VECTOR SURVEILLANCE IN NEW JERSEY

EEE, WNV, SLE, LAC, DENV and CHIK

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CDC WEEK 32: 16 August to 22 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**	0.50	0.20	9 (10)	7 (8)		
Green Bank (Burlington Co.)/23	**Coastal**	4.99	0.43	71 (81)	9 (10)	1	14.08
Corbin City (Atlantic Co.)/25	**Coastal**	1.38	1.00	178 (203)	10 (11)		
Dennisville (Cape May Co.)/50	**Coastal**	6.19	0.00	215	9		
Winslow (Camden Co.)/50	**Inland**	1.73	3.12	1251	31	3	2.40
Centerton (Salem Co.)/50	**Inland**	3.82	0.36	601	19		
Turkey Swamp (Monmouth Co.)/49	**Inland**	1.93	1.12	273 (329)	12 (14)		
Glassboro (Gloucester Co.)/50	**Inland**	0.68	0.54	184	12		

*Current week (in parentheses) results pending.

Remarks: A total of six positive mosquito pools for EEE have been detected in NJ, 4 at the traditional sites, 2 at county sites. 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: Four EEE positive *Cs. melanura* pools have been detected at the state resting box sites to date. The Winslow site has three positive pools and the Green Bank site has one. 2782 *Cs. melanura* from 110 pools have been tested for EEE with an additional 4 pools containing 92 *Cs. melanura* to be tested. MFIR for the traditional resting box sites is 1.43 with a statewide MFIR of 1.28 for *Cs. melanura* and a statewide MFIR of 0.71 for all species tested.

	Additional *Cs. melanura* trapped by counties *traps with positives indicated in **BOLD.**				
County	**Trap types***	**Pools**	**Mosquitoes**	**Positives**	**MFIR**
Atlantic	CO_2	13	146		
Burlington	**CO_2**	42	1680	2	1.19
Cape May	GR, RB	38	207		
Cumberland	CO_2, RB	10	83		
Middlesex	RB	6	40		
Ocean	CO_2, GR, RB	10	43		
Salem	CO_2	1	1		
TOTAL		**120**	**2200**	**2**	**0.91**

Additional *Cs. melanura*: Counties maintain trap sites for *Cs. melanura* in other areas. Two additional positive pools from Burlington County, the first collected from a CO_2 trap on 3 August have been detected.

Species other than *Cs. melanura*	**Pools**	**Mosquitoes**	**Positives**	**MFIR**
Aedes cantator	23	36		
Aedes sollicitans	7	232		
Anopheles bradleyi	6	8		
Anopheles crucians	1	1		
Anopheles punctipennis	6	21		
Anopheles quadrimaculatus	2	51		
Coquillettidia perturbans	64	1372		
Culex erraticus	3	3		
Culex pipiens	146	1225		
Culex restuans	2	2		
Culex salinarius	31	474		
Culex sp.	14	36		
State Total	**305**	**3461**		

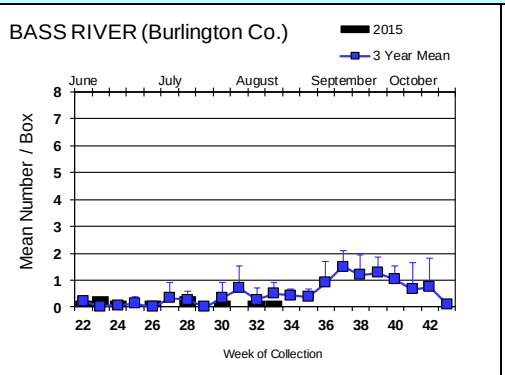
Additional Species: Eleven additional species were tested for EEE and no positives were detected.

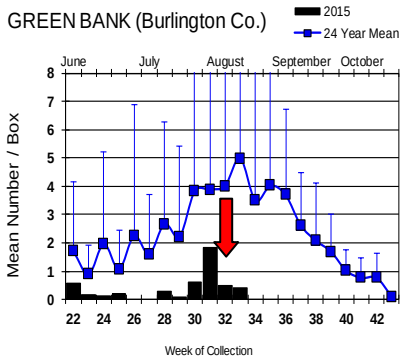
Horses and Humans: No horses or humans have been reported with EEE.

