VECTOR SURVEILLANCE IN NEW JERSEY

EEE, WNV, SLE and LAC

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CDC WEEK 41: October 6 – October 12, 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**	0.00	1.80	71 (80)	15 (16)		
Green Bank (Burlington Co.)/25	**Coastal**	0.79	0.60	546 (561)	20 (21)	3	5.49
Corbin City (Atlantic Co.)/25	**Coastal**	0.29	1.00	464 (489)	21 (22)	3	6.47
Dennisville (Cape May Co.)/50	**Coastal**	1.27	0.02	258	19	1	3.88
Winslow (Camden Co.)/50	**Inland**	0.39	1.50	1805	45	2	1.11
Centerton (Salem Co.)/50	**Inland**	0.81	1.16	1040	30		
Turkey Swamp (Monmouth Co.)/44	**Inland**	0.09	0.95	1559 (1601)	42 (43)	11	7.06
Glassboro (Gloucester Co.)/50	**Inland**	0.19	0.40	403	17	2	4.96

*Current week (in parentheses) results pending.

Remarks: EEE activity continues to be detected with additional positive pools found at both traditional resting box sites and other county sites. To date, 45 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 6146 *Cs. melanura* from 209 pools have been tested from the traditional resting box sites with an additional 4 pools of 91 mosquitoes to be tested. Twenty-two pools have been detected positive for an overall MFIR of 3.58 for the traditional resting box sites. Two new positives pools of *Cs. melanura* were detected at Corbin City and Turkey Swamp 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	6 (3)		
Burlington	**CO_2**	4873 (90)	5	1.03
Cape May	CO_2, **Gravid**, **RB**	1311 (111)	8	6.10
Gloucester	RB	896 (77)		
Monmouth	CO_2, **Other**	283 (21)	2	7.07
Ocean	**CO_2**, Gravid**, RB**	398 (60)	2	5.03
Salem	CO_2	33 (7)		
TOTAL		**7800 (369)**	**17**	2.18*

Additional *Cs. melanura*: Three hundred and sixty-nine additional pools containing 7800 *Cs. melanura* have been tested from other sites using other traps in addition to resting boxes. A total of 17 positive *Cs. melanura* pools from non-traditional sites have been detected to date. (Last week total was incorrectly reported as 17 when it should have been 16.) One additional pool was detected from Burlington County. 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.

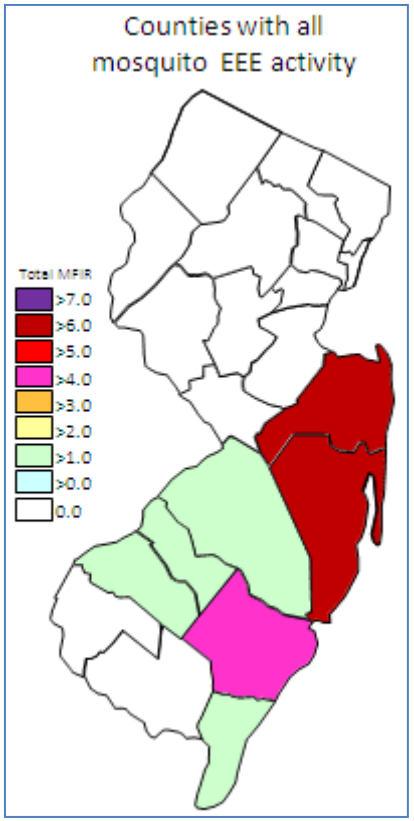
Species other than *Cs. melanura*	**Pools**	**Mosquitoes**	**Positives**	**MFIR**
Aedes albopictus	18	60		
Aedes atlanticus	3	75		
Aedes canadensis canadensis	14	138		
Aedes cantator	19	24		
Aedes infirmatus	1	1		
Aedes japonicus	12	27		
Aedes sollicitans	4	19		
Aedes sticticus	2	3		
Aedes taeniorhynchus	1	2		
Aedes triseriatus	7	25		
Aedes vexans	3	38		
Anopheles bradleyi	21	207	1	4.831
Anopheles crucians	4	16		
Anopheles punctipennis	15	76		
Anopheles quadrimaculatus	9	32		
Coquillettidia perturbans	24	338	1	2.959
Culex erraticus	112	2876	2	0.695
Culex pipiens	379	5207	1	0.192
Culex restuans	4	4		
Culex salinarius	82	762	1	1.312
Culex spp.	79	538		
Psorophora columbiae	3	7		
State Total	**816**	**10475**	6	0.573

