

Pennsylvania's “Mosquito Academy”

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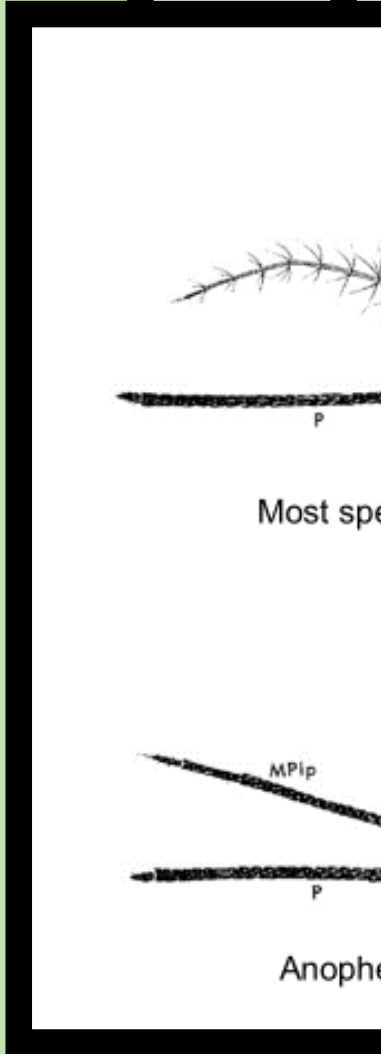
PA DEP

MAMCA- February 20, 2020

“Mosquito Academy”

- Created in 2015 to provide new and existing employees with the basics of mosquito biology, surveillance and control
- Two day training with classroom and field instruction
- Limit class size to 20-30 people
- Sections:
 - Taxonomy
 - Biology
 - Disease
 - Habitat recognition
 - Larval surveillance
 - Adult surveillance
 - Larval control
 - Adult control
 - Cage trial

Taxonomy



Culex restuans

Larval Habitat

- tires, artificial containers, ruts, catch basins, ditches, woodland pools, ubiquitous

Distinguishing characteristics

- blunt tip of abdomen (*Culex*)
- often with 2 white spots on top of thorax
- tan body and legs
- abdomen often with pale greenish color when gravid
- abdominal bands not constricted at edges as much as *Cx. pipiens*

Field identification rating

- Difficult. Hard to separate from *Cx. pipiens*

Notes

- mostly a bird feeder
- important enzootic vector of WNV

Pale spots on top of thorax

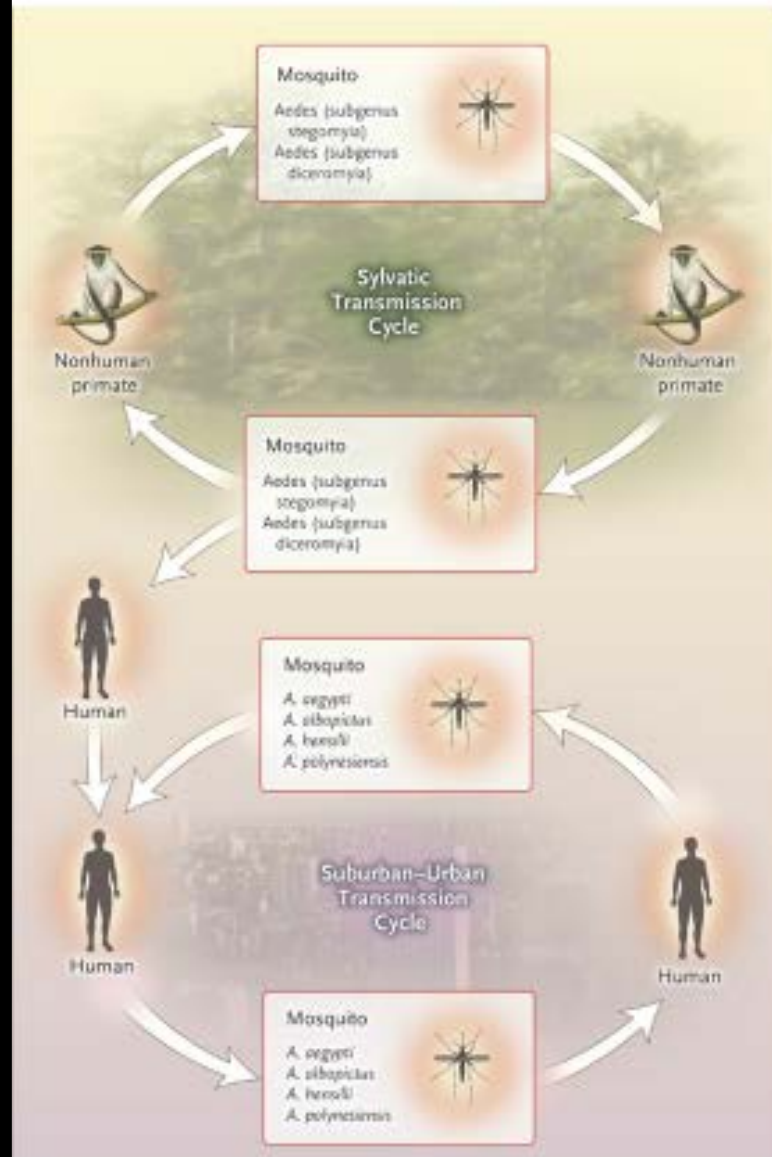


INTEGRATED MOSQUITO MANAGEMENT (IMM)

