RUTGERS
New Jersey Agricultural Experiment Station

NEW JERSEY ADULT MOSQUITO SURVEILLANCE
Report for 15 June to 21 June 2008, CDC Week 25

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Center for Vector Biology

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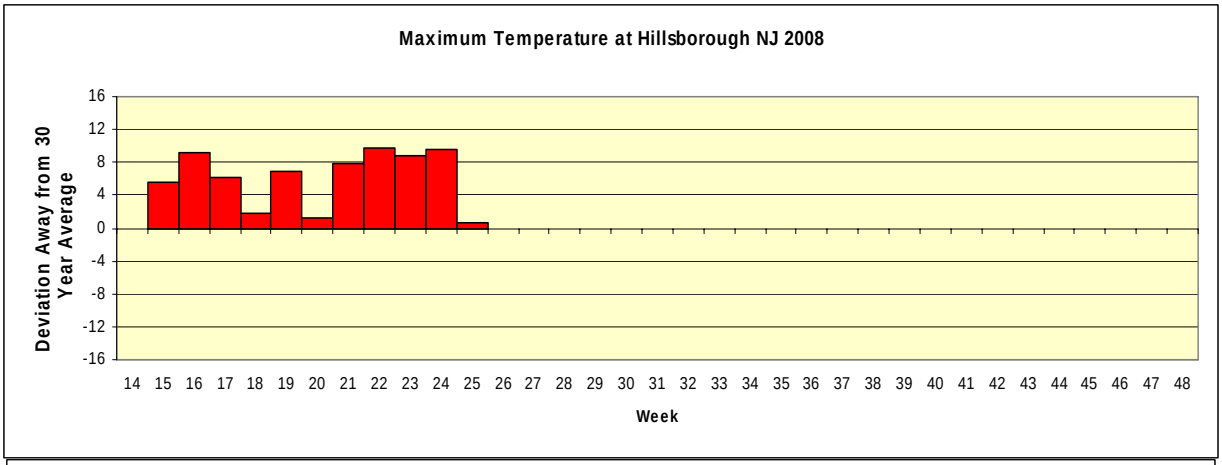
Summary table – Week 25

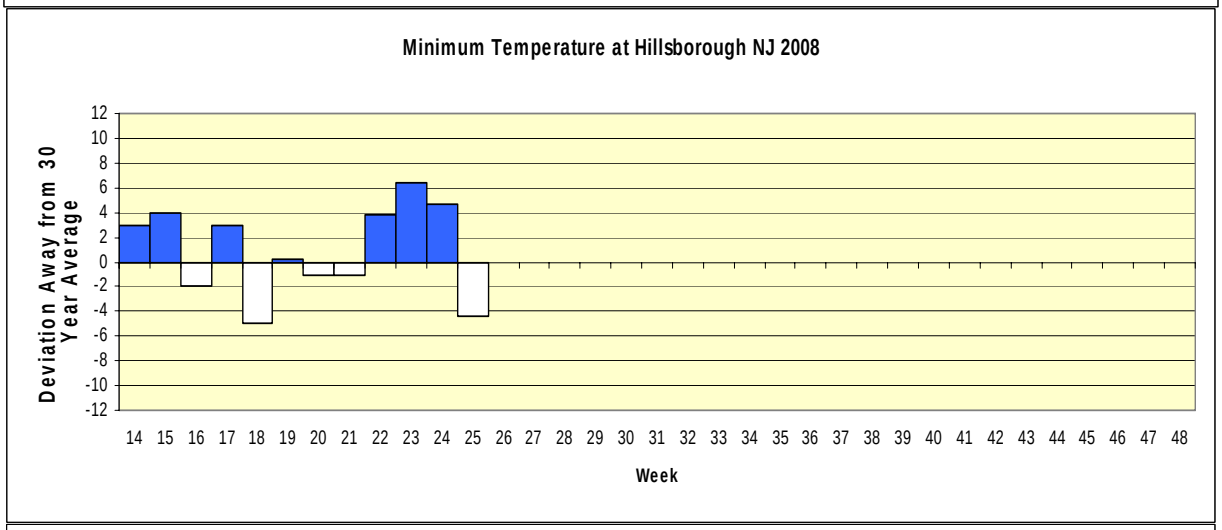
	Aedes vexans			*Culex* Mix			*Coquillettidia perturbans*			*Aedes sollicitans*		
Region	This Week	Average*	Increase	This Week	Average*	Increase	This Week	Average*	Increase	This Week	Average*	Increase
Agricultural	0.48	6.04	0	0.60	8.23	0	0.00	0.50	0	0.00	0.50	0
Coastal	1.98	12.04	0	10.49	8.05	1	0.16	1.98	0	2.84	27.20	0
Delaware Bayshore	0.29	4.56	0	2.62	26.58	0	0.21	3.48	0	1.76	12.54	0
Delaware River Basin	0.00	15.59	0	0.00	16.31	0	0.00	0.20	0	0.00	0.21	0
New York Metro	0.60	5.60	0	6.04	8.49	0	0.07	0.31	0	0.16	1.14	0
North Central Rural	0.57	0.69	0	0.98	1.55	0	0.00	0.00	0	0.00	0.00	0
Northwest Rural	5.83	17.10	0	3.66	2.29	2	0.69	0.01	4	0.00	0.00	0
Philadelphia Metro	2.45	12.75	0	3.19	8.49	0	0.03	0.11	0	0.00	0.00	0
Pinelands	0.75	2.47	0	0.99	2.54	0	0.08	0.86	0	0.01	0.25	0
Suburban Corridor	1.97	5.32	0	2.18	3.57	0	0.08	0.01	4	0.00	0.06	0

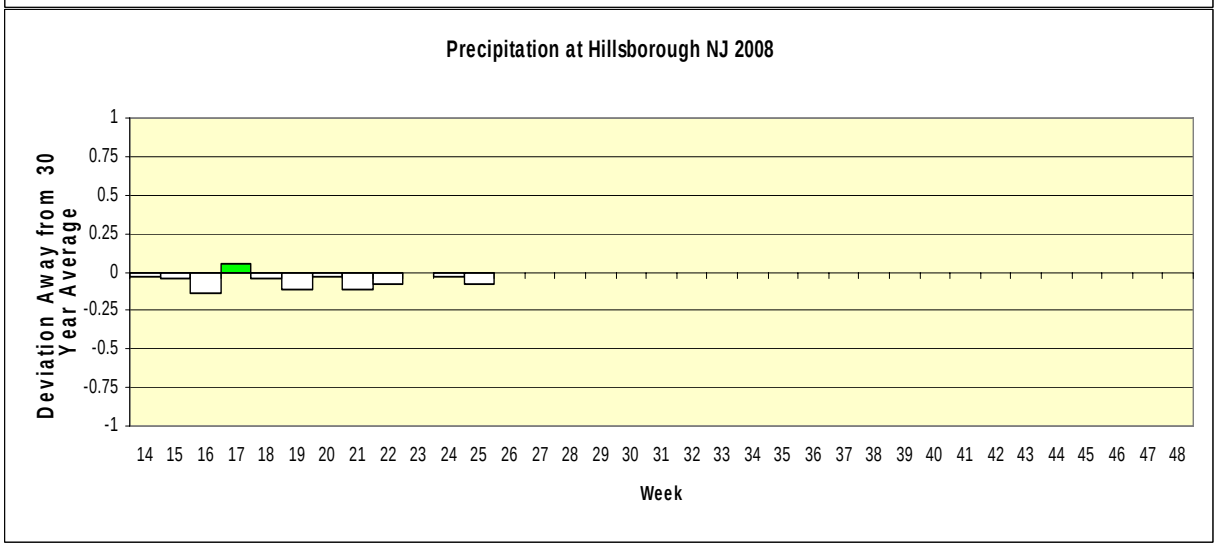
Averages represent data from, at most, the previous 5 years. Increase is a scale of current values from historical values where no difference or a decrease is represented by 0 (blue), up to 50% greater difference by 1 (green), up to 100% greater difference by 2 (yellow), up to 150% greater difference by 3 (orange) and greater than 150% increase by 4 (red). White cells denote increases from an historic zero and thus no value can be appropriately given.

State Summary: The population increases seen in *Aedes vexans* and the *Culex* species have not entirely sustained themselves into the current week. Modest increases of *Culex* spp. were seen in the Coastal and Northwestern Rural regions. Significant increases occurred early for *Cq. perturbans* in the Northwestern Rural and the Suburban Corridor regions.

