RUTGERS
New Jersey Agricultural Experiment Station

NEW JERSEY ADULT MOSQUITO SURVEILLANCE

Report for 30 May to 5 June 2010, 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.

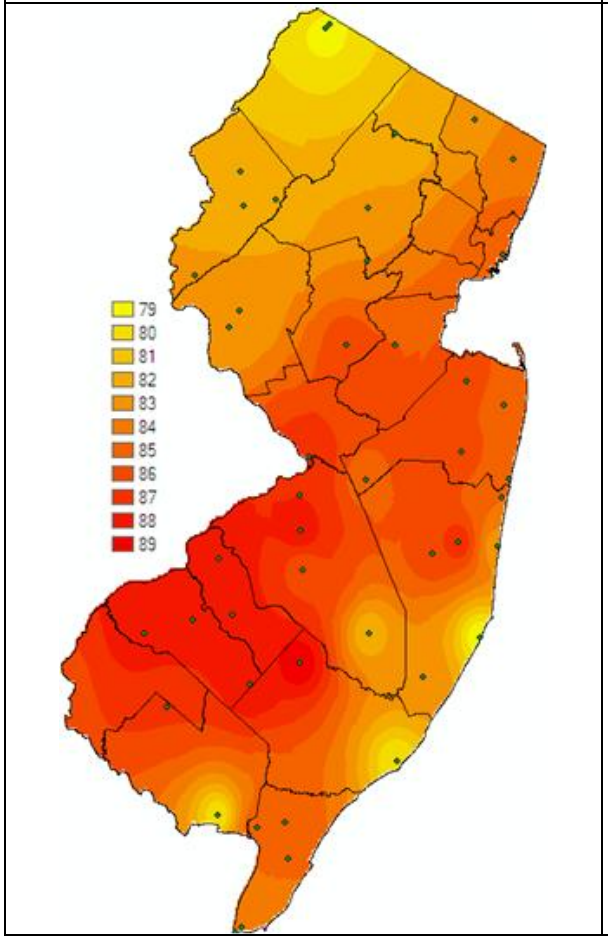
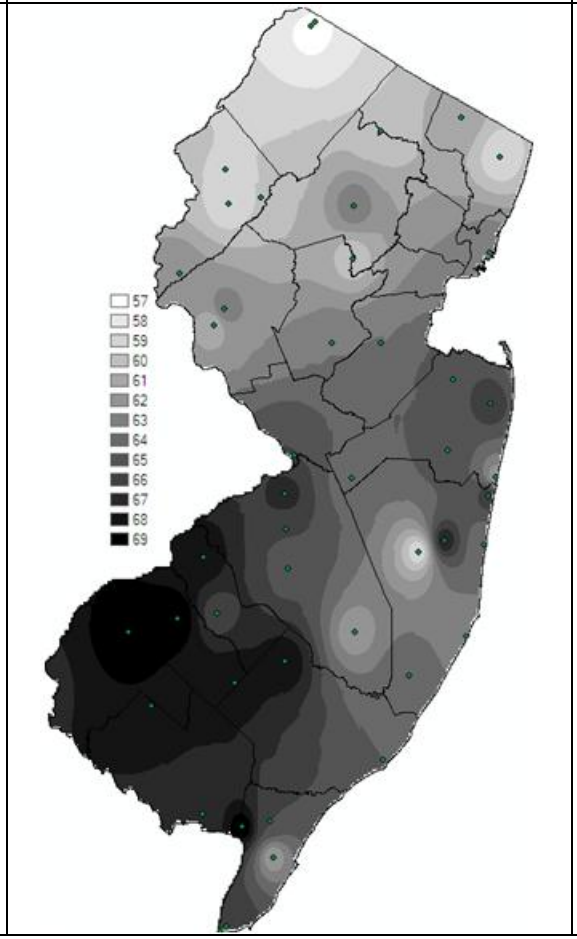
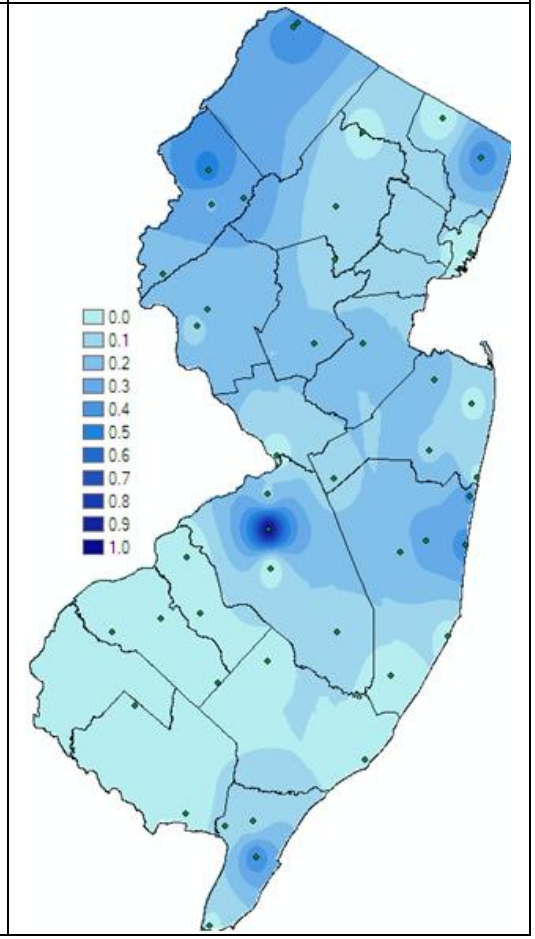
Summary table – Week 22

	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	**0.12**	**1.33**	**0**	**0.38**	**3.51**	**0**	**0.07**	**<0.01**	**4**	**0.00**	**0.05**	**0**
Coastal	**0.02**	**3.59**	**0**	**0.67**	**4.20**	**0**	**0.06**	**0.08**	**0**	**0.06**	**4.15**	**0**
Delaware Bayshore	**0.37**	**2.40**	**0**	**2.34**	**6.92**	**0**	**1.66**	**0.41**	**4**	**0.00**	**2.06**	**0**
Delaware River Basin	**0.00**	**5.39**	**0**	**0.00**	**3.86**	**0**	**0.00**	**0.14**	**0**	**0.00**	**<0.01**	**0**
New York Metro	**0.70**	**1.69**	**0**	**1.89**	**4.21**	**0**	**0.14**	**<0.01**	**4**	**0.04**	**0.25**	**0**
North Central Rural	**0.02**	**0.22**	**0**	**0.10**	**0.98**	**0**	**0.00**	**0.00**	**0**	**0.00**	**0.00**	**0**
Northwest Rural	**0.11**	**7.30**	**0**	**0.03**	**0.86**	**0**	**0.03**	**<0.01**	**4**	**0.00**	**0.00**	**0**
Philadelphia Metro	**0.38**	**4.75**	**0**	**0.93**	**4.96**	**0**	**0.34**	**0.13**	**4**	**0.00**	**0.00**	**0**
Pinelands	**0.03**	**1.20**	**0**	**0.18**	**2.94**	**0**	**0.03**	**0.06**	**0**	**0.00**	**0.18**	**0**
Suburban Corridor	**0.16**	**1.63**	**0**	**0.61**	**2.03**	**0**	**0.00**	**0.03**	**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: *Coquillettidia perturbans* continues to show up early in several regions. This week's tabular data would appear to suggest that *Aedes vexans* and *Culex* numbers are down, but the graphs for these species show that their numbers are close to historical values.

Climate Factors

May Average High Temperatures 1 Jun to 7 Jun	May Average Low Temperatures Jun to 7 Jun	May Total Precipitation 1 Jun to 7 Jun
		

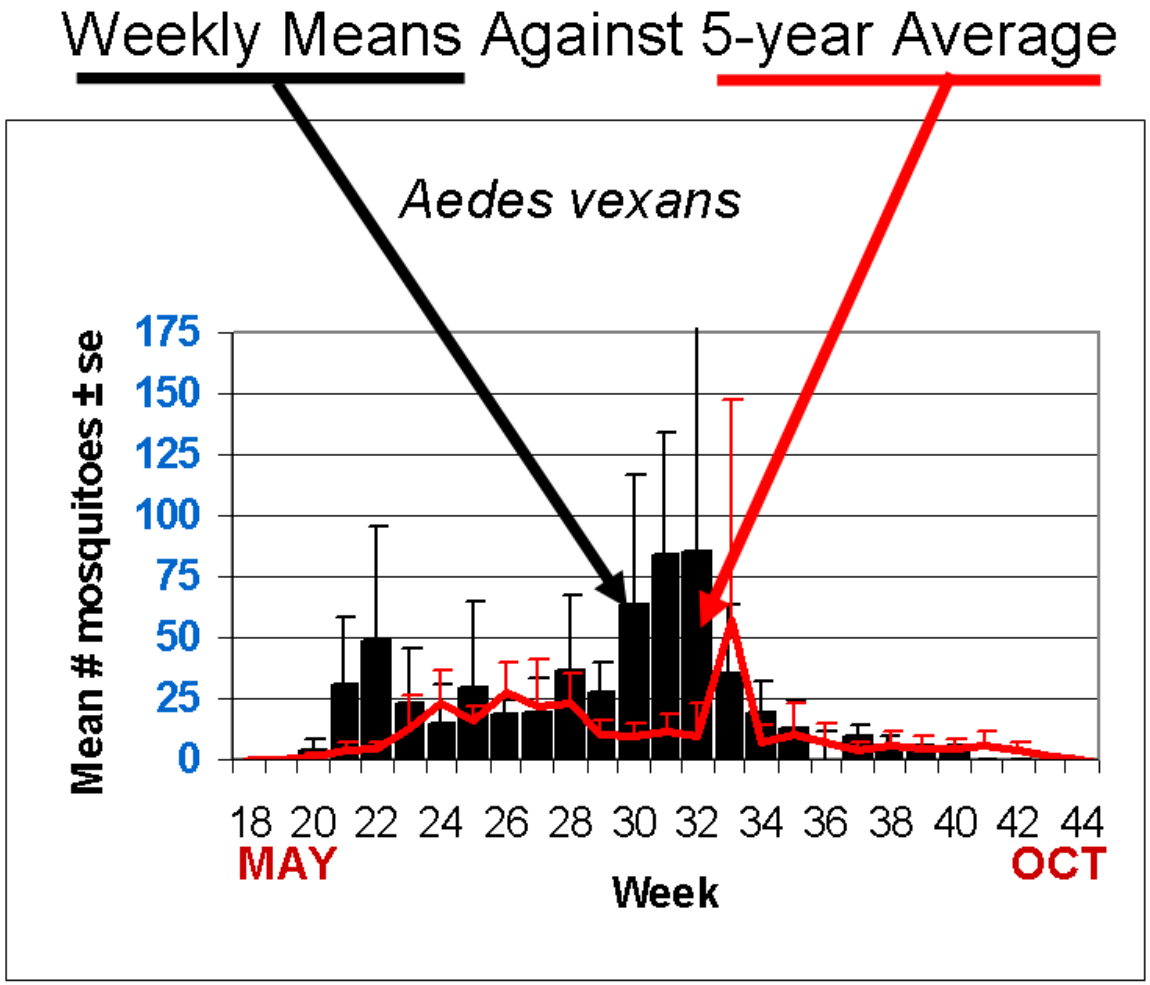
The three figures show the interpolation of average maximum and minimum temperature and total precipitation from June 1 to June 7, 2010 in New Jersey. Data points are from 35 weather stations maintained through the New Jersey Weather & Climate Network and the State Climatologist. Interpolation between points was performed using ArcMap 9.2.

