

NEW JERSEY VECTOR SURVEILLANCE

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ABSTRACT: Culiseta melanura populations showed a sharp increase during the month of August at most of the sites being monitored in New Jersey. The increase was accompanied by amplification of EEE virus in some areas. EEE activity was highest along the eastern seaboard with an intense pocket just north of Atlantic City. The combination of thunderstorms and lunar tides have produced numbers of Aedes sollicitans along the coast. EEE virus was isolated from a single pool of Culex salinarius during the month of August. No human or equine cases have been reported to date.

STATUS OF EEE VIRUS AND ITS MOSQUITO VECTORS

After a Summer of extremely low population levels, Culiseta melanura showed a sharp increase at most of the sites being monitored in New Jersey. Figure 1 shows the population trend at Green Bank and the steady rise in the numbers of Cs. melanura collected from resting boxes during the month. The same general pattern was seen at most of the sites where Atlantic White Cedar served as breeding habitat.

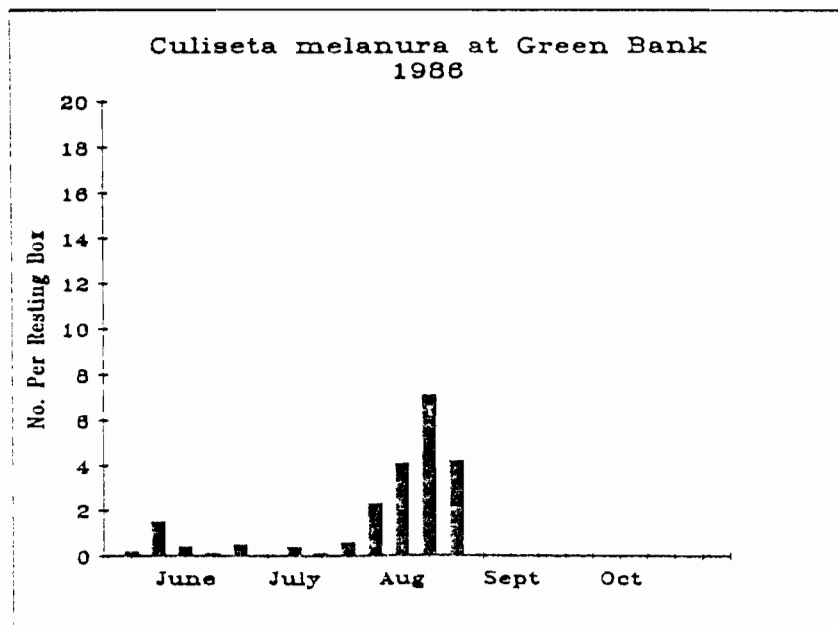
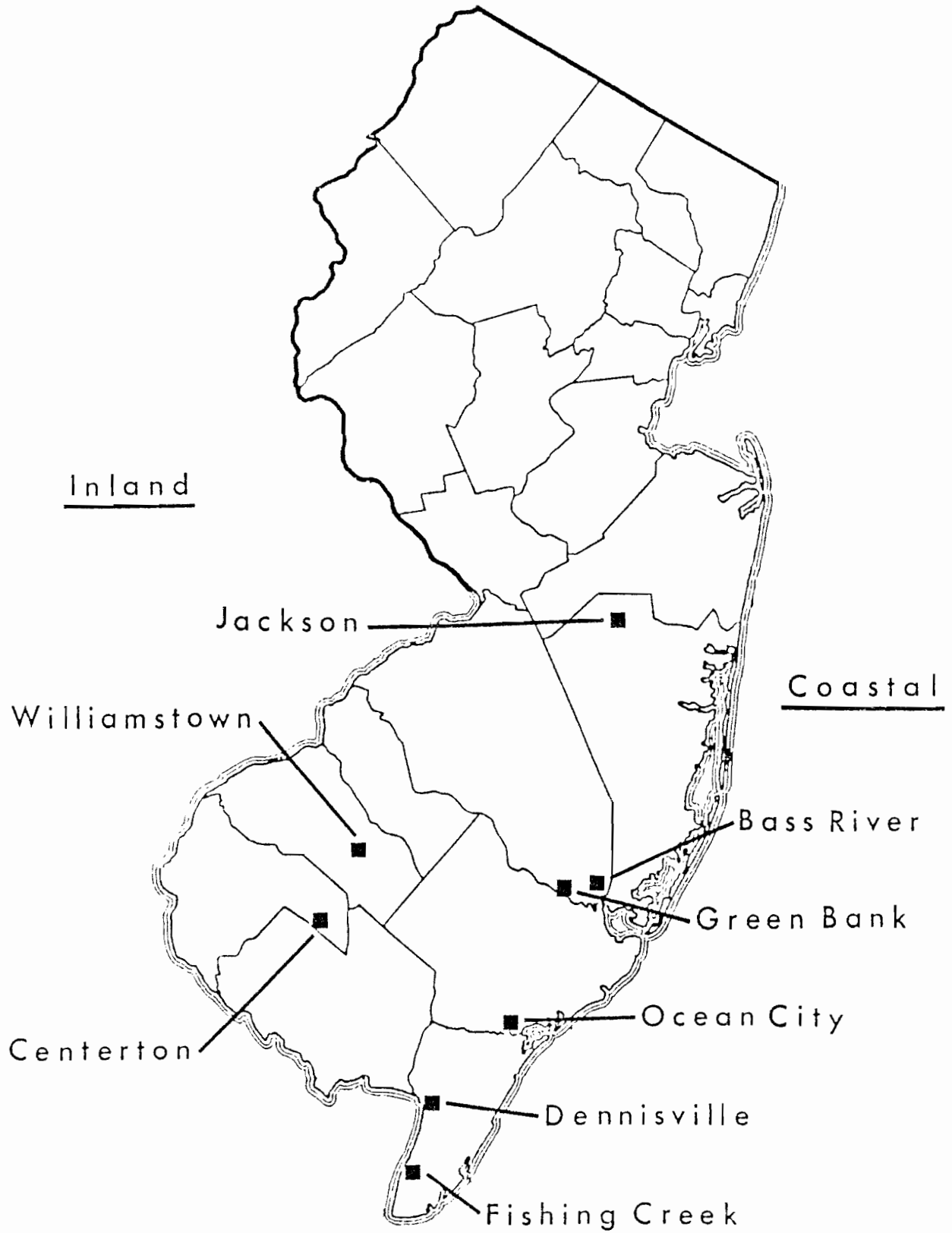