Climate Deviations

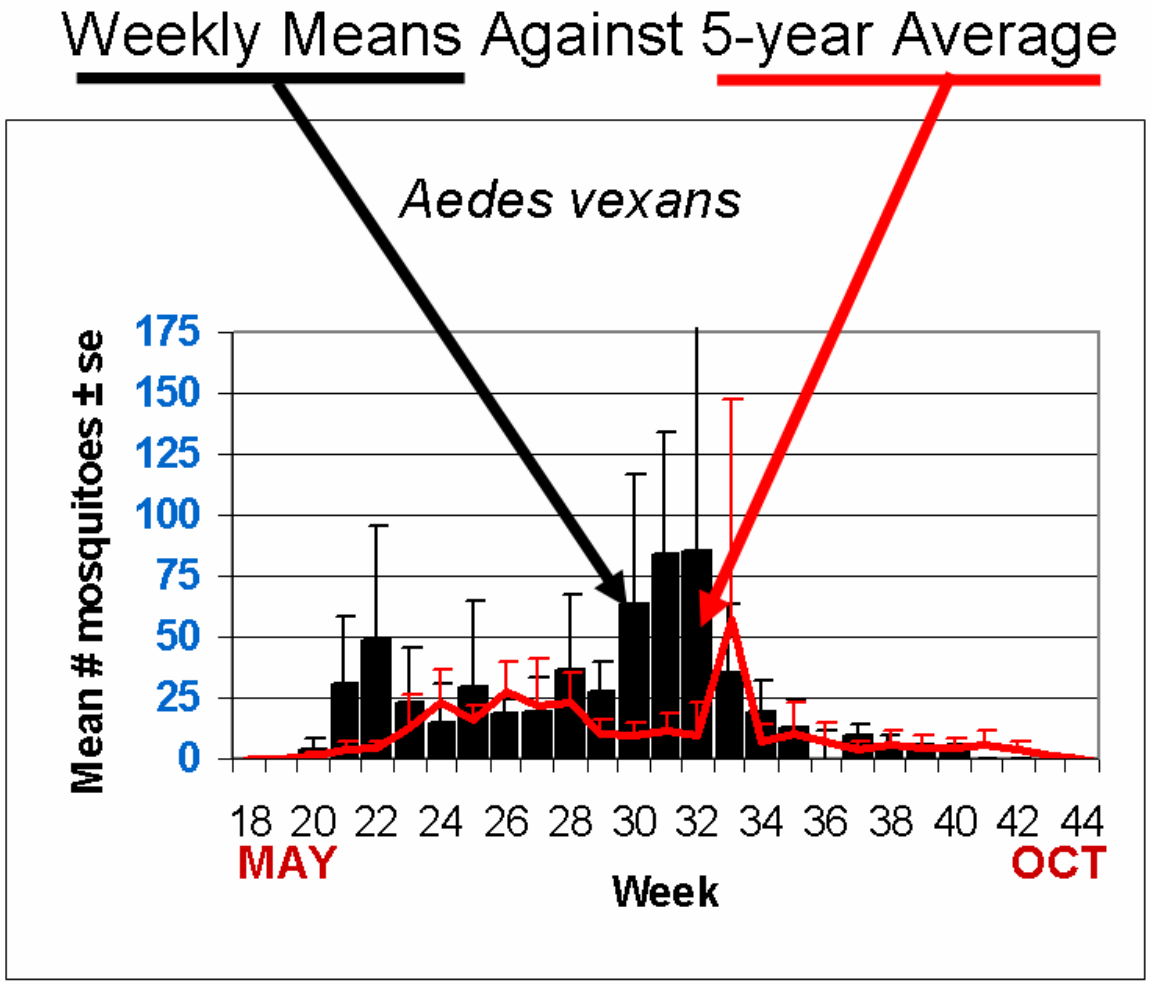






The figures show the average maximum temperature, minimum temperature and precipitation deviations from 30 year averages. Current data is from the Hillsborough NJ weather station (a station close to central NJ which recorded all three parameters and was available online at the NJ state climatologist) while historical data was from the New Brunswick weather station. Color bars above the zero line indicate warmer maximum or minimum temperatures and wetter conditions while white bars indicate cooler temperatures and dryer conditions.

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 Week 23 are from Atlantic, Camden, Cape May, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Somerset, Sussex and Warren counties. Note: County data is sent in at a variety of times during the week.



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

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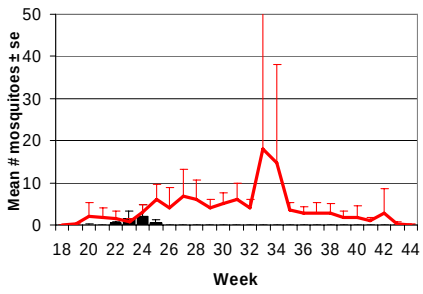
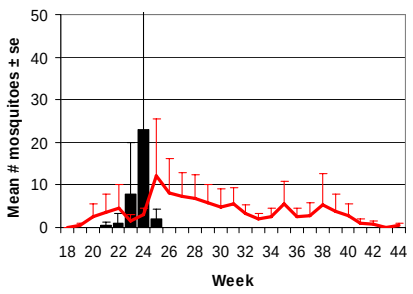
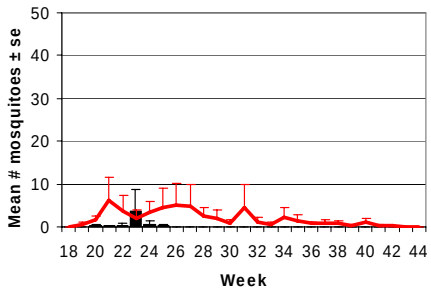
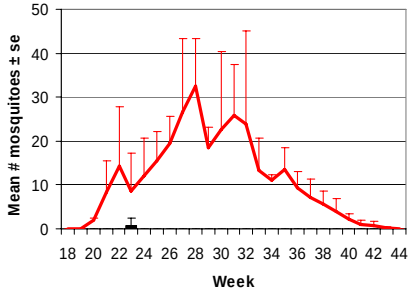
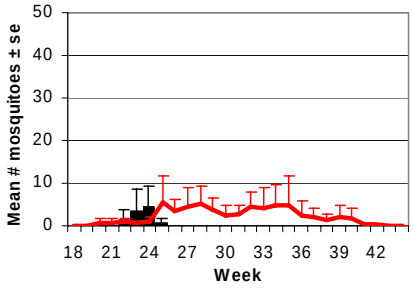
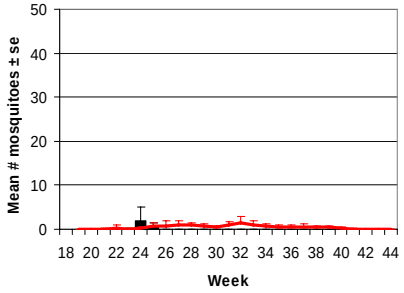
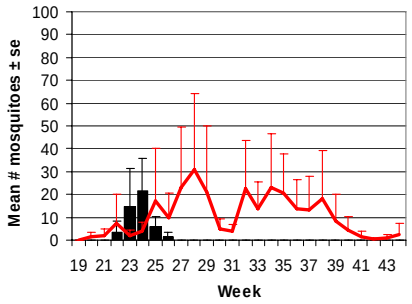
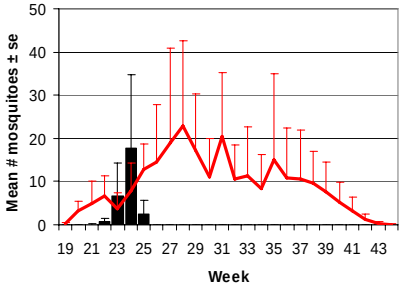
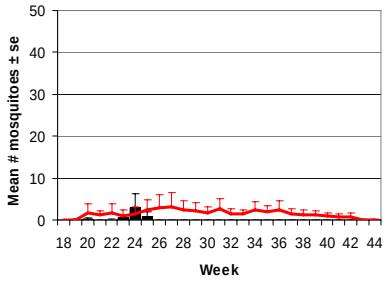
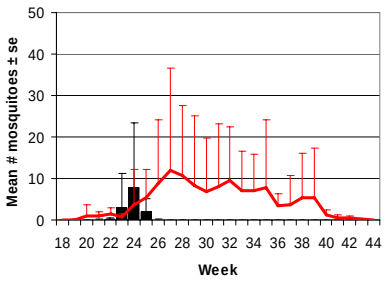
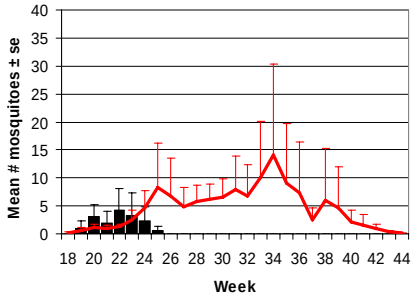
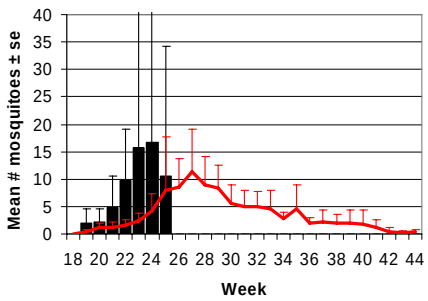
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		*Aedes vexans* populations have declined throughout much of the state after last week's emergence that occurred throughout much of the state. Populations continue to appear low in the Delaware River Basin, an area whose dredge spoil operations normally contribute to substantial abundance numbers. The Delaware Bayshore also appears to have reduced populations.	

