



Commonwealth of Massachusetts

Department of Agricultural Resources
Department of Public Health



**MMA Briefing:
EEE 2020 Overview**

June 25, 2020



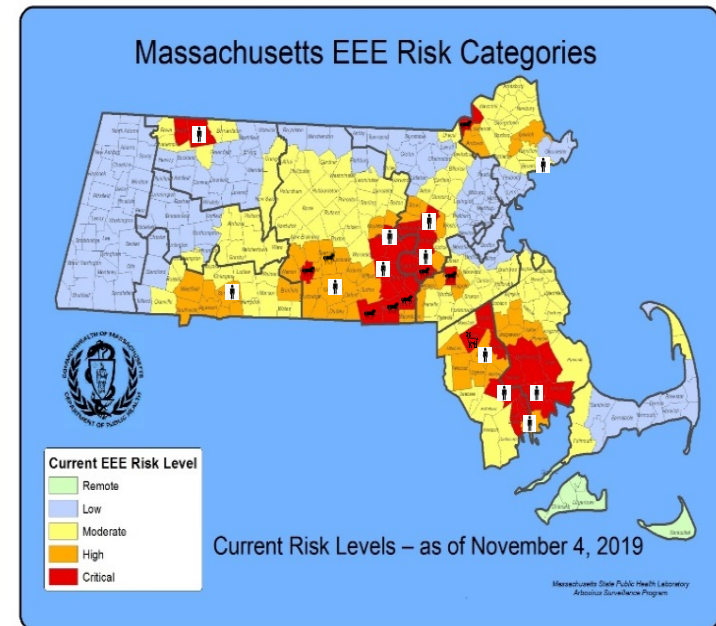
Speakers

- **Dr. Catherine Brown**, State Epidemiologist and State Public Health Veterinarian, Massachusetts Department of Public Health
- **Alisha Bouchard**, Chief of Staff, Massachusetts Department of Agricultural Resources
- **Taryn LaScola-Miner**, Director, Crop and Pest Services Division, MDAR
- **Jana Ferguson**, Assistant Commissioner, MDPH

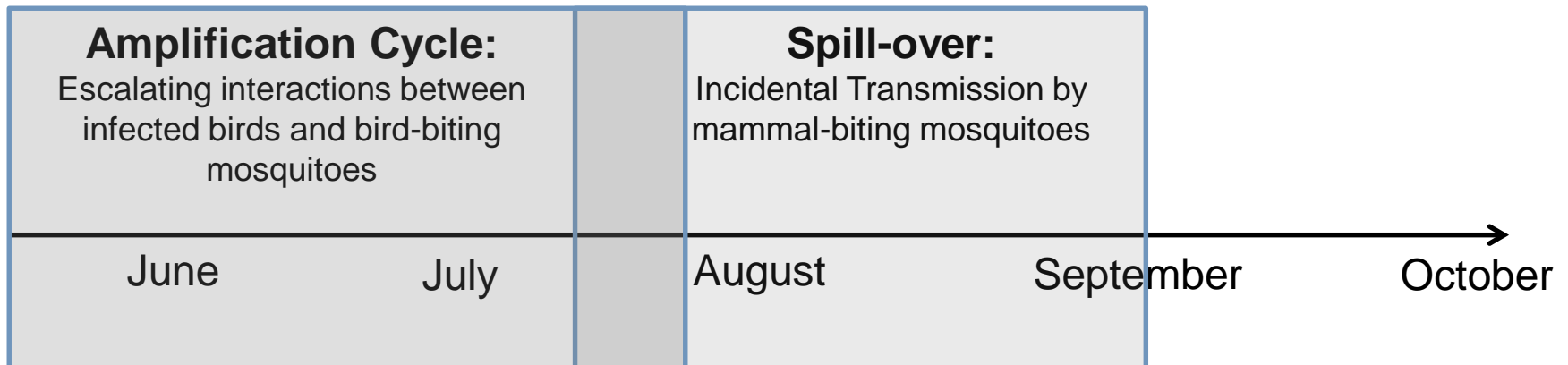
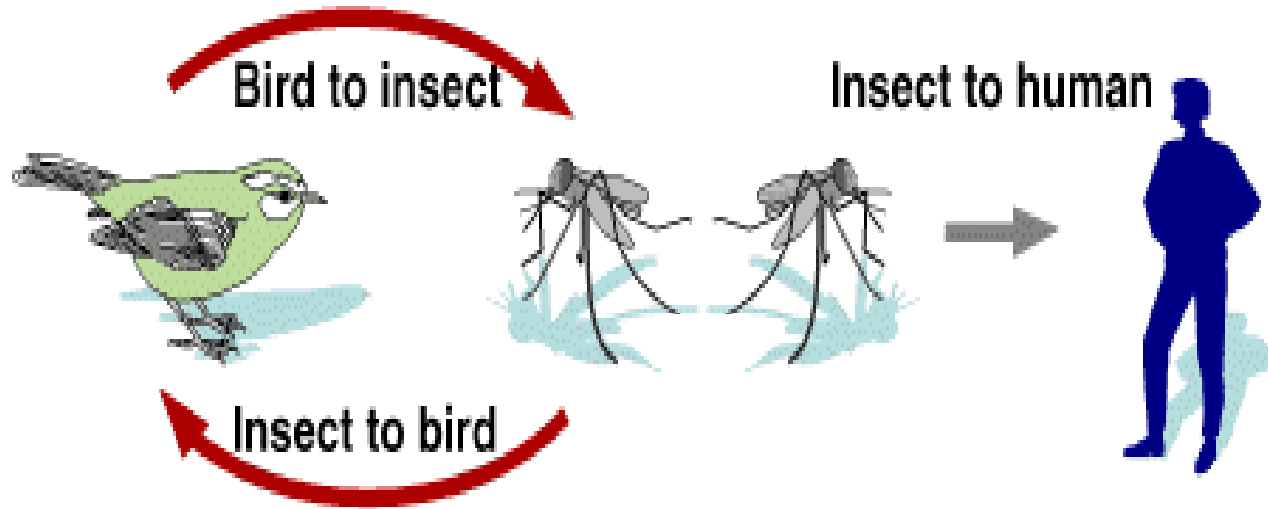


