RUTGERS
New Jersey Agricultural Experiment Station

NEW JERSEY ADULT MOSQUITO SURVEILLANCE

Report for 14 June to 20 June 2009, CDC Weeks 24

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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.

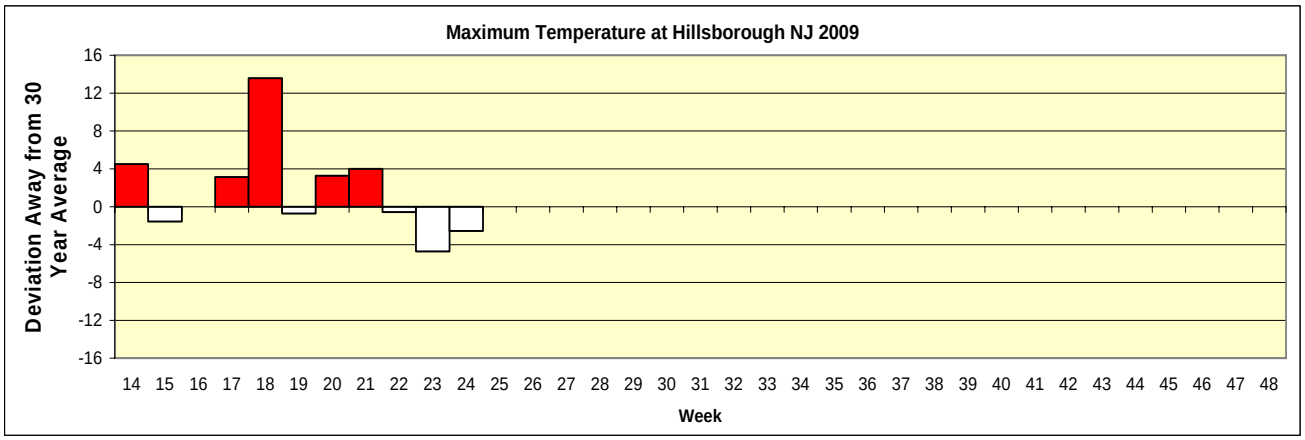
Summary table – Week 24

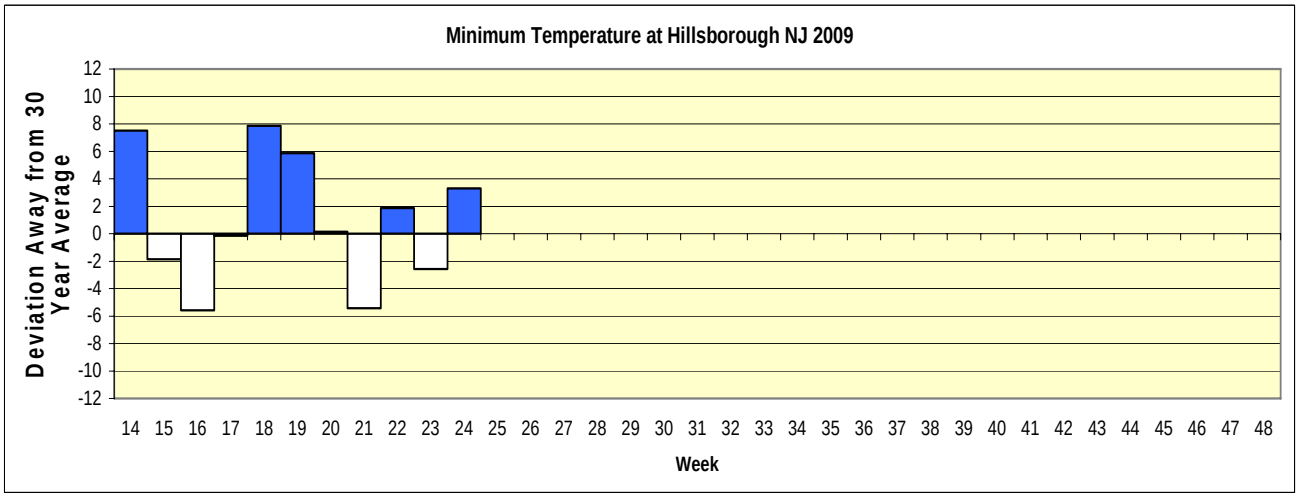
	Aedes vexans			*Culex* Mix			*Coquillettidia perturbans*			*Aedes sollicitans*		
Region	This Week	Average*	Increase	This Week	Average*	Increase	This Week	Average*	Increase	This Week	Average*	Increase
Agricultural	**0.46**	**2.53**	**0**	**1.17**	**3.50**	**0**	**0.00**	**0.30**	**0**	**0.00**	**0.10**	**0**
Coastal	**2.02**	**6.51**	**0**	**6.24**	**6.74**	**0**	**0.00**	**1.97**	**0**	**3.67**	**5.23**	**0**
Delaware Bayshore	**2.83**	**3.87**	**0**	**2.31**	**20.23**	**0**	**0.19**	**3.08**	**0**	**0.48**	**9.29**	**0**
Delaware River Basin	**0.00**	**10.35**	**0**	**0.00**	**12.32**	**0**	**0.00**	**0.38**	**0**	**0.00**	**0.00**	**0**
New York Metro	**0.84**	**1.95**	**0**	**5.07**	**5.46**	**0**	**0.13**	**0.20**	**0**	**0.20**	**0.86**	**0**
North Central Rural	**0.00**	**0.48**	**0**	**0.02**	**0.72**	**0**	**0.00**	**0.06**	**0**	**0.00**	**0.00**	**0**
Northwest Rural	**14.17**	**6.39**	**3**	**2.89**	**3.27**	**0**	**2.06**	**0.04**	**4**	**0.00**	**0.00**	**0**
Philadelphia Metro	**0.52**	**9.83**	**0**	**1.05**	**8.37**	**0**	**0.00**	**1.00**	**0**	**0.00**	**0.00**	**0**
Pinelands	**0.57**	**1.48**	**0**	**0.64**	**2.84**	**0**	**0.01**	**0.99**	**0**	**0.05**	**0.09**	**0**
Suburban Corridor	**0.47**	**3.07**	**0**	**1.83**	**2.40**	**0**	**0.03**	**0.90**	**0**	**0.02**	**0.01**	**3**

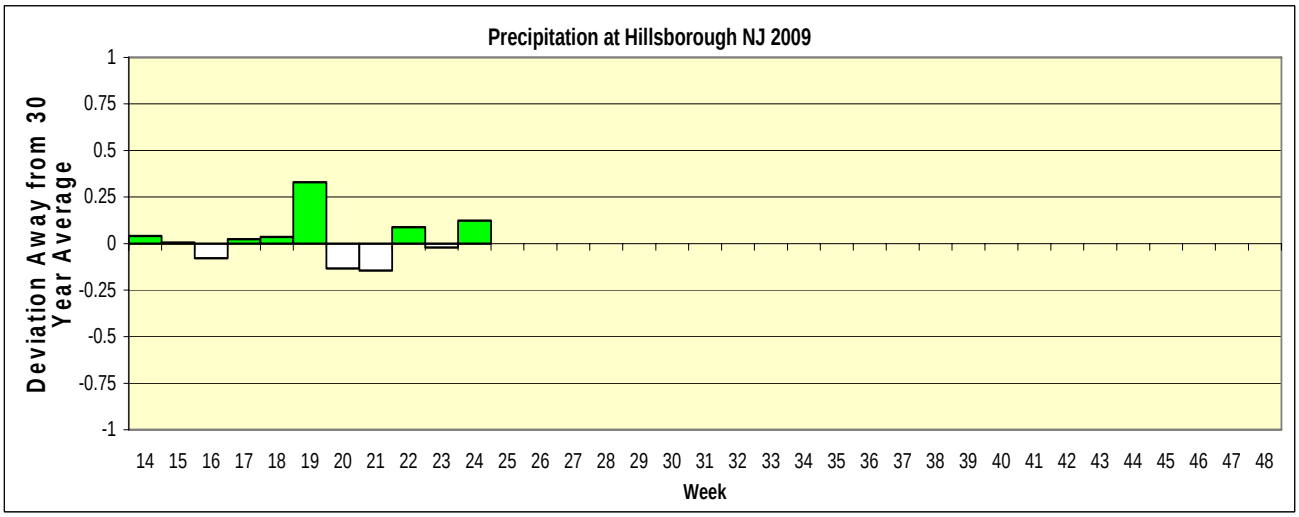
*Averages represent data from, at most, the previous 5 years. Increase is a scale of current values from historical values where no difference or a decrease is represented by 0 (blue), up to 50% greater difference by 1 (green), up to 100% greater difference by 2 (yellow), up to 150% greater difference 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: While overall numbers of pestiferous mosquitoes are increasing as the season progresses, the number of regions experiencing above average numbers has decreased this past week. The exceptions include the Northwest Rural, which saw a significant increase in *Aedes vexans* and *Coquillettidia perturbans* while *Aedes sollicitans* increased in suburban areas.

