NEW JERSEY VECTOR SURVEILLANCE

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ABSTRACT: Repeated thunderstorms triggered multiple broods of floodwater mosquitoes in New Jersey during the month of July. *Culiseta melanura* populations, however, were well below average during the critical period and virus amplification did not take place. The circumstances provided numerous potential epizootic vectors in the absence of EEE virus. As a result, mosquito nuisance was severe but vector potential remained low. Record high temperatures during June and July appear to have been a major factor in limiting *Cs. melanura* populations this season. Despite the low population levels of this species, EEE virus did appear during the month of August but isolations have been infrequent and no evidence of epizootic transmission has been evident to date.

INTRODUCTION

The month of July brought record hot weather to New Jersey that was interrupted by numerous thunderstorms. Floodwater mosquitoes dominated the collections at all of the upland sites and multiple broods of salt marsh mosquitoes were triggered by the combination of rains and tides along the coast. Mosquito nuisance was severe during much of the month and aerial control was necessary at frequent intervals. The hot weather compounded the situation by accelerating the developmental period of the larvae and allowing emergence before control operations could be completed in many areas. Had EEE virus been present, the conditions for epizootic transmission would have been ideal. Data, however, indicate that EEE had not been amplified at any of the sites during the period and epizootic transmission did not take place.

THE CURRENT STATUS OF EEE

Culiseta melanura populations began the season at normal levels in New Jersey but dropped dramatically during the extremely dry weather that was experienced in June. Data from the resting box collection sites (Fig. 1) indicate that lower than average population levels continued throughout the month of July despite the heavy rains that triggered the large broods of floodwater mosquitoes. *Culiseta melanura*

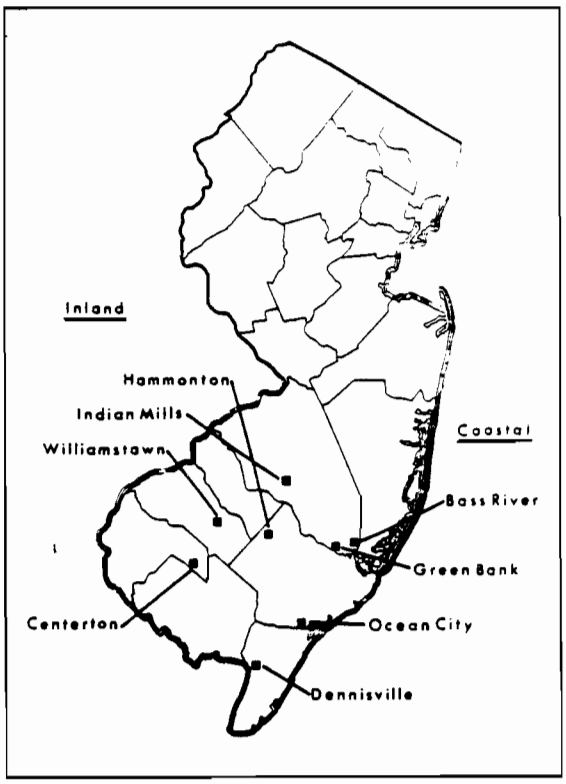

Fig. 1. Resting box collection sites to monitor *Cs. melanura* for EEE virus.

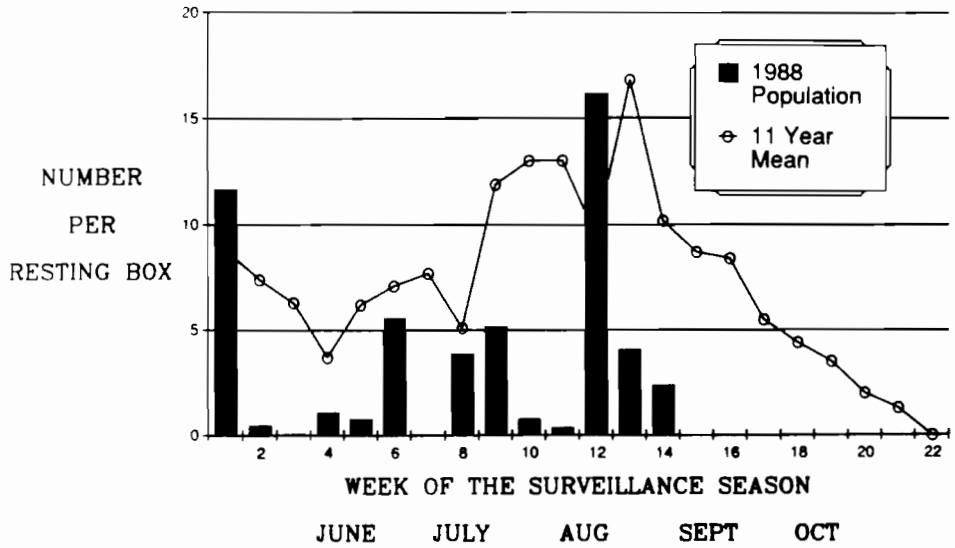

Fig. 2. Resting box populations of *Cs. melanura* at Dennisville in Cape May County in 1988.

populations appeared to recover at some of the sites during the early part of August but extremely hot weather again resulted in low populations at the sites that are being monitored in New Jersey. EEE virus was isolated from *Cs. melanura* at the Green Bank site during the early part of the month but no evidence of further amplification has been evident since that time.

Fig. 2 compares the 1988 populations of *Cs. melanura* at Dennisville, Cape May Co. with the 11-yr mean for that site. The data clearly show the drastic drop in numbers following the initial emergence in the spring and the failure of the species to attain average levels until very late in August.

