

New Jersey Vector Surveillance

NEW JERSEY AGRICULTURAL EXPERIMENT STATION
MOSQUITO RESEARCH AND CONTROL

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Period: 1984 Season Summation

INTRODUCTION

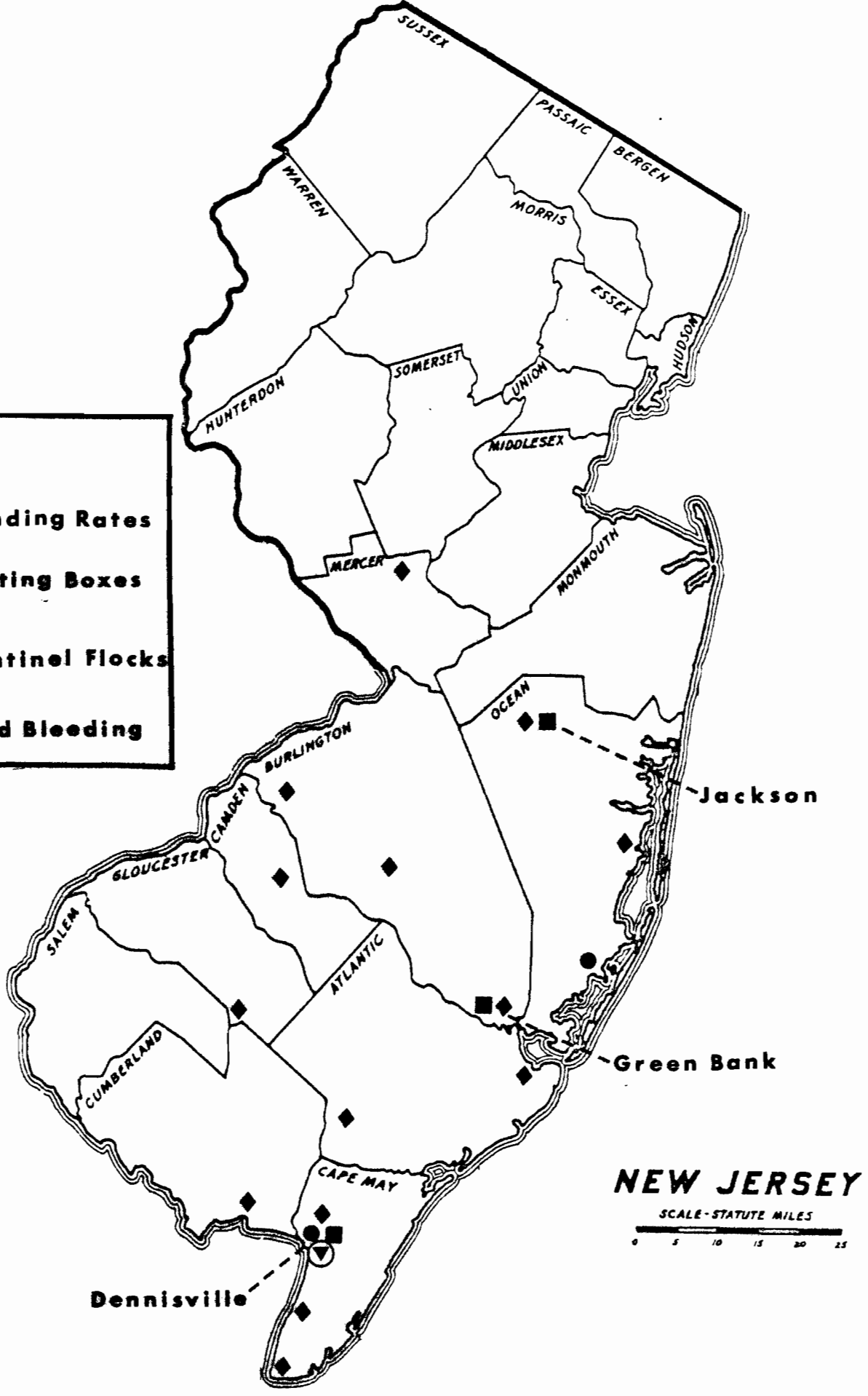
Eastern equine encephalitis virus (EEE) was extremely active in New Jersey during 1984 with pheasant, equine and human involvement during the course of the season. Some form of virus activity was documented in 9 of New Jersey's 21 counties with distinct inland foci as well as coastal involvement. EEE first appeared on July 28 when the first equine case was reported. The last equine case occurred Nov 2, well after virus monitoring had been ended. During the period, 17 equine cases of EEE were confirmed, 5 were listed as presumptive and 4 were reported as suspect. Human involvement included a confirmed case in a New Jersey resident and a case in a visitor that became apparent shortly after a visit to the New Jersey shore. EEE virus was isolated from more than 100 pools of Cs. melanura at nearly 20 separate sites in the State. No indication of the apparent vectors to either horses or humans were obtained from the field specimens collected at the numerous areas that were being monitored during the season.

