NEW JERSEY ADULT SURVEILLANCE

Report for 3 June to 9 June, 2007, Week 23

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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 Hatch funds and funding from the NJ State Mosquito Control Commission.

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

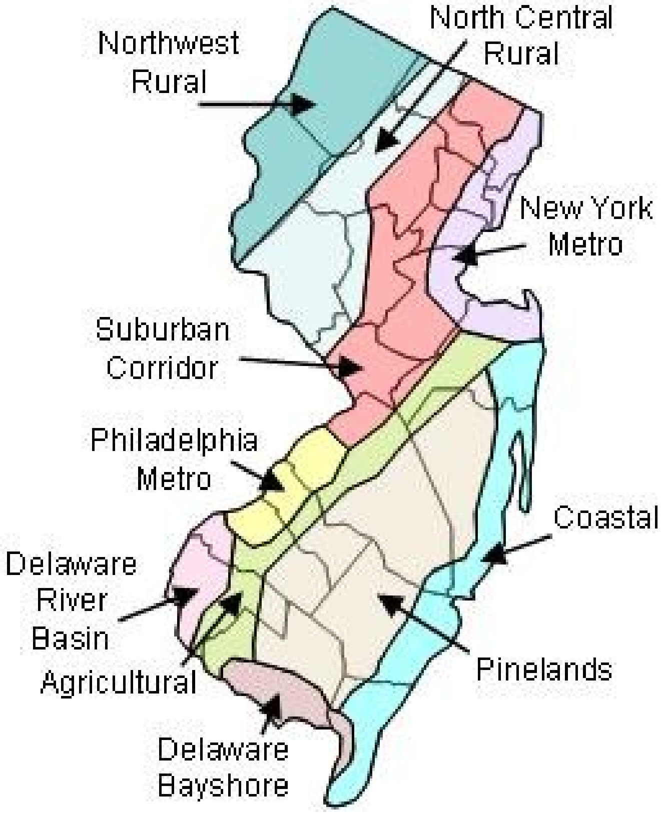


Figure 2. Trap lat-long locations.