EEE: Setting the Stage

- EEE is a rare but serious mosquito-borne disease
 - 50% mortality
 - Up to 80% of survivors left with permanent neurologic damage
 - All ages can be affected, including children
- 2019 was an active EEE season and likely the beginning of a 2-3 year cycle
- Only Florida has had more human cases of disease than MA
- MDPH/MDAR worked over the winter to:
 1. Conduct an Adulticide Product Review
 2. Identify legislative reforms
 3. Identify critical prevention and response actions
 4. Develop actions and recommendations



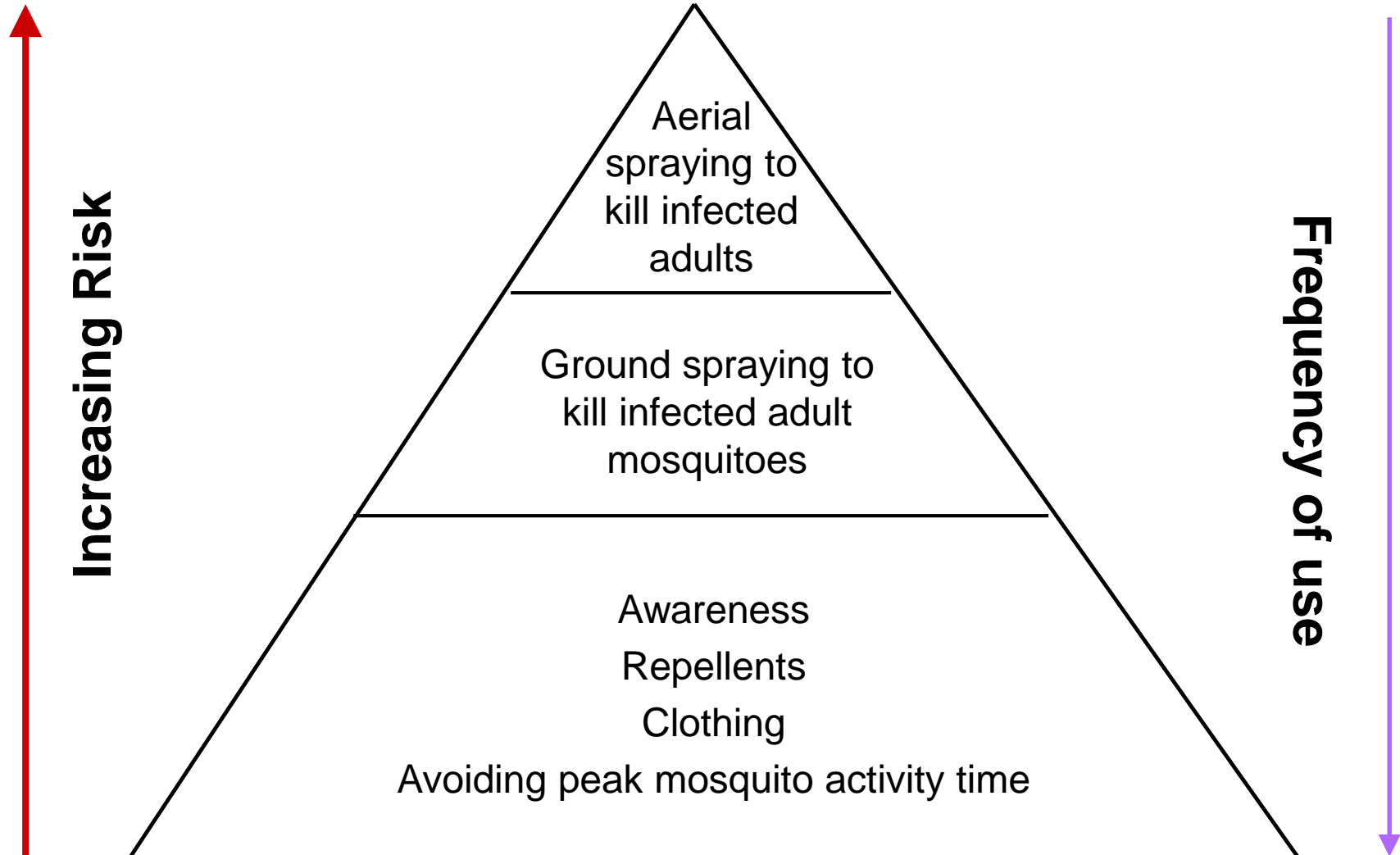
Arbovirus Transmission



Opportunity for adult mosquito control interventions; includes ground-based and aerial



Prevention Tools



Larviciding in EEE environments has shown limited efficacy to date but the data are also limited. Given the unique level of EEE activity that occurs in MA, research is being done to investigate & seek to expand available tools.



Multi-agency Arbovirus Surveillance and Response

- **Executive Office of Health and Human Services**
 - Department of Public Health
 - Bureau of Infectious Disease and Laboratory Science
 - Bureau of Environmental Health
- **Executive Office of Energy and Environmental Affairs**
 - State Reclamation and Mosquito Control Board
 - Department of Agricultural Resources
 - Department of Conservation and Recreation
 - Department of Environmental Protection
- **Local Mosquito Control Projects**
- **Local Health Departments**



MA State Plans: DPH & MDAR/SRMCB

