

Symposium on Mosquito-Borne Diseases in Connecticut

April 11, 2019

Options for Control of Mosquito Larval and Adult Mosquitoes

Connecticut Department of
Energy and Environmental Protection





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:



Photo: N. Read

Recommendations

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



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)



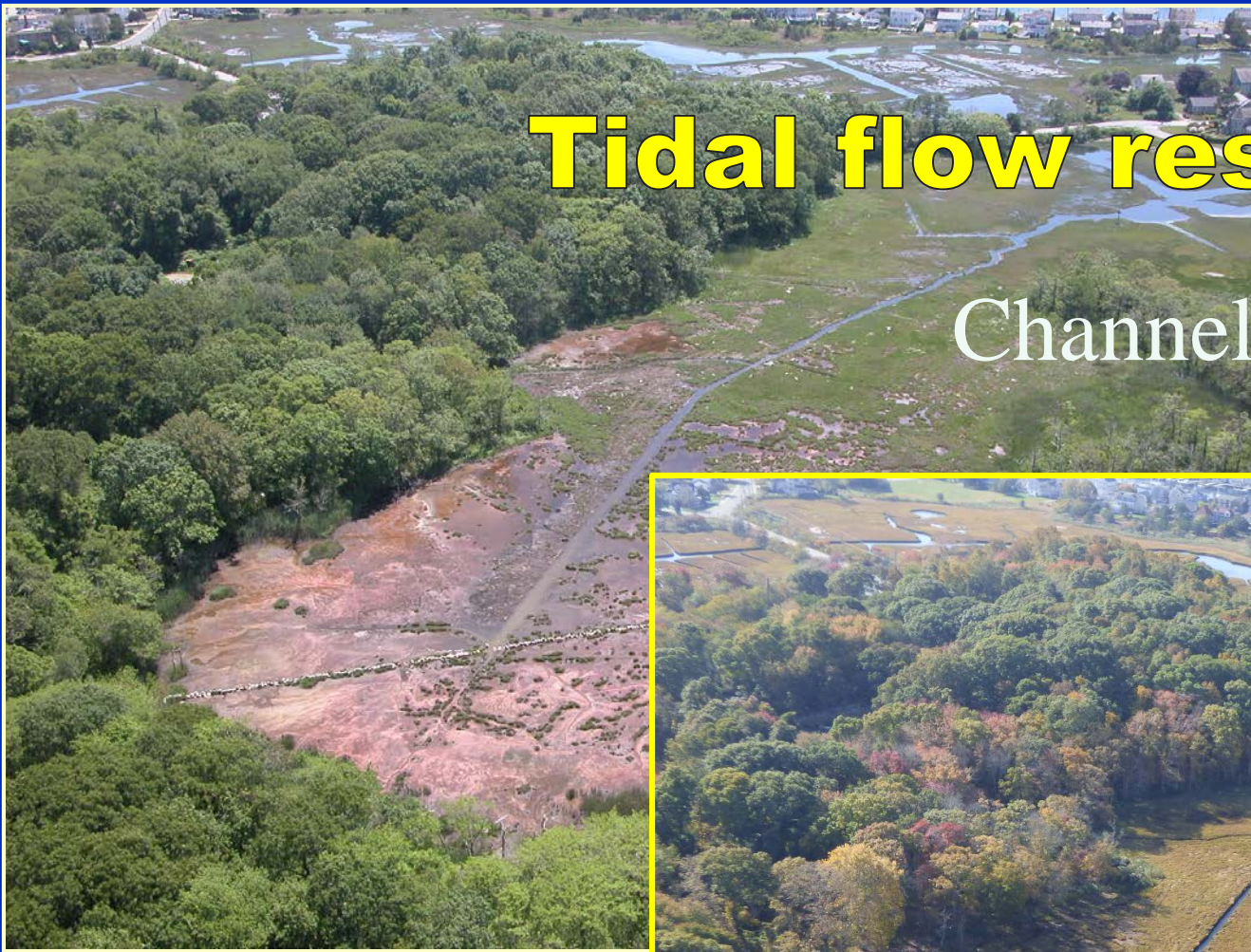
Tidal Flow Restoration



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)



