COMMONWEALTH OF MASSACHUSETTS
STATE RECLAMATION & MOSQUITO CONTROL BOARD

CENTRAL MASSACHUSETTS MOSQUITO CONTROL PROJECT

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EXECUTIVE SUMMARY
2019

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 42 cities and towns throughout Middlesex and Worcester Counties. The Project's headquarters is located at 111 Otis Street, Northboro, MA. Please call (508) 393-3055 during business hours for information. Twenty (20) full time and nine (9) seasonal staff were employed at CMMCP in 2019. This the year we received a record total of twenty thousand, eight hundred and forty-two (20,842) 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. In 2019, CMMCP laboratory personnel and other administrative staff made ninety-three (93) educational presentations before three thousand seventy-five (3,075) elementary school students in twenty (20) elementary schools. 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 also have a website at 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 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. Two thousand, three hundred and ninety-seven (2,397) 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 one hundred and eighty-five thousand, sixty-six (185,066) feet of streams, brooks and ditches. This represents over thirty-five (35) miles of waterways which were cleaned and improved by Project personnel in 2019.

ARBOVIRUS CONTROL:

As part of our West Nile Virus (WNV) prevention program, a record one hundred twenty-three thousand, forty-four (123,044) 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 in 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. Two thousand four hundred and sixteen (2,416) pools (collections) of mosquitoes totaling fifty six thousand three hundred and seventy-four (56,374) individual specimens were tested for mosquito-borne viruses this year. Thirty-eight (38) collections were identified positive this year; twenty-eight (28) with Eastern Equine Encephalitis (EEE) and ten (10) with West Nile Virus (WNV). CMMCP lab personnel processed at total of six thousand, five hundred and eighty-five (6,585) collections of mosquitoes containing two hundred and five thousand, two hundred and sixty-five (205,265) individual specimens, representing thirty-

one (31) mosquito species.

Target Species	*Ae. vex*	*Cq. per*	*Cs. mel*	*Oc. can*	*Culex*	All Species
No. Pools	291	1228	437	307	1274	6585
Total Specimens	1583	167745	2467	4495	17574	205265
No. Pools WNV +	0	0	0	0	10†	10†
No. Pools EEE +	2†	19†	3†	0	4†	28†

A table with the 2019 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. Five (5) 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:

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 two hundred and fifty (10,250) pounds of Bti (*Bacillus thuringiensis israelensis*) was applied by helicopter over two thousand and forty (2,050) acres in 3 towns, Chelmsford, Billerica & Boxborough, resulting in an 86.92% overall reduction in larval counts. Three hundred and seventy (370) additional acres were treated by hand in our area, totaling over two thousand, four hundred and twenty (2,420) 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, wetlands restoration or larviciding, but we recognize that there are times when adult mosquito spraying is the only viable solution. In such cases specific areas are treated with either hand-held or 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. Three hundred and twenty-one (321) 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 in Mass. Adult control began in early June and ended in mid-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 2016 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 cites 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