Climate Deviations



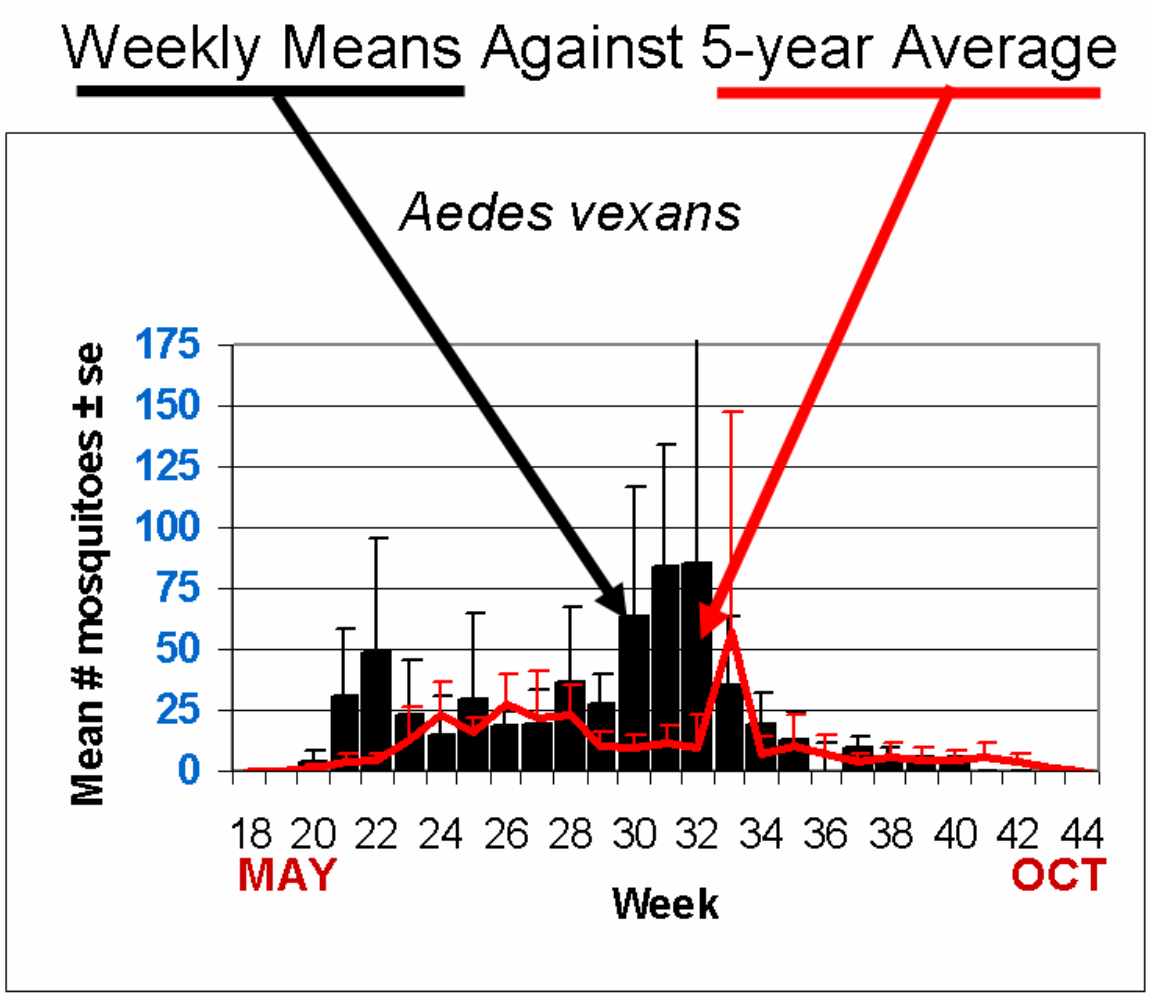




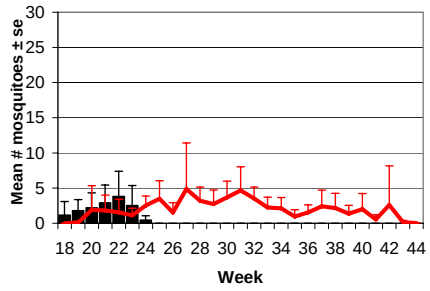
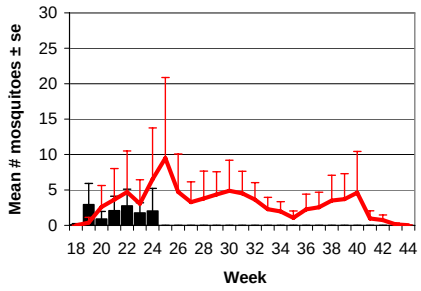
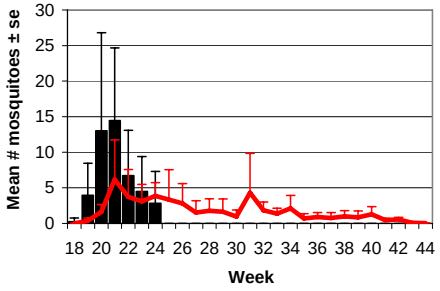
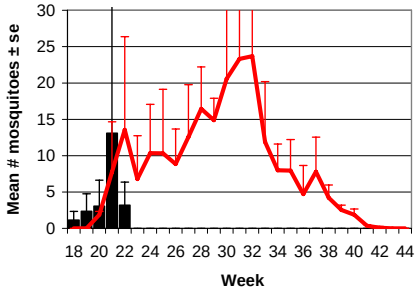
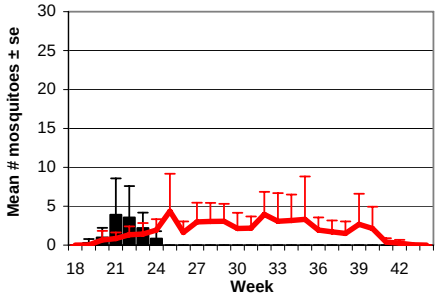
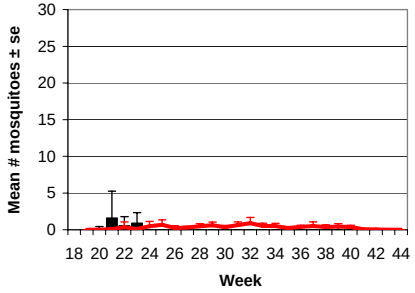
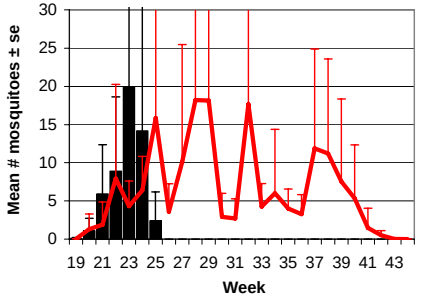
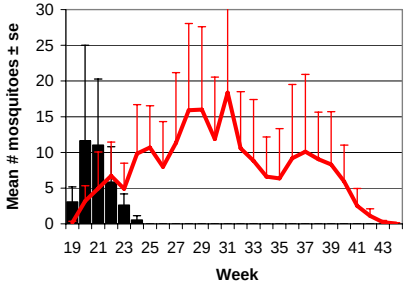
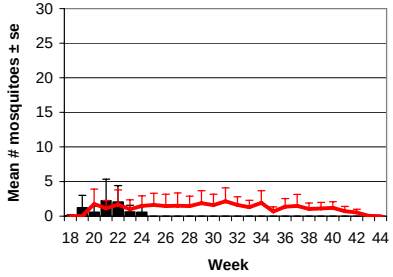
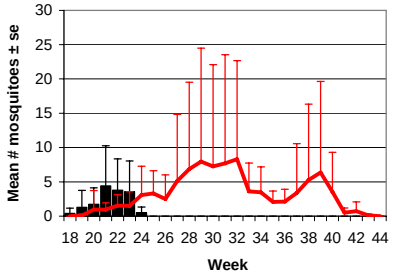
The figures show the average maximum temperature, minimum temperature and precipitation deviations from 30 year averages. Current data are from the Hillsborough NJ weather station (a station close to central NJ which recorded all three parameters and was available online at the NJ state climatologist)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

Data from: http://climate.rutgers.edu/njwxnet/index.php

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, Middlesex, Monmouth, Ocean, Somerset, Sussex and Warren counties. Note: County data is sent in at a variety of times during the week.

