BERKSHIRE COUNTY MOSQUITO CONTROL PROJECT

19 HARRIS ST.
PITTSFIELD, MA. 01201

SERVICES PROVIDED TO THE CITY OF PITTSFIELD SHERWOOD GREENS ROAD MANAGEMENT DISTRICT AND THE TOWNS OF CLARKSBURG, HINSDALE, LANESBOROUGH, OTIS, RICHMOND, SHEFFIELD, STOCKBRIDGE, TYRINGHAM

2019 ANNUAL REPORT

PREFACE

The 2019 annual report of the Berkshire County Mosquito Control Project has been prepared to provide the citizens and officials of member towns with information pertaining to the project's procedures and related activities.

As you read through this report you will notice that the project is committed to an Integrated Mosquito Management Program, IMM. This approach involves intervention in each stage of the mosquito life cycle using a variety of control techniques and evaluation procedures. When these techniques are properly implemented the process is safe and scientifically proven to reduce mosquito populations before they bite humans. No control effort is undertaken before surveillance data is collected and analyzed. Control decisions are made based on the exact need that exists at each specific site. Environmental considerations are paramount when prescribing various control techniques.

The BCMCP board of commissioners is appointed to represent the interests of each community. The commissioners meet with the superintendent on a regular basis to discuss and formulate policies and to provide their expertise in the operation of the project. The commissioners welcome your input, and we encourage you to contact us or visit the project headquarters.

Copies of this report are distributed to key officials in member towns. The report is also available to the public by contacting the project offices.

Our goal is to provide effective and environmentally sound mosquito control, reducing mosquito annoyance and the potential for the transmission of mosquito borne diseases. Our staff of well- trained, competent employees are known throughout member communities as individuals who take great pride in their work.

Thank You,

Wally Terrill, Chairman

TABLE OF CONTENTS

Organizational Setup

The Berkshire County Mosquito Control Project was created under chapter 454 of the Acts of 1945 and operated under MGL chapter 252 Improvement of Lowland and Swamps.

The project is administered by the State Reclamation and Mosquito Control Board located in Boston, MA. Membership in the project is accomplished by a majority vote at either an annual or special town meeting, or by the majority vote of a city council. The project is funded by an annual assessment which is determined by a formula administered by the Division of Local Services (DOR), and is calculated by equalized valuations. An amount is withheld from the State Cherry Sheet Assessment for each member city or town each fiscal year and is placed in a trust account for the project.

The State Reclamation and Mosquito Control Board (SRMCB) is comprised of three members, one each from The Department of Environmental Protection DEP, Department of Conservation and Recreation (DCR), and the Department of Agricultural Resources (DAR). The representative appointed from the DAR is by default the chair of the SRMCB. The SRMCB is charged with the appointment of the Berkshire County Mosquito Control Project Board of Commissioners. This is a three member board that meets quarterly at the project office. SRMCB contacts all member towns in the project area when there is an opening on the commission. Commissioners are appointed after an interview with SRMCB where qualifications are reviewed. Each commissioner is appointed to a three year term. The composition of the board varies and represents a wide range of expertise. Current commissioners include members of boards of health, selectmen, former project superintendents, private citizens, mosquito control industry representatives, and DPW directors or commissioners. The quarterly meeting of the commission is an open public meeting and a notice of each meeting is sent to the office of the Secretary of State. The commission is charged with the appointment of the superintendent, who is charged with the day to day operations of the project.

At the quarterly meeting the commission approves minutes of previous meetings, employee payrolls and all other expenditures. The superintendent outlines the current status of operations at the project, and all relevant topics are brought to the attention of the commission for review, discussion and a vote if necessary. All discussions and votes are recorded in the meeting minutes and are considered the official record of the commission.

THE COMMONWEALTH OF MASSACHUSETTS

STATE RECLAMATION AND MOSQUITO CONTROL BOARD

251 CAUSEWAY ST. SUITE 500

BOSTON, MA 02114

SRMCB MEMBERS

JUAN GUTIERREZ, PROJECTS ADMINISTRATOR

JOHN LEBEAUX (DAR)

NANCY LIN (DEP)

JAMES STRAUB (DCR)

JENNIFER FORMAN-ORTH , ENVIRONMENTAL BIOLOGIST

COMMISSIONERS OF BERKSHIRE COUNTY MCP

MR. RYAN GRENNAN
PITTSFIELD, MA

MR. JAMES MCGRATH
PITTSFIELD, MA

MR. WALLY TERRILL, CHAIRMAN
OTIS, MA.

PROJECT SUPERINTENDENT

CHRISTOPHER J. HORTON

EXPENDITURES 2019

ITEM	COST
PAYROLL	$ 103,750
COMMISSION	$ 1,200
RENT	$ 29,316
HEAT/ELECTRIC	$ 3,000
HEALTH INS./FRINGE BENEFITS	$ 15,025
LIABILITY/VEHICLE INS.	$ 15,387
POSTAGE	$ 300
FUEL VEHICLES/EQUIPMENT	$ 4,000
PESTICIDES	$ 60,000
PROFESSIONAL ASSN.	$ 205
PESTICIDE LICENSES	$ 450
TRAVEL	$ 1,500
RETIREMENT ASSESSMENT	$ 13,000
BERK COUNTY ALARMS	$ 300
TELEPHONE/INTERNET	$ 1,850
EQUIPMENT/SUPPLIES	$ 10,900
OFFICE SUPPLIES/PRINTING	$ 802
DPH TESTING	$ 11,000

THE TARGET PEST

All mosquitoes found within the project boundaries belong to one of two groups:

-Floodwater mosquitoes lay their eggs on dry ground in areas that are subject to flooding. These eggs lay dormant until inundation, when hatching is initiated. Hatching is synchronized and development from egg to blood-feeding adult can occur within 7 days when temperatures are high. Areas within the project that favor the development of floodwater mosquitoes include swamp and marsh margins, roadside ditches, vernal pools, and the floodplains of rivers and brooks. From a nuisance perspective, these are the most prolific and bothersome mosquitoes for member town residents.

