

VECTOR SURVEILLANCE IN NEW JERSEY

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

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 CDC WEEK 29: 16 July to 22 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	0.00	0.00	1	1		
Green Bank (Burlington Co.)/25	Coastal	2.05	0.00	7	2		
Corbin City (Atlantic Co.)/25	Coastal	0.87	0.12	63 (66)	7 (8)		
Dennisville (Cape May Co.)/50	Coastal	3.48	0.14	12	3		
Winslow (Camden Co.)/50	Inland	1.72	2.04	579	16		
Centerton (Salem Co.)/50	Inland	2.02	0.22	56	7		
Turkey Swamp (Monmouth Co.)/50	Inland	0.95	0.08	30 (34)	6 (7)		
Glassboro (Gloucester Co.)/49	Inland	0.56	0.22	63	7		

*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: 811 *Cs. melanura* from 49 pools have been tested for EEE, with 7 additional *Cs. melanura* from 2 pools to be tested. No positive pools were detected at these eight sites. Statewide, 2,100 *Cs. melanura* from 202 pools have been tested, with no positive pools detected for an overall *Cs. melanura* MFIR of 0.00. 3,039 specimens from nine other species have also been tested, with no positives detected. Overall MFIR for all species statewide is 0.00.

Additional <i>Cs. melanura</i> trapped by counties					
*traps with positives indicated in BOLD .					
County	Trap types*	Pools	Mosquitoes	Positives	MFIR
Atlantic	LT, RB	13	88		
Burlington	LT	17	621		
Cape May	GR, RB	84	320		
Cumberland	LT, RB	3	8		
Gloucester	RB	4	23		
Middlesex	RB	4	121		
Ocean	LT, RB	10	22		
Passaic	RB	3	3		
Salem	LT	3	33		
Sussex	ABC	12	50		
TOTAL		153	1289	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.aep.org/vaccination_guidelines.htm

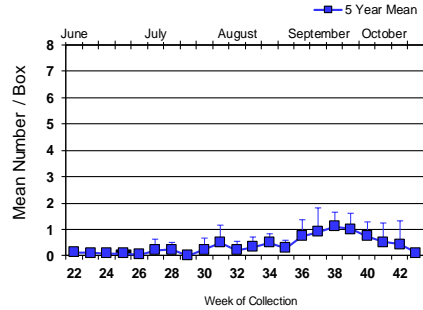
Additional Species: Twelve additional species were tested for EEE. No additional positives were detected.

Species other than <i>Cs. melanura</i>	Pools	Mosquitoes	Positives	MFIR
<i>Aedes canadensis canadensis</i>	4	41		
<i>Aedes cantator</i>	8	8		
<i>Aedes japonicus</i>	1	19		
<i>Aedes sollicitans</i>	1	1		
<i>Aedes vexans</i>	1	75		
<i>Anopheles bradleyi</i>	37	248		
<i>Anopheles crucians</i>	1	17		
<i>Anopheles punctipennis</i>	7	47		
<i>Anopheles quadrimaculatus</i>	3	26		
<i>Coquillettidia perturbans</i>	31	515		
<i>Culex erraticus</i>	10	134		
<i>Culex pipiens</i>	261	2099		
<i>Culex salinarius</i>	96	427		
<i>Culex</i> sp.	12	40		
State Total	473	3697		

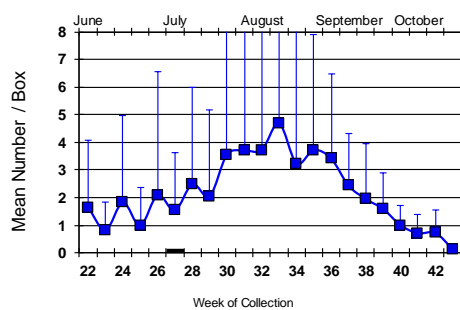
Culiseta melanura Population Graphs

Coastal

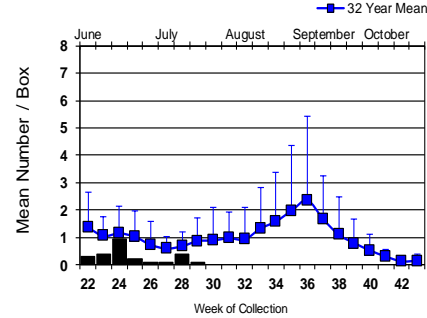
BASS RIVER (Burlington Co.)



