RUTGERS
New Jersey Agricultural Experiment Station

VECTOR SURVEILLANCE IN NEW JERSEY

EEE, WNV, SLE and LAC

CDC WEEK 36: September 5 to September 11, 2010

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Supported by funding from the NJ State Mosquito Control Commission.

Culiseta melanura and Eastern Equine Encephalitis

SITE	Inland / Coastal	Historic Mean	Current Weekly Mean	Total Tested to Date*	Total Pools Submitted	EEE Isolations	MFIR
Green Bank (Burlington County)	Coastal	3.80	0.12	161†	14	0	0
Corbin City (Atlantic County)	Coastal	2.86	0.44	337	16	0	0
Dennisville (Cape May County)	Coastal	6.14	0.18	693	24	2	2.89
Winslow (Camden County)	Inland	7.92	2.84	2041	46	3	1.47
Centerton (Salem County)	Inland	3.62	0.16	1476	36	2	1.36
Turkey Swamp (Monmouth County)	Inland	2.31	0.24	734†	53	0	0
Glassboro (Gloucester County)	Inland	2.62	0.30	432	15	0	0

*Including trial run last week in May. † not adjusted for this week's pool, to be reported next week (but mean is from week 36)

Remarks: There are **18 positive EEE pools** to report at this time. Sixteen positive pools are from *Cs. melanura*, from both traditional resting box monitoring sites (7 positives) and county-run traps (9 positives). No changes in positive pools at the traditional resting box sites (above). To date, 5825 *Culiseta melanura* mosquitoes forming 205 pools from the resting box sites have been tested. An additional 6100 *Cs. melanura* forming 312 pools have been sampled by the counties using a variety of traps (table to the left), producing two additional positive pools, one in Burlington County, collected on 7th Sep and the second positive in Gloucester County, collected on the 2nd Sep. The remaining two pools were from *Culex erraticus*, collected previously.

Additional *Cs. melanura* trapped by counties
*traps with positives indicated in **BOLD**.

County	Trap types*	Number collected	Number of positives	MFIR
Atlantic	CO_2	17		
Burlington	**CO_2**	2329	4	1.72
Camden	Gravid	3		
Cape May	CO_2, Gravid, **RB**	1720	1	0.58
Cumberland	Gravid, **RB**	469	1	2.13
Gloucester	**RB**	1310	3	2.29
Ocean	CO_2, Gravid, RB	219		
Salem	CO_2	1		
Sussex	CO_2, NJLT	32		
TOTAL		**6100**	**9**	**1.48**

The table below indicates non-melanura species tested for EEE:

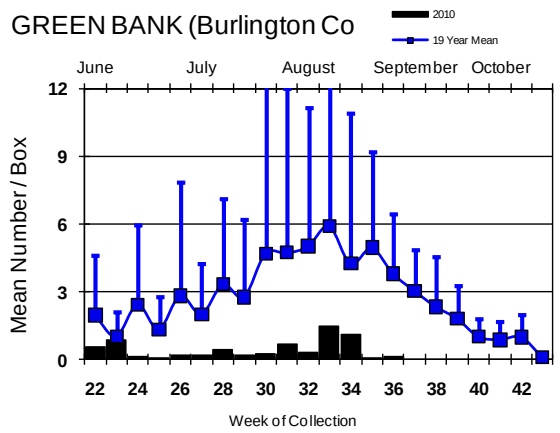
Species other than *Cs. melanura*	Pools	Mosquitoes	Positives	MFIR
Aedes albopictus	23	275		
Aedes canadensis canadensis	5	107		
Aedes cantator	1	1		
Aedes japonicus	4	21		
Aedes sollicitans	10	205		
Aedes taeniorhynchus	3	10		
Aedes triseriatus	18	57		
Aedes trivittatus	1	2		
Aedes vexans	12	223		
Anopheles bradleyi	25	369		
Anopheles crucians	2	122		
Anopheles punctipennis	3	64		
Anopheles quadrimaculatus	13	152		
Coquillettidia perturbans	49	890		
Culex erraticus	83	3098	2	0.65
Culex pipiens	278	2271		
Culex restuans	9	20		
Culex salinarius	45	562		
Culex spp.	192	4609		
Culex territans	2	2		
Culiseta minnesotae	1	1		
Psorophora columbiae	1	5		
Uranotaenia sapphirina	1	6		
State Total	**781**	**12977**	**2**	**0.15**

