VECTOR SURVEILLANCE IN NEW JERSEY

EEE, WNV, SLE and LAC

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CDC WEEK 43: October 20 – October 26, 2013

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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**	nd	0.00	81	17		
Green Bank (Burlington Co.)/25	**Coastal**	0.07	0.08	585 (587)	22 (23)	3	5.11
Corbin City (Atlantic Co.)/25	**Coastal**	0.23	0.00	507	23	3	5.92
Dennisville (Cape May Co.)/50	**Coastal**	0.00	0.02	277	21	1	3.61
Winslow (Camden Co.)/50	**Inland**	0.09	0.10	1860	47	3	1.61
Centerton (Salem Co.)/50	**Inland**	0.14	0.24	1063	32	1	0.94
Turkey Swamp (Monmouth Co.)/44	**Inland**	0.07	0.02	1612	44	11	6.82
Glassboro (Gloucester Co.)/50	**Inland**	0.07	0.04	406	19	3	7.39

*Current week (in parentheses) results pending.

Remarks: Two additional EEE pools were detected at two traditional resting box sites. To date, 50 positive EEE pools (*Cs. melanura*, *Anopheles bradleyi, Coquillettidia perturbans, Culex erraticus* and *Cx. salinarius*) have been collected in New Jersey. Three presumptive horse cases have been reported.

Traditional Resting Box Sites: To date 6391 *Cs. melanura* from 225 pools have been tested from the traditional resting box sites with an additional 1 pool of 2 mosquitoes to be tested. Twenty-five pools have been detected positive for an overall MFIR of 3.91 for the traditional resting box sites. Two new positives pool of *Cs. melanura* was detected, one each at the Centerton and Glassboro sites this past week.

Additional *Cs. melanura* trapped by counties *traps with positives indicated in **BOLD.**				
County	**Trap types***	**Number collected (pools)**	**Number of positives pools**	**MFIR**
Atlantic	**CO_2**	14 (4)	1	71.43
Burlington	**CO_2**	5401 (105)	5	0.93
Cape May	CO_2, **Gravid**, **RB**	1311 (111)	8	6.10
Gloucester	**RB**	969 (79)	1	1.03
Monmouth	CO_2, **Other**	291 (23)	2	6.87
Ocean	**CO_2**, Gravid, **RB**	401 (62)	2	4.99
Salem	CO_2	33 (7)		
TOTAL		**8420 (391)**	**19**	2.26*

Additional *Cs. melanura*: Three hundred and ninety-one additional pools containing 8420 *Cs. melanura* have been tested from other sites using other traps in addition to resting boxes. A total of 19 positive *Cs. melanura* pools from non-traditional sites have been detected to date. No additional pools were detected, this past week. Note that MFIR value is a "rough estimate" as other data already completed may be pending for entry to the West Nile database and not reflected in the tables below.