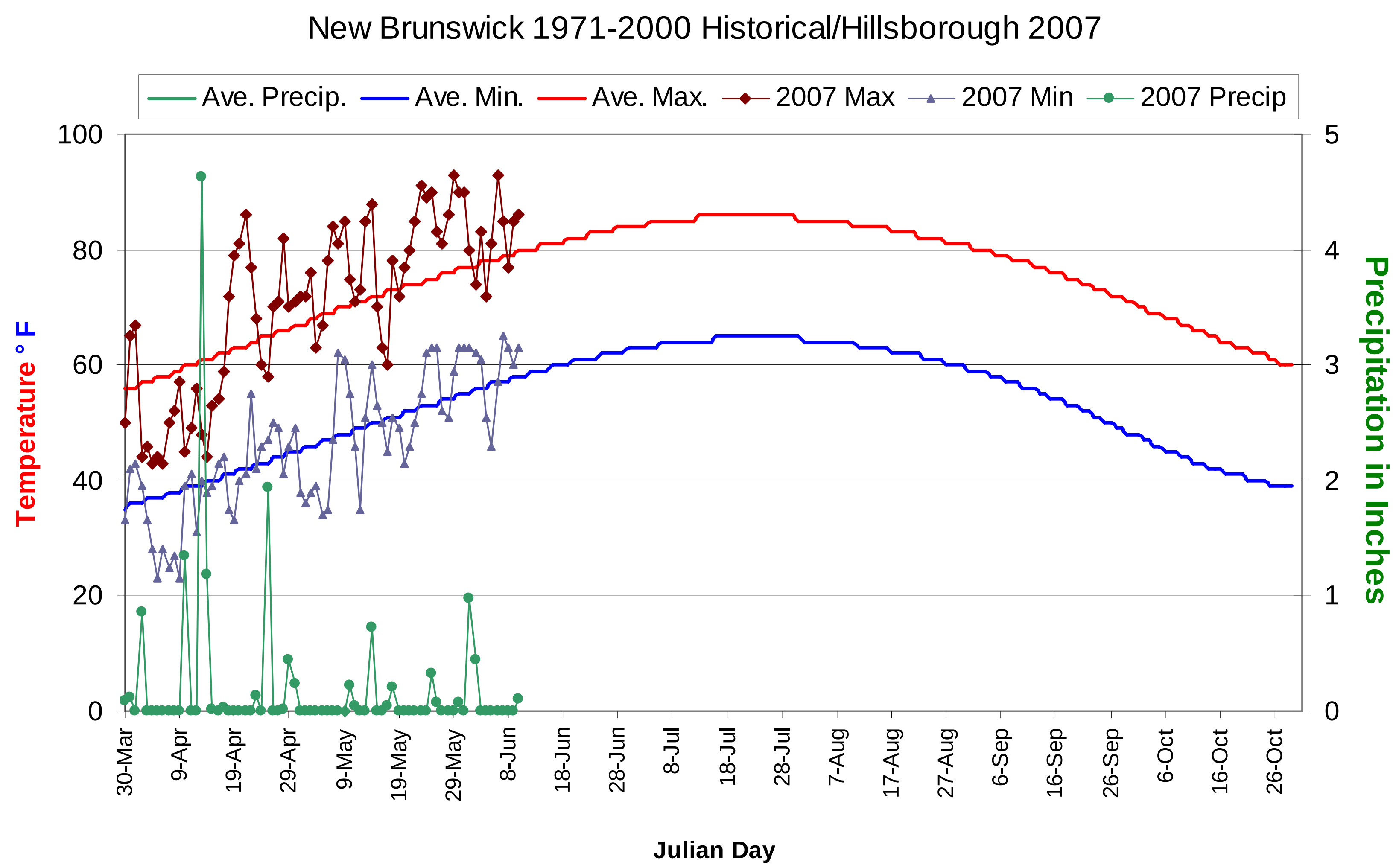
Summary table – Week 23

Region	*Aedes vexans*		*Culex* mix		*Coquillettidia perturbans*		*Aedes sollicitans*	
	This Week	Average*	This Week	Average*	This Week	Average*	This Week	Average*
Agricultural	1.17	0.99	2.02	2.91	0.00	0.07	0.14	0.02
Coastal	0.05	1.08	0.13	2.11	0.00	0.21	0.25	1.33
Delaware Bayshore	0.43	2.07	9.98	7.80	0.00	2.07	7.45	3.14
Delaware River Basin	0.00	9.59	0.00	10.54	0.00	0.20	0.00	0.02
New York Metro	0.31	0.70	1.49	2.88	0.02	0.01	0.09	0.07
North Central Rural	0.08	0.09	0.39	0.38	0.00	0.00	0.00	0.00
Northwest Rural	1.52	1.60	2.76	2.15	0.10	0.01	0.00	0.00
Philadelphia Metro	2.17	2.60	4.45	4.52	0.09	0.16	0.00	0.00
Pinelands	0.05	0.77	0.73	1.43	0.01	0.16	0.00	0.01
Suburban Corridor	1.11	1.39	1.38	2.30	0.28	0.21	0.00	0.00

* Averages represent data from, at most, the previous 5 years.

