

VECTOR SURVEILLANCE IN NEW JERSEY

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

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CDC WEEK 28: 10 July to 16 July, 2016



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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	0.30	0.00	1 [‡]	1		
Green Bank (Burlington Co.)/25	Coastal	1.53	0.28	2 (9)	3 (4)		
Corbin City (Atlantic Co.)/25	Coastal	0.70	0.28	54	7		
Dennisville (Cape May Co.)/50	Coastal	3.95	0.06	37	7		
Winslow (Camden Co.)/50	Inland	1.96	0.86	452	11		
Centerton (Salem Co.)/50	Inland	2.23	0.30	112	7		
Turkey Swamp (Monmouth Co.)/50	Inland	0.77	0.06	16 (19)	6 (7)		
Glassboro (Gloucester Co.)/50	Inland	0.71	0.16	74	7		

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

Remarks: The first positive EEE pools in New Jersey have been detected, in two pools of *Culex pipiens* in Cape May collected 6 July 2016 at a non-traditional site. In 2015, the first detection of EEE in a pool of *Culiseta melanura* was collected at the Winslow resting box site on the 27th of July.

Traditional Resting Box Sites: 748 *Cs. melanura* from 50 pools have been tested for EEE, with 2 pools of 10 *Cs. melanura* to be tested. No positives at these traditional sites have been detected. Statewide, 1769 *Cs. melanura* have been tested, with no positives currently in *Cs. melanura*. 7476 specimens from 12 other species have also been tested, with two reported positives *Culex pipiens* pools.

		Additional <i>Cs. melanura</i> trapped by counties			
County	Trap types*	Pools	Mosquitoes	Positives	MFIR
Atlantic	Co ₂ , RB	13	114		
Burlington	Co ₂	23	444		
Cape May	CDC, Co ₂ , GR, RB	33	72		
Cumberland	RB	3	10		
Middlesex	RB	24	357		
Ocean	Co ₂ , GR	8	23		
TOTAL		105	1021		

Additional *Cs. melanura*:
Counties maintain trap sites for *Cs. melanura* in other areas, using a variety of traps. No positives have been detected.

Species other than <i>Cs. melanura</i>	Pools	Mosquitoes	Positives	MFIR
<i>Aedes cantator</i>	17	43		
<i>Aedes sollicitans</i>	4	64		
<i>Anopheles bradleyi</i>	8	55		
<i>Anopheles crucians</i>	1	4		
<i>Anopheles punctipennis</i>	7	11		
<i>Anopheles quadrimaculatus</i>	1	1		
<i>Coquillettidia perturbans</i>	46	658		
<i>Culex erraticus</i>	9	52		
<i>Culex pipiens</i>	313	5357	2	0.373
<i>Culex restuans</i>	1	3		
<i>Culex salinarius</i>	92	1148		
<i>Culex</i> sp.	25	68		
<i>Culex territans</i>	1	12		
State Total	525	7476	2	0.268

Additional Species: Twelve additional species were tested for EEE. First positive pools were detected in *Culex pipiens*, an ornithophilic species, in Cape May, collected on 6 July.

