RUTGERS
New Jersey Agricultural Experiment Station

NEW JERSEY ADULT MOSQUITO SURVEILLANCE
Report for 17 August to 23 August 2008, CDC Week 34

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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.

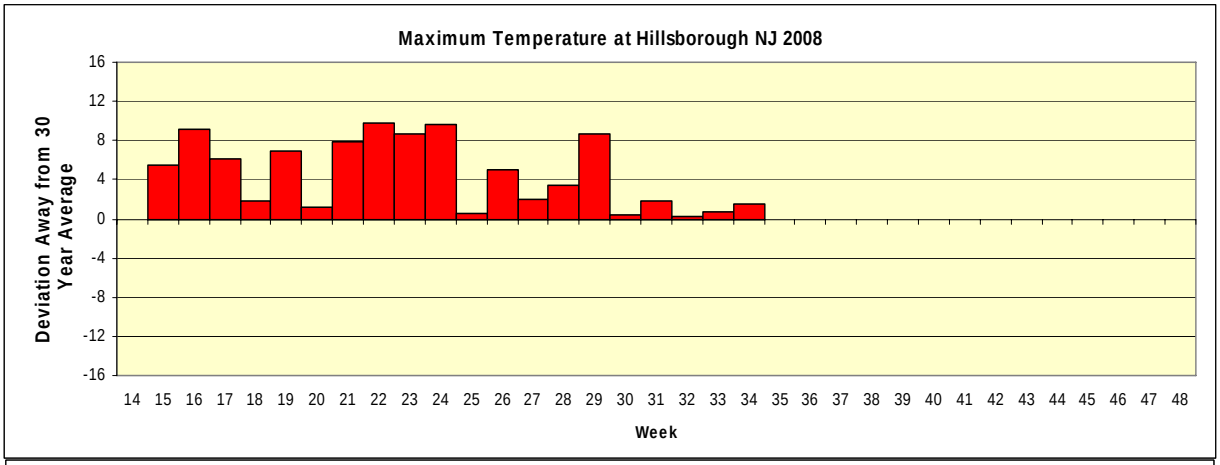
Summary table – Week 34

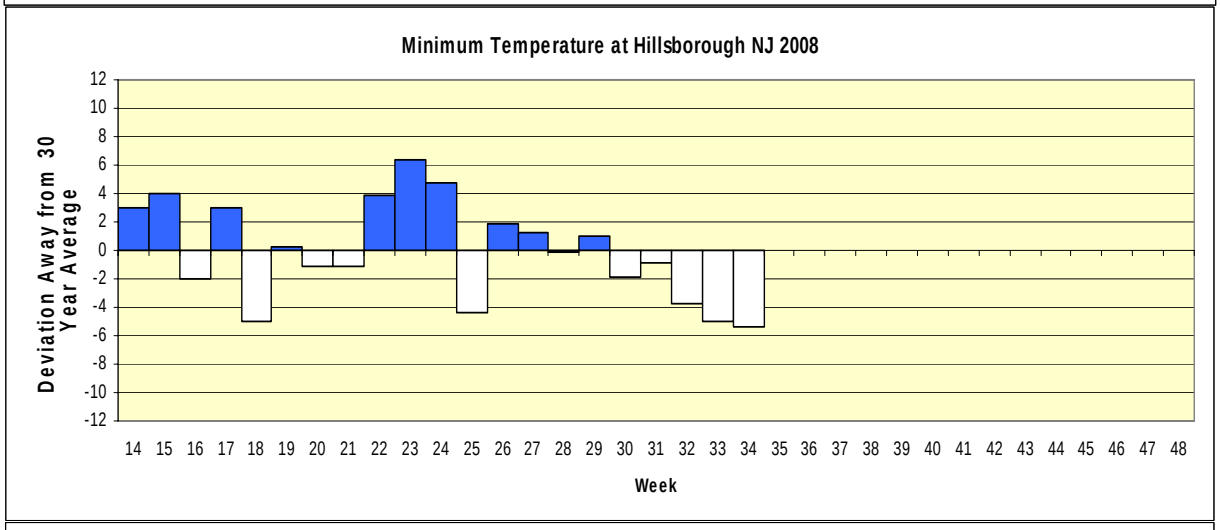
	Aedes vexans			*Culex* Mix			*Coquillettidia perturbans*			*Aedes sollicitans*		
Region	This Week	Average*	Increase	This Week	Average*	Increase	This Week	Average*	Increase	This Week	Average*	Increase
Agricultural	**0.31**	**14.66**	**0**	**0.45**	**14.13**	**0**	**0.00**	**0.18**	**0**	**0.02**	**0.55**	**0**
Coastal	**2.00**	**2.62**	**0**	**2.92**	**2.71**	**1**	**0.19**	**0.18**	**1**	**6.00**	**31.61**	**0**
Delaware Bayshore	**0.50**	**2.33**	**0**	**1.14**	**50.30**	**0**	**0.10**	**2.89**	**0**	**0.90**	**13.24**	**0**
Delaware River Basin	**0.00**	**11.07**	**0**	**0.00**	**10.41**	**0**	**0.00**	**0.39**	**0**	**0.00**	**0.14**	**0**
New York Metro	**2.04**	**4.72**	**0**	**9.66**	**5.21**	**2**	**0.17**	**0.11**	**2**	**0.07**	**0.81**	**0**
North Central Rural	**0.08**	**0.66**	**0**	**0.67**	**0.81**	**0**	**0.00**	**0.04**	**0**	**0.00**	**0.00**	**0**
Northwest Rural	**1.49**	**23.00**	**0**	**1.46**	**4.78**	**0**	**0.00**	**0.11**	**0**	**0.00**	**0.00**	**0**
Philadelphia Metro	**1.17**	**8.40**	**0**	**2.00**	**3.85**	**0**	**0.00**	**0.25**	**0**	**0.00**	**0.00**	**0**
Pinelands	**0.50**	**2.36**	**0**	**1.01**	**2.48**	**0**	**0.09**	**0.37**	**0**	**0.12**	**0.07**	**2**
Suburban Corridor	**2.08**	**7.19**	**0**	**2.31**	**2.31**	**0**	**0.04**	**0.49**	**0**	**0.03**	**0.06**	**0**

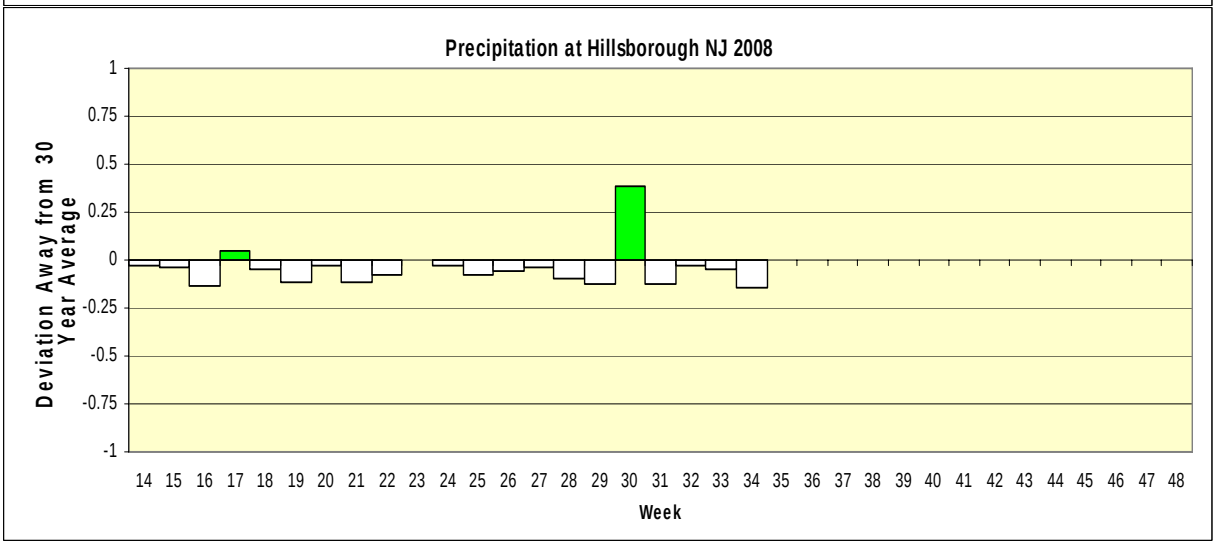
*Averages represent data from, at most, the previous 5 years. Increase is a scale of current values from historical values where no difference or a decrease is represented by 0 (blue), up to 50% greater difference by 1 (green), up to 100% greater difference by 2 (yellow), up to 150% greater difference by 3 (orange) and greater than 150% increase by 4 (red). White cells 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. The New York Metro and Coastal region are both showing increased activity for both mixed *Culex* and *Coquillettidia perturbans*, the former which should be viewed with caution given the upswing in recent West Nile virus positive pools (*Cq. perturbans* appears to be an inefficient vector of WNV).