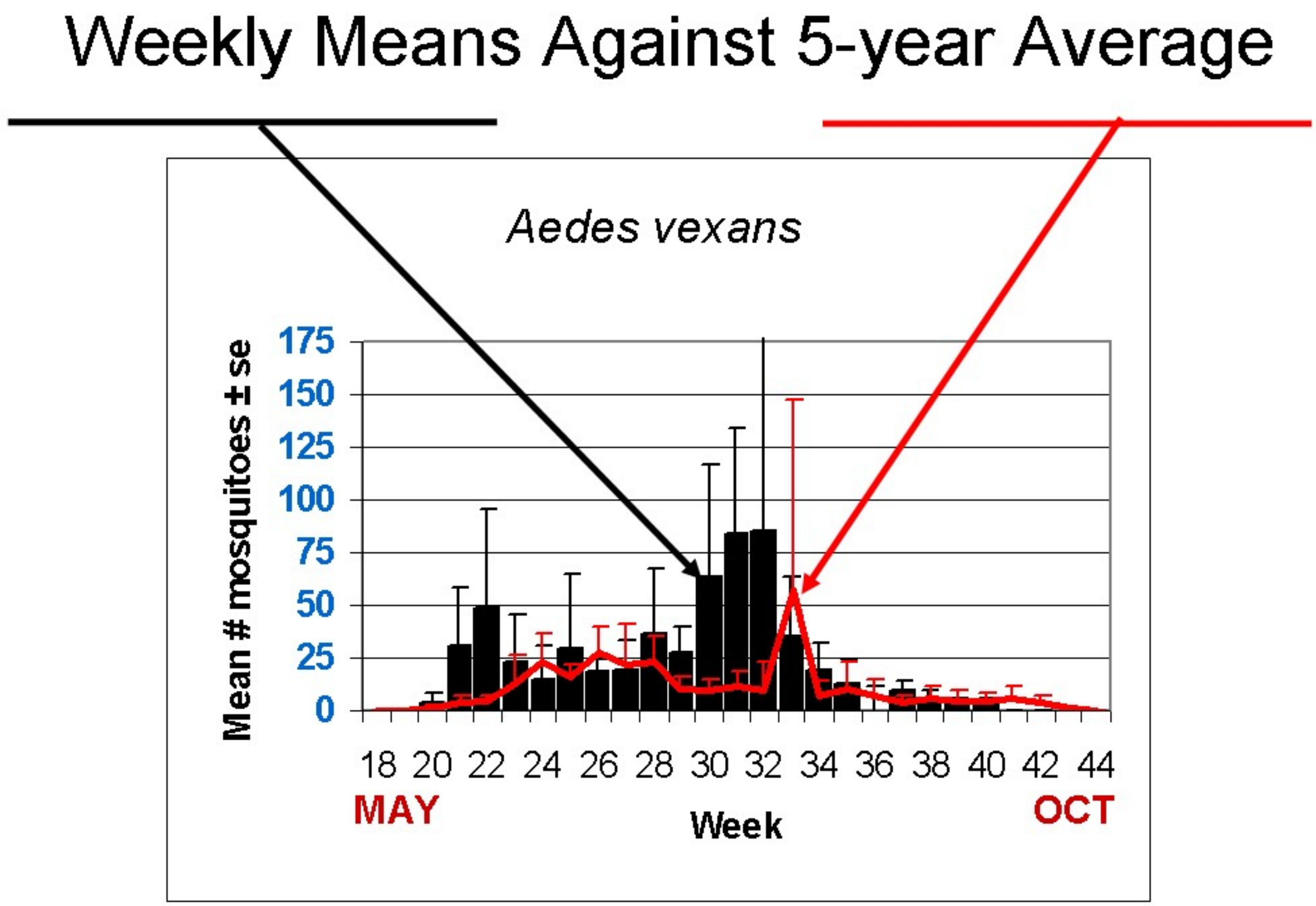
State Summary: Higher activity continues in the Delaware Bayshore and the Northwest Rural regions with *Culex* species. *Aedes vexans* is active in the Agricultural region. *Aedes sollicitans* is active in the Delaware Bayshore. *Coquillettidia perturbans* is active in the Northwest Rural, New York Metro, and the Suburban Corridor.

Climate Data



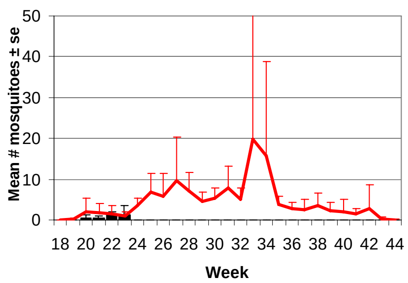
This figure shows historical average maximum and minimum temperatures and average precipitation recorded in the New Brunswick, NJ weather station over a recent 30 year period. Also graphed are the current year's minimum and maximum temperatures as recorded at the Hillsborough NJ weather station (a station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

The 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 Bergen, Camden, Cumberland, Hunterdon, Mercer, Middlesex, Morris, Ocean, Passaic, Somerset, Sussex and Warren counties.

