VECTOR SURVEILLANCE IN NEW JERSEY

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

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CDC WEEK 30: 23 July to 29 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**	0.24	0.00	1	1		
Green Bank (Burlington Co.)/25	**Coastal**	3.56	0.32	7 (15)	2 (3)		
Corbin City (Atlantic Co.)/25	**Coastal**	0.90	0.44	63 (77)	7 (8)		
Dennisville (Cape May Co.)/50	**Coastal**	6.51	0.42	33	4		
Winslow (Camden Co.)/50	**Inland**	2.11	1.00	600	17		
Centerton (Salem Co.)/50	**Inland**	1.63	0.84	98	8		
Turkey Swamp (Monmouth Co.)/50	**Inland**	0.93	0.20	34 (44)	7 (8)		
Glassboro (Gloucester Co.)/49	**Inland**	0.27	0.10	68	8		

*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: 904 *Cs. melanura* from 54 pools have been tested for EEE, with 29 additional *Cs. melanura* from 3 pools to be tested. No positive pools were detected at these eight sites. Statewide, 2,382 *Cs. melanura* from 222 pools have been tested, with no positive pools detected for an overall *Cs. melanura* MFIR of 0.00. 4,420 specimens from 15 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	LT, RB	13	88		
Burlington	CO_2, UVLT	24	787		
Cape May	GR, RB	86	325		
Cumberland	LT, RB	3	8		
Gloucester	RB	4	23		
Middlesex	RB	6	133		
Ocean	GR, LT, RB	10	22		
Passaic	RB	3	3		
Salem	LT	3	33		
Sussex	ABC, BGS, RB	16	56		
TOTAL		**168**	**1478**	**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.

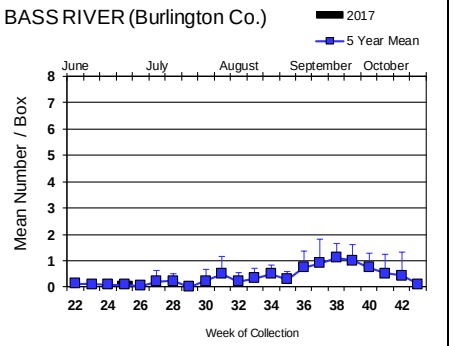
Horses and Vaccinations: The fate of unvaccinated equids reinforces the necessity of maintaining a vaccination schedule for arboviruses. For vaccination schedules recommended by the American Association of Equine Practices, see: http://www.aaep.org/vaccination_guidelines.htm

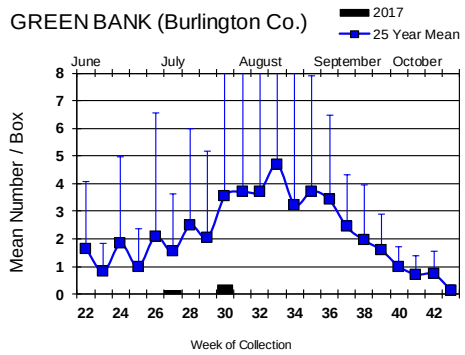
Additional Species: Fifteen additional species were tested for EEE. No additional positives were detected.

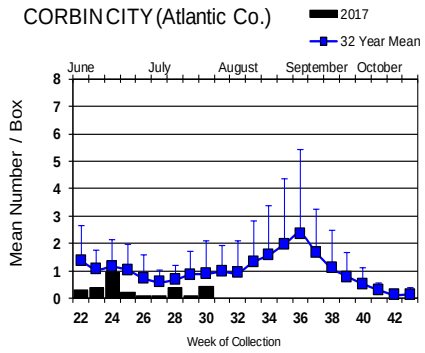
Species other than *Cs. melanura*	Pools	Mosquitoes	Positives	MFIR
Aedes canadensis canadensis	4	41		
Aedes cantator	8	8		
Aedes japonicus	2	20		
Aedes sollicitans	1	1		
Aedes taeniorhynchus	1	8		
Aedes vexans	1	75		
Anopheles bradleyi	41	264		
Anopheles crucians	1	17		
Anopheles punctipennis	8	55		
Anopheles quadrimaculatus	3	26		
Coquillettidia perturbans	38	702		
Culex erraticus	15	204		
Culex pipiens	285	2333		
Culex salinarius	109	623		
Culex sp.	13	42		
Psorophora cyanescens	1	1		
State Total	**531**	**4420**		