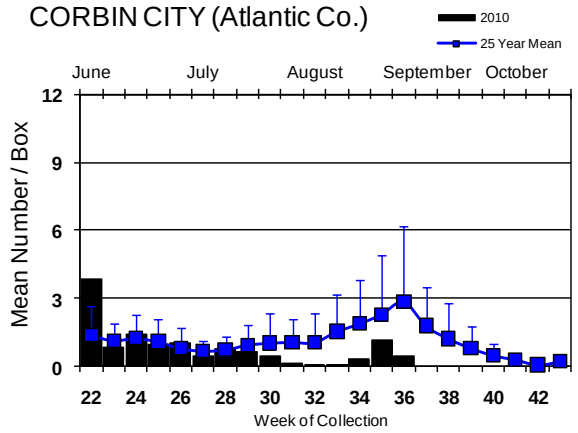
Horses and Humans: There are no positive horse or human cases to date.

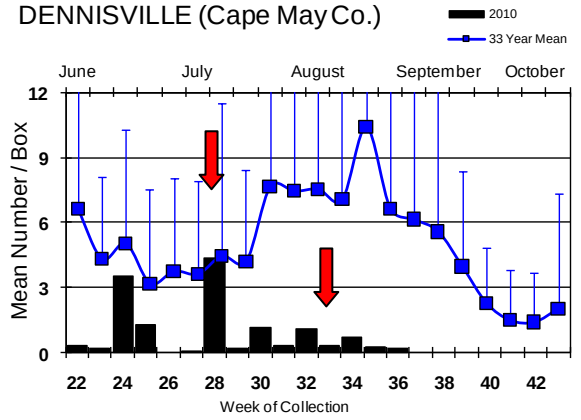
Horses and Vaccinations: The fate of unvaccinated equids reinforces the necessity of maintaining a vaccination schedule for arboviruses. For vaccination schedules recommended by the American Association of Equine Practices, see: http://www.aaep.org/vaccination_guidelines.htm