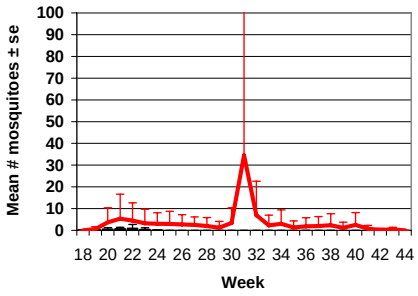


Aedes vexans - Fresh Floodwater Species
Multivoltine Aedine (*Ae. vexans* Type)

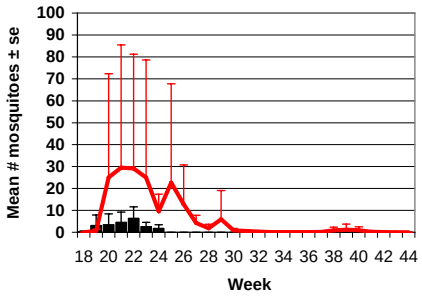
Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		*Aedes vexans* populations increased significantly in the Northwest Rural region over the past two weeks. This increase is accompanied by large error bars, indicating the wide variation in the collections comprising this region. One light trap is near the confluence of three streams and water contributing to this flooding area can come not only directly above from rainfall, but can also come from southern areas that can experience rainfall while the trap area does not. Tiawsirisup (et al 2008 Vector competence of *Aedes vexans* for West Nile virus and potential as an enzootic vector. J Med Ent: 45(3): 542-547) suggests that as the vector competency of *Ae. vexans* is similar to the avian vector *Culex pipiens*, this mosquito may serve to maintain WNV in small mammal populations.	

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

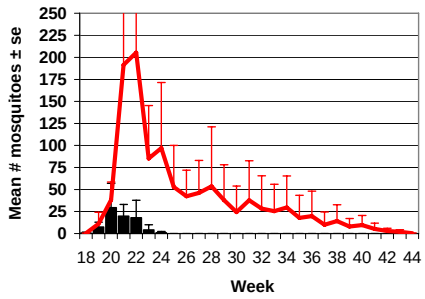
Agricultural



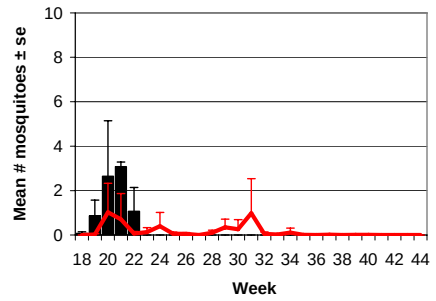
Coastal



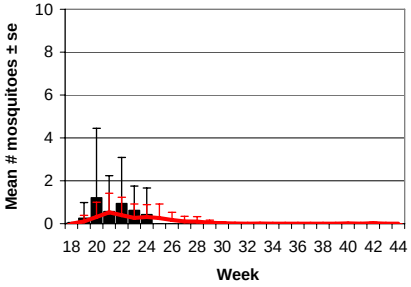
Delaware Bayshore



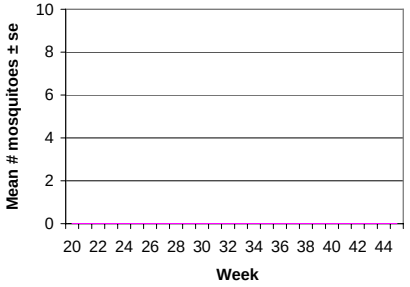
Delaware River Basin



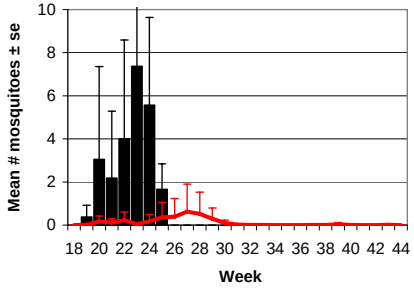
New York Metro



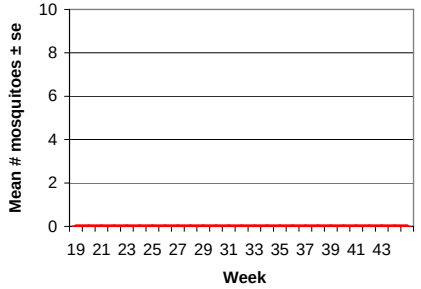
North Central Rural



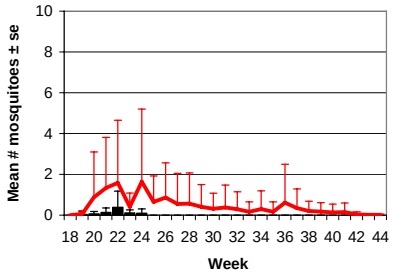
Northwestern Rural



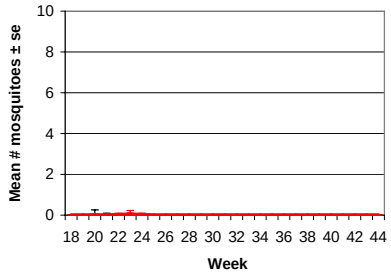
Philadelphia Metro



Pinelands



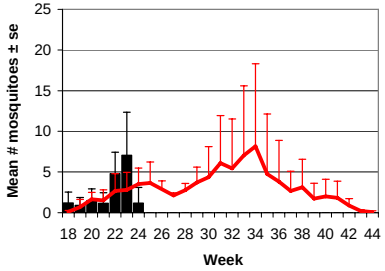
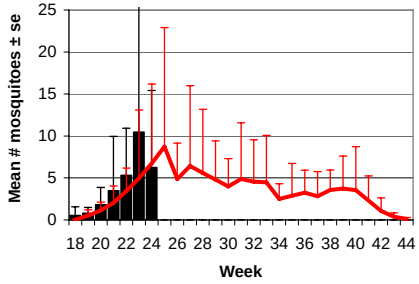
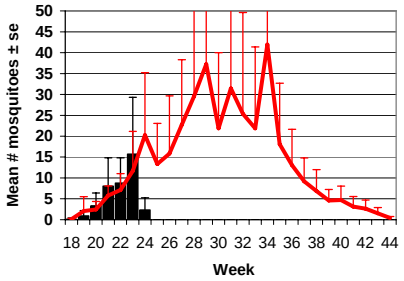
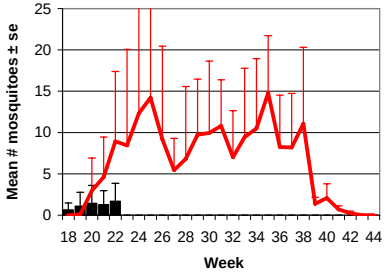
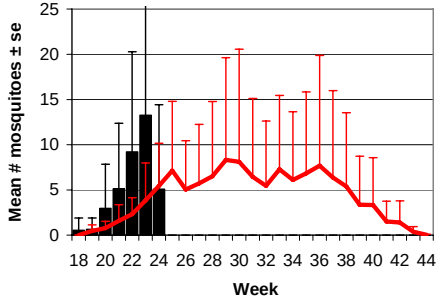
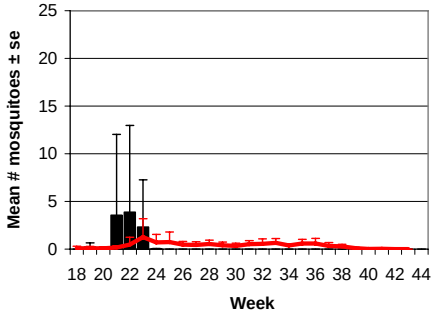
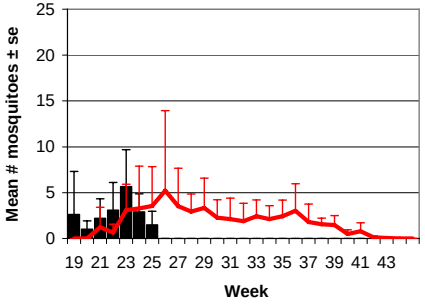
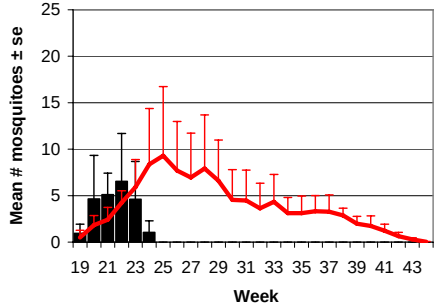
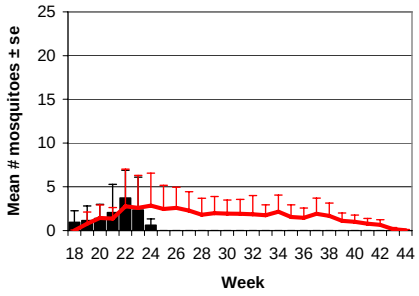
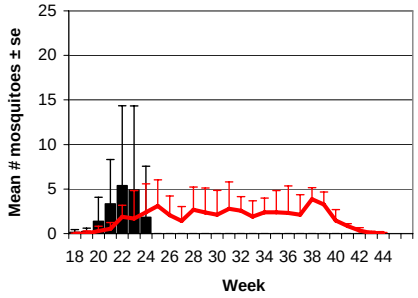
Suburban Corridor



