



# Commonwealth of Massachusetts

*Department of Agricultural Resources*  
*Department of Public Health*



**2024 Overview**

**July 2024**



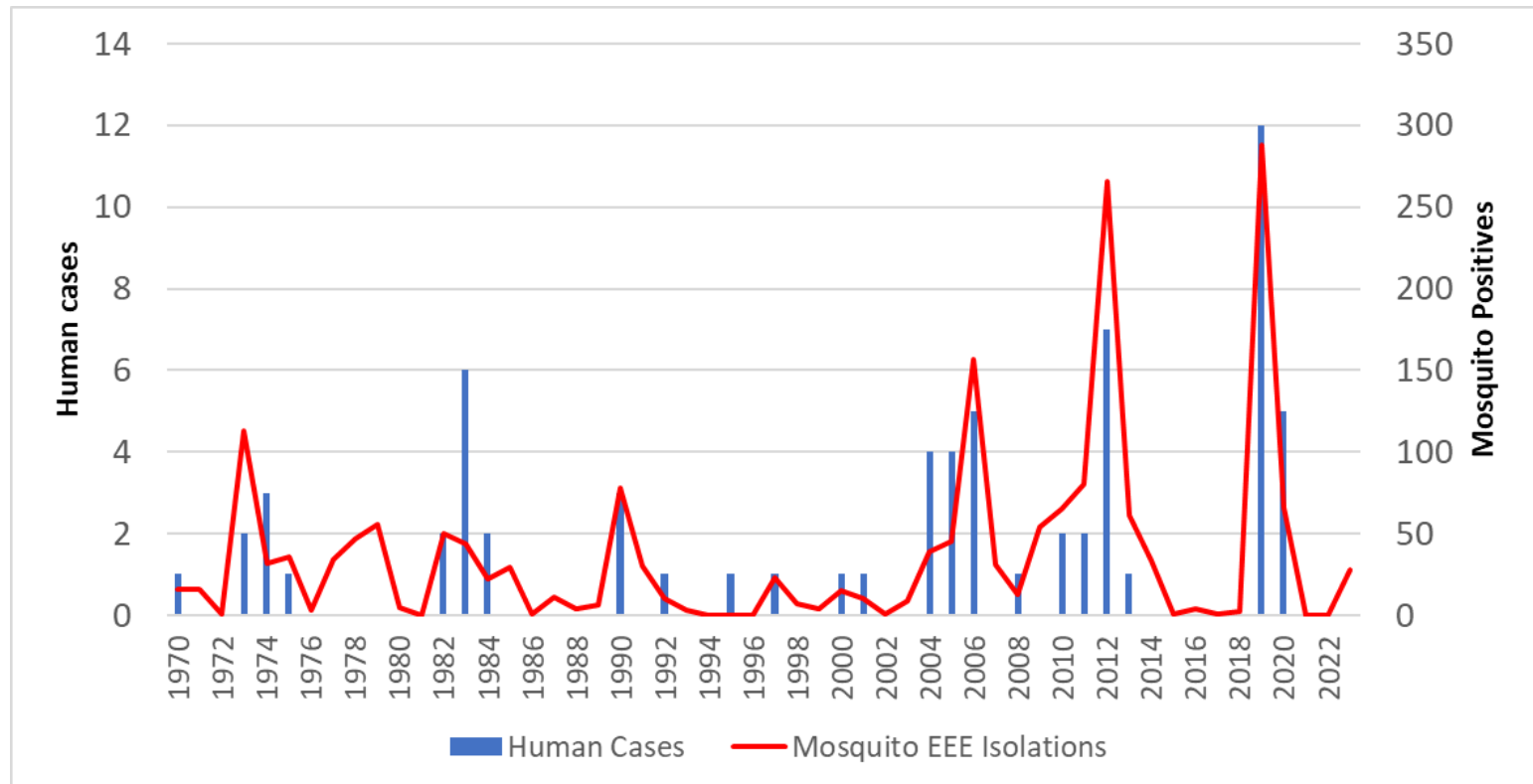
## Arbovirus Background: Human Disease

	EEE	WNV
Incubation Period	3-10 days	3-14 days
Symptoms	Often abrupt onset of fever, chills, headache, muscle aches, nausea and vomiting, with progression to seizures, coma	80% Mild and sub-clinical infection  20% Headache, sore throat, fatigue, muscle and joint aches, fever
Severity	30-50% mortality rate for those with symptoms  ~80% of those who recover have permanent neurological damage  Children: 11/43 (25%) cases (33% mortality) Adults: 32/43 (75%) cases (50% mortality)	Age-related severity  <1% Aseptic meningitis, encephalitis, meningoencephalitis



