

# VECTOR SURVEILLANCE IN NEW JERSEY

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

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 CDC WEEK 26: 26 June to 2 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	0.05	0	0	0		
Green Bank (Burlington Co.)/25	Coastal	2.16	0.32	2 (10)	2 (3)		
Corbin City (Atlantic Co.)/25	Coastal	0.76	0.12	39 (48)	5 (6)		
Dennisville (Cape May Co.)/50	Coastal	3.20	0.04	29	5		
Winslow (Camden Co.)/50	Inland	1.25	1.62	362	9		
Centerton (Salem Co.)/50	Inland	1.73	0.60	77	5		
Turkey Swamp (Monmouth Co.)/50	Inland	0.61	0.04	11 (13)	4 (5)		
Glassboro (Gloucester Co.)/50	Inland	0.39	0.12	60	5		

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

**Remarks:** Currently, there are no reports of positive EEE pools in New Jersey. In 2015, the first detection of EEE in a pool of *Culiseta melanura* was collected at the Winslow resting box site on the 27<sup>th</sup> of July.

**Traditional Resting Box Sites:** 588 *Cs. melanura* from 37 pools have been tested for EEE, with 3 pool of 71 *Cs. melanura* to be tested. No positives have been detected. Statewide, 1263 *Cs. melanura* have been tested, with no positives. 3937 specimens from 10 other species have also been tested, with no reported positives.

		<b>Additional <i>Cs. melanura</i> trapped by counties</b> *traps with positives indicated in <b>BOLD</b> .			
<b>County</b>	<b>Trap types*</b>	<b>Pools</b>	<b>Mosquitoes</b>	<b>Positives</b>	<b>MFIR</b>
Atlantic	Co <sub>2</sub> , RB	9	72		
Burlington	Co <sub>2</sub>	13	224		
Cape May	CDC, GR, RB	24	55		
Cumberland	RB	1	3		
Middlesex	RB	17	295		
Ocean	Co <sub>2</sub> , GR	8	23		
<b>TOTAL</b>		<b>72</b>	<b>675</b>		

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

<b>Species other than <i>Cs. melanura</i></b>	<b>Pools</b>	<b>Mosquitoes</b>	<b>Positives</b>	<b>MFIR</b>
<i>Aedes cantator</i>	15	41		
<i>Aedes sollicitans</i>	2	56		
<i>Anopheles bradleyi</i>	3	8		
<i>Anopheles crucians</i>	1	4		
<i>Anopheles punctipennis</i>	4	4		
<i>Coquillettidia perturbans</i>	23	338		
<i>Culex erraticus</i>	2	6		
<i>Culex pipiens</i>	204	3012		
<i>Culex salinarius</i>	45	417		
<i>Culex</i> sp.	19	51		
<b>State Total</b>	<b>318</b>	<b>3937</b>		

**Additional Species:** Ten additional species were tested for EEE. No positive pools have been detected.

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

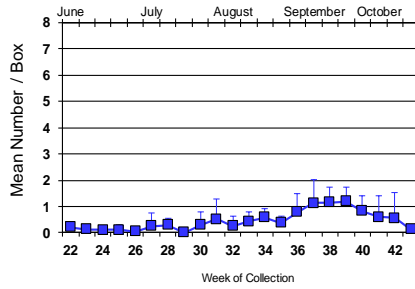
**Horses and Vaccinations:** The fate of unvaccinated equids reinforces the necessity of maintaining a vaccination schedule for arboviruses. For vaccination schedules recommended by the American Association of

Equine Practices, see: [http://www.aaep.org/vaccination\\_guidelines.htm](http://www.aaep.org/vaccination_guidelines.htm)