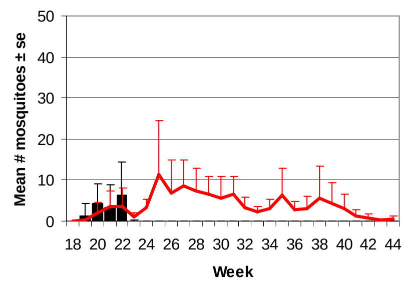


Aedes vexans - Fresh Floodwater Species

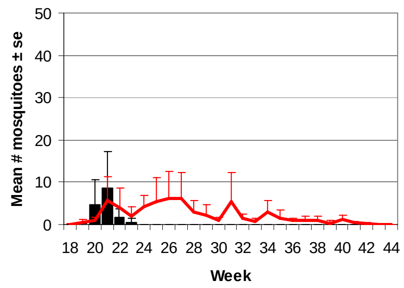
Agricultural



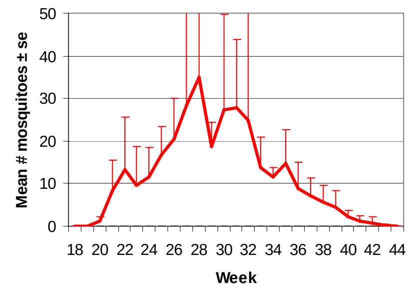
Coastal



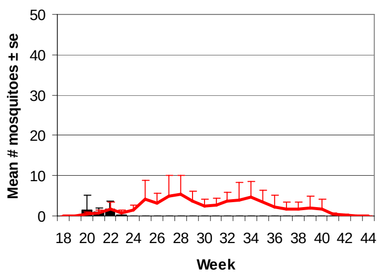
Delaware Bayshore



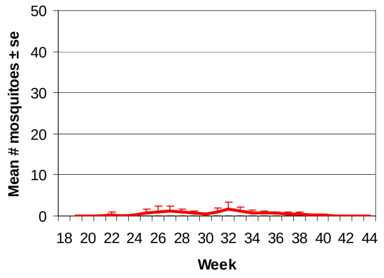
Delaware River Basin



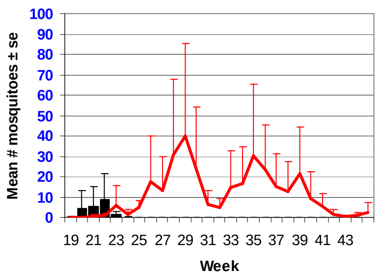
New York Metro



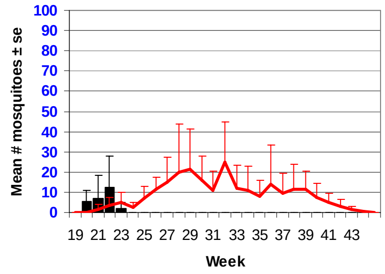
North Central Rural



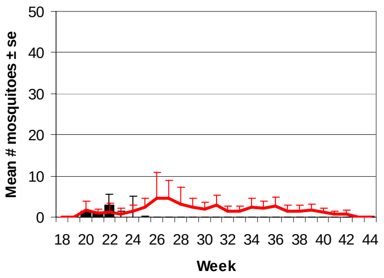
Northwestern Rural



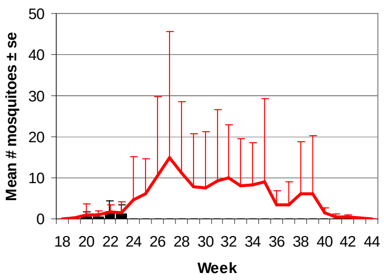
Philadelphia Metro



Pinelands



Suburban Corridor



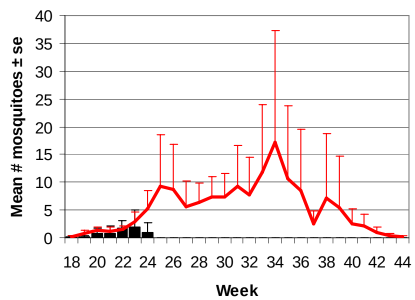
Comments

Aedes vexans continue to emerge with sizeable broods in the Coastal, Northwestern Rural, and Philadelphia Metro. As a floodwater species, habitat can be created in limited areas, and sometimes from areas not affected by immediate rainfall (as can happen with floodings of streams from rainfall at upstream locations).

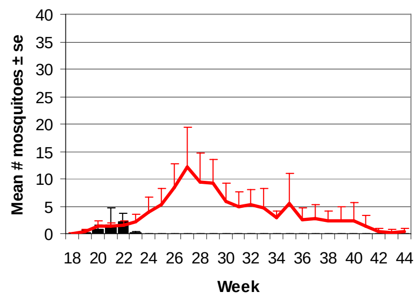
Ae. vexans is not a highly competent vector of WN, but has been implicated in the spread of dog heartworm.

