VECTOR SURVEILLANCE IN NEW JERSEY

EEE, WNV, SLE, LAC, DENV, CHIK and ZIKV

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CDC WEEK 27: 2 July to 8 July, 2017

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Culiseta melanura and Eastern Equine Encephalitis

SITE/Boxes	Inland or Coastal	Historic Population Mean	Current Weekly Mean	Total Tested* (Collected)	Total Pools Tested* (Submitted)	EEE Isolation Pools	MFIR
Bass River (Burlington Co.)/5	**Coastal**	0.20	0.00	1	1		
Green Bank (Burlington Co.)/25	**Coastal**	1.53	0.12	4 (7)	1 (2)		
Corbin City (Atlantic Co.)/25	**Coastal**	0.60	0.08	51 (53)	5 (6)		
Dennisville (Cape May Co.)/50	**Coastal**	3.04	0.00	5	2		
Winslow (Camden Co.)/50	**Inland**	1.11	1.70	385‡	11		
Centerton (Salem Co.)/50	**Inland**	2.18	0.22	43	5		
Turkey Swamp (Monmouth Co.)/50	**Inland**	0.49	0.26	6 (26)	4 (5)		
Glassboro (Gloucester Co.)/49	**Inland**	0.50	0.32	49	5		

*Current week (in parentheses) results pending. ‡ corrected from previous week NC=no collection

Remarks: Total positive EEE pools detected is zero. No horse cases reported to date.

Traditional Resting Box Sites: 544 *Cs. melanura* from 33 pools have been tested for EEE, with 75 additional *Cs. melanura* from 3 pools to be tested. No positive pools were detected at these eight sites. Statewide, 1,561 *Cs. melanura* from 128 pools have been tested, with no positive pools detected for an overall *Cs. melanura* MFIR of 0.00. 2,231 specimens from nine other species have also been tested, with no positives detected. Overall MFIR for all species statewide is 0.00.

	Additional *Cs. melanura* trapped by counties *traps with positives indicated in **BOLD.**				
County	**Trap types***	**Pools**	**Mosquitoes**	**Positives**	**MFIR**
Atlantic		8	68		
Burlington	LT	13	577		
Cape May	GR, RB	55	221		
Middlesex	RB	3	97		
Ocean	LT, RB	5	13		
Passaic	RB	1	1		
Salem	LT	2	8		
Sussex	ABC	8	32		
TOTAL		**95**	**1017**	**0**	**0.00**

Additional *Cs. melanura*: Counties maintain trap sites for *Cs. melanura* in other areas, using a variety of traps. No positive pools were detected in these traps.

Horses and Humans: No horses have been detected with EEE to date in New Jersey. Nearly all of the horse cases from previous years include those horses who were either not vaccinated or had incomplete vaccination histories. ***Horse owners are urged to make sure their horses are up to date on their vaccinations. Horse cases are known to occur through October and sometimes into November (see link below).*** Other sensitive species are non-native birds, such as Ostriches/Emus and Gallinaceous birds such as pheasants of Eurasian origins.

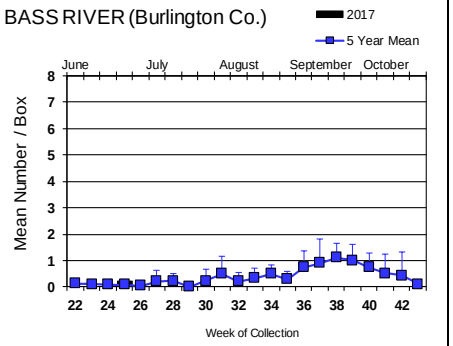
Species other than *Cs. melanura*	**Pools**	**Mosquitoes**	**Positives**	**MFIR**
Aedes canadensis canadensis	3	39		
Aedes cantator	6	6		
Aedes japonicus	1	19		
Anopheles bradleyi	17	51		
Anopheles punctipennis	3	7		
Coquillettidia perturbans	14	349		
Culex erraticus	4	44		
Culex pipiens	161	1338		
Culex salinarius	64	347		
Culex sp.	7	31		
State Total	**280**	**2231**		