Culiseta melanura Population Graphs

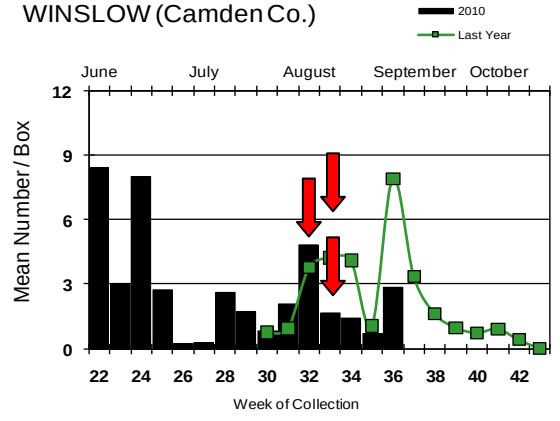
Coastal

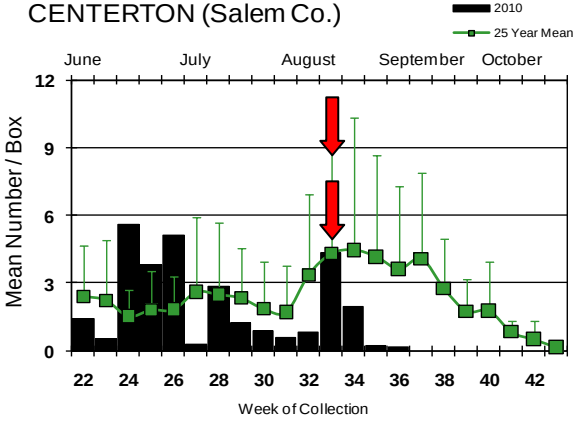


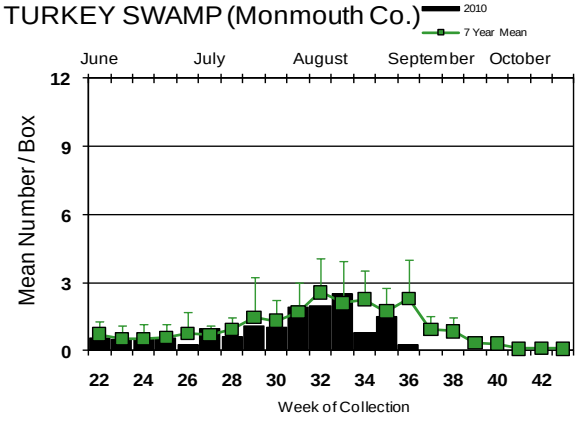




Inland

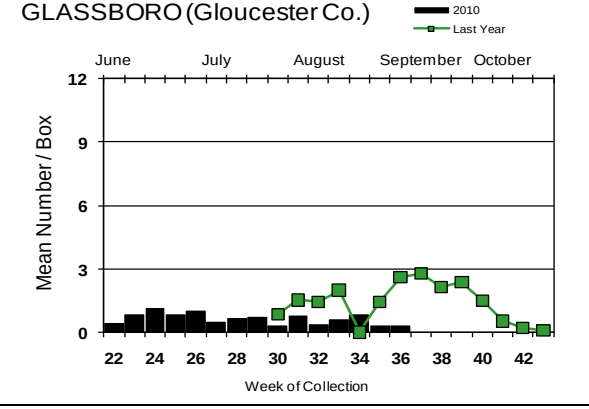






As with the previous few weeks, this week did not produce any positive EEE pools in the enzootic vector at the traditional resting box sites. *Cs. melanura* populations increased significantly from the previous week at Winslow and a minor increase occurred at Green Bank.

= Positive pool(s) detected.



EEE in US (2010 cumulative cases): (Black or Red = previous + new reported cases occurring)

- equine: 7(AL) 89(FL) 7(GA) 3(IN) 4(MA) 22 (MS) 37(MI) 2(NC) 1(NH) 1(NY) 1(TX) 1(VA)
- mosquito: 2(CT) 2(GA) 6(FL) 2(IN) 65(MA) 1(NH) 16(NJ) 42(NY) 7(VA)
- sentinel: 2(AL) 142/30(FL chickens/wild) 1 turkey(ME) 19(TX) 2(VA)
- human: 1(TX-out of country acquired case) 4(FL) 1(MA>RI) 1(MA) 3(MI)

West Nile Virus

West Nile in US (2010 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					2
Alaska					
Arizona		233/239	9	1/2	69/82
Arkansas					3
California	285/310	1032	133	12/14	35/38
Colorado		43/44		2	18/30
Connecticut		149/178			2
Delaware		1	3/6		
DC					
Florida	1Flavi		94/128	6/7	2
Georgia	1	12/45		1	4/6
Hawaii					
Idaho				1	
Illinois	39/42	1336/1596			3/4
Indiana	0	209/245		0	2/3
Iowa		0	2/3	1	1/2
Kansas					2
Kentucky		5		1/2	
Louisiana		317/412	4	3	19
Maine					
Maryland		1			3/6
Mass.		82/97		0	1/3
Michigan	3	1			4/9
Minnesota	2	7			2/3
Mississippi		2		2	4/5
Missouri		51		1	1/2

