RUTGERS
New Jersey Agricultural Experiment Station

NEW JERSEY ADULT MOSQUITO SURVEILLANCE

Report for 6 June to 12 June 2010, CDC Weeks 23

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.

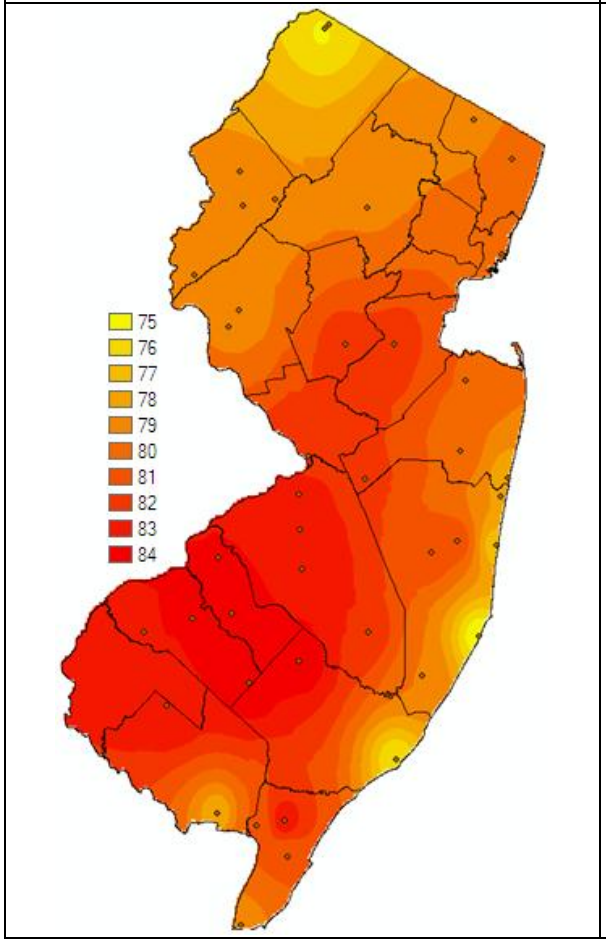
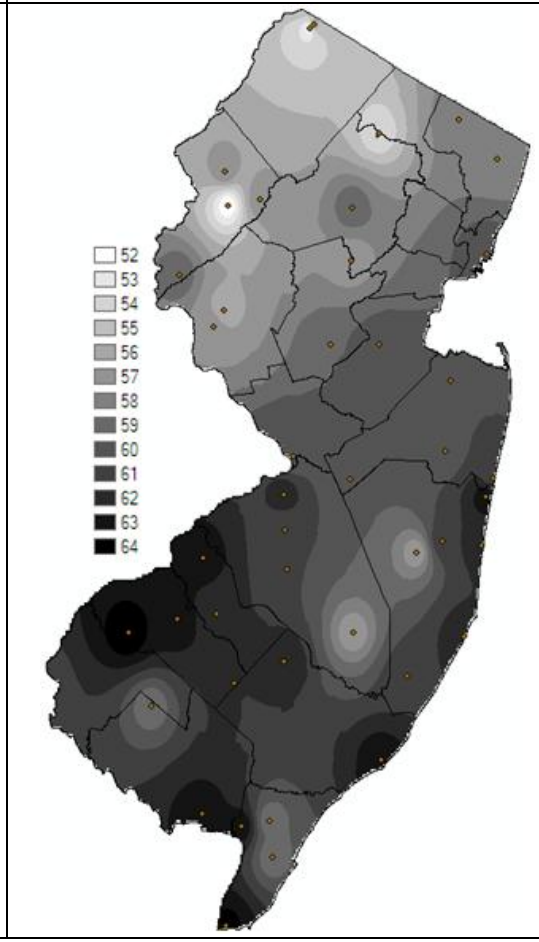
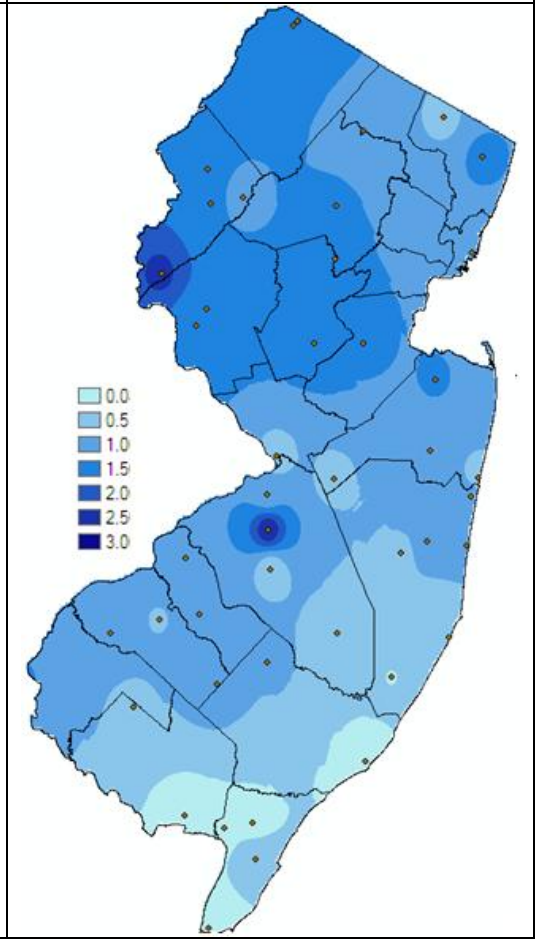
Summary table – Week 23

	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	**0.38**	**2.04**	**0**	**0.71**	**4.06**	**0**	**0.12**	**0.12**	**0**	**0.00**	**0.19**	**0**
Coastal	**2.06**	**3.79**	**0**	**3.37**	**6.80**	**0**	**0.63**	**0.76**	**0**	**0.56**	**4.58**	**0**
Delaware Bayshore	**0.66**	**4.46**	**0**	**1.57**	**14.50**	**0**	**4.29**	**0.84**	**4**	**0.26**	**8.36**	**0**
Delaware River Basin	**0.00**	**5.96**	**0**	**0.00**	**2.16**	**0**	**0.00**	**0.10**	**0**	**0.00**	**0.01**	**0**
New York Metro	**1.50**	**1.74**	**0**	**2.74**	**6.35**	**0**	**0.77**	**0.16**	**4**	**0.39**	**0.60**	**0**
North Central Rural	**0.12**	**0.27**	**0**	**0.37**	**1.28**	**0**	**0.06**	**0.03**	**3**	**0.00**	**0.00**	**0**
Northwest Rural	**1.14**	**7.94**	**0**	**0.57**	**3.45**	**0**	**0.88**	**0.07**	**4**	**0.00**	**0.00**	**0**
Philadelphia Metro	**0.50**	**5.46**	**0**	**2.14**	**6.35**	**0**	**2.54**	**0.48**	**4**	**0.00**	**0.00**	**0**
Pinelands	**0.42**	**0.87**	**0**	**0.60**	**2.89**	**0**	**1.86**	**0.11**	**4**	**0.00**	**0.06**	**0**
Suburban Corridor	**0.89**	**2.32**	**0**	**2.19**	**1.49**	**1**	**0.98**	**0.13**	**4**	**0.03**	**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 in abundance in many regions. *Culex* Mix numbers are also elevated in the Suburban region.

Climate Factors

May Average High Temperatures 1 Jun to 15 Jun	May Average Low Temperatures 1 Jun to 15 Jun	May Total Precipitation 1 Jun to 15 Jun
		

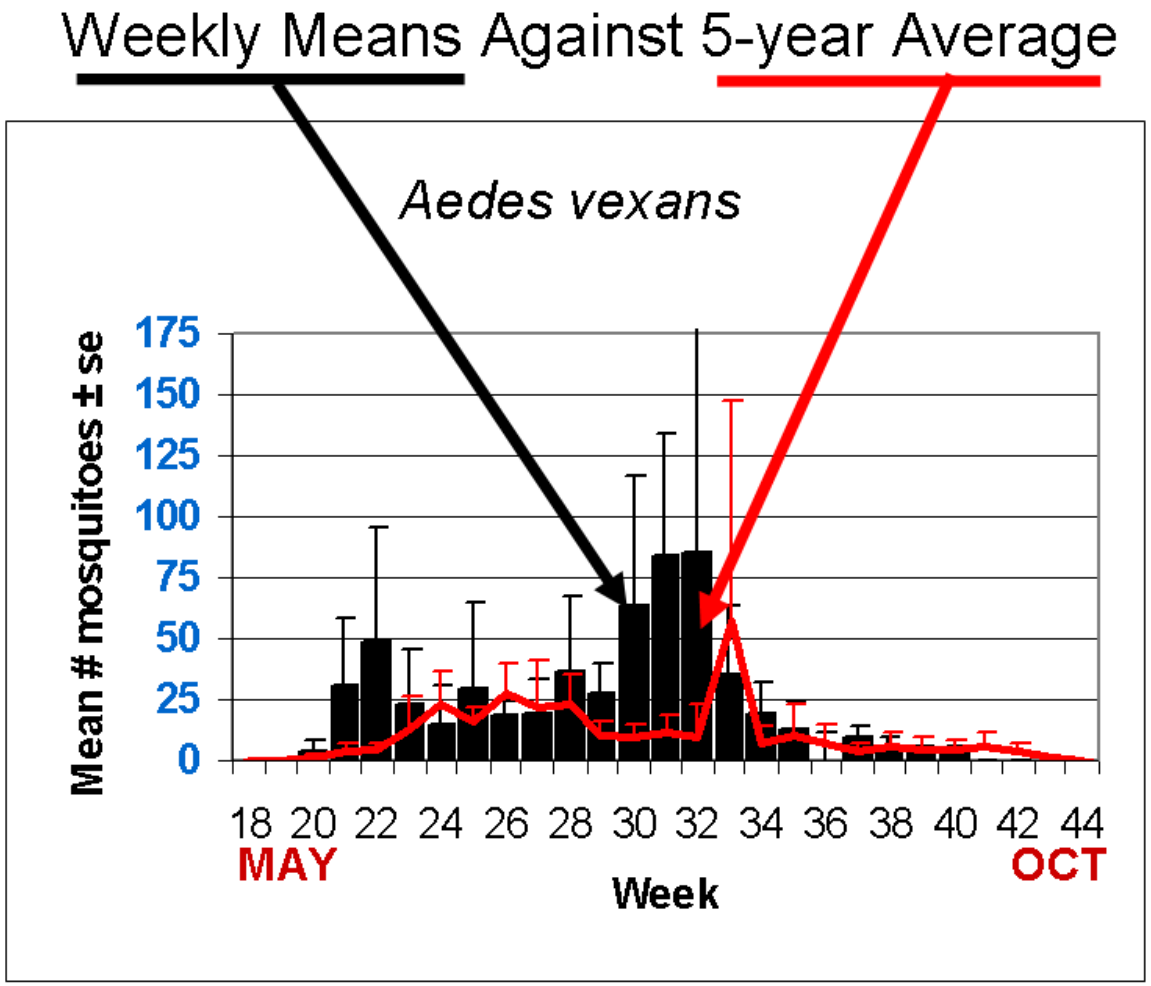
The three figures show the interpolation of average maximum and minimum temperature and total precipitation from June 1 to June 7, 2010 in New Jersey. Data points are from 35 weather stations maintained through the New Jersey Weather & Climate Network and the State Climatologist. Interpolation between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

The past week showed cooler temperatures with increased precipitation than the previous week. Average high temperatures continued to be 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 with pockets of cooler areas in the Pinelands. Highest rainfall was recorded along the Agricultural and Suburban Corridor northwards.

