

Homeowners can reduce mosquitoes on their property



- Dispose of unwanted containers that can hold water (tires, bottles, cans, buckets, barrels, etc.)
- Store unused containers in an upside-down position
- Empty or cover swimming or wading pools when not in use
- Change water in bird baths and troughs weekly
- Keep roof gutters and drainage ditches cleared out so water does not collect and sit in them
- Properly grade property and eliminate any areas where water can collect, such as tire ruts

Atlantic County Department of Public Works

Office of Mosquito Control

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Atlantic County Department of Public Works Office of Mosquito Control



Mosquito Control Question & Answer Sheet

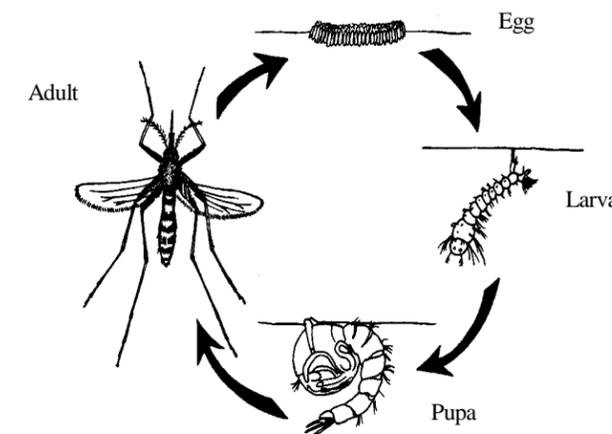
Q. What types of mosquitoes do we have in Atlantic County?

A. Of the 63 different species of mosquitoes found in the state of New Jersey, 40 of those have been found in Atlantic County existing in a wide variety of habitats. Mosquitoes are found breeding in roadside ditches, flooded woodlands, freshwater swamps, storm water basins, coastal salt marshes, and just about any artificial container that will hold water for more than five days.

Mosquito species that breed in our salt marshes are our major pest problem because of the large populations that can occur and because of their ability to travel large distances (over 20 miles) in search of a blood meal.

Q. What is the life cycle of the mosquito?

A. Despite the different varieties and needs of mosquitoes, all mosquitoes require water to complete their life cycle. Mosquitoes have four stages of development: egg, larva, pupa and adult. Mosquitoes undergo complete metamorphosis where their younger stages look completely different than the adult mosquito.



Depending on the species, female mosquitoes deposit their eggs on the edges of emergent vegetation, directly on the water's surface, or on muddy surfaces. Eggs deposited on mud hatch when enough water is present through rainfall or flood tides, and eggs laid on permanent water may be hatching all the time under the right temperature conditions. Eggs hatch into the aquatic stage known as larvae. Larval mosquitoes eat, grow and molt four times before becoming a pupa. Pupae are in a resting state developing the body parts necessary to become an adult mosquito. After emerging from the aquatic stages, adult mosquitoes mate and the female mosquito then flies off in search of a blood meal to obtain nutrients necessary for egg development. While various species differ, the average life expectancy for adult mosquitoes is 4-6 weeks. In the warmer months an egg can become a flying adult in a week's time. Once egg laying is complete, the female mosquito will seek another blood meal in order to lay additional batches of eggs.

Q. What affect do mosquitoes have on man and animals?

A. Through their blood "feeding" behavior, aside from being a nuisance, mosquitoes can act as a vector, or transmitter of diseases to humans and animals. Depending on the species, mosquitoes can transmit diseases like malaria, yellow fever, dog heartworm and encephalitis (such as Eastern Equine Encephalitis and West Nile Virus).

Although outbreaks of mosquito borne diseases are relatively rare in New Jersey, we have experienced incidents of Eastern Equine Encephalitis, St. Louis Encephalitis and most recently West Nile Virus.

West Nile Virus (WNV) was first recognized in the New York City area in 1999 and has since been detected in every state in the United States. In 2015 there were 26 human cases and one horse case of WNV in New Jersey. In Atlantic County, WNV activity resulted in one WNV positive bird and 17 WNV posi-

tive mosquito samples.

Historically, Eastern Equine Encephalitis (EEE) has been the major mosquito related health concern in Atlantic County. EEE shows up in mosquitoes through the vector surveillance program run with Rutgers University and the State Mosquito Control Commission nearly every year. There have been outbreaks of EEE over the years that have caused sickness and even fatalities that partially account for the development of mosquito control in Atlantic County. In 2015 there was one horse case throughout the state which did not occur in Atlantic County.

Dog Heartworm is an ever present threat to your pet's life and is costly to treat once it has been contracted. Horses can contract EEE and WNV, both of which can be fatal. However, there are now EEE and WNV vaccines to protect them. Contact your veterinarian for more information on vaccines for horses and for preventative heartworm medication for dogs.

EEE and WNV are also responsible for deaths in several species of birds. Exotic birds, such as Emu, are particularly susceptible to EEE, and some native populations of birds, such as crows and some raptors, are susceptible to WNV.

Q. How does Atlantic County control mosquitoes?

A. Atlantic County's Mosquito Control program, first organized in 1912, carries on a program of Integrated Pest Management (IPM), based on a comprehensive surveillance program involving inspections, biological and chemical controls, water management and public education, coordinated with the NJ DEP, the NJ Agriculture Experiment Station, and the Atlantic County Division of Public Health. Our goal has been to control mosquitoes to eliminate disease and enhance the quality of life for residents and visitors of Atlantic County.

