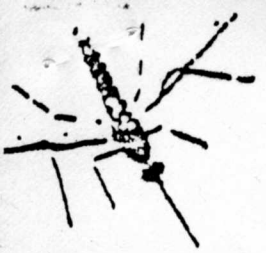

New Jersey Vector Surveillance

New Jersey Agricultural Experiment Station

Mosquito Research and Control

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Introduction

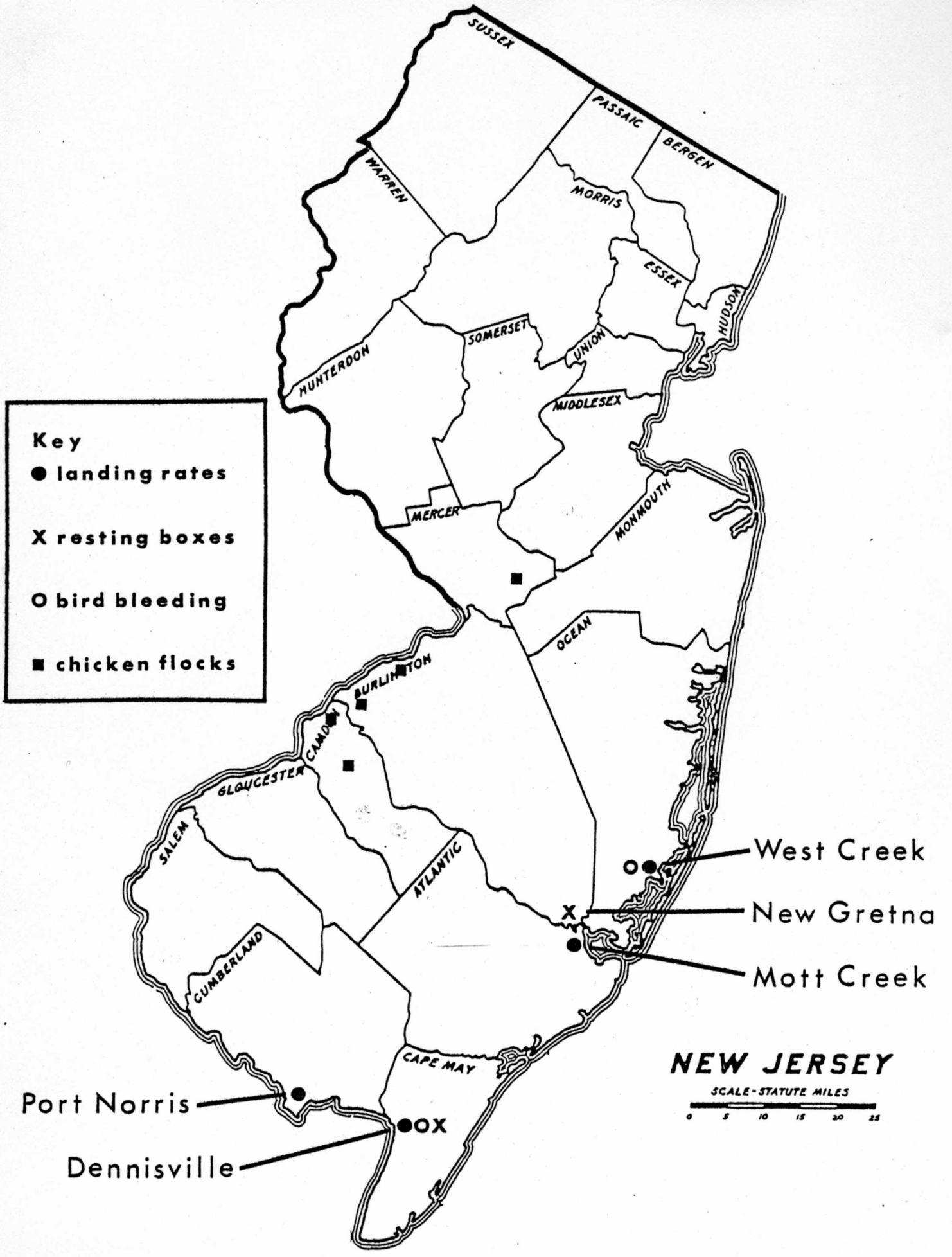
The vector surveillance program to monitor the encephalitis viruses in New Jersey is an ongoing effort to gather data on the mosquito vectors of eastern encephalitis virus (EE), Highlands J virus (HJ), and St. Louis encephalitis virus (SLE). The program, which was instituted in 1976, monitors vector populations in key areas of the state throughout the mosquito season. The information is analyzed on a weekly basis and the data are used to identify periods of virus amplification. The program functions primarily as a warning system to alert health related agencies to the status of the encephalitis viruses in the environment and provide control before human involvement is likely.

The Viruses and Their Cycles in Nature

EE virus has the potential for causing the greatest damage in New Jersey because of its high mortality rate and geographic proximity to the resort community. Though the virus is widespread in the state, New Jersey's seacoast provides the classical focus for greatest activity. EE originates in wild birds and severe epizootics occur in birds that nest in upland areas along the coast. Research has shown that the mosquito, Culiseta melanura, is responsible for the majority of avian involvement, and that large numbers of birds can be infected during the summer months. In some years, human cases occur and all evidence points to the salt marsh mosquito, Aedes sollicitans, as the primary vector. In theory, Ae. sollicitans picks up the virus late in the season by feeding on infected birds in the uplands. Under certain environmental conditions (still largely unknown) transfer to humans in the coastal strip is possible.

HJ virus apparently follows a similar epidemiological pattern but does not seem to produce an overt disease in humans. The virus is frequently found in birds and is regularly isolated from the same mosquito vectors, but human cases have never been confirmed. The value of monitoring a benign virus such as HJ is based primarily on its seasonal distribution. HJ appears in birds and mosquitoes 2-4 weeks earlier than EE and thereby serves as a valuable indicator for the more serious mosquito-borne disease.

SLE virus has the potential for affecting the greatest number of people in New Jersey, but does not occur on a regular basis. Unlike EE and HJ, which can be isolated from birds and mosquitoes in New Jersey nearly every year, SLE virus has a more western distribution and infrequently enters the state. When it does, the virus is usually associated with Culex mosquitoes in urban areas with peridomestic birds serving as the reservoirs.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