



NEW JERSEY VECTOR SURVEILLANCE

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ABSTRACT: *Culiseta melanura* populations declined during the month of September at most of the sites being monitored in New Jersey but EEE virus remained active in some areas. Data suggested that virus activity was highest along the eastern seaboard. A single equine case was confirmed from the zone where surveillance showed the highest virus isolation rates.

STATUS OF EEE VIRUS AND ITS MOSQUITO VECTORS

Culiseta melanura populations reached their seasonal peak during the month of August at most of the sites being monitored in New Jersey. September collections revealed declining numbers in most areas which is typical for this species at our latitude. Figure 1 plots the populations at Dennisville for the season and shows that the seasonal peak was reached during the first week of August. Data from other coastal sites showed a similar trend with the exception that peak populations were reached somewhat later in the month.

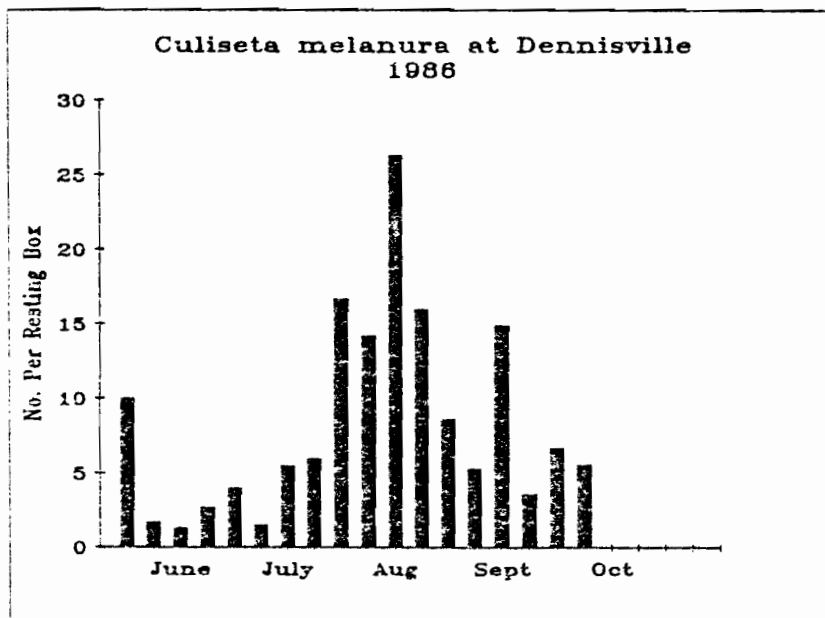
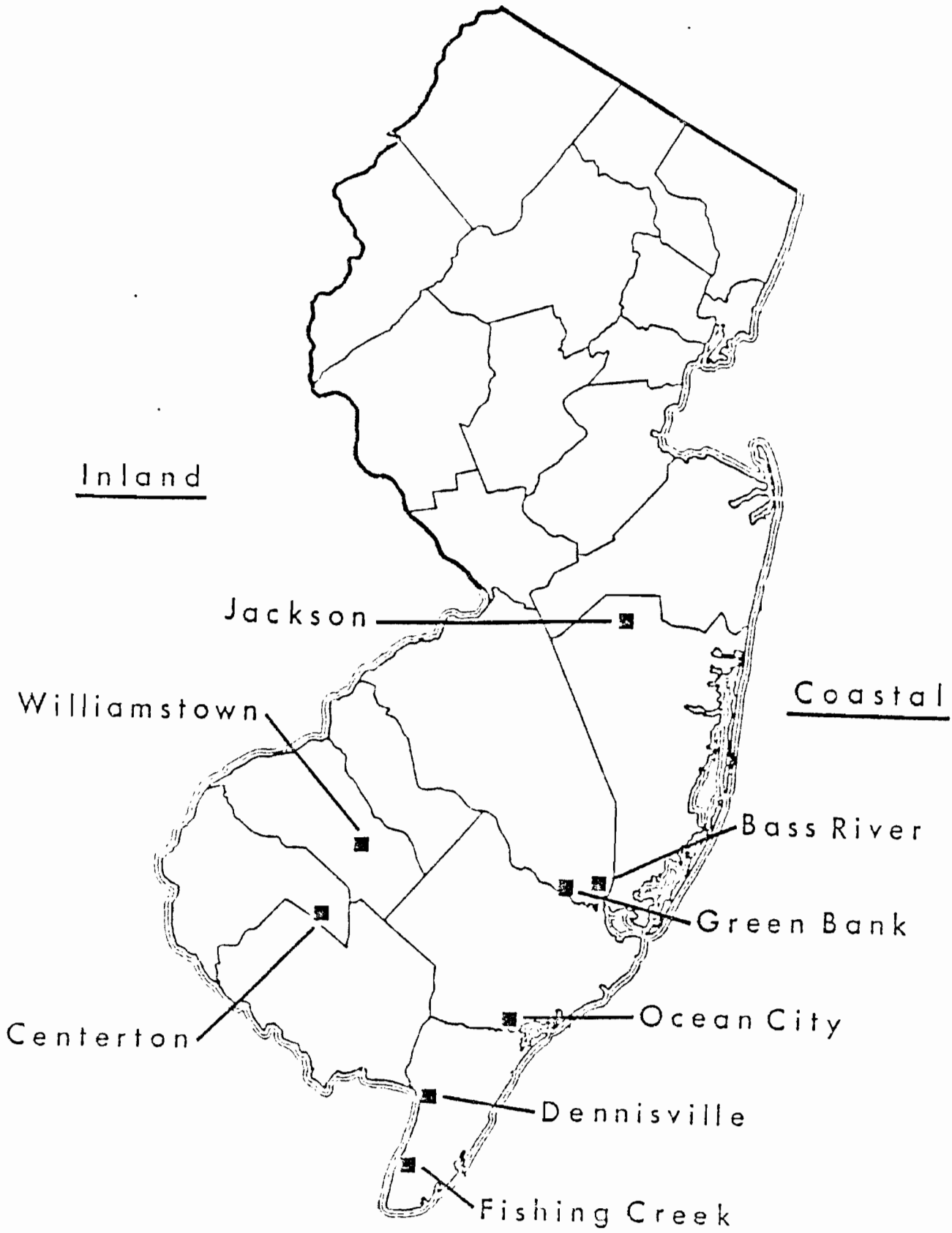


