MOSQUITO CONTROL IN CENTRAL MASSACHUSETTS

~ AN OVERVIEW ~

TIMOTHY D. DESCHAMPS

Executive Director
9 Mosquito Districts in Mass.

- Berkshire County MCP
- Bristol County MCP
- Cape Cod MCP
- Central Mass. MCP
- East Middlesex MCP
- NE Mass. Wetlands Mgmt. & MC District
- Norfolk County MCP
- Plymouth County MCP
- Suffolk County MCP
Mosquito Districts in Mass.
CMMCP Service Area 2011
New member for 2011

- Devens
Components of Our Program:

1. Surveillance
2. Public Education
3. Ditch Maintenance
4. Larval Control
5. Adult Control
6. Research & Efficacy
7. Source Reduction
Surveillance

Gravid trap

CDC light trap

Resting boxes
2010 CMMCP Surveillance

- 787 pools (collections)
- 13,673 total specimens tested
- 11 viral isolates in mosquitoes, all West Nile Virus
Public Education

MOSQUITOES and you!!

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for additional information, please access our website at www.cmmcp.org

SCHOOL PROGRAM

BROCHURE BOOKMARKS
The CMMCP tire program is up and running again. Click here for details.

Results of our 2010 resident survey are in: Click here for a .pdf report.

CMMCP is a PESP partner with the EPA. Click the logo for more details.
Ditch Maintenance
Ditch Maintenance  (Chelmsford 2010)
Ditch Maintenance (Natick 2010)
Larval Control
Larval Control Products

- Bacterial (wetlands)
  - Bti (*Bacillus thuringiensis israelensis*)
- Insect Growth regulator (catch basins)
  - Methoprene (Altosid®)
- Surfactant/Oils (limited use)
  - refined mineral oil
# Larval Site Card (front)

Central Massachusetts Mosquito Control Project

<table>
<thead>
<tr>
<th>Town</th>
<th>District #</th>
<th>Map Section</th>
<th>Site #</th>
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<tbody>
<tr>
<td>Date</td>
<td>Prepared By</td>
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<td>Location</td>
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<td>Landowner</td>
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<td>Comments</td>
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## Larval Site Card Details

### Type
- Spring Brood
- Re-flood
- Permanent
- Container
- Waste Water
- Other

### Size
- Dimensions \( \times \) \( X \) \( \times \)
  - \(< 1/4 \text{ Acre} \)
  - \(1/4 - 1/2 \text{ Acre} \)
  - \(1/2 - 1 \text{ Acre} \)
  - \(1 - 5 \text{ Acres} \)
  - \(> 5 \text{ Acres} \)

### Vegetation
- A. Cattail & Low brush
- B. Meadow Grasses & Aquatic
- C. Heavy Tree Canopy, Sparse Underbrush
- D. Heavy Tree Canopy, Dense Underbrush
- E. Heavy Tree Canopy, Alders & Grasses
- Other
Aerial Larval Control
Aerial Larval Control (cont.)

- 3 towns in program, Chelmsford (~700 acres), Billerica (~600 acres) and Boxborough (~900 acres)

- Aimed at reducing dependence on the spray program and reducing spring species, as well as possible vector species.
Larval Control in catch basins

- Basins are the preferred habitat of the *Culex* mosquito
- Part of our West Nile Virus control program
- Anticipated more WNV in 2010, expanded basin control by 64%
Catch Basin Treatment History 2003-2010

Year

Total Amount
48,867 29,846 34,935 36,165 33,918 30,244 30,761 28,057
Adult Control

photo by Tim Deschamps
Adult Control Product

- **Sumithrin**, a synthetic pyrethroid
- Not a residual product, rapid decomposition in the environment
- Low toxicity to humans, pets, etc.
- **Toxic to fish & bees**
Adult Control Product (cont.)

- “Customer driven” - applications by request only or after confirmation of virus

- 11,117 service requests in 2010 – 1,062 larval checks, 10,055 spray requests

- On par with 3 yr average of 11,518, but a 85% increase over the 2003-2006 average of 6,005
ULV Service Request History Comparison 2003-2010

Error bars show approx. number of requests if we had 36 cities and towns over the 7 year average
Pyrethroids

- Animal Products (flea spray, flea shampoos)
- Restaurant applications
- Food & grain storage
- Available to homeowners as Yard Guard®, Repel®, etc.
Landing Rates

- Landing rates >1 per min.*
- 98 landing rates in 2010**
- 19/98 (19%) had no application***