-Permanent or semi-permanent water mosquitoes lay their eggs directly on the water surface, either singly or in a cluster called a raft. The developing population is continually being replenished resulting in the constant emergence of new adult mosquitoes. The most important species occurring in the project area are *Anopheles* and *Culex* mosquitoes, which are found in catch basins, stagnant polluted water areas that form the margins of lakes and ponds and in unmounted tires, discarded containers and plugged gutters. *Culex* mosquitoes are considered a major vector in the transmission of West Nile Virus.

THE TACTICS

Operations of the Berkshire County Mosquito Project are modeled on the principles of Integrated Pest Management. Primary emphasis is placed on the decimation of target pests when they are in their most vulnerable and concentrated stage of development. In the case of mosquitoes this is the larval stage. Principal focus is placed on periodic surveys of the project area to locate permanent and temporary mosquito sources and then to routinely inspect these areas, treating only those sources found to hold mosquitoes. Additional efforts are made to eliminate sources through water management practices whenever possible. Finally temporary relief can be provided through adult control measures in those areas where surveillance shows a need.

OPERATIONAL OVERVIEW

1. Mapping

An effective mapping system to aid personnel in locating mosquito breeding Sites sources is crucial to any mosquito abatement operation. BCMCP implemented an automated mapping system in 2012 which uses ARC Geographic Information System technology to identify, measure, and record surveillance and Treatment data using hand held devices in the field. To date, over 550 breeding locations and 7,962 catch basins are mapped in member towns. Since 2013 all surveillance and treatment data has been recorded using this system. A program in the system automatically calculates application rates for each site based on the size of the site, the product being used, and the terrain type. Reports of work progress and treatment data can easily be generated from the project office.

Another benefit to the use of this system is that schedules for inspection and records of treatment are available in the field through handheld GPS units. Multiple technicians are able to work in the same zone efficiently.

2. Larval Control

Once an accurate mapping system has been established a routine inspection and treatment program can be implemented to control mosquitoes while they are concentrated, relatively immobile and accessible in the larval stage. Larval control is a major component of the BCMCP program and requires approximately fifty percent of our manpower during the breeding season. We strive to inspect each potential breeding site on a seven to ten day interval. Only those sites found to harbor mosquito larvae are treated. All sites inspected and treated are recorded each day and are on file at the project headquarters.

3. Adult Control

To determine the necessity for adult control, the project utilizes a procedure known as the “landing count” to determine the number of adult mosquitoes present at a particular location. (Adult mosquitoes are actually counted over a fixed interval at a specific location.) Placement of mosquito traps in areas that have the potential to produce large mosquito populations provide general population trends and are also a source of species information. Service requests from residents in member towns are also a valuable tool in determining where adult mosquito control may be necessary. The decision to initiate adult control

measures is based on information collected from all of these sources. Adult mosquito control is a vital component of Integrated Mosquito Management and accounts for approximately thirty percent of our manpower during the breeding season.

When WNV or EEE are detected in a particular area, an immediate adulticide response is recommended. Follow up surveillance measures and continued adulticide applications are used to limit virus amplification and exposure of human populations to viral agents. When virus is detected landing counts are curtailed and trapping data is used to evaluate mosquito populations.

4. Source Reduction

Source reduction involves habitat manipulation to eliminate or modify places that support adult mosquitoes. When source reduction methods are used appropriately they provide the most effective and long lasting mosquito control of all methods of management. In addition, source reduction is the least expensive method in the long term despite higher initial costs because it need not be repeated frequently. Source reduction usually consists of maintenance of existing drainage systems to restore traditional flow patterns by removing accumulated debris and obstructions. All work performed for source reduction by the project is done in a manner designed to cause minimal disturbance to the existing environment. We use only hand tools and all work is done in compliance to established best management practices. Source reduction projects are usually carried out in the fall months after the mosquito breeding season has ended.

5. Arbovirus Surveillance

The mosquito is considered the most important disease carrying vector on earth. Until the early part of the twentieth century little was known about the existence of mosquito borne diseases and their effects on human populations. Fortunately most of these diseases are not prevalent in our area. There are however two diseases that have become cause for concern in Massachusetts, and more recently in Berkshire County; West Nile Virus ,WNV and Eastern Equine Encephalitis, EEE. The Massachusetts Department of Public Health administers a statewide program to monitor mosquito populations for the presence of WNV and EEE, establish risk levels for local communities and disseminate information to the public and local boards of health concerning mosquito borne disease. The BCMCP participated in this program in 2019. The arbovirus surveillance season Began on June 4, 2019 and continued to October 2nd, 2019 in Berkshire County. Each week 15 to 20 gravid mosquito traps and 10 to 12 C02baited light traps were deployed at locations throughout member towns to collect

mosquito samples that were prepared and shipped to MDPH labs for analysis. A total of 421 samples were tested from Berkshire County in 2019. One sample tested positive for West Nile Virus on July 25th. This was the only mosquito isolation of WNV in Berkshire County for 2019. There were no isolations of Eastern Equine Encephalitis in Berkshire County in 2019.

