

NEW JERSEY AGRICULTURAL EXPERIMENT STATION

MOSQUITO RESEARCH AND CONTROL

Vector Surveillance Report*

Vol. 3 No. 2

Period. August 1-14, 1978

Introduction

Important information on the status of eastern encephalitis has been documented at both the state and national level within the past 2 weeks. The Center for Disease Control reported that EE virus has been active in two southern states, thus, the Caribbean outbreak detected earlier this year has been accompanied by epizootic cycling in the U.S. as many experts predicted.

Virus has also been recovered from a number of the mosquito pools collected at the resting box sites in New Jersey, but confirmations to date have only revealed WE virus. WE is not considered a human health hazard on the east coast, but the abrupt increase in virus activity underscores the potential of this year's Cs. melanura populations in terms of initiating an avian epizootic.

Recent rains have stimulated mosquito breeding throughout New Jersey and both Cs. melanura and Ae. sollicitans populations can be expected to increase within the next two weeks. Mosquito control commissions are presently exerting every effort to minimize vector populations, particularly in areas where EE has appeared in the past.

The Present Status of EE in the Eastern United States

The Center for Disease Control recently reported that EE activity has been documented in the southern U.S. The information through July 24, 1978 can be found in the CDC publication "Encephalitis Surveillance" Vol. 3, No. 4. CDC was contacted by telephone and provided additional information which is summarized here and will be included in more detail in their next reports.

EE activity was first detected in the state of Mississippi during the month of May. No actual virus was recovered through the July 24 reporting period, but HI antibodies in juvenile birds showed that low level transmission was occurring in the avian cycle at several of the coastal collection sites.

EE activity was found to be more extensive in Florida with both equine and human involvement. The horse cases began appearing in June and to date approximately 38 equine cases have been confirmed. Seven suspect human cases have also been reported including 2 with serological evidence of EE virus. Sentinel chicken flocks and mosquito pools from various parts of the state have also tested positive, indicating that epizootic activity is fairly widespread.

The occurrence of EE virus in Florida and Mississippi is not extraordinary but epizootic cycling in the south shows that EE should be closely monitored along the

*Supported by the New Jersey State Mosquito Control Commission.

entire eastern seaboard in 1978. The conditions which favor amplification of virus from one geographic area to the next have never been defined. The monitoring program encouraged by CDC is designed to ultimately provide the answers.

The Current Status of EE and its Vectors in New Jersey

Cs. melanura populations remain exceptionally high for this time of year and the wet weather that New Jersey has been experiencing in August will keep the cedar swamp habitat flooded in most areas of the state. Collection records from the New Gretna site in the graphs at the end of this report show a static population which has leveled off at 15-16 mosquitoes per resting box, approximately fifteen times the number recorded during August in 1976-1977. Individual county records suggest that Cs. melanura populations are also above normal along the remainder of the Atlantic coast. Populations are particularly high in those areas where cedar swamps are adjacent to salt marsh habitat.

The Cs. melanura at the Dennisville site on the Delaware Bay are also exceptionally high and the peak collections of August 7 (63.8 Cs. melanura/box) prompted a third attempt to institute larval control. Data from the August 14 collection show a moderate decline. Continued larval control as well as an adulticide treatment is anticipated within the next weeks.

Much of the concern and special control effort resulted from the detection of WE virus in the Cs. melanura populations within the past week. The New Jersey State Department of Health reported extensive epizootic activity in the Cs. melanura at both of the study sites which underscores how quickly this mosquito can initiate an epizootic in birds. The tables at the end of this report show that 2 pools were positive for WE at New Gretna from the July 31 collection and 3 pools were positive from the Dennisville site a week later. Three additional pools from New Gretna were positive on August 7 but confirmation and typing have not been completed. The State Department of Health reports that a high percentage of their own independent collections have produced similar results. No EE virus has been detected to date.

The vector potential index in Ae. sollicitans has dropped at most of the sites as a result of fresh emergences in the past week. At the present time, landing rates are high at most of the sites but most of the biting is the result of newly emerged mosquitoes which are seeking their first bloodmeal. As this population ages, vector potential will rise again with the peak expected in early September. Data from previous years show that the fall peaks are generally much higher than those from summer broods. Adult control directed toward the parous portion of the Ae. sollicitans collections should reduce vector potential in most areas.

The Ae. sollicitans in Cape May County show a slightly different trend which appears to be the result of intensive larval control shortly after flooding. Data indicate that the control effort was extremely successful. Landing rates showed little increase after the emergence and the parous rate of the biting population did not change markedly. The mosquitoes which remain appear to be the remnants of the previous brood. Migrations from surrounding areas, however, could result in higher landing rates over the next week or two.