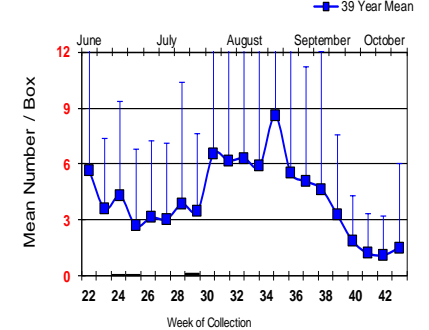
GREEN BANK (Burlington Co.)



CORBINCITY (Atlantic Co.)

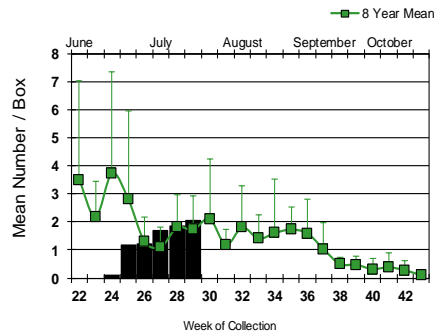


DENNISVILLE (Cape May Co.)

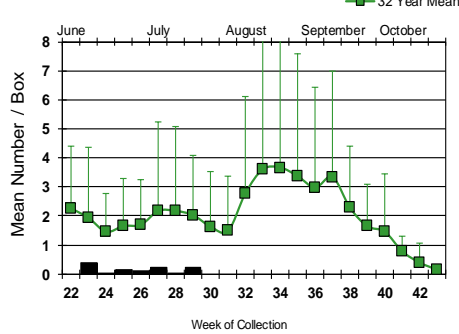


Inland

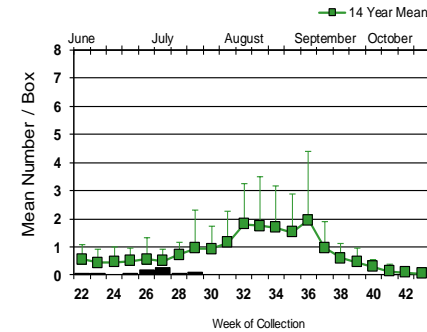
WINSLOW (Camden Co.)



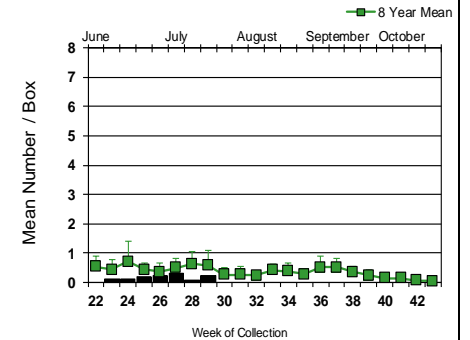
CENTERTON (Salem Co.)



TURKEY SWAMP (Monmouth Co.)




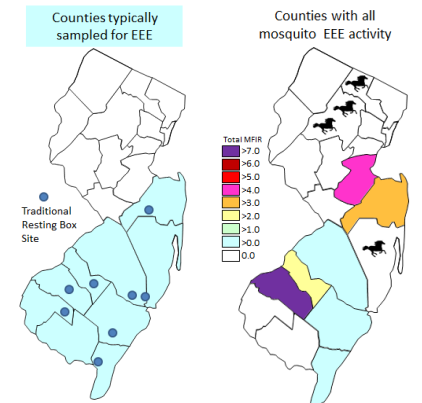
GLASSBORO (Gloucester Co.)



No detection of EEE has occurred at the traditional resting box sites. Mosquito population abundances remain low in the resting box collections - the Winslow site continues to be the only site approaching average levels, similar to light trap collections.

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: GA(1)
- 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	47/53		0	20/22
Arkansas				0	0
California	51/71	490/681	2/17	2	3/4
Colorado		2			1
Connecticut		1/2			0
Delaware					
DC					
Florida	1		9/10		0
Georgia		0		1	0
Hawaii					
Idaho		4/19		1	0
Illinois	4/7	137/263			0
Indiana	0	24/48		0	2
Iowa		2/6		0	1
Kansas		5/13		0	3/4
Kentucky				1	
Louisiana					
Maine		0		0	0
Maryland					
Mass.		7/19		0	0
Michigan					
Minnesota					
Mississippi		51/80		1	2/5
Missouri		0		0	2

	Birds	Mosquito Pools	Sentinels	Horses	Humans
Montana					
Nebraska	1	0		0	1
Nevada					
New Hampshire		0		0	0
New Jersey		16/33		0	0
New Mexico					2
New York		4/16			
North Carolina					
North Dakota	3/4	0		0	2
Ohio		3/25			0
Oklahoma					
Oregon		1/3			
Pennsylvania	1	67/174		0	0
Rhode Island		0		0	0
South Carolina		5			
South Dakota		10/14			2
Tennessee					
Texas		136/215			8
Utah		3/8		0	0
Vermont					
Virginia				1	
Washington	0	4/6		0	0
West Virginia					
Wisconsin	31/36	1		0	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.