Surveillance for 2019 showed that West Nile Virus remains present in our area and can show up at varied locations and times throughout the season. The previous two seasons showed record levels of WNV in the environment. Continued vigilance in the areas of surveillance and response are necessary to insure that when WNV comes into the community it does not amplify which can lead to human or animal infection. Additional trapping to target *Culiseta melanura* and *Coquillettidia perturbans* became a priority in 2014 after Eastern Equine Encephalitis was found in both of these species in 2013. This is of particular concern in that EEE has been found in *C. perturbans* which is considered a bridge vector for EEE and could spread the disease to mammals (humans). Surveillance will remain a high priority for 2020 and future years in order to identify the presence of mosquito borne disease and to effectively target potential disease vectors.

6. Public Outreach

The goal of public outreach is to increase understanding and cooperation among constituents. The goal of Integrated Mosquito Management (IMM) is to improve the health and quality of life of our human community. It is important that as many people as possible know the basics of mosquito biology, the diseases that mosquitoes can potentially carry and transmit, and the methods and materials that we use to control them. Our challenge is to have the public understand that IMM is a unified process that is scientifically developed to ensure adequate results while simultaneously protecting the safety of humans and the natural world around us. We use every opportunity available, such as media interviews, public events, or even personal contacts made while in the field to describe our activities.

MOSQUITO MANAGEMENT AROUND THE HOME

There are several ways that homeowners can minimize the number of biting mosquitoes around the house. One of the easiest ways to manage mosquitoes is to eliminate standing water where mosquitoes can lay eggs.

Some common breeding sites are:

-Artificial containers (pails, paint cans, discarded tires, open cesspools or septic tanks, boats, pool covers, bird baths, and wading pools)

Without standing water mosquitoes cannot reproduce. Old containers should be disposed of or recycled. Swimming pool filter systems should be maintained and in good working order. Openings to water sources can be sealed as in rain barrels or septic tanks. Rotten tree holes or stumps should be filled with sand. Old tires should be disposed of or stacked and covered to prevent rainwater from collecting inside. Ornamental pools and aquatic gardens can also breed mosquitoes if the water is allowed to stagnate. Water should be changed regularly or an aerator should be installed. Biological control can be achieved by stocking fish that will eat mosquito larvae.

There are also ways that the homeowner can minimize the annoyance of adult mosquitoes. Mosquitoes must rest in shady calm areas and will avoid breezy or sunny locations. Removing trees and mowing tall grass will reduce the number of places where mosquitoes can rest. Mosquitoes are most active in the hours around dusk and dawn. Simply avoiding outdoor activity during these times of peak activity can minimize contact with mosquitoes.

For more information on mosquito control techniques or the products used by the Berkshire County Mosquito Control Project please call or email us.

Berkshire County Mosquito Control Project
(413) 447-9808
chris@berkshiremosquito.org