Fig. 1. *Culiseta melanura* populations at Dennisville, N.J. from June to September, 1986.

RESTING BOX SITES

1986



Data from the Centerton site in Salem County did not follow the general trend. For the second straight year, *Cs. melanura* at Centerton showed an increase during September, reaching the highest levels of the season during the latter part of the month. The Centerton site was adopted as an inland study area in 1985 because of its history of early season cases of EEE in equines. No equine cases have occurred in this area since monitoring was put into effect and no data are available to compare current population trends with those that take place when EEE is active.

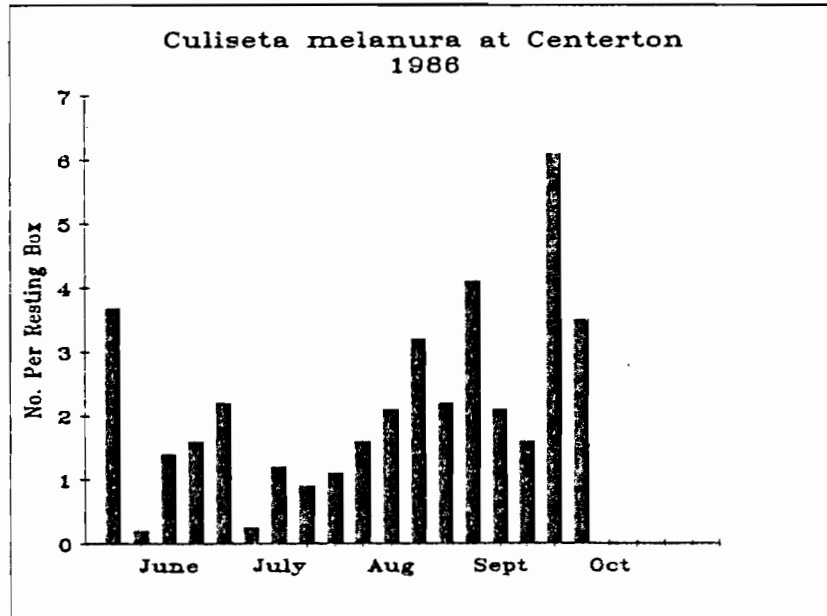


Fig. 2. *Culiseta melanura* populations at Centerton, N.J. from June to September, 1986.

Virus activity varied considerably in different areas of the State. On the eastern seaboard, EEE virus was the primary virus isolated from *Cs. melanura* during August and September. Table 1 lists isolations from the Green Bank study site and shows that EEE was present from August 15 through the month of September. Although HJ virus was detected during the period, relatively few HJ isolations were obtained from any of the east coast study sites.

Table 1. Virus isolations from *Culiseta melanura* at Green Bank, Burlington County, during August and September, 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	48	Gravid	EEE
Aug. 29	13	Black-blood	EEE
Sept. 5	40	Engorged	EEE
Sept. 5	50	Engorged	EEE
Sept. 14	30	Engorged	HJ
Sept. 19	33	Engorged	EEE
Sept. 27	53	Empty	EEE
Sept. 30	27	Black-blood	HJ

* An equine case was confirmed less than 10 mi. from this study site with date of onset Sept. 27.

HJ virus, however, was the primary virus isolated from Cs. melanura along the Delaware Bay. Table 2 shows that HJ virus appeared as early as July 3 at the Dennisville site with isolations throughout the month of August. EEE virus did not appear until August 26. From July 3 to September 30, 18 HJ isolations and only 3 EEE isolations were obtained from Cs. melanura at Dennisville. The data are surprising since EEE is normally very active at this site along the Delaware Bay.

Table 2. Virus isolations from Culiseta melanura at Dennisville, Cape May County during July, August and September, 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	18	Engorged	HJ
Aug. 20	50	Engorged	HJ
Aug. 20	50	Empty	HJ
Aug. 26	50	Empty	EEE
Aug. 29	18	Engorged	HJ
Sept. 11	29	Engorged	EEE
Sept. 30	31	Black-blood	EEE

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

HJ was the only virus isolated from Cs. melanura at any of the inland study sites. Table 3 lists isolations from Centerton, the site where Cs. melanura increased during the month of September. To date 5 isolations have been obtained, 2 during the month of August and 3 during September.

Table 3. Virus isolations from Culiseta melanura at Centerton, Salem County during August and September, 1986.

DATE	NUMBER SPECIMENS IN POOL	PHYSIOLOGICAL STATUS	VIRUS
Aug. 15	48	Engorged	HJ
Aug. 22	31	Engorged	HJ
Sept. 16	22	Empty	HJ
Sept. 16	13	Engorged	HJ
Sept. 26	43	Engorged	HJ

During the month of September, 20,844 mosquito specimens were tested for virus in 783 pools. Seven HJ isolations and 7 EEE isolations were obtained during the month, all from Cs. melanura. Table 4 lists the September data for Cs. melanura by study site. The tables at the end of this report summarizes information for all species.

Table 4. Virus isolations from Culiseta melanura during September, 1986.