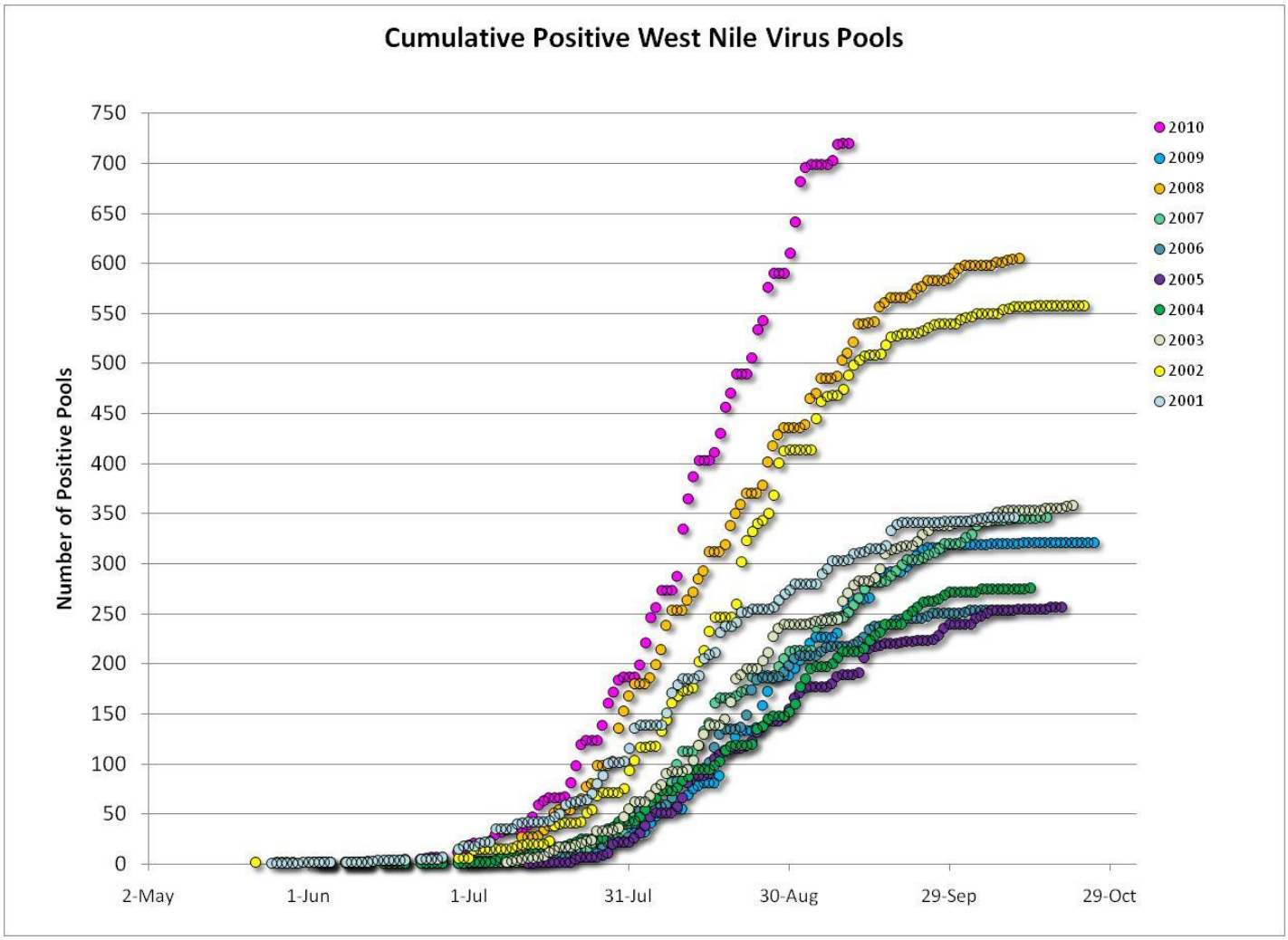
	Birds	Mosquito Pools	Sentinels	Horses	Humans
Montana					
Nebraska	1/6	59/81		0	12/16
Nevada		12		2	
New Hampshire		1		0	0
New Jersey	103/115	643/725	0	1	5
New Mexico					2/5
New York	0	683/758		0	37/52
North Carolina			1		
North Dakota				3	5/7
Ohio		110/171		0	1/2
Oklahoma		3			
Oregon	0	3	0	0	0
Pennsylvania	6/13	716/884		2	1
Rhode Island					
South Carolina		1			
South Dakota		1			9/17
Tennessee	0	145/185		0	0
Texas	1	105		1	5/24
Utah		10/23		1	
Vermont	1	6		0	0
Virginia		89	13		
Washington	0	104/105		0	0
West Virginia	0	26		0	0
Wisconsin	0	3		0	0
Wyoming		13			1

Protocol: New Jersey Department of Health and Senior Services (NJDHSS Public Health and Environmental Laboratories, PHEL) and the Cape May County Division of Mosquito Control tests mosquito pools using RT-PCR Taqman techniques.

Mosquito Species Submitted for West Nile Virus Testing through 14 Sep 2010

Species	Pools	Mosquitoes	Positives	MFIR
Aedes albopictus	481	3202	8	2.498
Aedes canadensis canadensis	26	475		
Aedes cantator	8	22		
Aedes japonicus	313	1485		
Aedes sollicitans	16	257		
Aedes sticticus	1	1		
Aedes stimulans	3	8		
Aedes taeniorhynchus	5	41		
Aedes triseriatus	144	333		
Aedes trivittatus	8	40		
Aedes vexans	84	741		
Anopheles barberi	2	2		
Anopheles bradleyi	33	385		
Anopheles crucians	3	124		
Anopheles punctipennis	42	393		
Anopheles quadrimaculatus	78	768		
Anopheles walkeri	5	29		
Coquillettidia perturbans	103	1648		
Culex erraticus	96	3137		
Culex pipiens	759	17561	160	9.111
Culex restuans	227	1446	5	3.458
Culex salinarius	69	928	1	1.078
Culex spp.	2412	88594	539	6.084
Culex territans	3	4		
Culiseta inornata	1	1		
Culiseta melanura	511	10470	12	1.146
Culiseta minnesotae	1	1		
Orthopodomyia signifera	5	6		
Psorophora ciliata	1	1		
Psorophora columbiae	3	8		
Psorophora cyanescens	1	1		
Psorophora ferox	3	4		
Uranotaenia sapphirina	2	11		
State Total	**5449**	**132127**	**725**	**5.487**

