MASSACHUSETTS MOSQUITO CONTROL

ANNUAL OPERATIONS REPORT

Year Report Covers: 2022 Date of Report:

Project/District Name: **Cape Cod Mosquito Control Project**

Address: 259 Willow Street

City/Town: Yarmouthport Zip: 02675

Phone: 508-775-1510 Fax: 508-362-7917

E-mail: ccmcp@ccmcp.net

Report prepared by: ***Caitlin Barrett, Audrey Russano, Aubrey Paolino, Gabrielle Sakolsky***

NPDES permit no. **MAG87B211**

If you have a mission statement, please include it here: Our goal is to reduce the transmission of mosquito-borne disease and maintain mosquito populations below the level at which they negatively impact quality of life, the enjoyment of the outdoors, or the economy by using practices and products that optimize efficacy and minimize impacts to non-target organisms and the environment.

ORGANIZATION SETUP:

Commissioner names:

J. Gregory Milne
Rodney Collins
Emily Beebe
James Quirk
Arthur Neill

Superintendent/Director name: Gabrielle Sakolsky-Hoopes
Superintendent/Director contact phone number: 508-775-1510
Asst. Superintendent/Director name: Barton Morris

District/Project website: http://ccmcp.net
Twitter handle: @
Facebook page: http://www.facebook.com/

Staffing levels for the year of this report:
Full time: 27
Part time:
Seasonal: 1
Other: (please describe)

Of the above, how many are:
(Please check off all that apply, and list employee name(s) next to each category)

☒ Administrative Caitlin Barrett
☐ Biologist
☒ Educator Aubrey Paolino, Gabrielle Sakolsky-Hoopes
☒ Entomologist Aubrey Paolino
☒ Facilities Andrew Fletcher
☒ Information technology Audrey Russano
☒ Laboratory Aubrey Paolino
☒ Operations Barton Morris, Paul Eldredge, Andrew Fletcher
☒ Public relations Gabrielle Sakolsky-Hoopes
☐ Wetland scientist
☒ Other (please describe) Field Crew Greg Baker, Joshua Berto, Tyler Besly, Sarah Bird, Christian Cedeno, William Chase, Vernon Crownshaw, Daniel Cutler, Braddock Doane, Matthew Eldredge, Timothy Ellis, John Harris, Eugene McNeill, Robert Motta, Joshua Pilone, Michael Racette, Samuel Rothwell, Gabriel Selfe, Charles White, Jason Wiseman

For the year of this report, the following were maintained (enter number in the column to the left):

2 Modified wetland equipment (list type) piston bully, excavator
46 Larval control equipment (list type) ShurFlo electric backpack sprayers, Maruyama granular dusters, Stihl granular dusters
____ ULV sprayers (list type)
20 Vehicles
Other (please be specific):

Comments: _____

How many cities and towns are in your service area?* 15
Alphabetical list: Barnstable, Bourne, Brewster, Chatham, Dennis, Eastham, Falmouth, Harwich, Mashpee, Orleans, Provincetown, Sandwich, Truro, Wellfleet, Yarmouth

Were there any changes to your service area this year? No
Cities/towns added:
Cities/towns removed:

***Please attach a map of your service area (or a website link to that map).**
https://arcg.is/qCKLq

INTEGRATED PEST MANAGEMENT (IPM):

Check off all services that your district/project currently provides to member cities and towns as part of an IPM program (details will be provided in the sections below):

☐ **Adult mosquito control**
☒ **Adult mosquito surveillance**
☒ **Ditch maintenance**

☒ **Education, Outreach & Public education**
☒ **Larval mosquito control**
☒ **Larval mosquito surveillance**
☐ **Open Marsh Water Management**
☒ **Research**
☐ **Source reduction (tire removals)**
☐ **Other (please list):**

Comments: _____

LARVAL MOSQUITO CONTROL:

If you have a larval mosquito control program, please fill out the section below, else skip ahead to the next section.

