RUTGERS
New Jersey Agricultural Experiment Station

VECTOR SURVEILLANCE IN NEW JERSEY
EEE, WNV, SLE and LAC
CDC WEEK 39: September 26 to October 2, 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	1.81	1.24†	191	18	0	0
Corbin City (Atlantic County)	Coastal	0.83	0.12	367	19	0	0
Dennisville (Cape May County)	Coastal	2.29	0.20	722	27	2	2.77
Winslow (Camden County)	Inland	0.98	0.64	2140	49	3	1.40
Centerton (Salem County)	Inland	1.76	0.58	1588	39	3	1.89
Turkey Swamp (Monmouth County)	Inland	0.34	0.11†	761	64	0	0
Glassboro (Gloucester County)	Inland	2.12	0.42	511	18	0	0

*Including trial run last week in May. † not included in total, to be reported next week

Remarks: There are **21 positive EEE pools** to report at this time, one additional from last week. Nineteen positive pools are from *Cs. melanura*, from both traditional resting box monitoring sites (8 positives) and county-run traps (11 positives). The additional pool this week came from the Centerton monitoring site, collected on 28 Sept. To date, 6281 *Culiseta melanura* mosquitoes forming 234 pools from the resting box sites have been tested. An additional 6477 *Cs. melanura* forming 378 pools have been sampled by the counties using a variety of traps (table to the left), producing a total of 11 additional positive pools. 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**	2408	4	1.66
Camden	Gravid	3		
Cape May	CO_2, Gravid, **RB**	1779	2	1.12
Cumberland	Gravid, **RB**	508	2	3.94
Gloucester	**RB**	1497	3	2.00
Ocean	CO_2, Gravid, RB	232		
Salem	CO_2	1		
Sussex	CO_2, NJLT	32		
TOTAL		**6477**	**11**	**1.70**

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

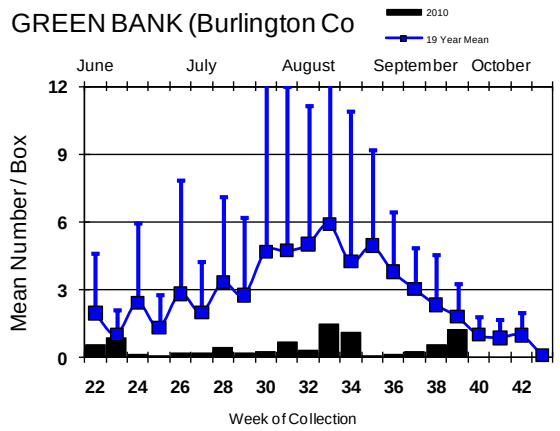
Species other than *Cs. melanura*	Pools	Mosquitoes	Positives	MFIR
Aedes albopictus	36	310		
Aedes canadensis canadensis	7	115		
Aedes cantator	3	3		
Aedes japonicus	5	22		
Aedes sollicitans	15	265		
Aedes taeniorhynchus	3	10		
Aedes triseriatus	18	57		
Aedes trivittatus	1	2		
Aedes vexans	22	353		
Anopheles bradleyi	36	457		
Anopheles crucians	2	122		
Anopheles punctipennis	7	72		
Anopheles quadrimaculatus	15	169		
Coquillettidia perturbans	54	897		
Culex erraticus	145	4290	2	0.47
Culex pipiens	372	2603		
Culex restuans	13	30		
Culex salinarius	56	689		
Culex spp.	235	4917		
Culex territans	2	2		
Culiseta minnesotae	1	1		
Psorophora columbiae	1	5		
Uranotaenia sapphirina	1	6		
State Total	**1050**	**15397**	**2**	**0.13**

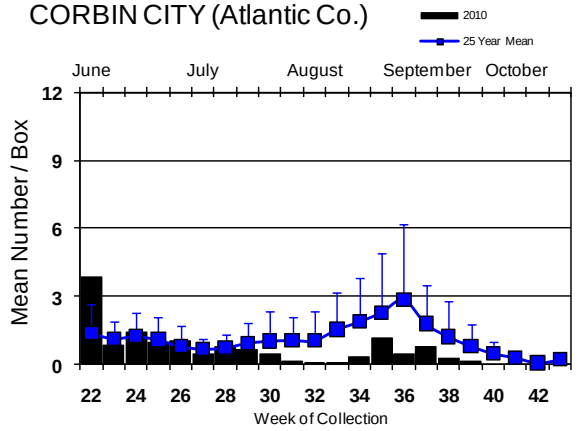
Horses and Humans: There are no positive horse or human cases to date.