# Public Health: Focus on EEE

- **EEE Outbreaks**
  - Typically in 2-3 year cycles
  - 2019-2020 was an outbreak cycle
- **Purpose of mosquito control: reduce populations of bird-biting and mammal-biting mosquito species in order to reduce the risk of arbovirus**
- **EEE Sampling over Time**



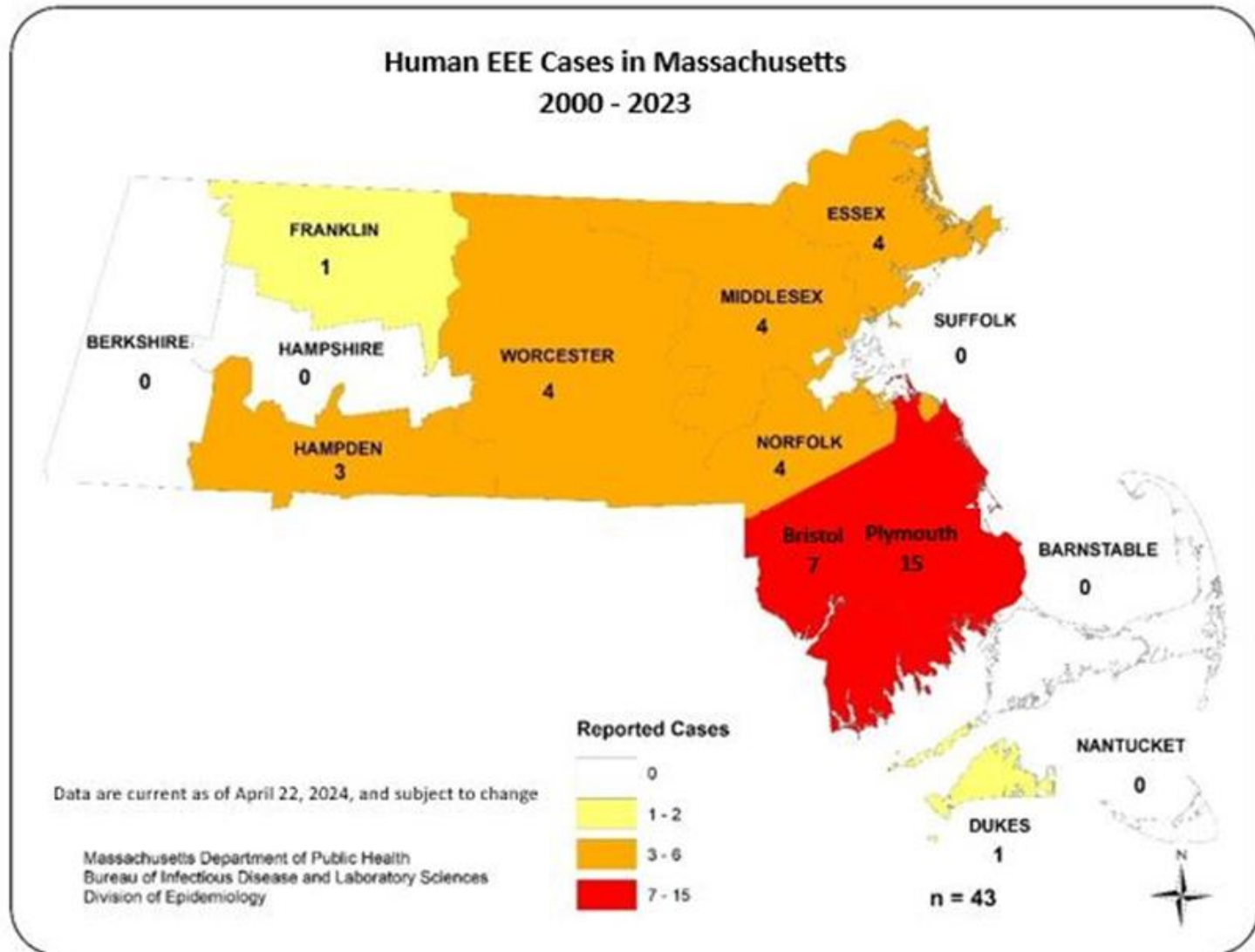


# Public Health: 2019 – 2023 EEE Seasons

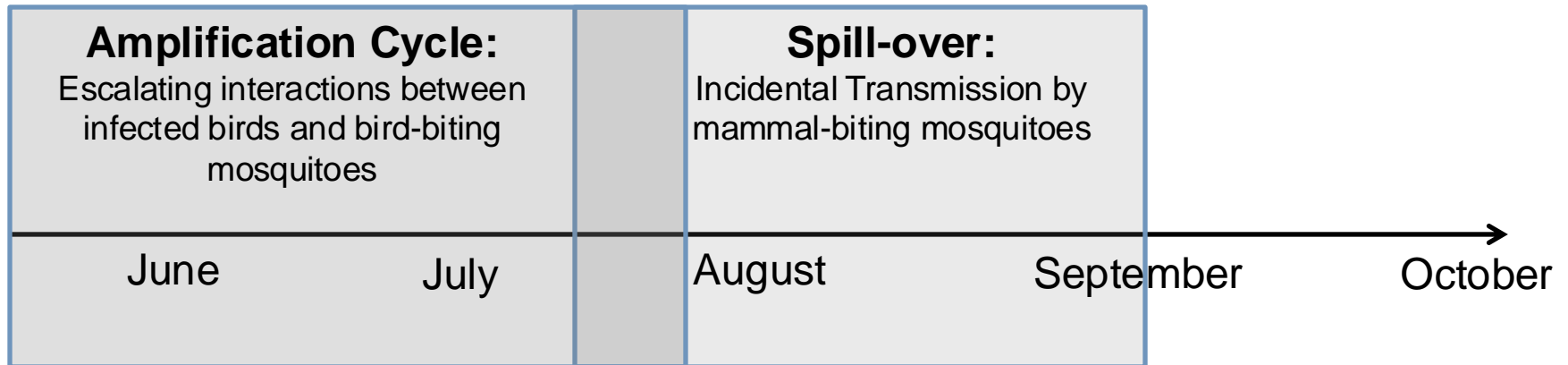
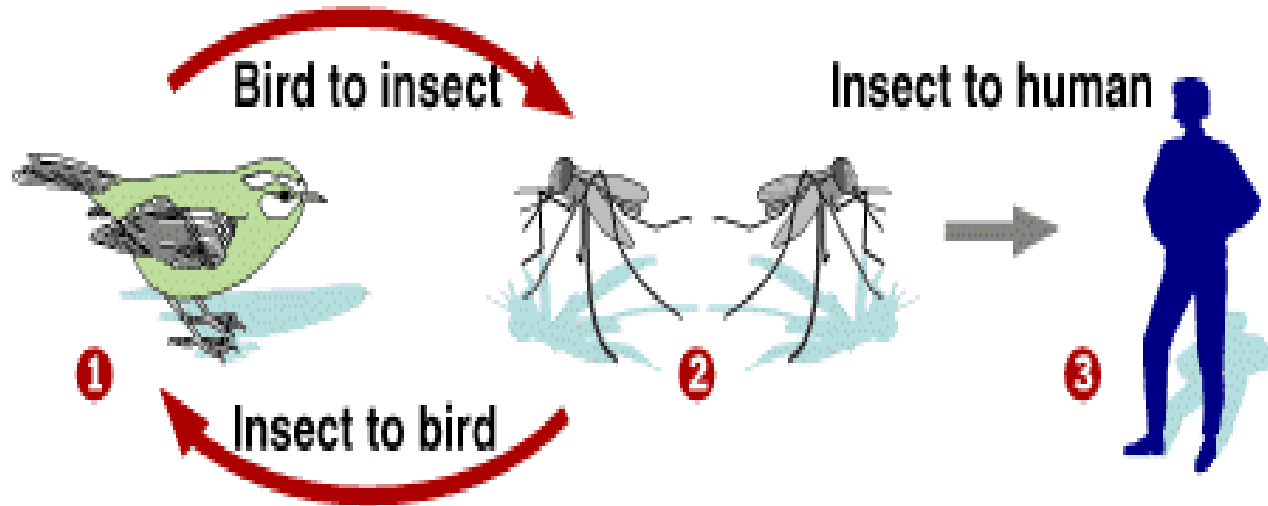
	2019	2020	2021	2022	2023
Overview	<p>First year of EEE outbreak cycle</p> <p>Most active EEE year in MA since the 1950s</p>	<p>Second year of outbreak cycle</p>			
EEE	<p>12 human cases, with 6 deaths</p> <p>9 animal cases</p>	<p>5 human cases, with 1 death</p>	0 human cases	0 human cases	0 human cases
WNV	5 human cases	12 human cases	11 human cases	8 human cases	6 human cases
Aerial Spray Application	6 aerial sprays to reduce EEE risk	1 aerial spray in Plymouth/Bristol County to reduce EEE risk			