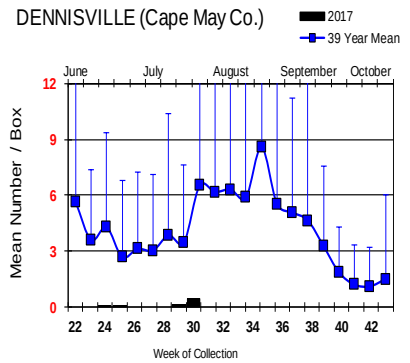
Culiseta melanura Population Graphs

Coastal

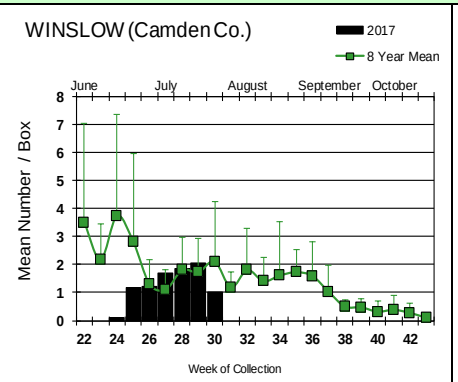


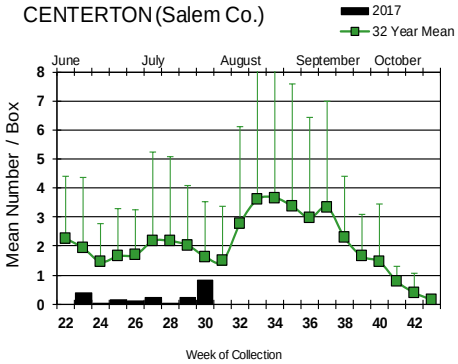


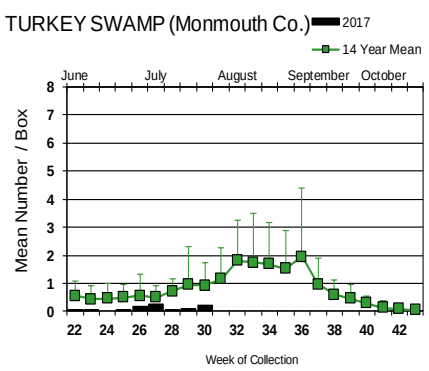


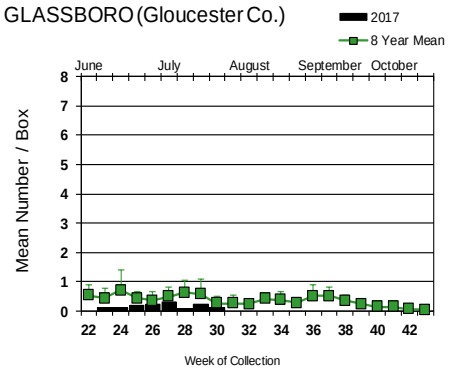


Inland









No detection of EEE has occurred at the traditional resting box sites. Mosquito population abundances remain low in the resting box collections.

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

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

- equine: FL(1) GA(1) LA(1) SC(2)
- mosquito pools: RI(2)
- sentinel: FL(9) 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					1
Alaska					
Arizona	0	53/57		0	22/26
Arkansas				0	0
California	71/115	681/1125	17/34	2	4/6
Colorado		2/7			1/2
Connecticut		2/8			0
Delaware					
DC					
Florida	1		9/10		0
Georgia		0		1	3
Hawaii					
Idaho		19/30		1	0
Illinois	7/10	263/438			1
Indiana	0	48/93		0	2
Iowa		6		0	1
Kansas		13		0	4
Kentucky				1/2	
Louisiana	7	175			7
Maine		0		0	0
Maryland					
Mass.		19/27		0	0
Michigan				3	
Minnesota					
Mississippi		80/93		1	10/16
Missouri		0		0	2

	Birds	Mosquito Pools	Sentinels	Horses	Humans
Montana					
Nebraska	1	11		0	1/3
Nevada					1
New Hampshire		0		0	0
New Jersey		33/71		0	0
New Mexico					2
New York		16/74			
North Carolina					
North Dakota	3/4	0		0	2
Ohio		25/151			0
Oklahoma					2
Oregon		3			
Pennsylvania	1/2	174/277		0	0
Rhode Island		0		0	0
South Carolina		5			
South Dakota		14/22			2/4
Tennessee					2
Texas		215/308	4		12/21
Utah		8/22		0	0
Vermont					
Virginia				1	1
Washington	0	6/8		0	0
West Virginia					
Wisconsin	36/38	1/4		1	0
Wyoming				1	

* 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.