2019 MOSQUITO SEASON SUMMARY

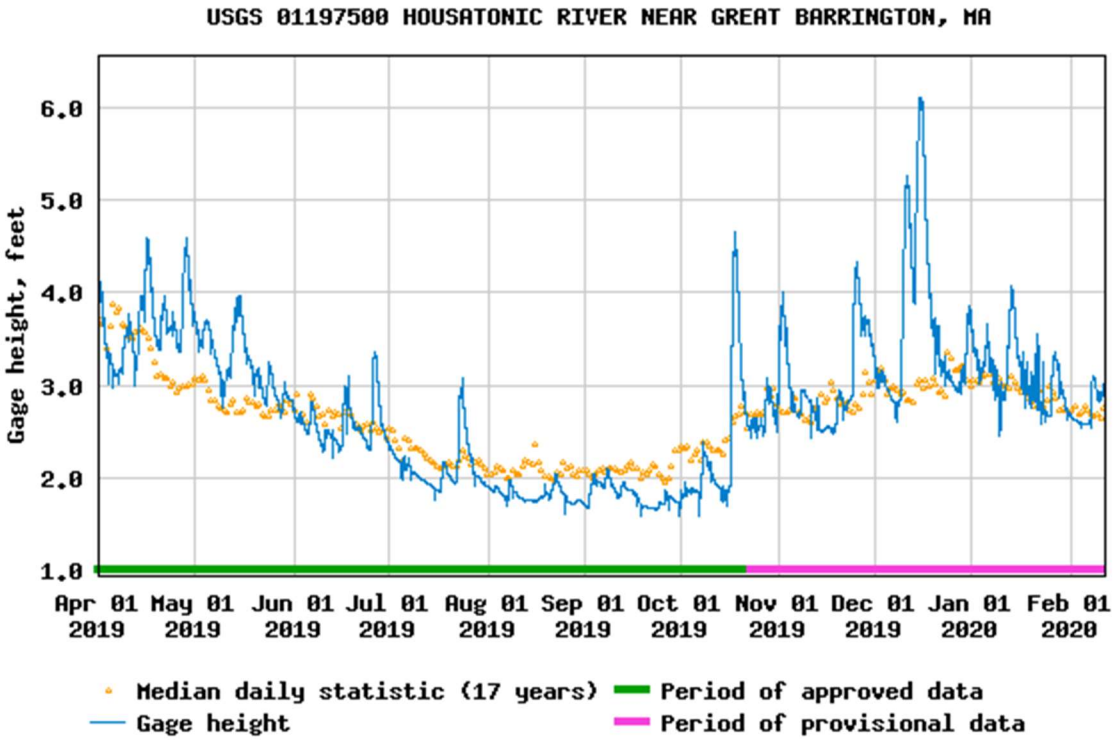


Figure 1. USGS 01197500 Housatonic River Near Great Barrington

The Berkshire County Mosquito Control Project began operations in early April 2019 with surveillance of over 500 known breeding sites in the member towns. Figure 1 clearly represents the overall pattern of precipitation for the 2019 season. (When the Gage height in Figure 1 exceeds 5 ft. the Housatonic begins to flood the low fields in Great Barrington and Sheffield.) Large areas of surface water resulted from ample precipitation in 2018 and larval treatments were scaled up to address spring brood species developing in woodland pools and flooded areas. Spring larval treatments were able to address the majority of early breeding before emergence. The scope of work in the spring of 2019 was very large and areas had to be prioritized in order to stay ahead of the emerging spring brood mosquitoes. As the season progressed, we experienced a drying trend that continued through most of the season.

A few areas did produce significant populations of spring species. Resident reports of high mosquito numbers initiated investigation that led to mapping of new breeding habitat in Sheffield. Targeted ULV treatments were used to address the adult mosquitoes. By early July Culex species were observed in increasing numbers in surveillance traps. Specific areas with high trap counts were targeted for ULV treatment to reduce the likelihood of WNV gaining a foothold in these areas. Surface water continued to diminish, and preparations were made to address the seasonal emergence of permanent water species. Early July yielded high numbers of *Coquilletidia perturbans* mosquitoes which hatch in early July from cattail swamps and areas of emergent vegetation in permanent wetlands. This species is particularly problematic in that the larva attaches and breaths through the vascular system of wetland plants. This makes them resistant to larval control because they are not spending as much time in the water column as other species. Also, their native habitat can be expansive, and access is limited for ground-based treatment. This species is of added concern because it is an important vector of Eastern Equine Encephalitis. The Massachusetts Department of Public Health and mosquito districts were on high alert in 2019 for signs of EEE. *Culiseta melanura* populations were high across the state in the fall of 2018 and the cyclical pattern of EEE emergence was overdue. When trap data showed *Cq. perturbans* levels of over 400 caught per night ULV treatments were scheduled in specific areas to reduce populations. By the third week in July, trapping data showed populations below threshold levels and a declining population. A single isolation of WNV in *Culex* mosquitoes occurred in Pittsfield on July 25th. Submissions of *Cq. perturbans* and *Cs. melanura* were increased during the season to detect the presence of EEE and *Culex pipiens/restuans* were sampled in greater numbers to look for WNV. Mosquito populations of all species were low during the month of August. Limited precipitation did not lead to flooding events and in most cases was absorbed before mosquito breeding could occur. Dry conditions continued through September and the season concluded with a single isolation of WNV.

Surveillance trapping for West Nile Virus and Eastern Equine Encephalitis began June 4th, 2019. All trap locations that have a past history of isolations for WNV or EEE are considered permanent trap locations with samples being tested weekly. Gravid traps which capture egg bearing mosquitoes are used to sample *Culex pipiens/restuans* which are vectors for WNV, while CO2 baited light traps are used in an effort to collect *Culiseta melanura* which is known to be the species responsible for EEE transmission in birds. These traps are also capable of capturing other species of mosquito that are known to be vectors of EEE. After two consecutive years of high WNV in the mosquito populations in Berkshire County, efforts focused on collecting and testing as many possible vector mosquitoes as possible. BCMCP staff trapped and submitted 421 samples from member towns during 2019 with only a single WNV isolation for the season. Other areas of the state saw a return of Eastern Equine Encephalitis with the first isolation occurring in the mosquito population on July 23rd in Bristol County.

