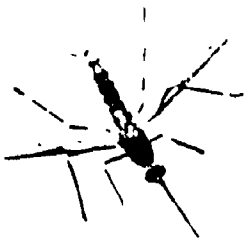

New Jersey Vector Surveillance

New Jersey Agricultural Experiment Station

Mosquito Research and Control

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Introduction

Data gathered by the Vector Surveillance Program indicate that both Highlands J virus (HJ)* and Eastern encephalitis virus (EE) have been active in New Jersey at the enzootic level since mid June of this year. Antibody to both viruses have been detected in juvenile birds at each of the sites where birds are being bled. HJ virus has been isolated from Culiseta melanura at the site along the Delaware Bay. At the time of this writing, no EE has been recovered from Cs. melanura, but active foci in Florida and Georgia indicate that EE is present on the eastern seaboard again this year.

Results from the Bird Bleeding Program

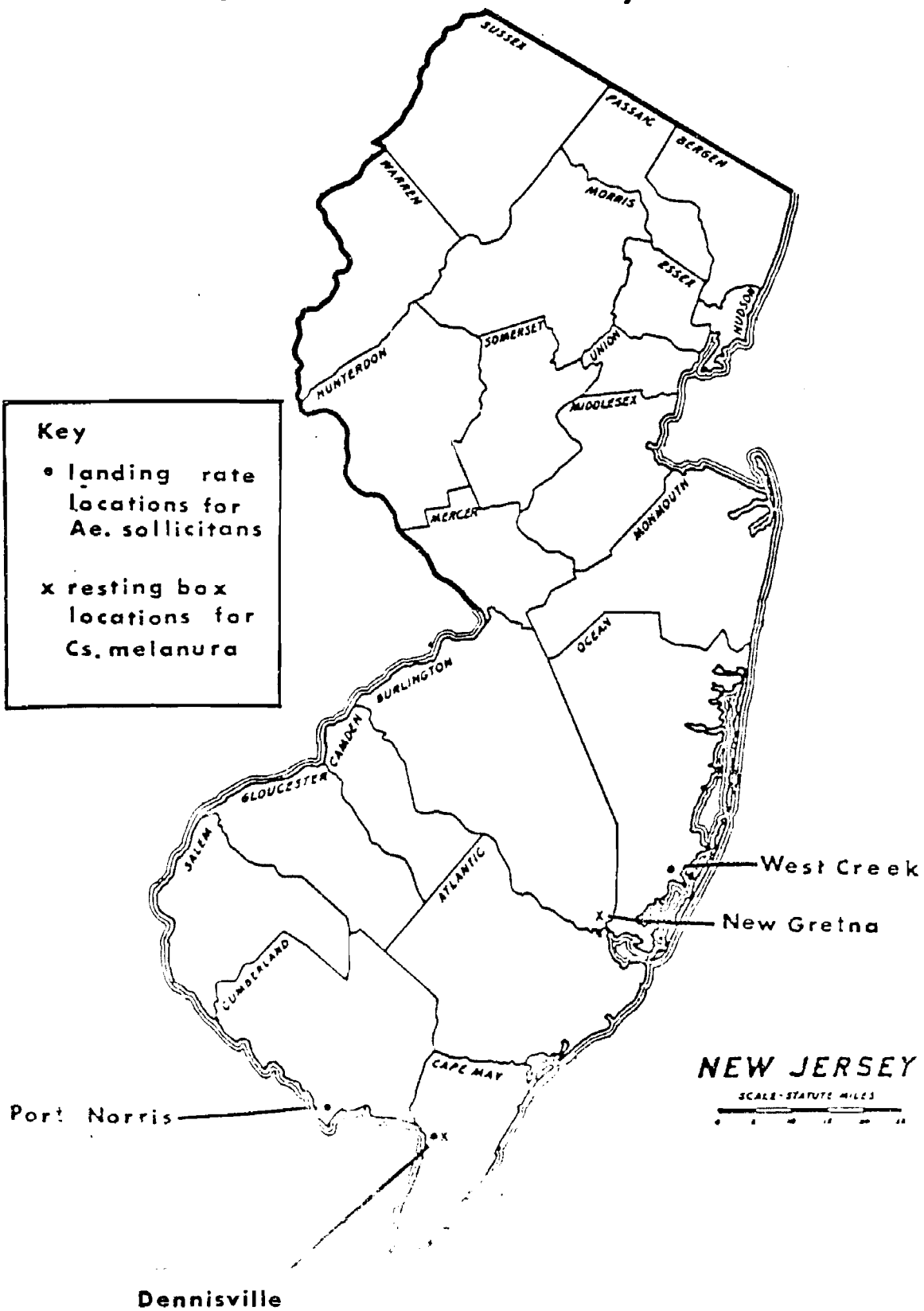
Wild birds have been captured from the sites where Cs. melanura populations are monitored since mid May of this year. The specimens are aged, sexed and bled from the jugular vein before being released. Blood samples are sent to the New Jersey State Department of Health Laboratories where they are screened for virus and neutralization antibody. The presence of antibody in adult birds indicates only that the bird was exposed to virus sometime in the past. Antibody in birds that were hatched this year is indicative of current virus activity.

