New Jersey Vector Surveillance

New Jersey Agricultural Experiment Station
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Introduction

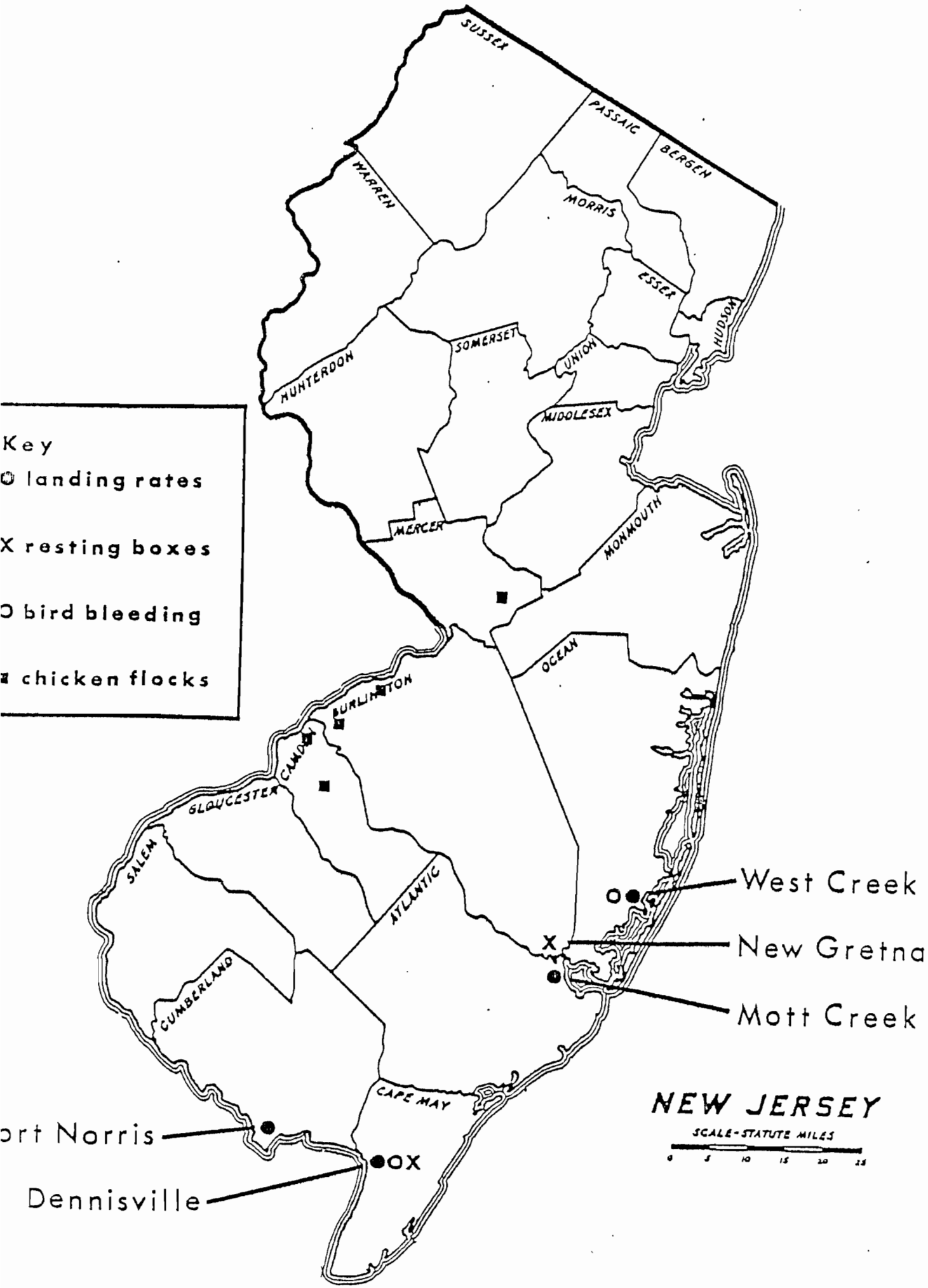
Eastern encephalitic virus (EE), which was first detected in New Jersey on July 13, reached epizootic proportions during the second week of August. Culiseta melanura populations (which were higher than normal in the early spring) have apparently been able to amplify the virus in nesting birds. Isolation rates are increasing at the study sites that are being monitored and horse cases have been reported from inland areas in the southern part of the State. EE has been a problem in Florida and Georgia since June with several confirmed human cases and numerous horse deaths. Since EE classically shows a seasonal progression from South to North, the NJ situation should be closely monitored. Aedes sollicitans populations along the coast will reach a peak in vector potential during early August and an August brood is expected later in the month. Every effort should be made to reduce vector populations at this time to minimize the potential for human involvement.