In June, average high temperatures were highest in the interior portions of New Jersey and coolest along the coastal and northwestern regions. Average low temperatures were lowest in the northern portion of the state and it was cooler along the coastal region as well. Rainfall was recorded for most of the central and northern regions as well as in Cape May. These small amounts of rain appear to produce habitat, possibly due to a high water table, the result of considerable amounts of precipitation from earlier in the season.

NJ Weather & Climate NETWORK

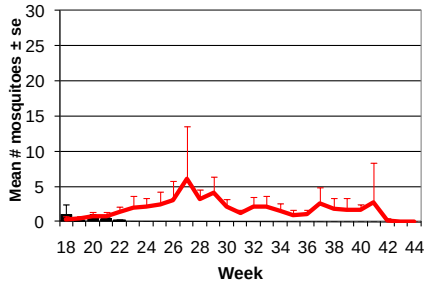
ONJSC at Rutgers University

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 Camden, Cape May, Essex, Hunterdon, Monmouth, Union and Warren counties. Note: Previous week's data are from Atlantic, Bergen, Burlington, Camden, Cape May, Cumberland, Essex, Hunterdon, Hudson, Mercer, Middlesex, Monmouth, Morris, Ocean, Salem, Somerset, Union and Warren counties.

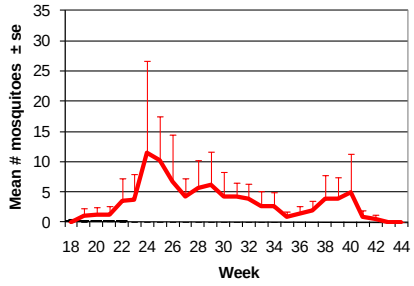


Aedes vexans - Fresh Floodwater Species
Multivoltine Aedine (*Ae. vexans* Type)

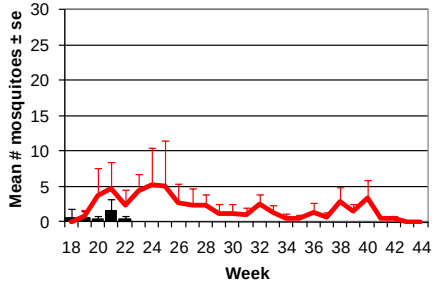
Agricultural



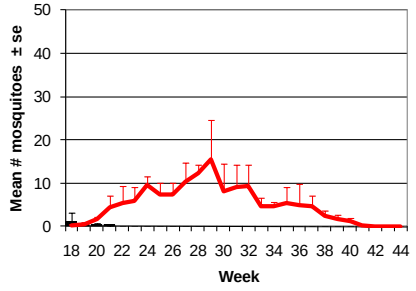
Coastal



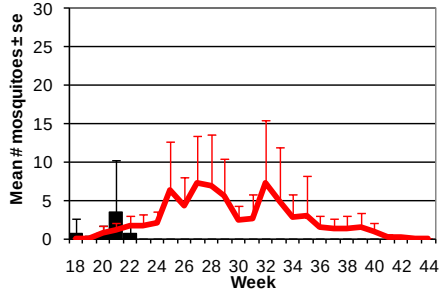
Delaware Bayshore



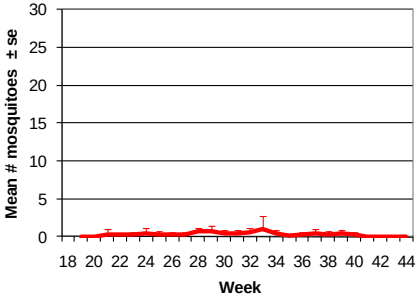
Delaware River Basin



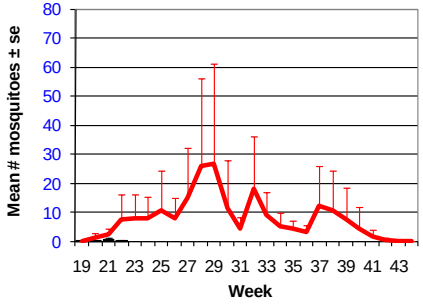
New York Metro



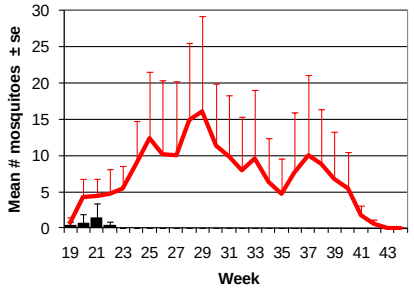
North Central Rural



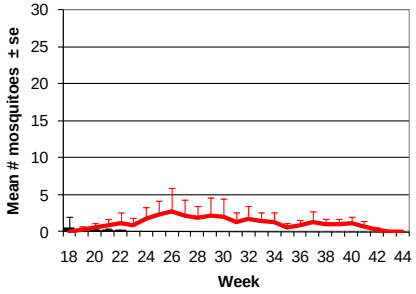
Northwestern Rural



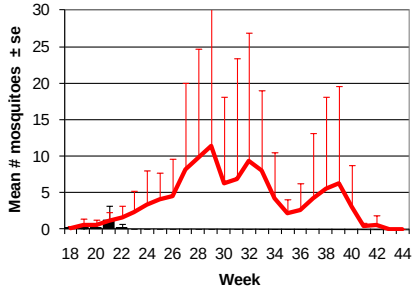
Philadelphia Metro



Pinelands



Suburban Corridor

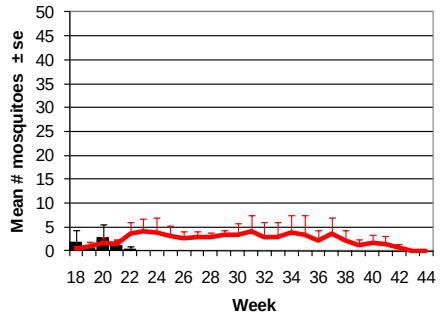


Comments

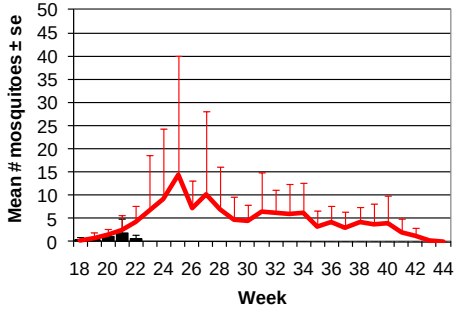
Aedes vexans populations appear to be at or below historical levels despite the frequent events of precipitation experienced since spring began. One possible reason why *Ae. vexans* might not be appearing in high numbers is that the ephemeral pools that this species utilizes were created earlier and often in the season and that subsequent reformation of those pools failed to reach a large enough size to inundate overwintering eggs lain higher up.