Describe the purpose of this program: The purpose of this program is to manage mosquito populations in Barnstable County below nuisance level, and to protect human health.

What months is this program active? April-Nov

Describe the types of areas where you use this program: All fresh water & salt water areas found to contain mosquto larvae.

Do you use:
☒ **Ground application (hand, portable and/or backpack, etc.)**
☐ **Aerial applications**
☐ **Other (please list):**
Comments: _____

List all products that you use for larval mosquito control in the table below (leave blank if not applicable)**:**

Product Name	**EPA #**	**Application Rate(s)**	**Application Method**	**Targeted life stage**	**Habitat Type**	**Total finished product applied**
VectoBac G	73049-10	2.5 to 10 pounds per acre	Hand	Larvae	☐ Catch basins ☒ Containers ☒ Wetland ☐ Other (please list):	12794 lbs
VectoBac GS	73049-10	2.5 to 10 pounds per acre	Hand	Larvae	☐ Catch basins ☒ Containers ☒ Wetland ☐ Other (please list):	2623.25 lbs
VectoBac WDG	73049-45	1.75 to 14 oz per acre	Hand	Larvae	☐ Catch basins ☒ Containers ☒ Wetland ☐ Other (please list):	24.47 lbs
VectoMax FG	73049-429	5 to 20 pounds per acre	Hand	Larvae	☐ Catch basins ☒ Containers ☒ Wetland ☐ Other (please list):	3110.65 lbs
VectoLex WSP	73049-20	1 packet per 50 sq ft	Hand	Larvae	☐ Catch basins ☒ Containers ☒ Wetland ☐ Other (please list):	10.625 lbs
BVA2 Larvicide Oil	70589-1	2 to 3 gallons per acre	Hand	Larvae/pupae	☐ Catch basins ☒ Containers ☒ Wetland ☐ Other (please list):	477.42 gal
VextoLex WSP	73049-20	1 packet per 50 sq ft	Hand	Larvae	☒ Catch basins ☐ Containers ☐ Wetland ☐ Other (please list):	508.4 lbs

List all products that you use for larval mosquito control in the table below (leave blank if not applicable)**:**

Product Name	**EPA #**	**Application Rate(s)**	**Application Method**	**Targeted life stage**	**Habitat Type**	**Total finished product applied**
Spheratax WSP	84268-2	1 packet per 50 sq ft	Hand	Larvae	☒ Catch basins ☐ Containers ☐ Wetland ☐ Other (please list):	11.72 lbs
BVA2 Larvicide Oil	70589-1	2 to 3 gallons per acre	Hand	Larvae/pupae	☒ Catch basins ☐ Containers ☐ Wetland ☐ Other (please list):	2.76 gal
Altosid XR Briquets	2724-421	1 briquet per 1500 gal	Hand	Larvae	☒ Catch basins ☐ Containers ☐ Wetland ☐ Other (please list):	3.13 lbs
Altosid Pellets WSP	2724-448	1 pouch per basin	Hand	Larvae/pupae	☒ Catch basins ☐ Containers ☐ Wetland ☐ Other (please list):	3.5 lbs
VectoMax FG	73049-429	5 to 20 pounds per acre	Hand	Larvae	☒ Catch basins ☐ Containers ☐ Wetland ☐ Other (please list):	25 lbs
				Choose one	☐ Catch basins ☐ Containers ☐ Wetland ☐ Other (please list):	
				Choose one	☐ Catch basins ☐ Containers ☐ Wetland ☐ Other (please list):	

What is your trigger for larviciding operations? (check all that apply)
☒ Best professional judgment
☒ Historical records
☒ Larval dip counts – please list trigger for application: 5 larvae per 10 dips
☐ Other (please describe):
Comments: _____

Please attach a map of your service area (or a website link to that map).

ADULT MOSQUITO CONTROL:

If you have a larval mosquito control program, please fill out the section below, else skip ahead to the next section.

Describe the purpose of this program:

What is the time frame for this program?

