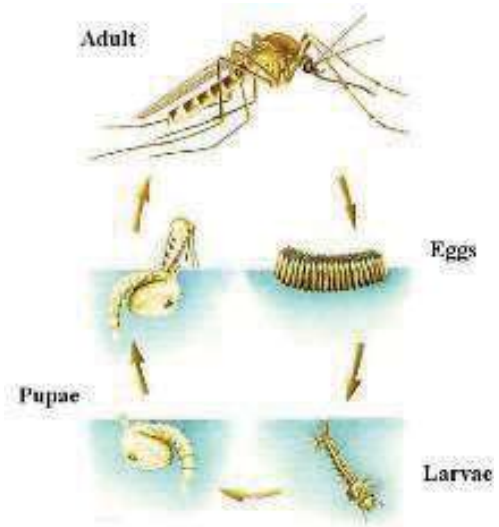


MOSQUITOES...WHAT EVERYONE SHOULD KNOW

Questions & Answers

What is the life cycle of mosquito?

Mosquitoes have four stages of development: egg, larva, pupa, and adult. They spend their larval and pupal stages in water. Female mosquitoes of most species deposit eggs on moist surfaces such as mud or fallen leaves. Rain re-floods these surfaces and stimulates the hatching of the eggs. Other mosquito species lay their eggs on permanent water surfaces. Since the water source is constant, egg hatching and larval development is an ongoing process. Mosquitoes take approximately one week to develop from egg to adult. After emerging from the aquatic stages, adult mosquitoes mate and females seek a blood meal to obtain nutrients for egg development. Only the female mosquitoes bite. Adult male mosquitoes feed on plant nectar and die shortly after mating. The average life span for adult mosquitoes is 2 - 3 weeks.



How many kinds of mosquitoes are there?

There are more than 63 mosquito species found in New Jersey. Fortunately, most mosquito species either do not prefer to feed on humans or do not occur in high enough numbers to cause a problem. Between 24 and 28 problematic species occur regularly throughout the County during the year.

What human diseases do mosquitoes transmit?

West Nile virus (WNV), St. Louis (SLE) and Eastern Equine encephalitis (EEE) are several diseases that can be transmitted by mosquitoes found in Bergen County. WNV was first identified in the United States in New York City and surrounding areas in the fall of 1999. The primary transmitter of WNV and SLE are mosquitoes commonly found around homes. These mosquitoes will readily utilize tires or containers holding water. Both of these diseases can pose a significant threat to the very young and old, as well as individuals with compromised immune systems. EEE, while rare in Bergen County, is a more dangerous disease and is transmitted by mosquitoes that are produced in permanent swamps and saltwater marshes.

What animal diseases do mosquitoes transmit?

Dogs and horses are also susceptible to mosquito-transmitted diseases. Dog heartworm is a serious threat to your pet's life and is costly to treat once it is contracted through the bite of an infected mosquito. Fortunately, preventative medicines are available to protect your dog from contracting heartworm. WNV and EEE are threats to horses as well as to humans. Vaccines are also readily available to protect your horse against EEE and WNV. Contact your local veterinarian for more information. WNV has also been responsible for the death of numerous birds, mostly in the wild bird population.

BERGEN COUNTY MOSQUITO CONTROL DIVISION

What does the Division do?

Bergen County has been performing mosquito control since 1914. Mosquito-borne disease control and quality of life assurance are the principal concerns of the Division. The statutory mandate of the Division is "To perform all acts which in its opinion may be necessary for the elimination of mosquito breeding areas, or which will tend to exterminate mosquitoes within the county." The key to the Division's activities is a comprehensive surveillance program. The presence of a mosquito problem must be documented before any control measures can be initiated. Emphasis is placed on the elimination of mosquito production habitat and the control of mosquitoes while they are still in the aquatic stages of their development.

What control efforts does the Division utilize?

The Division uses an Integrated Pest Management (IPM) approach to controlling mosquitoes. An IPM program employs various methods of control including, but not limited to: surveillance, water management, source reduction, biological control, biological and man-made pesticides, and education. With an IPM strategy, control efforts focus primarily on the immature, water-borne stages of the mosquito. These immature stages are more concentrated and accessible than the adult mosquitoes, which disperse after emerging. The primary insecticide applied from the ground is a bio-rational insecticide derived from the bacteria, *Bacillus thuringiensis* var. *israelensis* (Bti), which is specific to the mosquito's metabolism. Fish are available to the Division from the NJ Division of Fish & Wildlife as part of the State Mosquito Control Commission's bio-control program. The fish available are fathead minnows, banded killifish, sunfish, and mosquitofish. The Division will supply fish free of charge to any county resident to control mosquitoes after NJ Department of Environmental Protection (NJDEP) fish stocking criteria are satisfied. The Division conducts year round water management (source reduction) projects that control mosquitoes by eliminating mosquito habitat water. These operations are accomplished following the NJDEP Best Management Practices manual. Hand labor and excavating equipment are utilized for this work. If surveillance indicates that a nuisance level of mosquitoes is reached or disease is detected, a spray for adult mosquitoes may be applied by hand-held sprayers, truck-mounted sprayers, or from the air. All pesticides used are registered for use in New Jersey with the US Environmental Protection Agency (EPA) and the NJDEP. These products are also reviewed and recommended by the New Jersey Agricultural Experiment Station, School of Environmental and Biological Sciences/Rutgers University.