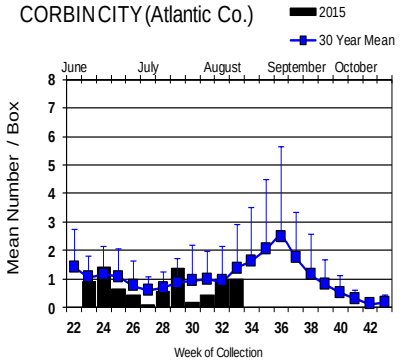
Horses and Vaccinations: The fate of unvaccinated equids reinforces the necessity of maintaining a vaccination schedule for arboviruses. For vaccination schedules recommended by the American Association of Equine Practices, see: http://www.aaep.org/vaccination_guidelines.htm

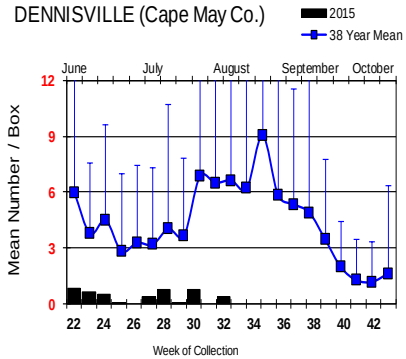
Culiseta melanura Population Graphs

Coastal

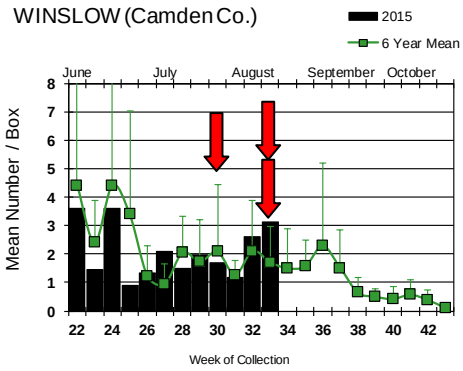


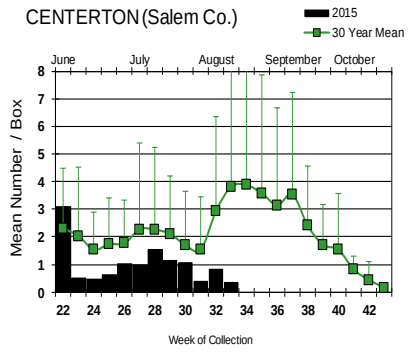


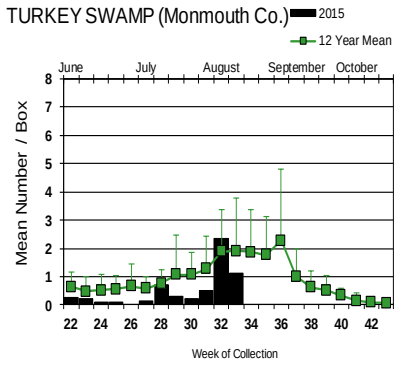


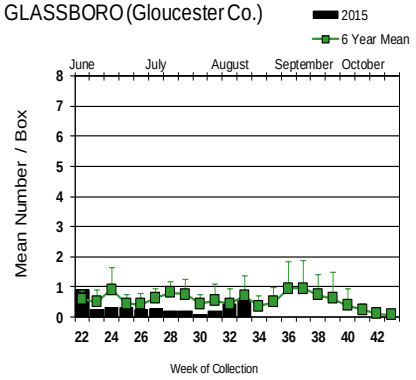


Inland









Populations of *Cs. melanura* at Winslow increased significantly above historical averages, and two additional positive pools were detected during this time. On the other hand at Green Bank, populations decreased from the previous week and one additional positive pool was detected. Positives have been detected for several years at the Green Bank (and other) site despite low population levels.

= 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(7) VA(1)
- mosquito pools: NJ (6) NY(13)
- sentinel: FL(59), 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					1/3
Alaska					
Arizona	0	59		2	25
Arkansas				1	4/7
California	418/503	1577/1768	104/150	3	36/57
Colorado	6	48		4	5/8
Connecticut		36/64			0
Delaware	1/2				1
DC					1
Florida		6	40/60		4
Georgia	0	0		0	0
Hawaii					
Idaho	0	12		1	4
Illinois	13/23	494/713		2	1
Indiana	0	82/130			1
Iowa		1		0	1
Kansas		0			4/6
Kentucky				1	
Louisiana	10/19	303/365			13/20
Maine					
Maryland					2
Mass.		58/86		0	0
Michigan	10	3/6			
Minnesota	2	1			4
Mississippi		26/40		1	7/13
Missouri		98		2/4	1/2