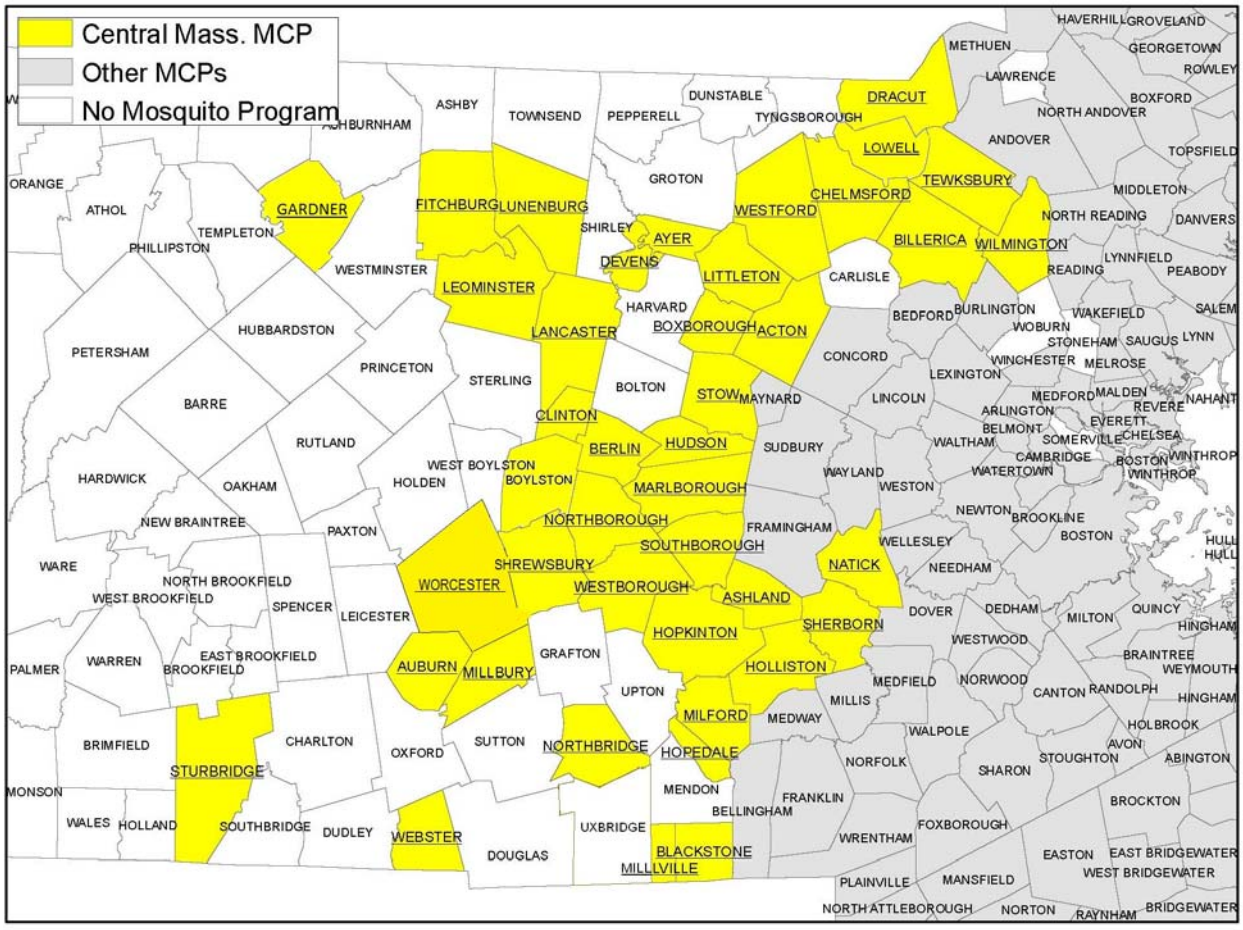
- Requests for tire removal shall be done according to established procedures
- We reserve the right to refuse anything determined to be unsuitable for this program

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 2019 we collected a total of three thousand, two hundred and thirty (3,230) tires in forty (40) member cities and towns. Collections will continue as time and resources allow.

Some additional highlights from 2019:

- 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*) did not find 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 – 2019



Frank Cornine, CMMCP
Select features of this map courtesy of:
Office of Geographic Information (MassGIS),
Commonwealth of Massachusetts
Information Technology Division

Member,
Northeastern
Mosquito Control
Association

Member,
New Jersey
Mosquito Control
Association

Partner,
EPA Pesticide
Environmental
Stewardship Program

Partner,
EPA WasteWise
Program

Member, Massachusetts Municipal Association

Member, MassRecycle

2019 SUMMARY TOTALS

Service Requests	Larval/Pupal Acres Treated	Adulticide Gallons	Adulticide Acres
20,842	2,420	1,348	211,461

Pools Sent to MDPH	Landing Counts	Culverts Cleaned	Restoration Footage	Catch Basins Treated	Tires Recycled
2,416	321	2,397	185,066	123,044	3,230

ARBOVIRUS SUMMARY 2019

WNV Surveillance Summary – Statewide	**2019**
Mosquito Pools Positive	87
Animals Positive	0
Humans Positive	3
EEE Surveillance Summary – Statewide	**2019**
Mosquito Pools Positive	428
Animals Positive	9
Humans Positive	12
CMMCP Surveillance Summary	**2019**
Mosquitoes Collected and Identified	205,265
Mosquito Pools Submitted for testing	2,420
Mosquito Pools Positive WNV	10
Animals Positive WNV	0
Humans Positive WNV	0
Mosquito Pools Positive EEE	28
Animals Positive EEE	0
Humans Positive EEE	2