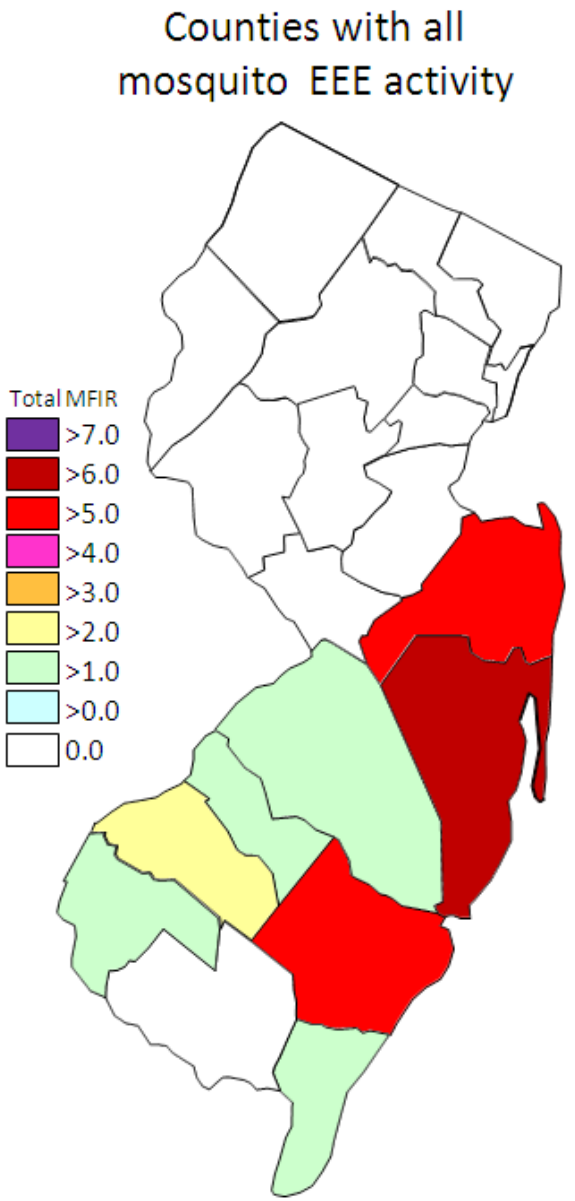
Species other than *Cs. melanura*	Pools	Mosquitoes	Positives	MFIR
Aedes albopictus	20	68		
Aedes atlanticus	3	75		
Aedes canadensis canadensis	14	138		
Aedes cantator	19	24		
Aedes infirmatus	1	1		
Aedes japonicus	13	28		
Aedes sollicitans	4	19		
Aedes sticticus	2	3		
Aedes taeniorhynchus	1	2		
Aedes triseriatus	8	26		
Aedes vexans	3	38		
Anopheles bradleyi	27	284	1	3.521
Anopheles crucians	4	16		
Anopheles punctipennis	20	145		
Anopheles quadrimaculatus	13	57		
Coquillettidia perturbans	24	338	1	2.959
Culex erraticus	117	2905	2	0.688
Culex pipiens	382	5215	1	0.192
Culex restuans	4	4		
Culex salinarius	86	812	1	1.232
Culex spp.	85	641		
Psorophora columbiae	3	7		
State Total	**853**	**10846**	**6**	**0.553**

While *Cs. melanura* is primarily a bird feeder, it is not exclusively ornithophilic and may on occasion take a bloodmeal from a mammal. The appropriate precautions should be taken in its habitat.

Additional Species: The table to the left indicates non-*Cs. melanura* mosquitoes tested for EEE. No additional non-melanura pools were found positive this past week. First positive in a non-*Cs. melanura* species was a pool of *Cx. salinarius* collected 3 August in Cape May County. *Coquillettidia perturbans*, a suspected inland vector of EEE, was found positive in Ocean County. *Culex erraticus*, an indiscriminant feeder that will bite both birds and mammals was found positive in both Monmouth and Ocean County. One pool of *Anopheles bradleyi* from Burlington County, collected 17 Sep was positive.

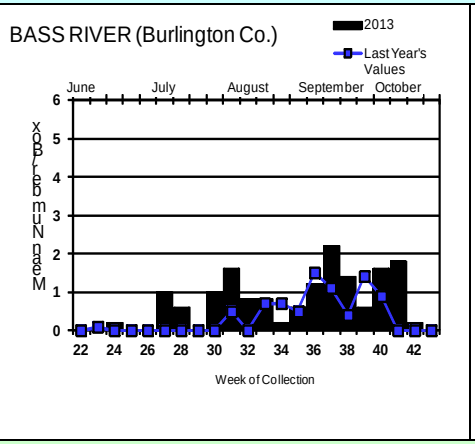
Horses and Humans: Currently there are no reported human cases or new horse cases. Three presumptive horse cases have been reported. The first was in Cape May County. This 7 yo gelding had a date of onset 2 August and was euthanized the following day. Vaccination history is unknown. The second horse, a 7 month old unvaccinated colt, was in Monmouth County with an onset date of 27 August. This horse died two days later. The third horse case is a 9 yo mare from Ocean County with an unknown vaccination history and date of onset of 10 September and euthanized 11 September.

