NEW JERSEY ADULT MOSQUITO SURVEILLANCE

Report for 9 September to 15 September, 2007, Week 37

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Purpose: Samples from New Jersey light traps throughout the state are collected by county mosquito control agencies for use in their IPM programs. A portion of this data (about 82 traps) is sent to Rutgers and re-calculated to show statewide 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 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 county mosquito control agencies in New Jersey.

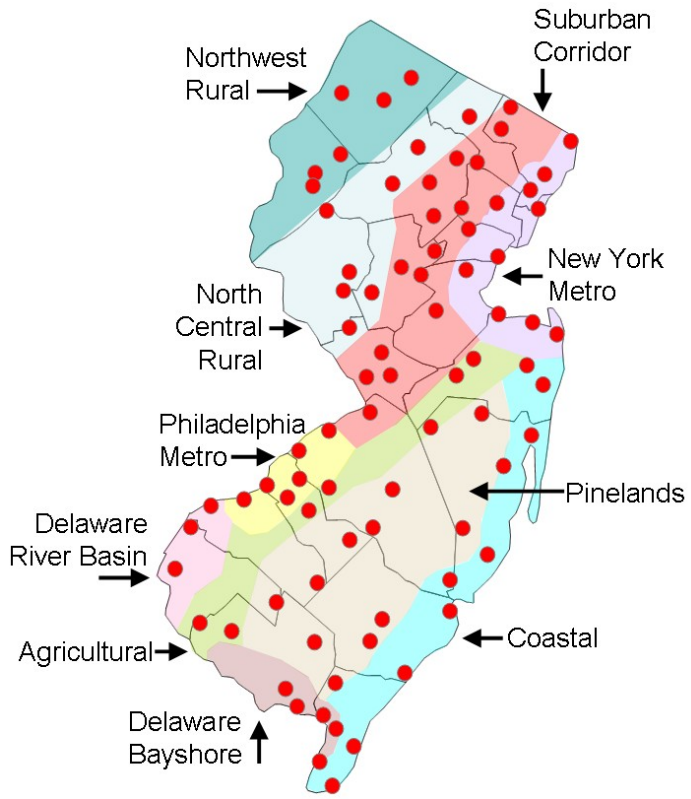


Figure 1: Ten regions selected for the New Jersey Adult Mosquito Surveillance Program overlaid with county borders. Trap locations indicated by red-filled circles.

