RUTGERS
New Jersey Agricultural Experiment Station

NEW JERSEY ADULT MOSQUITO SURVEILLANCE

Report for 31 May to 6 June 2009, CDC Weeks 22

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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.

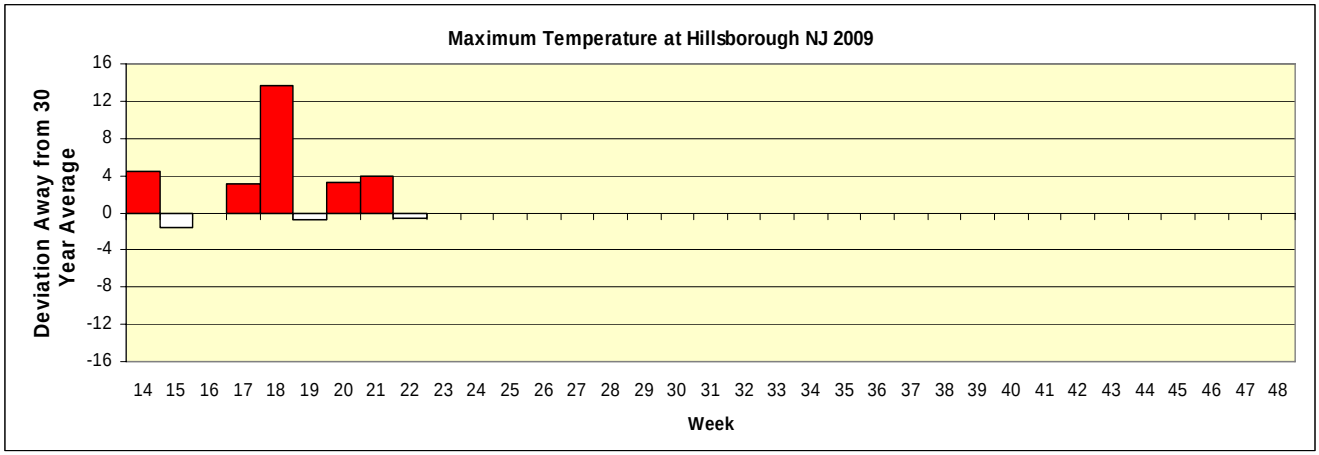
Summary table – Week 22

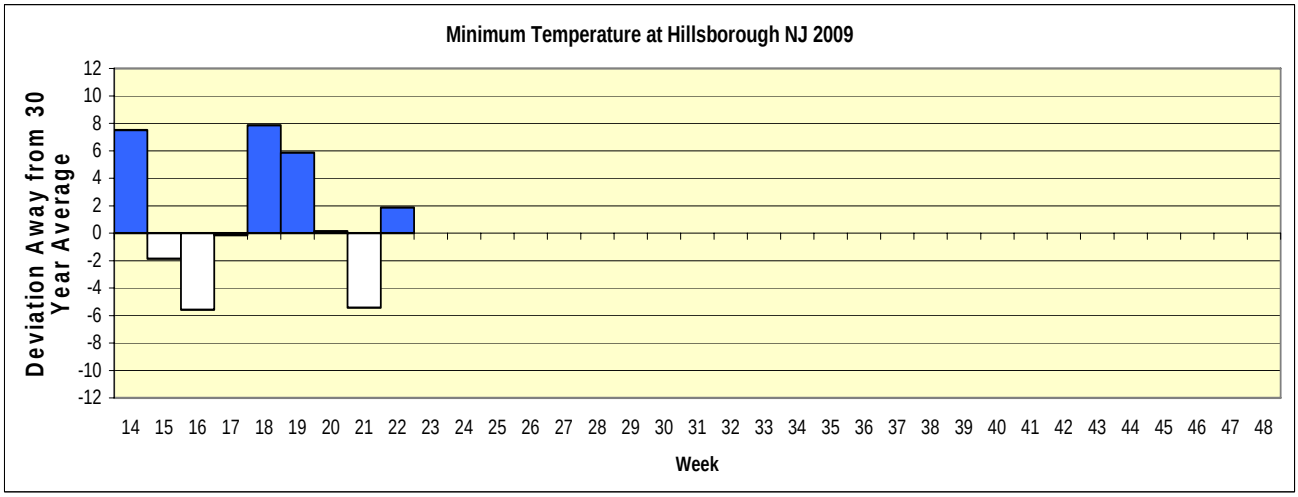
	Aedes vexans			*Culex* Mix			*Coquillettidia perturbans*			*Aedes sollicitans*		
Region	This Week	Average*	Increase	This Week	Average*	Increase	This Week	Average*	Increase	This Week	Average*	Increase
Agricultural	**3.24**	**1.56**	**3**	**2.64**	**2.66**	**0**	**0.00**	**0.07**	**0**	**0.02**	**0.12**	**0**
Coastal	**2.06**	**4.70**	**0**	**4.11**	**3.46**	**1**	**0.03**	**0.21**	**0**	**1.70**	**3.90**	**0**
Delaware Bayshore	**7.93**	**3.72**	**3**	**8.45**	**7.10**	**1**	**0.05**	**0.67**	**0**	**6.36**	**4.44**	**1**
Delaware River Basin	**3.18**	**13.56**	**0**	**1.64**	**8.91**	**0**	**0.04**	**0.08**	**0**	**0.07**	**0.00**	†
New York Metro	**1.60**	**1.32**	**1**	**3.19**	**2.33**	**1**	**0.01**	**<0.01**	**1**	**0.00**	**0.25**	**0**
North Central Rural	**0.53**	**0.35**	**2**	**3.78**	**0.48**	**4**	**0.00**	**0.00**	**0**	**0.00**	**0.00**	**0**
Northwest Rural	**8.74**	**7.93**	**1**	**2.74**	**0.66**	**4**	**0.43**	**0.00**	†	**0.00**	**0.00**	**0**
Philadelphia Metro	**4.62**	**6.71**	**0**	**3.93**	**4.24**	**0**	**0.00**	**0.52**	**0**	**0.00**	**0.00**	**0**
Pinelands	**2.01**	**1.67**	**1**	**3.49**	**2.76**	**1**	**0.03**	**0.11**	**0**	**0.05**	**0.11**	**0**
Suburban Corridor	**2.18**	**1.52**	**1**	**1.80**	**1.89**	**0**	**0.00**	**0.08**	**0**	**0.00**	**0.00**	**0**

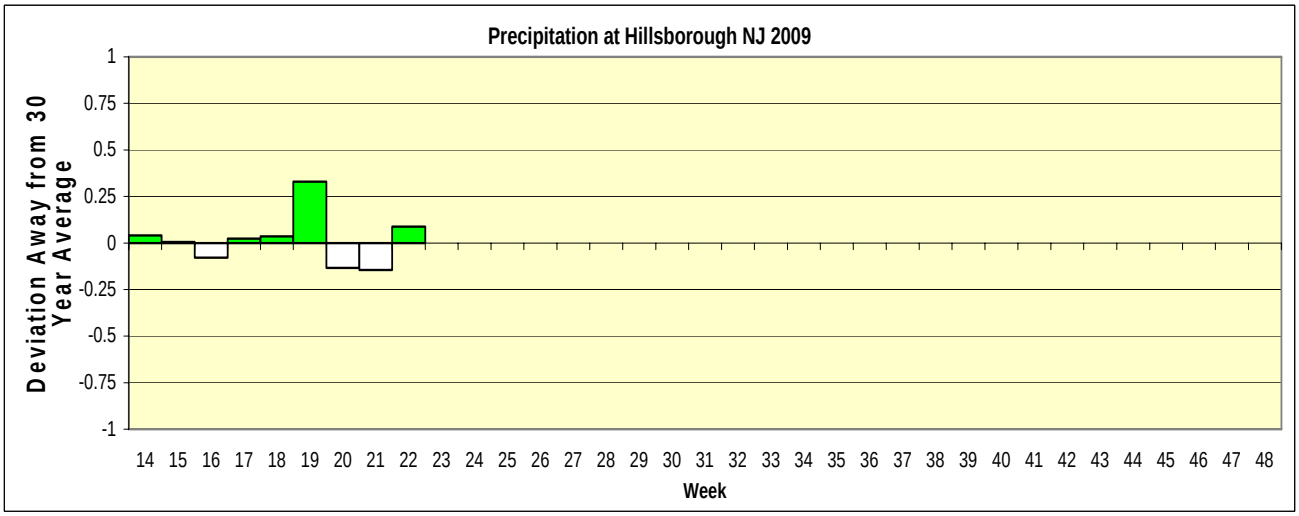
*Averages represent data from, at most, the previous 5 years. Increase is a scale of current values from historical values where no difference or a decrease is represented by 0 (blue), up to 50% greater difference by 1 (green), up to 100% greater difference by 2 (yellow), up to 150% greater difference 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: Activity continues for both the fresh floodwater (*Aedes vexans*) and permanent freshwater species (*Culex* Mix) in several regions of New Jersey, most notably the Agricultural and Delaware Bayshore regions for *Ae. vexans*, and in Northern Jersey for the *Culex* species. *Coquillettidia* is beginning to show up and *Aedes sollicitans* appears to have gone through its first emergence.