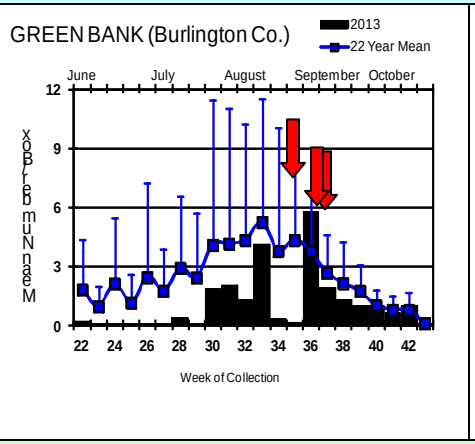
Horses and Vaccinations: The fate of unvaccinated equids reinforces the necessity of maintaining a vaccination schedule for arboviruses. For vaccination schedules recommended by the American Association of Equine Practices, see: http://www.aaep.org/vaccination_guidelines.htm

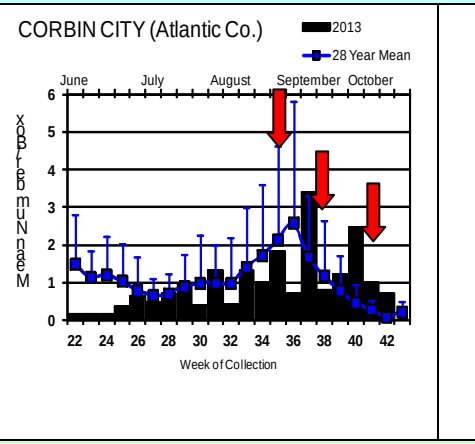


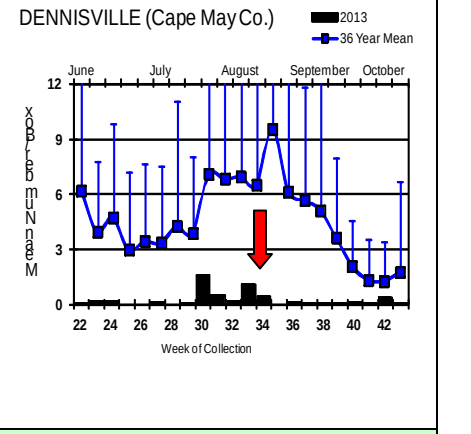
Culiseta melanura Population Graphs

Coastal

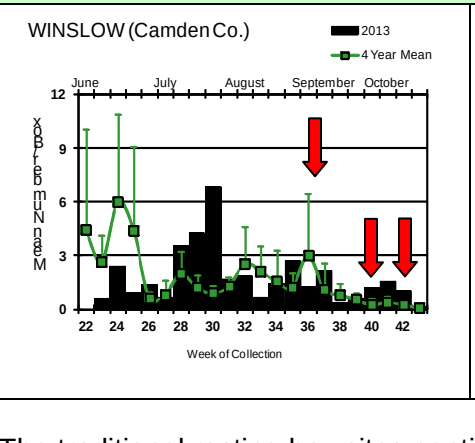


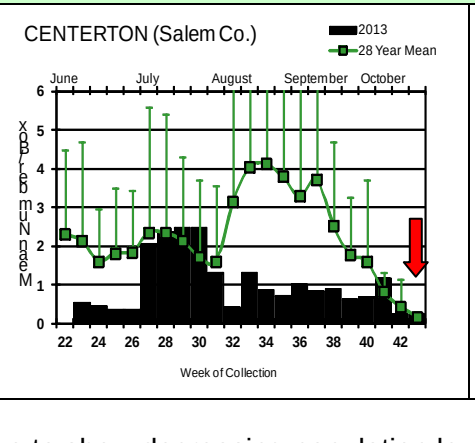


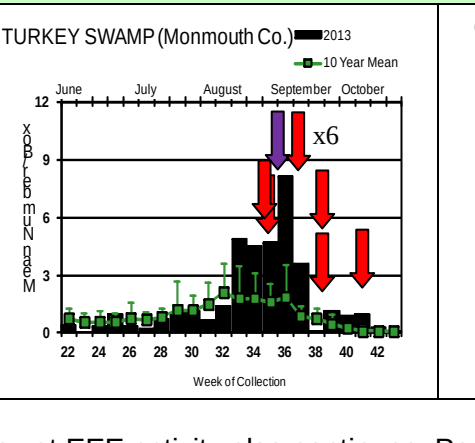


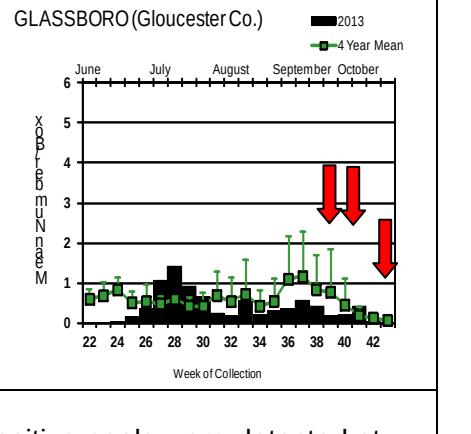


Inland









The traditional resting box sites continue to show decreasing population levels yet EEE activity also continues. Positive pools were detected at Centerton and Glassboro sites.

Note axis change (from 12 to 6) on Bass River, Corbin City, Centerton and Glassboro sites. Note axis change on Turkey Swamp *back* to original numbers to accommodate increased population activity.

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

EEE in US (2013 cumulative cases): (Black or Red = previous + new reported cases occurring)

- equine: 4(AL) 5(AR) 1(CT) 2(DE) 34(FL) 24(GA) 2(KY) 8(LA) 4(MA) 3(ME) 1(MD) 1(MI) 11(MS) 13(NC) 3(NH) 3(NJ) 1(NY) 1(RI) 49(SC) 2(TX) 1(VA) 2(VT)
- mosquito pools: 57(CT) 1(GA) 61(MA) 9(MD) 26(ME) 1(NC) 24(NH) 50(NJ) 53(NY) 4(RI) 116(VA) 22(VT)