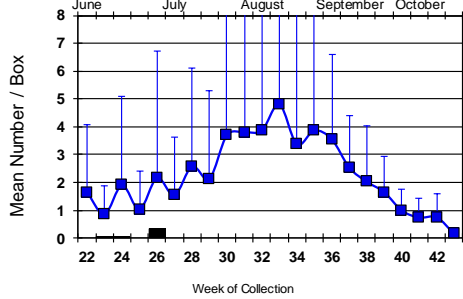
# Culiseta melanura Population Graphs

## Coastal

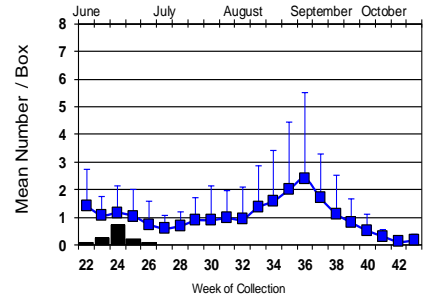
**BASS RIVER (Burlington Co.)**      2016  
—■— 3 Year Mean



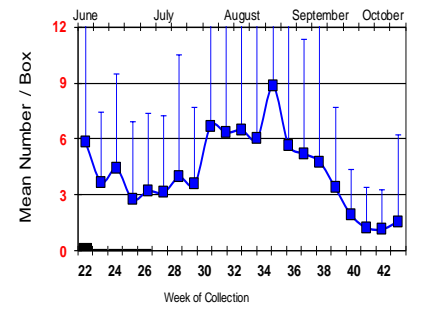
**GREEN BANK (Burlington Co.)**      2016  
—■— 25 Year Mean



**CORBINCITY (Atlantic Co.)**      2016  
—■— 31 Year Mean

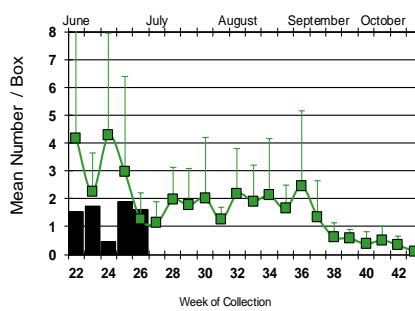


**DENNISVILLE (Cape May Co.)**      2016  
—■— 39 Year Mean

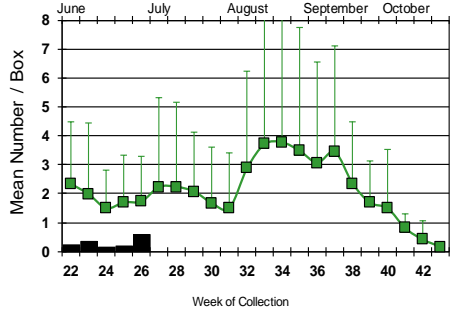


## Inland

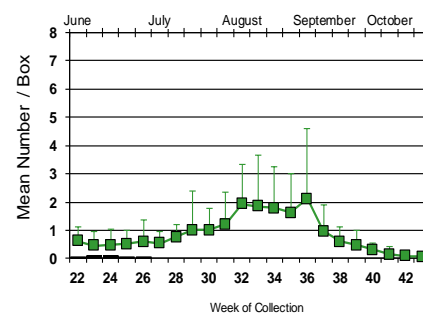
**WINSLOW (Camden Co.)**      2016  
—■— 7 Year Mean



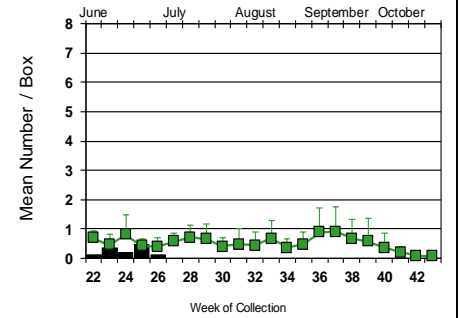
**CENTERTON (Salem Co.)**      2016  
—■— 31 Year Mean



**TURKEY SWAMP (Monmouth Co.)**      2016  
—■— 13 Year Mean



**GLASSBORO (Gloucester Co.)**      2016  
—■— 7 Year Mean



Currently, low or not significantly high numbers continue to be reported at all sites (Winslow's were "higher" than the historical average, but are not considered significantly different as the average was well within error rates). No positive pools have been detected to date.