Climate Deviations

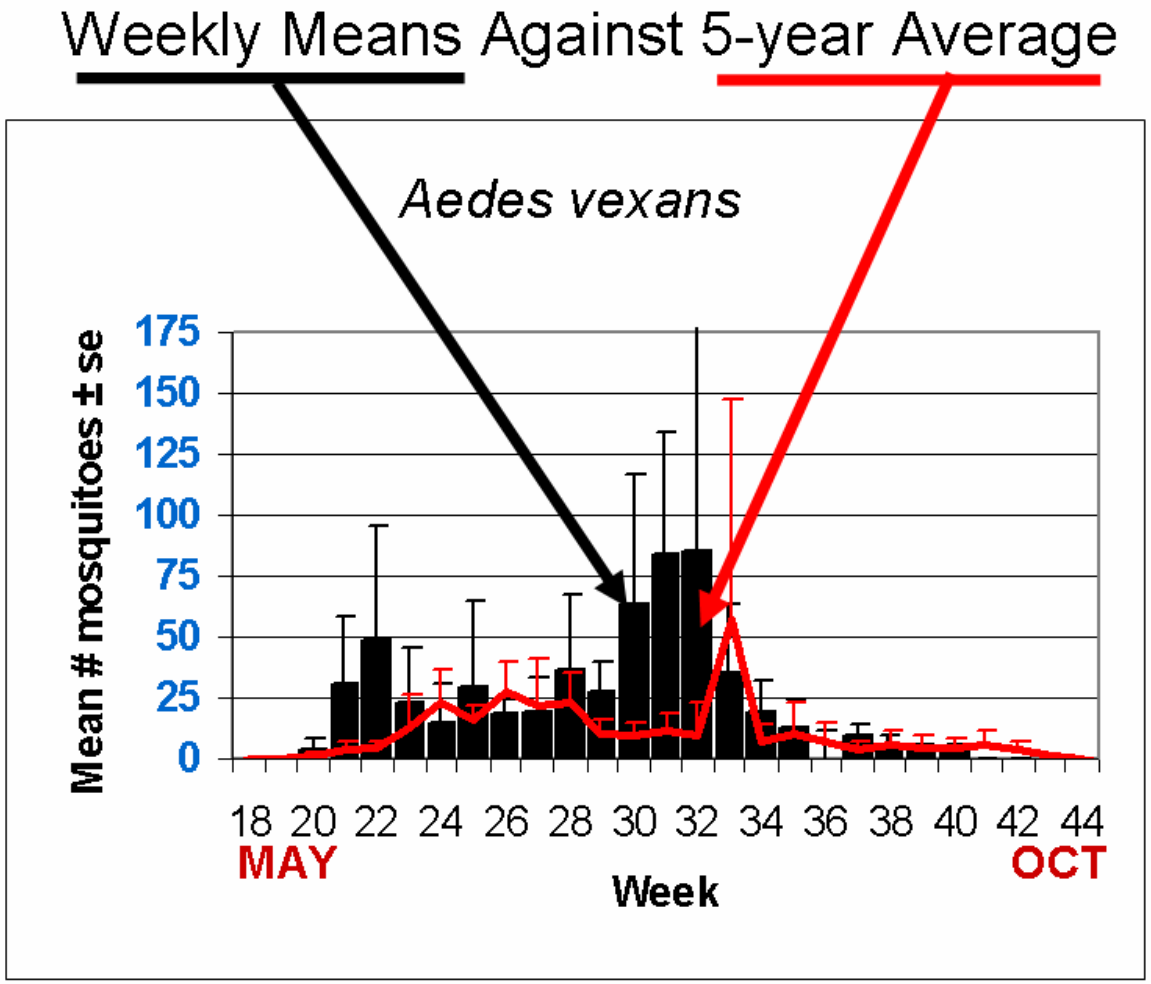






The figures show the average maximum temperature, minimum temperature and precipitation deviations from 30 year averages. Current data are from the Hillsborough NJ weather station (a station close to central NJ which recorded all three parameters and was available online at the NJ state climatologist) 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, Camden, Cape May, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Sussex, Union 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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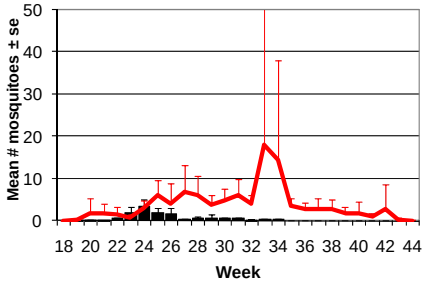
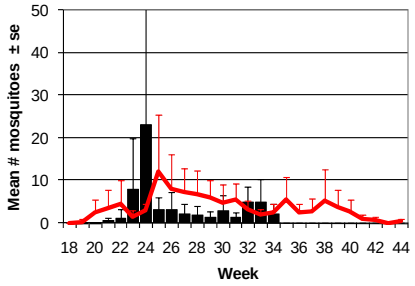
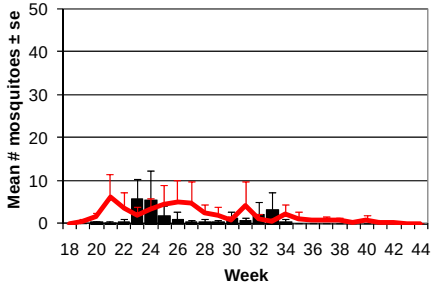
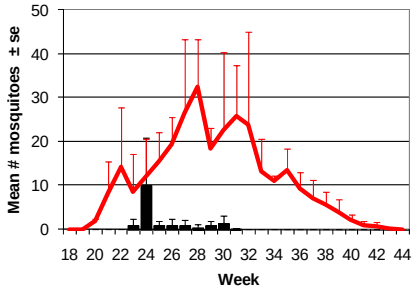
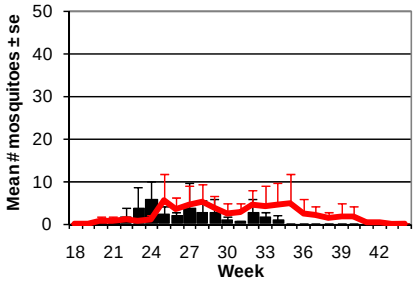
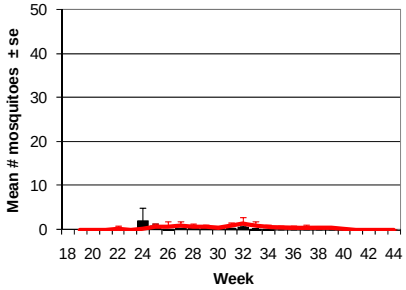
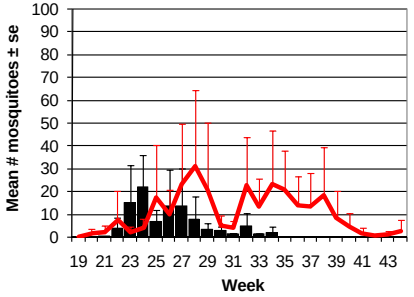
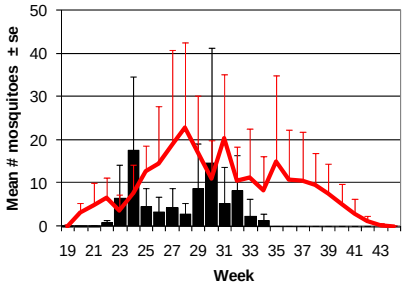
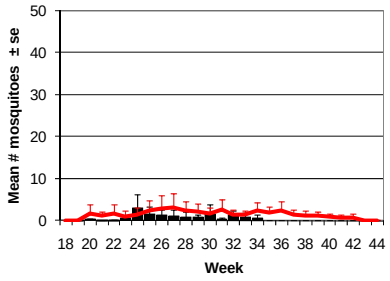
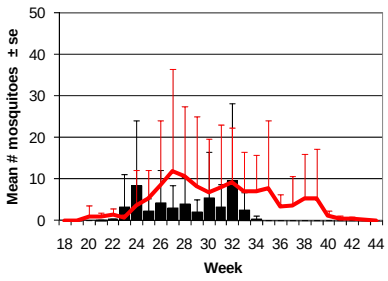
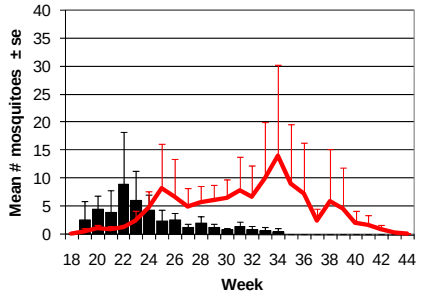
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		Populations of *Aedes vexans* continue to decline as cool nighttime temperatures have set in for the last several weeks for much of New Jersey. When ephemeral habitat becomes available and hatch available eggs, development may be slowed down due to lower night temperatures for these normally rapid morphers. If the habitat dries down before the mosquito is able to emerge, then local populations can become severely depleted. This mosquito feeds substantially on white-tailed deer and can feed on birds, acting as a bridge vector to infect deer populations with West Nile virus (Molaei and Andreadis 2006).	