Describe the types of areas where you use this program:

Do you use:
☐ **Aerial applications**
☐ **Portable applications**
☐ **Truck applications**
☐ **Other (please list):**
Comments: _____

For each product used, please list the name, EPA #, and application rate(s):

Product Name	**EPA #**	**Application Rate(s)**	**Application Method**	**Total finished product applied**

Please describe the maximum amounts or frequency used in a particular time frame such as season and areas

What is your trigger for adulticiding operations? (check all that apply)
☐ Arbovirus data
☐ Best professional judgment
☐ Complaint calls (Describe trigger for application:)
☐ Landing rates (Describe trigger for application)
☐ Light trap data (Describe trigger for application)
Comments: _____

Please attach a map of your service area (or a website link to that map).

SOURCE REDUCTION (Tire Removals)

If you practice source reduction methods, such as tire removal, please fill out the section below, else skip ahead to the next section.

Please describe your program:

What time frame during the year is this method employed?

Comments: _____

WATER MANAGEMENT/DITCH MAINTENANCE

If you have a water management or ditch maintenance program, please fill out the section below, else skip ahead to the next section.

Please check all that apply:
☒ Inland/freshwater
☒ Saltmarsh
Please describe your program:

For **inland/freshwater water management**, check off all that apply.

Maintenance Type	**Estimate of cumulative length of culverts, ditches, swales, etc. maintained (ft)**
☒ Culvert cleaning	914'
☒ Hand cleaning	147,302'
☐ Mechanized cleaning	
☐ Stream flow improvement	
☐ Other (please list):	

Comments: _____

For **saltmarsh ditch maintenance**, check off all that apply:

Maintenance Type	**Estimate of cumulative length of ditches maintained (ft)**
☒ Hand cleaning	36,843'
☐ Mechanized cleaning	
☐ Other (please list):	

Comments: _____

What time frame during the year is this method employed? October through April

Comments: _____

Please attach a map of ditch maintenance areas (or a website link to that map).

OPEN MARSH WATER MANAGEMENT

If you have an Open Marsh Water Management program, please fill out the section below, else skip ahead to the next section.

Describe the purpose of this program:

What months is this program active?

Please give an estimate of total square feet or acreage:

Comments: _____

Please attach a map of OMWM areas (or a website link to that map).

MONITORING (Measures of Efficacy)

Describe monitoring efforts for each of the following:

Aerial Larvicide – wetlands:

Ground ULV Adulticide:

Larvicide – catch basins:

Larvicide-hand/small area pre and post larval dip counts

Open Marsh Water Management:

Source Reduction: source reduction projects are only undertaken in response to high larval counts. Larval counts and amounts of pesticide application is monitored in following years.

Other (please list):

Provide or list standard steps, criterion, or protocols regarding the documentation of efficacy (pre and post data), and resistance testing (if any):
All larval habitats are monitored regularly throughout the treatment season. Data is entered into an ArcGIS online database and reviewed in a timely manner. Larvicide efficacy is checked at the beginning and the end of the season at a minimum of 18 sites. Source reduction projects are evaluated on a yearly basis.

Check the boxes below, indicating if your program has performed any of the following:

Research Project	Details
Bottle assays	
Efficacy testing	
Other:	

Other:	

ADULT MOSQUITO SURVEILLANCE

If you have an adult mosquito surveillance program, please fill out the section below, else skip ahead to the next section.

Describe the purpose of this program: To assess populations to determine efficacy of prgram as well as identifying presence of vectors/arbovirus.

