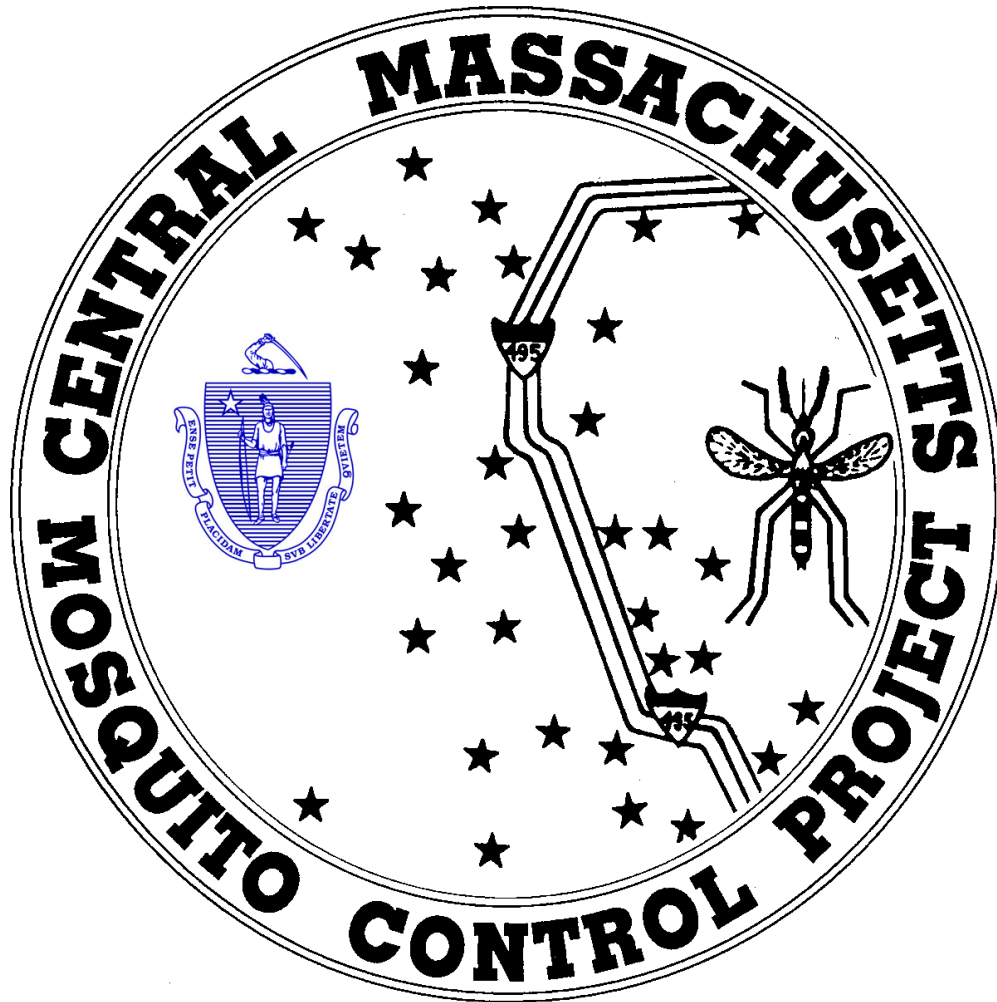


COMMONWEALTH OF MASSACHUSETTS
STATE RECLAMATION & MOSQUITO CONTROL BOARD

CENTRAL MASSACHUSETTS MOSQUITO CONTROL PROJECT
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EXECUTIVE SUMMARY
2023

January 2024

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 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 2023. This year we received a total of eleven thousand, one hundred and fifty-six (11,156) 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. CMMCP admin staff were interviewed on several cable TV and local radio stations. The "CMMCP Mosquito Education Program for Seniors" in which presentations are conducted at local senior centers to increase mosquito-borne disease awareness continued this year as well. Over 1,200 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. Six thousand, five hundred and forty-four (6,544) 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 eighteen thousand, nine hundred and ninety-three (218,993) feet of streams, brooks and ditches. This represents nearly forty-one (41) miles of waterways which were cleaned and improved by Project personnel in 2023.