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

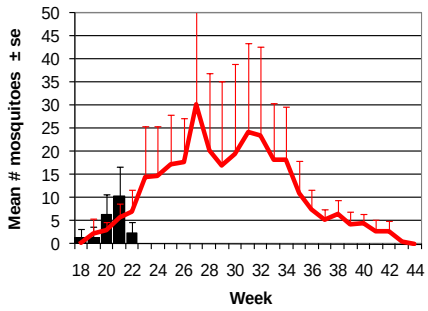
Agricultural



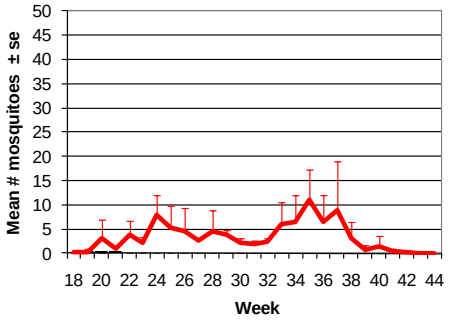
Coastal



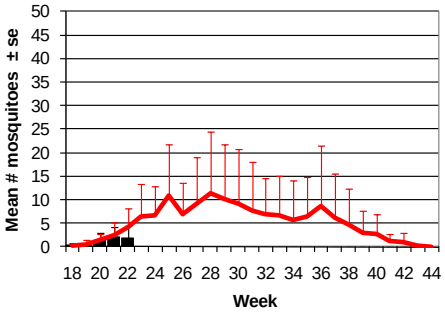
Delaware Bayshore



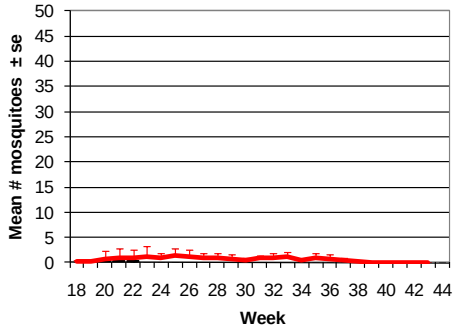
Delaware River Basin



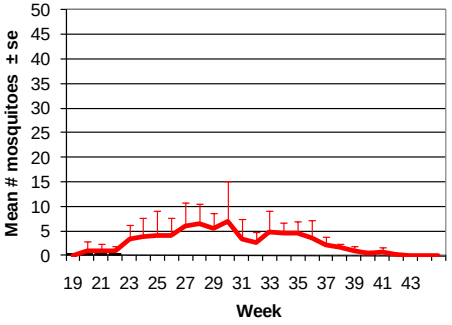
New York Metro



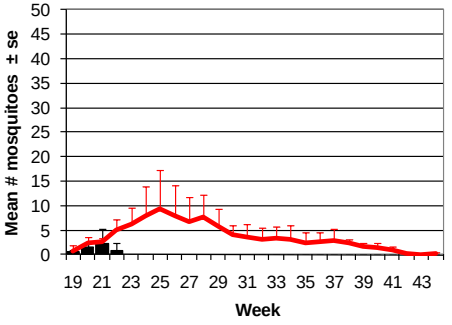
North Central Rural



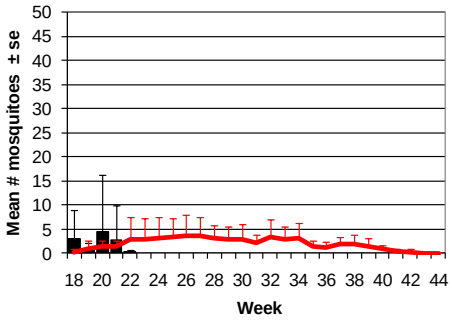
Northwestern Rural



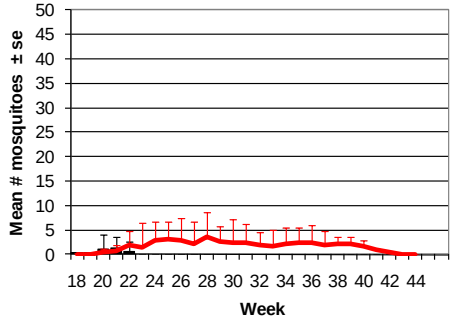
Philadelphia Metro



Pinelands



Suburban Corridor

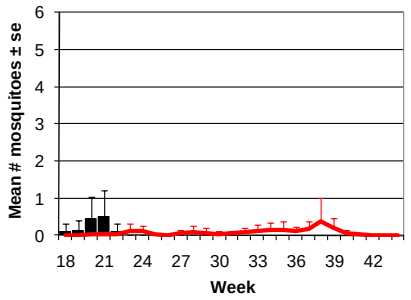
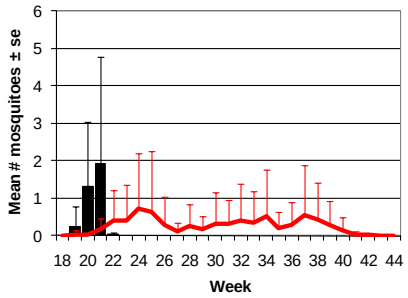
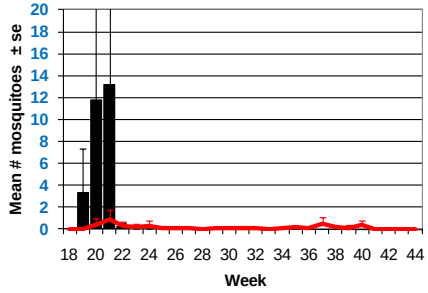
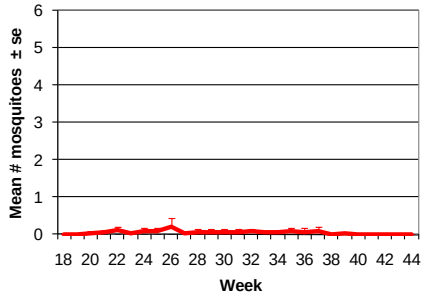
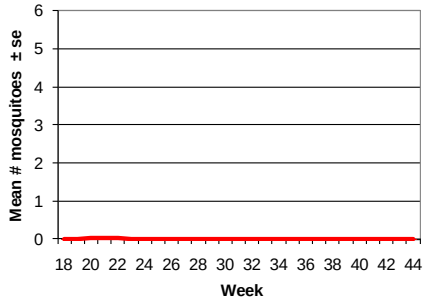
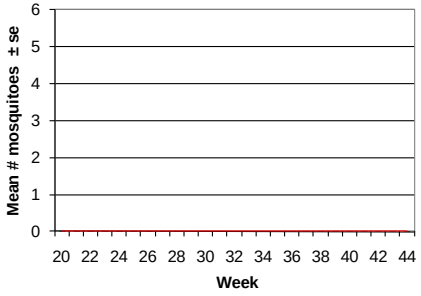
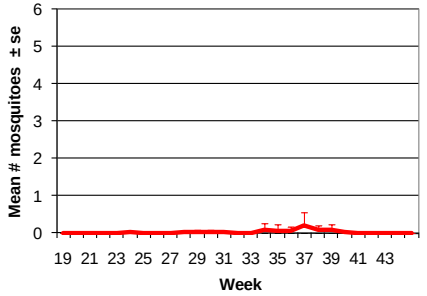
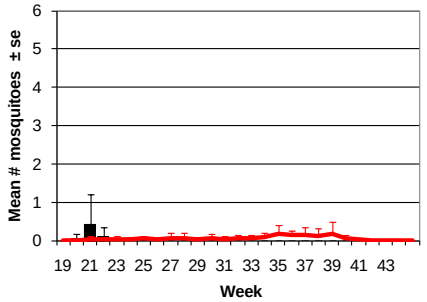
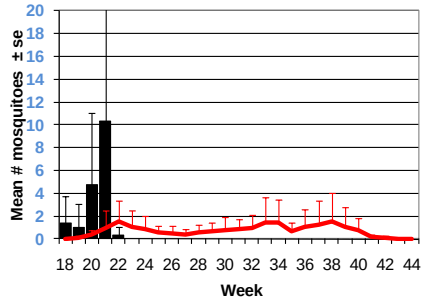
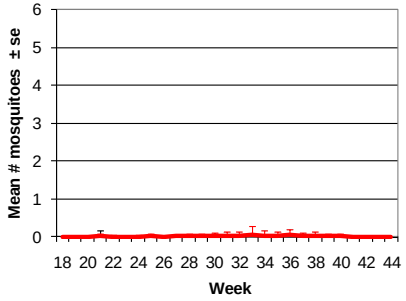


Comments

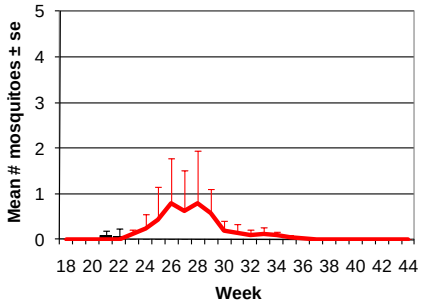
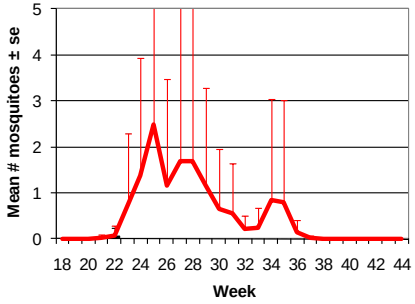
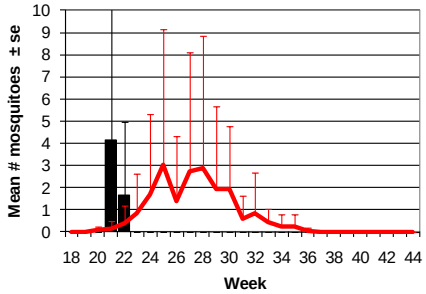
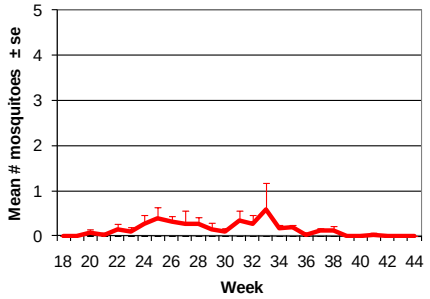
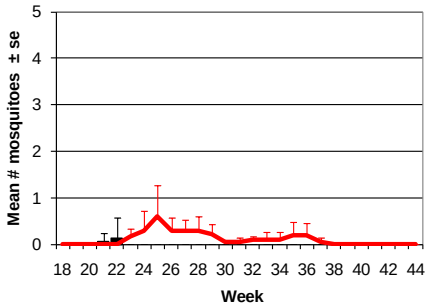
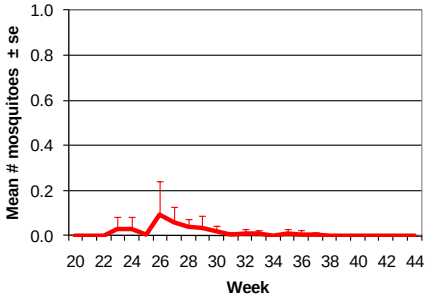
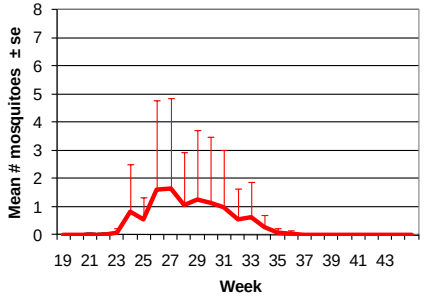
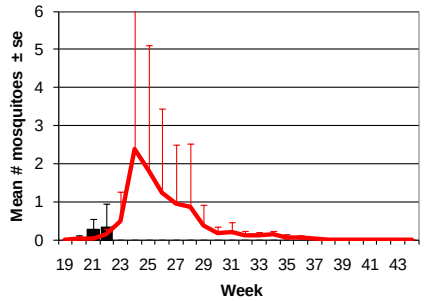
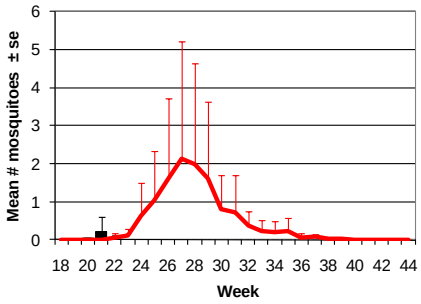
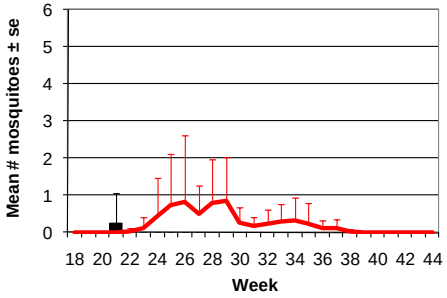
Culex Mix is represented by three species of *Culex* mosquitoes: *Cx. pipiens, Cx. restuans* and *Cx. salinarius*. These mosquitoes are usually grouped together as there is considerable difficulty in separating them to species easily after travelling through the grind of the light trap, often in the company of protesting moths and beetles.