Climate Deviations



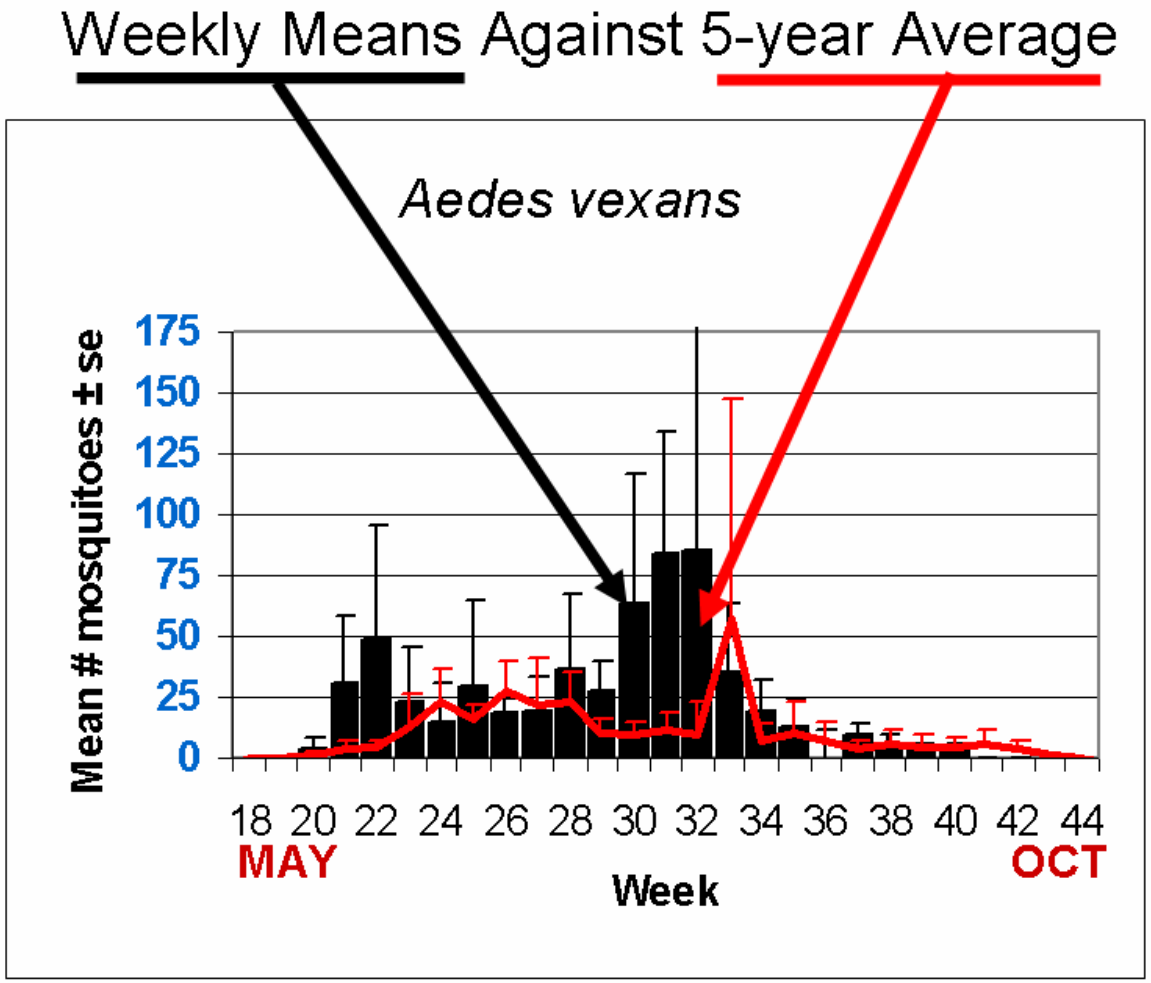




The figures show the average maximum temperature, minimum temperature and precipitation deviations from 30 year averages. Current data are from the Hillsborough NJ weather station (a station close to central NJ which recorded all three parameters and was available online at the NJ state climatologist)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

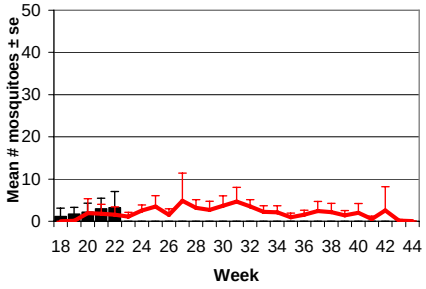
Data from: http://climate.rutgers.edu/njwxnet/index.php

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, Burlington, Camden, Cape May, Cumberland, Hudson, Mercer, Ocean, Salem, Somerset, Sussex and Warren counties. Note: County data is sent in at a variety of times during the week.

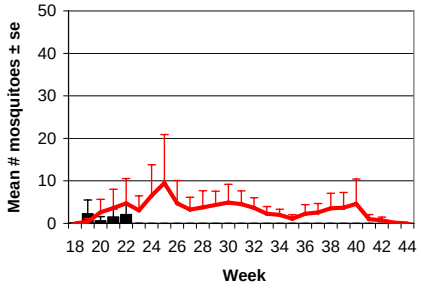


Aedes vexans - Fresh Floodwater Species
Multivoltine Aedine (*Ae. vexans* Type)