- **Department of Public Health: 2020 Massachusetts Arbovirus Surveillance and Response Plan**
 - Critical Tool
 - Outlines public health response to mosquito animal and human surveillance data
 - WNV and EEE
- **Department of Agricultural Resources / State Reclamation and Mosquito Control Board: Massachusetts Emergency Operations Response Plan for Mosquito-Borne Illness**
 - Critical tool
 - Outlines the SRMBC and MDAR response when an emergency response is needed.



DPH Arbovirus Program Overview

Surveillance

- **Set and collect traps from long-term sites in southeastern MA**
 - Collaborate with Mosquito Control Projects (MCP) on their surveillance efforts in member communities

Laboratory Testing and Correlation with Patient Information

- **Test specimens for EEE/WNV infection**
 - Mosquitoes, suspect animal & human specimens

Risk Analysis and Communication

- **Identify areas at risk for human disease**
- **Communicate findings with local health agents, MCP's and the public**
- **Provide information to guide the control actions to reduce the risk of disease**



2020 Plan: Updates in 5 Key Areas

Communications: to maximize adoption of personal prevention behaviors

- DPH will initiate communication with camps, schools and sports organizations in early June, promoting the use of bug spray
- DPH public awareness campaign launched June 1

Surveillance/Trapping: to drive use of all prevention tools

- DPH will add trapping locations, expanding its surveillance efforts
- DPH working with MCPs to reduce time between trapping and testing

