquito feeding

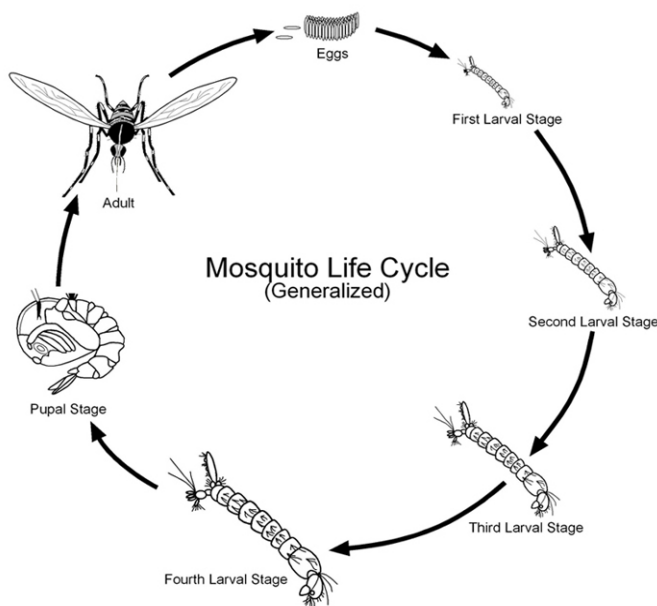


Old tires left on properties are a breeding ground for mosquitoes (*Photo Credit: Purdue University*)



Improperly maintained gutters are habitats for nuisance and vector mosquitoes (*Photo Credit: Purdue University*)

containers has often contributed to disease outbreaks. Mosquitoes lay eggs on the surface of water or in low places where water is likely to accumulate. In these low places, the eggs may hatch in less than 3 days after flooding occurs. The larvae, commonly called “wriggle-tails,” mature in 7-10 days and change into a pupal or “tumbler” stage. Two or three days later, adult mosquitoes emerge. After taking a blood meal, each female lays 100-400 eggs or more. The entire life cycle may be completed in 5-10 days.



Note: Each larval stage is larger than the previous one.  
 Molting occurs between each larval and pupal stage.  
 Larval and pupal stages are aquatic.  
 (*Illustration by: Scott Charlesworth, Purdue University*)

## ELIMINATING BREEDING PLACES

The most effective control of mosquitoes around the home is to prevent them from breeding. This can be done by eliminating or altering existing breeding sites as follows:

1. Destroy or dispose of tin cans, old tires, or any other artificial water containers.
2. Make weekly inspections of the water in flower pots and plant containers. If mosquito larvae are seen, change the water. Also, be sure to loosen soil in flower pots regularly to ensure that water penetrates through the soil instead of forming a stagnant pool on the surface for mosquitoes to breed in.
3. Change the water in bird baths and wading pools once or twice a week. Drain wading pools when not in use.
4. Stock garden and lily ponds with top-feeding minnows.
5. Keep rain gutters unclogged and flat roofs dry.
6. Drain and fill stagnant pools, puddles, ditches, or swampy places around the home and property.
7. Keep margins of small ponds clear of vegetation.
8. Place tight covers over cisterns, cesspools, septic tanks, fire barrels, rain barrels, and tubs where water is stored.
9. Fill all tree holes with sand or mortar, or drain them.
10. Remove all tree stumps that may hold water.

## CONTROLLING MOSQUITOES OUTDOORS

In addition to the elimination of breeding sites, it may be necessary to control adult mosquitoes that migrate in from surrounding areas. The adults like to rest in vegetation. Therefore, do not allow weeds to grow uncontrolled near the home, and keep weeds in nearby lots well trimmed. Leave insecticide treatments to trained mosquito control personnel. Contact your local health department regarding any concerns or interest for chemical treatment.

## CONTROLLING MOSQUITOES INDOORS

Mosquitoes can be prevented in the home by keeping windows and porches tightly screened. Inspect screens in windows, doors, and porches for holes or tears. Likewise, fill gaps around windows and doors with weather-stripping. Space sprays or aerosols containing synergized pyrethrins are effective against mosquitoes found in the home. Use these materials as directed on the label.

## PERSONAL PROTECTION

When possible, wear long-sleeved shirts and long pants with enough thickness to prevent mosquitoes from reaching the skin. Dark colors attract mosquitoes, so wear light tones if you're going to be outside. Mosquitoes are often most active at dawn and dusk. If possible stay indoors or in a tightly screened area to avoid bites at these times. When the female mosquito bites, our body reacts by releasing histamine at the bite site. This causes itching and swelling. Overzealous scratching can break the skin and lead to secondary infection. Apply a topical antihistamine treatment to relieve the itching and swelling. Check label directions for proper use. If an infection develops, seek proper medical attention.

Repellents are very useful in protecting against mosquito bites. Available under various trade names, those repellents that contain the active ingredient diethyl toluamide (DEET) are the most effective. Use only those repellents that are registered by the Environmental Protection Agency (EPA). These are proven to be effective when used according to label directions. Read and follow label directions on any product used. For concern about products for use on children, choose those products that indicate on their labels that they are safe for use on children. Citronella candles are available, but may be of limited effectiveness because of variable outdoor wind movement. A granular repellent containing naphthalene compounds, Mosquito Beater, can be applied on lawns and other mosquito-infested areas. It effectively keeps mosquitoes repelled for several hours.

## DOG HEARTWORM TRANSMISSION

Mosquitoes not only feast on human blood but other target animals as well as birds and amphibians. Generally, animals are not harmed by mosquitoes. However, some species of mosquitoes may play a role in transmitting heartworm in dogs. During times of high infestation, keep pets inside the house, a screened-in kennel or porch area. Avoid walking your pet during prime mosquito "feeding time." Check with a veterinarian for preventative measures for dog heartworm.

READ AND FOLLOW ALL LABEL INSTRUCTIONS. THIS INCLUDES DIRECTIONS FOR USE, PRECAUTIONARY STATEMENTS (HAZARDS TO HUMANS, DOMESTIC ANIMALS, AND ENDANGERED SPECIES), ENVIRONMENTAL HAZARDS, RATES OF APPLICATION, NUMBER OF APPLICATIONS, REENTRY INTERVALS, HARVEST RESTRICTIONS, STORAGE AND DISPOSAL, AND ANY SPECIFIC WARNINGS AND/OR PRECAUTIONS FOR SAFE HANDLING OF THE PESTICIDE.

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