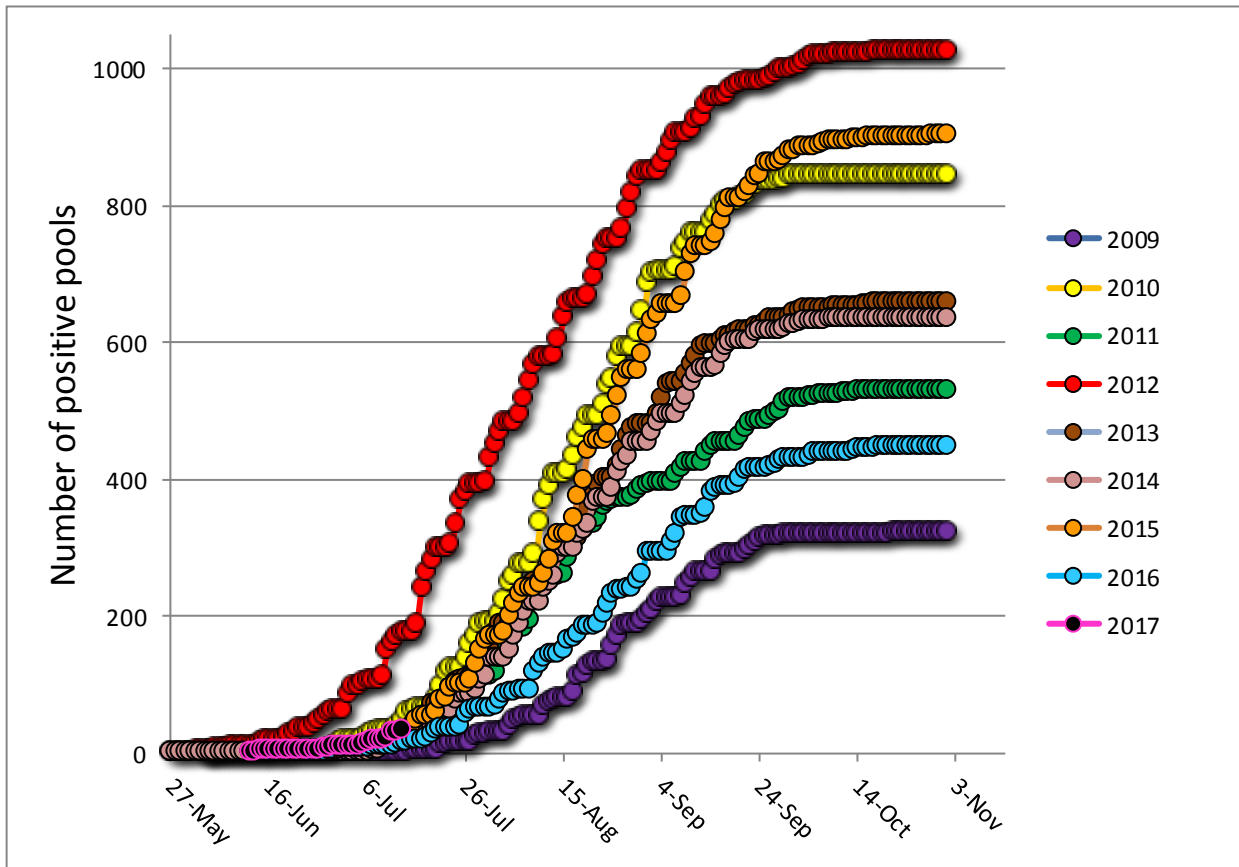
Mosquito Species Submitted and Tested for West Nile Virus Testing through 21 July 2017.