Fig. 1. Culiseta melanura populations at Green Bank, Burlington County, from June through August, 1986.

RESTING BOX SITES

1986



The Red Maple swamps further inland remained fairly dry during August and most inland populations of Cs. melanura remained stable. Figure 2 depicts the population trend at Williamstown where Red Maple forms the only breeding habitat available to this species.

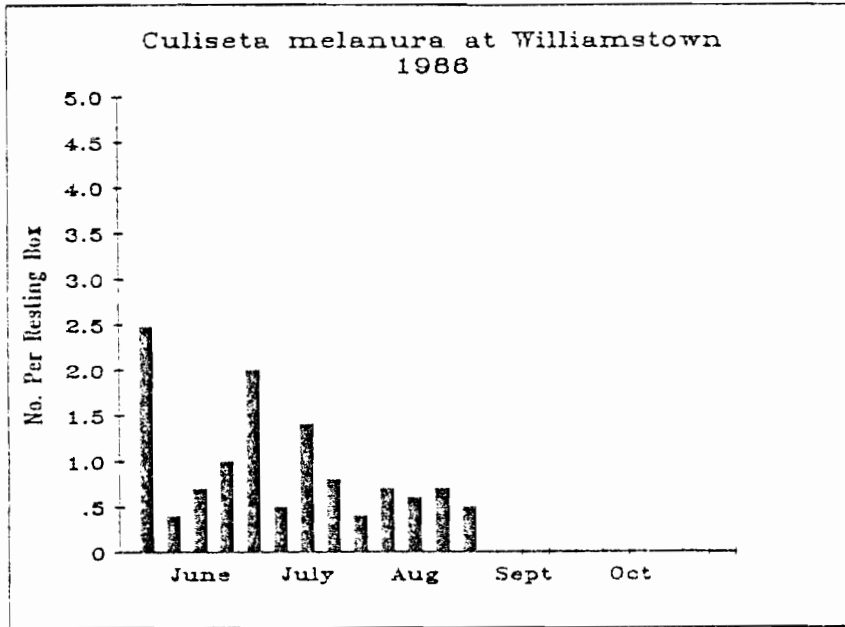


Fig. 2. Culiseta melanura populations at Williamstown, Gloucester County, from June through August, 1986.

