VECTOR SURVEILLANCE IN NEW JERSEY

EEE, WNV, SLE, LAC, DENV and CHIK

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CDC WEEK 32: 3 August to 9 August, 2014

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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**	0.40	0.00	4	3		
Green Bank (Burlington Co.)/25	**Coastal**	4.18	0.36	68 (77)	9 (10)		
Corbin City (Atlantic Co.)/25	**Coastal**	0.96	0.48	167	10		
Dennisville (Cape May Co.)/50	**Coastal**	6.76	1.70	292	11	3	10.274
Winslow (Camden Co.)/40	**Inland**	2.04	0.72	757 (793)	19 (20)		
Centerton (Salem Co.)/48	**Inland**	3.03	0.26	286 (299)	11 (12)		
Turkey Swamp (Monmouth Co.)/50	**Inland**	2.03	0.50	83 (108)	9 (11)		
Glassboro (Gloucester Co.)/49	**Inland**	0.23	0.28	329 (343)	11 (12)		

*Current week (in parentheses) results pending.

Remarks: EEE activity continues to be detected with three additional positive *Cs. melanura* mosquito pools, two from the Dennisville resting box site on Ca[e May County and one from a Burlington County CO_2 trap. Total number of positive EEE pools is 5, all in *Cs. melanura.* Statewide, for all mosquitoes tested, MFIR is 0.618. *Cs. melanura* activity has increased moderately at some sites but populations continue to remain low (see page 3 population graphs) with regard to resting box data.

Traditional Resting Box Sites: Two new EEE positive pools at the Dennisville resting box site were collected on 4 Aug. First detection of EEE in *Cs. melanura* occurred 21 July here, a long-standing endemic focal site and currently has an MFIR value of 10.274. To date, 1986 *Cs. melanura* from 84 pools have been tested for EEE at the traditional resting box sites. Overall MFIR for these traditional sites is 1.511. Six additional pools containing 109 *Cs. melanura* remains to be tested.

Additional *Cs. melanura* trapped by counties *traps with positives indicated in **BOLD.**				
County	**Trap types***	**Number collected (pools)**	**Number of positive pools**	**MFIR**
Atlantic	CO_2	4 (3)		
Burlington	CO_2	3151 (67)	1	0.317
Cape May	RB	121 (9)		
Cumberland	CO_2, RB	74 (12)		
Gloucester	**RB**	553 (39)	1	1.808
Monmouth	Other	2 (1)		
Ocean	CO_2, RB	20 (6)		
Salem	CO_2	6 (3)		
TOTAL		**3932 (141)**	**2**	**0.509**

Additional *Cs. melanura*: Counties submit additional pools of *Cs. melanura* caught in other trap types as well as resting boxes. A second positive pool was detected from a Burlington County CO2 trap collected on 4 Aug. Virus was first detected in these additional pools from a Gloucester County resting box sampled on 23 July.

Species other than *Cs. melanura*	**Pools**	**Mosquitoes**	**Positives**	**MFIR**
Aedes canadensis canadensis	3	81		
Aedes cantator	4	7		
Aedes mitchellae	1	1		
Aedes sollicitans	3	39		
Aedes taeniorhynchus	2	20		
Aedes vexans	2	21		
Anopheles bradleyi	8	219		
Anopheles punctipennis	23	443		
Anopheles quadrimaculatus	12	324		
Coquillettidia perturbans	28	626		
Culex erraticus	6	55		
Culex pipiens	8	36		
Culex restuans	2	11		
Culex salinarius	18	258		
Culex spp.	4	26		
Culiseta morsitans	1	1		
State Total	**125**	**2168**		

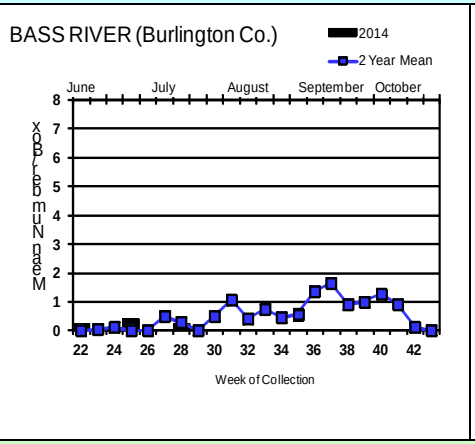
Additional Species: Counties submit additional pools of species other than *Cs. melanura* for EEE virus testing. Currently, no detection of EEE in other species has occurred.