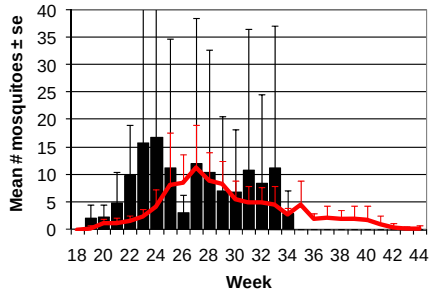
Molaei, G. and T. G. Andreadis 2006 Identification of avian- and mammalian-derived bloodmeals in *Aedes vexans* and *Culiseta melanura* (Diptera: Culicidae) and its implication for West Nile virus transmission in Connecticut, USA. Journal of Medical Entomology 43(5):1088-1093.

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

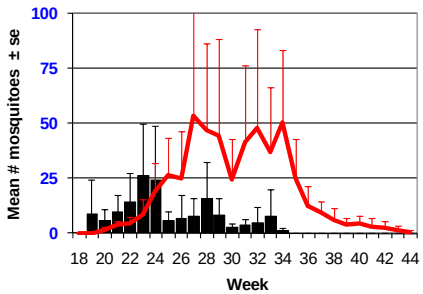
Agricultural



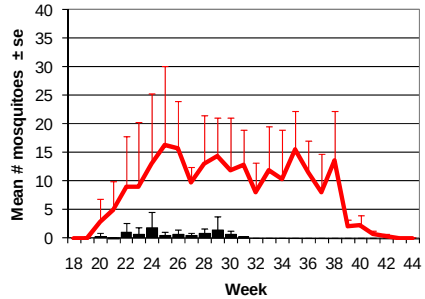
Coastal



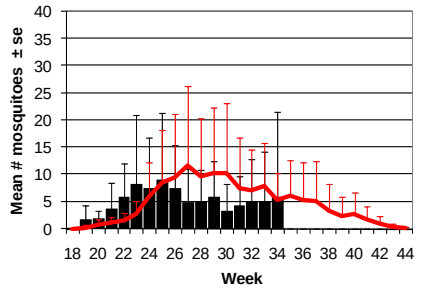
Delaware Bayshore



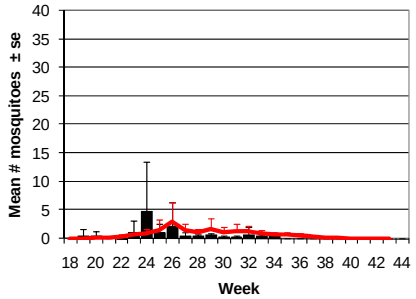
Delaware River Basin



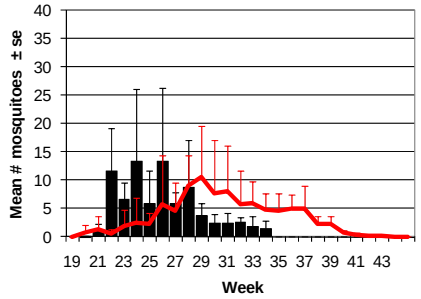
New York Metro



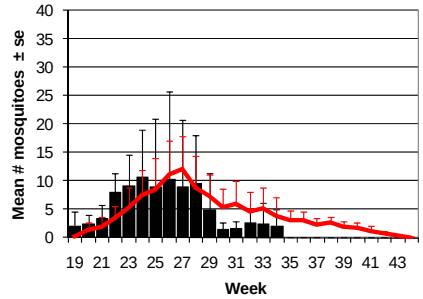
North Central Rural



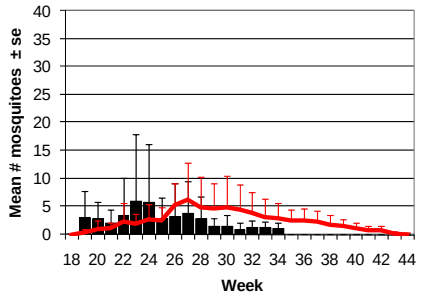
Northwestern Rural



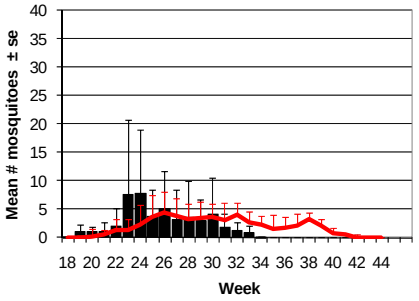
Philadelphia Metro



Pinelands



Suburban Corridor

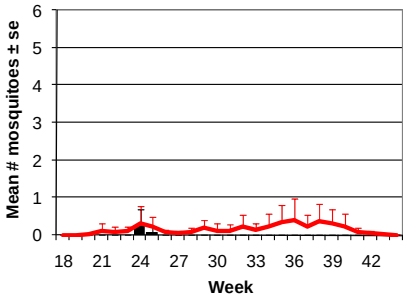


Comments

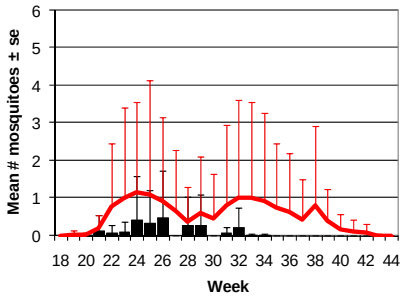
Culex populations here in New Jersey have normally been very stable over the past several years which are not unexpected for a permanent water species. This year, there appears to be several patterns that *Culex* populations (*Cx. pipiens, Cx. restuans* and *Cx. salinarius*) are undergoing: early peak emergence, population suppression or shift, and rebound to historical levels. Coastal populations demonstrate the early peak emergence. The agricultural region displays either a population suppression or shift and the two Metro regions are currently showing a rebound to historical levels. West Nile virus amplification has continued despite (or because of?) the changes in *Culex* populations.

