NEW JERSEY STATEWIDE SURVEILLANCE

Week 44 report for 15 May to 30 October, 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.

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

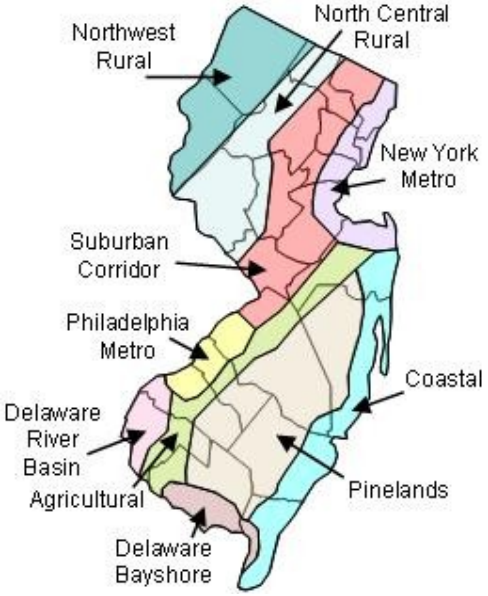


Figure 1b. Trap lat-long locations.

Summary table – Week 44

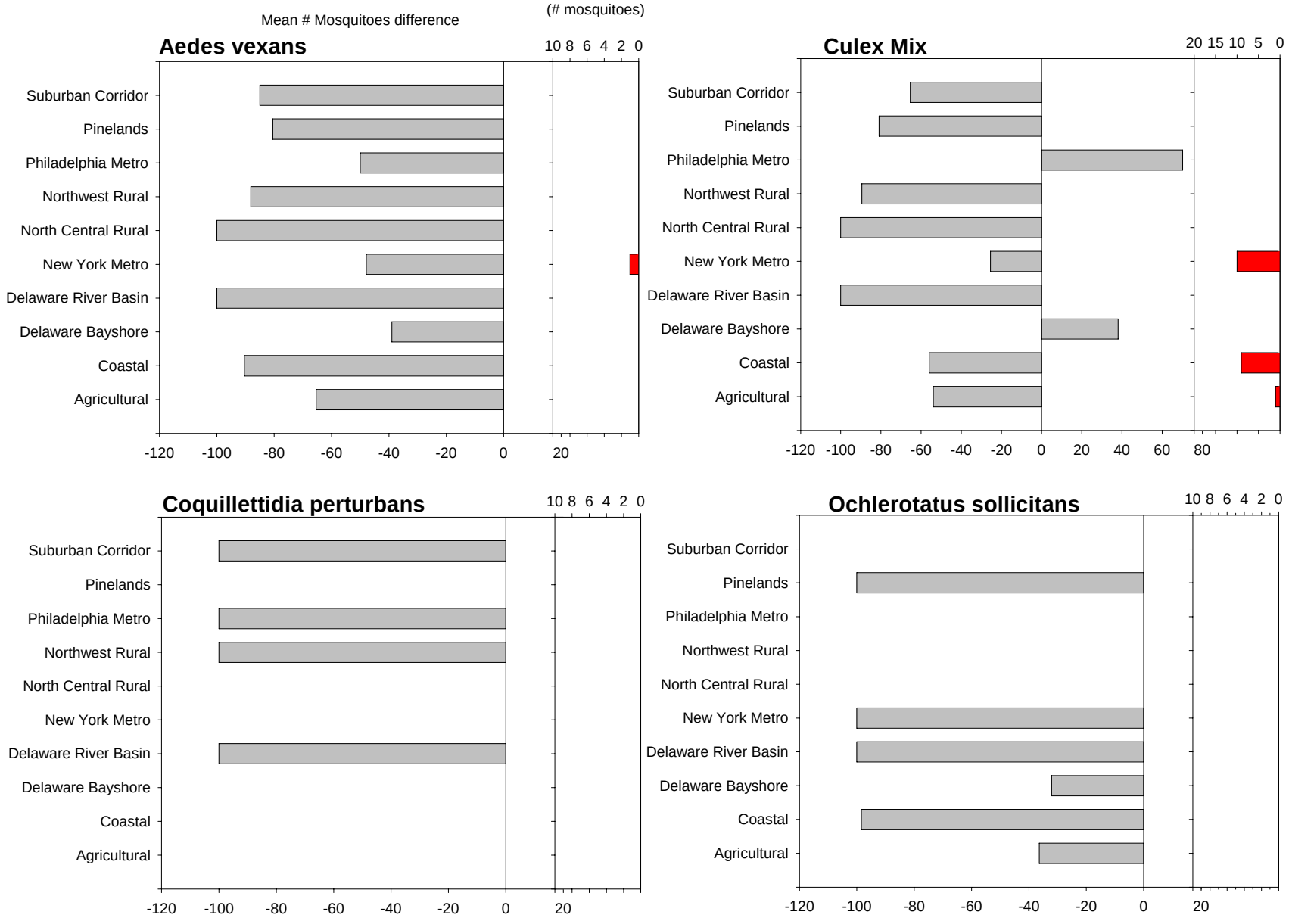
	Aedes vexans		*Culex complex*		*Coquillettidia perturbans*		*Ochlerotatus sollicitans*	
Region	This Week	Average*	This Week	Average*	This Week	Average*	This Week	Average*
Agricultural	**0.00**	**0.08**	**0.02**	**0.35**	**0.00**	**0.00**	**0.00**	**0.00**
Coastal	**0.00**	**0.49**	**0.14**	**0.41**	**0.00**	**0.00**	**0.00**	**0.02**
Delaware Bayshore	**0.00**	**0.01**	**0.00**	**1.06**	**0.00**	**0.00**	**0.00**	**0.02**
Delaware River Basin	**0.00**	**0.04**	**0.00**	**0.13**	**0.00**	**0.00**	**0.00**	**0.00**
New York Metro	**0.01**	**0.00**	**0.14**	**0.16**	**0.00**	**0.00**	**0.00**	**0.00**
North Central Rural	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Northwest Rural	**0.00**	**2.30**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**
Philadelphia Metro	**0.00**	**0.17**	**0.00**	**0.14**	**0.00**	**0.00**	**0.00**	**0.00**
Pinelands	**0.00**	**0.13**	**0.00**	**0.26**	**0.00**	**0.00**	**0.00**	**0.00**
Suburban Corridor	**0.00**	**0.01**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**

