

COMMONWEALTH OF MASSACHUSETTS
STATE RECLAMATION & MOSQUITO CONTROL BOARD

CENTRAL MASSACHUSETTS MOSQUITO CONTROL PROJECT
est. 1973



**EXECUTIVE SUMMARY
2020**

February 2020

CMMCP MISSION STATEMENT

The objective of the Central Massachusetts Mosquito Control Project (CMMCP) is to attain an efficient, economic mosquito control operation which will provide the best results possible and be consistent with all ecological aspects and the best interests of the member towns.

Our goal is to reduce mosquito exposure to the public, and the potential for disease transmission by mosquitoes, by utilizing proven, sound mosquito control techniques. CMMCP believes the best way to accomplish this task is by practicing an Integrated Pest Management (IPM) approach as it relates to mosquito control in Massachusetts. IPM utilizes a variety of control techniques and evaluation procedures. Control efforts are undertaken only after surveillance data has been collected and analyzed. Training, experience and common sense dictate our response in any given situation.

It is our desire and responsibility for this Project to have the best mosquito control for the communities that we serve.

INTRODUCTION:

The Central Massachusetts Mosquito Control Project currently provides its services to 44 cities and towns throughout Middlesex and Worcester Counties. The towns of Bolton and Grafton voted at town meeting to join the Project. The Project's headquarters is located at 111 Otis Street, Northboro, MA. Please call (508) 393-3055 during business hours for information. Twenty-one (21) full time and ten (10) seasonal staff were employed at CMMCP in 2019. This the year we received a total of sixteen thousand, eight hundred and thirty-one (16,831) requests for service from town residents and officials. A map of our service area is on page 7.

EDUCATION:

The Mosquito Awareness Program which we offer to elementary schools and other civic organizations in our district has become very popular. Project staff meets with students, teachers or residents to discuss mosquito biology, mosquito habitat, and control procedures. Much of the presentation is directed towards what can be done to prevent mosquitoes from breeding around their homes. This program is tailored to meet the needs of the specific audience. Due to the COVID-19 pandemic in 2020, CMMCP laboratory personnel and other administrative staff were unable to meet in person for any educational sessions. CMMCP admin staff were interviewed on several cable TV and local radio stations. 2011 marked the start of the "CMMCP Mosquito Education Program for Seniors" in which presentations are conducted at local senior centers to increase mosquito-borne disease awareness. Over 1,000 specialized brochures for this program have been distributed to area seniors. Several different educational pamphlets are available to anyone interested in learning about mosquito control and the services provided by the Project, and these items are routinely stocked in member Town/City Halls and libraries. Display boards with information on our program are rotated in area

Town/City Halls throughout the year. Bookmarks with educational information have been printed and stocked in member libraries and town halls, and are used as part of the education program. We have a website at <https://www.cmmcp.org/> that has extensive information on mosquito biology, our control procedures, products we use, etc.

DITCH MAINTENANCE & WETLAND RESTORATION:

As part of our effort to reduce the need for pesticides we continue to place great emphasis on our wetlands restoration program. By cleaning clogged, degraded and overgrown waterways, mosquito breeding from that area can be reduced or eliminated and drainage areas are restored to historic conditions. Three thousand, five hundred and sixty (3,560) culverts were cleaned in an attempt to eliminate unnecessary standing water and reduce mosquito breeding. This work was done in conjunction with cleaning, clearing, and digging of two hundred and fifty thousand, four hundred and fifty-one (250,451) feet of streams, brooks and ditches. This represents over forty-seven (47) miles of waterways which were cleaned and improved by Project personnel in 2020.

ARBOVIRUS CONTROL:

As part of our West Nile Virus (WNV) prevention program, eighty-eight thousand, six hundred and fifty (88,650) catch basins were treated with larvicidal products to control the mosquitoes that seek out these cool dark wet areas to develop, including the *Culex* species of mosquito, a major target for West Nile Virus transmission. We identify priority areas in each town and treat the basins in these selected areas to reduce the emergence of this arbovirus. The priority areas are as follows: prior year WNV activity; senior centers & over 55 housing developments; recreation areas; schools and neighborhoods (higher density first); industrial areas. We performed pre-emptive treatments in late May in areas that showed West Nile Virus in the prior year, with follow up treatments throughout the season as part of our standard protocol treatment. Additional seasonal staff and the new electronic mapping and routing program for adulticiding were responsible for this large increase in basin treatments.