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

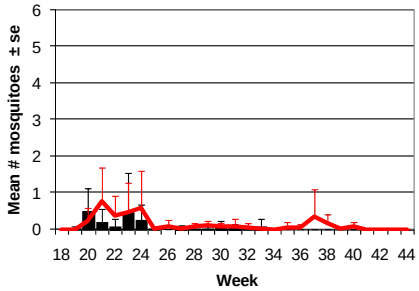
Agricultural



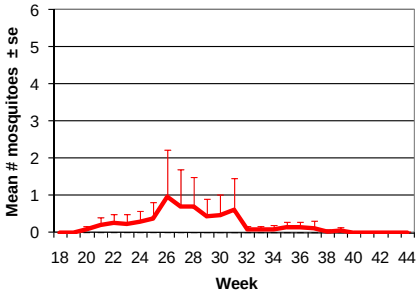
Coastal



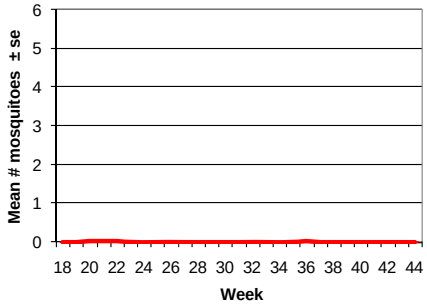
Delaware Bayshore



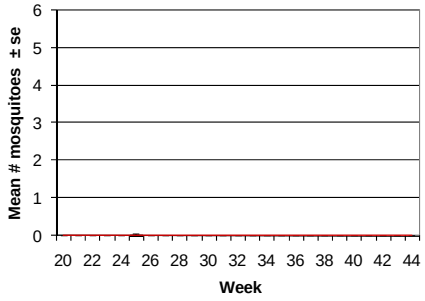
Delaware River Basin



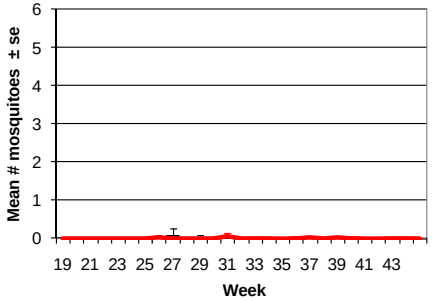
New York Metro



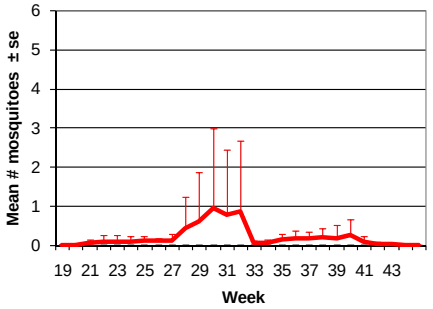
North Central Rural



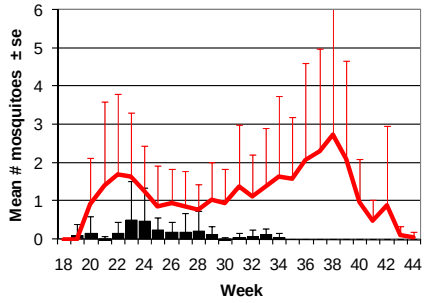
Northwestern Rural



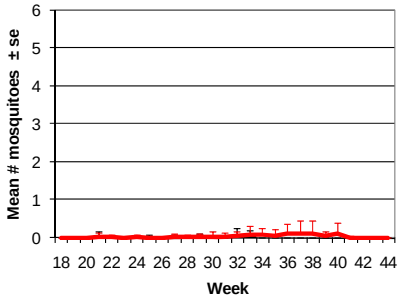
Philadelphia Metro



Pinelands



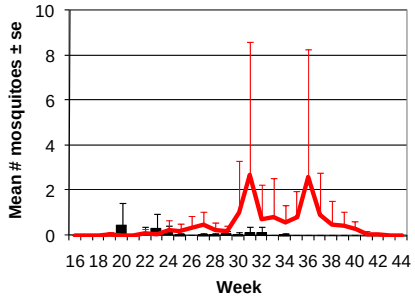
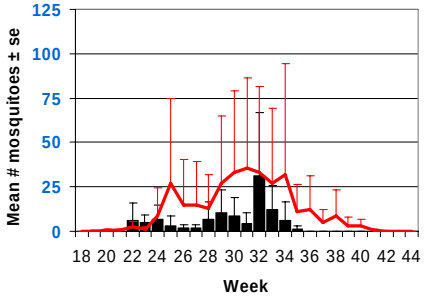
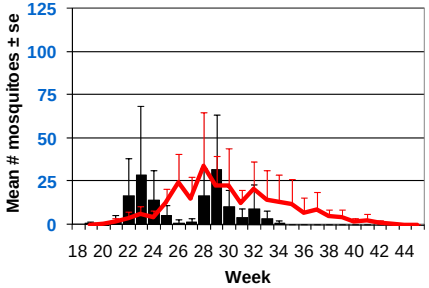
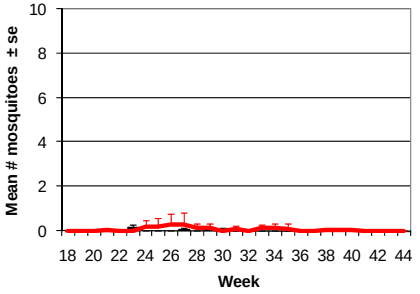
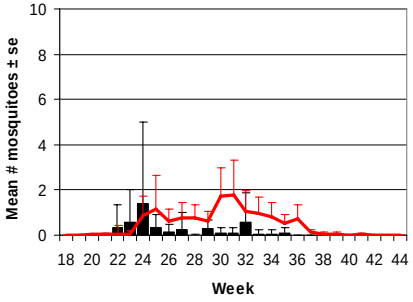
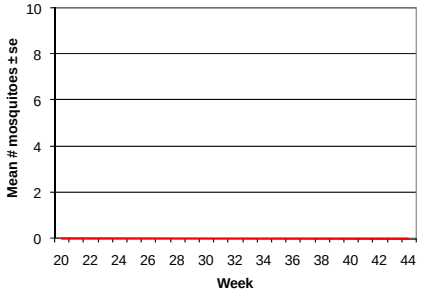
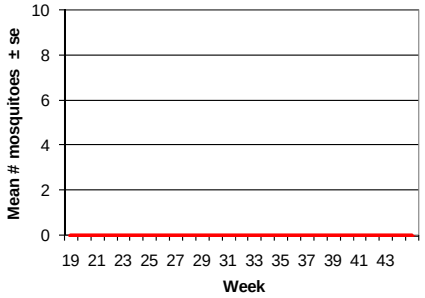
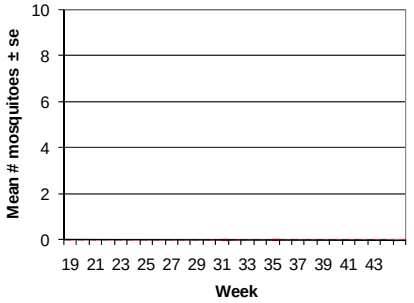
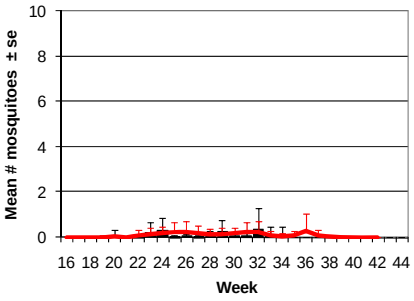
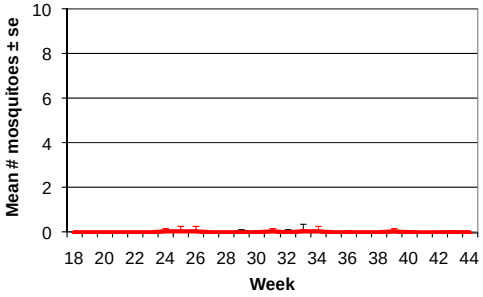
Suburban Corridor