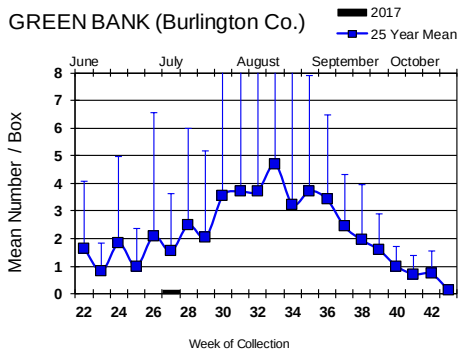
Horses and Vaccinations: The fate of unvaccinated equids reinforces the necessity of maintaining a vaccination schedule for arboviruses. For vaccination schedules recommended by the American Association of Equine Practices, see: http://www.aaep.org/vaccination_guidelines.htm

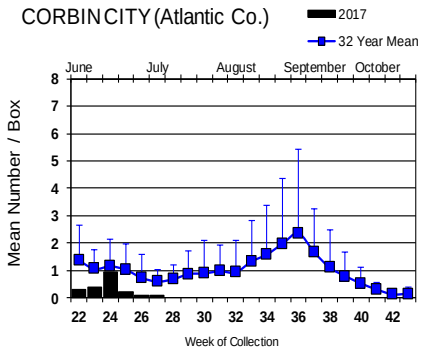
Additional Species: Nine additional species were tested for EEE. No additional positives were detected.

