VECTOR SURVEILLANCE IN NEW JERSEY

EEE, WNV, SLE, LAC, DENV and CHIK

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CDC WEEK 32: 9 August to 15 August, 2015

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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**	0.27	0.20	8 (9)	6 (7)		
Green Bank (Burlington Co.)/25	**Coastal**	4.01	0.48	59 (71)	8 (9)		
Corbin City (Atlantic Co.)/25	**Coastal**	0.94	1.00	153 (178)	9 (10)		
Dennisville (Cape May Co.)/50	**Coastal**	6.63	0.36	215	9		
Winslow (Camden Co.)/50	**Inland**	2.11	2.60	1095	27	1	0.91
Centerton (Salem Co.)/50	**Inland**	2.94	0.82	583	18		
Turkey Swamp (Monmouth Co.)/49	**Inland**	1.28	2.33	159 (273)	10 (12)		
Glassboro (Gloucester Co.)/50	**Inland**	0.44	0.44	157	11		

*Current week (in parentheses) results pending.

Remarks: A total of three positive mosquito pools for EEE have been detected in NJ. First detection of EEE in a pool of *Culiseta melanura* was collected at the Winslow resting box site on the 27th of July. Current MFIR at that resting box site is 0.91. Two additional positive pools of *Culiseta melanura* were collected at a Burlington county resting box site.

Traditional Resting Box Sites: One EEE positive *Cs. melanura* pool has been detected at the state resting box sites to date. 2429 *Cs. melanura* from 98 pools have been tested for EEE with an additional 5 pools containing 152 *Cs. melanura* to be tested. MFIR for the traditional resting box sites is 0.41 with an overall state MFIR of 0.29.

	Additional *Cs. melanura* trapped by counties *traps with positives indicated in **BOLD.**				
County	**Trap types***	**Pools**	**Mosquitoes**	**Positives**	**MFIR**
Atlantic	CO_2	10	76		
Burlington	**CO_2**	42	1680	2	1.19
Cape May	GR, RB	30	174		
Cumberland	CO_2, RB	10	83		
Middlesex	RB	6	40		
Ocean	CO_2, GR, RB	9	36		
Salem	CO_2	1	1		
TOTAL		**108**	**2090**	**2**	**0.96**

Additional *Cs. melanura*: Counties maintain trap sites for *Cs. melanura* in other areas. One additional pool from Burlington County, collected from a CO_2 trap on 3 August was positive.

Species other than *Cs. melanura*	**Pools**	**Mosquitoes**	**Positives**	**MFIR**
Aedes cantator	22	32		
Aedes sollicitans	7	232		
Anopheles bradleyi	3	5		
Anopheles crucians	1	1		
Anopheles punctipennis	6	21		
Anopheles quadrimaculatus	2	51		
Coquillettidia perturbans	59	1183		
Culex erraticus	3	3		
Culex pipiens	131	1054		
Culex restuans	2	2		
Culex salinarius	27	466		
Culex sp.	12	29		
State Total	**275**	**3079**		

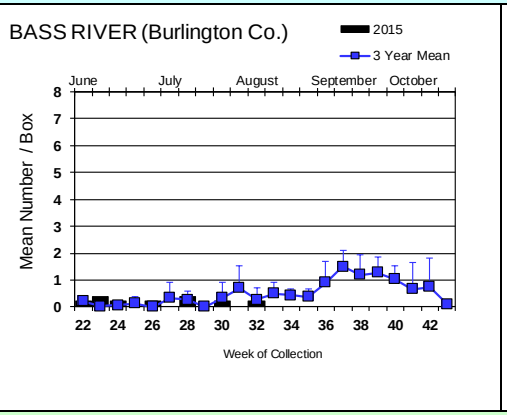
Additional Species: Eleven additional species were tested for EEE and no positives were detected.

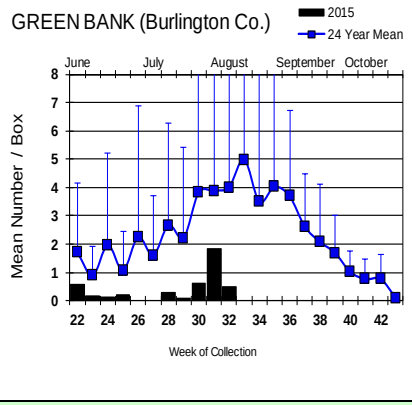
Horses and Humans: No horses or humans have been reported with EEE.