	Birds	Mosquito Pools	Sentinels	Horses	Humans
Montana					1
Nebraska	0	62/70		0	12/14
Nevada		63			3
New Hampshire		0		0	0
New Jersey	7/13	201/370		0	2/3
New Mexico					2
New York		36			1
North Carolina					
North Dakota	0	4		1	4
Ohio		28/134			3/8
Oklahoma		2			12/15
Oregon	2/3	15/26	0	1	0
Pennsylvania	6/14	1057/1425			1/6
Rhode Island		1		0	0
South Carolina					1
South Dakota		1/7			9/10
Tennessee		117			1
Texas	4/6	643/798			9/17
Utah		31/53		2	
Vermont		6/12			
Virginia					
Washington	3	110/127		10/15	13/15
West Virginia					
Wisconsin	14/15	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 24 August 2015

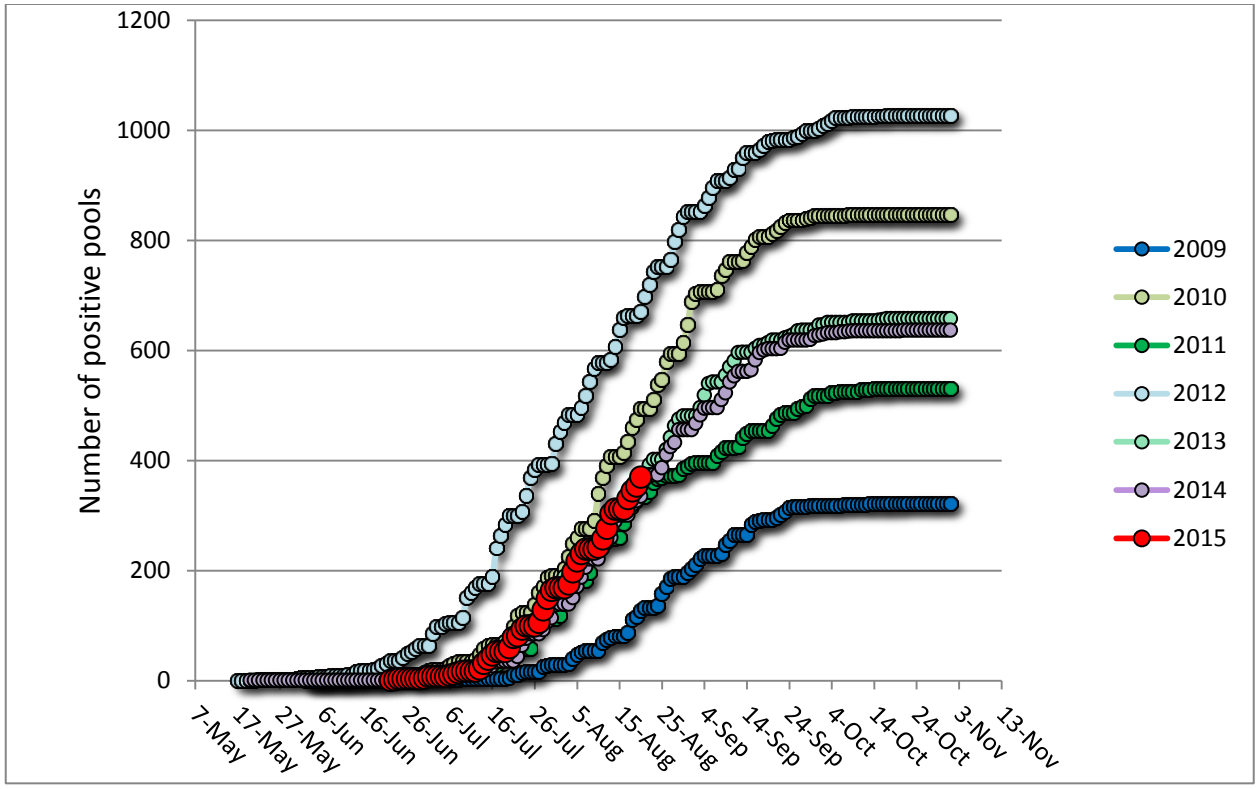
Species	Pools	Mosquitoes	Positives	MFIR
Aedes albopictus	504	3733	4	1.072
Aedes atlanticus	1	6		
Aedes atropalpus	1	1		
Aedes canadensis canadensis	18	236	1	4.237
Aedes cantator	29	206		
Aedes grossbecki	9	40		
Aedes japonicus	220	1315	1	0.760
Aedes sollicitans	7	232		
Aedes sticticus	1	1		
Aedes taeniorhynchus	3	35		
Aedes triseriatus	64	213	1	4.695
Aedes trivittatus	3	4		
Aedes vexans	44	832	1	1.202
Anopheles bradleyi	7	23		
Anopheles crucians	1	1		
Anopheles punctipennis	27	95		
Anopheles quadrimaculatus	41	596		
Coquillettidia perturbans	68	1450		
Culex erraticus	16	107		
Culex pipiens	327	10050	48	4.776
Culex restuans	228	1775	2	1.127
Culex salinarius	33	510		
Culex sp.	1662	67737	306	4.517
Culex territans	6	10		
Culiseta melanura	232	4988	6	1.203
Psorophora ciliata	3	20		
Psorophora columbiae	11	221		
Psorophora ferox	7	14		
Grand Total	**3573**	**94451**	**370**	**3.917**