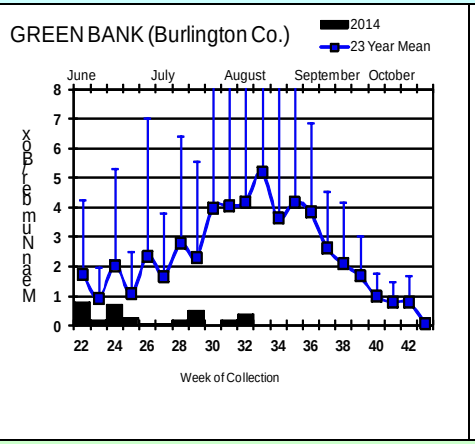
Horses and Humans: Currently there is no reported horse or human cases

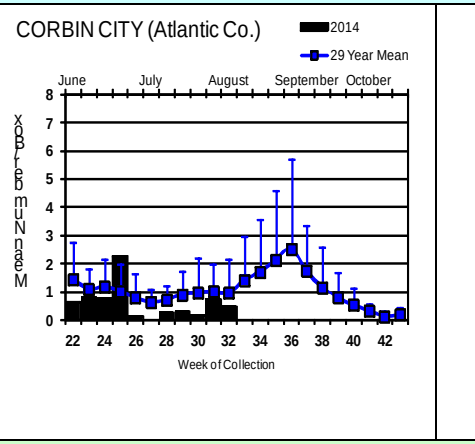
Horses and Vaccinations: The fate of unvaccinated equids reinforces the necessity of maintaining a vaccination schedule for arboviruses. For vaccination schedules recommended by the American Association of Equine Practices, see: http://www.aaep.org/vaccination_guidelines.htm