Remarks: The number of positive WNV mosquito pools to date is 725, well ahead of previous years (graph next page). Drought conditions, as suggested by many others, may have promoted more frequent interactions among vectors and hosts as they come together in the same space and time for available water, encouraging amplification. Drought conditions, on the other hand, may have been a factor in the lower number of positive EEE pools seen this year as compared to last year. Could water tables have fallen enough to affect the survivability of the second generation *Cs. melanura* in larval habitat, reducing potential amplification during this critical time period?



Humans, Horses and Wild Birds: To date in 2010, five human cases of West Nile virus (all neuroinvasive) have been detected in Atlantic County (1 case), Essex County (1), Ocean County (2), and Passaic County (1). For more details plus information about WNV, see the West Nile Virus Alert and FAQ Sheets from the NJ Department of Health and Senior Services, Communicable Disease Service, Infectious and Zoonotic Disease Program:
http://www.state.nj.us/health/cd/westnile/enceph.htm

One horse was found positive for WNV in Atlantic County with onset date of 17 August.

One hundred and fifteen dead, wild birds out of 214 tested are been positive for WNV, continue to be well ahead of last year's results in terms of number and timing. This year's positive birds include 103/144 corvids (23 positives/29 tested American Crows, 32/44 Fish Crows, 38/52 Blue Jays and 10/19 unidentified Crows), 1/5 Hawks (unknown species) and 11/65 unknown species. Fish Crows, *Corvus ossifragus*, have appeared in number this year as compared to last year.

2010 Positive Mosquito pools to date / Total Mosquito Pools Submitted	This time last year
725/ 5449 (13.3%)	256/ 6351 (4.0%)
2010 Positive Birds to date / Total Birds Submitted	This time last year
115/ 214 (53.7%)	24/ 91 (26.4%)

WNV Results by County through 14 Sep 2010

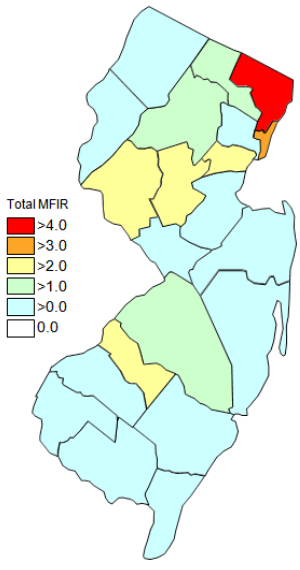
County	Species	Pools	Mosquitoes	Positives	MFIR
Atlantic		**215**	**5266**	**49**	**9.305**
	Aedes albopictus	27	253	1	3.953
	Aedes canadensis canadensis	3	56		
	Aedes cantator	3	14		
	Aedes japonicus	11	23		
	Aedes sollicitans	2	10		
	Aedes taeniorhynchus	1	24		
	Aedes triseriatus	4	8		
	Aedes trivittatus	3	26		
	Aedes vexans	17	154		
	Anopheles bradleyi	4	11		
	Anopheles punctipennis	5	108		
	Anopheles quadrimaculatus	3	4		
	Coquillettidia perturbans	9	35		
	Culex erraticus	2	5		
	Culex spp.	94	4121	47	11.405
	Culex territans	1	1		
	Culiseta melanura	25	412	1	2.427
	Orthopodomyia signifera	1	1		
Bergen		**185**	**13029**	**108**	**8.289**
	Aedes albopictus	5	30		
	Aedes japonicus	3	14		
	Culex spp.	177	12985	108	8.317
Burlington		**244**	**8551**	**40**	**4.678**
	Aedes albopictus	22	268		
	Aedes canadensis canadensis	3	105		
	Aedes japonicus	2	15		
	Aedes sollicitans	5	181		
	Aedes taeniorhynchus	2	9		
	Aedes triseriatus	1	7		
	Aedes vexans	11	221		
	Anopheles bradleyi	5	159		
	Anopheles crucians	2	122		
	Anopheles punctipennis	1	13		
	Anopheles quadrimaculatus	3	10		
	Coquillettidia perturbans	9	352		
	Culex erraticus	14	573		
	Culex pipiens	4	98	1	10.204
	Culex salinarius	6	38		
	Culex spp.	89	3879	36	9.281
	Culiseta melanura	63	2490	3	1.205
	Psorophora columbiae	1	5		
	Uranotaenia sapphirina	1	6		
Camden		**204**	**4938**	**67**	**13.568**
	Aedes albopictus	38	138	3	21.739
	Aedes canadensis canadensis	1	1		
	Aedes japonicus	16	23		
	Aedes triseriatus	2	2		
	Aedes trivittatus	1	1		
	Aedes vexans	1	45		
	Anopheles punctipennis	5	7		