NJ Weather & Climate NETWORK

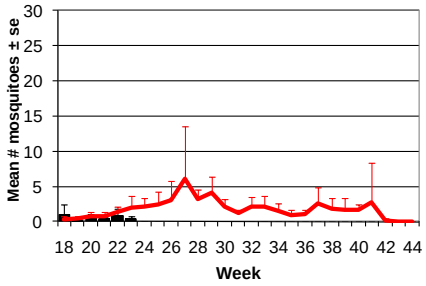
ONJSC at Rutgers University

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

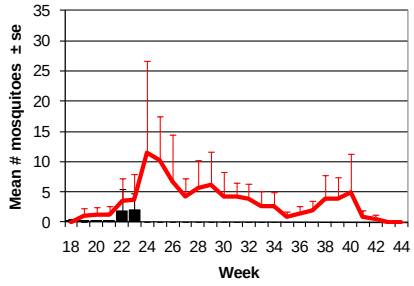


Aedes vexans - Fresh Floodwater Species
Multivoltine Aedine (*Ae. vexans* Type)

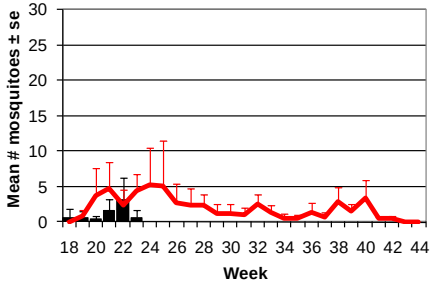
Agricultural



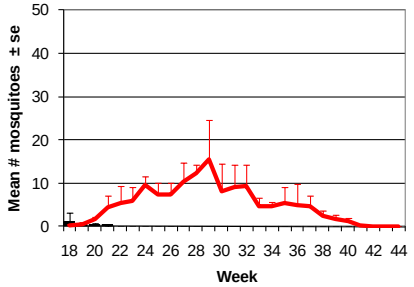
Coastal



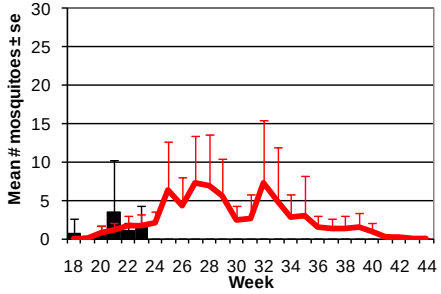
Delaware Bayshore



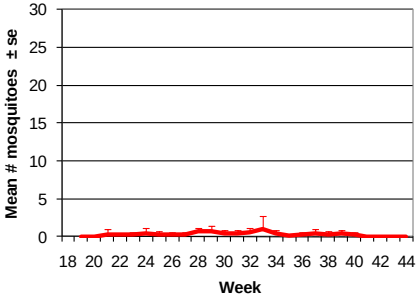
Delaware River Basin



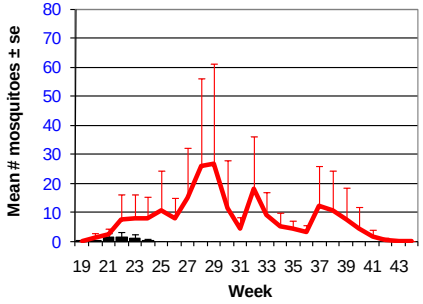
New York Metro



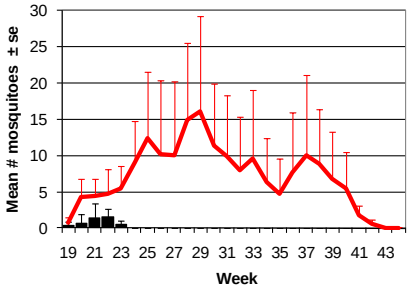
North Central Rural



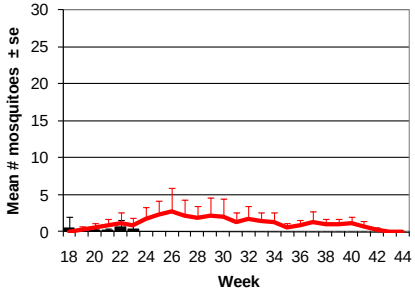
Northwestern Rural



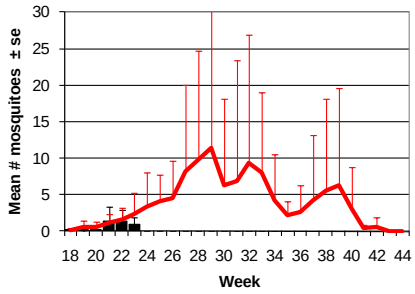
Philadelphia Metro



Pinelands



Suburban Corridor

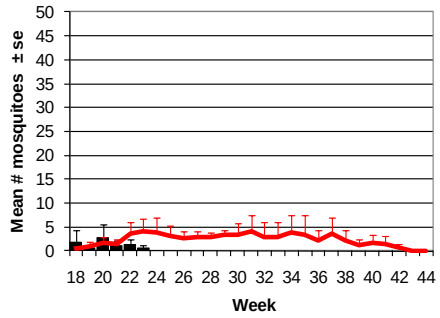


Comments

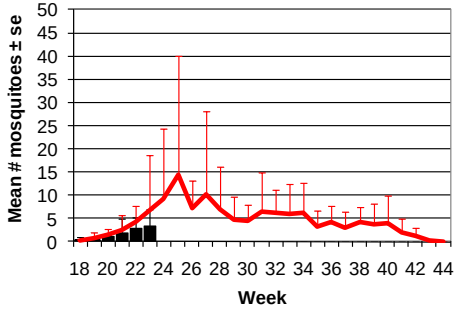
Aedes vexans abundances continue to track or be below historical trends. In the Northwestern Rural region, where this species can reach significant numbers, abundances appear lower than expected despite the fact that *Ae. vexans* is the second most commonly caught in the light traps for this program, after *Ae. stimulans*. Being a multivoltine species, eggs laid by females that emerged earlier in the season, should produce emergent mosquitoes given enough rainfall. This may also produce mosquitoes from eggs lain on higher ground not previously reached by rainfall.

