NEW JERSEY STATEWIDE SURVEILLANCE

Week 37 Report for 11 September to 17 September, 2006

Submitted by Lisa M. Reed
Mosquito Research and Control Unit
Rutgers University, New Brunswick, NJ 08901

Purpose: Data from 84 New Jersey light traps contributed by county mosquito control agencies are used to calculate trends in mosquito populations for species of nuisance or health concerns.

Calculations are based on regional distributions, with emphasis on mosquito habitat and land use. Trends will allow a statewide evaluation of changing mosquito populations, in response to control and/or changes in habitat.

This is New Jersey Agricultural Experiment Station publication No. PT-08-40500-37-06 supported by Hatch funds and funding from the NJ State Mosquito Control Commission. Prepared by Lisa M. Reed.

Figure 1a: Map of ten regions selected for the New Jersey Surveillance Program overlaid with county borders.

Figure 1b. Trap lat-long locations.

Summary table – Week 37

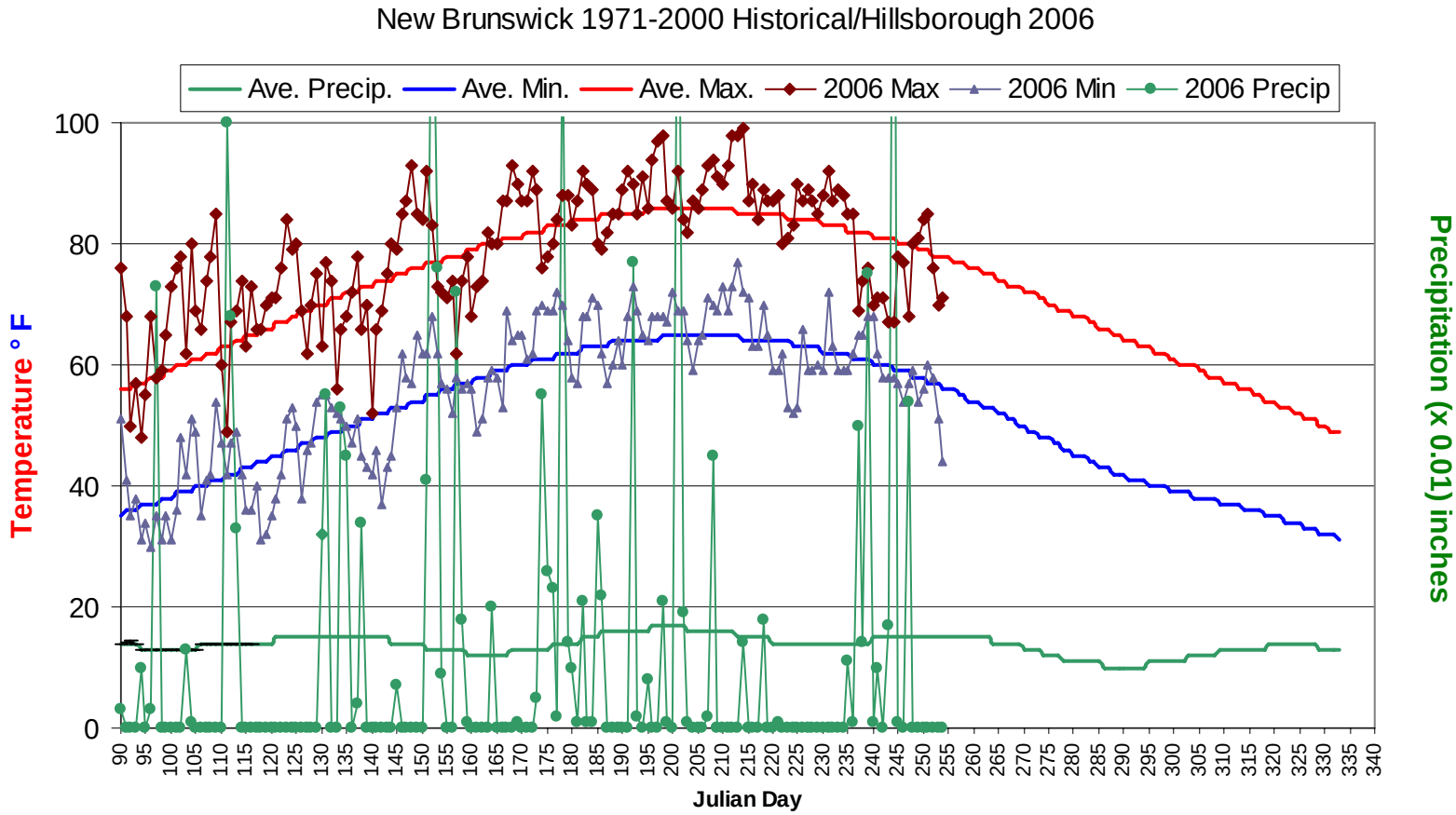