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

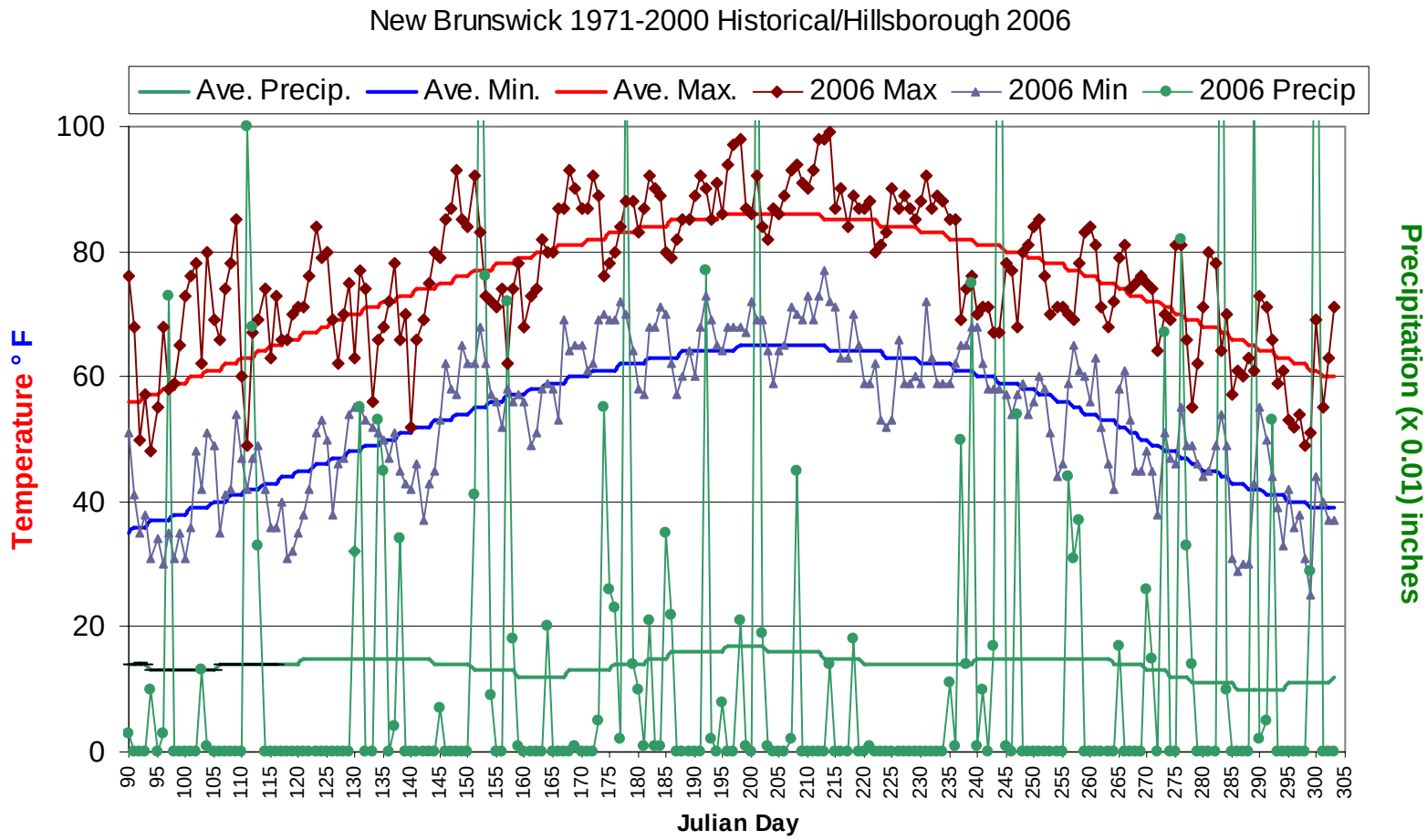
10 of 21 counties in one or both weeks; 20 of 21 counties reporting. Note low participation due to season end.

Weekly deviations graphs: The dual graphs illustrate changes in mosquito populations, including data from the previous table. The larger bar graph on the left under each species is the percent difference between the current week's mean number of mosquitoes and the corresponding historical value. Values with a minus sign indicate that current week means were smaller than historical values. A zero indicates that current week values are identical to historical values.

The smaller graph to the right is the cumulative sum of mosquitoes for the current week minus the cumulative sum for all previous weeks. Values near zero indicate little change from the previous week and many zeros can indicate the end of the season.



Climate Data

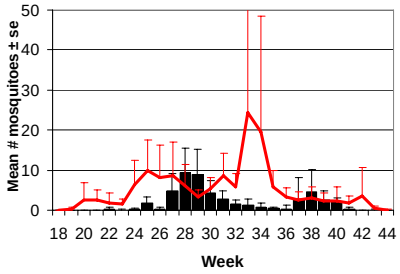
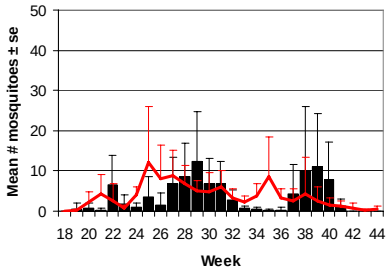
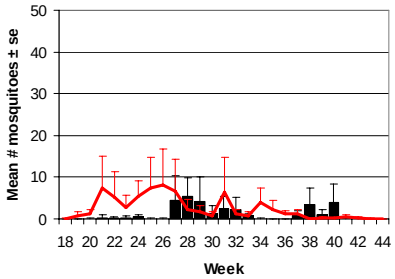
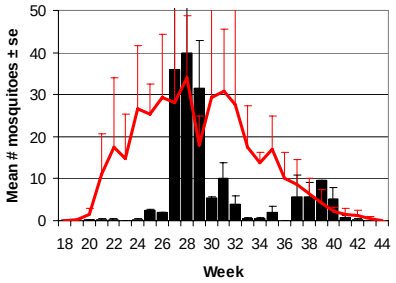
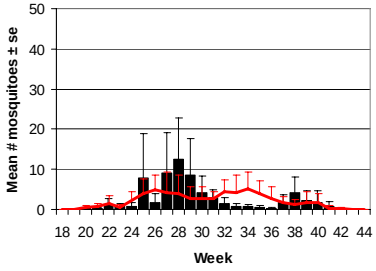
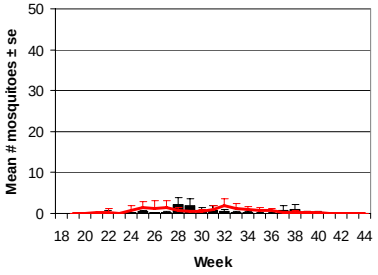
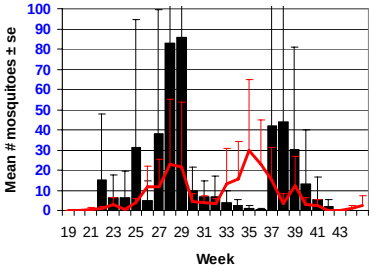
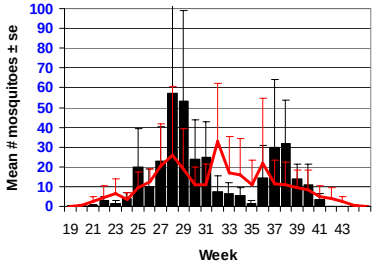
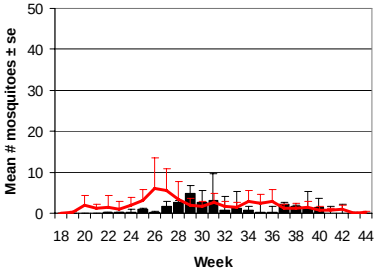
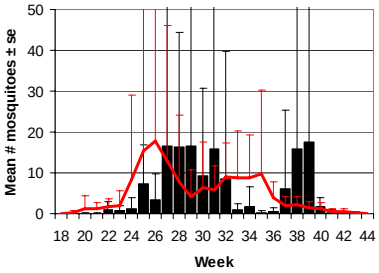


This figure shows historical average maximum and minimum temperatures and average precipitation recorded in the New Brunswick, NJ weather station over a recent 30 year period. Also graphed are the current year's minimum and maximum temperatures as recorded at the Hillsborough NJ weather station (a station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