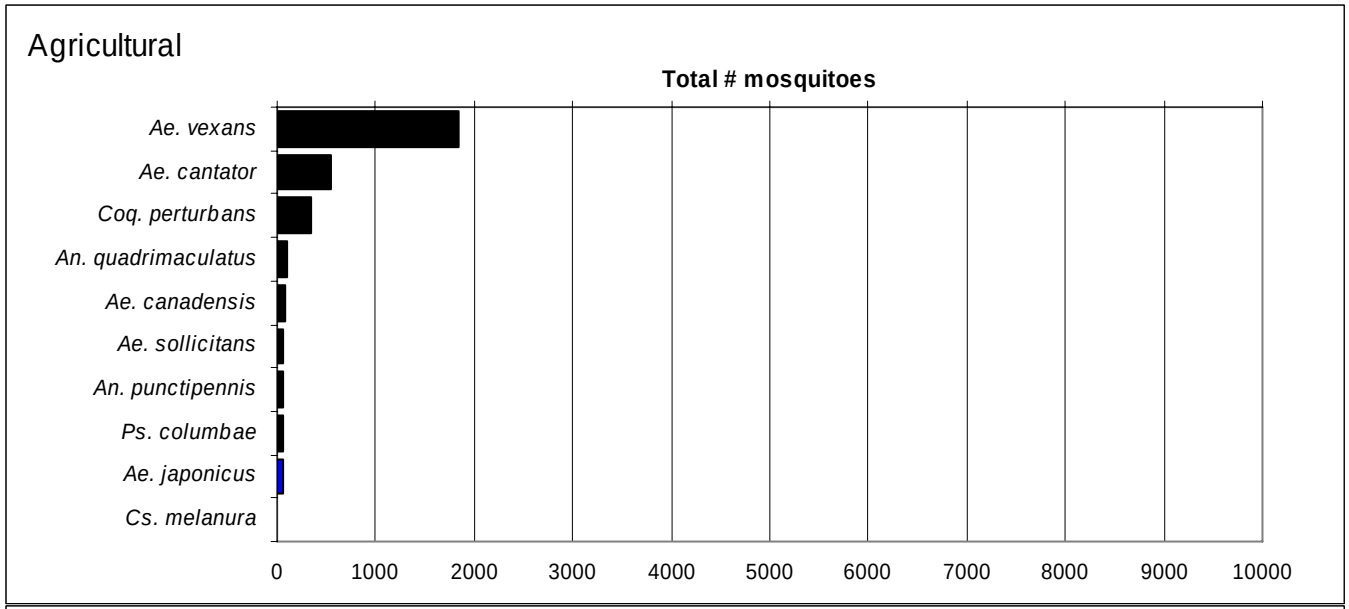
Comments

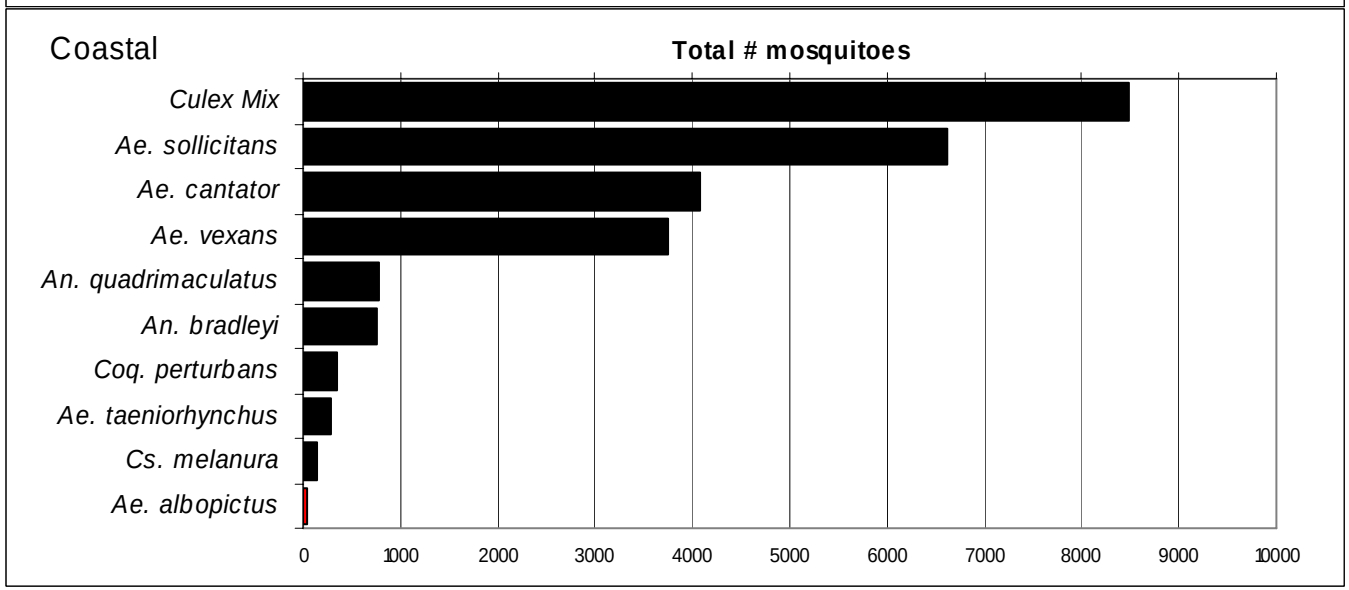
With such low numbers of *Culiseta melanura* in most regions, it has been difficult to determine where the overall population is heading toward. Will there be an early end to the season or will the expected increase in the population occur? It would appear that fall populations are likely to continue to be low, and as such, it would follow that low populations would not support much amplification of arboviruses. But, as has been mentioned several times here previously, virus detection has occurred for the last two years as Green Bank when populations were at low levels.

