

GO NORTH! IDENTIFICATION OF EEE IN NORTHERN NEW JERSEY

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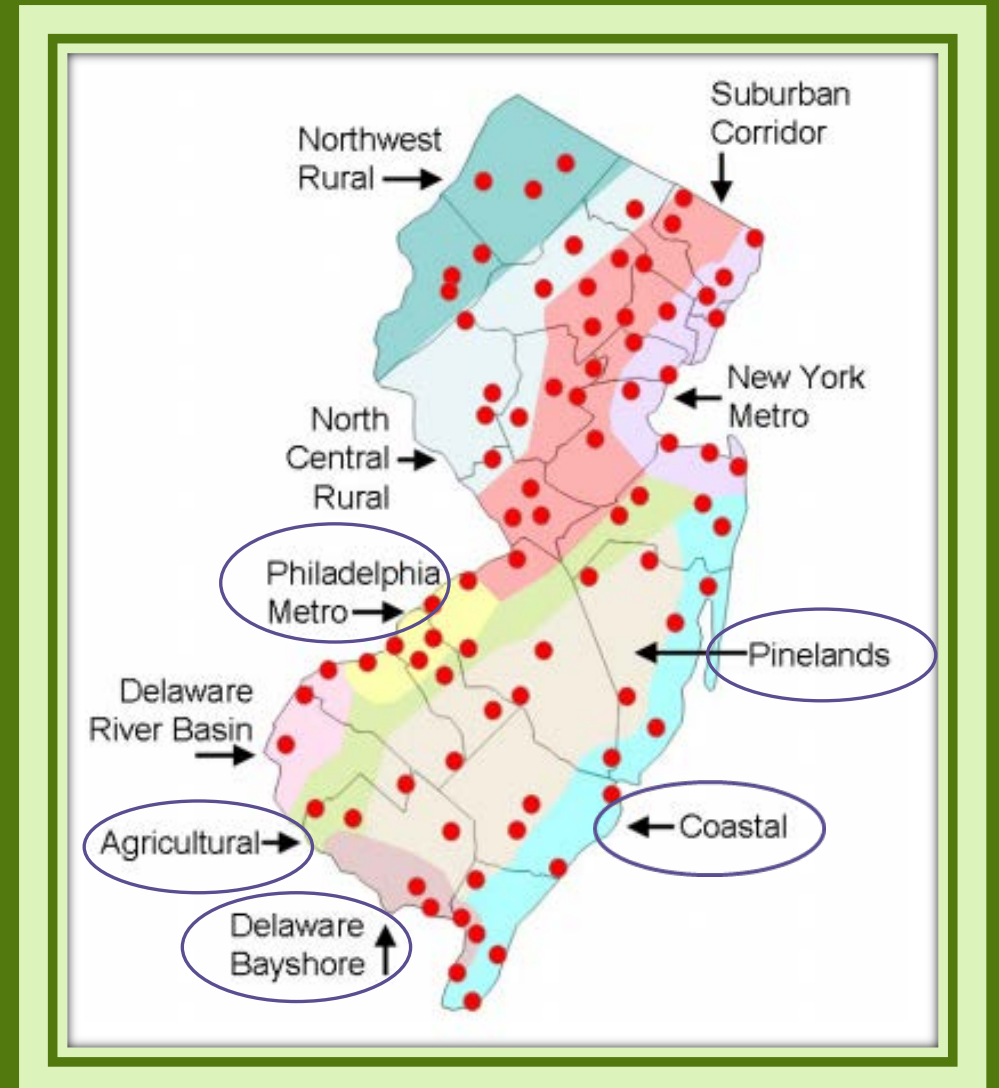
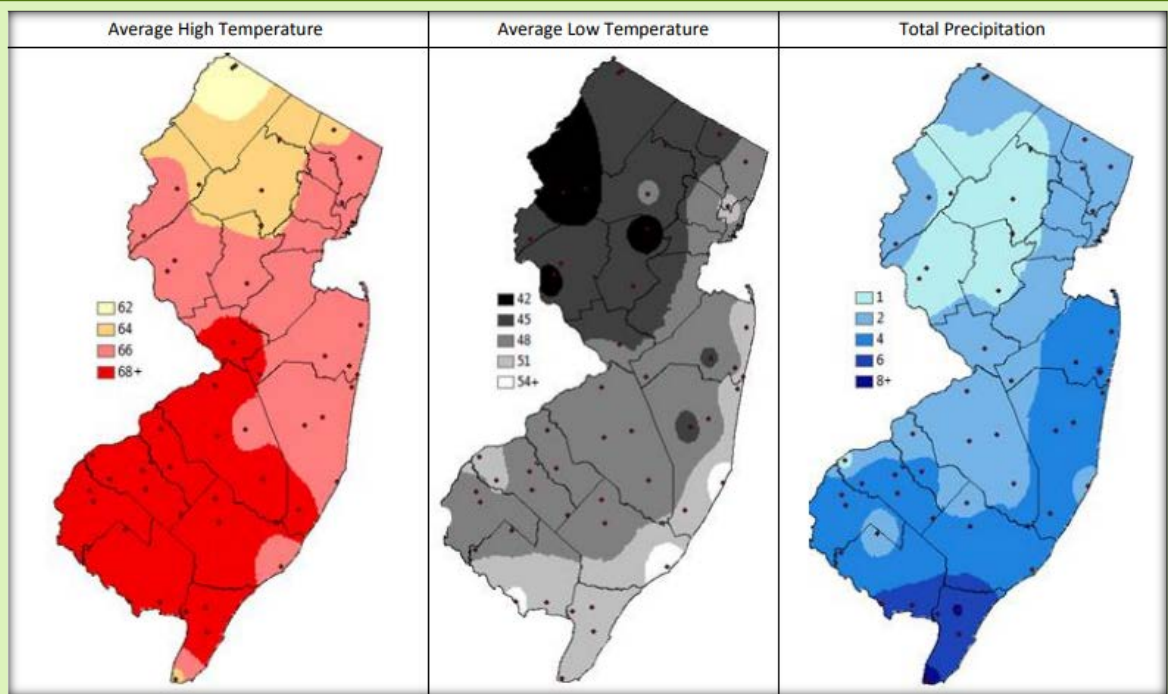