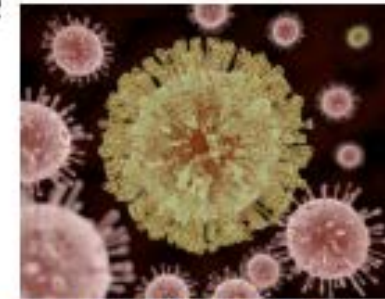
- **YOU** use these principles everyday to reduce mosquitoes and protect public health
- All tools available for managing mosquito populations should be considered for use to maintain vector populations at low levels
 - **Education**
 - **Source reduction**
 - **Larval control**
 - **Adult control**

Disease

Zika/Dengue/ChikV Transmission



- In Africa these viruses are transmitted between *Aedes* mosquitoes and primates—sporadic human infection
- In an urban setting these viruses are maintained in a human-mosquito-human transmission cycle



Habitat Recognition

Obscure Habitats

- Corrugated downspout extensions
- Backyard Catch basins
- Hoof prints
- Hidden Containers
- Abandoned Swimming Pools
 - Skimmer box
- STP- Reed Beds
- Cut off fence posts
- Bottle Caps



Larval Surveillance

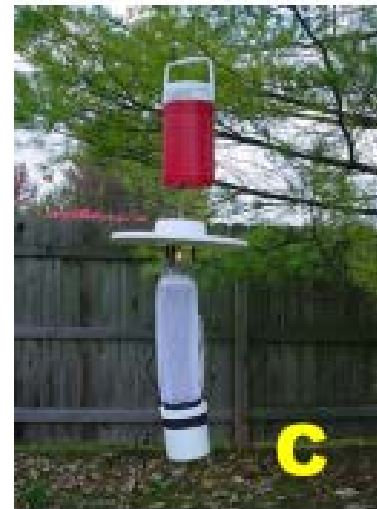
Complaint Investigation

- Ask the right questions so you have a good idea of what is causing the complaint and what habitat to look for.
 - Questions:
 - When are they biting?
 - Where is the location? Urban, Suburban, Wooded, etc.
 - Can the mosquitoes be described?
 - » Small, large, striped, etc.
 - Did this problem just occur?
 - Has there been large rain events lately?
 - Is there standing water on the property?

Adult Surveillance

Types of Traps

- A. Gravid
- B. BG Sentinel 2
- C. Light
- D. Resting Box



HOW TO CHOOSE THE BEST LARVAL PRODUCT(S)

- Consider...
 - Habitat
 - Formulation
 - Season
 - Targeted species and instar/pupae
 - Residual vs. non-residual situations
 - Mode of dispersal
 - Rate and amount of active ingredient
 - **Note: (products can be used in conjunction with each other)**

Adult Control

TYPES OF ADULT CONTROL

- **Ultra low volume (ULV)**
 - Droplets 5-30 microns in size that must make contact with mosquitoes
 - Truck, ATV, backpack
 - Temperature above 60°F
 - Wind speeds 2-10 mph
 - Inclement weather
 - Large scale operation
 - Notifications



Cage Trial

MOSQUITO CAGE TRIAL PROTOCOL

- Transfer to holding chambers with mouth aspirators
- Fed 10% sugar solution





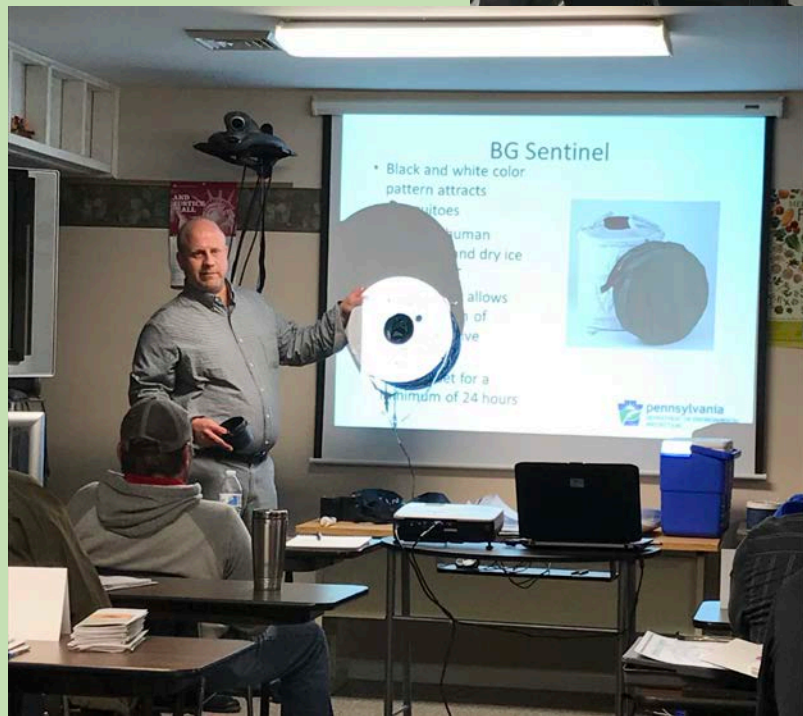
Gettysburg 2015-2016

- Mostly classroom with limited field instruction
- Several hours of microscope work
- Participants enjoyed the event and learned a lot
- Failed cage trial in 2016 was actually a success
- Participants asked for more field instruction



Northumberland 2017

- Scaled back taxonomy section
- More field instruction





Harrisburg 2018

- Added even more field instruction



Eldred 2019

- Really scaled back classroom instruction
- Field instruction was several hours





Eldred 2019

- Backpack treatment demonstrations
- Thermal fogging demonstrations





Eldred 2020

- More field instruction
 - Backpack treatments
 - Measuring product demonstrations
- May 22-23

Questions?