Remarks: To date, 3573 pools of 94,451 mosquitoes from 27 species have been tested, with 370 positive pools detected, most in ornithophilic *Culex/Culiseta* pools (98%). Most recent non-*Culex* species to become positive were pools of *Aedes canadensis* (sampled 20 August in Union County), *Aedes triseriatus* (sampled 11 August in Salem County) and *Aedes vexans* (sampled 5 August in Cumberland 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 3.917, up from the previous week of 1.942.

Humans, Horses and Wild Birds: Three human cases of WNV have been reported, one each in Bergen, 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. Thirteen positive birds have been reported, mostly corvids. To date, 41 birds have been tested. Species includes: American Crow (*Corvus brachyrhynchos* 2/6) Fish Crow (*Corvus ossifragus* 1/10), Blue Jay (*Cyanocitta cristata* 1/3), unidentified corvid (2/3), Hawk/Raptor (1/2) and other avian species (2/15). Counties (positives) submitting birds are Atlantic, Bergen, Burlington, Cape May, Cumberland, Essex, Gloucester, Hunterdon, Mercer, Monmouth, Morris, Ocean, Salem and Warren.



The figure above shows that despite a flurry of recent activity, the trend for 2015 is still with moderate activity at the current time.

WNV Results by County through 24 August 2015

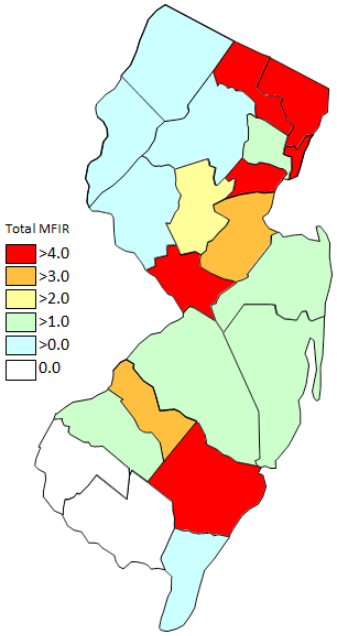
County	Species	Pools	Mosquitoes	Positives	MFIR
Atlantic		**124**	**3567**		
	Aedes albopictus	19	194		
	Aedes japonicus	9	33		
	Aedes taeniorhynchus	1	5		
	Aedes vexans	6	238		
	Coquillettidia perturbans	17	552		
	Culex spp.	48	2220		
	Culiseta melanura	23	324		
	Psorophora ferox	1	1		
Bergen		**84**	**4611**	**34**	**7.374**
	Aedes albopictus	3	5	1	200.000
	Aedes japonicus	8	235		
	Aedes triseriatus	1	1		
	Culex spp.	72	4370	33	7.551
Burlington		**126**	**3801**	**11**	**2.894**
	Aedes albopictus	5	74	1	13.514
	Aedes japonicus	4	40		
	Aedes sticticus	1	1		
	Aedes triseriatus	1	2		
	Aedes vexans	2	14		
	Anopheles punctipennis	1	3		
	Coquillettidia perturbans	2	15		
	Culex salinarius	4	152		
	Culex spp.	48	1740	9	5.172
	Culiseta melanura	58	1760	1	0.568

