



**NEW JERSEY**  
DEPARTMENT OF AGRICULTURE



## NEW JERSEY VECTOR SURVEILLANCE

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**ABSTRACT:** The New Jersey Vector Surveillance Program to monitor EEE virus and its mosquito vectors will continue in 1991. Budget restraints have forced the program to discontinue physiological age assessments for *Aedes sollicitans* but county cooperation has allowed the program to expand its virus surveillance in *Culiseta melanura*. The populations of *Cs. melanura* were well below average in most areas during the months of June and July and no virus activity was detected during the period. In August, *Cs. melanura* increased somewhat and EEE became evident by the middle of the month. The first equine case appeared at the very end of August and there is evidence that equine involvement will continue into September.

### INTRODUCTION

The New Jersey Vector Surveillance Program got off to a tenuous start in 1991 when fiscal constraints demanded a drastic reduction in the program's budget. Plans had been made to expand the surveillance effort into areas of the state where equine cases had been reported outside of our normal monitoring zones. The proposed budget cutback gave us only two viable options: 1) reduce the virus surveillance to no more than 2 or 3 sites or, 2) maintain broad virus surveillance and eliminate the program of monitoring physiological age in *Aedes sollicitans*. A poll of the county mosquito control agencies that benefit from the service revealed that broader monitoring of virus in *Culiseta melanura* was the best option. None wished to eliminate the physiological age information (upon which control decisions are based) but knowledge of virus activity is essential and past experience has shown that virus activity varies markedly from one area of the state to the next virtually every year.

The decision to eliminate physiological age dissections allowed the program to maintain all

of the current study sites where *Cs. melanura* populations are monitored for EEE virus and open one new study site in Camden County. In addition, the Monmouth County Mosquito Control Commission volunteered to collect and submit specimens from the Freehold area to broaden the surveillance effort and the Ocean County Mosquito Control Commission agreed to do the same from Forked River. The Atlantic County Mosquito Control Agency will continue to make collections from the Ocean City study site, thus, with county support, the New Jersey Vector Surveillance Program will be gathering virus information from 8 locations in the state in 1991.

### METHODOLOGY OF THE SURVEILLANCE EFFORT

As in the past, *Cs. melanura* will be used as the main indicator for EEE virus. Specimens will be collected weekly from resting boxes that are placed in areas of the state that have a history of human and/or equine cases.

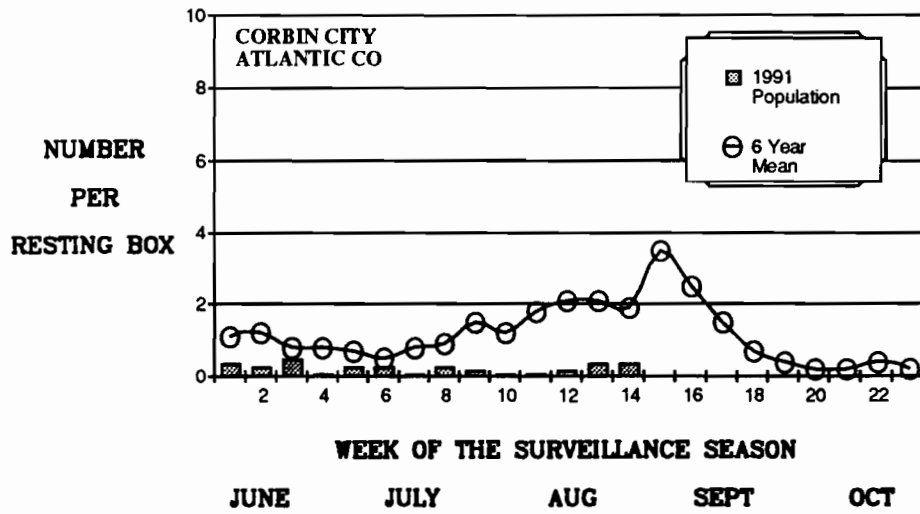


Fig. 1. Resting box populations of *Cs. melanura* at the Corbin City site in Atlantic County from June through August, 1991.

The resting box collection sites for 1991 will include: Forked River, a new coastal site in Ocean County, Bass River, a coastal site in Burlington County just North of Atlantic City, Corbin City, a coastal site in Atlantic County that monitors the critical Ocean City focus and Dennisville, a site in Cape May County along Delaware Bay. Inland sites will include: Freehold, a new site in Monmouth County where equine cases were reported in 1990, Hammon-

ton, a site in Atlantic County that monitors an established focus for equine involvement in the South-central coastal plain, Centerton, a site in Salem County where equine cases are common and Waterford, a new site in Camden County where equine involvement was widespread in 1989. Landing rate collections of *Aedes sollicitans* for physiological age assessment have been eliminated from the schedule because of budget cutbacks this year but steps are being taken to assure that this critical portion of the program will be restored in the near future.