POPULATION DYNAMICS OF CS. MELANURA IN 1984

New Jersey experienced heavy rains during the month of May with extensive flooding in many parts of the State. Although Spring Aedes populations were well above normal during the early season, Cs. melanura were only slightly above average at the sites where the species was being monitored. Cs. melanura exhibited a mid-June peak in most areas and a very marked peak during the last days of July. The July peak corresponded with the first EEE isolations of the season and the first of many equine fatalities around the State. Special surveillance revealed that Cs. melanura (together with EEE virus) was emanating from 2 very distinct habitats throughout the State. In coastal areas, Atlantic white cedar was producing large populations of the species in the vicinity of coastal salt marshes, the classic situation for EEE virus in New Jersey. At inland foci, however, large populations of Cs. melanura were found breeding in red maple habitats that had remained flooded as a result of the Spring rains. Surveillance at the site of each equine fatality that was investigated revealed that Cs. melanura was present in the immediate vicinity. Virus isolations showed EEE was present in most of the populations and that virus persisted late into the Fall. Although virus was isolated from a single pool of Cx. restuans at one of the farms, no one vector species, other than Cs. melanura could be associated with

KEY

- Landing Rates
- Resting Boxes
- ◆ Sentinel Flocks
- ▼ Bird Bleeding



the overall pattern. Coquillettidia perturbans, the primary suspect at inland sites, was all but absent in 1984 and the vector to horses could not be ascertained from the population data that were collected or the results of virus isolation attempts. In those few cases where equine fatalities occurred in coastal areas, Ae. sollicitans was present in large numbers but no virus was obtained from any of the specimens that were collected.

EQUINE CASES IN NEW JERSEY DURING 1984

Table 1 lists the equine cases attributed to EEE virus during 1984. Data show that the epizootic period extended from July 28 to November 2 with cases in 9 separate counties. Of the 27 animals involved, 17 were confirmed (isolation of EEE virus from brain tissue), 5 were presumptive (evidence from blood or other organs) and 4 were suspect (based only on symptomology). The single case in Somerset County was a probable negative even though EEE was isolated from a pheasant flock in that area several weeks prior to the equine death. Distinct foci were evident in the Williamstown area of Gloucester County, the Woodstown-Alloway area of Salem County, the Egg Harbor-Mays Landing area of Atlantic County and the Medford-Tabernacle area of Burlington County. Many of the cases were associated with red maple swamp habitat, particularly those in the interior of the State. The only equine case associated with a cedar swamp-salt marsh habitat occurred at Dividing Creek, an area where a confirmed human case had been documented one month earlier.

HUMAN CASES OF EEE IN 1984

Two human cases of EEE were associated with the equine epizootic of 1984, but both occurred in coastal rather than inland areas of the State. The first involved a 6 year-old girl from Massachusetts who vacationed at Ocean City, N.J. during the early part of August. Her visit corresponded with the initial equine cases in the State and the first isolations of EEE virus from Cs. melanura. Symptoms became apparent shortly after she returned home, thus there is no way of determining the exact area of exposure. Special surveillance to investigate the case detected EEE virus in Cs. melanura collected from the Great Egg Harbor drainage that leads to Ocean City. A viremic yellow-shafted flicker was also captured from the area during that same period. A second human case was confirmed Sept 13 in a 5 year-old boy from Dividing Creek in Cumberland County. Dividing Creek is not far from the Dennisville site where EEE has been repeatedly documented in Cs. melanura over the past 10 years. Dividing Creek is a typical community on the extensive salt marsh ecotone along the Delaware Bay coast of the State. One month later, an equine case was reported from that same area further documenting the extent of virus activity in that general region.

THE FAILURE OF SENTINEL CHICKENS IN DETECTION OF EEE

At the advent of the 1984 season, 10 flocks of white leghorn pullets were placed as sentinels for EEE virus. The flocks consisted of 5 birds each and were bled every other week for evidence of sero-conversion. Three of the flocks were placed at the areas where Cs. melanura were being collected for virus isolation attempts and the remainder were placed in areas where EEE virus had caused epizootics in the past. Data showed that most of the flocks failed to sero-convert, even though equine cases and/or virus isolations from Cs. melanura were common at those same sites during the course of the experiment. In those flocks that did sero-convert, the conversions did not occur until very late in the season. Data suggest that although sentinel chickens are useful for other mosquito-borne arboviruses, they appear to be a poor indicator for EEE.

Table 1. Equine cases of EEE in New Jersey During 1984

Date of Onset	County	Area	Outcome
July 28	Middlesex	Monmouth Junction	Presumptive
July 31	Gloucester	Williamstown	Confirmed
August 16	Gloucester	Williamstown	Confirmed
August 17	Gloucester	Williamstown	Confirmed
August 21	Gloucester	Williamstown	Presumptive
August 23	Cumberland	Vineland	Confirmed
August 24	Atlantic	Egg Harbor	Presumptive
August 28	Salem	Woodstown	Suspect
August 31	Salem	Woodstown	Confirmed
August 31	Somerset	North BRanch	Prob. Neg.
September 2	Salem	Woodstown	Confirmed
September 2	Salem	Woodstown	Confirmed
September 6	Salem	Woodstown	Confirmed
September 6	Cumberland	Port Elizabeth	Confirmed
September 6	Burlington	Medford Lakes	Confirmed
September 10	Burlington	Tabernacle	Confirmed
September 12	Burlington	Medford	Suspect
September 19	Gloucester	Williamstown	Confirmed
September 19	Monmouth	Freehold	Presumptive
September 21	Camden	Eriel	Confirmed
September 28	Salem	Alloway	Confirmed
October 1	Salem	Elmer	Presumptive
October 4	Salem	Woodstown	Confirmed
October 9	Atlantic	Mays Landing	Confirmed
October 16	Cumberland	Dividing Creek	Suspect
November 2	Atlantic	Mays Landing	Confirmed

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