	Anopheles quadrimaculatus	2	2		
	Culex erraticus	2	8		
	Culex pipiens	1	28		
	Culex spp.	107	3744	62	16.560
	Culex territans	1	2		
	Culiseta melanura	24	929	2	2.153
	Othopodomyia signifera	2	3		
	Uranotaenia sapphirina	1	5		
Cape May		**1246**	**14454**	**9**	**0.623**
	Aedes albopictus	63	121		
	Aedes canadensis canadensis	2	2		
	Aedes cantator	1	1		
	Aedes japonicus	43	74		
	Aedes sollicitans	5	24		
	Aedes taeniorhynchus	2	8		
	Aedes triseriatus	26	52		
	Anopheles bradleyi	17	206		
	Anopheles quadrimaculatus	29	500		
	Coquillettidia perturbans	14	155		
	Culex erraticus	66	2517		
	Culex pipiens	425	4997	6	1.201
	Culex restuans	176	962	1	1.040
	Culex salinarius	42	613	1	1.631
	Culex spp.	155	1256		0.000
	Culiseta melanura	180	2966	1	0.337
Cumberland		**44**	**555**	**1**	**1.802**
	Aedes albopictus	4	19		
	Aedes triseriatus	4	7		
	Anopheles bradleyi	3	4		
	Anopheles punctipennis	2	2		
	Anopheles quadrimaculatus	5	13		
	Culex erraticus	4	17		
	Culex pipiens	2	21		
	Culex restuans	2	2		
	Culex territans	1	1		
	Culiseta melanura	17	469	1	2.132
Essex		**226**	**3023**	**23**	**7.608**
	Aedes albopictus	41	171		
	Aedes japonicus	29	269		
	Aedes sollicitans	1	18		
	Aedes stimulans	1	3		
	Aedes triseriatus	17	35		
	Aedes vexans	13	53		
	Culex spp.	124	2474	23	9.297
Gloucester		**327**	**10349**	**104**	**10.049**
	Aedes albopictus	16	222		
	Aedes japonicus	3	20		
	Aedes vexans	2	65		
	Anopheles barberi	1	1		
	Anopheles punctipennis	1	50		
	Anopheles quadrimaculatus	3	30		
	Coquillettidia perturbans	3	12		