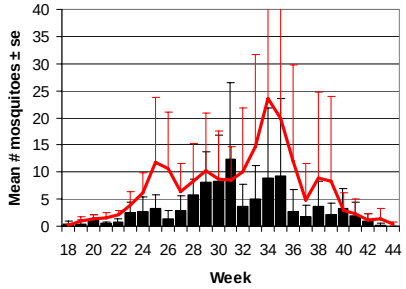
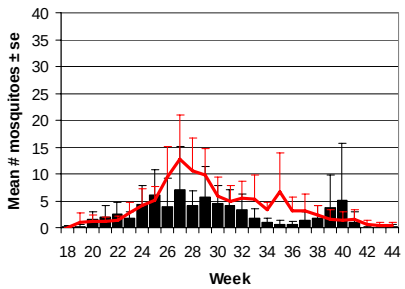
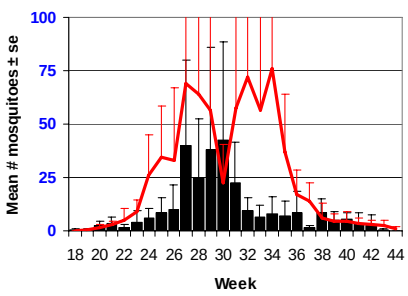
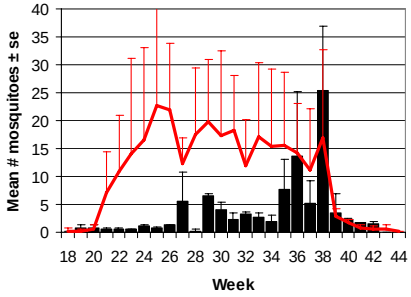
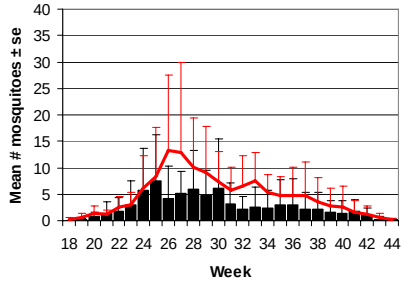
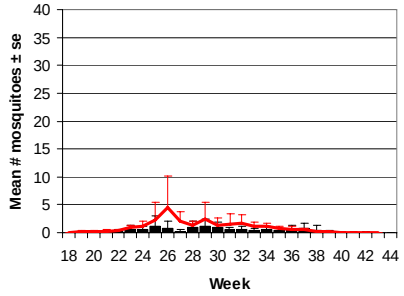
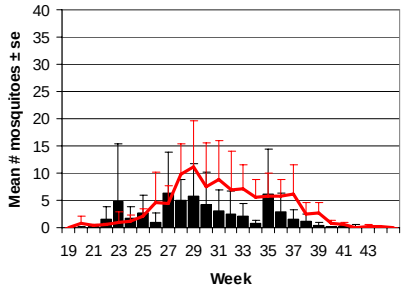
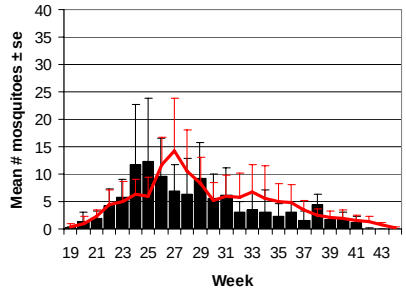
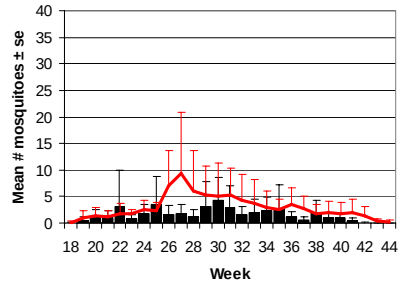
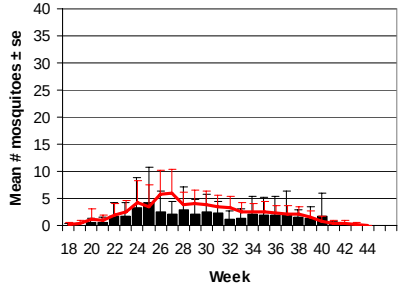
The state climatologist has an extensive amount of climatological historical data as well as stations reporting current conditions and forecasts:

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

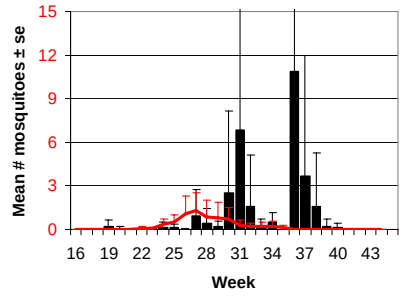
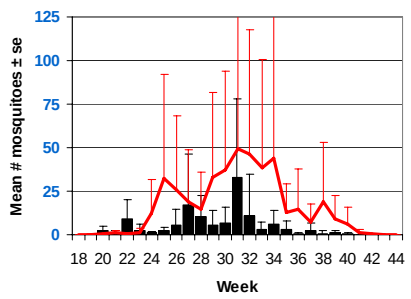
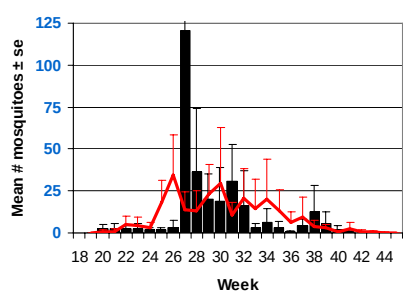
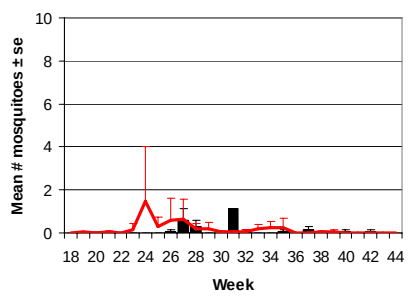
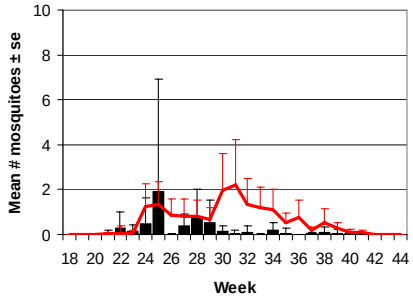
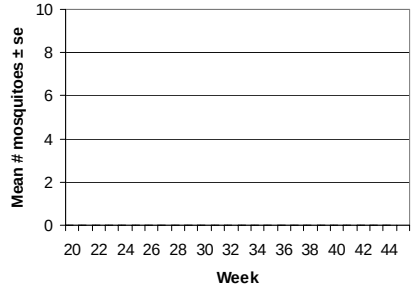
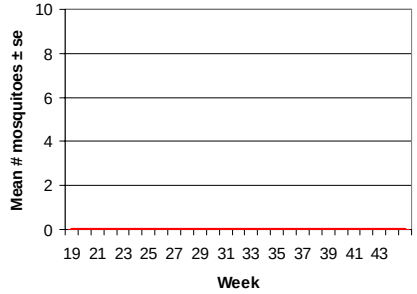
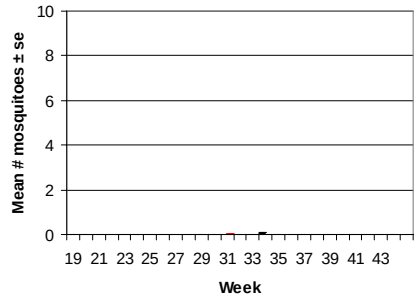
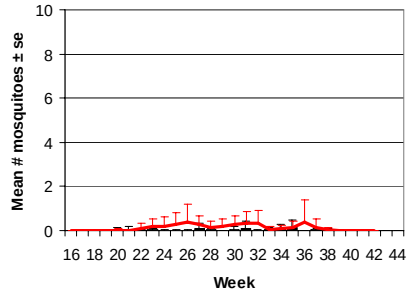
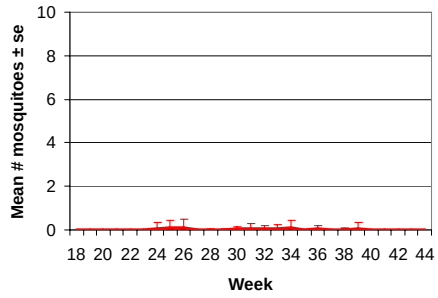
Aedes vexans - Fresh Floodwater Species

Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		Populations of the fresh floodwater species, *Aedes vexans*, follow patterns of general rainfall, with peaks during late June/early July and in early September throughout the state. All regions also had a time of reduced adult activity corresponding to a period of drought in August. Large error bars indicate the mosaic nature of rainfall, with a large variation in the local abundance of floodwater species. Flooding can be manmade, such as the dredging activities in the Delaware River Basin region, or natural, such as the confluence of several streams, as in the Northwestern Rural region. *Aedes vexans* is a moderately competent WN vector but no positive pools appeared this year in New Jersey.	