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

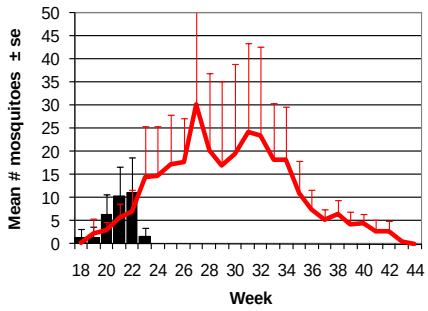
Agricultural



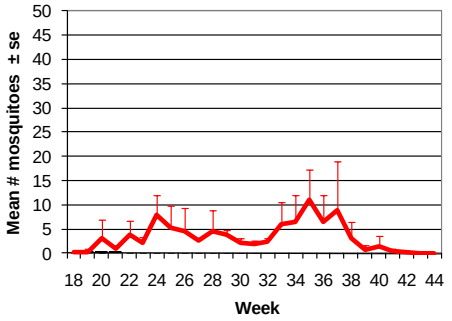
Coastal



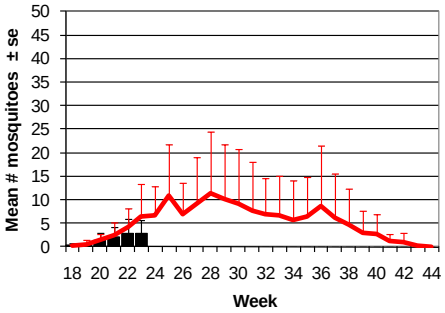
Delaware Bayshore



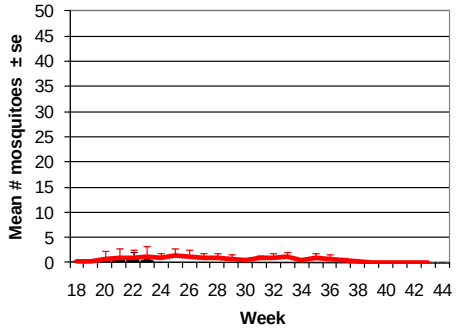
Delaware River Basin



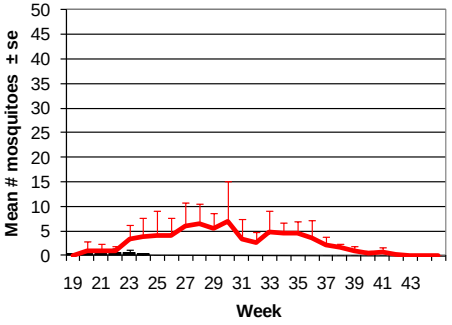
New York Metro



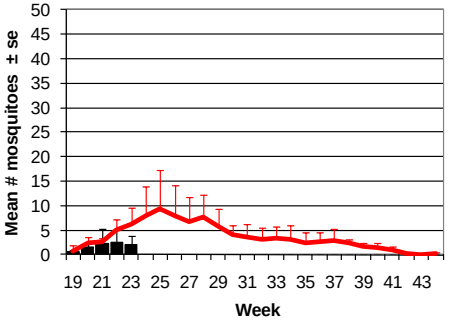
North Central Rural



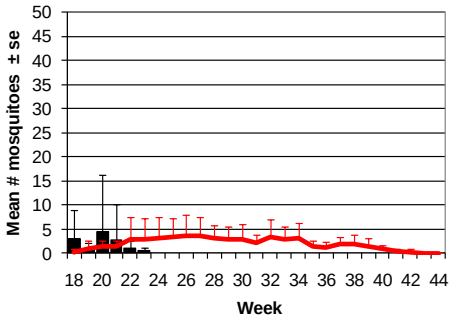
Northwestern Rural



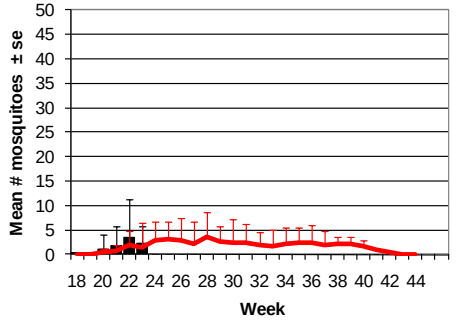
Philadelphia Metro



Pinelands



Suburban Corridor

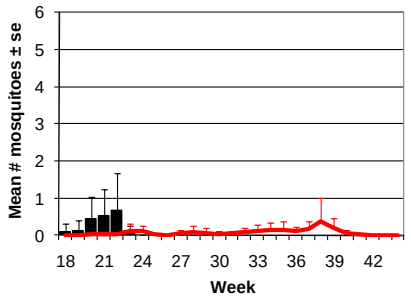
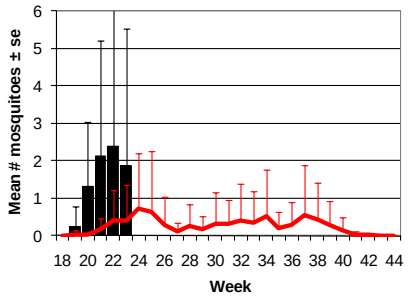
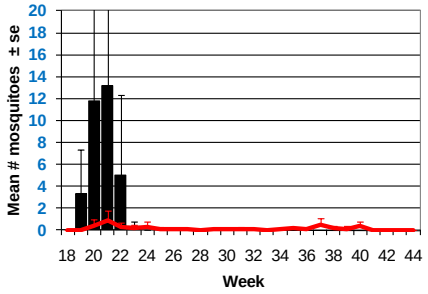
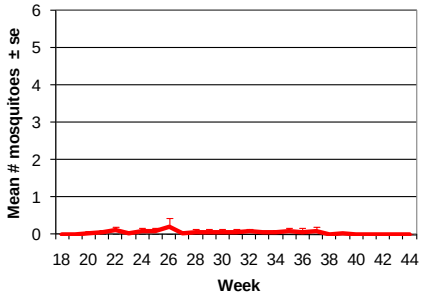
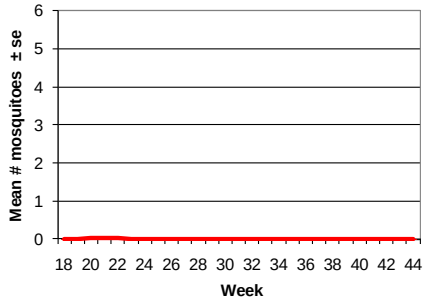
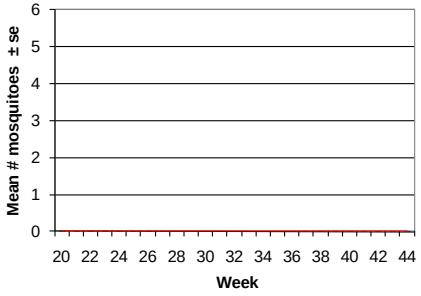
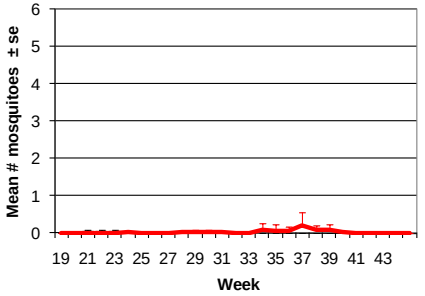
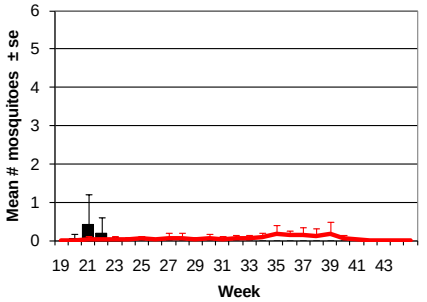
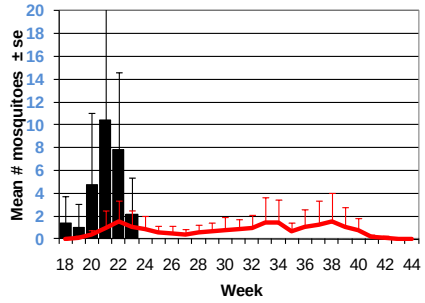
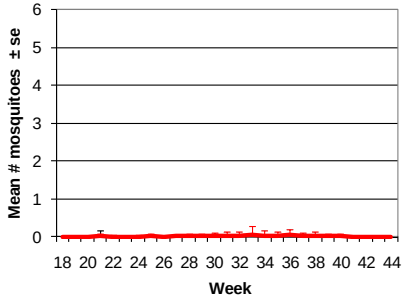


Comments

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.

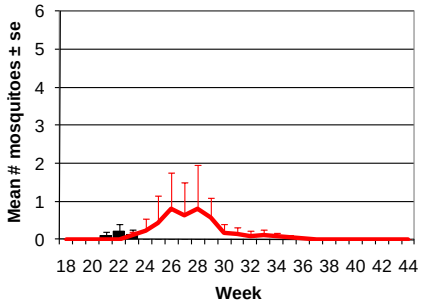
Current population levels continue to be consistent with the recent historical data for most regions. The exception appears to be the Delaware River region, where *Culex* numbers are currently low.

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

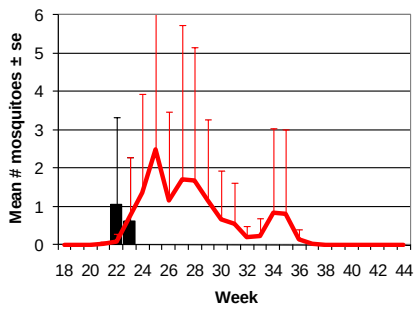
Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		*Culiseta melanura*, the enzootic ornithophilic vector of eastern equine encephalitis, continue to show significantly high numbers in the Agricultural, Coastal, Delaware Bayshore, Philadelphia and Pinelands regions. These high numbers represent the first generation (overwintering 3rd and 4th instars) and indicate a potential amount of females to contribute to the later season second generation. The second generation, which could begin emerging in about 4 or 5 weeks, along with early overwintering instars (1st and 2nd) will likely contribute to the amplification of any EEE virus during the mid- to late summer. Currently, resting box populations (a preferred trap by this mosquito) are showing these large numbers at only a few of the traditional resting box sites monitored by the Vector Surveillance program.	

