RUTGERS
New Jersey Agricultural Experiment Station

NEW JERSEY ADULT MOSQUITO SURVEILLANCE
Report for 10 August to 16 August 2008, CDC Week 33

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Center for Vector Biology

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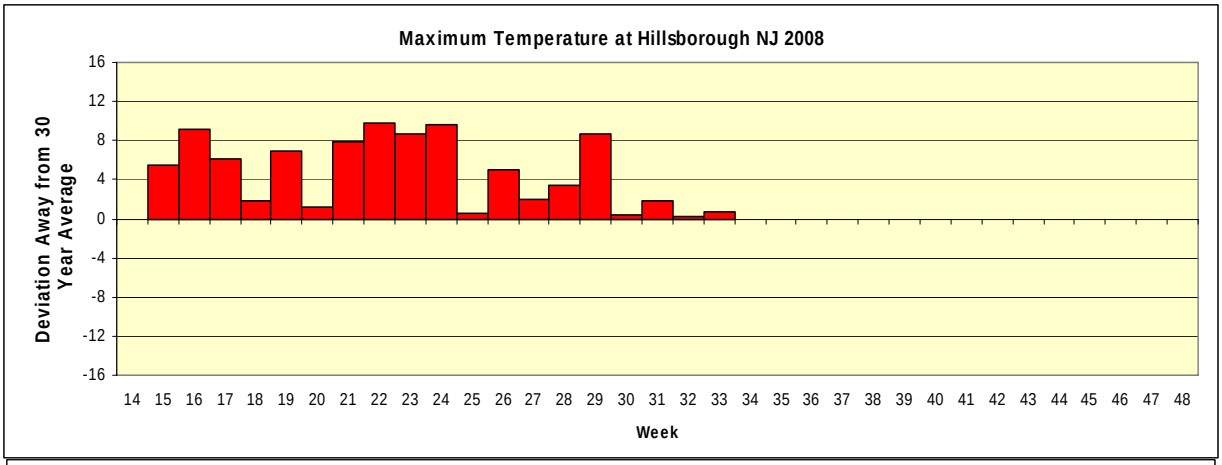
Summary table – Week 33

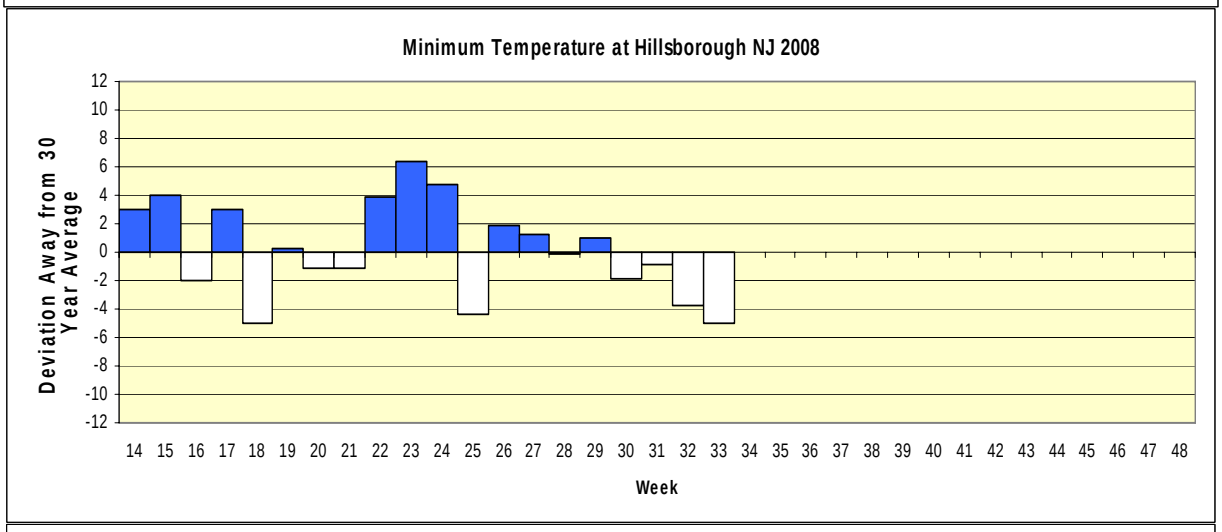
	Aedes vexans			*Culex* Mix			*Coquillettidia perturbans*			*Aedes sollicitans*		
Region	This Week	Average*	Increase	This Week	Average*	Increase	This Week	Average*	Increase	This Week	Average*	Increase
Agricultural	**0.19**	**18.13**	**0**	**0.26**	**10.06**	**0**	**0.00**	**0.20**	**0**	**0.00**	**0.83**	**0**
Coastal	**3.10**	**1.99**	**2**	**1.08**	**4.66**	**0**	**0.00**	**0.25**	**0**	**6.17**	**27.05**	**0**
Delaware Bayshore	**0.00**	**0.67**	**0**	**0.00**	**37.11**	**0**	**0.00**	**0.75**	**0**	**0.00**	**14.69**	**0**
Delaware River Basin	**0.00**	**13.24**	**0**	**0.00**	**11.84**	**0**	**0.00**	**0.83**	**0**	**0.00**	**0.14**	**0**
New York Metro	**1.04**	**4.18**	**0**	**1.90**	**7.84**	**0**	**0.10**	**0.07**	**1**	**0.07**	**0.97**	**0**
North Central Rural	**0.10**	**0.94**	**0**	**0.35**	**0.91**	**0**	**0.00**	**0.03**	**0**	**0.00**	**0.00**	**0**
Northwest Rural	**0.43**	**13.51**	**0**	**0.83**	**5.96**	**0**	**0.00**	**0.10**	**0**	**0.00**	**0.00**	**0**
Philadelphia Metro	**0.00**	**11.35**	**0**	**0.00**	**5.31**	**0**	**0.00**	**0.17**	**0**	**0.00**	**0.00**	**0**
Pinelands	**0.40**	**1.35**	**0**	**0.45**	**3.09**	**0**	**0.05**	**0.41**	**0**	**0.00**	**0.09**	**0**
Suburban Corridor	**2.08**	**7.18**	**0**	**0.72**	**2.71**	**0**	**0.03**	**0.55**	**0**	**0.08**	**0.03**	**4**

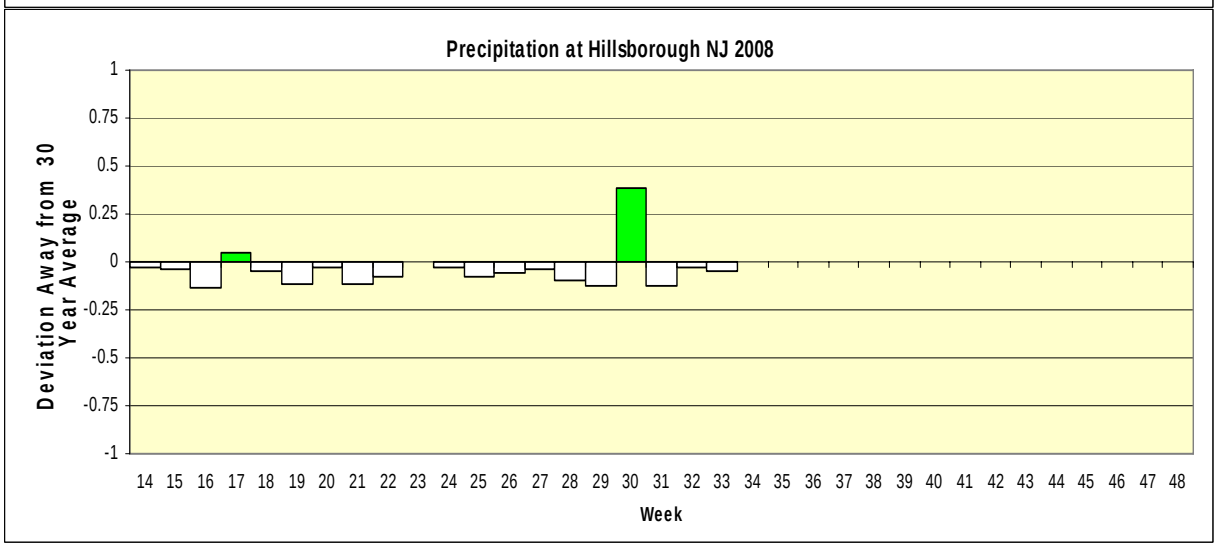
*Averages represent data from, at most, the previous 5 years. Increase is a scale of current values from historical values where no difference or a decrease is represented by 0 (blue), up to 50% greater difference by 1 (green), up to 100% greater difference by 2 (yellow), up to 150% greater difference by 3 (orange) and greater than 150% increase by 4 (red). White cells in the increase column denote increases from an historic zero and thus no value can be appropriately given.