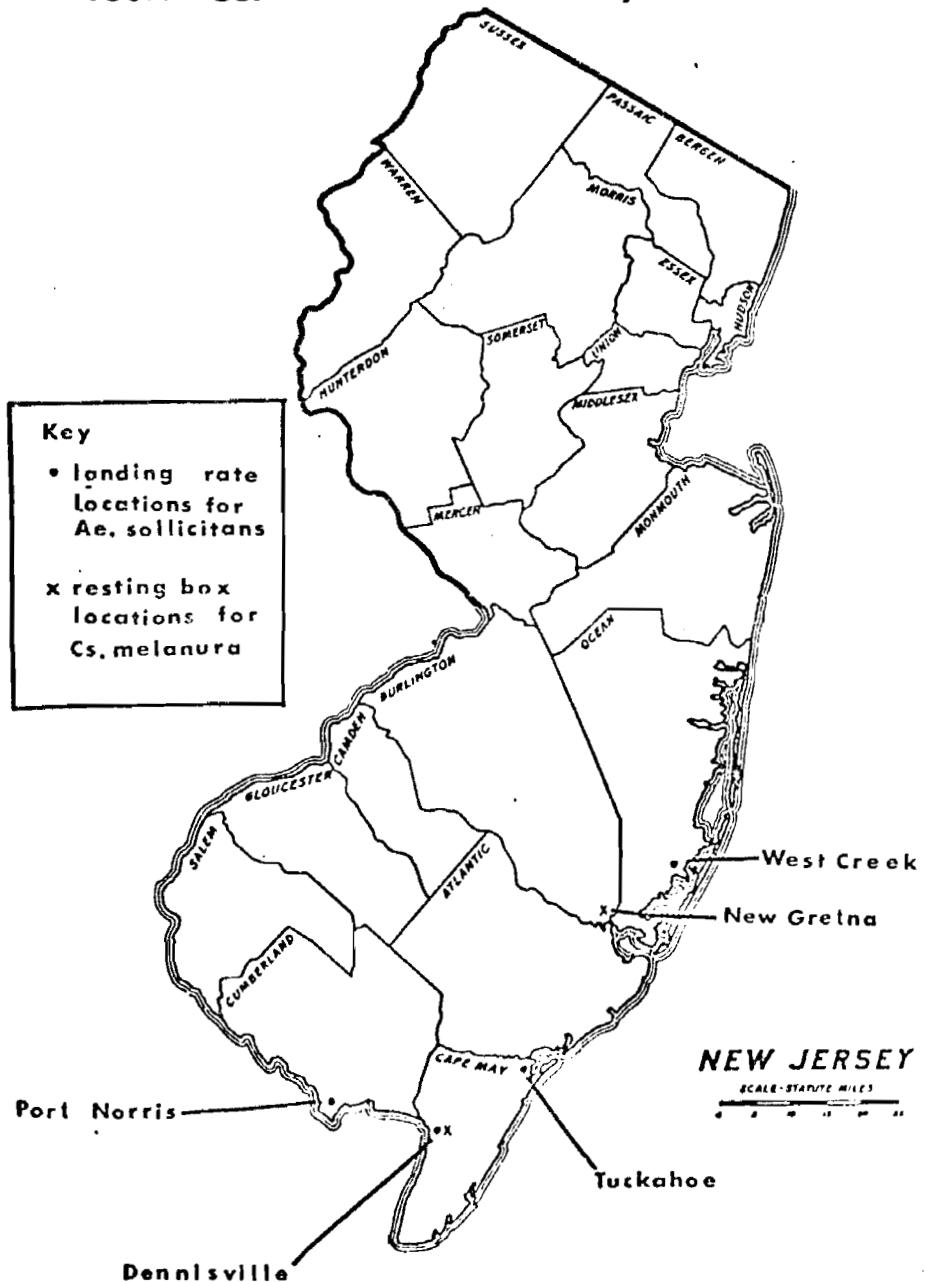
Summary

Epizootic EE activity in the southern U.S. indicates that EE is cycling at detectable levels this year. Cs. melanura populations in New Jersey remain high and appear fully capable of initiating an avian epizootic if the virus were present. Arbovirus screening has revealed a fairly high degree of WE activity in the avian cycle but no EE virus has been detected to date. A sizeable brood of Ae. sollicitans has emerged from the salt marshes in most coastal areas which will peak in vector potential early in September. Rains and tides have flooded new areas of salt marsh and additional Ae. sollicitans emergence is expected.