Comments

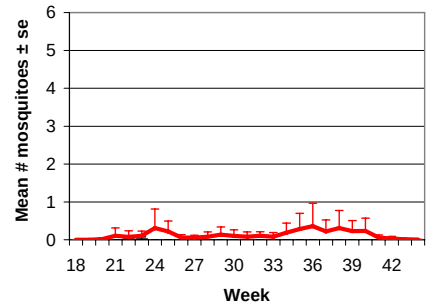
Aedes cantator populations in the Northwest Rural region continue to flourish. Populations appear to come from anthropogenic sources of salt. One source may be a former impoundment area near a textile plant. Salts from the impoundment may be leaching out. Other sources of salt can include run-off from nearby agricultural areas as well as salted roads during the winter. Runoff may be enhanced in this area due to the topographical characteristics that amplify the bowl-like features.

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

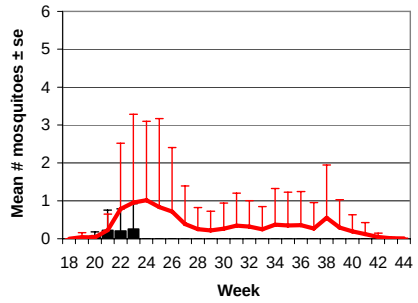
Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		*Culex* populations in the New York Metropolitan region looks to be near normal ranges after several weeks of above-historical values. Populations in other regions are also showing a decrease from the previous week. This decrease is also significantly lower than recent historical values in several regions including the Delaware Bayshore and the Philadelphia Metropolitan regions.	

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

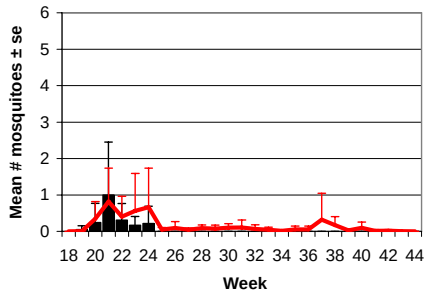
Agricultural



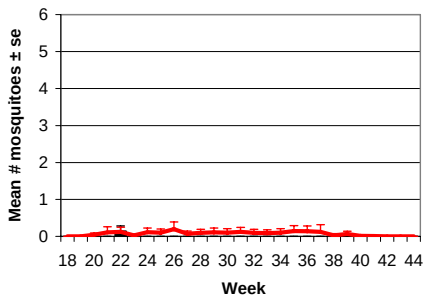
Coastal



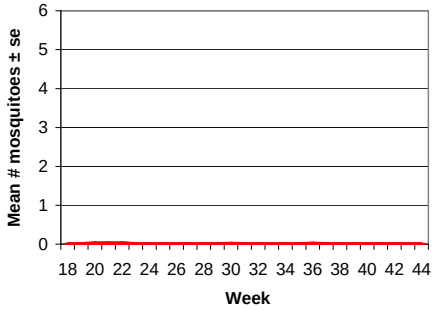
Delaware Bayshore



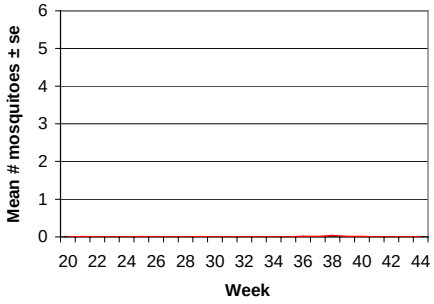
Delaware River Basin



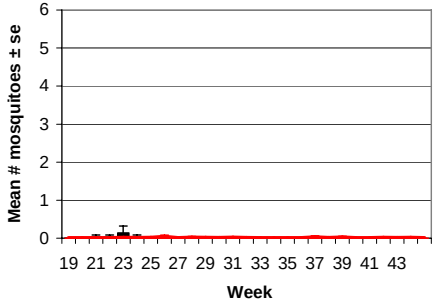
New York Metro



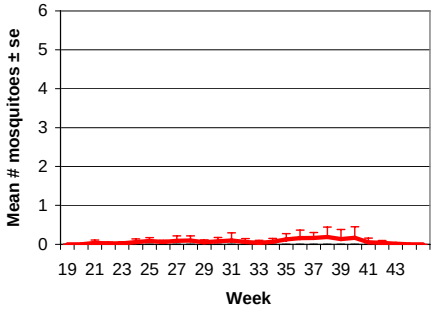
North Central Rural



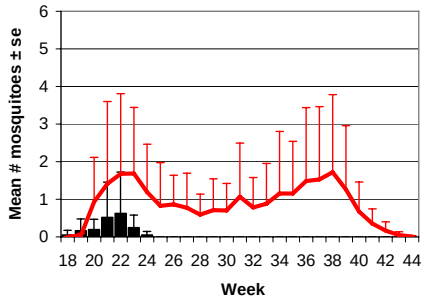
Northwestern Rural



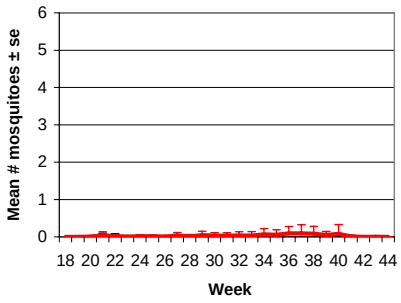
Philadelphia Metro



Pinelands



Suburban Corridor



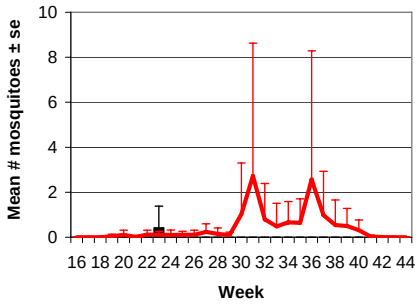
Comments

Culiseta melanura, the enzootic ornithophilic vector of eastern equine encephalitis, continues to show lower population numbers as compared to recent historical abundances in the Pinelands and Coastal regions. The Delaware Bayshore region appears to have population levels similar to historical values.

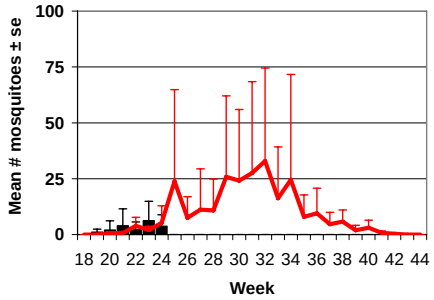
Cs. melanura is not the only species found in resting boxes. *Anopheles quadrimaculatus* and several *Culex* species regularly enter the boxes (Crans 1995 Resting boxes as mosquito surveillance tools, Proc NJMCA 53-57). In addition, arachnids such as black widow spiders frequently utilize the boxes.