To date, approximately 100 birds have been screened from each of the two sites. Antibody to both HJ and EE was common in the adults since the beginning of the investigation. The results were not surprising since both viruses reached epizootic levels in 1978 and 1979. By mid June, however, the first of several fledglings showed high antibody levels to HJ virus and since that time, antibody to EE has been detected in juvenile birds as well. There has also been a significant rise in the average EE titer of the adult birds in the area which may be an indication of recent infection. HJ virus was recently isolated from Cs. melanura at both of the study sites but no EE has been recovered to date.

The testing of bird bloods was added to the program this year to follow the progress of virus in the event that Cs. melanura populations dropped below the level where monitoring was practical. In 1979, cool weather in late August interfered with the resting box collections and too few specimens were captured to give an accurate indication of the epizootic. Data from this year suggest that monitoring the avian populations might have an added advantage. Information from the bird program revealed that virus was active in avians nearly one month before the virus was isolated from Cs. melanura.

*Highlands J Virus (HJ) is now considered to be the acceptable term for the virus that was formerly reported as Western Encephalitis (WE) in this area. WE is still a health hazard in western states. HJ is considered nonpathogenic but can be used as an indicator of the ability of Cs. melanura populations to amplify virus agents in wild birds.

Vector Surveillance Study Sites



The Current Status of Cs. melanura Populations

The two Cs. melanura populations that are being monitored in this investigation are showing opposite population trends at the present time. At New Gretna (east coast), the numbers are presently in a rapid decline; at Dennisville (Delaware Bay coast), the numbers are remaining high.