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

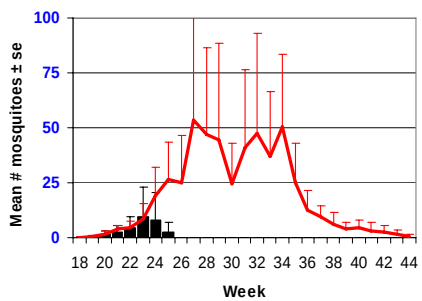
Agricultural



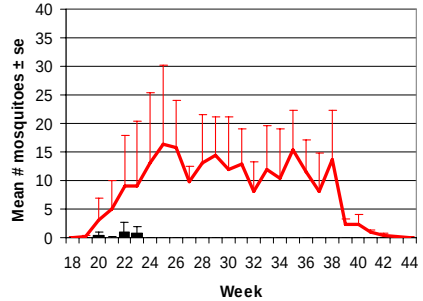
Coastal



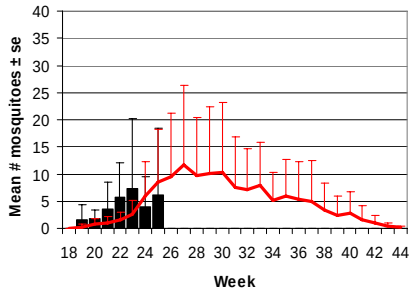
Delaware Bayshore



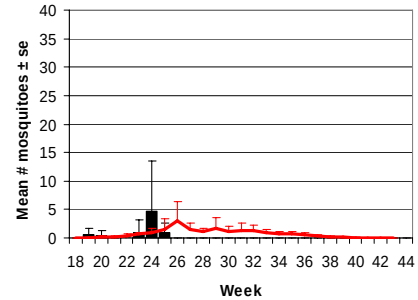
Delaware River Basin



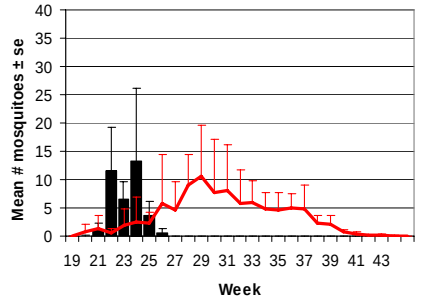
New York Metro



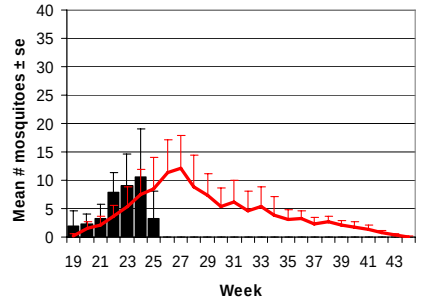
North Central Rural



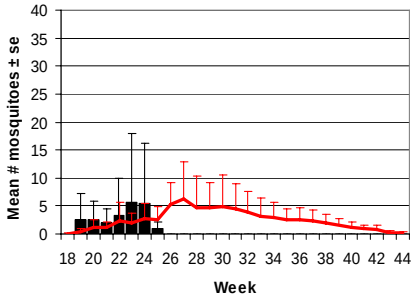
Northwestern Rural



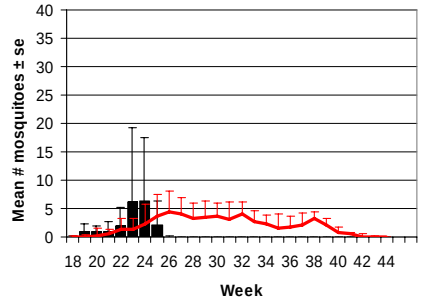
Philadelphia Metro



Pinelands



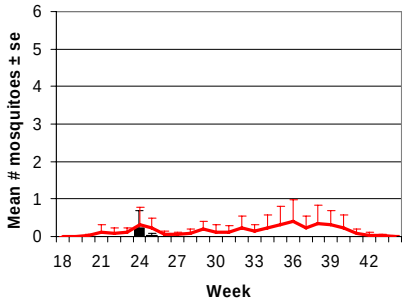
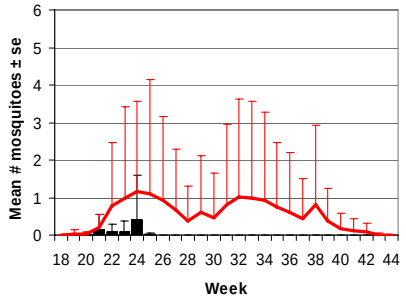
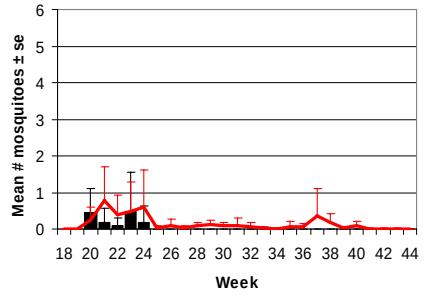
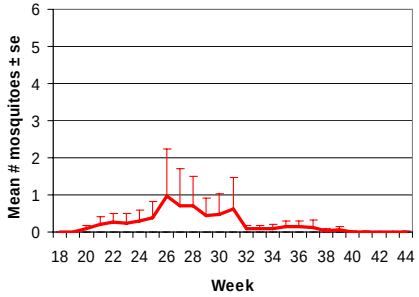
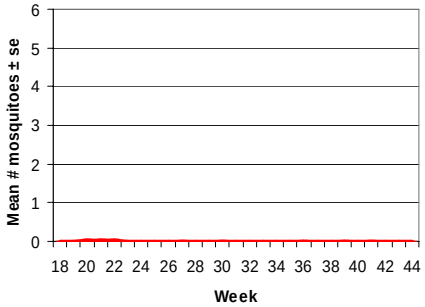
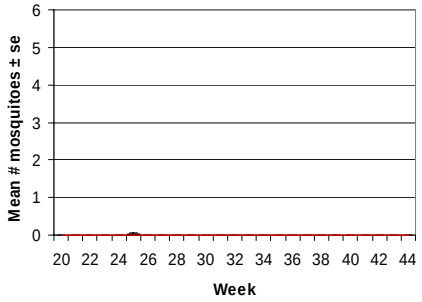
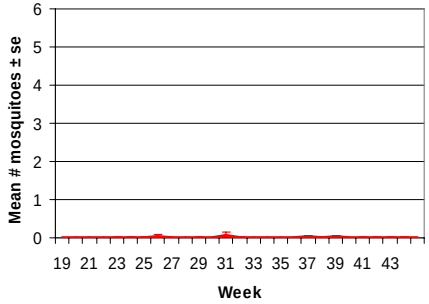
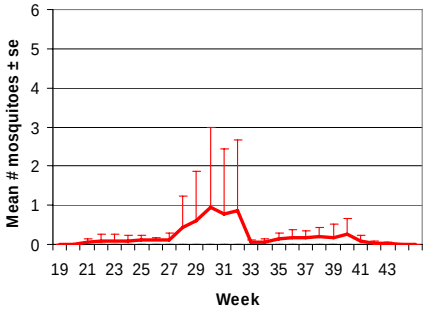
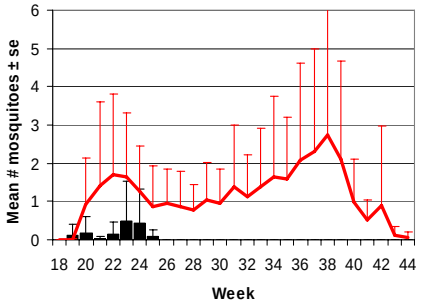
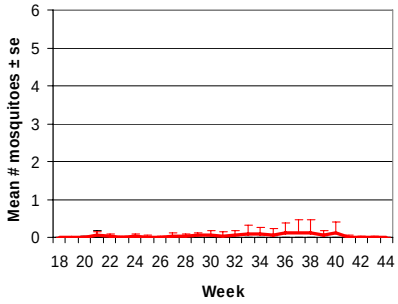
Suburban Corridor



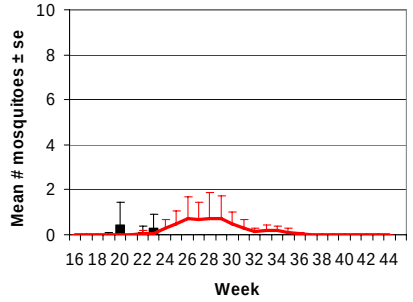
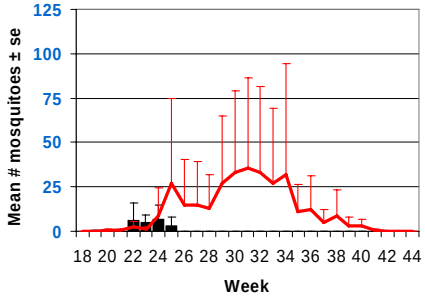
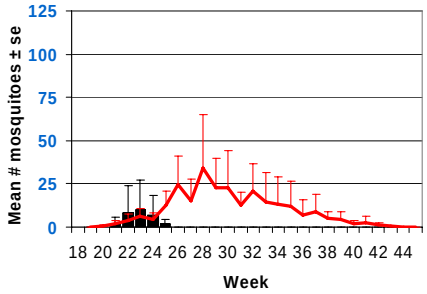
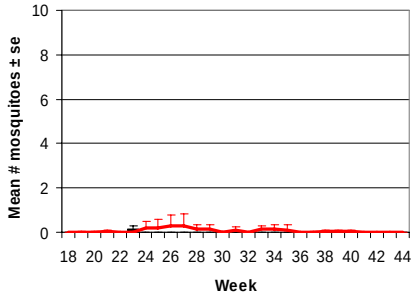
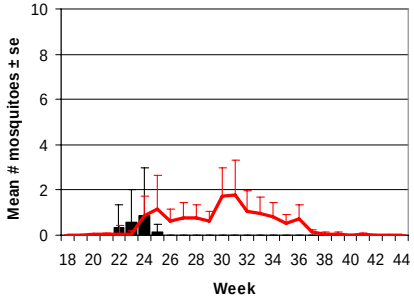
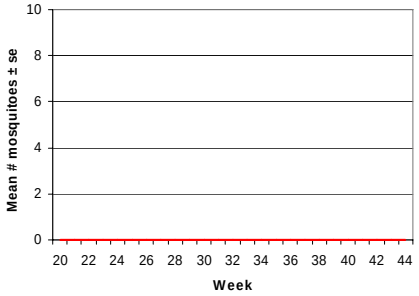
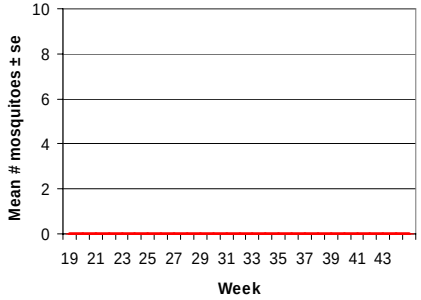
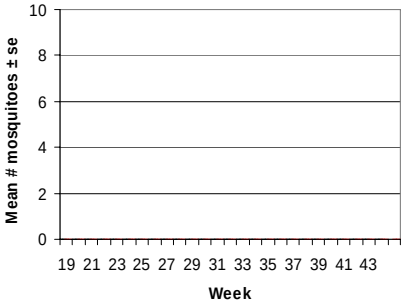
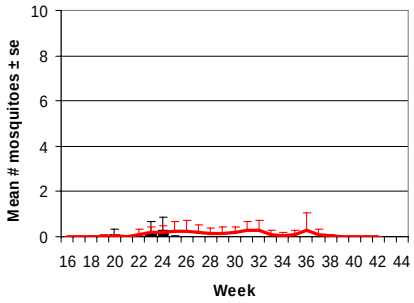
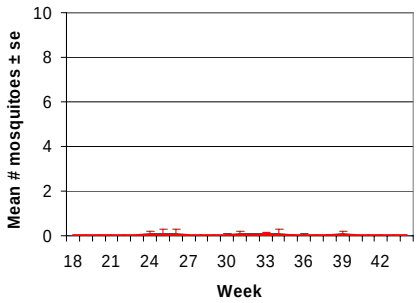
Comments

Culex (*Cx. pipiens, restuans,* and *salinarius*) populations appear to be tracking historical trends for most of the regions except for the Delaware River Basin. Apart from the higher abundances seen in the Coastal and Northwestern Rural regions, *Culex* populations tend to be more predictable due to the permanent nature of the larval habitat and this is reflected in the smaller variation seen in comparison to other species. However, all three species will also exploit ephemeral habitats, and have a wide range of tolerance for polluted waters.