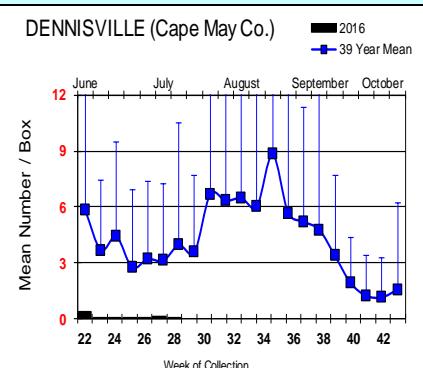
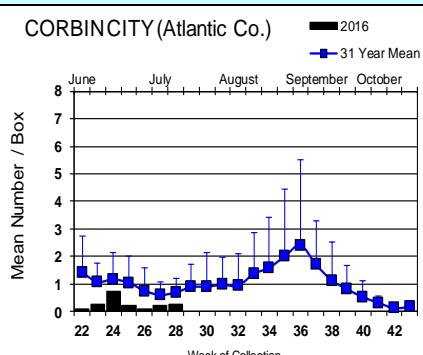
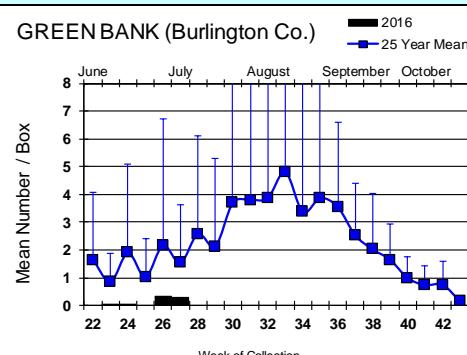
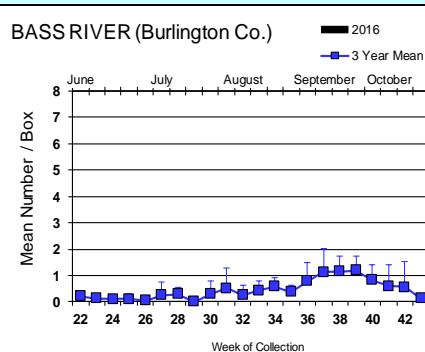
Horses and Humans: No positive horse or humans have been reported. Last year one positive horse was reported.

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:

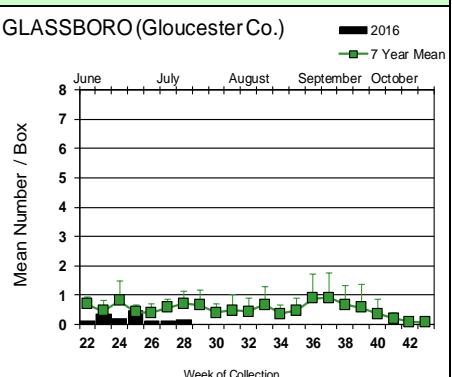
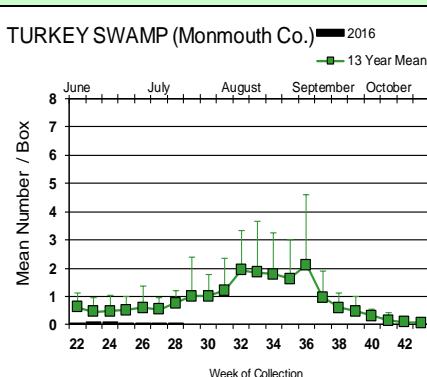
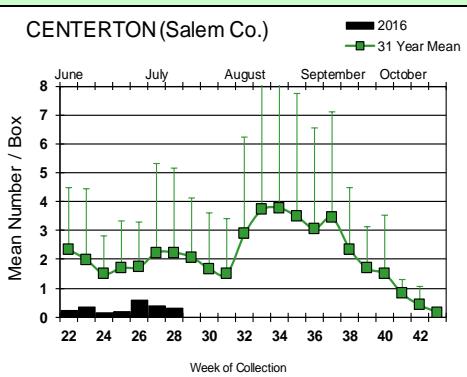
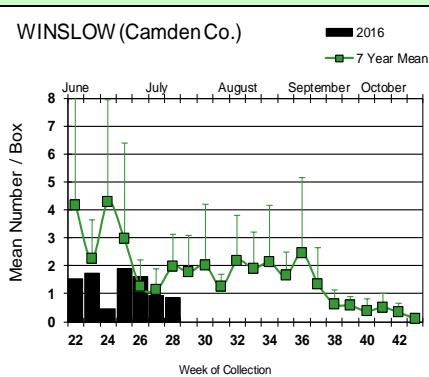
http://www.aaep.org/vaccination_guidelines.htm

Culiseta melanura Population Graphs

Coastal



Inland



All sites are reporting numbers that continue to trend below historical values. First positive pools were detected in *Culex* species at a non-traditional site in Cape May.