- sentinel: 3(AL) 1(DE) 147/4 wild(FL) 1(GA) 1pheasant1emu(ME) 2(NC) 30(VA)
- human: 2(FL) 1(GA) 1(MA)

West Nile Virus in US

West Nile in US (2013 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					5/7
Alaska					
Arizona	1	200	6	2	39
Arkansas				2	6
California	1188/1200	2493/2507	463/478	11	276/297
Colorado	11	441		13	295/303
Connecticut		89/90			2/4
Delaware	8		16	2	2
DC		23/38			
Florida			138/191	5	2/3
Georgia	0	138		4	9
Hawaii					
Idaho		178/180		10	39
Illinois	87	2686		13	74/91
Indiana	0	474/482		1	20
Iowa		47	15	10	44
Kansas		11/13		6/9	45/55
Kentucky	1			10/11	2
Louisiana		171	66	2	35
Maine		3		0	0
Maryland		10		1/2	13/14
Mass.		335		2	8
Michigan	46/60	23		3	32
Minnesota	1	48/77		2/5	77/79
Mississippi		46		2/3	43
Missouri		11		13	17/20

	Birds	Mosquito Pools	Sentinels	Horses	Humans
Montana	1	19		27	23/36
Nebraska	9	243		6	168/184
Nevada	1	47			8/11
New Hampshire		14		1	1
New Jersey	36	646/655		1	11
New Mexico		1		3	21/30
New York		582/583	1	12/13	23/24
North Carolina				2	1
North Dakota	9	23		1	111
Ohio		169		3	10/11
Oklahoma		41		5/14	45/49
Oregon	1	85	0	2	14
Pennsylvania	27	1499		2	11
Rhode Island		8			1
South Carolina	1/5	4		1/3	1/6
South Dakota	8	392		3	135
Tennessee	1	753/768		1	15
Texas	4	449/453		13/18	110/118
Utah	1	69	2	7	9
Vermont		28		1	1
Virginia		126/182	10	1	3/5
Washington	0	18		2	1
West Virginia		26			
Wisconsin	62	20		0	14
Wyoming	6	52		19	30/40

