NEW JERSEY STATEWIDE SURVEILLANCE

Week 30 Report for 23 July to 29 July, 2006

Submitted by Lisa M. Reed
Mosquito Research and Control Unit
Rutgers University, New Brunswick, NJ 08901

Purpose: Data from 84 New Jersey light traps contributed by county mosquito control agencies are used to calculate trends in mosquito populations for species of nuisance or health concerns.

Calculations are based on regional distributions, with emphasis on mosquito habitat and land use. Trends will allow a statewide evaluation of changing mosquito populations, in response to control and/or changes in habitat.

This is New Jersey Agricultural Experiment Station publication No. PT-08-40500-30-06 supported by Hatch funds and funding from the NJ State Mosquito Control Commission. Prepared by Lisa M. Reed.

Figure 1a: Map of ten regions selected for the New Jersey Surveillance Program overlaid with county borders.

Figure 1b. Trap lat-long locations.

Summary table – Week 30

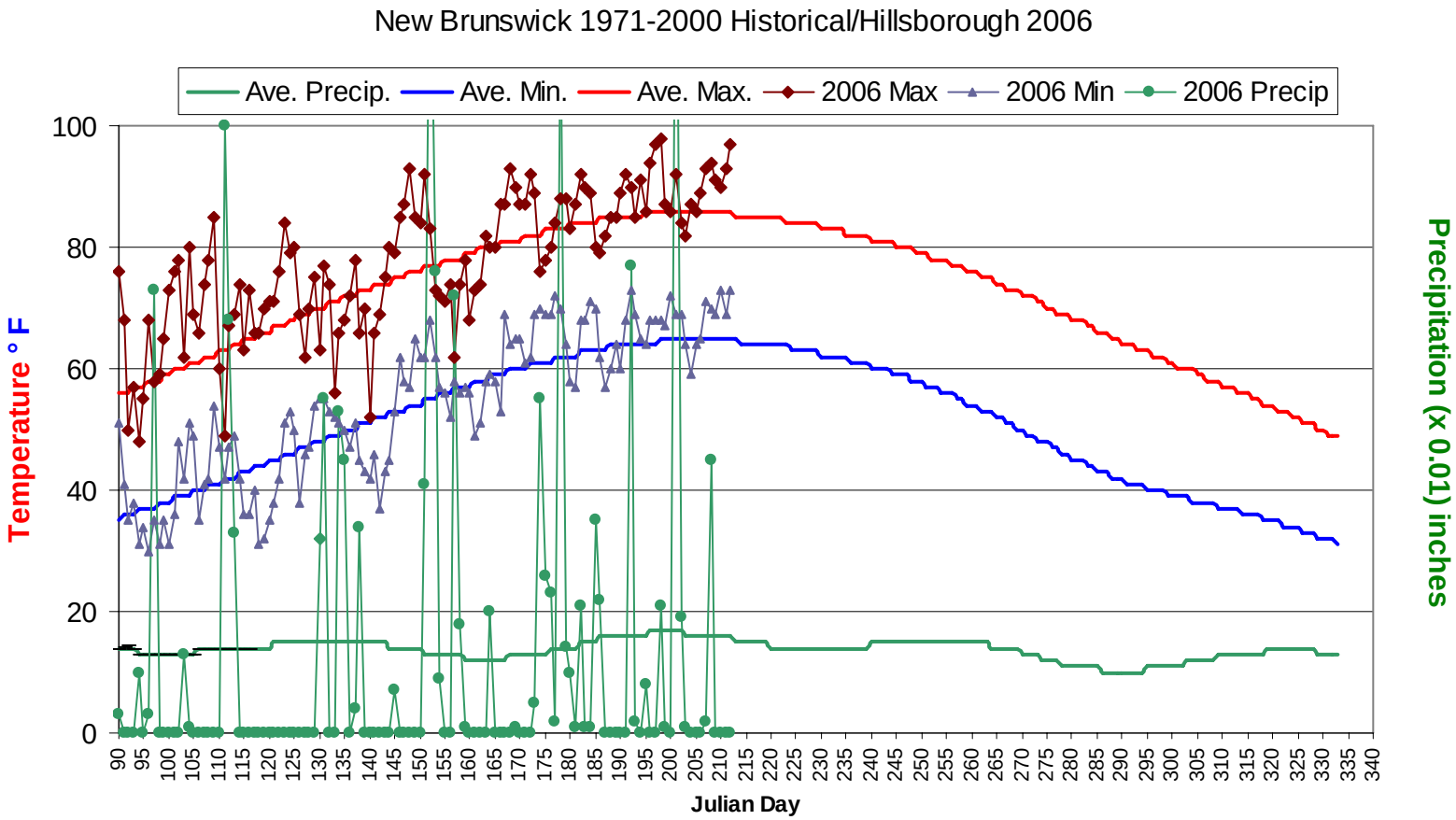
	Aedes vexans		*Culex complex*		*Coquillettidia perturbans*		*Ochlerotatus sollicitans*	
Region	This Week	Average*	This Week	Average*	This Week	Average*	This Week	Average*
Agricultural	**1.98**	**5.30**	**9.12**	**8.72**	**0.10**	**0.71**	**2.52**	**0.93**
Coastal	**0.32**	**4.74**	**0.29**	**5.80**	**0.00**	**1.53**	**2.10**	**37.22**
Delaware Bayshore	**2.98**	**0.87**	**31.05**	**22.71**	**0.00**	**2.45**	**6.33**	**10.99**
Delaware River Basin	**5.50**	**29.40**	**4.00**	**17.39**	**0.00**	**0.21**	**0.00**	**0.04**
New York Metro	**3.83**	**2.65**	**5.81**	**7.30**	**0.06**	**0.11**	**0.11**	**1.98**
North Central Rural	**0.65**	**0.45**	**0.80**	**2.37**	**0.04**	**0.22**	**0.00**	**0.00**
Northwest Rural	**4.45**	**3.89**	**3.52**	**8.76**	**0.02**	**0.17**	**0.00**	**0.00**
Philadelphia Metro	**8.51**	**11.19**	**1.86**	**5.27**	**0.14**	**0.39**	**0.00**	**0.01**
Pinelands	**0.00**	**1.61**	**0.73**	**5.06**	**0.21**	**1.78**	**0.00**	**0.15**
Suburban Corridor	**8.97**	**6.31**	**2.13**	**3.83**	**0.03**	**1.80**	**0.00**	**0.03**

* 5-year running mean.

Graphs include *Ae. vexans, Culex* complex (*Cx. pipiens, Cx. restuans, and Cx. salinarius*), *Oc. sollicitans, and Cs. melanura and Top Ten.*

15 of 21 counties in one or both weeks; 20 of 21 counties reporting.