- ▶ Virus transmitted by an infected mosquito
- ▶ Human illness is rare, but can be severe – 1/3 mortality
- ▶ Enzootic cycle involving ornithophilic mosquitoes (*Culiseta melanura*) and passerine birds in freshwater swamps
 - ▶ Other species implicated as bridge vectors
- ▶ Horses are susceptible



EEE neuroinvasive disease cases reported by state, 2004–2013

WHAT IS EASTERN EQUINE ENCEPHALITIS?



NJ ECOSYSTEMS/TOPOGRAPHY

Vectorborne
Disease
Surveillance

NJDOH Infectious
& Zoonotic
Disease Program

NJDEP
Office of
Mosquito Control
Coordination

NJDOH – Public
Health Laboratory

NJ State Mosquito
Control
Commission

Local health
departments

Rutgers University
Center for Vector
Biology

NJDA Office of
Animal Health

County Mosquito
Control Agencies

Associated
Executives of
Mosquito Control
Work in NJ

NJ Mosquito
Control
Association

- ▶ EEE was 1st recorded outbreak of a mosquito-borne disease in NJ in 1959, causing 32 cases and 21 deaths
 - ▶ Smaller outbreak in 1968, with 12 cases and 6 deaths
- ▶ EEE first reported in mosquito pools as part of vector surveillance in 1978
- ▶ 8 traditional resting box sites are located in the central and southern part of the state to collect *Cs. Melanura* and test for EEE
- ▶ Samples submitted from counties are tested for EEE upon request
- ▶ Human and equine surveillance are passive systems

Average annual EEE activity, 2012-2015:

- 36 positive mosquito pools
- 3 equine cases
- 0 human cases

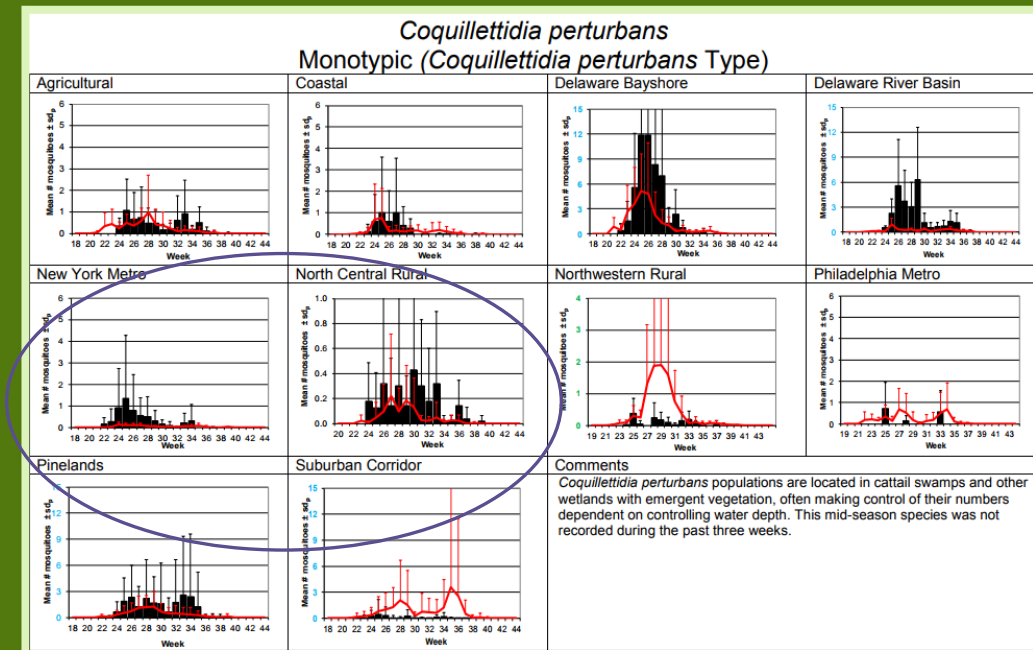
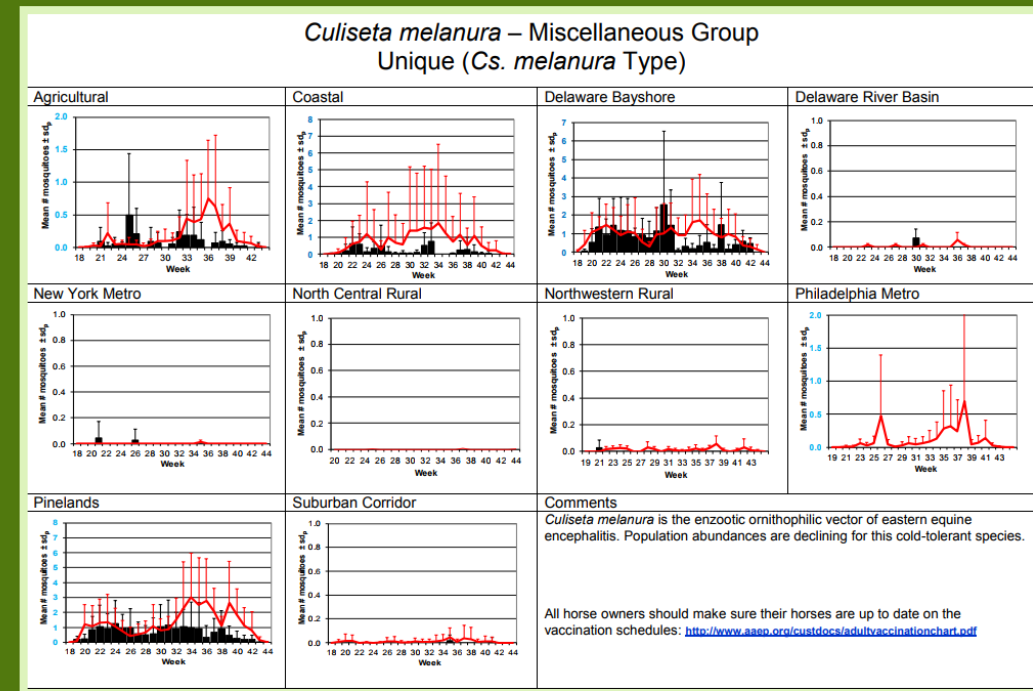
EEE SURVEILLANCE