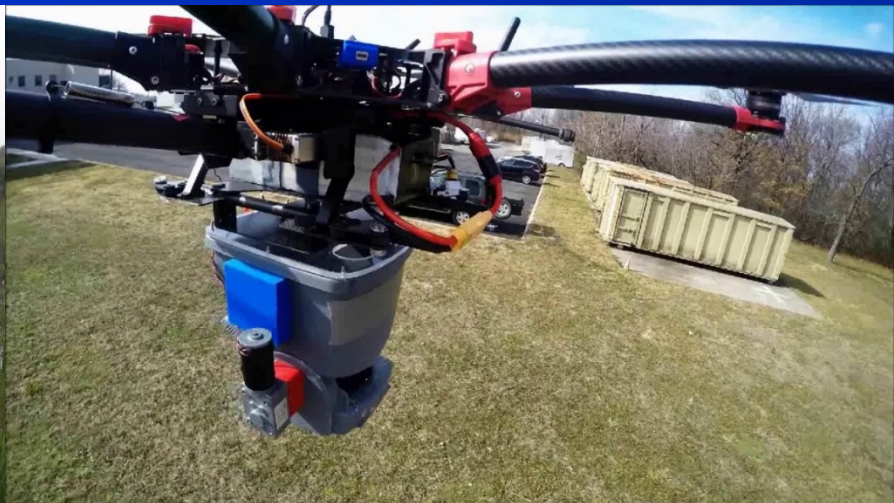
Larvacides

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

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

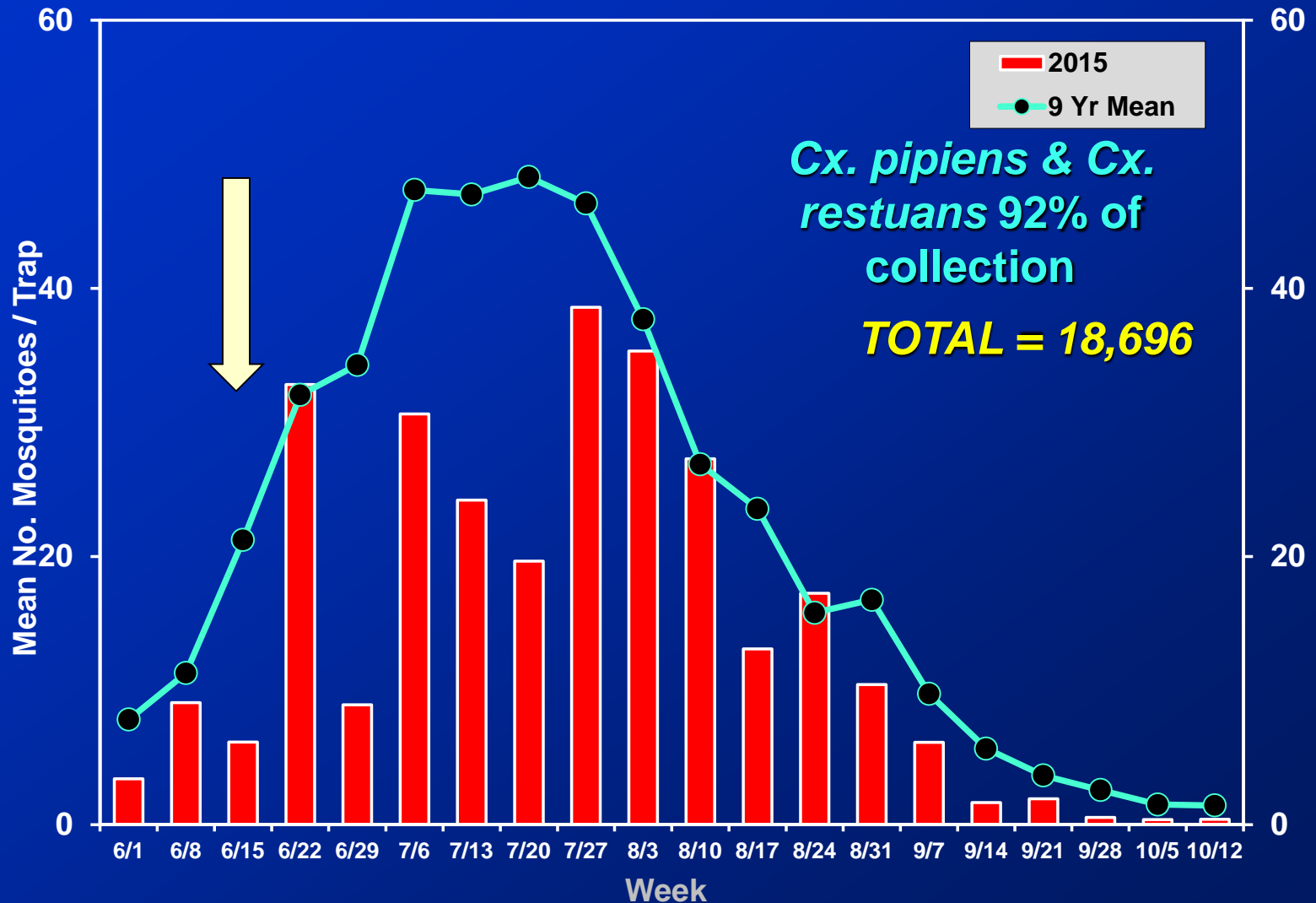
- Organophosphates (temephos) – not regist in CT
- Biologicals
 - Bti (Bacillus thuringiensis var. israelensis)
 - Bs (B. sphaericus)
 - Spinosad (Natular®)*
- Insect growth regulators (IGR's)*
 - Methoprene (can't use in coastal zone except in New Haven, PA13-197)

*requires Aquatic permit from DEEP



Timing of application for Culex control

Mean Gravid Trap Collections - Connecticut, 2015



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 (very expensive)

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

Etofenprox (Zenivex®) – an ether vs. an ester.

EPA exempt products (25b) may not hold up to mnfctr 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 (Socrates’ “last call”)

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

Nat'l Cent. Disease Contr. and Prev: www.cdc.gov

Rutgers Univ (NJMCA): vectorbio.rutgers.edu/outreach

NEVBD: neregionalvectorcenter.com



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