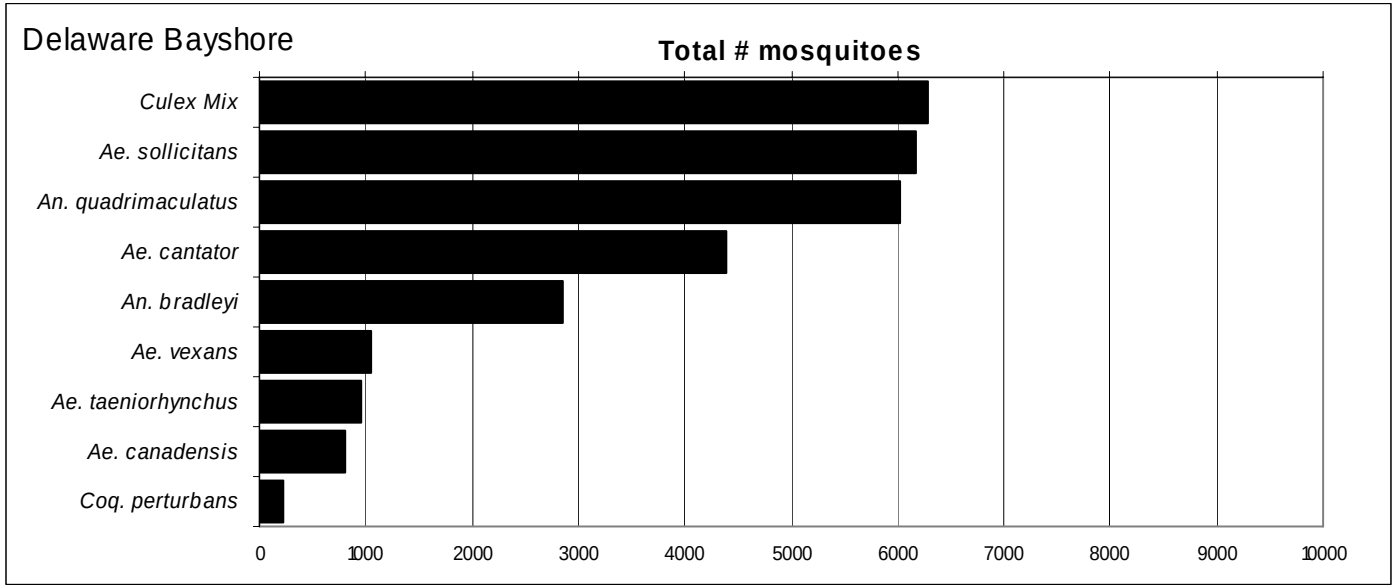
Aedes sollicitans - Salt Floodwater Species
Multivoltine Aedine (*Ae. sollicitans* Type)

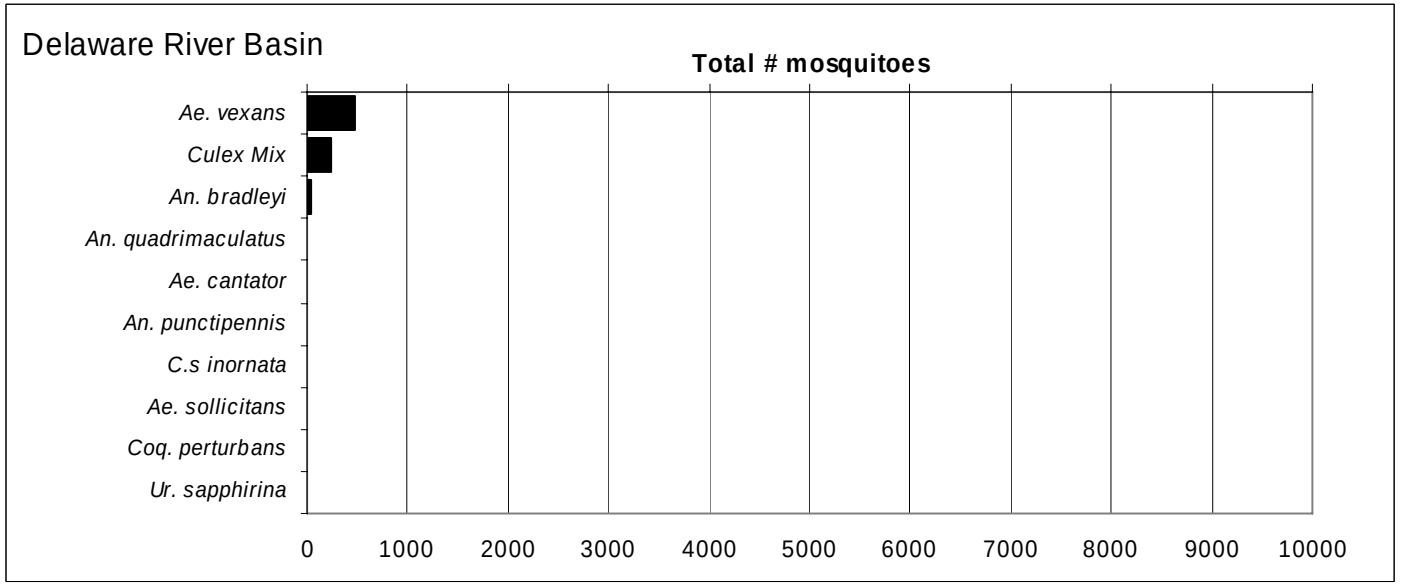
Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		What might potentially be the final emergence of *Aedes sollicitans* should begin in the next week. As with other species of mosquitoes, *Ae. sollicitans* population levels have been generally lower than historical trends would indicate. Note that the table on page one shows that *Ae. sollicitans* in the Pinelands regions are at greater levels than historical data. However, these values are very low, especially when compared to coastal or Bayshore abundances.	

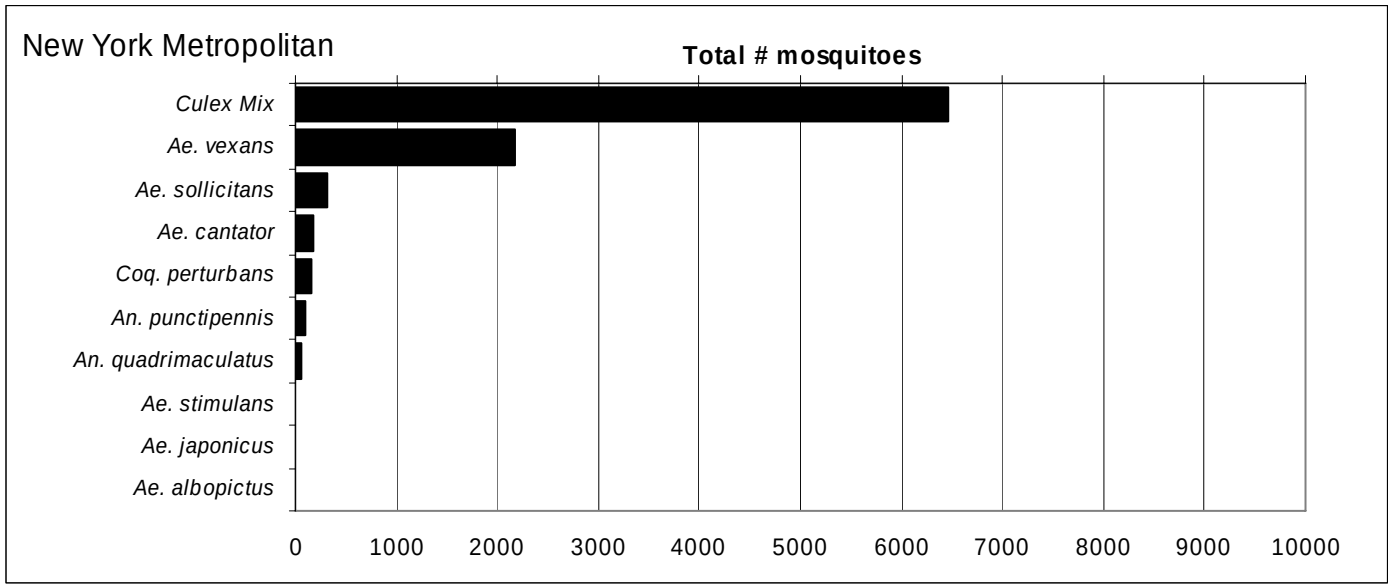
Top Ten Mosquito Species/Region - *Ae. albopictus*, *Ae. japonicus* (both invasive species)

