RUTGERS
New Jersey Agricultural Experiment Station

NEW JERSEY ADULT MOSQUITO SURVEILLANCE
Report for 27 July to 2 August 2008, CDC Week 31

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Center for Vector Biology

This New Jersey Agricultural Experiment Station report is supported by Rutgers University, Hatch funds, funding from the NJ State Mosquito Control Commission and with the participation of the 21 county mosquito control agencies of New Jersey.

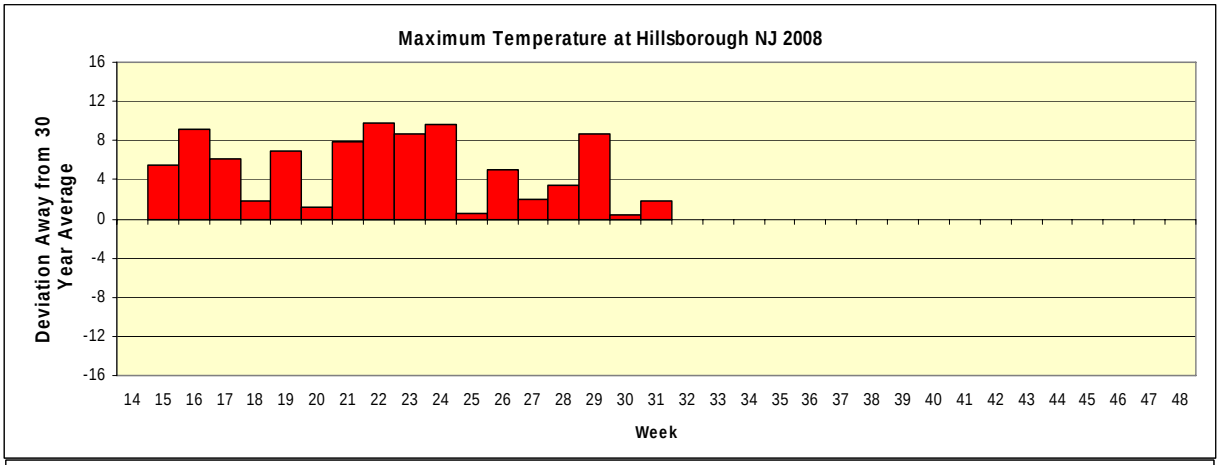
Summary table – Week 31

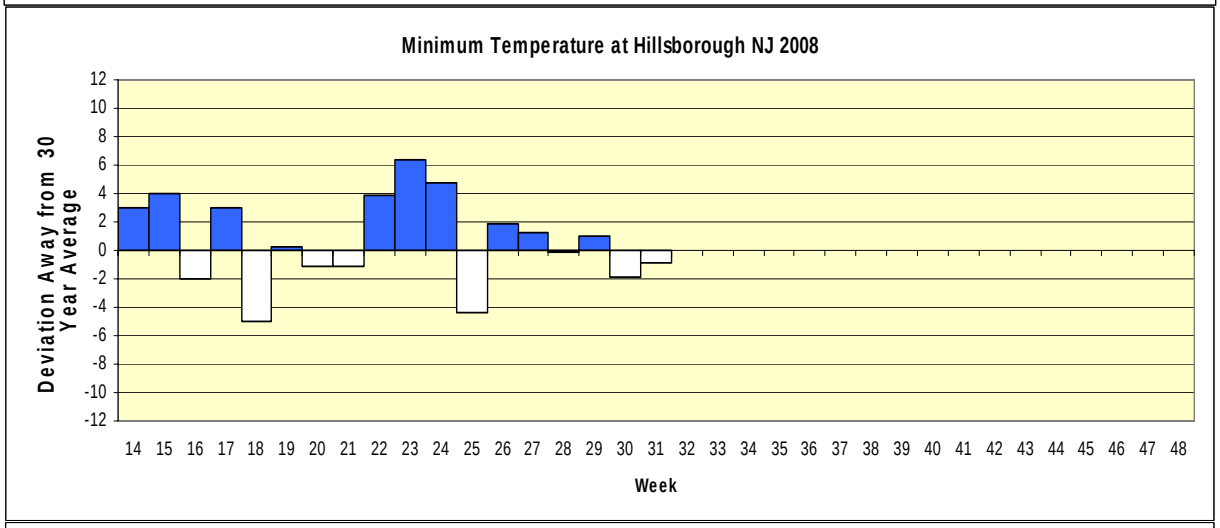
	Aedes vexans			*Culex* Mix			*Coquillettidia perturbans*			*Aedes sollicitans*		
Region	This Week	Average*	Increase	This Week	Average*	Increase	This Week	Average*	Increase	This Week	Average*	Increase
Agricultural	**0.05**	**6.03**	**0**	**0.12**	**8.00**	**0**	**0.00**	**0.27**	**0**	**0.00**	**0.27**	**0**
Coastal	**0.24**	**5.61**	**0**	**0.37**	**4.91**	**0**	**0.00**	**0.67**	**0**	**1.48**	**35.37**	**0**
Delaware Bayshore	**0.00**	**4.40**	**0**	**0.00**	**41.21**	**0**	**0.00**	**4.14**	**0**	**0.00**	**12.33**	**0**
Delaware River Basin	**0.00**	**25.78**	**0**	**0.00**	**12.87**	**0**	**0.00**	**0.43**	**0**	**0.00**	**0.12**	**0**
New York Metro	**0.20**	**2.81**	**0**	**2.51**	**7.46**	**0**	**0.00**	**0.09**	**0**	**0.00**	**1.76**	**0**
North Central Rural	**0.08**	**0.89**	**0**	**0.14**	**1.23**	**0**	**0.00**	**0.08**	**0**	**0.00**	**0.00**	**0**
Northwest Rural	**0.00**	**4.09**	**0**	**0.03**	**8.06**	**0**	**0.00**	**0.09**	**0**	**0.00**	**0.00**	**0**
Philadelphia Metro	**0.00**	**20.51**	**0**	**0.00**	**6.09**	**0**	**0.00**	**0.23**	**0**	**0.00**	**0.00**	**0**
Pinelands	**0.14**	**2.61**	**0**	**0.08**	**4.55**	**0**	**0.00**	**0.83**	**0**	**0.00**	**0.26**	**0**
Suburban Corridor	**0.71**	**8.16**	**0**	**1.23**	**3.06**	**0**	**0.01**	**0.94**	**0**	**0.00**	**0.04**	**0**