Larviciding: a targeted mitigation tool

- MDAR is coordinating early in the season with mosquito districts to conduct aggressive, targeted larviciding operations
- MDAR will implement Larviciding Product Choice Field Trials

Adulticiding: can be targeted or widespread mitigation tool

- Upon decision to spray, contractors will have assets & personnel in place w/in 3 days with 2 aircraft for over 250,000 acres

Statewide Mosquito Control (*long-term plan*)



2020 Public Communications Campaign

- Newly designated website
- Press release on summer safety: mosquito/tick safety awareness
- Video assets with Dr. Brown
- TV, paid social media and digital media
- DOT billboards, electronic signs, infographics, printed materials
- Stakeholder-specific calls, fact sheets



www.mass.gov/mosquitoesandticks



Public Communications – Sample Materials

Protect Yourself from Mosquitoes
Mosquitoes can spread diseases that make you very sick. Take steps to prevent mosquito bites.

Use an EPA-approved repellent anytime you're outdoors.

Wear long pants, long sleeves and socks to reduce exposed skin outdoors.

Repair torn screens early in the season to keep mosquitoes outdoors.

Remove standing water around the house to prevent mosquitoes from breeding.

Dusk to dawn is peak biting time for mosquitoes that carry disease.

Protect Yourself From
Mosquitoes and Ticks

mass.gov/MosquitoesAndTicks

MASSACHUSETTS
DEPARTMENT OF
PUBLIC HEALTH

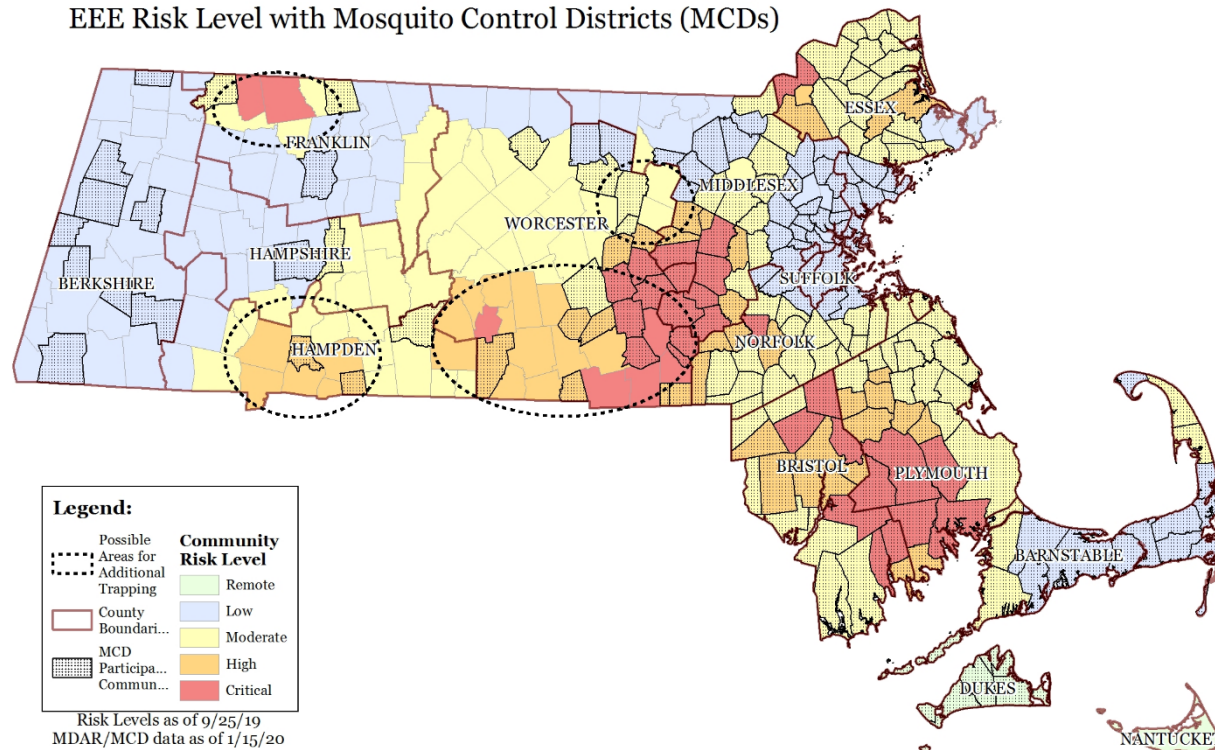


Surveillance / Trapping

Goals of surveillance: 1) detect the presence of virus as it emerges and 2) identify how rapidly and where it is spreading