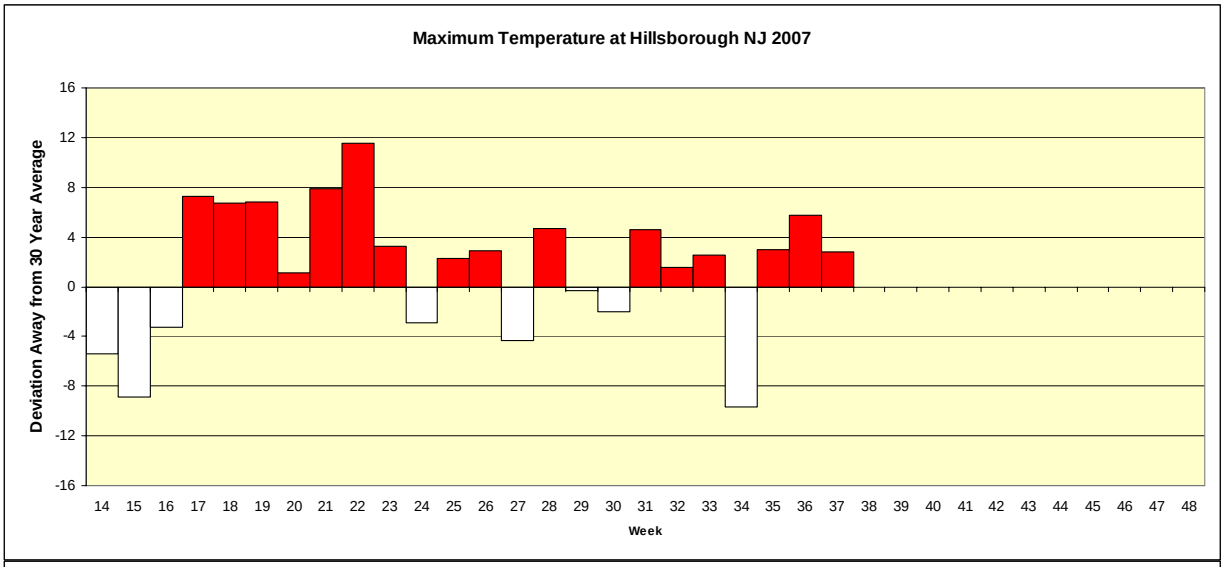
Summary table – Week 37

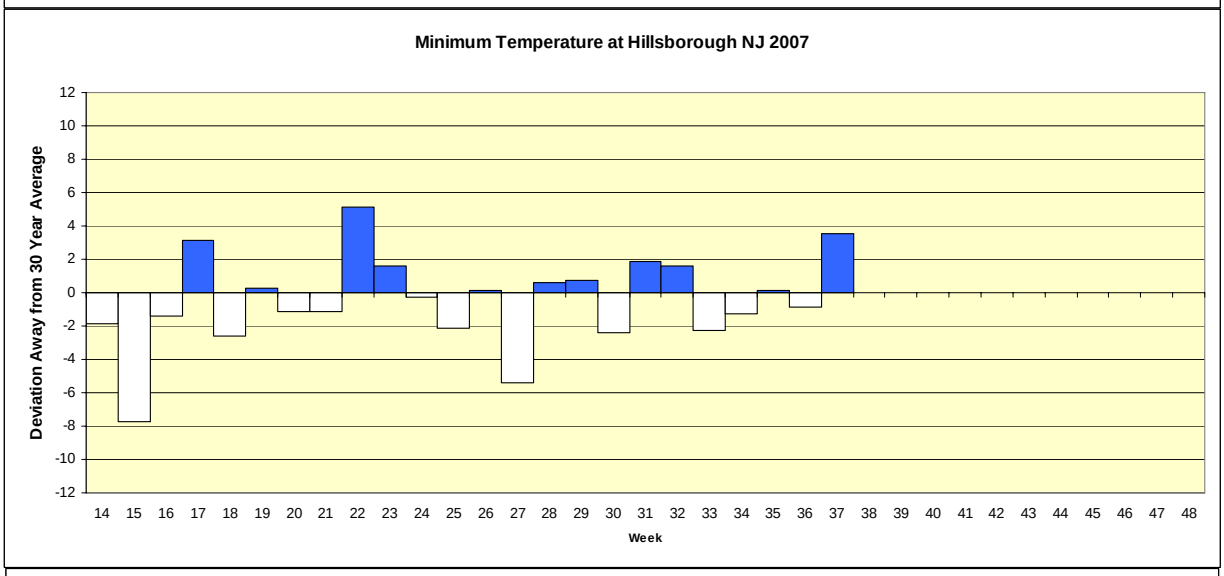
	Aedes vexans			*Culex* Mix			*Coquillettidia perturbans*			*Aedes sollicitans*		
Region	This Week	Average*	Increase	This Week	Average*	Increase	This Week	Average*	Increase	This Week	Average*	Increase
Agricultural	1.02	2.59	0	1.83	2.50	0	0.02	0.00	4	0.38	0.00	4
Coastal	0.67	3.06	0	0.29	2.77	0	0.00	0.51	0	4.87	6.03	0
Delaware Bayshore	0.02	1.08	0	2.29	11.04	0	0.00	0.81	0	9.02	7.21	1
Delaware River Basin	0.00	7.18	0	0.00	9.24	0	0.00	0.64	0	0.00	0.02	0
New York Metro	0.61	1.68	0	2.66	4.62	0	0.01	0.02	0	0.03	0.15	0
North Central Rural	1.24	0.48	4	0.06	0.48	0	0.00	0.00	0	0.00	0.00	0
Northwest Rural	6.71	12.56	0	1.51	7.04	0	0.00	0.02	0	0.00	0.00	0
Philadelphia Metro	3.80	11.57	0	0.43	2.59	0	0.00	0.24	0	0.00	0.00	0
Pinelands	0.62	1.51	0	0.45	2.28	0	0.00	0.18	0	0.09	0.12	0
Suburban Corridor	3.66	3.37	1	1.59	1.96	0	0.00	1.01	0	0.02	0.00	0

