

COMMONWEALTH OF MASSACHUSETTS
STATE RECLAMATION & MOSQUITO CONTROL BOARD

CENTRAL MASSACHUSETTS MOSQUITO CONTROL PROJECT
est. 1973



EXECUTIVE SUMMARY
2021

January 2022

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 seven (7) seasonal staff were employed at CMMCP in 2021. This the year we received a total of sixteen thousand, five hundred and seventy-two (16,572) 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 and 2021, CMMCP laboratory personnel and other administrative staff were once again 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, nine hundred and twenty-three (3,923) 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 sixty-four thousand, eight hundred and ninety-five (164,895) feet of streams, brooks and ditches. This represents over thirty-one (31) miles of waterways which were cleaned and improved by Project personnel in 2021.

ARBOVIRUS CONTROL:

As part of our West Nile Virus (WNV) prevention program, eighty-nine thousand, eight hundred and eighty-eight (89,888) 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 and seventy-one (2,071) pools (collections) of mosquitoes totaling forty-four thousand, one hundred and fifty-three (44,153) individual specimens were tested for mosquito-borne viruses this year. Seventeen (17) collections were identified positive this year for West Nile Virus, zero (0) pools of EEE were collected. CMMCP lab personnel processed a total of five thousand, nine hundred and forty-eight (5,948) collections of mosquitoes containing one hundred and nine thousand and twenty (109,020) individual

specimens, representing twenty-nine (29) 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	540	842	205	423	1,125	5,948
Total Specimens	20,259	47,553	765	4,672	13,056	109,020
No. Pools WNV +	1 [†]	0	0	0	16 [†]	17 [†]
No. Pools EEE +	0	0	0	0	0	0

A table with the 2021 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:

Due to risk from EEE in 2019 and anticipated risk in both 2020 and 2021, an enhanced larval control program was again implemented using organically-certified formulations of bacterial products Natular™ G and Natular™ G30, active ingredient spinosad. 12-member communities that were identified as “Critical” risk from EEE in 2019 we targeted for this program. 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 thirty-three (533) acres were treated with five thousand, three hundred and thirty (5,330) pounds of Natular™ G30 in *Cs. melanura* habitat in 5 communities. One thousand, five hundred and seventeen (1,517) acres in all twelve (12) communities were treated with fifteen thousand, one hundred and seventy (15,170) 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. Nine thousand and seven hundred (9,700) pounds of organically-certified Bti (*Bacillus thuringiensis israelensis*) was applied by helicopter over one thousand nine hundred and forty (1,940) acres in 3 towns, Chelmsford, Billerica & Boxborough, resulting in an average 76.4% overall reduction in larval counts. Six hundred and eighty-one (681) additional acres were treated by hand in our area during the spring and summer months. We treated 211 acres of *Cq. perturbans* habitat using backpack equipment to control the 2022 initial generation of this species. In all, our larval control program totaled over four thousand, six hundred and seventy-one (4,671) 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. Fifty-seven (57) 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 2021 Research projects were:

- 2021 Enhanced Larval Control Program for EEE Mitigation
- 2021 Aerial Larval Mosquito Control Program
- 2021 Early Spring Treatments Using Natular G30 for Spring-brood Mosquitoes
- 2021 Late Summer Treatments Using Natular G for *Cq. perturbans* Control
- 2021 Level of Resistance to Zenivex E4
- 2021 Catch Basin Efficacy
- Using GIS to Prioritize Larval Treatment Sites for Spring-Brood Mosquitoes
- Efficacy of Spinosad (*Saccharopolyspora spinosa*) against Mosquito Pupae
- *Aedes albopictus* Egg Collections - 2021

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.

Some additional highlights from 2021:

- 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 for pre-hatch spring brood applications ended and we have gone operational in this program, as well as larval cattail mosquito (*Cq. perturbans*) control in late summer.
- Monitoring for the Asian Tiger Mosquito (*Ae. albopictus*) found 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