Strategies: 1) increase data sources and 2) decrease time period between trapping and testing

EEE Risk Level with Mosquito Control Districts (MCDs)





Larviciding

- **Timing of Applications:** Operations were performed using helicopters or fixed wing aircraft for aerial applications and by-hand using backpack sprayers during April and May.
- **Targeted Areas:** 19,600 Acres identified in 110 MCD member Towns targeted for larviciding treatments throughout Barnstable, Berkshire, Bristol, Essex, Hampden, Hampshire, Middlesex, Norfolk, Plymouth and Worcester counties.
- **New for 2020, Product Choice Field Trials:** MCDs coordinating to conduct field trials using 3 different larviciding products to determine effectiveness of early spring treatments. Water sample testing for concentration of larvicide present in crypts and other water sources will measure efficacy of the products. This research seeks to expand available tools for use in EEE environments and provide data/information to DFW in relation to habitat restrictions.
- **Challenges - Non-member Towns:** An additional 25 Towns identified for treatment however, as the Towns have **not** joined an MCD, MGL Chapter 252 restricts the Commonwealth's ability to treat those communities. Since the 2019 season, 5 towns (Grafton, South Hadley, Southampton, Holyoke and Rowe) have joined an MCD.

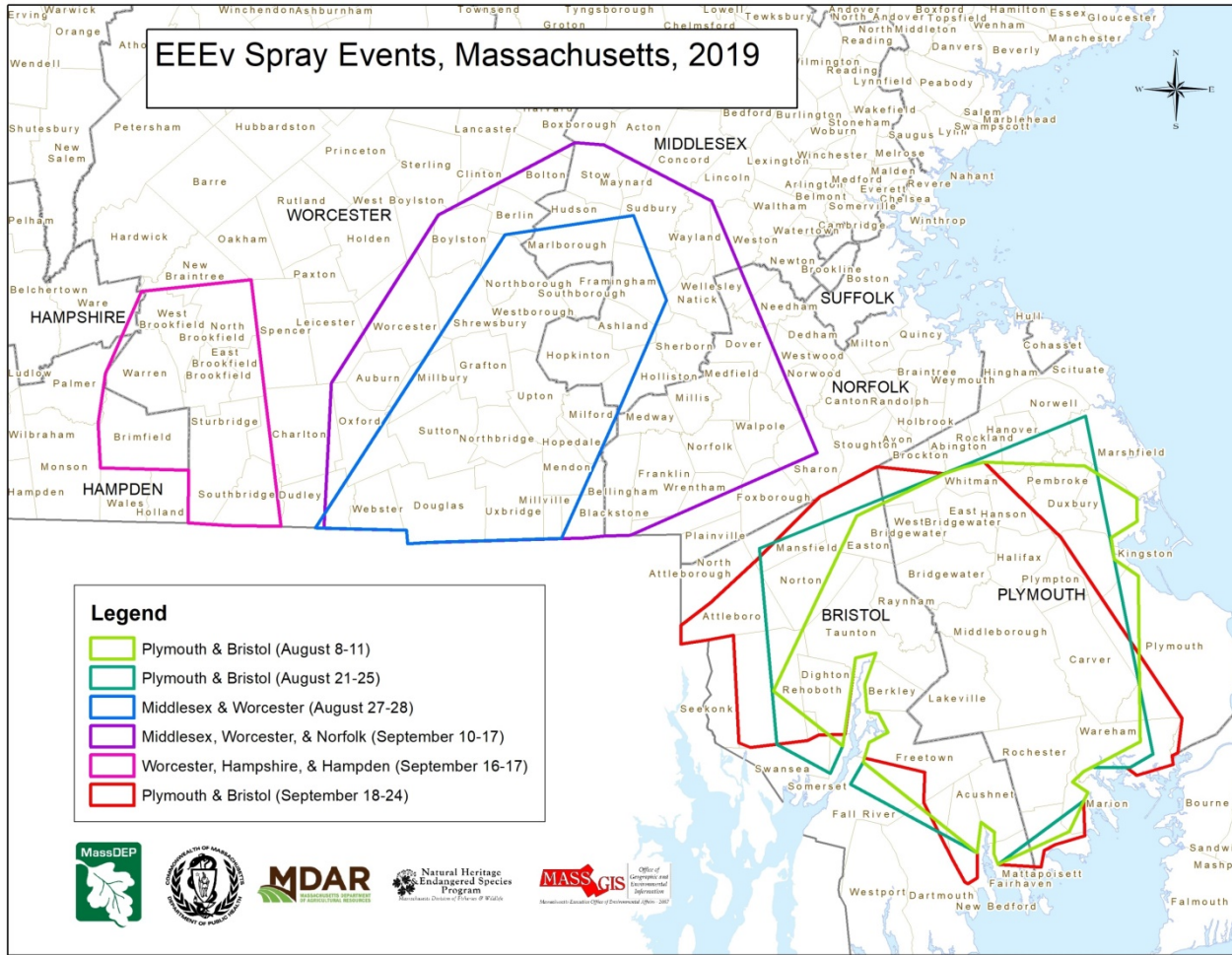


Adulticiding

- **Timing of Surveillance & Applications:** Early June through end of August/first week of September.
- **Surveillance Data Drives Response:** Mosquito populations, mosquito testing for EEE and determination of risk levels drives decisions for appropriate mosquito control interventions.
- **Adulticide Applications:** Based on surveillance data, adulticiding includes targeting EEE hot spots with truck-based and backpack ground spraying.
- **Exclusions:** Private property owners may exclude their property from wide-area pesticide applications for mosquito control under 333 CMR 13:03. Certain areas are excluded from pesticide use under the Endangered Species Act or require further review by DFW in order to be used within the area.
- **New for 2020, Aerial Adulticide Product Review:** Multi-agency workgroup (MDAR, DPH, DEP & DFW) evaluated existing pesticides to present recommendation for product use for 2020 Arbovirus Season. Review is to ensure most effective and environmentally friendly products used and to negate potential mosquito resistance.



2019 EEE Aerial Spray Events



AUGUST 2019

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
				3	4	5
	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

SEPTEMBER 2019

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					



Aerial spray decision making

- **Mosquito abundance – how large are the populations of concern?**
- **Mosquito infection rates – how much EEE virus is in the populations?**
- **Geography – is risk widespread +/- occurring in areas where truck-based mosquito control is not available or unlikely to be effective due to habitat?**
- **Weather**
- **Time of season**

