PIONEER VALLEY MOSQUITO CONTROL DISTRICT

67 North Main Street, South Deerfield, MA 01373

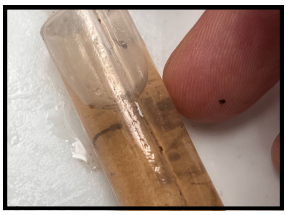
Spring 2024 Update

Operations Update

During the offseason, things have been exceptionally busy, but in a very positive manner. I'm very happy to announce that Pioneer Valley MCD now officially has an office location at 67 North Main Street in South Deerfield, with the mailing address being 8 Conway Street, South Deerfield. Moreover, I am pleased to introduce James Tsalah, a graduate from UMASS Amherst, who will be joining us this summer to take on the role of Seasonal Entomologist. James brings with him a unique and diverse skill set focused in epidemiology, conservation, ecology, and spatial analysis. We are incredibly excited to welcome James aboard.

Eastern Equine Encephalitis Habitat Surveying

During the offseason, I dedicated a considerable amount of time to sampling for Culiseta *melanura* larvae, the primary vector for EEE, in areas where they were previously established. My goal was to assess how well this particular species fared in response to the abundant rainfall we experienced last summer and fall. Cs. *melanura* are one of the few species that will overwinter in the larval phase, and therefore require a permanent source of water to survive.



Sampling efforts focused on red maple and white cedar swamps situated in central and western Massachusetts. Despite the lack of baseline data on Cs. *melanura* larvae in these specific locations, our observations, coupled with my experience and that of others, suggested a healthy presence of Cs. *melanura* larvae.

EEE Habitat Surveying Continued

There are numerous variables that influence the dynamics of mosquito populations and the spread of disease, which make it difficult to predict arbovirus prevalence several months prior to the beginning of the warm season. Adult surveillance of Cs. *melanura* starting in June will provide more precise data regarding population densities and the presence of EEE. Ecological conditions must remain favorable for Cs. *melanura* to sustain productivity throughout the season, along with the presence of EEE in the bird population.

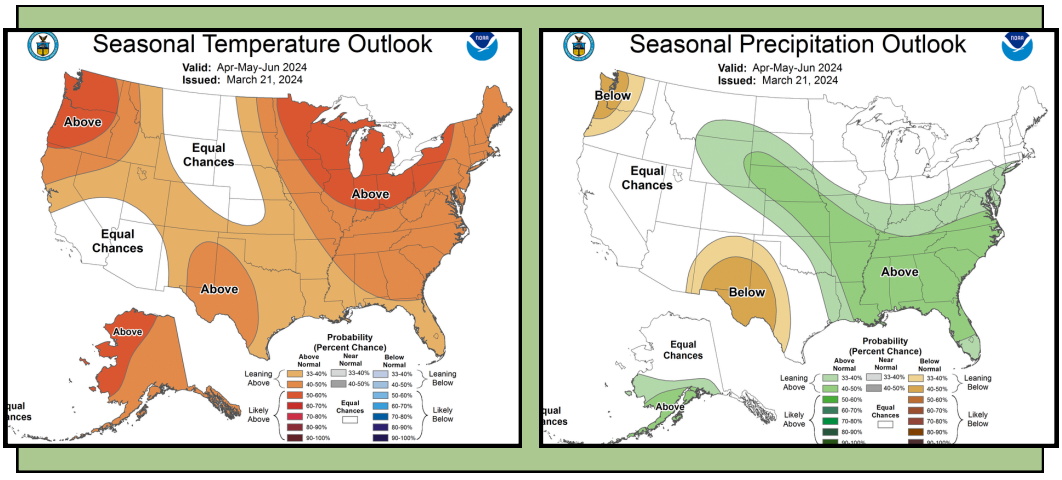
Spring Mosquitoes

Many of you may have noticed the abundant number of mosquitoes during the recent stretch of warmer days we experienced back in early March. The species responsible for disrupting these pleasant days are known as Anopheles *punctipennis* and *quadrimaculatus*. Both An. *punctipennis* and *quadrimaculatus* will utilize man-made structures such as sheds, barns, and basements as refuge during the colder months. It is not uncommon for either species to become active on a warm day, during the winter months. Once spring sets in and warmer temperatures prevail, An. *punctipennis* will become very active during the day and at dusk, while An. *quadrimaculatus* are typically only active at dawn and dusk. Both species are submitted for arbovirus testing throughout the season, as they both could potentially play a role in the transmission of mosquito-borne diseases.

Spring Weather Impacts

Last spring proved to be relatively dry, and as a result, mosquito activity remained minimal up until July. This spring has proven to be quite different with the amount of rainfall we've experienced thus far. The month of March alone produced more than six inches of rain. Experts from NOAA's Northeast River Forecast Center are predicting a higher risk for flooding in the area. Due to the amount of rainfall, it is expected that mosquitoes will be abundant and very active this spring.