State Summary: With nighttime temperatures and rainfall below average for the past several weeks, many pestiferous mosquito species are lower than historical averages would indicate over most regions throughout the state. Although *Aedes vexans, Ae. sollicitans* and *Coquillettidia perturbans* show a positive increase, these are in populations that are minimal, at best.

Climate Deviations

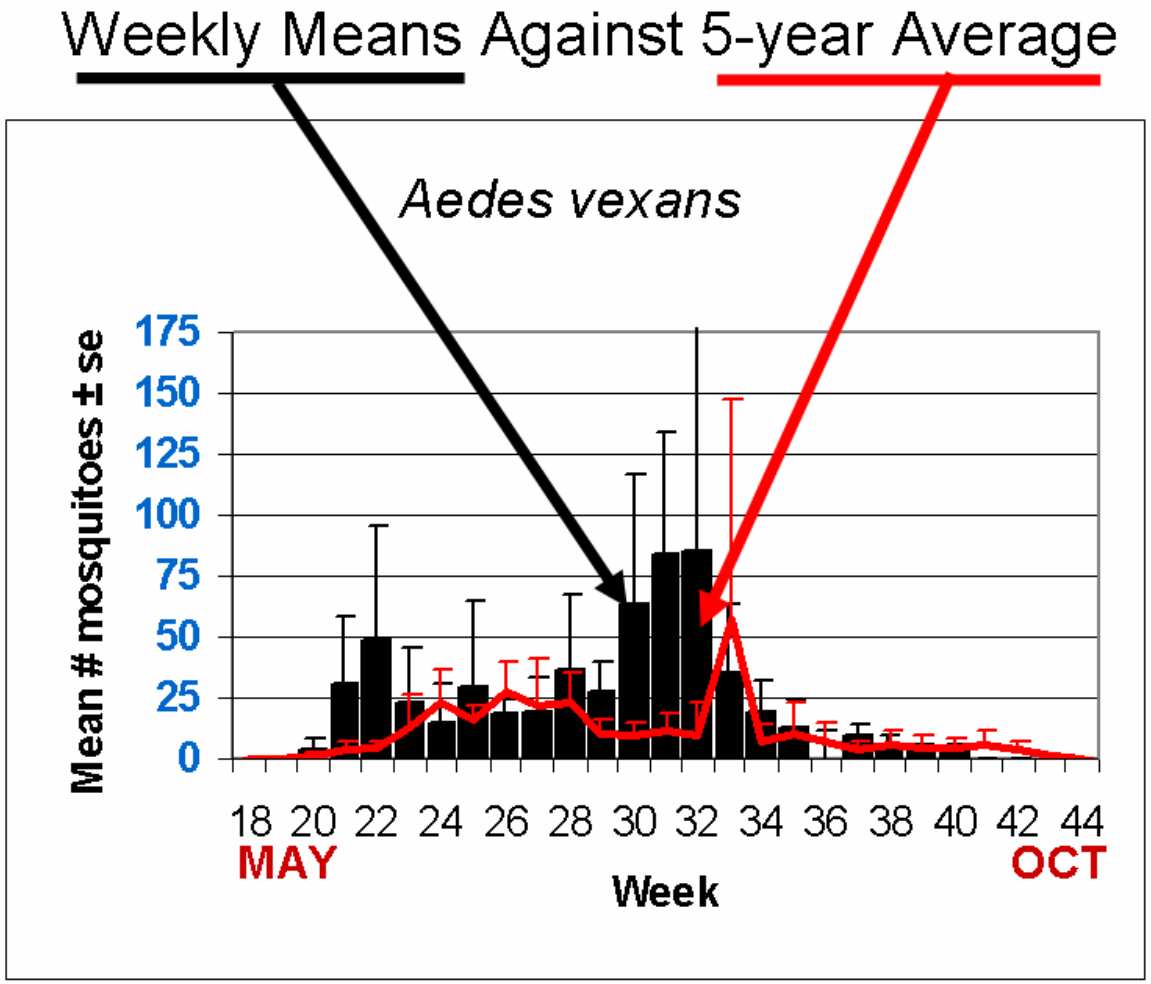






The figures show the average maximum temperature, minimum temperature and precipitation deviations from 30 year averages. Current data are from the Hillsborough NJ weather station (a station close to central NJ which recorded all three parameters and was available online at the NJ state climatologist) while historical data was from the New Brunswick weather station. Color bars above the zero line indicate warmer maximum or minimum temperatures and wetter conditions while white bars indicate cooler temperatures and dryer conditions.

The Species Graphs: The species graph pages include a graph with two plots for each of the ten regions defined on the first page (Agricultural, Coastal, Delaware Bayshore, Delaware River, New York Metro, North-Central, Northwestern, Philadelphia Metro, Pinelands, and Suburban Corridor). Below is an example of one graph from one species within one region. The bar plot show the average number of mosquitoes per trap within the region (weekly means) and line plots show the historical trend as the average number of mosquitoes from the previous 5 years (5-year average). In general, historical data are running means from the previous 5 years, but on occasion, will include data from fewer years. Adjustments are made to account for year discrepancies. Data for this week are from Atlantic, Bergen, Essex, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Somerset, Sussex and Warren counties. Note: County data is sent in at a variety of times during the week.



Aedes vexans - Fresh Floodwater Species
Multivoltine Aedine (*Ae. vexans* Type)