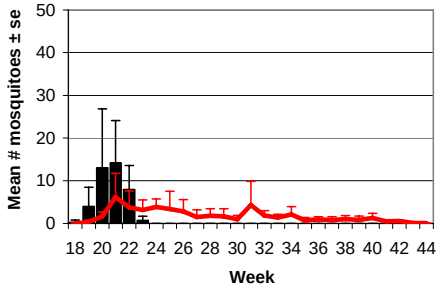
Agricultural



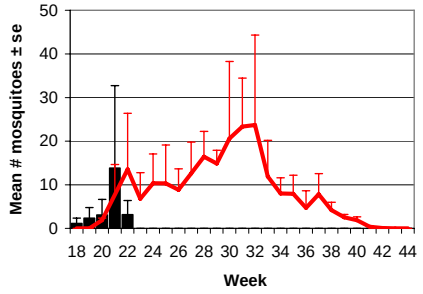
Coastal



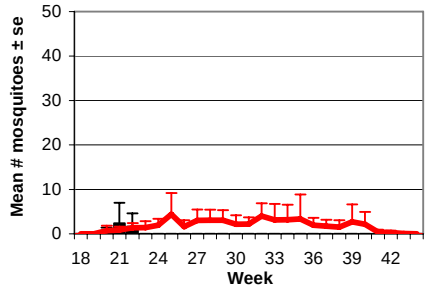
Delaware Bayshore



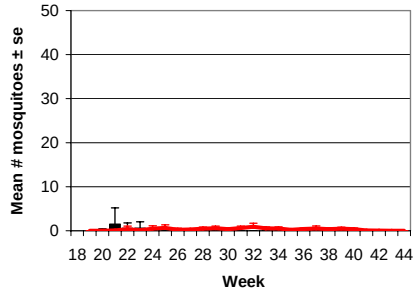
Delaware River Basin



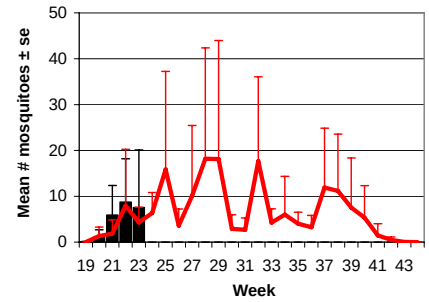
New York Metro



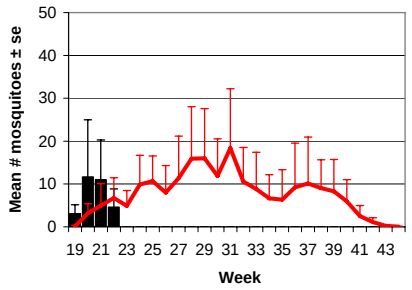
North Central Rural



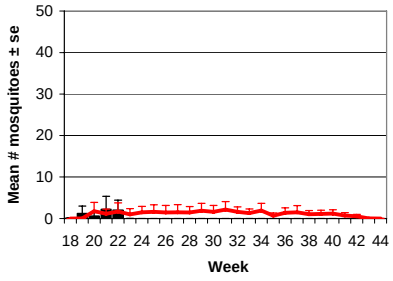
Northwestern Rural



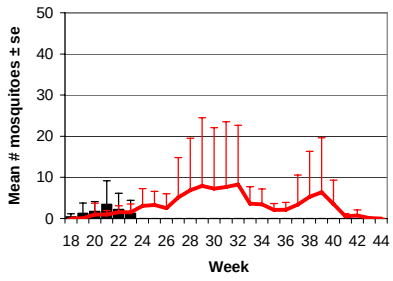
Philadelphia Metro



Pinelands



Suburban Corridor

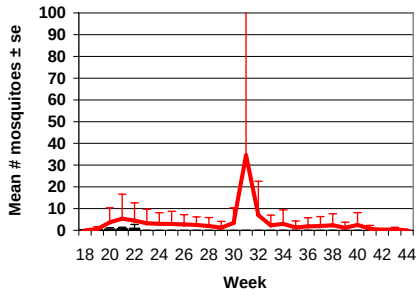
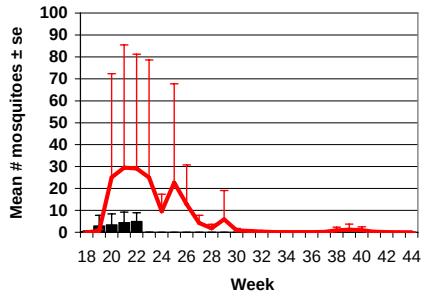
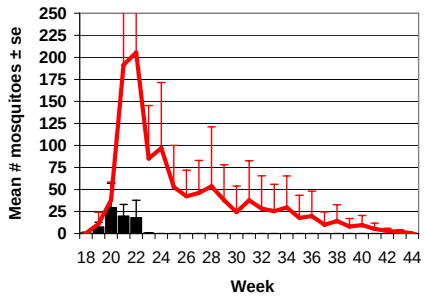
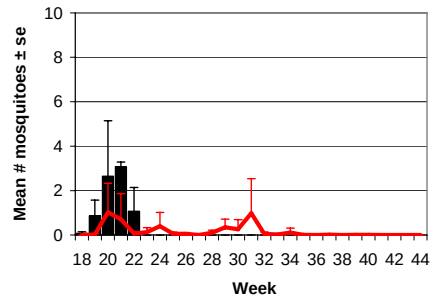
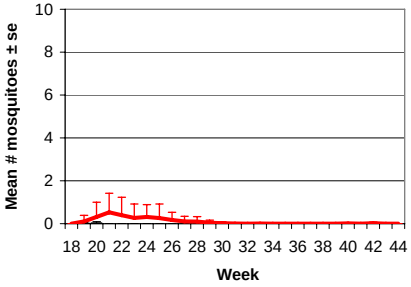
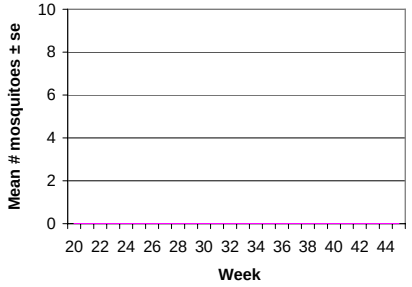
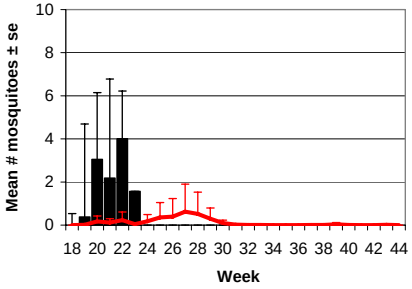
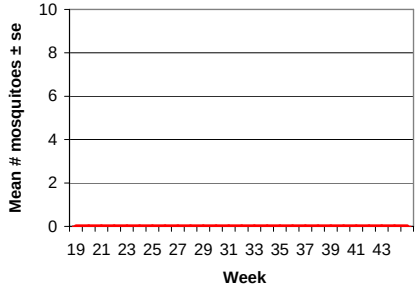
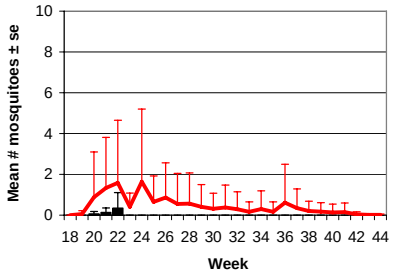
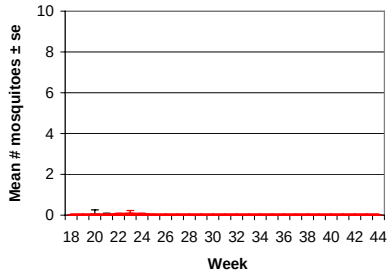


Comments

Aedes vexans populations are at or above historical trends in most regions. This mosquito is moderately competent in the transmission of WNV and pools of *Ae. vexans* have been found positive for EEE virus. However, studies by Vaidyanathan et al (1997) show that *Ae. vexans* is not very competent in the transmission of EEE and likely does not play much of a role in either maintenance nor bridge vector transmission of that disease.

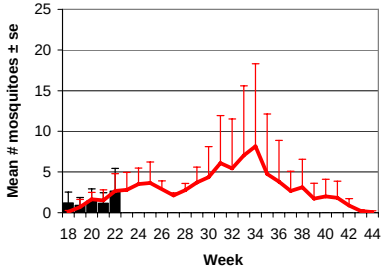
Vaidyanathan, R, Edman JD, Cooper LA, Scott TW. 1997 Vector competence of mosquitoes (Diptera:Culicidae) from Massachusetts for a sympatric isolate of eastern equine encephalomyelitis virus. J Med Entomol. 1997 May;34(3):346-52

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

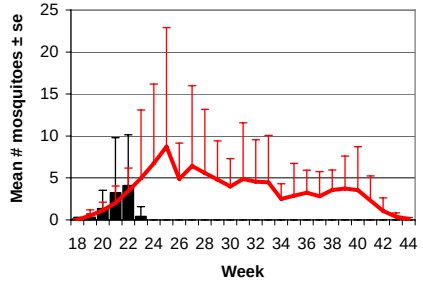
Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		*Aedes cantator* populations appear underrepresented in the traditional salt marsh areas along the Coastal and Delaware Bayshore regions while populations exploiting manmade habitats such as in the Northwestern and Delaware River Basin were higher than historical values early in the season. This multivoltine species is an early-season species and, as historical records indicate, should begin showing a reduction in abundance soon. *Ae. cantator* demonstrates a wide range of salt tolerance, exploiting areas that other halophytic species are not able to utilize, including those of low salt levels. This species is not an efficient vector of West Nile virus. EEE virus has been isolated from the human biter (Andreadis et al: Andreadis, T. et al. 1998 Multiple isolations of eastern equine encephalitis and highlands J viruses from mosquitoes (Diptera: Culicidae) during a 1996 epizootic in southeastern Connecticut. J. Med Ent: 1998 May;35(3):296-302.)	

