Eastern Equine Encephalitis Virus in Massachusetts

Doug Bidlack East Middlesex Mosquito Control Project

Eastern Equine Encephalitis

1831 Epidemic of brain disease in horses in Massachusetts **1931** Differentiated from other equine encephalitides **1933** Virus isolated from a horse in New Jersey **1933-36** Birds implicated as reservoir of virus **1938** Outbreak of brain disease in horses in Massachusetts (ca. 300 cases) **1938-39** Outbreak of human EEE in Massachusetts (35 cases) **1947** Louisiana and Texas outbreaks **1955-56** Second Massachusetts outbreak (16 cases), aerial spraying, DDT **1957** Taunton Field Station of the USPHS **1969** Taunton Field Station closed, State Laboratory continues surveillance **1973** Equine vaccine

Eastern Equine Encephalitis Clinical Course

- Abrubt onset fever, chills, headache, muscle aches, nausea and vomiting
- Progressive disorientation, discoordination
- Seizures, coma
- ca. 30-50% mortality
- ca. 80% residual neurological deficits

Eastern Equine Encephalitis 1964-2012



Distribution of Atlantic White Cedar





Humans serve as dead-end host and are unable to pass the virus on

Adapted from: PC Matton, W Andrews,

Bristol County Mosquito Control Project

Horses serve as dead-end host and are unable to pass the virus on

Montoring EEE

- DPH maintains network of traps located in sites with historic EEE activity.
- MCP's maintain own network of traps.
- All testing is done at DPH's lab.



Mosquito Control Projects (MCP's)



Montoring EEE (continued)

- Mosquitoes are submitted once a week from the MCPs to DPH.
- Results within 48hrs of submission.
- DPH calls BOH with positive results.
- Results posted on DPH's web page http://mass.gov/dph/wnv/ wnv1.htm



Atlantic White Cedar Swamp Acreage Greater than 25% Cedar Cover (Motzkin 1991)



1938-1959 EEE Massachusetts Human Cases



1960-1999 EEE Massachusetts Human Cases



2000-2012 EEE Massachusetts Human Cases



2000-2012 EEE Massachusetts





Mosquito Species Composition

Plymouth MCP

#1 <mark>#2</mark>	Oc. canadensis Cq. perturbans	34.2% 27.7%
#5	Ae. vexans	3.6%

Middlesex MCP

#3	Oc. canadensis	12.4%
#1	Cq. perturbans	37.2%
#11	Cs. melanura	1.4%
#2	Ae. vexans	24.5%





Adults/trap/night









How does EEE persist in the North?

Overwinters in local foci

Brought in via northward bird migration in Spring

Eastern Equine Encephalitis Perpetuation

Young et al. (2008) and Armstrong et al. (2008)