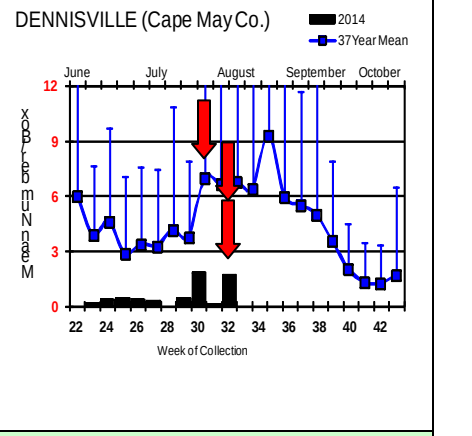
Culiseta melanura Population Graphs

Coastal

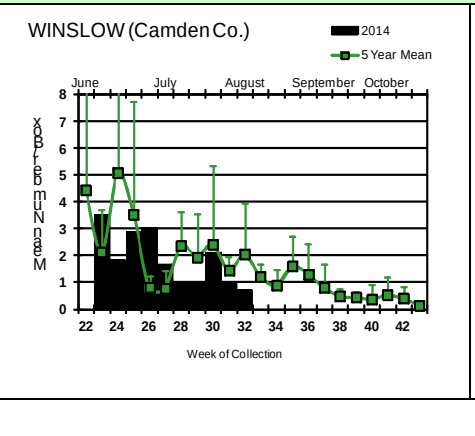


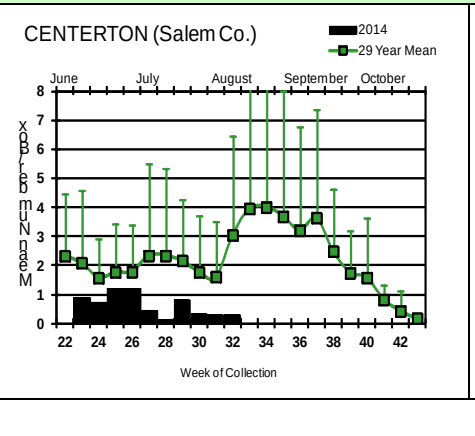


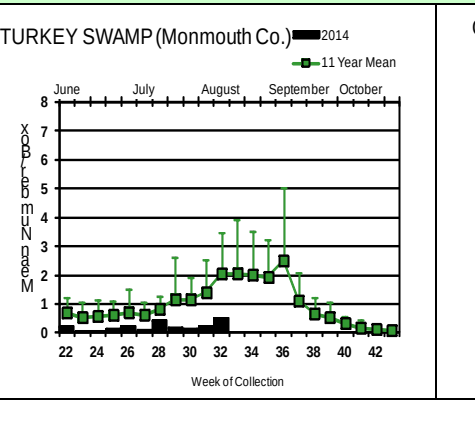


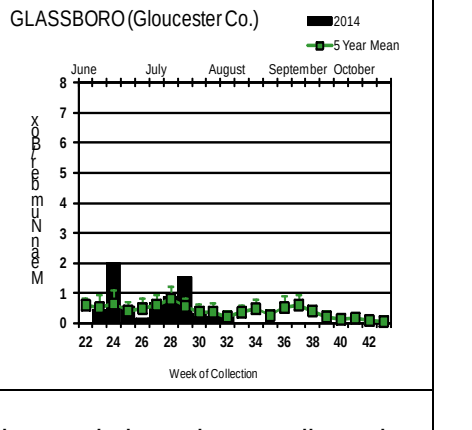


Inland









Culiseta melanura populations increased, yet remain below historical values at Dennisville, where additional positive pools have been collected. Light trap data suggests populations are closer to average values than resting box data would suggest. Caution in areas with *Cs. melanura* should be taken.

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

EEE in US (2014 cumulative cases): (Black or Red = previous + new reported cases occurring)

- equine: AL(2) FL (37 +2 deer) GA(4) LA(1) NC(2)
- mosquito pools: GA(1) MA(4) NJ(5) NY(20) VA(1) VT(1)
- sentinel: AL(3) GA(1) FL(127) VA(3 cassowaries)
- human:

West Nile Virus Positive Organisms in US

West Nile in US (2014 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	1	1/112			4/13
Arkansas					1
California	1014/1192	1268/1620	56/119		19/35
Colorado	1	37/53		1	5
Connecticut		1/4			0
Delaware					
DC					1
Florida			8/12	1	
Georgia					1
Hawaii					
Idaho		27/33			
Illinois	7/13	91/140			
Indiana		22/26			
Iowa		1			3/4
Kansas		0			0
Kentucky				0	
Louisiana		339/460	8/10		15/29
Maine		0		0	0
Maryland		1/5		0	0
Mass.		9/11		0	0
Michigan	2	1/6			
Minnesota	1	5/6			1
Mississippi		15/32		0	3/5
Missouri		4		0	1

	Birds	Mosquito Pools	Sentinels	Horses	Humans
Montana		1/2			
Nebraska	3	23/40		0	4/6
Nevada		10			
New Hampshire		0		0	0
New Jersey	5/8	90/146		0	1
New Mexico		1			
New York		52/121			1
North Carolina					
North Dakota	0	4		1*	1
Ohio		19/51			
Oklahoma					1
Oregon	0	5/10	0	0	0
Pennsylvania	3	307/478			1
Rhode Island		0			
South Carolina					
South Dakota		18/21			9/12
Tennessee	0	35/56		0	1/2
Texas	19/29	462/845		0	9/15
Utah	2	10/13			
Vermont		1		0	0
Virginia					
Washington	0	16/29		0	1
West Virginia	0			0	0
Wisconsin	15/20	0		0	1
Wyoming	1	2/4		1	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 11 August 2014