List of Personnel:

Project Leader:	Wayne J. Crans	
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Mosquito Program Acting Director:	Harry D. Brown	
State Airspray Program Director:	Donald J. Sutherland	
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Coperating County Mosquito Control Superintendents:	Frederick Lesser, Ocean County Brian Gooley, Burlington County Judy Hansen, Cape May County David Risley, Atlantic County Patrick Slavin, Cumberland County William Fisher, Salem County	
State Mosquito Control Coordinator:	Kenneth W. Bruder	

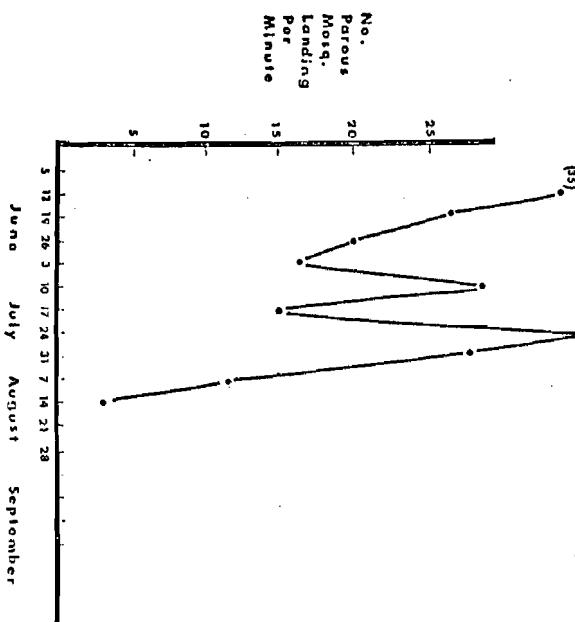
Vector Surveillance Study Sites



Aedes sollicitans

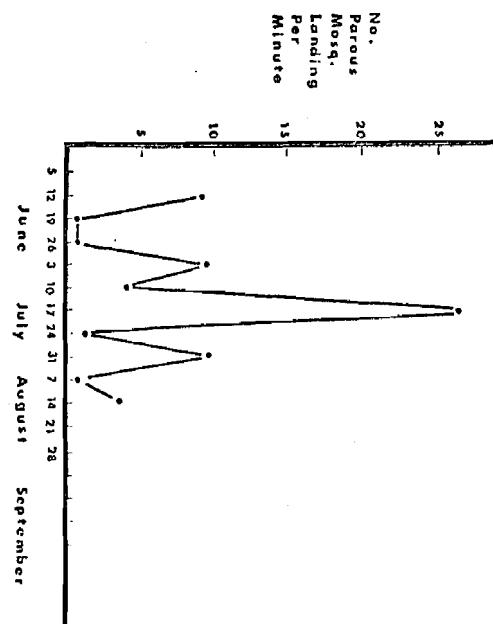
SITE West Creek
COUNTY Ocean

CUMULATIVE VECTOR POTENTIAL RECORD



SITE Tuckahoe
COUNTY Cape May

CUMULATIVE VECTOR POTENTIAL RECORD



REMARKS:

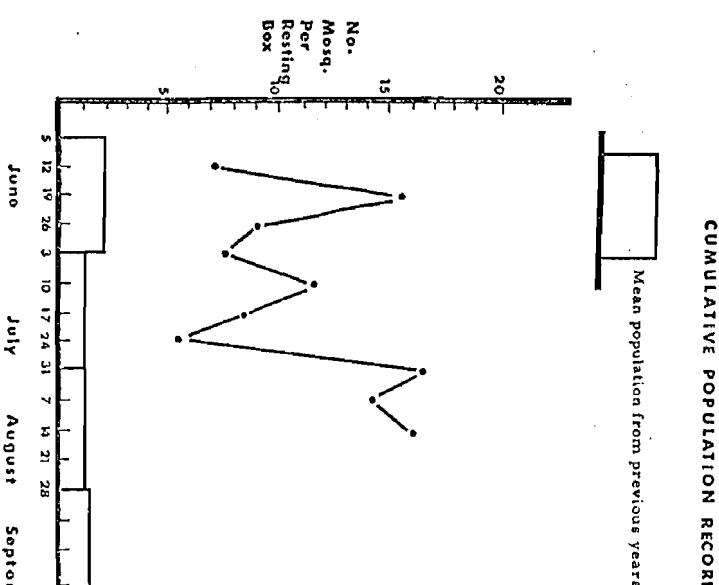
Vector potential has dropped considerably at this site since the high peak on July 24, but numerous mosquitoes are present as a result of a recent emergence. Landing rates of 504 per minute were recorded 8/14 with a parous rate of 5%. Dots indicate that emergence was still occurring at the time of the collections.