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

EEE in US (2016 cumulative cases): (Black or Red = previous + new reported cases occurring)

- equine: FL(12) NC(1) SC(8) VA(2)
- mosquito pools: NJ(2) MA(1)
- sentinel: FL(50) GA(2) TX(21)
- human:

West Nile Virus Positive Organisms in US, 2016

West Nile in US (2016 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					
Alaska					
Arizona	0	8/39	0	0	17/18
Arkansas				0	0
California	436/547	607/896	12/19	1/2	0
Colorado					1/3
Connecticut		1			0
Delaware					
DC					
Florida		1/2	39/50	1	
Georgia		0			0
Hawaii					
Idaho	0	3/4		0	0
Illinois	2	54/100		0	2/3
Indiana	0	4/10		0	1
Iowa		1			0
Kansas		0			0
Kentucky				0	
Louisiana					0
Maine		0			0
Maryland					
Mass.		3/10		0	0
Michigan		3			
Minnesota					
Mississippi		2/3			4
Missouri		0		0	0

	Birds	Mosquito Pools	Sentinels	Horses	Humans
Montana					
Nebraska	1/2	7/15		0	1
Nevada					1
New Hampshire		0		0	0
New Jersey		1/12		0	1
New Mexico					
New York		2/5			
North Carolina					
North Dakota	4	4		0	1
Ohio		1		0	0
Oklahoma		7			
Oregon	0	2	0	0	0
Pennsylvania	2	18/54			1
Rhode Island		0			
South Carolina					
South Dakota					1/6
Tennessee					
Texas		32/330		1/2	3/7
Utah		6			
Vermont					
Virginia					
Washington	0	11/18		0	0
West Virginia					
Wisconsin	1/5	0		0	0
Wyoming					0

* 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 16 July 2016

Species	Pools	Mosquitoes	Positives	MFIR
<i>Aedes albopictus</i>	268	1115		
<i>Aedes atropalpus</i>	13	46		
<i>Aedes canadensis canadensis</i>	24	389		
<i>Aedes cantator</i>	25	233		
<i>Aedes grossbecki</i>	1	1		
<i>Aedes japonicus</i>	233	1240		
<i>Aedes sollicitans</i>	7	175		
<i>Aedes sticticus</i>	1	6		
<i>Aedes taeniorhynchus</i>	8	290		
<i>Aedes triseriatus</i>	73	172		
<i>Aedes vexans</i>	19	171		
<i>Anopheles atropos</i>	1	1		
<i>Anopheles barberi</i>	2	2		
<i>Anopheles bradleyi</i>	13	187		
<i>Anopheles crucians</i>	2	9		
<i>Anopheles punctipennis</i>	25	40		
<i>Anopheles quadrimaculatus</i>	25	170		
<i>Coquillettidia perturbans</i>	61	1401		
<i>Culex erraticus</i>	11	57		
<i>Culex pipiens</i>	443	13026	2	0.154
<i>Culex restuans</i>	470	6336		
<i>Culex salinarius</i>	95	1256		
<i>Culex spp.</i>	1081	43936	10	0.228
<i>Culex territans</i>	8	64		
<i>Culiseta melanura</i>	156	1708		
<i>Psorophora ciliata</i>	1	1		
<i>Psorophora columbiae</i>	3	3		
<i>Psorophora ferox</i>	3	26		
Grand Total	3072	72061	12	0.167

Remarks: To date, 3072 pools of 72,061 mosquitoes from 27 species have been tested, with 12 positive pools detected, all in *Culex*. This first positive pool of *Culex* Mix was collected on 14 June in Monmouth County.