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

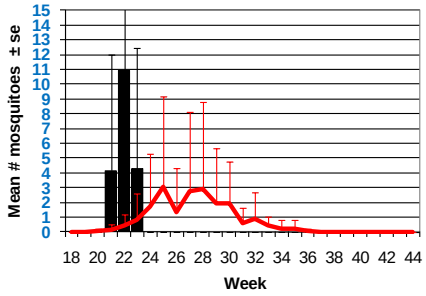
Agricultural



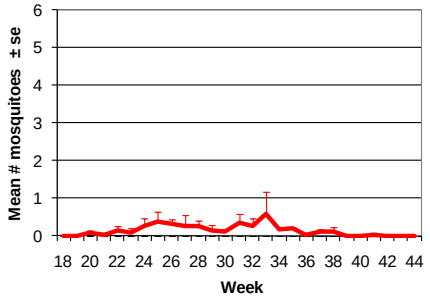
Coastal



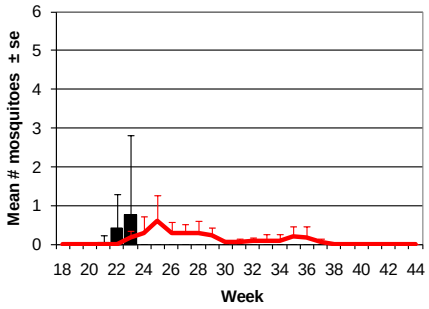
Delaware Bayshore



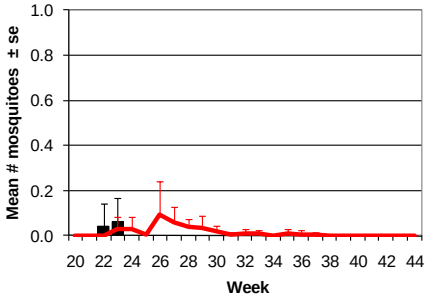
Delaware River Basin



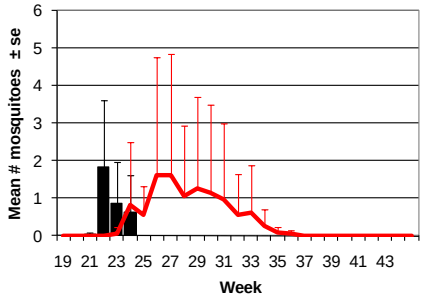
New York Metro



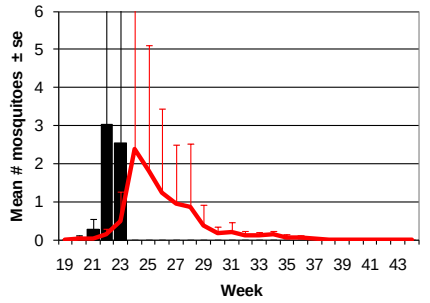
North Central Rural



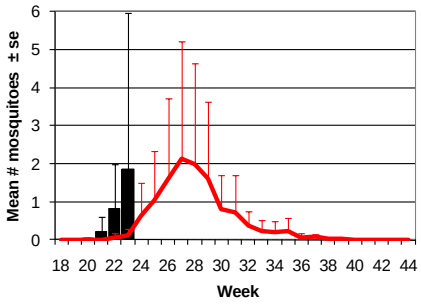
Northwestern Rural



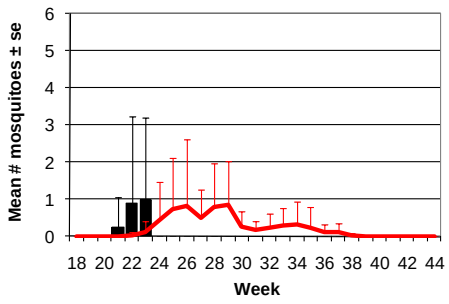
Philadelphia Metro



Pinelands



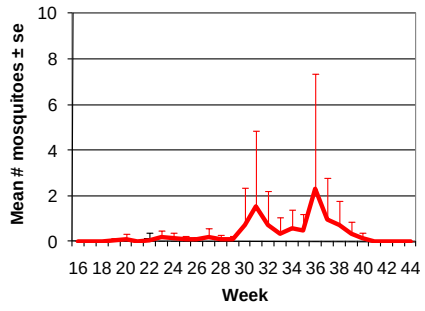
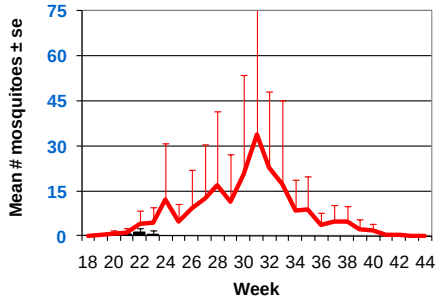
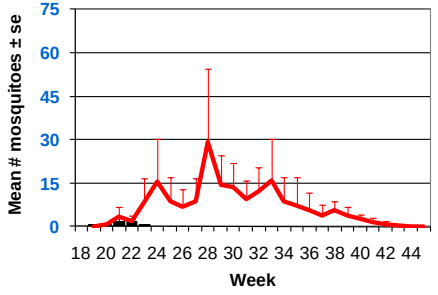
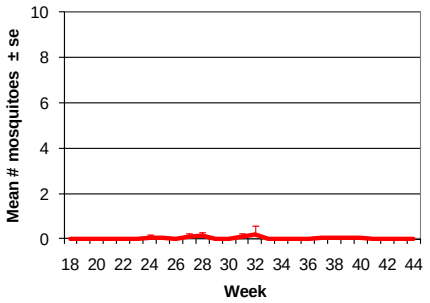
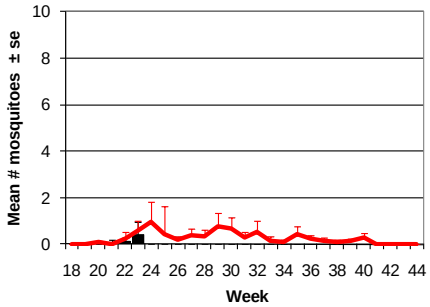
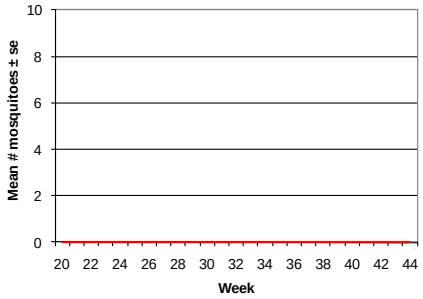
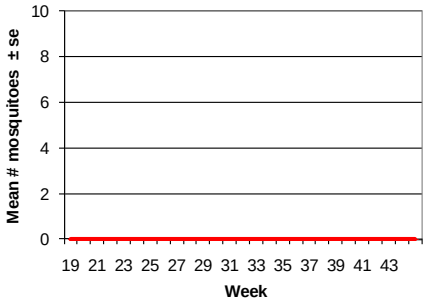
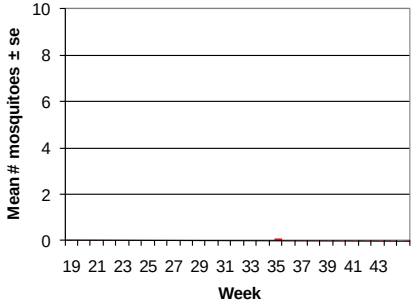
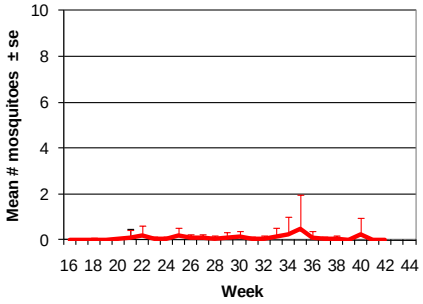
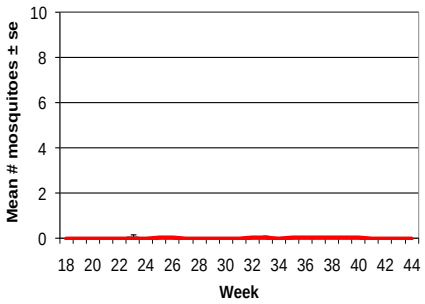
Suburban Corridor



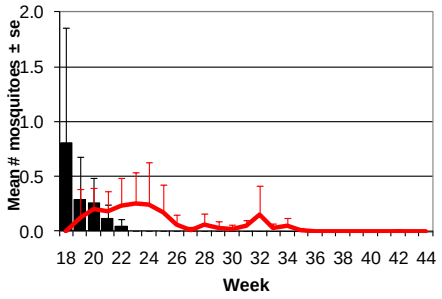
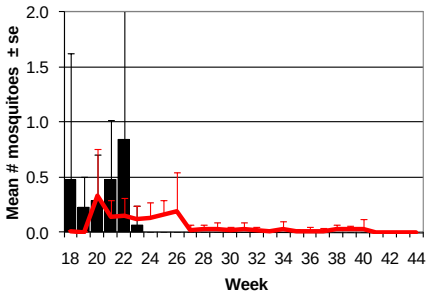
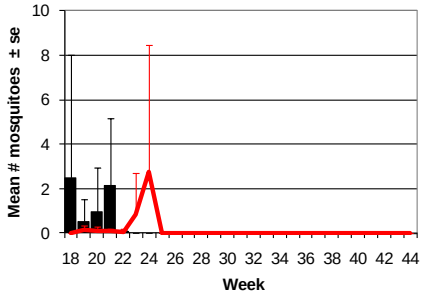
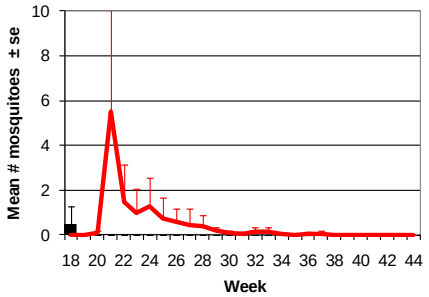
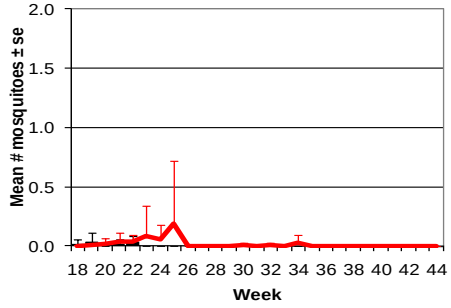
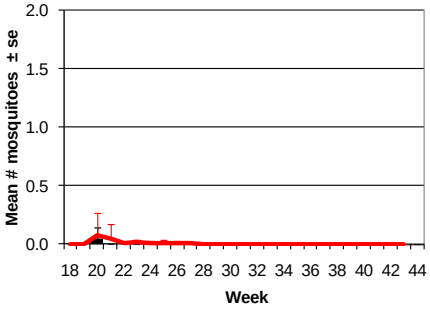
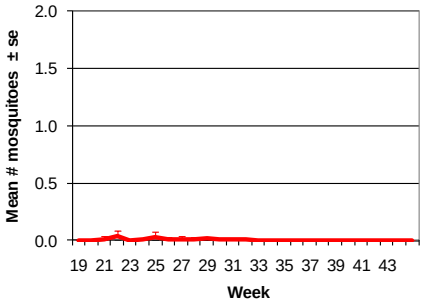
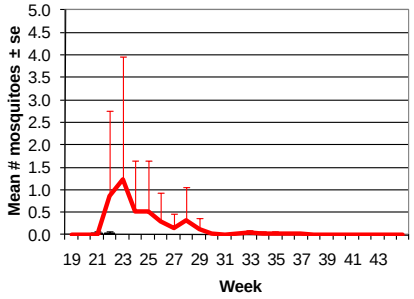
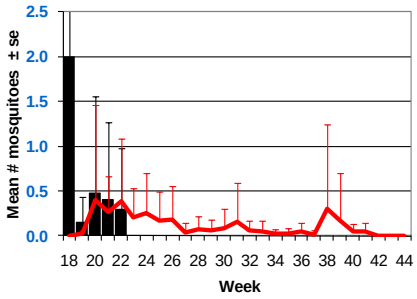
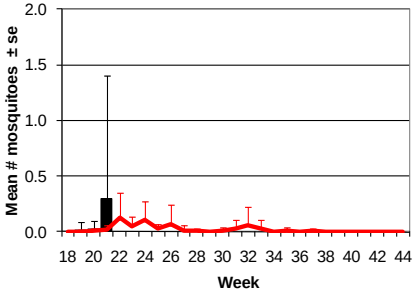
Comments

Populations of *Coquillettidia perturbans* emerged earlier than historical trends have shown. Numbers in the Delaware Bayshore show not only an earlier emergence, but numbers higher than the historical peak abundances. It remains to be seen if this is an actual shift in the seasonal presence of *Coq. perturbans* or if this species will also be seen later in the season as indicated by historical trends.