= 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(7) NC(1) SC(4) VA(1)
- mosquito pools:
- sentinel: FL(34) GA(2) TX(12)
- 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	0	0	8
Arkansas				0	0
California	277/372	264/433	4/7		0
Colorado					1
Connecticut		0			0
Delaware					
DC					
Florida		1	39	1	
Georgia		0			0
Hawaii					
Idaho	0	2		0	0
Illinois	2	14/23		0	1
Indiana	0	1		0	0
Iowa					
Kansas		0			0
Kentucky				0	
Louisiana					0
Maine					
Maryland					
Mass.		0		0	0
Michigan					
Minnesota					
Mississippi		2			3
Missouri		0		0	0

	Birds	Mosquito Pools	Sentinels	Horses	Humans
Montana					
Nebraska		3/4		0	1
Nevada					
New Hampshire					
New Jersey		1		0	0
New Mexico					
New York		1			
North Carolina					
North Dakota	1	0		0	0
Ohio		1		0	0
Oklahoma		7			
Oregon	0	0	0	0	0
Pennsylvania	2	8/15			
Rhode Island		0			
South Carolina					
South Dakota		2			1
Tennessee					
Texas		2/32		1	1
Utah					
Vermont					
Virginia					
Washington	0	2/6		0	0
West Virginia					
Wisconsin	1	0		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 2 July 2016

Species	Pools	Mosquitoes	Positives	MFIR
<i>Aedes albopictus</i>	126	347		
<i>Aedes atropalpus</i>	7	20		
<i>Aedes canadensis canadensis</i>	19	372		
<i>Aedes cantator</i>	21	226		
<i>Aedes grossbecki</i>	1	1		
<i>Aedes japonicus</i>	142	571		
<i>Aedes sollicitans</i>	2	56		
<i>Aedes taeniorhynchus</i>	1	14		
<i>Aedes triseriatus</i>	43	92		
<i>Aedes vexans</i>	10	151		
<i>Anopheles barberi</i>	2	2		
<i>Anopheles bradleyi</i>	4	16		
<i>Anopheles crucians</i>	2	9		
<i>Anopheles punctipennis</i>	9	16		
<i>Anopheles quadrimaculatus</i>	12	74		
<i>Coquillettidia perturbans</i>	28	404		
<i>Culex erraticus</i>	3	10		
<i>Culex pipiens</i>	208	3181		
<i>Culex restuans</i>	344	4862		
<i>Culex salinarius</i>	47	489		
<i>Culex</i> spp.	473	19619	1	0.051
<i>Culex territans</i>	4	45		
<i>Culiseta melanura</i>	111	1262		
<i>Psorophora ferox</i>	1	1		
<b>Grand Total</b>	<b>1620</b>	<b>31840</b>	<b>1</b>	<b>0.031</b>

**Remarks:** To date, 1620 pools of 31,840 mosquitoes from 22 species have been tested, with one positive pool detected. This first positive pool of *Culex* Mix was collected on 14 June in Monmouth County.

**Humans, Horses and Wild Birds:** No humans or horses have been reported. Last year 26 humans and one horse were positive. Onset 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.

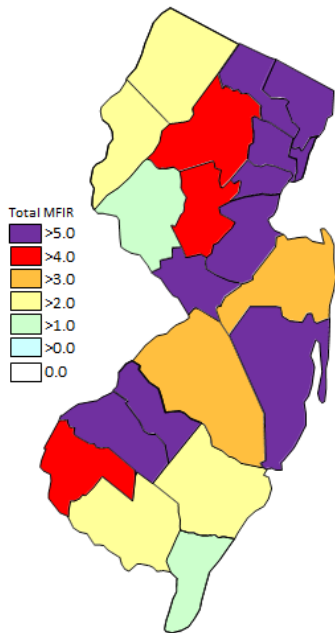
### WNV Results by County through 2 July 2016

County	Species	Pools	Mosquitoes	Positives	MFIR
Atlantic		<b>40</b>	<b>960</b>		
	<i>Aedes albopictus</i>	2	7		
	<i>Aedes vexans</i>	3	126		
	<i>Coquillettidia perturbans</i>	6	45		
	<i>Culex pipiens</i>	3	148		
	<i>Culex restuans</i>	2	47		
	<i>Culex salinarius</i>	2	72		
	<i>Culex</i> spp.	7	398		