# EEE Human Cases by County of Residence, 2000-2023



# Arbovirus Transmission



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



# Multi-agency Arbovirus Surveillance and Response

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- **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
- **Mosquito Control Districts (“MCDs”)**
- **Local Health Departments**



# MA State Plans: DPH & MDAR/SRMCB

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- **Department of Agricultural Resources / State Reclamation and Mosquito Control Board: Massachusetts Emergency Operations Response Plan for Mosquito-Borne Illness**
  - Critical tool
  - Outlines the SRMCB and MDAR response when an emergency response is needed
- **Department of Public Health: 2023 Massachusetts Arbovirus Surveillance and Response Plan**
  - Critical Tool
  - Outlines public health response to mosquito animal and human surveillance data
  - WNV and EEE





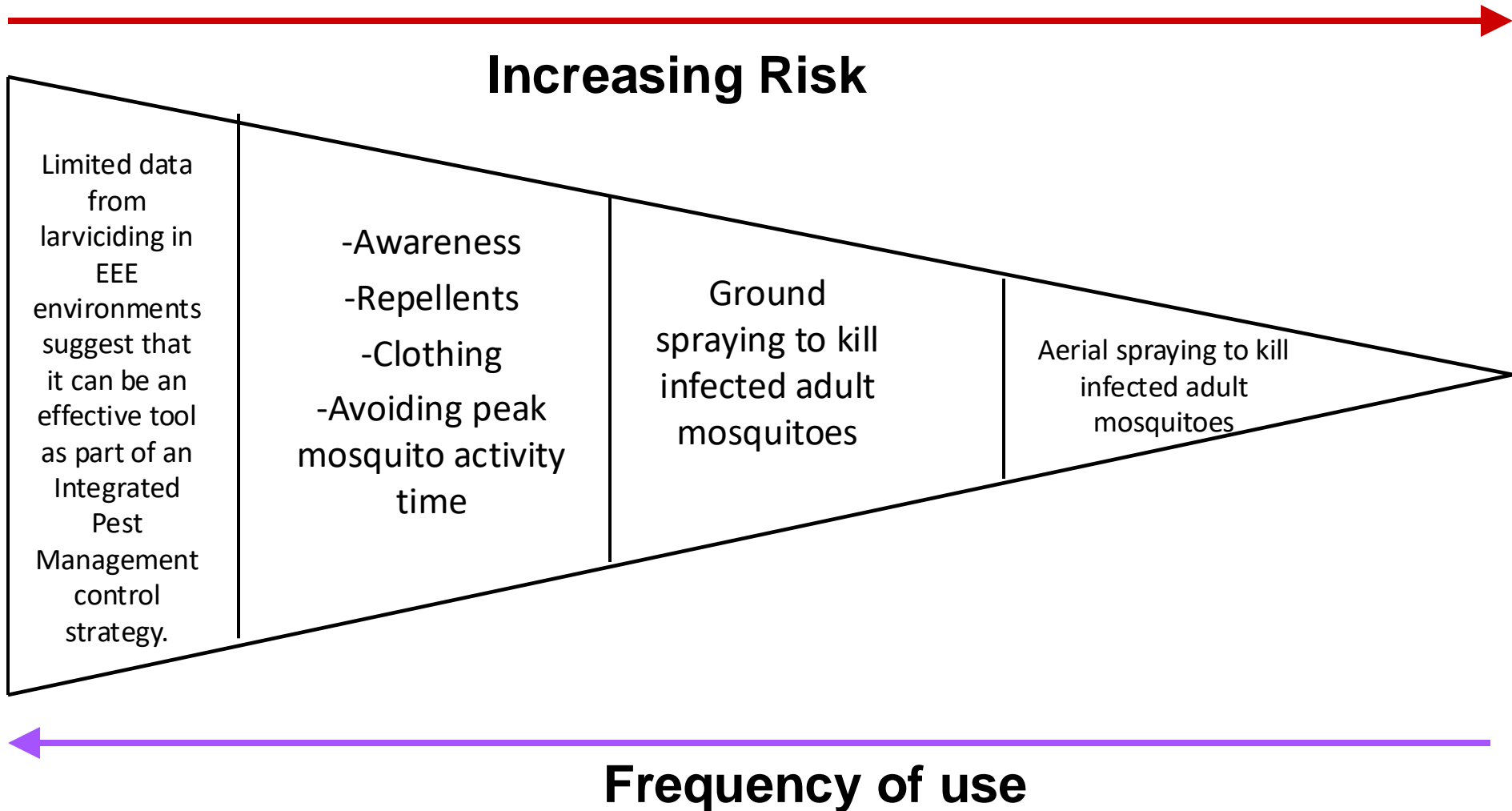
# DPH Arbovirus Program Overview

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- **Surveillance**
  - Set and collect traps from long-term sites in southeastern MA
    - Collaborate with Mosquito Control Districts (MCD) on their surveillance efforts in member communities
  - Provide surveillance testing in parts of the state without MCDs
- **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, MCD's and the public
  - Provide information to guide control actions to reduce risk of disease



# Prevention Tools





# Precautions

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- **Apply insect repellent when outdoors.** Use a repellent with an EPA-registered ingredient (DEET, permethrin, picaridin, oil of lemon eucalyptus)
  - <https://www.epa.gov/insect-repellents>
  - <http://npic.orst.edu/ingred/ptype/repel.html>
- **Reduce exposed skin.** Wear long-sleeves, long pants and socks when outdoors.
- **Avoid peak mosquito hours.** The hours from dusk to dawn are peak biting times for many mosquitoes. Consider rescheduling outdoor activities.