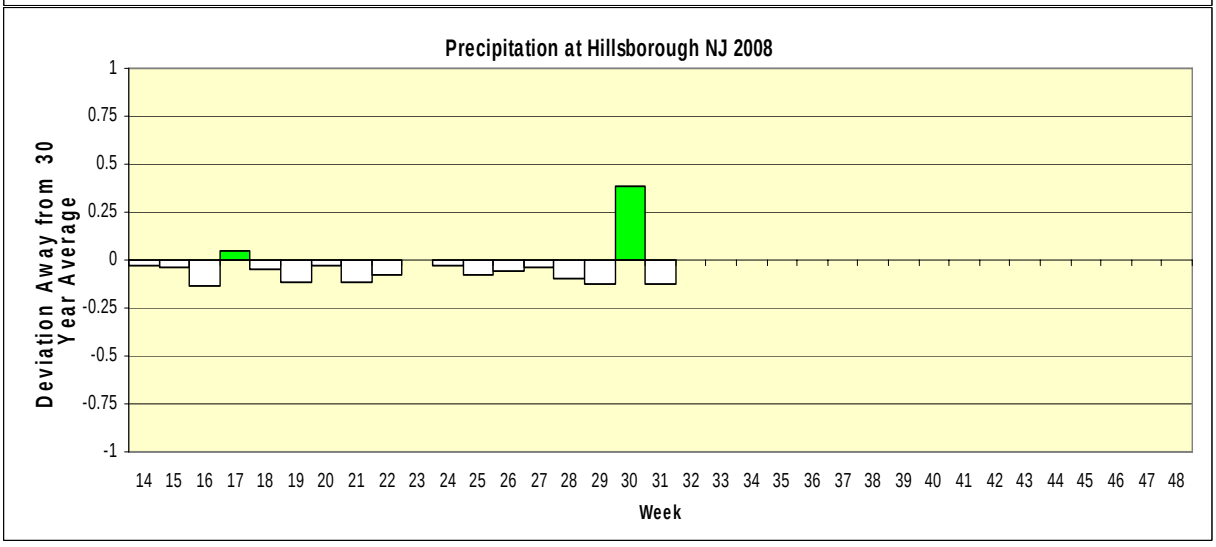
Averages represent data from, at most, the previous 5 years. Increase is a scale of current values from historical values where no difference or a decrease is represented by 0 (blue), up to 50% greater difference by 1 (green), up to 100% greater difference by 2 (yellow), up to 150% greater difference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

State Summary: All populations of these pestiferous mosquitoes are below historical trends.

Climate Deviations

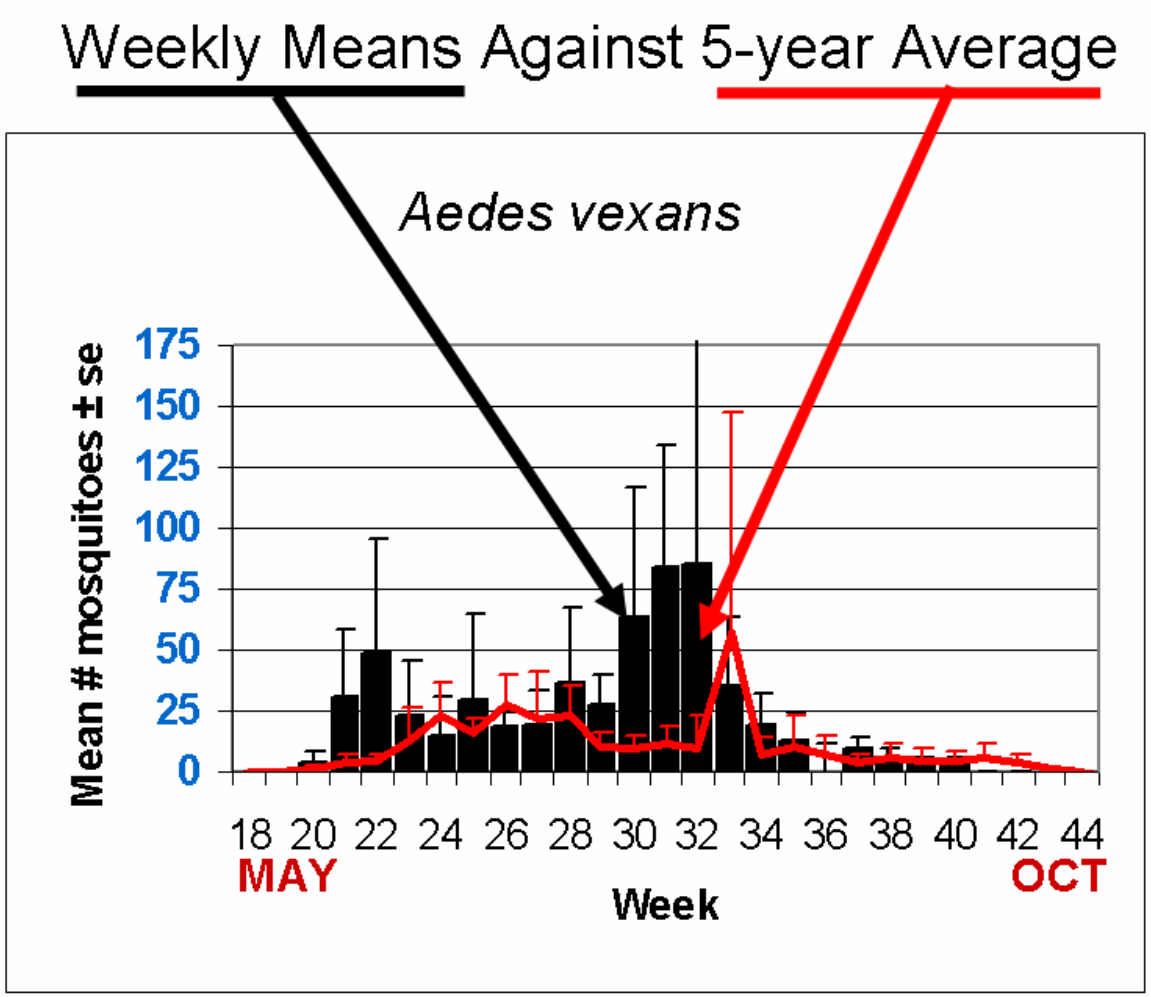




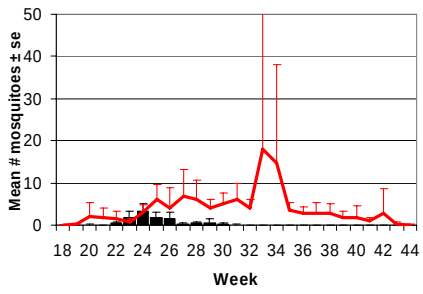
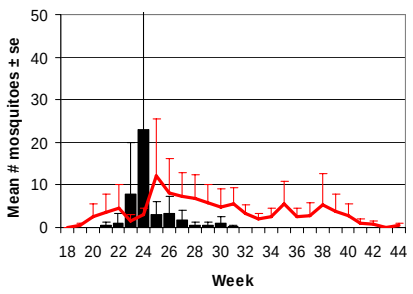
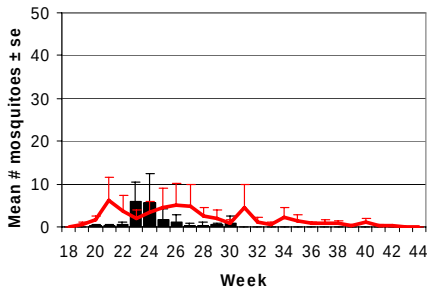
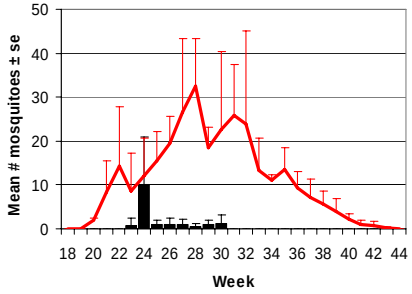
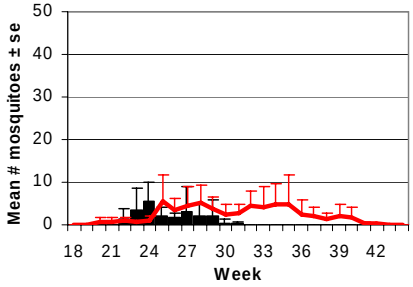
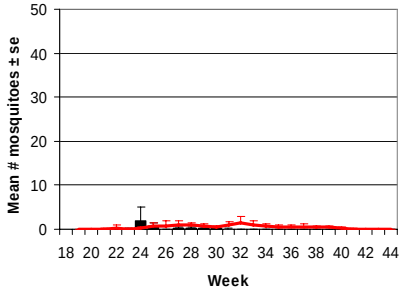
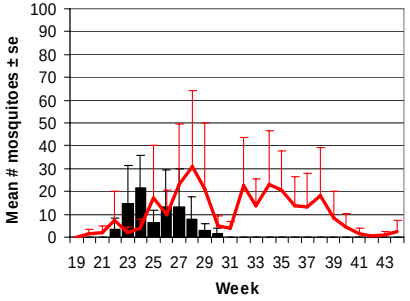
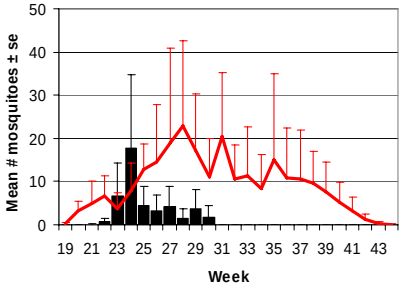
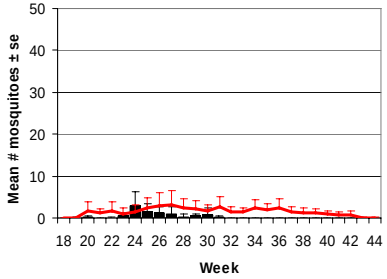
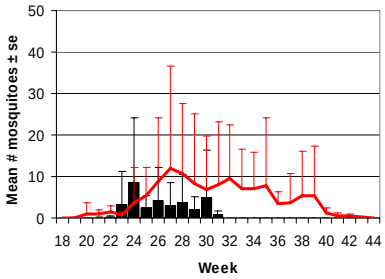


