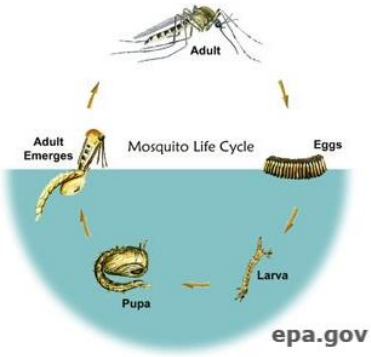
MOSQUITO LIFE CYCLE

Surveillance

We conduct surveillance on all life stages of the mosquito. Once collected, the samples are shipped to the Pennsylvania Department of Environmental Protection lab in Harrisburg, where they are tested for the West Nile Virus pathogen.



Larval Surveillance - We examine larval habitat and collect specimens using dipping cups attached to poles. We begin the larval surveying in April and the adult surveying in May, and this continues until the end of season in October.

Adult Surveillance - We have types of traps for adults: the BG Sentinel trap and the gravid trap. There are fixed sites in each county where we set these traps on a weekly basis.

The **BG Sentinel trap** is the one that aims to catch the biting mosquitoes. This trap is essentially a collapsible, fabric container with a white lid and holes covering its opening. It gets hooked up to a 12-volt battery and a fan inside the trap circulates the artificial human scent to attract the mosquitoes. We also combine it with CO2 in the form of dry ice, and that's what is inside the blue cooler you see in the picture. Once the mosquitoes get close enough, they get pulled into the trap by the air current from the fan.

The **gravid trap** is the egg-laying trap. This trap is essentially a tacklebox with a fan and a container inside. It also gets hooked up to a 12-volt battery. The attractant in this trap is organic, foul-smelling water that is placed in a bin underneath. The egg laying females love to lay their eggs in this water. When they fly down towards the surface of the water, they get sucked up into the trap.

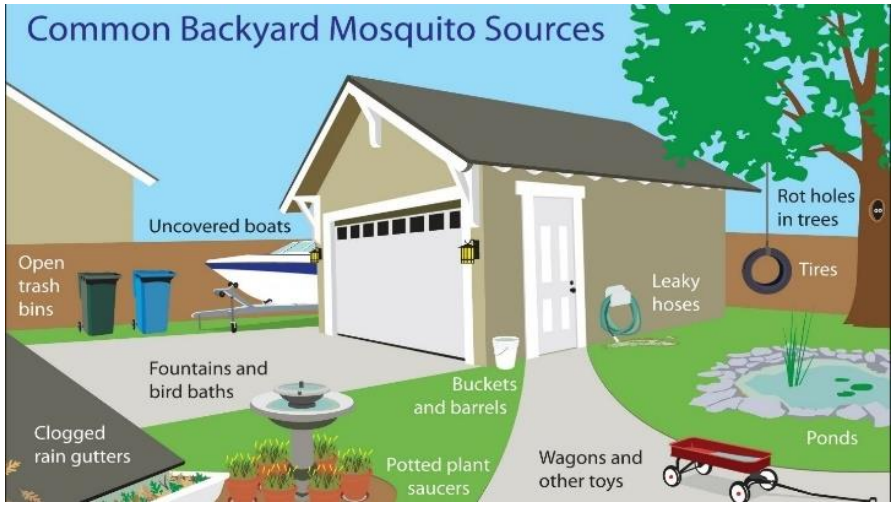
Dead Birds - Birds such as crows, jays and raptors are known to get sick and die from the infection. Reporting and testing dead birds are one way to check for the presence of West Nile virus in the environment. You can report dead birds on the DEP's WNV website. Someone will come and swab the bird's throat and the sample will be sent to the lab to test for WNV.

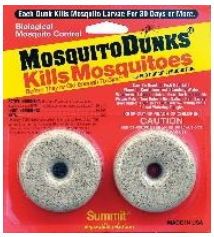
Complaint Calls - Complaint calls are used as an indicator of nuisance mosquito populations. Complaints can be registered on the DEP's WNV website. Someone would come to check the area and try to locate the source of the mosquitoes. Once the situation is assessed, steps will be taken to resolve the problem.

Habitat Reduction

These are all common areas where mosquitoes breed and lay their eggs. Anywhere there is standing water is a place where eggs will be laid, including tarps and buckets. Also, keep grass short. If there are trees and hedges around your yard, keep them trimmed to reduce resting habitat. Tires make the perfect breeding habitat, so limit the amount on your property to as few as possible.

The most effective mosquito control effort is directed toward the source: standing water where larval stages of the mosquito are found. Mosquitoes are extremely vulnerable during the larval stages because of their relatively dense concentrations and the limited protection shallow breeding waters offer. Larval mosquito habitats are generally divided into three types: permanent water, temporary floodwater, and containers. Mosquitoes larvae and pupae aren't strong swimmers so they will not be found in moving waters.





If you cannot get rid of the standing water, stores often have things you can use to treat the water in the pest control department. BTI (*Bacillus thuringiensis israelensis)* and LS (*Lysinibacillus sphaericus*) are common and safe ways to get rid of mosquito larvae in standing water. They are naturally occurring and have been used for decades. They only target mosquitoes so other insects will not be affected. They are non-toxic to people. As with anything, be sure to read the label and follow instructions.

Common Misidentifications

Oftentimes people confuse other insects for mosquitoes. Many other insects look or act like mosquitoes but only the mosquito spreads West Nile.

Adult female northern house mosquito *Culex pipiens* Linnaeus. Photograph by Lawrence E. Reeves, University of Florida.

Black flies bite but don't spread disease and are found around moving water. The Pennsylvania DEP has a black fly program. If you are near moving water and are getting bitten, please call them.

Adult black fly, *Simulium slossonae* Dyar & Shannon. Photograph by J. F. Butler, University of Florida.

Crane flies look like big mosquitoes but do not have a proboscis and do not bite. They are harmless to humans.

Phantom crane fly, Newfoundland, 2018.
Photograph by Bill Anderson.

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- WNV came to North America in NY in 1999, PA in 2000.
- Most common mosquito-borne disease in the U.S.
- Infected *culex* mosquitoes pass the virus on to birds, animals, and people.
- No vaccines to prevent or medications to treat WNV in people. There is a vaccine for horses, though.
- Most people are asymptomatic or develop flu-like symptoms. However, severe neuroinvasive disease can occur in those that are immunocompromised.

For more in-depth information on West Nile Virus and other mosquito resources, visit www.cdc.gov/westnile/index.html.