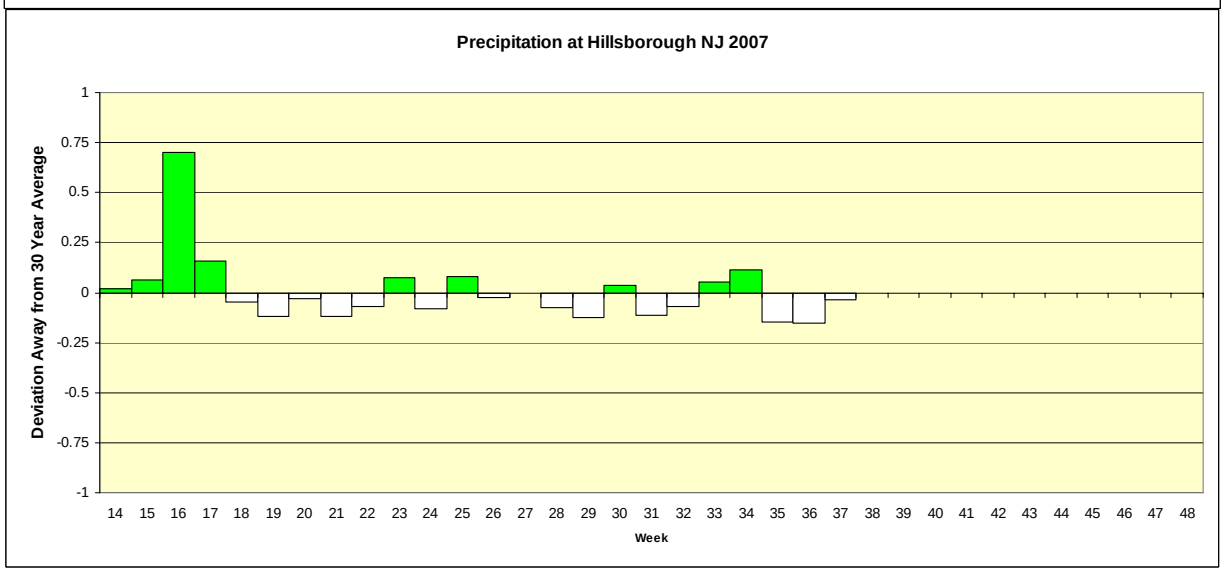
* Averages represent data from, at most, the previous 5 years. Increase is a scale of current values from historical values where no difference or a decrease is represented by 0 (blue), up to 50% greater difference by 1 (green), up to 100% greater difference by 2 (yellow), up to 150% greater difference by 3 (orange) and greater than 150% increase by 4 (red).

State Summary: The table above indicates substantial population increases over historical data in several regions. However, closer examination reveals that three of the four said regions are minor increases from an historical value of zero and occurring at the end of the species seasonal cycle. Of those three regions, the only notable increase is in the *Ae. sollicitans* from the Agricultural region, and the values this year from that region are particularly influenced by the most southern site, located nearest the Delaware Bayshore region. North Central Rural is experiencing high numbers of *Ae. vexans* for that region.

