Symposium on Mosquito-Borne Diseases in Connecticut
March 9, 2020

Options for Control of Larval and Adult Mosquitoes
Saint Andrews Church
Episcopal
Sunday Eucharist
10:00AM

I wish
noah had swatted
those two
mosquitos
IPM for Mosquito Control

- Monitoring and Surveillance
- Education
- Source Reduction
- Personal Protection
- Biological control
- Chemical control
  - Larvaciding
  - Adulticiding
Elements of a Municipal Mosquito Control Program

• Educate your constituents (sources of mosquitoes).
• Clean up yards/neighborhoods. Stress source reduction/personal protection.
• Enforce public health regs: e.g., abandoned pools
• If contracting with private company, use only DEEP licensed applicators (Cat. 7f)
• Consider catch basin larvaciding. Coordinate with DPW clean outs. Also parks, schools (check regs).
• Judicious use of adulticides is OK.
Source reduction
Eliminate standing water around home and workplace.
Created Wetlands/Stormwater Basins:

Recommendations

• 1:3 or 1:4 side slopes
• Veg/beaver management
• <72 hrs. detention
• maintenance!

Photo: N. Read
Personal Protection Measures to Prevent Mosquito Bites

- Minimize outdoors activities at dawn and dusk or when mosquitoes are most active.
- Cover arms and legs (pants, long sleeves). Wear light colored, loose fitting clothing.
- Repair holes in screens.
- Avoid camping near swampy areas. Use netting on tents and outdoor playpens.
Personal Protection Measures

Repellants

- Repellants (are pesticides):
  DEET (<30-40%), picaridin, oil of lemon eucalyptus, IR3535 (on clothes or skin).
- Sprays, creams, towelettes.
- Have an adult apply repellants to children. <10% DEET - not around eyes/nose/mouth. Wash off when you come indoors.
- Permethrin-based products to clothes only. Kills mosquitoes and ticks.
**Biological control**

The control of a pest by the introduction of a natural enemy or predator

- Gambusia (mosquito fish), guppies, dragonfly nymphs.
- *Introduction of non-native orgs in open waters is prohibited in CT*
- OK in water gardens, abandoned pools, closed systems (no outlet).
- Mummichogs, fathead minnows, sunfish, ‘top minnows’ - OK
Integrated Marsh Management

- A holistic approach to wetlands management utilizing a variety of techniques to achieve site specific goals.
- These techniques can be simple or complex.
- IMM takes into consideration many aspects of wetland management/restoration including mosquito control, vegetation management, wildlife habitat enhancement, hydrologic modification and education.
- Usually involves partnerships to share resources.
Open Marsh Water Management (OMWM)
Source reduction and biological control
Tidal Flow Restoration

Culvert replacement
(removal where feasible)
Tidal flow restoration

Channel recleaning
Chemical control

- Larvaciding
- Pupaciding
- Adulticiding
PPE for the handler/applicator

Read the label!
Wear PPE appropriate to the pesticide.
(disposable gloves, glasses, long sleeves, mask, respirator)
Larvacicides

Applied to water where larvae are active or to areas likely to produce mosquitoes (pre-emergent).

Formulations: liquid, granular, pellets, briquettes, WP, EC

- Organophosphates (temephos) – not regist in CT
- Biologicals
  - Bti (Bacillus thuringiensis var. israelensis)
  - Bs (B. sphaericus)
  - Spinosad (Natular®)*
- Insect growth regulators (IGR’s)*
  - Methoprene (can’t use in coastal zone except in New Haven, PA13-197)

*requires Aquatic permit from DEEP
Timing of catch basin application for Culex control

Mean Number of Mosquitoes per Gravid Trap

- **Cx. pipiens/Cx. restuans**
  - 88% of collection
  - **TOTAL = 16,065**
Pupacides
control of pupae and larvae by suffocation

- Surface films (Agnique MMF)
- Oils/alcohols

*requires Aquatic permit from DEEP
Adulticiding ("spraying")
Adulticiding
Barrier spray
Adulticiding
Ultra low volume (ULV)
Truck mounted spraying
Aerial application
Adulticides

Organophosphates (OP’s) - malathion

Natural pyrethrum – derived from chrysanthemums (expensive)

Synthetic pyrethroids (most anything ending in “thrin”), resmethrin (1<sup>st</sup> gen syn py); -sumithrin, permethrin, deltamethrin, bifenthrin, etc. Potential for resistance.

Etofenprox (Zenivex<sup>®</sup>) – an ether vs. an ester.
EPA exempt products (25b) may not hold up to manufacturers claims

• garlic, essential oils, torches, coils, plants, citronella candles, wristbands, a good cigar
  – buyer beware! CR report.

• “All Natural” doesn’t mean all safe
  – arsenic
  – strychnine
  – hemlock
  – nicotine
Other devices and myths

Sonic devices
Mosquito trap/”magnet”
Misting systems
Bug zappers
Bats and birds
Want to know more?

CT Mosq. Mgt Program: www.portal.ct.gov/mosquito
Amer. Mosq. Control Assoc: www.mosquito.org
Rutgers Univ (NJMCA): vectorbio.rutgers.edu/outreach
NEVBD: neregionalvectorcenter.com
Roger Wolfe
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Management (WHAMM) Program

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