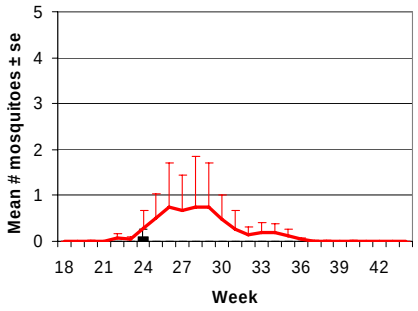
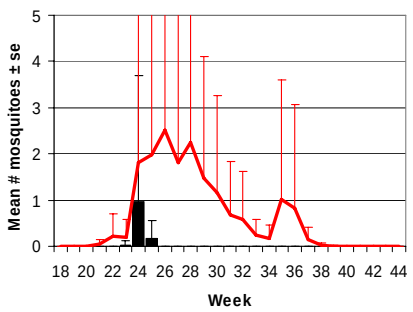
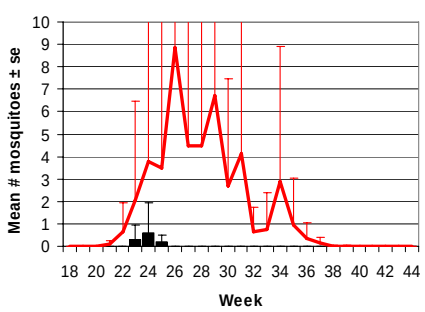
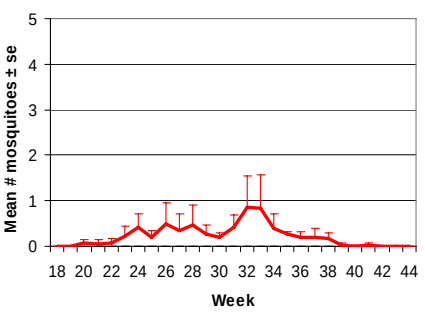
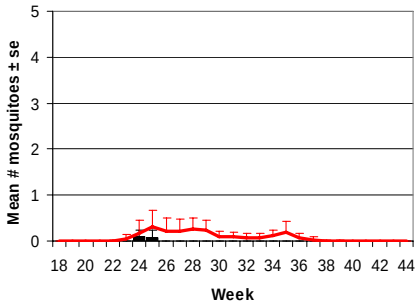
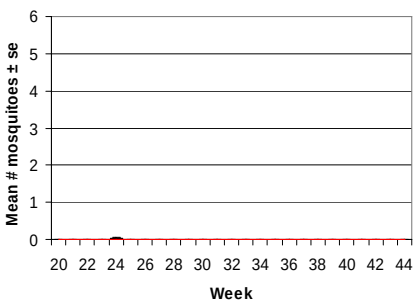
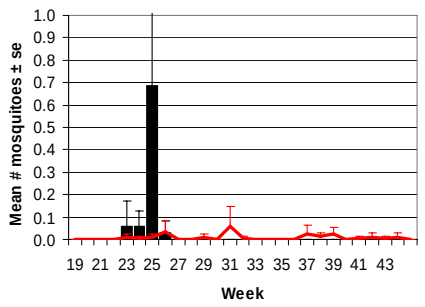
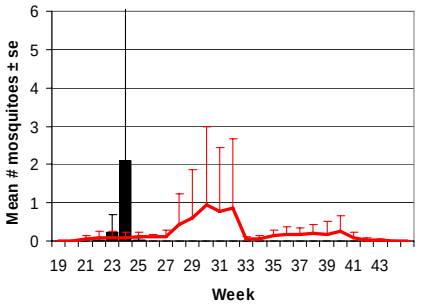
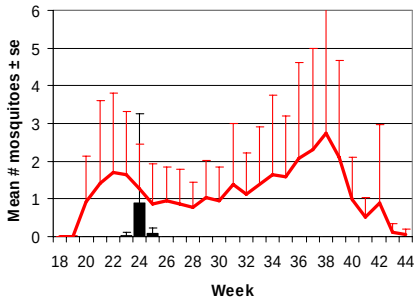
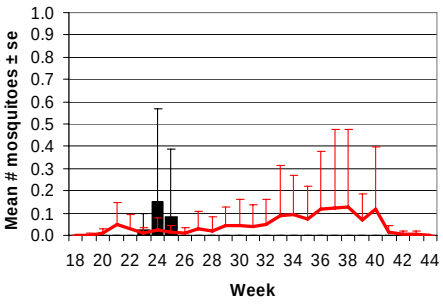
Culiseta melanura – Miscellaneous Group Unique (*Cs. melanura* Type)

Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		*Culiseta melanura* appear in lower abundance than historical values in the Coastal and Pinelands regions, and have not appeared in the Delaware River Basin and the Philadelphia Metro regions yet. In the Delaware Bayshore region, abundances are on track with historical values. Very low numbers were also reported from the Vector Surveillance program. Unlike WNV that use numerous mechanisms to overwinter, including vertical transmission (from one mosquito generation to the next), it is suspected that recrudescence (re-appearance) of EEE in previously infected birds during periods of stress (migration/nesting) infects the initial population of *Cs. melanura*, which then initiates amplification in the vertebrate host. Amplification increases substantially when immunologically naïve juvenile birds appear in the population and the second generation *Cs. melanura* begin emerging in early summer.	

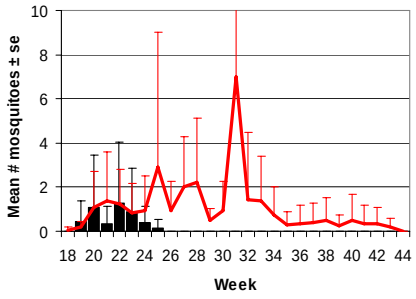
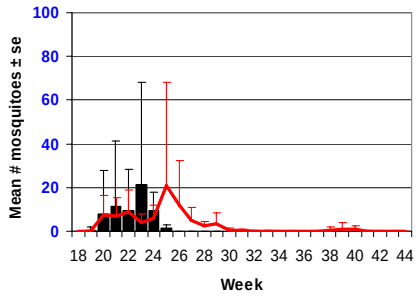
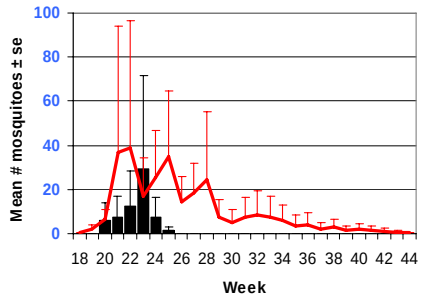
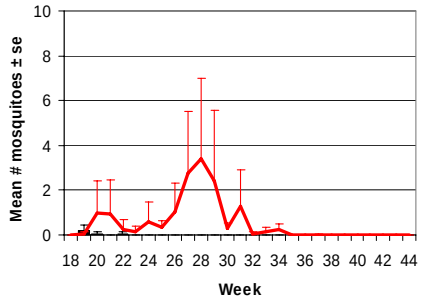
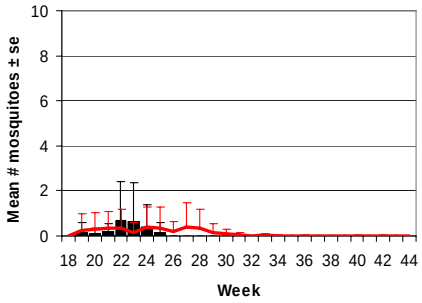
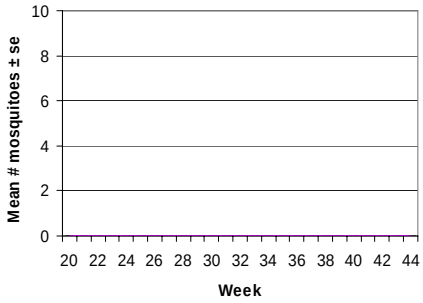
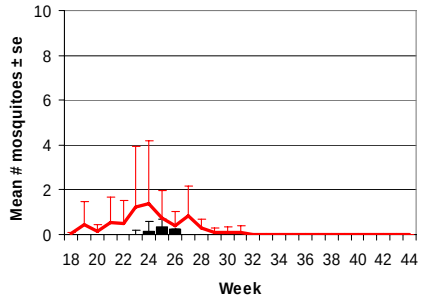
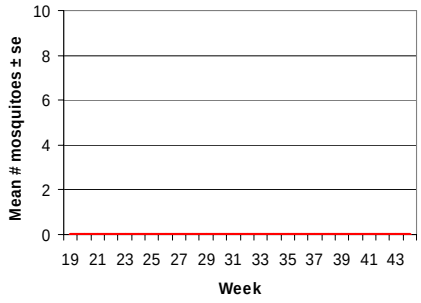
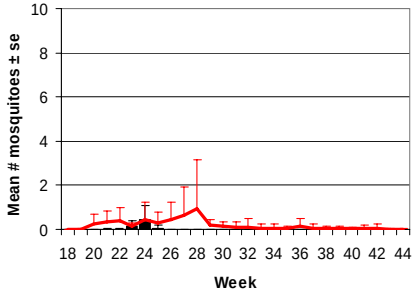
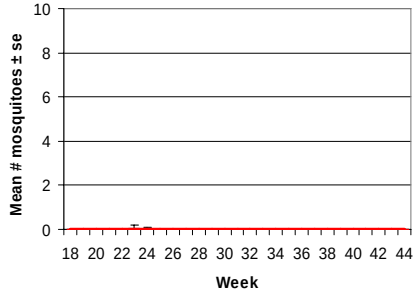
Aedes sollicitans - Salt Floodwater Species
Multivoltine Aedine (*Ae. sollicitans* Type)

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 declined from the previous weeks and are expected to increase as the next brood appears after the last high lunar tide. Over the past weeks, rainfall has been locally strong yet patchy and may increase the variability reported as local populations respond.	