Climate Deviations

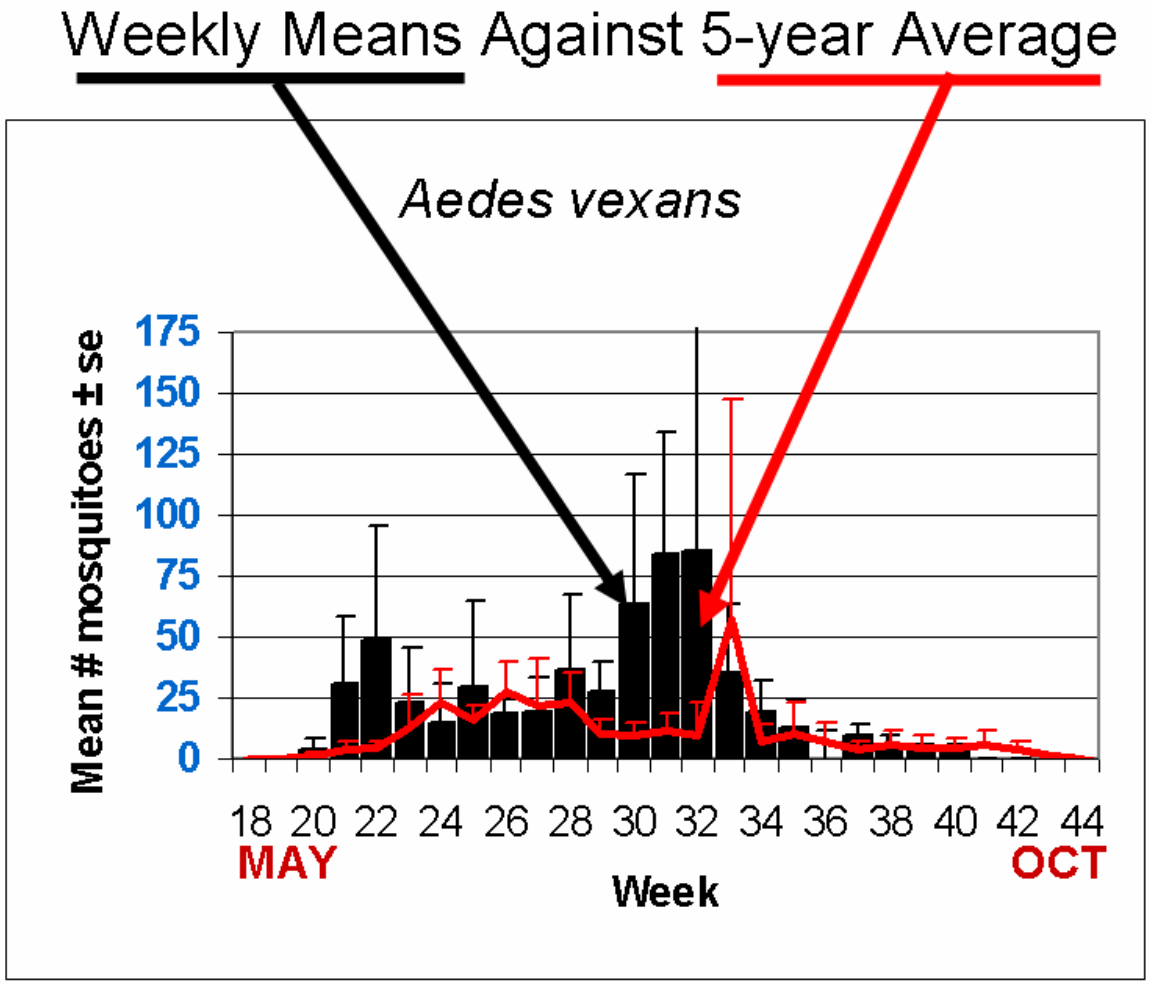




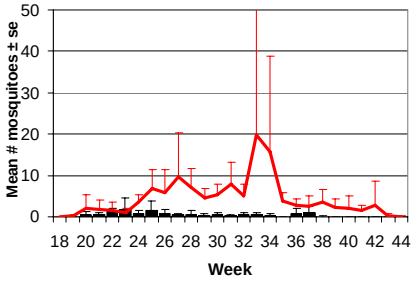
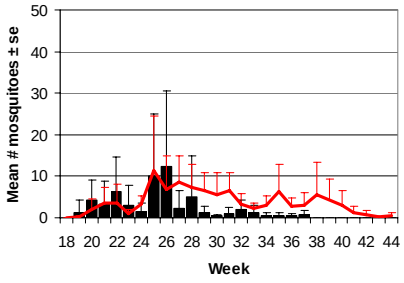
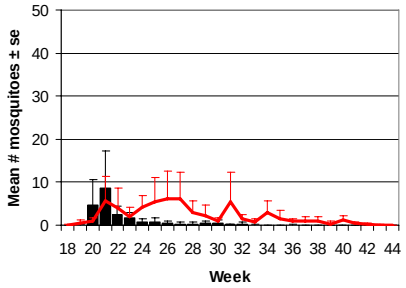
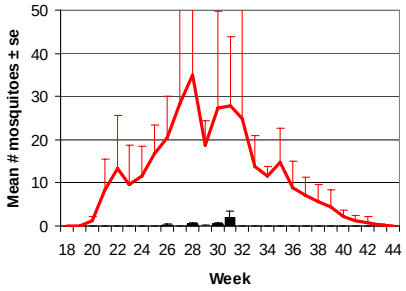
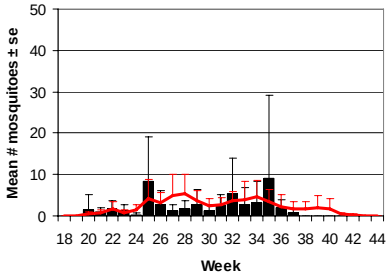
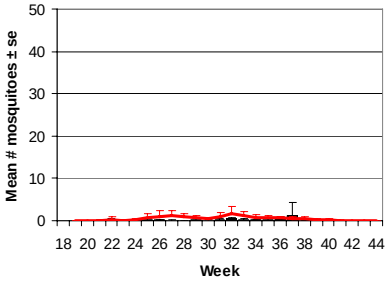
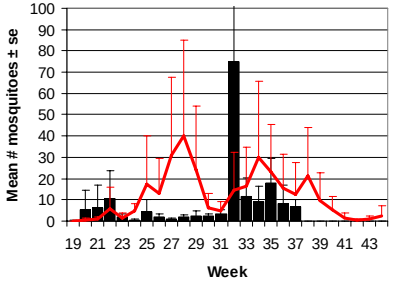
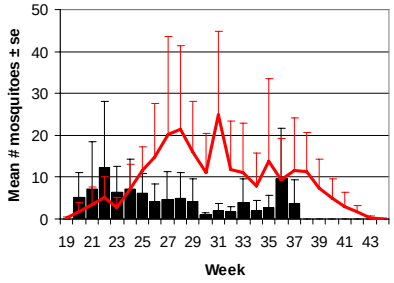
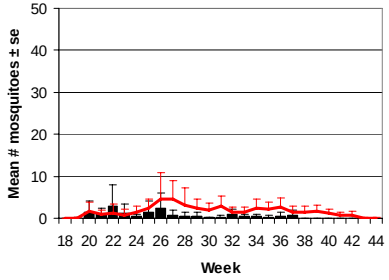
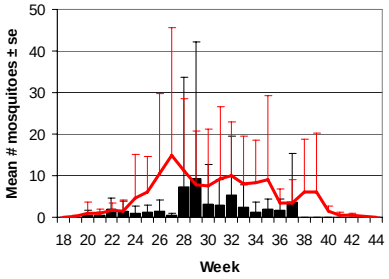