Climate Data

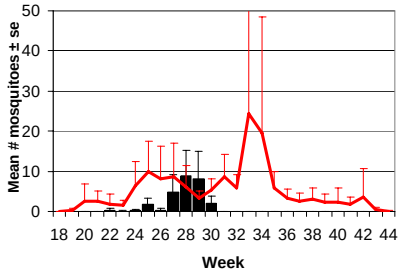
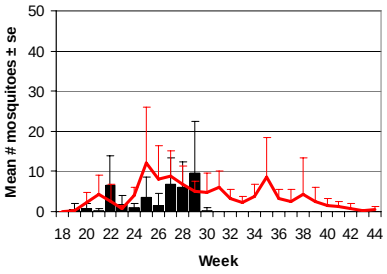
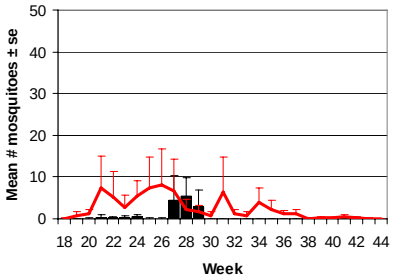
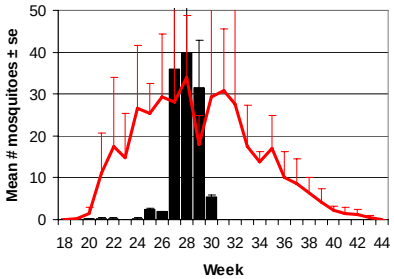
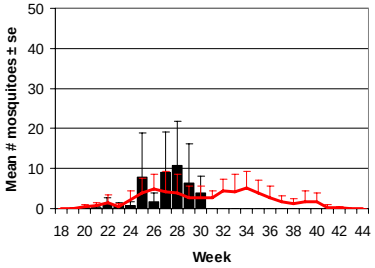
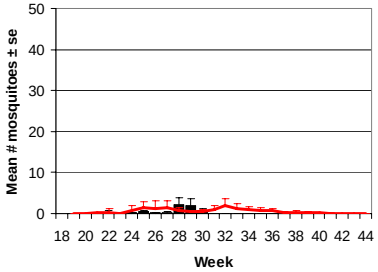
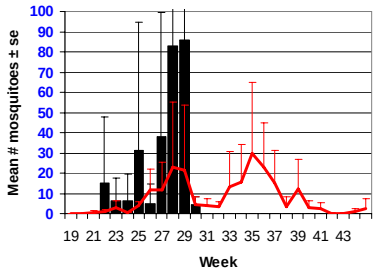
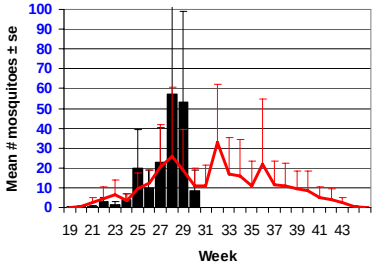
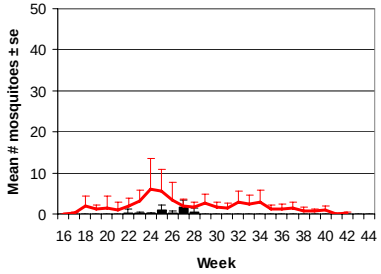
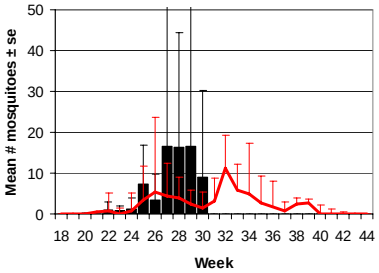


This figure shows historical average maximum and minimum temperatures and average precipitation recorded in the New Brunswick, NJ weather station over a recent 30 year period. Also graphed are the current year's minimum and maximum temperatures as recorded at the Hillsborough NJ weather station (a station close to central NJ which recorded all three parameters and was available online at the NJ state climatologist).

The state climatologist has an extensive amount of climatological historical data as well as stations reporting current conditions and forecasts:

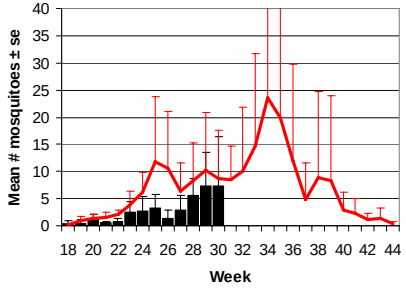
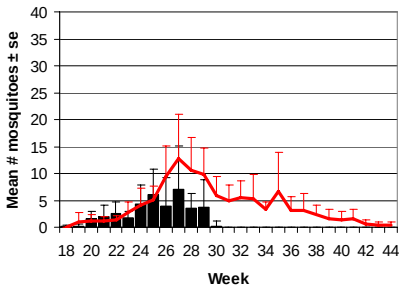
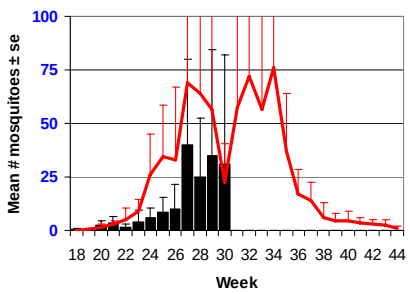
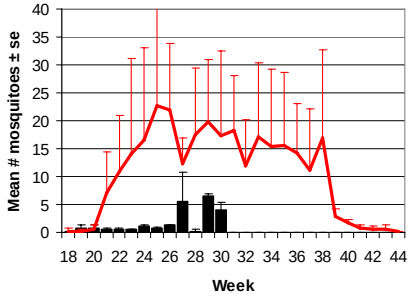
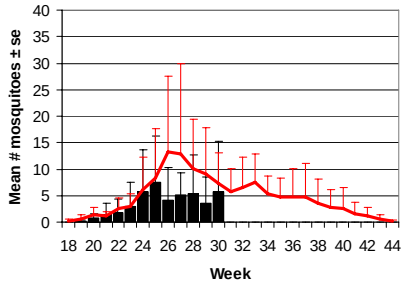
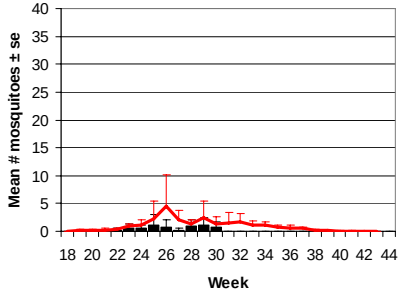
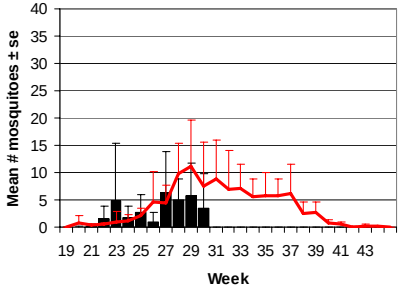
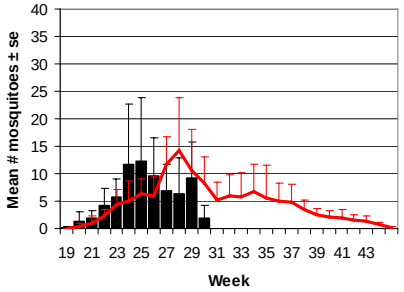
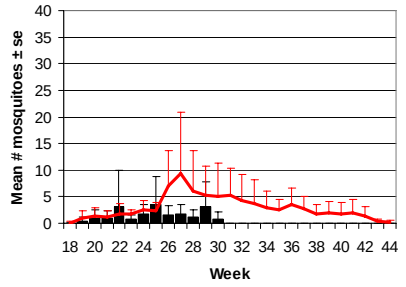
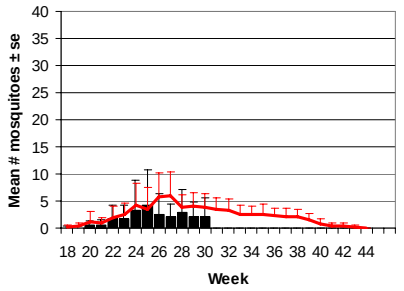
http://climate.rutgers.edu/stateclim/