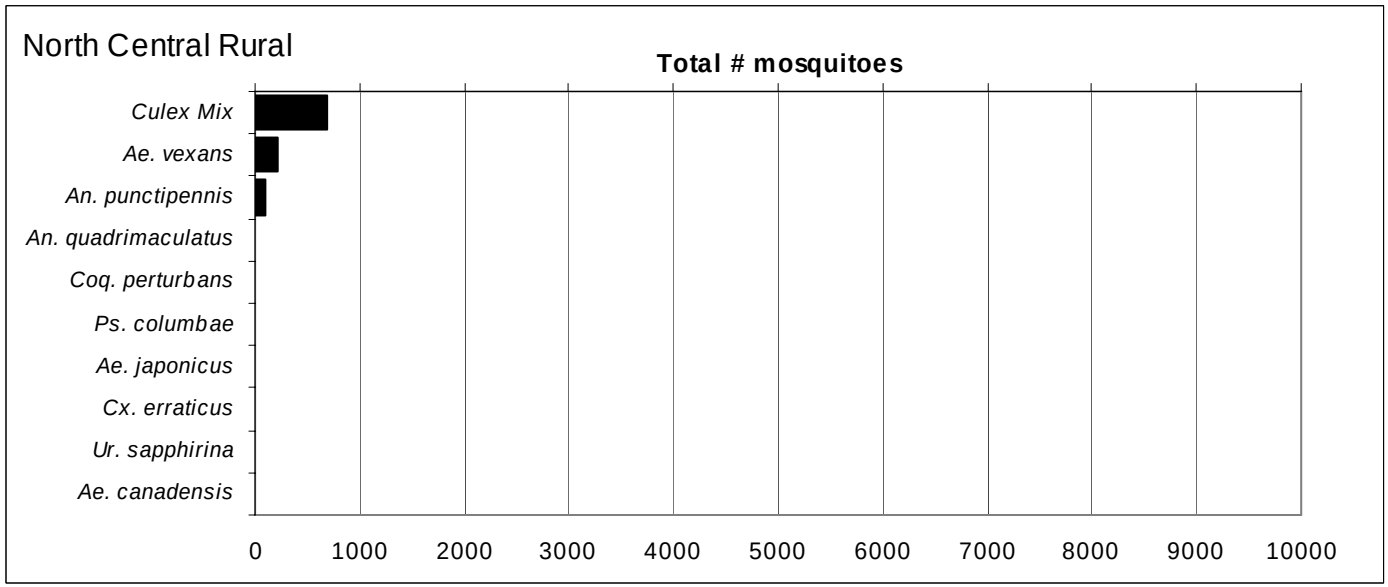


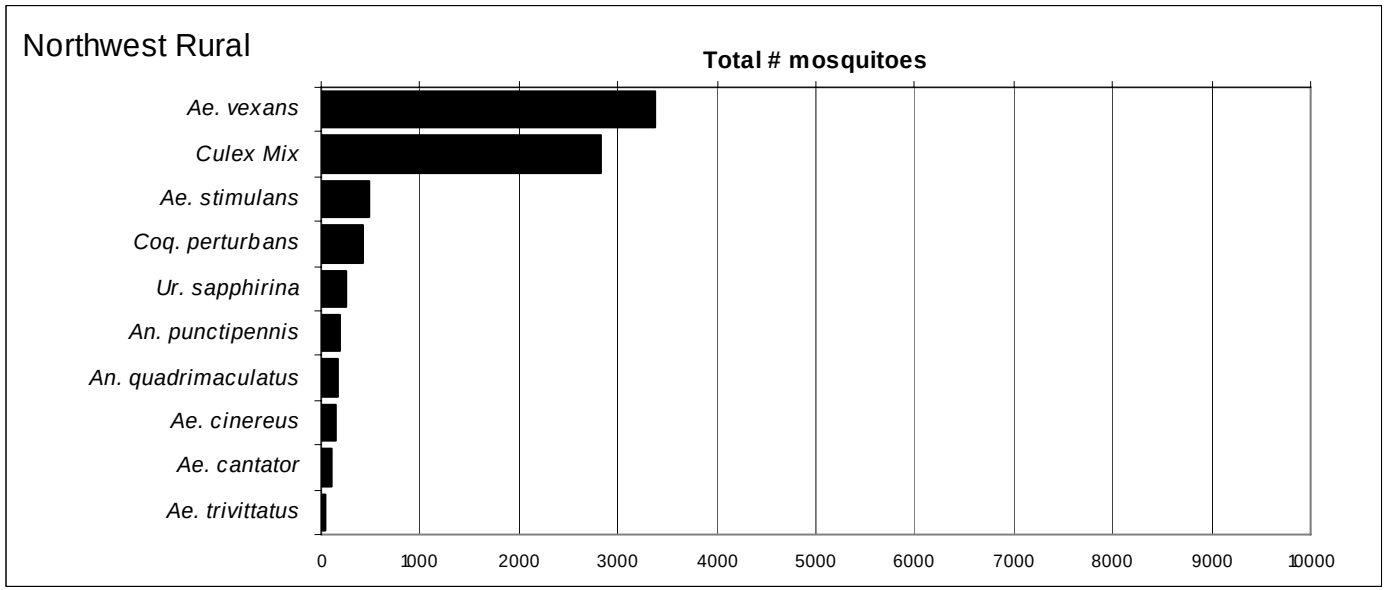


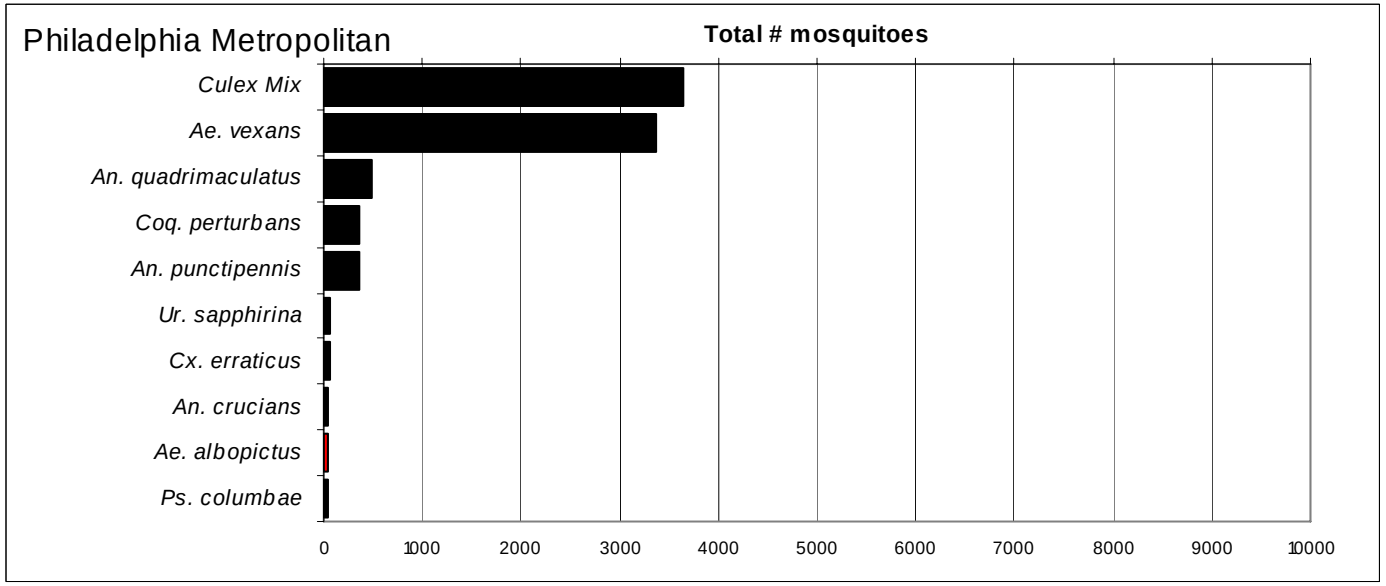

Delaware Bayshore
Total # mosquitoes
Culex Mix
Ae. sollicitans
An. quadrimaculatus
Ae. cantator
An. bradleyi
Ae. vexans
Ae. taeniorhynchus
Ae. canadensis
Coq. perturbans
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000

