NEW JERSEY ADULT MOSQUITO SURVEILLANCE

Report for 30 June to 6 July 2013, CDC Week 27

Prepared by Lisa M. Reed, Scott Crans and Mark Robson
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.

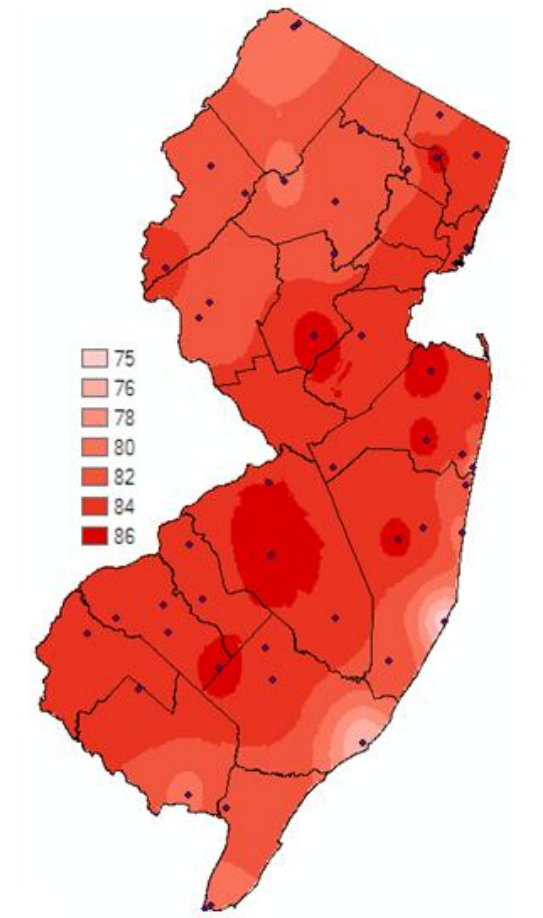
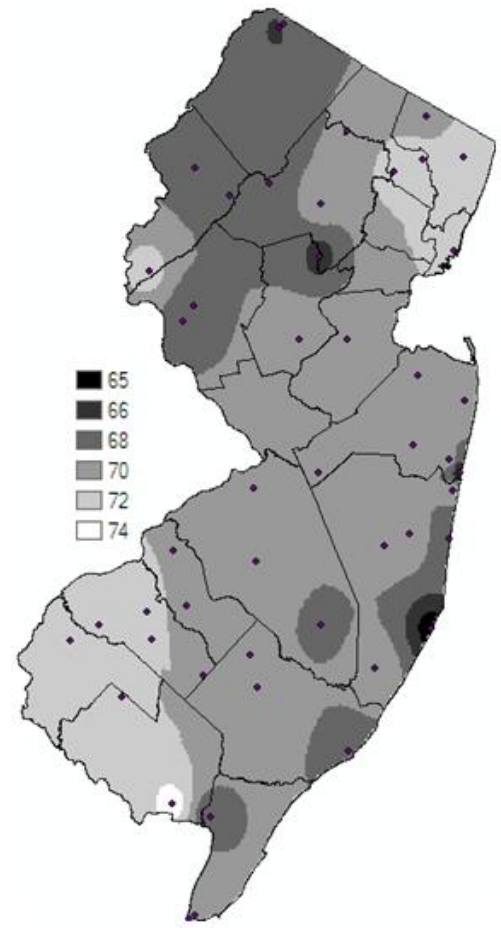
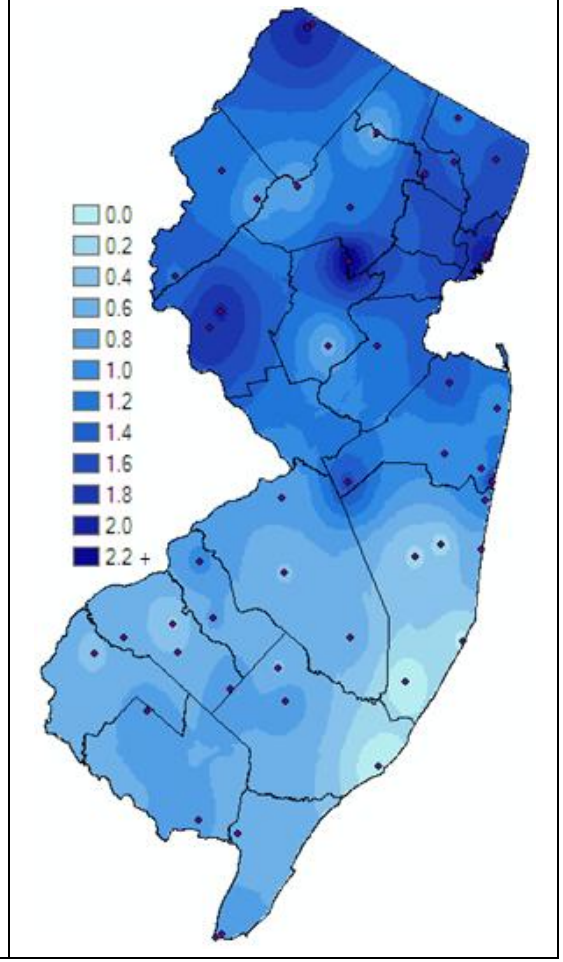
Summary Table – Week 27

	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	**0.11**	**4.48**	**0**	**1.05**	**2.84**	**0**	**0.03**	**0.43**	**0**	**0.00**	**0.02**	**0**
Coastal	**0.11**	**3.17**	**0**	**1.04**	**8.96**	**0**	**0.00**	**0.70**	**0**	**0.04**	**6.68**	**0**
Delaware Bayshore	**nd**	**1.55**	**0**	**nd**	**12.38**	**0**	**nd**	**1.31**	**0**	**nd**	**3.37**	**0**
Delaware River Basin	**nd**	**6.97**	**0**	**nd**	**1.73**	**0**	**nd**	**0.10**	**0**	**nd**	**0.04**	**0**
New York Metro	**5.86**	**6.21**	**0**	**2.59**	**10.24**	**0**	**0.09**	**0.25**	**0**	**0.66**	**0.53**	**1**
North Central Rural	**1.08**	**0.36**	**4**	**0.39**	**0.86**	**0**	**0.10**	**0.05**	**3**	**0.00**	**0.00**	**0**
Northwest Rural	**nd**	**20.55**	**0**	**nd**	**6.95**	**0**	**nd**	**2.26**	**0**	**0.00**	**0.00**	**0**
Philadelphia Metro	**nd**	**9.06**	**0**	**nd**	**7.40**	**0**	**nd**	**0.88**	**0**	**0.00**	**0.00**	**0**
Pinelands	**0.08**	**2.14**	**0**	**0.18**	**4.43**	**0**	**0.03**	**1.12**	**0**	**0.00**	**0.12**	**0**
Suburban Corridor	**6.57**	**5.68**	**1**	**0.75**	**3.77**	**0**	**1.18**	**0.47**	**4**	**0.00**	**0.01**	**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. nd=no data reported.

State Summary: According to the state climatologist, June was the wettest June since 1895 as well as warmer than usual. Floodwater species (*Aedes vexans* and *Ae. sollicitans*) have responded locally in areas with the higher amounts of rainfall. In addition, *Coquillettidia perturbans* numbers are above historical levels in two regions. However, with only 6 counties reporting for this holiday week, data is incomplete and patterns are likely to change as data becomes more current.

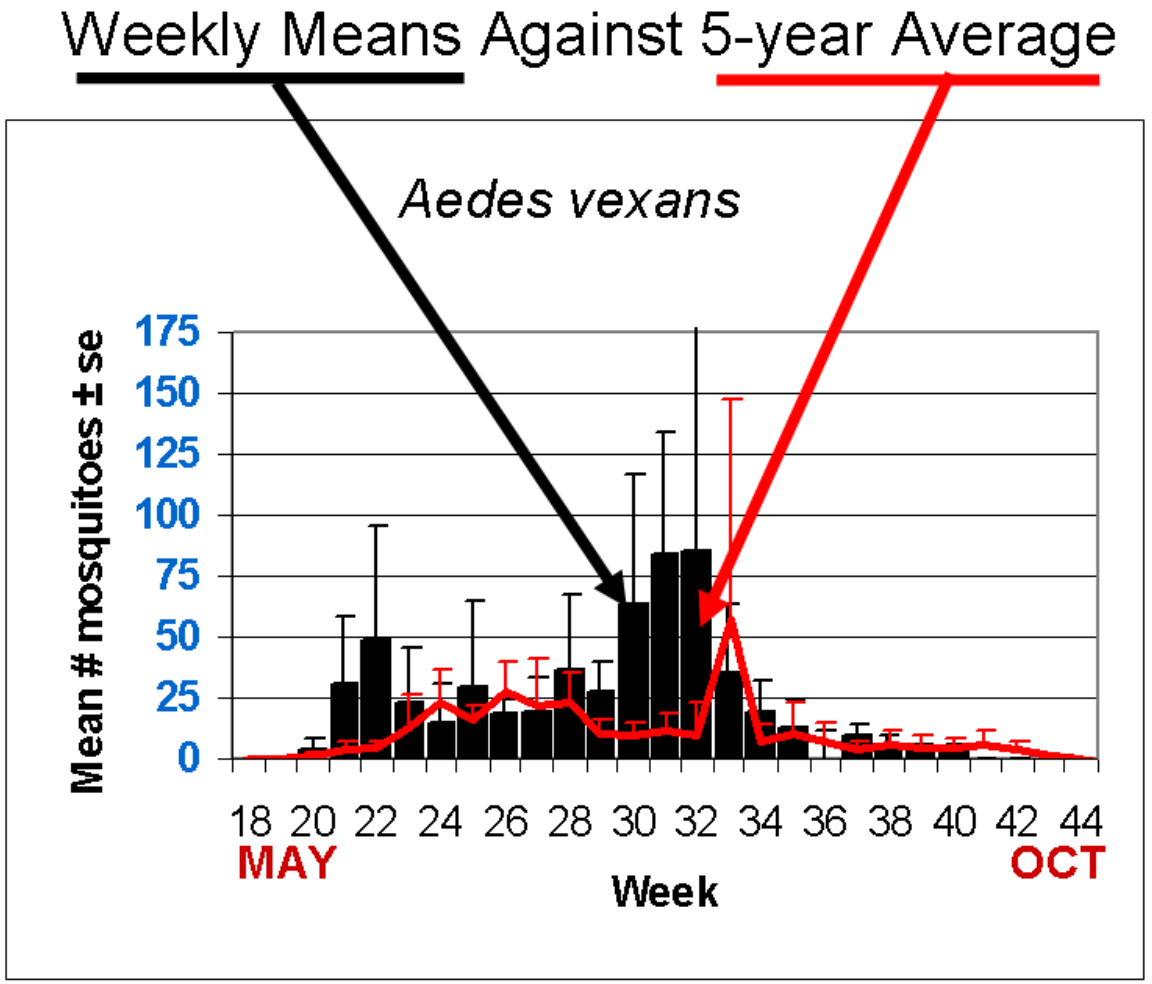
Climate Factors

Average High Temperature	Average Low Temperature	Total Precipitation
		

The three figures show the interpolation of average maximum (°F) and minimum temperature (°F) and total precipitation (inches) from 1 July to 4 July, 2013 in New Jersey. Data points are from about 47 weather stations maintained through the New Jersey Weather & Climate Network and the State Climatologist. Interpolation between points was performed using ArcMap 10.1.