What months is this program active? April-Nov

Check off all trap types used this past season by your program:

Trap Type	**Canopy?** (check box for yes)	**Number of traps** (leave blank if zero)
☐ ABC light trap	☐	
☐ ABC light trap w/CO_2	☐	
☐ CDC light trap	☐	
☒ CDC light trap w/CO_2	☐	24
☒ Gravid trap		22
☐ Landing rate test		
☐ NJ light trap	☐	
☐ NJ light trap w/CO_2	☐	
☒ Ovitrap		18
☒ Resting box		18
☐ Other (please describe):		
☐ Other (please describe):		
☐ Other (please describe):		

Do you maintain long-term trap sites in any of your areas? Yes
If yes, how many:
44

Please check off the species of concern in your service area:

☒ *Ae. albopictus*
☐ *Ae. cinereus*
☒ *Ae. vexans*
☐ *An. punctipennis*
☐ *An. quadrimaculatus*
☒ *Cq. perturbans*
☒ *Cx. pipiens*
☒ *Cx. restuans*
☒ *Cx. salinarius*
☒ *Cs. melanura*
☒ *Cs. morsitans*
☐ Others (please list):

☒ *Oc. abserratus*
☒ *Oc. canadensis*
☒ *Oc. cantator*
☒ *Oc. j. japonicus*
☒ *Oc. sollicitans*
☒ *Oc. taeniorhynchus*
☒ *Oc. triseriatus*
☒ *Oc. trivittatus*
☐ *Ps. ferox*
☐ *Ur. sapphirina*

Number of adult mosquitoes collected this season (whether submitted to DPH or not): 101,010
Number of adult mosquito pools collected this season (submitted and unsubmitted): 3,081
Number of ovitrap collections this season, if any: 125
Any other trap collections of note (please describe):

Do you participate in the MDPH Arboviral Surveillance program? Yes
Total number of adult mosquito pools submitted to DPH this past season: 722
How many pools do you submit weekly on average? 42

Number of traps in your service area **placed by MDPH**: 0
Were these long-term trap sites or supplemental trapping sites? Choose one

Which arboviruses were found in your area during the previous mosquito season? Enter the number of pools/cases below:

Arbovirus	Positive Mosquito Pools	Equine Cases	Human Cases
☐ Eastern Equine Encephalitis (EEE)			
☒ West Nile Virus (WNV)	1	0	0
☐ Other (please list):			

Comments: _____

For each arbovirus listed below, please list the risk levels in your project area at both the start and end of the season (if more than one, please list all):

Arbovirus	Start of Season	End of Season
EEE	8 remote, 7 low	8 remote, 7 low
WNV	15 low	15 low

Comments: _____

EDUCATION, OUTREACH & PUBLIC RELATIONS

If you have an education/outreach program, please fill out the section below, else skip ahead to the next section.

Describe the purpose of this program: Education, Outreach & Public Relations

What time frame during the year is this method employed?

Check off all education/outreach methods that were performed by your program this year:
☐ Development/distribution of brochures, handouts, etc.
☒ Door-to-door canvassing (door hangers, speaking to property owners, etc.)
☐ Facebook page, Twitter, or other social media
☐ Mailings (Describe target audience(s):)
☒ Media outreach (interviews for print or online media sources, press releases, etc.)
☒ Presentations at meetings
☒ School-based programs, science fairs, etc.

☒ Tabling at events (local events, annual meetings, etc.)
☒ Website
☐ Other (please describe):

Estimate the audience reached this year using the education/outreach methods above:
Comments:

List your program's top 3 education/outreach activities for this year:

1. Brewster Conservation Day
2. Mass Association of Landscaping Professionals
3. Orleans Conservation Trust

Were you involved in any collaborations with the following partners this year? Provide details below, including a list of technical reports, white/grey papers, journal publications, trade magazine articles, etc:
☒ Academia
☐ Another mosquito control district/project
☒ Another state agency (DCR, DPH, etc.)
☒ Environmental groups
☒ Industry

List any training/education your staff received this year: Mosquito Mayhem, NMCA Field Day, NMCA Annual Conference

Please list the certifications and degrees held by your staff: Mass Pesticide Applicator's Licenses, Commercial Certifications, CDL and Hydraulic Licenses, Master of Science Entomology, GIS Certification, Drone Certification

Comments: _____

INFORMATION TECHNOLOGY (IT)

Does your program use (check all that apply):
☒ Aerial Photography
☒ Databases
☐ Dataloggers (monitoring for temperature, etc.)
☒ GIS mapping (Describe:)
☒ GPS equipment
☒ Smartphones
☒ Tablets/Toughbooks
☐ Other (please describe):

Describe any changes/enhancements in IT from the previous year: new office computers

Describe any difficulties your program had with IT software/equipment this year: Internet connection reliability

Comments: _____

REVENUES & EXPENDITURES

Please enter your approved budgets for the current, previous, and future fiscal years.