Camden		**204**	**7520**	**40**	**5.319**
	Aedes albopictus	11	23		
	Aedes canadensis canadensis	3	15		
	Aedes cantator	1	1		
	Aedes japonicus	41	363	1	2.755
	Anopheles punctipennis	2	6		
	Culex spp.	112	5855	36	6.149
	Culiseta melanura	32	1252	3	2.396
	Psorophora ferox	2	5		
Cape May		**653**	**3869**	**16**	**4.135**
	Aedes albopictus	35	57		
	Aedes atropalpus	1	1		
	Aedes canadensis canadensis	5	5		
	Aedes cantator	23	36		
	Aedes japonicus	70	168		
	Aedes sollicitans	1	1		
	Aedes triseriatus	32	70		
	Aedes vexans	3	8		
	Anopheles bradleyi	6	8		
	Anopheles punctipennis	6	6		
	Anopheles quadrimaculatus	33	539		
	Coquillettidia perturbans	23	564		
	Culex erraticus	3	3		
	Culex pipiens	146	1225	13	10.612
	Culex restuans	178	650	1	1.538
	Culex salinarius	22	66		
	Culex spp.	10	27		
	Culex territans	6	10		
	Culiseta melanura	47	422	2	4.739
	Psorophora columbiae	1	1		
	Psorophora ferox	2	2		
Cumberland		**129**	**2193**	**3**	**1.368**
	Aedes albopictus	12	38		
	Aedes atlanticus	1	6		
	Aedes canadensis canadensis	2	53		
	Aedes cantator	1	2		
	Aedes grossbecki	9	40		
	Aedes japonicus	3	11		
	Aedes sollicitans	6	231		
	Aedes taeniorhynchus	2	30		
	Aedes triseriatus	3	7		
	Aedes trivitattus	1	2		
	Aedes vexans	17	480	1	2.083
	Anopheles bradleyi	1	15		
	Anopheles punctipennis	3	30		
	Anopheles quadrimaculatus	3	23		
	Coquillettidia perturbans	8	61		
	Culex restuans	1	1		
	Culex salinarius	5	256		
	Culex spp.	30	615	2	3.252
	Culiseta melanura	10	83		
	Psorophora ciliata	3	20		
	Psorophora columbiae	8	189		

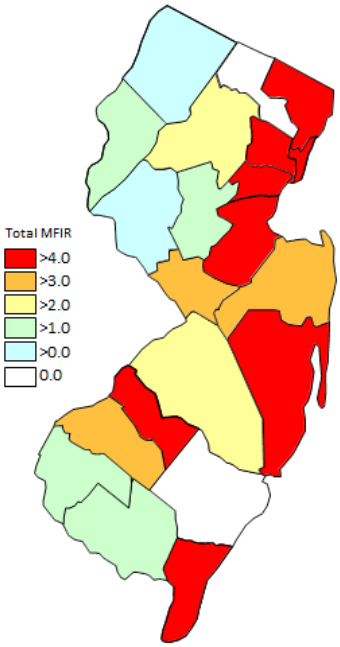
Essex		**112**	**1955**	**8**	**4.092**
	Aedes albopictus	5	9		
	Aedes japonicus	17	38		
	Aedes trivittatus	1	1		
	Anopheles punctipennis	1	2		
	Anopheles quadrimaculatus	2	17		
	Culex spp.	84	1882	8	4.251
	Psorophora ferox	2	6		
Gloucester		**250**	**8800**	**33**	**3.750**
	Aedes albopictus	90	679		
	Aedes japonicus	4	35		
	Aedes triseriatus	1	3		
	Coquillettidia perturbans	1	2		
	Culex pipiens	142	7897	33	4.179
	Culiseta melanura	12	184		
Hudson		**136**	**5959**	**41**	**6.880**
	Aedes albopictus	15	236		
	Culex spp.	121	5723	41	7.164
Hunterdon		**143**	**7150**	**5**	**0.699**
	Culex spp.	143	7150	5	0.699
Mercer		**169**	**4685**	**16**	**3.415**
	Aedes albopictus	12	42		
	Aedes japonicus	7	32		
	Aedes vexans	13	87		
	Coquillettidia perturbans	4	32		
	Culex pipiens	38	927	2	2.157
	Culex restuans	46	1121	1	0.892
	Culex spp.	49	2444	13	5.319
Middlesex		**225**	**8083**	**47**	**5.815**
	Aedes albopictus	68	166		
	Culex spp.	151	7877	47	5.967
	Culiseta melanura	6	40		
Monmouth		**319**	**5637**	**18**	**3.193**
	Aedes albopictus	156	1488	1	0.672
	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	8	74		
	Culex restuans	1	1		
	Culex salinarius	2	36		
	Culex spp.	108	3424	17	4.965
	Culiseta melanura	14	278		