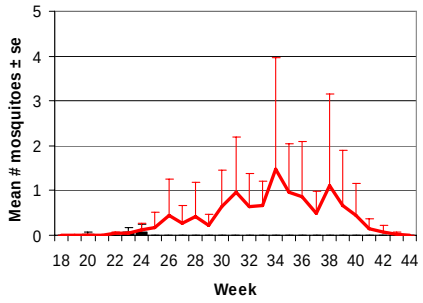
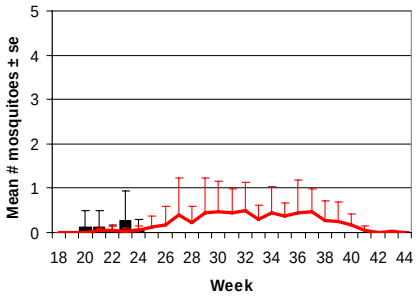
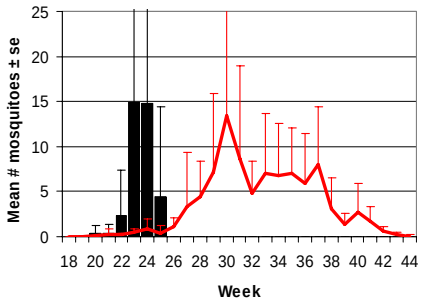
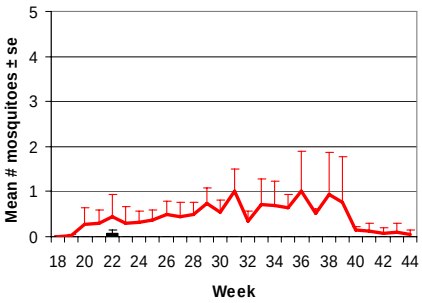
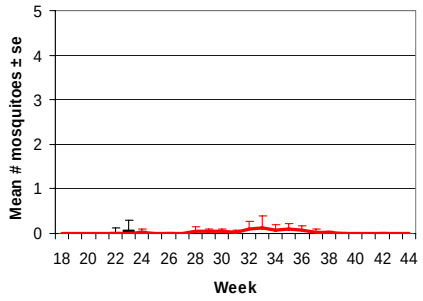
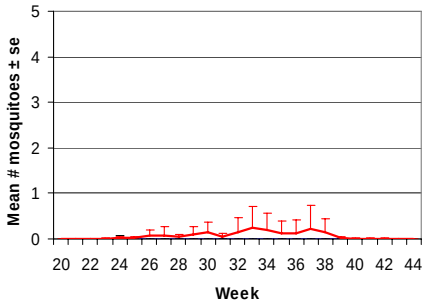
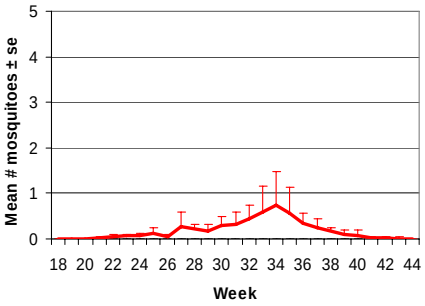
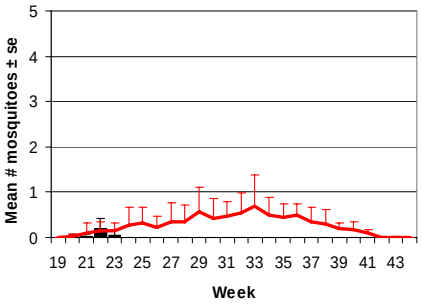
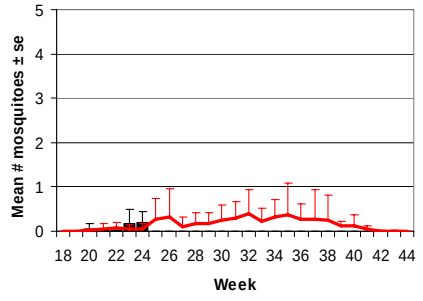
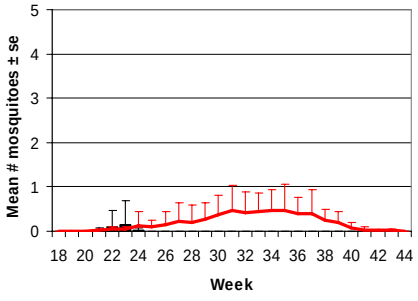
Coquillettidia perturbans- Monotypic Species
(*Cq. perturbans* Type)

Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		*Coquillettidia perturbans* numbers in the Philadelphia Metro region declined after a significant increase observed last week. Peaks were also observed in the Coastal, Delaware Bayshore, Philadelphia Metro, Pinelands and the Suburban Corridor at the same time. Unusually high populations were observed in the Northwestern, Philadelphia Metro and Suburban Corridors. The North Central Rural also reported trapping this species after no records in the historical data from the previous 5 years. Given the probable role of this species in inland EEE cases, monitoring of this species is prudent, particularly when unusual population patterns occur.	

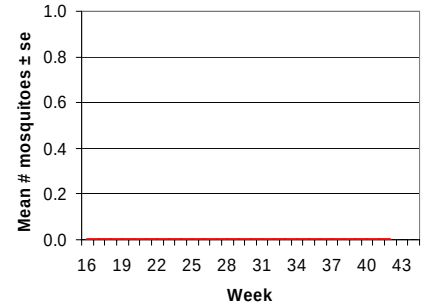
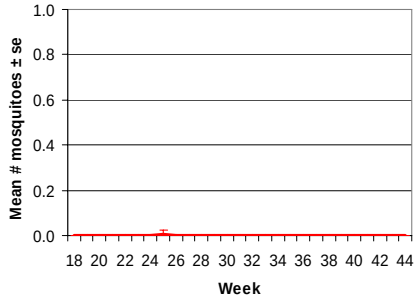
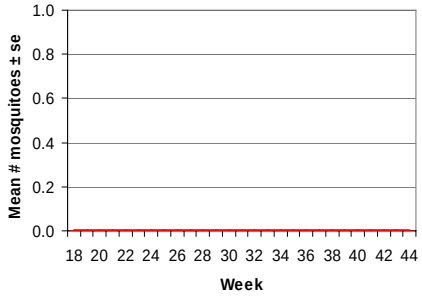
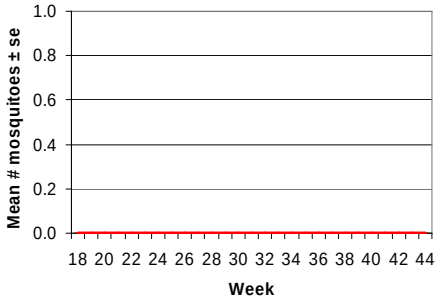
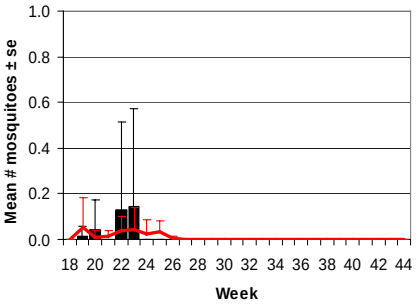
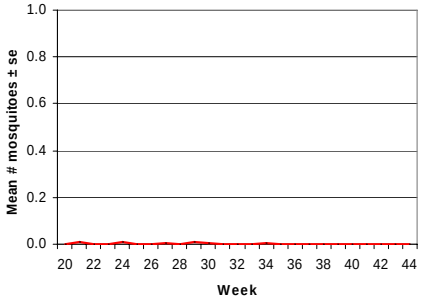
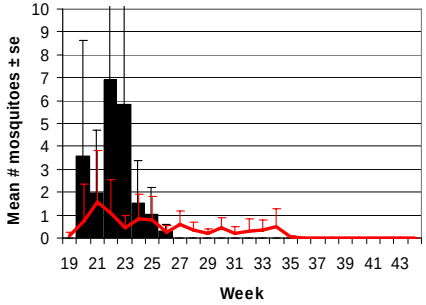
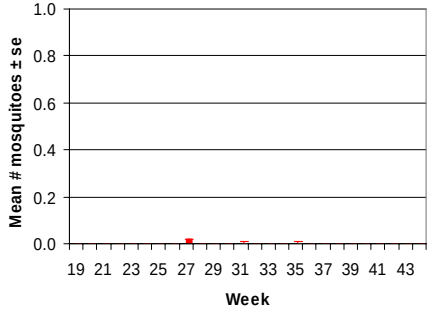
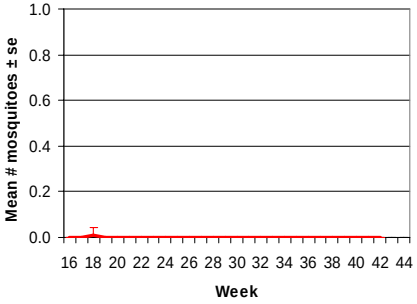
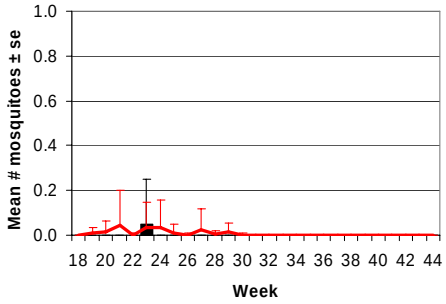
Aedes cantator- Salt Floodwater Species
Multivoltine Aedine (*Ae. sollicitans* Type)

Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		*Aedes cantator* populations appear to have peaked during Week 22 or 23 in the Agricultural, Coastal, Delaware Bayshore, New York Metro and Pinelands regions. The cooler Northwestern region indicates a population that may be peaking at a later date, possibly this week. *Ae. cantator* was also reported in the Suburban Corridor, from an area that has not caught individuals in this monitoring program for the last several years, most likely in an area that has an anthropogenic source of salt. Agricultural regions are also have sources of salt, produced by agricultural practices that result in fertilizer runoff and subsequent saline habitat that is exploited by this species later in the season.	