	Date of Fiscal Year	Approved Budget	Notes
Previous	2022	$2,651,940	
Current	2023	$2,718,239	
Future	2024	$2,718,239	

List each member municipality, along with the corresponding (cherry sheet) funding assessment dollar amount, for the current fiscal year (or provide a web link to this information):

Barnstable	$456,692
Bourne	$147,530
Brewster	$124,790
Chatham	$225,174
Dennis	$226,639
Eastham	$92,590
Falmouth	$375,663
Harwich	$182,221
Mashpee	$170,659
Orleans	$128,640
Provincetown	$103,152
Sandwich	$141,868
Truro	$70,804
Wellfleet	$75,815
Yarmouth	$196,002

Comments: _____

SERVICE REQUESTS

How many service requests did you receive this season? 181
How many were for larviciding? 181
How many were for adulticiding?

Was this an increase or decrease over last season? Decrease

Comments: Once permits were in place to control mosquitoes within Cape Cod National Seashore boundaries in Wellfleet, the number of service calls decreased.

EXCLUSIONS

How many exclusion requests did you receive this season? 55

Was this an increase or decrease over last season? Decrease

Do you have large areas of pesticide exclusion, such as estimated or priority habitats? Yes

If yes, please explain, and attach maps or a web link if possible. Mass Audubon, Cape Cod National Seashore limited access via permit only, Fish & Wildlife area of the Mashpee National Wildlife Refuge

SPECIAL PROJECTS

Did your program perform any of the following special projects? Check all that apply.

- ☐ Inspectional services (inspections at sewage treatment facilities, review of subdivision plans, etc.)

  Describe:

- ☒ Work with DPW departments or other local or state officials to address stormwater systems, clogged culverts, or other areas identified as man-made mosquito problem areas

  Describe:

- ☒ Work with groups as described above on long term solutions?

  Describe:

- ☒ Conduct or participate in any cooperative research or restoration projects?

  Describe: Salt Marsh Resiliency Waquoit Bay National Estuarine Research Reserve, Herring River Restoration Project, Mass Audubon

- ☒ Participate in any state/regional/national workgroups or panels, or attend any meeting pertaining to the above?

  Describe: Herring River Restoration Stakeholders Committee, Smart Marsh Adaptability & Resiliency Team Cape Cod

- ☒ Work on any biological control projects, such as enhancement of habitat for native predators, release of predatory fish or invertebrates, etc.?

  Describe:

CHILDREN AND FAMILIES PROTECTION ACT (CFPA)

Is your program impacted by the CFPA? Yes

If yes, please explain: All schools located within Barnstable County were required to add our larvicide products to their school outdoor IPM plan.

If you have data on compliance rates with the CFPA within your program area, please list here:

Describe any difficulties you have had with the implementation of your program due to the CFPA, please elaborate here:

Comments:

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT PROGRAM

Did your program report any adverse incidents during this reporting period? No

If yes, please list any corrective actions here: _____

GENERAL COMMENTS

Please add any comments here for topics not covered elsewhere in this report: Cape Cod Mosquito Control Project is a partner under the EPA's Pesticide Environmental Stewardship Program under the auspices of the American Mosquito Control Association. Cape Cod Mosquito Control Project works closely with the Town Boards of Health, Town Conservation Commissions and with the Cape and Islands Health Agents Coalition, the US Fish and Wildlife Service, MA Division of Marine Fisheries as well as working with local citizens who have mosquito concerns.