Species	Pools	Mosquitoes	Positives	MFIR
Aedes albopictus	287	2311	5	2.164
Aedes canadensis canadensis	25	476		
Aedes cantator	13	194		
Aedes japonicus	277	1559	2	1.283
Aedes mitchellae	1	1		
Aedes sollicitans	5	45		
Aedes sticticus	3	7		
Aedes taeniorhynchus	7	218		
Aedes triseriatus	71	321		
Aedes trivittatus	9	16		
Aedes vexans	32	232		
Anopheles bradleyi	17	432		
Anopheles punctipennis	53	611		
Anopheles quadrimaculatus	40	895		
Coquillettidia perturbans	56	1007		
Culex erraticus	20	130		
Culex pipiens	319	9811	7	0.713
Culex restuans	160	4180	10	2.392
Culex salinarius	22	269		
Culex spp.	1780	72719	122	1.678
Culex territans	1	1		
Culiseta melanura	244	5870		
Culiseta morsitans	1	1		
Psorophora ciliata	1	1		
Psorophora columbiae	5	13		
Psorophora ferox	7	41		
State Total	**3456**	**101361**	**146**	**1.440**

Remarks: To date, 3456 pools of 101,361 mosquitoes from 25 species have been tested, with 146 positive pools detected. Detection is now occurring in non-*Culex* pools, with positives also found in *Aedes albopictus* and *Aedes japonicus*. First positive was detected in a Mixed *Culex* pool collected on 20 May in Camden County. First detection in *Ae. albopictus* occurred on 9 July in Middlesex County and first detection in *Ae. japonicus* occurred on 30 July in Ocean County. Sixteen counties have detected positive pools, including Atlantic, Bergen, Burlington, Camden, Gloucester, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Union and Warren Counties. Overall MFIR for the state has increased from 0.864 to 1.440.

Humans, Horses and Wild Birds: First human case of WNV has occurred, in Gloucester County. For further information, see http://www.state.nj.us/health/cd/westnile/techinfo.shtml.

Bird testing began in mid-April. First positive bird (Fish Crow in Mercer County collected 8 July) has been reported. To date, 77 birds have been tested, with 8 positives. Species includes: American Crow (*Corvis brachyrhynchos* 1/1) Fish Crow (*Corvus ossifragus* 5/22), Blue Jay (*Cyanocitta cristata* 0/8), Hawk/Raptor (1/5), unidentified corvid (0/2) and other avian species (1/39). Counties (positives) submitting birds are Atlantic, Bergen, Burlington, Cape May, Cumberland, Essex, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Salem, Sussex and Warren.

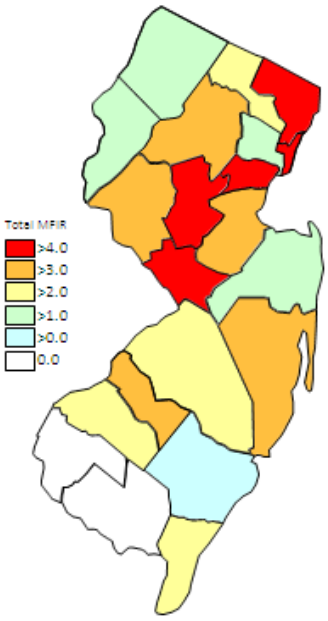
WNV Results by County through 11 August 2014