	Psorophora columbiae	2	31		
Morris		**169**	**6684**	**14**	**2.095**
	Aedes albopictus	19	276		
	Culex spp.	150	6408	14	2.185
Ocean		**137**	**2205**	**10**	**4.535**
	Aedes albopictus	39	313	1	3.195
	Aedes canadensis canadensis	1	3		
	Aedes japonicus	24	113		
	Aedes triseriatus	1	11		
	Aedes vexans	1	2		
	Coquillettidia perturbans	3	125		
	Culex spp.	58	1595	9	5.643
	Culiseta melanura	10	43		
Passaic		**9**	**149**		
	Aedes japonicus	2	5		
	Aedes triseriatus	2	3		
	Aedes vexans	1	1		
	Culex spp.	4	140		
Salem		**101**	**1236**	**2**	**1.618**
	Aedes albopictus	14	127		
	Aedes japonicus	10	20		
	Aedes triseriatus	11	16	1	62.500
	Anopheles quadrimaculatus	1	12		
	Coquillettidia perturbans	7	23		
	Culex erraticus	5	30		
	Culex pipiens	1	1		
	Culex restuans	2	2		
	Culex spp.	30	403	1	2.481
	Culiseta melanura	20	602		
Somerset		**125**	**2115**	**3**	**1.418**
	Aedes albopictus	1	6		
	Aedes japonicus	8	121		
	Aedes triseriatus	5	23		
	Anopheles punctipennis	1	4		
	Coquillettidia perturbans	1	29		
	Culex spp.	109	1932	3	1.553
Sussex		**134**	**2828**	**1**	**0.354**
	Aedes japonicus	10	91		
	Aedes triseriatus	7	77		
	Anopheles punctipennis	4	19		
	Coquillettidia perturbans	1	46		
	Culex spp.	112	2595	1	0.385
Union		**106**	**7560**	**64**	**8.466**
	Aedes canadensis canadensis	1	67	1	14.925
	Culex spp.	105	7493	63	8.408
Warren		**118**	**3844**	**4**	**1.041**
	Culex spp.	118	3844	4	1.041

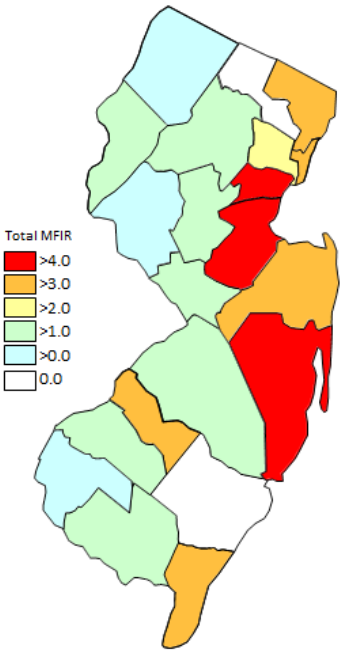
Grand Total		**3573**	**94451**	**370**	**3.917**



Cumulative WNV activity in 2014.



WNV activity to 24 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		**156**	**1246**		
	Culex pipiens	145	1216		
	Culex restuans	1	3		
	Culex spp.	10	27		
Grand Total		**156**	**1246**		

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		**32**	**70**		

	Aedes triseriatus	32	70		
Grand Total		**32**	**70**		

Dengue (DENV) to 24 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		**19**	**194**	**19**	**194**	**19**	**194**	**19**	**194**		
		19	194	19	194	19	194	19	194		
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		**148**	**1461**	**148**	**1461**	**148**	**1461**	**129**	**1350**		
		148	1461	148	1461	148	1461	129	1350		
Morris		**19**	**276**	**19**	**276**	**19**	**276**	**19**	**276**		
		19	276	19	276	19	276	19	276		
Salem		**14**	**127**	**14**	**127**	**14**	**127**	**14**	**127**		

		14	127	14	127	14	127	14	127		
Grand Total		**412**	**3314**	**412**	**3314**	**412**	**3314**	**393**	**3203**		

Chikungunya (CHIK) to 24 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 20 imported human cases reported in New Jersey.

County	Species	Pools	Mosquitoes	Positives	MFIR
Atlantic		**19**	**194**		
	Aedes albopictus	19	194		
Burlington		**5**	**74**		
	Aedes albopictus	5	74		
Camden		**10**	**21**		
	Aedes albopictus	10	21		
Cape May		**35**	**57**		
	Aedes albopictus	35	57		
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		**148**	**1461**		
	Aedes albopictus	148	1461		
Morris		**19**	**276**		
	Aedes albopictus	19	276		
Salem		**14**	**127**		
	Aedes albopictus	14	127		

Grand Total		**447**	**3371**		