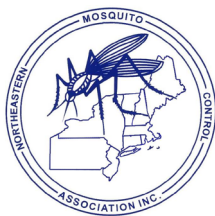
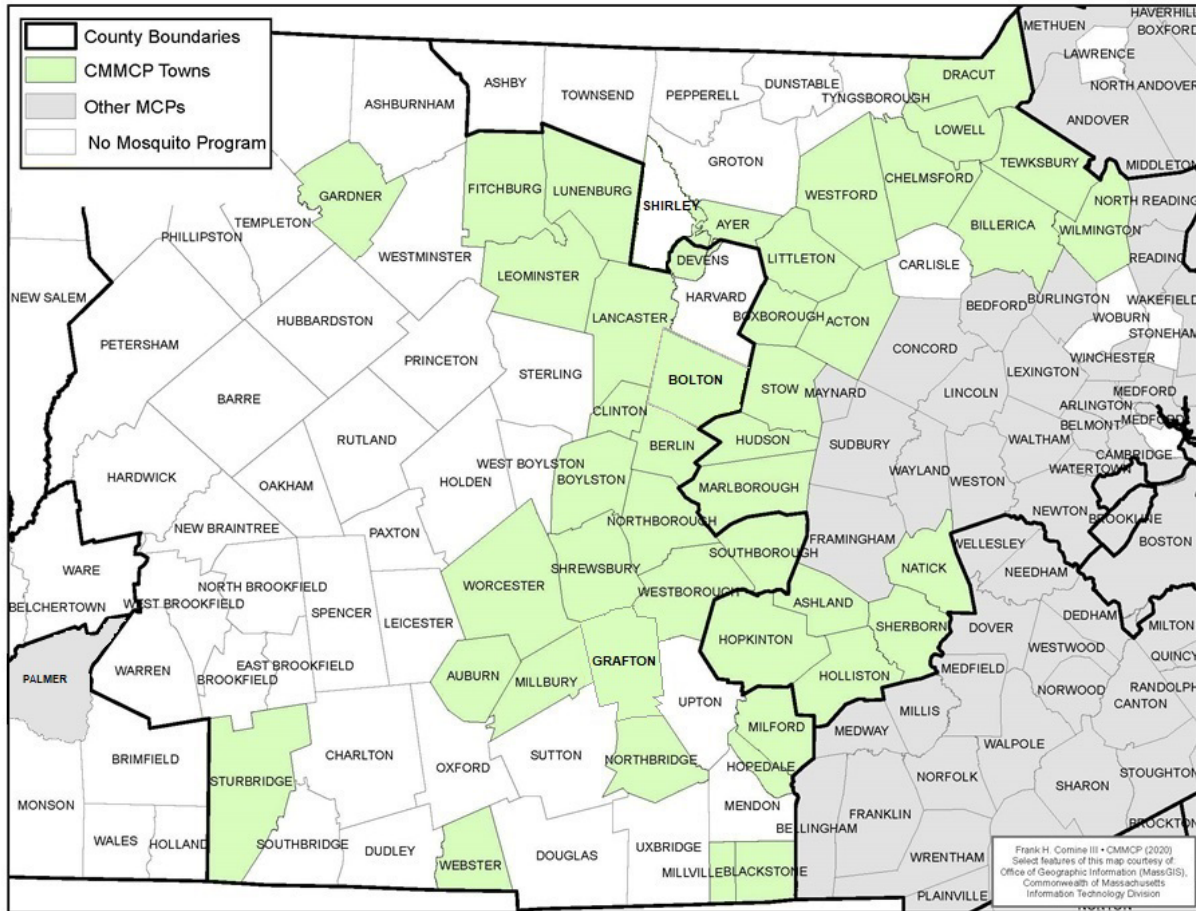
For Earth Day 2010, CMMCP officially announced a tire recycling program added as a value-added service to our member cities and towns. This program operates under grant monies received and the CMMCP operating budget. Tire piles provide suitable areas for larval mosquito development, including those species 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 2021 we collected a total of three thousand, two hundred and two (3,202) tires in forty (40) member cities and towns. Collections will continue as time and resources allow.

CMMCP SERVICE AREA – 2021



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

2021 SUMMARY TOTALS

Service Requests	Larval/Pupal Acres Treated	Adulticide Gallons	Adulticide Acres
16,572	4,671	783	125,945

Pools Sent to MDPH	Landing Counts	Culverts Cleaned	Restoration Footage	Catch Basins Treated	Tires Recycled
2,071	57	3,923	164,895	89,888	3,202