Current population levels appear to be consistent with the recent historical data. Last year, *Culex* abundances were often seen higher in the New York Metropolitan region than in the recent past, likely maintaining the WNV amplification cycle and the tendency of that region to show high virus activity. Highest activity, however, comes from the Delaware Bayshore region, where WNV activity is considerably lower than in the NY Metro region.

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

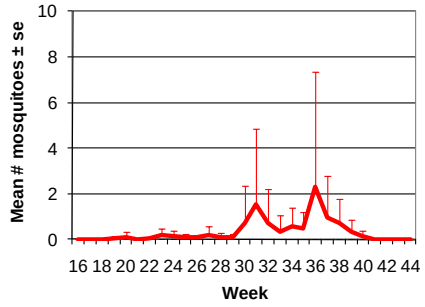
Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		*Culiseta melanura*, the enzootic ornithophilic vector of eastern equine encephalitis, continue to show a strong presence in the regions where it is most commonly found. The abundance is particularly noteworthy in the Delaware Bayshore and Pinelands region, where numbers are a magnitude greater than historical values. It should be noted that abundances over the past several years have been much reduced for this species, and that the previous 5 years of historical data reflects this. Vector surveillance begins this week and resting box data should follow similar trends. The pattern of *Cs. melanura*, the following species and EEE virus activity suggests a close monitoring of this situation is prudent. Note that *Cs. melanura* is currently the most abundant species (top ten below) collected in light traps for two regions (Bayshore and Pinelands).	

Coquillettidia perturbans – Miscellaneous Group
Monotypic (*Coq. perturbans* Type)

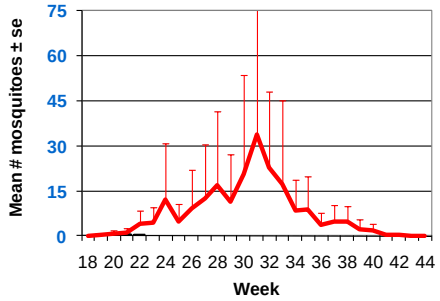
Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		Populations of *Coquillettidia perturbans* appear to have emerged at least one week earlier than historical data from the past five years indicate throughout the state. This is particularly evident in the Now York Metro, Pinelands and Suburban corridor. The Delaware Bayshore shows considerable activity early on. This species has been considered a potential inland vector of EEE, and so the current populations of this and the enzootic vector, *Culiseta melanura*, plus last year's high levels of EEE virus suggests that these three factors should be closely monitored.	

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

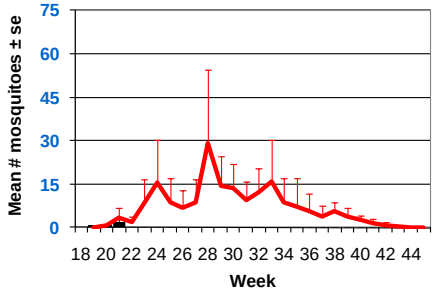
Agricultural



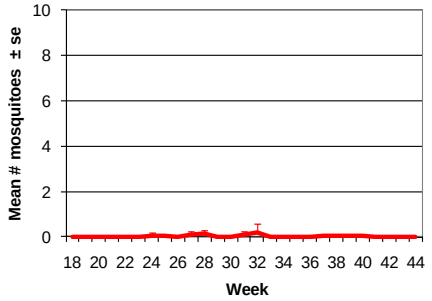
Coastal



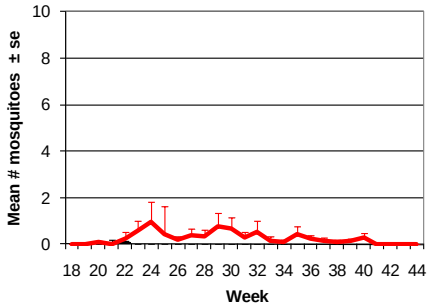
Delaware Bayshore



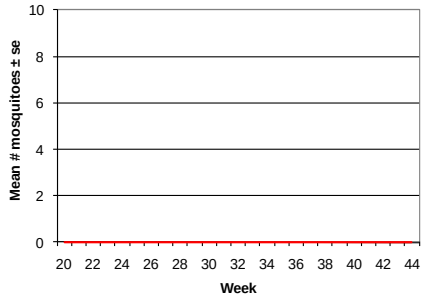
Delaware River Basin



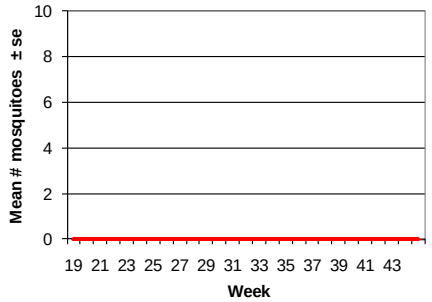
New York Metro



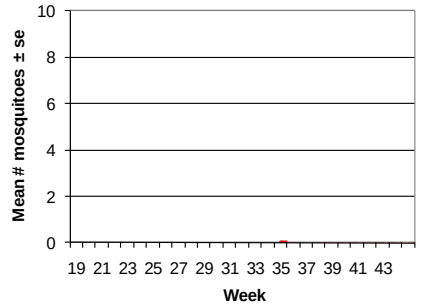
North Central Rural



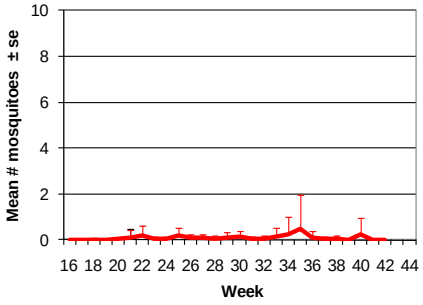
Northwestern Rural



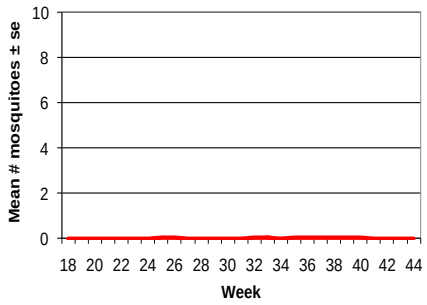
Philadelphia Metro



Pinelands



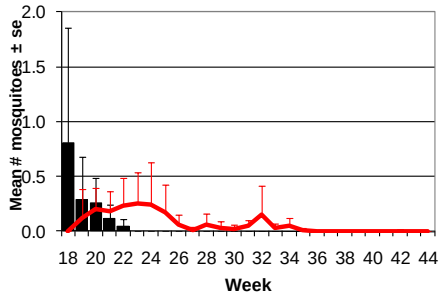
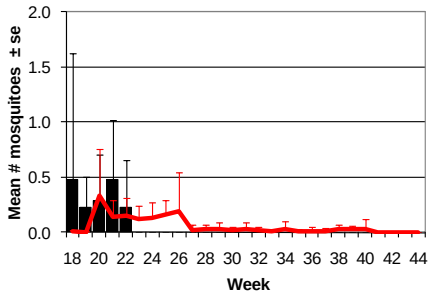
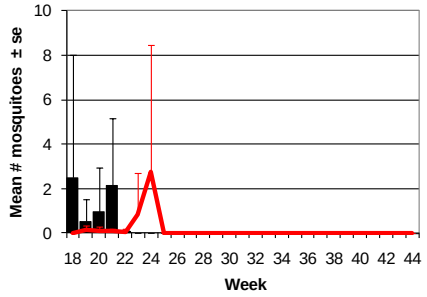
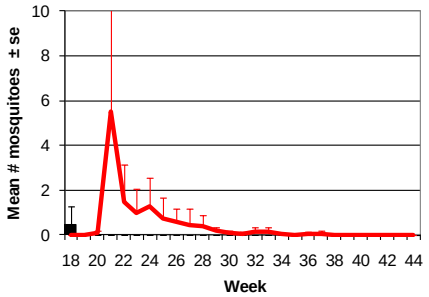
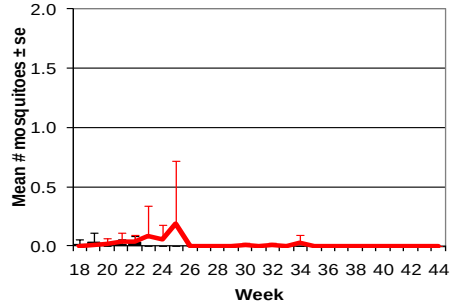
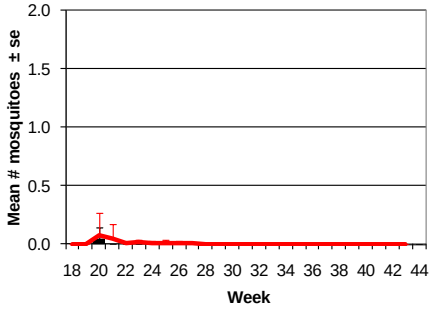
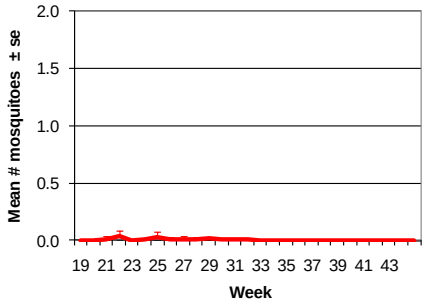
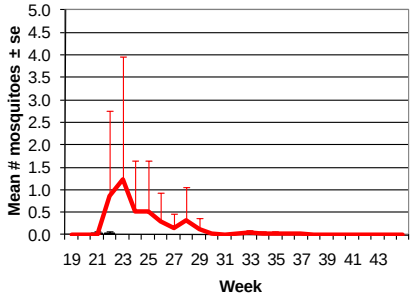
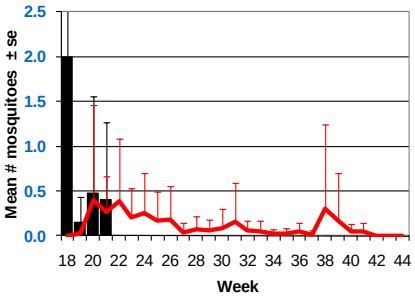
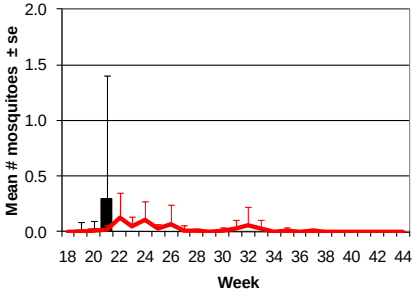
Suburban Corridor