What are the winter activities of the Mosquito Control Division?

Pesticides are not used to control mosquitoes during the winter when they are inactive. However, many other activities are continued throughout the year. These include water management, necessary repairs and maintenance, and record keeping on the past season's mosquito control activities. The inspection routes are revised to include new larval sources and remove sources that no longer exist. Brush is removed to enable easy access to treat larval habitats during the following mosquito season. Site evaluation is conducted on potential areas for fish stocking or for water management projects. Beehives are located to prevent accidental pesticide exposure to honey bees during spray operations. Presentations are made at public events on mosquitoes and mosquito control. Employees attend training classes to fulfill NJDEP pesticide licensing requirements.

BERGEN COUNTY MOSQUITO CONTROL DIVISION

What can homeowners do?

- Homeowners can control mosquitoes by eliminating standing water on their property. Any container holding water is a potential source of mosquitoes and is likely to cause problems around your home. Of particular concern are clogged gutters, scattered tires and unopened swimming pools. These tend to collect leaves and water and provide very attractive habitats for mosquito larvae. Keep gutters clean and free-flowing. Remove or overturn containers that may collect water.
- Remove water from swimming pool covers. If pools are not covered, make sure the water is clean so it is not attractive to mosquitoes. Natural depressions in your yard can hold water. They will not be a problem, however, if the water disappears within 4 to 5 days. Artificial containers will remain wet for a much longer period of time. If you wish to collect rainwater, tightly screen the tops of the containers to prevent mosquitoes from depositing their eggs on the water surface. Items such as pet water bowls and birdbaths should be emptied and refilled at least once a week.
- Small depressions in your yard can be filled to prevent the collection of water. If larger wet areas exist on your property, bring them to the attention of the Mosquito Control Division.
- Make sure windows and door screens are properly fitted and holes are patched to prevent mosquitoes from entering the house.
- A wide variety of repellents are available to provide relief from mosquitoes and other insects. Always **read and follow the label** before using any repellent.

What can I do if there are adult mosquitoes around my home?

If mosquitoes are causing a problem in your area, contact the Division office at (201) 634-2881. Staff will investigate your call promptly. Each area is inspected to locate mosquito-production sources and to verify the presence of adult mosquitoes. If an adult or larval mosquito problem is identified, insecticides may be applied for their control.

What pesticides are used to control mosquitoes?

The majority of the pesticides (insecticides) used are to control immature mosquitoes in the water. These insecticides may be applied either by ground equipment or aircraft. If a major adult mosquito problem is identified, or if disease-carrying mosquitoes are detected, an adulticide may be applied throughout the area of infestation. For more information regarding the pesticides used for adult mosquito control, please refer to the accompanying NJDEP approved pesticide fact sheets. Some of the insecticides used to control mosquitoes are also used to control other pests. However, the dosage rates for mosquitoes are usually much lower, as low as 5/8ths of an ounce per acre to control mosquito larvae.

Where can I find more specific information on spraying for adult mosquitoes in Bergen County and will I be notified of the spraying?

All spraying for adult mosquitoes on more than 3 acres aggregate, whether conducted from the ground or air, will be advertised in The Record and The Herald News. The advertisements will contain information such as intended application dates, locations, contacts, and phone numbers. This information is also available by accessing the Bergen Bites Back web page (<https://www.co.bergen.nj.us/health-promotions/bergen-bites-back>). Individual homeowners can request to be notified prior to an adulticide application near their home. Contact the Division for details on the procedure to request notification.

BERGEN COUNTY DEPARTMENT OF PUBLIC WORKS - MOSQUITO CONTROL

PUBLIC NOTICE

Mosquito Control is everyone's responsibility; please do your part by preventing mosquitoes from breeding on your property. For more information on mosquitoes and mosquito control contact the **Bergen County Mosquito Control Program at 201-634-2880 or 201-634-2881** and/or visit our website at <https://www.co.bergen.nj.us/public-works-mosquito-control/about-mosquito-control>.