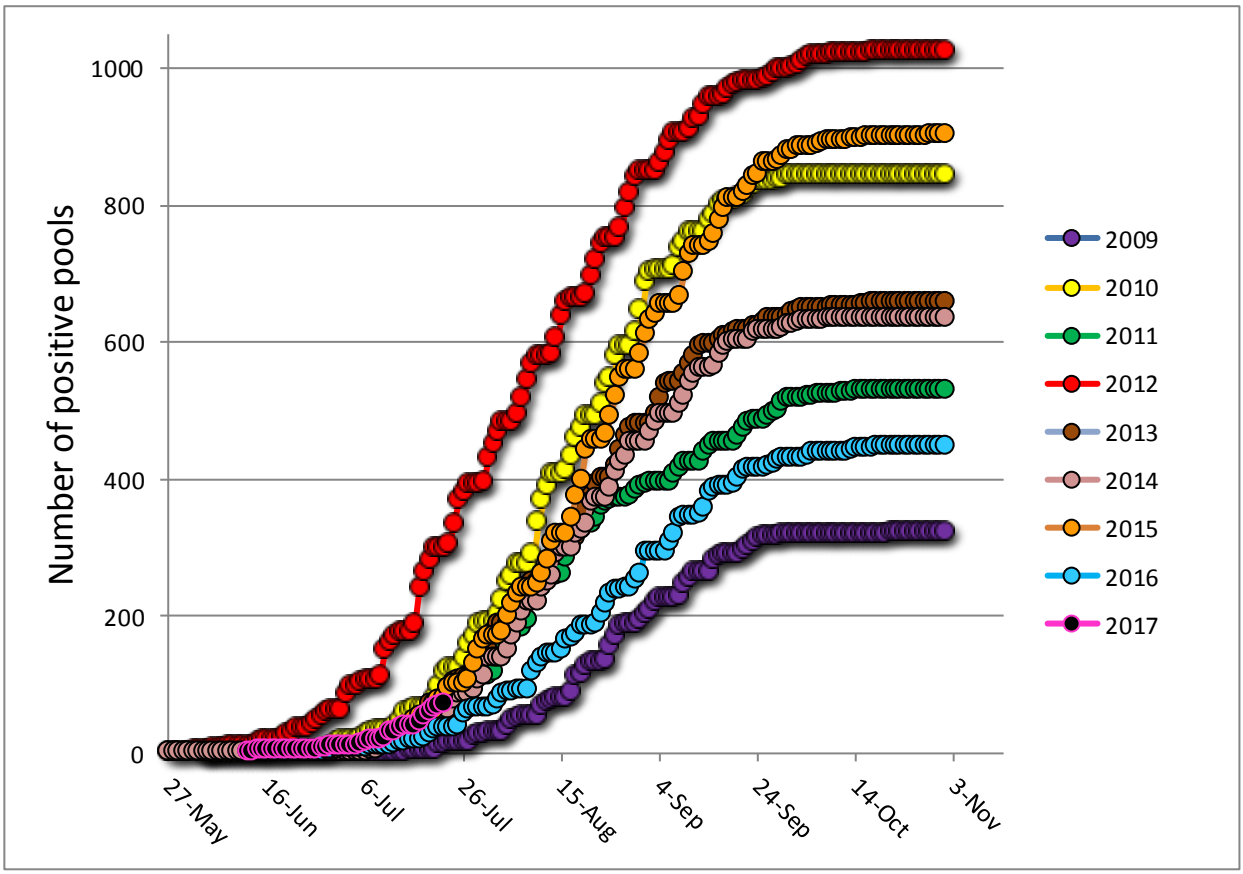
Mosquito Species Submitted and Tested for West Nile Virus Testing through 28 July 2017.

