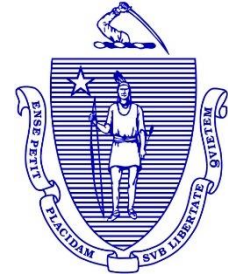


MASSACHUSETTS MOSQUITO CONTROL

ANNUAL OPERATIONS REPORT



Year Report Covers: 2021 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, Aubrey Paolino, Audrey Russano, Gabrielle Sakolsky-Hoopes*

NPDES permit no. **MAG87B211**

If you have a mission statement, please include it here:

ORGANIZATION SETUP:

Commissioner names:

J. Gregory Milne

James Quirk

Rodney Collins

Emily Beebe

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, Barton Morris, Gabrielle Sakolsky
- Biologist
- Educator Aubrey Paolino, Gabrielle Sakolsky-Hoopes
- Entomologist Aubrey Paolino
- Facilities Andrew Fletcher
- Information technology Audrey Russano
- Laboratory Aubrey Paolino
- Operations Barton Morris, Paul Eldrede, Andrew Fletcher
- Public relations Gabrielle Sakolsky-Hoopes
- Wetland scientist
- Other (please describe) Field Crew Greg Baker, Josh Berto, Bill Chase, Vern Crownshaw, Dan Cutler, Brad Doane, Tim Ellis, John Harris, Eugene McNeill, Bob Motta, Gabe Selfe, Tyler Wheeler, Chuck 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) ShurFlu 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).**

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 public health

What months is this program active? April - October

Describe the types of areas where you use this program: All fresh water & salt water areas found to contain mosquito 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 12AS	73049-38	.25-2 pints per acre	Hand	Larvae	<input type="checkbox"/> Catch basins <input checked="" type="checkbox"/> Containers <input checked="" type="checkbox"/> Wetland <input type="checkbox"/> Other (please list):	28.66gal
VectoBac G	73049-10	2.5 to 10 pounds per acre	Hand	Larvae	<input type="checkbox"/> Catch basins <input checked="" type="checkbox"/> Containers <input checked="" type="checkbox"/> Wetland <input type="checkbox"/> Other (please list):	10376.5lbs
VectoBac GS	73049-10	2.5 to 10 pounds per acre	Hand	Larvae	<input type="checkbox"/> Catch basins <input checked="" type="checkbox"/> Containers <input checked="" type="checkbox"/> Wetland <input type="checkbox"/> Other (please list):	704lbs
BVA2 oil	70589-1	2 to 3 gallons per acre	Hand	Larvae/pupae	<input type="checkbox"/> Catch basins <input checked="" type="checkbox"/> Containers <input checked="" type="checkbox"/> Wetland <input type="checkbox"/> Other (please list):	638.15gal
VectoMax FG	73049-429	5 to 20 pounds per acre	Hand	Larvae	<input type="checkbox"/> Catch basins <input checked="" type="checkbox"/> Containers <input checked="" type="checkbox"/> Wetland <input type="checkbox"/> Other (please list):	633.10lbs
VectoBac WDG	73049-56	50 to 200 gal per acre	Hand	Larvae	<input type="checkbox"/> Catch basins <input checked="" type="checkbox"/> Containers <input checked="" type="checkbox"/> Wetland <input type="checkbox"/> Other (please list):	49.42lbs
VectoLex WSP	73049-20	1 packet per 50 sq ft	Hand	Larvae	<input type="checkbox"/> Catch basins <input checked="" type="checkbox"/> Containers <input checked="" type="checkbox"/> Wetland <input type="checkbox"/> Other (please list):	12.58lbs