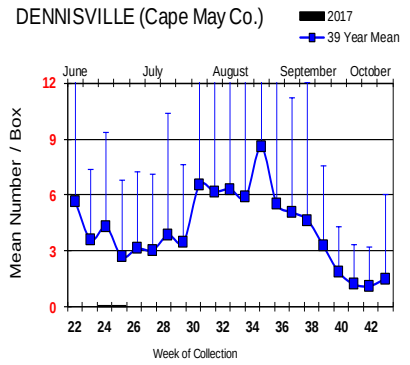
Culiseta melanura Population Graphs

Coastal

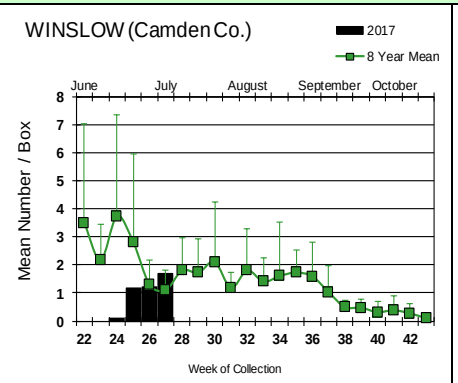


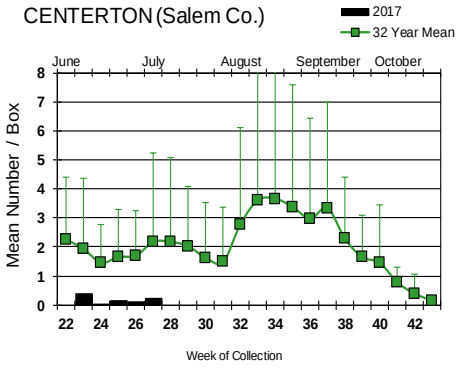


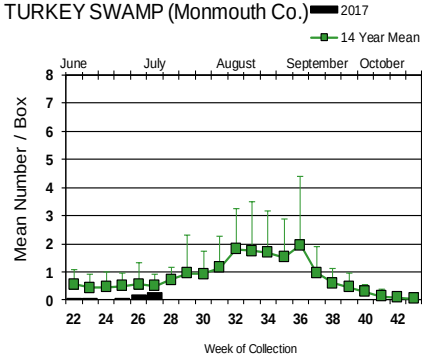


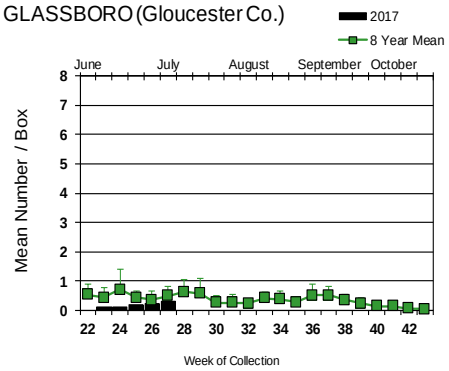


Inland



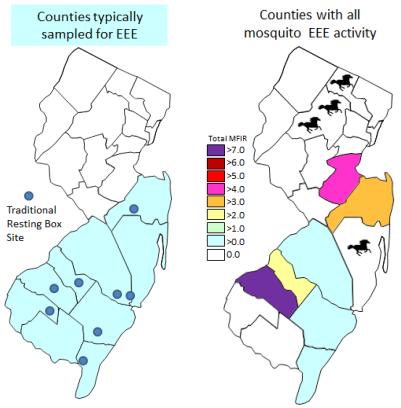






No detection of EEE has occurred at the traditional resting box sites. Mosquito population abundances remain low in the resting box collections, although the Winslow site had abundances that appear to be higher than average (but note that the value is within the error bar for historical data and thus NOT SIGNIFICANTLY higher. Again, light trap data suggests populations at average levels for Coastal, Delaware Bayshore and Pinelands sites (see http://vectorbio.rutgers.edu/reports/mosquito/).

Maps to right: Last year's data showed an unusual increase in activity well north of the typical areas of testing in New Jersey. The map on the left shows the area that is usually tested, with the locations of the traditional resting box sites. The map on the right shows locations and MFIR values of horse cases and positive mosquitoes. The occurrence of EEE in Middlesex County (pink) indicated the first positive EEE *Cs. melanura* of the season.



= Positive pool(s) detected (red = melanura, purple = other species).

EEE in US (2017 cumulative cases): (Black or Red = previous + new reported cases occurring)

- equine:
- mosquito pools:
- sentinel: FL(5) TX(3)
- human:

West Nile Virus Positive Organisms in US, 2017

West Nile in US (2017 cumulative cases): Single black values indicate no change from previous week. Black values / red values equals previous week/New totals.
Note: Data reported by all states should be considered provisional and subject to change. Sources for this table can be found here.

	Birds	Mosquito Pools	Sentinels	Horses	Humans
Alabama					2
Alaska					
Arizona	0	9/12		0	9/16
Arkansas				0	0
California	39	412	1		3
Colorado					1
Connecticut		0			0
Delaware					
DC					
Florida			8		0
Georgia		0			0
Hawaii					
Idaho		4		0	0
Illinois	2/3	64/80			0
Indiana	0	14/20		0	2
Iowa		1/2			
Kansas		5		0	1/2
Kentucky				1	
Louisiana					
Maine					
Maryland					
Mass.		1/2		0	0
Michigan					
Minnesota					
Mississippi		27/39		1	2
Missouri		0		0	0

	Birds	Mosquito Pools	Sentinels	Horses	Humans
Montana					
Nebraska	0	0		0	0
Nevada					
New Hampshire					
New Jersey		5/8		0	0
New Mexico					2
New York		4			
North Carolina					
North Dakota	2	0		0	0
Ohio		3			0
Oklahoma					
Oregon		1			
Pennsylvania	0	24/27		0	0
Rhode Island		0		0	0
South Carolina		5			
South Dakota		9/10			1
Tennessee					
Texas		70			6
Utah		2		0	0
Vermont					
Virginia					
Washington	0	1/3		0	0
West Virginia					
Wisconsin	14/25	1		0	0
Wyoming					

* Can include other species (e.g., dogs, cows) reported positive.

Protocol: New Jersey Department of Health (NJDH Public Health Environmental and Agricultural Laboratories, PHEAL) and the Cape May County Department of Mosquito Control tests mosquito pools using RT-PCR Taqman techniques.

Mosquito Species Submitted and Tested for West Nile Virus Testing through 7 July 2017.

Species	Pools	Mosquitoes	Positives	MFIR
Aedes albopictus	153	869		
Aedes atropalpus	9	57		
Aedes canadensis canadensis	35	416		
Aedes cantator	19	198		
Aedes cinereus	1	54		
Aedes grossbecki	2	4		
Aedes japonicus	88	278		
Aedes sollicitans	3	11		
Aedes stimulans	1	10		
Aedes taeniorhynchus	2	12		
Aedes triseriatus	77	180		
Aedes trivittatus	1	1		
Aedes vexans	11	96		
Anopheles bradleyi	20	80		
Anopheles punctipennis	12	38		
Anopheles quadrimaculatus	20	166		
Coquillettidia perturbans	18	357		
Culex erraticus	6	47		
Culex pipiens	183	1907	1	0.524
Culex restuans	196	1003		
Culex salinarius	65	356		
Culex spp.	358	15300	7	0.458
Culex territans	9	32		
Culiseta melanura	130	1567		
Orthopodomyia signifera	1	1		
Psorophora columbiae	1	1		
Psorophora ferox	2	6		
Grand Total	**1423**	**23047**	**8**	**0.347**

Remarks: To date, 1,423 pools of 23,047 mosquitoes from 26 species have been tested. Eight positive pools were detected, all in the enzootic vector, *Culex* (Mix or *pipiens*). First positive *Culex* Mix pool was detected in Sussex County on 12 June. Last year, the first positive pool of *Culex* Mix was collected on 14 June in Monmouth County.