Town	Total Service Requests	Larval/ Pupal Control Acres	Adulticide Gallons	Adulticide Acres	Catch Basins Treated	Mosquito Pools Tested	Mosquito Pools EEE Positive	Mosquito Pools WNV Positive	Culverts Cleaned	Ditch Maintenance Footage	Tires Recycled
Acton	521	3.50	25.36	3,039.70	2,703	46	0	0	47	3,930	23
Ashland	323	9.50	50.45	5,786.27	2,313	45	0	0	45	2,790	27
Auburn	520	13.00	19.84	3,284.52	3,609	53	0	1	29	6,090	124
Ayer	167	6.00	5.84	989.81	1,401	58	0	0	68	2,695	2
Berlin	92	9.00	6.26	1,073.92	866	42	0	0	61	3,920	0
Billerica	999	614.00	49.47	9,016.60	3,902	48	0	0	18	4,159	3
Blackstone	329	15.50	18.58	3,342.61	1,499	41	0	0	49	5,540	33
Boxborough	86	852.00	6.25	1,110.14	1,687	69	0	0	74	4,185	0
Boylston	292	11.00	24.89	4,885.74	1,299	45	0	0	81	2,895	0
Chelmsford	829	608.00	38.48	7,089.70	3,783	53	0	0	27	3,250	18
Clinton	145	5.00	23.87	4,165.41	2,110	35	0	0	42	2,000	392
Devens	8	4.50	6.93	1,428.51	1,148	56	0	0	40	2,825	0
Dracut	722	3.00	44.55	7,470.91	2,727	80	0	0	32	3,715	205
Fitchburg	168	2.00	7.91	941.13	3,850	38	0	0	117	3,580	390
Gardner	69	3.00	2.66	377.61	3,931	53	1	0	55	2,610	92
Holliston	687	9.00	82.33	10,333.82	3,040	103	1	1	35	6,495	256
Hopedale	177	13.00	4.29	618.47	1,310	64	0	0	86	4,385	2
Hopkinton	1094	16.00	75.14	9,582.68	4,048	90	1	0	97	2,580	34
Hudson	318	9.00	22.89	3,847.75	4,034	65	1	0	7	4,430	12
Lancaster	379	4.00	21.67	3,697.05	1,706	45	0	0	72	2,575	92
Leominster	239	1.00	15.15	2,520.60	4,499	38	0	1	111	10,485	361
Littleton	347	5.50	17.05	2,837.30	2,680	48	0	1	97	2,590	14
Lowell	273	2.00	24.97	3,976.16	4,934	51	1	0	31	3,305	4
Lunenburg	653	4.50	29.60	4,629.71	1,316	33	0	0	75	3,050	51
Marlboro	364	4.00	17.93	3,046.43	5,416	54	1	0	18	7,275	0
Milford	504	21.00	26.18	3,156.10	2,706	79	0	0	131	2,750	12
Millbury	444	8.00	15.28	2,895.64	2,236	49	0	0	103	2,740	83
Millville	144	11.00	10.33	1,543.47	2,019	49	1	0	55	8,260	2
Natick	595	11.00	17.43	2,797.71	2,853	60	0	0	21	5,592	0
Northboro	538	1.00	67.74	9,450.24	3,268	45	0	0	75	3,580	115
Northbridge	874	10.00	21.30	3,087.95	1,829	44	0	0	99	7,595	0
Sherborn	252	7.00	21.40	2,349.31	1,334	89	1	0	30	6,184	117
Shrewsbury	725	18.00	71.15	10,470.54	6,077	45	1	0	67	5,580	78
Southboro	266	16.00	24.58	4,418.27	1,928	85	13	0	53	10,182	17
Stow	733	8.00	27.27	4,115.55	1,679	55	0	1	48	4,788	52

Town	Total Service Requests	Larval/ Pupal Control Acres	Adulticide Gallons	Adulticide Acres	Catch Basins Treated	Mosquito Pools Tested	Mosquito Pools EEE Positive	Mosquito Pools WNV Positive	Culverts Cleaned	Ditch Maintenance Footage	Tires Recycled
Sturbridge	825	27.00	58.69	10,747.58	2,226	63	0	0	44	3,600	138
Tewksbury	1296	6.50	57.34	10,173.43	3,557	76	0	0	23	5,535	71
Webster	299	12.00	7.15	1,138.29	2,254	67	0	0	88	2,550	7
Westboro	741	11.00	89.53	13,742.87	1,285	115	6	0	15	4,346	17
Westford	1111	12.00	91.74	15,371.64	2,634	40	0	0	23	4,320	23
Wilmington	1566	10.00	59.89	10,111.17	2,126	53	0	0	49	3,585	318
Worcester	128	3.50	38.37	6,799.08	13,222	49	0	5	59	2,525	45
Totals	**20,842**	**2,420**	**1,347.73**	**211,461.39**	**123,044**	**2,416**	**28**	**10**	**2,397**	**185,066**	**3,230**