The figures show the average maximum temperature, minimum temperature and precipitation deviations from 30 year averages. Current data is from the Hillsborough NJ weather station (a station close to central NJ which recorded all three parameters and was available online at the NJ state climatologist) 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 36 are from Atlantic, Camden, Cape May, Cumberland, Essex, Hudson, Hunterdon, Mercer, Middlesex, Morris, Ocean, Passaic, Somerset, Sussex and Warren counties.

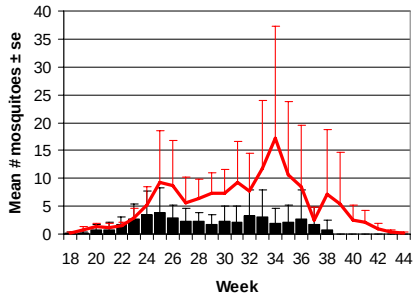


Aedes vexans - Fresh Floodwater Species

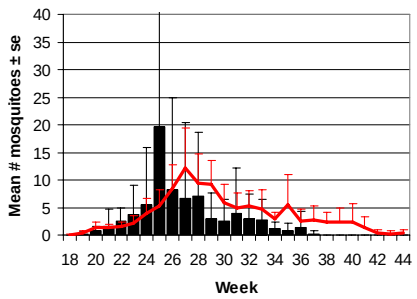
Agricultural	Coastal	Delaware Bayshore	Delaware River Basin
			
New York Metro	**North Central Rural**	**Northwestern Rural**	**Philadelphia Metro**
			
Pinelands	**Suburban Corridor**	**Comments**	
		Both the North Central Rural and the Suburban Corridor experienced higher than historical numbers of Aedes vexans. Most regions are showing a decline of this species. Warm weather and rainfall can still produce emergences over the next few weeks should these factors occur together. Warm weather is expected to continue through the weekend, but two cold fronts that could bring precipitation are expected to break up before they arrive.	

