



ELEMENTS OF AN INTEGRATED MOSQUITO MANAGEMENT PROGRAM

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IPM for Mosquito Control

AMCA's BMP for IMM (www.mosquito.org)

- Monitoring and Surveillance
- Education
- Source Reduction
- Personal Protection
- Biological control
- Chemical control
 - Larvaciding
 - Adulticiding

Elements of a Municipal Mosquito Control Program

- Educate your constituents (personal responsibility).
- Clean up yards/neighborhoods. Keep waterways clear. Stress source reduction and personal protection.
- Enforce public health regulations regarding mosquito breeding places (Sec. 19a-213).
- If contracting with private company, use only DEEP licensed applicators (Mosq- Cat. 7f, Ticks- Cat. 3A)
- Consider a catch basin larvaciding program.
- Judicious use of adulticides (“spraying”) 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
- <72 hrs. detention
- Veg/beaver management
- **Require maintenance!**



Maintain waterways



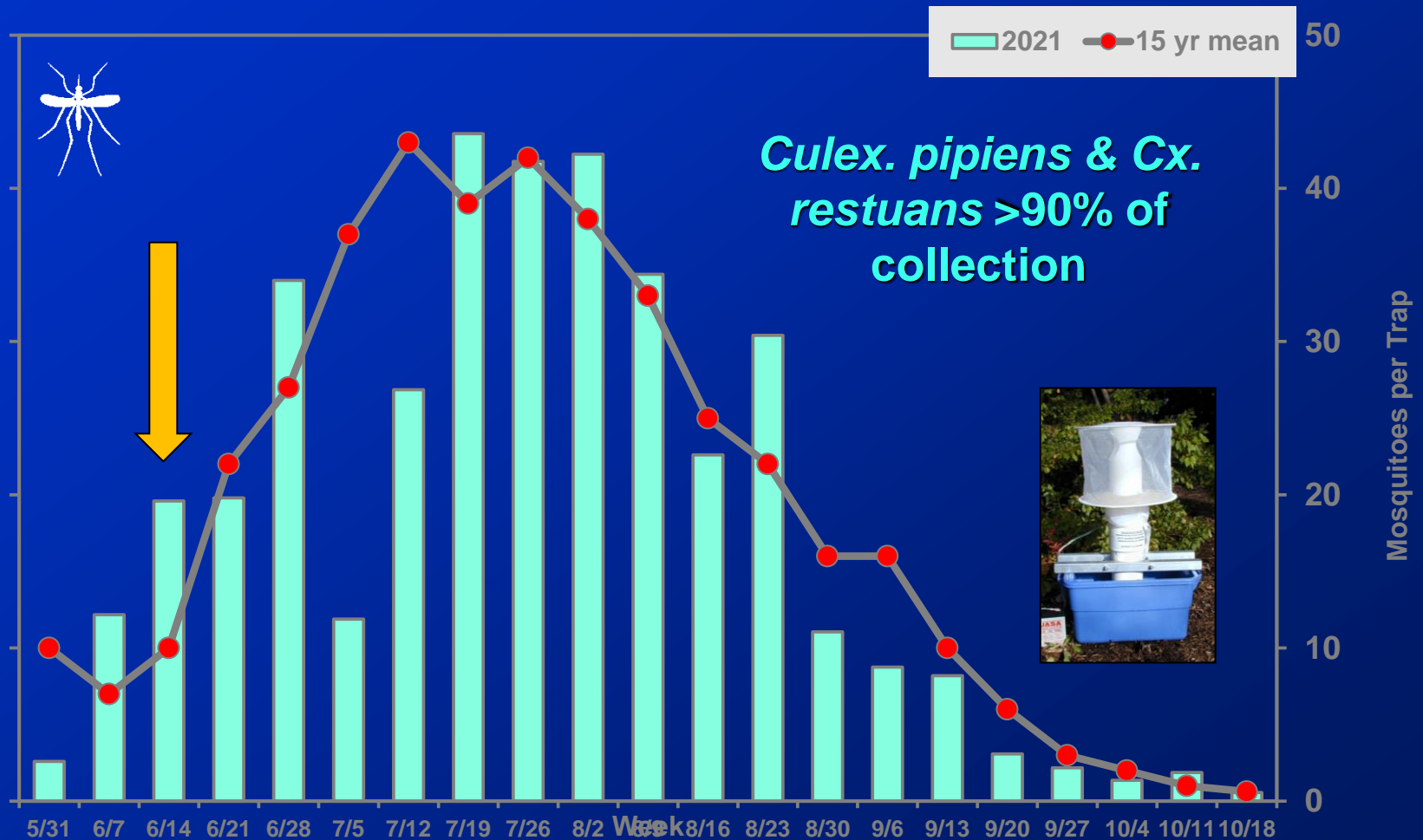
Catch basin treatments

- Identify/map those basins that will hold water for >7 days.
- Several granular, pellet and briquette formulations.
- Coordinate timing of application with DPW so they don't remove product when they clean basins.
- Also, parks, playground, schools (check local regs).