Species	Pools	Mosquitoes	Positives	MFIR
Aedes albopictus	365	2775	2	0.721
Aedes atropalpus	14	77		
Aedes canadensis canadensis	40	429		
Aedes cantator	26	222		
Aedes cinereus	1	54		
Aedes grossbecki	2	4		
Aedes japonicus	176	736		
Aedes sollicitans	9	177		
Aedes stimulans	1	10		
Aedes taeniorhynchus	6	53		
Aedes triseriatus	140	351		
Aedes trivittatus	1	1		
Aedes vexans	23	250		
Anopheles barberi	3	3		
Anopheles bradleyi	46	335		
Anopheles crucians	1	17		
Anopheles earlei	1	1		
Anopheles punctipennis	24	96		
Anopheles quadrimaculatus	52	367		
Coquillettidia perturbans	47	718		
Culex erraticus	21	217		
Culex pipiens	356	4129	3	0.727
Culex restuans	269	1768		
Culex salinarius	114	796		
Culex spp.	963	42871	65	1.516
Culex territans	19	73		
Culiseta melanura	225	2389	1	0.419
Orthopodomyia signifera	2	2		
Psorophora columbiae	1	1		
Psorophora cyanescens	1	1		
Psorophora ferox	3	7		
Grand Total	**2952**	**58930**	**71**	**1.205**

Remarks: To date, 2,952 pools of 58,930 mosquitoes from 30 species have been tested. 71 positive pools have been detected. Most are in the enzootic vector, *Culex* (Mix or *pipiens*), but this past weeks testing also showed positive pools in *Aedes albopictus* and *Culiseta melanura* (this last species not surprising, given its ornithophilic nature). Activity jumped considerably in Bergen County within July. Overall MFIR for New Jersey is at 1.205, up from 0.712. 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.



Above is a graph showing cumulative number of positive pools for the last 9 years, inclusive of the most active (2012) and least active (2009) years. While it is still early, trends are beginning to suggest a moderately active season (black markers with pink borders for current year).

WNV Results by County through 28 July 2017.

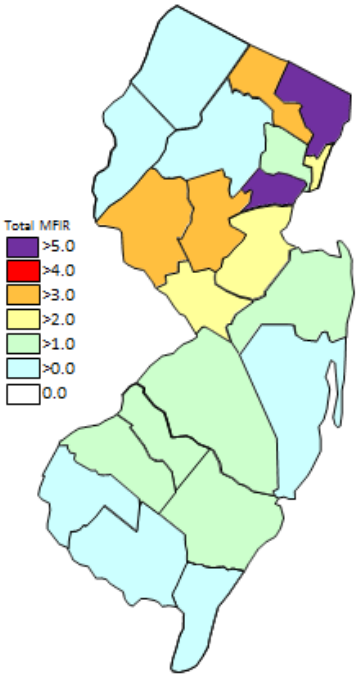
County	Species	Pools	Mosquitoes	Positives	MFIR
Atlantic		**62**	**1496**		
	Aedes japonicus	1	2		
	Aedes sollicitans	4	168		
	Aedes taeniorhynchus	2	41		
	Aedes triseriatus	1	12		
	Aedes vexans	1	19		
	Anopheles bradleyi	3	51		
	Coquillettidia perturbans	8	363		
	Culex pipiens	13	431		
	Culex salinarius	1	9		
	Culex spp.	7	248		
	Culiseta melanura	20	151		
	Psorophora columbiae	1	1		
Bergen		**45**	**1927**	**14**	**7.265**
	Aedes japonicus	7	42		
	Culex spp.	38	1885	14	7.427
Burlington		**102**	**4067**	**4**	**0.984**
	Aedes albopictus	5	104		
	Aedes canadensis canadensis	2	35		