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

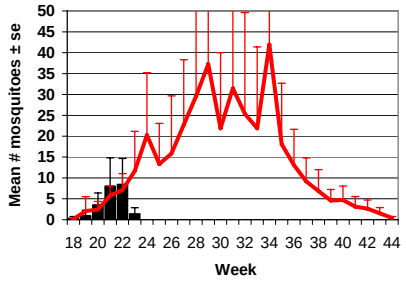
Agricultural



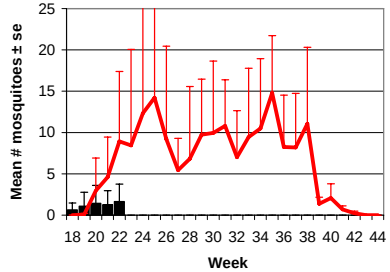
Coastal



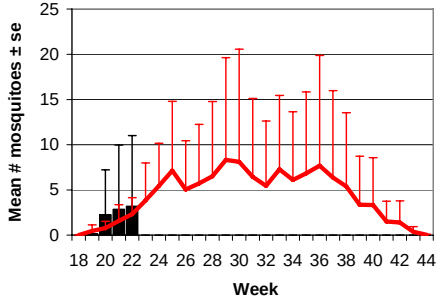
Delaware Bayshore



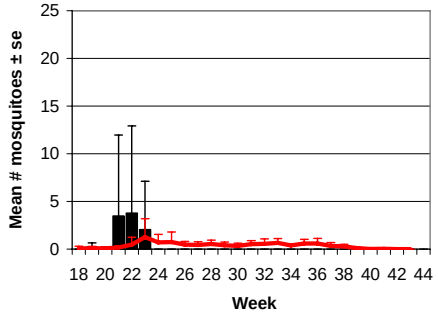
Delaware River Basin



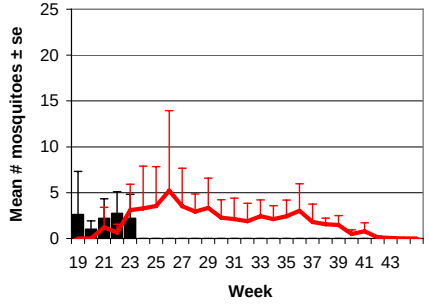
New York Metro



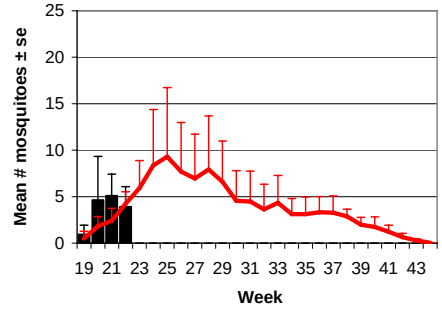
North Central Rural



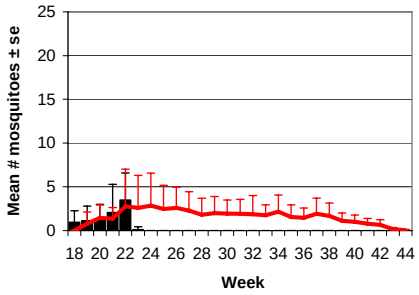
Northwestern Rural



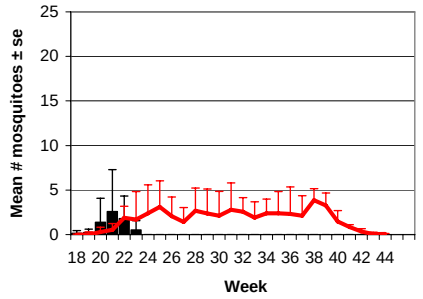
Philadelphia Metro



Pinelands



Suburban Corridor

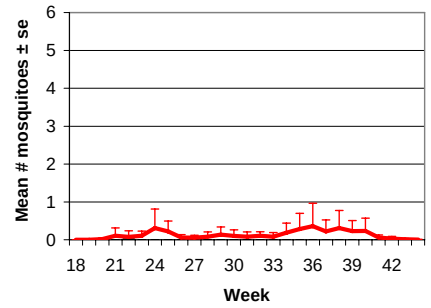


Comments

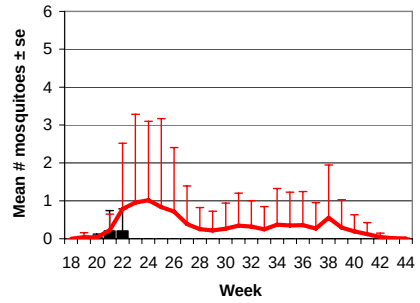
For most regions, *Culex* populations seem to be tracking historical levels, as opposed to the previous year when populations appeared earlier than expected. Generally, due to their permanent water larval habitats, *Culex* species such as those reported here in the Mixed species group (*Cx pipiens, Cx restuans* and *Cx. salinarius*) display similar population abundances from one year to the next. Because of their involvement in the amplification and transmission cycle of West Nile virus, monitoring of these species play a critical role for mosquito control agencies.