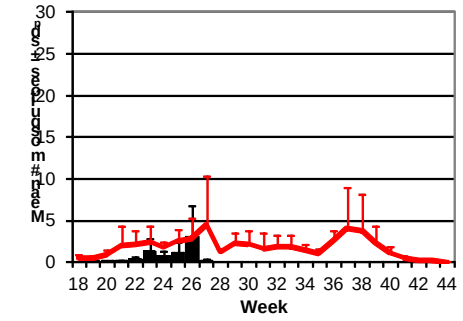
NJ Weather & Climate NETWORK ONJSC at Rutgers University

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 Essex, Hunterdon, Mercer, Morris, Ocean and Union counties. Data for the previous week(s) are from Atlantic, Bergen, Camden, Essex, Hunterdon, Mercer, Monmouth, Morris, Ocean, Somerset, Union and Warren counties.

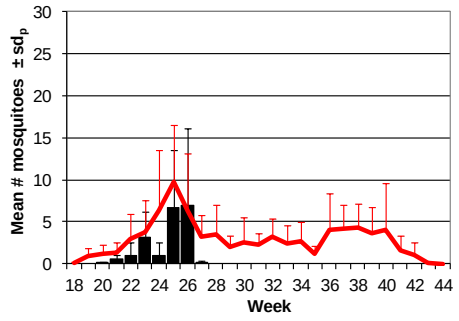


Aedes vexans - Fresh Floodwater Species
Multivoltine Aedine (*Ae. vexans* Type)

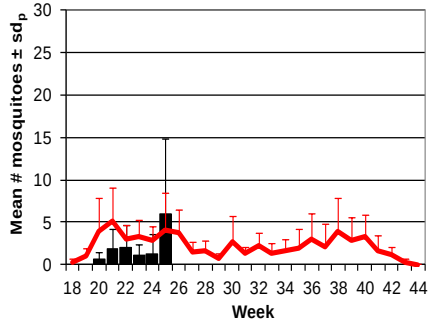
Agricultural



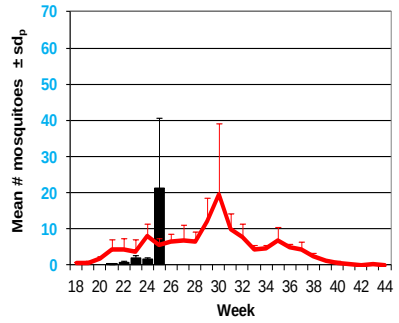
Coastal



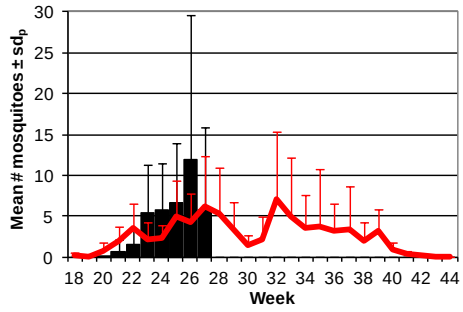
Delaware Bayshore



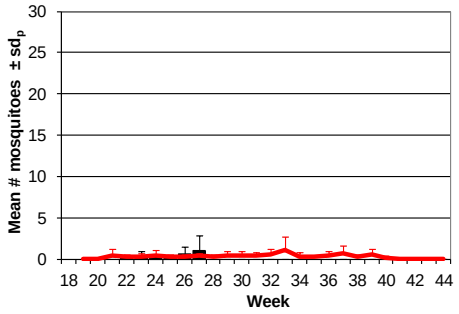
Delaware River Basin



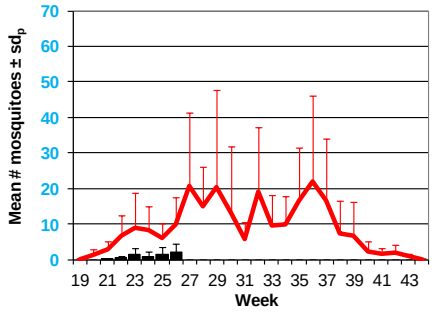
New York Metro



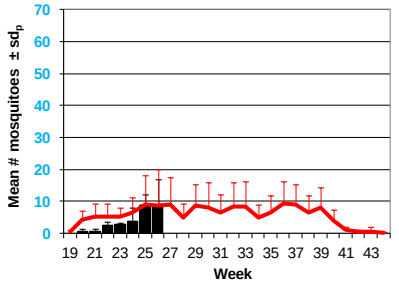
North Central Rural



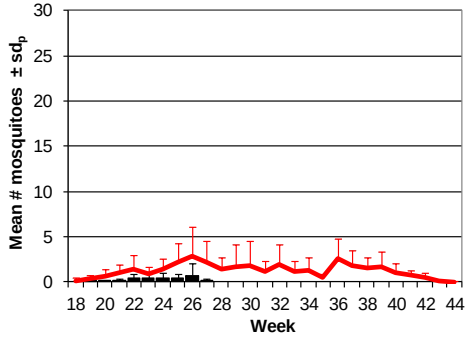
Northwestern Rural



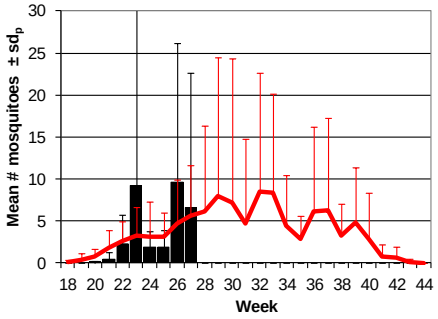
Philadelphia Metro



Pinelands



Suburban Corridor

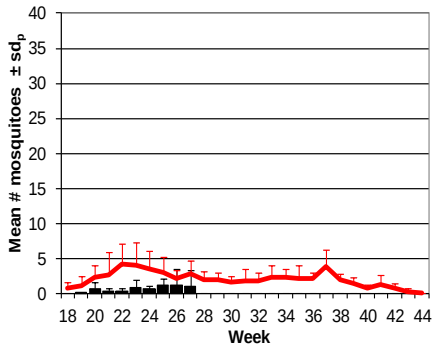


Comments

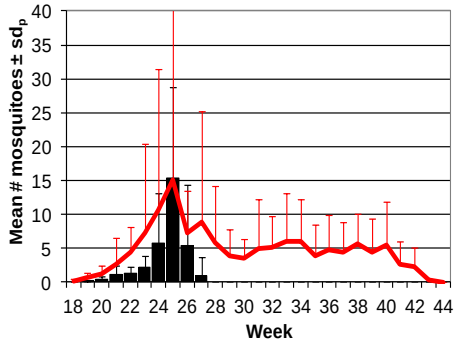
As data comes in from previous weeks, it is evident that *Aedes vexans* populations had responded to earlier precipitation. During the current week, both the North Central Rural and the Suburban Corridor, particularly in the northern half of the state experienced population levels of this floodwater species at higher than expected levels.