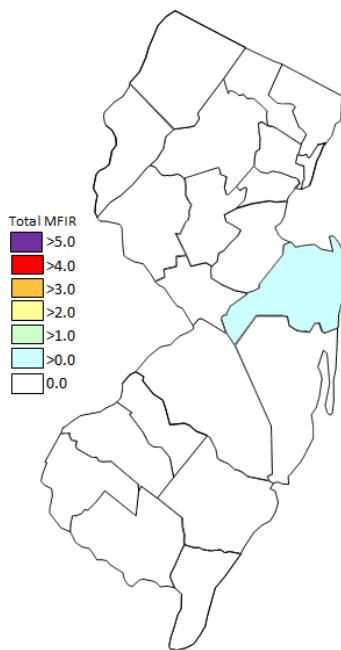
<i>Culiseta melanura</i>	15	117		
<b>Burlington</b>	<b>56</b>	<b>2137</b>		
<i>Aedes albopictus</i>	3	25		
<i>Aedes atropalpus</i>	1	9		
<i>Aedes japonicus</i>	4	86		
<i>Aedes triseriatus</i>	4	10		
<i>Anopheles barberi</i>	1	1		
<i>Anopheles crucians</i>	1	4		
<i>Culex salinarius</i>	5	172		
<i>Culex</i> spp.	24	1606		
<i>Culiseta melanura</i>	13	224		
<b>Camden</b>	<b>16</b>	<b>566</b>		
<i>Aedes japonicus</i>	2	8		
<i>Culex</i> spp.	5	196		
<i>Culiseta melanura</i>	9	362		
<b>Cape May</b>	<b>764</b>	<b>6861</b>		
<i>Aedes albopictus</i>	26	35		
<i>Aedes atropalpus</i>	6	11		
<i>Aedes canadensis canadensis</i>	5	8		
<i>Aedes cantator</i>	15	41		
<i>Aedes japonicus</i>	83	178		
<i>Aedes sollicitans</i>	1	3		
<i>Aedes triseriatus</i>	22	49		
<i>Aedes vexans</i>	2	3		
<i>Anopheles bradleyi</i>	3	8		
<i>Anopheles punctipennis</i>	2	3		
<i>Anopheles quadrimaculatus</i>	11	73		
<i>Coquillettidia perturbans</i>	12	268		
<i>Culex erraticus</i>	2	6		
<i>Culex pipiens</i>	204	3012		
<i>Culex restuans</i>	282	2851		
<i>Culex salinarius</i>	37	138		
<i>Culex</i> spp.	17	44		
<i>Culex territans</i>	4	45		
<i>Culiseta melanura</i>	29	84		
<i>Psorophora ferox</i>	1	1		
<b>Cumberland</b>	<b>11</b>	<b>196</b>		
<i>Aedes albopictus</i>	1	1		
<i>Aedes japonicus</i>	1	3		
<i>Aedes sollicitans</i>	1	53		
<i>Aedes taeniorhynchus</i>	1	14		
<i>Anopheles bradleyi</i>	1	8		
<i>Anopheles crucians</i>	1	5		
<i>Culex salinarius</i>	3	107		
<i>Culex</i> spp.	1	2		
<i>Culiseta melanura</i>	1	3		
<b>Essex</b>	<b>16</b>	<b>53</b>		
<i>Aedes japonicus</i>	2	5		
<i>Aedes triseriatus</i>	1	1		
<i>Culex</i> spp.	13	47		