The Status of EE Virus and its Mosquito Vectors

EE virus was first isolated from Cs. melanura at Dennisville on July 13. Since that time, additional EE isolations have been made at Dennisville and Greenbank (a State Health study site on the east coast). HJ virus has appeared at all of the sites that are being monitored. The first confirmed horse case was reported from Gloucester County on August 9 and several suspect cases are being investigated in Salem County. The wide distribution of EE isolates and equine cases shows that the virus is being amplified over a considerable geographic area. The bird migration, which will begin very shortly, should play a major role in further dissemination.

Funds have been made available to investigate each of the equine cases and determine the mosquito vectors involved in that phase of the cycle. Horse cases classically occur at inland sites and involve vectors other than Ae. sollicitans. The abrupt onset of horse cases after the initial detection of EE suggests that local mosquito populations become involved during the initial amplification period. Preliminary examination of county light trap records suggest that Aedes vexans and Coquillettidia perturbans may be involved. This same pattern has occurred in the past but no isolations have been made to confirm the hypothesis.

Resting box collections show that Cs. melanura are about average for this time of year but a sizeable emergence can be expected very shortly. Spring populations were well above normal and the adults, which will produce the larvae for the overwintering generation, are about to emerge. Fig. 1 shows the population trends at New Gretna and Dennisville. Both EE and HJ virus are rapidly being amplified at these sites.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SOMERSET
UNION
MIDDLESEX
MERCER
MONMOUTH
OCEAN
BURLINGTON
CAMDEN
GLOUCESTER
SALEM
ATLANTIC
CUMBERLAND
CAPE MAY
West Creek
New Gretna
Mott Creek
Port Norris
Dennisville
NEW JERSEY
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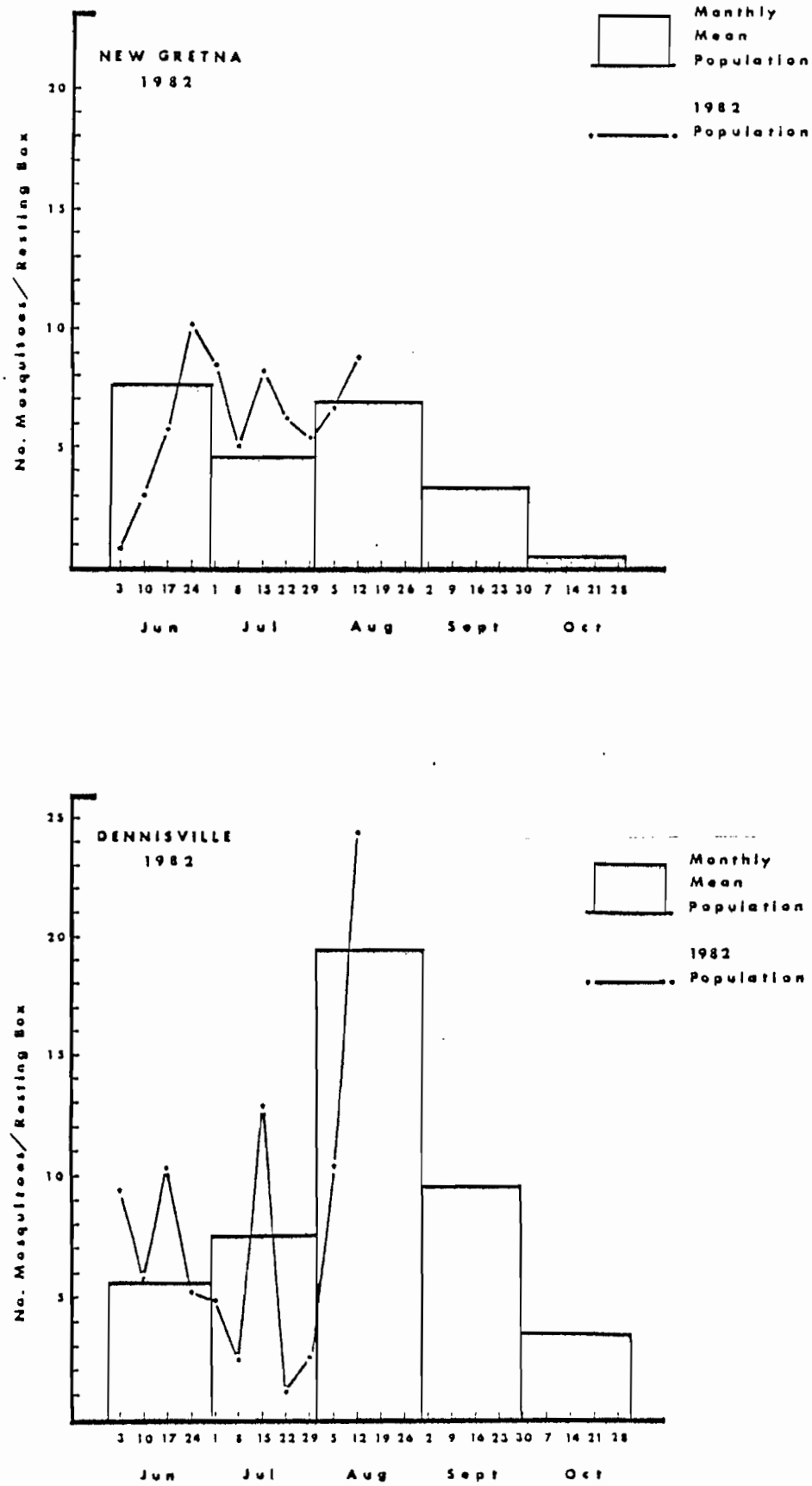

