RUTGERS
New Jersey Agricultural Experiment Station

NEW JERSEY ADULT MOSQUITO SURVEILLANCE

Report for 16 May to 29 May 2010, CDC Weeks 20-21

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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.

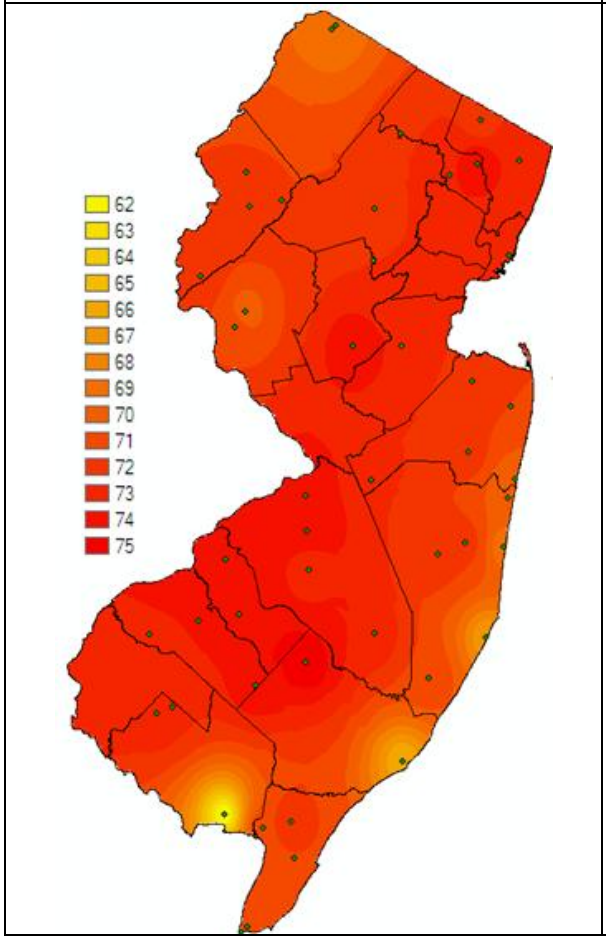
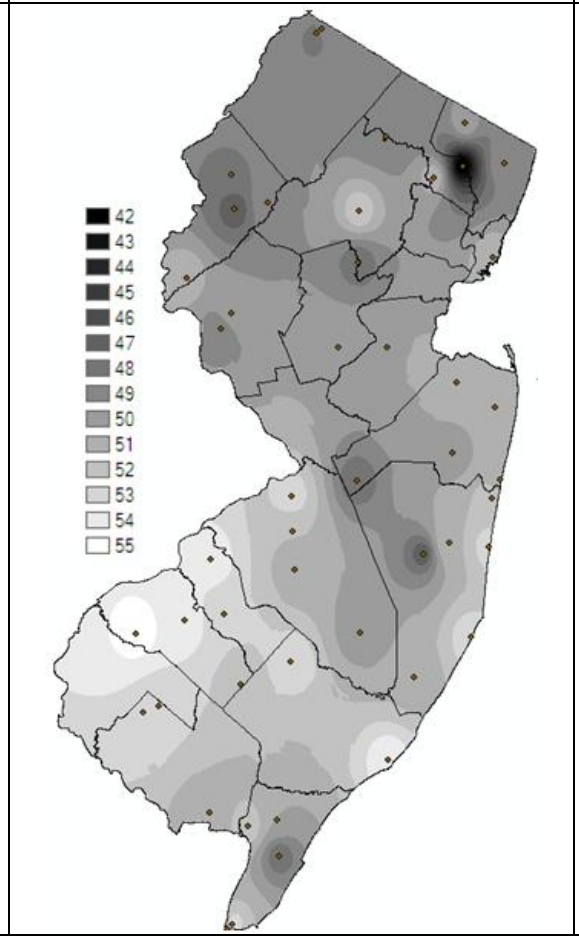
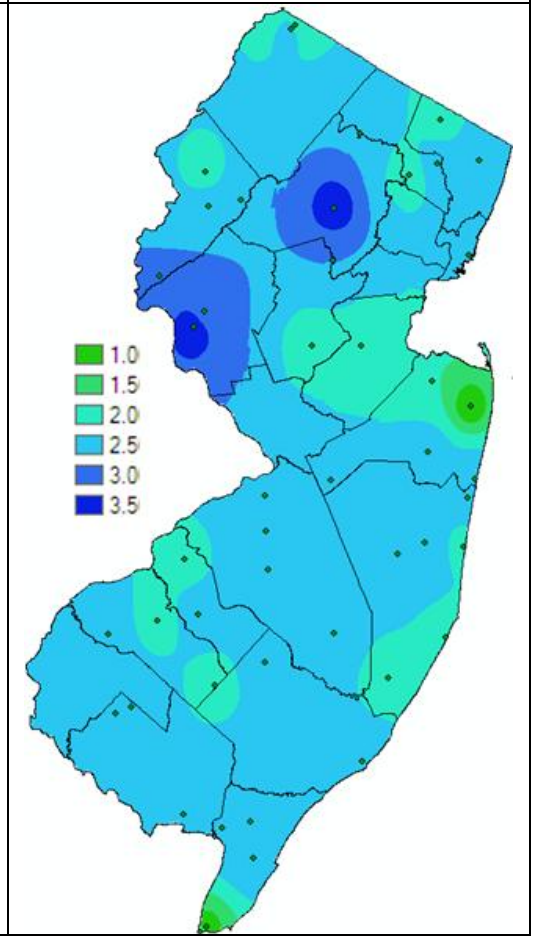
Summary table – Week 20/21

	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**	**0.78**	**0**	**0.50**	**1.38**	**0**	**0.02**	**0.00**	**?**	**0.00**	**0.11**	**0**
Coastal	**0.08**	**1.23**	**0**	**0.52**	**1.47**	**0**	**0.00**	**0.00**	**0**	**0.06**	**0.97**	**0**
Delaware Bayshore	**0.00**	**3.75**	**0**	**0.69**	**3.00**	**0**	**0.00**	**0.08**	**0**	**0.00**	**0.60**	**0**
Delaware River Basin	**0.07**	**4.34**	**0**	**0.14**	**1..04**	**0**	**0.00**	**0.08**	**0**	**0.00**	**0.00**	**0**
New York Metro	**0.27**	**1.09**	**0**	**0.59**	**2.50**	**0**	**0.00**	**0.00**	**0**	**0.00**	**0.09**	**0**
North Central Rural	**0.00**	**0.05**	**0**	**0.14**	**0.67**	**0**	**0.00**	**0.00**	**0**	**0.00**	**0.00**	**0**
Northwest Rural	**0.07**	**2.31**	**0**	**0.14**	**0.93**	**0**	**0.00**	**0.00**	**0**	**0.00**	**0.00**	**0**
Philadelphia Metro	**1.17**	**4.39**	**0**	**1.31**	**2.69**	**0**	**0.11**	**0.03**	**4**	**0.00**	**0.00**	**0**
Pinelands	**0.08**	**0.29**	**0**	**0.04**	**1.34**	**0**	**0.01**	**<0.01**	**0**	**0.00**	**0.03**	**0**
Suburban Corridor	**0.12**	**1.18**	**0**	**0.59**	**0.69**	**0**	**0.00**	**0.00**	**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: Mosquito activity has begun this year in late March/early April. As of the beginning of this program, several species have emerged in significant numbers, including *Culiseta melanura*. Notable on this page is the capture of *Coquillettidia perturbans* in several regions, a species we normally see begin to emerge a week or two later. This may be a reflection of the warmer temperatures we have experienced lately.