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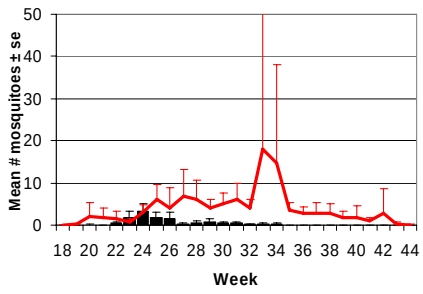
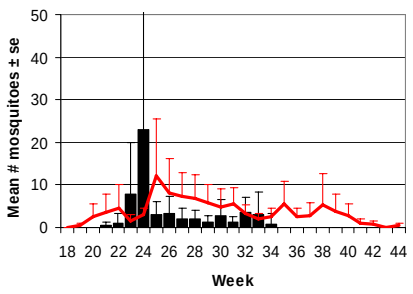
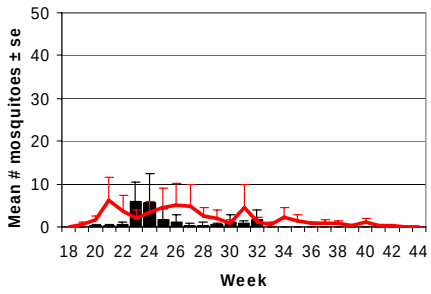
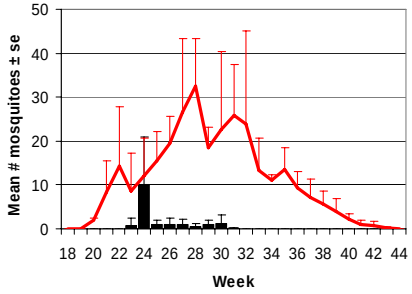
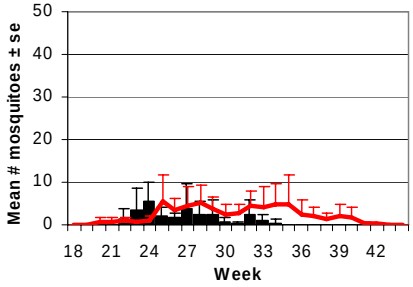
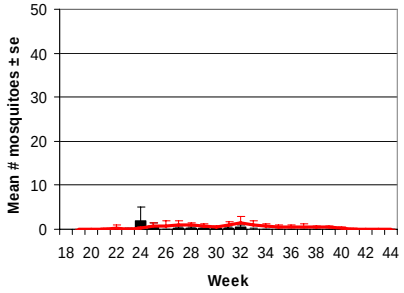
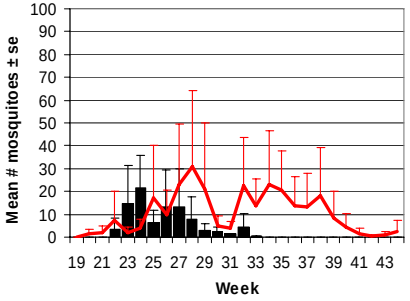
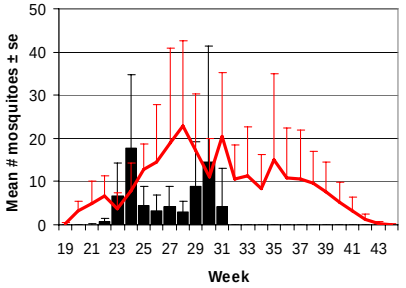
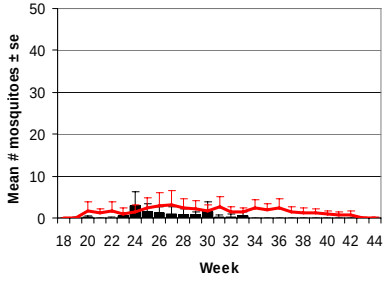
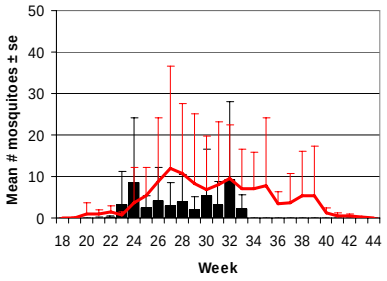
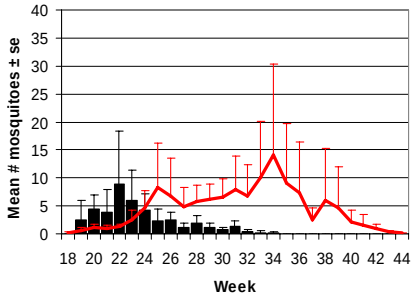
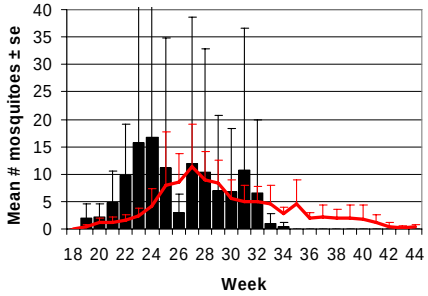
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		Continued cooler nighttime temperatures has not provided *Aedes vexans* with the opportunity to quickly exploit recent patchy habitat that may have appeared with passing fronts, except in the Coastal region. All other regions are showing lower population than historical averages would indicate, but for some regions, standard error bars would likely include these lower numbers and thus would not be considered significantly different from the historical means. One exception would be the Delaware River Basin, where *Ae. vexans* numbers are minimal, most likely the result of dredge spoil maintenance. *Ae*. vexans numbers are anticipated to rise next year as dredge spoils come back in operation and the fissures and cracks that harbor large numbers of *Ae. vexans* larvae redevelop.	

Culex Mix – Permanent Water Species
Multivoltine *Culex*/*Anopheles* (*Cx. pipiens* Type)