Culex Mix - Multivoltine *Culex* Species

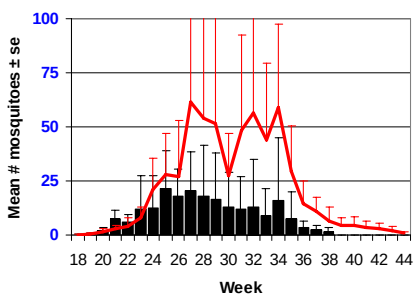
Agricultural



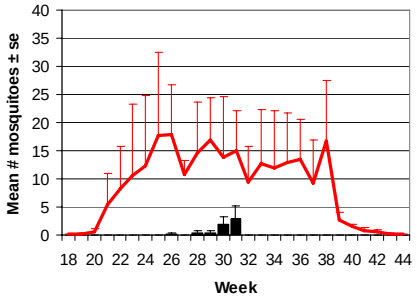
Coastal



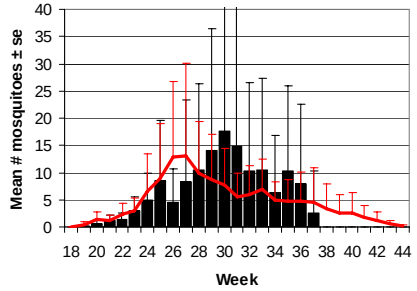
Delaware Bayshore



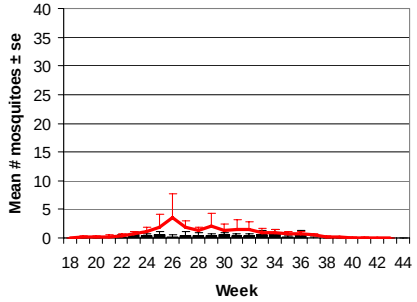
Delaware River Basin



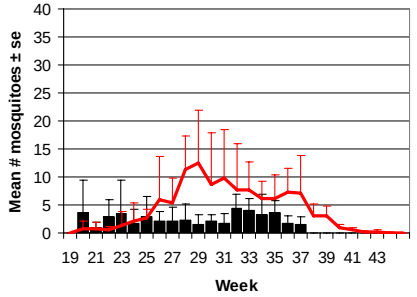
New York Metro



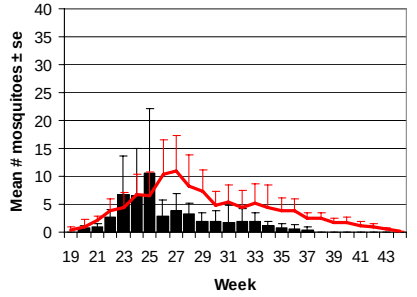
North Central Rural



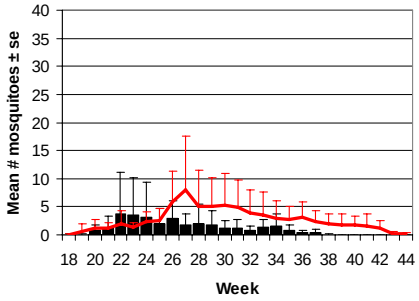
Northwestern Rural



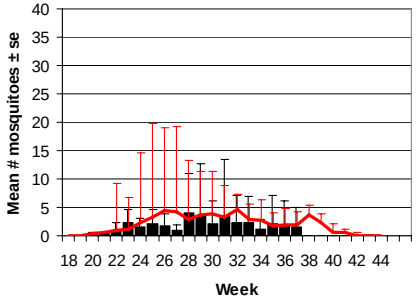
Philadelphia Metro



Pinelands



Suburban Corridor

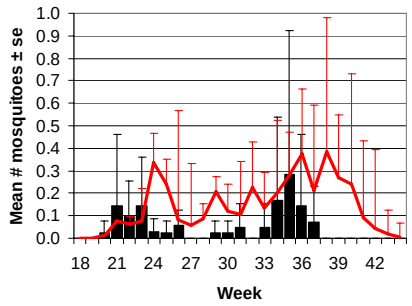


Comments

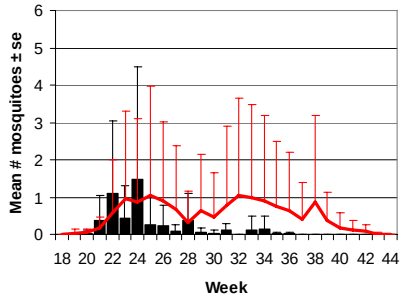
Culex species (*Cx. pipiens, restuans,* and *salinarius*) continue to decline and all regions have lower than historical abundances. *Culex restuans* is an early-season ornithophilic *Culex* in New Jersey, and its greatest abundance comes at mid-season. A smaller second generation is usually detected at this time as adults prepare to overwinter in hibernaculae. Larvae of this species can be found in habitat that vary widely in anthropogenic influence, such as from pristine woodland pools rich in organic leaf layers to tire piles with little organic material collected.