MOSQUITO SURVEILLANCE:

The Project's surveillance program monitors adult mosquito and larval population density, and is the backbone for prescribing various control techniques. Specialized mosquito traps are deployed throughout the Project's service area to sample for mosquitoes that may be transmitting mosquito-borne diseases. In conjunction with the Mass. Dept. of Public Health we sample in areas suspected of harboring WNV and other viruses. One thousand two hundred and ten (1,210) pools (collections) of mosquitoes totaling twenty-eight thousand, four hundred and thirty-seven (28,437) individual specimens were tested for mosquito-borne viruses this year. No (0) collections were identified positive this year for Eastern Equine Encephalitis or West Nile Virus. CMMCP lab personnel processed a total of four thousand, three hundred and nineteen (4,319) collections of mosquitoes containing fifty thousand, three hundred and seventeen (50,317) individual specimens, representing thirty-four (34) mosquito species.

Target Species	<i>Ae. vex</i>	<i>Cq. per</i>	<i>Cs. mel</i>	<i>Oc. can</i>	<i>Culex</i>	All Species
No. Pools	252	753	115	198	673	4198
Total Specimens	2304	32587	341	2825	4586	49838
No. Pools WNV +	0	0	0	0	0	0
No. Pools EEE +	0	0	0	0	0	0

A table with the 2020 arbovirus information for our service area as well as the statewide results is included on page 8. Adult mosquito surveillance began in May and concluded in September. Six (6) full-time seasonable employees were hired for the summer to assist our Staff Entomologist, Staff Biologist and Field Biologist in their duties.

LARVAL MOSQUITO CONTROL:

Due to risk from EEE in 2019 and anticipated risk in 2020, an enhanced larval control program was implemented using organically-certified formulations of bacterial products Natular™ G and Natular™ G30, active ingredient spinosad. 21-member communities were identified as either “High” or “Critical” risk from EEE in 2019. Wetlands in these communities that were considered larval habitat for 2 species, *Cs. melanura* and *Cq. perturbans*, were identified in our GIS program and field checked for possible applications by rotary aircraft. Sites <5 acres would be treated by ground crews. Due to the specialized biology of these 2 species, larval control is difficult and the spinosad products would be field trialed to gauge control efficacy. Five hundred and fifty-one (551) acres were treated with five thousand, seven hundred and fifty-three (5,753) pounds of Natular™ G30 in *Cs. melanura* habitat in 6 communities. One thousand, nine hundred and thirty-seven (1,937) acres in twenty-one (21) communities were treated with nineteen thousand, five hundred and sixty-seven (19,567) pounds of Natular™ G in *Cq. perturbans* habitat.

Bti (*Bacillus thuringiensis* var. *israelensis*) mosquito larvicide is a species specific, non-reproducing bacterium and is used to treat areas where mosquito larvae are found. Our field crews will investigate areas we have databased and treat the area if surveillance gathered at the time shows an imminent threat of mosquito emergence. Ten thousand six hundred and ninety (10,690) pounds of organically-certified Bti (*Bacillus thuringiensis israelensis*) was applied by helicopter over two thousand one hundred and thirty-eight (2,138) acres in 3 towns, Chelmsford, Billerica & Boxborough, resulting in an average 93.03% overall reduction in larval counts. One thousand, one hundred and fourteen (1,114) additional acres were treated by hand in our area, totaling over three thousand, two hundred and fifty-two (3,252) acres of wetland that was treated, significantly reducing adult mosquito populations in these areas. We have several thousand areas catalogued that are checked and treated as needed on a routine basis, and many applications are small, measured in ounces. Larval control began in late March and continued throughout the month of September.

ADULT MOSQUITO CONTROL:

Our goal is to manage all mosquito problems with education, water management or larval

control, but we recognize that there are times when adult mosquito spraying is the best viable solution. In such cases specific areas are treated with pickup truck mounted sprayers if surveillance gathered at the time exceeds a pre-determined threshold to warrant an application. This program is offered on a **request-only** basis, and the exclusion process under 333CMR13 allows residents and/or town officials to exclude areas under their control from this or any part of our program. We apply the spray product at the lowest label rate unless mosquito-borne virus has been identified, and then we will consider other application rates depending on weather and other factors. Two hundred and ninety-six (296) landing counts were performed by Project field staff as additional surveillance or prior to the application of etofenprox to confirm that pre-determined thresholds of mosquitoes were exceeded to warrant an application. Landing rates are suspended when WNV or EEE is identified anywhere in Mass. Adult control began in early June and ended in early September with the onset of low nighttime temperatures, reduced service requests and low mosquito population density.