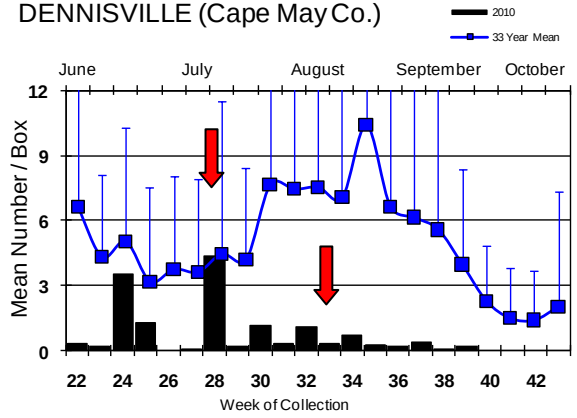
Horses and Vaccinations: The fate of unvaccinated equids reinforces the necessity of maintaining a vaccination schedule for arboviruses. For vaccination schedules recommended by the American Association of Equine Practices, see: http://www.aaep.org/vaccination_guidelines.htm

Culiseta melanura Population Graphs

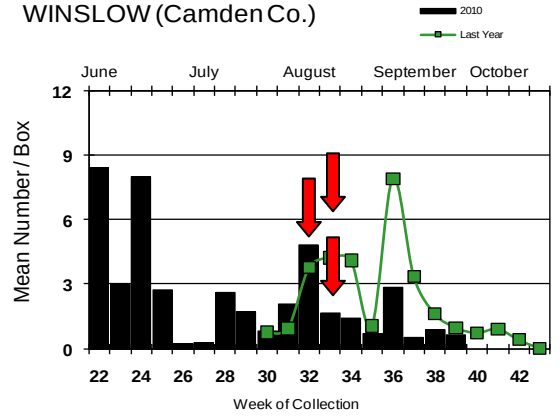
Coastal

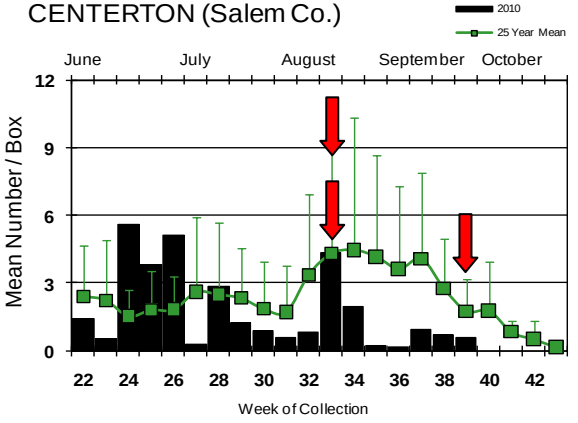


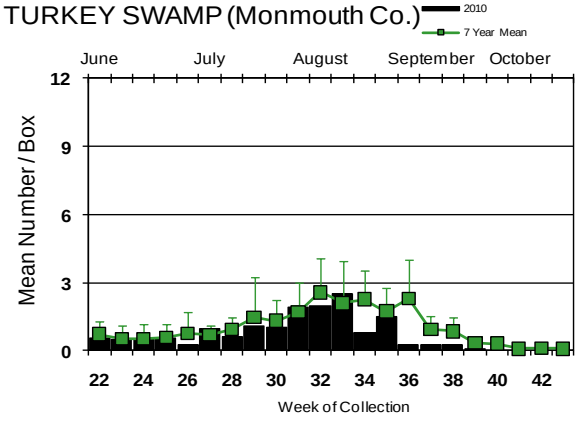




Inland

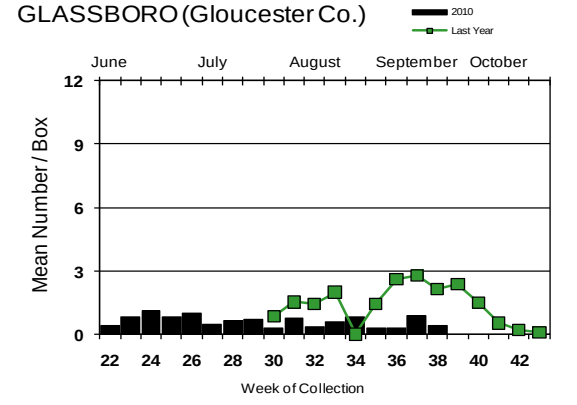






Green Bank experienced an unusual increase in *Cs. melanura* atypical for the site, in comparison with the other traditional monitoring sites. Usually, Green Bank experiences fewer *Cs. melanura* (but also shows positive activity). This week, all other sites recorded fewer than one *Cs. melanura* per resting box.

= Positive pool(s) detected.



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

- equine: 8(AL) 91(FL) 8(GA) 11(IN) 4(MA) 20(MS) 54(MI) 4(NC) 1(NE) 1(NH) 3(NY) 3(OH) 1(SC) 1(TX) 1(VA)
- mosquito: 2(CT) 2(GA) 6(FL) 3(IN) 65(MA) 1(NH) 21(NJ) 65(NY) 2(RI) 8(VA)
- sentinel: 2(AL) 150/30(FL chickens/wild) 1 turkey(ME) 3(SC) 19(TX) 5(VA)
- human: 1(TX-out of country acquired case) 4(FL) 1(MA>RI) 1(MA) 3(MI) 1(NY)

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					3
Alaska					
Arizona	2/3	285	3/9	2/3	88/101
Arkansas					3
California	359/374	1217/1259	219/241	16/18	51/61
Colorado	9	47		6	48/61
Connecticut		206/212			7
Delaware		1	6/11		
DC					
Florida	1Flavi		177/180	7/15	6/7
Georgia	3	85		1	9/10
Hawaii					
Idaho				1	1
Illinois	52/62	2040/2155		1	18/25
Indiana	1	283/305		6	5
Iowa		3	6	1	3
Kansas					5/6
Kentucky	1	5		4	
Louisiana		474/516	10/18	3	23
Maine					
Maryland		7			10
Mass.		114/121		1	3/4
Michigan	3	1		1	16/21
Minnesota	2	8			3
Mississippi		5		2	5
Missouri		51/53		1	2/4

