

MASSACHUSETTS MOSQUITO CONTROL

ANNUAL OPERATIONS REPORT



Year Report Covers: 2016 Date of Report: 1/4/2017

Project/District Name: Cape Cod Mosquito Control Project

Address: 259 Willow Street

City/Town: Yarmouth Port

Zip: 02675

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Report prepared by: *Gabrielle Sakolsky, Audrey Russano, Caitlin Slowik*

NPDES permit no. **MAG87A024**

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

ORGANIZATION SETUP:

Commissioner names:

J. Gregory Milne

Jere Downing

Arthur Neill

James Quirk

Rodney Collins

Superintendent/Director name: John W. Doane

Superintendent/Director contact phone number: 508-775-1510

Asst. Superintendent/Director name: Gabrielle Sakolsky

District/Project website: <http://ccmcp.net>

Twitter handle: @

Facebook page: <http://www.facebook.com/Cape-Cod-Mosquito-Control-Project-924500587613065/>

Staffing levels for the year of this report:

Full time: 26

Part time:

Seasonal:

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 Slowik
- Biologist
- Educator
- Entomologist Gabrielle Sakolsky
- Facilities Bart Morris
- Information technology Audrey Russano
- Laboratory
- Operations
- Public relations
- Wetland scientist
- Other (please describe)

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

- 2 Modified wetland equipment (list type)
- 22 Larval control equipment (list type)
- ULV sprayers (list type)
- 17 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 through 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
AquaBac XT	62637-1	.5 to 1 pint per acre	Hand	Larvae	<input checked="" type="checkbox"/> Catch basins <input checked="" type="checkbox"/> Containers <input checked="" type="checkbox"/> Wetland <input type="checkbox"/> Other (please list):	255 gallons
AquaBac G	62637-3	2.5 to 10 pounds per acre	Hand	Larvae	<input checked="" type="checkbox"/> Catch basins <input checked="" type="checkbox"/> Containers <input checked="" type="checkbox"/> Wetland <input type="checkbox"/> Other (please list):	1947 lbs
BVA2	70589-1	2 to 3 gallons per acre	Backpack sprayer	Larvae/pupae	<input checked="" type="checkbox"/> Catch basins <input checked="" type="checkbox"/> Containers <input checked="" type="checkbox"/> Wetland <input type="checkbox"/> Other (please list):	760 gallons
Spheratax WSP	84268-2	1 pack per basin	Hand	Larvae	<input checked="" type="checkbox"/> Catch basins <input checked="" type="checkbox"/> Containers <input checked="" type="checkbox"/> Wetland <input type="checkbox"/> Other (please list):	298 lbs
Altosid WSP	2724-448	1 pack per basin	Hand	Larvae	<input checked="" type="checkbox"/> Catch basins <input checked="" type="checkbox"/> Containers <input checked="" type="checkbox"/> Wetland <input type="checkbox"/> Other (please list):	36 lbs
Fourstar Bti Briquettes	83362-2-89549	7.5 to 20 pounds per acre	Hand	Larvae	<input checked="" type="checkbox"/> Catch basins <input checked="" type="checkbox"/> Containers <input checked="" type="checkbox"/> Wetland <input type="checkbox"/> Other (please list):	200 briquettes
				Choose one	<input type="checkbox"/> Catch basins <input type="checkbox"/> Containers <input type="checkbox"/> Wetland <input type="checkbox"/> Other (please list):	

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
				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):	
				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:
- 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:

Describe the types of areas where you use 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: We remove obstructions in ditches that prevent water from flowing.

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	575 culverts cleaned
<input checked="" type="checkbox"/> Hand cleaning	165340'
<input checked="" type="checkbox"/> Mechanized cleaning	100'
<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	38610'
<input checked="" type="checkbox"/> Mechanized cleaning	100'
<input type="checkbox"/> 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 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:

What months is this program active?

Check off all trap types currently in use by your program:

- | | |
|--|---------------------------------|
| <input type="checkbox"/> ABC light traps | <input type="checkbox"/> Canopy |
| <input type="checkbox"/> ABC light traps w/CO ₂ | <input type="checkbox"/> Canopy |
| <input checked="" type="checkbox"/> CDC light traps | <input type="checkbox"/> Canopy |
| <input checked="" type="checkbox"/> CDC light traps w/CO ₂ | <input type="checkbox"/> Canopy |
| <input checked="" type="checkbox"/> Gravid traps | |
| <input type="checkbox"/> Landing rate tests | |
| <input type="checkbox"/> NJ light traps | <input type="checkbox"/> Canopy |
| <input type="checkbox"/> NJ light traps w/CO ₂ | <input type="checkbox"/> Canopy |
| <input checked="" type="checkbox"/> Ovitrap | |
| <input checked="" type="checkbox"/> Resting boxes | |
| <input type="checkbox"/> Other (please describe): Modified Gravid Traps, BioQuip EVS light traps with carbon dioxide | |

Do you maintain long-term trap sites in any of your areas? Yes

If yes, please describe how you chose these long-term sites:

Long term sites for resting boxes were chosen based on the presence of *Culiseta melanura* and roosting bird populations. Gravid traps are placed in locations where there are high *Culex* populations or where crows congregate as a sentinel. Long term light trap locations are placed in a variety of habitats to target certain mosquitoes of concern. This includes control sites where larviciding is not permitted.