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

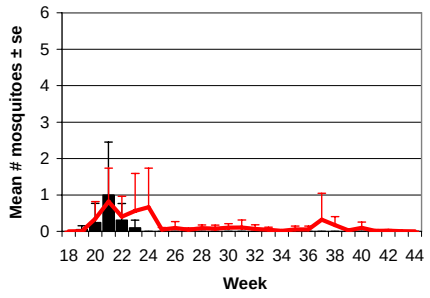
Agricultural



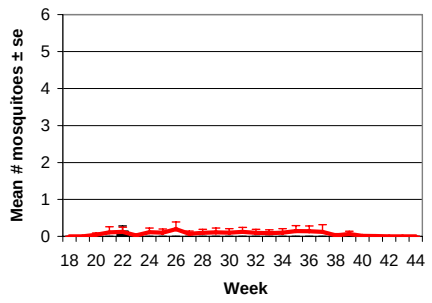
Coastal



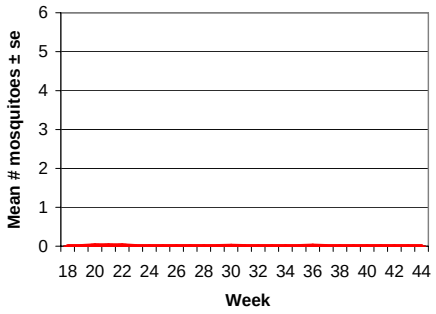
Delaware Bayshore



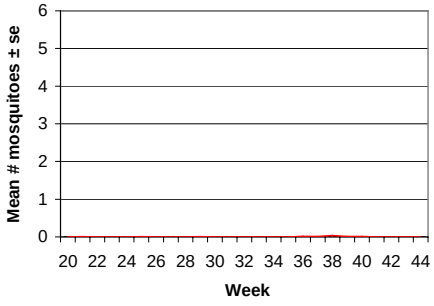
Delaware River Basin



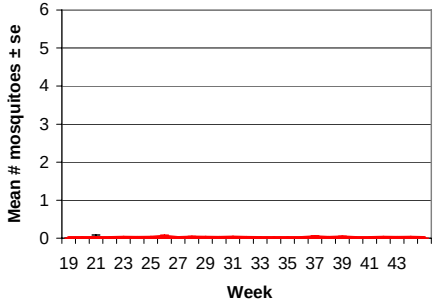
New York Metro



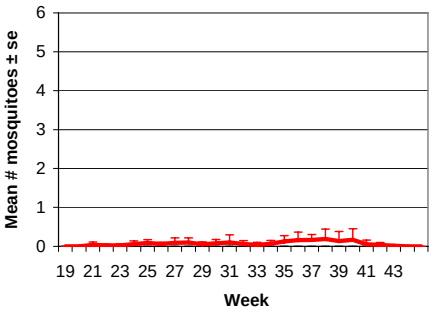
North Central Rural



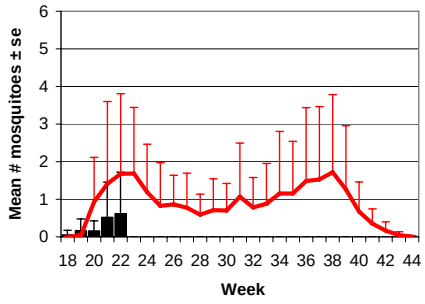
Northwestern Rural



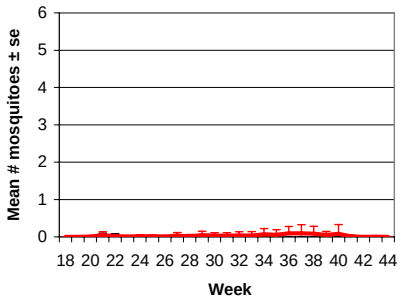
Philadelphia Metro



Pinelands



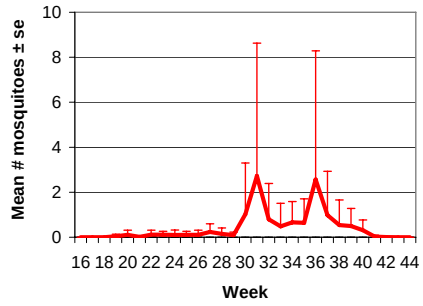
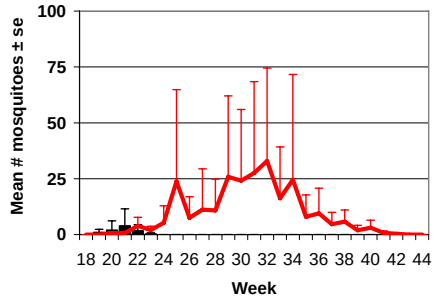
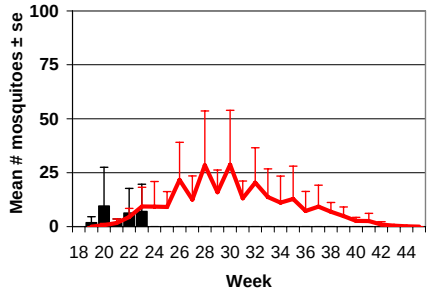
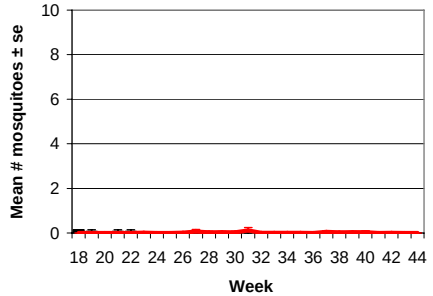
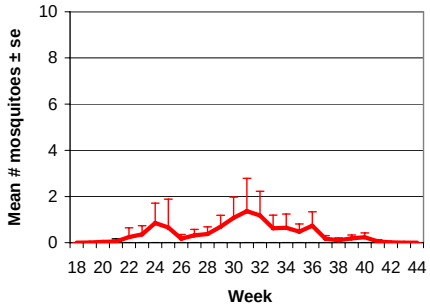
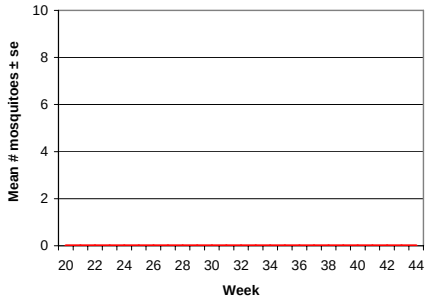
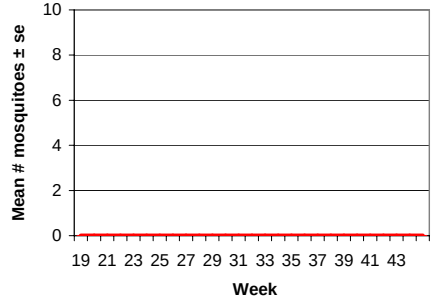
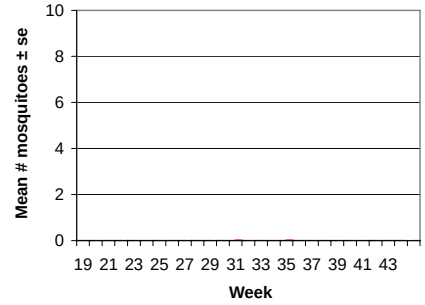
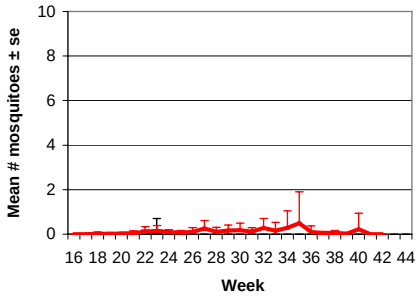
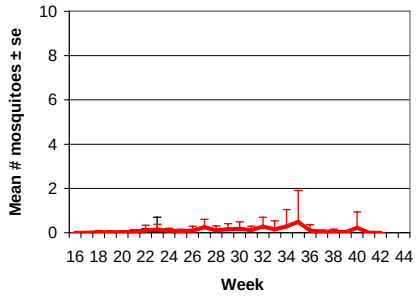
Suburban Corridor



Comments

Culiseta melanura, the enzootic ornithophilic vector of eastern equine encephalitis, is showing lower population levels than might be expected. These values, however, appear to be reflective of those obtained in traditional resting boxes – a preferred trap to that of light traps. This year populations appear larger than last year's depauperate values, but are barely within recent historic values observed over the past five years. Since last year's low populations still produced enough virus for several pool isolations of EEE, continued vigilance of this species is prudent.

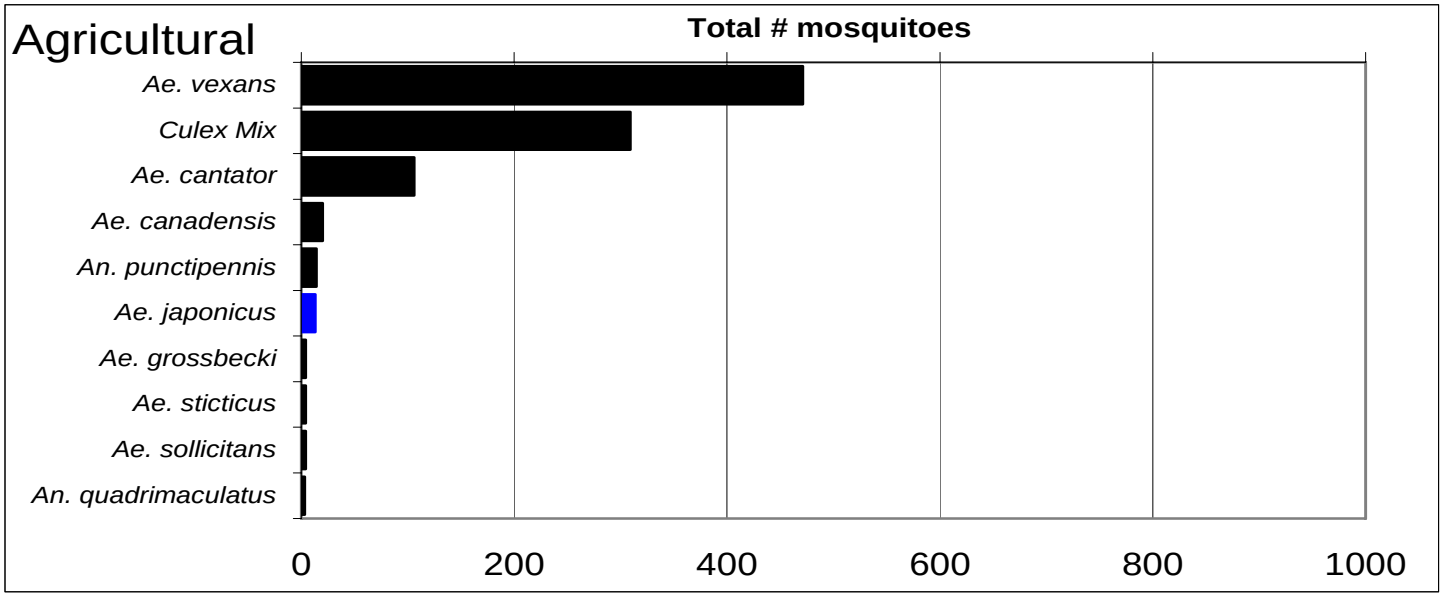
Aedes sollicitans - Salt Floodwater Species
Multivoltine Aedine (*Ae. sollicitans* Type)