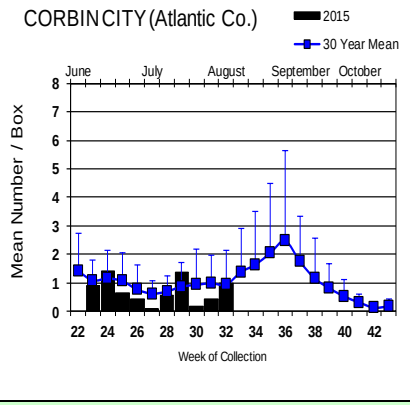
Horses and Vaccinations: The fate of unvaccinated equids reinforces the necessity of maintaining a vaccination schedule for arboviruses. For vaccination schedules recommended by the American Association of Equine Practices, see: http://www.aaep.org/vaccination_guidelines.htm

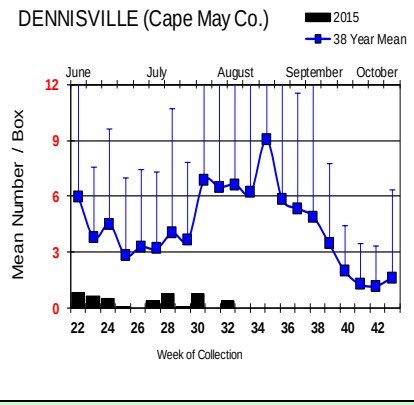
Culiseta melanura Population Graphs

Coastal

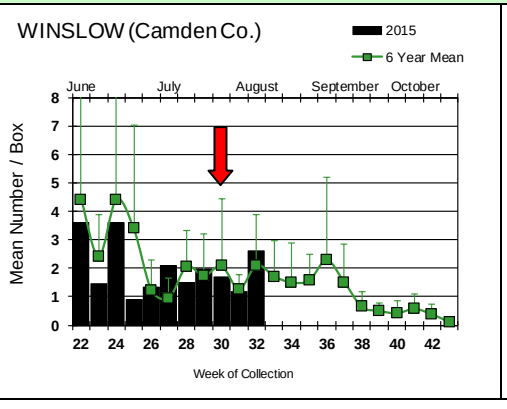


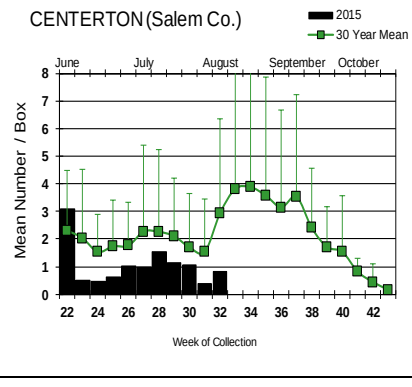


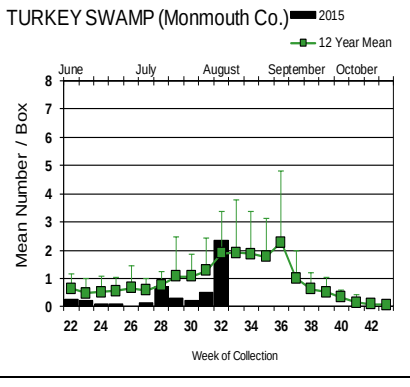


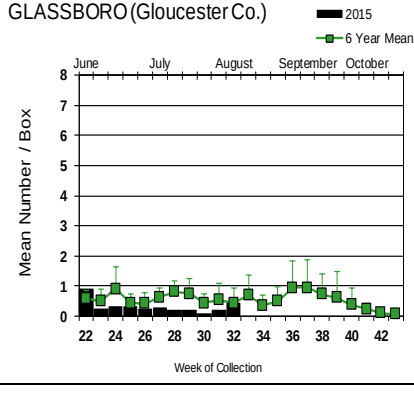


Inland









Populations of *Cs. melanura* at Corbin City, Winslow (with previous activity), Turkey Swamp and Glassboro were at or surpassed historical values while population averages at the other traditional resting box sites were well below historical values.