Climate Factors

May Average High Temperatures to May 25	May Average Low Temperatures to May 25	May Total Precipitation to May 25
		

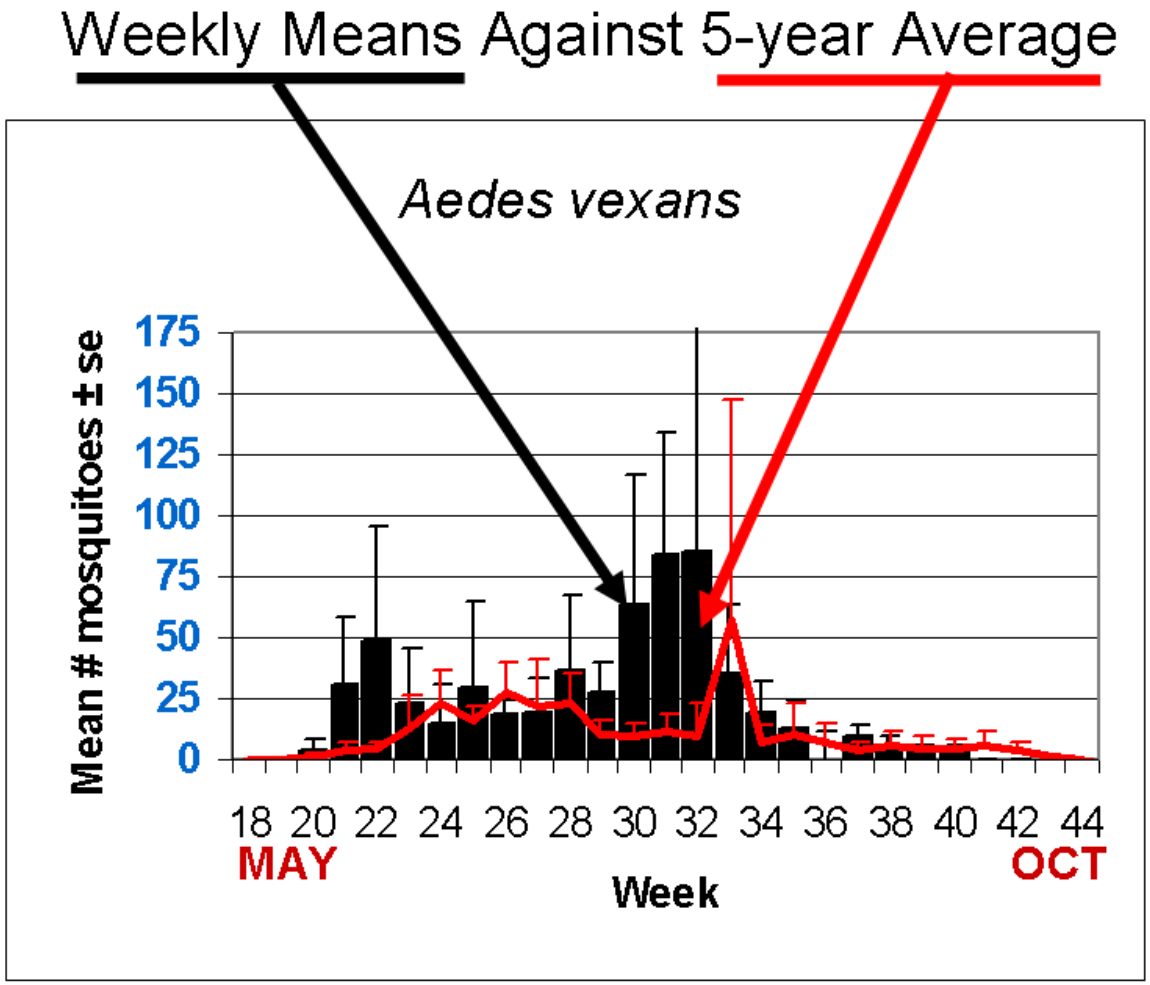
The three figures show the interpolation of average maximum and minimum temperature and total precipitation from May 1 to May 25, 2010 in New Jersey. Data points are from 35 weather stations maintained through the New Jersey Weather & Climate Network and the State Climatologist. Interpolation between points was performed using ArcMap 9.2.

In May, average high temperatures were highest in the interior portions of New Jersey. Average low temperatures were lowest in the northern portion of the state. Rainfall was highest in the northwestern portion of the state. The State Climatologist Office reported that record amounts of precipitation for December 2009 and March 2010 as well as high amounts for other winter months such that the 12 months from March recorded the highest amount of rainfall for New Jersey ever recorded. April saw significantly warm temperatures which may have been the impetus for an early emergence for some mosquito species. See http://climate.rutgers.edu/stateclim/?section=menu& target=apr10 and http://climate.rutgers.edu/stateclim/?section=menu& target=mar10

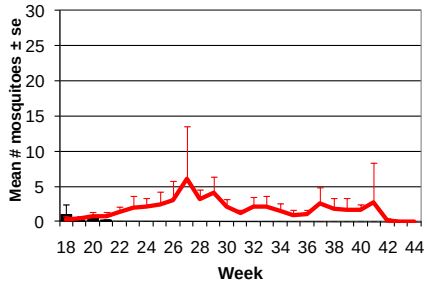
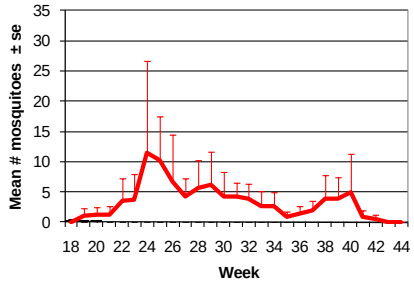
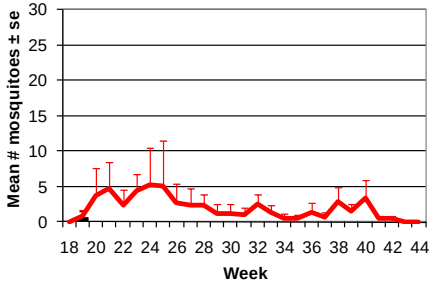
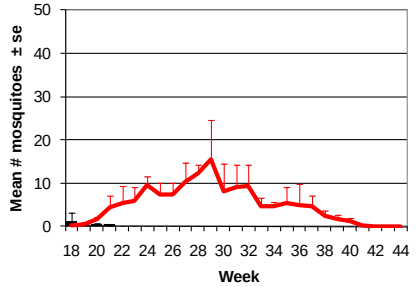
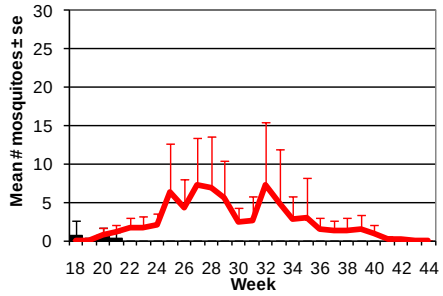
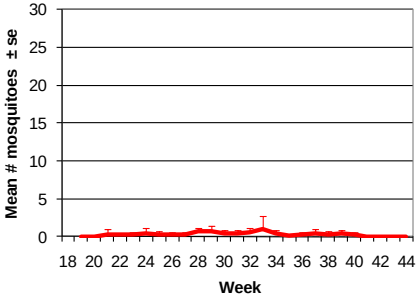
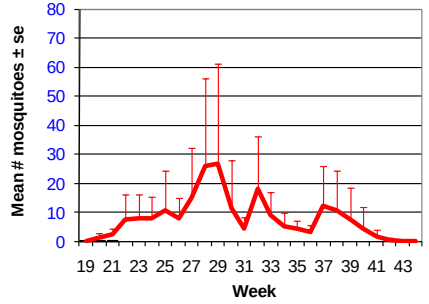
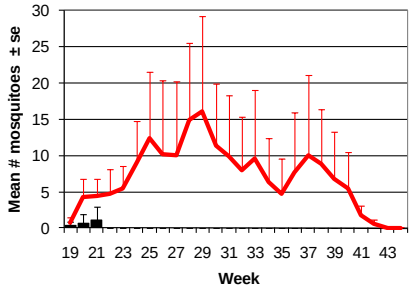
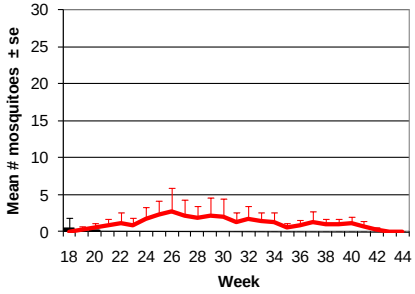
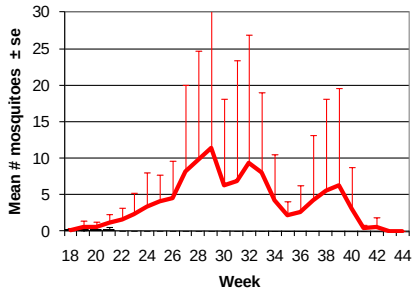
NJ Weather & Climate NETWORK

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 Burlington, Camden, Cape May, Essex, Hudson, Mercer, Middlesex, Monmouth, Ocean, Salem, Somerset and Warren counties. Note: Some counties put their light traps out on June 1st. County data is sent in at a variety of times during the week.



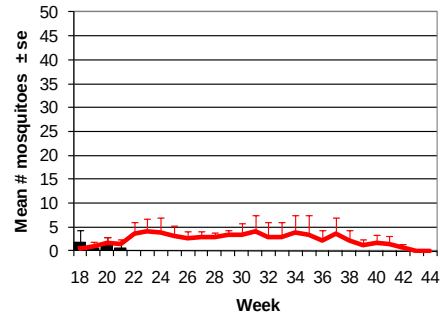
Aedes vexans - Fresh Floodwater Species
Multivoltine Aedine (*Ae. vexans* Type)

Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		*Aedes vexans* populations have been reported by county mosquito control agencies from April or May, and appear to be following historical patterns of the previous five years for the period reported by this program. This mosquito has the potential of being a nuisance mosquito not only due to the large numbers that a local area can potentially produce, but also because, according to Headlee (1945), this mosquito can move up to 15 miles, becoming a nuisance to other areas.	