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

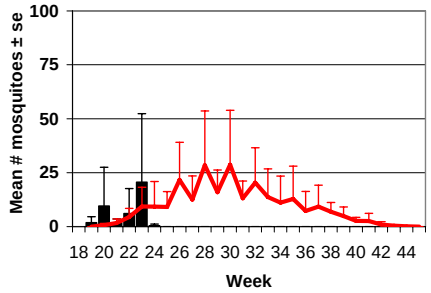
Agricultural



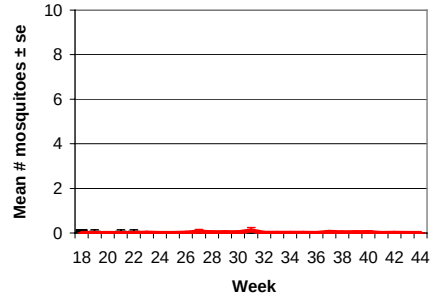
Coastal



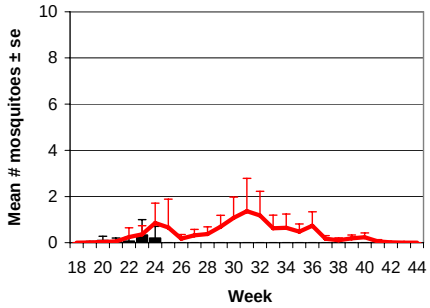
Delaware Bayshore



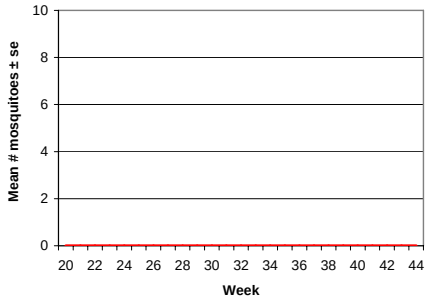
Delaware River Basin



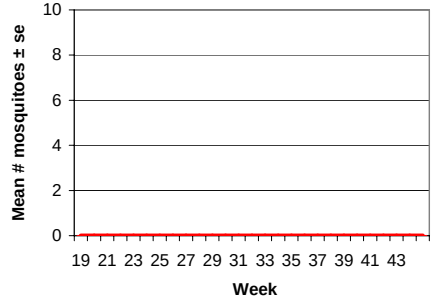
New York Metro



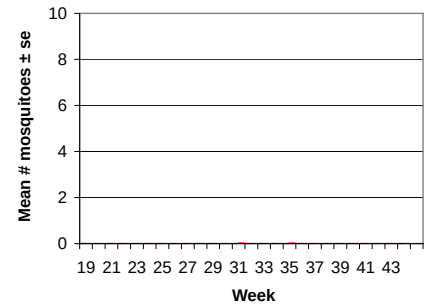
North Central Rural



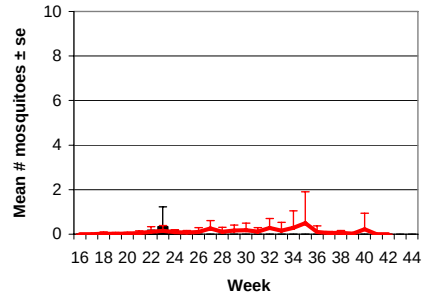
Northwestern Rural



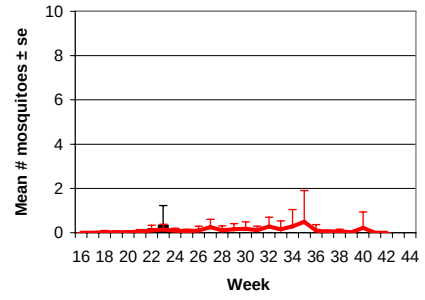
Philadelphia Metro



Pinelands



Suburban Corridor



Comments

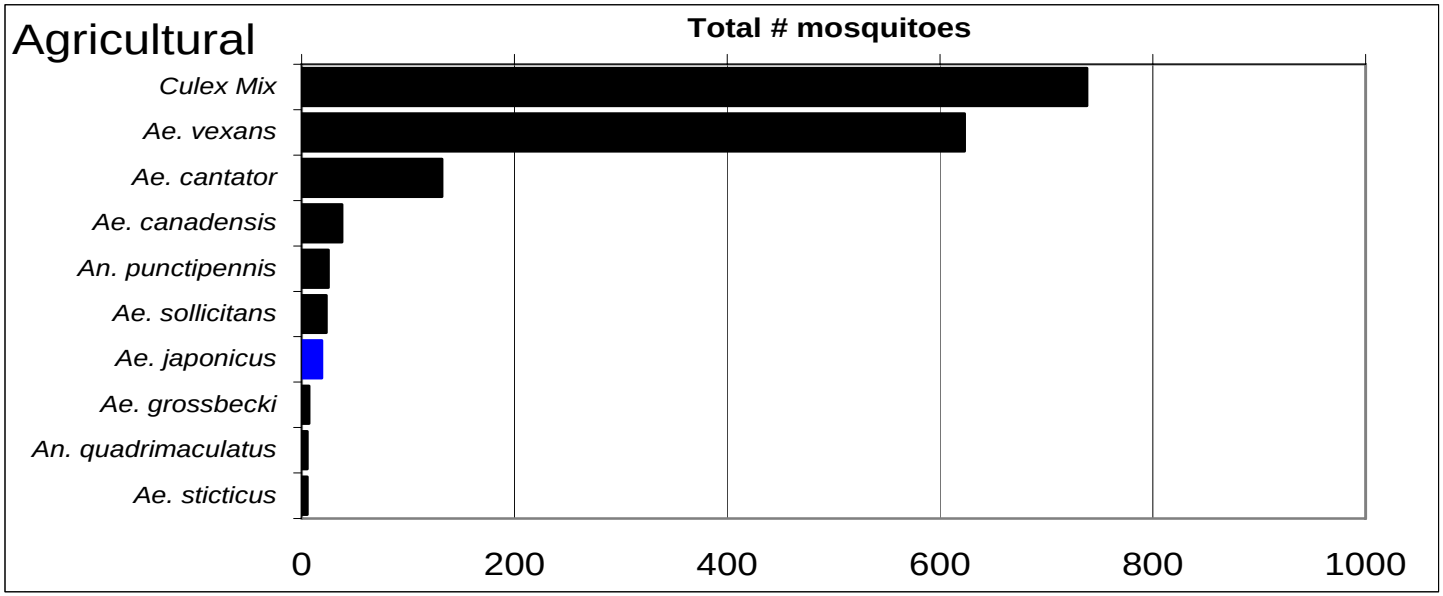
Aedes sollicitans eggs respond to the high tides and /or rainfall that floods the upland marsh habitat. Early emergences are more pronounced and identifiable than mid-season emergences, where new populations build on previous ones. The influence of rainfall and control measures from the Coastal and Delaware Bayshore mosquito control agencies all act to provide variation from week to week as well as from site to site.