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

EEE in US (2015 cumulative cases): (Black or Red = previous + new reported cases occurring)

- equine: FL(18/1goat) LA(1) MS(2) NC(1) SC(3) TX(6) VA(1)
- mosquito pools: NJ (3) NY(13)
- sentinel: FL(56), TX(16)
- human: LA (1)

West Nile Virus Positive Organisms in US, 2015

West Nile in US (2015 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	59		0	17/25
Arkansas				0	2/4
California	363/418	1333/1577	90/104		18/36
Colorado	3/6	30/48		2/4	3/5
Connecticut		16/36			0
Delaware	1/2				1
DC					0
Florida		6	33/40		3/4
Georgia	0	0		0	0
Hawaii					
Idaho	0	12		1	2/4
Illinois	4/13	16/494		0	0
Indiana	0	63/82			0
Iowa		0		0	1
Kansas		0			4
Kentucky				0	
Louisiana	3/10	251/303			11/13
Maine					
Maryland					
Mass.		49/58		0	0
Michigan	5/10	2/3			
Minnesota	2	1			
Mississippi		25/26		0	3/7
Missouri		1/98		2	0

	Birds	Mosquito Pools	Sentinels	Horses	Humans
Montana					1
Nebraska	0	50/62		0	5/12
Nevada		63			
New Hampshire		0		0	0
New Jersey	7	136/201		0	2
New Mexico					1/2
New York		36			
North Carolina					
North Dakota	0	4		1	1/4
Ohio		28			2/3
Oklahoma		2			11/12
Oregon	2	7/15	0	1	0
Pennsylvania	5/6	784/1057			1
Rhode Island		0		0	0
South Carolina					
South Dakota		1/7			5/9
Tennessee		117			1
Texas	3/4	483/643		2	9/17
Utah		31			
Vermont		6			
Virginia					
Washington	2/3	85/110		6/10	8/13
West Virginia					
Wisconsin	8/14	0		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 17 August 2015

Species	Pools	Mosquitoes	Positives	MFIR
Aedes albopictus	442	3141	2	0.637
Aedes atlanticus	1	6		
Aedes atropalpus	1	1		
Aedes canadensis canadensis	16	166		
Aedes cantator	28	202		
Aedes grossbecki	9	40		
Aedes japonicus	184	1115	1	0.897
Aedes sollicitans	7	232		
Aedes taeniorhynchus	3	35		
Aedes triseriatus	53	171		
Aedes trivittatus	3	4		
Aedes vexans	34	684		
Anopheles bradleyi	4	20		
Anopheles crucians	1	1		
Anopheles punctipennis	24	78		
Anopheles quadrimaculatus	37	572		
Coquillettidia perturbans	63	1261		
Culex erraticus	10	61		
Culex pipiens	270	8275	20	2.417
Culex restuans	211	1724	2	1.160
Culex salinarius	29	502		
Culex sp.	1387	56576	171	3.022
Culex territans	6	10		
Culiseta melanura	208	4525	5	1.105
Psorophora ciliata	3	20		
Psorophora columbiae	7	206		
Psorophora ferox	5	12		
Grand Total	**3046**	**79640**	**201**	**2.524**

Remarks: To date, 3046 pools of 79,640 mosquitoes from 26 species have been tested, with 201 positive pools detected, most in ornithophilic *Culex/Culiseta* pools. Most recent non-*Culex* species to become positive was a pool of *Aedes japonicus* sampled 23 July in Camden County. First positive of the season occurred in Middlesex County, in a pool of mixed *Culex*, collected on the 22nd of June. First positive pool in non-*Culex* was in an *Aedes albopictus* pool, collected in Monmouth County on 10 July. First positive pool in a non-*Culex* ornithophilic species was found in *Culiseta melanura* in Cape May 21 July. Overall state MFIR is 1.942, up from the previous week of 1.797.

Humans, Horses and Wild Birds: Two human cases of WNV have been reported, one each in Burlington and Camden counties. For further information, see http://www.state.nj.us/health/cd/westnile/techinfo.shtml.

No horse cases have been detected.

Bird testing began in mid-April. Seven positive birds have been reported, mostly corvids. To date, 35 birds have been tested. Species includes: American Crow (*Corvus brachyrhynchos* 3/5) Fish Crow (*Corvus ossifragus* 1/10), Blue Jay (*Cyanocitta cristata* 1/3), unidentified corvid (1/2), Hawk/Raptor (0/1) and other avian species (1/14). Counties (positives) submitting birds are Atlantic, Bergen, Burlington, Cumberland, Essex, Gloucester, Hunterdon, Mercer, Monmouth, Morris, Ocean, Salem and Warren.