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

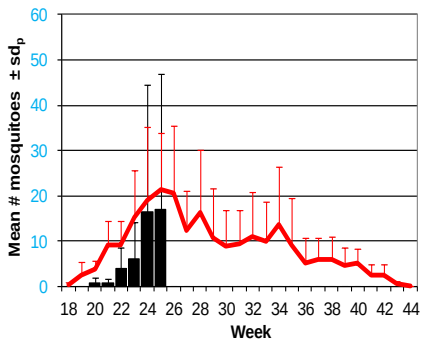
Agricultural



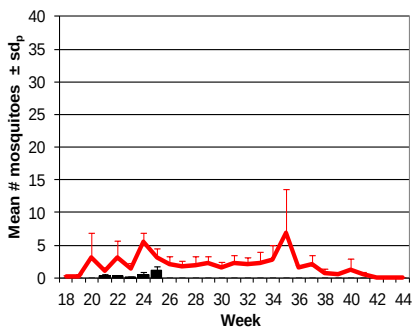
Coastal



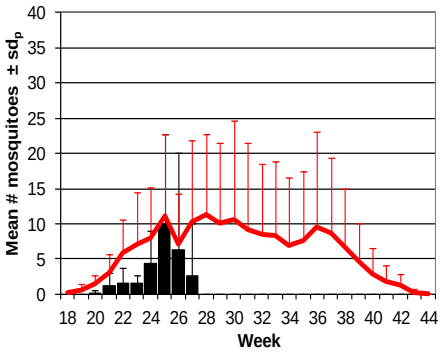
Delaware Bayshore



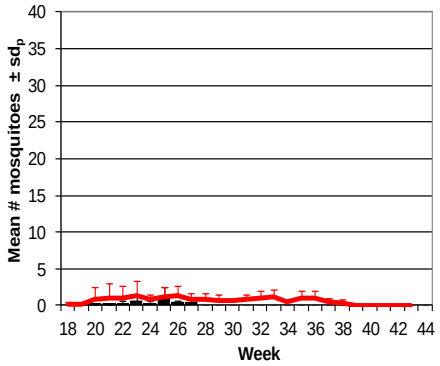
Delaware River Basin



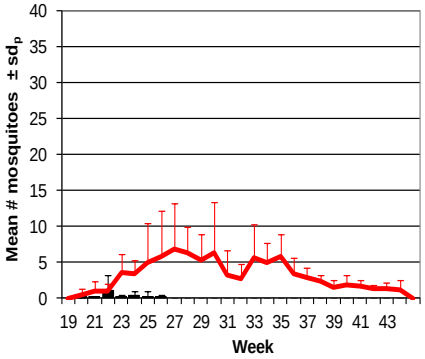
New York Metro



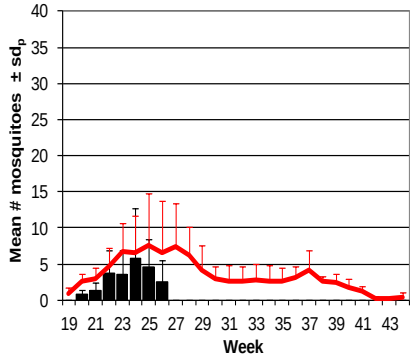
North Central Rural



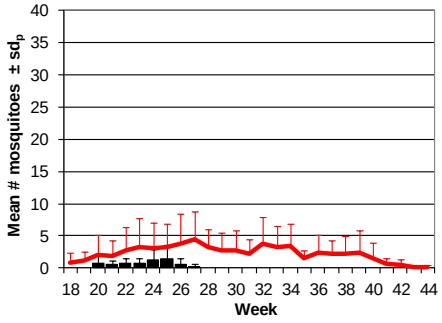
Northwestern Rural



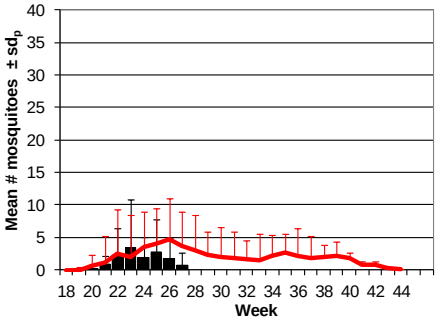
Philadelphia Metro



Pinelands



Suburban Corridor

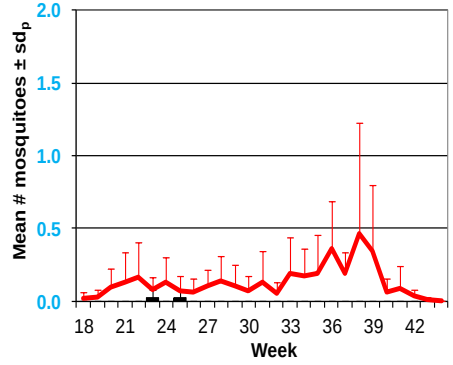
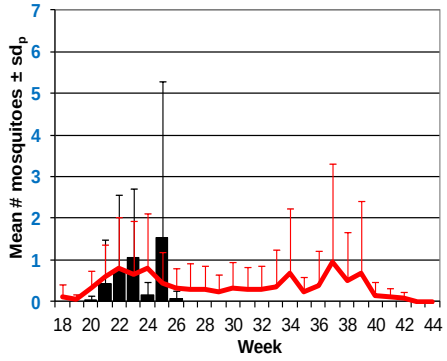
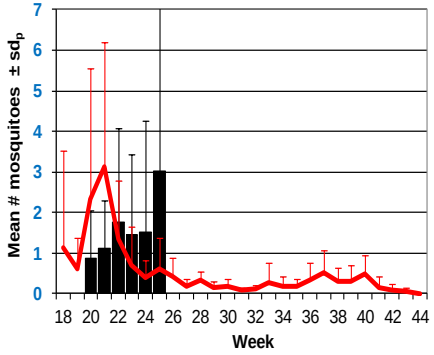
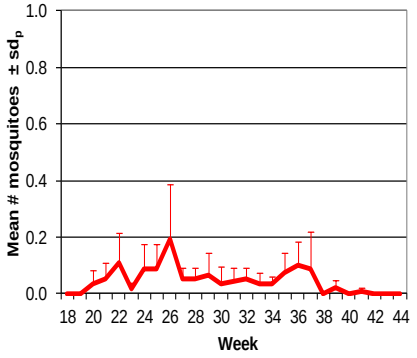
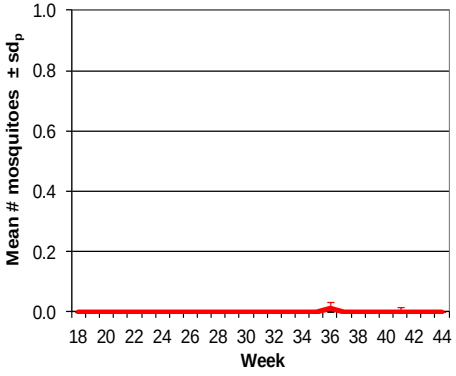
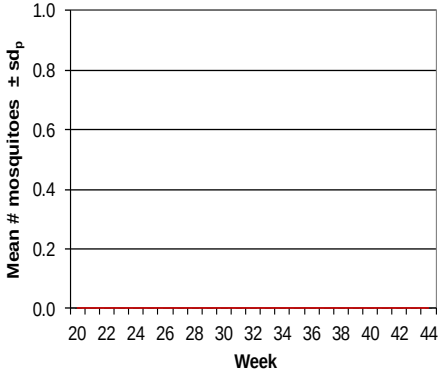
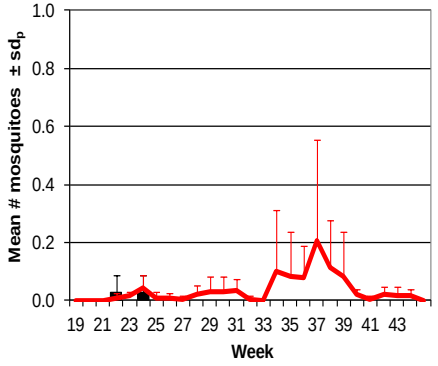
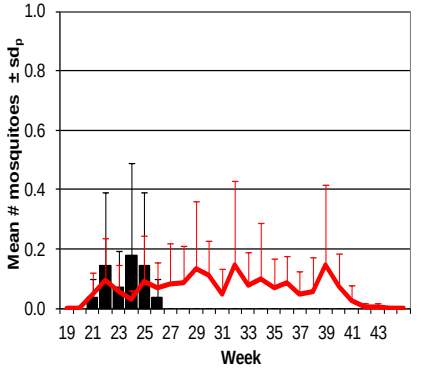
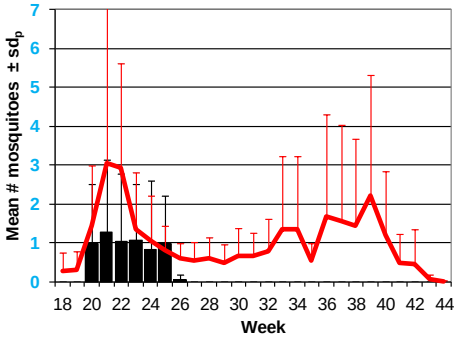
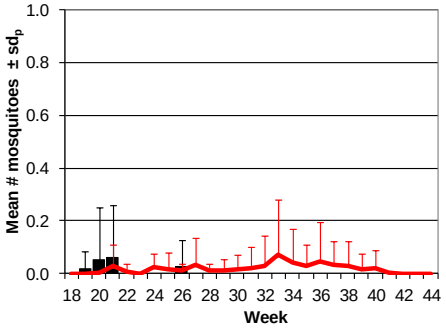