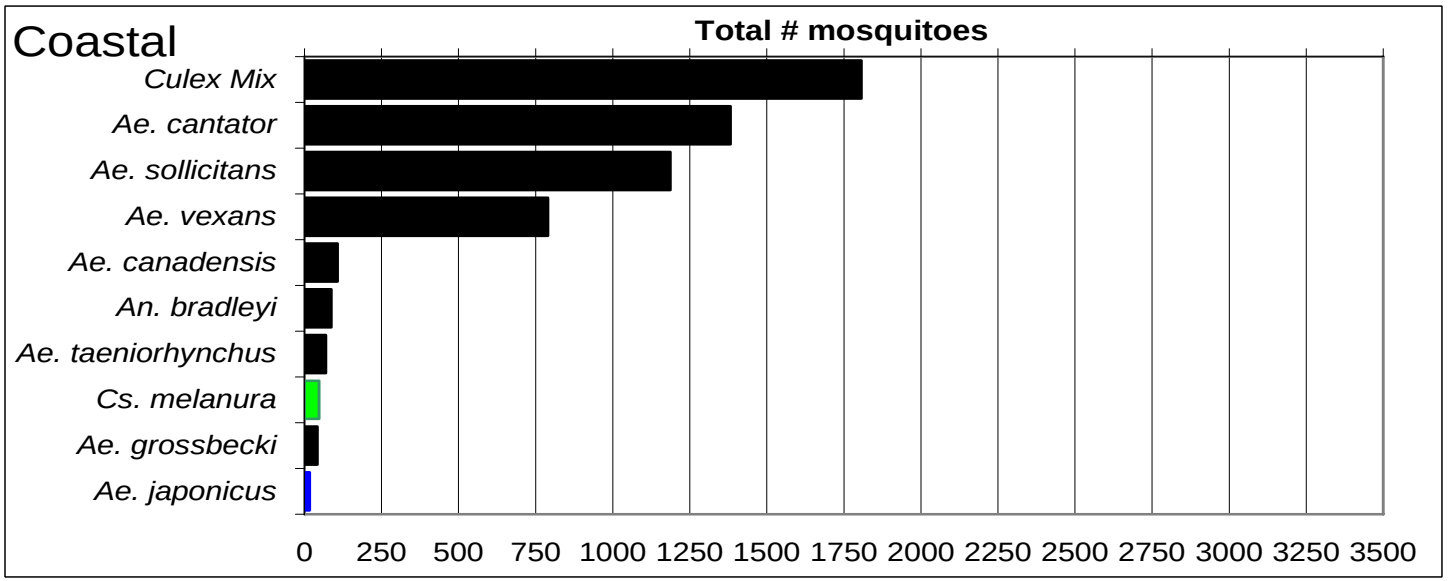
Next Full Moon: 7 July

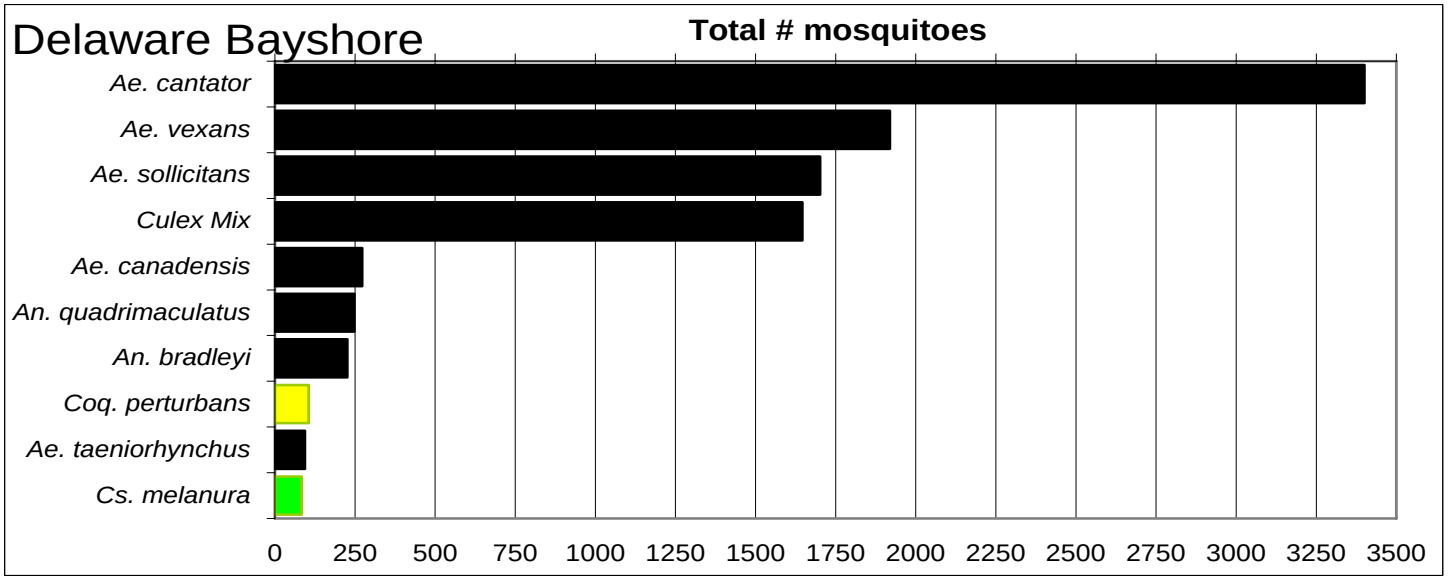
WNV *EEE*

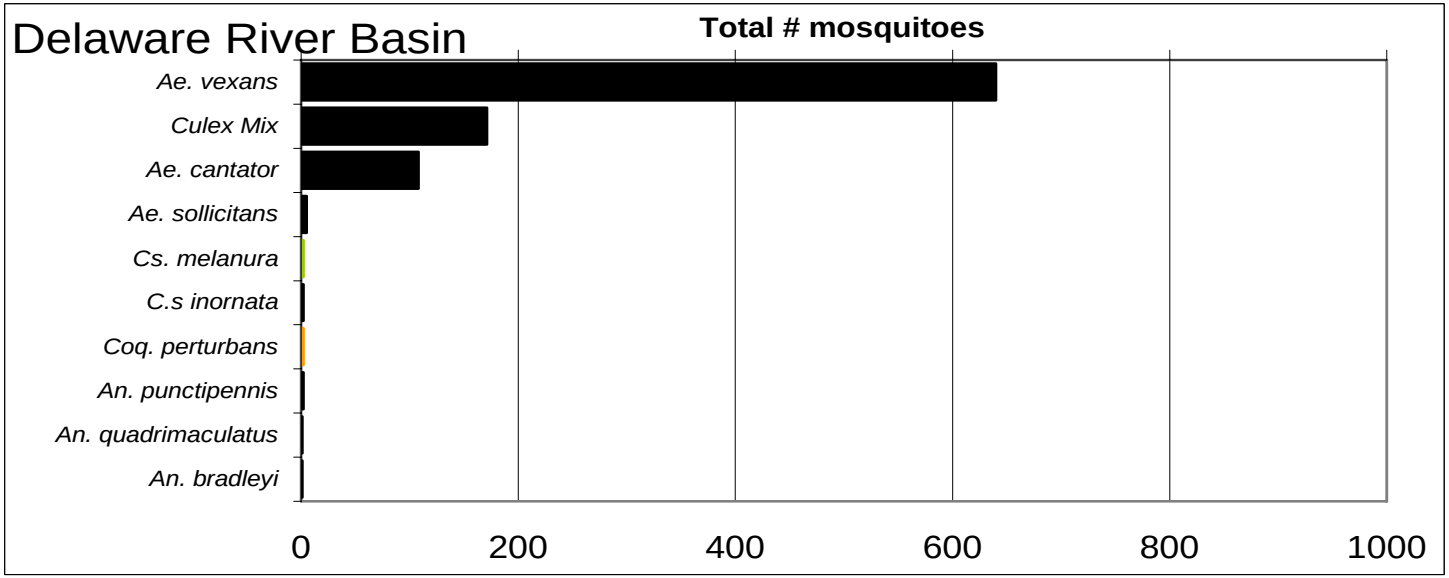
Top Ten Mosquito Species/Region - *Ae. albopictus,* *Ae. japonicus (invasives);* *Cs. melanura or Cx. erraticus* *Coq. perturbans*

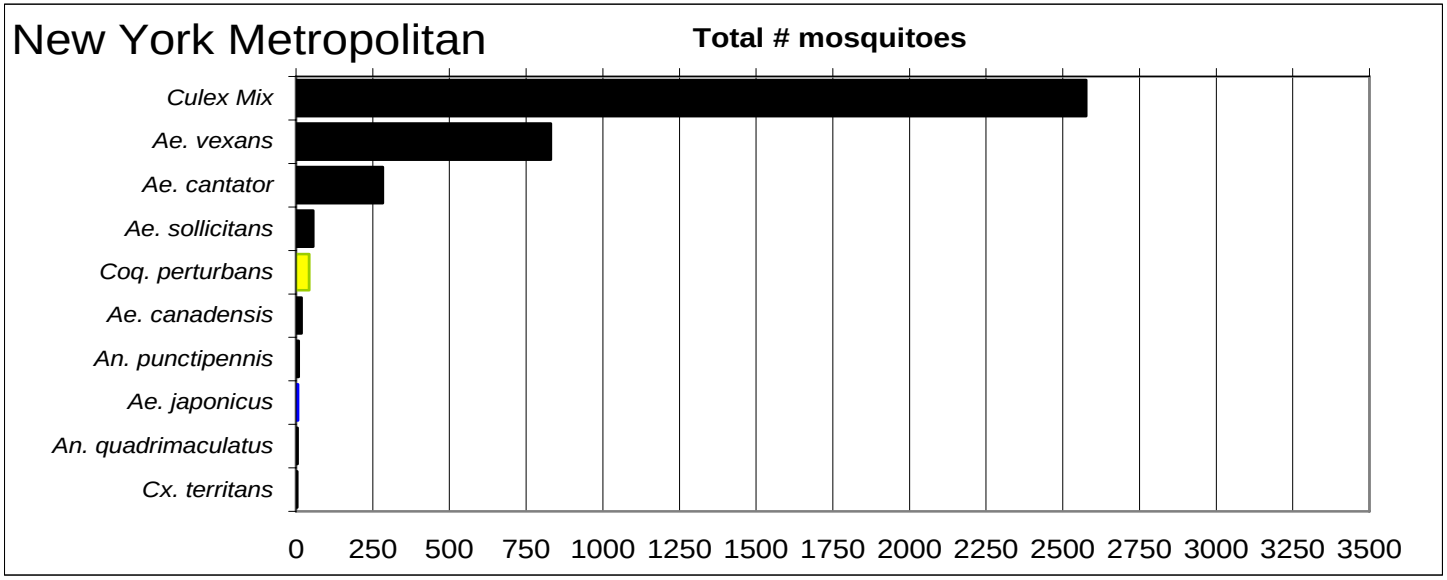
Note: In early season when fewer species are caught, graphs may show less than ten species listed.