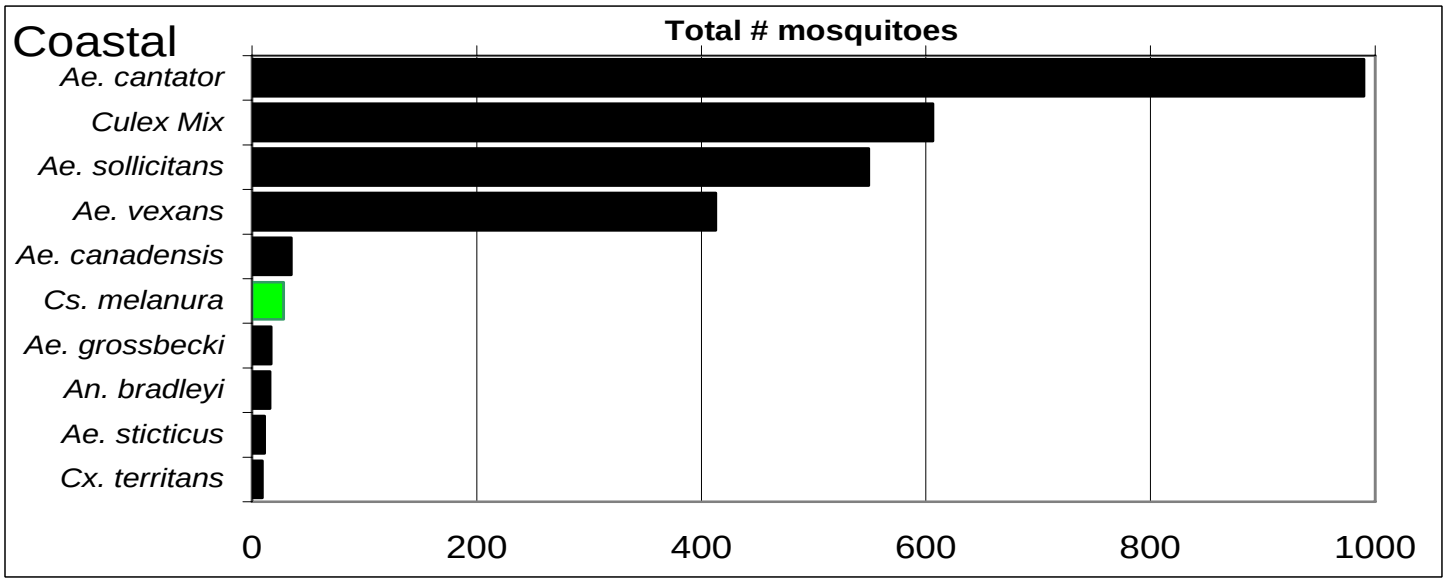
Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		*Aedes sollicitans* emergences occur as a result of saltwater and freshwater flooding, such as tidal action and rainfall events. Tidal action large enough to reach the upper portions of the marsh to flood *Ae. sollicitans* deposited eggs require lunar intervention: the monthly high tides. Last full moon was 24 May and with increasing water and air temperatures, the next emergence should be underway. As *Ae. cantator* begins to disappear, *Ae. sollicitans* will replace the former in the top ten lists for some regions.	

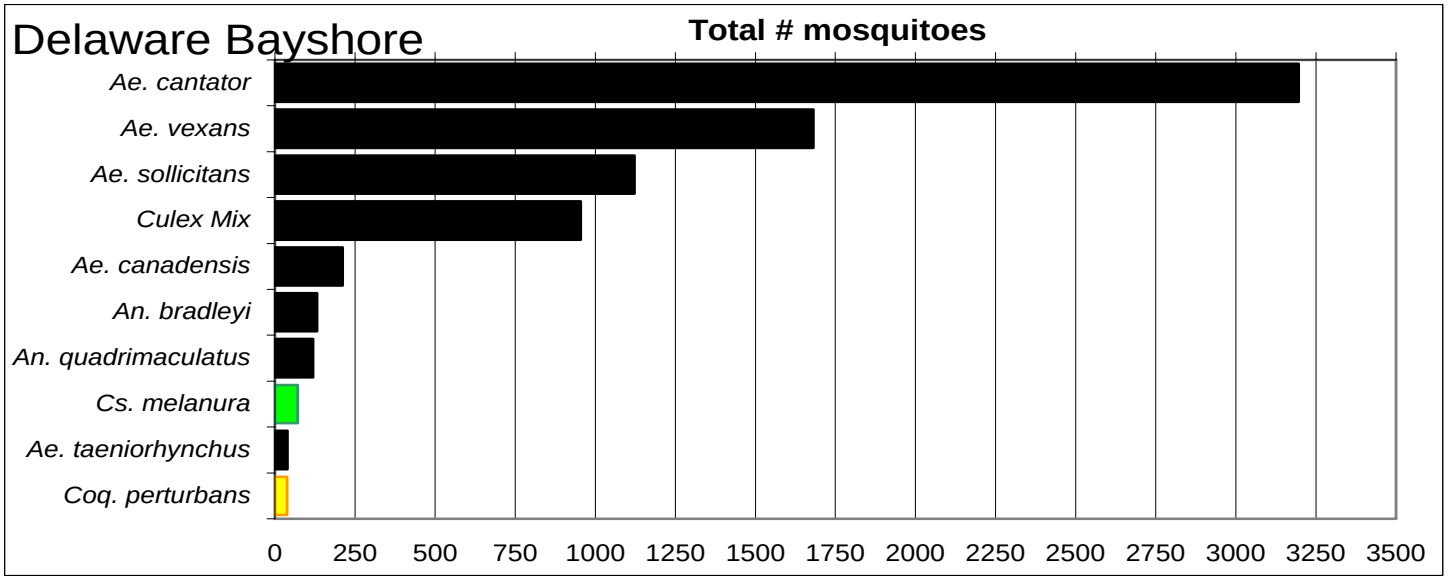
WNV *EEE*

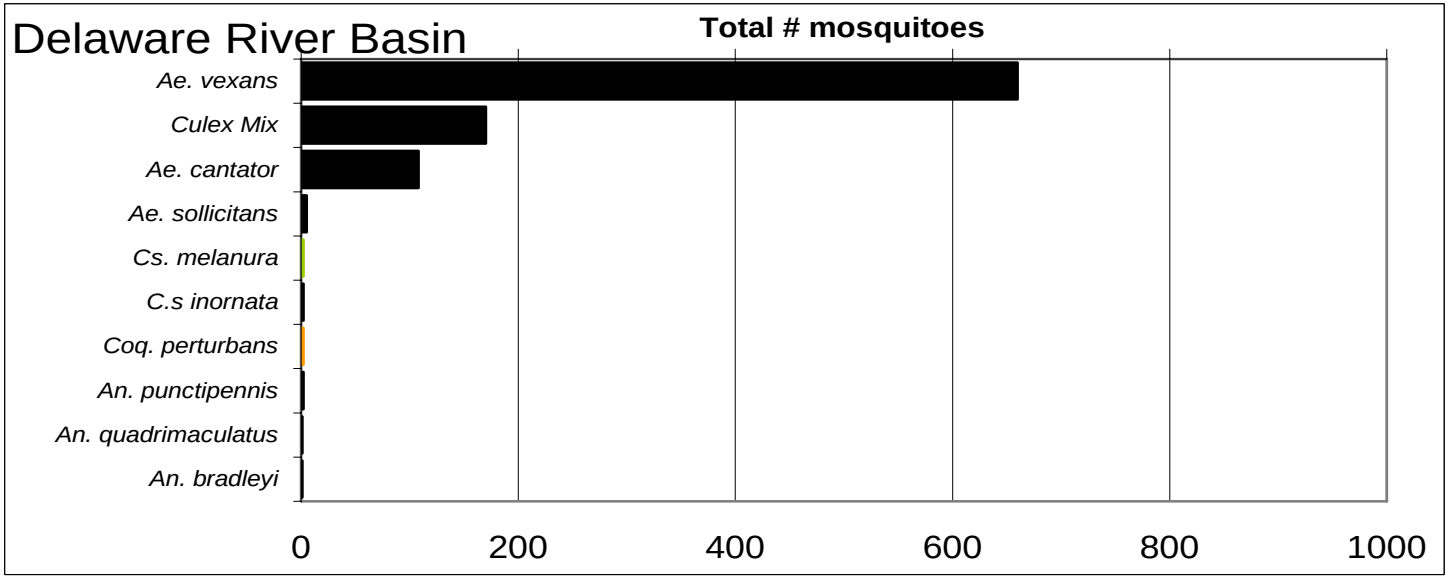
Top Ten Mosquito Species/Region - *Ae. albopictus,* *Ae. japonicus (invasives);* *Cs. melanura or Cx. erraticus* *Coq. perturbans*