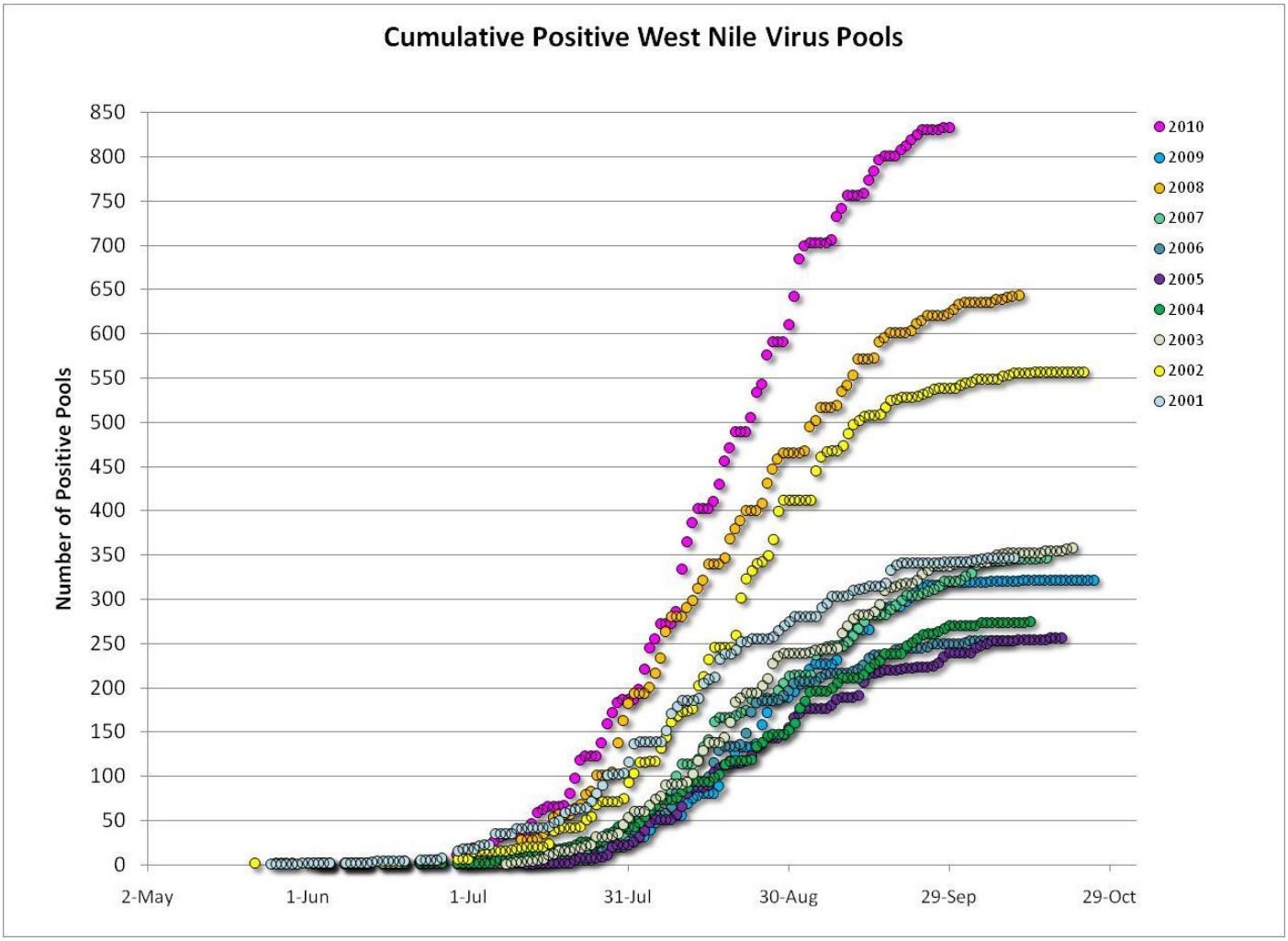
	Birds	Mosquito Pools	Sentinels	Horses	Humans
Montana					
Nebraska	7/9	86		0	30/37
Nevada	1	17/18		2	3
New Hampshire		1		0	0
New Jersey	122/128	807/838	0	2	17/20
New Mexico					11/13
New York	2/13	870/888		0	84/99
North Carolina			1		
North Dakota				3	8
Ohio		228		0	2
Oklahoma		3			
Oregon	0	3	0	0	0
Pennsylvania	17/18	990/1041		2/4	13/14
Rhode Island		2			
South Carolina		7			
South Dakota		1			20
Tennessee	0	273/304		2	1
Texas	1	119/120		4/5	39/45
Utah		26/29	1	2/3	1
Vermont	1	9		0	0
Virginia		98	13		2
Washington	2	126		0	0
West Virginia	0	26		0	0
Wisconsin	4	3		0	1
Wyoming		16		1	3/4

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 5 Oct 2010

Species	Pools	Mosquitoes	Positives	MFIR
Aedes albopictus	627	3785	9	2.378
Aedes canadensis canadensis	28	483		
Aedes cantator	10	24		
Aedes japonicus	362	1623		
Aedes sollicitans	22	319		
Aedes sticticus	1	1		
Aedes stimulans	3	8		
Aedes taeniorhynchus	9	116		
Aedes triseriatus	175	384		
Aedes trivittatus	9	41		
Aedes vexans	131	1528		
Anopheles barberi	2	2		
Anopheles bradleyi	50	502		
Anopheles crucians	3	124		
Anopheles punctipennis	56	420		
Anopheles quadrimaculatus	114	1186		
Anopheles walkeri	5	29		
Coquillettidia perturbans	108	1655	1	0.604
Culex erraticus	159	4343		
Culex pipiens	955	19089	171	8.958
Culex restuans	323	1724	6	3.480
Culex salinarius	81	1056	1	0.947
Culex spp.	2874	101004	635	6.287
Culex territans	3	4		
Culiseta inornata	1	1		
Culiseta melanura	607	11282	15	1.330
Culiseta minnesotae	1	1		
Orthopodomyia signifera	5	6		
Psorophora ciliata	1	1		
Psorophora columbiae	4	9		
Psorophora cyanescens	1	1		
Psorophora ferox	4	5		
Uranotaenia sapphirina	3	13		
State Total	**6737**	**150769**	**838**	**5.558**

Remarks: The number of positive WNV mosquito pools to date is 838 and continues to be ahead of previous years (see graph next page – note that 2008 was adjusted to account for the results of additional pools tested after the end of the season). This week, new positives continue in the *Culex* species only, and the trend for new positive pools appears to be slowly leveling out.