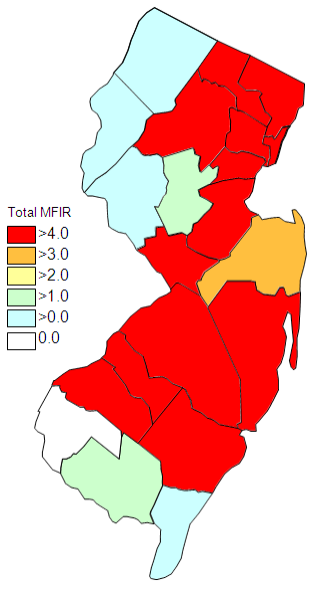
	Culex pipiens	224	8387	102	12.162
	Culiseta melanura	74	1562	2	1.280
Hudson		**174**	**8966**	**83**	**9.257**
	Culex spp.	174	8966	83	9.257
Hunterdon		**195**	**9662**	**8**	**0.828**
	Aedes albopictus	2	61		
	Culex spp.	193	9601	8	0.828
Mercer		**193**	**4803**	**55**	**11.451**
	Aedes albopictus	34	79	1	12.658
	Aedes japonicus	22	35		
	Aedes triseriatus	4	5		
	Aedes vexans	3	75		
	Culex pipiens	84	3956	51	12.892
	Culex restuans	32	368	3	8.152
	Culex salinarius	12	264		
	Culex spp.	2	21		
Middlesex		**234**	**9753**	**53**	**5.434**
	Aedes albopictus	9	60		
	Aedes japonicus	3	21		
	Aedes triseriatus	1	6		
	Culex spp.	221	9666	53	5.483
Monmouth		**279**	**2363**	**8**	**3.386**
	Aedes albopictus	46	338		
	Aedes canadensis canadensis	10	89		
	Aedes cantator	3	6		
	Aedes japonicus	33	94		
	Aedes sollicitans	2	22		
	Aedes triseriatus	12	14		
	Aedes vexans	4	11		
	Anopheles barberi	1	1		
	Anopheles crucians	1	2		
	Anopheles punctipennis	3	5		
	Anopheles quadrimaculatus	5	5		
	Coquillettidia perturbans	6	10		
	Culex erraticus	3	5		
	Culex pipiens	1	1		
	Culex restuans	1	1		
	Culex salinarius	2	2		
	Culex spp.	83	1013	7	6.910
	Culiseta melanura	60	741	1	1.350
	Orthopodomyia signifera	2	2		
	Psorophora cyanescens	1	1		
Morris		**192**	**7043**	**40**	**5.679**
	Aedes albopictus	1	2		
	Aedes japonicus	13	143		
	Aedes vexans	1	5		
	Anopheles punctipennis	2	6		
	Anopheles quadrimaculatus	3	82		

	Coquillettidia perturbans	6	207		
	Culex spp.	166	6598	40	6.062
Ocean		**265**	**3782**	**17**	**4.495**
	Aedes albopictus	64	829	1	1.206
	Aedes canadensis canadensis	7	222		
	Aedes japonicus	29	91		
	Aedes sollicitans	1	2		
	Aedes sticticus	1	1		
	Aedes triseriatus	12	29		
	Aedes trivittatus	2	2		
	Aedes vexans	6	19		
	Anopheles punctipennis	2	4		
	Anopheles quadrimaculatus	1	1		
	Coquillettidia perturbans	13	103		
	Culex erraticus	2	2		
	Culex restuans	3	3	1	333
	Culex salinarius	5	7		
	Culex spp.	82	2244	14	6.239
	Culiseta inornata	1	1		
	Culiseta melanura	32	219	1	4.566
	Psorophora ferox	2	3		
Passaic		**134**	**1809**	**10**	**5.528**
	Aedes albopictus	28	136		
	Aedes japonicus	23	163		
	Aedes triseriatus	10	21		
	Anopheles punctipennis	3	7		
	Anopheles quadrimaculatus	1	2		
	Coquillettidia perturbans	4	44		
	Culex spp.	65	1436	10	6.964
Salem		**257**	**2014**		
	Aedes albopictus	49	222		
	Aedes cantator	1	1		
	Aedes japonicus	20	24		
	Aedes triseriatus	15	17		
	Aedes vexans	24	58		
	Anopheles bradleyi	4	5		
	Anopheles punctipennis	5	5		
	Anopheles quadrimaculatus	19	52		
	Anopheles walkeri	4	5		
	Coquillettidia perturbans	11	22		
	Culex erraticus	3	10		
	Culex pipiens	7	16		
	Culex restuans	5	7		
	Culex spp.	70	917		
	Culiseta melanura	18	650		
	Psorophora columbiae	2	3		
Somerset		**198**	**2381**	**3**	**1.260**
	Aedes albopictus	14	39		
	Aedes japonicus	20	130		
	Aedes triseriatus	15	64		