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.

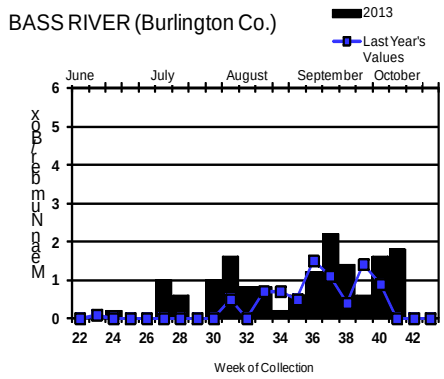
Horses and Vaccinations: The fate of unvaccinated equids reinforces the necessity of maintaining a vaccination schedule for arboviruses. For vaccination schedules recommended by the American Association of Equine Practices, see: http://www.aaep.org/vaccination_guidelines.htm



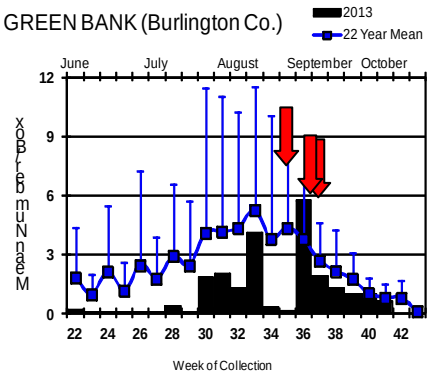
Culiseta melanura Population Graphs

Coastal

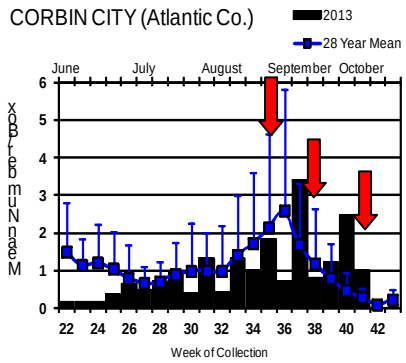
BASS RIVER (Burlington Co.)



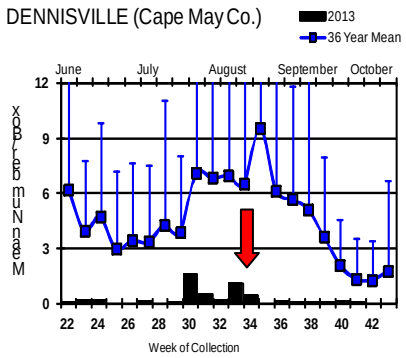
GREEN BANK (Burlington Co.)



CORBIN CITY (Atlantic Co.)

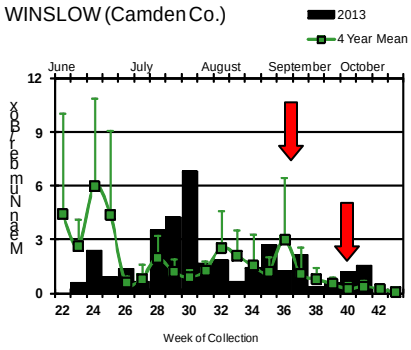


DENNISVILLE (Cape May Co.)