	Aedes vexans		*Culex complex*		*Coquillettidia perturbans*		*Ochlerotatus sollicitans*	
Region	This Week	Average*	This Week	Average*	This Week	Average*	This Week	Average*
Agricultural	**1.24**	**2.46**	**1.62**	**4.89**	**0.00**	**0.00**	**3.69**	**0.19**
Coastal	**4.22**	**2.63**	**0.98**	**3.13**	**0.00**	**0.22**	**0.98**	**7.15**
Delaware Bayshore	**0.14**	**1.16**	**0.71**	**14.24**	**0.00**	**0.27**	**2.74**	**3.47**
Delaware River Basin	**5.57**	**8.50**	**5.14**	**11.18**	**0.00**	**0.21**	**0.14**	**0.00**
New York Metro	**1.94**	**1.61**	**2.03**	**4.85**	**0.03**	**0.01**	**0.03**	**0.18**
North Central Rural	**0.10**	**0.29**	**0.47**	**0.65**	**0.00**	**0.00**	**0.00**	**0.00**
Northwest Rural	**2.52**	**3.64**	**0.62**	**2.43**	**0.00**	**0.02**	**0.00**	**0.00**
Philadelphia Metro	**12.51**	**10.72**	**0.90**	**3.44**	**0.09**	**0.15**	**0.00**	**0.00**
Pinelands	**0.44**	**1.15**	**0.39**	**2.68**	**0.00**	**0.09**	**0.03**	**0.13**
Suburban Corridor	**5.77**	**2.00**	**1.71**	**2.19**	**0.01**	**0.36**	**0.00**	**0.00**