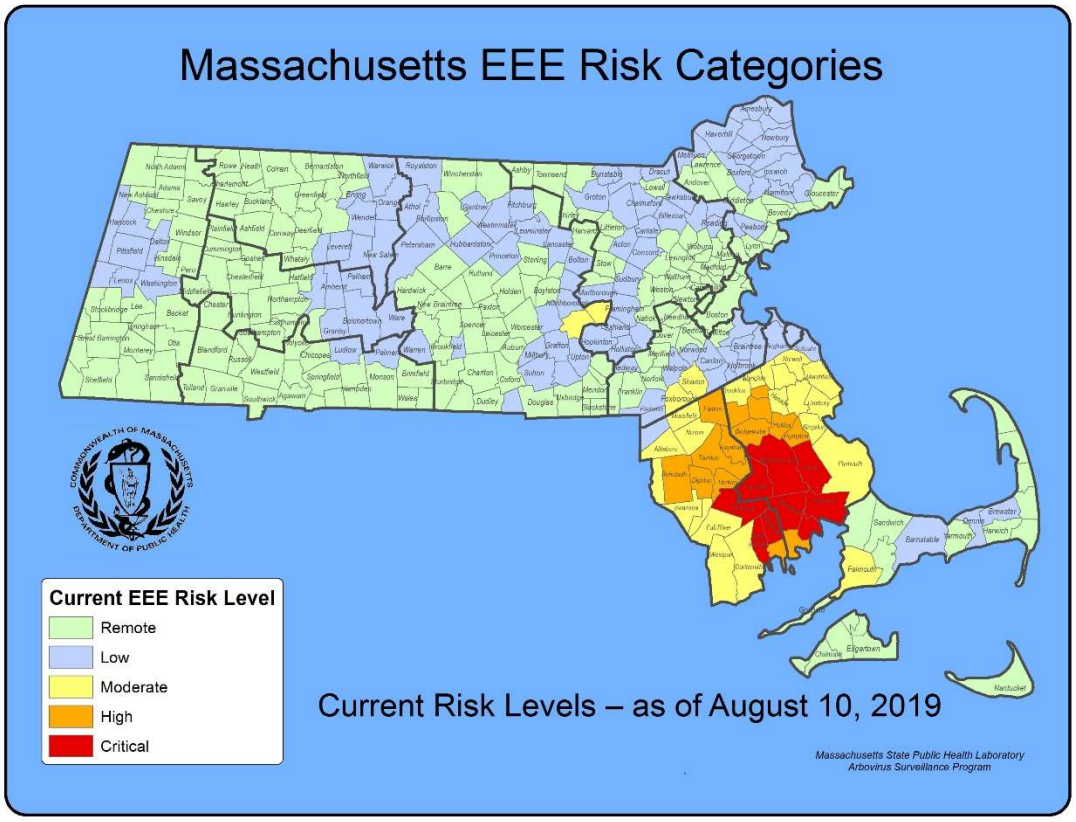


Figure 2. MADPH Arbovirus Risk Map (Early August 2019)

Isolations of EEE in the mosquito population in Southeastern Massachusetts increased rapidly through the last week of July which indicated the possibility of a significant outbreak, When WNV or EEE is detected in mosquito samples the first priority is to inform the public that the disease is present and then provide information on how they can protect themselves from exposure to biting mosquitoes. The immediate area where the virus was isolated is then evaluated to make sure that all possible measures have been taken to reduce mosquito populations. A recommendation is made for a rapid application of adulticide in the area in order to reduce the threat of exposure to infected mosquitoes. This process also prevents the infection of birds in the area thereby interrupting the amplification of WNV and EEE. This process is consistent with recommendations from The Centers for Disease Control and Prevention. As EEE isolations increased, MADPH began preparing for large scale aerial ULV treatments in target areas. As surveillance data indicated, treatment areas were expanded to address the disease threat. Aerial ULV treatments continued across large areas of the state in August and September until low

temperatures precluded further treatments. The data from the 2019 season is still being evaluated as of this writing but is certainly one of the most significant occurrences of EEE ever seen in the state.

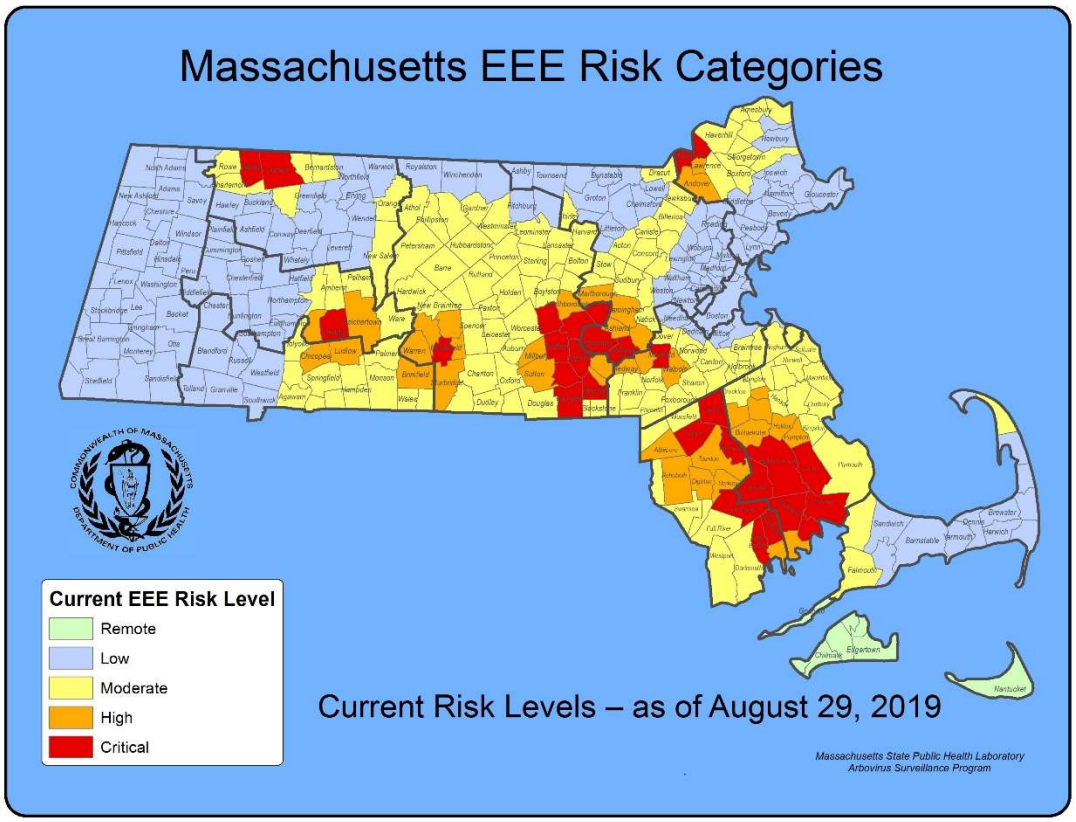


Figure 3. MADPH Arbovirus Risk Map (Late August 2019)

The events related to the EEE outbreak of 2019 demonstrate the importance of an effective system of surveillance and control in order to protect populations from mosquito borne disease. This disease threat was detected early, determined to be critical and a rapid commensurate response of communication and vector control was initiated to protect public health. The 2018 mosquito season saw the highest threat levels of WNV ever seen in Massachusetts and 2019 likely saw highest threat levels of EEE ever seen. It is important that we remain prepared for future challenges.