Figure 1. Culiseta melanura populations at the New Gretna (east coast, top graph) and at the Dennisville (west coast, bottom graph) study sites as measured by resting box collections.

The Ae. sollicitans populations from the moon tide of July 20 reached a peak in nuisance very late in the month. Vector potential indices have been rising since that time with a peak expected on or about August 12. For the first time in many years, the July brood occurred at a time when virus was present. The August brood and the September brood will pose the greatest health threat. Weather conditions and control effectiveness will play a major role in aborting EE which has already passed from the avian cycle (enzootic) to mammals (epizootic).

The Status of SLE Virus and its Mosquito Vectors

St. Louis encephalitis activity has been minimum in the USA during June and July but a human case was recently documented from the mid-west (St. Louis, MO.). None of the 4 sentinel flocks in New Jersey have sero-converted to date but it is too soon to tell if virus activity will progress eastward. Culex populations (with the exception of Cx. salinarius) are average in all regions at this time. SLE, however, can appear as late as September of October, thus the sentinel chicken surveillance will be closely monitored.

List of Personnel

Project Leader:	Wayne J. Crans	
Mosquito Program Acting Director:	Harry D. Brown	
Associate Mosquito Program Staff:	Donald J. Sutherland	Roy K. Sofield
	Linda McCuiston	Steve Racioppe
	Joseph K. Shisler	Dennis Hajek
	Daniel Sprenger	
Cooperating State Health Personnel:	Epid.& Dis. Control	Division of Labs
	David Kirsh	Wayne Pizutti
	Ronald Altman	Bernard Taylor
	William Parkin	Consumer Health
	Terry Schulze	Dave Adam
		Walter Gusciora
Cooperating State Mosquito Control Commission Personnel:	Kenneth W. Bruder	
	Robert B. Kent	
Cooperating County Mosquito Control Superintendents:	Jeffrey Curtain, Atlantic County	
	Brian Gooley, Burlington County	
	Judy Hansen, Cape May County	
	Pat Slavin, Cumberland County	
	Tom Candeletti, Ocean County	
	Bill Fisher, Salem County	

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Prepared by: Dr. Wayne J. Crans
Mosquito Research and Control
New Jersey Agricultural Experiment Station
Cook College, P. O. Box 231
New Brunswick, N.J. 08903

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