County	Species	Pools	Mosquitoes	Positives	MFIR
Atlantic		**91**	**2352**	**10**	**4.252**
	Aedes albopictus	12	68	1	14.706
	Aedes canadensis canadensis	3	26		
	Aedes cantator	2	5		
	Aedes japonicus	2	16		
	Aedes sollicitans	1	5		
	Aedes sticticus	1	1		
	Aedes taeniorhynchus	4	196		
	Aedes vexans	4	24		
	Anopheles bradleyi	1	2		
	Anopheles punctipennis	2	4		
	Coquillettidia perturbans	4	23		
	Culex spp.	38	1772	9	5.079
	Culiseta melanura	14	174		
	Psorophora ferox	3	36		
Bergen		**105**	**7875**	**31**	**3.937**
	Culex spp.	105	7875	31	3.937
Burlington		**248**	**7182**	**7**	**0.975**
	Aedes albopictus	25	165		
	Aedes canadensis canadensis	1	75		
	Aedes japonicus	21	221		
	Aedes mitchellae	1	1		
	Aedes taeniorhynchus	2	20		
	Aedes triseriatus	4	43		
	Aedes vexans	4	69		
	Anopheles bradleyi	2	80		
	Anopheles punctipennis	3	13		
	Anopheles quadrimaculatus	1	21		
	Coquillettidia perturbans	2	117		
	Culex erraticus	2	4		
	Culex salinarius	10	146		
	Culex spp.	91	2984	7	2.346
	Culiseta melanura	79	3223		
Camden		**260**	**7850**	**17**	**2.166**
	Aedes albopictus	9	11		
	Aedes japonicus	68	262		
	Culex spp.	164	6820	17	2.493
	Culiseta melanura	19	757		
Cape May		**240**	**3014**		
	Aedes albopictus	12	68		
	Aedes canadensis canadensis	1	1		
	Aedes cantator	4	7		
	Aedes japonicus	7	15		
	Aedes triseriatus	8	43		
	Anopheles bradleyi	6	139		
	Anopheles quadrimaculatus	13	442		
	Coquillettidia perturbans	2	51		
	Culex erraticus	5	53		

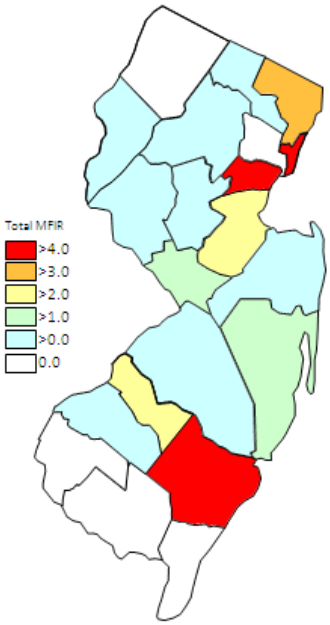
	Culex pipiens	107	1368		
	Culex restuans	50	439		
	Culex salinarius	5	57		
	Culex spp.	1	2		
	Culex territans	1	1		
	Culiseta melanura	18	328		
Cumberland		**97**	**1492**		
	Aedes albopictus	1	1		
	Aedes canadensis canadensis	1	2		
	Aedes japonicus	2	2		
	Aedes sollicitans	3	39		
	Aedes vexans	5	48		
	Anopheles bradleyi	7	210		
	Anopheles punctipennis	6	75		
	Anopheles quadrimaculatus	4	20		
	Coquillettidia perturbans	8	245		
	Culex pipiens	1	5		
	Culex salinarius	3	55		
	Culex spp.	38	699		
	Culiseta melanura	13	78		
	Psorophora ciliata	1	1		
	Psorophora columbiae	3	11		
	Psorophora ferox	1	1		
Essex		**180**	**1988**		
	Aedes albopictus	10	26		
	Aedes japonicus	26	88		
	Aedes triseriatus	2	4		
	Aedes trivittatus	4	9		
	Aedes vexans	1	4		
	Anopheles quadrimaculatus	2	2		
	Culex spp.	133	1853		
	Psorophora ferox	2	2		
Gloucester		**301**	**10200**	**8**	**0.784**
	Aedes albopictus	28	293	1	3.413
	Aedes japonicus	9	150		
	Aedes triseriatus	4	45		
	Aedes vexans	1	4		
	Anopheles punctipennis	19	428		
	Anopheles quadrimaculatus	11	323		
	Coquillettidia perturbans	2	26		
	Culex pipiens	177	8049	7	0.870
	Culiseta melanura	50	882		
Hudson		**60**	**2831**	**13**	**4.592**
	Aedes albopictus	6	88	1	11.364
	Culex spp.	54	2743	12	4.375
Hunterdon		**165**	**8133**	**2**	**0.246**
	Culex spp.	165	8133	2	0.246
Mercer		**226**	**5255**	**10**	**1.903**
	Aedes albopictus	34	306		