Aedes vexans - Fresh Floodwater Species

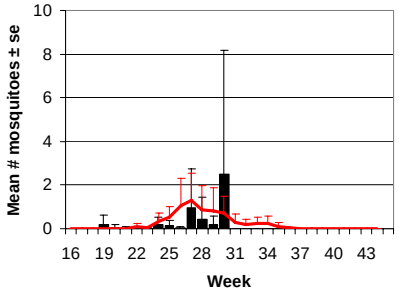
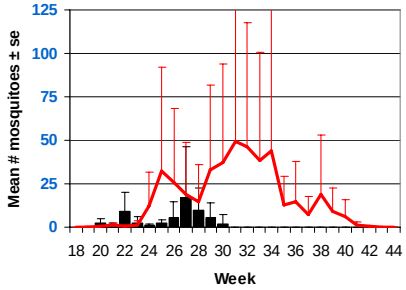
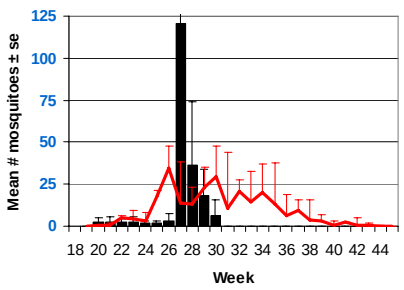
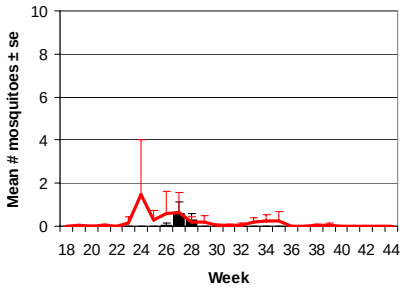
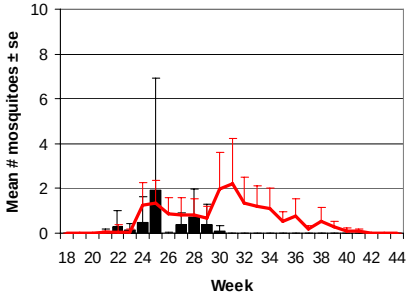
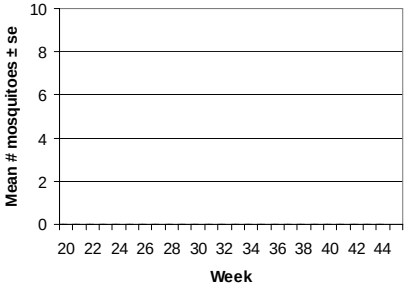
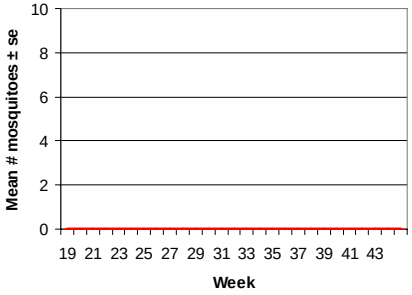
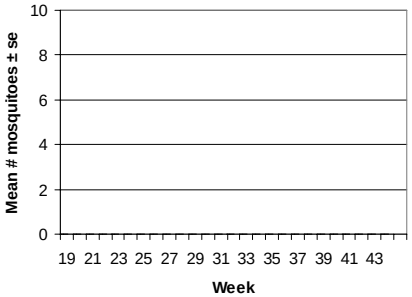
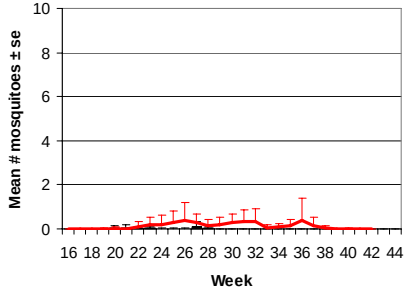
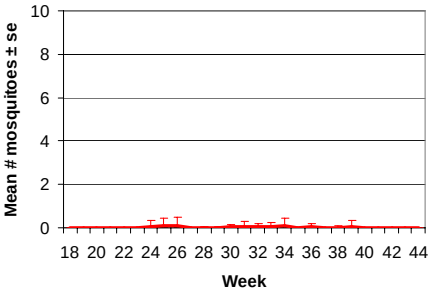
Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		*Aedes vexans* populations continue to dominate in the Northwestern Rural, Philadelphia Metro, and the Suburban Corridor (see also Top Ten list at the end of this report) after locally heavy rains continues to create habitat for eggs awaiting the correct conditions to hatch. The population size in the Northwestern Rural appears to be four times the historical average, but large error bars suggest that this is not an uncommon occurrence. Newly emerged females are generally “short on reserves,” but ample sources of nectar will provide sufficient energy for host-seeking flights well away from their larval habitats. They are moderately competent for West Nile virus.	

Brieger et. al 2001 Reproductive Physiology of *Aedes* (Aedimorphus) *vexans* (Diptera: Culicidae) in Relation to Flight Potential. Journal of Medical Entomology, 38(4): 557–565

Culex Complex - Multivoltine Culex Species

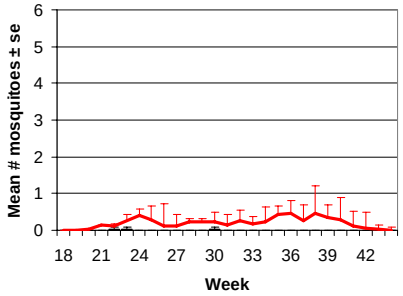
Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		*Culex* populations in the Delaware River Basin have risen in the past several weeks, with *Cx. salinarius* playing a major contributory role. Yet their total values in this region remains lower than historical trends would suggest is normal. Elsewhere, *Culex* trends appear to be well within typical limits. Wayne Crans reports in the Vector Surveillance program of 6 positive pools found in the central to northern half of New Jersey.	