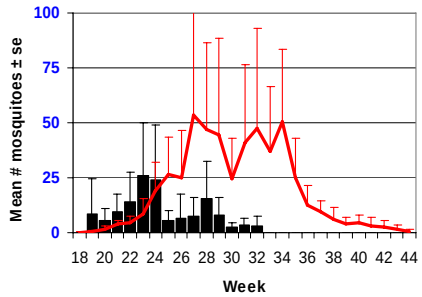
Agricultural



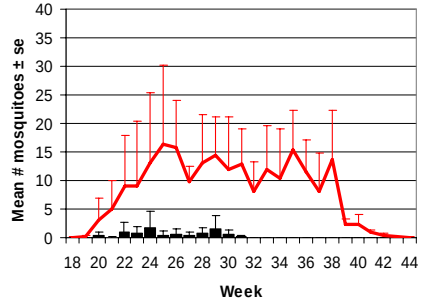
Coastal



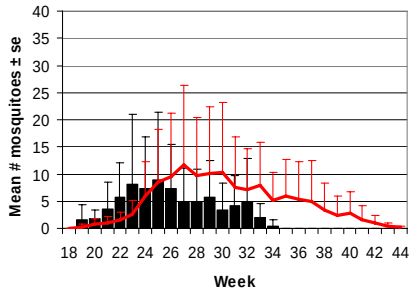
Delaware Bayshore



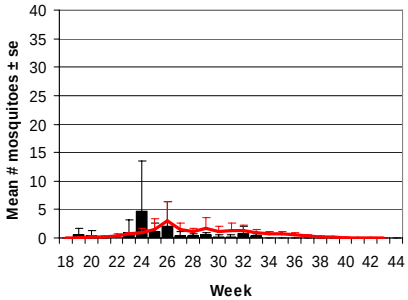
Delaware River Basin



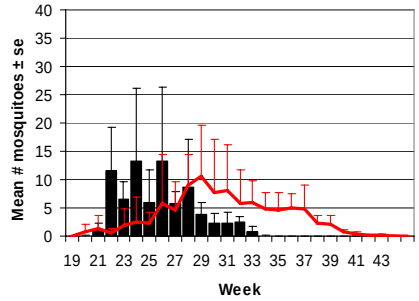
New York Metro



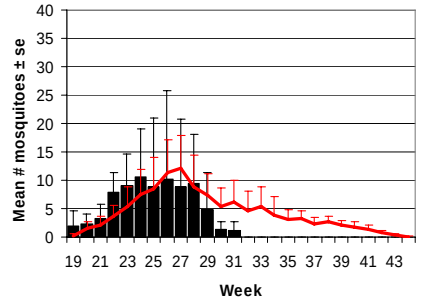
North Central Rural



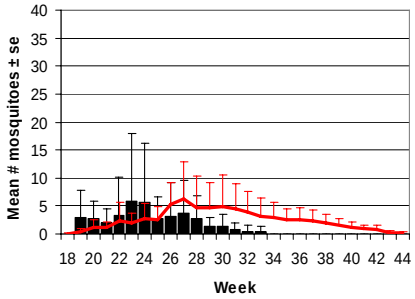
Northwestern Rural



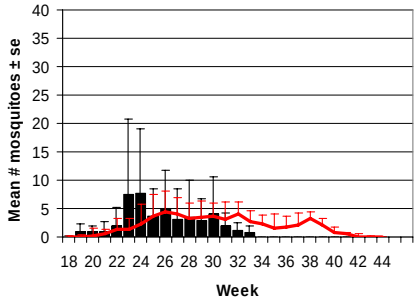
Philadelphia Metro



Pinelands



Suburban Corridor

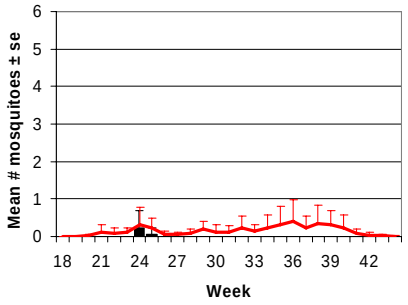
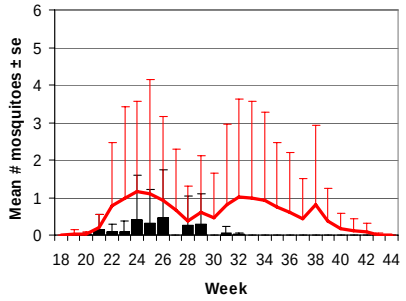
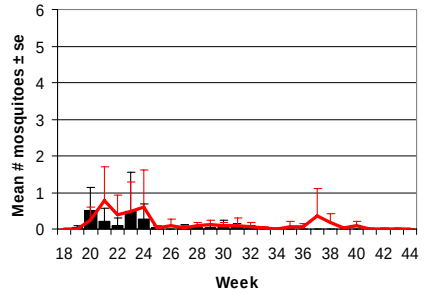
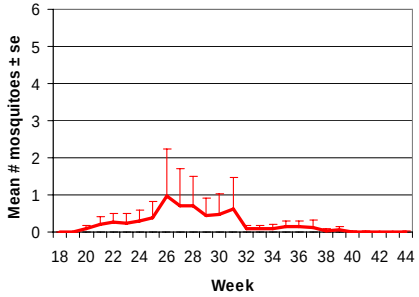
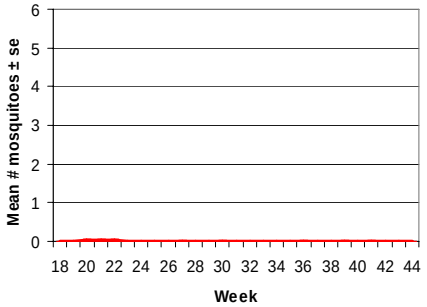
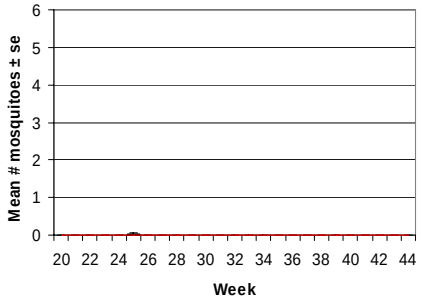
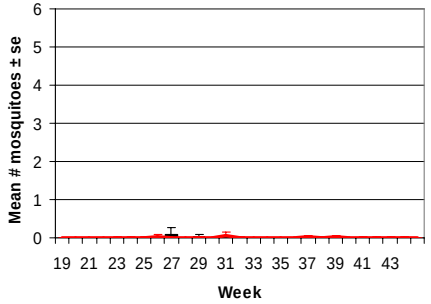
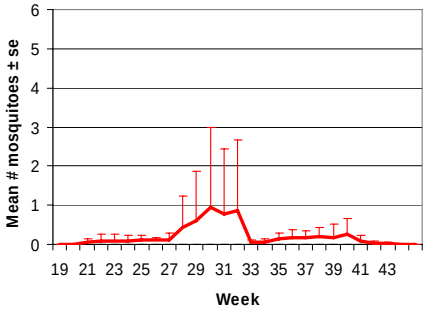
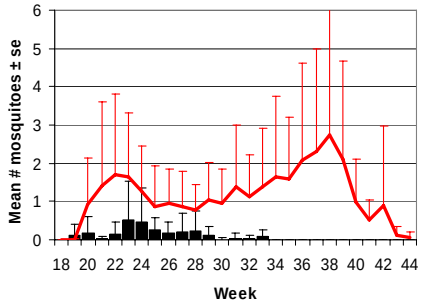
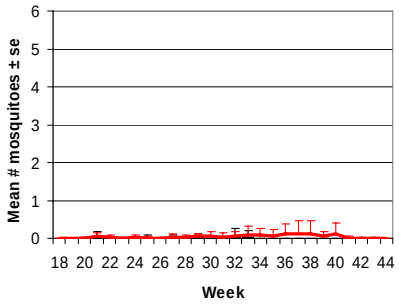


Comments

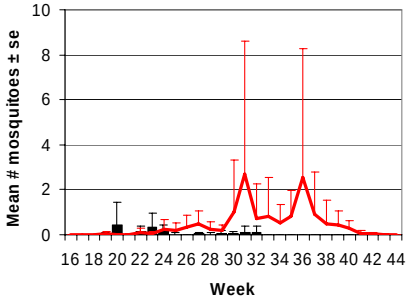
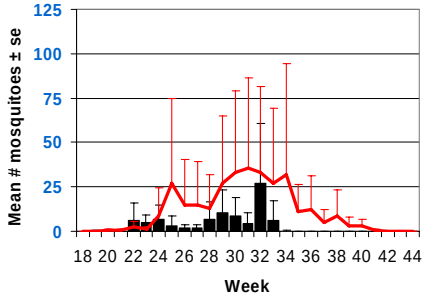
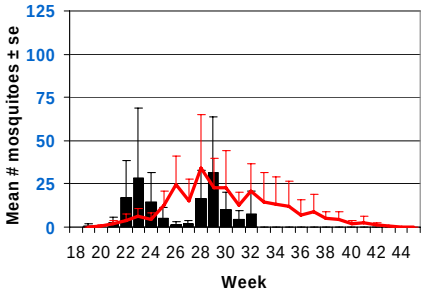
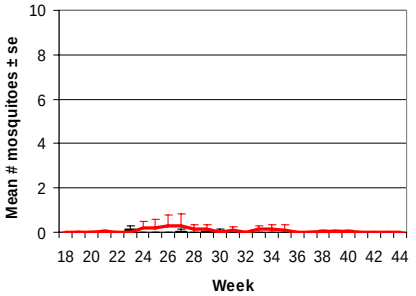
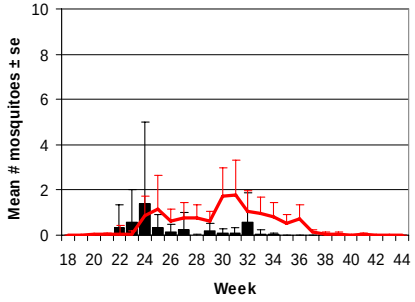
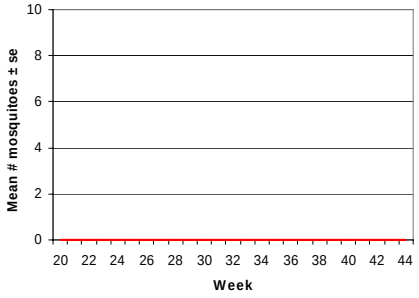
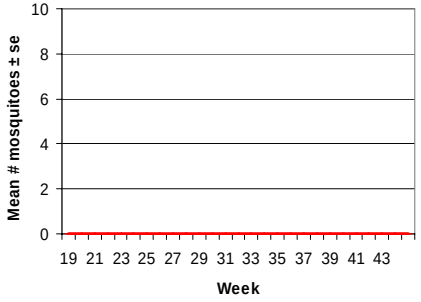
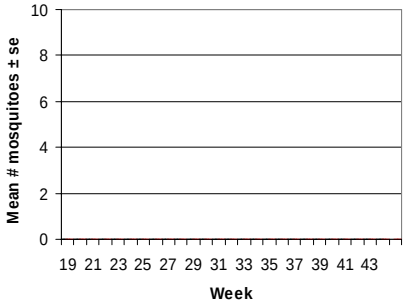
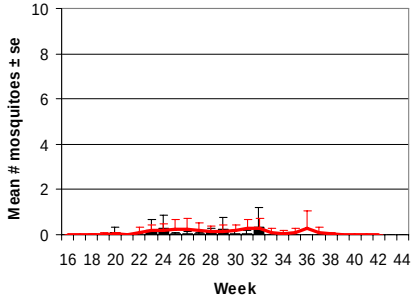
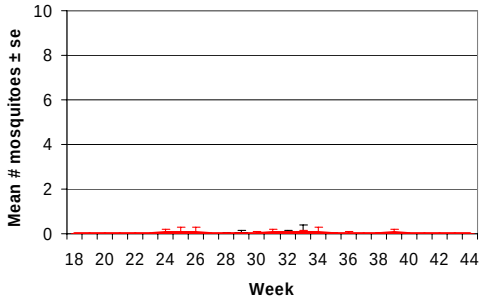
At this time, *Culex* populations (*Cx. pipiens, Cx. restuans* and *Cx. salinarius*) should beginning to respond to shortening daylight that cues adult females to seek overwintering shelter called hibernaculae. Caves, culverts and basements can all serve as areas that provide the temperature and humidity needed to survive as overwintering adults. As these females switch over, the populations show the slow decrease into autumn as overwintering females seek shelter. Areas that experience very large populations, such as the two Delaware regions demonstrate a more rapid decrease of the populations. It is generally thought that hostseeking behaviors change and non-avian species (for *Cx. pipiens* and *Cx. restuans*) are increasing targets as fall approaches. However, Patrican *et al.* (2007) found that feeding on non-avian vertebrates by *Cx. pipiens* occurred throughout the season.