Culex Mix - *Multivoltine Culex Species*

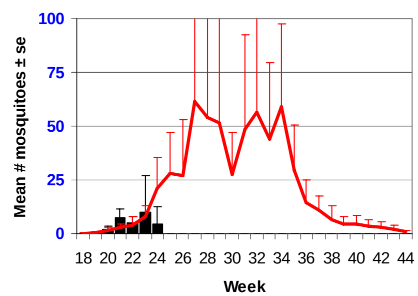
Agricultural



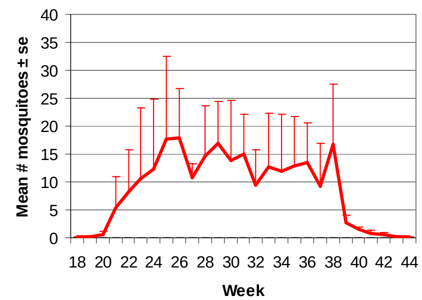
Coastal



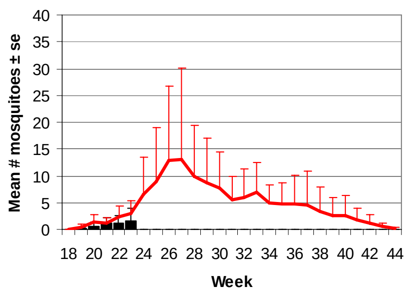
Delaware Bayshore



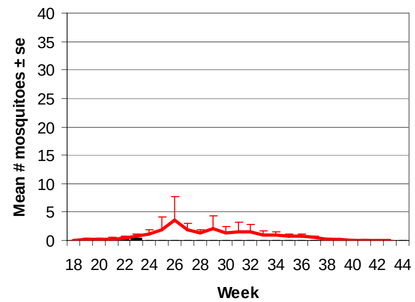
Delaware River Basin



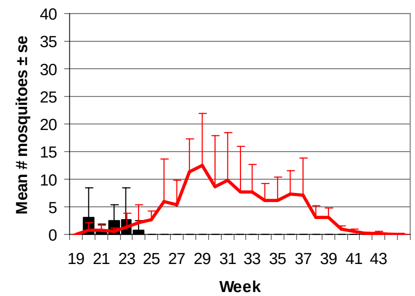
New York Metro



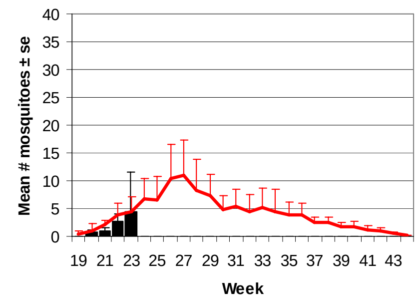
North Central Rural



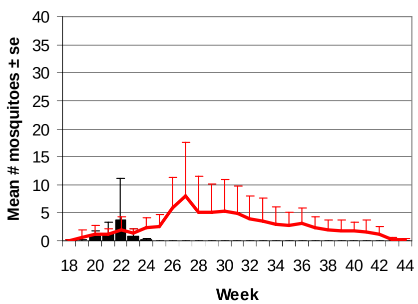
Northwestern Rural



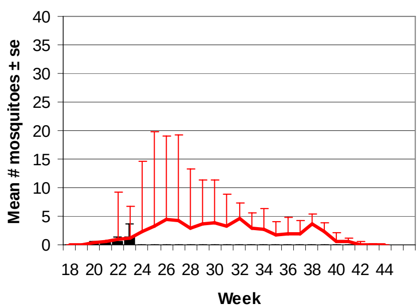
Philadelphia Metro



Pinelands



Suburban Corridor

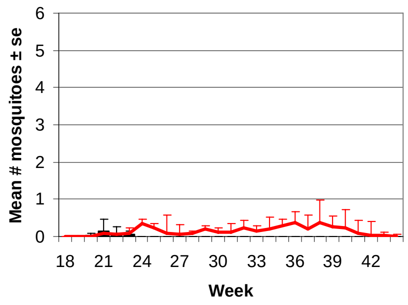


Comments

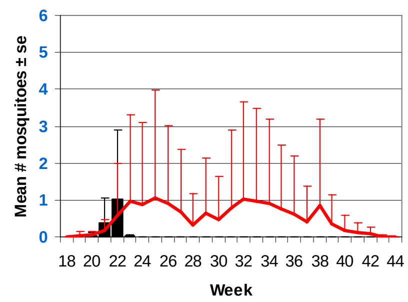
As with *Aedes vexans*, *Culex* populations, for most regions, appear to be following historical trends. Populations begin a slow increase after overwintering inseminated females come out from hibernaculae. *Cx. pipiens* females will hostseek prior to egg-laying. The form that is autogenous (not requiring a bloodmeal to lay the first batch of eggs) is called *Cx. pipiens* form *molestus*. *Cx. restuans*, as with *Cx. pipiens*, are more likely to hostseek birds, contributing to the amplification cycle of West Nile virus. *Cx salinarius* is a less discriminating hunter, changing from avian to mammalian hosts depending on availability.