Humans, Horses and Wild Birds: To date in 2010, twenty human cases of West Nile virus have been detected (three additional from last week) and include the following counties: Atlantic (1 case), Burlington (1), Camden (3), Cumberland (1), Essex (1), Hudson (2), Mercer (2), Monmouth (2), Ocean (2), Passaic County (3), Salem (1) and Union (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

To date, two horses have been infected with WNV. One is in Gloucester County, with an onset of symptoms on 18 Sept, and the other in Atlantic County with onset date of 17 August. No vaccinations were done for either horse.

One hundred and twenty-eight dead, wild birds out of 237 tested are been positive for WNV, continuing to be well ahead of last year's results in terms of number and timing. This year's positive birds include 114/158 corvids (25 positives/32 tested American Crows, 32/45 Fish Crows, 46/60 Blue Jays and 11/21 unidentified Crows), 2/7 Hawks (unknown species) and 12/72 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
838/ 6737 (12.4%)	308/ 7295 (4.2%)
2010 Positive Birds to date / Total Birds Submitted	This time last year
128/ 235 (54.5%)	29/ 109 (26.6%)

WNV Results by County through 5 Oct 2010

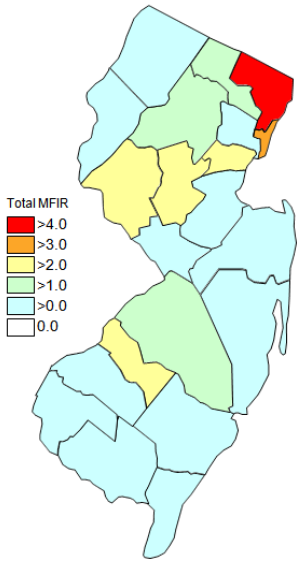
County	Species	Pools	Mosquitoes	Positives	MFIR
Atlantic		**274**	**6603**	**60**	**9.087**
	Aedes albopictus	34	308	1	3.247
	Aedes canadensis canadensis	3	56		
	Aedes cantator	3	14		
	Aedes japonicus	11	23		
	Aedes sollicitans	2	10		
	Aedes taeniorhynchus	1	24		
	Aedes triseriatus	4	8		
	Aedes trivittatus	3	26		
	Aedes vexans	27	419		
	Anopheles bradleyi	6	17		
	Anopheles punctipennis	6	109		
	Anopheles quadrimaculatus	4	7		
	Coquillettidia perturbans	10	37		
	Culex erraticus	7	26		
	Culex spp.	120	5046	57	11.296
	Culex territans	1	1		
	Culiseta melanura	31	471	2	4.246
	Orthopodomyia signifera	1	1		
Bergen		**223**	**15612**	**140**	**8.967**
	Aedes albopictus	5	30		
	Aedes japonicus	3	14		
	Aedes triseriatus	1	1		
	Culex spp.	214	15567	140	8.993
Burlington		**303**	**9186**	**46**	**5.008**
	Aedes albopictus	27	286		
	Aedes canadensis canadensis	4	109		
	Aedes japonicus	3	16		
	Aedes sollicitans	6	185		
	Aedes taeniorhynchus	2	9		
	Aedes triseriatus	1	7		
	Aedes vexans	19	346		
	Anopheles bradleyi	6	176		
	Anopheles crucians	2	122		
	Anopheles punctipennis	1	13		
	Anopheles quadrimaculatus	4	11		
	Coquillettidia perturbans	9	352		
	Culex erraticus	16	634		
	Culex pipiens	5	99	1	10.101
	Culex restuans	1	1		
	Culex salinarius	7	43		
	Culex spp.	112	4167	42	10.079
	Culiseta melanura	76	2599	3	1.154
	Psorophora columbiae	1	5		
	Uranotaenia sapphirina	1	6		
Camden		**254**	**5940**	**76**	**12.795**
	Aedes albopictus	44	150	3	20.000
	Aedes canadensis canadensis	1	1		
	Aedes japonicus	22	35		
	Aedes triseriatus	2	2		