The population increase exhibited by Cs. melanura was accompanied by amplification of EEE virus at some of the sites. Most of the virus isolations came from the eastern seaboard with a fairly intense pocket of activity just north of Atlantic City. Table 1 lists EEE isolations from the Green Bank study site. Data suggest that amplification of EEE began in the middle of the month and will probably continue during the month of September.

Table 1. Virus isolations from Culiseta melanura at Green Bank, Burlington County during August, 1986.

DATE	NUMBER SPECIMENS IN POOL	PHYSIOLOGICAL STATUS	VIRUS
Aug. 12	31	Engorged	EEE
Aug. 12	31	Engorged	EEE
Aug. 15	43	Engorged	EEE
Aug. 15	44	Engorged	HJ
Aug. 20	50	Engorged	EEE
Aug. 20	30	Black-blood	EEE
Aug. 20	24	Engorged	HJ
Aug. 26	18	Black-blood	EEE
Aug. 26	10	Gravid	EEE
Aug. 26	33	Empty	EEE
Aug. 29	48	Empty	EEE
Aug. 29	43	Gravid	EEE
Aug. 29	13	Black-blood	EEE

Virus activity along the Delaware Bay coast of New Jersey has been atypical this season. Extremely large populations of Cs. melanura emerge from the large cedar swamps along Delaware Bay and EEE virus is normally quite active all through the area. In 1986, the populations of Cs. melanura were higher than normal during August (Fig. 3). HJ virus appeared during July and was isolated with considerable frequency during August (Table 2). EEE virus did not appear in Cs. melanura at Dennisville until very late in August despite the sizeable populations available for amplification.

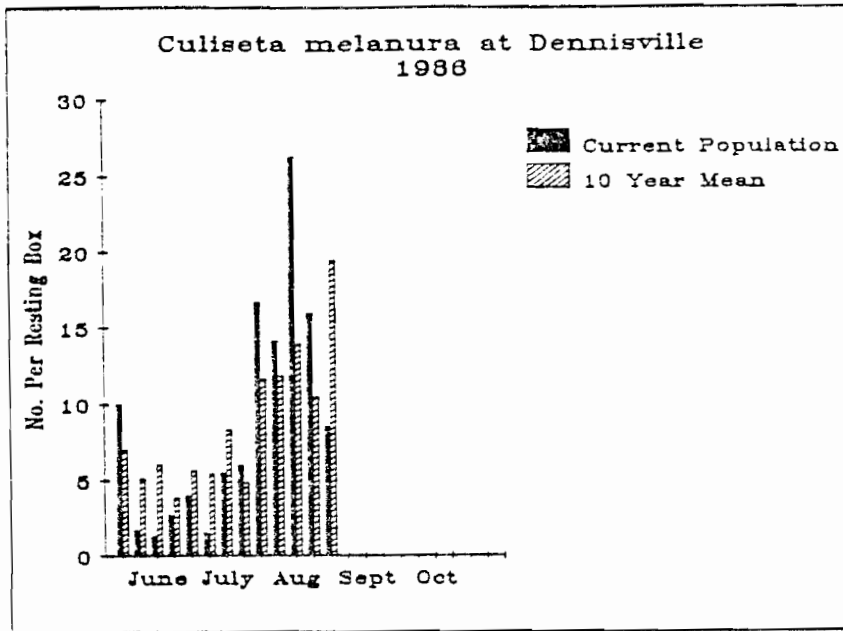


Fig. 3. Culiseta melanura populations at Dennisville, Cape May County in comparison with the 10 year mean.