- **Reduce mosquito breeding.** Dump standing water; stagnant water is used by mosquitoes to lay their eggs.



# 2024 Public Awareness Campaign

- Website: [www.mass.gov/mosquitoesandticks](http://www.mass.gov/mosquitoesandticks)
- Press release on summer safety: mosquito/tick safety awareness
- Video assets, social media and digital media
- DOT billboards, electronic signs, infographics, printed materials
- Stakeholder-specific calls and factsheets





# Highlights of 2023 Paid Media Campaign

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- 2023 paid media campaign (18 June – 16 September) was highly successful based on final metrics for the season
  - Utilized six different media channels with a total media budget of \$567, 235.29.
  - Served over 20 million impressions and received 24,725 total clicks across social media and digital with ads in English, Spanish, and Portuguese
  - Facebook was top performing media platform generating most clicks responsible for highest amount of web traffic; Facebook / Instagram users also shared ads an impressive number of times, which added valuable reach to the campaign
  - Website metrics included 39,567 pageviews
  - Video completion rate (VCR) was higher than the industry benchmark of 75% for all 3 languages (range 78% - 86%)



# Public Communications

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- Messaging focuses on ticks in June and transitions to mosquitoes in late June/July
- To ensure the delivery of consistent, coordinated, timely, and actionable information to the public and to those within high or critical risk communities, we have established guidelines for press releases
- Information on cases we release: gender, age range, county of exposure, communities moving to high or critical risk based on exposure information
- Information we do NOT release: city/town/or county of residence, hospital facility of treatment, patient condition