Culex Complex - Multivoltine *Culex* Species

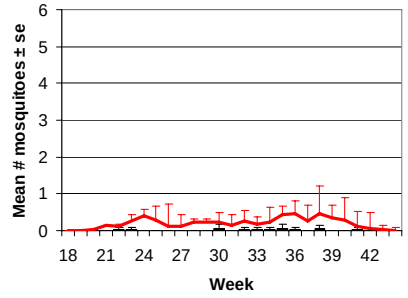
Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		*Culex* mixed populations (inseminated females of *Cx. pipiens, Cx. restuans,* and C*x. salinarius*) should be well on their way to inhabiting hibernaculae to overwinter in now that temperatures and especially day length have decreased. This common house mosquito has a varied set of requirements, with *Cx. pipiens'* preferential avian bloodmeal and larval tolerance of polluted waters to the opportunistic feeding habits of *Cx. salinarius* that takes advantage of anthropogenic habitat sources, such as the dredge spoils from the Delaware River. The feeding on both avian and mammalian species and great numbers of *Oc. salinarius*, in addition to its high WN vector competency, would make this species one to watch. No pools of *Oc. salinarius* were found to be positive this year.	

Ochlerotatus sollicitans - Salt Marsh Floodwater Species

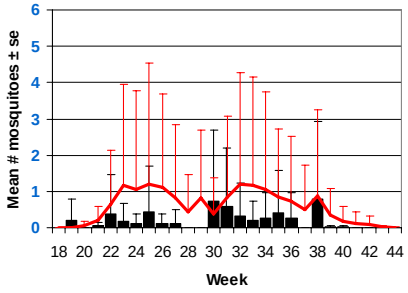
Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		*Ochlerotatus sollicitans* appeared to have had 4 major emergences, based on the Coastal region. Activity in this region was suppressed compared to historical trends, while the Delaware Bayshore experienced a significantly large emergence early in the season. The Agricultural region often shows the migratory abilities of this mosquito, and mid-summer populations there are not likely locally derived. This mammal feeder is not an efficient vector of West Nile but can transmit EEE and dog heartworm.	

Culiseta melanura – Miscellaneous Group

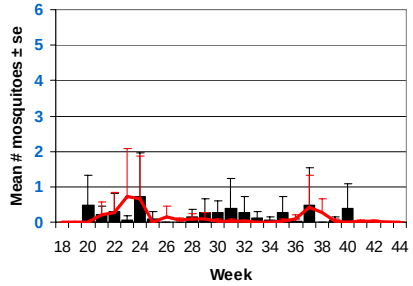
Agricultural



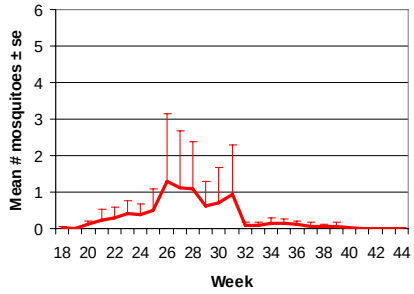
Coastal



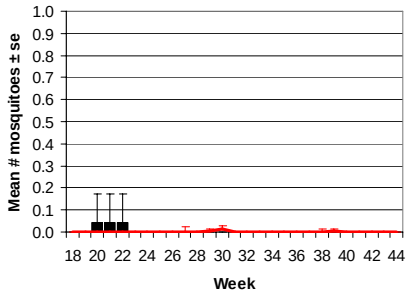
Delaware Bayshore



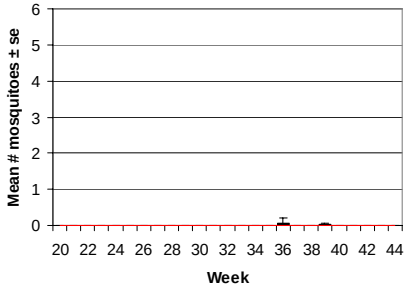
Delaware River Basin



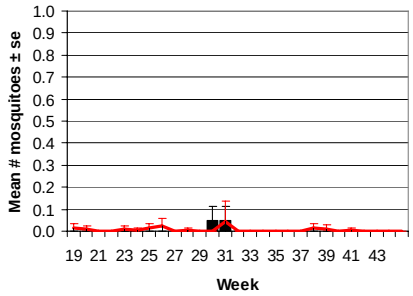
New York Metro



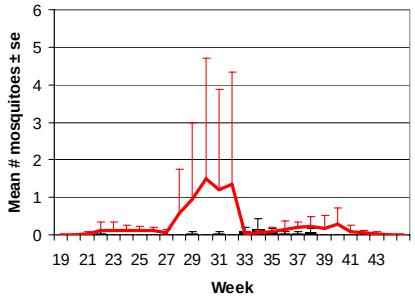
North Central Rural



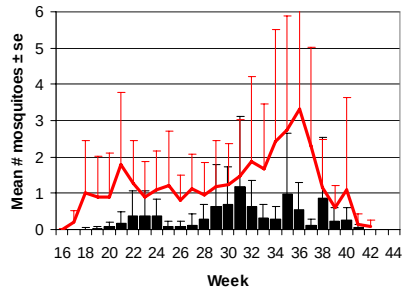
Northwestern Rural



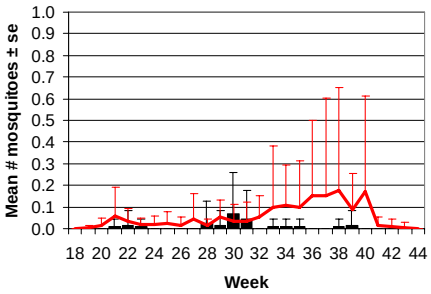
Philadelphia Metro



Pinelands



Suburban Corridor

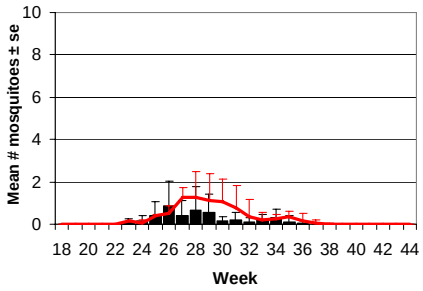


Comments

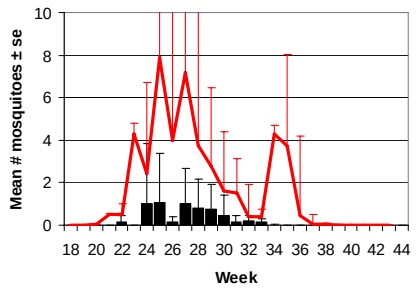
Culiseta melanura populations appeared to have been suppressed both early in the season as well as for general population levels for most regions of the state. Patterns of light trap captures show the same reduced patterns seen in resting boxes. Despite this reduced level of the primary enzootic vector of EEE, there was apparent amplification of the virus with transmission to a horse. Shortly prior to the onset of symptoms in the horse, a local EEE positive pool of *Cs. melanura* was found.