Ochlerotatus sollicitans - Salt Marsh Floodwater Species

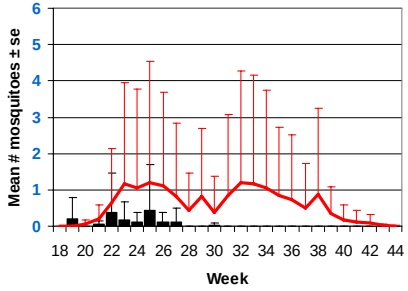
Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		*Ochlerotatus sollicitans* that emerged is such great numbers in the Delaware Bayshore region has now migrated inland, showing up in the most southerly light trap of the Agricultural region. Coastal numbers should be on the upswing now, after two distinct emergences. The eggs of this species require a dry-down period. Continuous rains, although providing a flood water habitat for this euryhaline species, can be detrimental to this species in not allowing the required time to dry out and completing needed physiological changes for hatching to occur.	

Culiseta melanura – Miscellaneous Group

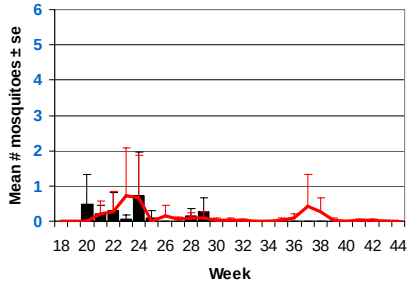
Agricultural



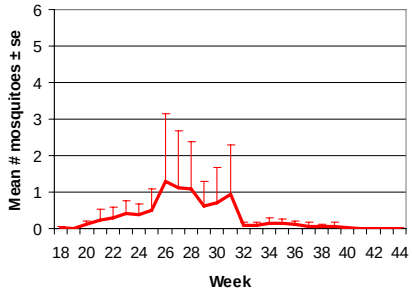
Coastal



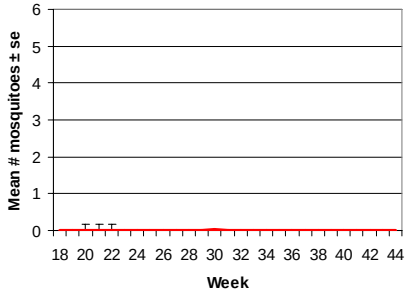
Delaware Bayshore



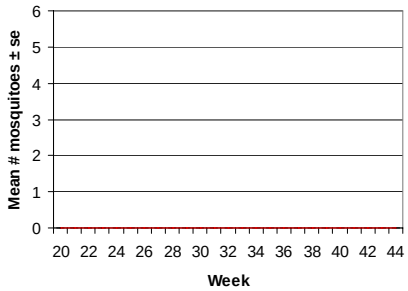
Delaware River Basin



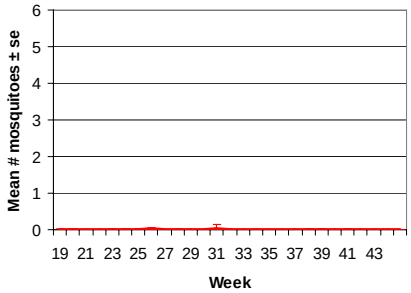
New York Metro



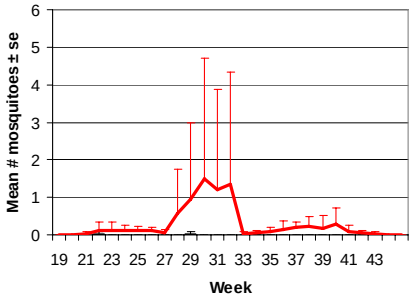
North Central Rural



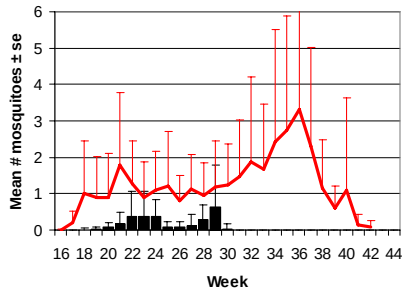
Northwestern Rural



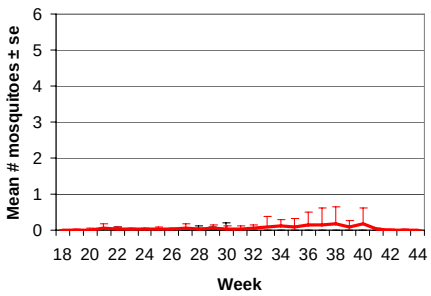
Philadelphia Metro



Pinelands



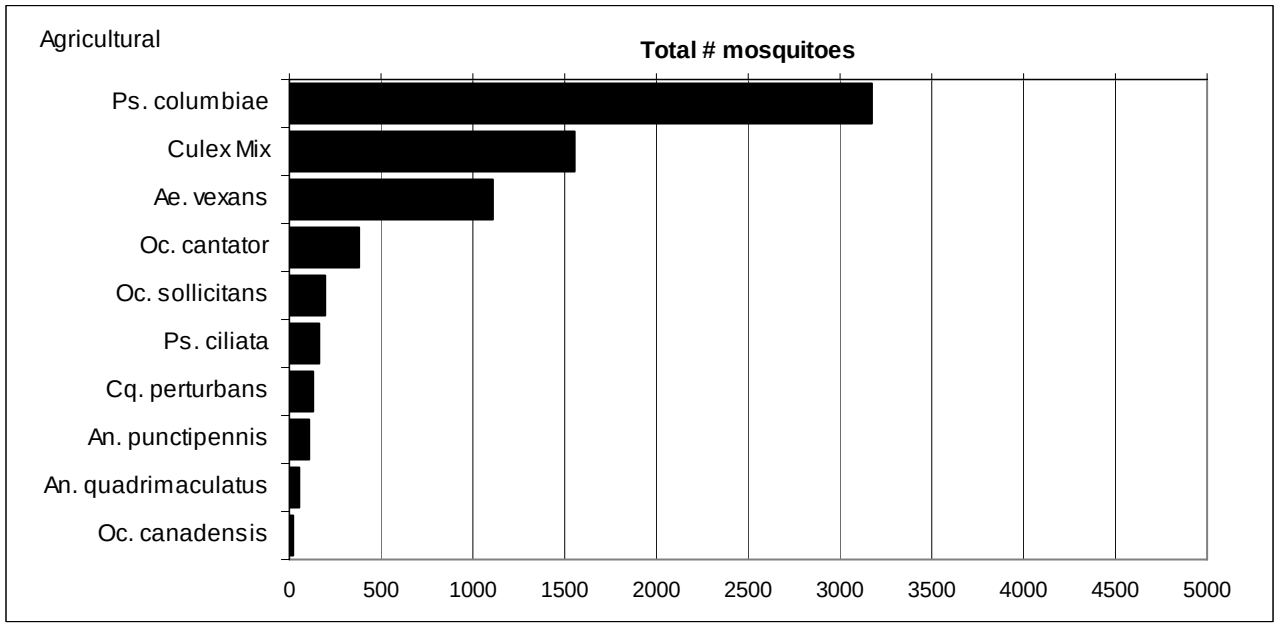
Suburban Corridor

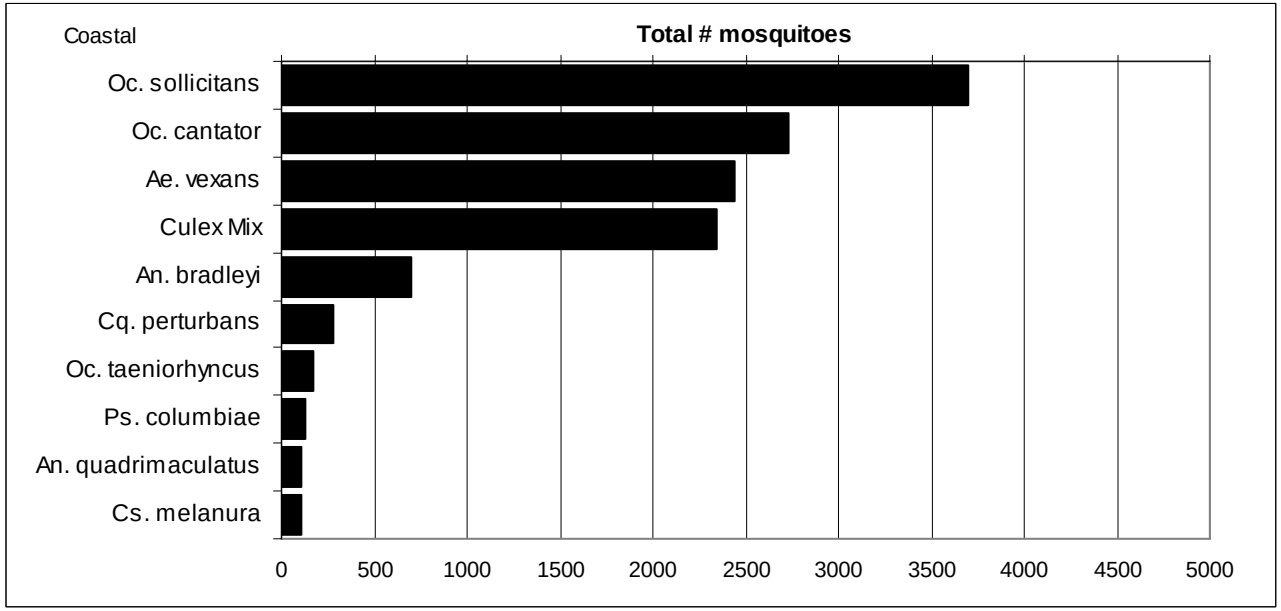


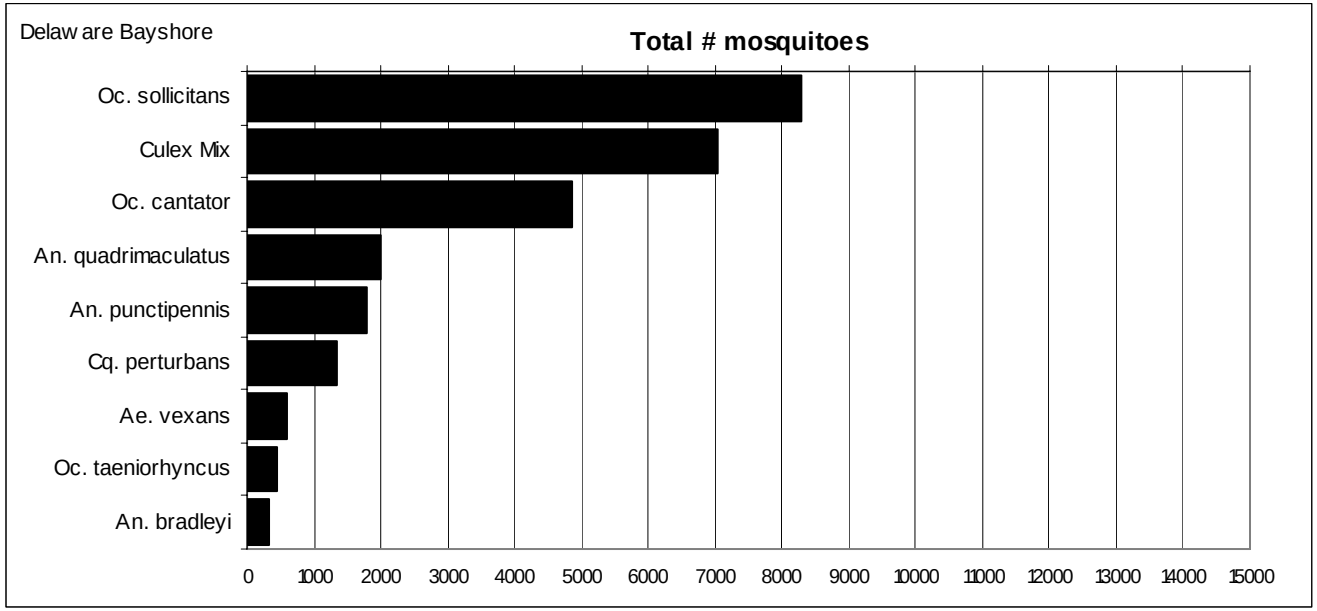
Comments

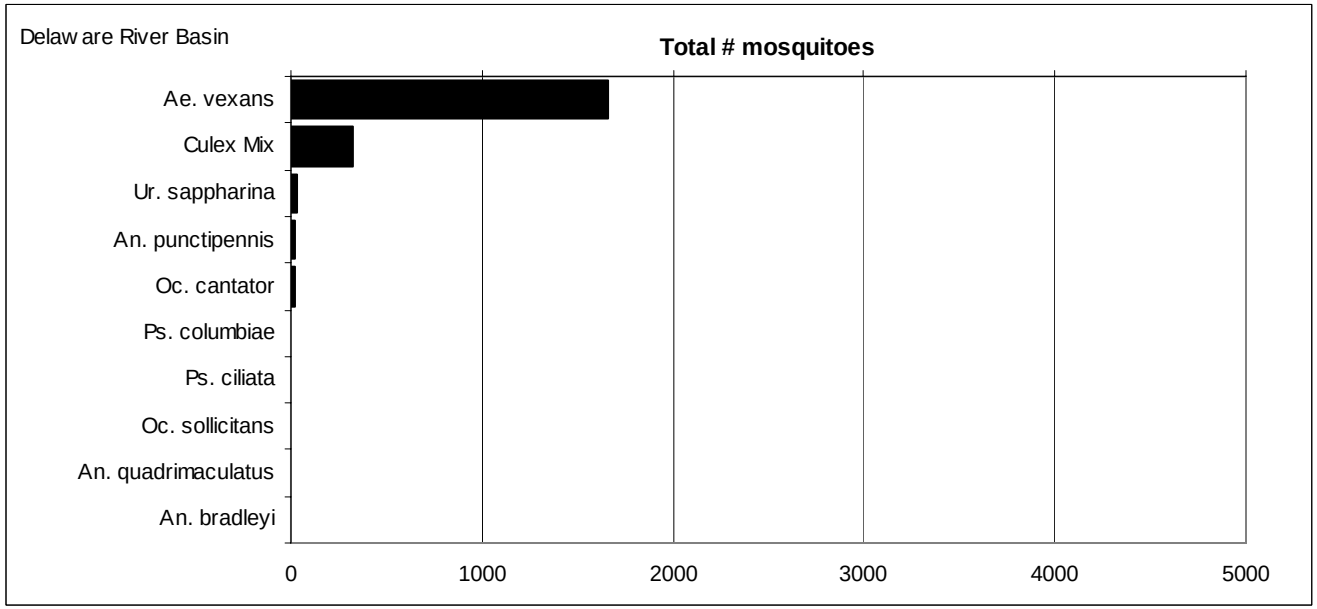