ARBOVIRUS CONTROL:

As part of our West Nile Virus (WNV) prevention program, ninety thousand, nine hundred and eighty-eight (90,988) 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 sixty-three (2,463) pools (collections) of mosquitoes totaling fifty-five thousand, three hundred and ninety-three (55,393) individual specimens were tested for mosquito-borne viruses this year. Eleven (11) collections were identified positive this year for West Nile Virus, zero (0) pools of EEE were collected. CMMCP lab personnel processed a total of one thousand, seven hundred and ninety-seven (1,797) trap collections of adult mosquitoes containing eighty-nine thousand, three hundred and sixty-three (89,363) individual specimens, representing thirty-five (35) 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	491	640	84	437	1,218	6,321
Total Specimens	6,294	25,606	184	6,798	26,128	88,248
No. Pools WNV +	0	3	0	0	8	11
No. Pools EEE +	0	0	0	0	0	0

A table with the 2023 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 seasonal employees were hired for the summer to assist our Staff Entomologist and Staff Biologist in their duties.

LARVAL MOSQUITO CONTROL:

Our pre-hatch larvicide program continued in 2023. An organically-certified formulation of spinosad named Natular® G30 was applied to snow, ice and frozen ground in areas of historical larval activity. Previous field trials show control well past 30 days and these applications have expanded our larval control program. Two hundred and seventy-four (274) acres were treated across all member communities beginning in early March 2023. Post dipping data once again showed control beyond the 30-day application window. In the fall we treated one hundred and ninety-two (192) acres of *Cq. perturbans* habitat using backpack equipment to control the 2024 initial generation of this species. These treatments used Natular® G, another organically-certified formulation of spinosad.

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. Seven thousand, eight hundred and fifty (7,850) pounds of organically-certified Bti (*Bacillus thuringiensis israelensis*) was applied by helicopter over one thousand, five hundred and seventy (1,570) acres in 3 towns, Chelmsford, Billerica & Boxborough, resulting in an average 92.88% overall reduction in larval counts. Three hundred and seventy-six (376) additional acres were treated by hand in our area during the spring and summer months. In all, our larval control program totaled over two thousand, four hundred and fourteen (2,414) 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 with Bti began in late March and continued into 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 fifty-nine (259) 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 2023 Research projects were:

- 2023 Aerial Larval Mosquito Control Program
- 2023 Level of Resistance to Zenivex E4
- 2023 Efficacy Trials of the CMMCP Adulticide Program
- Evaluation of Mosquito Larvicides in Catch Basin Systems
- *Aedes albopictus* Egg Collections - 2023

Having a fulltime Field Biologist has 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.

Some additional highlights from 2023:

- Resistance management study; no significant resistance to pyrethroids noted, no change recommended in adulticide material choice (see full report).
- Monitoring for the Asian Tiger Mosquito (*Ae. albopictus*) did find isolated specimens of this aggressive, invasive species in the Central Mass. area, and our ATM control protocols were instituted.
- 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.