Culiseta melanura – Miscellaneous Group

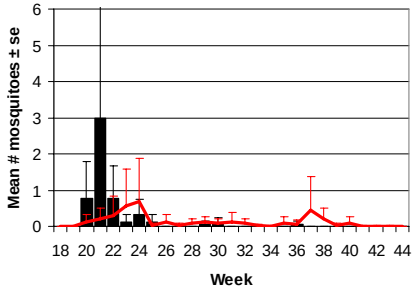
Agricultural



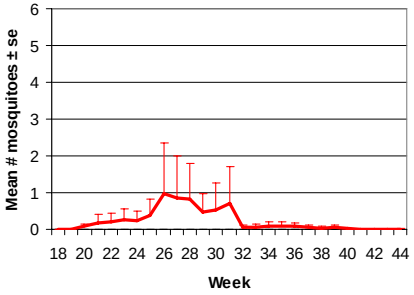
Coastal



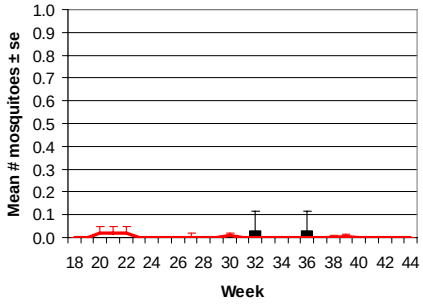
Delaware Bayshore



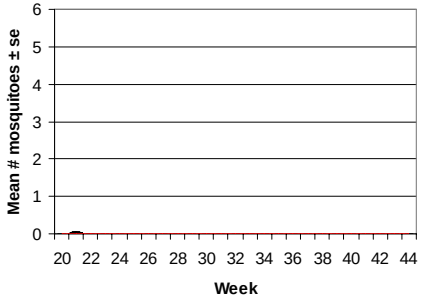
Delaware River Basin



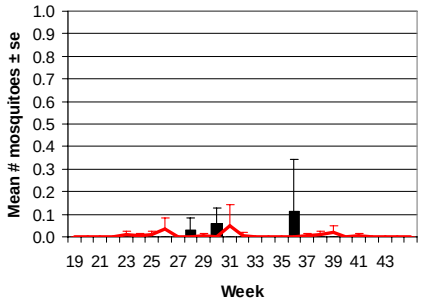
New York Metro



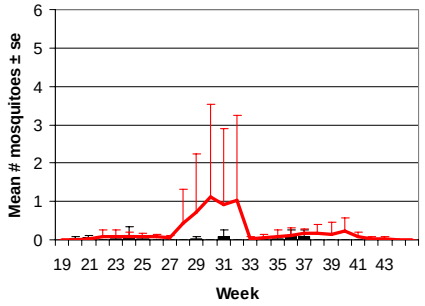
North Central Rural



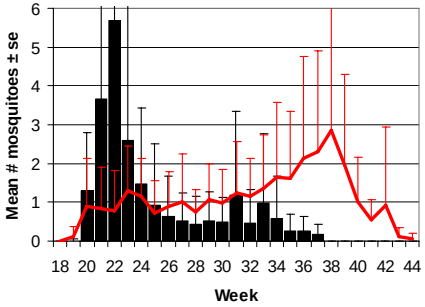
Northwestern Rural



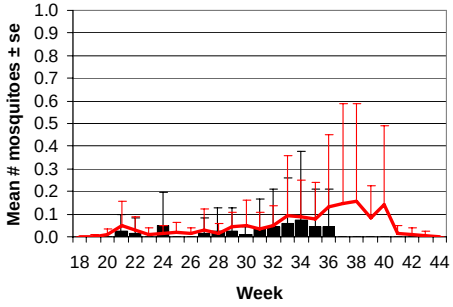
Philadelphia Metro



Pinelands



Suburban Corridor

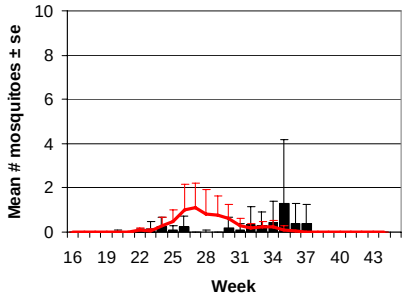


Comments

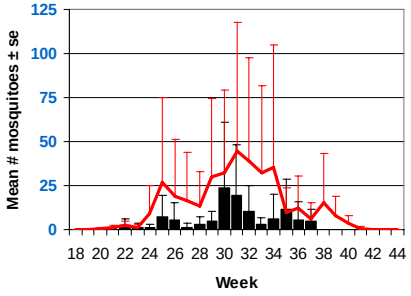
The typical build-up of *Culiseta melanura* in the Pinelands has failed to occur fully and this pattern is also reflected at most of the resting box sites of the NJ vector surveillance program. Early high population levels likely contributed to the transmission and amplification of eastern equine encephalitis virus in local wild bird populations such that positive mosquito pools and, most recently, positive sentinel chickens have been detected despite lowered mosquito abundances observed later in the season.