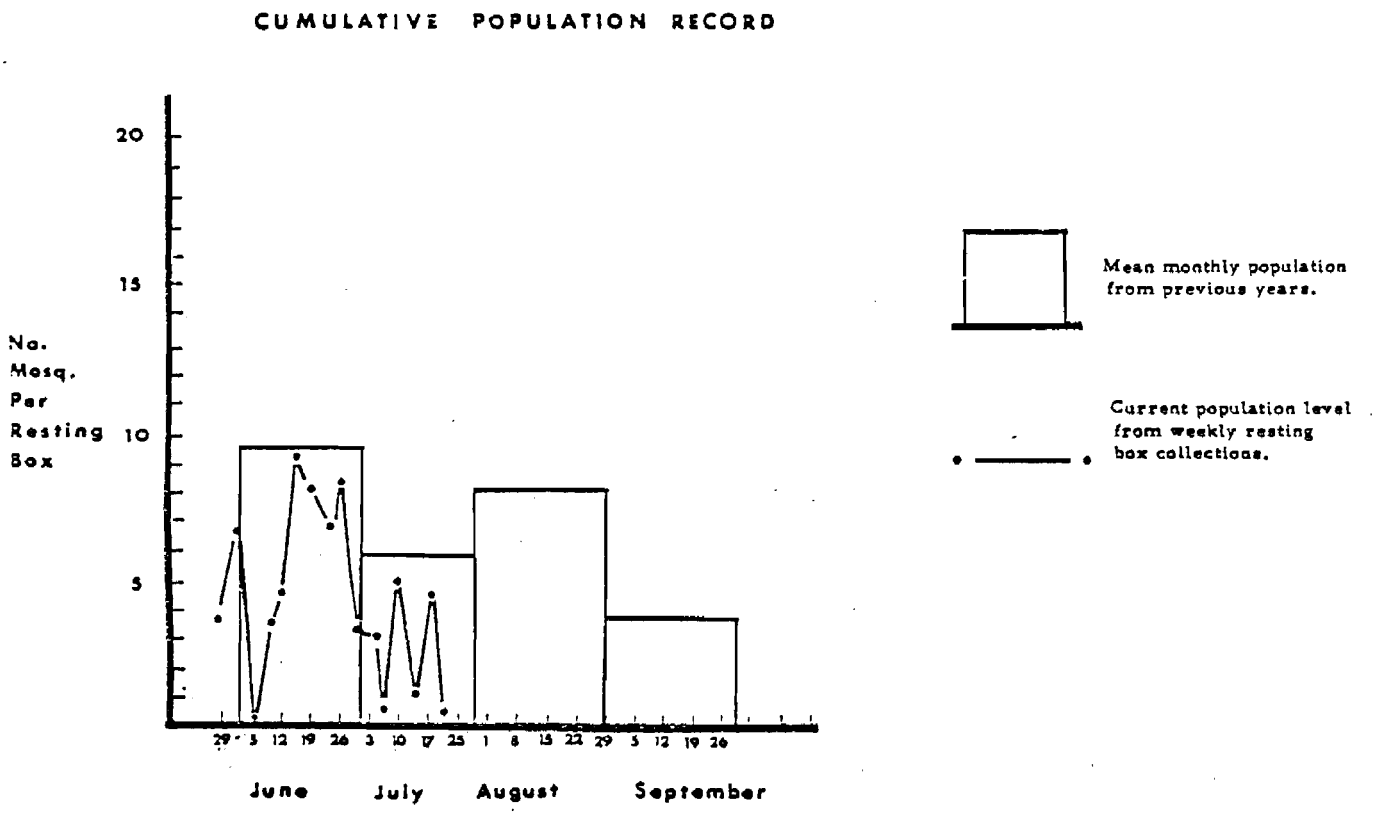


Fig. 1. Culiseta melanura populations at the New Gretna (east coast) study site as measured by resting box collections.

Figure 1 shows the results of twice-weekly resting box collections at New Gretna since early June. When the investigation was initiated, the Cs. melanura numbers were above average and fully capable of amplifying virus in the local birds. Since that time, however, the numbers have dropped significantly and too few specimens are currently being captured to indicate whether or not the virus is being maintained.