Comments

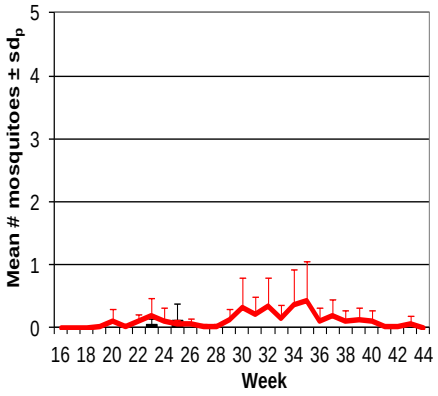
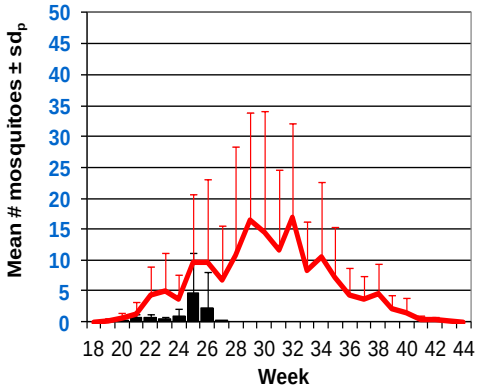
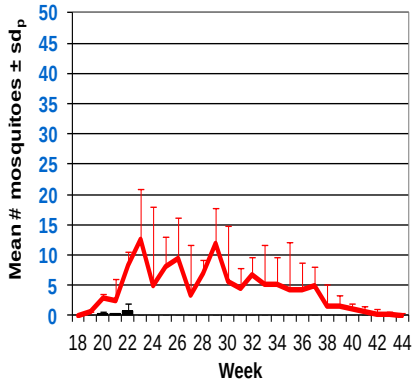
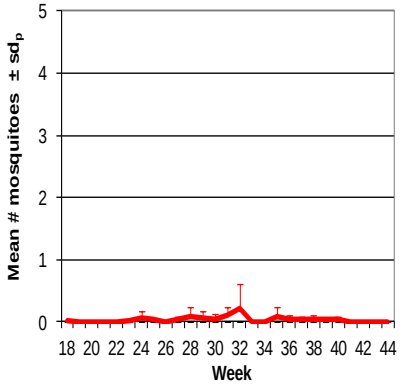
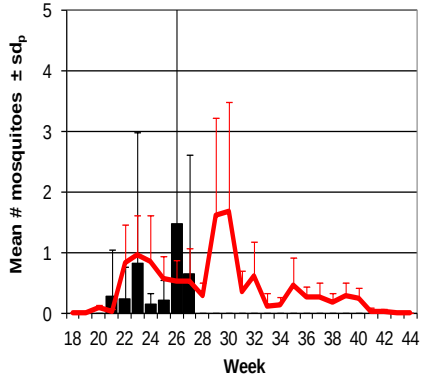
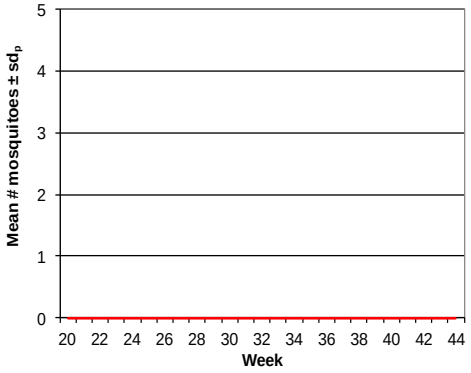
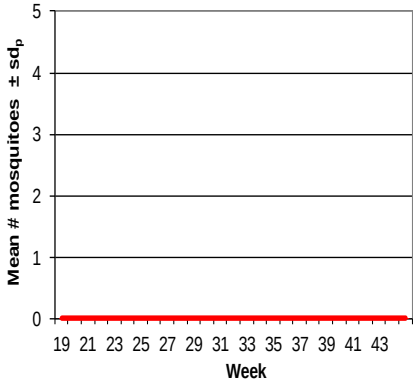
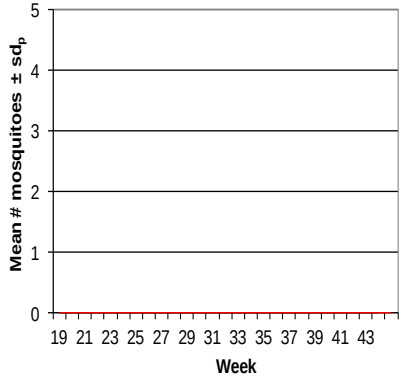
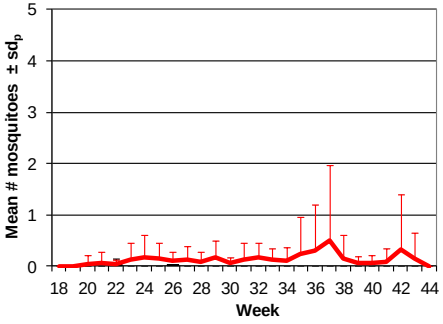
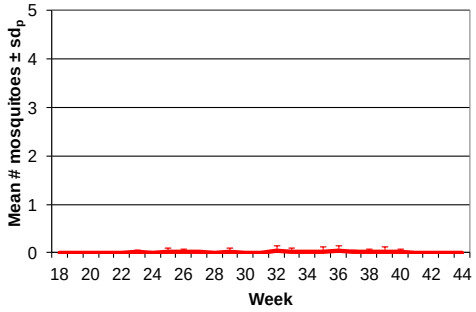
Culex Mix is composed of *Culex pipiens, Cx. restuans* and *Cx. salinarius*. These three species (especially *pipiens* and *restuans*) are often difficult to tell apart after encountering the damaging blades of the New Jersey light trap. *Culex* populations are remaining close or below historical trends. It is expected that as data continues to come in from counties not currently reporting, that numbers should increase toward historical values for most regions.

This past week, the first positive WNV pools in the state were detected.

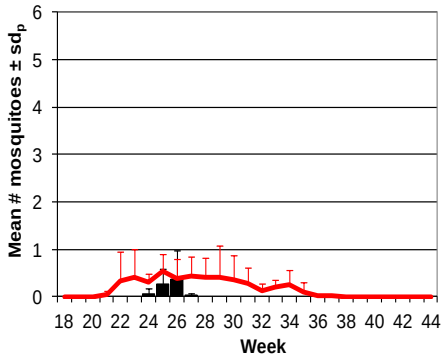
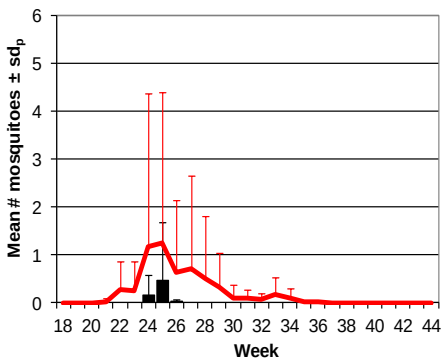
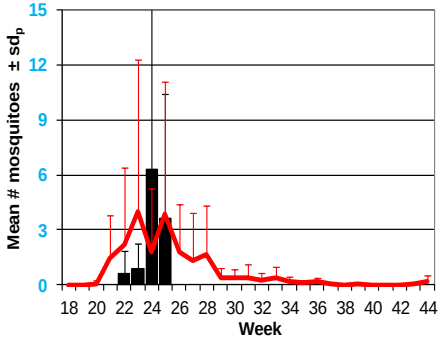
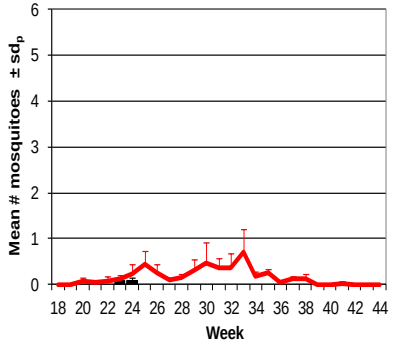
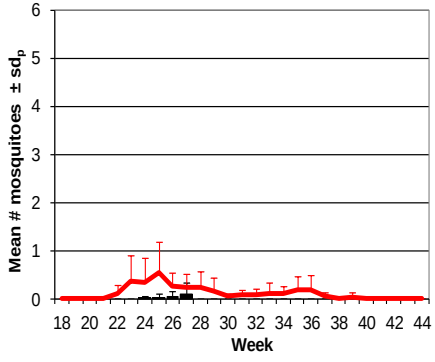
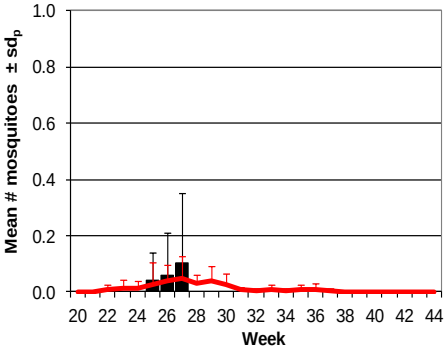
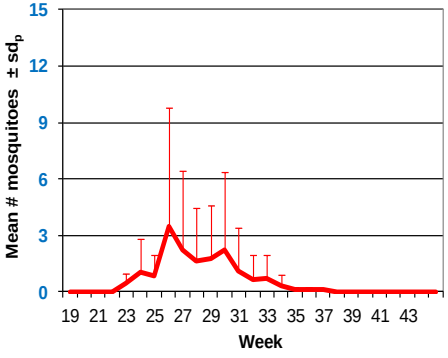
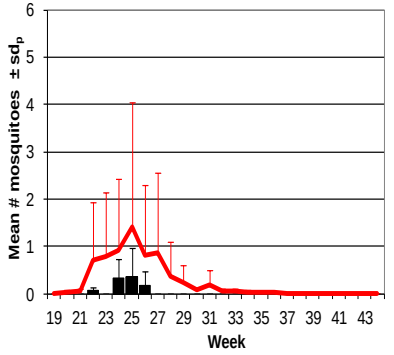
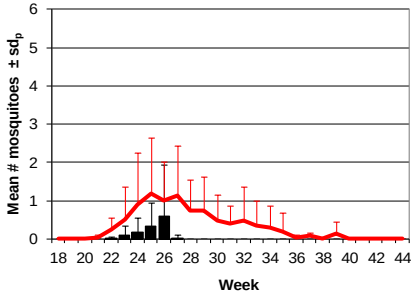
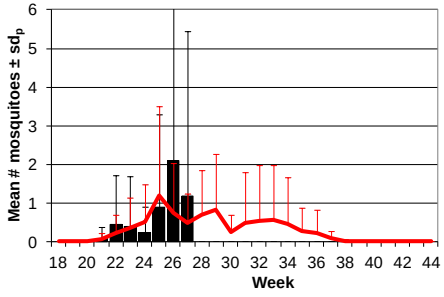
Culiseta melanura – Miscellaneous Group Unique (*Cs. melanura* Type)

Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		*Culiseta melanura* is the enzootic ornithophilic vector of eastern equine encephalitis. While there continues to be no EEE activity recorded as of this week, populations in the Coastal and Delaware Bayshore had recently increased.	