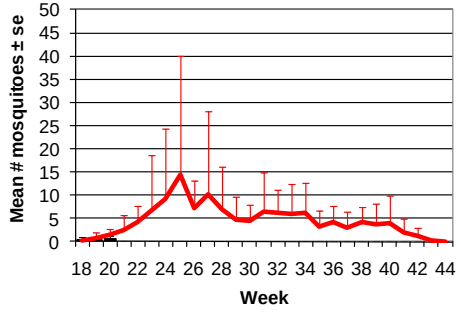
Headlee, T. 1945 The mosquitoes of New Jersey and their control. Rutgers University Press, New Brunswick, New Jersey. 316 pp.

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

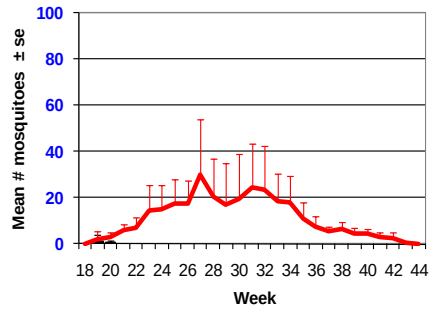
Agricultural



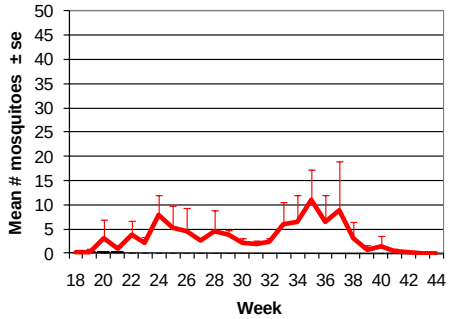
Coastal



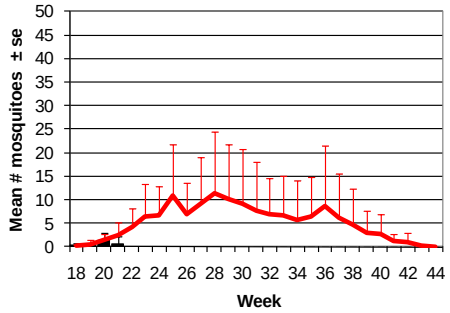
Delaware Bayshore



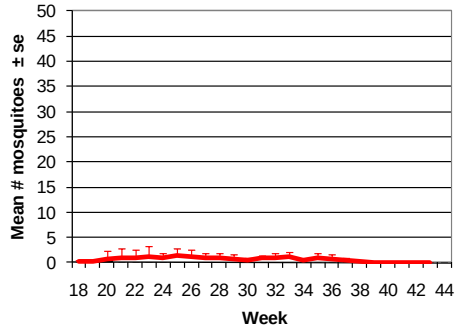
Delaware River Basin



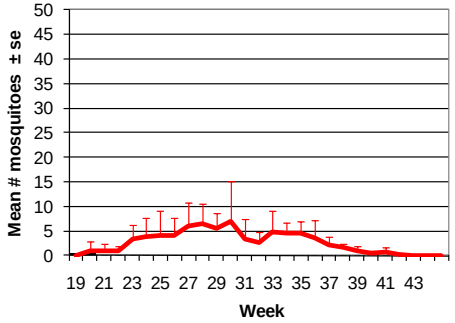
New York Metro



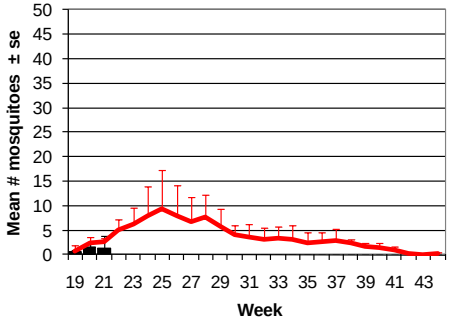
North Central Rural



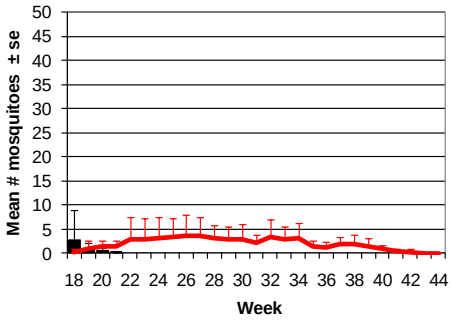
Northwestern Rural



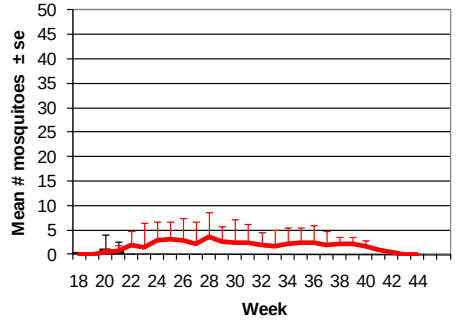
Philadelphia Metro



Pinelands



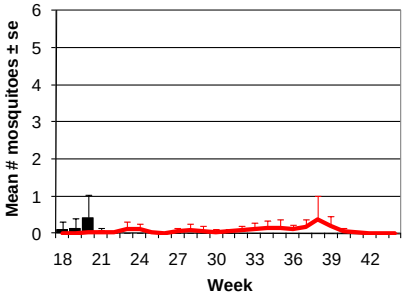
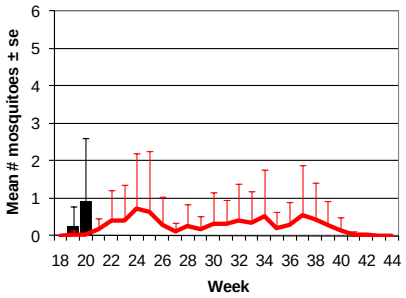
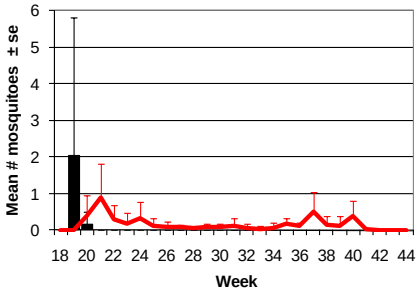
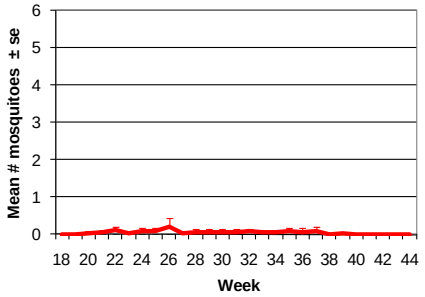
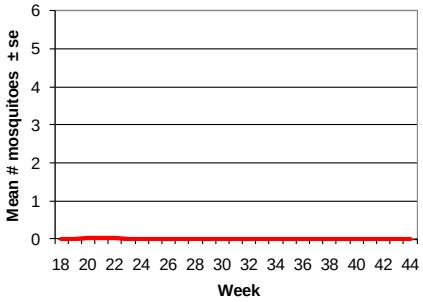
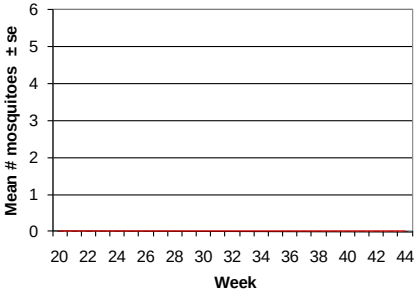
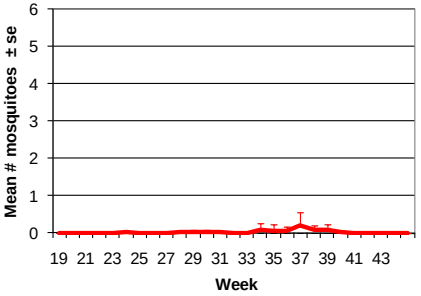
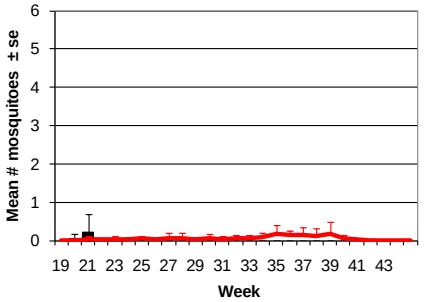
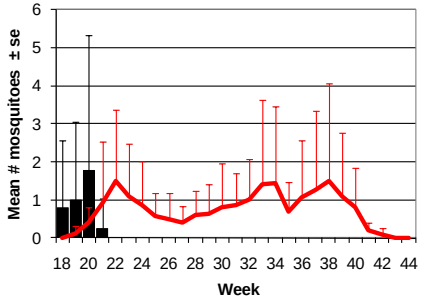
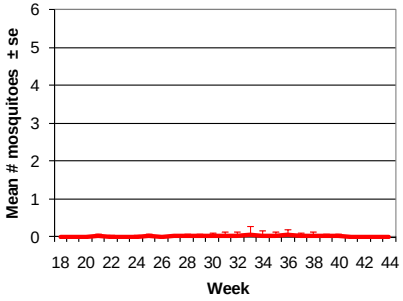
Suburban Corridor