<b>Gloucester</b>	<b>5</b>	<b>60</b>		
<i>Culiseta melanura</i>	5	60		
<b>Hudson</b>	<b>17</b>	<b>834</b>		
<i>Culex</i> spp.	17	834		
<b>Hunterdon</b>	<b>32</b>	<b>1183</b>		
<i>Culex</i> spp.	32	1183		
<b>Mercer</b>	<b>69</b>	<b>2226</b>		
<i>Aedes japonicus</i>	1	2		
<i>Culex pipiens</i>	1	21		
<i>Culex restuans</i>	57	1960		
<i>Culex</i> spp.	10	243		
<b>Middlesex</b>	<b>83</b>	<b>3832</b>		
<i>Aedes albopictus</i>	7	16		
<i>Culex</i> spp.	58	3520		
<i>Culiseta melanura</i>	18	296		
<b>Monmouth</b>	<b>143</b>	<b>1380</b>	<b>1</b>	<b>0.725</b>
<i>Aedes albopictus</i>	63	216		
<i>Aedes canadensis canadensis</i>	13	294		
<i>Aedes cantator</i>	6	185		
<i>Aedes grossbecki</i>	1	1		
<i>Aedes japonicus</i>	8	17		
<i>Aedes triseriatus</i>	4	10		
<i>Aedes vexans</i>	3	18		
<i>Anopheles barberi</i>	1	1		
<i>Anopheles punctipennis</i>	6	12		
<i>Anopheles quadrimaculatus</i>	1	1		
<i>Coquillettidia perturbans</i>	2	2		
<i>Culex erraticus</i>	1	4		
<i>Culex</i> spp.	28	605	1	1.653
<i>Culiseta melanura</i>	6	14		
<b>Morris</b>	<b>64</b>	<b>2423</b>		
<i>Aedes albopictus</i>	1	2		
<i>Culex</i> spp.	63	2421		
<b>Ocean</b>	<b>74</b>	<b>1235</b>		
<i>Aedes albopictus</i>	13	29		
<i>Aedes canadensis canadensis</i>	1	70		
<i>Aedes japonicus</i>	15	56		
<i>Aedes triseriatus</i>	4	8		
<i>Anopheles punctipennis</i>	1	1		
<i>Coquillettidia perturbans</i>	2	12		
<i>Culex restuans</i>	1	2		
<i>Culex</i> spp.	27	1032		
<i>Culiseta melanura</i>	10	25		
<b>Passaic</b>	<b>80</b>	<b>2388</b>		
<i>Aedes albopictus</i>	1	1		
<i>Aedes japonicus</i>	19	90		

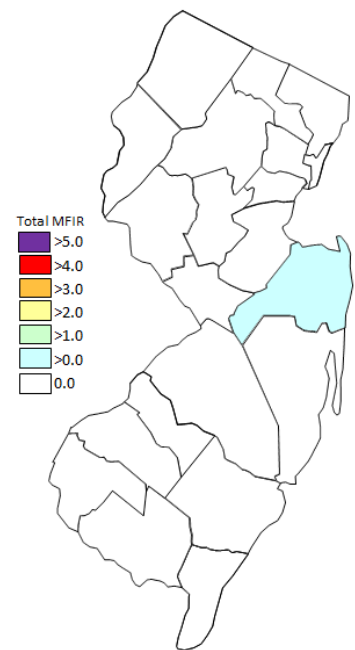
	<i>Aedes triseriatus</i>	1	1		
	<i>Aedes vexans</i>	2	4		
	<i>Culex</i> spp.	57	2292		
<b>Salem</b>		<b>53</b>	<b>495</b>		
	<i>Aedes albopictus</i>	9	15		
	<i>Aedes japonicus</i>	5	14		
	<i>Aedes triseriatus</i>	7	13		
	<i>Coquillettidia perturbans</i>	6	77		
	<i>Culex restuans</i>	2	2		
	<i>Culex</i> spp.	19	297		
	<i>Culiseta melanura</i>	5	77		
<b>Somerset</b>		<b>17</b>	<b>480</b>		
	<i>Culex</i> spp.	17	480		
<b>Sussex</b>		<b>40</b>	<b>1866</b>		
	<i>Aedes japonicus</i>	2	112		
	<i>Culex</i> spp.	38	1754		
<b>Warren</b>		<b>40</b>	<b>2665</b>		
	<i>Culex</i> spp.	40	2665		
<b>Grand Total</b>		<b>1620</b>	<b>31840</b>	<b>1</b>	<b>0.031</b>



Cumulative WNV activity in 2015.



WNV activity to 2 July 2016.



WNV activity last week, 2016.