RESEARCH AND EFFICACY

While CMMCP is an agency charged with the control of mosquitoes, we strive to check for efficacy of our products and techniques, and whenever possible perform research in new or different areas of mosquito control. Some of our 2020 Research projects were:

- Asian Tiger Mosquito (ATM) Surveillance in Central Mass.
- Field Trials of Natular™ G30 for Pre-Hatch Control of Mosquito Larvae in Selected Spring Brood Locations
- Field Trials of Natular™ G for Control of *Coquillettidia perturbans* Larvae in Selected Cattail Locations
- Aerial Mosquito Larval Control Program
- Bottle Assays of Field Collected Mosquitoes for Levels of Resistance to Zenivex® E4 in Central Mass

The addition of a fulltime Field Biologist in 2007 allowed these research projects to become more standardized, resulting in increased validity of the findings, reinforced by multiple seasons of trials. We have annual strategy sessions in the fall/winter seasons to plan for field trials and other anticipated research for the upcoming year. CMMCP departments as determined by the Executive Director will be expected to publish annually in such journals as the Journal of the AMCA (JAMCA), the NMCA or NJMCA Proceedings, Wing Beats, and other publications. The Field Biologist composes reports as directed, such as weekly surveillance, rainfall data, aerial larval control, etc. and will graph and track trends as directed. These reports will be disseminated to various parties, i.e. SRMCB, MDPH, CMMCP Commission, posted on the CMMCP website, etc.

SOURCE REDUCTION/TIRE RECYCLING

For Earth Day 2010, CMMCP officially announced a tire recycling program added as a value added service to our member cities and towns. This program operates under grant monies received and the CMMCP operating budget. Tire piles provide suitable

areas for larval mosquito development, including those species known to carry West Nile virus. During the course of one season, the potential exists for hundreds or even thousands of mosquitoes to emerge from just one tire. If tires infested with mosquito eggs, larvae or pupae are transported, the potential to introduce mosquito species into new areas and/or the potential for the spread of arboviruses and their transmission may increase significantly.

For these reasons and as a value-added service to our member cities and towns, CMMCP has developed a used tire program, consisting of the following guidelines:

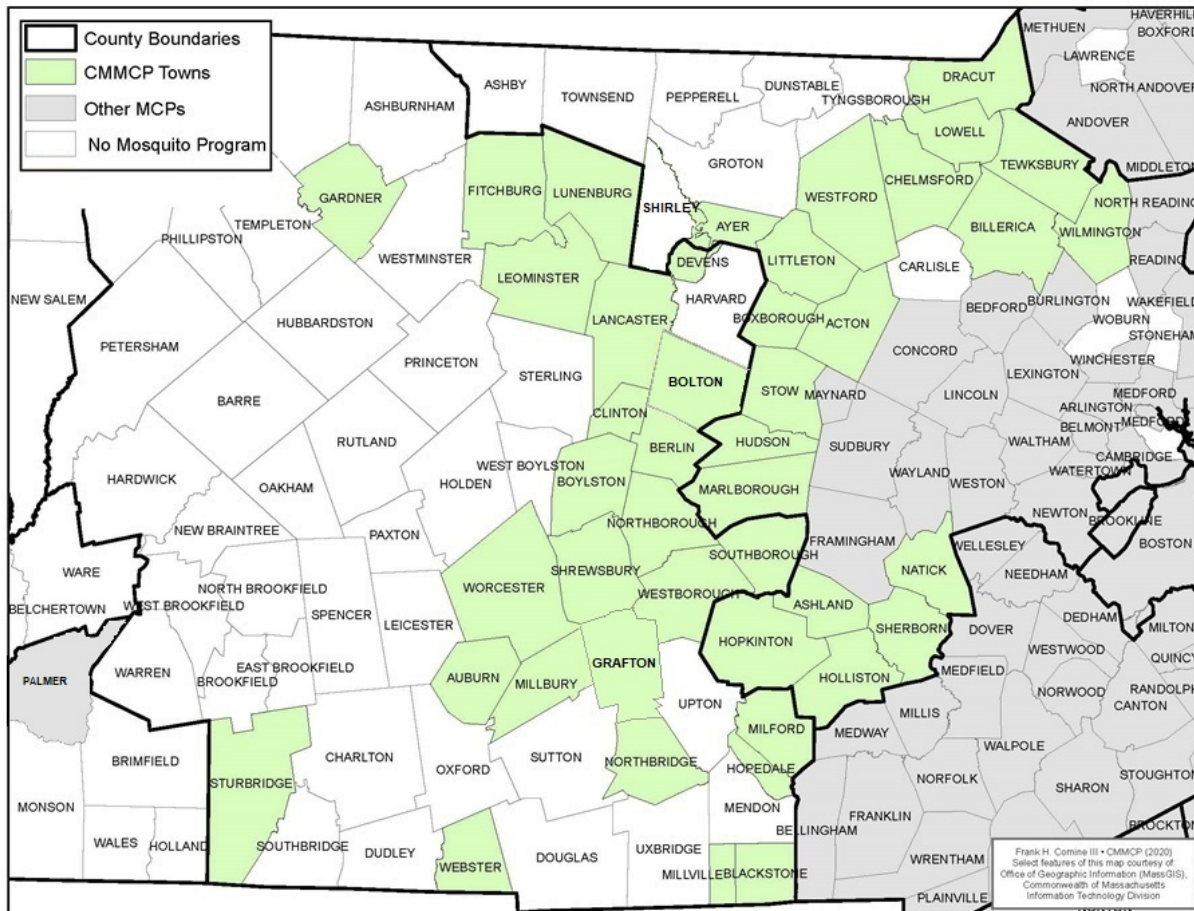
- We accept passenger and light truck tires only
- The maximum number tires from one property will be 10 at one time, subject to change without notice
- Requests for tire removal shall be done according to established procedures
- We reserve the right to refuse anything determined to be unsuitable for this program