Culiseta melanura – Miscellaneous Group

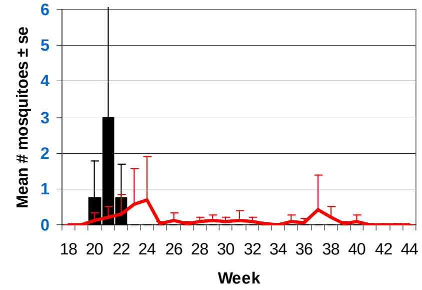
Agricultural



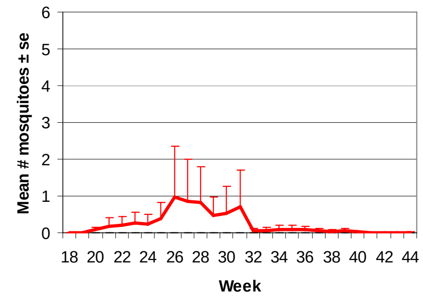
Coastal



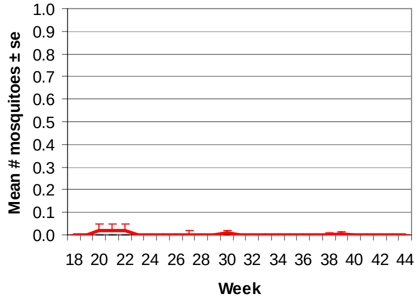
Delaware Bayshore



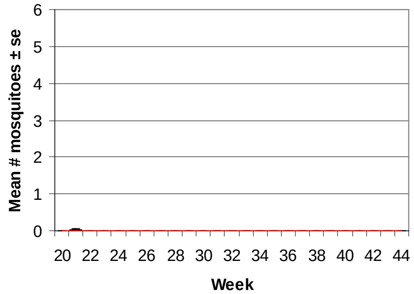
Delaware River Basin



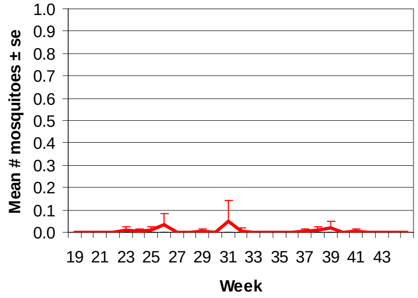
New York Metro



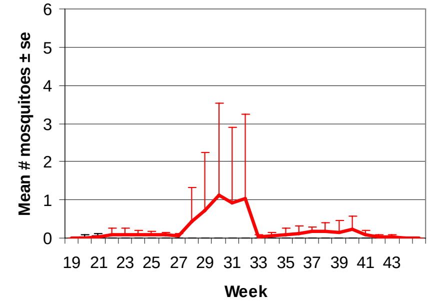
North Central Rural



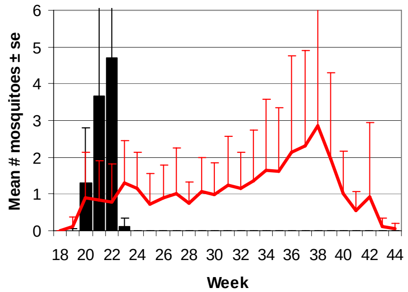
Northwestern Rural



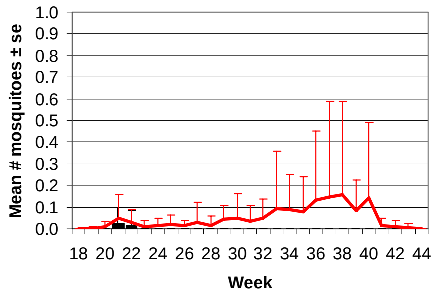
Philadelphia Metro



Pinelands



Suburban Corridor



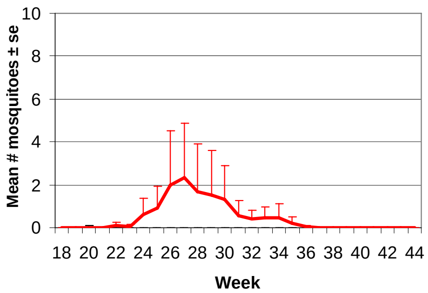
Comments

Culiseta melanura populations are significantly higher than historical trends in the Delaware Bayshore and Pinelands region, showing up in numbers in a trap that is generally not effective in catching them. The adult represent the overwintering 4^{th} instars, and the eggs they lay will likely contribute to the larger populations seen toward the end of the year. These bird-feeders are the enzootic vector that will contribute to the amplification cycle of Eastern Equine encephalitis. This suggests that a large initial population involved in passing significant amounts of virus among the avian hosts for amplification should be indicative of a potentially active virus season ahead. However, in addition to significant virus in hosts, bridge vectors must also be present. Moncayo and Edman (1999) suggested that *Coquillettidia perturbans, Aedes canadensis* and *Ae. salinarius* may play such a role in Massachusetts.

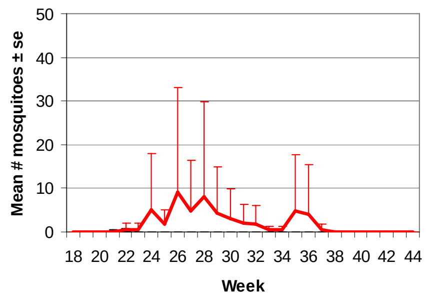
Moncayo, A. C. and J. D. Edman 1999 Toward the incrimination of epidemic vectors of eastern equine encephalomyelitis virus in Massachusetts: Abundance of mosquito populations at epidemic foci. JAMCA, 15(4): 479-492.