	Aedes canadensis canadensis	2	5		
	Aedes japonicus	27	102		
	Aedes triseriatus	9	21		
	Aedes vexans	3	42		
	Culex pipiens	30	383		
	Culex restuans	107	3737	10	2.676
	Culex salinarius	2	8		
	Culex spp.	12	651		
Middlesex		**189**	**9204**	**21**	**2.282**
	Aedes albopictus	25	196	2	10.204
	Aedes triseriatus	2	14		
	Culex spp.	162	8994	19	2.113
Monmouth		**220**	**3264**	**1**	**0.306**
	Aedes albopictus	35	335		
	Aedes canadensis canadensis	13	268		
	Aedes cantator	4	47		
	Aedes japonicus	26	121		
	Aedes sollicitans	1	1		
	Aedes taeniorhynchus	1	2		
	Aedes triseriatus	11	37		
	Aedes trivitattus	5	7		
	Aedes vexans	7	15		
	Anopheles punctipennis	9	11		
	Anopheles quadrimaculatus	2	2		
	Coquillettidia perturbans	4	4		
	Culex erraticus	3	9		
	Culex restuans	1	1		
	Culex salinarius	1	1		
	Culex spp.	83	2315	1	0.432
	Culiseta melanura	11	85		
	Culiseta morsitans	1	1		
	Psorophora columbiae	2	2		
Morris		**140**	**6364**	**2**	**0.314**
	Aedes albopictus	2	45		
	Coquillettidia perturbans	4	200		
	Culex spp.	134	6119	2	0.327
Ocean		**195**	**2796**	**4**	**1.431**
	Aedes albopictus	42	419		
	Aedes canadensis canadensis	3	96		
	Aedes cantator	3	135		
	Aedes japonicus	29	112	2	17.857
	Aedes sticticus	2	6		
	Aedes triseriatus	8	27		
	Aedes vexans	6	23		
	Coquillettidia perturbans	11	77		
	Culex erraticus	2	3		
	Culex salinarius	1	2		
	Culex spp.	62	1844	2	1.085
	Culiseta melanura	25	50		
	Psorophora ferox	1	2		

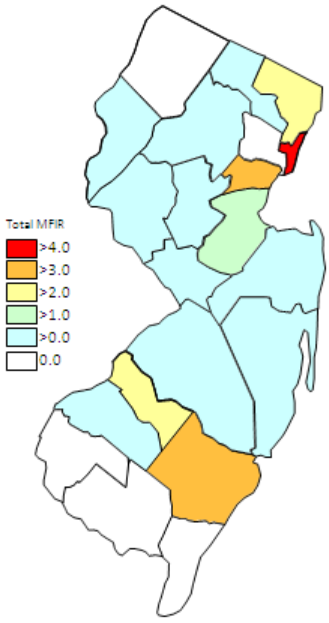
Passaic		**69**	**2081**	**2**	**0.961**
	Aedes albopictus	5	20		
	Aedes japonicus	18	171		
	Aedes triseriatus	2	5		
	Aedes vexans	1	3		
	Culex spp.	43	1882	2	1.063
Salem		**188**	**1885**		
	Aedes albopictus	28	152		
	Aedes japonicus	20	51		
	Aedes triseriatus	14	30		
	Anopheles bradleyi	1	1		
	Anopheles punctipennis	13	78		
	Anopheles quadrimaculatus	6	80		
	Coquillettidia perturbans	18	247		
	Culex erraticus	8	61		
	Culex pipiens	4	6		
	Culex restuans	2	3		
	Culex spp.	59	883		
	Culiseta melanura	15	293		
Somerset		**150**	**3337**	**1**	**0.300**
	Aedes albopictus	5	25		
	Aedes canadensis canadensis	1	3		
	Aedes japonicus	14	147		
	Aedes triseriatus	3	9		
	Anopheles punctipennis	1	2		
	Culex spp.	126	3151	1	0.317
Sussex		**96**	**2856**		
	Aedes japonicus	4	56		
	Aedes triseriatus	4	43		
	Anopheles quadrimaculatus	1	5		
	Coquillettidia perturbans	1	17		
	Culex spp.	86	2735		
Union		**67**	**3131**	**15**	4.791
	Aedes albopictus	7	76		
	Aedes japonicus	2	14		
	Culex spp.	58	3041	15	4.933
Warren		**169**	**8271**	**2**	**0.242**
	Aedes albopictus	1	17		
	Aedes japonicus	2	31		
	Culex spp.	166	8223	2	0.243
Grand Total		**3456**	**101361**	**146**	**1.440**