Humans, Horses and Wild Birds: No human or horse cases have been detected. Last year, human cases were first reported in CDC week 20, but under unusual circumstances. First typical case occurred in CDC week 27. For further information, see http://www.nj.gov/health/cd/statistics/arboviral-stats/ .

Birds are no longer routinely tested in New Jersey.

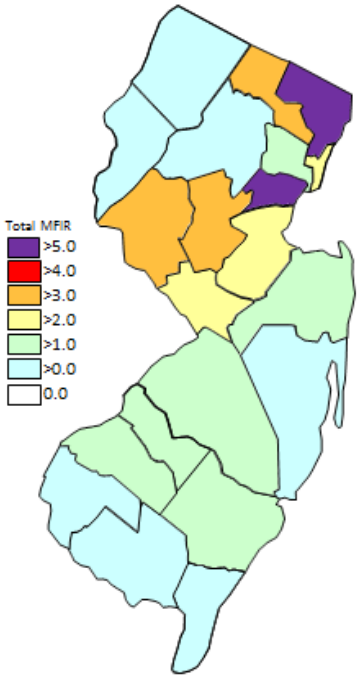
WNV Results by County through 7 July 2017.

County	Species	Pools	Mosquitoes	Positives	MFIR
Atlantic		**38**	**966**		
	Aedes japonicus	1	2		
	Aedes sollicitans	1	6		
	Aedes taeniorhynchus	1	11		

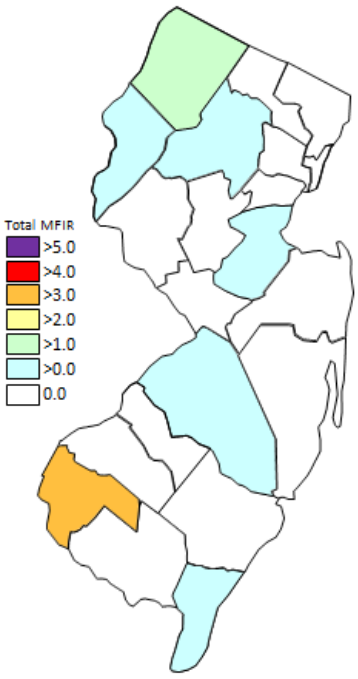
	Aedes vexans	1	19		
	Anopheles bradleyi	1	9		
	Coquillettidia perturbans	5	303		
	Culex pipiens	12	412		
	Culex salinarius	1	9		
	Culex spp.	1	75		
	Culiseta melanura	13	119		
	Psorophora columbiae	1	1		
Burlington		**41**	**1776**	**1**	0.563
	Aedes albopictus	1	34		
	Aedes canadensis canadensis	1	33		
	Aedes japonicus	2	41		
	Culex salinarius	3	225		
	Culex spp.	21	866	1	1.155
	Culiseta melanura	13	577		
Camden		**25**	**1084**		
	Aedes japonicus	1	4		
	Culex spp.	15	780		
	Culiseta melanura	9	300		
Cape May		**748**	**3068**	**1**	**0.326**
	Aedes albopictus	73	109		
	Aedes atropalpus	9	57		
	Aedes canadensis canadensis	15	23		
	Aedes cantator	6	6		
	Aedes japonicus	57	115		
	Aedes triseriatus	58	119		
	Aedes vexans	5	6		
	Anopheles bradleyi	19	71		
	Anopheles punctipennis	5	8		
	Anopheles quadrimaculatus	18	164		
	Coquillettidia perturbans	7	9		
	Culex erraticus	4	44		
	Culex pipiens	162	1339	1	0.747
	Culex restuans	178	606		
	Culex salinarius	61	122		
	Culex spp.	3	7		
	Culex territans	9	32		
	Culiseta melanura	57	226		
	Orthopodomyia signifera	1	1		
	Psorophora ferox	1	4		
Cumberland		**8**	**47**		
	Aedes japonicus	2	17		
	Aedes triseriatus	1	2		
	Anopheles quadrimaculatus	1	1		
	Culex spp.	4	27		
Essex		**22**	**248**		
	Aedes albopictus	7	12		
	Aedes japonicus	3	4		
	Culex spp.	12	232		