Coquillettidia perturbans – Miscellaneous Group

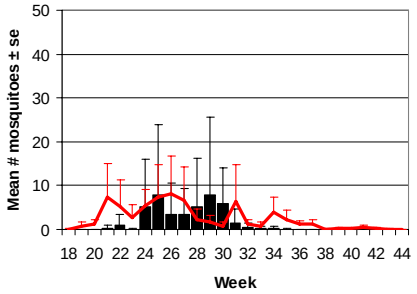
Agricultural



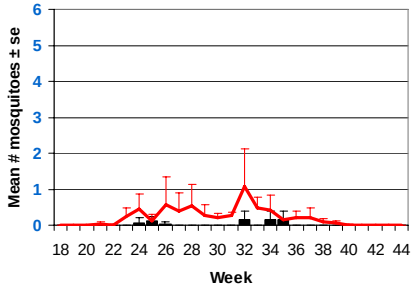
Coastal



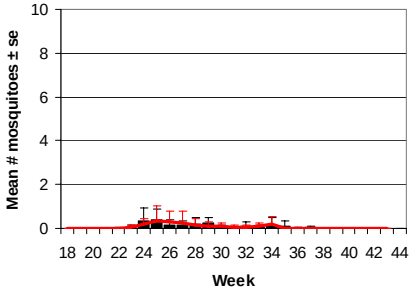
Delaware Bayshore



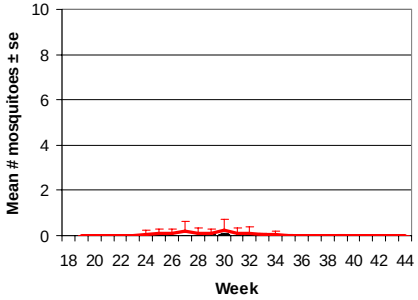
Delaware River Basin



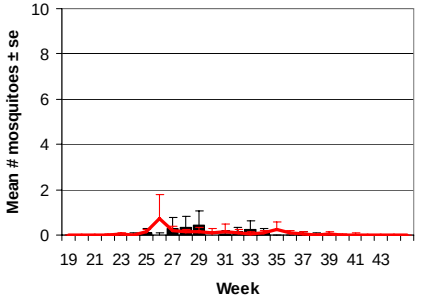
New York Metro



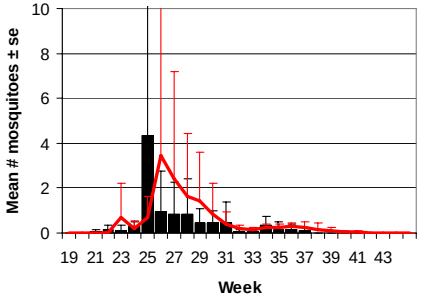
North Central Rural



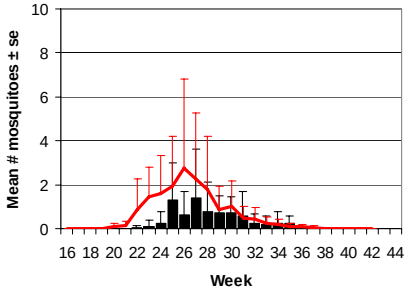
Northwestern Rural



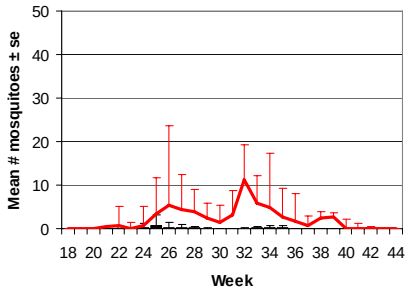
Philadelphia Metro



Pinelands



Suburban Corridor



Comments

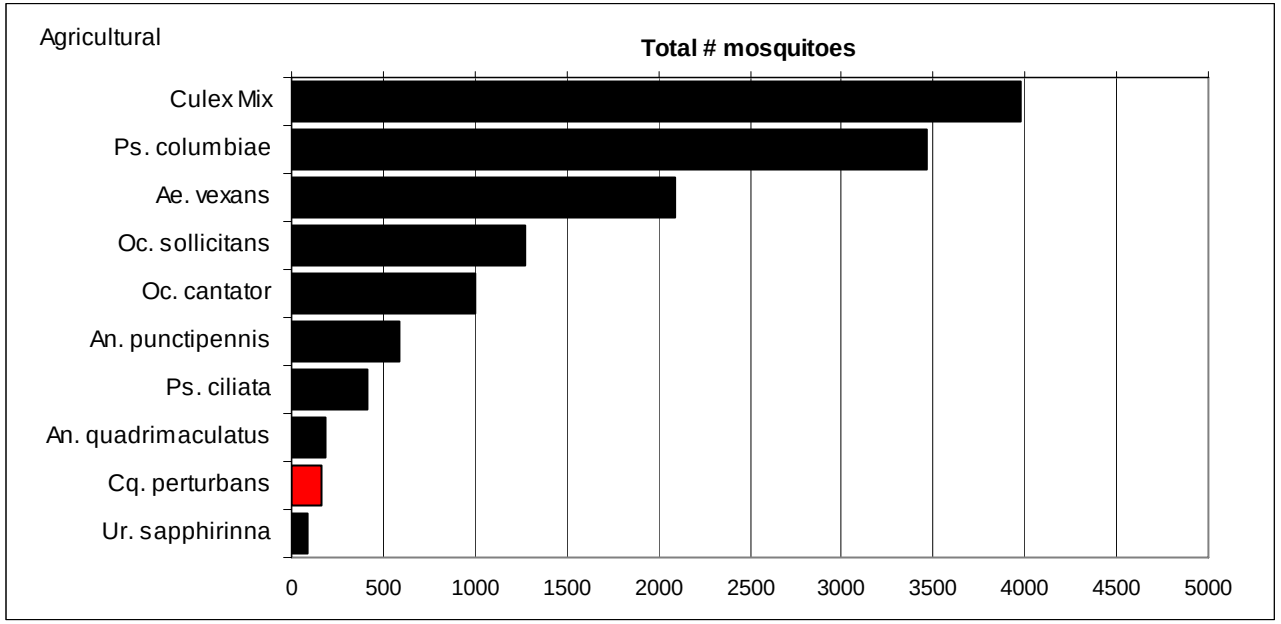
Coquillettidia perturbans populations, along with other permanent water species, are generally less affected by drought conditions unless the drought is severe. Larvae attach themselves on emergent vegetation and are able to obtain oxygen through the plant's phloem rather than at the top of the water column making this species difficult not only to control but even to assess larval populations. While a few regions had lower numbers of adults this year as compared with the past, one site in the Philadelphia Region has had significant emergences over the past few years. This species is not an efficient vector for West Nile virus. For EEE, *Cq. perturbans* involvement has been debated. Ecological/behavioral limitations (Bosak et al) as well as higher mortality rates of the mosquito by the virus itself (Moncayo et al) might curb the potential effects of during an endemic (Crans et al).

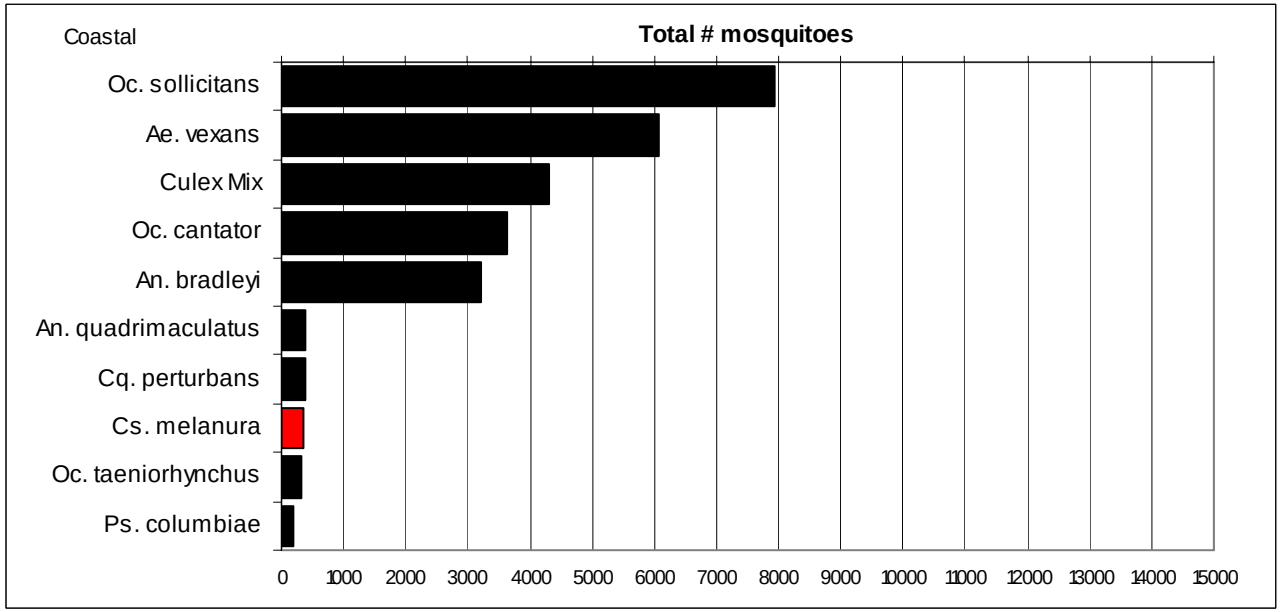
Bosak, Reed & Crans 2001 Habitat preference of host-seeking Cq. perturbans in relation to birds and EEE in NJ. J. Vector Ecology, 103-109.