## Saint Louis Encephalitis (SLE) to 2 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
<b>Burlington</b>		<b>25</b>	<b>1607</b>		
	<i>Anopheles barberi</i>	1	1		
	<i>Culex</i> spp.	24	1606		
<b>Cape May</b>		<b>221</b>	<b>3056</b>		
	<i>Culex pipiens</i>	204	3012		
	<i>Culex</i> spp.	17	44		
<b>Grand Total</b>		<b>246</b>	<b>4663</b>		

## La Crosse Encephalitis (LAC) to 2 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	Pools	Mosquitoes	Positives	MFIR
<b>Burlington</b>		<b>12</b>	<b>130</b>		
	<i>Aedes albopictus</i>	3	25		
	<i>Aedes atropalpus</i>	1	9		
	<i>Aedes japonicus</i>	4	86		
	<i>Aedes triseriatus</i>	4	10		
<b>Grand Total</b>		<b>12</b>	<b>130</b>		

## Dengue (DENV) to 2 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.		
<b>Atlantic</b>		<b>2</b>	<b>7</b>	<b>2</b>	<b>7</b>	<b>2</b>	<b>7</b>	<b>2</b>	<b>7</b>		
	<i>Aedes albopictus</i>	2	7	2	7	2	7	2	7		
<b>Cumberland</b>		<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>		
	<i>Aedes albopictus</i>	1	1	1	1	1	1	1	1		
<b>Middlesex</b>		<b>8</b>	<b>17</b>	<b>8</b>	<b>17</b>	<b>8</b>	<b>17</b>	<b>8</b>	<b>17</b>		
	<i>Aedes albopictus</i>	7	16	7	16	7	16	7	16		
	<i>Culiseta melanura</i>	1	1	1	1	1	1	1	1		
<b>Monmouth</b>		<b>54</b>	<b>195</b>	<b>54</b>	<b>195</b>	<b>54</b>	<b>195</b>	<b>54</b>	<b>195</b>		
	<i>Aedes albopictus</i>	54	195	54	195	54	195	54	195		
<b>Morris</b>		<b>1</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>2</b>		
	<i>Aedes albopictus</i>	1	2	1	2	1	2	1	2		
<b>Salem</b>		<b>9</b>	<b>15</b>	<b>9</b>	<b>15</b>	<b>9</b>	<b>15</b>	<b>9</b>	<b>15</b>		
	<i>Aedes albopictus</i>	9	15	9	15	9	15	9	15		
<b>Grand Total</b>		<b>75</b>	<b>237</b>	<b>75</b>	<b>237</b>	<b>75</b>	<b>237</b>	<b>75</b>	<b>237</b>		

### Chikungunya (CHIK) to 2 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
<b>Atlantic</b>		<b>2</b>	<b>7</b>		
	<i>Aedes albopictus</i>	2	7		
<b>Cape May</b>		<b>26</b>	<b>35</b>		
	<i>Aedes albopictus</i>	26	35		
<b>Cumberland</b>		<b>1</b>	<b>1</b>		
	<i>Aedes albopictus</i>	1	1		
<b>Middlesex</b>		<b>8</b>	<b>17</b>		
	<i>Aedes albopictus</i>	7	16		
	<i>Culiseta melanura</i>	1	1		
<b>Monmouth</b>		<b>54</b>	<b>195</b>		
	<i>Aedes albopictus</i>	54	195		
<b>Morris</b>		<b>1</b>	<b>2</b>		
	<i>Aedes albopictus</i>	1	2		
<b>Salem</b>		<b>9</b>	<b>15</b>		
	<i>Aedes albopictus</i>	9	15		
<b>Grand Total</b>		<b>101</b>	<b>272</b>		

### Zika (ZIKV) to 2 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 49 imported human cases of Zika.

<b>County</b>	<b>Species</b>	<b>Pools</b>	<b>Mosquitoes</b>	<b>Positives</b>	<b>MFIR</b>
<b>Cape May</b>		<b>26</b>	<b>35</b>		
	<i>Aedes albopictus</i>	26	35		
<b>Monmouth</b>		<b>6</b>	<b>8</b>		
	<i>Aedes albopictus</i>	6	8		
<b>Grand Total</b>		<b>32</b>	<b>43</b>		