Coquillettidia perturbans – Unique Group

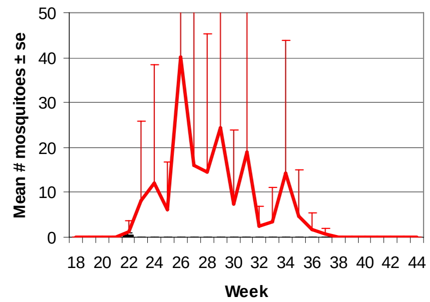
Agricultural



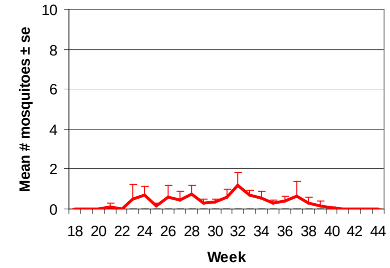
Coastal



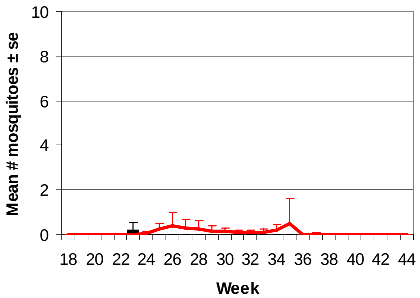
Delaware Bayshore



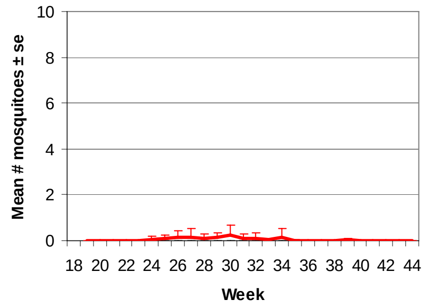
Delaware River Basin



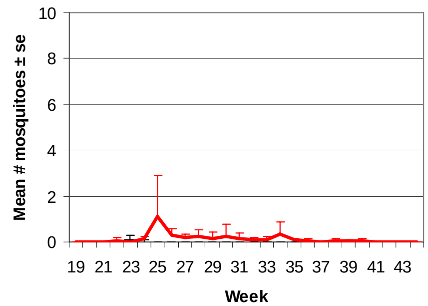
New York Metro



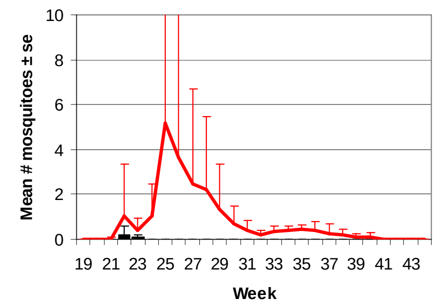
North Central Rural



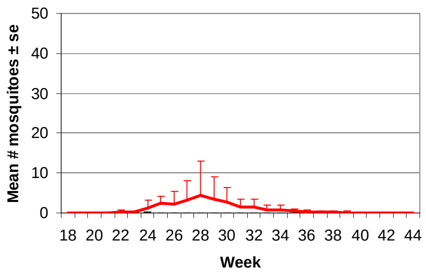
Northwestern Rural



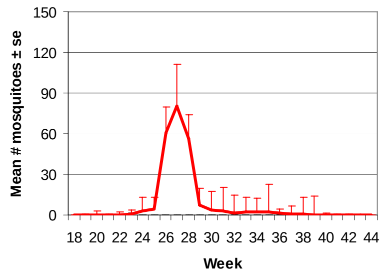
Philadelphia Metro



Pinelands



Suburban Corridor

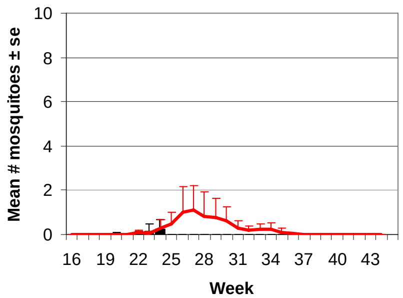


Comments

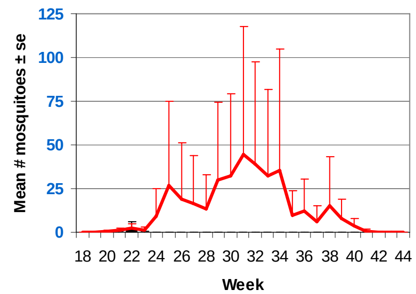
Coquillettidia perturbans has recently begun emerging in the Delaware Bayshore, New York Metro, Northwestern Rural, Philadelphia Metro and Pinelands regions. The New York Metro region emerged earlier than is typically seen in historical trends. Like *Cs. melanura*, *Cq. perturbans* overwinters as larvae, attaching themselves onto the submerged portions of emergent vegetation by using a hooked airtube. The first (and larger) emergence is composed of 3^{rd} and 4^{th} instar larvae. If conditions are suitable, a second, but smaller emergence composed of 2^{nd} instar larvae may occur later in the summer (see the historical Coastal region).