Culiseta melanura populations continue to remain at low levels for most regions. No virus isolations for eastern equine encephalitis have been found to date and the further along into the season that resting box specimens remain virus-free, the less likely a chance for a bridge vector species will transport virus out of the amplification cycle. Being a vector for EEE is not a hazard-free situation: *Cs. melanura* infected with EEE have a shorter life-span and fewer offspring (Scott *et al.* 1998 Reduction of *Culiseta melanura* fitness by eastern equine encephalomyelitis virus. American Journal of Tropical Biology and Medicine, 59(2): 341-346).

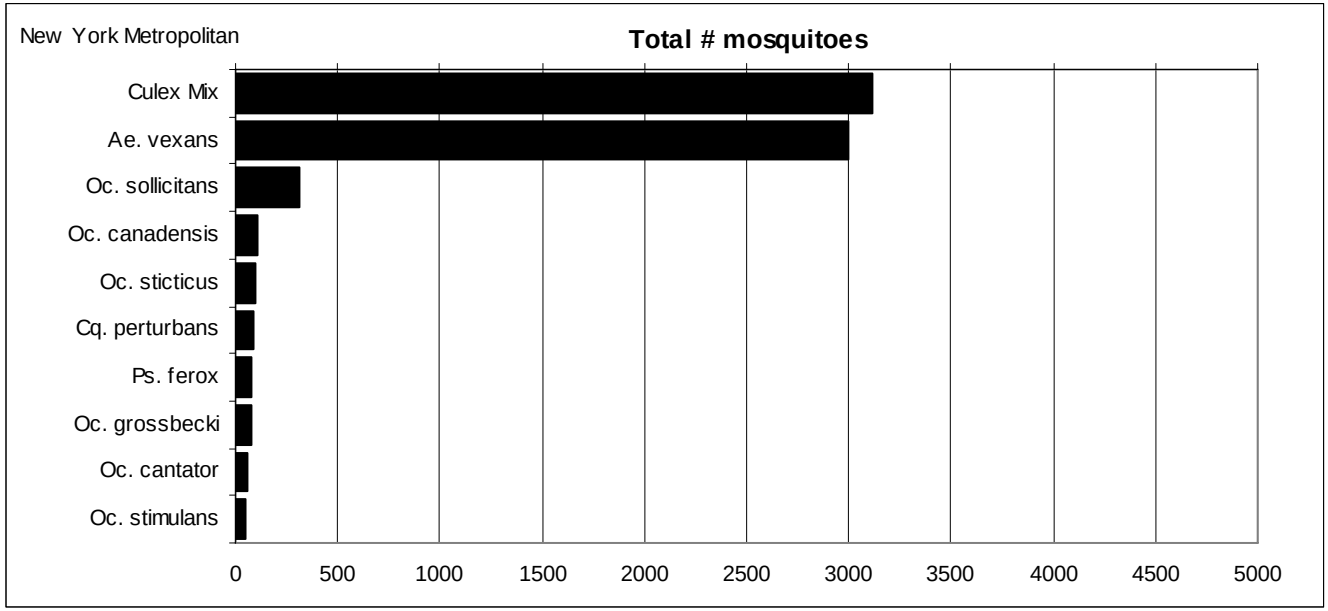
Top Ten species (cumulative) for each region to date, 2006.

