



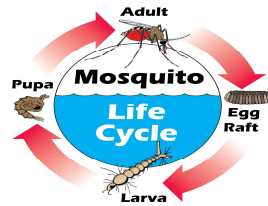
Mosquito Protection

What types of mosquitoes are in Oklahoma?

There are 60 different types (species) of mosquitoes in Oklahoma and 230 species in the United States. The species differ in how they look. They also differ in how they act, such as how aggressive they are when they bite, where they breed, and when they are most active. Another important difference is whether the mosquitoes can live through the winter. Not all mosquitoes transmit diseases like West Nile Virus (WNV).

What is the life cycle of mosquitoes?

Some mosquitoes lay single eggs and some lay eggs in clusters called egg rafts. There are four stages in the mosquito life cycle: egg, larva, pupa, and adult. The adult is an active flying insect, while the larvae only live in water. Depending on the species, eggs are laid either on the surface of water or are deposited on moist soil or other objects that often contain standing water.



What types of mosquitoes transmit West Nile virus?

Over 39 species of mosquitoes have tested positive for West Nile virus including the Asian tiger mosquito. The main species of mosquitoes that cause WNV are the *Culex* mosquitoes. There are two species of *Culex* mosquitoes known to spread WNV: *Culex tarsalis* mosquitoes (sometimes called the “encephalitis” mosquito) and *Culex pipiens quinquefasciatus* (sometimes called the “southern house” mosquito).

What are the “encephalitis” (*Culex tarsalis*) and the “southern house” mosquitoes (*Culex pipiens quinquefasciatus*)?

The “encephalitis” and “southern house” mosquitoes are most active during the early morning and early evening hours. These mosquitoes are unable to fly more than a few feet from where they are born. They lay their eggs in small pools of standing water so they are sometimes called “container” mosquitoes. These *Culex* mosquitoes go from egg to an adult in four to ten days during hot summer months. Adults live for about three weeks. They bite and feed on birds more often than people. These mosquitoes can transmit West Nile virus to humans if they have fed on an infected bird.



Encephalitis Mosquito
Culex tarsalis



Southern House Mosquito
Culex pipiens quinquefasciatus

What is an Asian tiger mosquito (*Aedes albopictus*)?

The Asian tiger mosquito is a rare carrier of West Nile virus and may be associated with the transmission of Zika virus. Zika is primarily spread through the bite of another infected mosquito, the *Aedes aegypti*. The *Aedes aegypti* are often found in the gulf coast states and are not typically found in Oklahoma. Asian tiger mosquitoes are known as pest mosquitoes and are aggressive daytime biters. They are black and gray with white stripes and their numbers increase after a flood has occurred. They are most active in the early morning to late afternoon. Asian tiger mosquitoes were first found in Oklahoma in 1990. They can live in a broad range of climates and conditions. They can live in shade or sunny areas. They breed in small pools of standing water and go from being an egg to an adult in 24 days during hot summer months.



Asian Tiger Mosquito

How can I prevent mosquito bites?

- Wear insect repellent containing an active ingredient such as ten percent to 30% DEET (N, N-diethyl-m-toluamide), Picaridin, or oil of lemon eucalyptus [(p-methane 3,8-diol (PMD))], to exposed skin and clothing when outdoors, especially during the evening and early morning hours. Always follow labeled directions for proper use.
- Medical experts recommend applying repellent with low concentrations (10%) of DEET to infants over 2 months old.
- Avoid doing outdoor activities when mosquitoes are active in the early morning and early evening.
- Prevent items such as buckets and tarps from holding standing water.
- If rainwater is collected, cover and seal containers when not collecting rain.
- Empty your pet's water bowl and refill daily.
- Rinse, scrub, and refill birdbaths weekly.
- Empty plastic wading pools weekly and store indoors when not in use.
- Regularly maintain swimming pools and outdoor hot tubs.
- Store boats covered or upside down.
- For a water garden or ornamental body of water, use an environmentally safe product to kill the larvae, e.g. BTI, or stock with fish that eat mosquito larvae.
- Regularly clean fallen leaves and debris from roof gutters.
- Trim grass and weeds and dismantle brush to deprive mosquitoes of a habitat.
- Repair or replace all broken or torn window and door screens.
- Repair leaky lawn irrigation spouts.

What are the recommended percentages of active ingredients in repellants to prevent WNV?

A higher percentage of DEET or Picaridin in a repellent does not mean that your protection is better—just that it will last longer. For example, a product that has 20-50% DEET will provide five to 8 hours of protection. For two to four hours of protection, products with 15% DEET, 15% Picaridin or 30% oil of lemon eucalyptus are recommended. Products with < 10% DEET or Picaridin provide 1-2 hours of protection.

How can I prevent an increase in mosquitoes?

- Interrupt the mosquito life cycle by using bacterial and chemical (methoprine oils, mononuclear films) agents that kill the larvae.
- Stock ponds or areas of standing water with fish that eat the mosquito larvae or pupae ("mosquito minnows").



For more information on WNV or Zika virus disease and prevention, please visit the OSDH Acute Disease website at <http://ads.health.ok.gov>.

Bacterial Mosquito Control Information

BTI, Mosquito Dunk, Aquaback, or Vectobac

- * These products contain a bacteria called *Bacillus thuringiensis* (BTI) that eat larvae.
- * They may be purchased at most hardware or home and garden stores.
- * They are safe for animals like horses or birds but are not approved to treat drinking water.
- * Most of these products are shaped like a ring and do not cost a lot of money.
- * Depending on the product, one ring will protect 100 square feet of water for 30 days.
- * Generally, 1/4 ring can be used in small areas up to 5 square feet, and 1/2 ring for areas up to 25 square feet.
- * Remember to follow the directions on the product label.