ARBOVIRUS SUMMARY 2021

WNV Surveillance Summary – Statewide	2021
Mosquito Pools Positive	144
Animals Positive	1
Humans Positive	10
EEE Surveillance Summary – Statewide	2021
Mosquito Pools Positive	0
Animals Positive	0
Humans Positive	0
CMMCP Surveillance Summary	2021
Mosquitoes Collected and Identified	109,020
Mosquito Pools Submitted for testing	2,071
Mosquito Pools Positive WNV	17
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	465	8.39	16.68	1,774.62	1,704	148	52	0	0	103	2,760	6
Ashland	338	169.86	13.68	1,429.38	2,523	137	51	0	0	75	3,035	67
Auburn	382	6.85	13.41	1,751.86	1,693	98	44	0	0	101	2,660	216
Ayer	187	14.91	5.17	905.37	1,229	184	48	0	0	126	2,545	11
Berlin	55	7.79	3.20	531.73	657	168	42	0	0	67	2,919	0
Billerica	856	678.95	43.61	7,605.97	2,154	143	46	0	2	68	8,400	11
Blackstone	254	5.35	10.49	1,502.50	1,073	119	38	0	0	105	3,930	51
Bolton	192	3.85	5.48	829.38	1,040	146	44	0	0	102	3,175	171
Boxborough	80	791.20	4.32	816.03	1,535	146	56	0	0	102	3,630	8
Boylston	239	19.95	20.09	3,629.99	1,059	102	42	0	1	61	2,745	160
Chelmsford	798	510.85	34.00	6,080.72	1,983	152	56	0	0	75	3,270	11
Clinton	171	21.11	11.54	2,032.14	1,631	148	48	0	1	45	2,998	388
Devens	25	18.77	0.95	174.73	1,337	123	45	0	0	118	2,520	0
Dracut	522	8.88	33.41	5,829.40	1,162	133	52	0	0	85	5,185	0
Fitchburg	119	4.65	6.01	671.81	2,014	120	37	0	0	114	2,590	234
Gardner	93	13.40	2.20	335.67	1,902	143	54	0	0	121	2,690	222
Grafton	110	94.05	10.51	1,892.47	1,601	159	53	0	2	103	2,785	6
Holliston	315	286.59	10.87	1,080.93	2,374	96	42	0	0	65	3,860	14
Hopedale	141	42.35	8.39	1,293.31	1,670	138	48	0	1	65	4,740	0
Hopkinton	701	310.14	33.62	4,597.54	4,171	111	51	0	0	47	2,801	8
Hudson	185	22.76	8.51	1,465.72	1,805	125	41	0	0	83	4,275	59
Lancaster	530	17.65	19.86	3,477.07	1,401	140	53	0	0	54	5,657	46
Leominster	102	3.90	2.95	425.21	1,280	116	42	0	0	111	2,940	46
Littleton	456	7.68	12.16	2,009.41	1,998	164	55	0	0	108	2,620	7
Lowell	164	8.98	5.40	969.20	3,609	157	42	0	0	60	2,615	136
Lunenburg	450	17.57	18.63	2,969.36	1,341	142	43	0	0	100	3,230	333
Marlboro	249	102.09	13.05	2,434.76	4,749	112	36	0	1	70	3,008	0
Milford	615	141.71	33.95	4,801.22	2,842	109	44	0	1	137	2,610	1
Millbury	304	8.87	15.55	2,714.92	1,549	123	39	0	0	97	2,520	85
Millville	254	5.72	14.20	2,041.49	707	118	44	0	1	123	3,435	0
Natick	423	10.13	11.92	2,019.49	2,221	113	44	0	0	58	4,170	0
Northboro	274	274.37	9.90	1,649.82	2,692	134	52	0	0	70	3,177	255
Northbridge	553	160.26	21.88	2,998.55	1,554	141	58	0	1	106	3,420	2
Sherborn	114	15.90	9.12	1,052.68	1,221	133	43	0	0	59	3,345	0
Shrewsbury	436	80.41	17.00	2,998.60	3,210	122	38	0	0	52	6,890	179
Southboro	205	27.85	8.31	1,418.13	2,080	106	42	0	0	57	3,010	0
Stow	467	15.88	16.82	2,486.81	1,560	134	43	0	0	111	3,175	28
Sturbridge	953	20.15	51.34	8,558.18	2,109	132	46	0	2	106	3,260	40

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
Tewksbury	1013	15.57	39.95	6,899.49	1,745	171	57	0	0	88	16,555	103
Webster	329	8.58	9.63	1,305.15	1,333	121	42	0	0	112	3,415	21
Westboro	398	628.30	22.37	4,009.04	2,067	133	45	0	0	60	4,190	44
Westford	799	32.98	63.09	10,801.94	2,087	146	49	0	0	167	2,955	45
Wilmington	1158	17.08	60.66	10,171.61	2,050	103	47	0	1	110	2,645	188
Worcester	98	8.95	8.97	1,529.93	8,166	239	77	0	3	76	2,540	0
Totals	16,572	4,671	782.85	125,973.33	89,888	5,948	2,071	0	17	3,923	164,895	3,202

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