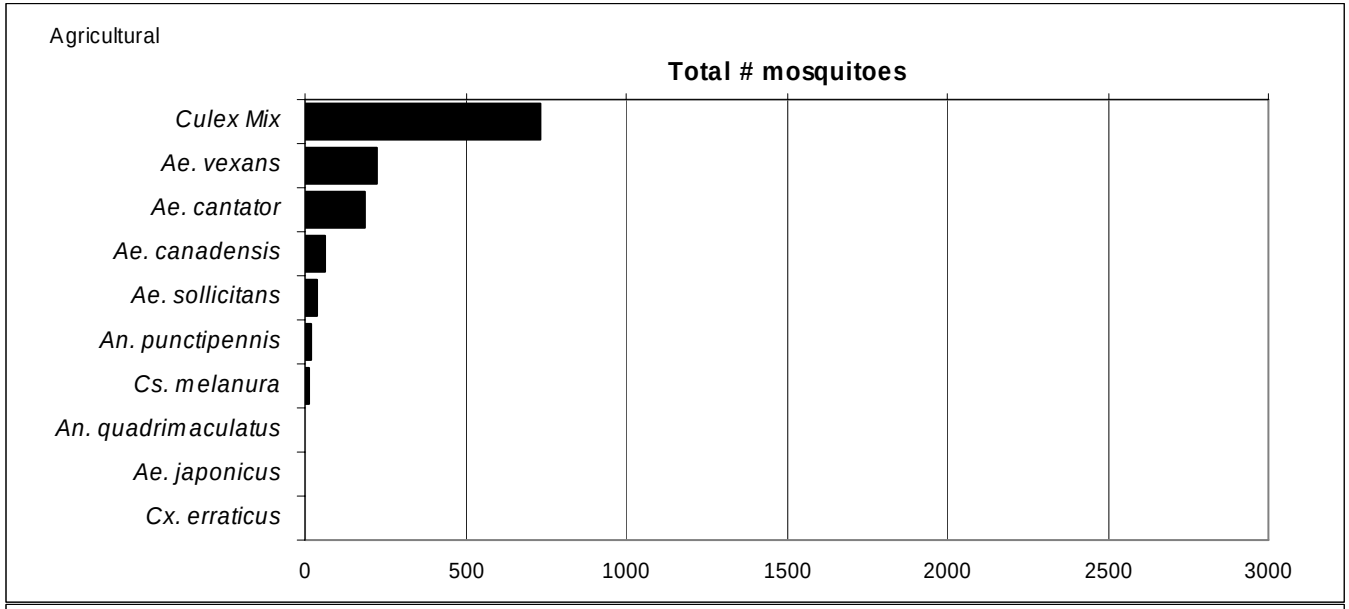
Anopheles quadrimaculatus – Culex/Anopheles (*An. quadrimaculatus* Type)

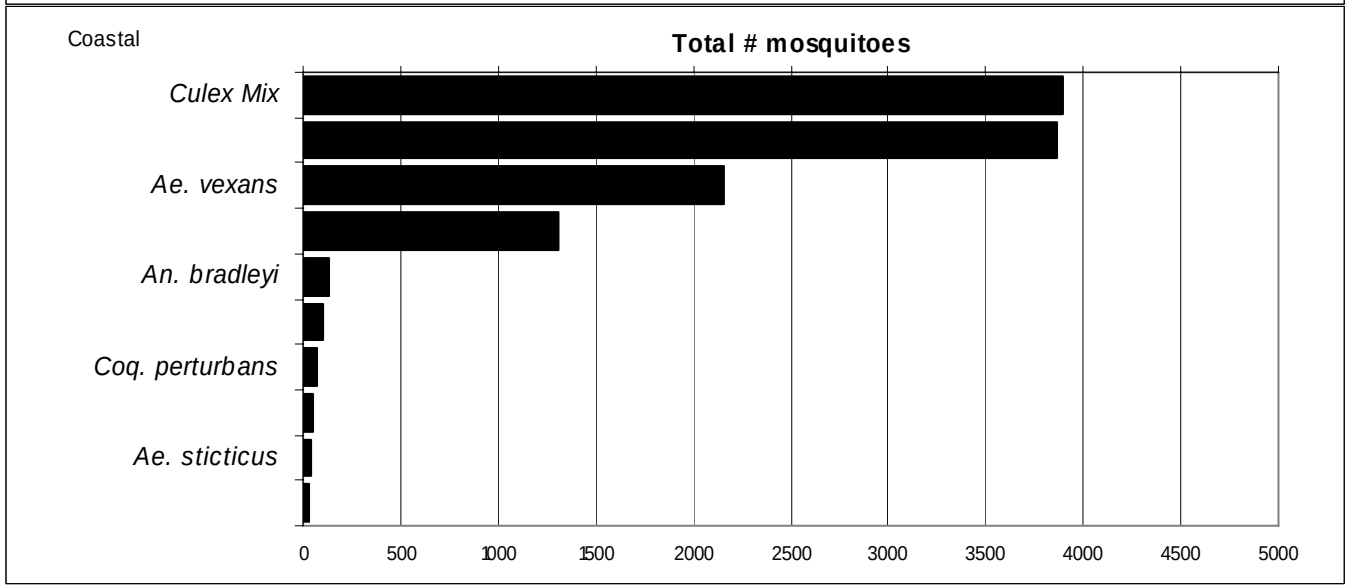
Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		*Anopheles quadrimaculatus* has emerged in very large numbers in the Delaware Bayshore region, earlier than typical for this species. This permanent water species is not shy about biting humans and is a competent vector of malaria. This species is yet another mosquito that has shown earlier than expected large emergences.	

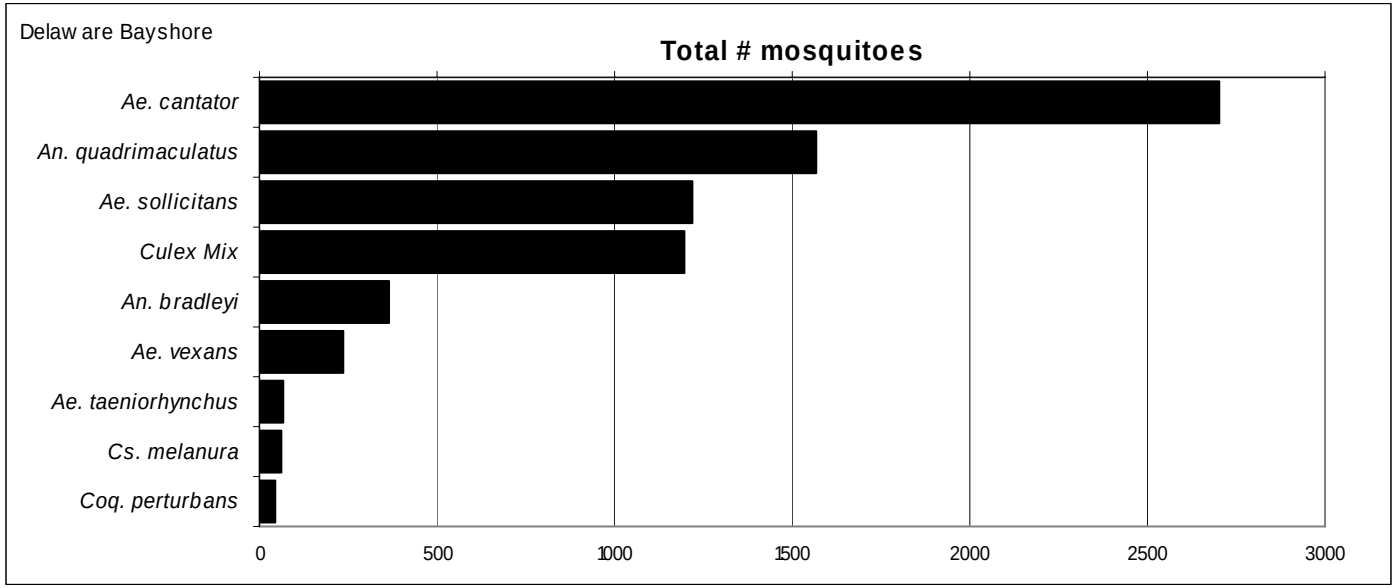
Aedes stimulans – Northern *Aedes* Species
Univoltine Aedine (*Ae. stimulans* Type)