In compliance with Section 9.10 of the New Jersey Pesticide Control Code (N.J.A.C. Title 7 Chapter 30), the Bergen County Mosquito Control Division (220 East Ridgewood Ave, Paramus New Jersey 07652) will be applying insecticides to reduce adult mosquito populations on an area-wide basis as needed throughout Bergen County during the period from April 30, 2024-October 31, 2024. The insecticides used for adult mosquito control include:

- DUET/DUET HD (active ingredients: prallethrin, sumithrin, PBO)
- Zenivex (active ingredient: etofenprox)
- Fyfanon (active ingredient: malathion)
- Merus (active ingredient: pyrethrins)

These may be applied using truck mounted Ultra Low Volume (ULV) equipment or by helicopter. All products will be applied according to product labeling and NJAES recommendations. Bergen County Mosquito Control Division will apply a selective insecticide Vectobac 12AS (active ingredient: Bacillus thuringiensis israelensis) by hand to portions of the Hohokus Brook and Saddle River to reduce biting black flies in their larval stage. Larval black fly control will be performed from April 1, 2024 to September 30, 2024.

Upon request, the Bergen County Mosquito Control shall provide a resident with notification at least 12 hours prior to the application, except for Quarantine and Disease Vector Control only, when conditions necessitate pesticide applications sooner than that time. To receive updates about time and location of applications, please call 201-225-7000.

To seek further information about Bergen County Mosquito Control Division activities, please contact Warren Staudinger, Division Director (NJCPA License #58053A), or Matthew Bickerton, Entomologist (NJCPA License #52099B) 201-634-2880 or 201-634-2881 or visit the website at <https://www.co.bergen.nj.us/public-works-mosquito-control/about-mosquito-control>.

In case of any pesticide emergency, please contact the New Jersey Poison Control Center at 1-800-222-1222. For routine pesticide-related health inquiries, contact the National Pesticide Information Center at 1-800-858-7378. For information on pesticide regulations, pesticide complaints, and health referrals contact the **New Jersey Pesticide Control Program at 1-609-984-6507**.

MOSQUITO HABITAT CHECKLIST



Container mosquitoes are the #1 mosquito problem in Bergen County!

WATER +7 DAYS = MOSQUITOES

Use this checklist to help you find and eliminate all the places that mosquitoes breed around your home. Any container that holds water can be a home for mosquito larvae. After 7 days, larvae will emerge as adult mosquitoes. Remember to stay vigilant and to keep containers free of standing water all year long.

COMMON HOUSEHOLD ITEMS

- | | | |
|--------------------------|--|---|
| <input type="checkbox"/> | Buckets | Problem: Buckets are the most common mosquito habitats found at homes.
Solution: Empty buckets and turn them over. |
| <input type="checkbox"/> | Garbage cans and recycling bins | Problem: Garbage cans, recycling bins, and recycled containers can hold water.
Solution: Drill drainage holes in the bottoms of garbage cans and bins, keep covered and dispose of recycling weekly. |
| <input type="checkbox"/> | Tarps, plastic bags and sheets | Problem: When tarps are not fitted tightly, multiple pockets form and collect water.
Solution: Keep tarps tight and refit them if water collects. |

BUILDING STRUCTURES

- | | | |
|--------------------------|--------------------------------------|--|
| <input type="checkbox"/> | Gutters | Problem: Gutters hold water when clogged with leaves or improperly pitched. Plus the leaf debris provides food for the larvae
Solution: Keep gutters clean and properly pitched. |
| <input type="checkbox"/> | Flexible downspout extensions | Problem: Improper pitch and ridges cause these pipes to hold water.
Solution: Pitch downspout extensions so water drains completely after it rains or replace with a non-flexible extension that is pitched to drain fully. Keep the inside free of debris. |
| <input type="checkbox"/> | Leaky hose spigots | Problem: Water can accumulate below the faucet.
Solution: Fix leak or call a professional plumber. |
| <input type="checkbox"/> | Decks & Porches | Make sure to check under decks and porches for containers that may hold water. |