Humans, Horses and Wild Birds: One human from Camden County had been reported with WNV, onset of early July. Last year 26 humans and one horse were positive. Onset in 2015 for humans began in early August and the onset for the horse case began in September. For further information, see <http://www.state.nj.us/health/cd/westnile/techinfo.shtml>.

Birds are no longer routinely tested in New Jersey.

WNV Results by County through 16 July 2016

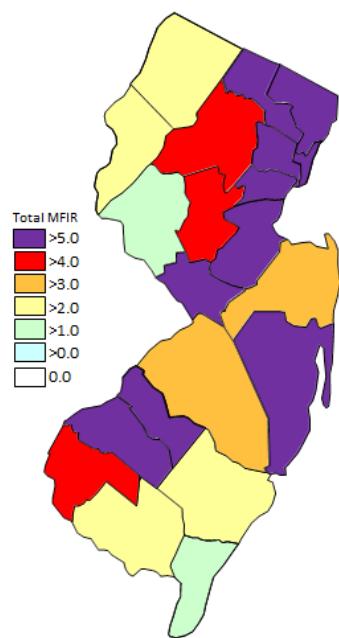
County	Species	Pools	Mosquitoes	Positives	MFIR
Atlantic		83	2283	2	0.876
	<i>Aedes albopictus</i>	7	23		
	<i>Aedes japonicus</i>	1	4		

	<i>Aedes sollicitans</i>	2	108		
	<i>Aedes sticticus</i>	1	6		
	<i>Aedes taeniorhynchus</i>	4	266		
	<i>Aedes vexans</i>	4	134		
	<i>Anopheles bradleyi</i>	1	10		
	<i>Coquillettidia perturbans</i>	10	76		
	<i>Culex erraticus</i>	1	21		
	<i>Culex pipiens</i>	11	609	2	3.284
	<i>Culex restuans</i>	3	52		
	<i>Culex salinarius</i>	4	123		
	<i>Culex</i> spp.	11	664		
	<i>Culiseta melanura</i>	22	175		
	<i>Psorophora ferox</i>	1	12		
Bergen		45	3375	1	0.296
	<i>Culex</i> spp.	45	3375	1	0.296
Burlington		85	3034	1	0.330
	<i>Aedes albopictus</i>	5	58		
	<i>Aedes atropalpus</i>	2	15		
	<i>Aedes japonicus</i>	6	111		
	<i>Aedes triseriatus</i>	4	10		
	<i>Anopheles barberi</i>	1	1		
	<i>Anopheles bradleyi</i>	1	6		
	<i>Anopheles crucians</i>	1	4		
	<i>Culex salinarius</i>	11	362		
	<i>Culex</i> spp.	34	2091	1	0.478
	<i>Culex territans</i>	1	12		
	<i>Culiseta melanura</i>	19	364		
Camden		75	2627	2	0.761
	<i>Aedes albopictus</i>	6	24		
	<i>Aedes japonicus</i>	10	30		
	<i>Culex</i> spp.	48	2121	2	0.943
	<i>Culiseta melanura</i>	11	452		
Cape May		1121	10534		
	<i>Aedes albopictus</i>	37	56		
	<i>Aedes atropalpus</i>	11	31		
	<i>Aedes canadensis canadensis</i>	5	8		
	<i>Aedes cantator</i>	17	43		
	<i>Aedes japonicus</i>	116	255		
	<i>Aedes sollicitans</i>	2	4		
	<i>Aedes taeniorhynchus</i>	2	2		
	<i>Aedes triseriatus</i>	38	80		
	<i>Aedes vexans</i>	3	5		
	<i>Anopheles atropos</i>	1	1		
	<i>Anopheles bradleyi</i>	7	49		
	<i>Anopheles punctipennis</i>	5	6		
	<i>Anopheles quadrimaculatus</i>	20	162		
	<i>Coquillettidia perturbans</i>	18	352		
	<i>Culex erraticus</i>	3	8		
	<i>Culex pipiens</i>	313	5357		
	<i>Culex restuans</i>	386	3601		
	<i>Culex salinarius</i>	68	293		
	<i>Culex</i> spp.	21	59		