The figures show the average maximum temperature, minimum temperature and precipitation deviations from 30 year averages. Current data is from the Hillsborough NJ weather station (a station close to central NJ which recorded all three parameters and was available online at the NJ state climatologist) 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.

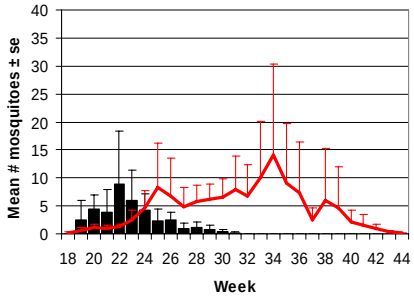
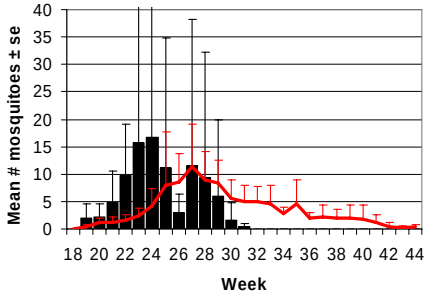
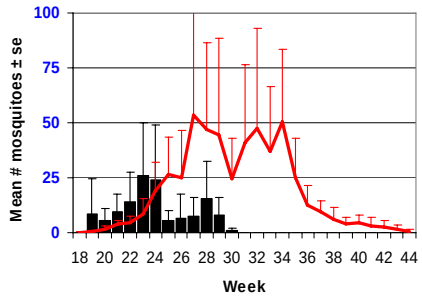
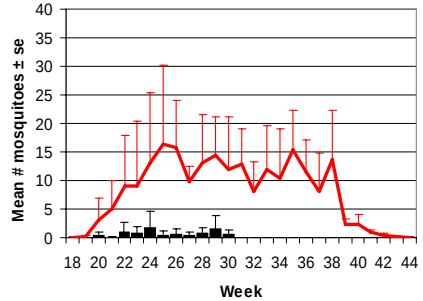
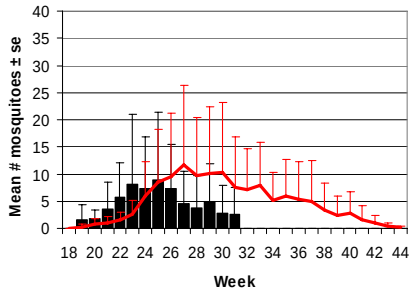
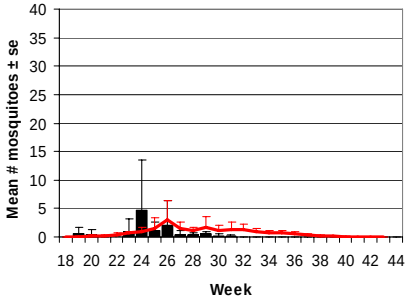
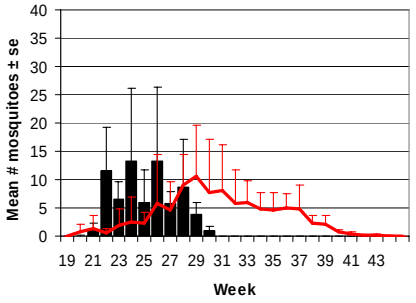
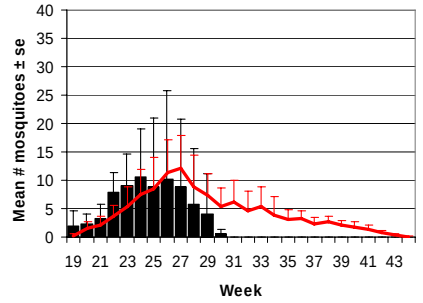
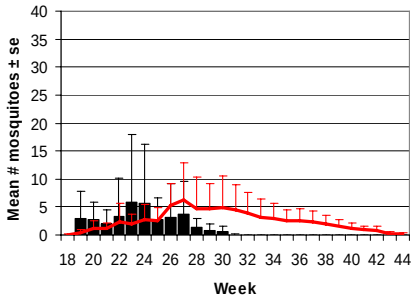
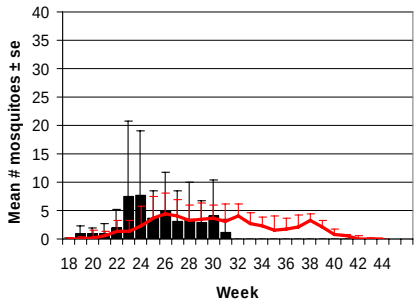
The Species Graphs: The species graph pages include a graph with two plots for each of the ten regions defined on the first page (Agricultural, Coastal, Delaware Bayshore, Delaware River, New York Metro, North-Central, Northwestern, Philadelphia Metro, Pinelands, and Suburban Corridor). Below is an example 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, Hudson, Mercer, Middlesex, Morris, Ocean, Somerset, 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)

Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		Despite recent rains from the previous week, cooler night time temperatures have seemingly delayed the emergence of floodwater species such as *Aedes vexans*. However, it should be noted that this week's reporting only includes nine counties at the time of this writing. It is anticipated that the abundance of *Ae. vexans* will likely be higher over the course of the next week or two. The state climatologist reports that this past July was the 9th warmest July in the past 112 years on record, and in combination with the 4th warmest June, this summer has been the warmest on record so far. But floodwater mosquitoes have thus far been unable to exploit this with increased abundances, as a corresponding decrease in precipitation over the last two months have occurred.	