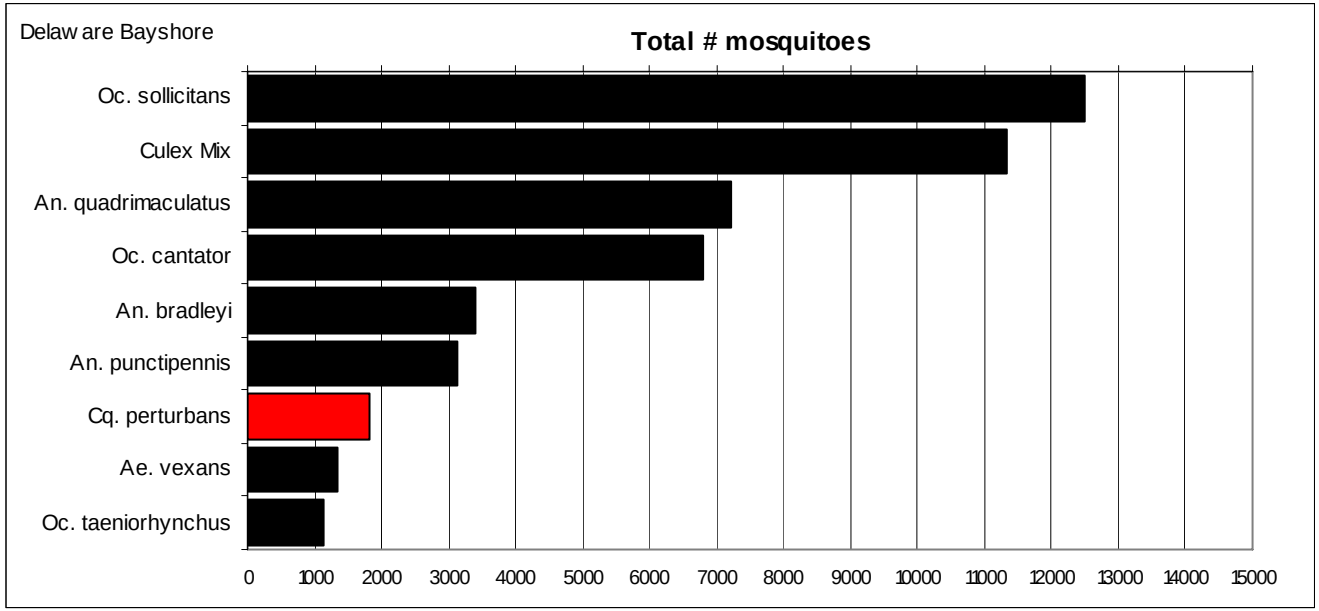
Crans and Schultze 1986 Evidence incriminating Cq. perturbans as an epizootic vector of EEE. SOVE 178-184.

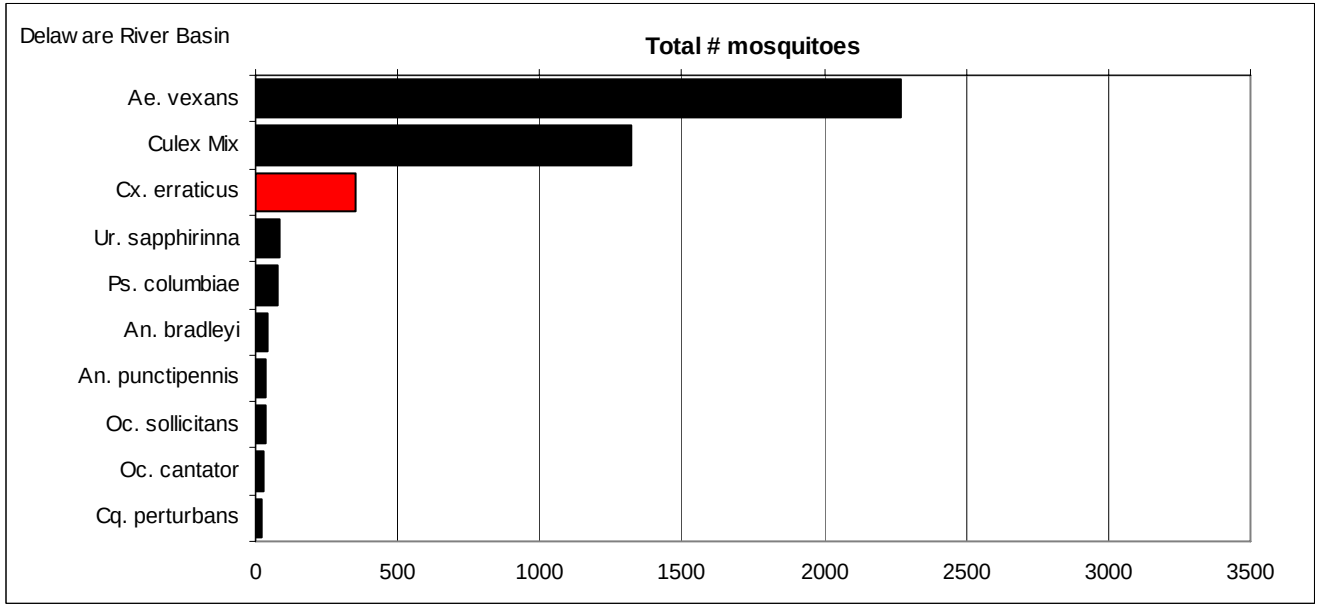
Mancayo, Edman, & Turrell 2000 Effects of EEE on survival of Ae. albopictus, An. quadrimaculatus, and Cq. perturbans. J. Med Ento 701-709.

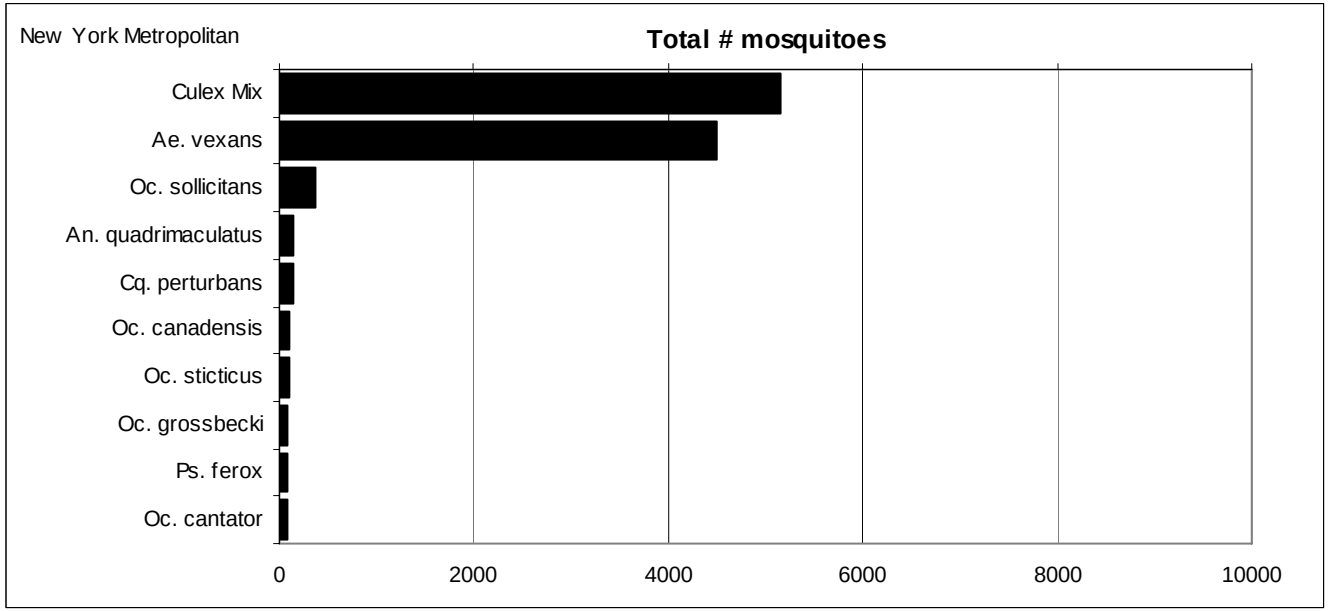
Top Ten cumulative species for each region to date.