Timing of application for Culex control

Mean Gravid Trap Collections - Connecticut



Personal Protection Measures to Prevent Mosquito Bites (portal.ct.gov/mosquito)

- Minimize outdoor 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). Apply to clothes or skin. DEET (<30-40%), picaridin, IR3535, para-menthane-diol, oil of lemon eucalyptus, 2-undecanone.
- 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 organisms to open waters in CT is prohibited.
- OK to use in water gardens, abandoned pools, closed systems (no outlet).
- Mummichogs, fathead minnows, sunfish, 'top minnows' – OK.



Open Marsh Water Management (OMWM)



Tidal Flow Restoration

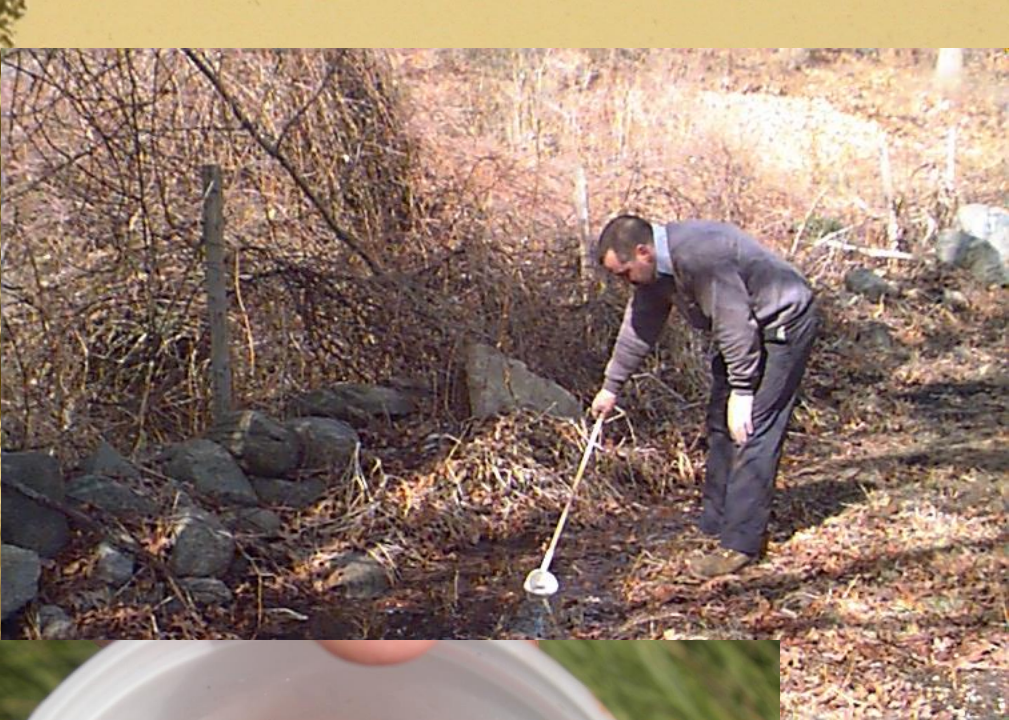


Culvert/tide gate replacement
(or removal where feasible)



Chemical control

- Larvaciding
- Pupaciding
- Adultciding



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



Pupacides

control of pupae and larvae by suffocation

- Surface films (Agnique MMF)
- Oils/alcohols

*requires Aquatic permit from DEEP





Adulticiding

Barrier spray



Adulticiding

Ultra low volume (ULV)

Truck/ATV mounted spraying



Aerial application



Adulticides

Organophosphates (OP's) - malathion

Natural pyrethrum – derived from chrysanthemum flowers (expensive).

Synthetic pyrethroids (most anything ending in “thrin”. E.g., sumithrin, permethrin, deltamethrin, bifenthrin).

Potential for resistance.

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

Exempt products (25b)

EPA “minimal risk”

- do not have to be scientifically scrutinized
- may not hold up to manufacturers claims

- garlic, essential oils, torches, coils, plants, citronella candles, wristbands, a good cigar
 - buyer beware! *Consumer Reports: July 2015*
- “All Natural” doesn’t mean all safe
 - arsenic
 - hemlock

Other devices and myths

Sonic devices

Misting systems (banned in CT)

Mosquito trap/"magnet"

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