For long-term weather outlooks, NOAA is predicting a 40-50% probability of above normal temperatures and an equal chance of above or below precipitation from April through June. The Farmer's Almanac is predicting that temperatures will be above normal, with precipitation below normal.

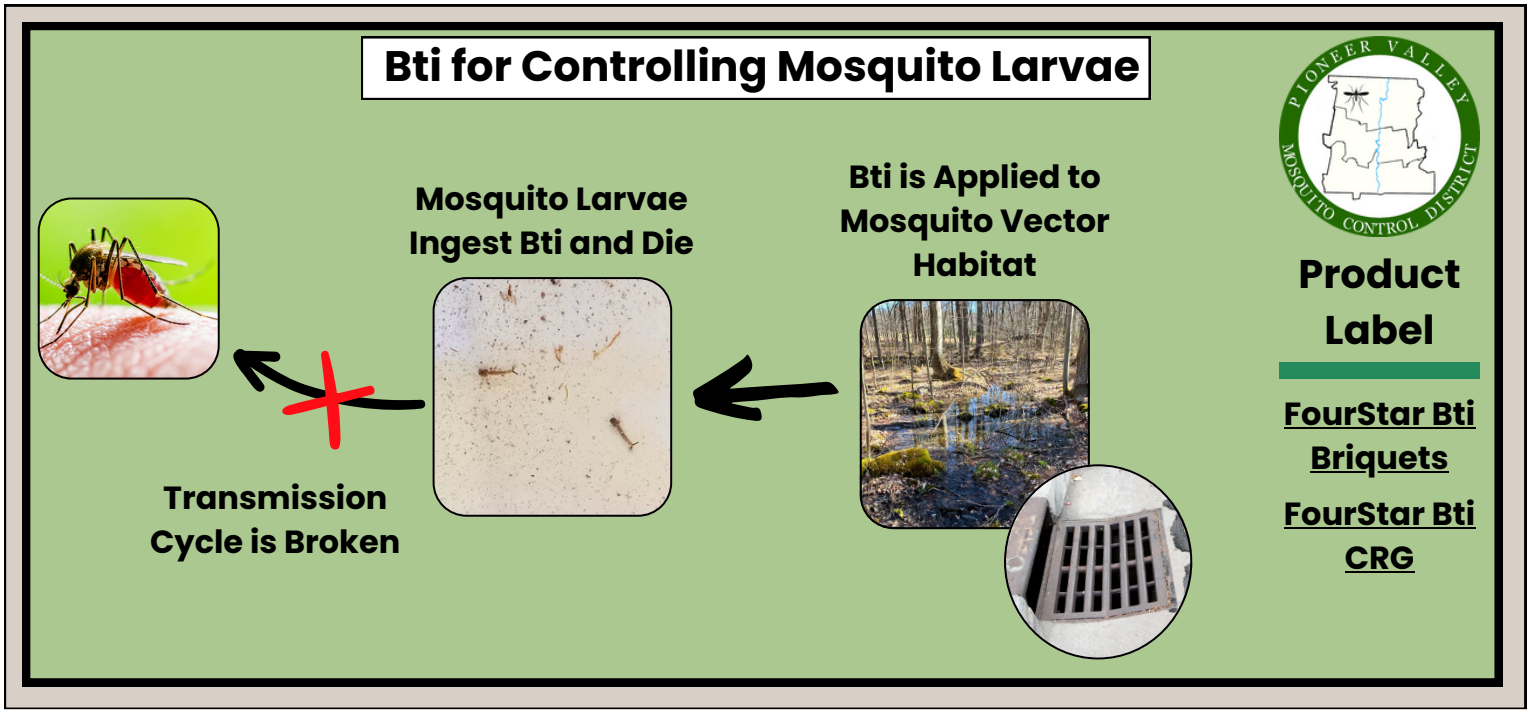


Pilot Larval Mitigation Program

PVMCD will be implementing a pilot larval mitigation program this coming season at a practical level of capacity. The pilot program will focus on targeting the primary vector for West Nile virus, Culex pipiens, in catch basins. Culex pipiens prefer stagnant water full of bacteria, making catch basins an ideal habitat for this species. Currently, the pilot catch basin treatment program is only being offered to communities impacted by West Nile virus. Our goal is to extend this proactive mitigation service to additional communities in 2025.