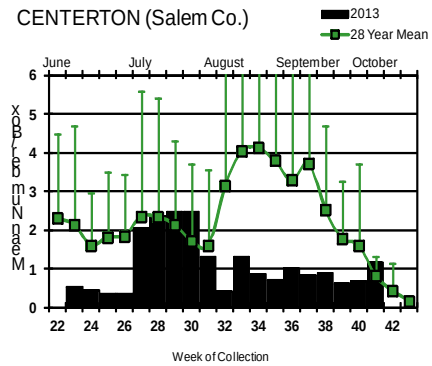


Inland

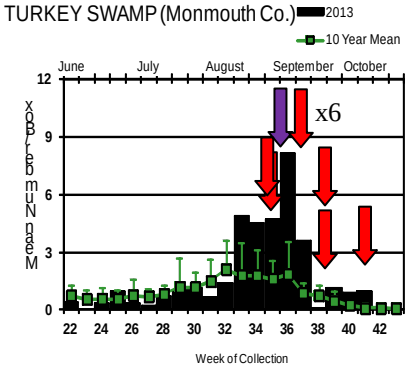
WINSLOW (Camden Co.)



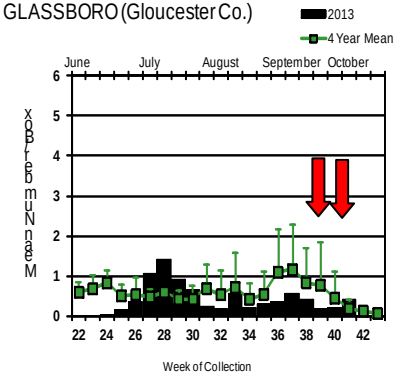
CENTERTON (Salem Co.)



TURKEY SWAMP (Monmouth Co.)



GLASSBORO (Gloucester Co.)



Cs. melanura population activity should be decreasing at this time of year, but several sites continue to show activity above historical levels, including Bass River, Corbin City Winslow, Turkey Swamp and Glassboro. Populations also increased at Centerton from the previous week.

Positive pools were detected at Corbin City and Turkey Swamp 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) 33(FL) 20(GA) 1(KY) 6(LA) 4(MA) 3(ME) 1(MD) 1(MI) 9(MS) 12(NC) 3(NH) 3(NJ) 1(NY) 36(SC) 1(TX) 1(VA) 2(VT)
- mosquito pools: 51(CT) 1(GA) 61(MA) 9(MD) 26(ME) 1(NC) 24(NH) 45(NJ) 53(NY) 4(RI) 98(VA) 22(VT)
- sentinel: 3(AL) 1(DE) 143/4 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
Alaska					
Arizona	0	185	6	1	38
Arkansas				2	6
California	1134/1158	2440/2480	425/453	16	206/237
Colorado	11	441		12	245/267
Connecticut		87/88			2
Delaware	8		16	2	2
DC		23			
Florida			89/138	2/5	1/2
Georgia	0	64		2	2/4
Hawaii					
Idaho		178		98/10	24/39
Illinois	8/87	2619/2682		10/13	40/68
Indiana	0	465/473		1	14/20
Iowa		47	15	9/10	38
Kansas		11		6	20/45
Kentucky	1			7/9	2
Louisiana		171	66	2	35
Maine		3		0	0
Maryland		9/10		1	8/10
Mass.		332/335		1/2	6/7
Michigan	46	19/23		3	21/31
Minnesota	1	48		2	71
Mississippi		46		2	39/40
Missouri		11		13	14/16

	Birds	Mosquito Pools	Sentinels	Horses	Humans
Montana	1	19		27	23
Nebraska	4	238		6	135
Nevada	1	47			8
New Hampshire		13/14		1	1
New Jersey	34/36	634/646		1	11
New Mexico		1		3	21
New York		569/582	1	10/12	17/21
North Carolina				2	1
North Dakota	8/9	23		1	104/111
Ohio		169		3	10
Oklahoma		36/41		5	33/36
Oregon	1	85	0	2	14
Pennsylvania	27	1499		2	11
Rhode Island		7/8			
South Carolina	1			1	1
South Dakota	8	392		3	122/135
Tennessee	1	713/738		1	15
Texas	4	429		12	80/89
Utah	1	66	2	7	7
Vermont		23/27		1	1
Virginia		126	6/10	1	2/3
Washington	0	18		1/2	1
West Virginia		26			
Wisconsin	62	20		0	11
Wyoming	5/6	52		19	36/38