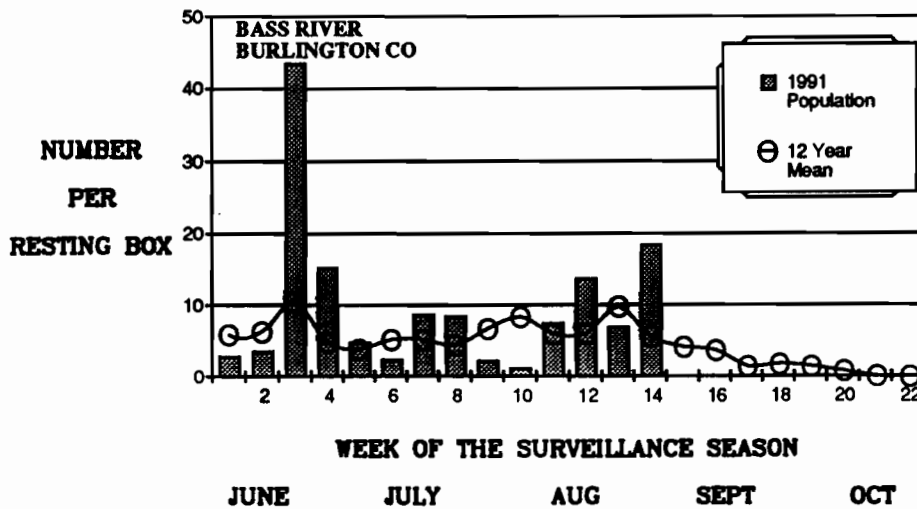


Fig. 2. Resting box populations of *Cs. melanura* at the Bass River site in Burlington County from June through August, 1991.

**Table 1.** Minimum Field Infection Rates in *Cs. melanura* during August, 1991

LOCATION	TOTAL TESTED	POSITIVE		MFIR VALUE
		HJ	EEE	
<b>Coastal Sites</b>				
Forked River	75	1	0	0.00
Bass River	706	2	1	1.42
Ocean City	25	0	0	0.00
Dennisville	915	0	1	1.09
<b>Inland Sites</b>				
Freehold	33	0	0	0.00
Hammonton	310	2	1	3.23
Centerton	265	0	0	0.00
Waterford	265	0	1	3.77

An equine case was reported approximately 12 mi. north of the Hammonton site and 9 mi northwest of the Waterford site with an onset date of Aug 22.

Additional equine cases are being investigated from Burlington and Salem counties with onset dates in early September.

Each of the resting box study sites will be sampled once weekly until late October. Mosquitoes will be frozen on dry ice at the time of collection and transported to the Mosquito Research & Control laboratories for speciation and pooling. Sorting will be conducted on chill tables to maintain living virus. Mosquito pools will be grouped by Species, Site, Date, Physiological Status and Trapping Method. *Cs. melanura* pools will be sent to the New Jersey Department of Health laboratories for trituration and virus isolation attempts.

Results will be entered into a computer data base for collation, MFIR calculations and graphics. Information regarding EEE in horses will be compiled by the New Jersey Department of Agriculture. The results of equine testing will be coordinated through the New Jersey Department of Health and included in this report.

#### THE CURRENT STATUS OF EEE

*Culiseta melanura* populations were well below average at most of the study sites during the month of June. New Jersey then experienced drought conditions during July which kept collections well below the long term mean for each site. Figure 1 compares the 1991 populations of *Cs. melanura* at Corbin City with the 6 yr. mean for that site. A similar trend was evident at most of the areas that were being monitored in 1991.

The Bass River site in Burlington Co. and the Waterford site in Camden Co. were exceptions to the overall trend. Figure 2 shows that *Cs. melanura* at Bass River demonstrated an abrupt population peak in late June and remained at or near the long term mean throughout most of July. A similar trend was seen at Waterford, however, no long term data are available to make comparisons for this newly established site. *Culiseta melanura* entered August (Week 10) with extremely low populations in all areas of the state but numbers climbed steadily at most sites as the month progressed. HJ virus and EEE appeared in *Cs. melanura* during the population increase.

The low populations of *Cs. melanura* during June and July made it difficult to assess the effectiveness of the newly established study sites in Monmouth and Ocean Counties. In both cases, the weekly collections were below 1 mosquito per box, thus, population data and specimens for virus assay have been minimal from these areas.

During the month of June, 5390 *Cs. melanura* were tested for virus from the 8 study sites with no indication of EEE activity. In July, 3539 *Cs. melanura* were tested. HJ virus appeared at Bass River and Dennisville by mid-month but there was no evidence of EEE in July. The first isolation of EEE virus came from *Cs. melanura* collected at Dennisville in mid-

August. Since that time EEE virus has also been detected at Hammonton, Bass River and Waterford. The isolations were quickly followed by equine cases of EEE on the inner coastal plain. Table 1 lists the Minimum Field Infection Rates (MFIR) for *Cs. melanura* during the month of August together with the information available on the equine cases.

#### ACKNOWLEDGEMENTS<sup>1</sup>

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