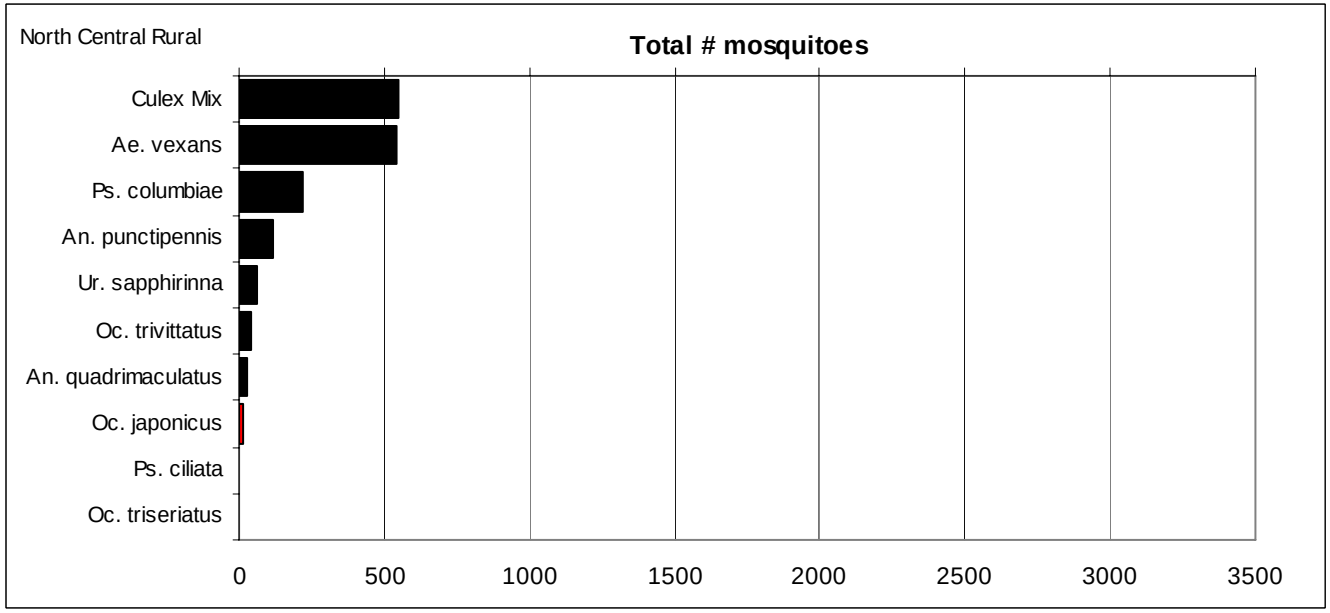


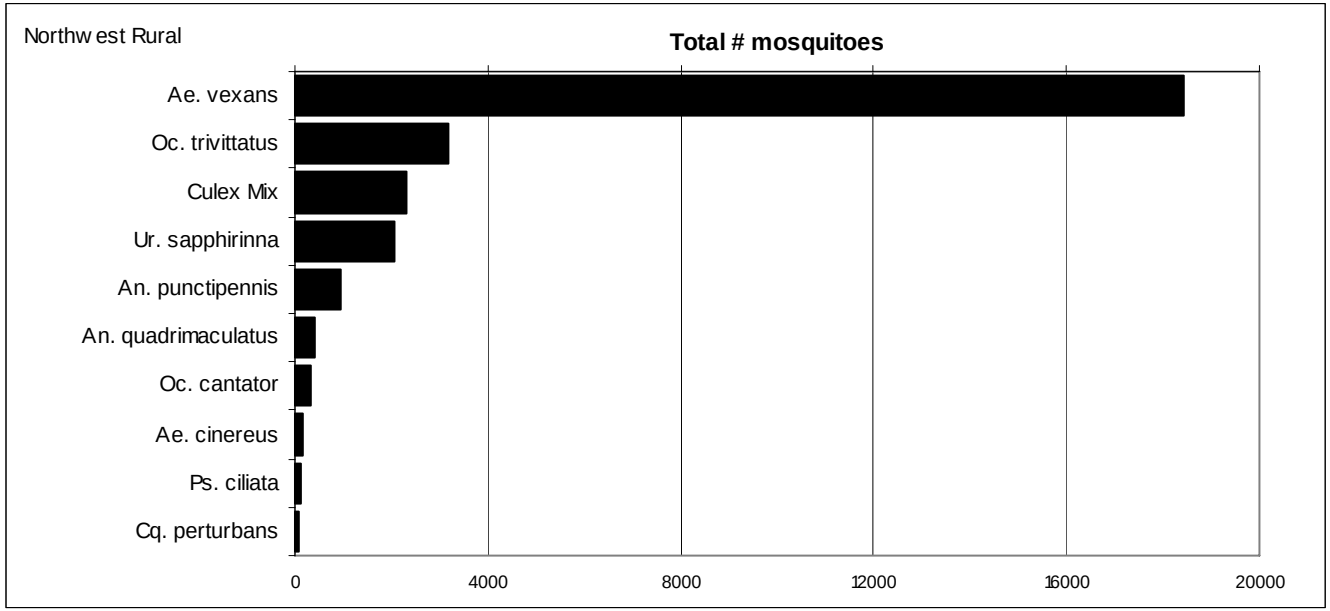


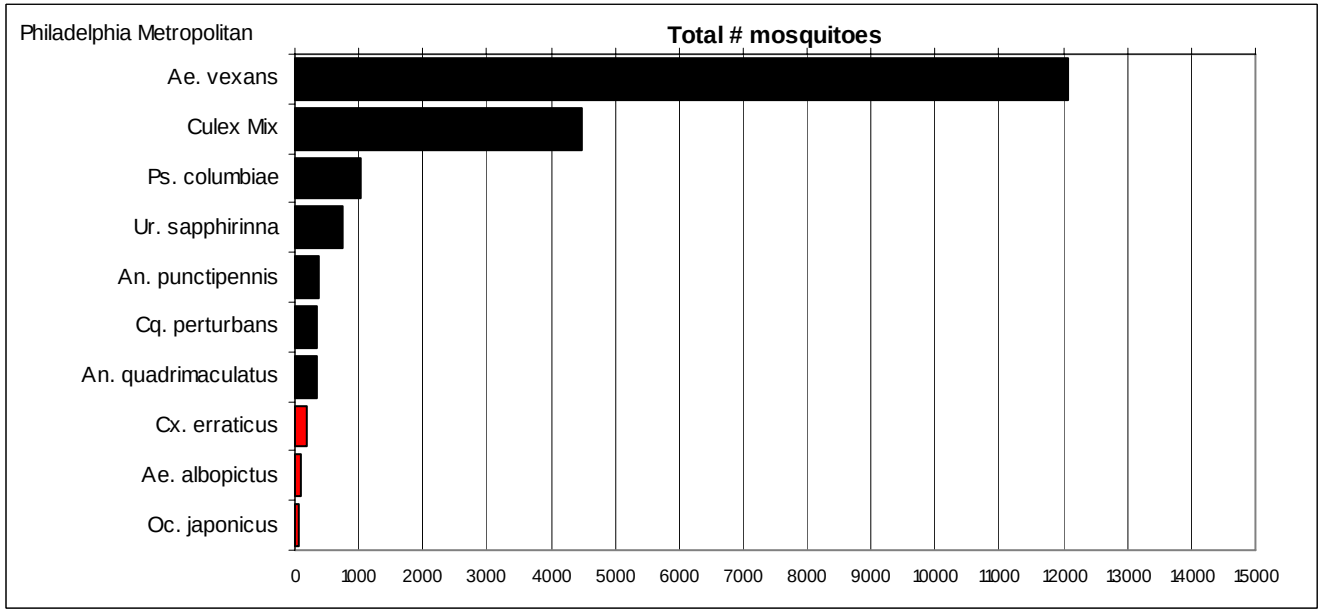

Delaware Bayshore
Total # mosquitoes
Oc. sollicitans
Culex Mix
An. quadrimaculatus
Oc. cantator
An. bradleyi
An. punctipennis
Cq. perturbans
Ae. vexans
Oc. taeniorhynchus
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
11000
12000
13000
14000
15000