	Aedes cantator	1	1		
	Aedes japonicus	3	76		
	Aedes taeniorhynchus	1	8		
	Aedes triseriatus	2	30		
	Aedes vexans	1	75		
	Anopheles bradleyi	1	75		
	Anopheles crucians	1	17		
	Culex salinarius	5	342		
	Culex spp.	53	2509	3	1.196
	Culiseta melanura	27	795	1	1.258
Camden		**76**	**3174**	**1**	**0.315**
	Aedes albopictus	3	22		
	Aedes japonicus	5	22		
	Culex spp.	51	2530	1	0.395
	Culiseta melanura	17	600		
Cape May		**1217**	**5121**	**2**	**0.391**
	Aedes albopictus	151	239		
	Aedes atropalpus	14	77		
	Aedes canadensis canadensis	16	24		
	Aedes cantator	7	7		
	Aedes japonicus	82	161		
	Aedes sollicitans	1	1		
	Aedes triseriatus	98	181		
	Aedes vexans	6	7		
	Anopheles bradleyi	42	209		
	Anopheles punctipennis	5	8		
	Anopheles quadrimaculatus	41	310		
	Coquillettidia perturbans	11	13		
	Culex erraticus	12	191		
	Culex pipiens	286	2334	2	0.857
	Culex restuans	224	685		
	Culex salinarius	102	224		
	Culex spp.	7	13		
	Culex territans	19	73		
	Culiseta melanura	91	359		
	Orthopodomyia signifera	1	1		
	Psorophora ferox	1	4		
Cumberland		**47**	**382**		
	Aedes albopictus	4	10		
	Aedes japonicus	6	33		
	Aedes triseriatus	1	2		
	Aedes vexans	5	42		
	Anopheles quadrimaculatus	5	26		
	Coquillettidia perturbans	4	42		
	Culex erraticus	1	11		
	Culex salinarius	2	57		
	Culex spp.	16	151		
	Culiseta melanura	3	8		
Essex		**52**	**360**		
	Aedes albopictus	20	46		
	Aedes japonicus	6	11		
	Culex spp.	26	303		

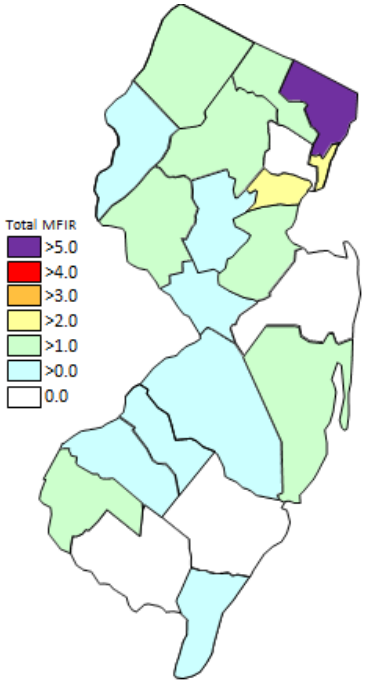
Gloucester		**104**	**4062**	**2**	**0.492**
	Aedes albopictus	21	221	1	4.525
	Aedes japonicus	8	85		
	Aedes triseriatus	2	26		
	Anopheles punctipennis	2	24		
	Anopheles quadrimaculatus	3	26		
	Coquillettidia perturbans	1	6		
	Culex pipiens	9	657		
	Culex spp.	46	2926	1	0.342
	Culiseta melanura	12	91		
Hudson		**63**	**3384**	**10**	**2.955**
	Culex spp.	63	3384	10	2.955
Hunterdon		**113**	**5088**	**7**	**1.376**
	Culex spp.	113	5088	7	1.376
Mercer		**64**	**1424**	**1**	**0.702**
	Aedes japonicus	15	66		
	Culex pipiens	3	127		
	Culex restuans	25	747		
	Culex spp.	21	484	1	2.066
Middlesex		**62**	**3235**	**4**	**1.236**
	Culex spp.	56	3102	4	1.289
	Culiseta melanura	6	133		
Monmouth		**264**	**3017**		
	Aedes albopictus	111	1697		
	Aedes canadensis canadensis	22	370		
	Aedes cantator	17	176		
	Aedes grossbecki	2	4		
	Aedes japonicus	18	80		
	Aedes sollicitans	4	8		
	Aedes taeniorhynchus	3	4		
	Aedes triseriatus	7	7		
	Aedes trivitattus	1	1		
	Aedes vexans	7	17		
	Anopheles barberi	3	3		
	Anopheles earlei	1	1		
	Anopheles punctipennis	15	53		
	Anopheles quadrimaculatus	1	1		
	Coquillettidia perturbans	5	6		
	Culex erraticus	2	6		
	Culex salinarius	2	14		
	Culex spp.	31	526		
	Culiseta melanura	9	40		
	Orthopodomyia signifera	1	1		
	Psorophora cyanescens	1	1		
	Psorophora ferox	1	1		
Morris		**93**	**4046**	**6**	**1.483**
	Coquillettidia perturbans	4	166		
	Culex spp.	89	3880	6	1.546