AROUND THE GARDEN

- | | | |
|--------------------------|--|---|
| <input type="checkbox"/> | Planter saucers | Problem: If a plant saucer holds water for 5-7 days it will support mosquito larvae.
Solution: Dump the water out every 3-5 days or don't use a saucer at all. |
| <input type="checkbox"/> | Planters without drainage holes | Problem: Planters fill with water after heavy rains.
Solution: Drill holes in the bottom of your planter – it's healthier for your plants. |
| <input type="checkbox"/> | Self-watering planters | Problem: The hole used to water the plant is also used by the female mosquito to access the water and lay eggs.
Solution: Tightly seal the watering hole after adding water. If this is not possible, treat the reservoir water with a Bti* product. The most effective method for preventing mosquitoes is to not use these planters. |
| <input type="checkbox"/> | Wheelbarrows | Problem: Water collects in the main tub or small crevices inherent in their construction.
Solution: Turn wheelbarrows over or store them on end. If crevices present, check weekly and move to empty any water you find. |
| <input type="checkbox"/> | Watering Cans | Problem: Watering cans holding water for many days will attract egg laying mosquitoes.
Solution: Empty and store upside down or in a garage or shed. |
| <input type="checkbox"/> | Rain Barrels | Problem: Rain barrels conserve water but can also be a perfect home for mosquito larvae.
Solution: Cover tops of rain barrels with tightly fitted screen. (Use nylon window screen and secure with a bungee cord or other tight elastic.) Mosquitoes will use the overflow hole to get in and lay their eggs; either plug hole or treat with a Bti* product. |
| <input type="checkbox"/> | Bird Baths | Problem: Unless water is changed regularly, mosquito larvae flourish.
Solution: Change water at least once a week. |
| <input type="checkbox"/> | Ornamental ponds | Problem: Ornamental ponds without fish provide a great home for mosquitoes.
Solution: Get fish. If that is not an option, you can use Bti* to treat for mosquito larvae. |

- Behind the shed & under the shrubs**
Problem: Discarded and unattended items in hard to reach spaces can collect water.
Solution: Look under bushes and in overlooked spots in the yard and remove debris that can hold water.

- Tires**
Problem: Water left inside tires will cause mosquitoes to breed.
Solution: Rid of old tires or you can puncture holes at the bottom of the tire so it may drain any water that is trying to collect within the tire.

CHILDREN'S TOYS

- Portable basketball hoops**
Problem: The fill holes in the base of a portable basketball hoop allow mosquitoes to reach the water and lay eggs.
Solution: Make sure caps for fill holes are in place; replace if lost.

- Kiddie pools**
Problem: Kiddie pools can become mosquito habitat if the water is not changed often.
Solution: Empty or change water in kiddie pools every 5 - 7 days. Be sure to store indoors or turned over when not in use.

- Sand boxes**
Problem: Water accumulates in some plastic sand boxes whether covered or not.
Solution: Drill small drainage holes in the bottom of your sand box.

- Big plastic toys, wagons, etc.**
Problem: Wagons, dump trucks, cars, kitchen sets, and playhouses all fill with rain water when left outside and, if left unchecked, will breed mosquitoes.
Solution: Keep toys turned over or inside when not in use. If water can get inside the plastic toy so can a mosquito - drill drainage holes in the bottom.

- Deflated toys**
Problem: Like a tarp, a deflated toy (kiddie pool, bounce house, etc.) will create multiple small pockets that fill with water and provide habitat for larvae.
Solution: Drain off water, dry out, and store indoors when not in use.

RECREATION

- Boats**
Problem: There are many compartments on boats that can collect water. Even when a boat itself doesn't hold water there can be containers left on a boat that do.
Solution: Empty all the water possible. If there is water that can't be emptied, you can treat it with a Bti* product. Cover boats in storage with taut tarps or use boat shrink wrap.

- Jet skis**
Problem: The foot depressions tend to hold water and provide a mosquito breeding ground.
Solution: Rinse out the foot depressions with a hose every week. Jet skis can be tightly tarped or stored indoors.

- Pools/pool covers**
Problem: Pool covers and pool skimmer compartments filled with water breed mosquitoes.
Solution: Treat the pool or pool cover with Bti* in the spring before you open it. If you know of an abandoned home in your neighborhood with an unkept pool, call the **Bergen County Health Dept 201-634-2600**. It may need to be treated or stocked with fish that eat mosquito larvae.

** A note about Bti - Ideally, keep containers dry or discard if unneeded. If you do need to treat for mosquito larvae in a container, use the low impact pesticide Bti (Bacillus thuringiensis israelensis). It is available at many hardware stores, pond supply stores and online. Bti effectively targets mosquito larvae. It can be purchased as a granule, briquette, or liquid. Be sure to choose a product that is registered with the US EPA, labeled to use for mosquito larva. Closely follow the directions on the label. You may only use these products on your property; if you see a source of standing water elsewhere, call the **Bergen County Mosquito Control Division**.*



The primary strategy for mosquito control relies on an Integrated Pest Management approach that focuses on controlling mosquito larvae versus broad control of adult mosquitoes. Much of the effort is on source control-- reducing or eliminating the standing water where mosquito larvae live. This checklist can help you do your part to control mosquitoes in your landscape.

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