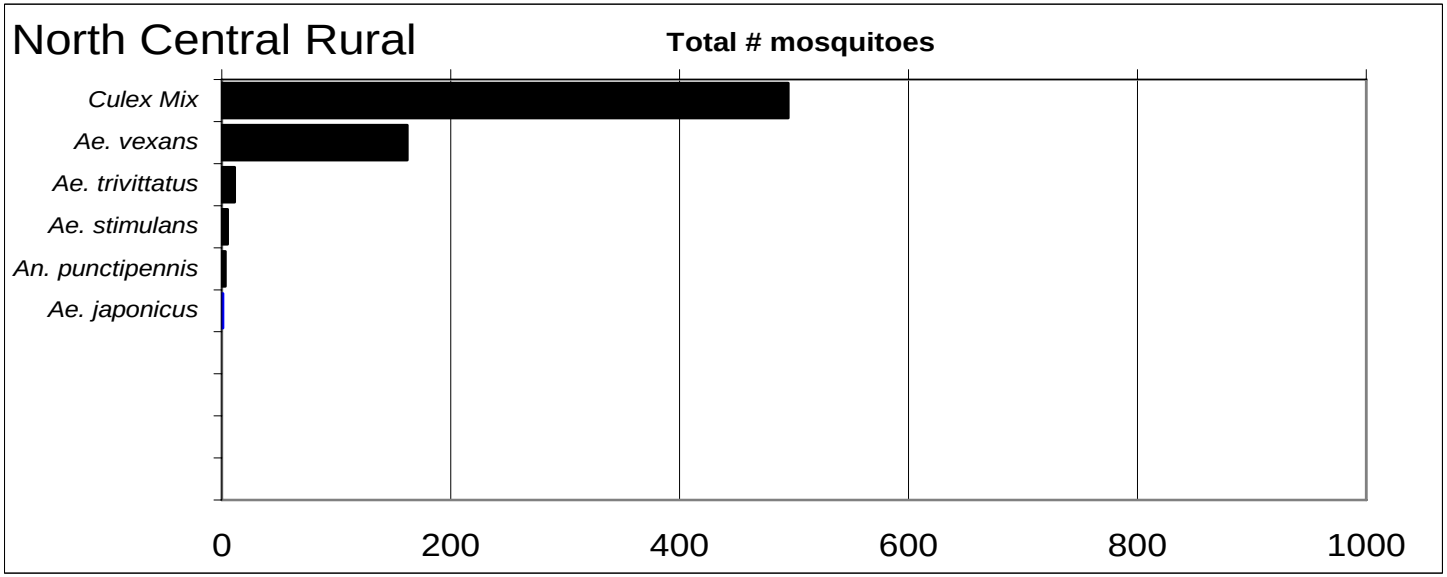


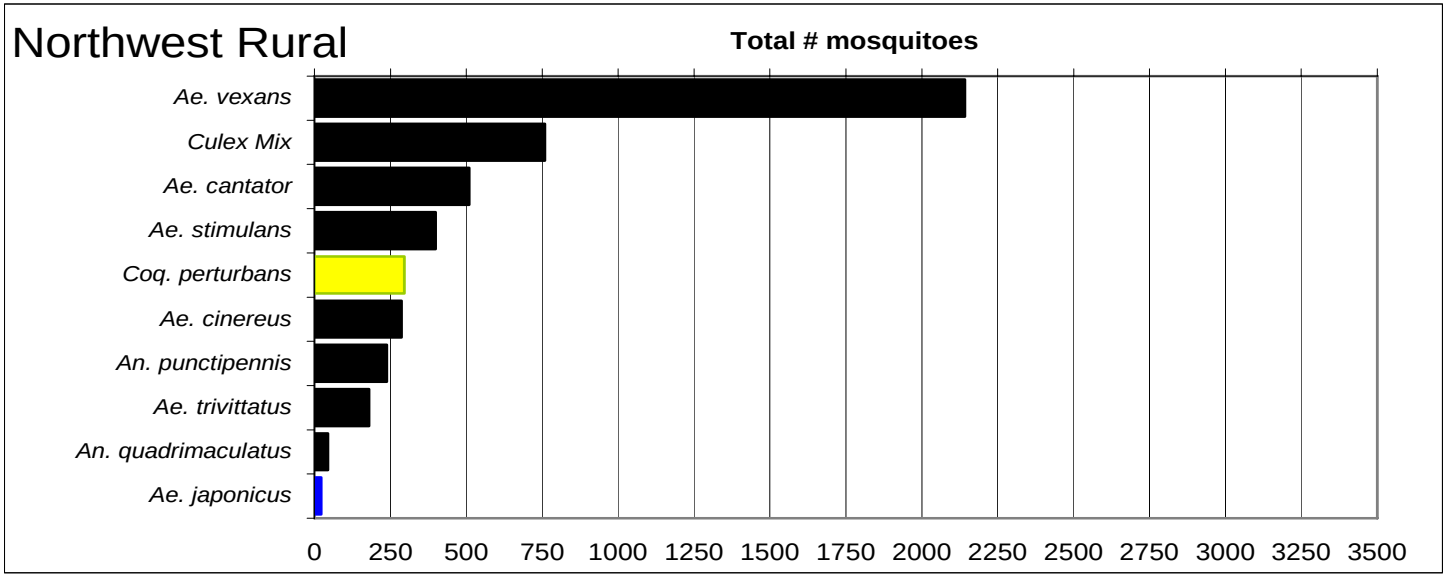


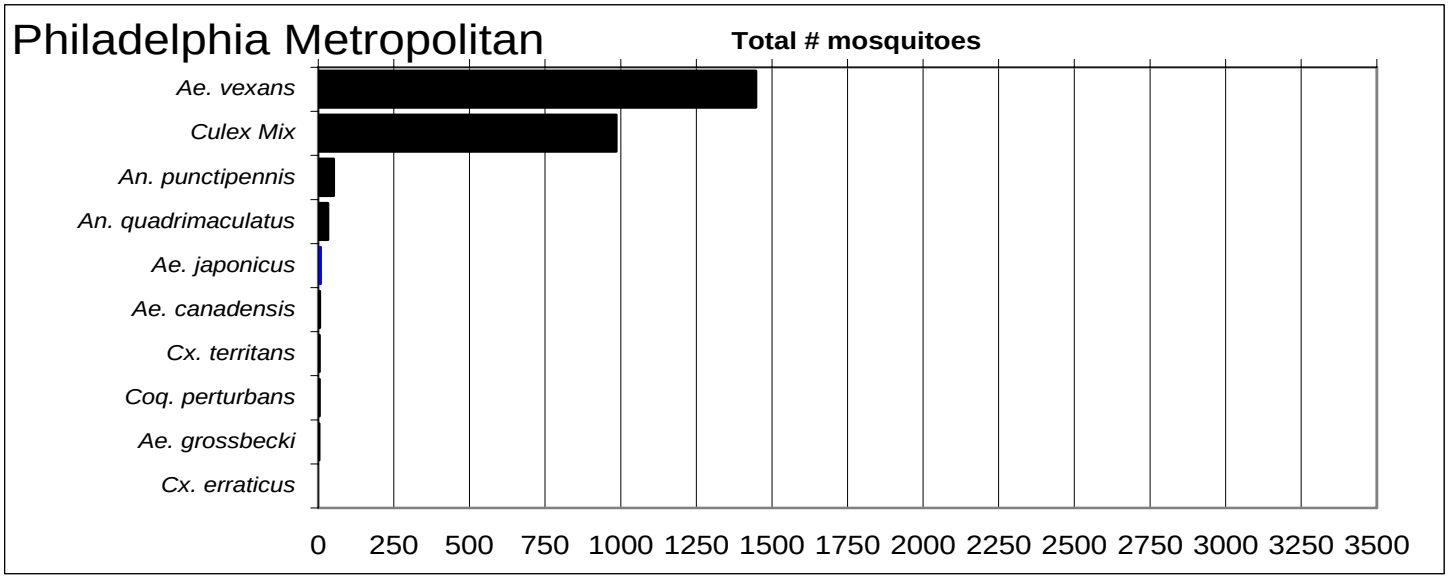

Delaware Bayshore
Total # mosquitoes
Ae. cantator
Ae. vexans
Ae. sollicitans
Culex Mix
Ae. canadensis
An. quadrimaculatus
An. bradleyi
Coq. perturbans
Ae. taeniorhynchus
Cs. melanura
0
250
500
750
1000
1250
1500
1750
2000
2250
2500
2750
3000
3250
3500