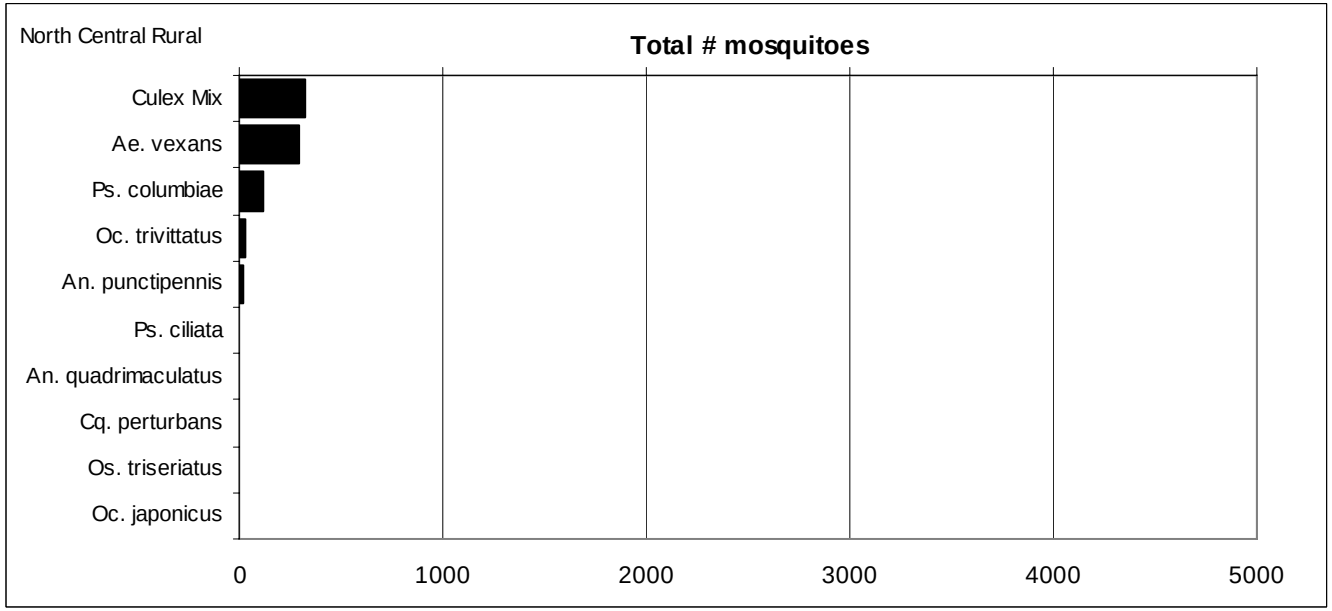


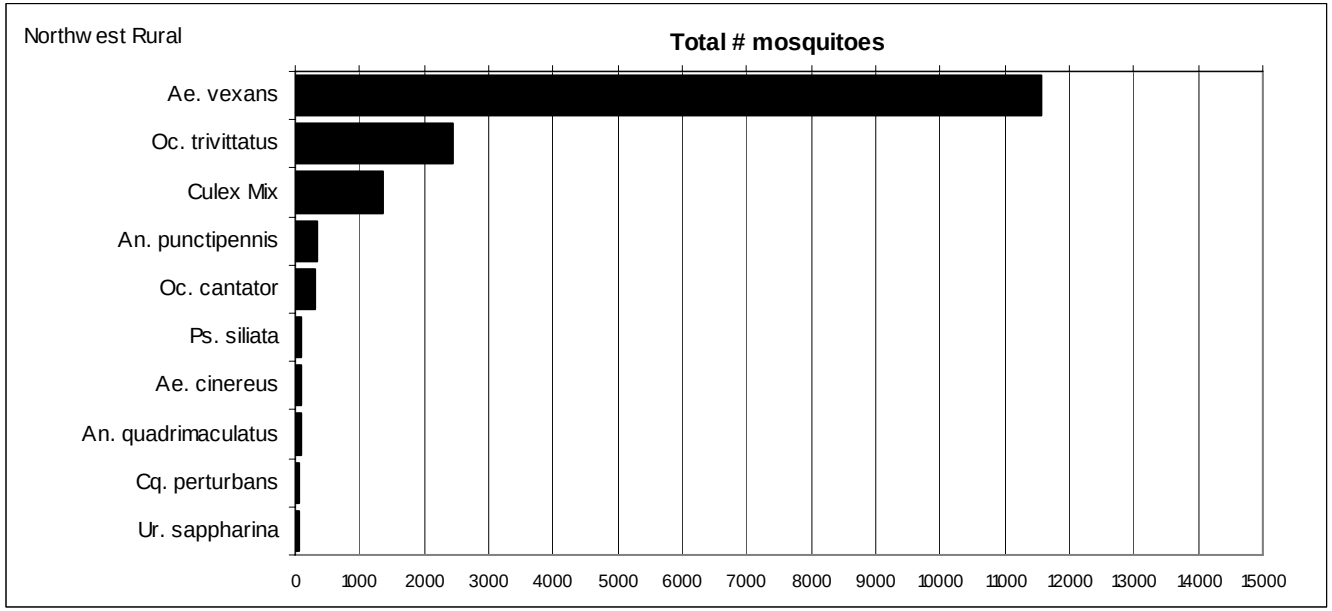


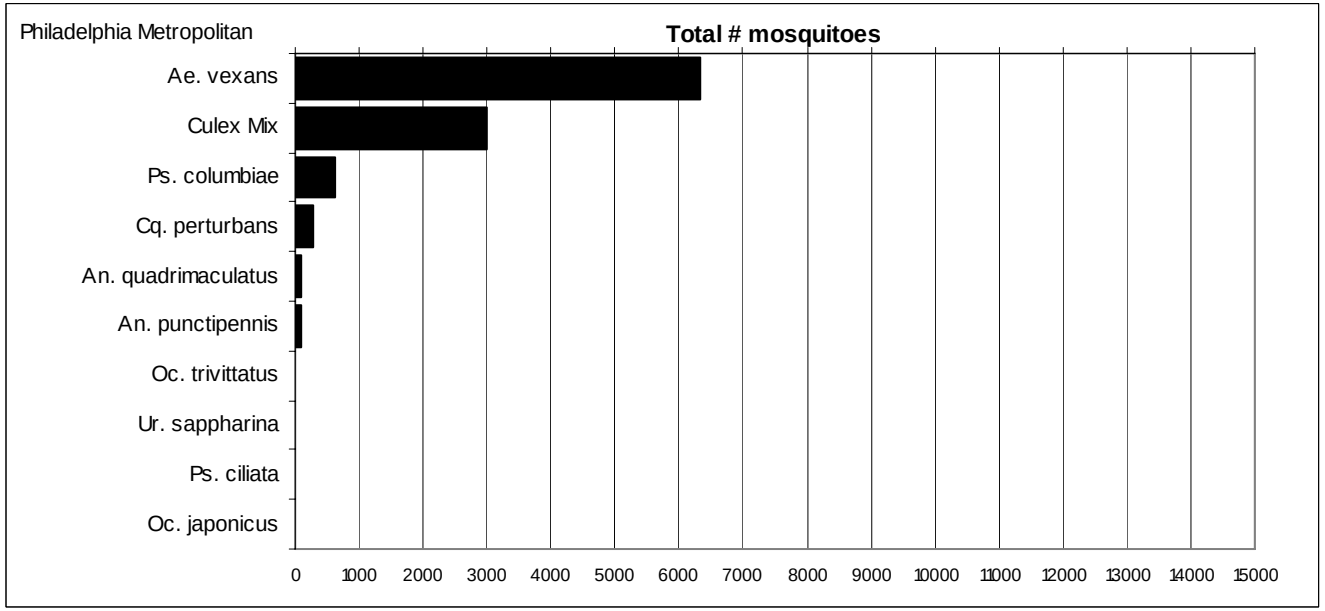

Delaware Bayshore
Total # mosquitoes
Oc. sollicitans
Culex Mix
Oc. cantator
An. quadrimaculatus
An. punctipennis
Cq. perturbans
Ae. vexans
Oc. taeniorhyncus
An. bradleyi
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
11000
12000
13000
14000
15000