Comments

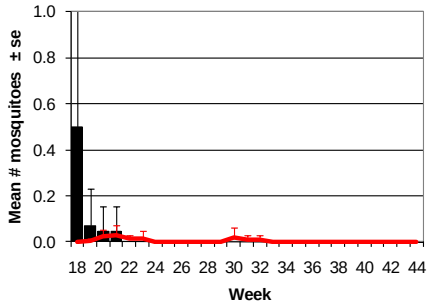
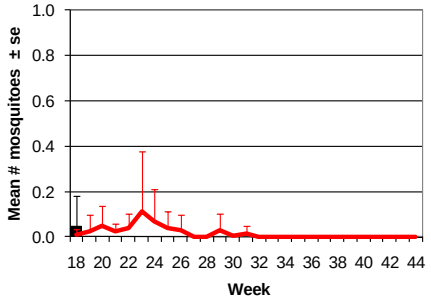
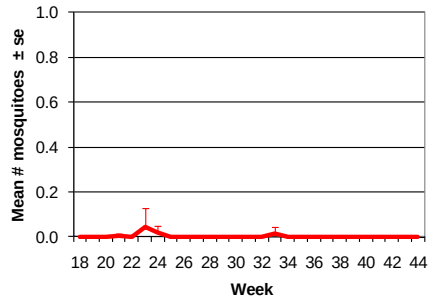
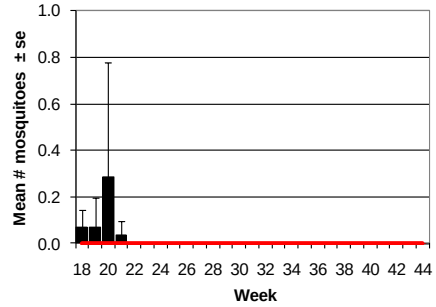
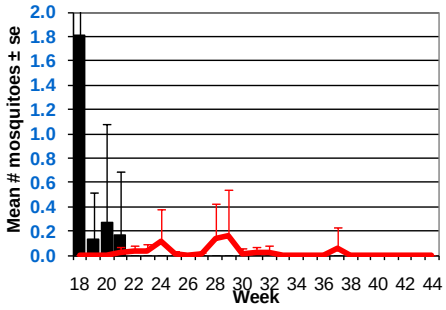
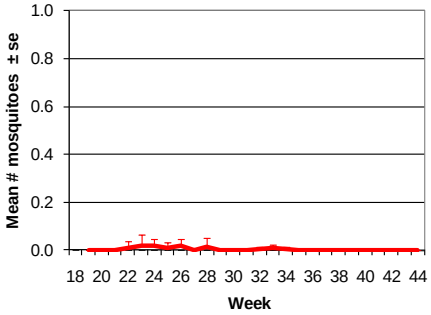
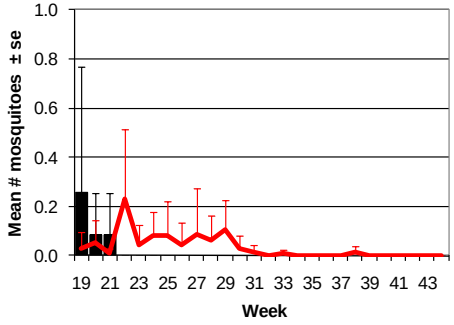
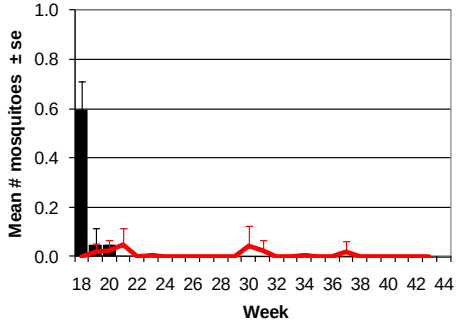
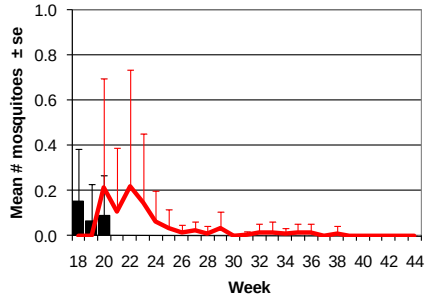
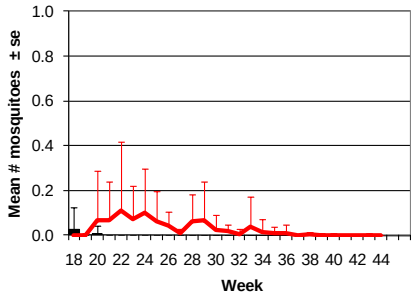
Aedes sollicitans populations continue to show up in small numbers. The past full moon occurred on 27 May, which should have contributed to the high tide that would inundate upland eggs lain by this species. Next high tide is 26 June and should produce the first sizeable emergence.

Aedes canadensis – Early Season Species
Univoltine Aedine (*Ae. canadensis* Type)

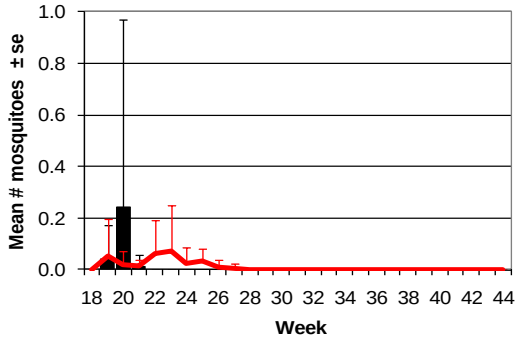
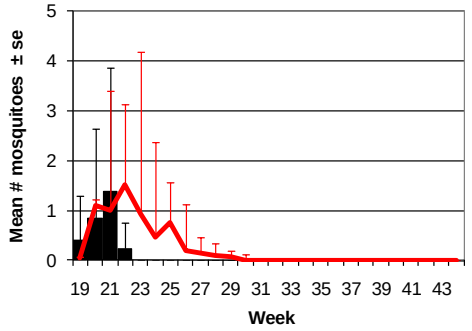
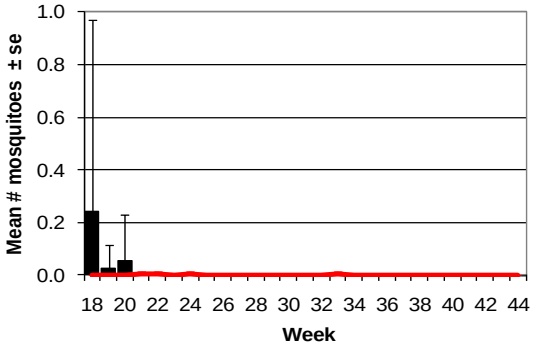
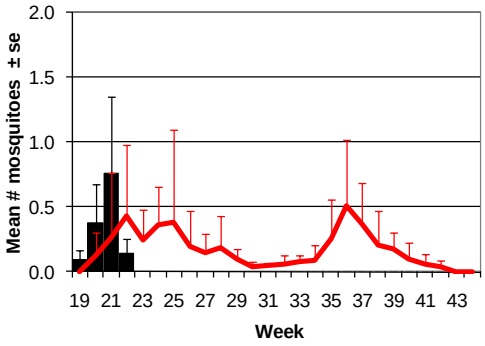
Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		*Aedes canadensis* populations continue to show up in most regions after significant early hatches occurred, such as in the Pinelands, Agricultural and Coastal sites. This species has been implicated as a potential EEE vector, but it has a low rate of transmission to mammals (Vaidyanathan 1997). In addition, its numbers decrease as the season progresses, particularly in late summer, when EEE transmission is greatest.	

Vaidyanathan, R, J. D. Edman, L.A. Cooper, and T. W. Scott 1997 Vector Competence of Mosquitoes (Diptera: Culicidae) from Massachusetts for a sympatric isolate of eastern equine encephalomyelitis virus. Journal of Medical Entomology, 34(3): 346-352.

Aedes sticticus – Early Season Species
Univoltine Aedine (*Ae. canadensis* Type)

Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		*Aedes sticticus*, continues to show up in various regions, but its numbers are much reduced from the time that the trapping for this program had begun. Like *Ae. canadensis*, *Ae. sticticus* numbers will decline as the season progresses, although reoccurrence after flooding may occur.	