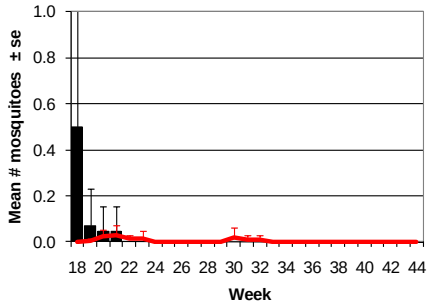
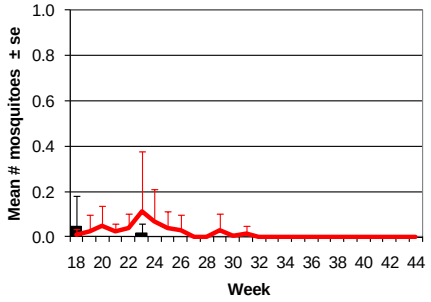
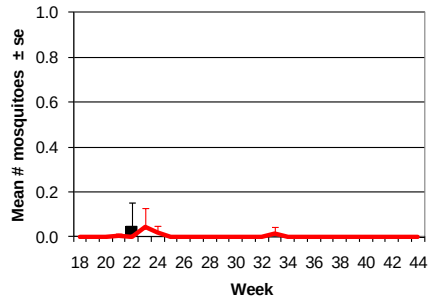
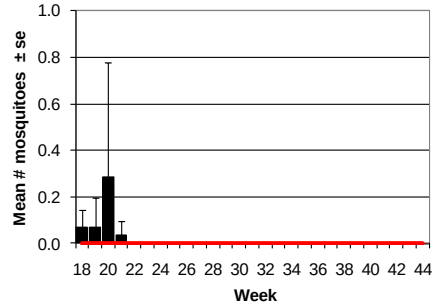
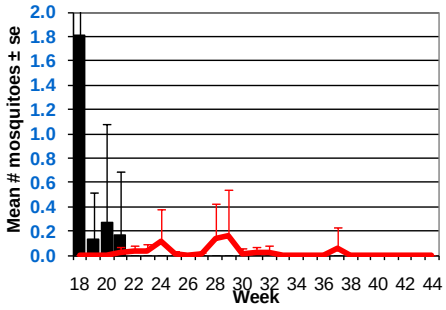
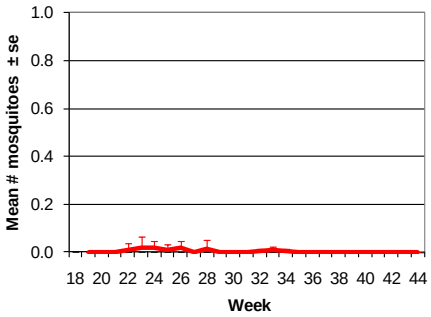
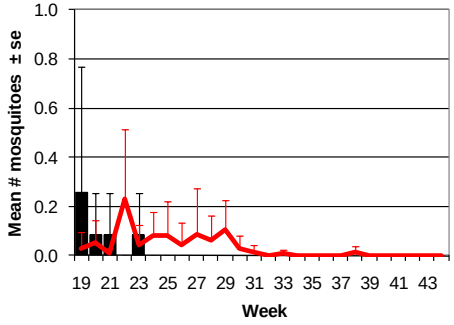
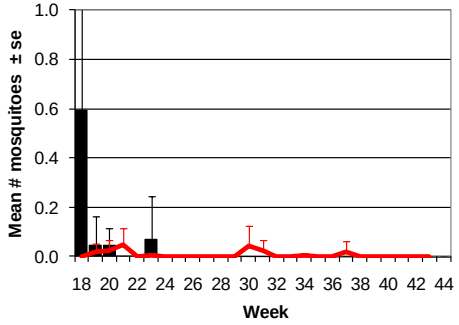
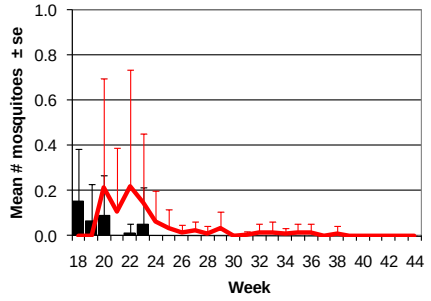
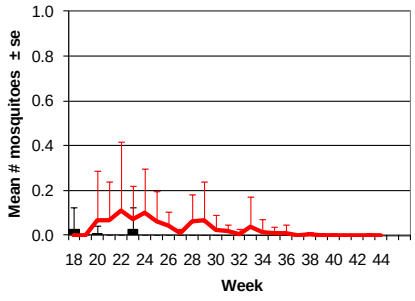
Aedes sollicitans - Salt Floodwater Species
Multivoltine Aedine (*Ae. sollicitans* Type)

Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		*Aedes sollicitans* population abundances for the first emergence were either at or lower than what historical values would suggest. The Coastal region had a few larviciding applications done to mitigate potential populations. Over time, these populations contribute toward the seasonal trends shown by historical data. Next high tide is 26 June and should produce the first sizeable emergence.	

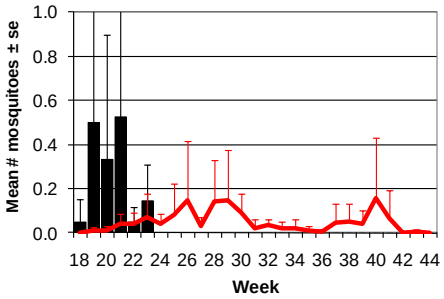
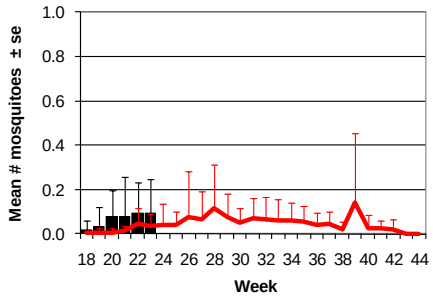
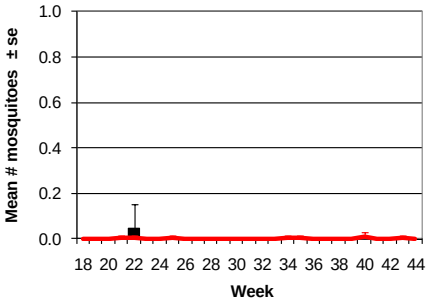
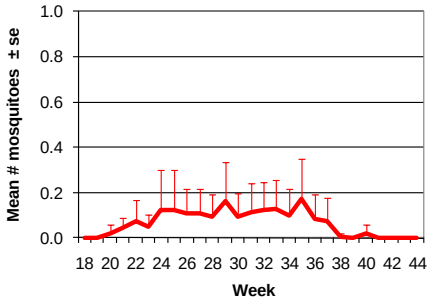
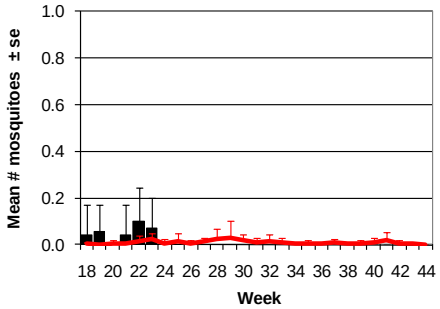
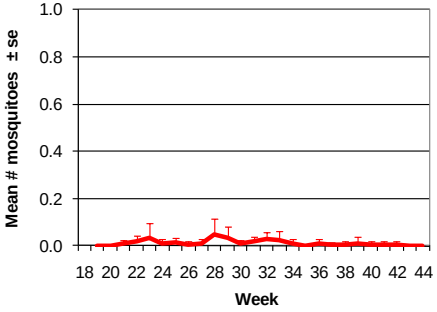
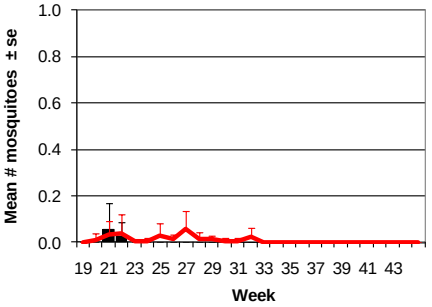
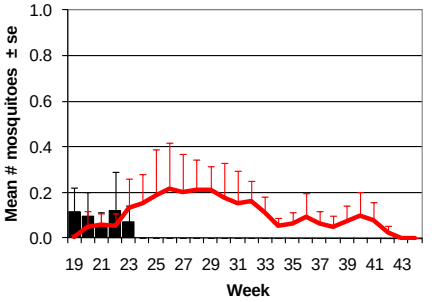
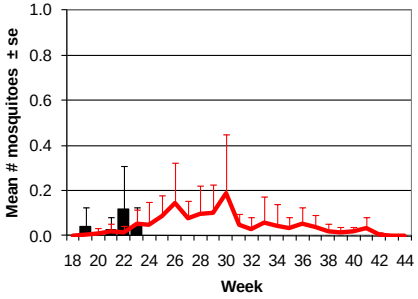
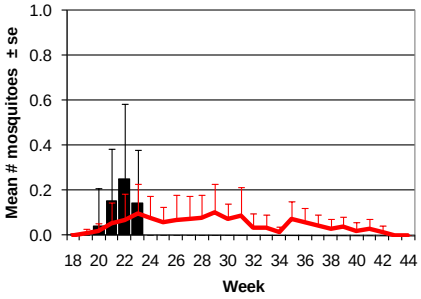
Aedes canadensis – Early Season Species
Univoltine Aedine (*Ae. canadensis* Type)

Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		*Aedes canadensis* continue to show up in most regions at or above historical trends, with the exception of the Delaware Bayshore and River Basin, the Philadelphia Metro and the Suburban Corridor. This species is often seen early in the season and so the larger numbers seen early in this program might not represent a shift (as possibility with *Coquillettidia perturbans*) but a larger than expected abundance at this time. This species can also appear later in the season, with the Pinelands historical trends exemplifying this pattern.	