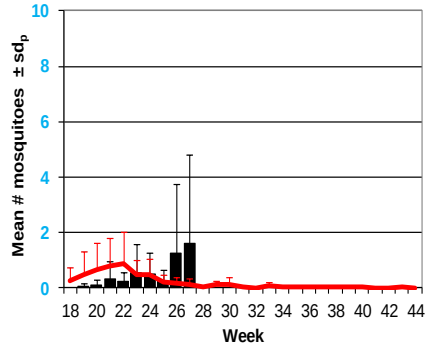
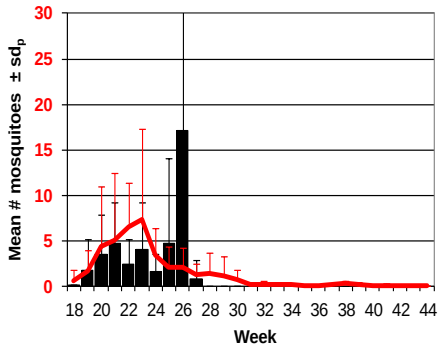
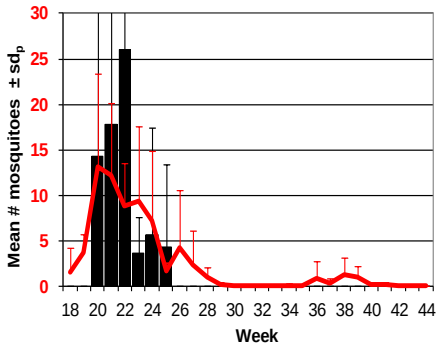
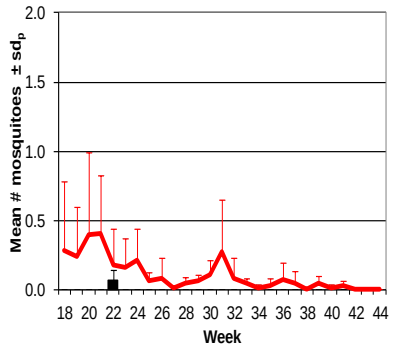
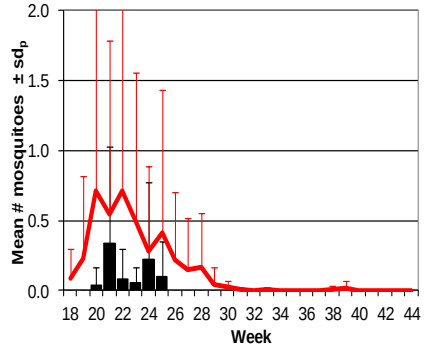
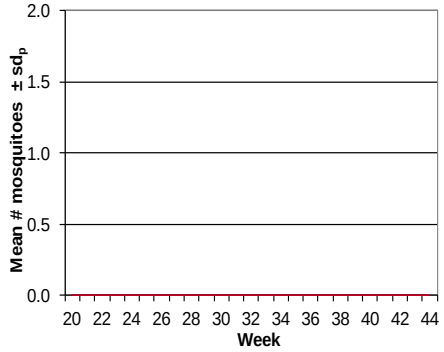
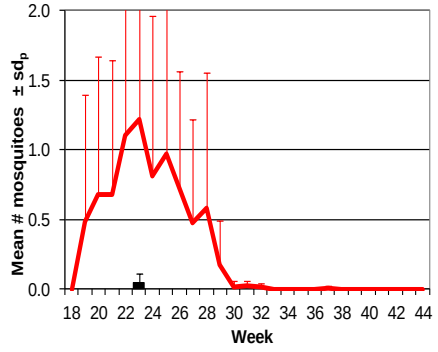
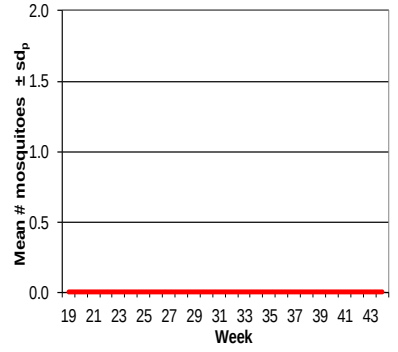
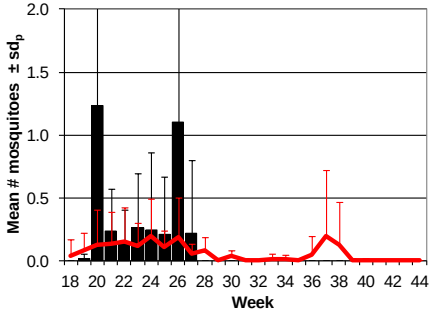
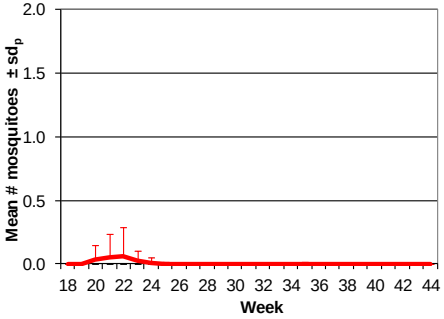
Aedes sollicitans - Salt Floodwater Species
Multivoltine Aedine (*Ae. sollicitans* Type)

Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		*Aedes sollicitans* is a salt floodwater species and responds to both lunar tidal patterns as well as rainfall. While numbers in the traditional areas of significance are lower than historical data, the New York Metropolitan region experienced a second week of higher than average abundance. Next lunar full moon is July 22nd.	

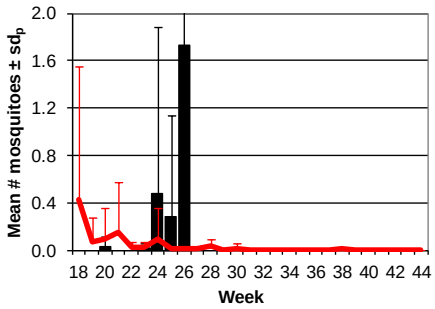
Coquillettidia perturbans
Monotypic (*Coquillettidia perturbans* Type)

Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		*Coquillettidia perturbans* populations are located in cattail swamps and other wetlands with emergent vegetation. Local populations in the North Central Rural and Suburban Corridor are elevated.	

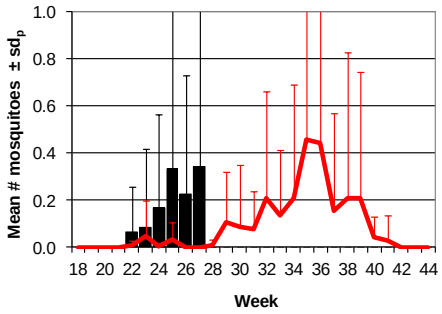
Aedes cantator
Multivoltine Aedine (*Ae. sollicitans* Type)

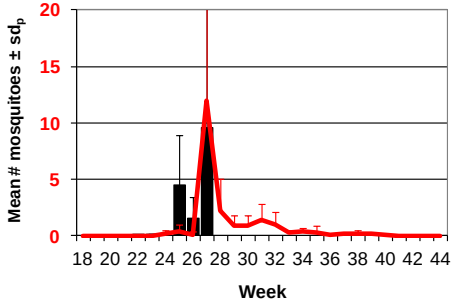
Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		*Aedes cantator* is a salt floodwater species. Occupying similar habitat, *Ae. cantator* finds its niche by emerging earlier than *Ae. sollicitans.* As with other floodwater species, *Ae, cantator* has responded to increased precipitation and warming weather. Normally, this species would be on the decline at this time of year, but several local populations are showing increased emergences, such as in the Agricultural regions and recently, in the Coastal and Pinelands regions. *Ae. cantator* tolerates a wide range of saline conditions, including run-off of fertilizers from agricultural areas, explaining their presence in non coastal habitats.	

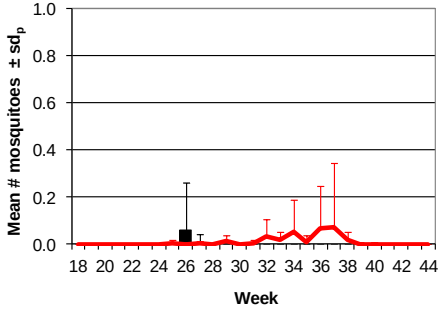
Noteworthy populations

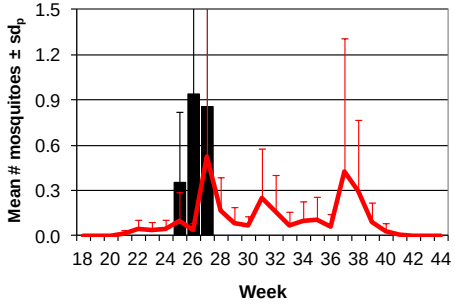


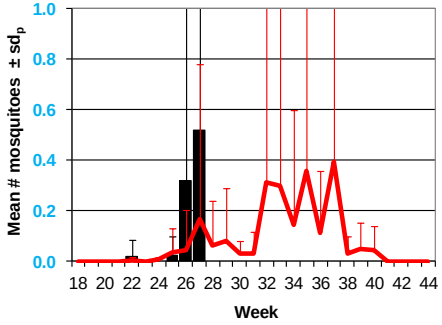
Aedes sticticus in the New York Metropolitan region. This floodwater species is found in greater numbers along the Passaic River floodplains.

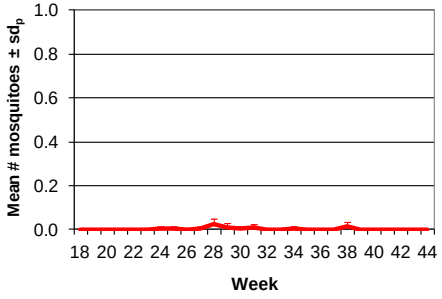






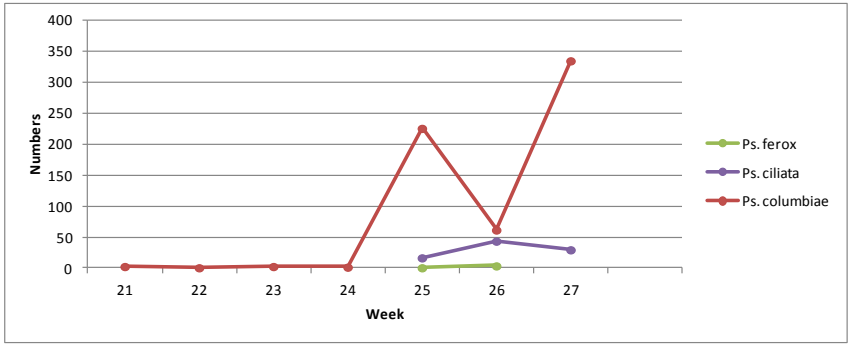






The *Psorophorans* in the Suburban Corridor (far left column) and the Agricultural region (near left column). From top to bottom are *Psorophora columbiae, Ps. ciliata,* and *Ps. ferox.*