* 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 12 October 2013

Species	Pools	Mosquitoes	Positives	MFIR
Aedes albopictus	788	6520	3	0.460
Aedes atlanticus	6	80		
Aedes atropalpus	4	7		
Aedes canadensis canadensis	57	880		
Aedes cantator	31	114		
Aedes grossbecki	1	1		
Aedes infirmatus	1	1		
Aedes japonicus	435	2433	2	0.822
Aedes sollicitans	10	47		
Aedes sticticus	3	5		
Aedes taeniorhynchus	14	123		
Aedes triseriatus	119	315	1	3.175
Aedes trivittatus	9	64		
Aedes vexans	80	734		
Anopheles bradleyi	32	258		
Anopheles crucians	9	114		
Anopheles punctipennis	53	275	1	3.636
Anopheles quadrimaculatus	112	1931		
Coquillettidia perturbans	37	453		
Culex erraticus	124	2897	1	0.345
Culex pipiens	875	22055	84	3.809
Culex restuans	560	6339	23	3.628
Culex salinarius	88	782	1	1.279
Culex spp.	3386	134351	510	3.796
Culex territans	14	17		
Culiseta melanura	566	13346	23	1.723
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	**7476**	**194701**	**649**	**3.333**

Remarks: To date, 7476 pools of 194701 mosquitoes from 31 species have been tested, with 649 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. 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)
649 / 7476 (0.087)	1002 / 7409 (0.135)
2013 Positive Birds to date / Total Birds Submitted	This time last year
36 / 123 (0.293)	132 / 304(0.434)

WNV Results by County through 12 October 2013

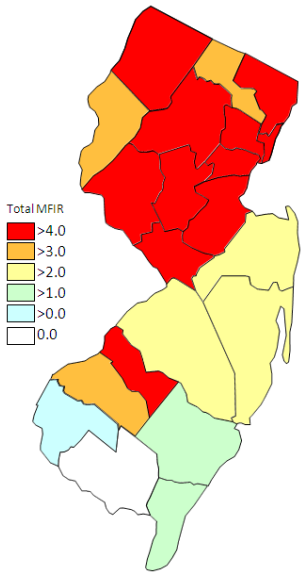
County	Species	Pools	Mosquitoes	Positives	MFIR
Atlantic		**195**	**3411**	**1**	**0.293**
	Aedes albopictus	19	195		
	Aedes canadensis canadensis	4	81		
	Aedes cantator	3	36		
	Aedes grossbecki	1	1		
	Aedes japonicus	8	28		
	Aedes sollicitans	2	23		
	Aedes sticticus	2	3		
	Aedes taeniorhynchus	6	30		
	Aedes triseriatus	6	14		
	Aedes vexans	16	300		
	Anopheles bradleyi	9	43		
	Anopheles crucians	1	47		
	Anopheles punctipennis	4	14		
	Anopheles quadrimaculatus	4	12		
	Coquillettidia perturbans	6	37		
	Culex erraticus	10	115		
	Culex spp.	53	1759	1	0.569
	Culiseta melanura	31	513		
	Psorophora ciliata	1	1		
	Psorophora columbiae	2	2		
	Psorophora ferox	5	146		
	Psorophora howardii	1	10		
	Uranotaenia sapphirina	1	1		
Bergen		**184**	**10778**	**85**	**7.886**
	Aedes albopictus	1	6		
	Aedes japonicus	5	42		
	Anopheles punctipennis	1	1		
	Culex spp.	177	10729	85	7.922
Burlington		**284**	**9697**	**24**	**2.475**
	Aedes albopictus	16	260		
	Aedes atlanticus	2	53		
	Aedes canadensis canadensis	7	101		
	Aedes infirmatus	1	1		
	Aedes japonicus	13	84		
	Aedes taeniorhynchus	1	2		