* 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 28 October 2013

Species	Pools	Mosquitoes	Positives	MFIR
Aedes albopictus	817	6657	3	0.451
Aedes atlanticus	6	80		
Aedes atropalpus	4	7		
Aedes canadensis canadensis	59	882		
Aedes cantator	31	114		
Aedes grossbecki	1	1		
Aedes infirmatus	1	1		
Aedes japonicus	459	2513	2	0.796
Aedes sollicitans	10	47		
Aedes sticticus	3	5		
Aedes taeniorhynchus	14	123		
Aedes triseriatus	122	345	1	2.899
Aedes trivittatus	9	64		
Aedes vexans	85	778		
Anopheles bradleyi	40	340		
Anopheles crucians	10	117		
Anopheles punctipennis	59	345	1	2.899
Anopheles quadrimaculatus	120	1977		
Coquillettidia perturbans	38	455		
Culex erraticus	130	2927	1	0.342
Culex pipiens	899	22279	87	3.905
Culex restuans	567	6356	23	3.619
Culex salinarius	92	832	1	1.202
Culex spp.	3493	135988	514	3.780
Culex territans	14	17		
Culiseta melanura	599	14175	24	1.693
Orthopodomyia signifera	4	4		
Psorophora ciliata	3	4		
Psorophora columbiae	22	167		
Psorophora ferox	30	364		
Psorophora howardii	1	10		
Uranotaenia sapphirina	2	10		
State Total	**7744**	**197984**	**657**	**3.318**

Remarks: To date, 7744 pools of 197984 mosquitoes from 31 species have been tested, with 657 positive pools detected. First positive was detected in a pool collected on 26 June in Middlesex County. Positive pools continue to be detected primarily in the enzootic vectors. Potential bridge vectors are also being detected, with positive pools in *Aedes albopictus, Aedes japonicus*, *Aedes triseriatus, Anopheles punctipennis*, *Culex erraticus* and *Culex salinarius.*

Humans, Horses and Wild Birds: To date, eleven human cases have been reported by the NJ Department of Health. The first case was from Burlington County with onset date of 5 August. Cases are from Bergen (1), Burlington (2), Camden (5), Gloucester (1), Morris (1) and Ocean (1) counties. See http://www.state.nj.us/health/cd/westnile/techinfo.shtml for further information.

Last year the first horse was detected in mid July. This year, the first reported horse was a 33 yo gelding from Cumberland County, with date of onset at 4 Oct. There was no vaccination history. This is the only WNV horse case to date.

Bird testing began in mid-April. Thirty-six positive birds have been reported, mostly corvids. No new positive birds were detected this past week. First American Crow positive has been detected. To date, 121 birds have been tested. Testing includes: American Crow (*Corvus brachyrhynchos* 3/8), Fish Crow (*C. ossifragus* 7/18), unidentified Crow (*Corvus* spp. 4/7), Blue Jay (*Cyanocitta cristata* 15/21), Hawk/Raptor (0/9) and other avian species (7/60). Counties (positives) submitting birds are Atlantic, Bergen, Burlington, Cape May, Cumberland, Essex, Gloucester, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Salem, Sussex, Union and Warren.

2013 Positive Mosquito pools to date / Total Mosquito Pools Submitted (PHEL)	This time last year (PHEL)
657 / 7744 (0.085)	1004 / 7586 (0.132)
2013 Positive Birds to date / Total Birds Submitted	This time last year
36 / 123 (0.293)	132 / 310 (0.426)