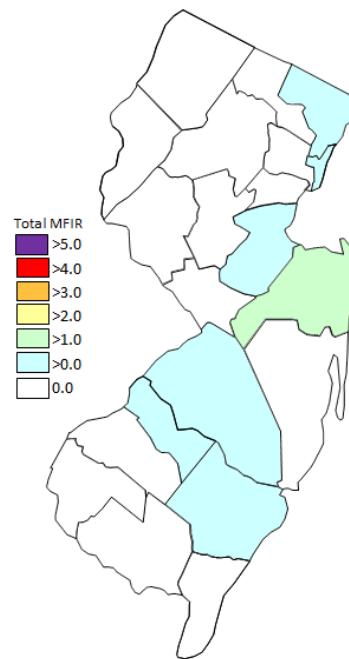
<i>Culex territans</i>	7	52		
<i>Culiseta melanura</i>	40	109		
<i>Psorophora ferox</i>	1	1		
Cumberland	38	702		
<i>Aedes albopictus</i>	1	1		
<i>Aedes cantator</i>	1	1		
<i>Aedes japonicus</i>	3	6		
<i>Aedes sollicitans</i>	2	60		
<i>Aedes taeniorhynchus</i>	2	22		
<i>Anopheles bradleyi</i>	4	122		
<i>Anopheles crucians</i>	1	5		
<i>Anopheles punctipennis</i>	1	2		
<i>Anopheles quadrimaculatus</i>	1	3		
<i>Coquillettidia perturbans</i>	3	29		
<i>Culex salinarius</i>	11	423		
<i>Culex</i> spp.	1	2		
<i>Culiseta melanura</i>	3	10		
<i>Psorophora ciliata</i>	1	1		
<i>Psorophora columbiae</i>	2	2		
<i>Psorophora ferox</i>	1	13		
Essex	60	156		
<i>Aedes albopictus</i>	13	18		
<i>Aedes japonicus</i>	3	6		
<i>Aedes triseriatus</i>	2	2		
<i>Anopheles punctipennis</i>	1	1		
<i>Culex</i> spp.	41	129		
Gloucester	127	6972		
<i>Aedes albopictus</i>	3	49		
<i>Aedes japonicus</i>	9	141		
<i>Aedes triseriatus</i>	1	4		
<i>Anopheles punctipennis</i>	1	3		
<i>Culex pipiens</i>	106	6701		
<i>Culiseta melanura</i>	7	74		
Hudson	62	3100	1	0.323
<i>Aedes albopictus</i>	3	47		
<i>Culex</i> spp.	59	3053	1	0.328
Hunterdon	59	2473		
<i>Culex</i> spp.	59	2473		
Mercer	130	4015		
<i>Aedes japonicus</i>	4	43		
<i>Aedes triseriatus</i>	2	24		
<i>Culex pipiens</i>	13	359		
<i>Culex restuans</i>	77	2676		
<i>Culex</i> spp.	34	913		
Middlesex	128	5753	1	0.174
<i>Aedes albopictus</i>	15	69		
<i>Culex</i> spp.	88	5326	1	0.188
<i>Culiseta melanura</i>	25	358		