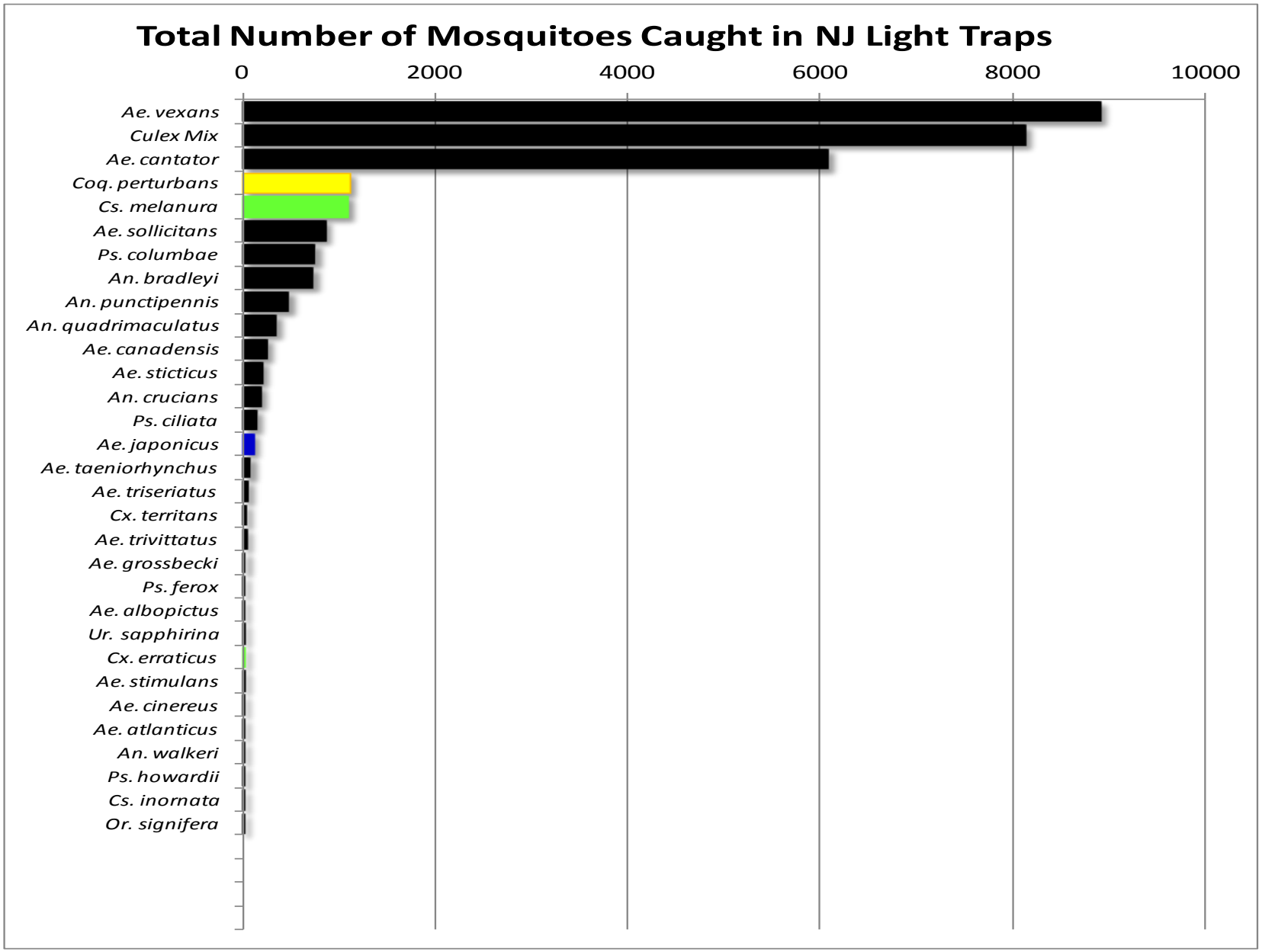
The predators (*Ps. ciliata* and *Ps. ferox*) and prey (*Ps. columbiae*) relationships are more easily seen in the statewide graph below. Numbers for these mosquitoes are highest in the agricultural region.



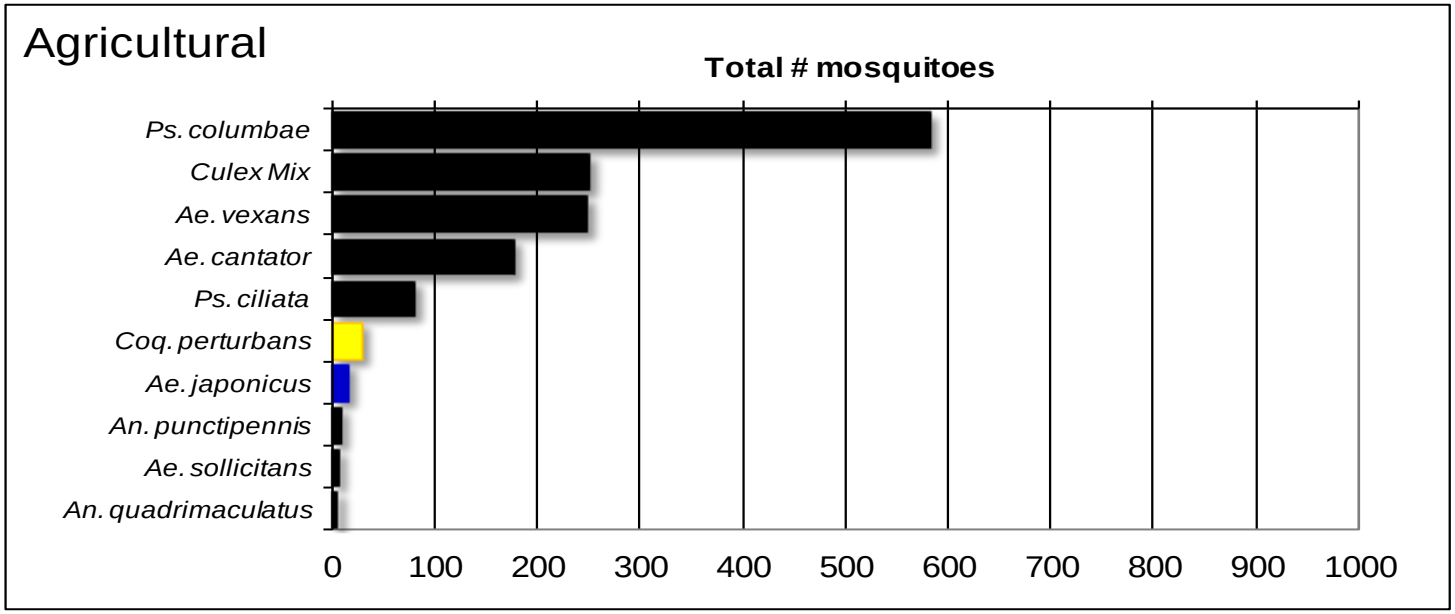
WNV *EEE*

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

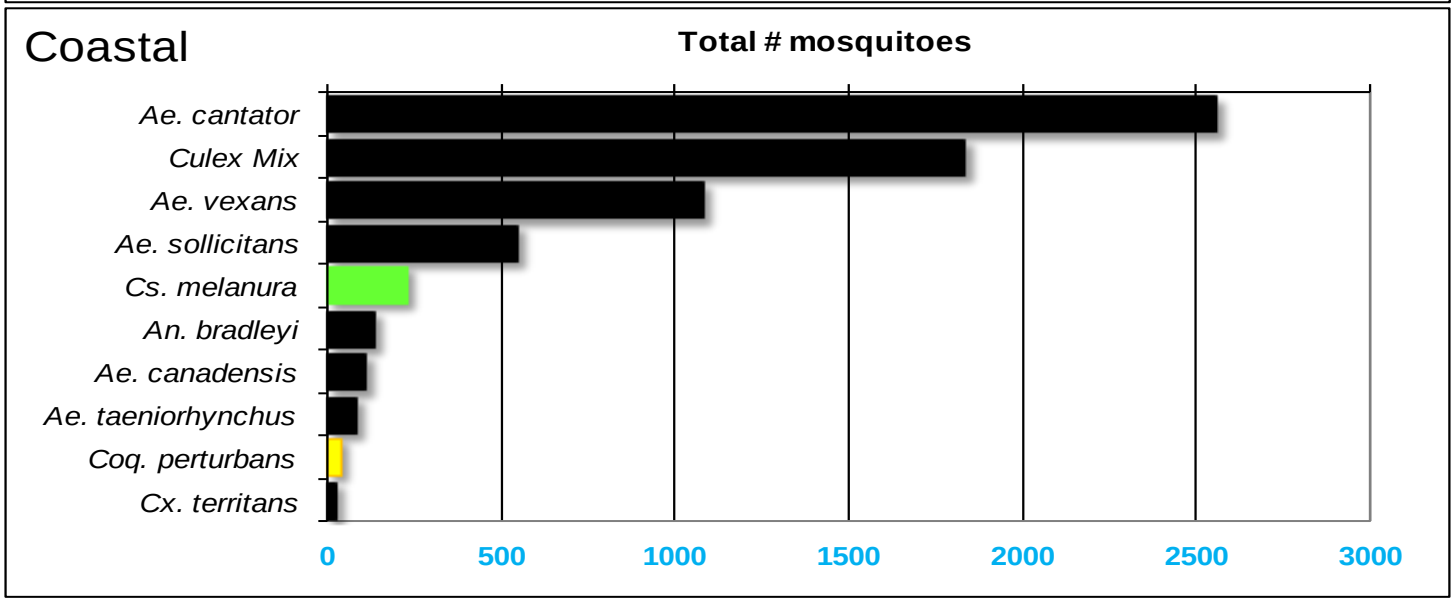
Note: In early season when fewer species are caught, graphs may show less than ten species/region or 25 statewide.