Table 2. Virus isolations from Culiseta melanura at Dennisville, Cape May County during July and August, 1986.*

DATE	NUMBER SPECIMENS IN POOL	PHYSIOLOGICAL STATUS	VIRUS
July 3	45	Black-blood	HJ
July 22	50	Engorged	HJ
July 25	50	Engorged	HJ
July 25	50	Empty	HJ
Aug. 1	50	Empty	HJ
Aug. 1	50	Empty	HJ
Aug. 1	50	Empty	HJ
Aug. 1	35	Black-blood	HJ
Aug. 8	27	Empty	HJ
Aug. 11	5	Gravid	HJ
Aug. 12	50	Empty	HJ
Aug. 12	50	Empty	HJ
Aug. 15	50	Engorged	HJ
Aug. 15	50	Empty	HJ
Aug. 15	13	Engorged	HJ
Aug. 20	50	Engorged	HJ
Aug. 20	50	Empty	HJ
Aug. 26	50	Empty	EEE
Aug. 29	18	Engorged	HJ

* The first isolation of EEE virus from this study site was obtained from a pool of 100 empty Culex salinarius on Aug. 20.

Earlier indications of EEE activity, however, were obtained from the Dennisville site. In mid-August, a sentinel chicken housed in a pen 20 ft high in the canopy developed antibodies to EEE virus. Data indicate that the infective bite was delivered well before virus was evident in the Cs. melanura collected twice weekly at that site. On August 20, EEE virus was isolated from a pool of 100 Culex salinarius collected by CDC light trap. The role of Cx. salinarius in the epidemiology of EEE has long been unclear and the significance of this isolation merits further investigation.

Light trap collections and landing rate counts showed that the salt marsh mosquito, Aedes sollicitans reached high numbers in all of the coastal areas of New Jersey during August. Several broods emerged during August as a result of local thunderstorms. Lunar floodings added to the problem during the month. Parity dissections revealed high populations of parous mosquitoes late in the month. Mosquito control agencies have been directing their efforts toward elimination of the older specimens.

During the month of August, 23,923 mosquito specimens were tested in 865 pools. Twenty-one isolations of HJ virus were obtained, all from Cs. melanura. Eleven EEE isolations were obtained from Cs. melanura and a single EEE isolation was obtained from Cx. salinarius. Table 3 lists the August data for Cs. melanura by site. The tables at the end of this report summarize information on all of the species.

Table 3. Virus isolations from Culiseta melanura collected in New Jersey during August, 1986.

	TOTAL TESTED	NO. POOLS	POSITIVE POOLS		EEE MFIR
			HJ	EEE	

COASTAL SITES					
GREEN BANK	1781	57	3	10	5.61
BASS RIVER	1179	45	3	1	0.85
OCEAN CITY	85	27	0	0	0.00
DENNISVILLE	6407	181	13	1	0.16
FISHING CR.	73	12	0	0	0.00

INLAND SITES					
JACKSON	89	23	0	0	0.00
WILLIAMSTOWN	132	23	0	0	0.00
CENTERTON	499	34	2	0	0.00

EASTERN EQUINE ENCEPHALITIS IN PHEASANTS AND HORSES

No equine involvement was noted during the month of July. Follow-up investigations of the pheasant outbreak that occurred at Medford, N.J. during July revealed no further activity in that area.

THE STATUS OF ST. LOUIS ENCEPHALITIS IN NEW JERSEY

Sentinel chicken flocks in the urban corridor of the State have given no indication of SLE activity to date. The sentinel flock stationed at Mt. Holly, however, was destroyed by a predator during the month. In view of the outbreak near Houston this year, weekly bleedings of the remaining New Jersey flocks will continue well into the Fall. SLE activity in Texas preceded the New Jersey outbreaks of 1964 and 1975.

TABLE 1. VECTOR SURVEILLANCE SUMMARY FOR THE GREEN BANK SITE DURING THE MONTH OF AUGUST (YEAR).

MOSQUITO SPECIES	TOTAL TESTED		NO. POOLS		POSITIVE POOLS	
	AUG	(YEAR)	AUG	(YEAR)	HJ	EEE
<i>Cs. melanura</i>	1781	2141	57	106	3	10
<i>Cq. perturbans</i>	8	50	6	12	0	0
<i>Ae. canadensis</i>	38	125	4	9	0	0
<i>Ae. cantator</i>	134	230	3	12	0	0
<i>Ae. triseriatus</i>	1	1	1	1	0	0
<i>Ae. vexans</i>	2	2	1	2	0	0
<i>Cx. pipiens</i>	0	1	0	1	0	0
<i>Cx. restuans</i>	26	29	5	8	0	0
<i>Cx. salinarius</i>	256	450	6	15	0	0
<i>Cx. territans</i>	8	9	1	2	0	0
<i>An. bradleyi</i>	121	134	4	8	0	0
<i>An. punctipennis</i>	2	2	2	2	0	0
<i>An. gaudrimaculatus</i>	13	14	9	10	0	0

TABLE 2. VECTOR SURVEILLANCE SUMMARY FOR THE BASS RIVER SITE DURING THE MONTH OF AUGUST (YEAR).