* 5-year running mean.

Graphs include *Ae. vexans, Culex* complex (*Cx. pipiens, Cx. restuans, and Cx. salinarius*), *Oc. sollicitans, Cs. melanura and Top Ten.*

14 of 21 counties in one or both weeks; 20 of 21 counties reporting.

Climate Data



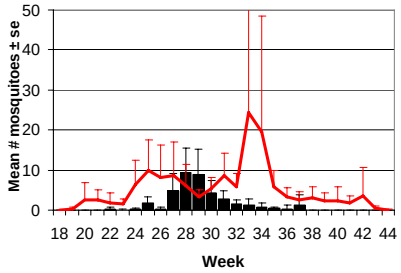
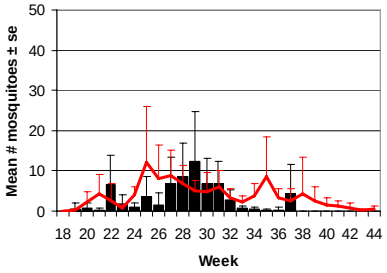
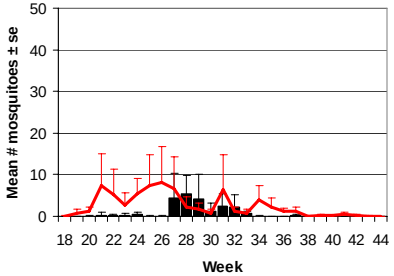
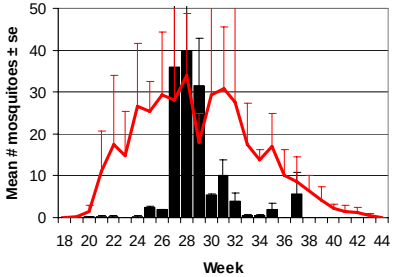
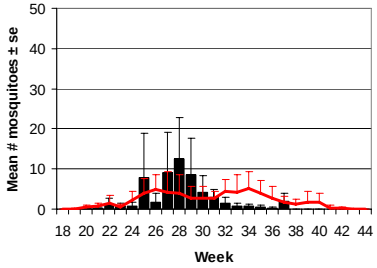
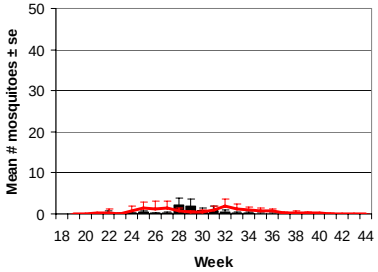
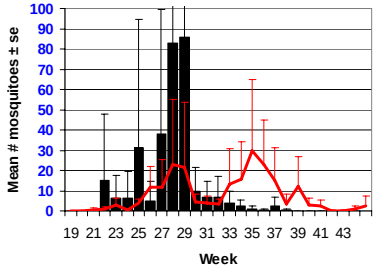
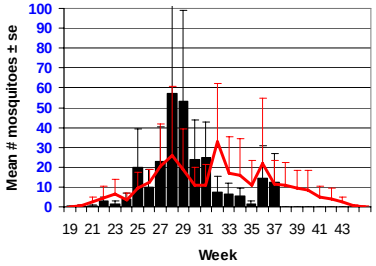
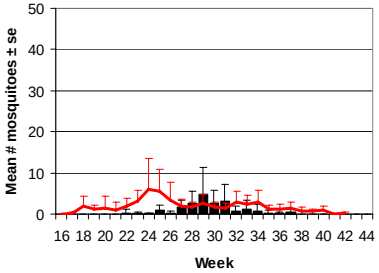
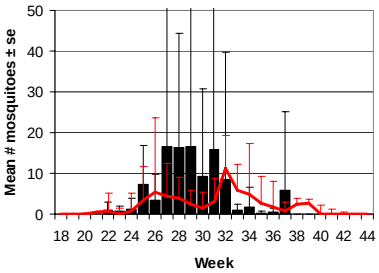
This figure shows historical average maximum and minimum temperatures and average precipitation recorded in the New Brunswick, NJ weather station over a recent 30 year period. Also graphed are the current year's minimum and maximum temperatures as recorded at the Hillsborough NJ weather station (a station close to central NJ which recorded all three parameters and was available online at the NJ state climatologist).

NOTE: Graph could not be updated due to weather server outage.