Aedes stimulans and *Aedes cinereus* – Early Season Species
Univoltine Aedine (*Ae. stimulans* Type and *Ae. canadensis* Type, respectively)

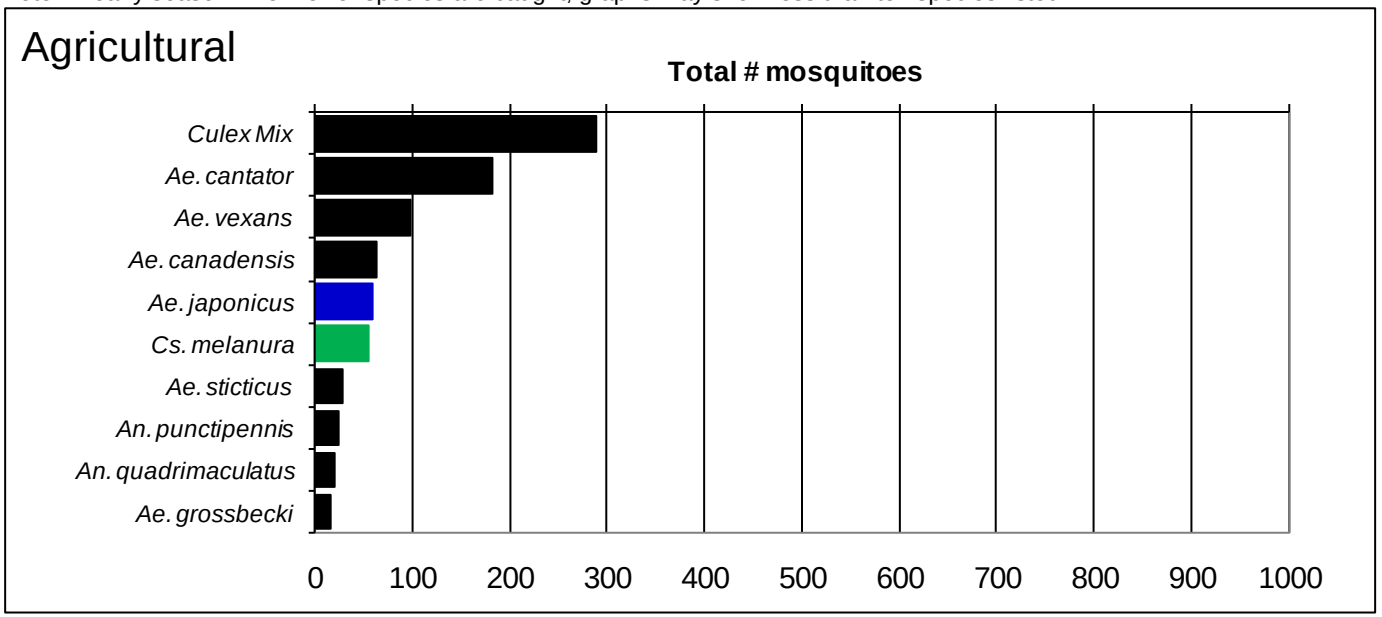
Ae. stimulans in NY Metro	*Ae. stimulans* in Northwestern Rural
	
***Ae. cinereus* in NY Metro**	***Ae. cinereus* in Northwestern Rural**
	

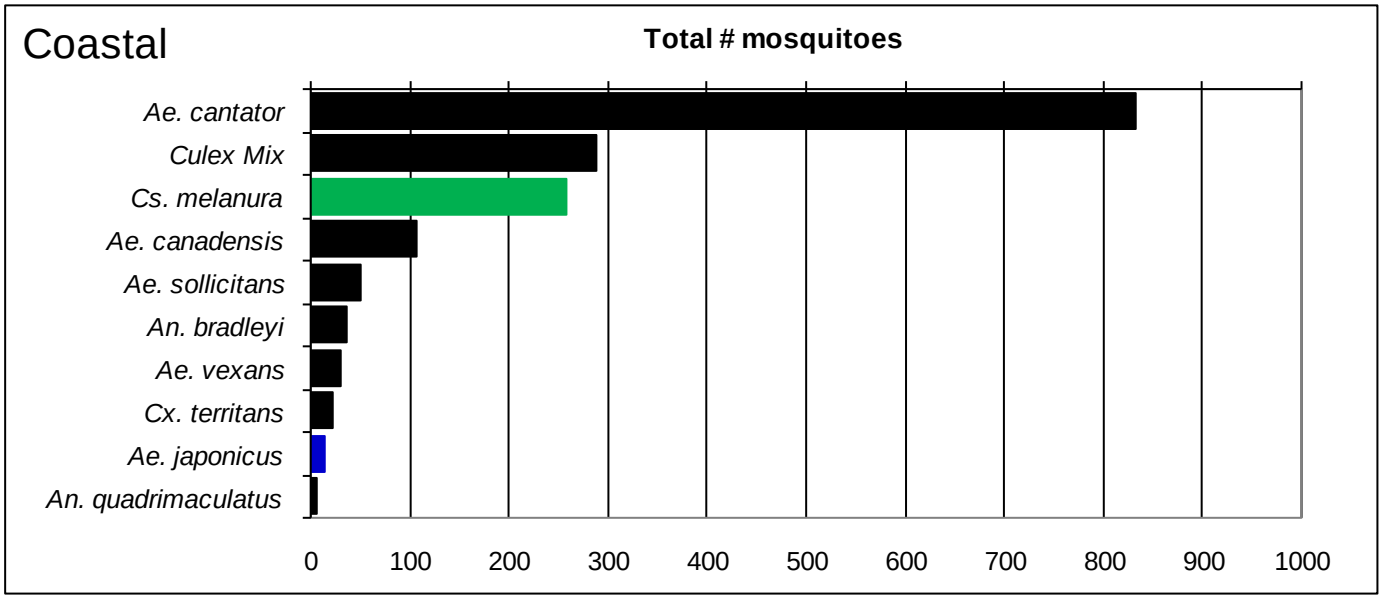
Ae. stimulans and *Ae. cinereus* are both early season, cold-tolerant species. Both species are most abundant in the Northwestern Rural region, but has also shown up in numbers in the New York Metro region. *Ae. stimulans*, the snow-pool mosquito, is one of the earliest species to emerge from overwintering eggs, usually from shaded woodland pools. This species is considered a potential vector of dog heartworm. *Ae. cinereus* is also an early season species, but can re-appear later in the summer when habitat gets flooded. This ankle-biter is aggressive and few numbers can still result in complaints.