WNV Results by County through 21 October 2013

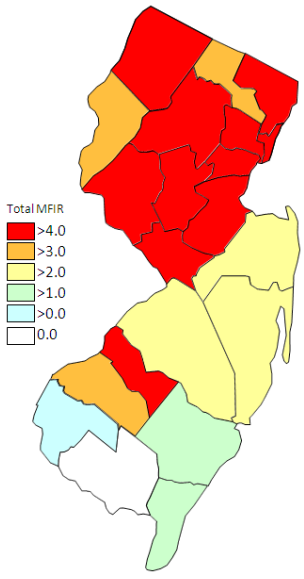
County	Species	Pools	Mosquitoes	Positives	MFIR
Atlantic		**207**	**3493**	**1**	**0.286**
	Aedes albopictus	20	196		
	Aedes canadensis canadensis	5	82		
	Aedes cantator	3	36		
	Aedes grossbecki	1	1		
	Aedes japonicus	9	29		
	Aedes sollicitans	2	23		
	Aedes sticticus	2	3		
	Aedes taeniorhynchus	6	30		
	Aedes triseriatus	6	14		
	Aedes vexans	17	314		
	Anopheles bradleyi	9	43		
	Anopheles crucians	2	50		
	Anopheles punctipennis	5	15		
	Anopheles quadrimaculatus	4	12		
	Coquillettidia perturbans	6	37		
	Culex erraticus	10	115		
	Culex spp.	56	1769	1	0.565
	Culiseta melanura	34	564		
	Psorophora ciliata	1	1		
	Psorophora columbiae	2	2		
	Psorophora ferox	5	146		
	Psorophora howardii	1	10		
	Uranotaenia sapphirina	1	1		
Bergen		**185**	**10833**	**86**	**7.939**
	Aedes albopictus	1	6		
	Aedes japonicus	5	42		
	Anopheles punctipennis	1	1		
	Culex spp.	178	10784	86	7.975
Burlington		**322**	**10619**	**25**	**2.354**
	Aedes albopictus	18	270		
	Aedes atlanticus	2	53		
	Aedes canadensis canadensis	7	101		
	Aedes infirmatus	1	1		
	Aedes japonicus	14	90		
	Aedes taeniorhynchus	1	2		

	Aedes triseriatus	2	44		
	Aedes vexans	3	15		
	Anopheles bradleyi	8	182		
	Anopheles crucians	2	47		
	Anopheles punctipennis	2	3		
	Coquillettidia perturbans	5	216		
	Culex erraticus	4	6		
	Culex pipiens	2	15		
	Culex restuans	2	2		
	Culex salinarius	9	159		
	Culex spp.	93	3332	15	4.502
	Culiseta melanura	144	6067	10	1.648
	Psorophora ciliata	1	1		
	Psorophora columbiae	1	4		
	Uranotaenia sapphirina	1	9		
Camden		**340**	**8771**	**35**	**3.990**
	Aedes albopictus	48	266		
	Aedes japonicus	48	142	1	7.042
	Aedes triseriatus	1	2		
	Anopheles punctipennis	1	1		
	Anopheles quadrimaculatus	1	1		
	Culex erraticus	1	1		
	Culex spp.	202	6782	32	4.718
	Culiseta melanura	38	1576	2	1.269
Cape May		**1841**	**18216**	**39**	**2.141**
	Aedes albopictus	176	388	1	2.577
	Aedes atlanticus	1	2		
	Aedes atropalpus	4	7		
	Aedes canadensis canadensis	6	7		
	Aedes cantator	20	25		
	Aedes japonicus	87	168		
	Aedes sollicitans	4	19		
	Aedes taeniorhynchus	6	90		
	Aedes triseriatus	43	69		
	Aedes vexans	19	32		
	Anopheles bradleyi	18	101		
	Anopheles punctipennis	1	1		
	Anopheles quadrimaculatus	78	1788		
	Coquillettidia perturbans	4	8		
	Culex erraticus	76	2537		
	Culex pipiens	521	6798	30	4.413
	Culex restuans	486	3744	3	0.801
	Culex salinarius	75	602	1	1.661
	Culex spp.	61	204	1	4.902
	Culex territans	14	17		
	Culiseta melanura	124	1586	3	1.892
	Orthopodomyia signifera	4	4		
	Psorophora columbiae	5	8		
	Psorophora ferox	8	11		
Essex		**267**	**3239**	**4**	**1.235**
	Aedes albopictus	108	716		
	Aedes japonicus	64	467		
	Culex spp.	95	2056	4	1.946