Monmouth	261	2514	4	1.591
<i>Aedes albopictus</i>	119	474		
<i>Aedes canadensis canadensis</i>	18	311		
<i>Aedes cantator</i>	7	189		
<i>Aedes grossbecki</i>	1	1		
<i>Aedes japonicus</i>	15	31		
<i>Aedes sollicitans</i>	1	3		
<i>Aedes triseriatus</i>	5	12		
<i>Aedes vexans</i>	4	19		
<i>Anopheles barberi</i>	1	1		
<i>Anopheles punctipennis</i>	14	25		
<i>Anopheles quadrimaculatus</i>	2	2		
<i>Coquillettidia perturbans</i>	4	5		
<i>Culex erraticus</i>	2	5		
<i>Culex restuans</i>	1	3		
<i>Culex</i> spp.	58	1413	4	2.831
<i>Culiseta melanura</i>	9	20		
Morris	131	4856		
<i>Aedes albopictus</i>	6	25		
<i>Culex</i> spp.	125	4831		
Ocean	135	2122		
<i>Aedes albopictus</i>	33	233		
<i>Aedes canadensis canadensis</i>	1	70		
<i>Aedes japonicus</i>	19	72		
<i>Aedes triseriatus</i>	6	12		
<i>Aedes vexans</i>	1	1		
<i>Anopheles punctipennis</i>	2	2		
<i>Coquillettidia perturbans</i>	9	183		
<i>Culex erraticus</i>	2	14		
<i>Culex restuans</i>	1	2		
<i>Culex</i> spp.	48	1499		
<i>Culiseta melanura</i>	13	34		
Passaic	120	3402		
<i>Aedes albopictus</i>	2	2		
<i>Aedes japonicus</i>	28	115		
<i>Aedes triseriatus</i>	2	3		
<i>Aedes vexans</i>	7	12		
<i>Culex</i> spp.	81	3270		
Salem	98	669		
<i>Aedes albopictus</i>	16	29		
<i>Aedes japonicus</i>	10	26		
<i>Aedes triseriatus</i>	12	21		
<i>Anopheles punctipennis</i>	1	1		
<i>Anopheles quadrimaculatus</i>	2	3		
<i>Coquillettidia perturbans</i>	8	81		
<i>Culex erraticus</i>	3	9		
<i>Culex restuans</i>	2	2		
<i>Culex</i> spp.	36	384		
<i>Culiseta melanura</i>	7	112		
<i>Psorophora columbiae</i>	1	1		

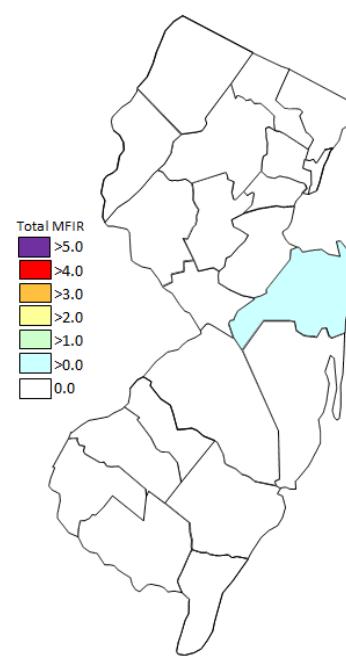
Somerset	75	1881		
<i>Aedes albopictus</i>	2	7		
<i>Aedes triseriatus</i>	1	4		
<i>Culex</i> spp.	72	1870		
Sussex	135	5695		
<i>Aedes japonicus</i>	9	400		
<i>Coquillettidia perturbans</i>	9	675		
<i>Culex salinarius</i>	1	55		
<i>Culex</i> spp.	116	4565		
Warren	89	5198		
<i>Culex</i> spp.	89	5198		
Grand Total	3072	72061	12	0.167



Cumulative WNV activity in 2015.



WNV activity to 16 July 2016.



WNV activity last week, 2016.

Saint Louis Encephalitis (SLE) to 16 July 2016.

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.

Currently, there are no reported positive pools of SLE for 2016.

County	Species	Pools	Mosquitoes	Positives	MFIR
Burlington		35	2092		
	<i>Anopheles barberi</i>	1	1		
	<i>Culex</i> spp.	34	2091		
Cape May		334	5416		
	<i>Culex pipiens</i>	313	5357		
	<i>Culex</i> spp.	21	59		
Grand Total		369	7508		

La Crosse Encephalitis (LAC) to 16 July 2016.