Aedes sollicitans - Salt Marsh Floodwater Species

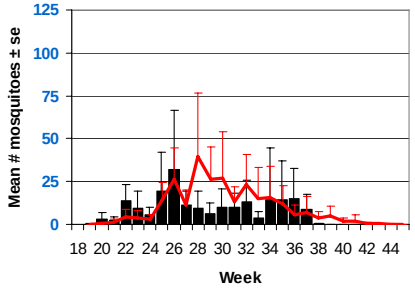
Agricultural



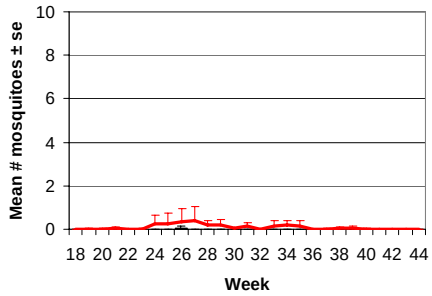
Coastal



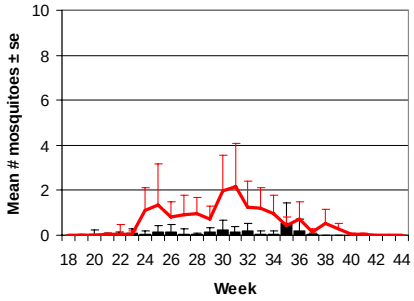
Delaware Bayshore



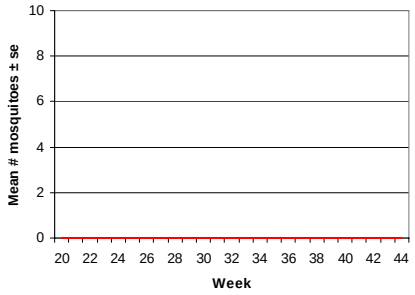
Delaware River Basin



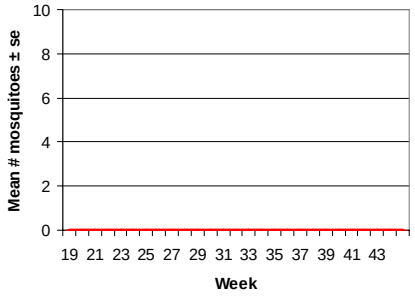
New York Metro



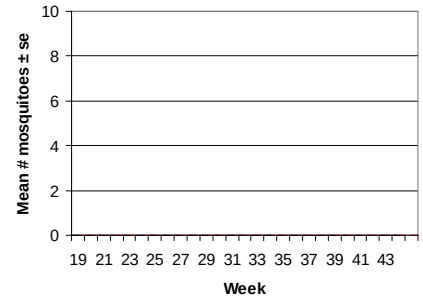
North Central Rural



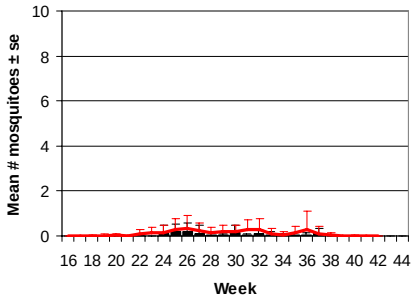
Northwestern Rural



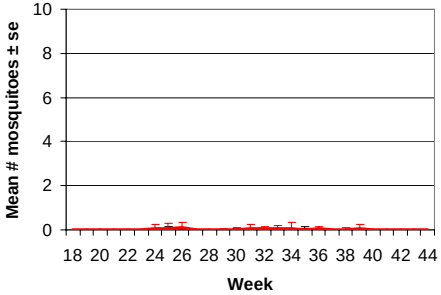
Philadelphia Metro



Pinelands



Suburban Corridor



Comments

Aedes sollicitans abundance continues to decline in most areas as the season draws to an end. The Agricultural region appears to be an exception. However, most mosquitoes collected in this region are from a trap closest to the Delaware Bayshore, and is over-represented this year due to the lack of migration of *Ae. sollicitans* from coastal sites. *Ae. sollicitans* can still be present, shifting hostseeking to daylight hours. This species is cosmopolitan in their diet, feeding not only on mammals, but birds and reptiles as well. As such, this species has been implicated in the coastal transmission of EEE to humans. EEE virus has been found in this species (Crans et al 1986) and has transmitted EEE virus from horse to horse (Sudia et al 1956). Generally, horses are thought to be a dead-end (non-infecting) host but may occasionally have high enough viremias to transmit to mosquitoes.

Crans, McNelly, Schultze & Main 1986 Isolation of eastern equine encephalitis virus from Aedes sollicitans during an epizootic in southern New Jersey. JAMCA 1986 2(1):68-72.
Sudia, Stamm, Chamberlain & Kisseling 1956 Transmission of Eastern Equine Encephalitis to Horses by Aedes Sollicitans Mosquitoes AJTMH 5(5):802-808.