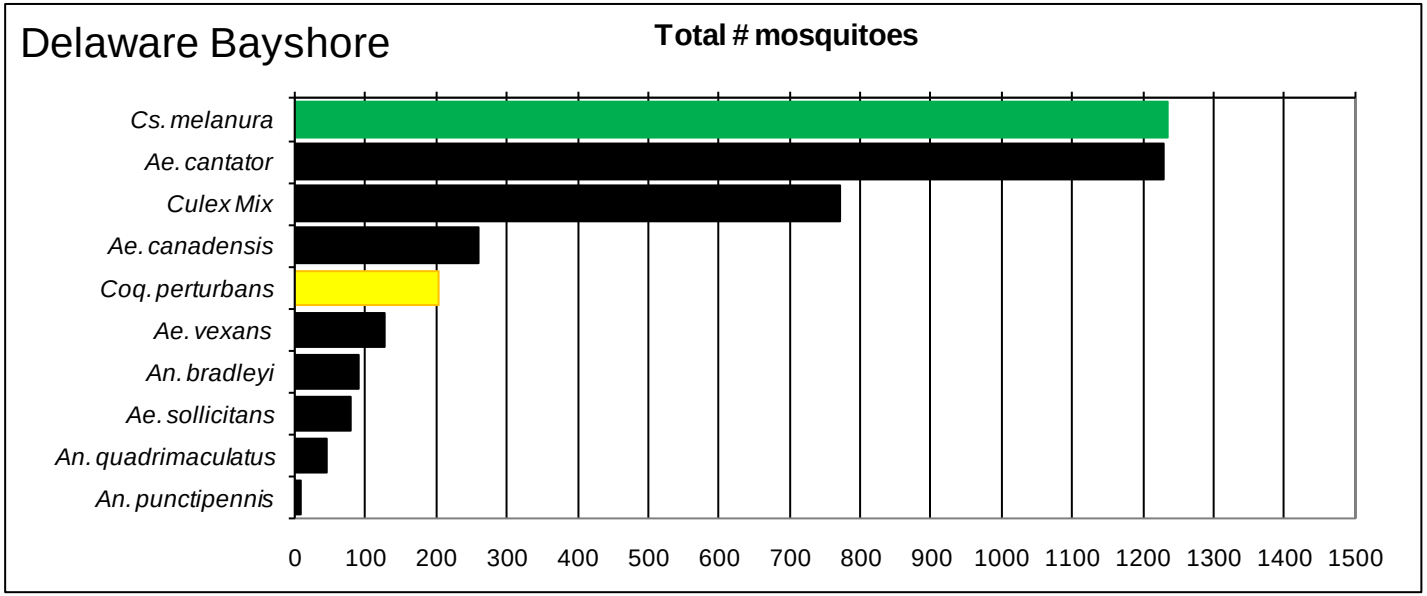
WNV *EEE*

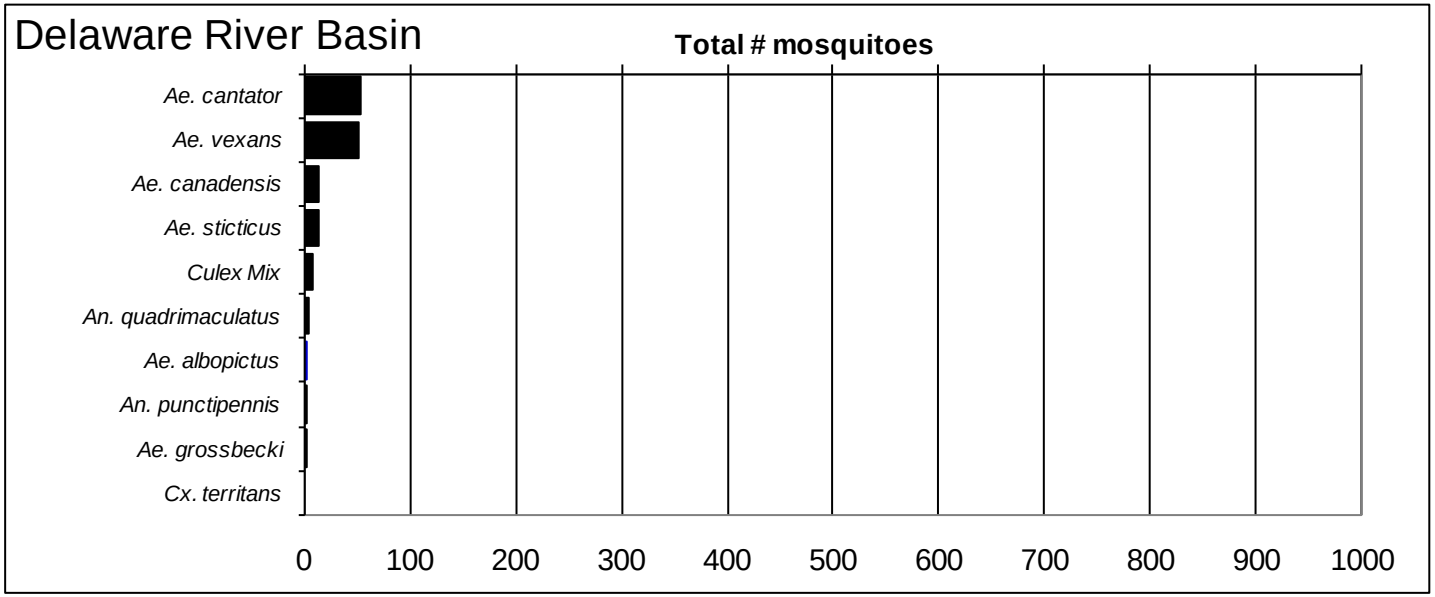
Top Ten Cumulative Mosquito Species/Region - *Ae. albopictus,* *Ae. japonicus (invasives);* *Cs. melanura or Cx. erraticus* *Coq. perturbans*

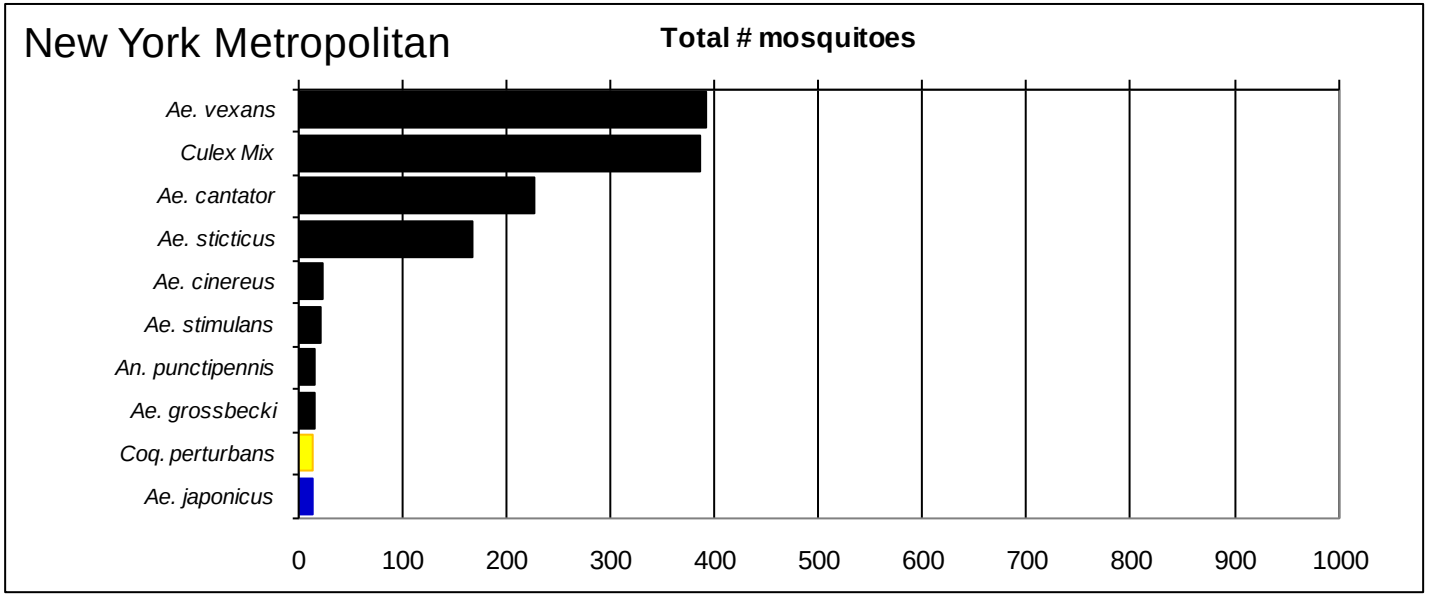
Note: In early season when fewer species are caught, graphs may show less than ten species listed.