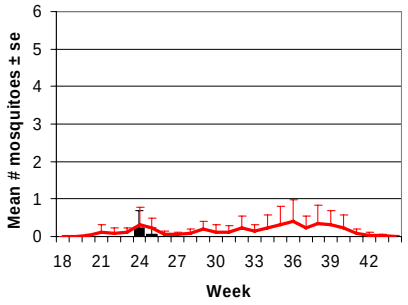
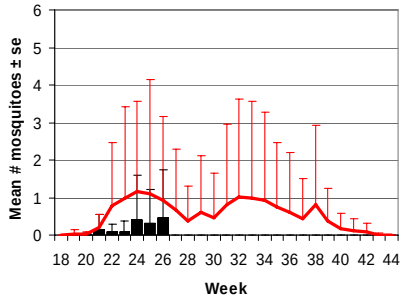
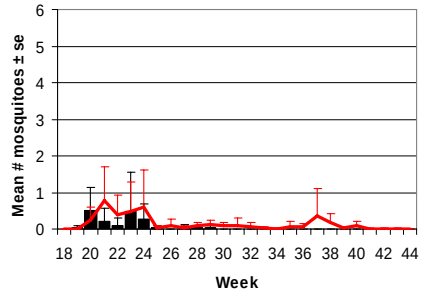
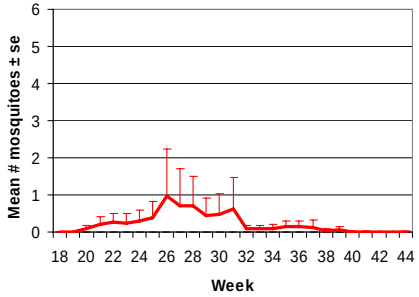
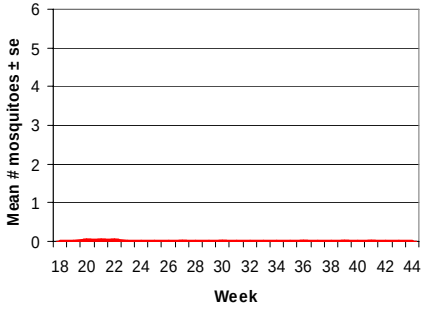
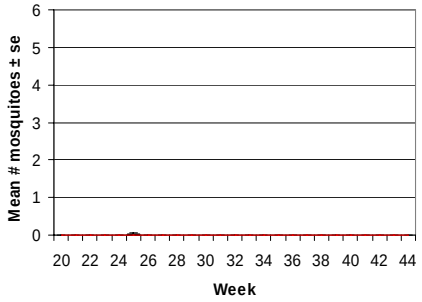
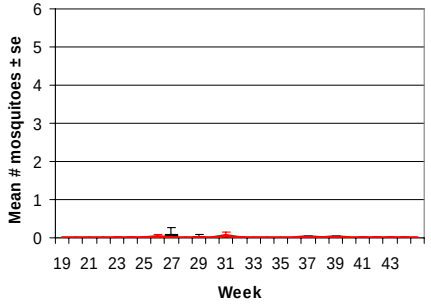
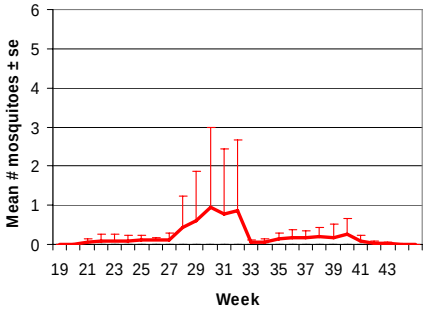
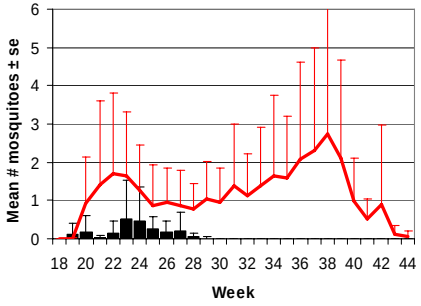
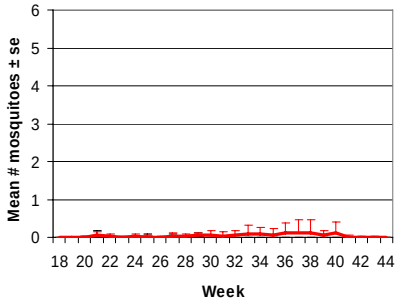
Culex Mix – Permanent Water Species
Multivoltine *Culex/Anopheles* (*Cx. pipiens* Type)

Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		*Culex* Mixed species (*Cx. pipiens, restuans* and *salinarius*) are now appearing to have made a shift toward earlier emergence in the Agricultural region, possibly influenced by the warmer June and July referred to in the previous commentary of *Aedes vexans.* If higher temperatures resulted in a shift of population chronology, there may have been a corresponding shift in the time period to become disseminated with West Nile virus. Dohm *et al.* (2002) found such an effect, with shorter days to dissemination occurring with higher temperatures. Viral genetic shifts accentuate this trend (Kilpatrick *et. al* 2008).	

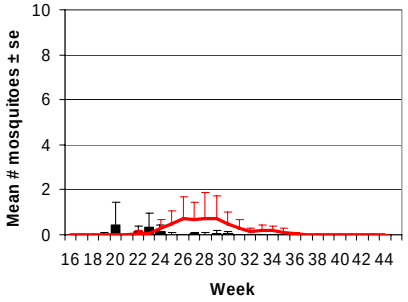
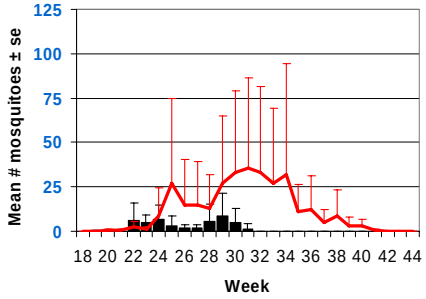
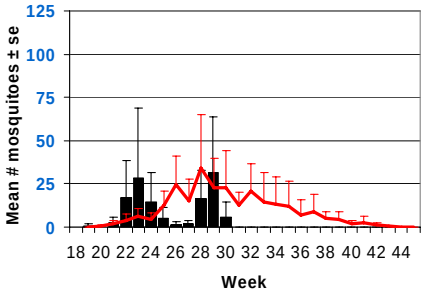
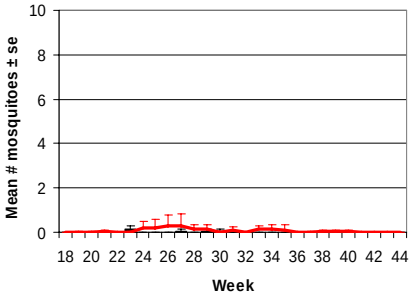
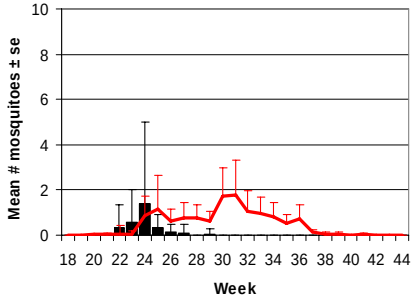
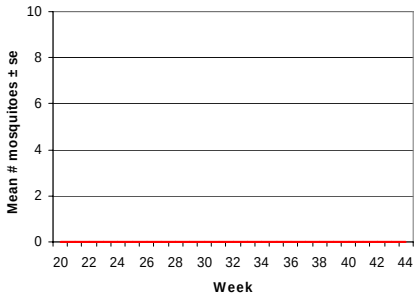
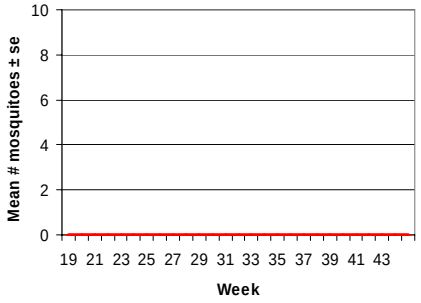
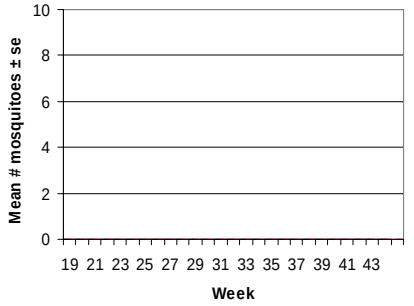
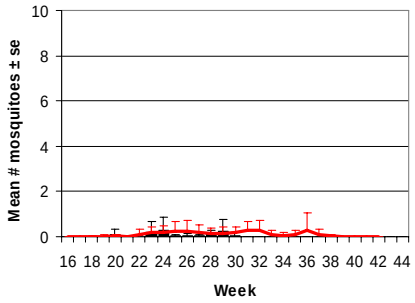
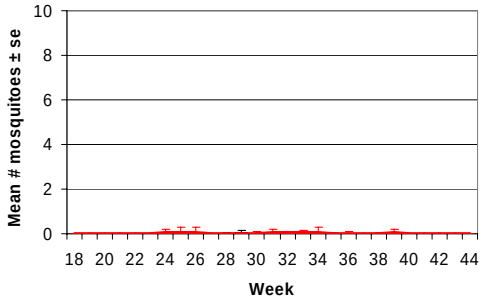
Dohm DJ, O'Guinn ML, Turell MJ (2002) Effect of Environmental Temperature on the Ability of Culex pipiens (Diptera: Culicidae) to Transmit West Nile Virus. Journal of Medical Entomology: Vol. 39, No. 1 pp. 221–225