Patrican LA, Hackett LE, Briggs JE, McGowan JW, Unnasch TR, Lee J.-H. Host-feeding patterns of *Culex* mosquitoes in relation to trap habitat. Emerg Infect Dis [serial on the Internet]. 2007 Dec [*Cited 21Aug2008*)]. Available from http://www.cdc.gov/EID/content/13/12/1921.htm

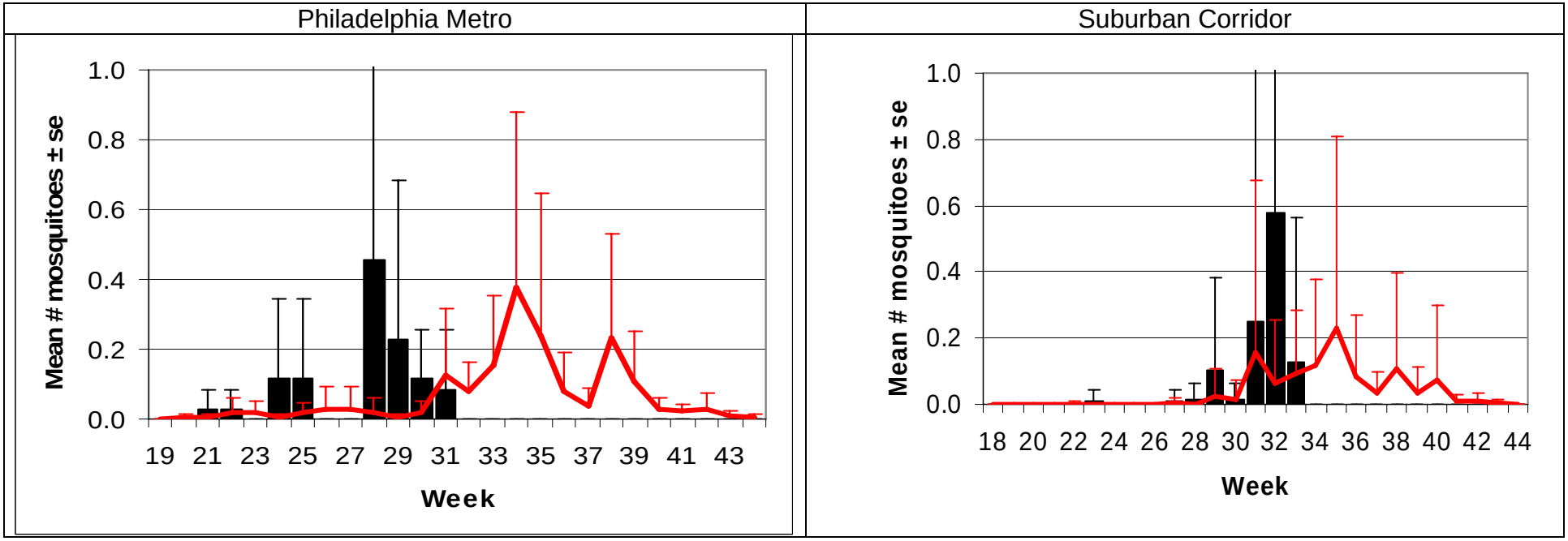
Culiseta melanura – Miscellaneous Group Unique (*Cs. melanura* Type)

Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		*Culiseta melanura* in the Pinelands has increased just slightly over the nearly non-existent population recorded the previous week. This may be signaling the entry into the second generation that is typically seen as adults emerge from eggs lain by the spring generation. To this date, eastern equine encephalitis virus has not been detected in any pools of *Cs. melanura* collected in the New Jersey Vector Surveillance program.	

Aedes sollicitans - Salt Floodwater Species
Multivoltine Aedine (*Ae. sollicitans* Type)

Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		A full moon occurred on August 16th and the next emergence of *Aedes sollicitans* should occur within the next two weeks.	

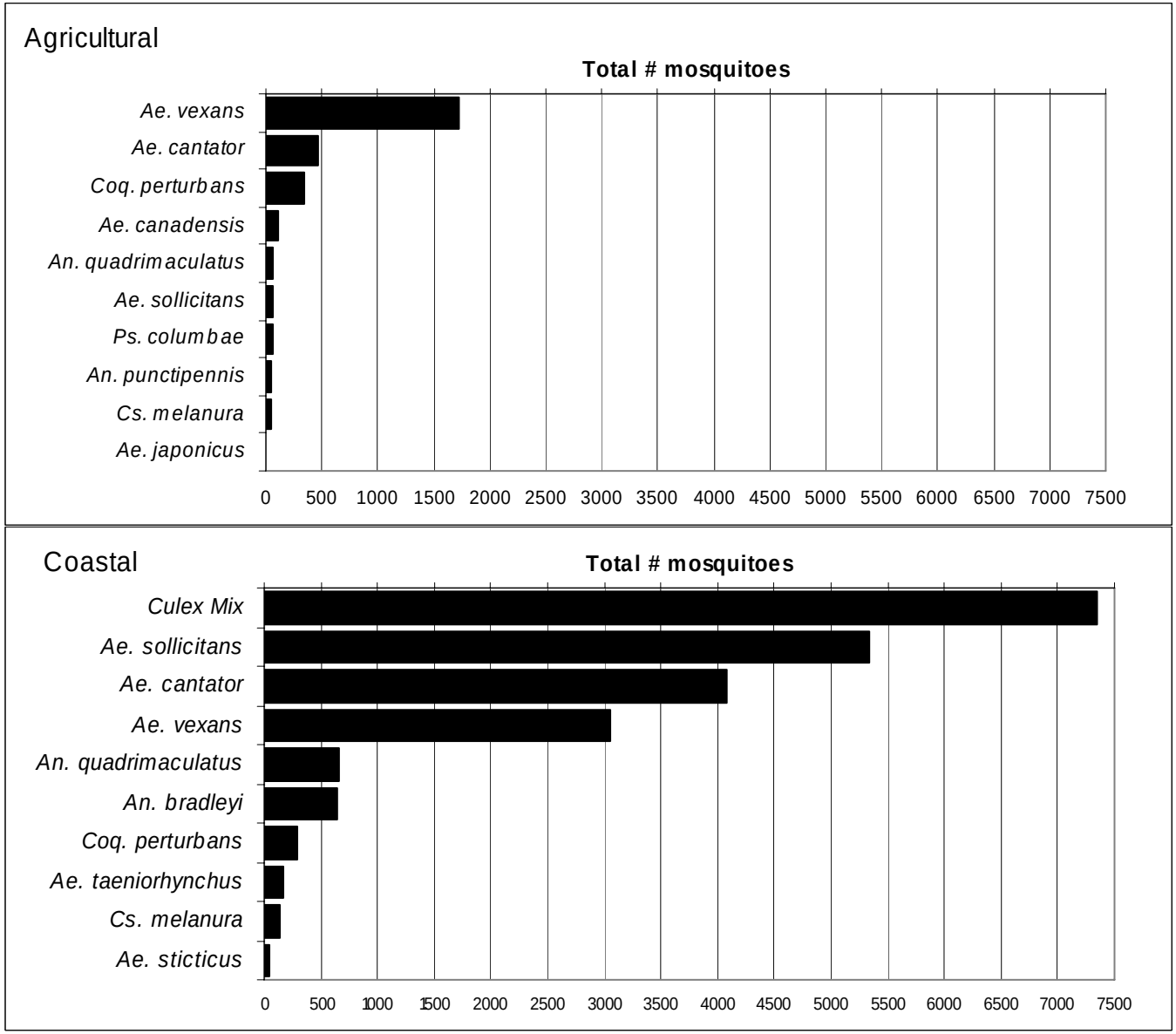
***Culex erraticus*:** As with *Anopheles quadrimaculatus* shown last week, *Culex erraticus* is also displaying numbers that are either higher than historical average or have occurred earlier is several trap locations in the Philadelphia Metro and Suburban Corridor. *Culex erraticus* was first observed in New Jersey in 1969, in both Rutgers and the NJ Dept of Health and Senior Services collections from the Cape May County (Crans 1970) and has subsequently been found in other counties. This common species in the south eastern US has been the source of positive EEE pools and is suspected of playing a role in the transmission of the disease due to its opportunistic diet (Cupp *et al.* 2003). As global warming increases, range expansion is likely to occur, and may also increase the possibility of EEE occurring in areas currently not affected.