Source reduction is a term used to describe work performed in wetlands and drainage systems to reduce breeding habitat for mosquitoes. The process involves cleaning and maintenance of ditches and waterways to prevent flooding and backups which would favor mosquito breeding. Mosquito control districts in the state of Massachusetts have statutory authority to work in wetland environments through exemptions granted through the Wetlands Protection Act. The Berkshire County Mosquito Control Project does however consult with the Natural Heritage and Endangered Species Program when work is performed in high priority Natural Heritage areas. All work is performed using hand tools according to accepted "best management practices "which are designed to accomplish project goals while minimizing disturbance to the environment. BCMCP Currently maintains over 17,000 linear feet of ditch to reduce breeding habitat. In addition, Berkshire County Mosquito Control Project worked with cities and towns in 2019 at several locations where beaver activity had caused drainage problems by restoring beaver exclusion devices, removing debris and restoring water flow.

Education and outreach are essential to the mission of mosquito control especially when mosquito borne disease is present. Employees of the Berkshire County Mosquito Control Project are always encouraged to interact with the public whenever possible to explain our work, to describe our methods, the products we use and explain how they work. In 2019 Berkshire County Mosquito Project contributed to several local events such as Third Thursday in Pittsfield and after school educational programs. The Project's Educational Brochure is distributed at every opportunity.

MATERIALS USED

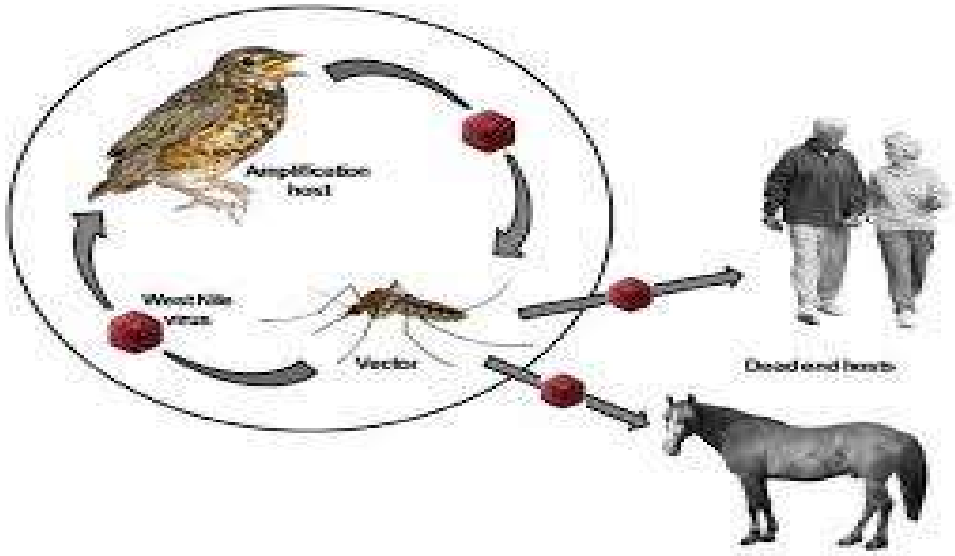
The most effective way to deal with mosquitoes is to control the population in the larval stages, before they become flying adults that cause annoyance and can possibly spread disease. For larval control the Berkshire County Mosquito Control Project uses an organic larvicide, Vectobac which is a formulation of the bacteria *Bacillus thuringiensis* and is extremely effective against larval populations. The product is introduced directly into the water column where it is ingested by mosquito larvae. The active ingredient interrupts the gut lining of the mosquito larvae causing them to stop feeding and die within hours. This product does not affect species other than mosquitoes, black flies, and midges and does not accumulate in the environment. For catch basin larval treatments in 2019 the Project used Fourstar 90-day BTI briquets and Vectolex WSP packets which contain a formulation of *Bacillus sphaericus* another biological larvicide which can actually be recycled in the larval population.

In 2019 the Berkshire County Mosquito Control Project applied 2,019 lbs. of Vectobac G to 321 acres of larval habitat in member towns. Larval control continues throughout the season and breeding areas are treated each time surveillance indicates larval development. BCMCP treated a total of 3,988 catch basins in the months of June, July, and August.

Unfortunately, all mosquito breeding sites are not able to be treated because of either size or accessibility issues. From time to time the populations of adult mosquitoes present a public health risk or increase above tolerable levels and adult treatments become necessary. The tolerance of individuals to mosquito annoyance varies throughout the population but research has shown that if from three to five mosquitoes land on a person at a particular location over the course of one minute intervention is warranted. When surveillance indicates this condition is present, adulticide applications are in order. For adult mosquito control the Berkshire County Mosquito Control Project uses Duet which is a formulation of Prallethrin and Sumithrin which are synthetic pyrethroids. These chemicals are synthetic versions of the natural insecticides found in chrysanthemum flowers. Duet is an advanced product that has been shown to be extremely effective at controlling adult mosquito population across the globe. The combination of Prallethrin and Sumithrin cause a condition known as “benign agitation” in which mosquitoes are drawn from their resting state allowing greater control of the population. This product kills mosquitoes by interrupting neural transmissions causing paralysis. This product was chosen because it has a very low toxicity to humans and mammals and breaks down rapidly in the environment. This product does have the potential, however to impact non target organisms such as fish and honey bees. To prevent adverse effects on the environment and species other than mosquitoes, applications are made only when necessary and strictly according to label instructions prescribed by the Environmental

Protection Agency. These label instructions provide wide margins of safety for humans and the environment. The project applied 82.22 gal. Duet in 2019 over an area of 16, 975 acres.