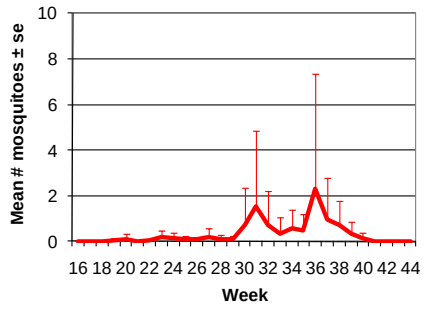
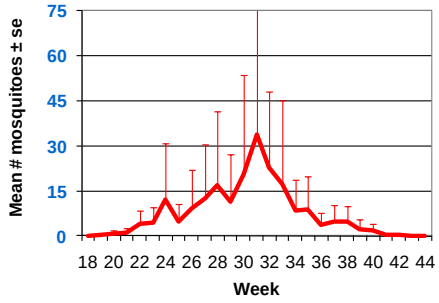
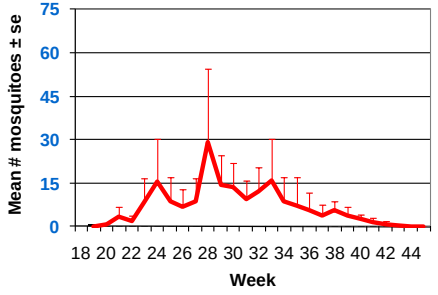
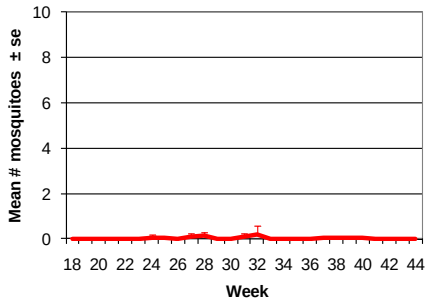
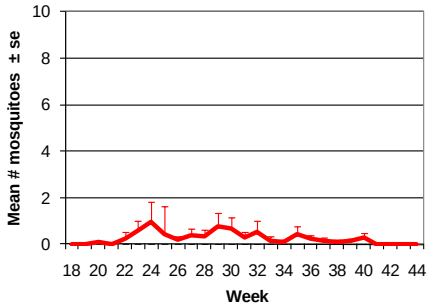
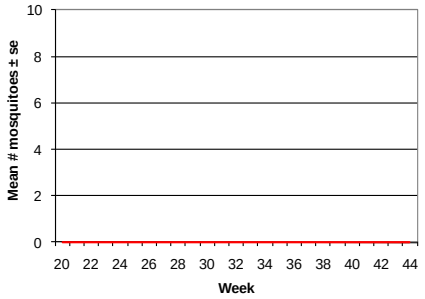
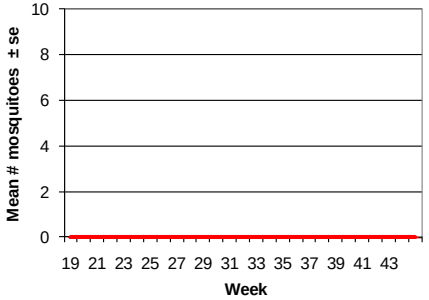
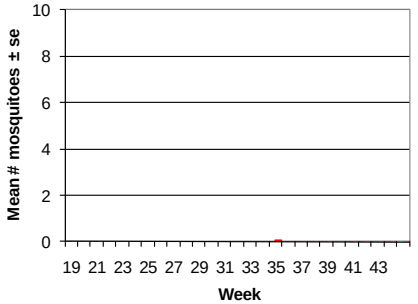
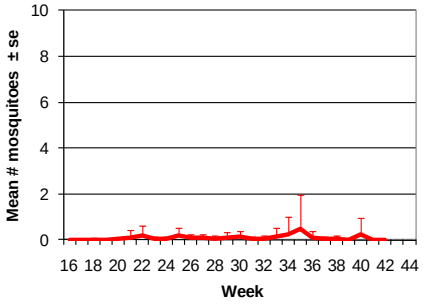
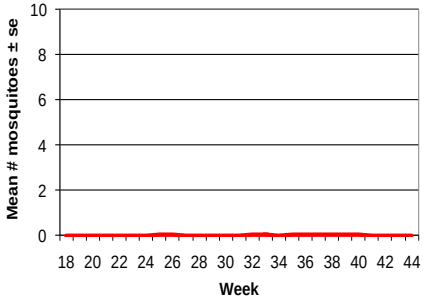
Comments

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. These species overwinter as inseminated females. Egg rafts from *Cx.* females begin to appear in April and May in New Jersey. Survival of overwintering females appears to be related to the availability of moist environments. With the amount of rainfall through the winter, this would not appear to be much of an impediment to this year's population.

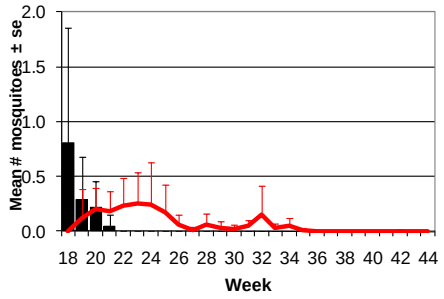
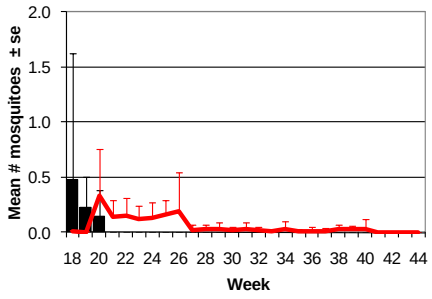
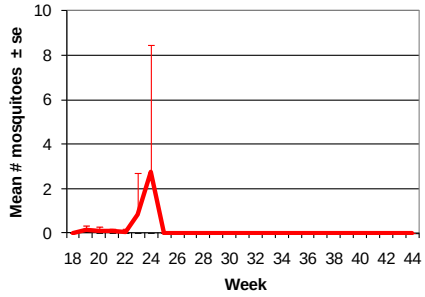
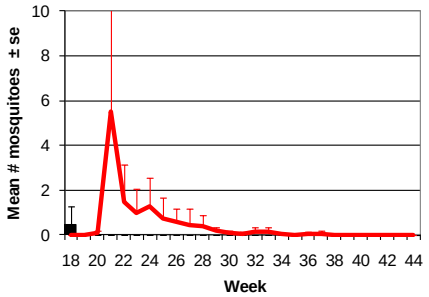
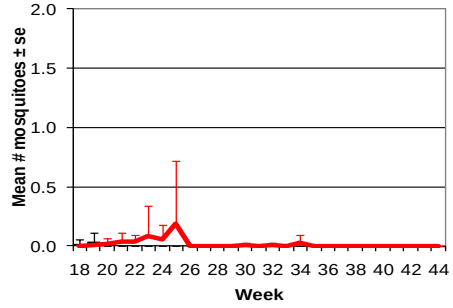
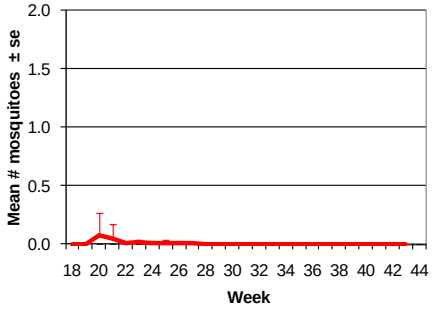
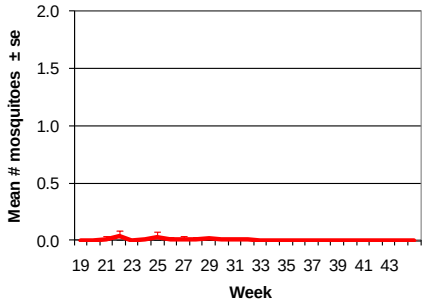
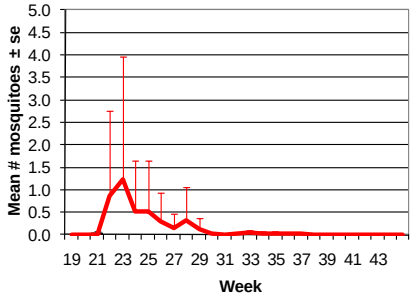
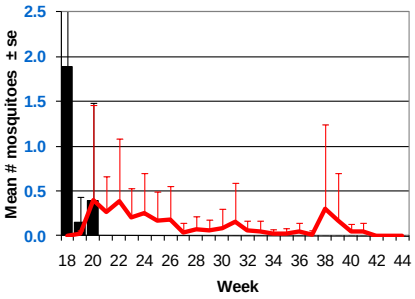
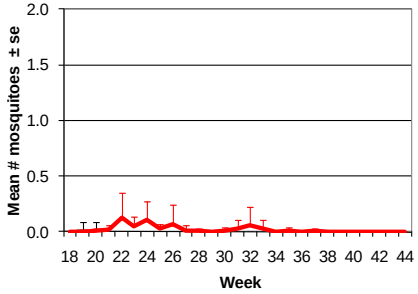
Culiseta melanura – Miscellaneous Group Unique (*Cs. melanura* Type)

Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		Populations of *Culiseta melanura*, the enzootic ornithophilic vector of eastern equine encephalitis, have shown up early and in numbers for those regions that commonly report this species (Coastal, Delaware Bayshore, the Pinelands, plus Agricultural). This species overwinters as larvae, and so the population level is set by the number of larvae produced by the previous generation and survival of said larvae. Last year's population abundance was higher than the previous few years, although not exceptionally so. However, the viral activity of EEE was much higher than the previous several years, and as such, warrants close observation of this species.	

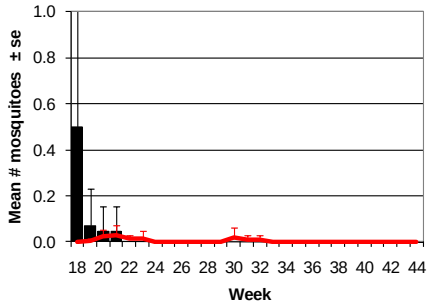
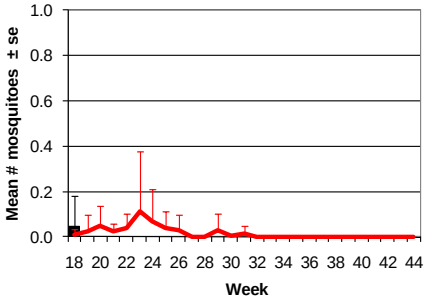
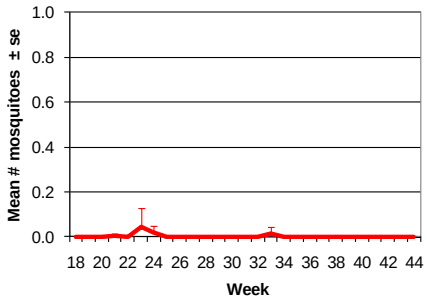
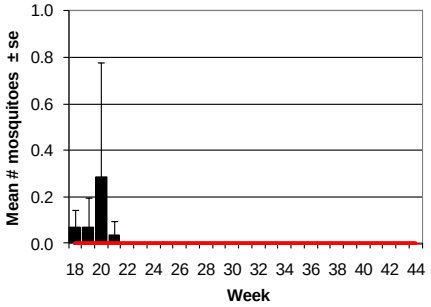
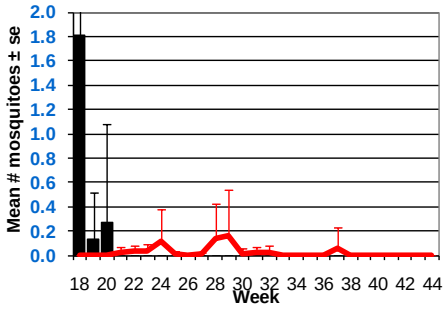
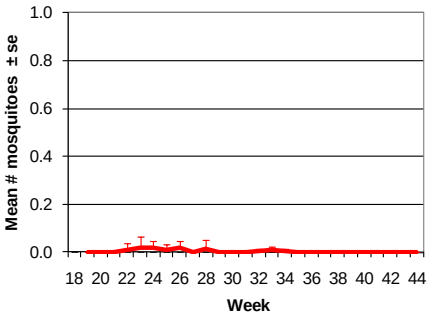
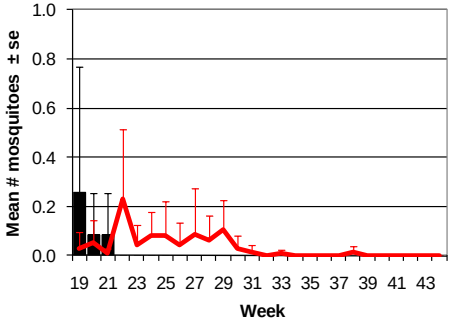
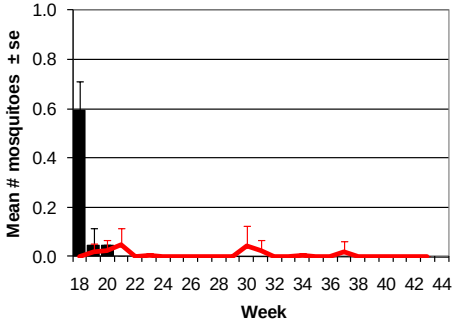
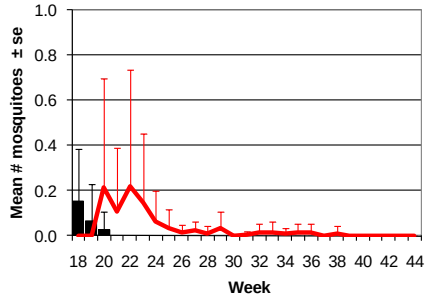
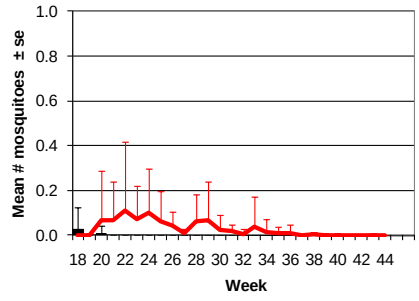
Aedes sollicitans - Salt Floodwater Species
Multivoltine Aedine (*Ae. sollicitans* Type)

Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		*Aedes sollicitans* populations have just begun to appear in small numbers. This salt floodwater species is most commonly found in the Coastal and Delaware Bayshore region, but adults can migrate for many miles and can thus be a nuisance in a substantial portion of New Jersey and not just along coastal areas. Populations emerge through flooding induced by lunar tides as well as rainfall. This species may be involved in coastal cases of eastern equine encephalitis and dog heartworm.	

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 have been on the wing for several weeks. Populations have been notably large in certain regions, such as the Pinelands. This species can appear as early as March and April. *Ae. canadensis* overwinters as a desiccant-resistant egg. It is typically described as univoltine, but often reappears later in the season, as exemplified by the historical values in the Pinelands. This re-appearance, as suggested by numerous authors, is likely due to eggs that get flooded by water that is high enough to reach these eggs (univoltine), not by eggs lain by earlier emergent mosquitoes (bivoltine).	

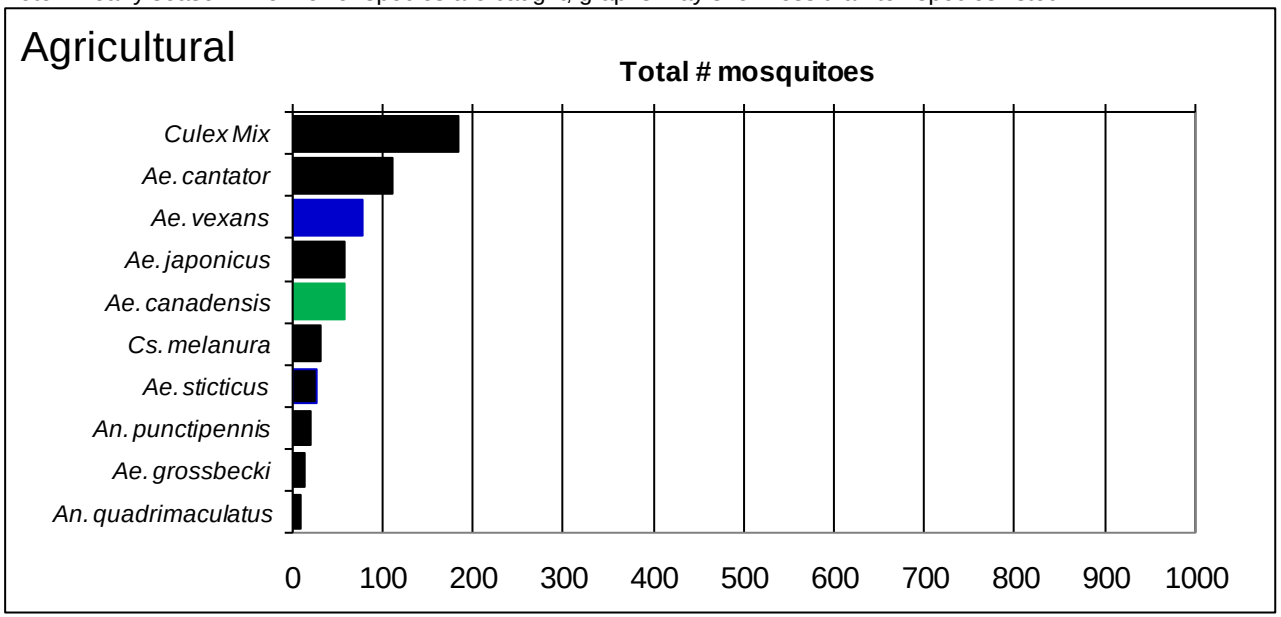
Aedes sticticus – Early Season Species
Univoltine Aedine (*Ae. canadensis* Type)