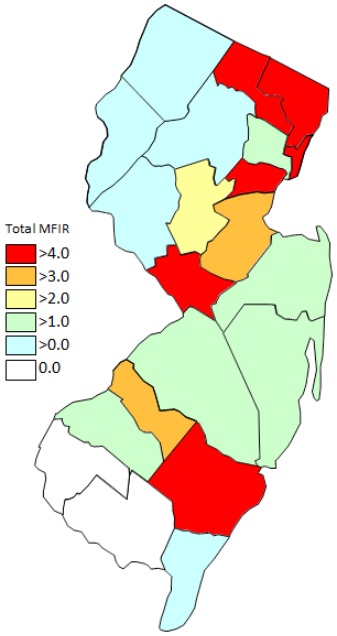
WNV Results by County through 17 August 2015

County	Species	Pools	Mosquitoes	Positives	MFIR
Atlantic		**114**	**3214**		
	Aedes albopictus	18	166		
	Aedes japonicus	9	33		
	Aedes taeniorhynchus	1	5		
	Aedes vexans	6	238		
	Coquillettidia perturbans	15	416		
	Culex spp.	45	2126		
	Culiseta melanura	19	229		
	Psorophora ferox	1	1		
Bergen		**55**	**3800**	**14**	**3.684**
	Aedes japonicus	5	175		
	Culex spp.	50	3625	14	3.862
Burlington		**103**	**3437**	**5**	**1.455**
	Aedes albopictus	3	59		
	Aedes japonicus	1	15		
	Coquillettidia perturbans	2	15		
	Culex salinarius	4	152		
	Culex spp.	37	1449	4	2.761
	Culiseta melanura	56	1747	1	0.572
Camden		**160**	**5865**	**21**	**3.581**
	Aedes albopictus	10	22		
	Aedes canadensis canadensis	2	12		
	Aedes cantator	1	1		
	Aedes japonicus	31	319	1	3.135
	Anopheles punctipennis	2	6		
	Culex spp.	84	4404	18	4.087
	Culiseta melanura	28	1096	2	1.825
	Psorophora ferox	2	5		
Cape May		**580**	**3486**	**11**	**3.155**
	Aedes albopictus	29	45		
	Aedes atropalpus	1	1		
	Aedes canadensis canadensis	5	5		
	Aedes cantator	22	32		
	Aedes japonicus	63	151		
	Aedes sollicitans	1	1		
	Aedes triseriatus	30	56		
	Aedes vexans	2	5		
	Anopheles bradleyi	3	5		
	Anopheles punctipennis	5	5		
	Anopheles quadrimaculatus	30	527		
	Coquillettidia perturbans	20	511		
	Culex erraticus	3	3		
	Culex pipiens	131	1054	8	7.590
	Culex restuans	163	604	1	1.656
	Culex salinarius	18	58		
	Culex spp.	9	24		
	Culex territans	6	10		
	Culiseta melanura	39	389	2	5.141

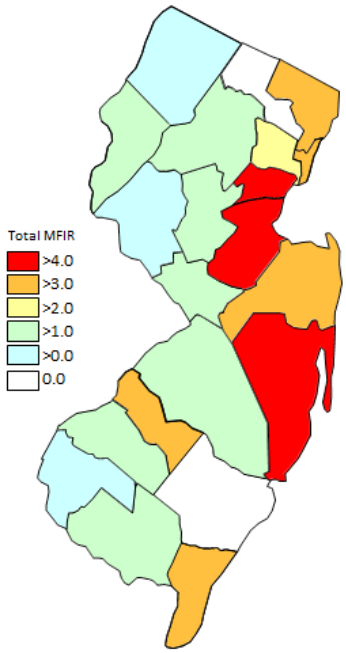
Cumberland		**106**	**1874**	**2**	**1.067**
	Aedes albopictus	12	38		
	Aedes atlanticus	1	6		
	Aedes canadensis canadensis	2	53		
	Aedes cantator	1	2		
	Aedes grossbecki	9	40		
	Aedes japonicus	2	8		
	Aedes sollicitans	6	231		
	Aedes taeniorhynchus	2	30		
	Aedes triseriatus	2	6		
	Aedes trivitattus	1	2		
	Aedes vexans	10	349		
	Anopheles bradleyi	1	15		
	Anopheles punctipennis	2	17		
	Anopheles quadrimaculatus	3	23		
	Coquillettidia perturbans	8	61		
	Culex restuans	1	1		
	Culex salinarius	5	256		
	Culex spp.	20	458	2	4.367
	Culiseta melanura	10	83		
	Psorophora ciliata	3	20		
	Psorophora columbiae	5	175		
Essex		**99**	**1751**	**5**	**2.856**
	Aedes albopictus	2	4		
	Aedes japonicus	13	30		
	Aedes trivittatus	1	1		
	Anopheles punctipennis	1	2		
	Anopheles quadrimaculatus	2	17		
	Culex spp.	78	1691	5	2.957
	Psorophora ferox	2	6		
Gloucester		**206**	**7179**	**10**	**1.393**
	Aedes albopictus	82	583		
	Aedes japonicus	4	35		
	Aedes triseriatus	1	3		
	Coquillettidia perturbans	1	2		
	Culex pipiens	107	6399	10	1.563
	Culiseta melanura	11	157		
Hudson		**108**	**4750**	**18**	**3.789**
	Aedes albopictus	14	224		
	Culex spp.	94	4526	18	3.977
Hunterdon		**128**	**6400**	**4**	**0.625**
	Culex spp.	128	6400	4	0.625
Mercer		**144**	**3958**	**6**	**1.516**
	Aedes albopictus	12	42		
	Aedes japonicus	3	16		
	Aedes vexans	13	87		
	Coquillettidia perturbans	4	32		
	Culex pipiens	31	821	2	2.436
	Culex restuans	44	1116	1	0.896