AREA	TOTAL TESTED	NO. POOLS	POSITIVE POOLS		EEE MFIR
			HJ	EEE	
Coastal Sites					
Green Bank	1568	63	2	4	2.55
Bass River	667	36	2	0	0.00
Ocean City	123	28	0	1	3.13
Dennisville	1397	59	0	2	1.43
Fishing Creek	28	7	0	0	0.00
Inland Sites					
Jackson	31	10	0	0	0.00
Williamstown	85	23	0	0	0.00
Centerton	687	34	3	0	0.00

EASTERN EQUINE ENCEPHALITIS IN PHEASANTS AND HORSES

The first confirmed case of EEE in a New Jersey horse occurred during the month of September. The case involved a 10 year old thoroughbred gelding stabled in Hammonton Township, Atlantic County. The horse had been moved from the Atlantic City Race Track to the Hammonton Township farm 3 weeks before the symptoms became evident. Onset of CNS disfunctions were noted the morning of Sept. 26 and the animal was destroyed later that same day. The horse had no vaccination history, but 20 other horses on the farm had been immunized and failed to develop symptoms. EEE virus was isolated from brain tissue on Sept. 29 confirming the case.

Followup survey by the Atlantic County Mosquito Control Unit revealed that the farm was located near Elwood, N.J., less than 10 mi. from the Green Bank study site where high EEE activity had been documented in Cs. melanura. Larval survey did not reveal Cs. melanura habitat in the immediate vicinity of the farm, but CDC traps and Gravid traps did collect small numbers of both Cs. melanura and Coquillettidia perturbans from the farm property. Traps that were operated closer to the nearest breeding habitat (\pm 2 mi. to the South) collected relatively large numbers of Cs. melanura. All of the specimens collected during the survey were submitted for virus isolation attempts but none yielded EEE virus.

Of academic interest was a case involving a 20+ year old horse from Jackson Township in Ocean County which died on Sept. 21 following expression of some CNS signs. The Jackson Township area was thoroughly surveyed in 1983 following 4 confirmed equine deaths due to EEE. Data, at that time, suggested that Cq. perturbans served as the probable vector to horses. High levels of EEE virus were also detected in Cs. melanura throughout the Jackson Township area in 1983 and again in 1984. Histopathic evaluation of this year's equine death indicated that the animal died of moldy feed poisoning; no EEE virus was isolated from the brain. A serum sample, however, demonstrated a titer of 1:80 to EEE virus and no titer to HJ virus. The information suggests that the titer was the result of prior exposure to EEE which is consistent with the previous findings from the Jackson Township area.

THE STATUS OF ST. LOUIS ENCEPHALITIS IN NEW JERSEY

Sentinel chicken flocks in the urban corridor of New Jersey have given no indication of SLE activity to date. In view of the outbreak in Texas this Fall, weekly bleedings of the New Jersey flocks will continue into November.

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

MOSQUITO SPECIES	TOTAL TESTED		NO. POOLS		POSITIVE POOLS			
	SEPT	(YEAR)	SEPT	(YEAR)	HJ	(YEAR)	EEE	(YEAR)
<i>Cs. melanura</i>	1568	3709	63	169	2	5	4	14
<i>Cq. perturbans</i>	2	52	1	13	0	0	0	0
<i>Ae. sollicitans</i>	3	3	2	2	0	0	0	0
<i>Ae. canadensis</i>	10	135	4	13	0	0	0	0
<i>Ae. cantator</i>	170	400	6	18	0	0	0	0
<i>Ae. triseriatus</i>	0	1	0	1	0	0	0	0
<i>Ae. vexans</i>	0	2	0	2	0	0	0	0
<i>Cx. erraticus</i>	1	1	1	1	0	0	0	0
<i>Cx. pipiens</i>	0	1	0	1	0	0	0	0
<i>Cx. restuans</i>	11	40	7	15	0	0	0	0
<i>Cx. salinarius</i>	50	500	3	18	0	0	0	0
<i>Cx. territans</i>	9	18	2	4	0	0	0	0
<i>An. bradleyi</i>	64	198	5	13	0	0	0	0
<i>An. punctipennis</i>	7	9	6	8	0	0	0	0
<i>An. quadrimaculatus</i>	5	19	3	13	0	0	0	0

