



**NEW JERSEY**  
DEPARTMENT OF AGRICULTURE



## **NEW JERSEY VECTOR SURVEILLANCE**

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**ABSTRACT:** *Culiseta melanura* populations in New Jersey have been lower than average at study sites that are being monitored for eastern equine encephalitis virus (EEE). The latter portion of June produced significant rainfall but dry conditions during July kept resting box collections well below the long-term mean in most areas. To date, EEE virus has appeared at only one site and Minimum Field Infection Rates (MFIR) have been low. There has been no indication of equine involvement in any area of the state.

### **INTRODUCTION**

Mosquito populations in New Jersey have been lower than average during most of 1992 and low populations of the mosquito vectors of EEE have been the norm at the study sites that are being monitored for EEE virus. A relatively dry spring resulted in early populations of *Cs. melanura* that were somewhat below the long term mean at virtually all of the study sites. Near drought conditions during July kept *Cs. melanura* below average and the population surge that the species normally reaches in the southern part of the state during August did not take place this year.

Virus monitoring by the New Jersey Vector Surveillance Program has only detected EEE at Dennisville, a site along Delaware Bay where the virus cycles nearly every year. No equine cases have been reported to date and no other indications of virus activity are evident at the time of this writing.

### **THE CURRENT STATUS OF *Cs. melanura* POPULATIONS IN NEW JERSEY**

The resting box collection sites that are being monitored for *Cs. melanura* and EEE virus are shown in Fig. 1. They include 4 coastal sites (Waretown, Bass River, Ocean City and Dennisville) where epizootic cycling presents a potential human health risk and 4 inland sites (Turkey Swamp, Hammonton, Centerton and Waterford) where epizootic cycling normally leads only to equine involvement. The Waretown and Turkey Swamp sites were established this year, thus, no data are available to characterize normal population trends. The Waterford site was established in 1991, thus data are limited. Each of the remaining sites have been monitored from 5-15 years and data are available to show deviations from the long-term mean.

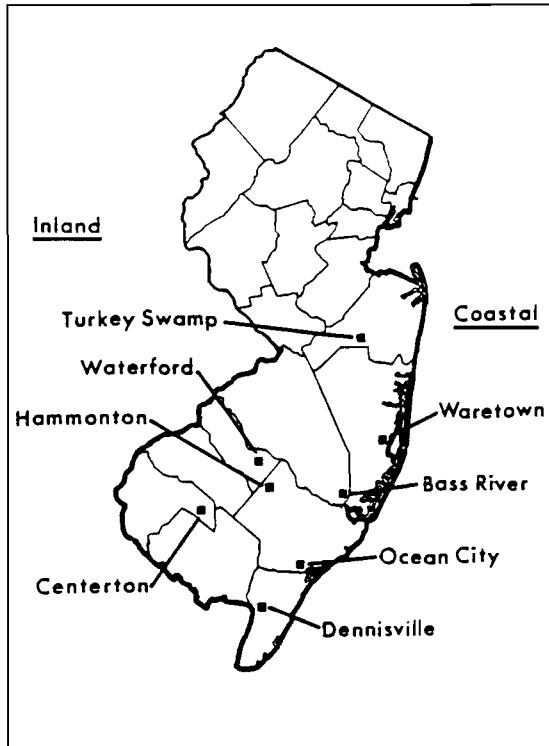


Fig. 1. Resting box sites for arbovirus surveillance in 1992.

Fig. 2 shows resting box populations of *Cs. melanura* at the Bass River site in

Burlington County in comparison to the 13 yr mean at that coastal site. Fig. 3 shows similar data over a 5 yr period for the more inland Hammonton site in Atlantic County. In both cases, *Cs. melanura* remained below the long-term average for most of the season. A similar trend has been evident throughout the state this year.

The reasons for reduced populations of *Cs. melanura* are unclear at this time. A cursory inspection of the water table indicates that there is sufficient breeding habitat in the acid swamps that sustain this species in the southern portion of New Jersey. In some areas, the water table appears to be somewhat higher than normal. Spring populations of *Cs. melanura* did not appear to be low enough to prevent the gradual increase in numbers that is seen in most years. In 1992, however, mid-summer populations remained relatively static. The month of August usually produces a significant population upsurge for *Cs. melanura* as the species builds in numbers for overwintering in the larval stage. None of the study sites exhibited this typical population increase during the month of August and there has been little evidence of EEE in any area of the state.