Ocean		**88**	**862**	**1**	**1.160**
	Aedes albopictus	24	243		
	Aedes japonicus	5	38		
	Aedes triseriatus	4	12		
	Anopheles punctipennis	1	1		
	Coquillettidia perturbans	4	74		
	Culex erraticus	2	2		
	Culex spp.	38	470	1	2.128
	Culiseta melanura	10	22		
Passaic		**78**	**745**	**1**	**1.342**
	Aedes albopictus	1	5		
	Aedes japonicus	11	73		
	Aedes triseriatus	3	11		
	Coquillettidia perturbans	5	9		
	Culex erraticus	2	4		
	Culex pipiens	44	579	1	1.727
	Culex restuans	9	61		
	Culiseta melanura	3	3		
Salem		**60**	**641**	**1**	**1.560**
	Aedes albopictus	11	37		
	Aedes japonicus	3	5		
	Aedes triseriatus	7	14		
	Aedes vexans	1	2		
	Anopheles quadrimaculatus	1	1		
	Coquillettidia perturbans	5	39		
	Culex erraticus	2	3		
	Culex pipiens	1	1		
	Culex spp.	17	406	1	2.463
	Culiseta melanura	11	131		
	Psorophora ferox	1	2		
Somerset		**86**	**3236**	**3**	**0.927**
	Aedes albopictus	3	16		
	Aedes japonicus	4	33		
	Aedes triseriatus	1	3		
	Culex spp.	78	3184	3	0.942
Sussex		**90**	**1963**	**2**	**1.019**
	Aedes albopictus	3	8		
	Aedes triseriatus	14	53		
	Culex restuans	11	275		
	Culex salinarius	2	150		
	Culex spp.	44	1421	2	1.407
	Culiseta melanura	16	56		
Union		**47**	**2725**	**7**	**2.569**
	Aedes albopictus	8	127	1	7.874
	Culex spp.	39	2598	6	2.309
Warren		**139**	**7975**	**5**	**0.627**
	Aedes cantator	1	38		
	Aedes cinereus	1	54		

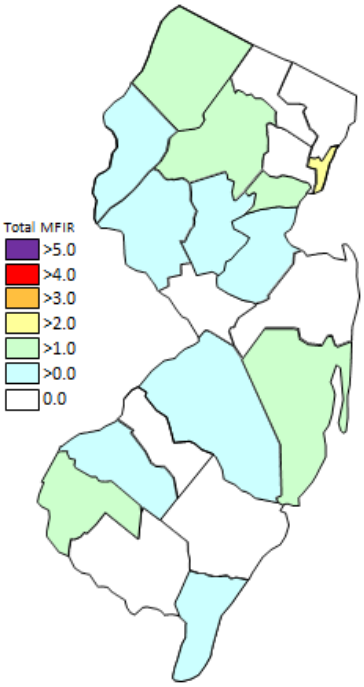
	Aedes japonicus	2	9		
	Aedes stimulans	1	10		
	Aedes vexans	2	88		
	Anopheles punctipennis	1	10		
	Anopheles quadrimaculatis	1	3		
	Culex spp.	130	7763	5	0.644
Grand Total		**2952**	**58930**	**71**	**1.205**



Cumulative WNV activity in 2016.



WNV activity to 28 July 2017.



WNV activity last week, 2017

Saint Louis Encephalitis (SLE) to 28 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
Burlington		**8**	**554**		
	Culex spp.	8	554		
Cape May		**292**	**2346**		
	Culex pipiens	285	2333		
	Culex spp.	7	13		
Grand Total		**300**	**2900**		

La Crosse Encephalitis (LAC) to 28 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		**9**	**199**		
	Aedes albopictus	4	93		
	Aedes japonicus	3	76		
	Aedes triseriatus	2	30		
Sussex		**14**	**53**		
	Aedes triseriatus	14	53		
Grand Total		**23**	**252**		

Dengue (DENV) to 28 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 28 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		**151**	**239**		
	Aedes albopictus	151	239		
Grand Total		**151**	**239**		

Zika (ZIKV) to 28 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		**151**	**239**		
	Aedes albopictus	151	239		
Grand Total		**151**	**239**		