Gloucester		**5**	**49**		
	Culiseta melanura	5	49		
Hudson		**23**	**1311**		
	Culex spp.	23	1311		
Hunterdon		**23**	**588**		
	Culex spp.	23	588		
Mercer		**26**	**751**		
	Aedes japonicus	4	8		
	Culex pipiens	3	127		
	Culex restuans	9	259		
	Culex spp.	10	357		
Middlesex		**29**	**1855**	**1**	**0.539**
	Culex spp.	26	1758	1	0.569
	Culiseta melanura	3	97		
Monmouth		**132**	**1430**		
	Aedes albopictus	53	613		
	Aedes canadensis canadensis	19	360		
	Aedes cantator	12	154		
	Aedes grossbecki	2	4		
	Aedes japonicus	6	32		
	Aedes sollicitans	2	5		
	Aedes taeniorhynchus	1	1		
	Aedes triseriatus	1	1		
	Aedes trivvitattus	1	1		
	Aedes vexans	3	8		
	Anopheles punctipennis	6	20		
	Coquillettidia perturbans	1	1		
	Culex spp.	20	218		
	Culiseta melanura	5	12		
Morris		**29**	**1339**	**1**	0.747
	Culex spp.	29	1339	1	0.747
Ocean		**49**	**458**		
	Aedes albopictus	12	74		
	Aedes japonicus	2	21		
	Aedes triseriatus	3	11		
	Coquillettidia perturbans	1	36		
	Culex spp.	24	298		
	Culiseta melanura	7	18		
Passaic		**17**	**80**		
	Aedes japonicus	5	24		
	Aedes triseriatus	1	1		
	Coquillettidia perturbans	1	1		
	Culex pipiens	5	28		
	Culex restuans	4	25		
	Culiseta melanura	1	1		

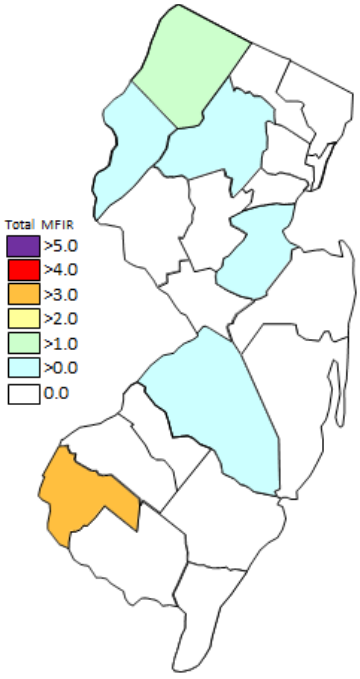
Salem		**40**	**271**	**1**	**3.690**
	Aedes albopictus	6	25		
	Aedes japonicus	3	5		
	Aedes triseriatus	5	12		
	Aedes vexans	1	2		
	Anopheles quadrimaculatus	1	1		
	Coquillettidia perturbans	3	7		
	Culex erraticus	2	3		
	Culex pipiens	1	1		
	Culex spp.	10	162	1	6.173
	Culiseta melanura	7	51		
	Psorophora ferox	1	2		
Somerset		**42**	**1819**		
	Aedes japonicus	1	4		
	Culex spp.	41	1815		
Sussex		**44**	**997**	**1**	**1.003**
	Aedes albopictus	1	2		
	Aedes triseriatus	8	34		
	Culex restuans	5	113		
	Culex spp.	22	816	1	1.225
	Culiseta melanura	8	32		
Warren		**80**	**4825**	**2**	**0.415**
	Aedes cantator	1	38		
	Aedes cinereus	1	54		
	Aedes japonicus	1	1		
	Aedes stimulans	1	10		
	Aedes vexans	1	61		
	Anopheles punctipennis	1	10		
	Culex spp.	74	4651	2	0.430
Grand Total		**1423**	**23047**	**8**	**0.347**



Cumulative WNV activity in 2016.



WNV activity to 7 July 2017.