The products being used to treat catch basins and wetlands are Fourstar Bti Briquets and FourStar CRG (granules). Bti stands for Bacillus thuringiensis israelensis, which is a naturally occurring soil bacteria that is used to control larval mosquito populations and is very safe for humans, animals, and the environment when used as directed. Once Bti spores reach the gut of a mosquito larva via ingestion, protein crystals form due to higher pH levels. The protein crystals will then attach to the wall of the mosquito's gut, breaking it down and causing the mosquito to die shortly after. In addition to mosquito larvae, Bti is toxic to blackflies, also known as buffalo gnats.

When applying Bti to wetlands or vernal pools, indirect trophic effects are taken into consideration. For instance, a vernal pool with a high level of biodiversity will likely balance out mosquito populations and would therefore not require treatment. On the other hand, a wetland or vernal pool that yields a significant number of mosquitoes and is low in biodiversity would be an ideal location for treatment.



Arbovirus Surveillance

Arbovirus testing is expected to begin in early June, and the duration of the testing period will be dependent on virus incidence and risk of human infection. PVMCD will be submitting 15 mosquito species that have been either implicated or confirmed as vectors for mosquito-borne diseases. The table below lists the mosquito species of most concern in the area, the majority of which are confirmed vectors for arboviruses.

Species of Most Concern	
Aedes *vexans*	Aggressive mammal biter and bridge vector for EEE.
Coquillettidia *perturbans*	Most common mosquito species in MA and is a bridge vector for EEE.
Culex *pipiens*	Primary vector of WNV and are commonly found from May to October.
Culex *salinarius*	Has been implicated as a vector for both EEE and WNV.
Culiseta *melanura*	Primary vector of EEE and feeds exclusively on avian species.
Ochleratatus canadensis	Feeds on both mammals and birds and is a bridge vector for EEE.
Ochleratatus *japanicus*	Could potentially be involved in the transmission of both EEE and WNV

Looking Ahead

Due to weather impacts affecting next season's EEE outlook, PVMCD will be heavily focusing on trapping in areas where Cs. melanura have been established. Cs. melanura population data and any incidence of virus will be promptly communicated with local Boards of Health. Public outreach/education materials will be available for distribution, along with a PVMCD response packet provided to LBOHs.

Due to the potential for EEE becoming prevalent this coming season, it is highly recommended that horse owners speak to their veterinarian about the EEE vaccination and establish an appropriate vaccine schedule that ensures protection through October of 2024.

Lastly, surveillance updates are going to be posted weekly on PVMCD's website. The next newsletter can be expected in mid-July.

Public education materials are included on the following pages.

PVMCD Website: mass.gov/info-details/pioneer-valley-mosquito-control-district-pvmcd

Questions/Comments: john.c.briggs@mass.gov

Mailing Address: 8 Conway Street, South Deerfield MA 01373
Physical Address: 67 N Main Street, South Deerfield, MA 01373

PIONEEER VALLEY MOSQUITO CONTROL DISTRICT

FIGHT THE BITE

AND HELP PREVENT THE SPREAD OF MOSQUITO BORNE DISEASES

USE REPELLENT

Be sure to apply EPA approved insect repellents containing plant based eucalyptus or DEET when outdoors.

AVOID DUSK AND DAWN

Most mosquito species are very active at dusk and dawn. Avoid engaging in outdoor activities during these times whenever possible.

WEAR PROPER CLOTHING

Wearing long-sleeves and pants will significantly help reduce mosquito bites.

PREVENT ARTIFICIAL HABITAT

Buckets, plant pots, kiddie pools, tire swings, and anything that holds water should be emptied to prevent mosquito habitat.