Cumulative WNV activity in 2013.



WNV activity to 11 August 2014.



WNV activity last week, 2014.

Saint Louis Encephalitis (SLE) to 11 August 2014.

New Jersey will be selectively testing for SLE this year. 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 have been detected positive for SLE in 2014.

County	Species	Pools	Mosquitoes	Positives	MFIR
Burlington		**104**	**3136**		
	Aedes japonicus	17	193		
	Culex spp.	87	2943		
Cape May		**9**	**38**		
	Culex pipiens	8	36		
	Culex spp.	1	2		
Grand Total		**113**	**3174**		

La Crosse Encephalitis (LAC) through 11 August 2014.

New Jersey will be selectively testing for La Crosse (LAC) virus this year. 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 have been detected positive for LAC in 2014.

County	Species	Pools	Mosquitoes	Positives	MFIR
Burlington		**10**	**82**		
	Aedes albopictus	4	28		
	Aedes japonicus	2	11		
	Aedes triseriatus	4	43		
Cape May		**8**	**43**		
	Aedes triseriatus	8	43		
Salem		**5**	**9**		
	Aedes triseriatus	5	9		
Grand Total		**23**	**134**		

Dengue (DENV) to 11 August 2014.

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. If positive pools are detected, serotype will be reported. There are currently 18 imported human cases in New Jersey, no local transmission.

No pools have been detected positive for DENV in 2014.

County	Species	Pools	Mosquitoes	Positives	MFIR
Atlantic		**35**	**230**		
	Aedes albopictus	35	230		
Burlington		**76**	**484**		
	Aedes albopictus	76	484		
Camden		**4**	**4**		
	Aedes albopictus	4	4		
Cape May		**40**	**260**		
	Aedes albopictus	40	260		
Gloucester		**80**	**604**		
	Aedes albopictus	80	604		
Hudson		**24**	**352**		
	Aedes albopictus	24	352		
Mercer		**68**	**932**		
	Aedes albopictus	68	932		
Middlesex		**100**	**784**		
	Aedes albopictus	100	784		

Monmouth		**48**	**1020**		
	Aedes albopictus	48	1020		
Passaic		**4**	**8**		
	Aedes albopictus	4	8		
Salem		**96**	**560**		
	Aedes albopictus	96	560		
Grand Total		**575**	**5238**		

Chikungunya (CHIK) to 11 August 2014.

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. There are currently 45 imported human cases in New Jersey, no local transmission.

No pools have been detected positive for CHIK in 2014.

County	Species	Pools	Mosquitoes	Positives	MFIR
Atlantic		**9**	**59**		
	Aedes albopictus	9	59		
Burlington		**19**	**121**		
	Aedes albopictus	19	121		
Camden		**1**	**1**		
	Aedes albopictus	1	1		
Cape May		**10**	**65**		
	Aedes albopictus	10	65		
Gloucester		**20**	**151**		
	Aedes albopictus	20	151		
Hudson		**6**	**88**		
	Aedes albopictus	6	88		
Mercer		**17**	**233**		
	Aedes albopictus	17	233		
Middlesex		**25**	**196**		
	Aedes albopictus	25	196		
Monmouth		**12**	**255**		
	Aedes albopictus	12	255		

Passaic		**1**	**2**		
	Aedes albopictus	1	2		
Salem		**24**	**140**		
	Aedes albopictus	24	140		
Grand Total		**144**	**1311**		