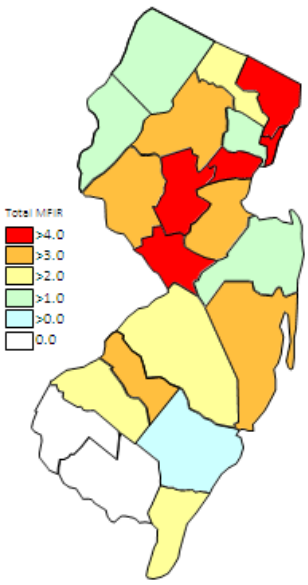
Gloucester		**497**	**17535**	**52**	**2.965**
	Aedes albopictus	26	702		
	Aedes japonicus	18	238		
	Aedes triseriatus	3	37		
	Aedes vexans	6	149		
	Anopheles punctipennis	1	2		
	Anopheles bradleyi	10	207	1	4.831
	Anopheles quadrimaculatus	6	72		
	Coquillettidia perturbans	5	76		
	Culex pipiens	322	14655	50	3.412
	Culiseta melanura	97	1309	1	0.764
	Psorophora ferox	3	88		
Hudson		**242**	**11805**	**63**	**5.337**
	Culex spp.	242	11805	63	5.337
Hunterdon		**398**	**16742**	**57**	**3.405**
	Culex spp.	398	16742	57	3.405
Mercer		**291**	**7111**	**47**	**6.609**
	Aedes albopictus	71	615		
	Aedes japonicus	21	78	1	12.821
	Aedes triseriatus	5	12		
	Aedes vexans	5	124		
	Culex erraticus	7	16		
	Culex pipiens	51	808	7	8.663
	Culex restuans	72	2603	20	7.683
	Culex salinarius	1	5		
	Culex spp.	58	2850	19	6.667
Middlesex		**247**	**7251**	**27**	**3.724**
	Aedes albopictus	14	189		
	Aedes japonicus	4	20		
	Culex spp.	229	7042	27	3.834
Monmouth		**364**	**4926**	**9**	**1.827**
	Aedes albopictus	64	707		
	Aedes atlanticus	3	25		
	Aedes canadensis canadensis	17	260		
	Aedes cantator	6	20		
	Aedes japonicus	33	117		
	Aedes sollicitans	1	1		
	Aedes taeniorhynchus	1	1		
	Aedes triseriatus	18	44		
	Aedes trivittatus	6	9		
	Aedes vexans	9	23		
	Anopheles crucians	1	1		
	Anopheles punctipennis	20	63		
	Anopheles quadrimaculatus	7	13		
	Coquillettidia perturbans	3	7		
	Culex erraticus	10	84		
	Culex restuans	2	2		
	Culex salinarius	1	50		
	Culex spp.	85	1571	3	1.910