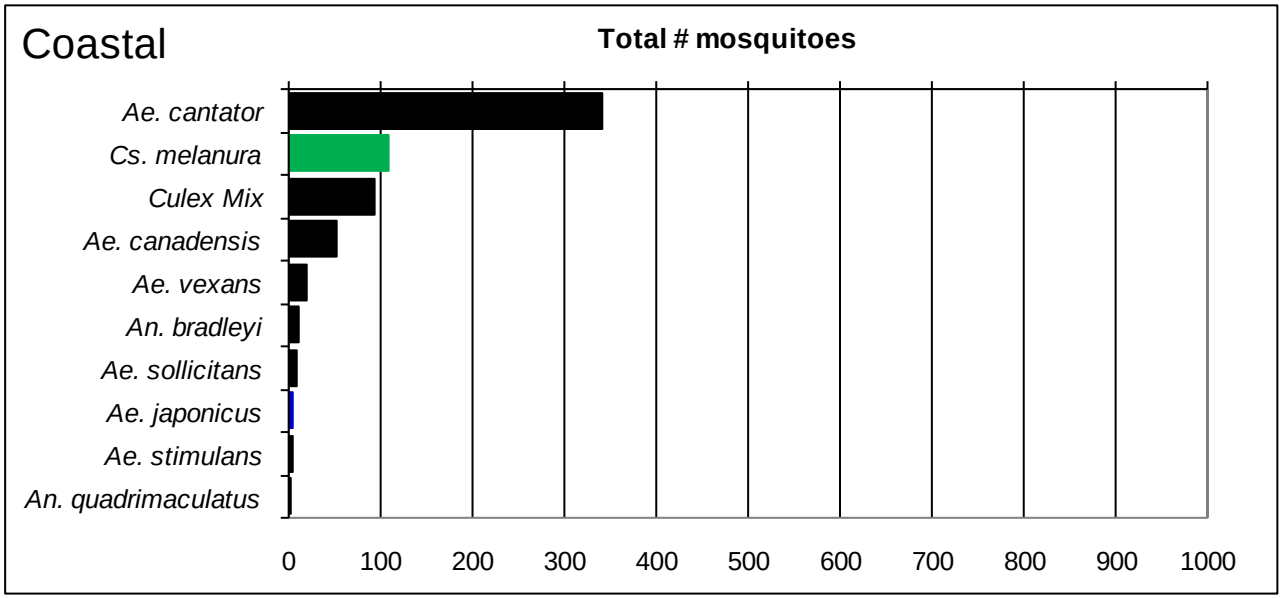
Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		*Aedes sticticus*, like *Ae. canadensis*, overwinters as a desiccant-resistant egg. County mosquito control agencies reported significant number of *Ae. sticticus* and this is reflected in high numbers seen in several regions, including the New York and Philadelphia Metro regions. It should be noted that as an early season species, this species can emerge before the beginning of the seasonal surveillance program, and thus we are seeing the end of this species' emergence. *Ae. sticticus* and *Ae. vexans* illustrate two methods of adaptation to rapidly disappearing habitat: *Ae. sticticus* will quickly mature and emerge, often without a reduction in size while *Ae. vexans* can develop in muddy habitat after water has dried down.	

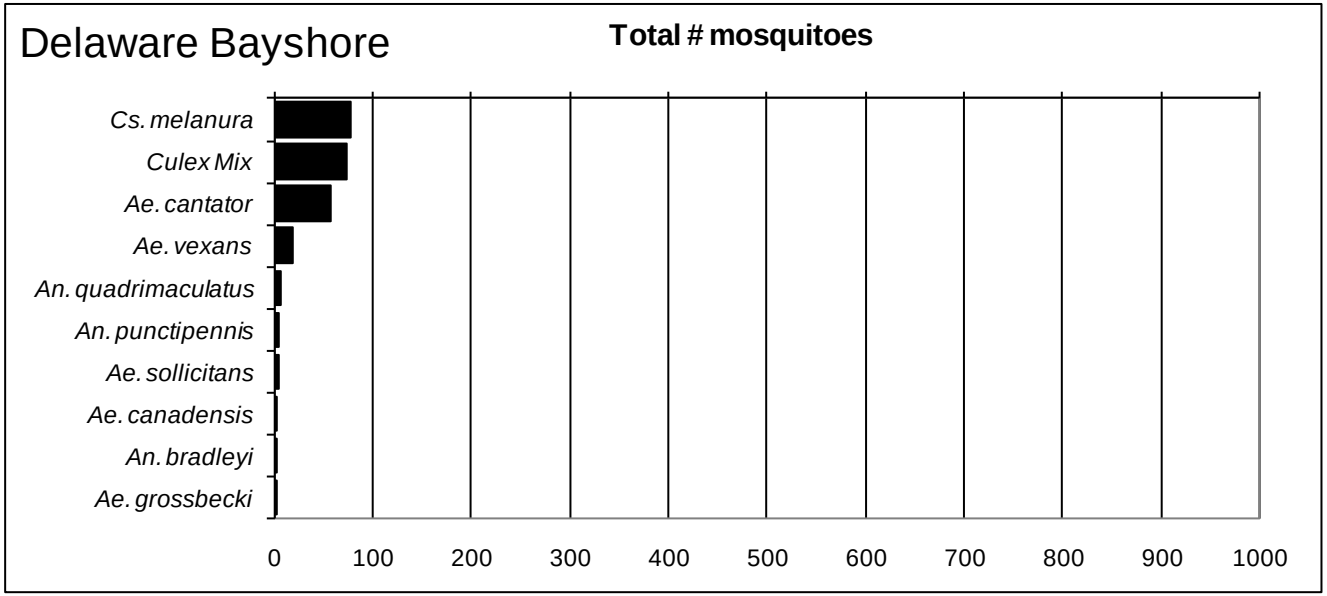
WNV *EEE*

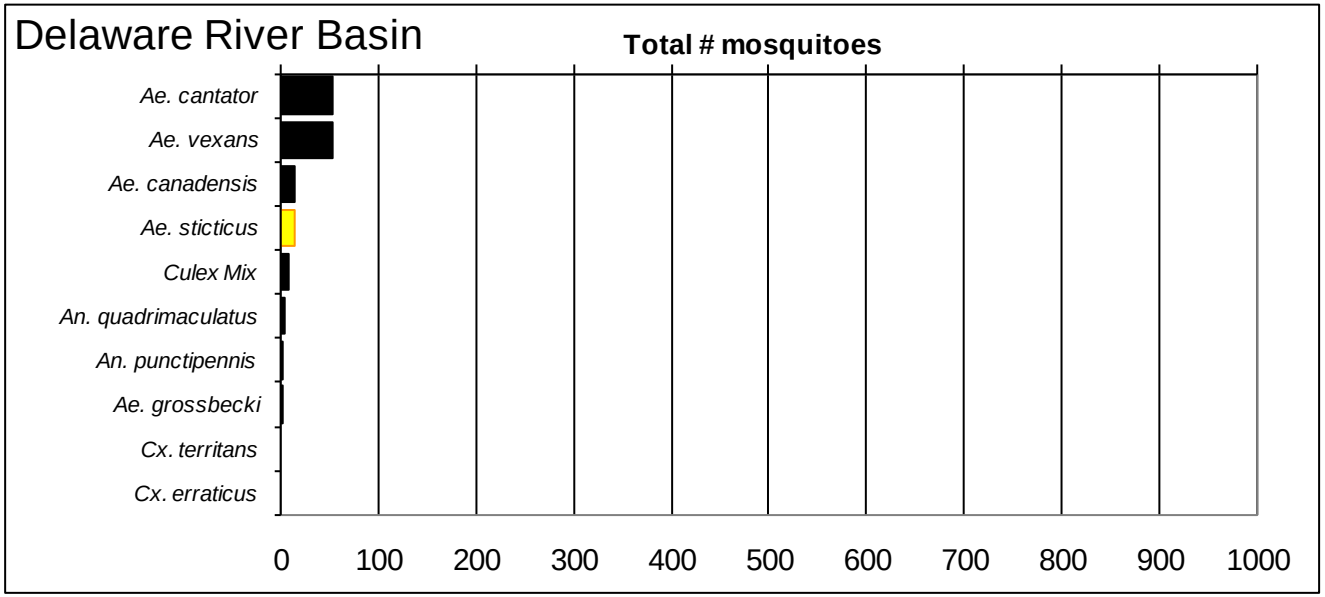
Top Ten Cumulative Mosquito Species/Region - *Ae. albopictus,* *Ae. japonicus (invasives);* *Cs. melanura or Cx. erraticus* *Coq. perturbans*