	Aedes triseriatus	1	17		
	Aedes vexans	3	15		
	Anopheles bradleyi	3	107		
	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	5	109		
	Culex spp.	87	3155	15	4.754
	Culiseta melanura	125	5490	9	1.639
	Psorophora ciliata	1	1		
	Psorophora columbiae	1	4		
	Uranotaenia sapphirina	1	9		
Camden		**314**	**8568**	**35**	**4.085**
	Aedes albopictus	43	234		
	Aedes japonicus	42	117	1	8.547
	Aedes triseriatus	1	2		
	Anopheles punctipennis	1	1		
	Anopheles quadrimaculatus	1	1		
	Culex spp.	189	6687	32	4.785
	Culiseta melanura	37	1526	2	1.311
Cape May		**1812**	**18027**	**36**	**1.997**
	Aedes albopictus	175	381	1	2.625
	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	17	99		
	Anopheles punctipennis	1	1		
	Anopheles quadrimaculatus	75	1768		
	Coquillettidia perturbans	4	8		
	Culex erraticus	74	2523		
	Culex pipiens	504	6667	27	4.050
	Culex restuans	481	3729	3	0.805
	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		**242**	**3164**	**4**	**1.264**
	Aedes albopictus	97	669		
	Aedes japonicus	60	462		
	Culex spp.	85	2033	4	1.968

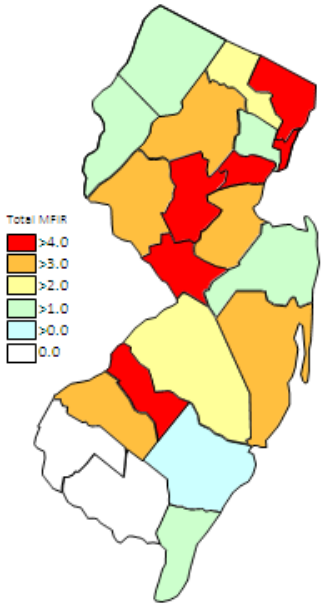
Gloucester		**480**	**17280**	**52**	**3.009**
	Aedes albopictus	26	702		
	Aedes japonicus	17	231		
	Aedes triseriatus	3	37		
	Aedes vexans	5	143		
	Anopheles punctipennis	8	156	1	6.410
	Anopheles quadrimaculatus	5	53		
	Coquillettidia perturbans	4	74		
	Culex pipiens	315	14562	50	3.434
	Culiseta melanura	94	1234	1	0.810
	Psorophora ferox	3	88		
Hudson		**229**	**11429**	**63**	**5.512**
	Culex spp.	229	11429	63	5.512
Hunterdon		**359**	**16116**	**55**	**3.413**
	Culex spp.	359	16116	55	3.413
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		**345**	**4792**	**9**	**1.878**
	Aedes albopictus	62	699		
	Aedes atlanticus	3	25		
	Aedes canadensis canadensis	17	260		
	Aedes cantator	6	20		
	Aedes japonicus	31	111		
	Aedes sollicitans	1	1		
	Aedes taeniorhynchus	1	1		
	Aedes triseriatus	17	43		
	Aedes trivittatus	6	9		
	Aedes vexans	9	23		
	Anopheles crucians	1	1		
	Anopheles punctipennis	18	46		
	Anopheles quadrimaculatus	4	7		
	Coquillettidia perturbans	3	7		
	Culex erraticus	9	74		
	Culex restuans	2	2		
	Culex salinarius	1	50		
	Culex spp.	81	1546	3	1.940
	Culiseta melanura	63	1753	6	3.423
	Psorophora columbiae	4	70		