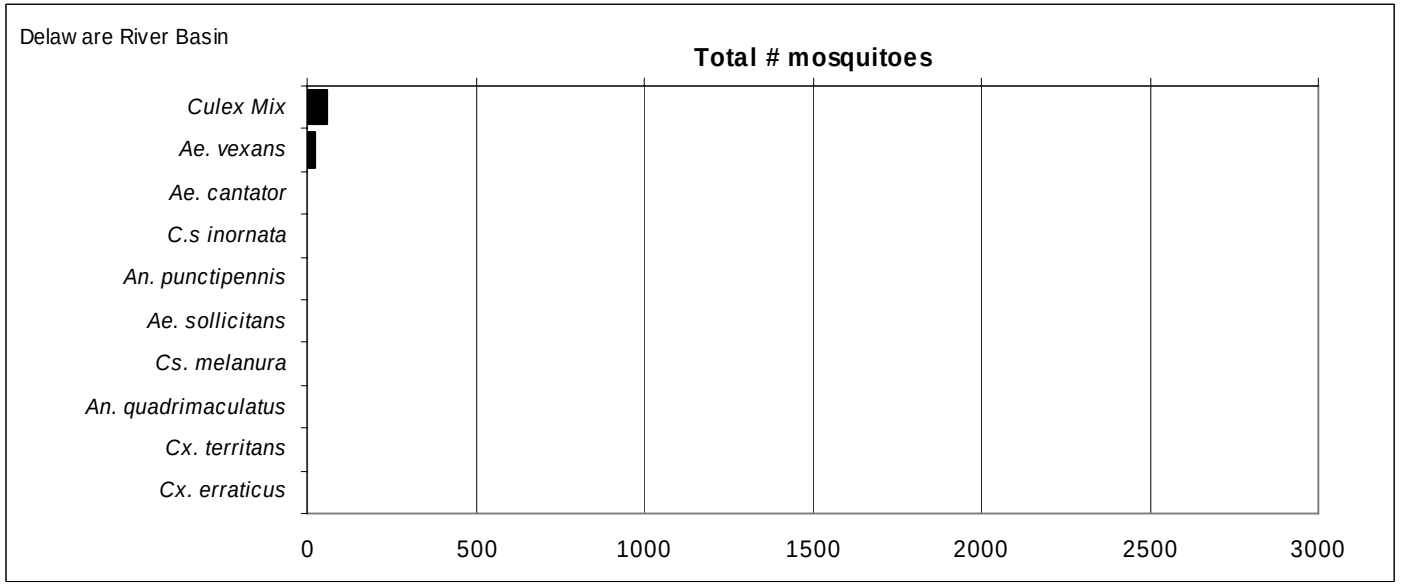
Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		*Aedes stimulans* populations in the Northwestern and the New York Metro regions appear to be on the decline.	