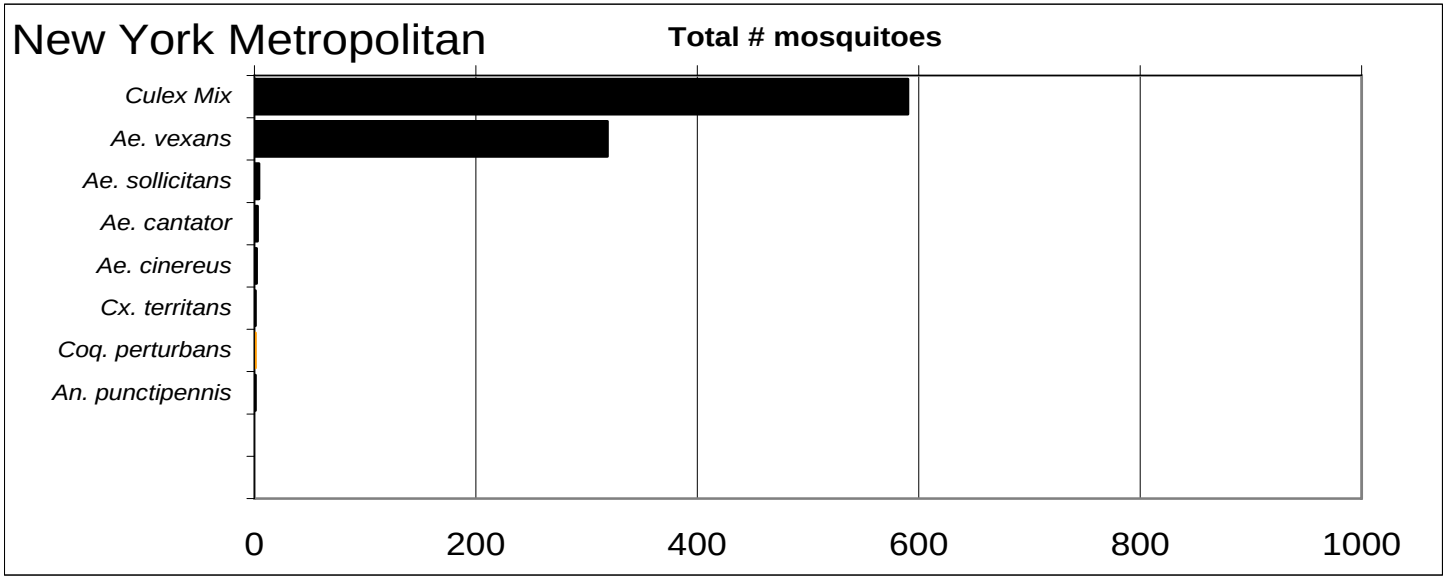
Note: In early season when fewer species are caught, graphs may show less than ten species listed.