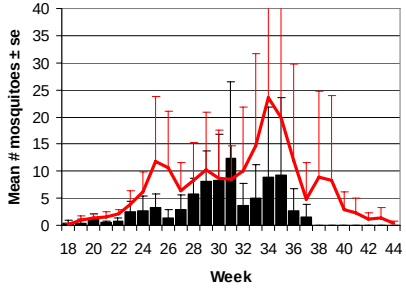
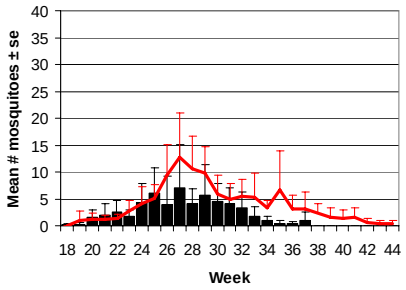
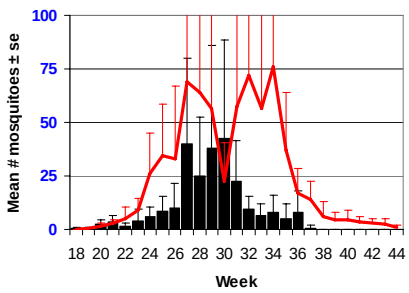
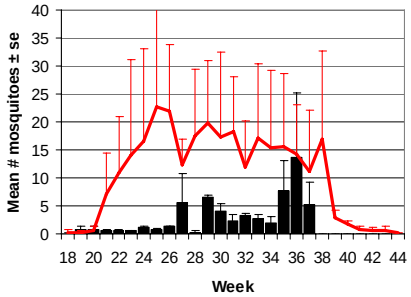
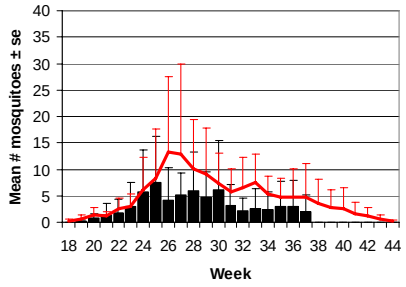
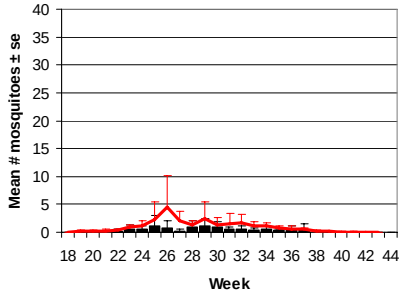
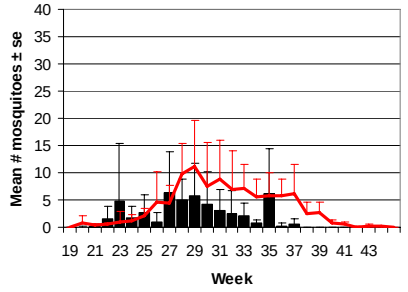
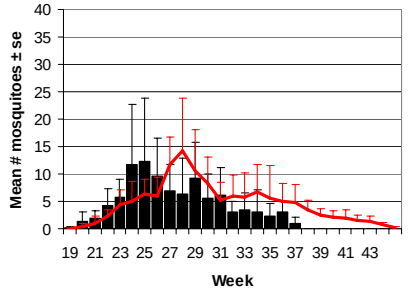
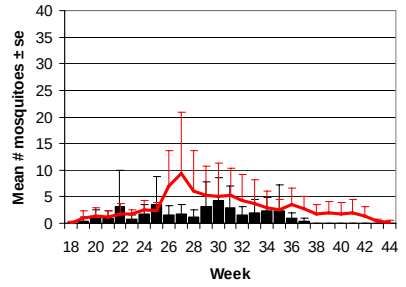
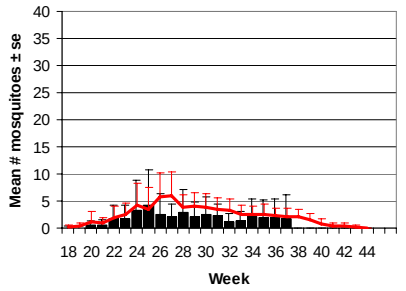
The state climatologist has an extensive amount of climatological historical data as well as stations reporting current conditions and forecasts:

http://climate.rutgers.edu/stateclim/

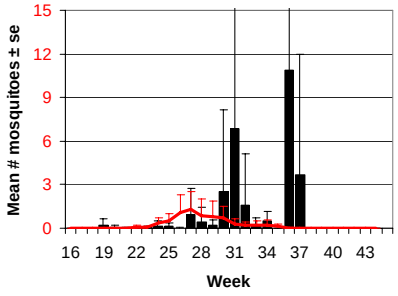
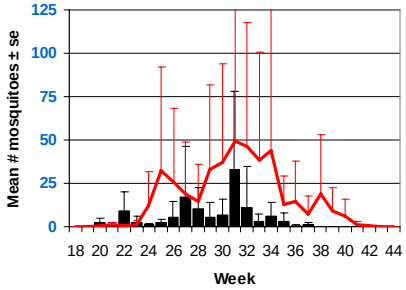
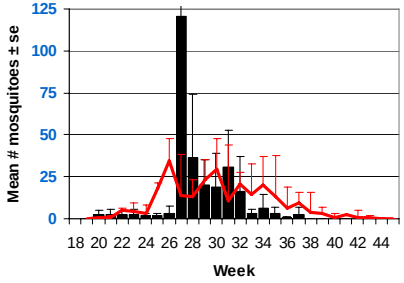
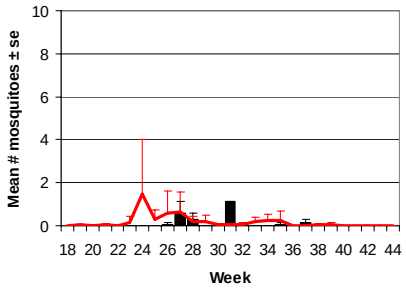
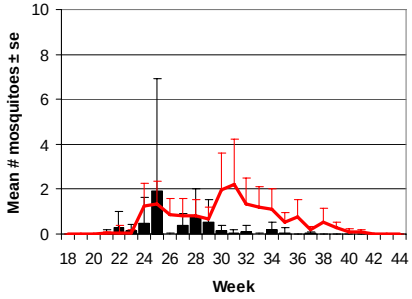
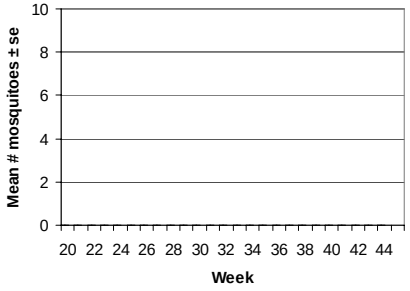
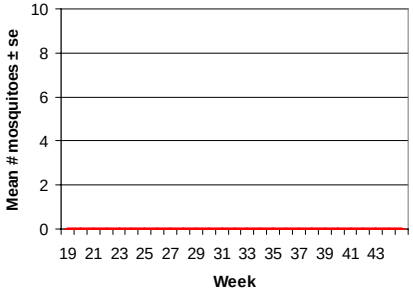
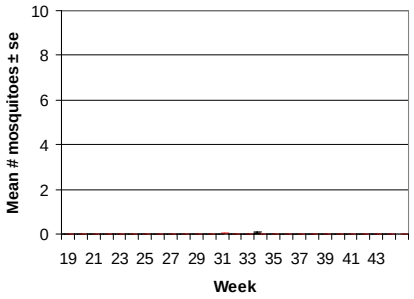
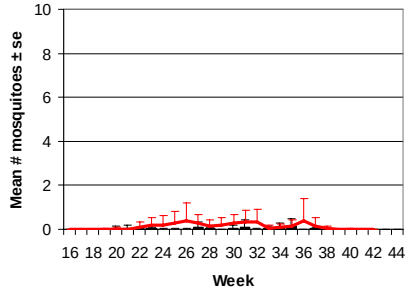
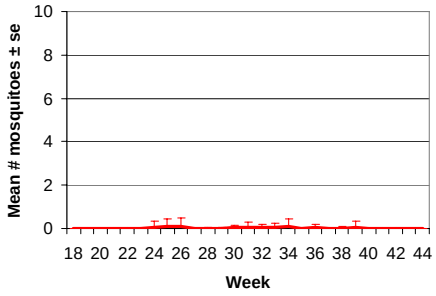
Aedes vexans - Fresh Floodwater Species

Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		As a result of the passing of tropical depression Ernesto, *Aedes vexans* eggs hatched in newly created larval habitat and significant emergences occurred in every region. Although *Ae. vexans* is moderately competent for WN transmission and is a mammal biter, no positive mosquitoes have yet been detected in submitted pools of the Vector Surveillance program.	

Culex Complex - Multivoltine Culex Species

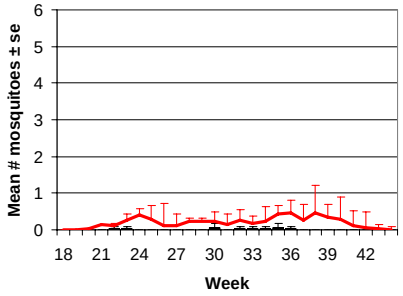
Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		While *Culex* populations in general have been slowly declining throughout the state, the Delaware River Basin is showing an influx of *Cx. salinarius*, a pattern typical for this coastal/riverine system. The wide range of peak abundances in the historical dataset reflect difference *Culex* species emergences: *Cx. restuans* during the early season, *Cx. salinarius* during the late season, and *Cx. pipiens* throughout. To date, no *Cs. salinarius* pools have been found positive for WN fortunately, as this is an efficient vector for this flavivirus.	