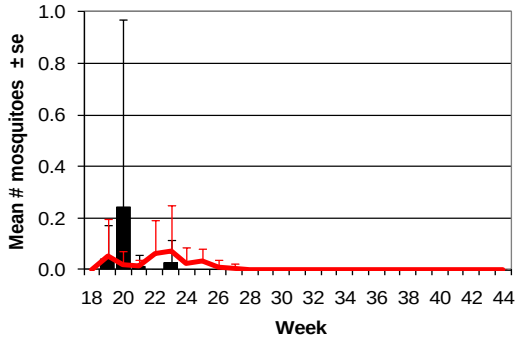
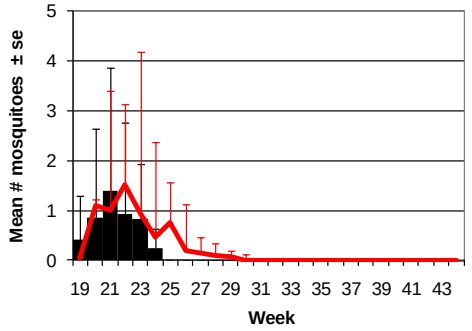
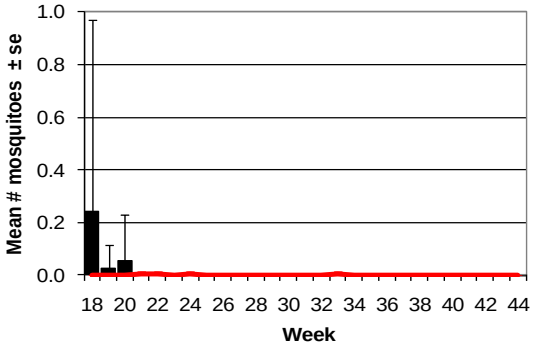
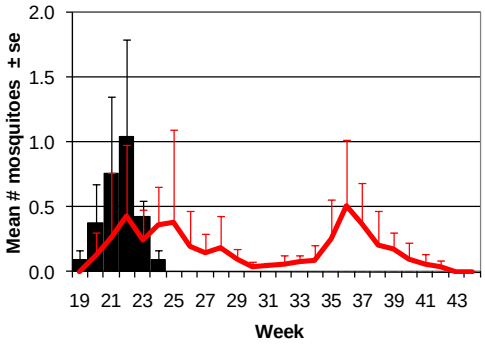
Aedes sticticus – Early Season Species
Univoltine Aedine (*Ae. canadensis* Type)

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 numerous regions, but its numbers are dropping quickly from its early season high. Like *Ae. canadensis*, *Ae. sticticus* numbers will decline as the season progresses, although reoccurrence after flooding may occur. Unless unusual numbers of *Ae. sticticus* begin to appear, this will be the last presentation of graphs for this species this season.	

Aedes japonicus – Container Species
Multivoltine Aedine (*Ae. triseriatus* Type)

Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		*Aedes japonicus*, a hardy cold-tolerant species, are showing up in abundance early this season at several regions, and especially in the Agricultural region. This species is a competent vector for West Nile as well as for EEE and SLE. *Ae. japonicus* has mixed reports on their aggressiveness to obtain a bloodmeal. Interrupted meals may increase the potential for picking up viruses if the host is not a dead-end host.	

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

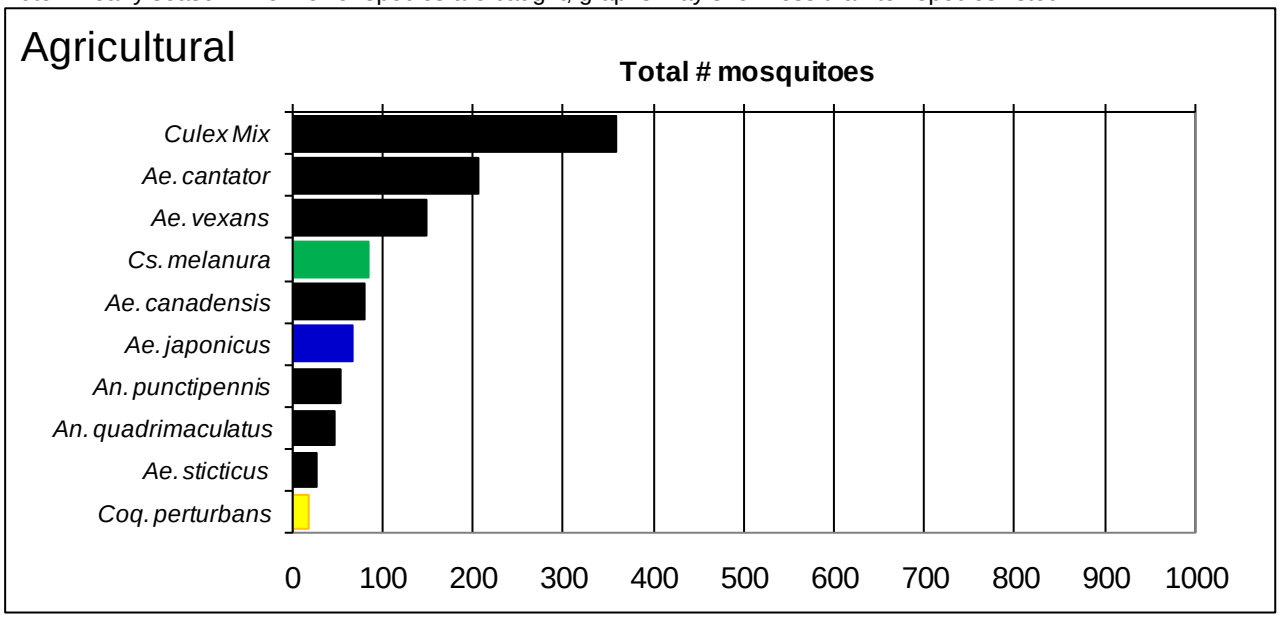
Ae. stimulans in NY Metro	*Ae. stimulans* in Northwestern Rural
	
***Ae. cinereus* in NY Metro**	***Ae. cinereus* in Northwestern Rural**
	

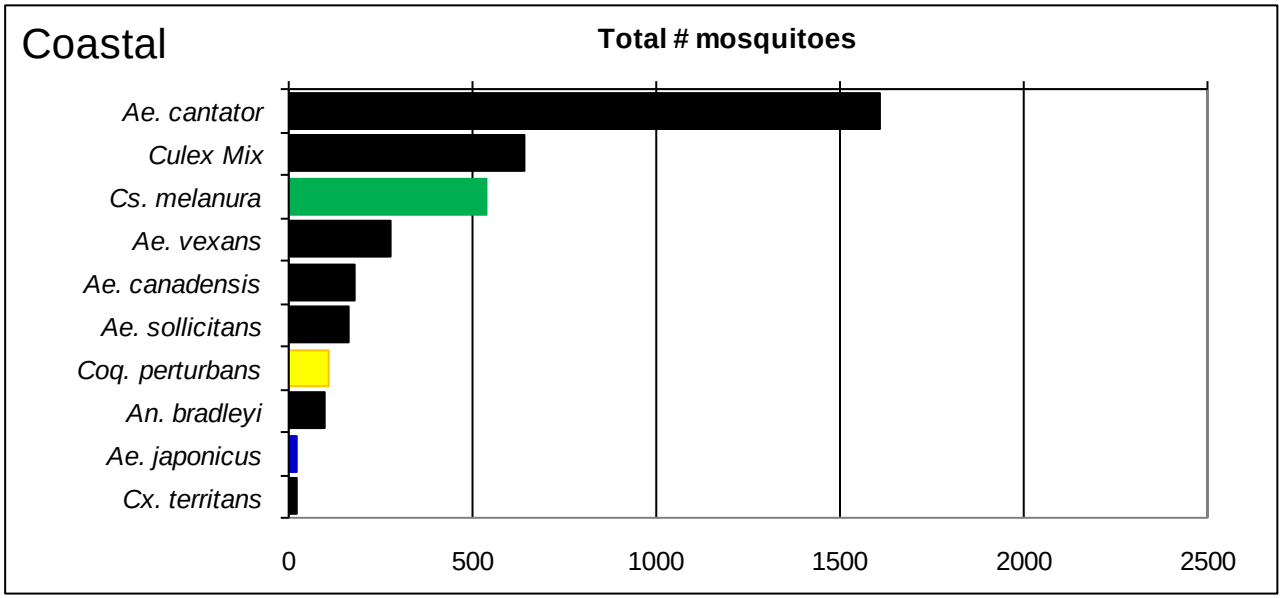
Ae. stimulans and *Ae. cinereus* are both early season, cold-tolerant species. This year, *Ae. cinereus* numbers have been higher in the two regions that they are commonly found while *Ae. stimulans* are tracking historical values. .