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

- | | |
|---|---|
| <input type="checkbox"/> <i>Ae. albopictus</i> | <input checked="" type="checkbox"/> <i>Cq. perturbans</i> |
| <input type="checkbox"/> <i>Ae. cinereus</i> | <input checked="" type="checkbox"/> <i>Cx. pipiens</i> |
| <input type="checkbox"/> <i>Ae. vexans</i> | <input checked="" type="checkbox"/> <i>Cx. restuans</i> |
| <input type="checkbox"/> <i>An. punctipennis</i> | <input checked="" type="checkbox"/> <i>Cx. salinarius</i> |
| <input type="checkbox"/> <i>An. quadrimaculatus</i> | <input checked="" type="checkbox"/> <i>Cs. melanura</i> |

- Cs. morsitans*
- Oc. abserratus*
- Oc. canadensis*
- Oc. cantator*
- Oc. j. japonicus*
- Oc. sollicitans*
- Other (please list):

- Oc. taeniorhynchus*
- Oc. triseriatus*
- Oc. trivittatus*
- Ps. ferox*
- Ur. sapphirina*

Do you participate in the MDPH Arboviral Surveillance program? Yes
 How many pools do you submit weekly on average? 15

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 checked="" type="checkbox"/> Eastern Equine Encephalitis (EEE)	1		
<input checked="" type="checkbox"/> West Nile Virus (WNV)	9		
<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	Remote - 3 towns low	Remote - 3 towns low
WNV	Low	Low - 1 town moderate

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 informational 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: 2400
Comments:

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

1. Oyster Pond Environmental Trust
2. Cape Cod Community College Environmental Science Program
3. Brewster Conservation Day

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: Staff attended Field Day training sponsored by the NMCA; annual NMCA conference; annual backpack sprayer calibration training; EEA training; Safety and PPE Training

Please list the certifications and degrees held by your staff: Mass Pesticide Applicators licenses, Commercial Certifications, CDL and hydraulic license, Master of Science in Entomology

Comments: We work closely with Dr. Aimlee Laderman, Director of the Swamp Research Center at the Marine Biological Laboratory regarding Atlantic white cedar swamps; Karen McKenzie, Bedoukian Research Inc. Danbury CT to evaluate new greenhead trap type; Dr Dan Kline, USDA/ARS/CMAVE Gainesville FL Htrap testing. Pesticide Environmental Stewardship Program reports to EPA.

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: This year we created two new layers to our field collection data. The layers consist of pipes and ditches. This data has a two-fold purpose; to assist Cape Cod towns in receiving credit for drainage system management and to document location of pipes.

Describe any difficulties your program had with IT software/equipment this year: no significant difficulties noted.

Comments: _____

REVENUES & EXPENDITURES

Please provide the amounts for your approved budgets for the current, previous, and future fiscal years. Please note if the budget for the next fiscal year is an estimate, or put "n/a" if it is not yet available.

Fiscal Year	Approved Budget
2016	\$1,961,963.91
2017	\$2,017,423.00

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 \$351,392.23
 BOURNE \$111,986.34
 BREWSTER \$95,851.14
 CHATHAM \$162,610.50
 DENNIS \$166,845.99
 EASTHAM \$73,866.95
 FALMOUTH \$286,246.40
 HARWICH \$126,306.32
 MASHPEE \$122,474.21
 ORLEANS \$99,884.94
 PROVINCETOWN \$62,370.62
 SANDWICH \$99,884.94
 TRURO \$55,714.86
 WELFLEET \$56,925.00
 YARMOUTH \$145,063.48

Comments: _____

SERVICE REQUESTS

How many service requests did you receive this season? 287

How many were for larviciding? 287

How many were for adulticiding?

Was this an increase or decrease over last season? Decrease

Comments: Dry season

EXCLUSIONS

How many exclusion requests did you receive this season? 2

Was this an increase or decrease over last season? Stayed steady

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. Cape Cod National Seashore, Mass Audubon

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

- 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: All public schools, private schools and parochial schools have notified us

Describe any difficulties you have had with the implementation of your program due to the CFPA, please elaborate here: no

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.