Tires accepted as part of this program will be sent to an approved facility for recycling or disposal. This program is subject to end without notice. There is no additional cost to residents or municipalities; this program is part of the full suite of mosquito control services offered. In 2020 we collected a total of four thousand, one hundred and seventeen (4,117) tires in forty-one (41) member cities and towns. Collections will continue as time and resources allow.

Some additional highlights from 2020:

- Resistance management study; no significant resistance to pyrethroids noted, no change recommended in adulticide material choice (see full report).
- Field trials of a naturally-occurring bacterium called spinosad shows promise for pre-hatch spring brood applications, as well as larval cattail mosquito (*Cq. perturbans*) control.
- Monitoring for the Asian Tiger Mosquito (*Ae. albopictus*) found specimens of this aggressive, invasive species in the Central Mass. area.
- CMMCP participates in the EPA's WasteWise program, tracking our source reduction (tire recycling) efforts. Our efforts in this program were recognized by the EPA – Region 1 in 2017 with a "Certificate of Achievement" for sustainable waste management practices.

CMMCP SERVICE AREA – 2020



Member,
Northeastern
Mosquito Control
Association



Member,
New Jersey
Mosquito Control
Association



Partner,
EPA Pesticide
Environmental
Stewardship Program



Preserving Resources,
Preventing Waste
Partner,
EPA WasteWise
Program



Member, Massachusetts Municipal
Association



Member, MassRecycle

2020 SUMMARY TOTALS

Service Requests	Larval/Pupal Acres Treated	Adulticide Gallons	Adulticide Acres
16,831	5,740	817	133,743

Pools Sent to MDPH	Landing Counts	Culverts Cleaned	Restoration Footage	Catch Basins Treated	Tires Recycled
1,210	296	3,560	250,451	88,650	4,117

ARBOVIRUS SUMMARY 2020

WNV Surveillance Summary – Statewide	2020
Mosquito Pools Positive	97
Animals Positive	0
Humans Positive	8
EEE Surveillance Summary – Statewide	2020
Mosquito Pools Positive	66
Animals Positive	0
Humans Positive	5
CMMCP Surveillance Summary	2020
Mosquitoes Collected and Identified	50,513
Mosquito Pools Submitted for testing	1,210
Mosquito Pools Positive WNV	0
Animals Positive WNV	0
Humans Positive WNV	0
Mosquito Pools Positive EEE	0
Animals Positive EEE	0
Humans Positive EEE	0