*from the Mass. GEIR

** Landing rates are suspended after confirmation of virus – July 10, 2010.

***either below threshold or during nights with no service requests
Exclusion properties (No Sprays)

- Letters sent to all City/Town Clerks in January
- Can register with Clerk, CMMCP or through our website
- Detailed list sent with all pesticide applicators & on GPS units
Spray Notifications

- Monthly schedules sent to all Boards of Health, City/Town Clerks & Police Dept. 2 weeks prior to start of each month
- Street listings on CMMCP phone system after 3:30pm each day
- Street listing on CMMCP website after 3:30pm each day.
- Detailed listing given to Police Dept. each afternoon
Research & Efficacy

- New department for CMMCP – includes GIS capabilities

- Past studies:
  - Mosquito bloodmeal analysis
  - Pesticide resistance testing
  - Adulticide program efficacy evaluation
  - Host-seeking activity
  - Resident survey
Research & Efficacy (cont.)

Pesticide resistance (sumithrin/resmethrin)

- Done for past 5 years, no resistance noted in area
Research & Efficacy (cont.)

Adulticide Efficacy - 2007

- 2-3 days (avg.) of control
- Low residual nature of sumithrin
- Re-infestation from untreated areas
- New emergence
Resident Survey 2010

- 20 questions, plus a 1-5 rating system
- 264 respondents from 1,500, 18%
- Overall satisfaction, 94.2%
- 98.9% will use our services again
- 7,423 points from 8,950 possible, 4.14 average (from 5 max points)
Research & Efficacy (cont.)

Resident Survey 2005-2010

- 92.3% (avg.) are satisfied with service
- 98.5% (avg.) will use service again
- 1,260 total respondents (from 6,000 21%)
2010 Mass. Rainfall Data vs. 30 Year Average*

*Source: Northeast Regional Climate Center: http://www.nrcc.cornell.edu/page_summaries.html
2010 CMMCP Weekly Rainfall vs. 5 Year Average*

*Source: CMMCP Weather Station - Northborough, MA
Source Reduction

- New program for CMMCP
- Operates off grants & operating budget – cost is $2.00/tire
- 3,523 tires recycled to date in 26 member cities & towns
- Brought to a recycling center in Littleton, MA
ASHLAND, MA
1,300+ tires

BEFORE
ASHLAND, MA
0 tires

AFTER
Pesticide Environmental Stewardship Program (PESP)

- A program of the EPA to reduce health and environmental risks associated with pesticide use.
- Awarded to CMMCP in 2007-2010
MOSQUITO-BORNE DISEASES IN CENTRAL MASS.
ARBOVIRUS DISEASE TRANSMISSION CYCLE

MOSQUITO (VECTOR)

BIRD (RESERVOIR)

INCIDENTAL INFECTIONS
2010 WNV

944 cases reported – 7 in Mass.
MA WNV Surveillance Summary
2010

Mosquito Pools Positive 121
Animals Positive* 1
Humans Positive** 7

(*horse, Hudson)
(**Worcester (2), Boston (2), Holyoke, Revere & Lexington)
West Nile Virus - 2004

[Map showing areas affected by West Nile Virus in 2004 with different shades indicating various regions.]
West Nile Virus - 2009
1 positive human in 2010
MA EEEV Surveillance Summary
- October 22, 2010

Mosquito Pools Positive   65
Horses Positive           4
(Warren, Lancaster, Middleboro & Plympton)
Humans Positive           1*
(Middleboro, *RI man with MA exposure)
EEEV in Lancaster

- Horse mortality in northern part of Lancaster.
- Northern area sprayed Aug 19 right after notification from MDPH (Aug. 18)
- Town-wide spraying done Aug. 26 (after weather delays)
EEEV in Lancaster

- Press release sent to local papers and all towns in area
- Continued mosquito trapping did not show subsequent EEE
EEEV in Bolton

??

What to do??
Bolton is a non-member town
EEEV in Bolton

- Notified of EEE positive *Cq. perturbans* on Aug. 24
- CMMCP has a policy in place for intervention in non-member towns
- Began consultation with Nashoba Associated Boards of Health, state and town officials
EEEV in Bolton

- Risk area identified
- Notification to area residents – 14 exclusion properties, 12 requests to be sprayed
- 2/3 town sprayed on Aug 30.
- No subsequent EEE found
EEEV in Bolton

- Selectmen agreed to sponsor an article on Annual Town Meeting warrant
- Met with Bolton BOH on Dec. 14, will be planning a public meeting before ATM
ANY QUESTIONS