Kilpatrick, AM., Meola, MA, Moudy, RM, Kramer LD (2008) Temperature, viral genetics, and the transmission of West Nile virus by *Culex pipiens pipiens* mosquitoes. PLOS Pathogens: 4(6):1-7

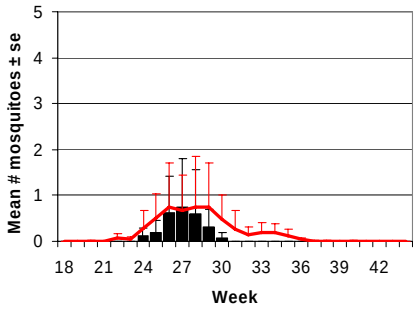
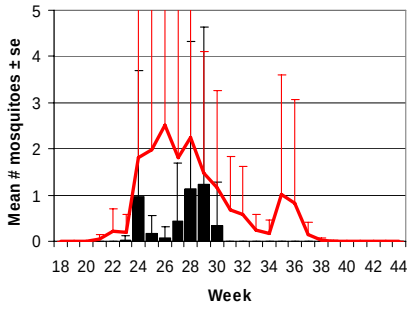
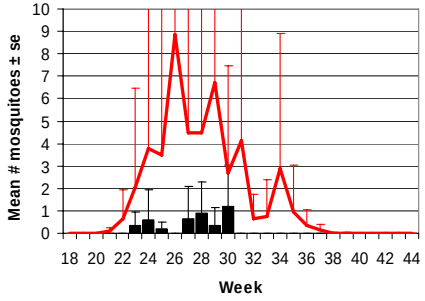
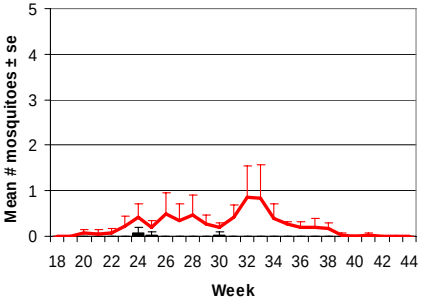
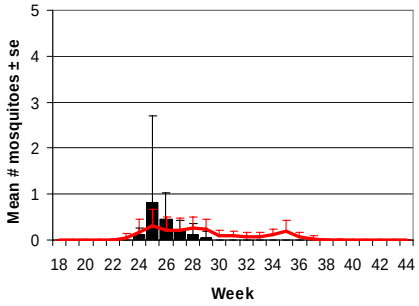
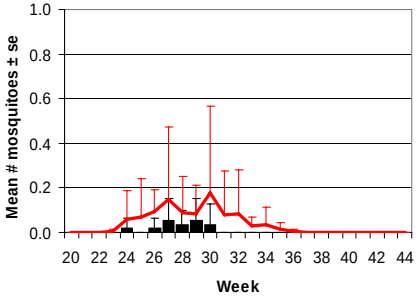
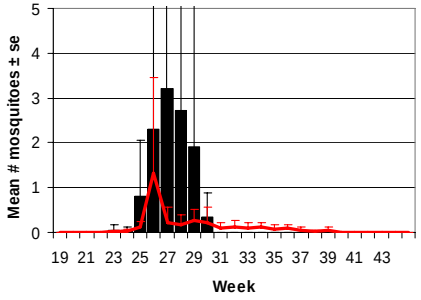
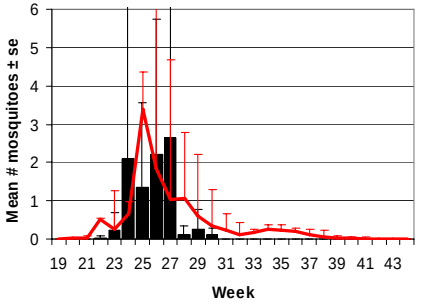
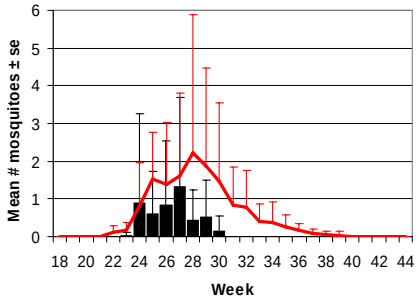
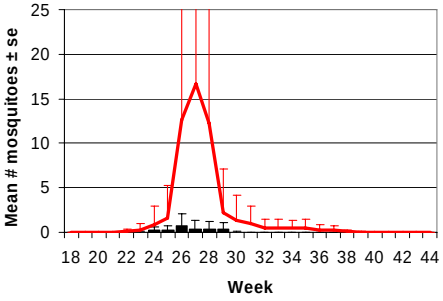
Culiseta melanura – Miscellaneous Group Unique (*Cs. melanura* Type)

Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		For regions of primary *Culiseta melanura* habitat, populations remain remarkably low in both the county light traps involved with this surveillance program and with the vector surveillance's monitoring site using the preferred resting boxes.	