	Psorophora ferox	6	44		
Morris		**415**	**14555**	**45**	**3.092**
	Culex spp.	415	14555	45	3.092
Ocean		**420**	**4876**	**16**	**3.281**
	Aedes albopictus	108	1312	1	0.762
	Aedes canadensis canadensis	22	418		
	Aedes cantator	2	33		
	Aedes japonicus	36	118		
	Aedes sollicitans	1	2		
	Aedes triseriatus	6	12		
	Aedes vexans	18	25		
	Anopheles bradleyi	1	1		
	Anopheles crucians	5	19		
	Anopheles punctipennis	4	5		
	Anopheles quadrimaculatus	3	8		
	Coquillettidia perturbans	9	73		
	Culex erraticus	13	61	1	16.393
	Culex restuans	1	1		
	Culex salinarius	6	16		
	Culex spp.	124	2373	12	5.057
	Culiseta melanura	61	399	2	5.013
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		**271**	**4923**		
	Aedes albopictus	41	176		
	Aedes japonicus	25	93		
	Aedes sollicitans	2	2		
	Aedes sticticus	1	2		
	Aedes triseriatus	14	38		
	Anopheles bradleyi	2	8		
	Anopheles punctipennis	7	24		
	Anopheles quadrimaculatus	17	57		
	Coquillettidia perturbans	5	36		
	Culex erraticus	7	102		
	Culex pipiens	3	3		
	Culex restuans	2	2		
	Culex spp.	98	3407		
	Culiseta melanura	30	815		
	Psorophora ciliata	1	2		
	Psorophora columbiae	10	83		
	Psorophora ferox	6	73		

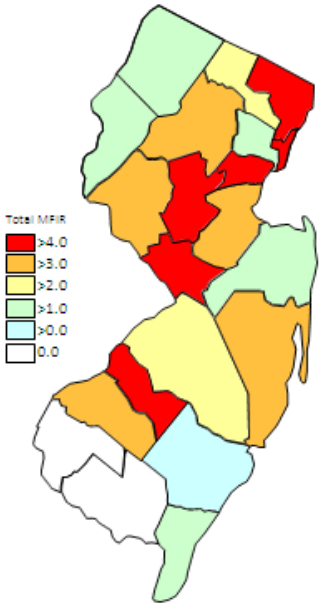
Somerset		**294**	**6340**	**29**	**4.574**
	Aedes albopictus	26	144		
	Aedes japonicus	16	161		
	Aedes triseriatus	5	14		
	Aedes vexans	2	16		
	Anopheles punctipennis	1	2		
	Culex spp.	244	6003	29	4.831
Sussex		**279**	**12005**	**16**	**1.333**
	Aedes japonicus	20	338		
	Culex spp.	258	11637	16	1.375
	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		**326**	**13647**	**19**	**1.392**
	Aedes albopictus	19	209	1	4.785
	Aedes canadensis canadensis	1	13		
	Aedes japonicus	14	43		
	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.	277	13309	17	1.277
Grand Total		**7476**	**194701**	**649**	**3.333**



Cumulative WNV activity in 2012.



WNV activity to 12 October 2013.



WNV activity last week, 2013.

Saint Louis Encephalitis (SLE) to 12 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		**50**	**1505**		
	Aedes albopictus	5	81		
	Aedes japonicus	2	13		
	Culex erraticus	1	2		
	Culex pipiens	42	1409		
Cape May		**368**	**4782**		
	Culex pipiens	356	4748		
	Culex spp.	12	34		
Salem		**2**	**122**		
	Culex spp.	2	122		
Grand Total		**420**	**6409**		

La Crosse Encephalitis (LAC) through 12 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		**1**	**17**		
	Aedes triseriatus	1	17		
Cape May		**39**	**65**		
	Aedes triseriatus	39	65		
Salem		**14**	**52**		
	Aedes triseriatus	14	52		
Grand Total		**54**	**134**		