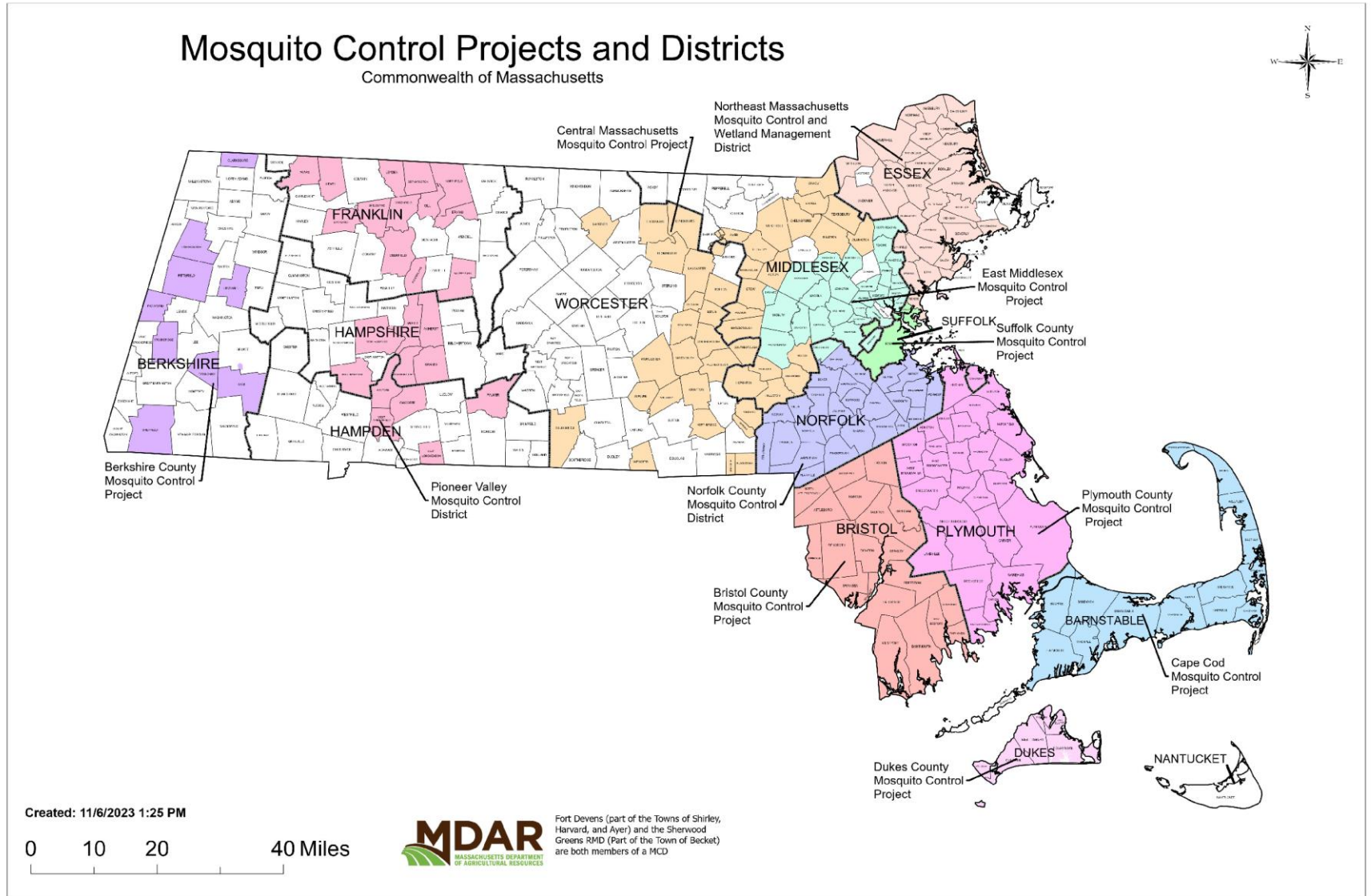
# Arbovirus Press Release Triggers

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- **First identifications of WNV and EEE in a mosquito**
  - With press release, other state agencies & LBOHs in affected regions or counties are notified. Statewide notification based on DPH judgment.
- **Any laboratory confirmation of WNV or EEE in a veterinary specimen**
  - With press release, other state agencies & LBOHs in affected regions or counties are notified. Statewide notification based on DPH judgment.
- **Any laboratory confirmation of a human WNV or EEE case**
  - With press release, other state agencies & LBOHs in affected regions or counties are notified. Statewide notification based on DPH judgment.
  - Data provided: Gender, age range (<20, 20-29, 30-39, 40-49, 50-59, 60-69, 70-79, 80+), county of exposure, communities moving to high or critical risk based on exposure information.
- **Risk assessment level changes (high or critical)**
  - With press release, other state agencies & LBOHs in affected regions or counties are notified. Statewide notification based on DPH judgment.
- **Aerial spraying operations (per SOP Action Plan)**



# Mosquito Control Structure - Map







# Mosquito Control: Annual Timeline

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- **Leading up to and throughout the season: Planning & Surveillance**
  - In collaboration with DPH, the SRB/MDAR arbovirus response plan is updated and informed based on the previous season
  - Surveillance is conducted by DPH and the MCDs who collect mosquitoes and submit samples to DPH for virus testing, results help inform a response strategy
- **Early March – End of May: Larviciding applications**
  - Larvicide is targeted to areas of standing water and targets mosquito species that would reduce the risk of EEE cycle amplification
  - Depending on the mosquito species, this may continue throughout the season
  - Applications depend on foliage cover, weather and water temperature
- **Early June – Early September: Adulticiding applications**
  - Mosquito population type, mosquito testing for virus, and determination of risk levels drives decisions for appropriate mosquito control interventions