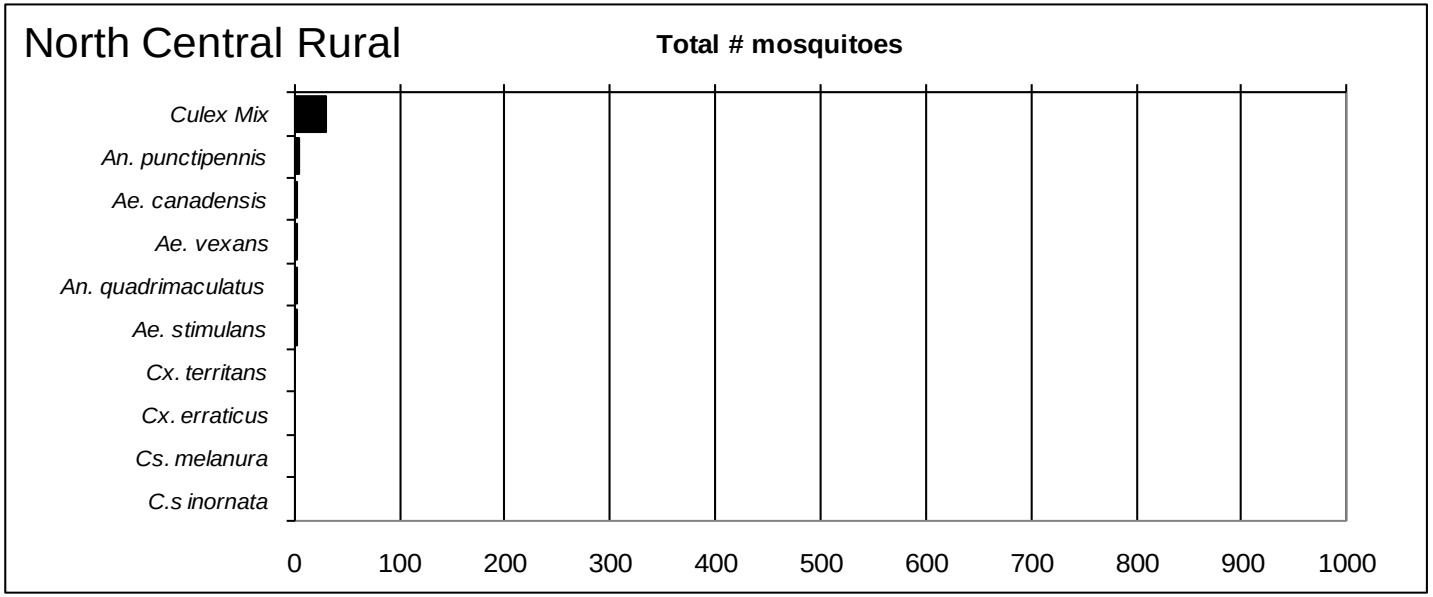


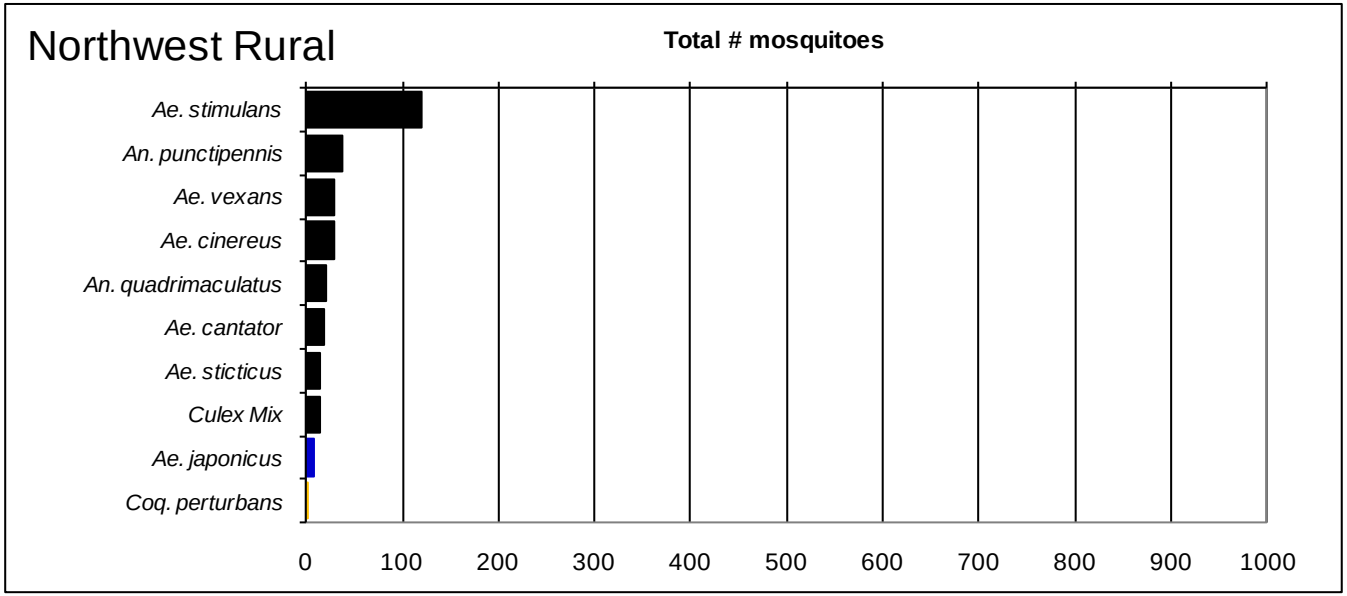


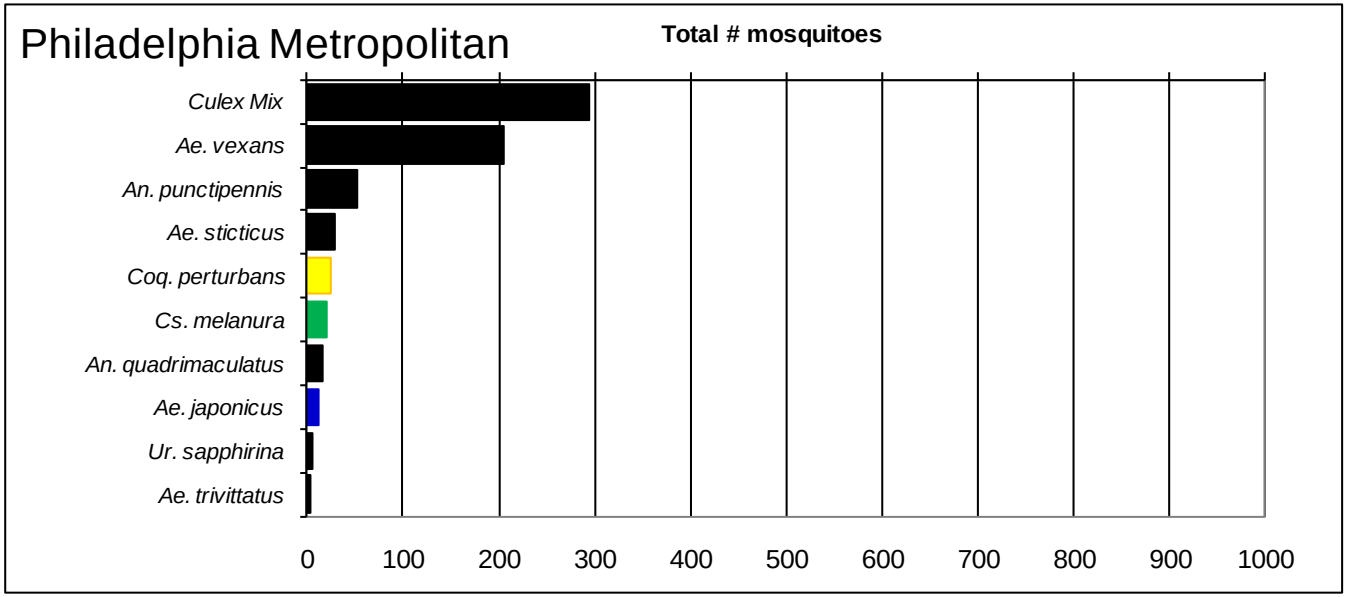

Delaware Bayshore
Total # mosquitoes
Cs. melanura
Ae. cantator
Culex Mix
Ae. canadensis
Coq. perturbans
Ae. vexans
An. bradleyi
Ae. sollicitans
An. quadrimaculatus
An. punctipennis
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500

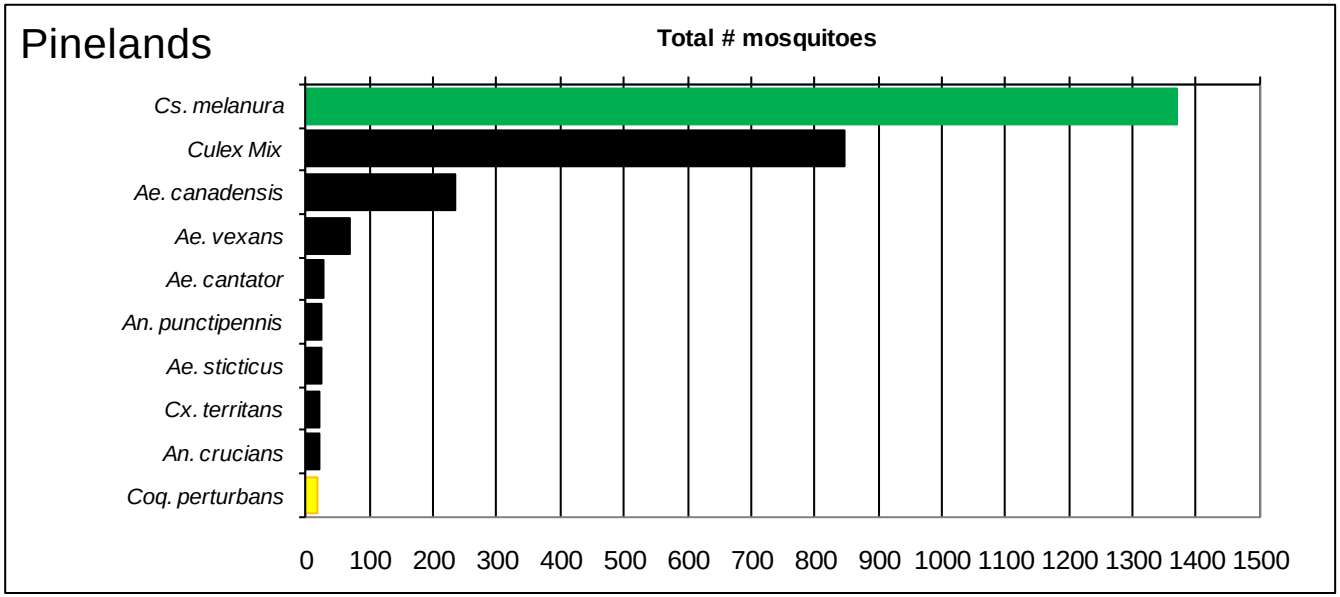

Delaware River Basin
Total # mosquitoes
Ae. cantator
Ae. vexans
Ae. canadensis
Ae. sticticus
Culex Mix
An. quadrimaculatus
Ae. albopictus
An. punctipennis
Ae. grossbecki
Cx. territans
0
100
200
300
400
500
600
700
800
900
1000

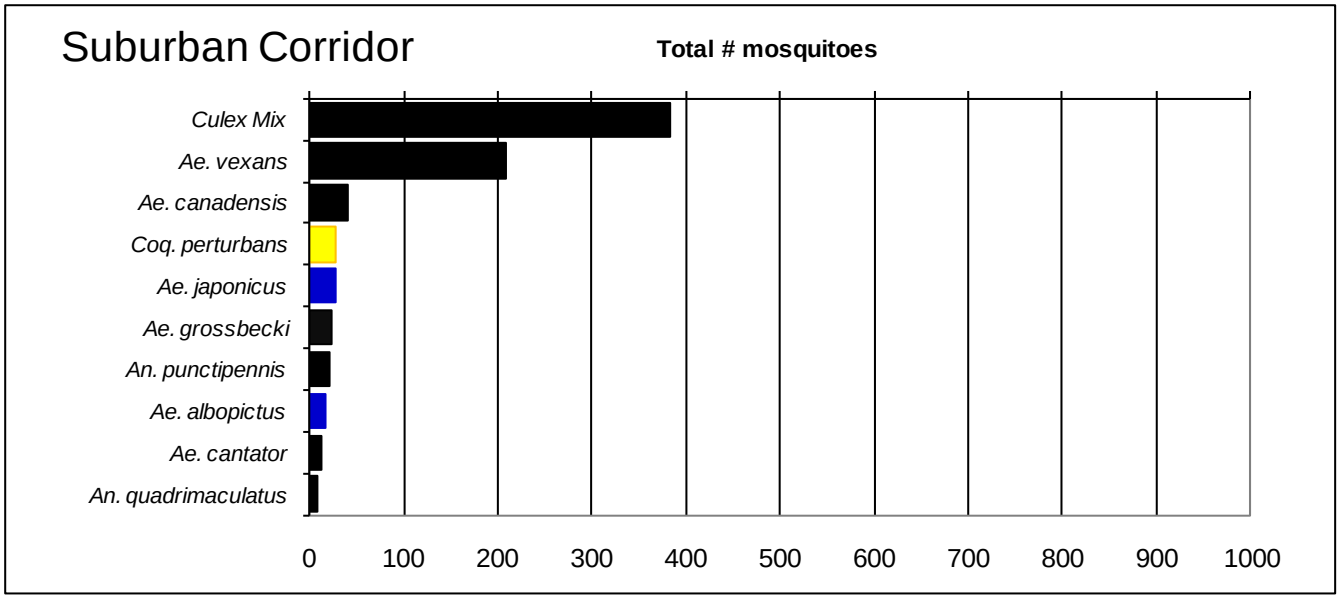

New York Metropolitan
Total # mosquitoes
Ae. vexans
Culex Mix
Ae. cantator
Ae. sticticus
Ae. cinereus
Ae. stimulans
An. punctipennis
Ae. grossbecki
Coq. perturbans
Ae. japonicus
0
100
200
300
400
500
600
700
800
900
1000


North Central Rural
Total # mosquitoes
Culex Mix
An. punctipennis
Ae. canadensis
Ae. vexans
An. quadrimaculatus
Ae. stimulans
Cx. territans
Cx. erraticus
Cs. melanura
C.s inornata
0
100
200
300
400
500
600
700
800
900
1000


Northwest Rural
Total # mosquitoes
Ae. stimulans
An. punctipennis
Ae. vexans
Ae. cinereus
An. quadrimaculatus
Ae. cantator
Ae. sticticus
Culex Mix
Ae. japonicus
Coq. perturbans
0
100
200
300
400
500
600
700
800
900
1000


Philadelphia Metropolitan
Total # mosquitoes
Culex Mix
Ae. vexans
An. punctipennis
Ae. sticticus
Coq. perturbans
Cs. melanura
An. quadrimaculatus
Ae. japonicus
Ur. sapphirina
Ae. trivittatus
0
100
200
300
400
500
600
700
800
900
1000


Pinelands
Total # mosquitoes
Cs. melanura
Culex Mix
Ae. canadensis
Ae. vexans
Ae. cantator
An. punctipennis
Ae. sticticus
Cx. territans
An. crucians
Coq. perturbans
0 100 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 1500


Suburban Corridor
Total # mosquitoes
Culex Mix
Ae. vexans
Ae. canadensis
Coq. perturbans
Ae. japonicus
Ae. grossbecki
An. punctipennis
Ae. albopictus
Ae. cantator
An. quadrimaculatus
0 100 200 300 400 500 600 700 800 900 1000