MOSQUITO SPECIES	TOTAL TESTED		NO. POOLS		POSITIVE POOLS	
	AUG	(YEAR)	AUG	(YEAR)	HJ	EEE
<i>Cs. melanura</i>	1179	2210	45	112	3	1
<i>Cq. perturbans</i>	0	2	0	2	0	0
<i>Ae. sollicitans</i>	0	0	0	0	0	0
<i>Ae. cantator</i>	2	2	1	1	0	0
<i>Cx. pipiens</i>	0	1	0	1	0	0
<i>Cx. restuans</i>	84	104	10	27	0	0
<i>Cx. salinarius</i>	0	0	0	0	0	0
<i>Cx. territans</i>	16	31	4	13	0	0
<i>An. quadrimaculatus</i>	1	1	1	1	0	0

TABLE 3. VECTOR SURVEILLANCE SUMMARY FOR THE SMITHVILLE SITE DURING THE MONTH OF AUGUST (YEAR).

MOSQUITO SPECIES	TOTAL TESTED		NO. POOLS		POSITIVE POOLS	
	AUG.	(YEAR)	AUG	(YEAR)	HJ	EEE
<i>Cs. melanura</i>	0	6	0	4	0	0
<i>Cq. perturbans</i>	3	114	1	9	0	0
<i>Ae. sollicitans</i>	475	745	7	14	0	0
<i>Ae. canadensis</i>	14	142	3	11	0	0
<i>Ae. cantator</i>	57	695	4	15	0	0
<i>Ae. taeniorhynchus</i>	0	5	0	3	0	0
<i>Ae. triseriatus</i>	6	26	3	9	0	0
<i>Ae. vexans</i>	20	42	3	8	0	0
<i>Cx. pipiens</i>	1	1	1	1	0	0
<i>Cx. restuans</i>	3	7	3	4	0	0
<i>Cx. salinarius</i>	534	709	8	19	0	0
<i>Cx. territans</i>	0	1	0	1	0	0
<i>An. bradleyi</i>	17	26	2	5	0	0
<i>An. quadrimaculatus</i>	1	4	1	4	0	0

TABLE 4. VECTOR SURVEILLANCE SUMMARY FOR THE OCEAN CITY SITE DURING THE MONTH OF AUGUST (YEAR).

MOSQUITO SPECIES	TOTAL TESTED		NO. POOLS		POSITIVE POOLS	
	AUG	(YEAR)	AUG	(YEAR)	HJ	EEE
<i>Cs. melanura</i>	85	353	27	93	0	0
<i>Cq. perturbans</i>	0	0	0	0	0	0
<i>Ae. sollicitans</i>	0	0	0	0	0	0
<i>Ae. canadensis</i>	0	1	0	1	0	0
<i>Cx. restuans</i>	4	7	2	4	0	0
<i>Cx. salinarius</i>	1	1	1	1	0	0
<i>Cx. territans</i>	5	6	3	4	0	0

TABLE 5. VECTOR SURVEILLANCE SUMMARY FOR THE FISHING CREEK SITE DURING THE MONTH OF AUGUST (YEAR).

MOSQUITO SPECIES	TOTAL TESTED		NO. POOLS		POSITIVE POOLS	
	AUG	(YEAR)	AUG	(YEAR)	HJ	EEE
<i>Cs. melanura</i>	73	193	12	31	0	0
<i>Cq. perturbans</i>	4	88	3	24	0	0
<i>Ae. sollicitans</i>	0	0	0	0	0	0

TABLE 6. VECTOR SURVEILLANCE SUMMARY FOR THE DENNISVILLE SITE DURING THE MONTH OF AUGUST (YEAR).