Town	Total Service Requests	Larval/ Pupal Control Acres	Adulticide Gallons	Adulticide Acres	Catch Basins Treated	Mosquito Pools Collected	Mosquito Pools Tested	Mosquito Pools EEE Positive	Mosquito Pools WNV Positive	Culverts Cleaned	Ditch Maintenance Footage	Tires Recycled
Acton	432	6.00	17.97	2,111.15	2,162	90	33	0	0	71	10,800	11
Ashland	362	216.00	14.37	1,505.31	2,462	61	12	0	0	69	12,624	44
Auburn	410	41.00	14.48	2,395.53	1,343	85	24	0	0	55	2,640	186
Ayer	159	4.50	6.64	1,215.01	1,097	170	38	0	0	184	2,935	7
Berlin	63	17.00	4.64	736.41	1,247	82	17	0	0	84	3,100	2
Billerica	581	753.00	31.41	5,283.85	3,136	82	21	0	0	74	17,975	90
Blackstone	197	14.50	11.30	1,979.69	775	110	21	0	0	125	3,015	222
Bolton	164	0.00	3.44	493.80	1,021	83	33	0	0	118	3,065	597
Boxborough	73	874.00	4.85	904.76	842	102	32	0	0	67	3,050	4
Boylston	344	16.50	18.17	3,458.52	1,542	67	20	0	0	70	2,834	4
Chelmsford	669	538.00	32.36	5,978.11	3,153	115	30	0	0	59	3,925	34
Clinton	107	605.00	7.15	1,201.05	1,477	71	19	0	0	58	2,605	201
Devens	2	2.00	5.51	1,164.10	1,202	84	31	0	0	54	2,766	0
Dracut	640	5.50	34.04	6,037.73	1,705	129	36	0	0	52	4,585	22
Fitchburg	126	7.00	6.18	872.17	1,346	91	17	0	0	55	6,600	412
Gardner	95	99.50	3.35	569.37	1,381	135	32	0	0	142	3,090	246
Grafton	177	108.50	11.51	1,975.34	1,807	120	47	0	0	81	2,740	282
Holliston	441	320.00	15.66	1,825.17	2,732	68	20	0	0	82	7,254	3
Hopedale	240	29.00	10.72	1,830.71	1,458	96	36	0	0	94	3,300	6
Hopkinton	801	197.00	49.96	5,617.11	1,868	90	36	0	0	77	4,935	34
Hudson	220	81.50	11.64	2,059.45	1,617	109	33	0	0	51	8,070	22
Lancaster	310	6.50	17.01	2,947.69	1,674	74	21	0	0	134	8,310	58
Leominster	172	12.00	5.57	925.33	1,823	93	17	0	0	82	9,375	19
Littleton	285	10.50	9.49	1,642.73	2,709	107	34	0	0	52	6,985	0
Lowell	177	5.00	6.37	1,148.19	1,594	89	16	0	0	13	4,705	282
Lunenburg	446	12.00	16.21	2,695.42	1,902	89	21	0	0	124	6,865	92
Marlboro	283	150.00	23.29	4,037.52	1,938	77	27	0	0	120	3,343	0
Milford	588	156.00	31.90	4,589.05	2,420	90	31	0	0	177	2,980	36
Millbury	317	65.00	14.85	2,673.47	1,504	91	23	0	0	45	7,415	59
Millville	129	23.50	7.04	1,037.80	658	63	10	0	0	99	7,080	13
Natick	669	11.50	19.61	3,314.37	3,110	73	27	0	0	70	6,055	10
Northboro	355	227.50	18.50	2,951.98	2,670	59	17	0	0	68	4,815	87
Northbridge	524	105.50	20.31	3,023.74	1,448	93	17	0	0	96	3,165	58
Sherborn	148	77.50	14.09	1,392.35	1,530	95	26	0	0	56	7,360	85
Shrewsbury	536	93.00	17.95	3,057.62	3,267	61	15	0	0	68	6,615	103
Southboro	271	62.00	15.57	2,904.77	1,337	90	26	0	0	68	4,530	8
Stow	479	36.50	19.64	2,966.83	2,143	110	32	0	0	79	4,975	18
Sturbridge	714	127.50	41.67	8,161.63	1,145	148	39	0	0	72	2,660	199
Tewksbury	1011	11.50	49.85	9,062.98	3,905	147	51	0	0	54	5,200	145

Town	Total Service Requests	Larval/ Pupal Control Acres	Adulticide Gallons	Adulticide Acres	Catch Basins Treated	Mosquito Pools Collected	Mosquito Pools Tested	Mosquito Pools EEE Positive	Mosquito Pools WNV Positive	Culverts Cleaned	Ditch Maintenance Footage	Tires Recycled
Webster	222	44.00	8.83	1,402.57	1,211	132	26	0	0	106	2,550	82
Westboro	432	545.00	28.26	5,182.78	789	114	48	0	0	74	20,927	41
Westford	871	6.00	63.91	10,541.89	1,847	121	52	0	0	70	6,570	153
Wilmington	1474	8.50	44.24	7,525.63	3,212	75	20	0	0	62	3,020	136
Worcester	115	8.00	7.78	1,342.39	9,441	188	26	0	0	49	3,043	4
Totals	16,831	5,740	817.29	133,743.07	88,650	4,319	1,210	0	0	3,560	250,451	4,117