  - Includes targeting of EEE hotspots with backpack spraying and truck mounted Ultra-Low-Volume (ULV) spraying
  - May include aerial application



# Aerial Spray Decision Making, Factors

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- **The following factors are taken into account when making this determination**
  - Mosquito abundance – how large are the populations of concern?
  - Mosquito infection rates – how much EEE virus is in the mosquito 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 and time of season
- **The following expertise is taken into account when making this determination**
  - DPH – risk assessments and geographic distribution of virus
  - MDAR/SRB – pesticide regulation and subject matter expertise
  - Mosquito Control Districts – field condition awareness and mosquito control expertise
  - Mosquito Advisory Group – mosquito control expertise
- **Elevated Risk:** If there is an elevated risk of EEE and the DPH Commissioner issues a certification of a public health hazard that may result in a decision to conduct wide-area emergency aerial spraying
  - Funding for emergency operations are typically filed for in supplemental budget; FY19 allocation was \$5.1 M



# Aerial Spray Decision Making, Process

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- If EEA starts to escalate to a high-risk situation, MDAR maintains communications with EEA to ensure situational awareness
- If risk levels reach a threshold for determination, MDAR and DPH ensures EEA, EHS and GOV concur with the proposed actions
  - DPH Commissioner issues a certification of a public health hazard that may result in a decision to conduct wide-area emergency aerial spraying
  - This triggers exemptions in MDAR pesticide and DFW wildlife regulations
  - SRB may then vote to engage in preventive, management and eradication methods within 48-hours of public notice
  - MDAR supports the administration, deployment of contractors, and supervises the aerial spraying

## **Communications:**

- Once a decision to proceed with aerial spraying is made, MDAR and DPH work with EEA and EHS Communications to coordinate all related press releases to inform the public of the proposed response