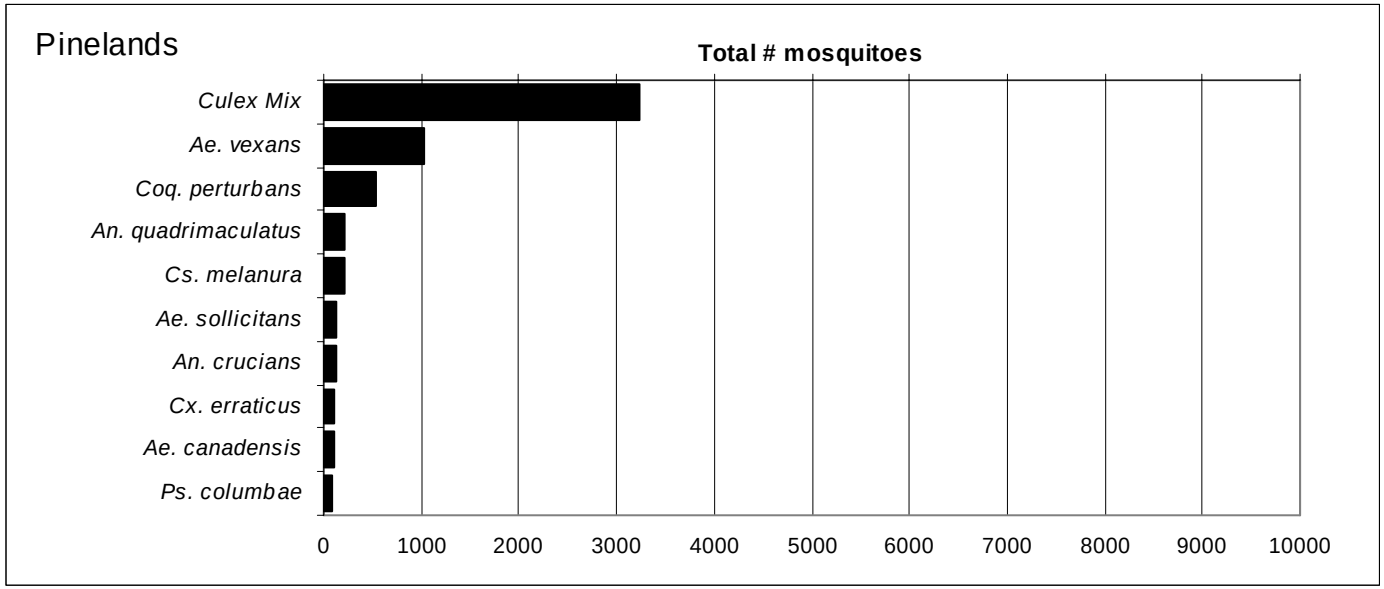

Delaware River Basin
Total # mosquitoes
Ae. vexans
Culex Mix
An. bradleyi
An. quadrimaculatus
Ae. cantator
An. punctipennis
C.s inornata
Ae. sollicitans
Coq. perturbans
Ur. sapphirina
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000

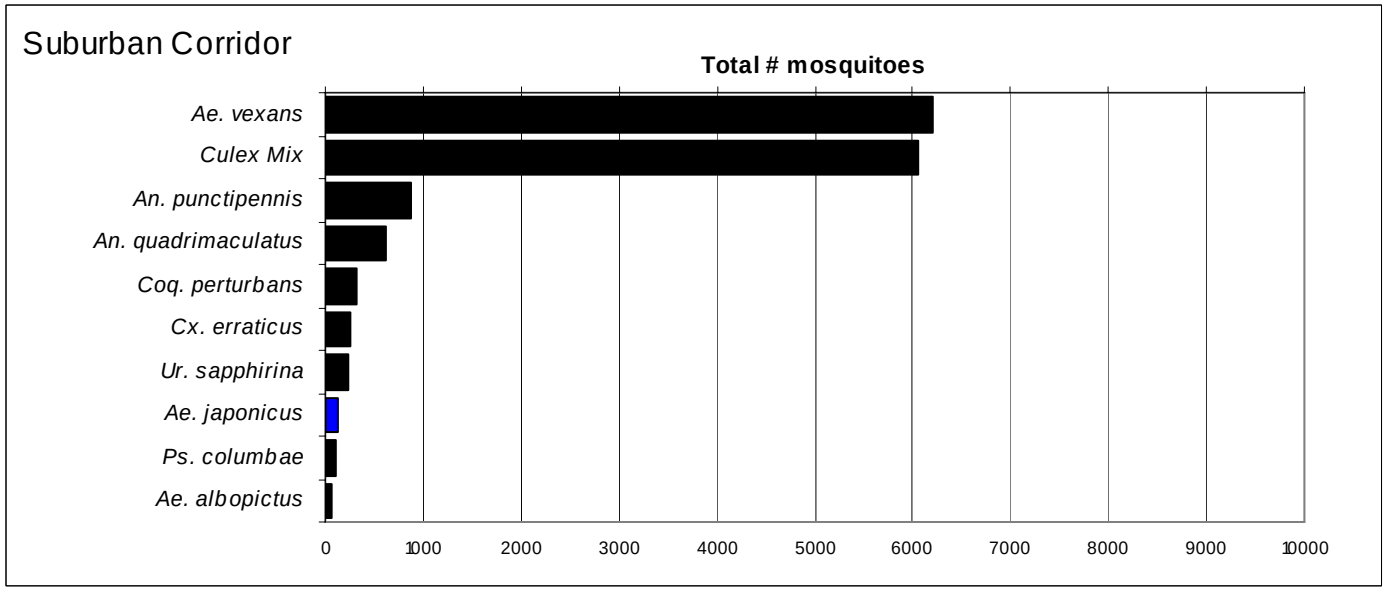

New York Metropolitan
Total # mosquitoes
Culex Mix
Ae. vexans
Ae. sollicitans
Ae. cantator
Coq. perturbans
An. punctipennis
An. quadrimaculatus
Ae. stimulans
Ae. japonicus
Ae. albopictus
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000


North Central Rural
Total # mosquitoes
Culex Mix
Ae. vexans
An. punctipennis
An. quadrimaculatus
Coq. perturbans
Ps. columbae
Ae. japonicus
Cx. erraticus
Ur. sapphirina
Ae. canadensis
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000


Northwest Rural
Total # mosquitoes
Ae. vexans
Culex Mix
Ae. stimulans
Coq. perturbans
Ur. sapphirina
An. punctipennis
An. quadrimaculatus
Ae. cinereus
Ae. cantator
Ae. trivittatus
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000


Philadelphia Metropolitan
Total # mosquitoes
Culex Mix
Ae. vexans
An. quadrimaculatus
Coq. perturbans
An. punctipennis
Ur. sapphirina
Cx. erraticus
An. crucians
Ae. albopictus
Ps. columbae
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000


Pinelands
Total # mosquitoes
Culex Mix
Ae. vexans
Coq. perturbans
An. quadrimaculatus
Cs. melanura
Ae. sollicitans
An. crucians
Cx. erraticus
Ae. canadensis
Ps. columbae
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000


Suburban Corridor
Total # mosquitoes
Ae. vexans
Culex Mix
An. punctipennis
An. quadrimaculatus
Coq. perturbans
Cx. erraticus
Ur. sapphirina
Ae. japonicus
Ps. columbae
Ae. albopictus
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000