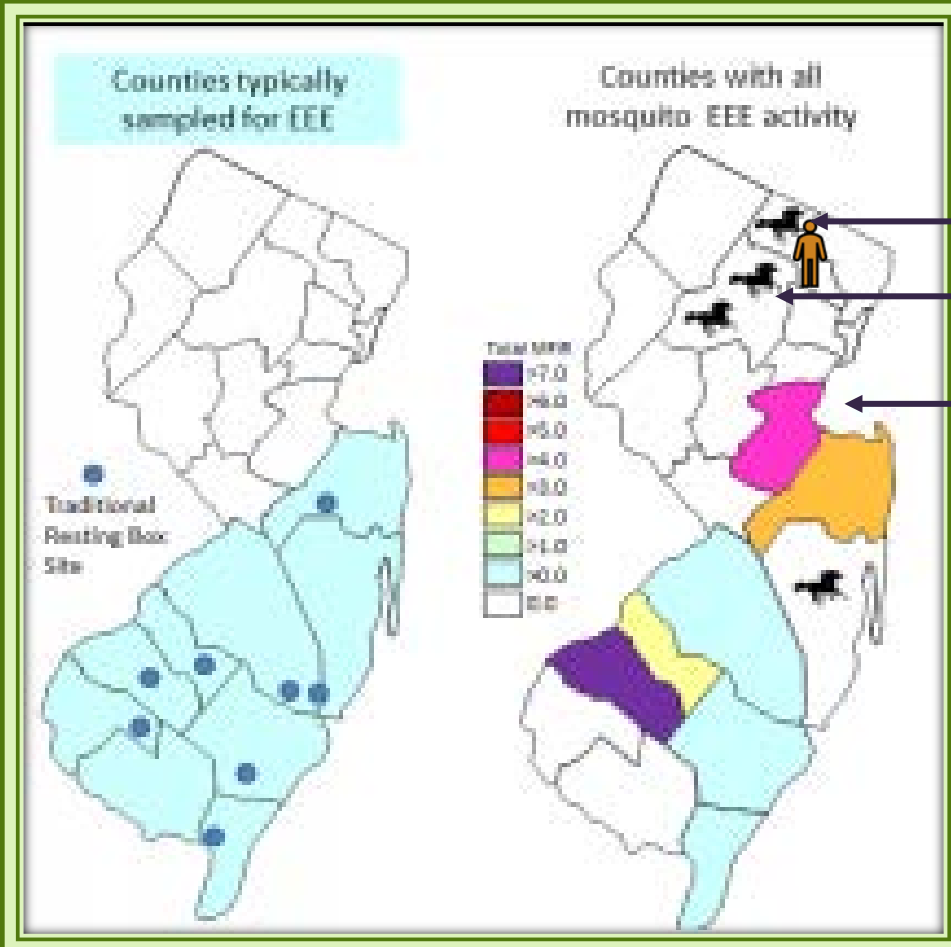


Photograph by C. Roxanne Connelly,
University of Florida.
http://entnemdept.ufl.edu/creatures/aquatic/culiseta_melanura.htm

- ▶ Statewide 5,484 *Cs. melanura* were tested for EEE
 - ▶ 2,073 (38%) traditional resting boxes
 - ▶ 3,411 (62%) county submissions
- ▶ 11 EEE positive mosquito pools, *Cs. Melanura* MFIR 1.64 / all species MFIR 0.44
- ▶ 4 EEE positive horses
- ▶ 1 human case

EEE ACTIVITY 2016





Passaic

Morris

Middlesex

- ▶ Mosquito pools
 - ▶ Middlesex County – 3+ EEE pools, MFIR 4.88
- ▶ Horses
 - ▶ 2- Morris County and <math><5</math> miles from each other (onsets August 9, Aug 23)
 - ▶ 1 – Ocean County (onset Aug 26)
 - ▶ 1 – Passaic County (onset Sept 5)
- ▶ Human case
 - ▶ Passaic County (onset Sept 30)

EEE ACTIVITY 2016

- ▶ NJ Vector-borne Disease Working Group
- ▶ Joint press release (Health, Environmental Protection, Agriculture)
- ▶ Agency communications to increase awareness
- ▶ Health education through local health departments and Agriculture
- ▶ Expanded EEE testing capability in northern counties

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Cathleen D. Bennett
Commissioner

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Taking Precautions Against Mosquitoes Can Prevent Diseases like Eastern Equine Encephalitis

The New Jersey Departments of Health (DOH), Environmental Protection (DEP) and Agriculture (NJDA) recommend that state residents take precautions to protect themselves from all mosquito-borne diseases, including Eastern Equine Encephalitis (EEE).

The EEE virus is transmitted to people and horses by the bite of an infected mosquito. Most people infected with EEE have no apparent illness, but some can become very ill. Severe cases involving encephalitis, an inflammation of the brain, begin with the sudden onset of symptoms that include headache, high fever, chills and vomiting within 4 to 10 days after a mosquito bite. The illness may progress into disorientation, seizures or coma.

EEE is one of the most severe mosquito-transmitted diseases in the U.S. Approximately one-third of people with EEE die from the disease, and there is significant brain damage in most survivors. While there is a vaccine for horses, there is no vaccine for people.

A fatal EEE case was reported last year in a Passaic County resident, the first case of human EEE reported in New Jersey since 2003. By taking steps to prevent mosquito bites and protect horses, residents can dramatically decrease their risk of exposure.

"Reducing exposure to mosquitoes is the best defense against infection with EEE and other mosquito-borne viruses," Health Commissioner Cathleen D. Bennett said. "While we are always concerned about more common mosquito-borne diseases like West Nile virus and travel-associated viruses like Zika and dengue, we also need to be vigilant for less common but severe viruses like EEE. Anyone who is concerned they may have EEE should contact their healthcare provider."