MOSQUITO SPECIES	TOTAL TESTED		NO. POOLS		POSITIVE POOLS	
	AUG	(YEAR)	AUG	(YEAR)	HJ	EEE
<i>Cs. melanura</i>	6407	10,712	181	364	17	1
<i>Cq. perturbans</i>	329	8,278	24	245	0	0
<i>Ae. sollicitans</i>	1112	4,307	26	80	0	0
<i>Ae. canadensis</i>	112	4,797	19	100	0	0
<i>Ae. cantator</i>	290	3,271	7	54	0	0
<i>Ae. taeniorhynchus</i>	10	15	3	5	0	0
<i>Ae. vexans</i>	2	2	2	2	0	0
<i>Cx. erraticus</i>	0	1	0	1	0	0
<i>Cx. pipiens</i>	2	7	1	3	0	0
<i>Cx. restuans</i>	603	979	18	45	0	0
<i>Cx. salinarius</i>	7391	25,105	85	283	0	1
<i>Cx. territans</i>	80	264	11	28	0	0
<i>An. bradleyi</i>	1343	2,202	24	41	0	0
<i>An. punctipennis</i>	2	28	2	15	0	0
<i>An. quadrimaculatus</i>	79	163	17	39	0	0

TABLE 7. VECTOR SURVEILLANCE SUMMARY FOR THE JACKSON SITE DURING THE MONTH OF AUGUST (YEAR).

MOSQUITO SPECIES	TOTAL TESTED		NO. POOLS		POSITIVE POOLS	
	AUG	(YEAR)	AUG	(YEAR)	HJ	EEE
<i>Cs. melanura</i>	89	193	23	56	0	0
<i>Cq. perturbans</i>	5	11	4	8	0	0
<i>Cx. restuans</i>	39	89	12	25	0	0
<i>Cx. territans</i>	33	55	8	18	0	0
<i>An. bradleyi</i>	2	6	2	6	0	0
<i>An. punctipennis</i>	0	3	0	3	0	0
<i>An. quadrimaculatus</i>	4	4	2	2	0	0

TABLE 8. VECTOR SURVEILLANCE SUMMARY FOR THE WILLIAMSTOWN SITE DURING THE MONTH OF AUGUST (YEAR).

MOSQUITO SPECIES	TOTAL TESTED		NO. POOLS		POSITIVE POOLS	
	AUG	(YEAR)	AUG	(YEAR)	HJ	EEE
<i>Cs. melanura</i>	132	537	28	78	0	0
<i>Cq. perturbans</i>	2	139	1	9	0	0
<i>Ae. canadensis</i>	0	73	0	9	0	0
<i>Ae. cantator</i>	0	1	0	1	0	0
<i>Ae. triseriatus</i>	0	1	0	1	0	0
<i>Ae. vexans</i>	0	3	0	1	0	0
<i>Cx. pipiens</i>	0	4	0	2	0	0
<i>Cx. restuans</i>	5	14	4	11	0	0
<i>Cx. salinarius</i>	2	10	2	5	0	0
<i>Cx. territans</i>	2	2	2	2	0	0
<i>An. punctipennis</i>	2	2	2	2	0	0
<i>An. quadrimaculatus</i>	1	3	1	3	0	0

TABLE 9. VECTOR SURVEILLANCE SUMMARY FOR THE CENTERTON SITE DURING THE MONTH OF AUGUST (YEAR).

MOSQUITO SPECIES	TOTAL TESTED		NO. POOLS		POSITIVE POOLS	
	AUG	(YEAR)	AUG	(YEAR)	HJ	EEE
<i>Cs. melanura</i>	499	1081	34	78	2	0
<i>Cq. perturbans</i>	4	53	4	14	0	0
<i>Ae. canadensis</i>	0	12	0	5	0	0
<i>Ae. cantator</i>	0	1	0	1	0	0
<i>Ae. triseriatus</i>	0	4	0	2	0	0
<i>Ae. vexans</i>	0	1	0	1	0	0
<i>Cx. erraticus</i>	23	23	3	3	0	0
<i>Cx. pipiens</i>	15	33	3	8	0	0
<i>Cx. restuans</i>	50	93	13	30	0	0
<i>Cx. salinarius</i>	5	13	2	4	0	0
<i>Cx. territans</i>	5	8	3	5	0	0
<i>An. bradleyi</i>	7	7	6	6	0	0
<i>An. punctipennis</i>	28	48	11	23	0	0
<i>An. quadrimaculatus</i>	107	132	18	32	0	0

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