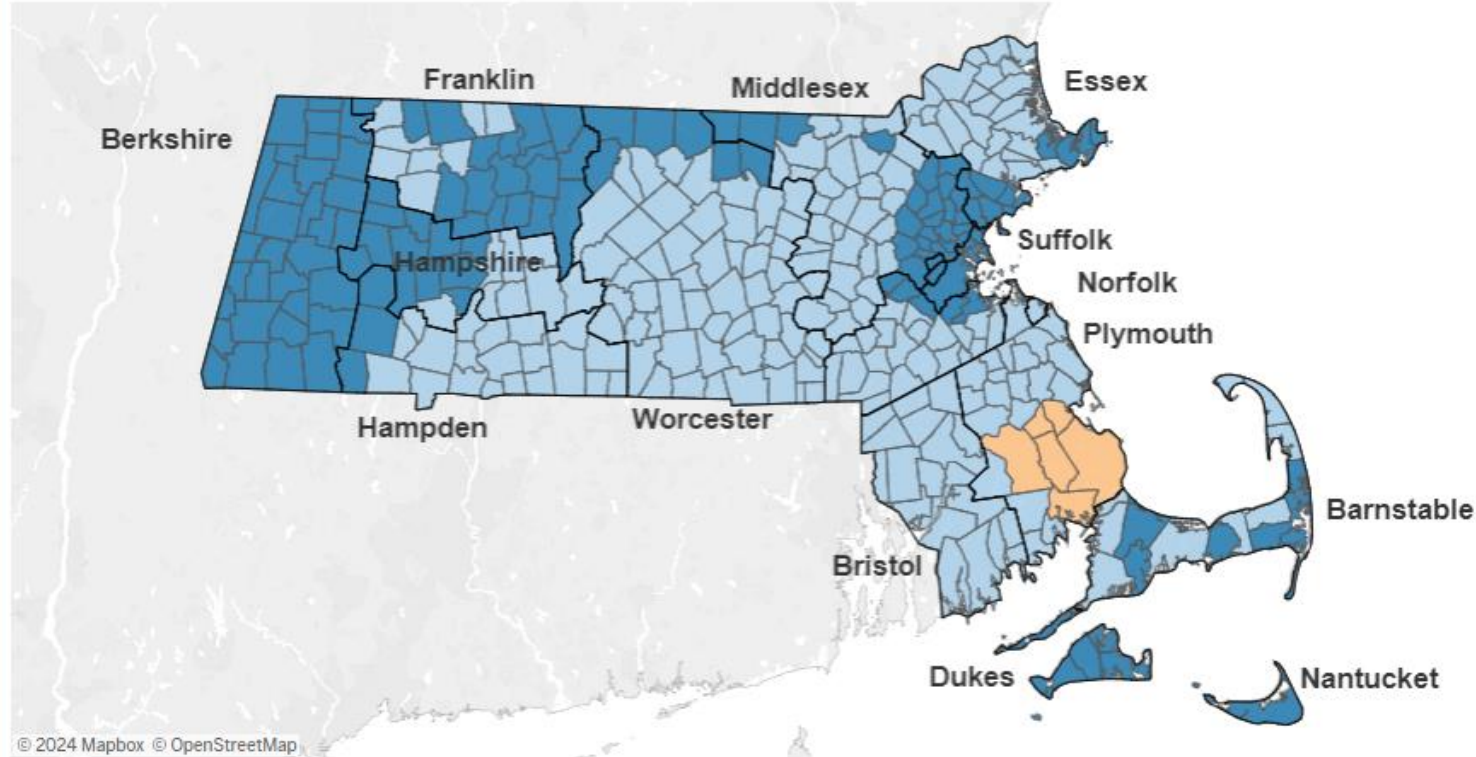
# Current EEE Risk Levels



## Massachusetts Eastern Equine Encephalitis (EEE) Risk Map and Reporting

Last updated: July 3, 2024

EEE Risk Level by Town



© 2024 Mapbox © OpenStreetMap

### Map selections

Click on or hover your mouse over a town to see the current EEE risk level with steps you can take to prevent EEE infection. You can also select a county or town from the menu below to zoom to that area.

#### EEE Risk Level

- Remote
- Low
- Moderate
- High
- Critical

[More on Risk Levels](#)

Select county  
(All)

Select town(s)  
(All)



# Current WNV Risk Levels



## Massachusetts West Nile Virus (WNV) Risk Map and Reporting

Last updated: July 3, 2024

### WNV Risk Level by Town



### Map selections

Click on or hover your mouse over a town to see the current WNV risk level with steps you can take to prevent WNV infection. You can also select a county or town from the menu below to zoom to that area.

#### WNV Risk Level

- Low 
- Moderate 
- High 
- Critical 

[More on Risk Levels](#)

Select county

(All) 

Select town(s)

(All) 