Species	Pools	Mosquitoes	Positives	MFIR
<i>Aedes albopictus</i>	297	1990		
<i>Aedes atropalpus</i>	14	77		
<i>Aedes canadensis canadensis</i>	40	429		
<i>Aedes cantator</i>	26	222		
<i>Aedes cinereus</i>	1	54		
<i>Aedes grossbecki</i>	2	4		
<i>Aedes japonicus</i>	149	586		
<i>Aedes sollicitans</i>	9	177		
<i>Aedes stimulans</i>	1	10		
<i>Aedes taeniorhynchus</i>	4	44		
<i>Aedes triseriatus</i>	129	314		
<i>Aedes trivittatus</i>	1	1		
<i>Aedes vexans</i>	15	181		
<i>Anopheles barberi</i>	3	3		
<i>Anopheles bradleyi</i>	42	319		
<i>Anopheles crucians</i>	1	17		
<i>Anopheles earlei</i>	1	1		
<i>Anopheles punctipennis</i>	21	86		
<i>Anopheles quadrimaculatus</i>	45	331		
<i>Coquillettidia perturbans</i>	39	529		
<i>Culex erraticus</i>	14	141		
<i>Culex pipiens</i>	321	3721	2	0.537
<i>Culex restuans</i>	259	1644		
<i>Culex salinarius</i>	100	590		
<i>Culex</i> spp.	796	35480	33	0.930
<i>Culex territans</i>	17	71		
<i>Culiseta melanura</i>	205	2107		
<i>Orthopodomyia signifera</i>	1	1		
<i>Psorophora columbiae</i>	1	1		
<i>Psorophora ferox</i>	3	7		
Grand Total	2557	49138	35	0.712

Remarks: To date, 2,557 pools of 49,138 mosquitoes from 29 species have been tested. 35 positive pools were detected, all in the enzootic vector, *Culex* (Mix or *pipiens*). Overall MFIR for New Jersey is at 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. It is still too early to see any trends for the current year (black markers with pink borders).

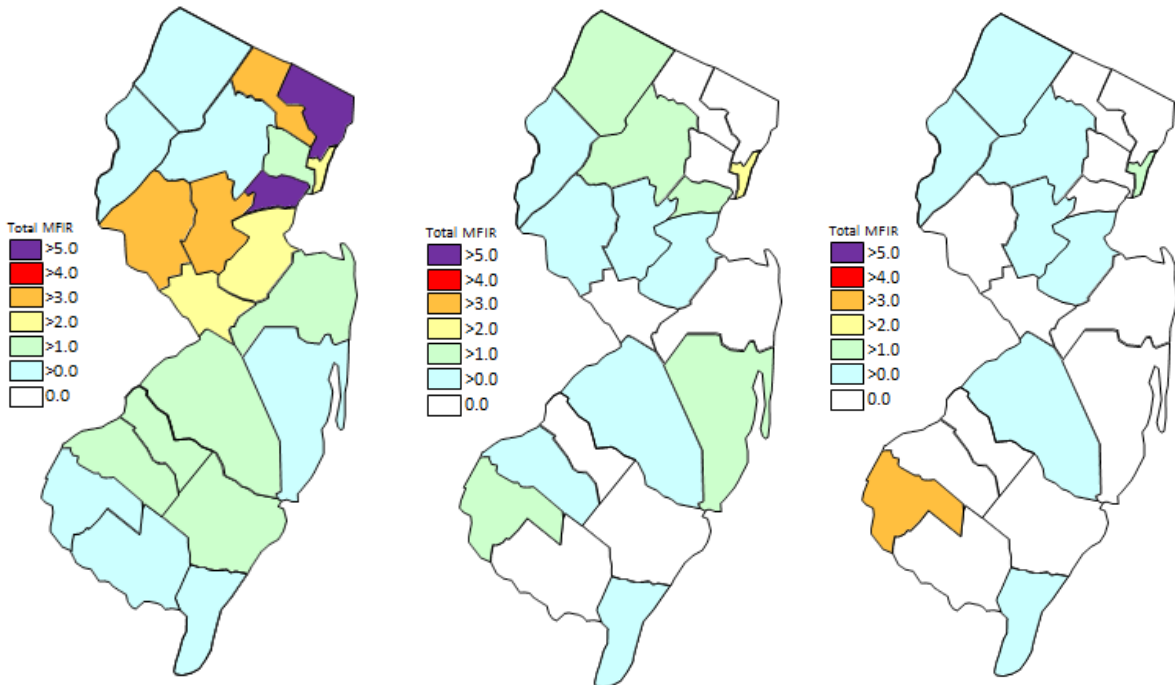
WNV Results by County through 21 July 2017.