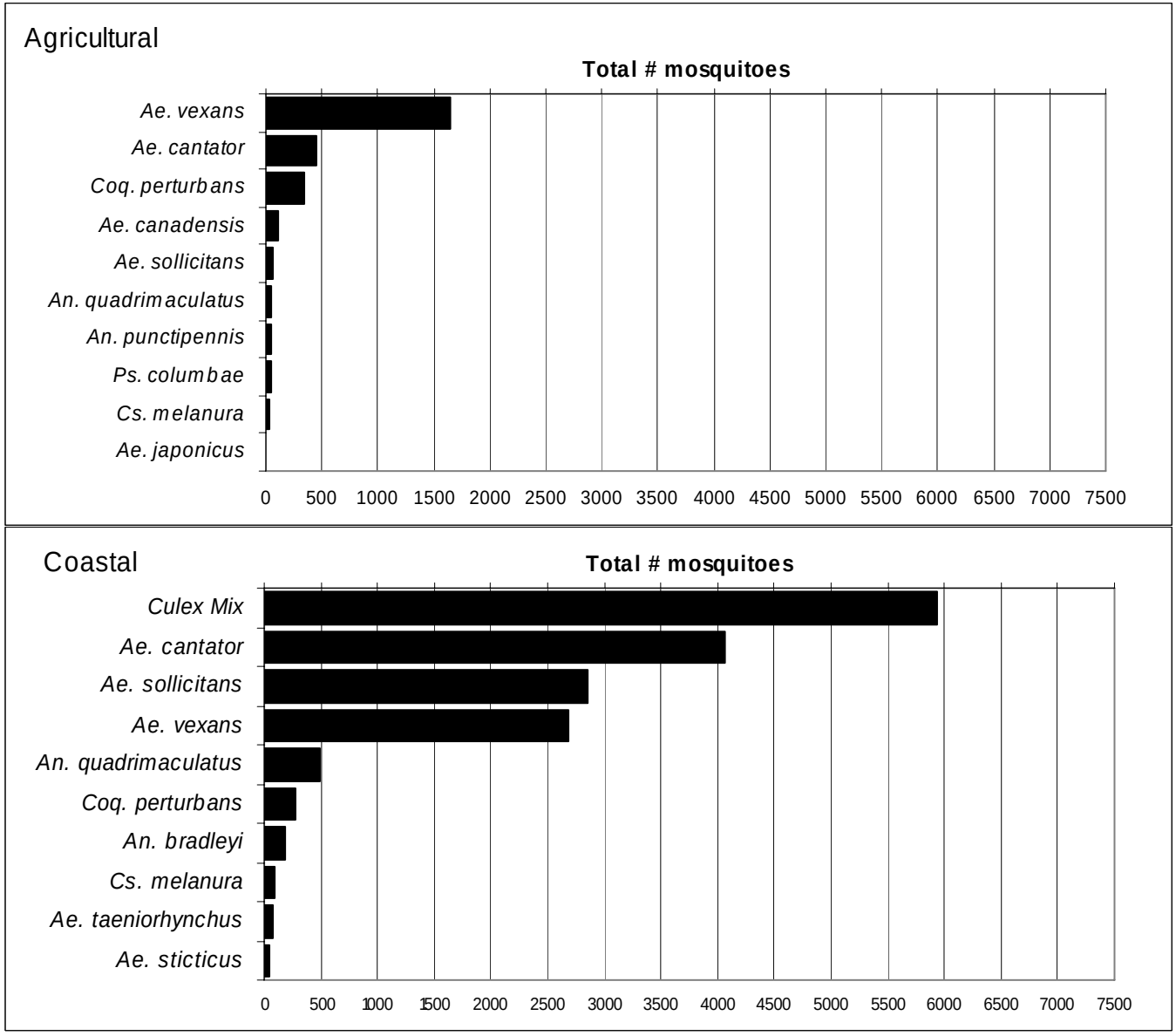
Aedes sollicitans - Salt Floodwater Species
Multivoltine Aedine (*Ae. sollicitans* Type)

Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		With the reduction of populations, clear broods of *Aedes sollicitans* are distinct. Like other floodwater species, *Ae. sollicitans* are able to develop and emerge rapidly after flooding events (for this saltwater species, this includes both tidal events as well as rainfall), and thus avoid major loss due to rapidly disappearing habitat. When summers are warm and rainfall reduced, broods become more easily identifiable. Inland sites show a minor delay in population peaks as adults from the saltmarsh make their way inland.	

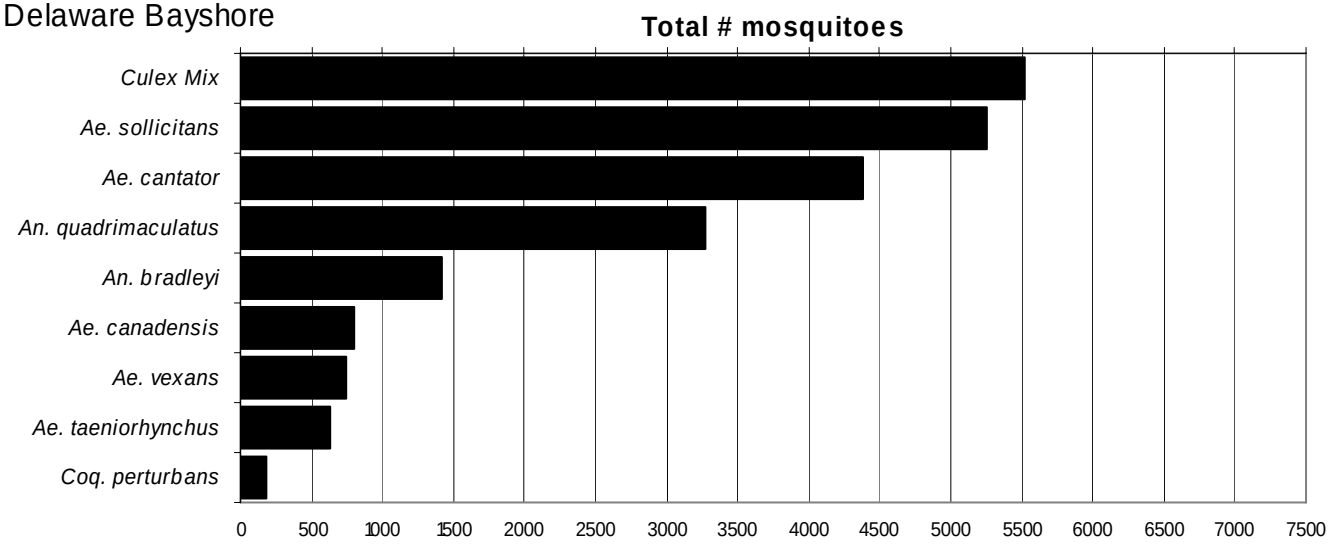
Coquillettidia perturbans- Monotypic Species
(*Cq. perturbans* Type)

Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		The mid-season *Coquillettidia perturbans* populations appear to be on the decline for most regions.	