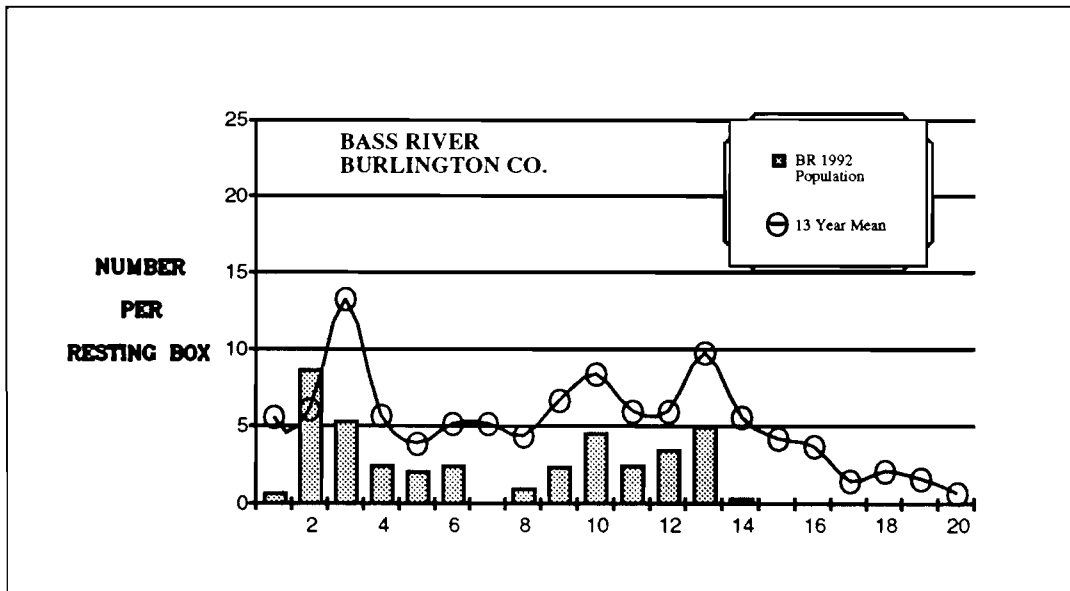


Fig. 2. *Culiseta melanura* populations at the Bass River study site in Burlington County from June through August, 1992.

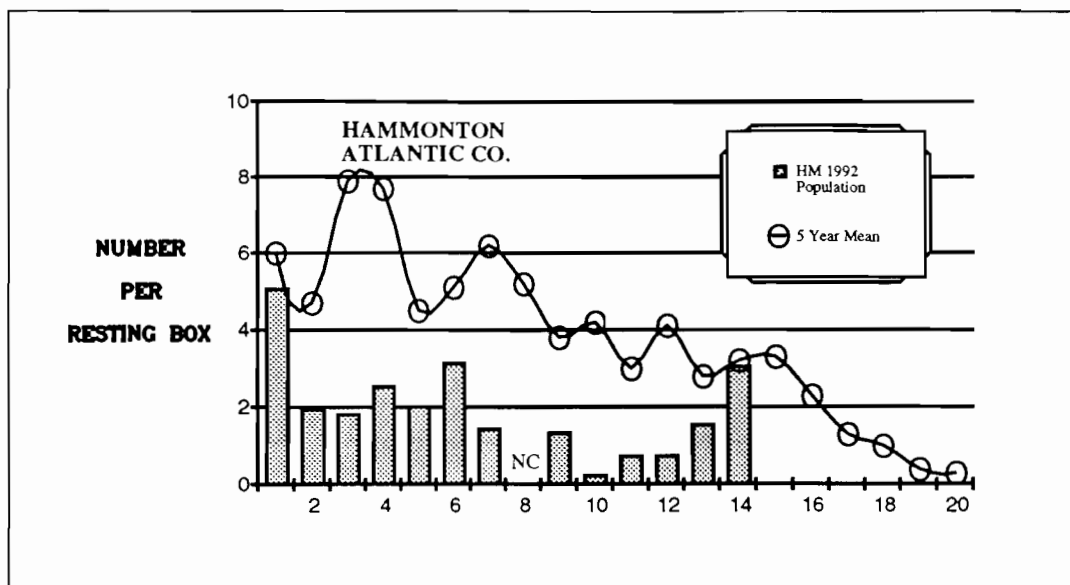


Fig. 3. *Culiseta melanura* populations at the Hammonton study site in Atlantic County from June through August, 1992.

### THE CURRENT STATUS OF EEE VIRUS IN NEW JERSEY

A total of 8788 *Cs. melanura* collected from June - August were screened for EEE virus by the N.J. State Department of Health laboratories. Table 1 shows that EEE virus has only been detected at the Dennisville site. The first isolation was made on July 31, approximately 2 weeks after a major peak in the *Cs. melanura* in that area. One additional isolation was made from the August 13

collection at Dennisville. There has been no indication of virus activity in any of the other areas to date.

Minimum Field Infection Rate (MFIR) values, based on isolations per thousand specimens tested, have been low indicating that EEE virus has not reached epizootic proportions at the Dennisville site.

Table 1. *Cs. melanura* submitted for virus assay from June - August, 1992.

LOCATION	TOTAL TESTED	NO. POOLS	POSITIVE EEE	MFIR VALUE
<b>Coastal Sites</b>				
Waretown	209	33	0	0
Bass River	1235	46	0	0
Ocean City	267	39	0	0
Dennisville	5331	138	2	0.38
<b>Inland Sites</b>				
Turkey Swamp	23	13	0	0
Waterford	713	39	0	0
Hammonton	459	35	0	0
Centerton	551	35	0	0

The MFIR value at Dennisville for July was 0.36 per 1000 tested. The MFIR for August was 0.50 . The probability of detecting EEE at these levels of transmission is fairly low. The Dennisville area is currently being studied as a focus for EEE transfer via salt marsh wading birds. Had it not been for the large numbers tested in relation to this study, the low levels of enzootic transmission may well have gone unnoticed.

## ACKNOWLEDGMENTS

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