	Culiseta melanura	67	1814	6	3.308
	Psorophora columbiae	4	70		
	Psorophora ferox	6	44		
Morris		**415**	**14555**	**45**	**3.092**
	Culex spp.	415	14555	45	3.092
Ocean		**442**	**4927**	**16**	**3.247**
	Aedes albopictus	112	1328	1	0.753
	Aedes canadensis canadensis	23	419		
	Aedes cantator	2	33		
	Aedes japonicus	41	133		
	Aedes sollicitans	1	2		
	Aedes triseriatus	6	12		
	Aedes vexans	20	27		
	Anopheles bradleyi	1	1		
	Anopheles crucians	5	19		
	Anopheles punctipennis	5	6		
	Anopheles quadrimaculatus	3	8		
	Coquillettidia perturbans	9	73		
	Culex erraticus	14	62	1	16.129
	Culex restuans	2	2		
	Culex salinarius	6	16		
	Culex spp.	129	2384	12	5.034
	Culiseta melanura	63	402	2	4.975
Passaic		**232**	**7079**	**18**	**2.543**
	Aedes albopictus	31	147		
	Aedes japonicus	27	202		
	Aedes triseriatus	9	15		
	Aedes trivittatus	2	51		
	Aedes vexans	2	51		
	Anopheles punctipennis	3	5		
	Anopheles quadrimaculatus	2	20		
	Coquillettidia perturbans	1	2		
	Culex spp.	153	6584	18	2.734
	Psorophora ferox	2	2		
Salem		**279**	**4973**		
	Aedes albopictus	41	176		
	Aedes japonicus	26	94		
	Aedes sollicitans	2	2		
	Aedes sticticus	1	2		
	Aedes triseriatus	14	38		
	Aedes vexans	1	22		
	Anopheles bradleyi	3	11		
	Anopheles punctipennis	7	24		
	Anopheles quadrimaculatus	18	58		
	Coquillettidia perturbans	5	36		
	Culex erraticus	8	106		
	Culex pipiens	3	3		
	Culex restuans	3	3		
	Culex spp.	99	3413		
	Culiseta melanura	31	827		
	Psorophora ciliata	1	2		
	Psorophora columbiae	10	83		

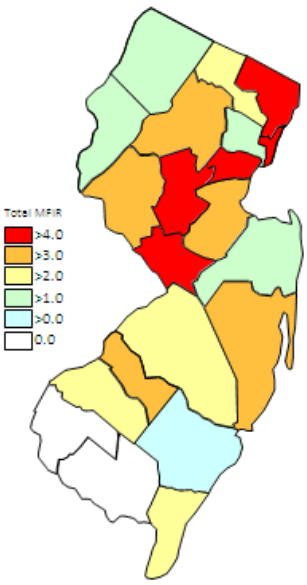
	Psorophora ferox	6	73		
Somerset		**306**	**6438**	**30**	**4.660**
	Aedes albopictus	26	144		
	Aedes japonicus	18	173		
	Aedes triseriatus	6	16		
	Aedes vexans	2	16		
	Anopheles punctipennis	1	2		
	Culex spp.	253	6087	30	4.929
Sussex		**279**	**12005**	**16**	**1.333**
	Aedes japonicus	20	338		
	Culex spp.	258	11637	16	1.375
	Culiseta melanura	1	30		
Union		**257**	**13652**	**68**	**4.981**
	Aedes albopictus	39	582		
	Aedes japonicus	9	137		
	Culex spp.	209	12933	68	5.258
Warren		**333**	**13814**	**19**	**1.375**
	Aedes albopictus	22	225	1	4.444
	Aedes canadensis canadensis	1	13		
	Aedes japonicus	15	45		
	Aedes triseriatus	9	42	1	23.810
	Aedes trivittatus	1	4		
	Aedes vexans	1	5		
	Anopheles punctipennis	3	17		
	Anopheles quadrimaculatus	1	5		
	Culex spp.	280	13458	17	1.263
Grand Total		**7744**	**197984**	**657**	**3.318**



Cumulative WNV activity in 2012.



WNV activity to 28 October 2013.



WNV activity last week, 2013.

Saint Louis Encephalitis (SLE) to 281 October 2013.

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 2013.

County	Species	Pools	Mosquitoes	Positives	MFIR
Burlington		**56**	**1610**		
	Aedes albopictus	6	84		
	Aedes japonicus	2	13		
	Culex erraticus	1	2		
	Culex spp.	47	1511		
Cape May		**368**	**4782**		
	Culex pipiens	356	4748		
	Culex spp.	12	34		
Salem		**3**	**128**		
	Culex spp.	3	128		
Grand Total		**427**	**6520**		

La Crosse Encephalitis (LAC) through 28 October 2013.

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 2013.

County	Species	Pools	Mosquitoes	Positives	MFIR
Burlington		**2**	**44**		
	Aedes triseriatus	2	44		
Cape May		**39**	**65**		
	Aedes triseriatus	39	65		
Salem		**14**	**52**		
	Aedes triseriatus	14	52		
Grand Total		**55**	**161**		