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

MOSQUITO SPECIES	TOTAL TESTED		NO. POOLS		POSITIVE POOLS			
	SEPT	(YEAR)	SEPT	(YEAR)	HJ	(YEAR)	EEE	(YEAR)
<i>Cs. melanura</i>	667	2877	36	148	2	5	0	1
<i>Cq. perturbans</i>	0	2	0	2	0	0	0	0
<i>Ae. cantator</i>	0	2	0	1	0	0	0	0
<i>Cx. pipiens</i>	0	1	0	1	0	0	0	0
<i>Cx. restuans</i>	49	153	6	33	0	0	0	0
<i>Cx. salinarius</i>	2	2	1	1	0	0	0	0
<i>Cx. territans</i>	11	42	4	17	0	0	0	0
<i>An. punctipennis</i>	4	4	4	4	0	0	0	0
<i>An. quadrimaculatus</i>	8	9	3	4	0	0	0	0

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

MOSQUITO SPECIES	TOTAL TESTED		NO. POOLS		POSITIVE POOLS			
	SEPT	(YEAR)	SEPT	(YEAR)	HJ	(YEAR)	EEE	(YEAR)
<i>Cs. melanura</i>	0	6	0	4	0	0	0	0
<i>Cq. perturbans</i>	0	114	0	9	0	0	0	0
<i>Ae. sollicitans</i>	1600	2345	38	52	0	0	0	0
<i>Ae. canadensis</i>	4	146	2	13	0	0	0	0
<i>Ae. cantator</i>	603	1298	12	27	0	0	0	0
<i>Ae. taeniorhynchus</i>	1	6	1	4	0	0	0	0
<i>Ae. triseriatus</i>	2	28	2	11	0	0	0	0
<i>Ae. vexans</i>	63	105	4	12	0	0	0	0
<i>Cx. pipiens</i>	0	1	0	1	0	0	0	0
<i>Cx. restuans</i>	3	10	2	6	0	0	0	0
<i>Cx. salinarius</i>	1482	2191	21	40	0	0	0	0
<i>Cx. territans</i>	0	1	0	1	0	0	0	0
<i>An. bradleyi</i>	54	80	5	10	0	0	0	0
<i>An. punctipennis</i>	3	3	3	3	0	0	0	0
<i>An. quadrimaculatus</i>	4	8	3	7	0	0	0	0

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

MOSQUITO SPECIES	TOTAL TESTED		NO. POOLS		POSITIVE POOLS			
	SEPT	(YEAR)	SEPT	(YEAR)	HJ	(YEAR)	EEE	(YEAR)
<i>Cs. melanura</i>	123	476	28	121	0	0	1	1
<i>Ae. canadensis</i>	0	1	0	1	0	0	0	0
<i>Cx. erraticus</i>	1	1	1	1	0	0	0	0
<i>Cx. restuans</i>	3	10	3	7	0	0	0	0
<i>Cx. salinarius</i>	0	1	0	1	0	0	0	0
<i>Cx. territans</i>	1	7	1	5	0	0	0	0
<i>An. punctipennis</i>	1	1	1	1	0	0	0	0

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

MOSQUITO SPECIES	TOTAL TESTED		NO. POOLS		POSITIVE POOLS			
	SEPT	(YEAR)	SEPT	(YEAR)	HJ	(YEAR)	EEE	(YEAR)
<i>Cs. melanura</i>	28	221	7	38	0	0	0	0
<i>Cq. perturbans</i>	0	88	0	24	0	0	0	0