County	Species	Pools	Mosquitoes	Positives	MFIR
Atlantic		62	1496		
	<i>Aedes japonicus</i>	1	2		
	<i>Aedes sollicitans</i>	4	168		
	<i>Aedes taeniorhynchus</i>	2	41		
	<i>Aedes triseriatus</i>	1	12		
	<i>Aedes vexans</i>	1	19		
	<i>Anopheles bradleyi</i>	3	51		
	<i>Coquillettidia perturbans</i>	8	363		
	<i>Culex pipiens</i>	13	431		
	<i>Culex salinarius</i>	1	9		
	<i>Culex spp.</i>	7	248		
	<i>Culiseta melanura</i>	20	151		
	<i>Psorophora columbiae</i>	1	1		
Bergen		15	692		
	<i>Aedes japonicus</i>	1	7		
	<i>Culex spp.</i>	14	685		
Burlington		74	3270	2	0.612

<i>Aedes albopictus</i>	2	44		
<i>Aedes canadensis canadensis</i>	2	35		
<i>Aedes cantator</i>	1	1		
<i>Aedes japonicus</i>	2	41		
<i>Aedes triseriatus</i>	1	12		
<i>Aedes vexans</i>	1	75		
<i>Anopheles bradleyi</i>	1	75		
<i>Anopheles crucians</i>	1	17		
<i>Culex salinarius</i>	3	225		
<i>Culex</i> spp.	40	2116	2	0.945
<i>Culiseta melanura</i>	20	629		
Camden	60	2653		
<i>Aedes japonicus</i>	3	12		
<i>Culex</i> spp.	41	2062		
<i>Culiseta melanura</i>	16	579		
Cape May	1123	4653	2	0.430
<i>Aedes albopictus</i>	129	198		
<i>Aedes atropalpus</i>	14	77		
<i>Aedes canadensis canadensis</i>	16	24		
<i>Aedes cantator</i>	7	7		
<i>Aedes japonicus</i>	75	141		
<i>Aedes sollicitans</i>	1	1		
<i>Aedes triseriatus</i>	90	170		
<i>Aedes vexans</i>	5	6		
<i>Anopheles bradleyi</i>	38	193		
<i>Anopheles punctipennis</i>	5	8		
<i>Anopheles quadrimaculatus</i>	37	288		
<i>Coquillettidia perturbans</i>	11	13		
<i>Culex erraticus</i>	10	134		
<i>Culex pipiens</i>	262	2100	2	0.952
<i>Culex restuans</i>	217	671		
<i>Culex salinarius</i>	93	202		
<i>Culex</i> spp.	6	11		
<i>Culex territans</i>	17	71		
<i>Culiseta melanura</i>	88	333		
<i>Orthopodomyia signifera</i>	1	1		
<i>Psorophora ferox</i>	1	4		
Cumberland	33	239		
<i>Aedes albopictus</i>	3	7		
<i>Aedes japonicus</i>	4	29		
<i>Aedes triseriatus</i>	1	2		
<i>Aedes vexans</i>	2	9		
<i>Anopheles quadrimaculatus</i>	4	16		
<i>Coquillettidia perturbans</i>	2	23		
<i>Culex</i> spp.	14	145		
<i>Culiseta melanura</i>	3	8		
Essex	45	339		
<i>Aedes albopictus</i>	17	40		
<i>Aedes japonicus</i>	6	11		
<i>Culex</i> spp.	22	288		