	Culex spp.	37	1844	3	1.627
Middlesex		**185**	**6413**	**28**	**4.366**
	Aedes albopictus	66	161		
	Culex spp.	113	6212	28	4.507
	Culiseta melanura	6	40		
Monmouth		**280**	**4987**	**16**	**3.208**
	Aedes albopictus	132	1183	1	0.845
	Aedes canadensis canadensis	6	93		
	Aedes cantator	4	167		
	Aedes japonicus	3	10		
	Aedes trivittatus	1	1		
	Aedes vexans	1	2		
	Anopheles crucians	1	1		
	Anopheles punctipennis	9	25		
	Anopheles quadrimaculatus	2	5		
	Coquillettidia perturbans	1	1		
	Culex erraticus	6	57		
	Culex restuans	1	1		
	Culex salinarius	2	36		
	Culex spp.	98	3210	15	4.673
	Culiseta melanura	11	164		
	Psorophora columbiae	2	31		
Morris		**152**	**5940**	**10**	**1.684**
	Aedes albopictus	17	248		
	Culex spp.	135	5692	10	1.757
Ocean		**123**	**1913**	**8**	**4.182**
	Aedes albopictus	33	251	1	3.984
	Aedes canadensis canadensis	1	3		
	Aedes japonicus	23	99		
	Aedes triseriatus	1	11		
	Aedes vexans	1	2		
	Coquillettidia perturbans	3	125		
	Culex spp.	52	1386	7	5.051
	Culiseta melanura	9	36		
Passaic		**9**	**149**		
	Aedes japonicus	2	5		
	Aedes triseriatus	2	3		
	Aedes vexans	1	1		
	Culex spp.	4	140		
Salem		**82**	**1074**	**1**	**0.931**
	Aedes albopictus	12	115		
	Aedes japonicus	9	17		
	Aedes triseriatus	7	12		
	Coquillettidia perturbans	7	23		
	Culex erraticus	1	1		
	Culex pipiens	1	1		
	Culex restuans	2	2		
	Culex spp.	24	319	1	3.135
	Culiseta melanura	19	584		

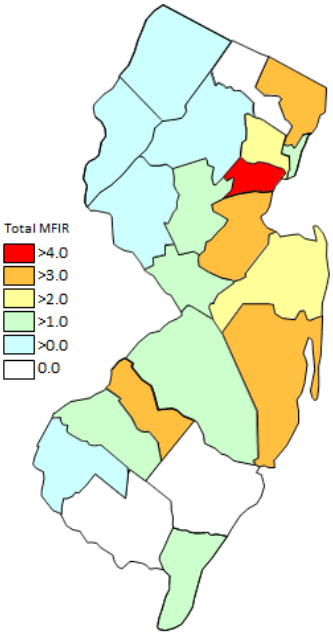
Somerset	**114**	**1967**	**3**	**1.525**
Aedes japonicus	8	121		
Aedes triseriatus	5	23		
Anopheles punctipennis	1	4		
Coquillettidia perturbans	1	29		
Culex spp.	99	1790	3	1.676
Sussex	**121**	**2608**	**1**	**0.383**
Aedes japonicus	8	81		
Aedes triseriatus	5	57		
Anopheles punctipennis	4	19		
Coquillettidia perturbans	1	46		
Culex spp.	103	2405	1	0.416
Union	**74**	**5307**	**34**	**6.407**
Culex spp.	74	5307	34	6.407
Warren	**103**	**3568**	**4**	**1.121**
Culex spp.	103	3568	4	1.121
Grand Total	**3046**	**79640**	**201**	**2.524**



Cumulative WNV activity in 2014.