Early efforts in Atlantic and other coastal counties involved constructing a series of ditches to drain the salt marsh and freshwater wetlands, and chemical control efforts directed at adult mosquito populations. Today we focus on controlling the larval, or the aquatic stage of the mosquito where it is more concentrated and accessible than the adult mosquito.

Larval control involves applying pesticides applied by hand sprayers, truck mounted power sprayers, or aircraft targeting mosquito larvae at their source (in water) and are based on inspections of breeding areas.

Larvicides are applied in either liquid, granular or briquet formulations. Inspections of known breeding areas are made routinely from late March through October. Complaints are also an important surveillance tool as they direct us to new or previously unknown breeding areas.

Our water management program targets mosquito larvae by physically altering breeding sites to remove the standing water which prevents them from completing their life cycle or providing access and habitat for mosquito predators. With the use of modern equipment and the techniques of Open Marsh Water Management, mosquito breeding salt marshes are altered to reduce mosquito breeding habitat, to enhance the tidal food chain, and to reduce the amount of pesticides needed to control those mosquitoes. Limited water management activities for mosquito control using low ground pressure excavating equipment are also carried out in freshwater wetlands following "Best Management Practices for Mosquito Control in Freshwater Wetlands".

Cleaning ditches to promote flow, removing surface water or the simple removal of a tire for recycling are also effective water management tools for mosquito control. In the winter hand crews are actively doing this type of water management for mosquito control.

Further larval mosquito control is accomplished by stocking "Mosquito Fish" (*Gambusia affinis*) and other mosquito predacious fish in appropriate mosquito breeding areas. These fish are made available by the N. J. Division of Fish & Wildlife as part of the State Mosquito Control Commission's bio-control program.

Atlantic County runs a comprehensive adult mosquito surveillance program which keeps us abreast of mosquito populations around the county and provides information used to measure the effectiveness of our control activities. The program utilizes a series of "NJ Light Traps" and landing rate counts to determine the size and species composition of our mosquito populations. As part of a statewide vector surveillance program in conjunction with the Rutgers University - Mosquito Research and Control program, mosquito collections are made around the county for virus testing.

FACT: Mosquitoes cause more human suffering and economic loss than any other insect or animal.

Occasionally it becomes necessary to control adult mosquitoes because of very high populations or because of the presence of disease in local mosquito populations. Adult mosquito control is accomplished by applying pesticides targeting adult mosquitoes at ultra low volumes (very fine droplets) using truck mounted power equipment or, when mosquito populations are wide spread, using aircraft to make the applications.

Q. What pesticides are used to control mosquitoes in Atlantic County?

A. The products used are chosen from a list of pesticides recommended for use by the New Jersey Agricultural Experiment Station / Cook College. These products are registered with both the US EPA and NJ DEP, which means they are legal to use in New Jersey.

Pesticides used by Atlantic County for controlling larval mosquitoes include *Bacillus thuringiensis israelensis* (Bti), brand names Teknar, Vectobac, Aquabac, or Bactimos; Methoprene, brand name Altosid; Temephos, brand name Abate; and larvicide oil brand name Bonide. These larvicide products are applied by ground application equipment or by aircraft.

Pesticides used for controlling adult mosquitoes include Malathion, brand name Fyfanon, Atrapa, or Microflo; or, Resmethrin, brand name Scourge. The adulticide materials are applied using ultra low volume equipment from either truck or aircraft. For additional information, refer to the attached NJ DEP approved fact sheets.

In Atlantic County, aerial applications of pesticides, for either larval or adult control, are coordinated through the NJ DEP Office of Mosquito Control Coordination, State Airspray program. All pesticide applications are made by state licensed pesticide applicators/operators.

Q. What can the homeowner do?

A. Mosquito control begins at home! Mosquitoes will breed in anything that holds water for more than a few days. Eliminating potential breeding sites can include emptying buckets, cans, unused wading pools or toys, removing used tires, changing bird baths or pet dishes regularly, cleaning rain gutters, or putting mosquito eating fish in ornamental ponds. Also, pool owners should keep pool covers free of debris and standing water

and open pools should be properly maintained. Crawl spaces and cellars should also be monitored for standing water.

Keeping adult mosquitoes out of one's house is another step. Repair window and door screens and make sure they close securely.

A wide variety of repellents are available that can provide relief from mosquito and other insects, the repellents are effective but caution should be used and directions followed carefully. Please - **read the label!**

Q. What do I do if there are adult mosquitoes or possible mosquito breeding area around my house?

A. Contact the Atlantic County Office of Mosquito Control at (609) 645-5948 during the office hours of 7:30-4:00 Monday-Friday. If an on site inspection is necessary an inspector will be dispatched to investigate the situation promptly.

Q. Where do I find more information?

A. Visit our web site - www.aclink.org/publicworks/mosquito for additional information on mosquitoes and their control, as well as updated adult mosquito spraying information and schedules. You can also call the county "Mosquito Control and West Nile Virus Information Line" at 1-877-6-4-FACTS for adult mosquito spraying information and West Nile virus health information, or the Division of Public Health at 645-5971 for health related inquiries. Also included in this packet is a sample newspaper notice that is placed in both the Atlantic City Press and the Mainland Journal/Atlantic County Record throughout the mosquito season. You also have the right, if you'd like, to be notified by us with specific information prior to planned adult mosquito control pesticide applications.

For Additional Information on the Web:

www.aclink.org/publichealth

www.state.nj.us/dep/mosquito

www.state.nj.us/health

www.state.nj.us/agriculture

www-rci.rutgers.edu/~insects/njmos.htm