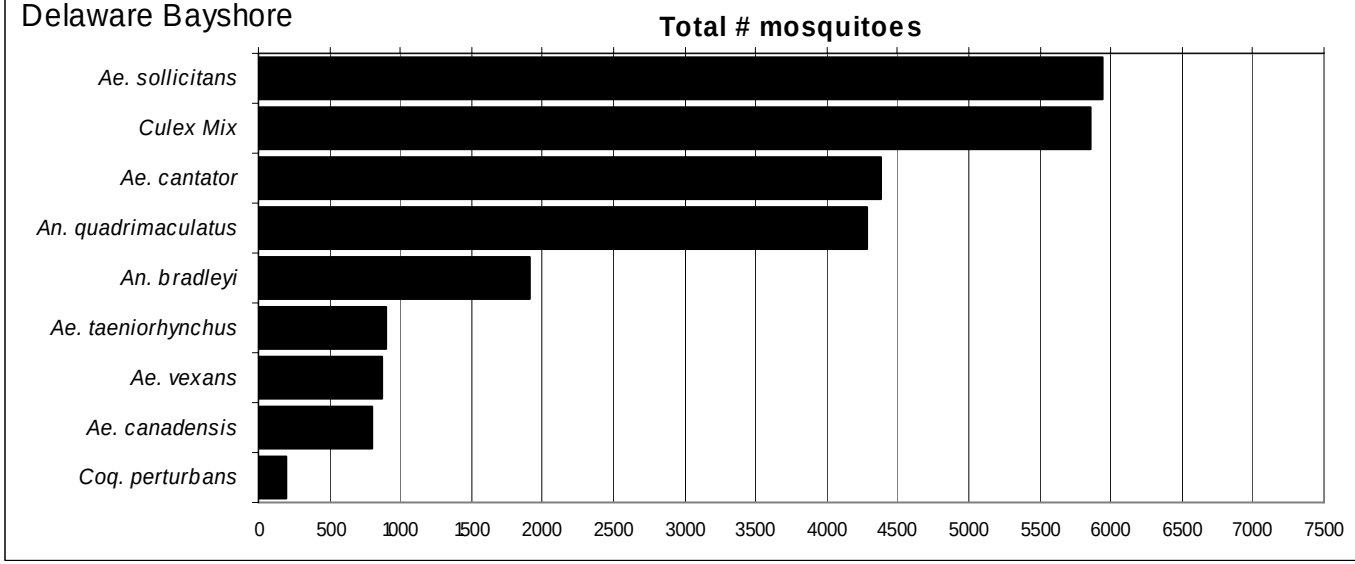
Crans, W. J. 1970. The occurrence of *Aedes flavescens* (Muller), *Psorophora cyanescens* (Coquillett), and *Culex erraticus* (Dyar and Knab) in New Jersey. Mosquito News 665.

Cupp, EW, Klingler, K, Hassan, HK, Viguers, LM and TR Unnasch. 2003 Transmission of eastern equine encephalomyelitis in central Alabama. American Journal of Tropical Medicine and Hygiene. 68(4): 495-500.