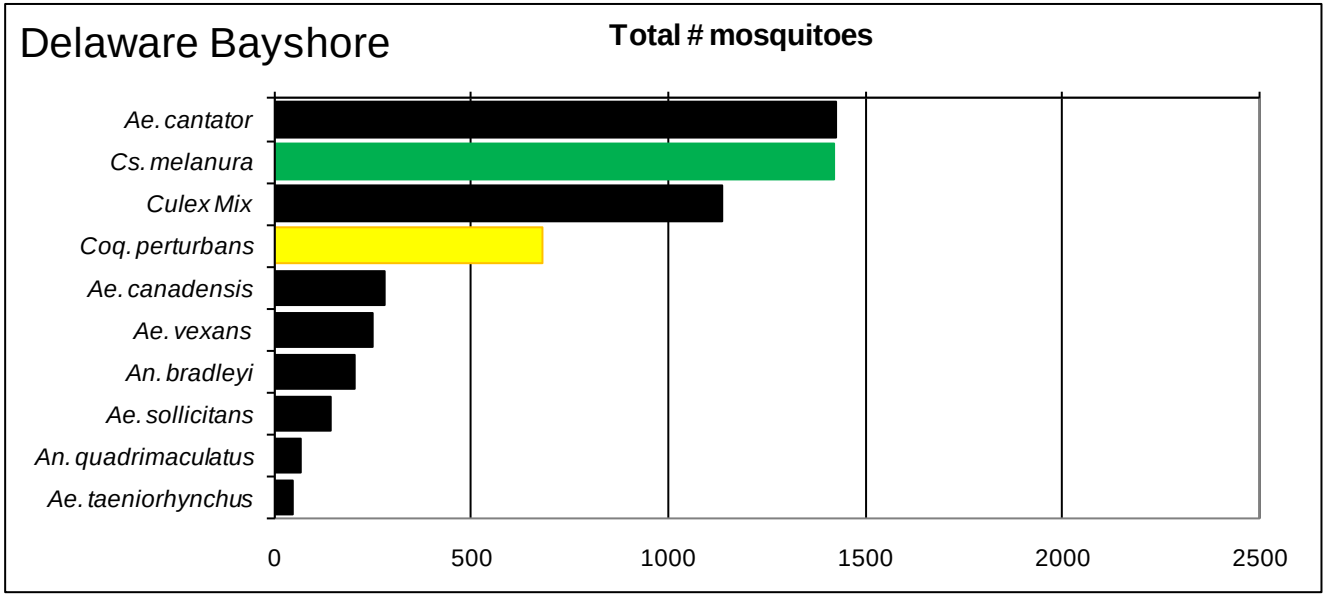
WNV *EEE*

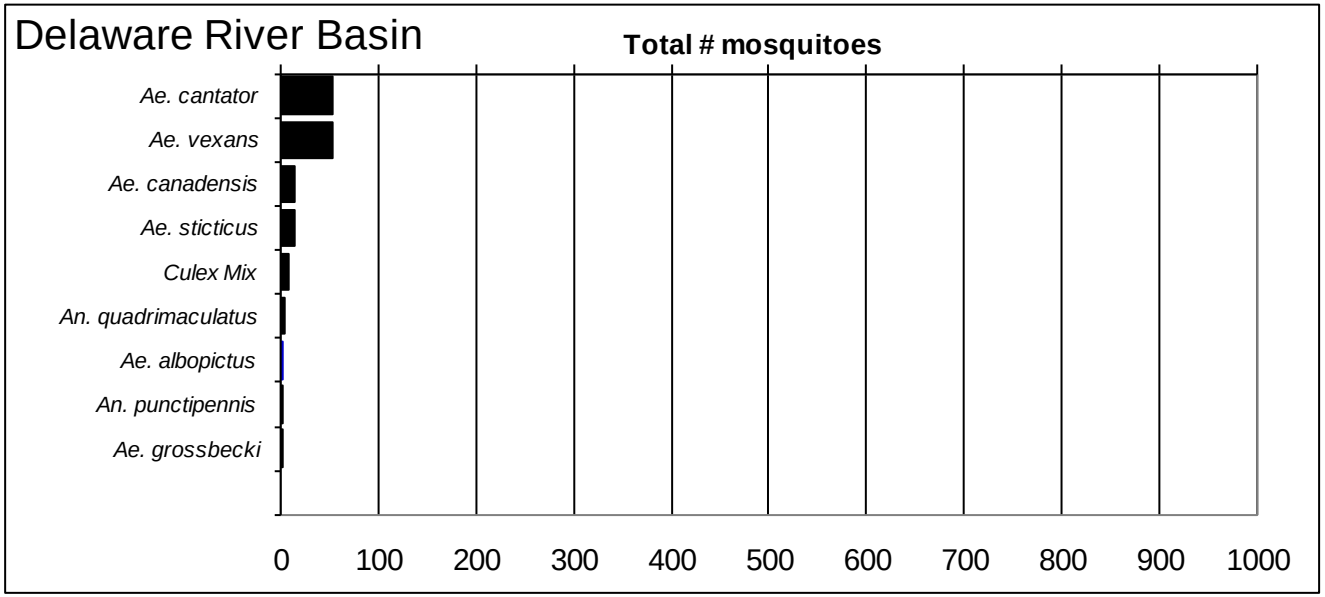
Top Ten Cumulative Mosquito Species/Region - *Ae. albopictus,* *Ae. japonicus (invasives);* *Cs. melanura or Cx. erraticus* *Coq. perturbans*

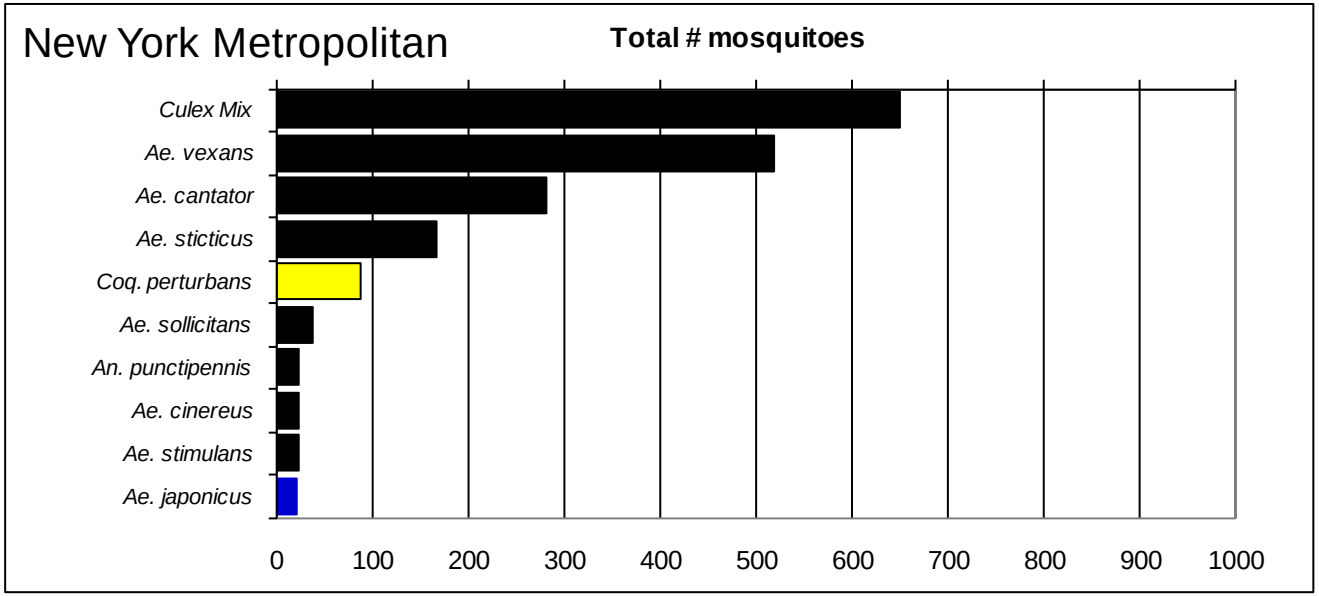
Note: In early season when fewer species are caught, graphs may show less than ten species listed.