SOURCE REDUCTION/TIRE RECYCLING

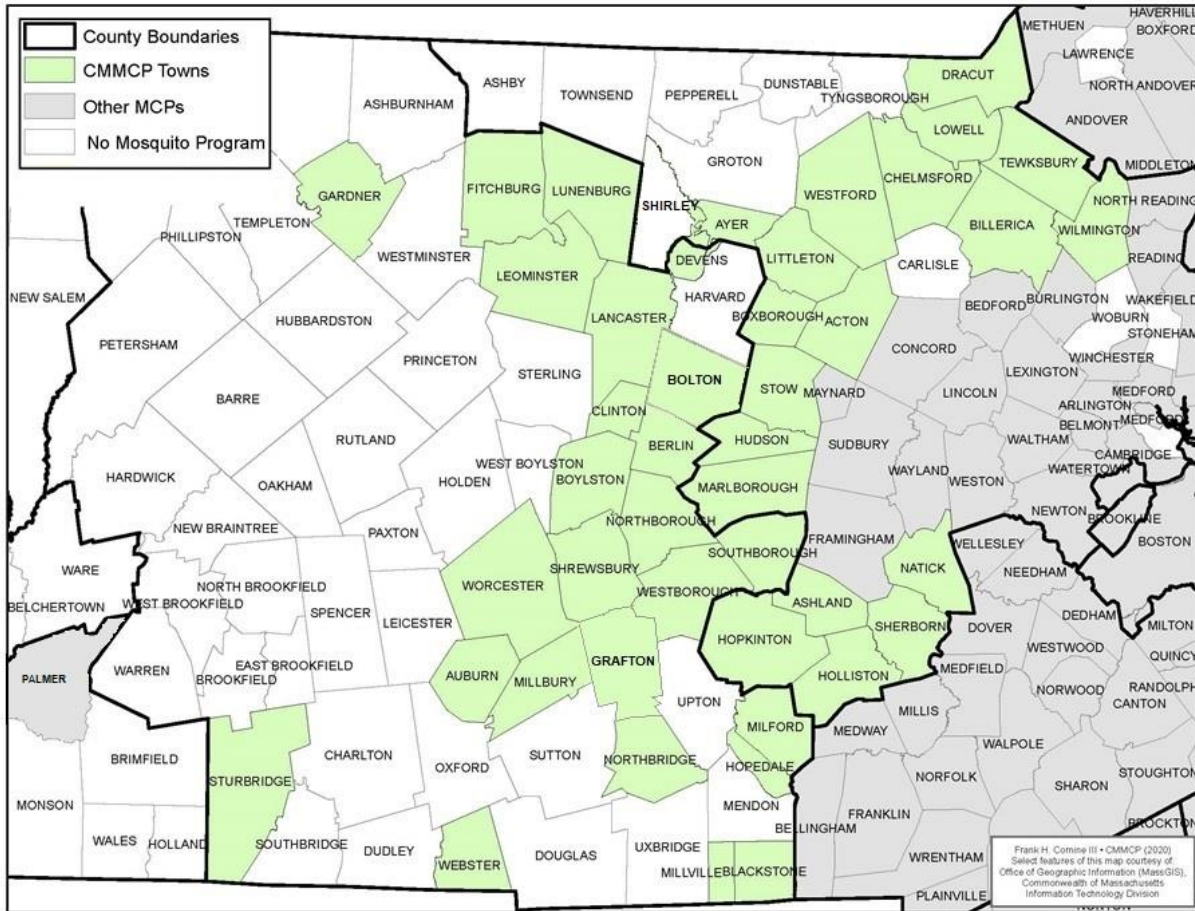
For Earth Day 2010, CMMCP officially announced a tire recycling program added as a value-added service to our member cities and towns. This program operates under grant monies received and the CMMCP operating budget. Tire piles provide suitable areas for larval mosquito development, including those species 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 2023 we collected a total of three thousand, nine hundred and twenty-nine (3,929) tires in thirty-five (35) member cities and towns. Collections will continue as time and resources allow.

CMMCP SERVICE AREA – 2023



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

2023 SUMMARY TOTALS

Service Requests	Larval/Pupal Acres Treated	Adulticide Gallons	Adulticide Acres
11,156	2,414	731	83,694

Pools Sent to MDPH	Landing Counts	Culverts Cleaned	Restoration Footage	Catch Basins Treated	Tires Recycled
2,463	259	6,544	218,993	90,988	3,929