At certain locations, conditions exist that provide excellent resting habitat for adult mosquito populations. Mosquitoes are soft bodied insects and weak flyers. They cannot tolerate strong sunlight or breezy conditions. Mature landscaping and shrubbery in residential areas can harbor large mosquito populations. When requested, the Berkshire County Mosquito Project may use FLIT 10EC or Mavrik to treat vegetation at the perimeter of a property forming a barrier to annoying mosquitoes. FLIT 10EC and Mavrik are applied by backpack sprayer to kill active mosquito populations and to provide residual protection of several days. The active ingredient in FLIT 10EC is Permethrin which is a synthetic pyrethroid. This product was chosen because of its low toxicity and for the fact that it does not persist in the environment or accumulate in the bodies of non-target species. The active ingredient in Mavrik is Tau-fluvalinate which is also very low toxicity and presents less risk to non-target species in certain areas. Risks to the environment or species other than the mosquito are also mitigated by applying the product only when necessary and strictly according to label instructions. In 2019 BCMCP applied 24 oz. of Mavrik over 3 acres.



Enzootic Cycle of West Nile Virus

CLARKSBURG 2019

Crews from the Berkshire County Mosquito Control Project began larval surveillance in The Town of Clarksburg on 5/6/19 on the known breeding areas in the town. The first larvae were detected and treated on 5/6/19. And by the end of the season 13 sites had been treated with larvicide. A total of 53 catch basins required treatment in 2019. Arbovirus surveillance began on 6/17/19 and was concluded on 8/29/19.
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The following materials were used for larval control.

VECTOBAC G (BTI)	21.7 LBS.	4.5 ACRES
VECTOLEX WSP (CATCH BASIN)		53 PACKETS

Larval Control:

BREEDING SITE INSPECTIONS	74	TREATMENTS	13
CATCH BASIN INSPECTIONS	174	TREATMENTS	53

DPH Arbovirus Surveillance:

POOLS SUBMITTED	24	NO ISOLATIONS WNV OR EEE

HINSDALE 2019

Crews from the Berkshire County Mosquito Control Project began larval surveillance in the Town of Hinsdale on 5/7/19 on the known breeding sites in the town. The first larvae were detected and treated on 5/7/19 and by the end of the season 15 sites had been treated with larvicide. A total of 103 catch basins were treated in the town. Arbovirus surveillance began on 6/4/19 was concluded on 8/29/19.

The following materials were used for larval control.

VECTOBAC G (BTI)	43.4 LBS.	6.4 ACRES
VECTOLEX WSP (CATCH BASIN)	103 PACKETS	

Larval Control:

BREEDING SITE INSPECTIONS	52	TREATMENTS	15
CATCH BASIN INSPECTIONS	261	TREATMENTS	103

DPH Arbovirus Surveillance:

POOLS SUBMITTED	14	NO ISOLATIONS WNV OR EEE

The following materials were used for adult control between 7/12/19 AND 8/16/19.

DUET	5.51 GAL.	1,138 ACRES

LANESBOROUGH 2019

Crews from the Berkshire County Mosquito Control Project began larval surveillance on 5/28/19. The first larvae were detected on 5/28/19 and by the end of the season 22 sites had been treated with larvicide. A total of 158 catch basins were treated during the breeding season.

The following materials were used for larval control.

VECTOBAC G (BTI)	28 LBS.	6 ACRES
VECTOLEX WSP (CATCH BASIN)		158 PACKETS

Larval Control:

BREEDING SITE INSPECTIONS	59	TREATMENTS	22
CATCH BASIN INSPECTIONS	628	TREATMENTS	158

DPH Arbovirus Surveillance:

POOLS SUBMITTED	16	NO ISOLATIONS WNV OR EEE

OTIS 2019

Crews from the Berkshire County Mosquito Control Project began surveillance on 5/1/19 of the known mosquito breeding sites in the town. The first larvae were detected and treated on 5/1/19 and by the end of the season 39 sites had been treated with larvicide. A total of 80 catch basins were treated during the breeding season.

The following materials were used for larval control.

VECTOBAC G (BTI)	83 LBS.	20 ACRES
VECTOLEX WSP (CATCH BASIN)	80 PACKETS	

Larval Control:

BREEDING SITE INSPECTIONS 146	TREATMENTS 39
CATCH BASIN INSPECTIONS 247	TREATMENTS 80

DPH Arbovirus Surveillance:

POOLS SUBMITTTED 19	NO WNV OR EEE ISOLATIONS

The following materials were used for adult control between 6/19/19 and 8/21/19.

DUET	20.28 GAL.	7,060 ACRES

PITTSFIELD 2019

Crews began surveillance on the known breeding sites in the City on 4/12/19. The first larvae were detected and treated on 4/12/19 and by the end of the season 74 sites had been treated with larvicide. A total of 3,054 catch basin were treated with larvicide. Arbovirus surveillance began on 6/4/19 and surveillance was completed on 10/2/19.