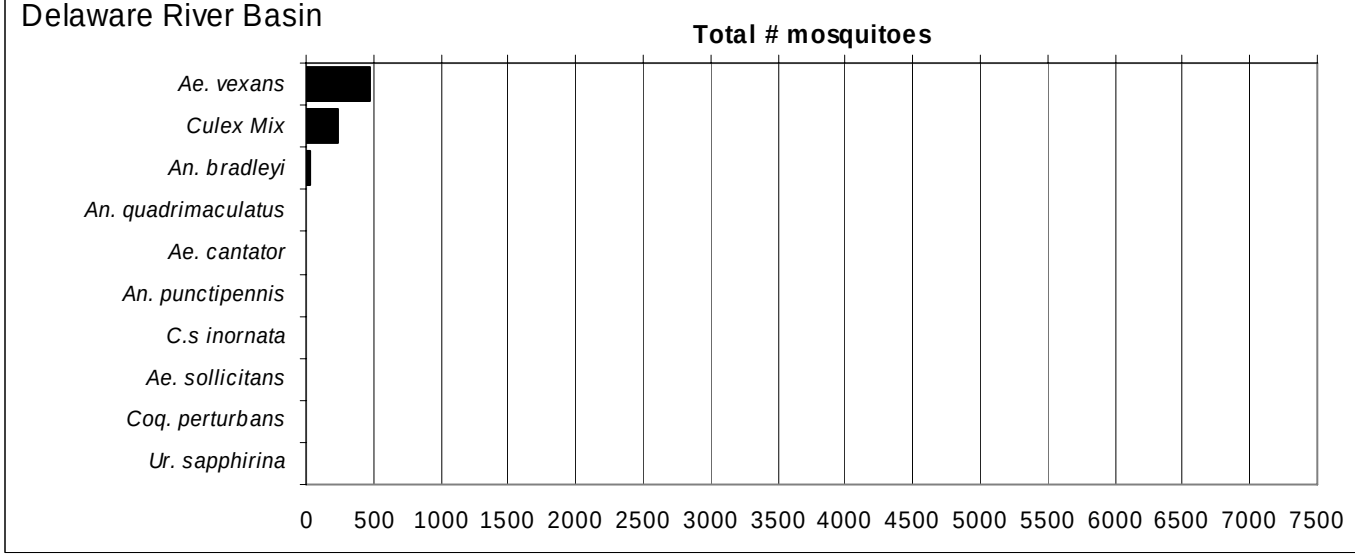
Top Ten Mosquito Species/Region

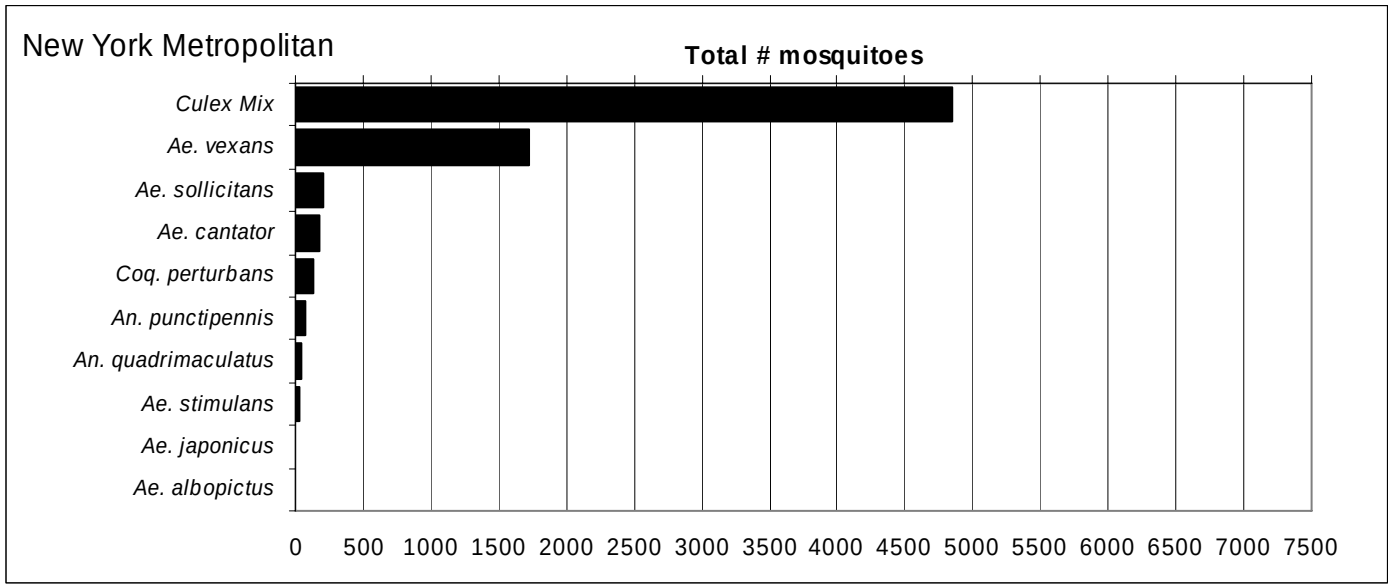


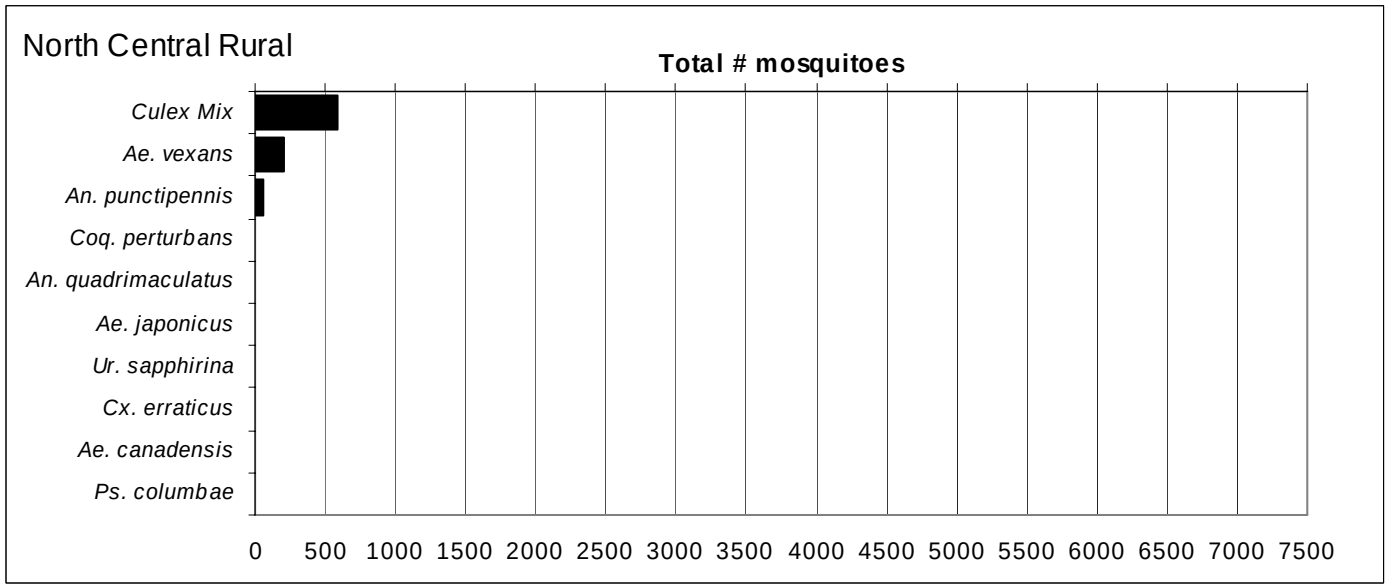
Delaware Bayshore



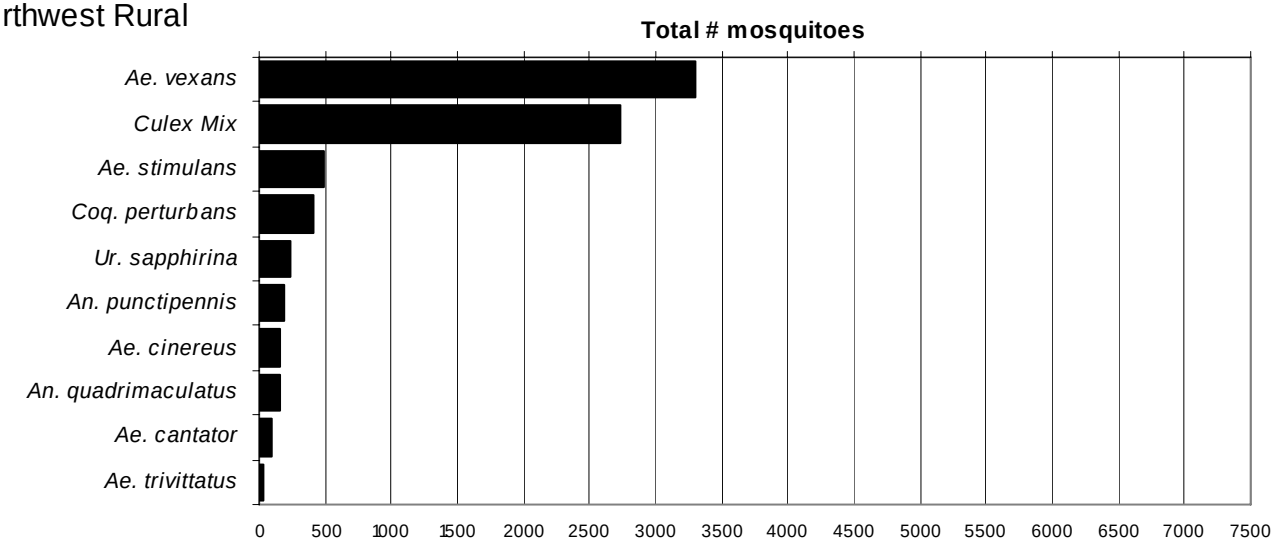
Delaware River Basin



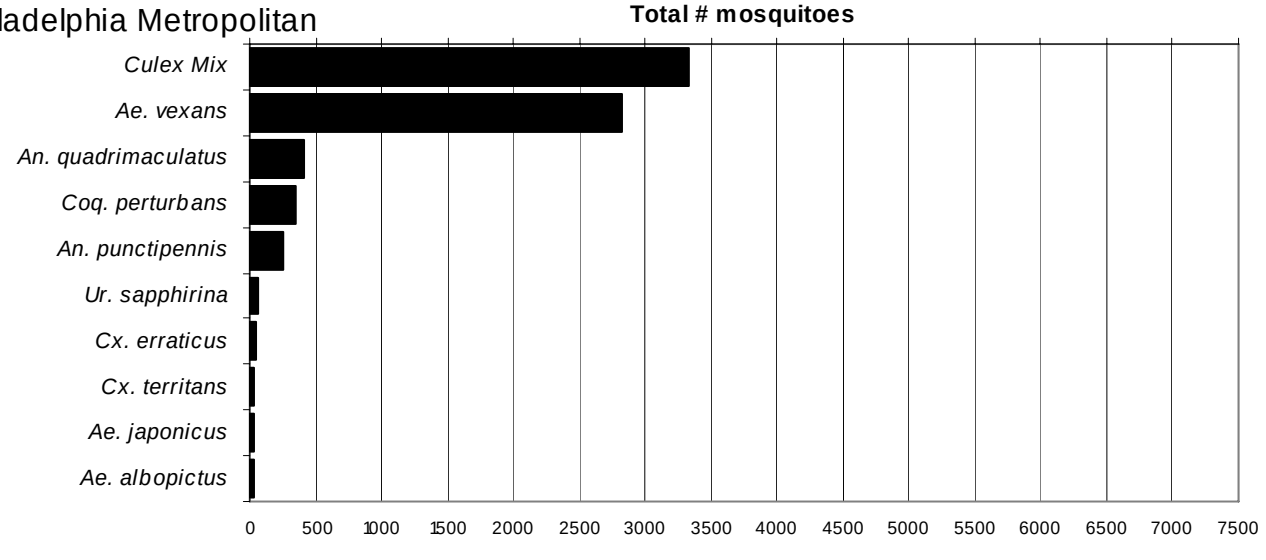

New York Metropolitan
Total # mosquitoes
Culex Mix
Ae. vexans
Ae. sollicitans
Ae. cantator
Coq. perturbans
An. punctipennis
An. quadrimaculatus
Ae. stimulans
Ae. japonicus
Ae. albopictus
0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 6000 6500 7000 7500

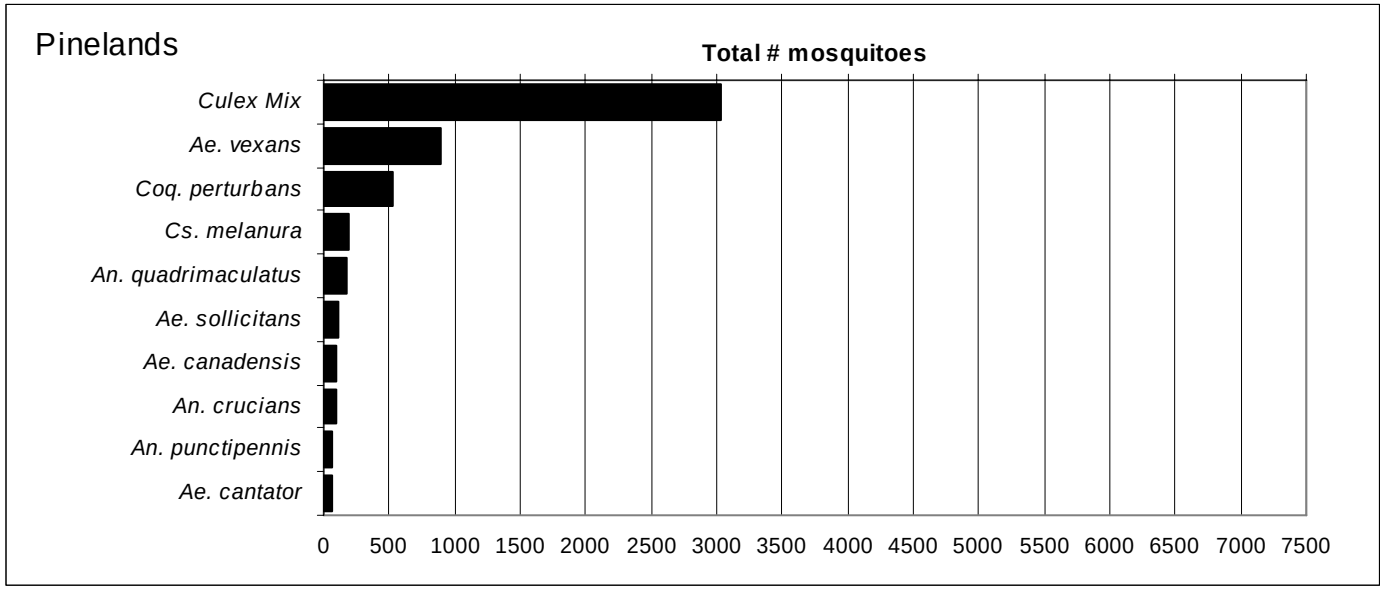

North Central Rural
Total # mosquitoes
Culex Mix
Ae. vexans
An. punctipennis
Coq. perturbans
An. quadrimaculatus
Ae. japonicus