REMARKS:

Vector potential remains fairly low at this site and mosquito populations have not increased markedly even though a fresh brood emerged in most of the area. Landing rates of 8.3 per minute were recorded 8/14 with a parous rate of 35%.

Culiseta melanura

SITE New Grotto
COUNTY Burlington



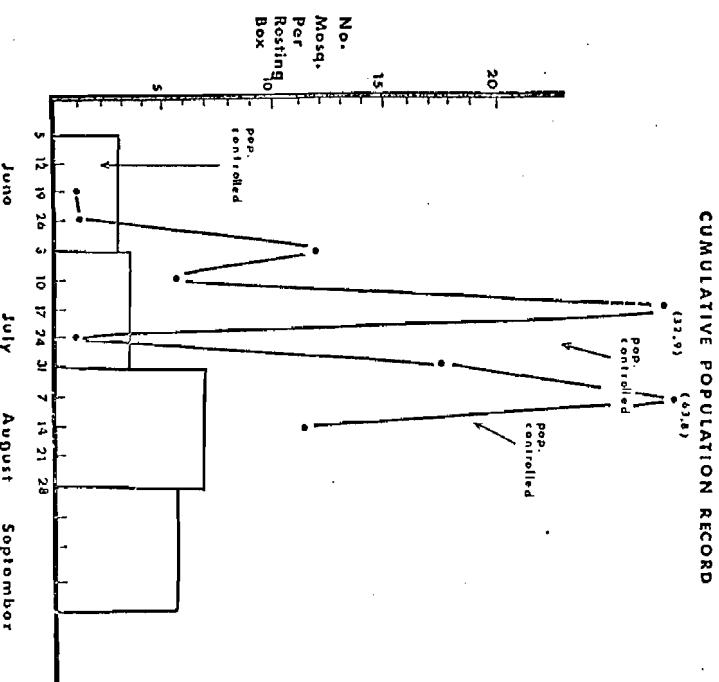
REMARKS:

This population remains well above average for this time of year. Partly dissections (31%) suggest that emergence is continuous.

Rains have kept most of the breeding habitat flooded. WE virus was isolated from collections made 7/31 and 3 pools of unconfirmed virus were isolated from the 8/7 collection. Parous rates of 20% suggest

Culiseta melanura

SITE Dennisville
COUNTY Cape May



REMARKS:

This population peaked dramatically on August 7, which prompted larval control in nearby cedar swamps. The numbers of adults dropped to near average levels but further larval as well as adult control is anticipated. Three pools of WE virus were detected in the 8/7 collection. Parous rates of 20% suggest that numerous mosquitoes are still emerging.

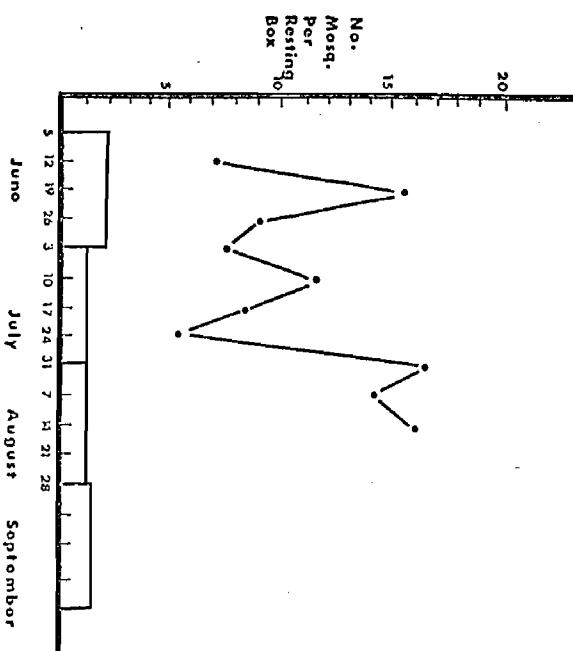
Culiseta melanura

Culiseta melanura

SITE New Gretna
COUNTY Burlington

SITE Dennisville
COUNTY Cape May

CUMULATIVE POPULATION RECORD



REMARKS:

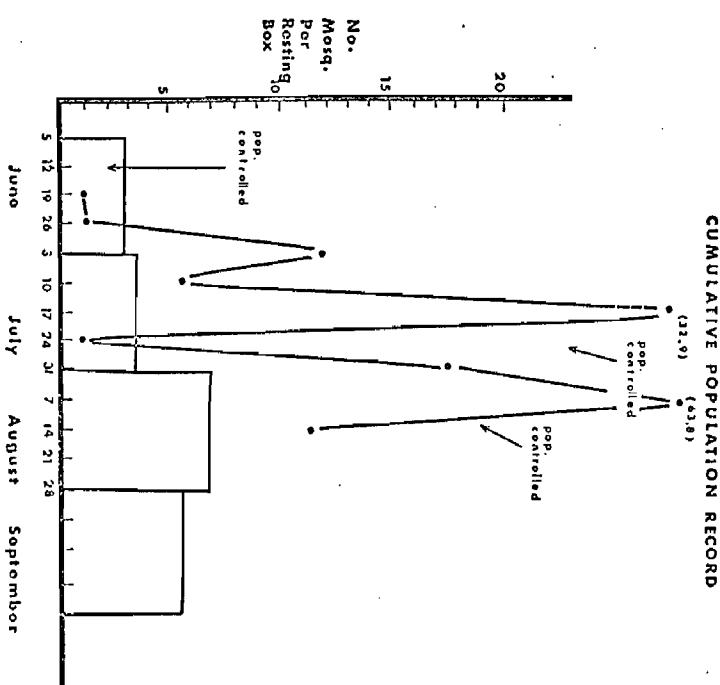
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REMARKS:

This population peaked dramatically on August 7, which prompted larval control in near Ryb cedar swamps. The numbers of adults dropped to near average levels but surpise larval as well as adult control is anticipated. Three pools of WEE virus were detected in the 8/7 collection. Parous rates of 20% suggest that numerous mosquitoes are still emerging.

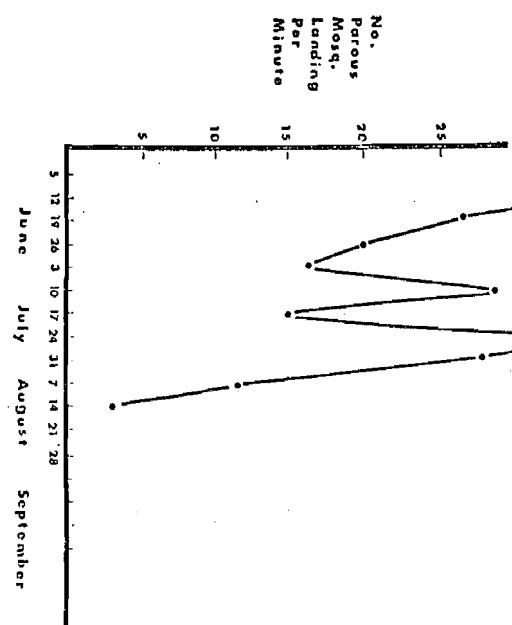


Aedes sollicitans

SITE West Creek
COUNTY Ocean

CUMULATIVE VECTOR POTENTIAL RECORD

(a)

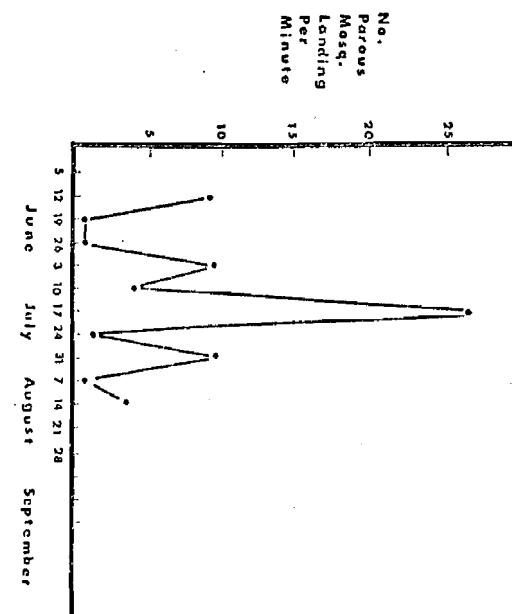


Aedes sollicitans

SITE Tuckahoe
COUNTY Cape May

CUMULATIVE VECTOR POTENTIAL RECORD

(b)



REMARKS:

Vector potential has dropped considerably at this site since the high peak on July 24, but numerous mosquitoes are present as a result of a recent emergence. Landing rates of 50% per minute were recorded 8/14 with a parous rate of only 5%. Data indicate that emergence was still occurring at the time of the collections.

REMARKS:

Vector potential remains fairly low at this site and mosquito populations have not increased markedly even though a fresh brood emerged in most of the area. Landing rates of 8.3 per minute were recorded 8/14 with a parous rate of 35%.