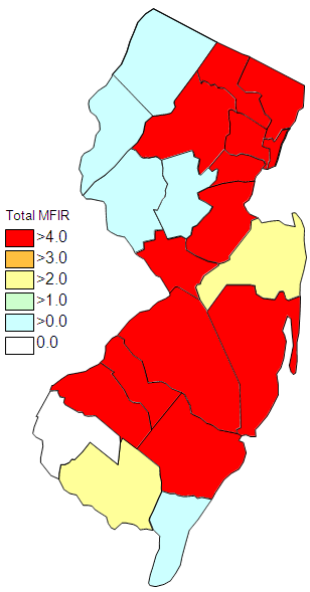
	Anopheles punctipennis	9	33		
	Anopheles quadrimaculatus	2	4		
	Culex spp.	138	2111	3	1.421
Sussex		**312**	**7636**	**3**	**0.393**
	Aedes japonicus	32	256		
	Aedes stimulans	2	5		
	Aedes triseriatus	16	48		
	Coquillettidia perturbans	17	321		
	Culex pipiens	11	57		
	Culex restuans	8	103		
	Culex salinarius	2	4		
	Culex spp.	205	6809	3	0.441
	Culiseta melanura	18	32		
	Culiseta minnesotae	1	1		
Union		**153**	**5528**	**40**	**7.236**
	Aedes albopictus	17	189	2	10.582
	Aedes japonicus	10	88		
	Coquillettidia perturbans	1	9		
	Culex spp.	125	5242	38	7.249
Warren		**172**	**6222**	**4**	**0.643**
	Aedes japonicus	1	2		
	Aedes triseriatus	5	18		
	Aedes trivittatus	2	11		
	Aedes vexans	2	35		
	Anopheles punctipennis	4	153		
	Anopheles quadrimaculatus	2	63		
	Anopheles walkeri	1	24		
	Coquillettidia perturbans	10	378		
	Culex spp.	143	5536	4	0.723
	Psorophora ciliata	1	1		
	Psorophora ferox	1	1		
Grand Total		**5449**	**132127**	**725**	**5.487**



Cumulative WNV activity in 2009.



WNV activity to 14 Sep, 2010.



WNV activity last week, 2010.

Saint Louis Encephalitis (SLE) through 14 Sep 2010.

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 tested positive to date for 2010.

County	Species	Pools	Mosquitoes	Positives	MFIR
Burlington		**231**	**8422**		
	Aedes albopictus	22	268		
	Aedes canadensis canadensis	3	105		
	Aedes japonicus	2	15		
	Aedes sollicitans	5	181		
	Aedes taeniorhynchus	2	9		
	Aedes triseriatus	1	7		
	Aedes vexans	11	221		
	Anopheles bradleyi	5	159		
	Anopheles crucians	2	122		
	Anopheles punctipennis	1	13		
	Anopheles quadrimaculatus	3	10		
	Coquillettidia perturbans	9	352		
	Culex erraticus	14	573		
	Culex pipiens	4	98		
	Culex salinarius	6	38		
	Culex spp.	90	3911		
	Culiseta melanura	49	2329		
	Psorophora columbiae	1	5		
	Uranotaenia sapphirina	1	6		
Camden		**168**	**3878**		
	Aedes albopictus	34	111		
	Aedes canadensis canadensis	1	1		
	Aedes japonicus	14	21		
	Aedes triseriatus	2	2		
	Aedes trivittatus	1	1		
	Aedes vexans	1	45		
	Anopheles punctipennis	5	7		
	Anopheles quadrimaculatus	1	1		
	Culex erraticus	2	8		
	Culex spp.	102	3670		
	Culex territans	1	2		
	Culiseta melanura	1	1		
	Orthopodomyia signifera	2	3		
	Uranotaenia sapphirina	1	5		
Essex		**187**	**2936**		
	Aedes albopictus	30	147		
	Aedes japonicus	25	259		
	Aedes sollicitans	1	18		

	Aedes triseriatus	2	6		
	Aedes vexans	5	32		
	Culex spp.	124	2474		
Hudson		**132**	**7266**		
	Aedes albopictus	1	25		
	Culex spp.	131	7241		
Salem		**1**	**7**		
	Culex spp.	1	7		
Sussex		**16**	**48**		
	Aedes triseriatus	16	48		
Grand Total		**735**	**22557**		

La Crosse Encephalitis (LAC) through 14 Sep 2010.

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 tested positive to date for 2010.

County	Species	Pools	Mosquitoes	Positives	MFIR
Cape May		**13**	**26**		
	Aedes triseriatus	13	26		
Cumberland		**4**	**7**		
	Aedes triseriatus	4	7		
Salem		**4**	**4**		
	Aedes triseriatus	4	4		
Warren		**10**	**106**		
	Aedes canadensis canadensis	4	86		
	Aedes triseriatus	6	20		
Grand Total		**31**	**143**		