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	<input checked="" type="checkbox"/> Catch basins <input type="checkbox"/> Containers <input type="checkbox"/> Wetland <input type="checkbox"/> Other (please list):	1.90lbs
VectoLex WSP	73049-20	1 packet per 50 sq ft	Hand	Larvae	<input checked="" type="checkbox"/> Catch basins <input type="checkbox"/> Containers <input type="checkbox"/> Wetland <input type="checkbox"/> Other (please list):	397.5lbs
BVA2 oil	70589-1	1 ounce per basin	Hand	Larvae/pupae	<input checked="" type="checkbox"/> Catch basins <input type="checkbox"/> Containers <input type="checkbox"/> Wetland <input type="checkbox"/> Other (please list):	.99gal
				Choose one	<input type="checkbox"/> Catch basins <input type="checkbox"/> Containers <input type="checkbox"/> Wetland <input type="checkbox"/> Other (please list):	
				Choose one	<input type="checkbox"/> Catch basins <input type="checkbox"/> Containers <input type="checkbox"/> Wetland <input type="checkbox"/> Other (please list):	
				Choose one	<input type="checkbox"/> Catch basins <input type="checkbox"/> Containers <input type="checkbox"/> Wetland <input type="checkbox"/> Other (please list):	
				Choose one	<input type="checkbox"/> Catch basins <input type="checkbox"/> Containers <input type="checkbox"/> Wetland <input type="checkbox"/> 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)
<input checked="" type="checkbox"/> Culvert cleaning	947'
<input checked="" type="checkbox"/> Hand cleaning	170376'
<input type="checkbox"/> Mechanized cleaning	
<input type="checkbox"/> Stream flow improvement	
<input type="checkbox"/> Other (please list):	

Comments: _____

For saltmarsh ditch maintenance, check off all that apply:

Maintenance Type	Estimate of cumulative length of ditches maintained (ft)
<input checked="" type="checkbox"/> Hand cleaning	35390'
<input checked="" type="checkbox"/> Mechanized cleaning	2325'
<input type="checkbox"/> Other (please list):	

Comments: _____

What time frame during the year is this method employed? October - 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 are 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 program as well as identifying presence of vectors/arbovirus.

What months is this program active? May - November

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)
<input type="checkbox"/> ABC light trap	<input type="checkbox"/>	
<input type="checkbox"/> ABC light trap w/CO ₂	<input type="checkbox"/>	
<input type="checkbox"/> CDC light trap	<input type="checkbox"/>	
<input checked="" type="checkbox"/> CDC light trap w/CO ₂	<input type="checkbox"/>	23
<input checked="" type="checkbox"/> Gravid trap		24
<input type="checkbox"/> Landing rate test		
<input type="checkbox"/> NJ light trap	<input type="checkbox"/>	
<input type="checkbox"/> NJ light trap w/CO ₂	<input type="checkbox"/>	
<input checked="" type="checkbox"/> Ovitrap		18
<input checked="" type="checkbox"/> Resting box		18
<input type="checkbox"/> Other (please describe):		
<input type="checkbox"/> Other (please describe):		
<input type="checkbox"/> 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:

- | | |
|---|---|
| <input checked="" type="checkbox"/> <i>Ae. albopictus</i> | <input checked="" type="checkbox"/> <i>Oc. abserratus</i> |
| <input type="checkbox"/> <i>Ae. cinereus</i> | <input checked="" type="checkbox"/> <i>Oc. canadensis</i> |
| <input checked="" type="checkbox"/> <i>Ae. vexans</i> | <input checked="" type="checkbox"/> <i>Oc. cantator</i> |
| <input type="checkbox"/> <i>An. punctipennis</i> | <input checked="" type="checkbox"/> <i>Oc. j. japonicus</i> |
| <input type="checkbox"/> <i>An. quadrimaculatus</i> | <input checked="" type="checkbox"/> <i>Oc. sollicitans</i> |
| <input checked="" type="checkbox"/> <i>Cq. perturbans</i> | <input checked="" type="checkbox"/> <i>Oc. taeniorhynchus</i> |
| <input checked="" type="checkbox"/> <i>Cx. pipiens</i> | <input checked="" type="checkbox"/> <i>Oc. triseriatus</i> |
| <input checked="" type="checkbox"/> <i>Cx. restuans</i> | <input checked="" type="checkbox"/> <i>Oc. trivittatus</i> |
| <input checked="" type="checkbox"/> <i>Cx. salinarius</i> | <input type="checkbox"/> <i>Ps. ferox</i> |
| <input checked="" type="checkbox"/> <i>Cs. melanura</i> | <input type="checkbox"/> <i>Ur. sapphirina</i> |
| <input checked="" type="checkbox"/> <i>Cs. morsitans</i> | |
| <input type="checkbox"/> Others (please list): | |