	Aedes trivittatus	1	1		
	Aedes vexans	3	50		
	Anopheles punctipennis	5	7		
	Anopheles quadrimaculatus	2	2		
	Culex erraticus	2	8		
	Culex pipiens	1	28		
	Culex spp.	137	4614	71	15.388
	Culex territans	1	2		
	Culiseta melanura	28	1029	2	1.944
	Othopodomyia signifera	2	3		
	Uranotaenia sapphirina	1	1		
Cape May		**1685**	**17765**	**10**	**0.563**
	Aedes albopictus	107	198		
	Aedes canadensis canadensis	3	6		
	Aedes cantator	3	3		
	Aedes japonicus	46	77		
	Aedes sollicitans	9	80		
	Aedes taeniorhynchus	6	83		
	Aedes triseriatus	41	68		
	Aedes vexans	8	199		
	Anopheles bradleyi	28	297		
	Anopheles punctipennis	4	12		
	Anopheles quadrimaculatus	54	785		
	Coquillettidia perturbans	16	157		
	Culex erraticus	117	3596		
	Culex pipiens	543	5869	6	1.022
	Culex restuans	263	1221	2	1.638
	Culex salinarius	53	736	1	1.359
	Culex spp.	177	1324		
	Culiseta melanura	207	3054	1	0.327
Cumberland		**72**	**704**	**1**	**1.420**
	Aedes albopictus	10	53		
	Aedes triseriatus	7	10		
	Anopheles bradleyi	3	4		
	Anopheles punctipennis	3	4		
	Anopheles quadrimaculatus	5	13		
	Culex erraticus	7	56		
	Culex pipiens	7	40		
	Culex restuans	6	15		
	Culex territans	1	1		
	Culiseta melanura	23	508	1	1.969
Essex		**287**	**3411**	**25**	**7.329**
	Aedes albopictus	49	181		
	Aedes japonicus	37	296		
	Aedes sollicitans	1	18		
	Aedes stimulans	1	3		
	Aedes triseriatus	21	42		
	Aedes vexans	21	135		
	Culex spp.	157	2736	25	9.137
Gloucester		**419**	**11227**	**117**	**10.421**
	Aedes albopictus	28	289	1	3.460
	Aedes japonicus	4	21		

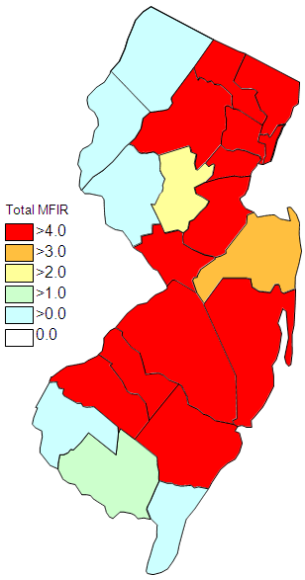
	Aedes vexans	4	70		
	Anopheles barberi	1	1		
	Anopheles punctipennis	3	55		
	Anopheles quadrimaculatus	4	46		
	Coquillettidia perturbans	5	15	1	66.667
	Culex pipiens	272	8902	112	12.581
	Culiseta melanura	98	1828	3	1.641
Hudson		**204**	**10303**	**92**	**8.929**
	Aedes albopictus	1	25		
	Culex spp.	203	10278	92	8.951
Hunterdon		**240**	**11278**	**11**	**0.943**
	Aedes albopictus	2	61		
	Culex spp.	238	11598	11	0.948
Mercer		**226**	**4989**	**57**	**11.425**
	Aedes albopictus	47	115	1	8.696
	Aedes japonicus	25	38		
	Aedes triseriatus	4	5		
	Aedes vexans	3	75		
	Culex pipiens	100	4057	52	12.817
	Culex restuans	32	368	3	8.152
	Culex salinarius	12	264		
	Culex spp.	3	67	1	14.925
Middlesex		**251**	**9876**	**53**	**5.367**
	Aedes albopictus	11	74		
	Aedes japonicus	3	21		
	Aedes triseriatus	1	6		
	Culex spp.	236	9775	53	5.422
Monmouth		**327**	**2558**	**9**	**3.518**
	Aedes albopictus	62	399		
	Aedes canadensis canadensis	10	89		
	Aedes cantator	3	6		
	Aedes japonicus	40	107		
	Aedes sollicitans	3	24		
	Aedes triseriatus	13	21		
	Aedes vexans	5	12		
	Anopheles barberi	1	1		
	Anopheles crucians	1	2		
	Anopheles punctipennis	3	5		
	Anopheles quadrimaculatus	5	5		
	Coquillettidia perturbans	6	10		
	Culex erraticus	5	11		
	Culex pipiens	1	1		
	Culex restuans	1	1		
	Culex salinarius	2	2		
	Culex spp.	96	1093	8	7.319
	Culiseta melanura	67	766	1	1.305
	Orthopodomyia signifera	2	2		
	Psorophora cyanescens	1	1		
Morris		**236**	**7600**	**47**	**6.184**