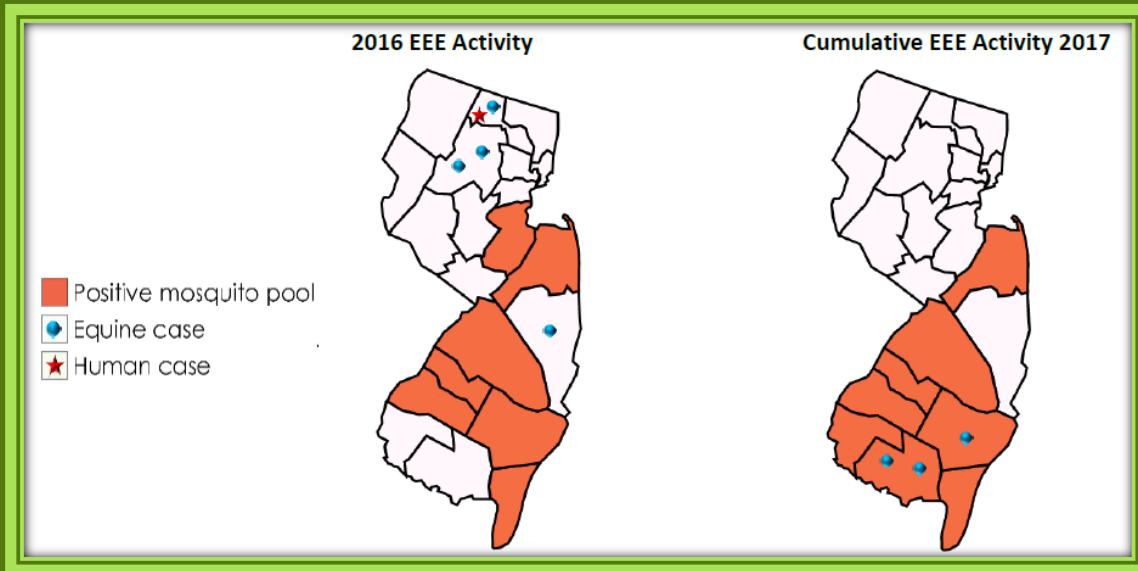
DEP works with county mosquito control agencies to conduct testing for viruses in mosquitoes each year. Mosquito control agency efforts to improve water management help to reduce mosquito breeding sites. EEE is not usually detected in mosquitoes or horses in the northern part of the state. However in 2016, EEE was detected in two horses in Morris County, one horse in Ocean County and one horse in Passaic County. DEP is working closely with county mosquito control agencies, particularly in the northern part of the state, to expand trapping and testing mosquitoes for EEE this season.

"Our goal is to find the virus in mosquitoes so preventative control measures can be performed to minimize the threat of disease transmission," DEP Commissioner Bob Martin said.

In horses, EEE causes inflammation of the brain tissue, and produces clinical signs such as fever, anorexia, depression, hypersensitivity, aimless wandering, head pressing, circling, paralysis and death. EEE infections in horses are not a significant risk factor for human infection because horses (like humans) are considered "dead-end" hosts, meaning they are unable to maintain high enough virus levels in the bloodstream to infect a mosquito.

There are several approaches you and your family can use to prevent and control mosquito-borne diseases.

EXPANDED SURVEILLANCE 2017



- ▶ 8,020 *Cs. Melanura* mosquitoes from 614 pools tested for EEE
 - ▶ 17 EEE positive mosquito pools, MFIR 1.341
- ▶ 13,977 specimens from 21 other species tested, 0 positive
- ▶ 3 positive horses (onset Aug 23, Sept 17, Sept 30)
- ▶ 0 human cases

EEE ACTIVITY 2017 AS OF WEEK 40 (OCTOBER 1-7)

- ▶ 2017 has been a relatively low year for EEE positive pools statewide
- ▶ Mosquito testing was limited in the far northeastern part of the state
- ▶ Human cases may be underreported
 - ▶ Lack of commercial testing
 - ▶ Lack of provider awareness about EEE and testing options
- ▶ Interagency vector-borne disease working group is an effective mechanism for enhanced collaboration and communications

FINAL THOUGHTS

- ▶ Lisa Reed, Ph.D, Rutgers University Center for Vector Biology,
<http://vectorbio.rutgers.edu/reports/mosquito/>
- ▶ Scott Crans, Ph.D, Office of Mosquito Control Coordination,
<http://www.nj.gov/dep/mosquito/>
- ▶ NJ Vector-borne Disease Working Group
- ▶ NJDOH Vector-borne Disease Team

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