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

MOSQUITO SPECIES	TOTAL TESTED		NO. POOLS		POSITIVE POOLS			
	SEPT	(YEAR)	SEPT	(YEAR)	HJ	(YEAR)	EEE	(YEAR)
<i>Cs. melanura</i>	1397	12,121	59	428	0	17	2	3
<i>Cq. perturbans</i>	223	8,638	11	262	0	0	0	0
<i>Ae. sollicitans</i>	571	4,924	27	109	0	0	0	0
<i>Ae. canadensis</i>	794	5,624	24	129	0	0	0	0
<i>Ae. cantator</i>	1702	5,006	26	81	0	0	0	0
<i>Ae. taeniorhynchus</i>	3	18	2	7	0	0	0	0
<i>Ae. vexans</i>	8	15	3	6	0	0	0	0
<i>Cx. erraticus</i>	17	18	2	3	0	0	0	0
<i>Cx. pipiens</i>	1	8	1	4	0	0	0	0
<i>Cx. restuans</i>	160	1,139	16	61	0	0	0	0
<i>Cx. salinarius</i>	5465	30,591	62	346	0	0	0	0
<i>Cx. territans</i>	28	292	3	31	0	0	0	0
<i>An. bradleyi</i>	1532	4,482	35	85	0	0	0	0
<i>An. punctipennis</i>	23	55	12	28	0	0	0	0
<i>An. quadrimaculatus</i>	26	190	12	52	0	0	0	0

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

MOSQUITO SPECIES	TOTAL TESTED		NO. POOLS		POSITIVE POOLS			
	SEPT	(YEAR)	SEPT	(YEAR)	HJ	(YEAR)	EEE	(YEAR)
<i>Cs. melanura</i>	31	224	10	66	0	0	0	0
<i>Cq. perturbans</i>	0	11	0	8	0	0	0	0
<i>Cx. restuans</i>	54	143	5	30	0	0	0	0
<i>Cx. territans</i>	6	61	3	21	0	0	0	0
<i>An. bradleyi</i>	2	8	1	7	0	0	0	0
<i>An. punctipennis</i>	1	4	1	4	0	0	0	0
<i>An. quadrimaculatus</i>	0	4	0	2	0	0	0	0

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

MOSQUITO SPECIES	TOTAL TESTED		NO. POOLS		POSITIVE POOLS			
	SEPT	(YEAR)	SEPT	(YEAR)	HJ	(YEAR)	EEE	(YEAR)
<i>Cs. melanura</i>	85	622	23	101	0	0	0	0
<i>Cq. perturbans</i>	0	139	0	9	0	0	0	0
<i>Ae. canadensis</i>	0	73	0	9	0	0	0	0
<i>Ae. cantator</i>	0	1	0	1	0	0	0	0
<i>Ae. triseriatus</i>	0	1	0	1	0	0	0	0
<i>Ae. vexans</i>	0	3	0	1	0	0	0	0
<i>Cx. pipiens</i>	0	4	0	2	0	0	0	0
<i>Cx. restuans</i>	1	15	1	12	0	0	0	0
<i>Cx. salinarius</i>	1	11	1	6	0	0	0	0
<i>Cx. territans</i>	4	6	2	4	0	0	0	0
<i>An. punctipennis</i>	2	4	2	4	0	0	0	0
<i>An. quadrimaculatus</i>	0	3	0	3	0	0	0	0

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

MOSQUITO SPECIES	TOTAL TESTED		NO. POOLS		POSITIVE POOLS			
	SEPT	(YEAR)	SEPT	(YEAR)	HJ	(YEAR)	EEE	(YEAR)
<i>Cs. melanura</i>	687	1768	34	112	3	5	0	0
<i>Cq. perturbans</i>	0	53	0	14	0	0	0	0
<i>Ae. canadensis</i>	0	14	0	6	0	0	0	0
<i>Ae. cantator</i>	0	1	0	1	0	0	0	0
<i>Ae. triseriatus</i>	3	7	3	5	0	0	0	0
<i>Ae. vexans</i>	0	1	0	1	0	0	0	0
<i>Cx. erraticus</i>	104	127	7	10	0	0	0	0
<i>Cx. pipiens</i>	2	36	2	6	0	0	0	0
<i>Cx. restuans</i>	49	142	9	39	0	0	0	0
<i>Cx. salinarius</i>	0	13	0	4	0	0	0	0
<i>Cx. territans</i>	23	31	3	8	0	0	0	0
<i>An. bradleyi</i>	25	32	9	15	0	0	0	0
<i>An. punctipennis</i>	56	104	8	19	0	0	0	0
<i>An. quadrimaculatus</i>	110	242	14	46	0	0	0	0