	Aedes albopictus	2	13		
	Aedes japonicus	20	161		
	Aedes triseriatus	1	1		
	Aedes vexans	1	5		
	Anopheles punctipennis	2	6		
	Anopheles quadrimaculatus	3	82		
	Coquillettidia perturbans	6	207		
	Culex spp.	201	7125	47	6.596
Ocean		**312**	**4054**	**18**	**4.440**
	Aedes albopictus	78	986	1	1.014
	Aedes canadensis canadensis	7	222		
	Aedes japonicus	31	94		
	Aedes sollicitans	1	2		
	Aedes sticticus	1	1		
	Aedes triseriatus	12	29		
	Aedes trivittatus	2	2		
	Aedes vexans	6	19		
	Anopheles bradleyi	3	3		
	Anopheles punctipennis	5	8		
	Anopheles quadrimaculatus	4	4		
	Coquillettidia perturbans	13	103		
	Culex erraticus	2	2		
	Culex pipiens	1	2		
	Culex restuans	5	6	1	166.667
	Culex salinarius	5	7		
	Culex spp.	96	2328	15	6.443
	Culiseta inornata	1	1		
	Culiseta melanura	37	232	1	4.310
	Psorophora ferox	2	3		
Passaic		**146**	**1851**	**11**	**5.943**
	Aedes albopictus	30	138		
	Aedes japonicus	25	178		
	Aedes triseriatus	10	21		
	Aedes trivittatus	1	1		
	Aedes vexans	1	3		
	Anopheles punctipennis	4	8		
	Anopheles quadrimaculatus	1	2		
	Coquillettidia perturbans	4	44		
	Culex spp.	69	1455	11	7.560
	Psorophora ferox	1	1		
Salem		**303**	**2628**	**1**	**0.381**
	Aedes albopictus	57	234		
	Aedes cantator	1	1		
	Aedes japonicus	23	29		
	Aedes triseriatus	18	20		
	Aedes vexans	27	148		
	Anopheles bradleyi	4	5		
	Anopheles punctipennis	5	5		
	Anopheles quadrimaculatus	24	162		
	Anopheles walkeri	4	5		
	Coquillettidia perturbans	11	22		