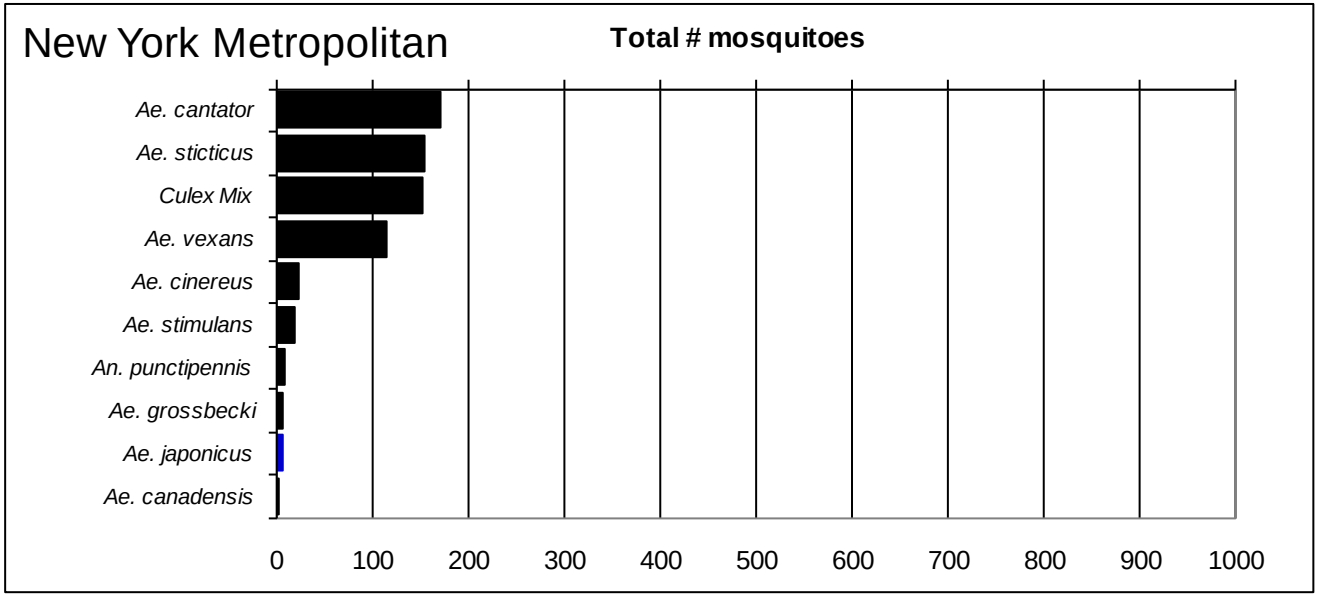
Note: In early season when fewer species are caught, graphs may show less than ten species listed.