ARBOVIRUS SUMMARY 2023

WNV Surveillance Summary – Statewide	2023
Mosquito Pools Positive	164
Animals Positive	0
Humans Positive	6
EEE Surveillance Summary – Statewide	2023
Mosquito Pools Positive	28
Animals Positive	0
Humans Positive	0
CMMCP Surveillance Summary	2023
Mosquitoes Collected and Identified	55,393
Mosquito Pools Submitted for testing	2,463
Mosquito Pools Positive WNV	11
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	303	26.61	8.89	1,533.38	2,478	58	1,622	0	0	219	4,425	65
Ashland	263	25.29	6.79	1,121.56	1,618	60	1,007	0	0	122	3,412	66
Auburn	243	13.25	7.64	822.88	1,464	58	1,015	0	0	166	3,095	119
Ayer	217	16.98	66.10	2,987.10	1,596	52	1,217	0	1	129	4,455	131
Berlin	46	13.72	1.51	228.15	542	56	885	0	0	113	4,012	2
Billerica	471	523.55	21.05	3,042.42	2,437	59	1,598	0	0	190	3,557	30
Blackstone	103	19.32	5.02	428.75	1,089	52	860	0	0	137	3,160	96
Bolton	66	12.95	2.26	325.05	1,421	32	562	0	0	120	3,100	10
Boxborough	41	618.21	1.75	335.56	1,273	53	1,520	0	0	177	3,850	10
Boylston	188	17.23	6.18	984.38	1,171	64	848	0	0	241	3,040	0
Chelmsford	611	484.08	31.19	4,931.50	3,206	44	1,374	0	1	222	6,795	16
Clinton	93	10.43	4.46	639.57	1,261	51	812	0	0	136	3,235	110
Devens	19	18.78	0.43	81.92	1,013	55	1,230	0	0	107	3,120	0
Dracut	394	26.33	25.89	4,473.78	1,551	51	1,411	0	0	113	7,250	14
Fitchburg	99	16.13	3.91	645.70	2,628	33	745	0	0	111	3,715	356
Gardner	142	18.57	3.37	394.04	1,964	57	1,434	0	0	221	3,740	399
Grafton	62	18.50	2.72	452.42	1,872	63	1,158	0	0	250	3,305	187
Holliston	263	19.73	7.31	1,226.77	1,986	51	911	0	0	154	3,427	53
Hopedale	72	15.67	1.78	199.39	1,436	51	1,189	0	0	107	7,535	4
Hopkinton	521	23.50	17.18	2,713.61	3,299	54	997	0	0	106	4,377	0
Hudson	192	15.02	5.85	705.96	1,493	58	1,161	0	0	150	6,002	15
Lancaster	391	9.31	22.46	2,119.54	1,371	67	1,418	0	0	194	4,495	134
Leominster	104	17.57	2.64	381.30	2,503	41	835	0	0	110	8,440	505
Littleton	161	23.65	4.19	763.25	1,439	67	2,149	0	0	111	4,220	584
Lowell	134	9.83	11.59	1,942.31	3,715	70	2,053	0	3	107	3,485	4
Lunenburg	352	19.35	14.33	2,170.02	1,167	47	1,031	0	0	103	3,205	96
Marlboro	170	21.67	7.56	1,253.65	4,285	64	1,549	0	0	136	7,387	0
Milford	363	24.55	15.47	2,676.05	3,118	61	1,186	0	1	241	5,740	5
Millbury	224	14.45	9.13	739.10	2,300	79	1,303	0	0	229	3,040	288
Millville	68	26.25	3.24	283.67	489	33	664	0	0	175	4,120	27
Natick	275	19.00	7.24	1,149.68	1,826	58	1,270	0	0	105	16,087	0
Northboro	259	23.50	13.24	1,591.49	2,054	38	664	0	0	122	3,903	75
Northbridge	396	18.67	15.23	1,662.69	1,997	61	1,142	0	1	113	6,903	0
Sherborn	55	19.80	2.46	343.38	1,078	60	1,150	0	0	101	5,031	28
Shrewsbury	503	17.20	13.97	2,171.59	2,344	47	846	0	0	160	3,220	170
Southboro	104	17.67	4.01	504.06	1,472	62	1,722	0	0	136	4,150	0
Stow	229	20.35	8.79	1,367.81	1,688	52	1,542	0	0	109	3,035	14
Sturbridge	444	37.32	133.13	8,604.29	1,847	71	1,289	0	0	173	13,420	0
Tewksbury	680	20.45	27.91	4,302.08	2,824	52	1,728	0	0	149	3,665	57

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	178	14.69	74.60	4,328.23	1,344	71	1,056	0	0	116	5,105	11
Westboro	344	17.11	13.28	1,849.32	2,153	81	2,369	0	0	120	6,285	0
Westford	510	40.68	43.90	7,149.10	1,820	60	1,921	0	0	208	8,125	26
Wilmington	696	15.18	31.89	4,757.03	2,044	52	1,265	0	0	123	3,420	197
Worcester	107	12.32	20.32	3,310.53	9,312	57	1,685	0	4	112	3,905	25
Totals	11,156	2,414	731.86	83,694.06	90,988	2,463	55,393	0	11	6,544	218,993	3,929

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