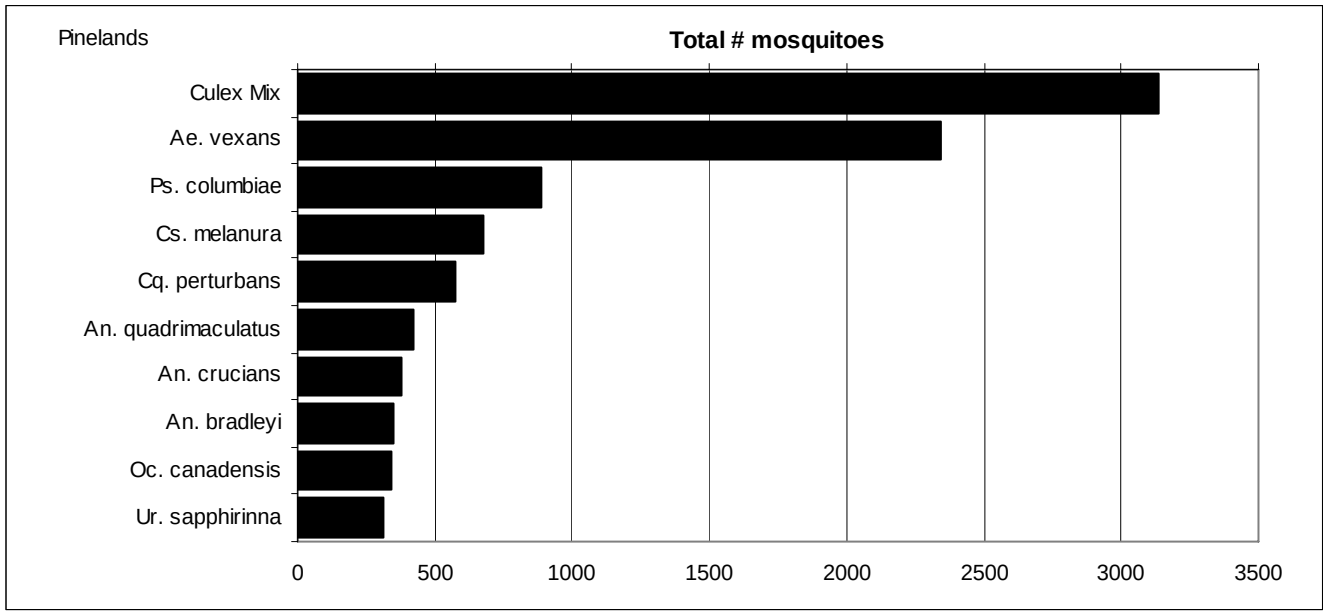

Delaware River Basin
Total # mosquitoes
Ae. vexans
Culex Mix
Cx. erraticus
Ur. sapphirinna
Ps. columbiae
An. bradleyi
An. punctipennis
Oc. sollicitans
Oc. cantator
Cq. perturbans
0
500
1000
1500
2000
2500
3000
3500

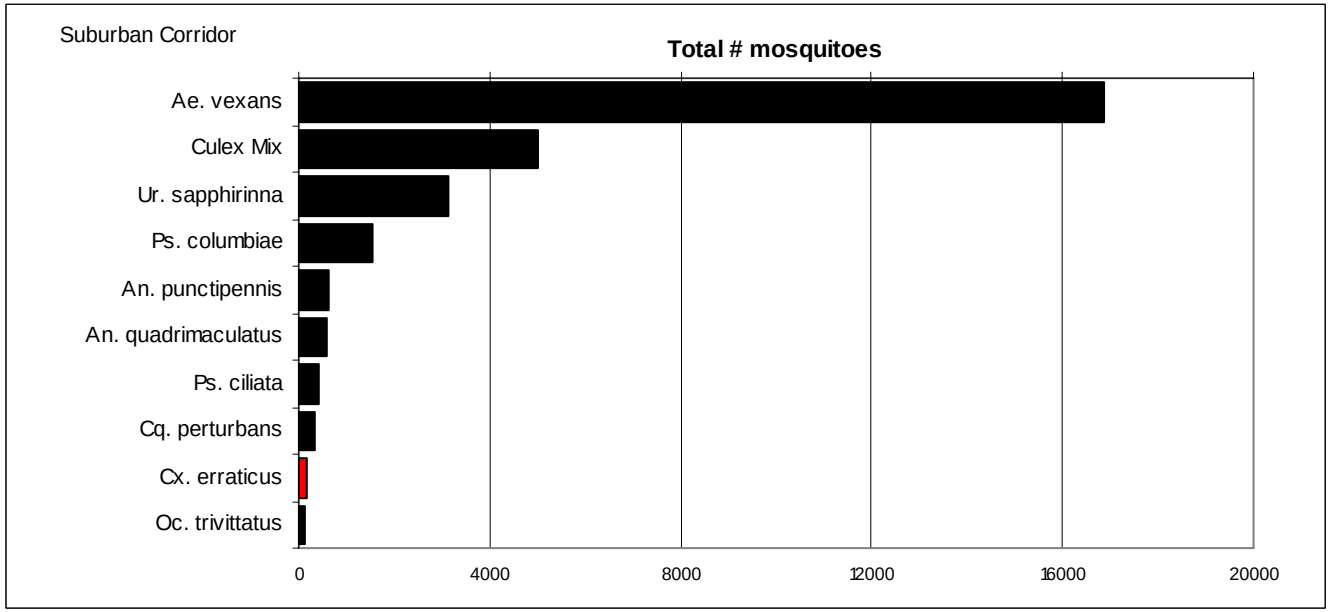

New York Metropolitan
Total # mosquitoes
Culex Mix
Ae. vexans
Oc. sollicitans
An. quadrimaculatus
Cq. perturbans
Oc. canadensis
Oc. sticticus
Oc. grossbecki
Ps. ferox
Oc. cantator
0
2000
4000
6000
8000
10000


North Central Rural
Total # mosquitoes
Culex Mix
Ae. vexans
Ps. columbiae
An. punctipennis
Ur. sapphirinna
Oc. trivittatus
An. quadrimaculatus
Oc. japonicus
Ps. ciliata
Oc. triseriatus
0
500
1000
1500
2000
2500
3000
3500


Northwest Rural
Total # mosquitoes
Ae. vexans
Oc. trivittatus
Culex Mix
Ur. sapphirinna
An. punctipennis
An. quadrimaculatus
Oc. cantator
Ae. cinereus
Ps. ciliata
Cq. perturbans
0
4000
8000
12000
16000
20000


Philadelphia Metropolitan
Total # mosquitoes
Ae. vexans
Culex Mix
Ps. columbiae
Ur. sapphirinna
An. punctipennis
Cq. perturbans
An. quadrimaculatus
Cx. erraticus
Ae. albopictus
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
Ps. columbiae
Cs. melanura
Cq. perturbans
An. quadrimaculatus
An. crucians
An. bradleyi
Oc. canadensis
Ur. sapphirinna
0
500
1000
1500
2000
2500
3000
3500


Suburban Corridor
Total # mosquitoes
Ae. vexans
Culex Mix
Ur. sapphirinna
Ps. columbiae
An. punctipennis
An. quadrimaculatus
Ps. ciliata
Cq. perturbans
Cx. erraticus
Oc. trivittatus
0
4000
8000
12000
16000
20000