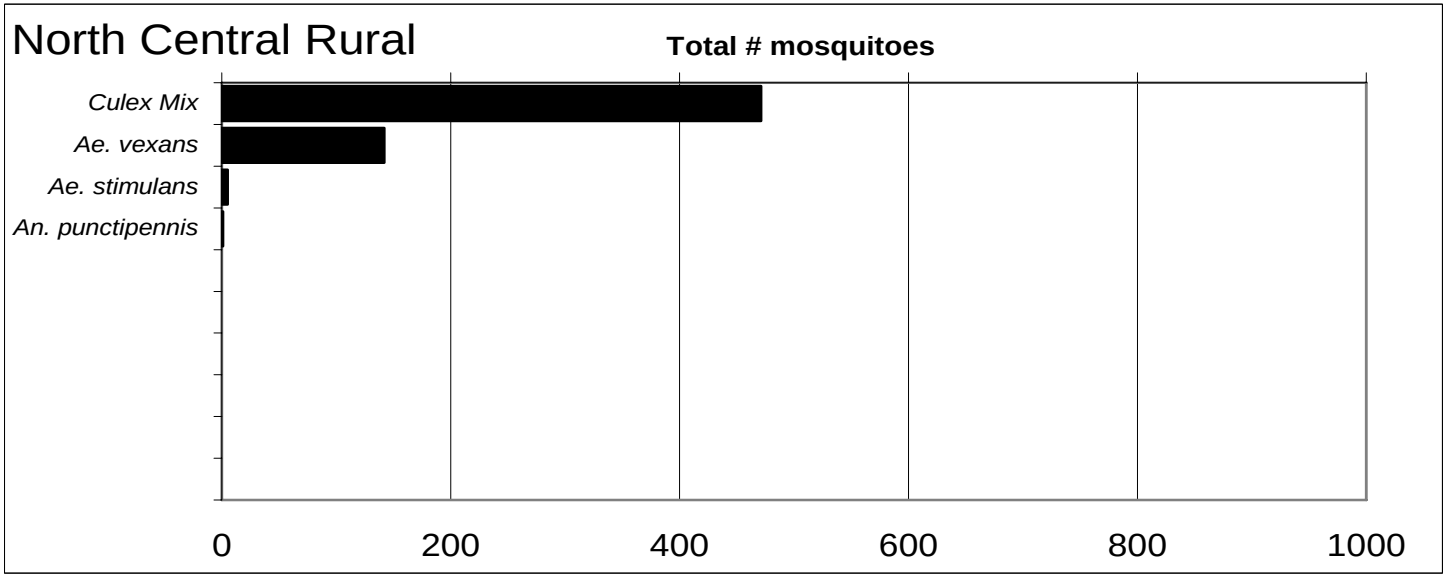


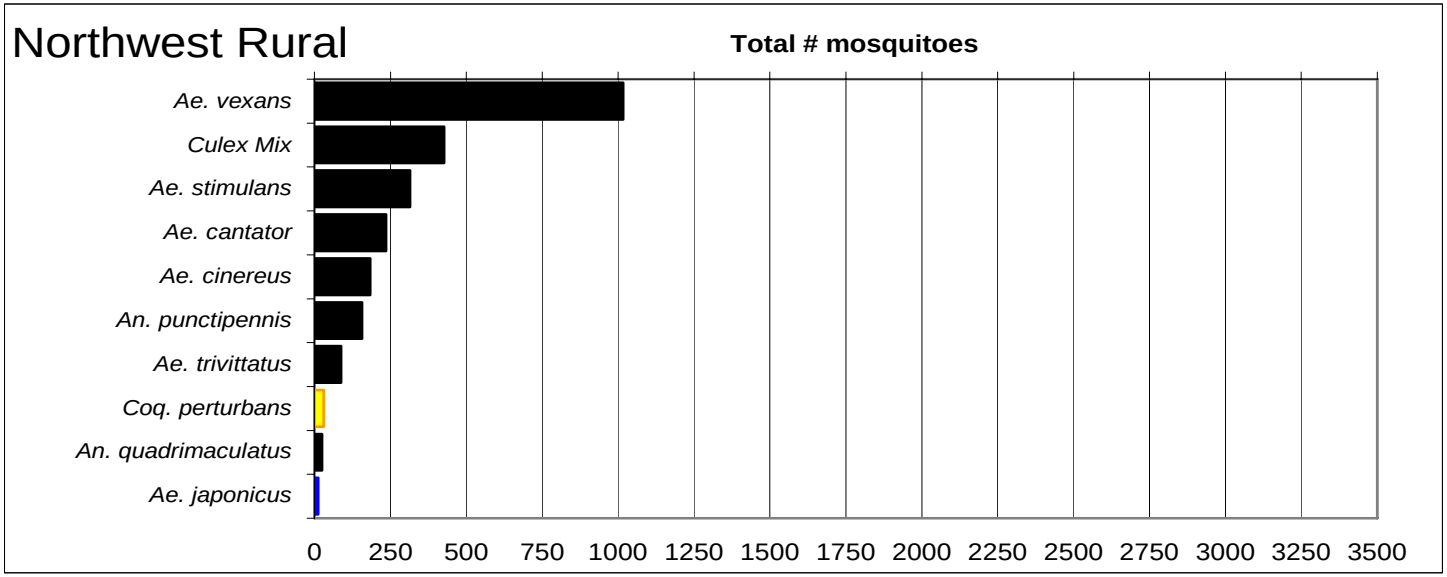


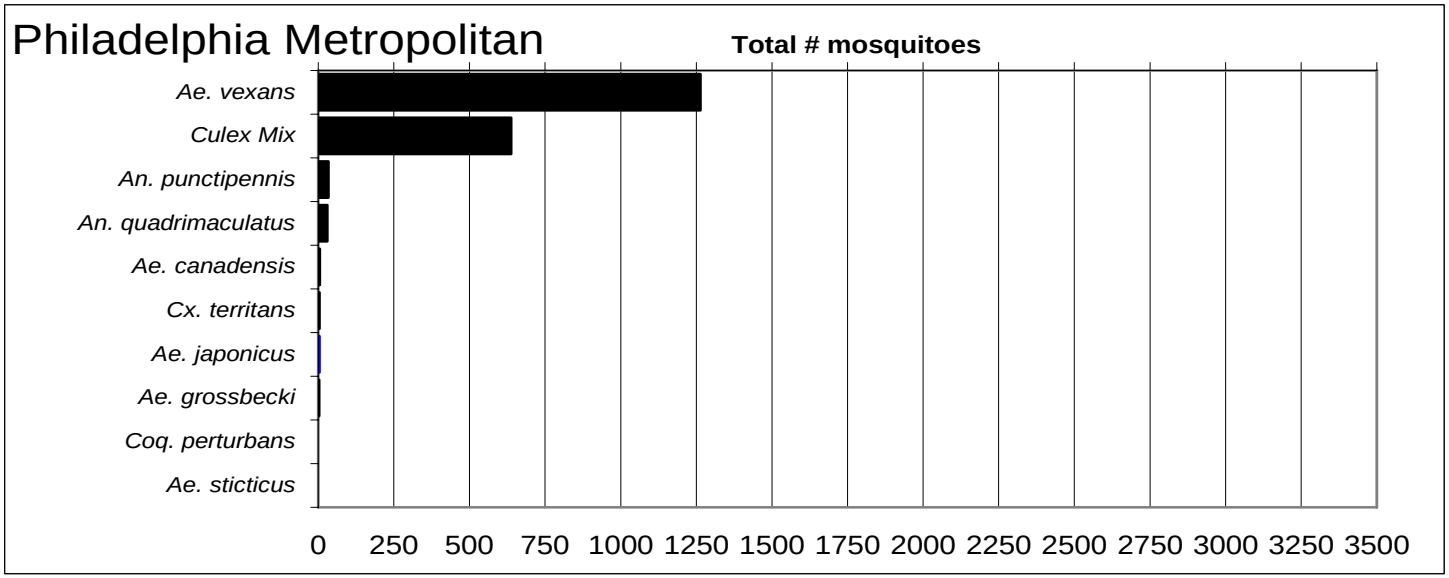

Delaware Bayshore
Total # mosquitoes
Ae. cantator
Ae. vexans
Ae. sollicitans
Culex Mix
Ae. canadensis
An. bradleyi
An. quadrimaculatus
Cs. melanura
Ae. taeniorhynchus
Coq. perturbans
0
250
500
750
1000
1250
1500
1750
2000
2250
2500
2750
3000
3250
3500

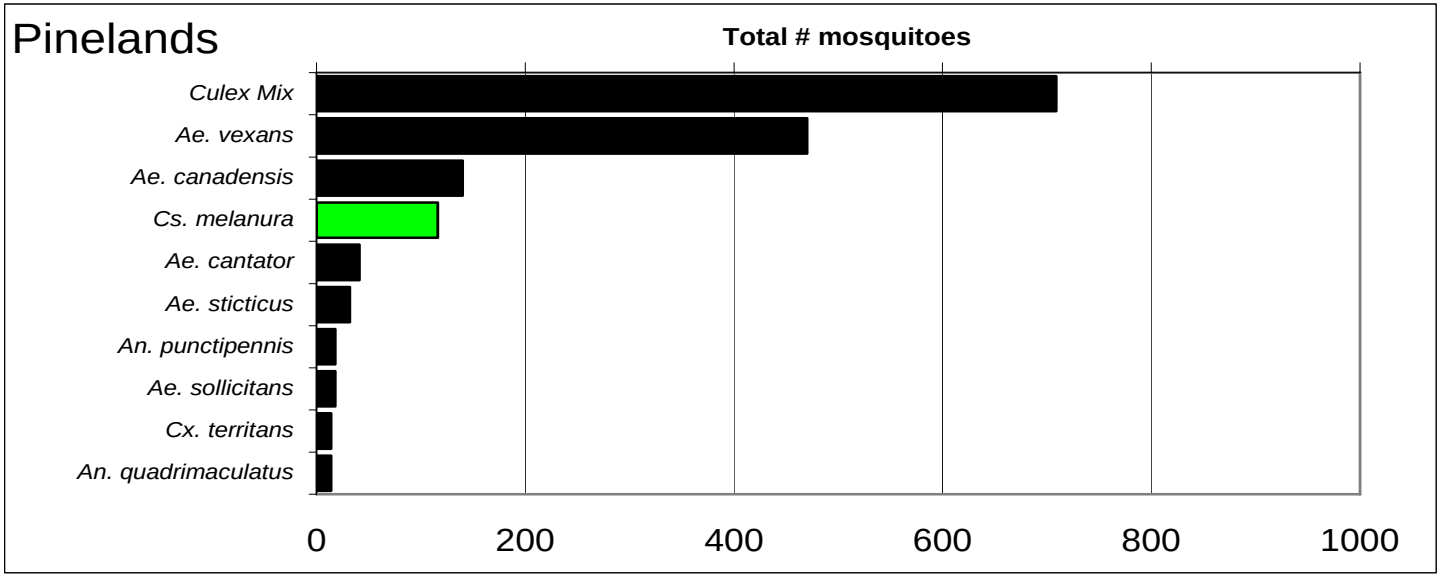

Delaware River Basin
Total # mosquitoes
Ae. vexans
Culex Mix
Ae. cantator
Ae. sollicitans
Cs. melanura
C.s inornata
Coq. perturbans
An. punctipennis
An. quadrimaculatus
An. bradleyi
0
200
400
600
800
1000

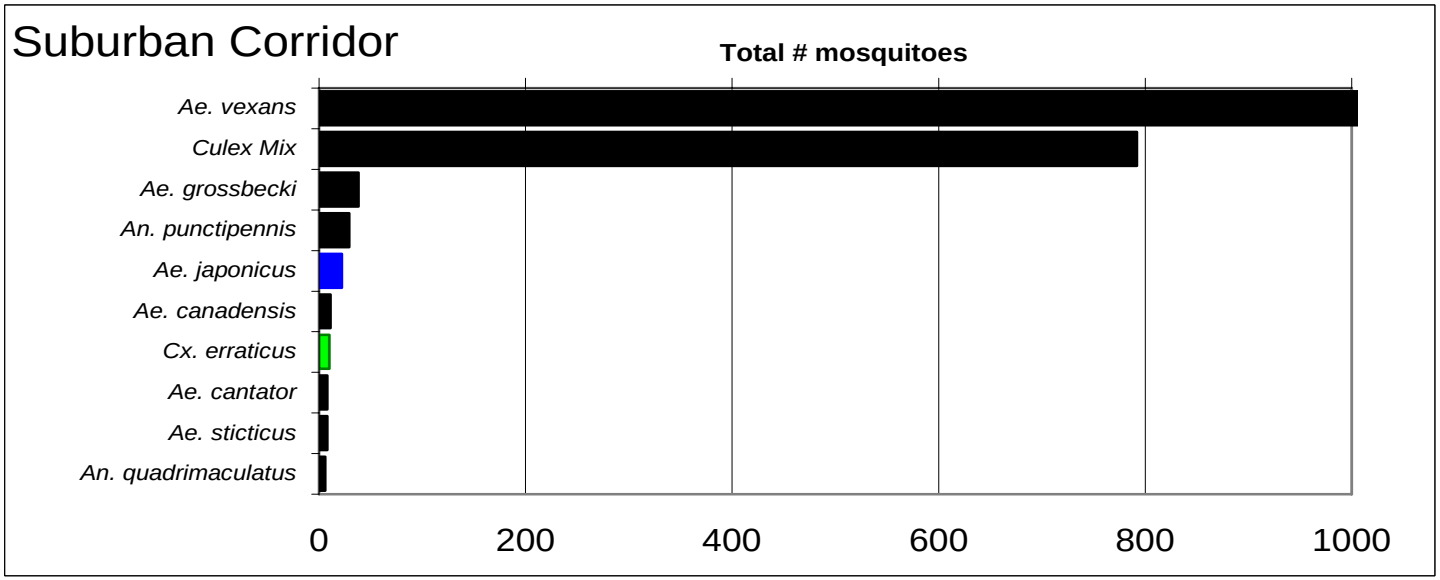

New York Metropolitan
Total # mosquitoes
Culex Mix
Ae. vexans
Ae. sollicitans
Ae. cantator
Ae. cinereus
Cx. territans
Coq. perturbans
An. punctipennis
0
200
400
600
800
1000


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


Northwest Rural
Total # mosquitoes
Ae. vexans
Culex Mix
Ae. stimulans
Ae. cantator
Ae. cinereus
An. punctipennis
Ae. trivittatus
Coq. perturbans
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. canadensis
Cx. territans
Ae. japonicus
Ae. grossbecki
Coq. perturbans
Ae. sticticus
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. sticticus
An. punctipennis
Ae. sollicitans
Cx. territans
An. quadrimaculatus
0
200
400
600
800
1000


Suburban Corridor
Total # mosquitoes
Ae. vexans
Culex Mix
Ae. grossbecki
An. punctipennis
Ae. japonicus
Ae. canadensis
Cx. erraticus
Ae. cantator
Ae. sticticus
An. quadrimaculatus
0
200
400
600
800
1000