WNV activity to 17 August 2015.



WNV activity last week, 2015.

Saint Louis Encephalitis (SLE) 2015.

New Jersey will be testing for SLE this year only when adjacent states show human activity (Cape May tests its own 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.

County	Species	Pools	Mosquitoes	Positives	MFIR

Cape May		**140**	**1072**		
	Culex pipiens	130	1045		
	Culex restuans	1	3		
	Culex spp.	9	24		
Grand Total		**140**	**1072**		

La Crosse Encephalitis (LAC) 2015.

New Jersey will be testing for LAC this year only when adjacent states show human activity (Cape May tests its own 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).

County	Species	Pools	Mosquitoes	Positives	MFIR
Cape May		**30**	**56**		
	Aedes triseriatus	30	56		
Grand Total		**30**	**56**		

Dengue (DENV) to 17 August 2015.

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 2015. Currently, there are 21 imported human cases reported in New Jersey.

County	Species	DENV1		DENV2		DENV3		DENV4		Positives	MFIR
		Pool	Mos.	Pool	Mos.	Pool	Mos.	Pool	Mos.		
Atlantic		**18**	**166**	**18**	**166**	**18**	**166**	**18**	**166**		
		18	166	18	166	18	166	18	166		
Burlington		**5**	**74**	**5**	**74**	**5**	**74**	**5**	**74**		
		5	74	5	74	5	74	5	74		
Camden		**10**	**21**	**10**	**21**	**10**	**21**	**10**	**21**		
		10	21	10	21	10	21	10	21		
Cumberland		**12**	**38**	**12**	**38**	**12**	**38**	**12**	**38**		
		12	38	12	38	12	38	12	38		

Gloucester	**90**	**679**	**90**	**679**	**90**	**679**	**90**	**679**		
	90	679	90	679	90	679	90	679		
Hudson	**15**	**236**	**15**	**236**	**15**	**236**	**15**	**236**		
	15	236	15	236	15	236	15	236		
Mercer	**12**	**42**	**12**	**42**	**12**	**42**	**12**	**42**		
	12	42	12	42	12	42	12	42		
Middlesex	**68**	**166**	**68**	**166**	**68**	**166**	**68**	**166**		
	68	166	68	166	68	166	68	166		
Monmouth	**128**	**1167**	**128**	**1167**	**128**	**1167**	**109**	**1056**		
	128	1167	128	1167	128	1167	109	1056		
Morris	**17**	**248**	**17**	**248**	**17**	**248**	**17**	**248**		
	17	248	17	248	17	248	17	248		
Salem	**14**	**127**	**14**	**127**	**14**	**127**	**14**	**127**		
	14	127	14	127	14	127	14	127		
Grand Total	**389**	**2964**	**389**	**2964**	**389**	**2964**	**370**	**2853**		

Chikungunya (CHIK) to 17 August 2015.

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 2015. Currently, there are 19 imported human cases reported in New Jersey.

County	Species	Pools	Mosquitoes	Positives	MFIR
Atlantic		**18**	**166**		
	Aedes albopictus	18	166		
Burlington		**5**	**74**		
	Aedes albopictus	5	74		
Camden		**10**	**21**		
	Aedes albopictus	10	21		
Cape May		**29**	**45**		
	Aedes albopictus	29	45		
Cumberland		**12**	**38**		
	Aedes albopictus	12	38		
Gloucester		**90**	**679**		

	Aedes albopictus	90	679		
Hudson		**15**	**236**		
	Aedes albopictus	15	236		
Mercer		**12**	**42**		
	Aedes albopictus	12	42		
Middlesex		**68**	**166**		
	Aedes albopictus	68	166		
Monmouth		**128**	**1167**		
	Aedes albopictus	128	1167		
Morris		**17**	**248**		
	Aedes albopictus	17	248		
Salem		**14**	**127**		
	Aedes albopictus	14	127		
Grand Total		**418**	**3009**		