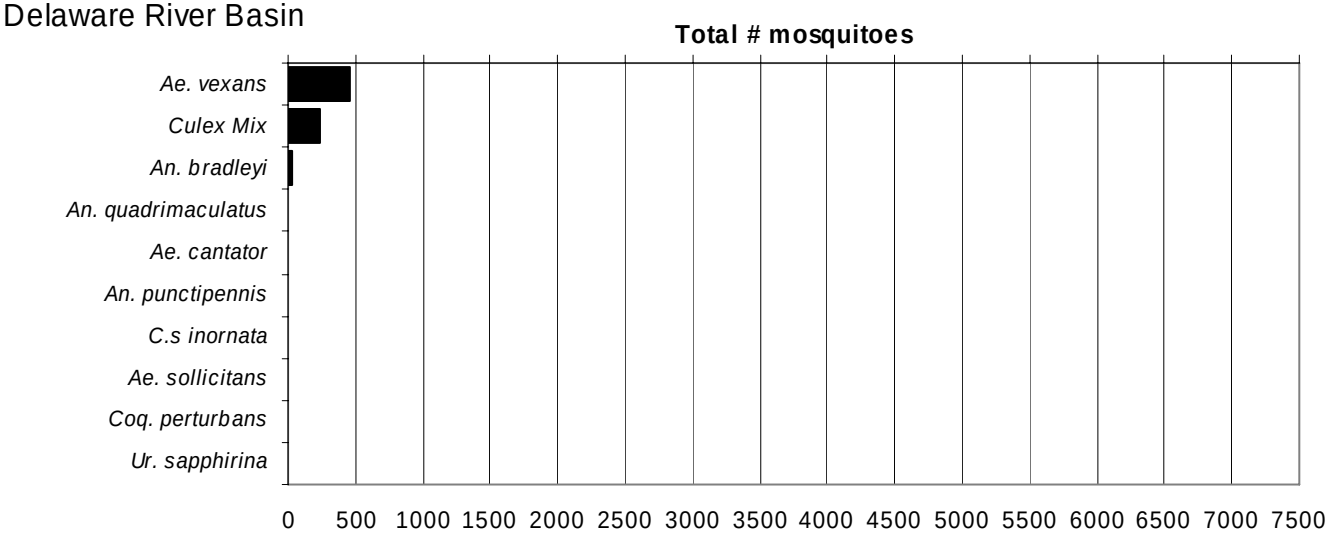
Top Ten Mosquito Species/Region

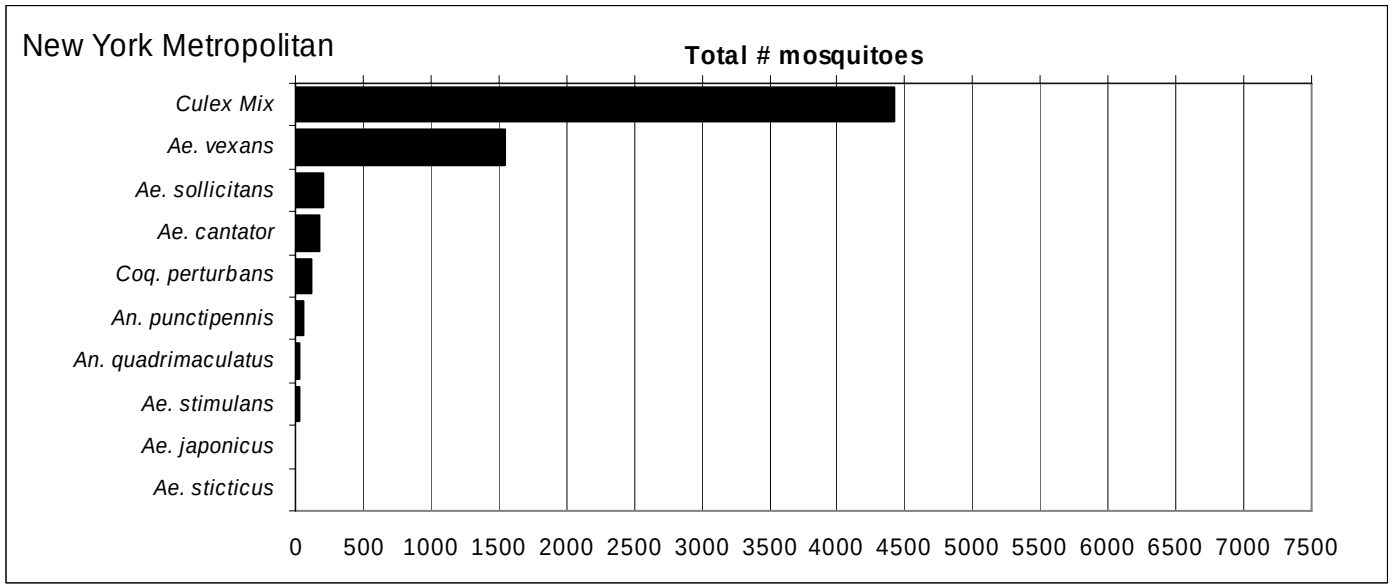


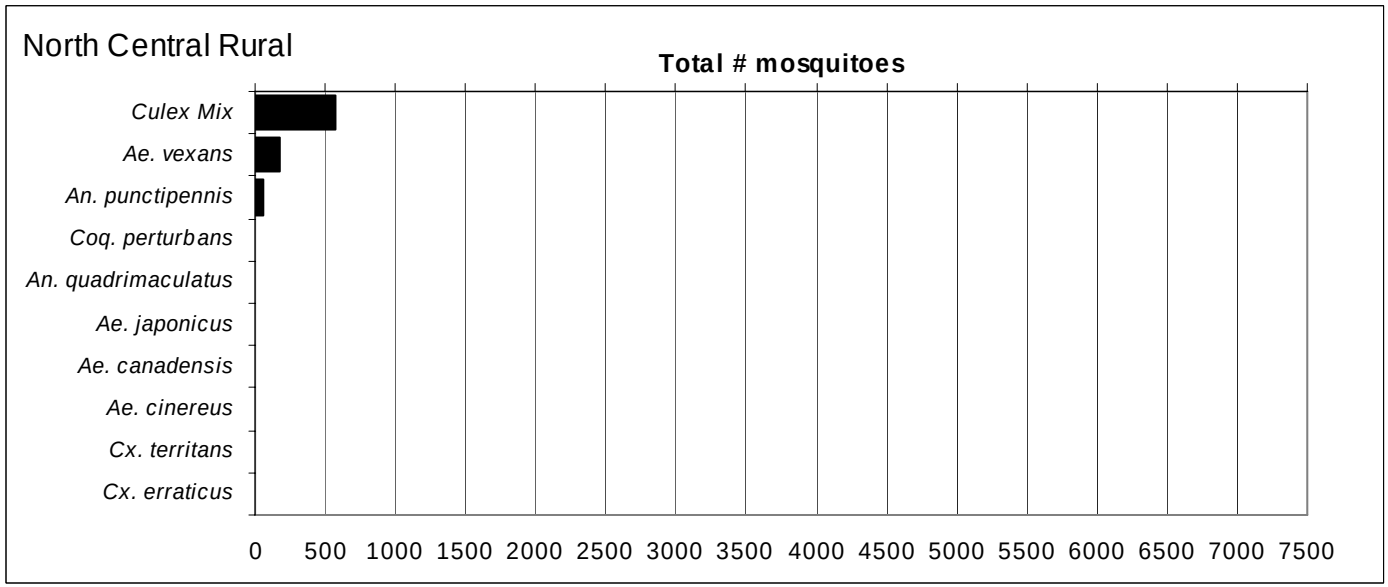
Delaware Bayshore

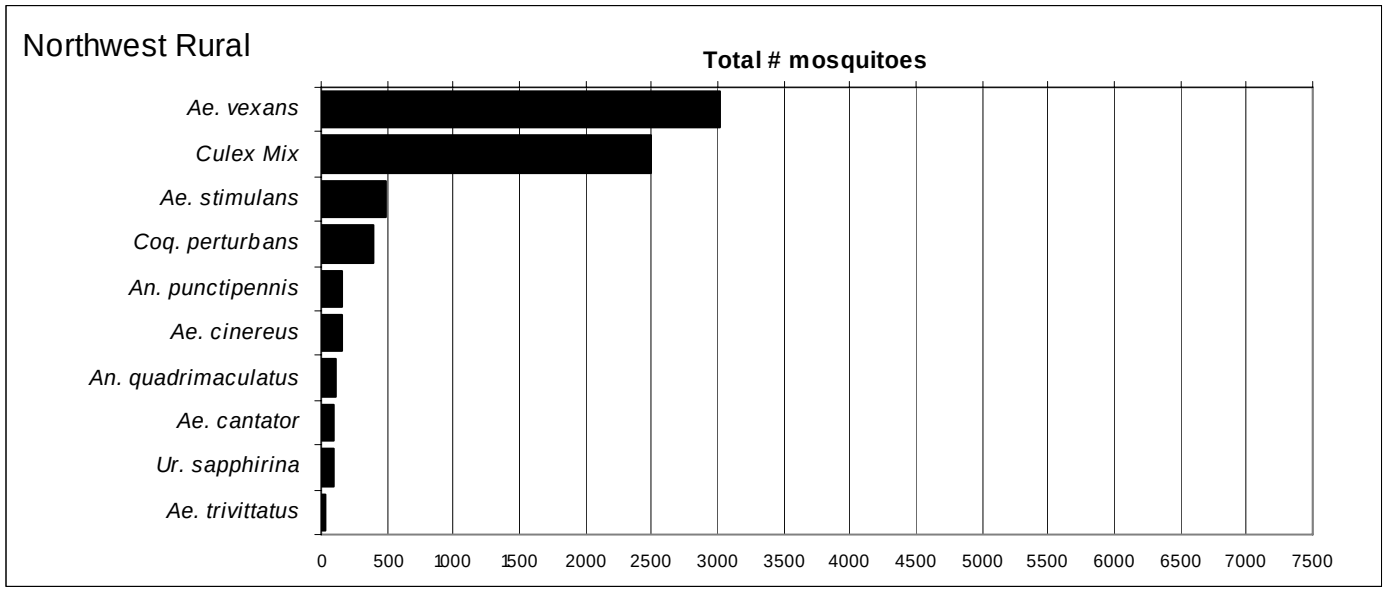


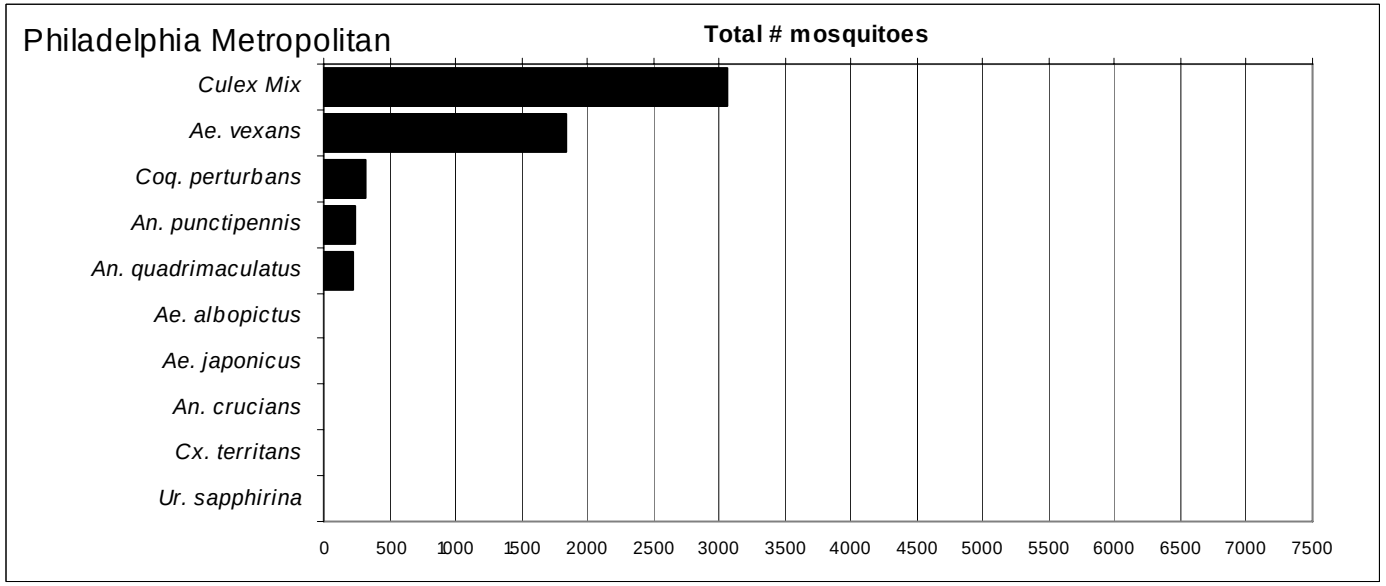
Delaware River Basin



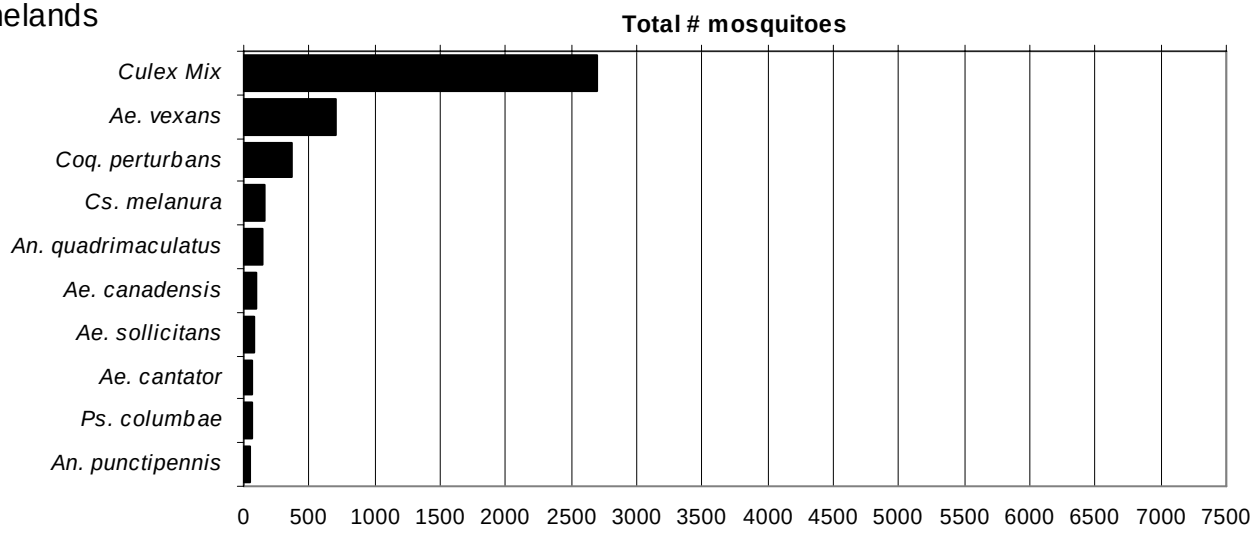

New York Metropolitan
Total # mosquitoes
Culex Mix
Ae. vexans
Ae. sollicitans
Ae. cantator
Coq. perturbans
An. punctipennis
An. quadrimaculatus
Ae. stimulans
Ae. japonicus
Ae. sticticus
0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 6000 6500 7000 7500


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


Northwest Rural
Total # mosquitoes
Ae. vexans
Culex Mix
Ae. stimulans
Coq. perturbans
An. punctipennis
Ae. cinereus
An. quadrimaculatus
Ae. cantator
Ur. sapphirina
Ae. trivittatus
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
6500
7000
7500


Philadelphia Metropolitan
Total # mosquitoes
Culex Mix
Ae. vexans
Coq. perturbans
An. punctipennis
An. quadrimaculatus
Ae. albopictus
Ae. japonicus
An. crucians
Cx. territans
Ur. sapphirina
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
6500
7000
7500

Pinelands



Suburban Corridor