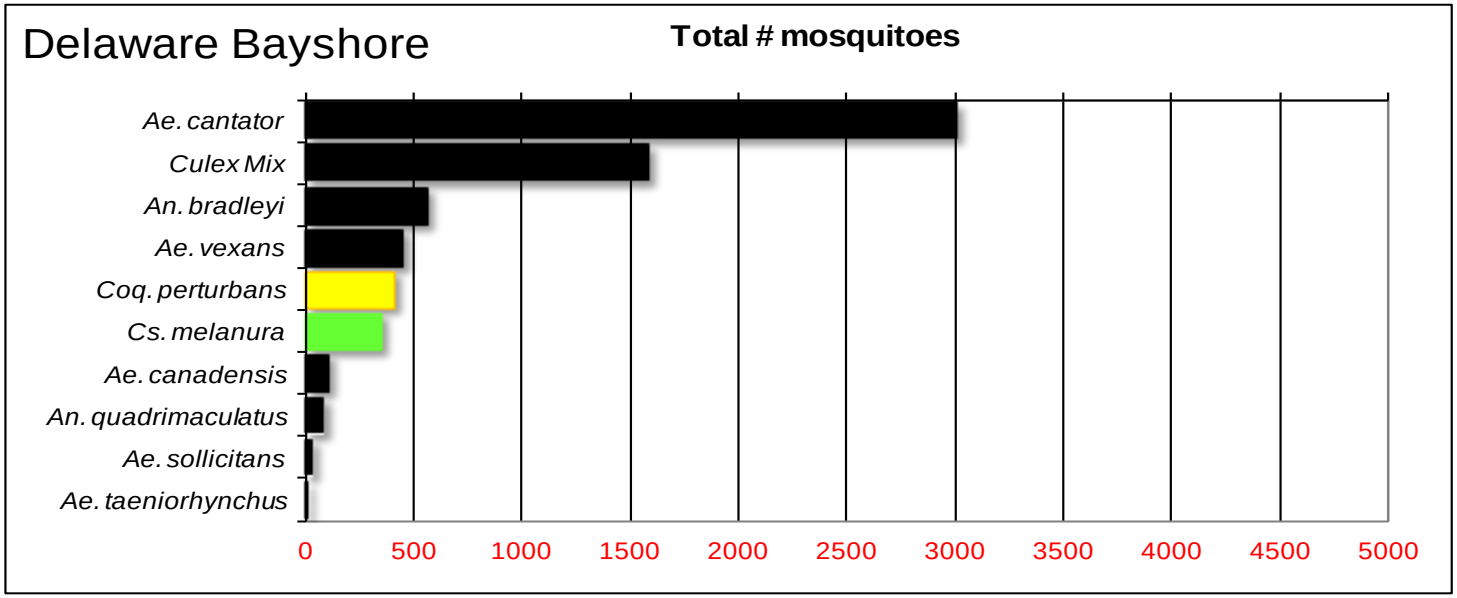


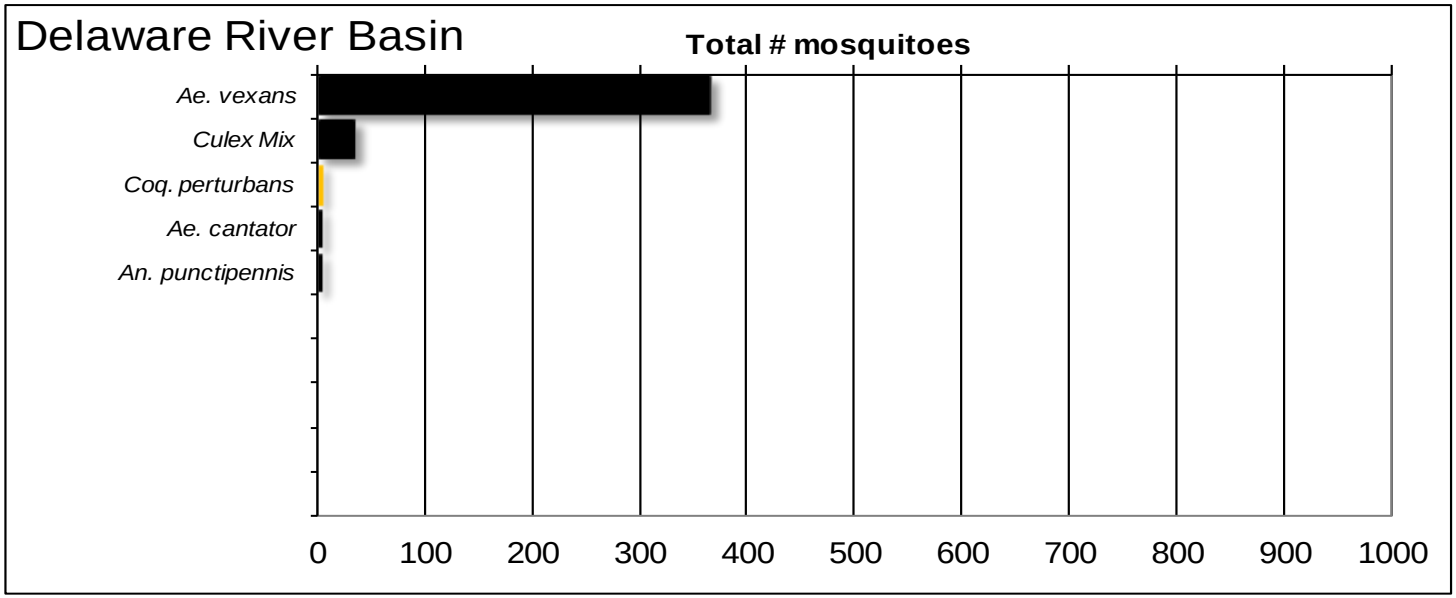
Agricultural

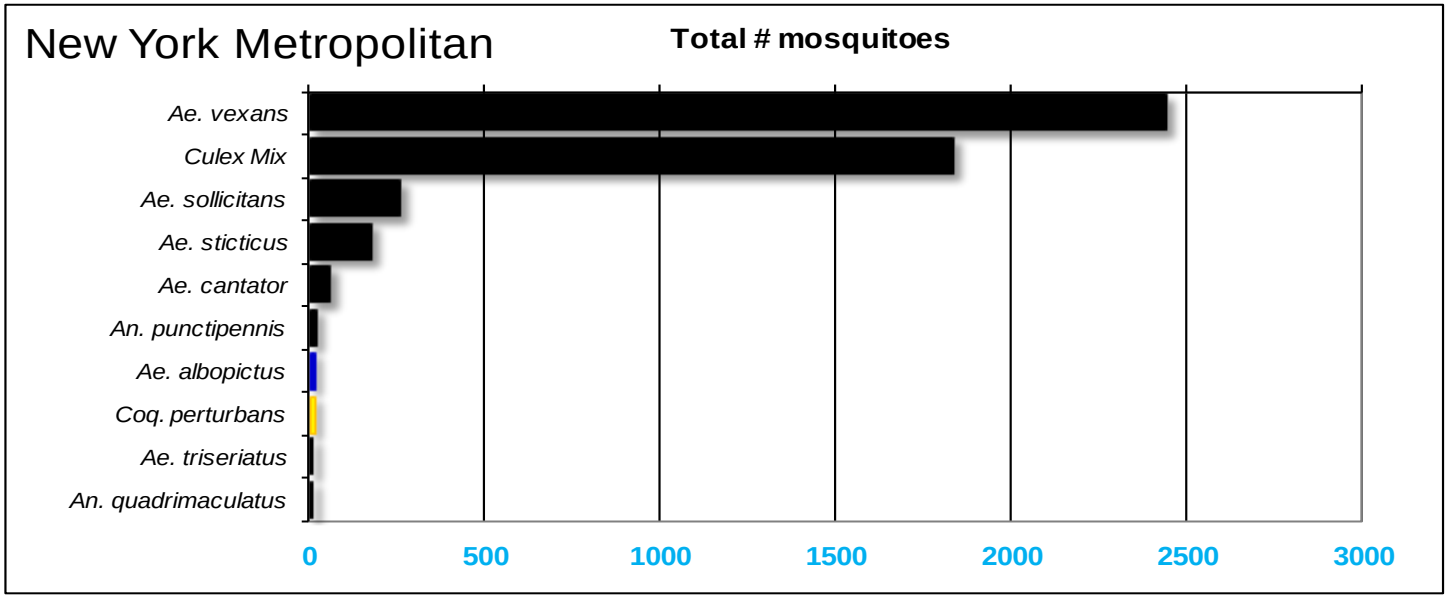


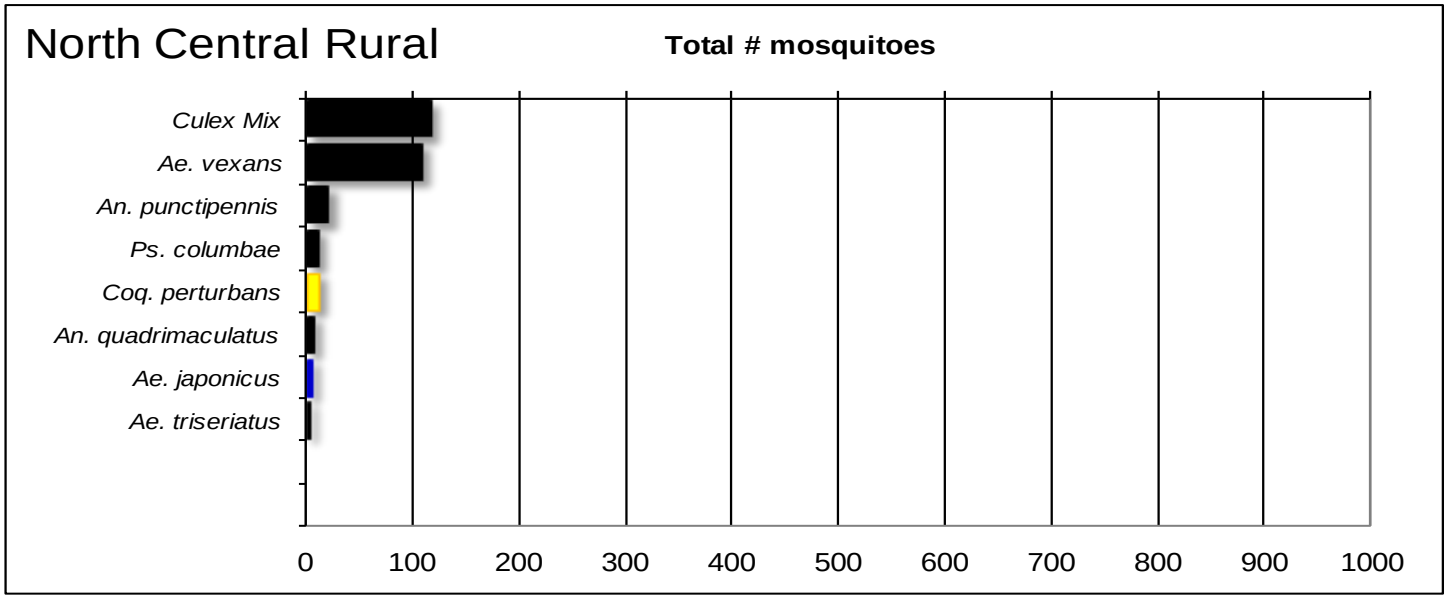
Coastal

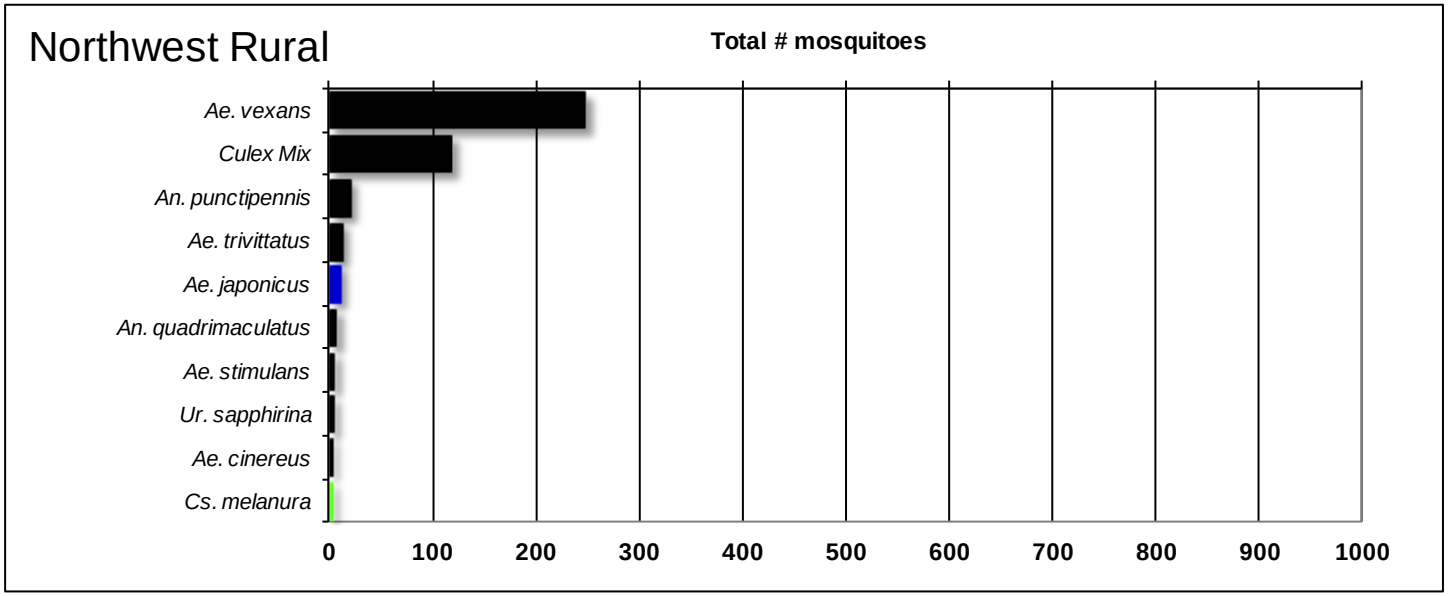


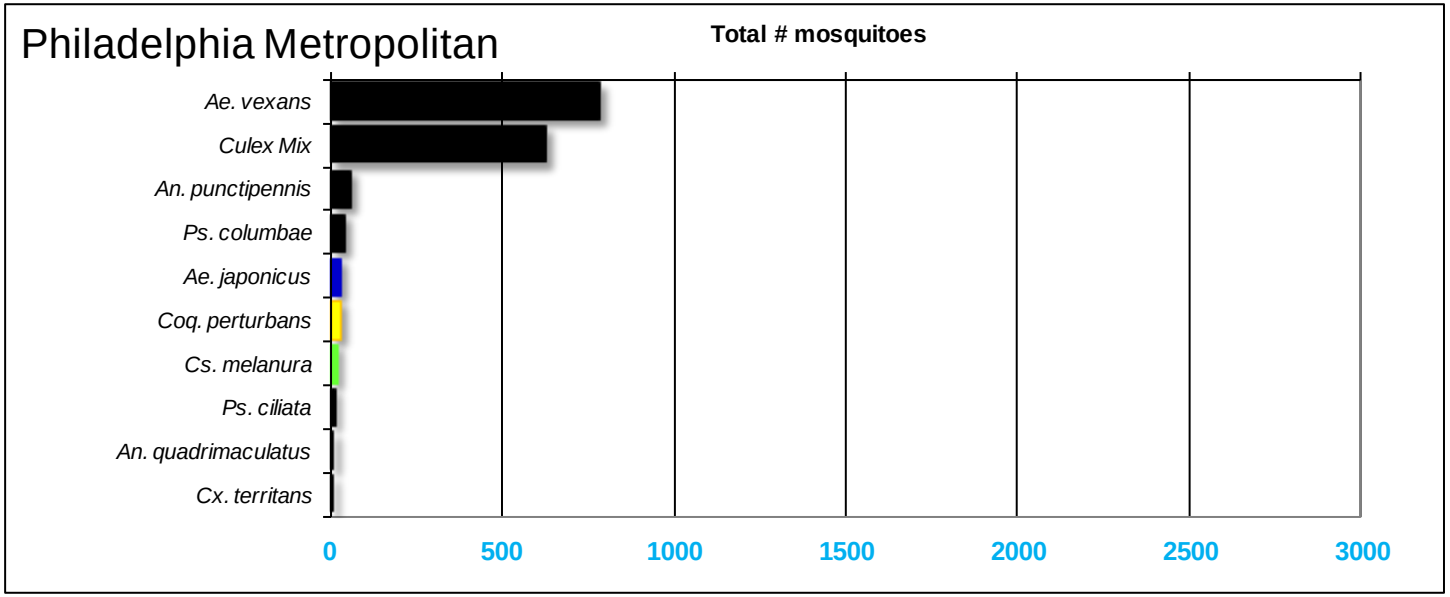

Delaware Bayshore
Total # mosquitoes
Ae. cantator
Culex Mix
An. bradleyi
Ae. vexans
Coq. perturbans
Cs. melanura
Ae. canadensis
An. quadrimaculatus
Ae. sollicitans
Ae. taeniorhynchus
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000


Delaware River Basin
Total # mosquitoes
Ae. vexans
Culex Mix
Coq. perturbans
Ae. cantator
An. punctipennis
0
100
200
300
400
500
600
700
800
900
1000

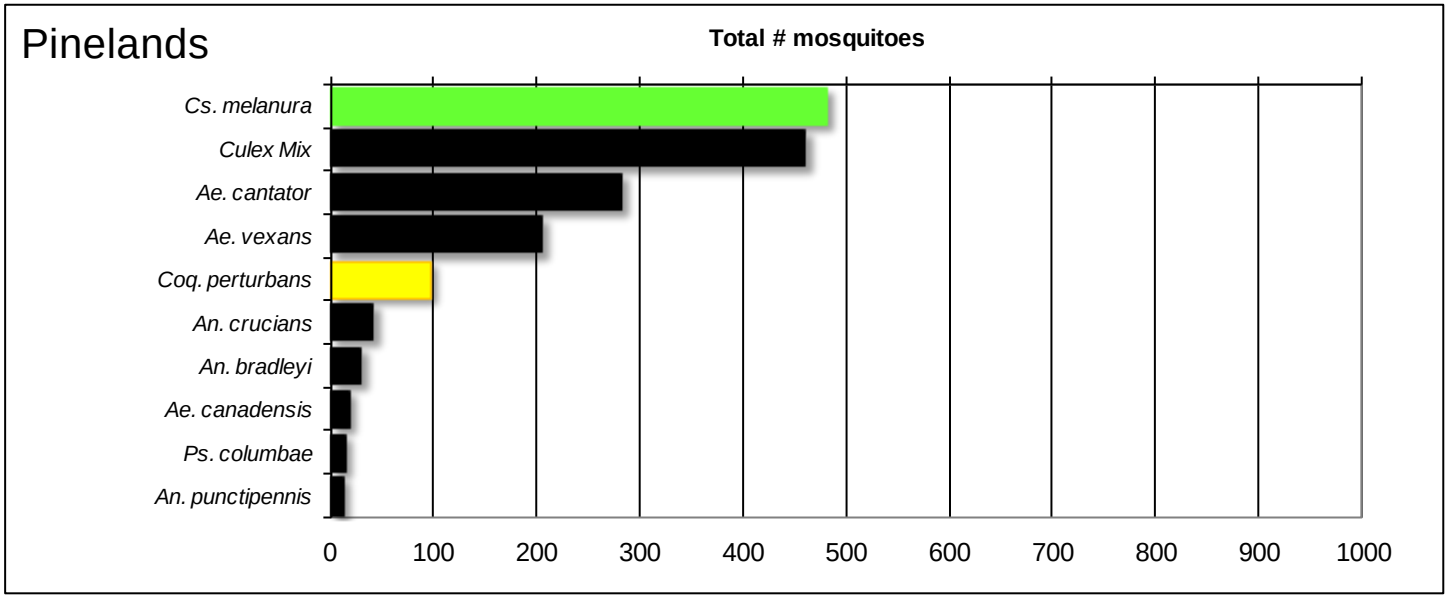

New York Metropolitan
Total # mosquitoes
Ae. vexans
Culex Mix
Ae. sollicitans
Ae. sticticus
Ae. cantator
An. punctipennis
Ae. albopictus
Coq. perturbans
Ae. triseriatus
An. quadrimaculatus
0
500
1000
1500
2000
2500
3000


North Central Rural
Total # mosquitoes
Culex Mix
Ae. vexans
An. punctipennis
Ps. columbae
Coq. perturbans
An. quadrimaculatus
Ae. japonicus
Ae. triseriatus
0
100
200
300
400
500
600
700
800
900
1000


Northwest Rural
Total # mosquitoes
Ae. vexans
Culex Mix
An. punctipennis
Ae. trivittatus
Ae. japonicus
An. quadrimaculatus
Ae. stimulans
Ur. sapphirina
Ae. cinereus
Cs. melanura
0
100
200
300
400
500
600
700
800
900
1000


Philadelphia Metropolitan
Total # mosquitoes
Ae. vexans
Culex Mix
An. punctipennis
Ps. columbae
Ae. japonicus
Coq. perturbans
Cs. melanura
Ps. ciliata
An. quadrimaculatus
Cx. territans
0
500
1000
1500
2000
2500
3000

Pinelands



Suburban Corridor