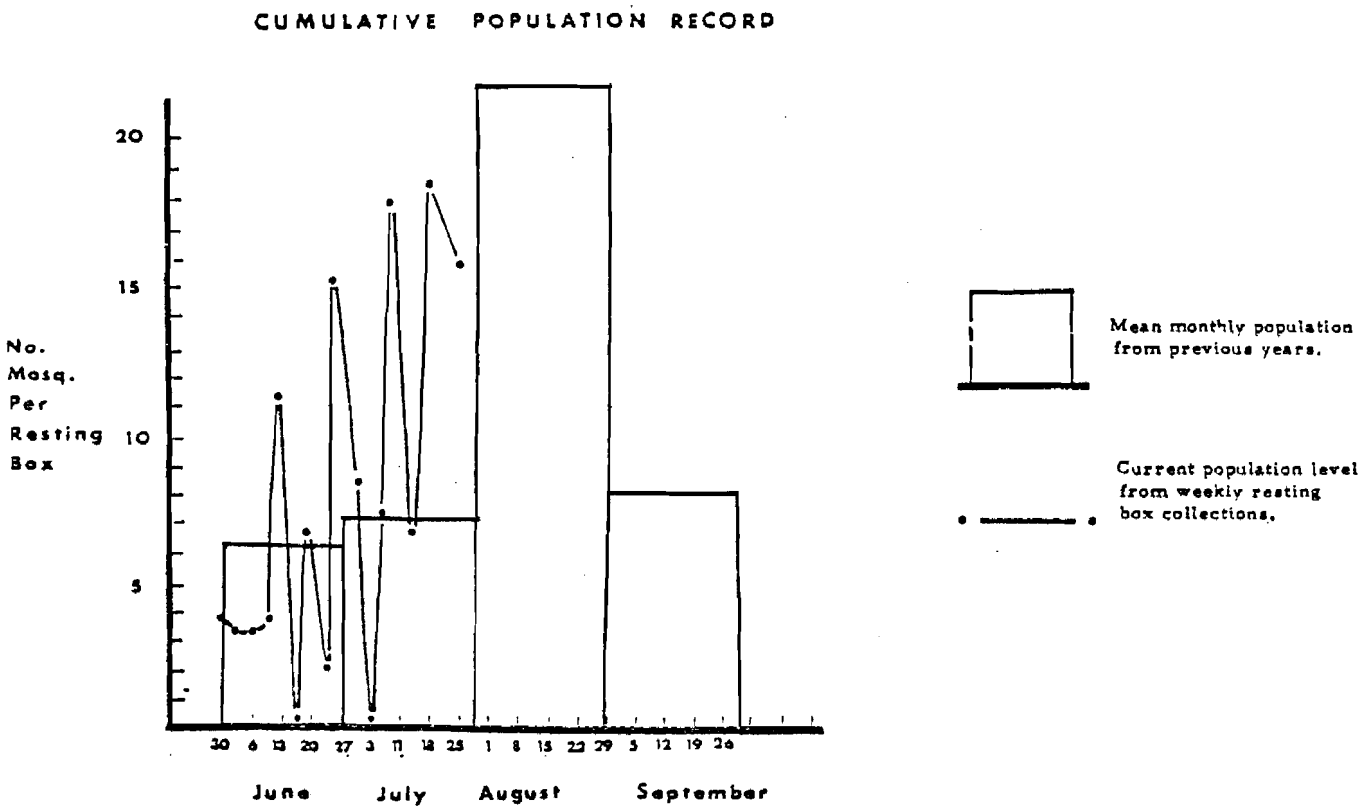


Fig. 2. Culiseta melanura populations at the Dennisville (Delaware Bay coast) study site as measured by resting box collections.

The results of twice-weekly collections at Dennisville are presented in Figure 2 and show that the numbers have been increasing in recent weeks, consistent with the trend over the past years. The area has received considerable rain and HJ virus was first isolated at this site on July 17. Data would seem to indicate that the current populations would be capable of amplifying virus and creating a local epizootic. Large populations of Coquillettidia perturbans, Aedes canadensis and Aedes cantator have been present in the area since early spring, and trapping indicates that Culex salinarius has been increasing in recent weeks.

The Current Status of Ae. sollicitans Populations

Ae. sollicitans populations have been low most of the season due to the dry weather, incomplete floodings of the marsh and effective larval control by the county mosquito commissions when tidal floodings resulted in producing larvae. The graphs on the following pages show that the vector potential indices have been minimal in most cases or that the vector potential peaks have been of short duration. To date, the hay meadows in Cumberland County have been the greatest producers and have received the majority of the control effort.* Recent floodings, however,

*The salt hay meadows represent an agricultural crop that is flooded artificially to produce salt hay. The State Airspray Program provides larval control when necessary and adulticiding whenever landing rate counts in adjacent communities exceed a predetermined level.

have resulted in what appears to be a major brood that should emerge as adults during the first week of August.

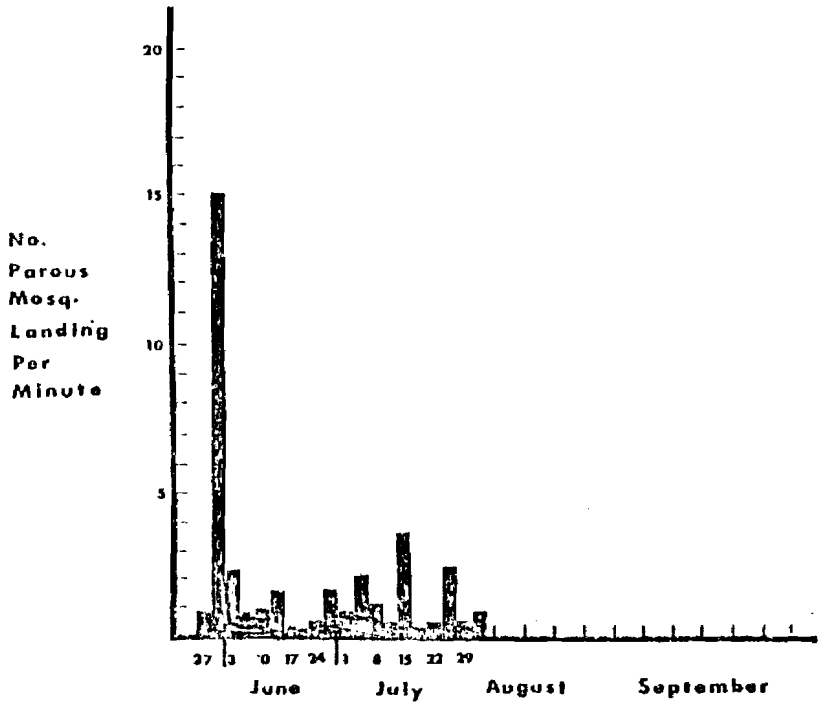
Ae. sollicitans populations in the early part of the season are primarily of nuisance importance and are controlled to keep the numbers below the threshold where irritation is minimal. Once EE virus is detected, however, the physiological age of the biting population is closely watched and control is directed toward reducing the older populations and keeping the vector potential index as low as possible. At the present time, EE virus is known to be present in the State, but is not epizootic. As the season progresses and if monitoring documents further virus activity, greater attention will be placed on vector control to reduce vector potential in Ae. sollicitans in addition to the normal level of nuisance control that is practiced throughout the season. Ae. sollicitans will also be collected in large numbers from this point on and screened for virus by the New Jersey State Department of Health.