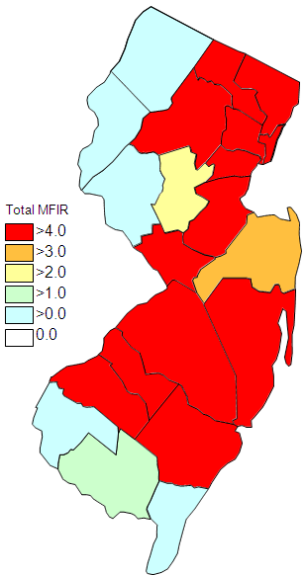
	Culex erraticus	3	10		
	Culex pipiens	12	26		
	Culex restuans	7	9		
	Culex spp.	83	1186		
	Culiseta melanura	22	763	1	1.311
	Psorophora columbiae	2	3		
Somerset		**243**	**2858**	**8**	**2.799**
	Aedes albopictus	14	39		
	Aedes japonicus	20	130		
	Aedes triseriatus	18	77		
	Anopheles punctipennis	11	35		
	Anopheles quadrimaculatus	2	4		
	Culex spp.	178	2573	8	3.109
Sussex		**362**	**9401**	**6**	**0.638**
	Aedes japonicus	37	291		
	Aedes stimulans	2	5		
	Aedes triseriatus	16	48		
	Coquillettidia perturbans	17	321		
	Culex pipiens	13	65		
	Culex restuans	8	103		
	Culex salinarius	2	4		
	Culex spp.	248	8531	6	0.703
	Culiseta melanura	18	32		
	Culiseta minnesotae	1	1		
Union		**168**	**5932**	**44**	**7.417**
	Aedes albopictus	19	206	2	9.709
	Aedes japonicus	10	88		
	Coquillettidia perturbans	1	9		
	Culex spp.	138	5629	42	7.461
Warren		**202**	**6612**	**6**	**0.907**
	Aedes japonicus	2	4		
	Aedes triseriatus	5	18		
	Aedes trivittatus	2	11		
	Aedes vexans	6	47		
	Anopheles punctipennis	4	153		
	Anopheles quadrimaculatus	2	63		
	Anopheles walkeri	1	24		
	Coquillettidia perturbans	10	378		
	Culex spp.	168	5912	6	1.015
	Psorophora ciliata	1	1		
	Psorophora ferox	1	1		
Grand Total		**6737**	**150769**	**838**	**5.558**



Cumulative WNV activity in 2009.



WNV activity to 5 Oct, 2010.



WNV activity last week, 2010.

Saint Louis Encephalitis (SLE) through 5 Oct 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		**285**	**8994**		
	Aedes albopictus	27	286		
	Aedes canadensis canadensis	4	109		
	Aedes japonicus	3	16		
	Aedes sollicitans	6	185		
	Aedes taeniorhynchus	2	9		
	Aedes triseriatus	1	7		
	Aedes vexans	19	346		
	Anopheles bradleyi	6	176		
	Anopheles crucians	2	122		
	Anopheles punctipennis	1	13		
	Anopheles quadrimaculatus	3	10		
	Coquillettidia perturbans	9	352		
	Culex erraticus	16	634		
	Culex pipiens	5	99		
	Culex restuans	1	1		
	Culex salinarius	7	43		
	Culex spp.	112	4167		
	Culiseta melanura	59	2408		
	Psorophora columbiae	1	5		
	Uranotaenia sapphirina	1	6		
Camden		**213**	**4758**		
	Aedes albopictus	40	123		
	Aedes canadensis canadensis	1	1		

	Aedes japonicus	20	33		
	Aedes triseriatus	2	2		
	Aedes trivittatus	1	1		
	Aedes vexans	3	50		
	Anopheles punctipennis	5	7		
	Anopheles quadrimaculatus	1	1		
	Culex erraticus	2	8		
	Culex spp.	131	4518		
	Culex territans	1	2		
	Culiseta melanura	1	1		
	Orthopodomyia signifera	2	3		
	Psorophora columbiae	1	1		
	Uranotaenia sapphirina	2	7		
Essex		**260**	**3347**		
	Aedes albopictus	43	168		
	Aedes japonicus	33	286		
	Aedes sollicitans	1	18		
	Aedes triseriatus	12	24		
	Aedes vexans	14	115		
	Culex spp.	157	2736		
Hudson		**162**	**8603**		
	Aedes albopictus	1	25		
	Culex spp.	161	8578		
Salem		**1**	**7**		
	Culex spp.	1	7		
Sussex		**16**	**48**		
	Aedes triseriatus	16	48		
Grand Total		**937**	**25757**		

La Crosse Encephalitis (LAC) through 5 Oct 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		**17**	**30**		
	Aedes triseriatus	17	30		
Cumberland		**7**	**10**		

	Aedes triseriatus	7	10		
Salem		**5**	**5**		
	Aedes triseriatus	5	5		
Warren		**10**	**106**		
	Aedes canadensis canadensis	4	86		
	Aedes triseriatus	6	20		
Grand Total		**39**	**151**		