The following materials were used for Larval Control

VECTOBAC G (BTI)	1,303 LBS.	180.2 ACRES
FOURSTAR 90 (CATCH BASIN)	3,009 BRIQUETS	
VECTOLEX WSP (CATCH BASIN)	45 PACKETS	

Larval Control:

BREEDING SITE INSPECTIONS	173	TREATMENTS	74
CATCH BASIN INSPECTIONS	6,412	TREATMENTS	3,054

DPH Arbovirus Surveillance:

POOLS SUBMITTED	198	WNV ISOLATION 7/25/19 NO ISOLATION EEE

The following materials were used for adult control between 7/15/19 and 7/23/19

DUET	1.85 GAL.	382 ACRES

RICHMOND 2019

Berkshire County Mosquito Control Project began operations in The Town of Richmond on 4/19/19. The first larvae were detected and treated on 4/19/19. By the end of the season 7 sites had been treated with larvicide. A total of 18 catch basins were treated during the season. Arbovirus surveillance began on 6/5/19 and surveillance was completed on 8/29/19

The following materials were used for control:

VECTOBAC G (BTI)	21.4 LBS.	3.1 ACRES
FOURSTAR 90 (CATCH BASIN)	18 BRIQUETS	

Larval Control:

BREEDING SITE INSPECTIONS	16	TREATMENTS 7
CATCH BASIN INSPECTIONS	71	TREATMENTS 18

DPH Arbovirus Surveillance:

POOLS SUBMITTED	24	NO ISOLATIONS WNV OR EEE

The following materials were used for adult control 7/4/19 to 8/15/19.

DUET	6.4 GALS.	1,321 ACRES

SHEFFIELD 2019

Crews from the Berkshire County Mosquito Control Project began larval surveillance in the Town of Sheffield on 4/23/19 Larvae were detected and treated on 4/23/19. By the end of the season 41 breeding locations had been treated. A total of 117 catch basins were treated during the season. Arbovirus surveillance began on 6/5/19 and was completed on 9/18/19.

The following materials were used for larval control:

VECTOBAC G (BTI)	451.3 LBS.	90.6 ACRES
VECTOLEX WSP (CATCH BASIN)		117 PACKETS

Larval Control:

BREEDING SITE INSPECTIONS	135	TREATMENTS	41
CATCH BASIN INSPECTIONS	339	TREATMENTS	117

DPH Arbovirus Surveillance:

POOLS SUBMITTED	33	NO ISOLATIONS WNV OR EEE

The following materials were used for adult control from 6/20/19 to 8/15/19.

DUET	19.9 GAL.	4,108.4

SHERWOOD GREENS ROAD MANAGEMENT DISTRICT 2019

Berkshire County Mosquito Control Project began larval surveillance at Sherwood Greens Road Management District in Becket, MA on 5/1/19. By the end of the season 22 breeding sites had been treated with biological larvicide. Arbovirus surveillance began on 6/17/19 was completed for the season on 10/2/19.

The following materials were used for larval control:

VECTOBAC G	55.6 LBS.	7.1 ACRES

Larval control:

BREEDING SITE INSPECTIONS	44	TREATMENTS 22

DPH Arbovirus Surveillance:

POOLS SUBMITTED	22	NO ISOLATIONS WNV OR EEE

The following materials were used for adult control from 7/10/19 to 7/24/19.

DUET	1.4 GAL.	284.9 ACRES

STOCKBRIDGE 2019

Crews from the Berkshire County Mosquito Control Project began larval surveillance in the Town of Stockbridge on 5/8/19. The first larvae were detected on 5/8/19. Two sites were treated with larvicide. A total of 368 catch basins were treated in town. Arbovirus surveillance began on 6/5/19 and was completed on 9/11/19.

The following materials were used for larval control:

VECTOBAC G (BTI)	6 LBS.	1 ACRES
VECTOLEX WSP (CATCH BASIN)		368 PACKETS

Larval Control:

BREEDING SITE INSPECTIONS	43	TREATMENTS	2
CATCH BASIN INSPECTIONS	516	TREATMENTS	368

DPH Arbovirus Surveillance:

POOLS SUBMITTED	62	NO ISOLATIONS WNV OR EEE

The following materials were used for adult control from 6/21/19 to 9/3/19

DUET	18.4 GAL.	3,799 ACRES
MAVRIK	24 OZ	3 ACRES

TYRINGHAM 2019

Crews from the Berkshire County Mosquito Control Project began larval surveillance in the town of Tyringham on 5/3/19. On 5/3/19 the first larvae were detected and treated. At the end of the season a total of 3 breeding locations had been treated with larvicide. A total of 21 catch basins were treated in the town. Arbovirus surveillance began on 6/17/19 and was completed on 8/29/19.

The following materials were used for larval control:

VECTOBAC G (BTI)	6 LBS.	1.8 ACRES
VECTOLEX WSP (CATCH BASIN)		21 PACKETS

Larval Control:

BREEDING SITE INSPECTIONS	9	TREATMENTS	3
CATCH BASIN INSPECTIONS	57	TREATMENTS	21

DPH Arbovirus Surveillance:

POOLS SUBMITTED	9	NO ISOLATION WNV OR EEE

Adult Control:

The following materials were used for adult control between 7/3/19 and 8/7/19

DUET	1.5 GAL.	316 ACRES

REFERENCES CITED

-USGS (United States Geological Survey) 2014 National Water Information System: Web Interface, USGS water resources, USGS01197500 Housatonic River Near Great Barrington, MA.

-MADPH Arbovirus Surveillance Program 2019 (EEE Risk Map)