Gloucester	90	3600	1	0.278
<i>Aedes albopictus</i>	15	151		
<i>Aedes japonicus</i>	7	77		
<i>Aedes triseriatus</i>	2	26		
<i>Anopheles punctipennis</i>	2	24		
<i>Anopheles quadrimaculatus</i>	3	26		
<i>Coquillettidia perturbans</i>	1	6		
<i>Culex pipiens</i>	9	657		
<i>Culex</i> spp.	40	2547	1	0.393
<i>Culiseta melanura</i>	11	86		
Hudson	55	3005	8	2.662
<i>Culex</i> spp.	55	3005	8	2.662
Hunterdon	98	4338	4	0.922
<i>Culex</i> spp.	98	4338	4	0.922
Mercer	54	1353		
<i>Aedes japonicus</i>	14	65		
<i>Culex pipiens</i>	3	127		
<i>Culex restuans</i>	23	712		
<i>Culex</i> spp.	14	449		
Middlesex	49	2587	2	0.773
<i>Culex</i> spp.	45	2466	2	0.811
<i>Culiseta melanura</i>	4	121		
Monmouth	230	2484		
<i>Aedes albopictus</i>	97	1292		
<i>Aedes canadensis canadensis</i>	22	370		
<i>Aedes cantator</i>	17	176		
<i>Aedes grossbecki</i>	2	4		
<i>Aedes japonicus</i>	14	67		
<i>Aedes sollicitans</i>	4	8		
<i>Aedes taeniorhynchus</i>	2	3		
<i>Aedes triseriatus</i>	7	7		
<i>Aedes trivitattus</i>	1	1		
<i>Aedes vexans</i>	4	9		
<i>Anopheles barberi</i>	3	3		
<i>Anopheles earlei</i>	1	1		
<i>Anopheles punctipennis</i>	13	44		
<i>Coquillettidia perturbans</i>	4	4		
<i>Culex salinarius</i>	1	4		
<i>Culex</i> spp.	29	454		
<i>Culiseta melanura</i>	8	36		
<i>Psorophora ferox</i>	1	1		
Morris	74	3139	4	1.274
<i>Culex</i> spp.	74	3139	4	1.274
Ocean	75	776	1	1.289
<i>Aedes albopictus</i>	21	213		
<i>Aedes japonicus</i>	3	27		
<i>Aedes triseriatus</i>	4	12		
<i>Coquillettidia perturbans</i>	4	74		

<i>Culex</i> spp.	33	428	1	2.336
<i>Culiseta melanura</i>	10	22		
Passaic	65	564		
<i>Aedes japonicus</i>	11	73		
<i>Aedes triseriatus</i>	3	11		
<i>Coquillettidia perturbans</i>	4	7		
<i>Culex erraticus</i>	2	4		
<i>Culex pipiens</i>	33	405		
<i>Culex restuans</i>	9	61		
<i>Culiseta melanura</i>	3	3		
Salem	59	599	1	1.669
<i>Aedes albopictus</i>	11	37		
<i>Aedes japonicus</i>	3	5		
<i>Aedes triseriatus</i>	7	14		
<i>Aedes vexans</i>	1	2		
<i>Anopheles quadrimaculatus</i>	1	1		
<i>Coquillettidia perturbans</i>	5	39		
<i>Culex erraticus</i>	2	3		
<i>Culex pipiens</i>	1	1		
<i>Culex</i> spp.	17	406	1	2.463
<i>Culiseta melanura</i>	10	89		
<i>Psorophora ferox</i>	1	2		
Somerset	71	2773	1	0.361
<i>Aedes japonicus</i>	3	20		
<i>Aedes triseriatus</i>	1	3		
<i>Culex</i> spp.	67	2750	1	0.364
Sussex	76	1707	2	1.172
<i>Aedes albopictus</i>	1	2		
<i>Aedes triseriatus</i>	12	45		
<i>Culex restuans</i>	10	200		
<i>Culex salinarius</i>	2	150		
<i>Culex</i> spp.	39	1260	2	1.587
<i>Culiseta melanura</i>	12	50		
Union	30	1918	3	1.564
<i>Aedes albopictus</i>	1	6		
<i>Culex</i> spp.	29	1912	3	1.569
Warren	119	6953	4	0.575
<i>Aedes cantator</i>	1	38		
<i>Aedes cinereus</i>	1	54		
<i>Aedes japonicus</i>	2	9		
<i>Aedes stimulans</i>	1	10		
<i>Aedes vexans</i>	1	61		
<i>Anopheles punctipennis</i>	1	10		
<i>Culex</i> spp.	112	6771	4	0.591
Grand Total	2557	49138	35	0.712



Cumulative WNV activity in 2016. WNV activity to 21 July 2017. WNV activity last week, 2017

Saint Louis Encephalitis (SLE) to 21 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		5	375		
	<i>Culex</i> spp.	5	375		
Cape May		267	2110		
	<i>Culex pipiens</i>	261	2099		
	<i>Culex</i> spp.	6	11		
Grand Total		272	2485		

La Crosse Encephalitis (LAC) to 21 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		5	97		
	<i>Aedes albopictus</i>	2	44		
	<i>Aedes japonicus</i>	2	41		
	<i>Aedes triseriatus</i>	1	12		
Sussex		12	45		
	<i>Aedes triseriatus</i>	12	45		
Grand Total		17	142		

Dengue (DENV) to 21 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 21 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		129	198		
	<i>Aedes albopictus</i>	129	198		
Grand Total		129	198		

Zika (ZIKV) to 21 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		129	198		
	<i>Aedes albopictus</i>	129	198		
Grand Total		129	198		