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).

Currently, there are no reported positive pools of LAC for 2016.

County	Species		Positives	MFIR
Burlington		17	194	
	<i>Aedes albopictus</i>	5	58	
	<i>Aedes atropalpus</i>	2	15	
	<i>Aedes japonicus</i>	6	111	
	<i>Aedes triseriatus</i>	4	10	
Grand Total		17	194	

Dengue (DENV) to 16 July 2016.

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. There are currently 40 imported human cases in New Jersey, no local transmission.

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

No pools have tested positive in 2016.

County	Species	DENV1		DENV2		DENV3		DENV4		Positives	MFIR
		Pool	Mos.	Pool	Mos.	Pool	Mos.	Pool	Mos.		
Atlantic		7	23	7	23	7	23	7	23		
	<i>Aedes albopictus</i>	7	23	7	23	7	23	7	23		
Camden		6	24	6	24	6	24	6	24		
	<i>Aedes albopictus</i>	6	24	6	24	6	24	6	24		
Cumberland		1	1	1	1	1	1	1	1		
	<i>Aedes albopictus</i>	1	1	1	1	1	1	1	1		
Essex		13	18	13	18	13	18	13	18		
	<i>Aedes albopictus</i>	13	18	13	18	13	18	13	18		
Hudson		3	47	3	47	3	47	3	47		
	<i>Aedes albopictus</i>	3	47	3	47	3	47	3	47		
Middlesex		16	70	16	70	16	70	16	70		
	<i>Aedes albopictus</i>	15	69	15	69	15	69	15	69		
	<i>Culiseta melanura</i>	1	1	1	1	1	1	1	1		
Monmouth		98	420	98	420	98	420	98	420		
	<i>Aedes albopictus</i>	98	420	98	420	98	420	98	420		
Morris		8	28	8	28	8	28	8	28		
	<i>Aedes albopictus</i>	6	25	6	25	6	25	6	25		
	<i>Culex spp.</i>	2	3	2	3	2	3	2	3		
Passaic		1	1	1	1	1	1	1	1		
	<i>Aedes albopictus</i>	1	1	1	1	1	1	1	1		
Salem		16	29	16	29	16	29	16	29		
	<i>Aedes albopictus</i>	16	29	16	29	16	29	16	29		
Grand Total		169	661	169	661	169	661	169	661		

Chikungunya (CHIK) to 16 July 2016.

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 have tested positive in 2016.

County	Species	Pools	Mosquitoes	Positives	MFIR
Atlantic		7	23		
	<i>Aedes albopictus</i>	7	23		
Camden		6	24		
	<i>Aedes albopictus</i>	6	24		
Cape May		37	56		
	<i>Aedes albopictus</i>	37	56		
Cumberland		1	1		
	<i>Aedes albopictus</i>	1	1		
Essex		13	18		
	<i>Aedes albopictus</i>	13	18		
Hudson		3	47		
	<i>Aedes albopictus</i>	3	47		

Middlesex		16	70		
	<i>Aedes albopictus</i>	15	69		
	<i>Culiseta melanura</i>	1	1		
Monmouth		98	420		
	<i>Aedes albopictus</i>	98	420		
Morris		8	28		
	<i>Aedes albopictus</i>	6	25		
	<i>Culex</i> spp.	2	3		
Passaic		1	1		
	<i>Aedes albopictus</i>	1	1		
Salem		16	29		
	<i>Aedes albopictus</i>	16	29		
Grand Total		206	717		

Zika (ZIKV) to 16 July 2016.

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 2016. Currently, New Jersey has 61 imported human cases of Zika.

County	Species	Pools	Mosquitoes	Positives	MFIR
Cape May		37	56		
	<i>Aedes albopictus</i>	37	56		
Monmouth		6	8		
	<i>Aedes albopictus</i>	6	8		
Grand Total		43	64		