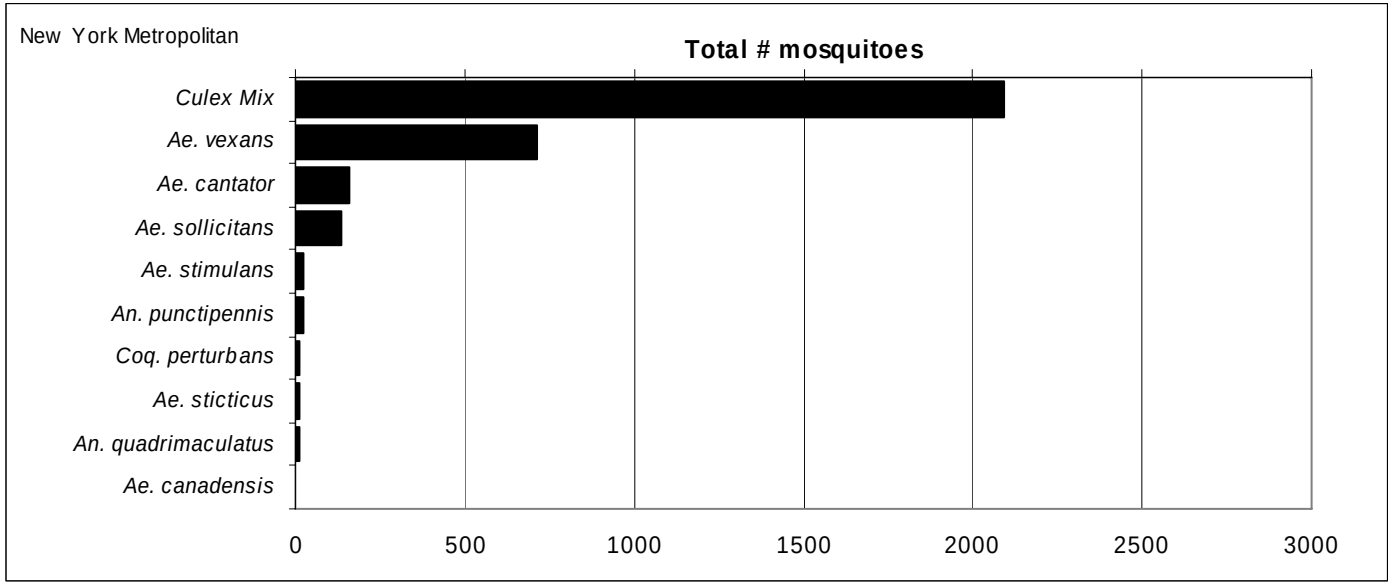
Top Ten Mosquito Species/Region

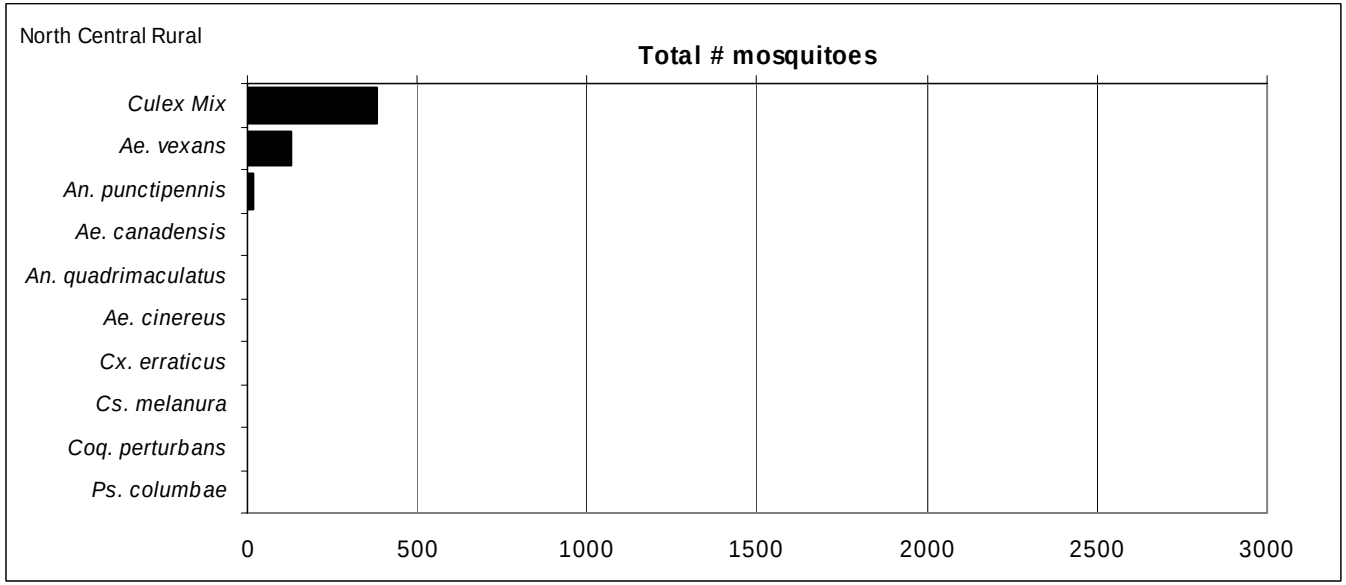


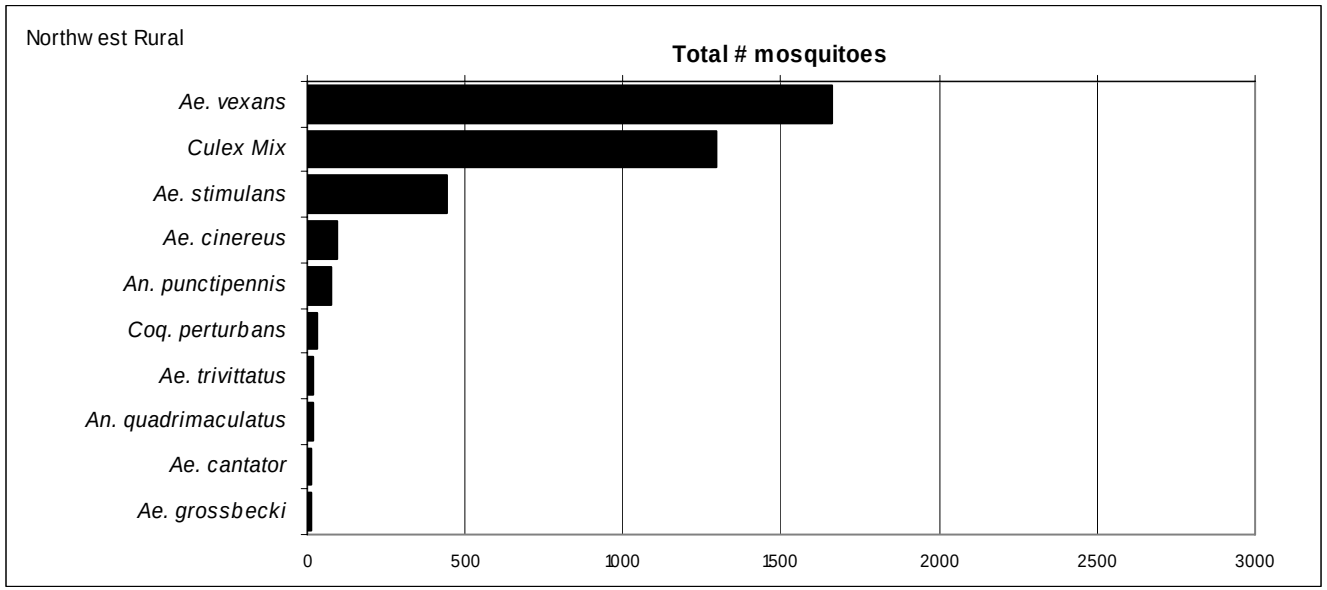


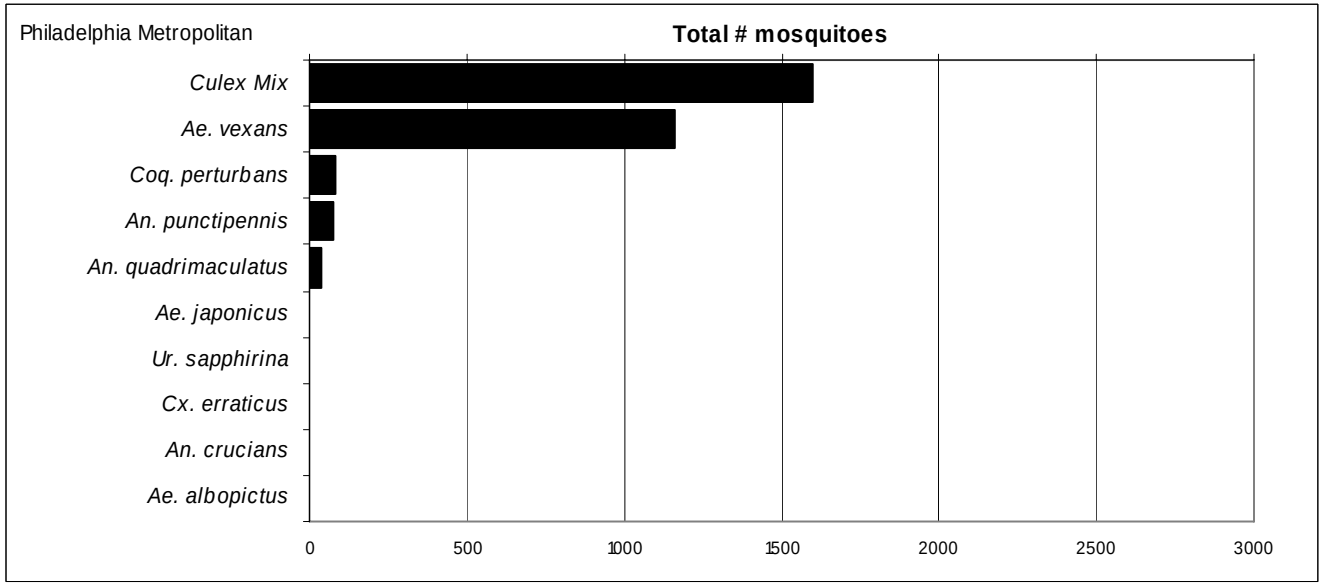

Delaware Bayshore
Total # mosquitoes
Ae. cantator
An. quadrimaculatus
Ae. sollicitans
Culex Mix
An. bradleyi
Ae. vexans
Ae. taeniorhynchus
Cs. melanura
Coq. perturbans
0
500
1000
1500
2000
2500
3000

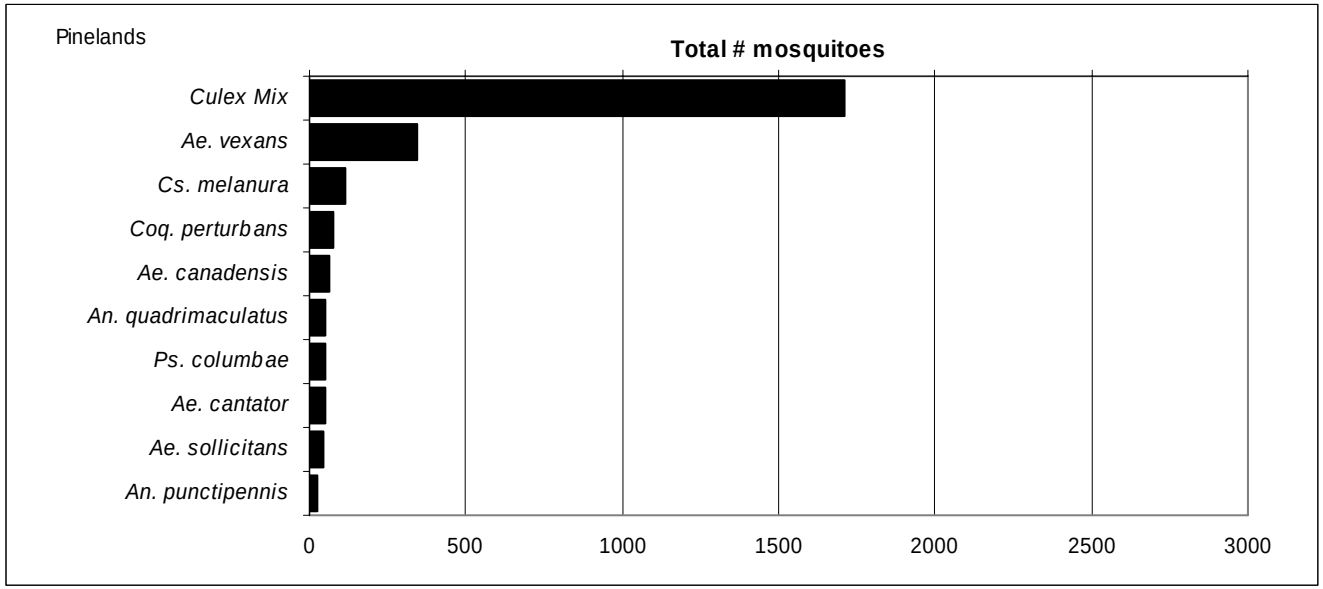

Delaware River Basin
Total # mosquitoes
Culex Mix
Ae. vexans
Ae. cantator
C.s inornata
An. punctipennis
Ae. sollicitans
Cs. melanura
An. quadrimaculatus
Cx. territans
Cx. erraticus
0
500
1000
1500
2000
2500
3000

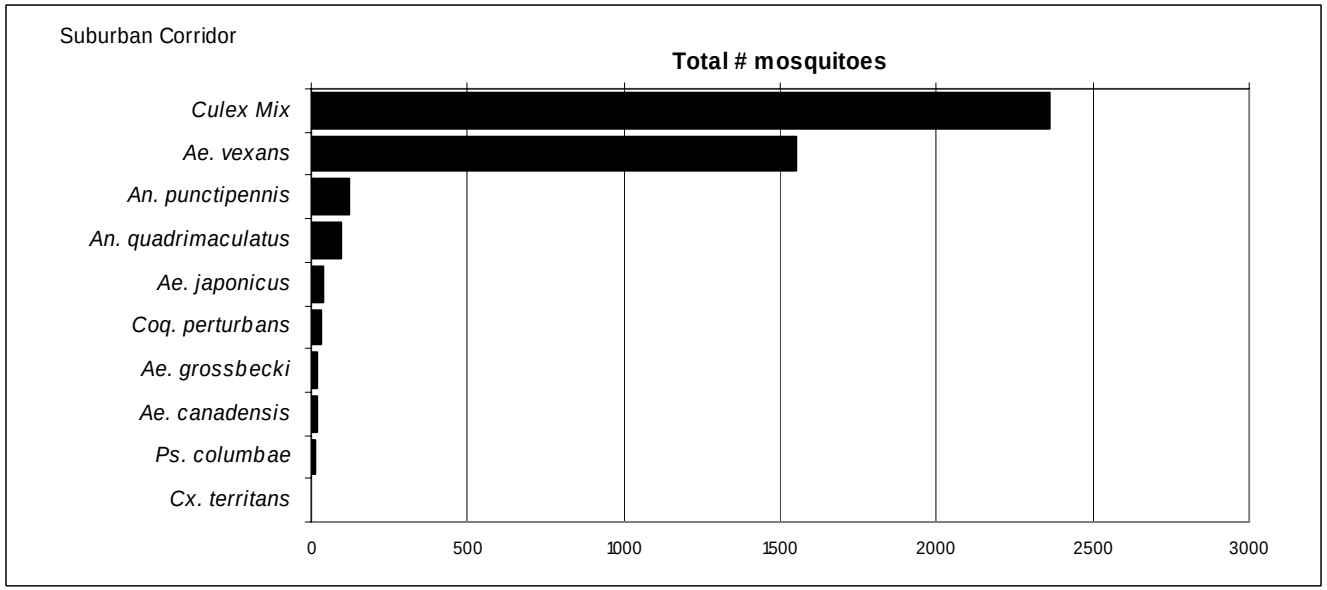

New York Metropolitan
Total # mosquitoes
Culex Mix
Ae. vexans
Ae. cantator
Ae. sollicitans
Ae. stimulans
An. punctipennis
Coq. perturbans
Ae. sticticus
An. quadrimaculatus
Ae. canadensis
0
500
1000
1500
2000
2500
3000


North Central Rural
Total # mosquitoes
Culex Mix
Ae. vexans
An. punctipennis
Ae. canadensis
An. quadrimaculatus
Ae. cinereus
Cx. erraticus
Cs. melanura
Coq. perturbans
Ps. columbae
0
500
1000
1500
2000
2500
3000


Northw est Rural
Total # mosquitoes
Ae. vexans
Culex Mix
Ae. stimulans
Ae. cinereus
An. punctipennis
Coq. perturbans
Ae. trivittatus
An. quadrimaculatus
Ae. cantator
Ae. grossbecki
0
500
1000
1500
2000
2500
3000


Philadelphia Metropolitan
Total # mosquitoes
Culex Mix
Ae. vexans
Coq. perturbans
An. punctipennis
An. quadrimaculatus
Ae. japonicus
Ur. sapphirina
Cx. erraticus
An. crucians
Ae. albopictus
0
500
1000
1500
2000
2500
3000


Pinelands
Total # mosquitoes
Culex Mix
Ae. vexans
Cs. melanura
Coq. perturbans
Ae. canadensis
An. quadrimaculatus
Ps. columbae
Ae. cantator
Ae. sollicitans
An. punctipennis
0
500
1000
1500
2000
2500
3000


Suburban Corridor
Total # mosquitoes
Culex Mix
Ae. vexans
An. punctipennis
An. quadrimaculatus
Ae. japonicus
Coq. perturbans
Ae. grossbecki
Ae. canadensis
Ps. columbae
Cx. territans
0
500
1000
1500
2000
2500
3000