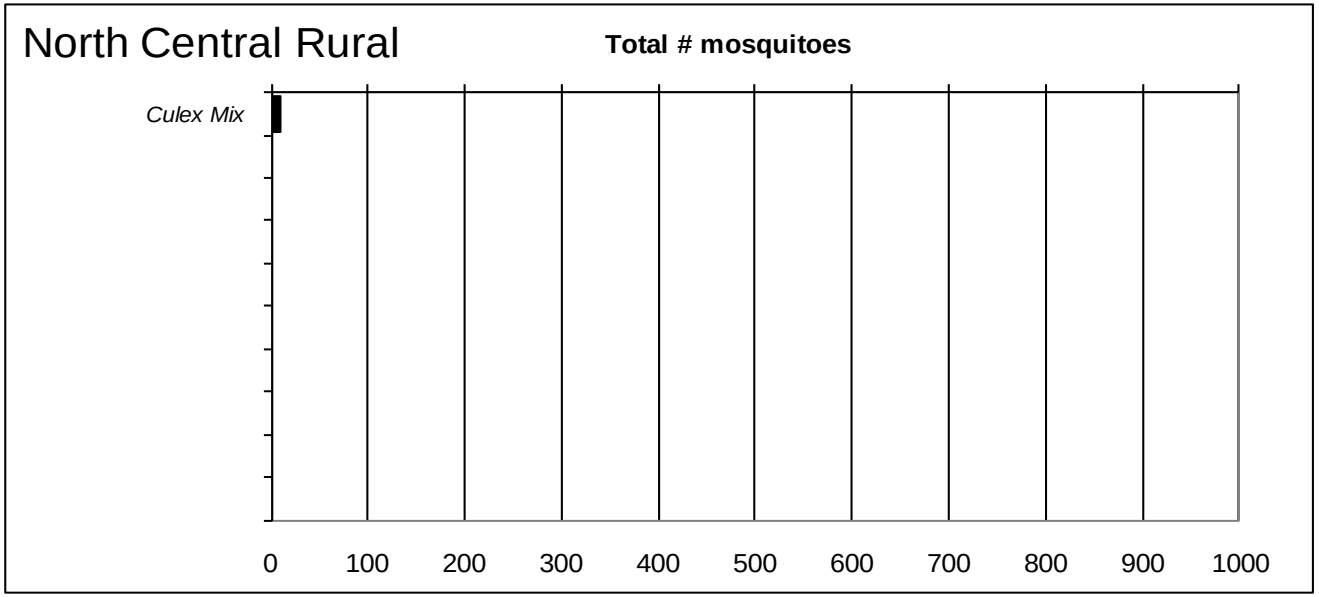


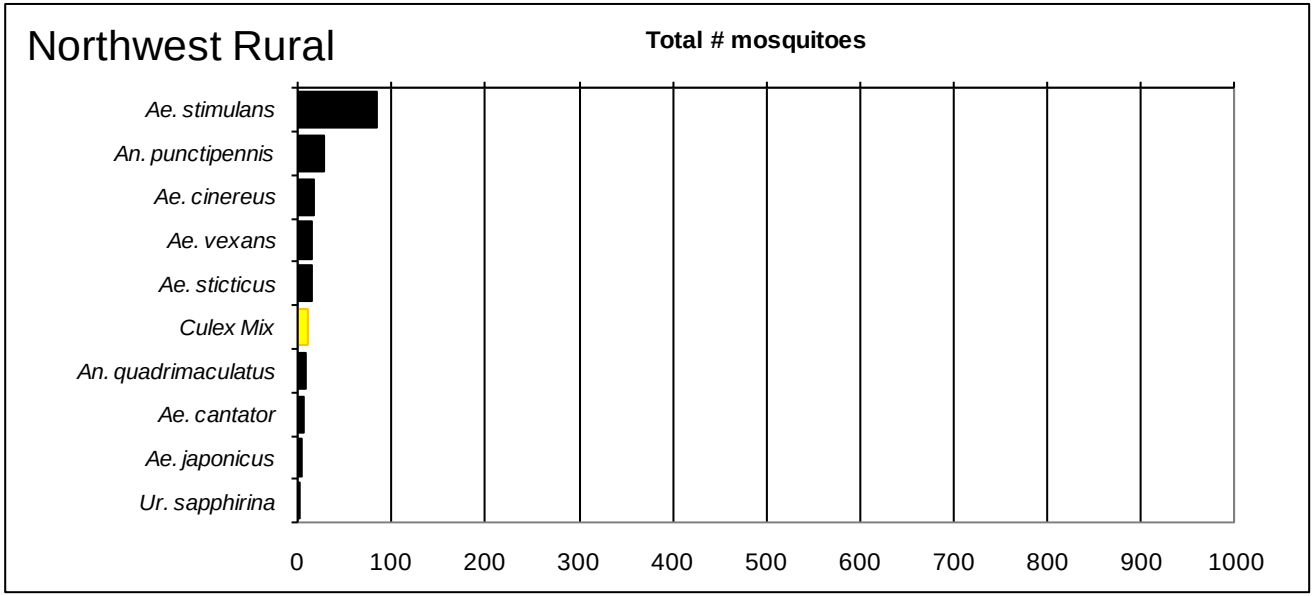


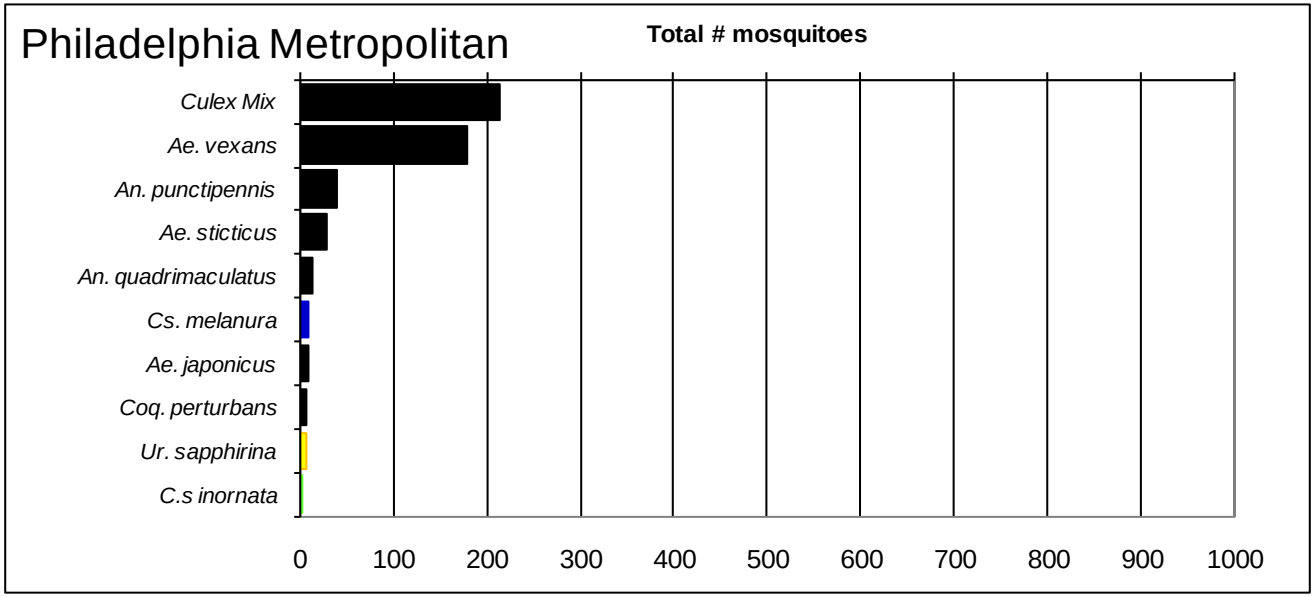

Delaware Bayshore
Total # mosquitoes
Cs. melanura
Culex Mix
Ae. cantator
Ae. vexans
An. quadrimaculatus
An. punctipennis
Ae. sollicitans
Ae. canadensis
An. bradleyi
Ae. grossbecki
0
100
200
300
400
500
600
700
800
900
1000

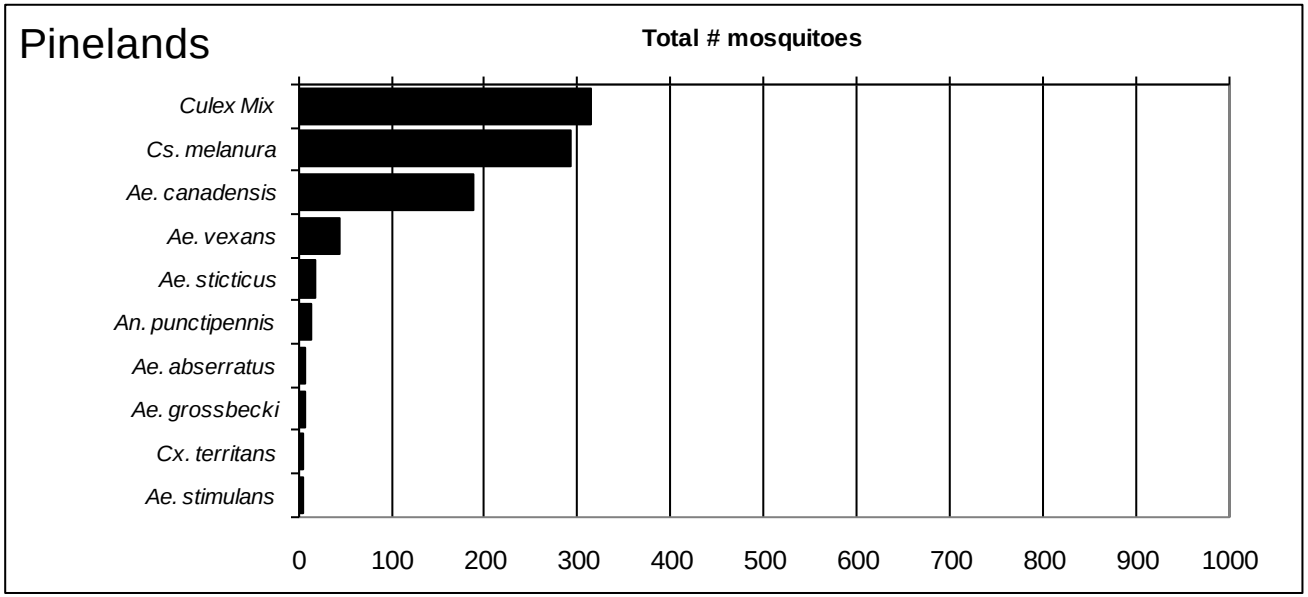

Delaware River Basin
Total # mosquitoes
Ae. cantator
Ae. vexans
Ae. canadensis
Ae. sticticus
Culex Mix
An. quadrimaculatus
An. punctipennis
Ae. grossbecki
Cx. territans
Cx. erraticus
0
100
200
300
400
500
600
700
800
900
1000

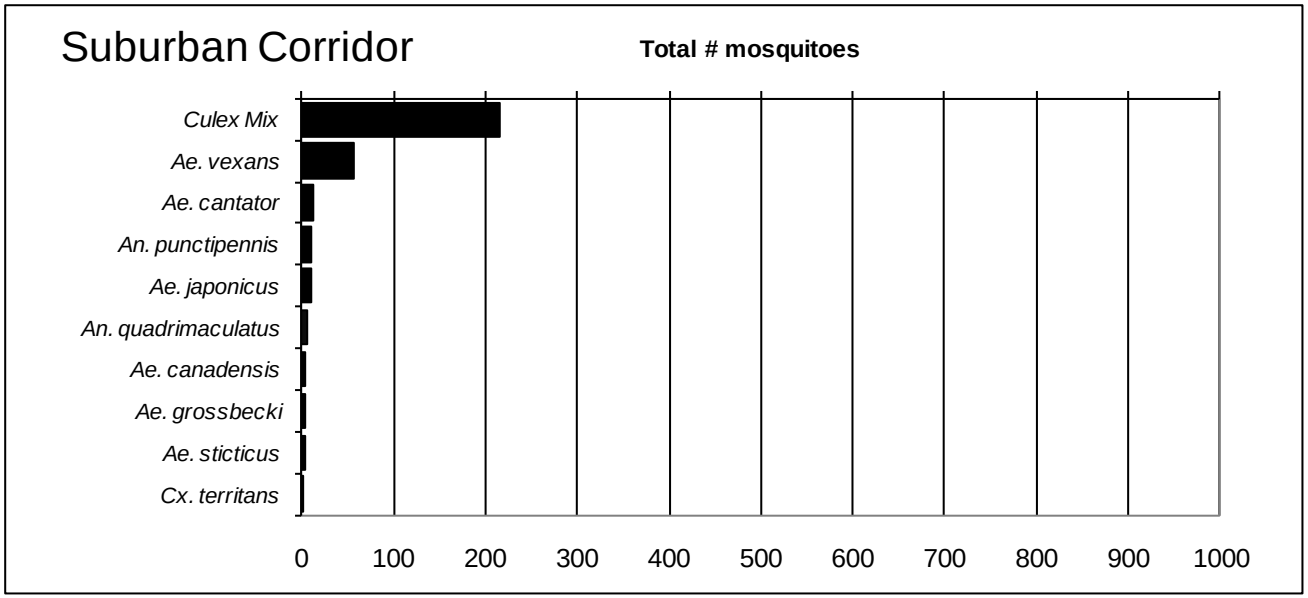

New York Metropolitan
Total # mosquitoes
Ae. cantator
Ae. sticticus
Culex Mix
Ae. vexans
Ae. cinereus
Ae. stimulans
An. punctipennis
Ae. grossbecki
Ae. japonicus
Ae. canadensis
0
100
200
300
400
500
600
700
800
900
1000


North Central Rural
Total # mosquitoes
Culex Mix
0
100
200
300
400
500
600
700
800
900
1000


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


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


Pinelands
Total # mosquitoes
Culex Mix
Cs. melanura
Ae. canadensis
Ae. vexans
Ae. sticticus
An. punctipennis
Ae. abserratus
Ae. grossbecki
Cx. territans
Ae. stimulans
0
100
200
300
400
500
600
700
800
900
1000


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