Number of adult mosquitoes collected this season (whether submitted to DPH or not): 119,401

Number of adult mosquito pools collected this season (submitted and unsubmitted): 2,608

Number of ovitrap collections this season, if any: 116

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: 606

How many pools do you submit weekly on average? 38

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
<input type="checkbox"/> Eastern Equine Encephalitis (EEE)			
<input checked="" type="checkbox"/> West Nile Virus (WNV)	2	0	0
<input type="checkbox"/> 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: We present educational programs to a variety of organizations in Barnstable County. Our field crews hand out information pamphlets to homeowners.

What time frame during the year is this method employed? Year-round

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: 2500
 Comments:

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

1. Evaluating the Impact of Hydrologic Alterations on Salt Marsh Sustainability in a Changing Climate; Collaborative Science for Estuaries Webinar Series
2. State of Wellfleet Harbor Conference
3. Elder Services of Cape Cod and the Island Winter Education Series

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: NMCA Annual Conference; mosquito ID course; annual backpack sprayer calibration training; EEA training; Safety and PPE training

Please list the certifications and degrees held by your staff: Mass Pesticide Applicator's Licenses, Commercial certifications, CDL and hydraulic license, Master of Science Entomology

Comments: Pesticide Environmental Stewardship Program; collaboarting with Louisiana State University, National Park Service, US Fish and Wildlife, US Geographic Survey, Waquoit Bay Reserve and Woods Hole Oceanographic Institute as an end user on a project entitled 'Evaluating the Impact of Hydrolic Alterations on Salt Marsh Sustainability in a Changing Climate.'

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:

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

Comments: _____

REVENUES & EXPENDITURES

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

	Date of Fiscal Year	Approved Budget	Notes
Previous	2021	\$2,587,259	certified
Current	2022	\$2,651,940	certified
Future	2023	\$2,718,239	proposed

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	CAPE COD	445,553
Bourne	CAPE COD	143,931
Brewster	CAPE COD	121,746
Chatham	CAPE COD	219,682
Dennis	CAPE COD	221,111
Eastham	CAPE COD	90,332
Falmouth	CAPE COD	366,501
Harwich	CAPE COD	177,776
Mashpee	CAPE COD	166,496
Orleans	CAPE COD	125,502
Provincetown	CAPE COD	100,636
Sandwich	CAPE COD	138,408
Truro	CAPE COD	69,078
Wellfleet	CAPE COD	73,966
Yarmouth	CAPE COD	191,222

Comments: Budget info available on ccmcp.net

SERVICE REQUESTS

How many service requests did you receive this season? 330

How many were for larviciding? 330

How many were for adulticiding?

Was this an increase or decrease over last season? Increase

Comments: Greater number of calls this year however most not collected as service requests as they were mostly from Duck Harbor area Wellfleet.

EXCLUSIONS

How many exclusion requests did you receive this season? 70

Was this an increase or decrease over last season? Increase

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

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: Pesticide Environmental Stewardship Program; collaboarting with Louisiana State University, National Park Service, US Fish and Wildlife, US Geographic Survey, Waquoit Bay Reserve and Woods Hole Oceanographic Institute as an end user on a project entitled 'Evaluating the Impact of Hydrolic Alterations on Salt Marsh Sustainability in a Changing Climate.'
- Conduct or participate in any cooperative research or restoration projects?
Describe: See Education, Outreach & Public Relation Section
- Participate in any state/regional/national workgroups or panels, or attend any meeting pertaining to the above?
Describe: Stakeholder in the Herring River Resoration Taskforce
- 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.