Ochlerotatus sollicitans - Salt Marsh Floodwater Species

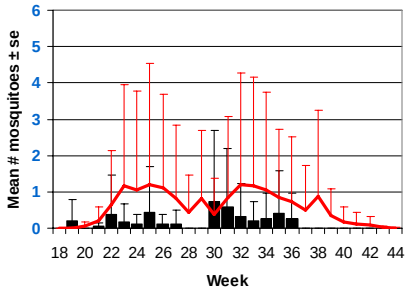
Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		*Ochlerotatus sollicitans* continues to decline through most active regions (although this decline is in part due to a switch to daytime host-seeking behavior and thus *Oc. sollicitans* not being caught in the light traps).	

Culiseta melanura – Miscellaneous Group

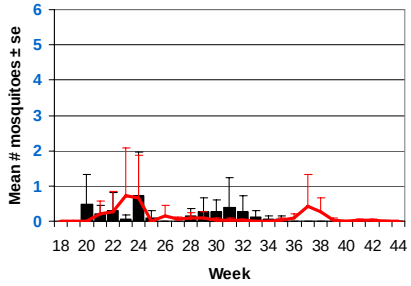
Agricultural



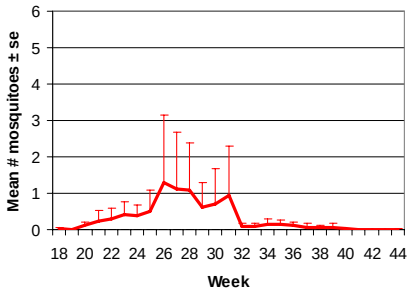
Coastal



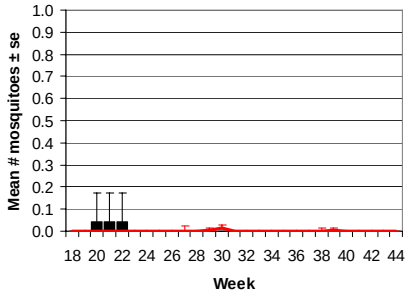
Delaware Bayshore



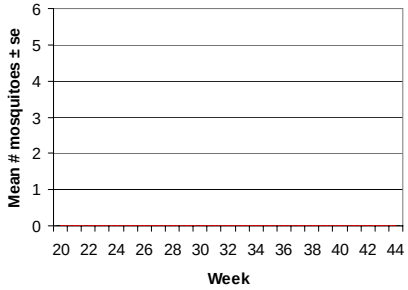
Delaware River Basin



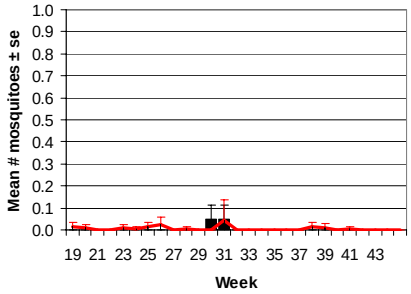
New York Metro



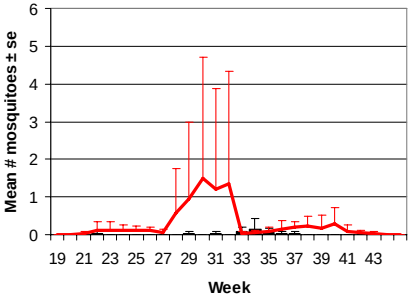
North Central Rural



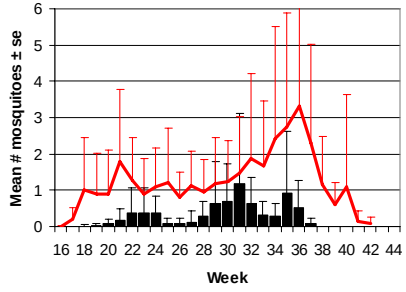
Northwestern Rural



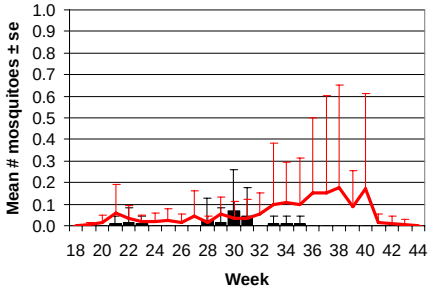
Philadelphia Metro



Pinelands



Suburban Corridor

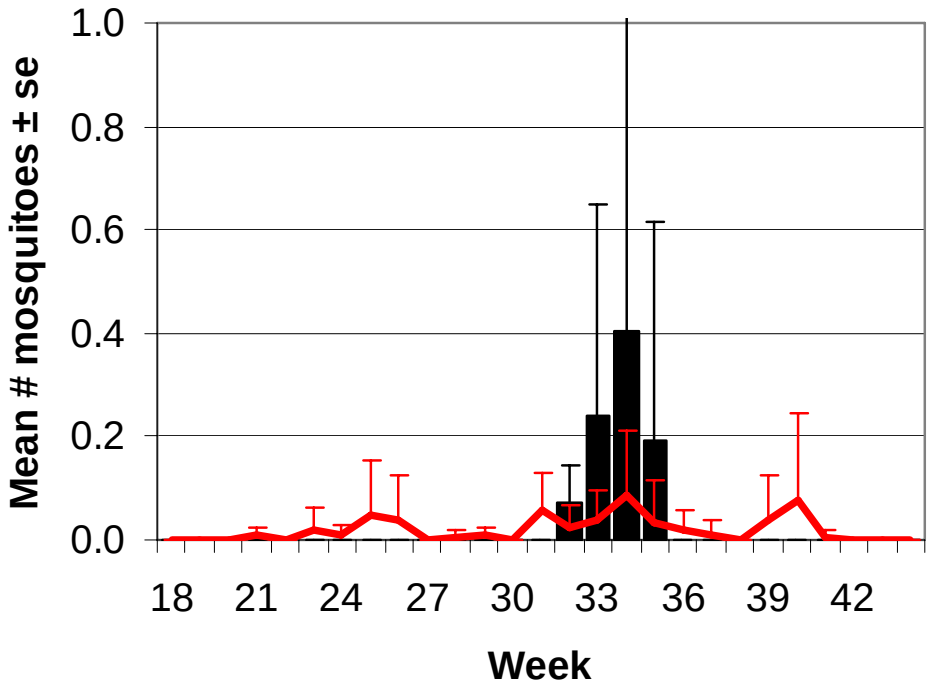


Comments

Detection of EEE has occurred in a pool of *Culiseta melanura* collected in late August. Despite a lower population in comparison to recent historical trends, amplification to levels high enough to be transmitted to a bridge vector population has also occurred resulting in transmission to an unvaccinated horse.

Culex erraticus in agricultural habitat:

Culex erraticus is not often found in light traps, but has a low, yet persistent presence in certain habitats. A peak was observed in agricultural habitat that appears greater than recent historical trends. Robertson *et al.* found that this mosquito had a varied diet, with nearly half the meals mammalian and thirty percent from avian sources (and the rest herpetological). Although the MIR rates were very low, Cupp *et al.* reported finding EEE virus in this efficient vector, and speculated that *Cx. erraticus* may play a significant role in the maintenance of EEE in the endemic cycle. Its reported host targets suggest that it may also act as a bridge vector.



Cupp, E. W., Tennessen, A. K. J., Oldland, W. K., Hassan, B. H. Hill, G. E., Katholi, C. R. and Unnasch T. R. 2004 Mosquito and Arbovirus Activity During 1997–2002 in a Wetland in Northeastern Mississippi Journal of Medical Entomology 41(3): 495–501

Robertson L., C., Prior S., Apperson C., S., and Irby W., S. 1993 Bionomics of *Anopheles quadrimaculatus* and *Culex erraticus* (Diptera: Culicidae) in the Falls Lake basin, North Carolina: seasonal changes in abundance and gonotrophic status, and host-feeding patterns. J Med Entomol. Jul;30(4):689-98