Ur. sapphirina
Cx. erraticus
Ae. canadensis
Ps. columbae
0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 6000 6500 7000 7500

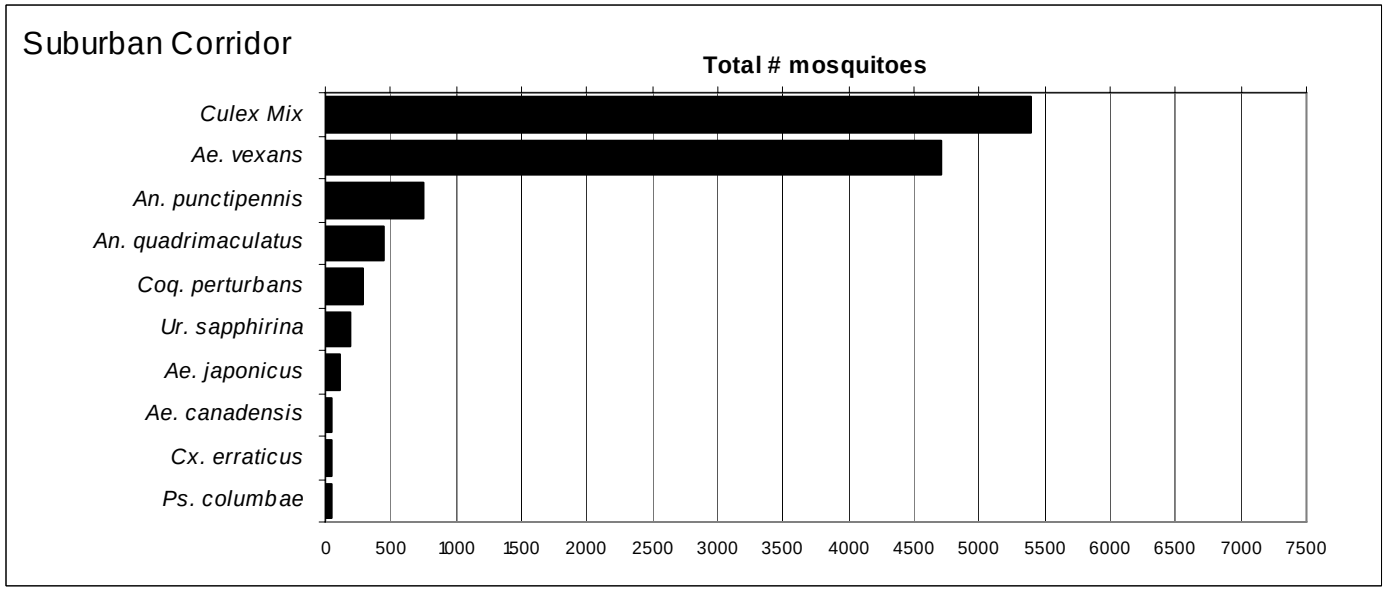
Northwest Rural



Philadelphia Metropolitan




Pinelands
Total # mosquitoes
Culex Mix
Ae. vexans
Coq. perturbans
Cs. melanura
An. quadrimaculatus
Ae. sollicitans
Ae. canadensis
An. crucians
An. punctipennis
Ae. cantator
0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 6000 6500 7000 7500


Suburban Corridor
Total # mosquitoes
Culex Mix
Ae. vexans
An. punctipennis
An. quadrimaculatus
Coq. perturbans
Ur. sapphirina
Ae. japonicus
Ae. canadensis
Cx. erraticus
Ps. columbae
0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 6000 6500 7000 7500