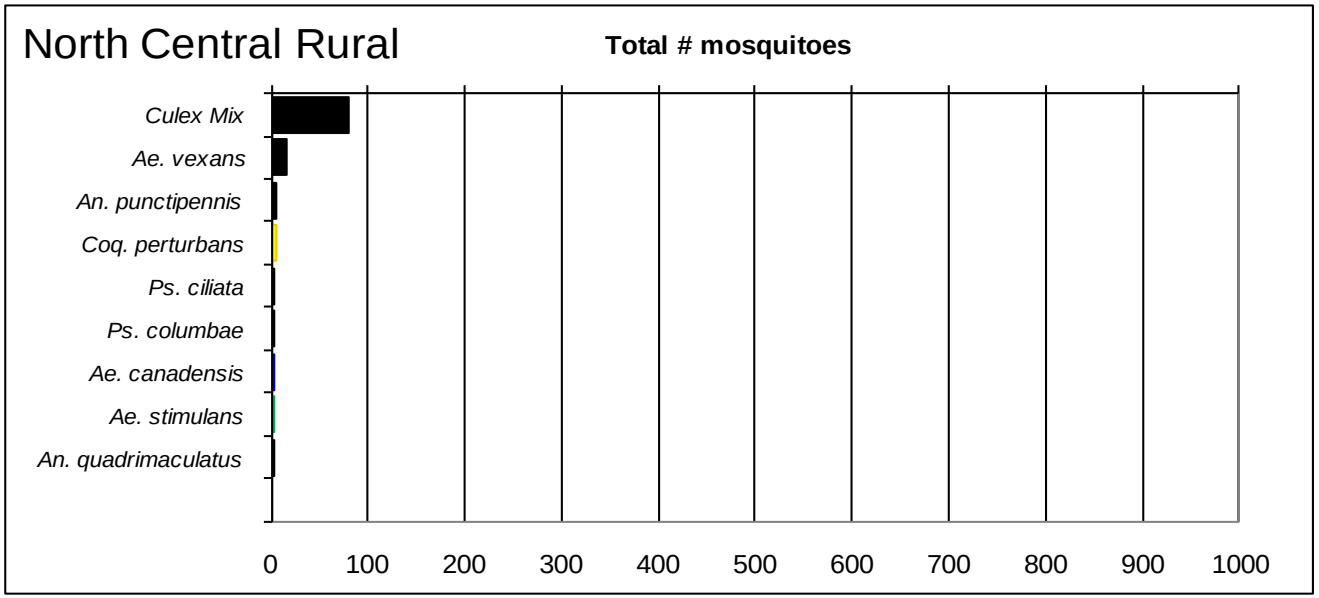


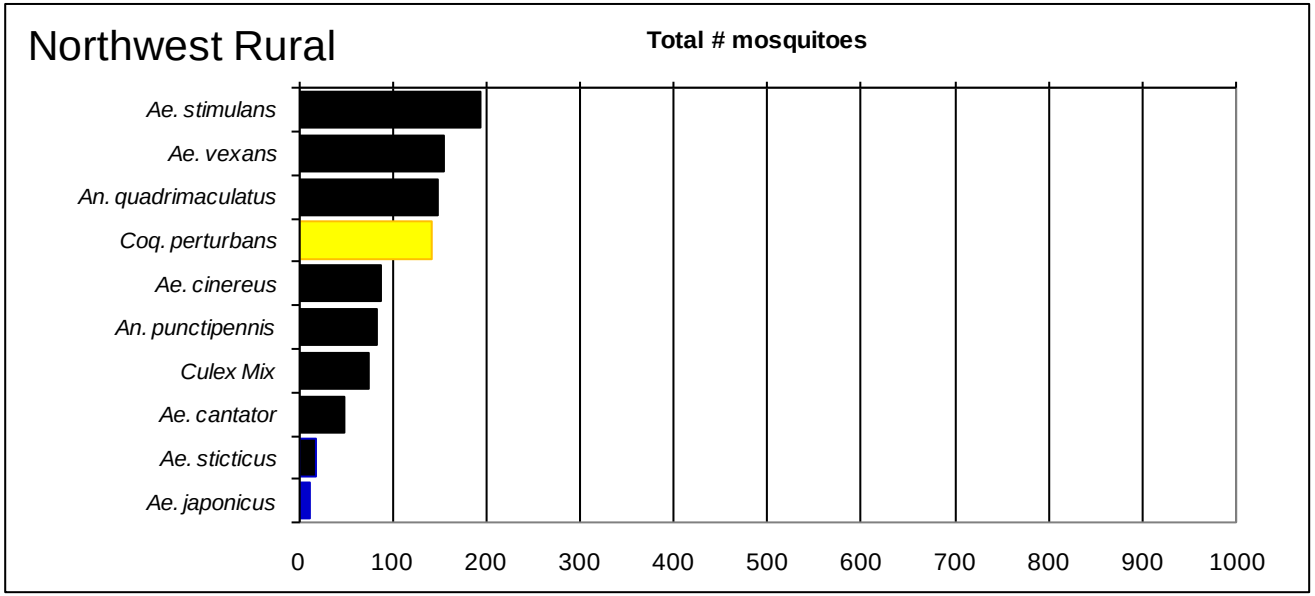


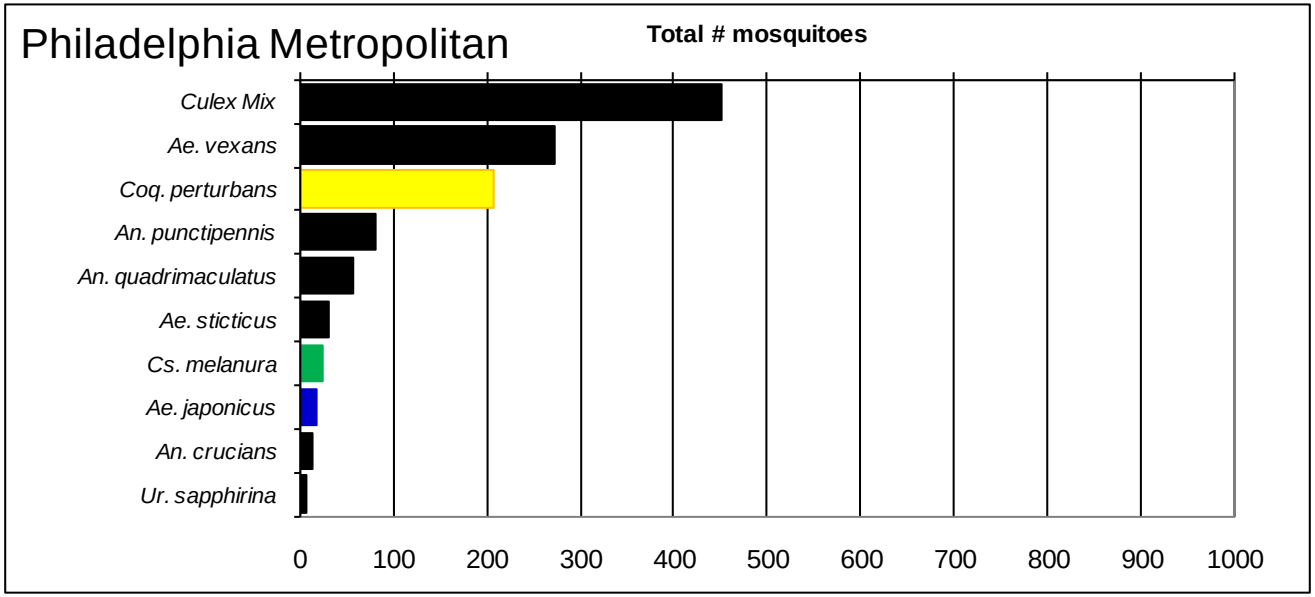

Delaware Bayshore
Total # mosquitoes
Ae. cantator
Cs. melanura
Culex Mix
Coq. perturbans
Ae. canadensis
Ae. vexans
An. bradleyi
Ae. sollicitans
An. quadrimaculatus
Ae. taeniorhynchus
0
500
1000
1500
2000
2500

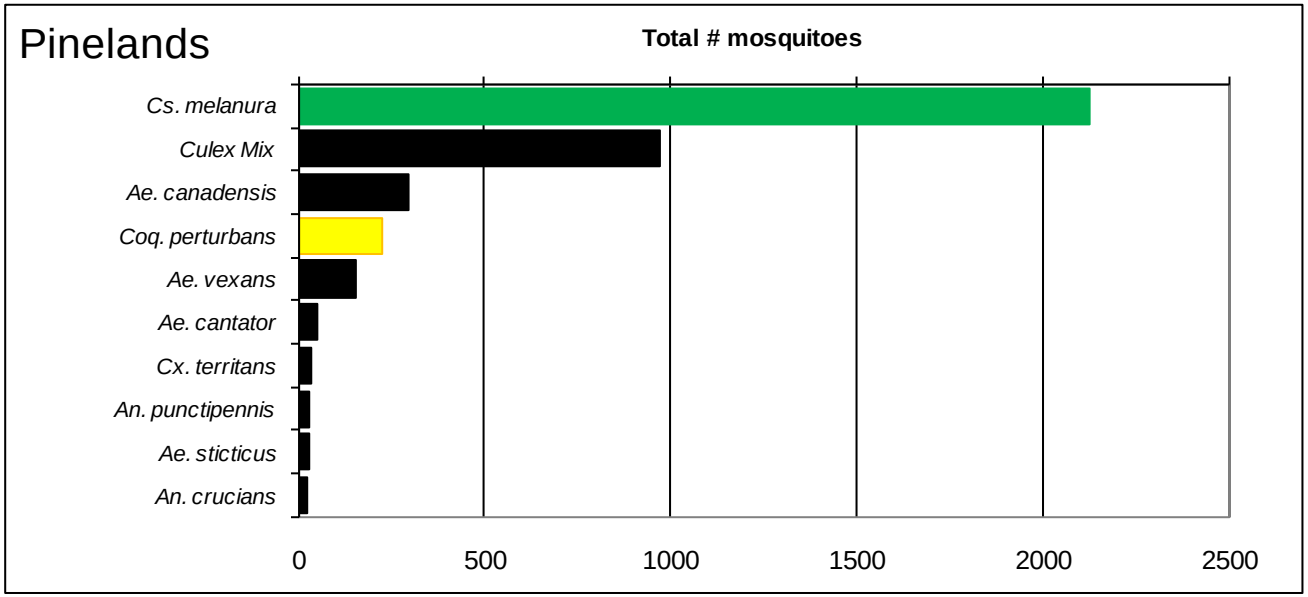

Delaware River Basin
Total # mosquitoes
Ae. cantator
Ae. vexans
Ae. canadensis
Ae. sticticus
Culex Mix
An. quadrimaculatus
Ae. albopictus
An. punctipennis
Ae. grossbecki
0
100
200
300
400
500
600
700
800
900
1000

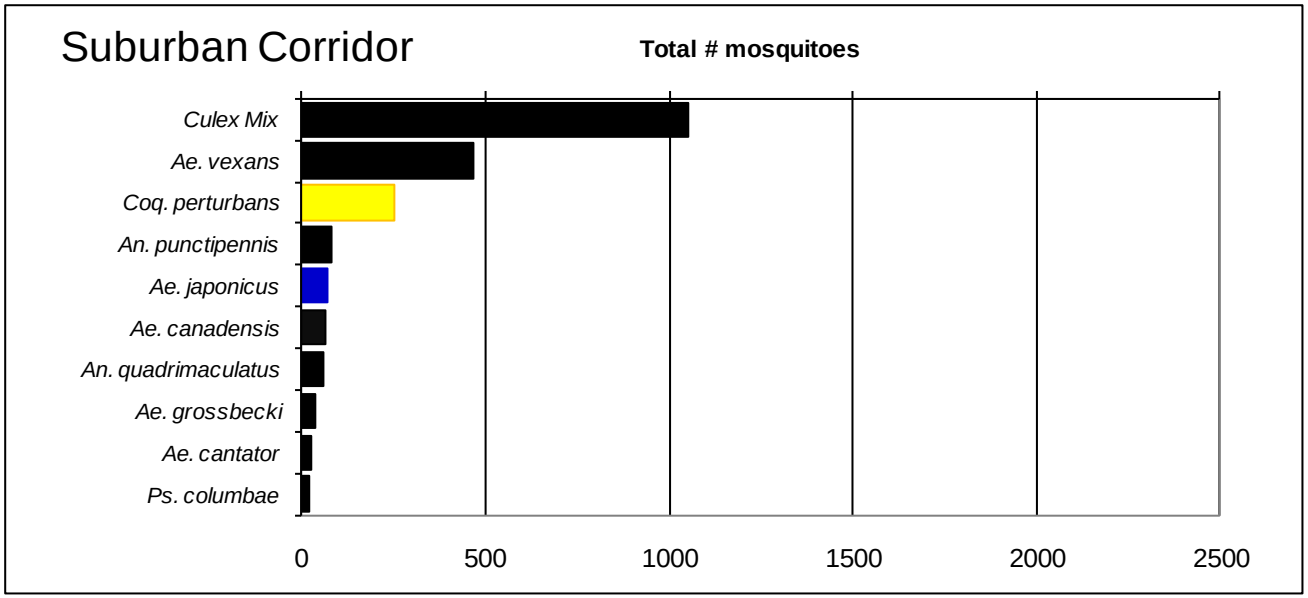

New York Metropolitan
Total # mosquitoes
Culex Mix
Ae. vexans
Ae. cantator
Ae. sticticus
Coq. perturbans
Ae. sollicitans
An. punctipennis
Ae. cinereus
Ae. stimulans
Ae. japonicus
0
100
200
300
400
500
600
700
800
900
1000


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


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


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


Pinelands
Total # mosquitoes
Cs. melanura
Culex Mix
Ae. canadensis
Coq. perturbans
Ae. vexans
Ae. cantator
Cx. territans
An. punctipennis
Ae. sticticus
An. crucians
0
500
1000
1500
2000
2500


Suburban Corridor
Total # mosquitoes
Culex Mix
Ae. vexans
Coq. perturbans
An. punctipennis
Ae. japonicus
Ae. canadensis
An. quadrimaculatus
Ae. grossbecki
Ae. cantator
Ps. columbae
0
500
1000
1500
2000
2500