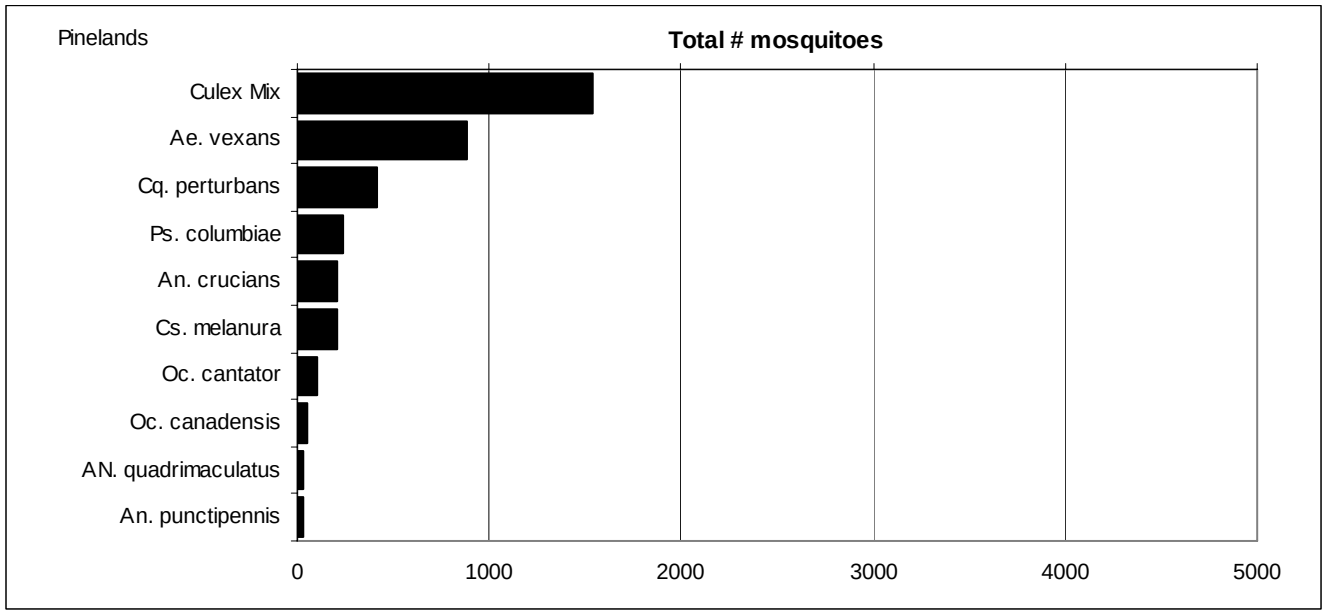

Delaware River Basin
Total # mosquitoes
Ae. vexans
Culex Mix
Ur. sappharina
An. punctipennis
Oc. cantator
Ps. columbiae
Ps. ciliata
Oc. sollicitans
An. quadrimaculatus
An. bradleyi
0
1000
2000
3000
4000
5000

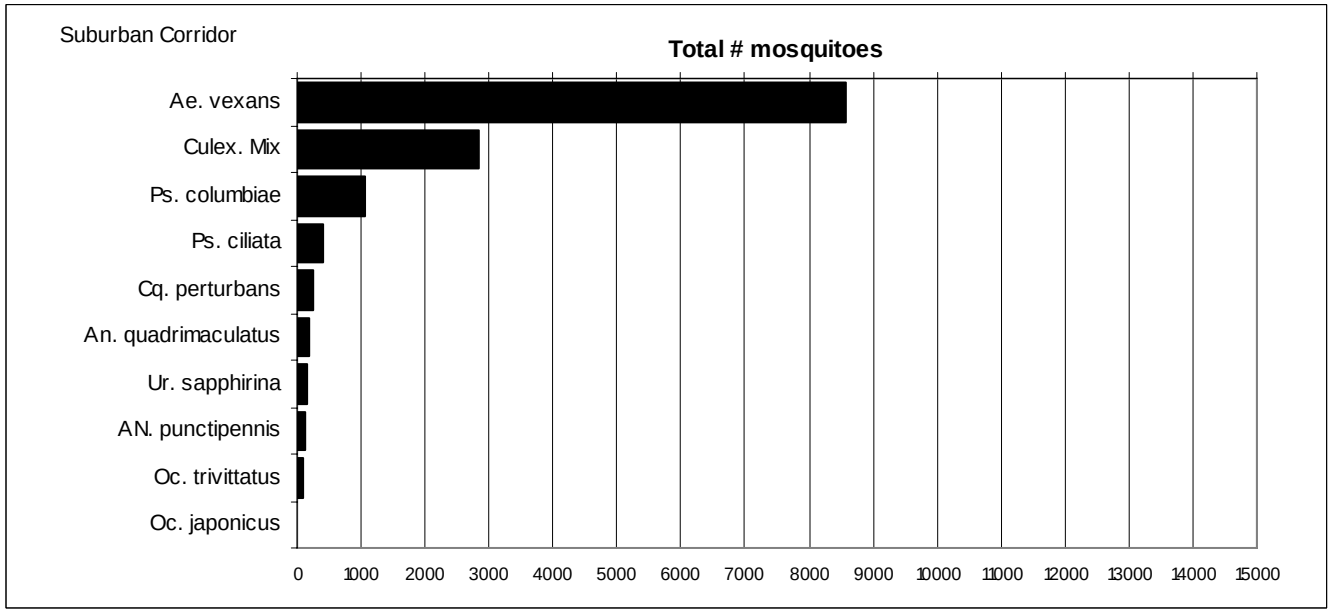

New York Metropolitan
Total # mosquitoes
Culex Mix
Ae. vexans
Oc. sollicitans
Oc. canadensis
Oc. sticticus
Cq. perturbans
Ps. ferox
Oc. grossbecki
Oc. cantator
Oc. stimulans
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000


North Central Rural
Total # mosquitoes
Culex Mix
Ae. vexans
Ps. columbiae
Oc. trivittatus
An. punctipennis
Ps. ciliata
An. quadrimaculatus
Cq. perturbans
Os. triseriatus
Oc. japonicus
0
1000
2000
3000
4000
5000


Northwest Rural
Total # mosquitoes
Ae. vexans
Oc. trivittatus
Culex Mix
An. punctipennis
Oc. cantator
Ps. siliata
Ae. cinereus
An. quadrimaculatus
Cq. perturbans
Ur. sappharina
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
11000
12000
13000
14000
15000


Philadelphia Metropolitan
Total # mosquitoes
Ae. vexans
Culex Mix
Ps. columbiae
Cq. perturbans
An. quadrimaculatus
An. punctipennis
Oc. trivittatus
Ur. sappharina
Ps. ciliata
Oc. japonicus
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
11000
12000
13000
14000
15000


Pinelands
Total # mosquitoes
Culex Mix
Ae. vexans
Cq. perturbans
Ps. columbiae
An. crucians
Cs. melanura
Oc. cantator
Oc. canadensis
AN. quadrimaculatus
An. punctipennis
0
1000
2000
3000
4000
5000


Suburban Corridor
Total # mosquitoes
Ae. vexans
Culex. Mix
Ps. columbiae
Ps. ciliata
Cq. perturbans
An. quadrimaculatus
Ur. sapphirina
AN. punctipennis
Oc. trivittatus
Oc. japonicus
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
11000
12000
13000
14000
15000