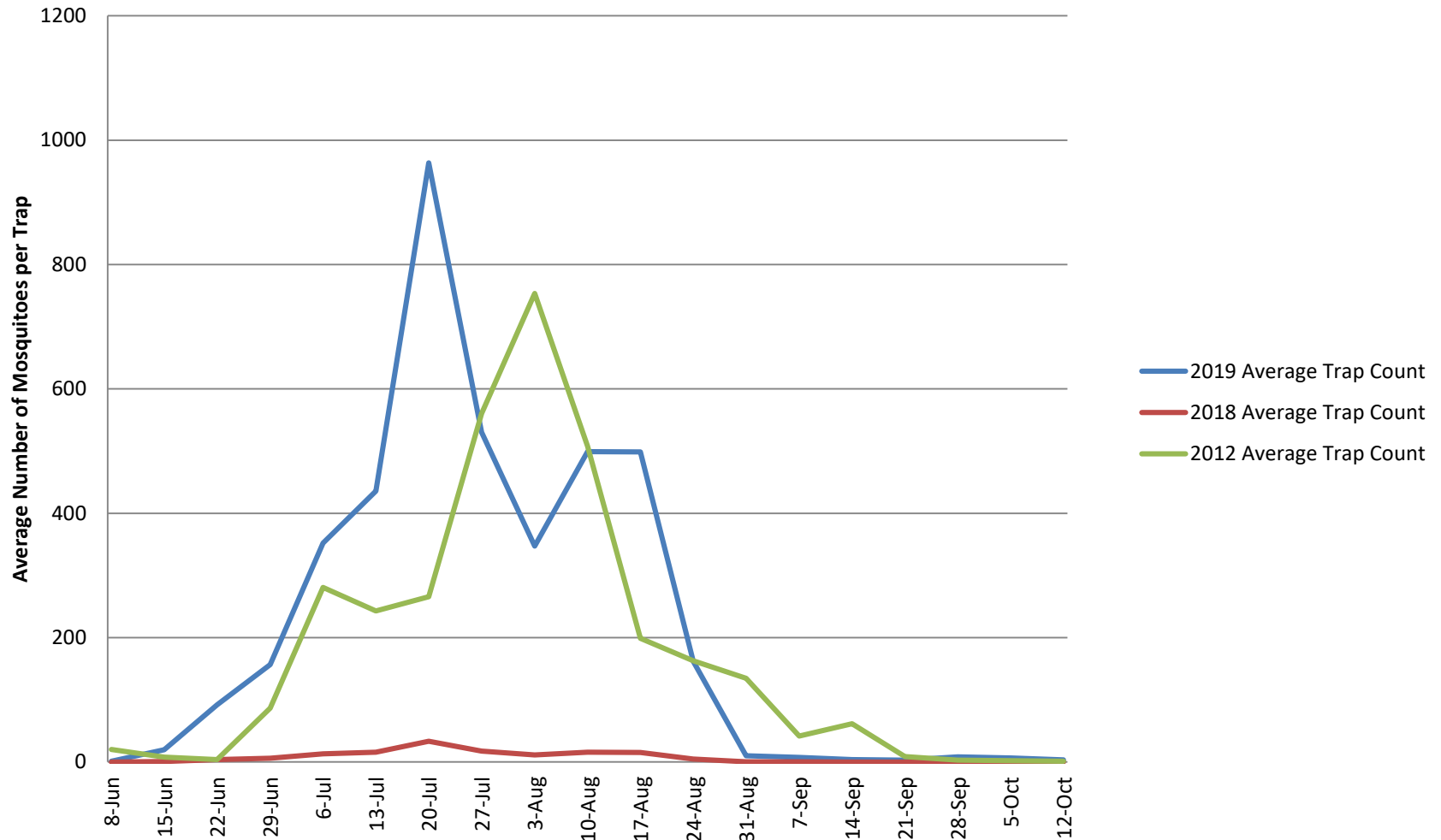
Aerial spray decision-making inputs:

- **DPH – risk assessments and geographic distribution of virus**
- **MDAR/State Reclamation & Mosquito Control Board – pesticide regulation and subject matter expertise**
- **Mosquito Control Districts – field condition awareness and mosquito control expertise**
- **Mosquito Advisory Group – mosquito control expertise advisory group**



Mosquito Species – variable timing

Average Number of Primary Vector Species Trapped by Week





Aerial Spray Efficacy – 2019

Percent Reduction in Mosquitoes Trapped: Comparing Pre-Spray Trapping Numbers to Post-spray Trapping Numbers

Aerial Intervention Location	Start Date	End Date	Total Reduction in Primary Mosquito Vector*	Total Reduction in Mosquito Trapped	Avg High Temp	Relative Humidity	Aerial Spray Costs
Bristol / Plymouth	8/8/2019	8/11/2019	66%	58%	85	83%	\$ 891,585
Bristol / Plymouth	8/21/2019	8/25/2019	91%	25%	80	86%	\$ 891,226
Middlesex / Worcester	8/26/2019	8/27/2019	38%	20%	72	70%	\$ 583,989
Middlesex / Norfolk / Worcester	9/10/2019	9/18/2019	NR	NR	72	74%	\$ 2,261,727
Hampden, Hampshire and Worcester	9/15/2019	9/17/2019	NR	NR	71	71%	
Bristol / Plymouth	9/18/2019	9/24/2019	NR	53%	78	84%	
NR = No Reduction							
Other: Supplies, Lab Testing, Employee Travel & OT, Ground Spraying & Late Fees							\$ 457,108
Total Costs:							\$ 5,085,636

Factors affecting efficacy

- The greater the mosquito activity, the greater the efficacy
 - Mosquito activity minimal at 60 degrees, increases with increasing temperature
 - Mosquito activity generally increased with increasing humidity but reduced when raining
- Large spray blocks conducted over the fewest possible nights increases efficacy
 - Small spray strips and increased time to complete entire polygon reduce efficacy



Questions and Discussion

Thank you!



DPH Contact: catherine.brown@mass.gov
MDAR Contact: taryn.lascola@mass.gov