WNV activity last week, 2017

Saint Louis Encephalitis (SLE) to 7 July 2017.

New Jersey will be primarily testing for SLE this year only when adjacent states show human activity (Cape May tests mosquitoes in the Cape May lab independently). SLE has had previous activity in New Jersey, most notably in 1964 and 1975 (CDC's SLE website), the latter prompting the surveillance reporting by Rutgers. SLE is a flavivirus and has a similar transmission pattern to West Nile, with *Culex* species as the predominant vectors.

No pools of SLE have tested positive for 2017.

County	Species	Pools	Mosquitoes	Positives	MFIR
Cape May		**164**	**1345**		
	Culex pipiens	161	1338		
	Culex spp.	3	7		
Grand Total		**164**	**1345**		

La Crosse Encephalitis (LAC) to 7 July 2017.

New Jersey will be primarily testing for LAC this year only when adjacent states show human activity (Cape May tests mosquitoes in the Cape May lab independently). New Jersey has had 3 cases of this encephalitic disease since 1964 (see CDC's LAC website). The mortality is low but like other encephalitides, LAC can have both personal (lasting neurological sequelae) and economic impacts. LAC is a bunyavirus with a transmission cycle involving mosquitoes such as *Aedes triseriatus* and small mammals such as squirrels and chipmunks. LAC can not only infect *Aedes albopictus* but transovarial transmission was also demonstrated.
(Tesh and Gubler 1975 Laboratory studies of transovarial transmission of La Crosse and other arboviruses by *Aedes albopictus* and *Culex fatigans.* American Journal of Tropical Medicine and Hygiene 24(5):876-880).

No pools of SLE have tested positive for 2017.

County	Species			Positives	MFIR
Burlington		**3**	**75**		
	Aedes albopictus	1	34		
	Aedes japonicus	2	41		
Sussex		**8**	**34**		
	Aedes triseriatus	8	34		
Grand Total		**11**	**109**		

Dengue (DENV) to 7 July 2017.

New Jersey will be selectively testing for DENV (including serotypes) this year. Dengue has not had a history of local transmission here in New Jersey, but each year, travelers can bring virus back from areas in the world with virus activity. This is significant as humans are NOT dead-end hosts and thus there is the potential for local transmission (i.e., New Jersey mosquitoes biting a sick person and then biting and transmitting the disease to someone else) to be established. DENV is a flavivirus but unlike WNV, *Aedes* mosquitoes are predominant vectors. In New Jersey, *Aedes albopictus* is a candidate for local transmission. There are 4 serotypes tested for Dengue.

Note Same pools of *Ae. albopictus* are tested for the four serotypes of Dengue as well as Chikungunya.

Currently, there are no tested pools of Dengue in 2017.

County	Species	DENV1		DENV2		DENV3		DENV4		Pos.	MFIR
		Pool	Mos.	Pool	Mos.	Pool	Mos.	Pool	Mos.		
Grand Total											

Chikungunya (CHIK) to 7 July 2017.

New Jersey will be selectively testing for CHIK this year. Chikungunya is similar in symptoms to Dengue, a “breakbone” fever and has a low mortality rate. But this virus has had recent worldwide activity, and in the past year has come to the Western Hemisphere. As with Dengue, transmission can occur when a mosquito bites an infected human, then bites an uninfected human who subsequently becomes ill. CHIK is an alphavirus with *Aedes* mosquitoes as potential vectors. In New Jersey, *Aedes albopictus* is the mosquito of interest.

No pools of CHIK have tested positive in 2017.

County	Species	Pools	Mosquitoes	Positives	MFIR
Cape May		**73**	**109**		
	Aedes albopictus	73	109		
Grand Total		**73**	**109**		

Zika (ZIKV) to 7 July 2017.

New Jersey will be selectively testing for ZIKV this year. Zika is an emerging arboviral threat with significant health consequences for fetuses and recent activity in the Western Hemisphere. Humans are potential hosts that can transmit through sexual activity. ZIKV is a flavivirus with *Aedes* mosquitoes as potential vectors. In New Jersey, *Aedes albopictus* is the mosquito of interest.

No pools have tested positive in 2017.

County	Species	Pools	Mosquitoes	Positives	MFIR
Cape May		**73**	**109**		
	Aedes albopictus	73	109		
Grand Total		**73**	**109**		