A similar population trend was evident at most of the study sites where *Cs. melanura* is being monitored. The initial generation appeared to be stressed by the dry weather and subsequent generations have not been able to bring the populations up to the levels which are normal for this time of year.

Fig. 3 compares the 1988 population levels of this species with those documented a year ago at Hammonton, a study site within the severe equine epizootic that New Jersey experienced last year. The data show the decline that was apparent at all sites during July but also indicate a recovery to near normal levels late in the month. Record heat during the early part of

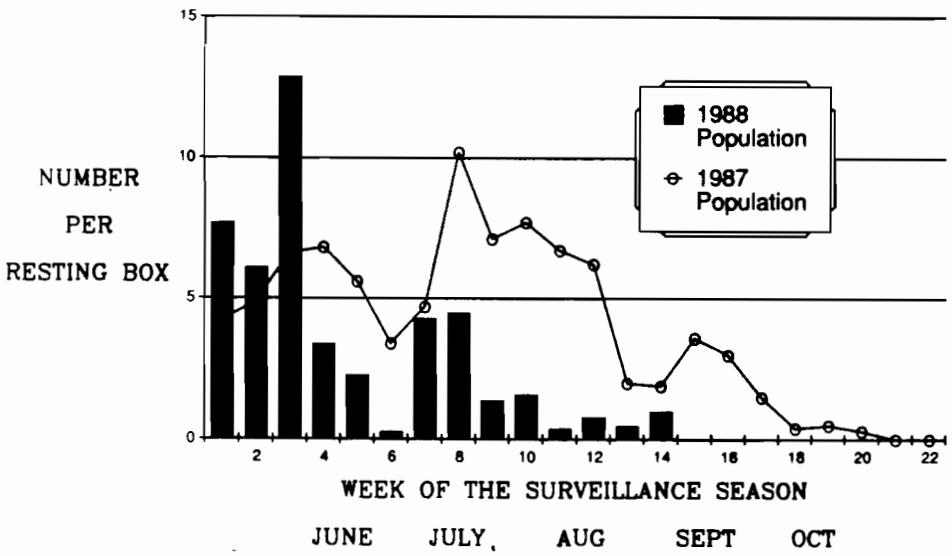

Fig. 3. Resting box populations of *Cs. melanura* at Hammonton in Atlantic County in 1988.

Table 1. Total specimens tested for EEE and HJ virus through the month of August, 1988.

MOSQUITO SPECIES	TOTAL TESTED	NO. POOLS	POSITIVES HJ	POSITIVES EEE
Cs. melanura	6305	492	3	3
Cq. perturbans	9217	274		
Ae. sollicitans	12654	214	1	
Ae. canadensis	5162	138		
Ae. cantator	3532	104		
Ae. grossbecki	2	2		
Ae. taeniorhynchus	292	31		
Ae. thibaulti	9	3		
Ae. triseriatus	72	27		
Ae. vexans	52	17		
Cx. pipiens	156	23		
Cx. restuans	184	95		
Cx. salinarius	18617	317		
Cx. territans	68	46		
An. bradleyi	8758	53		
An. punctipennis	72	52		
An. quadrimaculatus	755	181		
Ps. columbiae	6	4		
Ps. ferox	1	1		

August may have been a factor in the reduction of this species at a time when it normally approaches its seasonal peak. Regardless of reasons, the trend has been state-wide and *Cs. melanura* remain well below the levels that are normally seen when virus amplification takes place.

RESULTS OF VIRUS TESTING

During the month of July, 16,442 total specimens were processed for virus isolation attempts in 733 pools. During August, 18,632 specimens were processed in 601 pools. Table 1 lists the numbers of all species that have been tested through the month of August.

HJ virus first appeared in *Cs. melanura* at the Dennisville site on July 13. *Culiseta melanura* populations, however, declined markedly over the next weeks and no further isolations were made from that site. HJ virus was isolated from *Aedes sollicitans* at Dennisville on August 3, suggesting that amplification in the local bird population had probably taken place. The lack of sizeable numbers of *Cs. melanura* in that area apparently aborted the cycle of this little studied virus in the Dennisville area. HJ virus was also isolated from *Cs. melanura* at Green Bank and Bass River toward the very end of August.

EEE virus appeared in *Cs. melanura* at the Green Bank site on August 1. Since that time, a total of 3 isolations have been made, all from *Cs. melanura* at Green Bank. Data from Green Bank suggest that the low level *Cs. melanura* populations that are present appear to be successfully amplifying EEE in that area. To date, there is no evidence of EEE in any other portion of the state.

Table 2 lists the minimum field infection rates (MFIR) for EEE virus during August at the 7 sites that are being monitored in New Jersey. The data reflect the low numbers of *Cs. melanura* that are available for testing but also show the remarkably high MFIR at Green Bank. No evidence of epizootic transmission has accompanied this local amplification focus to date. Data from the month of September will show if late season amplification extends to other areas of the state.

Table 2. Virus isolations from *Culiseta melanura* in New Jersey during the month of August, 1988.

COASTAL SITES	TOTAL TESTED	NO. POOLS	POSITIVES HJ	EEE	EEE MFIR
Green Bank	161	13	1	3	18.63
Bass River	182	18	1	1	0.00
Ocean City	3	2	0	0	0.00
Dennisville	702	39	0	0	0.00
INLAND SITES					
Indian Mills	48	18	0	0	0.00
Hammonton	108	0	0	0	0.00
Centerton	178	16	0	0	0.00

ACKNOWLEDGEMENTS

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