FIX DOORS AND WINDOWS

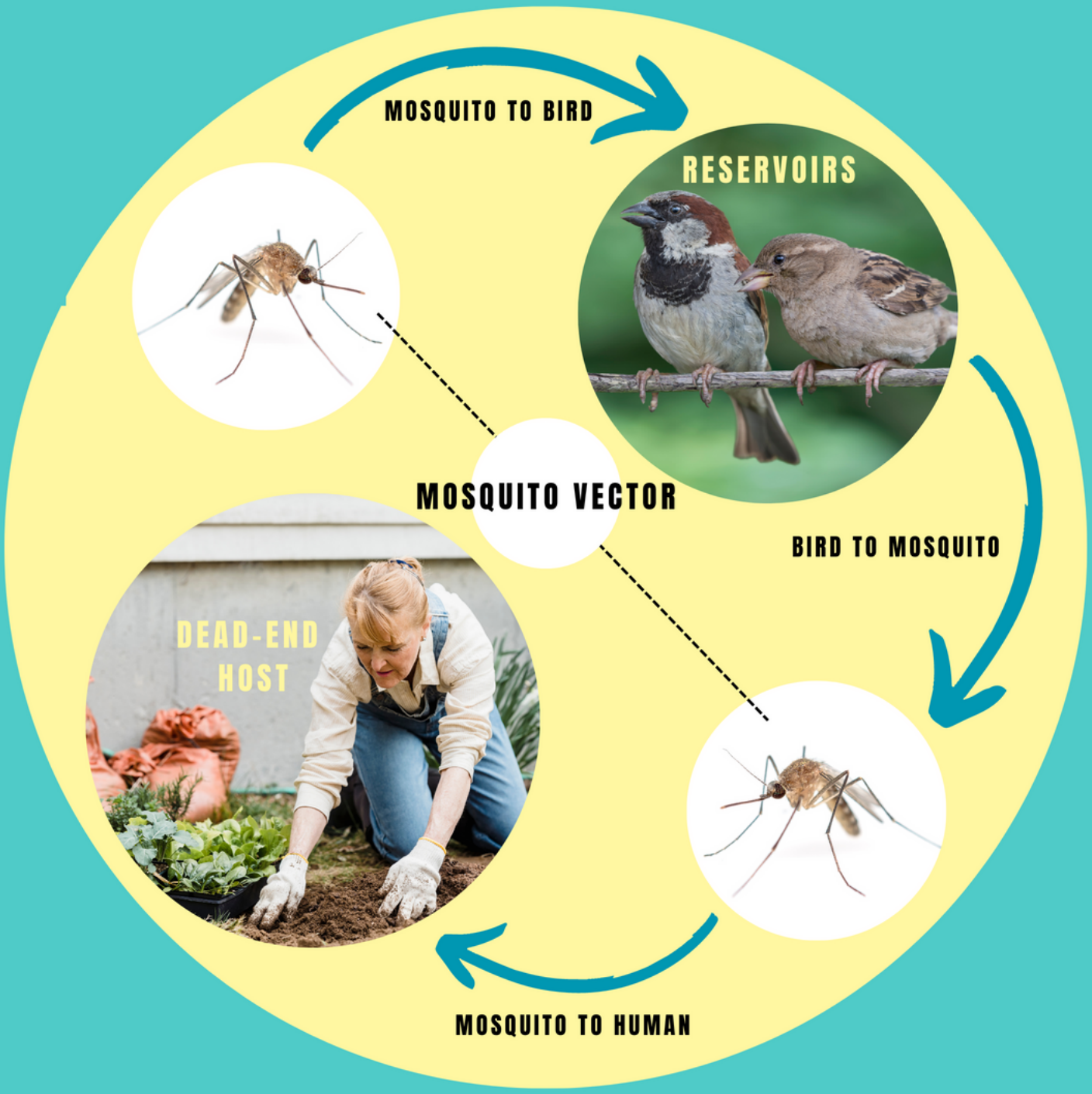
Screens with holes should be repaired and be sure that all doors and windows are working properly to keep the mosquitoes out.

FIRST AID FOR BITES

Wash bite with soap and water and apply anti-itch cream. If necessary, apply a cold cloth to reduce swelling.

PIONEEER VALLEY MOSQUITO CONTROL DISTRICT

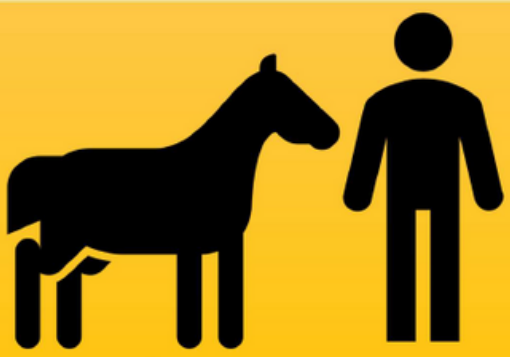
WEST NILE VIRUS CYCLE

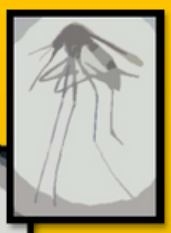


Eastern Equine Encephalitis Transmission Cycle

Pioneer Valley Mosquito Control District

Culiseta melanura will amplify the virus among the bird population. Melanura mosquitoes prefer to feed on avian species and rarely feed on humans





Bridge vectors such as *Coquillettidia* perturbans and some species in the *Aedes* and *Culex* genera are of medical importance because they are capable of transmitting EEE to humans and horses.

WNV and EEE Symptoms Chart

Disease	Onset	Symptoms	
WNV	**2 to 14 Days**	**Febrile Illness** • Fever • Muscle aches • Joint Pain • Fatigue • Rash	**Neuroinvasive Disease** • Stiff neck • Muscle Tremors • Seizures • Changes in vision • Weakness or paralysis
EEE	**4 to 10 Days**	**Febrile Illness** • Fever • Muscle aches • Joint pain • Chills	**Neuroinvasive Disease** • Fever • Headache • Seizures • Behavioral changes • Vomiting • Diarrhea • Coma