Aedes sollicitans - Salt Marsh Floodwater Species

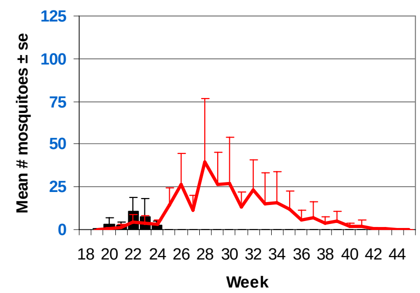
Agricultural



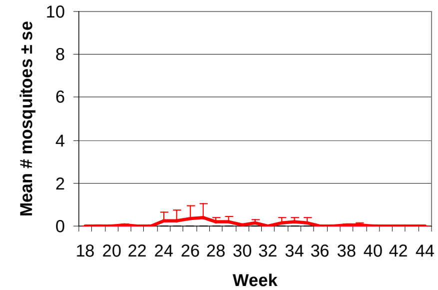
Coastal



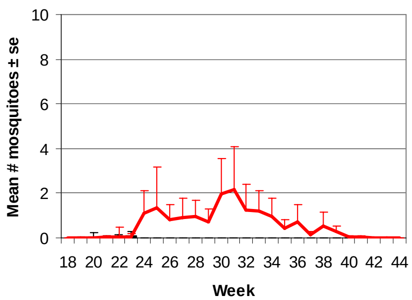
Delaware Bayshore



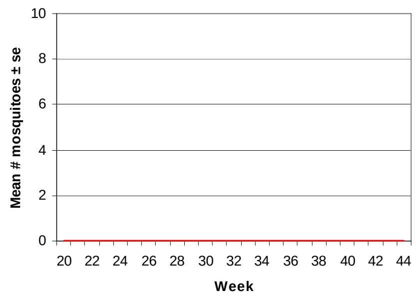
Delaware River Basin



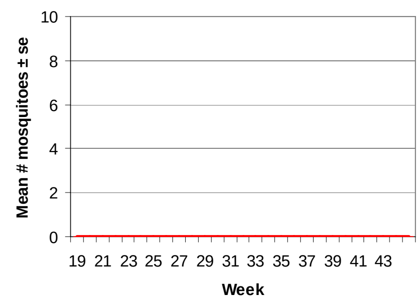
New York Metro



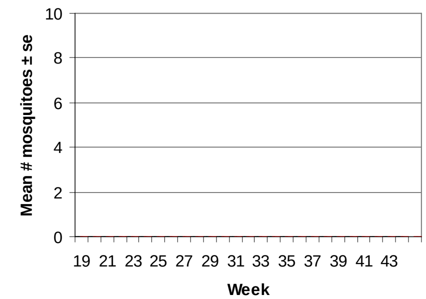
North Central Rural



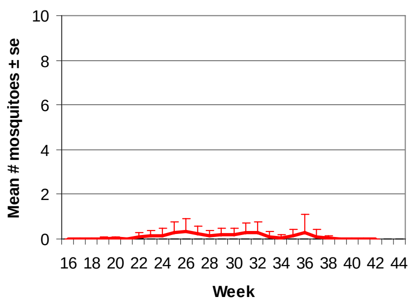
Northwestern Rural



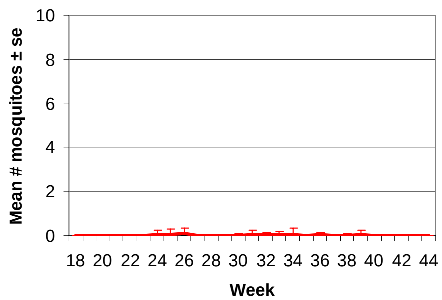
Philadelphia Metro



Pinelands



Suburban Corridor



Comments

Aedes sollicitans continue to build in the Delaware Bayshore region and are within historical trends. Activity seen in the Agricultural region reflects activity at the most southerly farm in the Agricultural region and one that is close to the Delaware Bayshore. True agricultural activity for this species will occur when coastal and Bayshore populations migrate inland.

Female *Ae. sollicitans* will readily hunt potential bloodmeals that wander into their vicinity. Mammals are foremost in their diet, but they will also bloodfeed on birds.