Aedes sollicitans

1980

SITE WEST CREEK
COUNTY OCEAN

CUMULATIVE VECTOR POTENTIAL RECORD

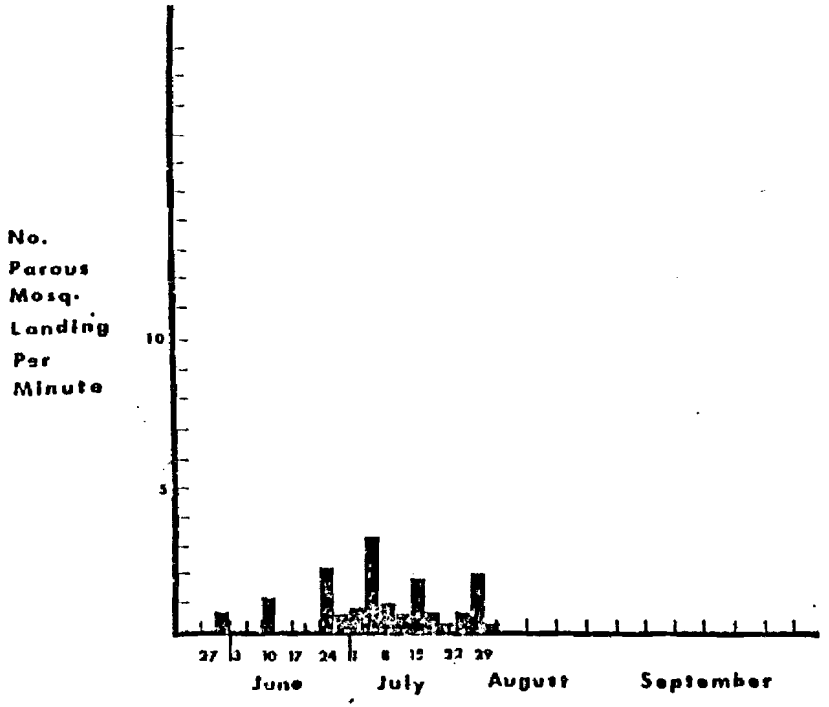


Aedes sollicitans

1980

SITE DENNISVILLE
COUNTY CAPE MAY

CUMULATIVE VECTOR POTENTIAL RECORD

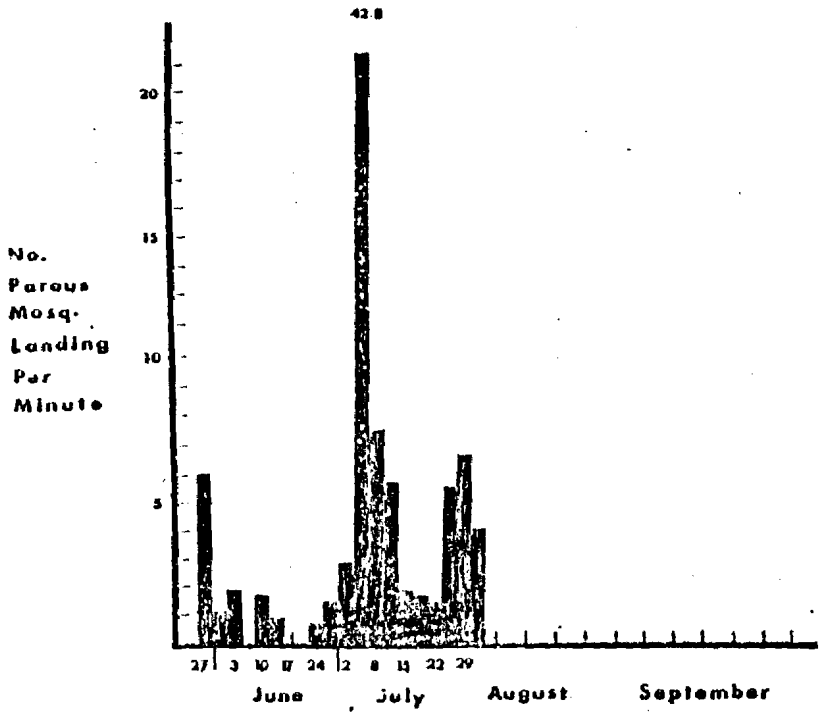


Aedes sollicitans

1980

SITE PORT NORRIS
COUNTY CUMBERLAND

CUMULATIVE VECTOR POTENTIAL RECORD



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* * * * * * * * * *

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