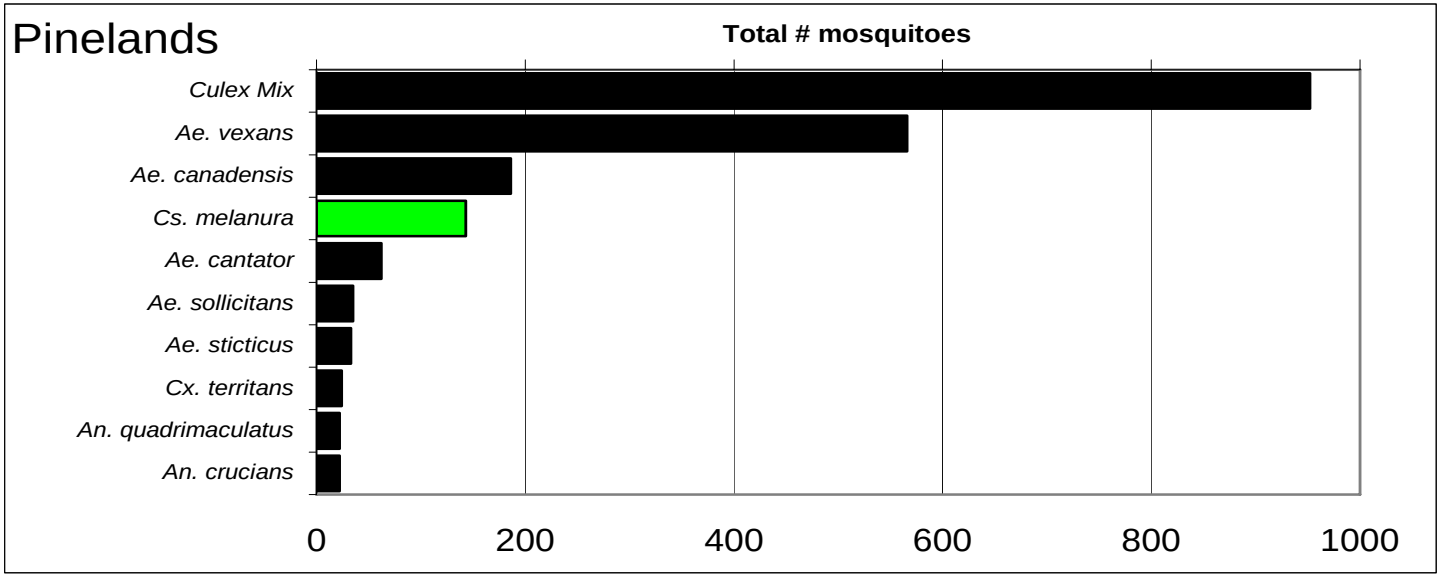

Delaware River Basin
Total # mosquitoes
Ae. vexans
Culex Mix
Ae. cantator
Ae. sollicitans
Cs. melanura
C.s inornata
Coq. perturbans
An. punctipennis
An. quadrimaculatus
An. bradleyi
0
200
400
600
800
1000

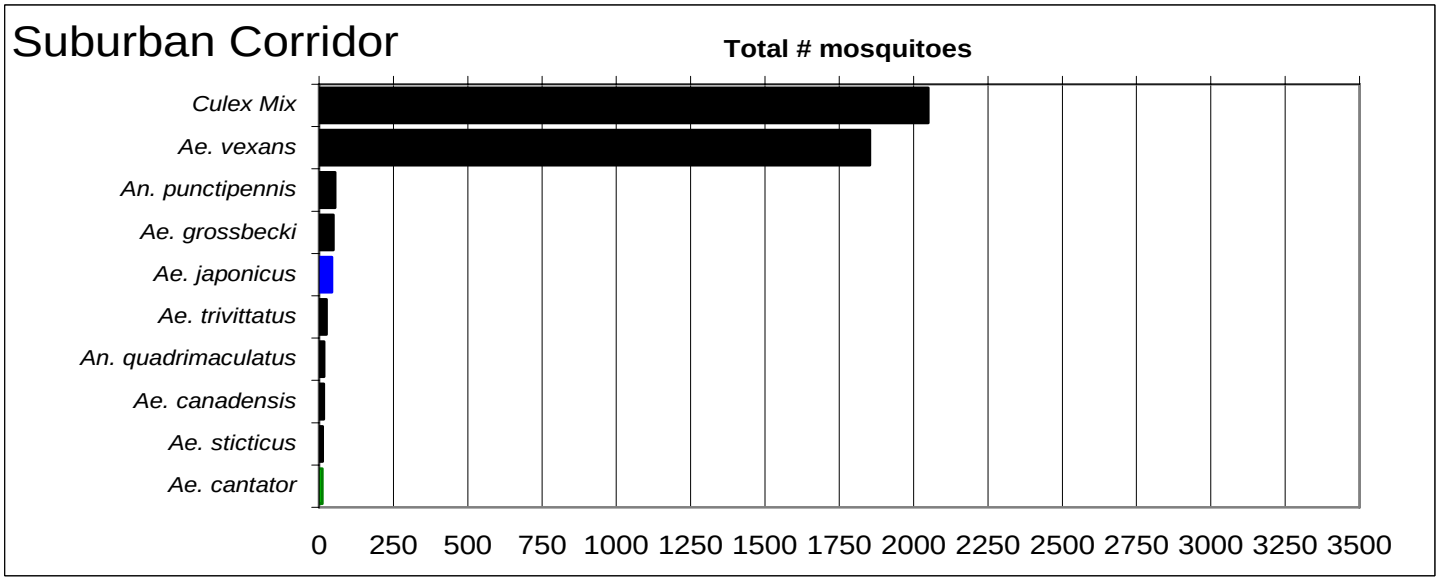

New York Metropolitan
Total # mosquitoes
Culex Mix
Ae. vexans
Ae. cantator
Ae. sollicitans
Coq. perturbans
Ae. canadensis
An. punctipennis
Ae. japonicus
An. quadrimaculatus
Cx. territans
0 250 500 750 1000 1250 1500 1750 2000 2250 2500 2750 3000 3250 3500


North Central Rural
Total # mosquitoes
Culex Mix
Ae. vexans
Ae. trivittatus
Ae. stimulans
An. punctipennis
Ae. japonicus
0 200 400 600 800 1000


Northwest Rural
Total # mosquitoes
Ae. vexans
Culex Mix
Ae. cantator
Ae. stimulans
Coq. perturbans
Ae. cinereus
An. punctipennis
Ae. trivittatus
An. quadrimaculatus
Ae. japonicus
0 250 500 750 1000 1250 1500 1750 2000 2250 2500 2750 3000 3250 3500


Philadelphia Metropolitan
Total # mosquitoes
Ae. vexans
Culex Mix
An. punctipennis
An. quadrimaculatus
Ae. japonicus
Ae. canadensis
Cx. territans
Coq. perturbans
Ae. grossbecki
Cx. erraticus
0 250 500 750 1000 1250 1500 1750 2000 2250 2500 2750 3000 3250 3500


Pinelands
Total # mosquitoes
Culex Mix
Ae. vexans
Ae. canadensis
Cs. melanura
Ae. cantator
Ae. sollicitans
Ae. sticticus
Cx. territans
An. quadrimaculatus
An. crucians
0
200
400
600
800
1000


Suburban Corridor
Total # mosquitoes
Culex Mix
Ae. vexans
An. punctipennis
Ae. grossbecki
Ae. japonicus
Ae. trivittatus
An. quadrimaculatus
Ae. canadensis
Ae. sticticus
Ae. cantator
0
250
500
750
1000
1250
1500
1750
2000
2250
2500
2750
3000
3250
3500