RUTGERS
New Jersey Agricultural Experiment Station

VECTOR SURVEILLANCE IN NEW JERSEY

EEE, WNV, SLE and LAC

CDC WEEK 43: October 24 to October 30, 2010

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Prepared by Lisa M. Reed, Scott Crans and Mark Robson at the Center for Vector Biology, Rutgers University.
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	0.09	0.08	251	22	0	0
Corbin City (Atlantic County)	Coastal	0.23	nc†	369	20	0	0
Dennisville (Cape May County)	Coastal	0.00	0.00	725	28	2	2.76
Winslow (Camden County)	Inland	0.02	0.16	2179	54	3	1.38
Centerton (Salem County)	Inland	0.16	0.10	1617	43	3	1.86
Turkey Swamp (Monmouth County)	Inland	0.09	0.00	763	66	0	0
Glassboro (Gloucester County)	Inland	0.08	0.00	513	19	0	0

*Including trial run last week in May. † no collection

Remarks: There are **21 positive EEE pools** to report at this time, no changes 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). *Culiseta melanura* mosquitoes forming 252 pools from 6417 mosquitoes out of the resting box sites have been tested. An additional 7022 *Cs. melanura* forming 419 pools have been sampled by the counties using a variety of traps (table to the left), producing a total of 11 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**	2582	4	1.55
Camden	Gravid	3		
Cape May	CO_2, Gravid, **RB**	2130	2	0.94
Cumberland	Gravid, **RB**	509	2	3.93
Gloucester	**RB**	1516	3	1.97
Ocean	CO_2, Gravid, RB	232		
Salem	CO_2	1		
Sussex	CO_2, NJLT	32		
TOTAL		**7022**	**11**	**1.57**

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

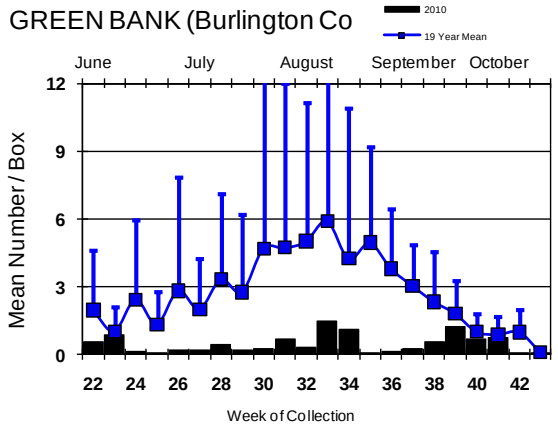
Species other than *Cs. melanura*	Pools	Mosquitoes	Positives	MFIR
Aedes albopictus	39	313		
Aedes canadensis canadensis	8	117		
Aedes cantator	3	3		
Aedes japonicus	6	23		
Aedes sollicitans	16	266		
Aedes taeniorhynchus	3	10		
Aedes triseriatus	18	57		
Aedes trivittatus	1	2		
Aedes vexans	28	374		
Anopheles bradleyi	47	487		
Anopheles crucians	2	122		
Anopheles punctipennis	14	87		
Anopheles quadrimaculatus	21	180		
Coquillettidia perturbans	54	897		
Culex erraticus	175	4479	2	0.45
Culex pipiens	429	3042		
Culex restuans	17	36		
Culex salinarius	60	699		
Culex spp.	253	5035		
Culex territans	2	2		
Culiseta minnesotae	2	2		
Psorophora columbiae	1	5		
Uranotaenia sapphirina	1	6		
State Total	**1200**	**16244**	**2**	**0.12**

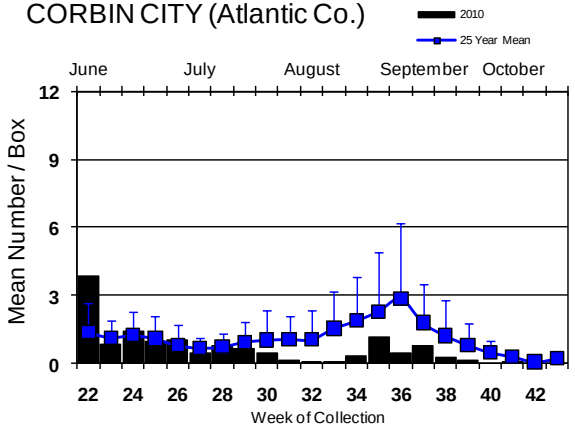
Horses and Humans: Reported last week: one unvaccinated horse that was EEE positive from Monmouth County with symptom onset on 5 October. There are no positive human cases to date.

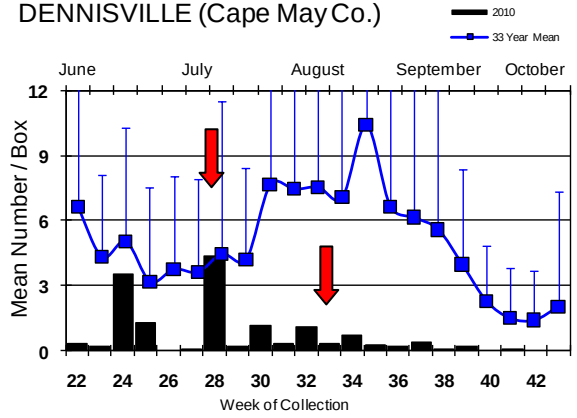
Horses and Vaccinations: The fate of unvaccinated equids reinforces the necessity of maintaining a vaccination schedule for arboviruses. For vaccination schedules recommended by the American Association of Equine Practices, see: http://www.aaep.org/vaccination_guidelines.htm

Culiseta melanura Population Graphs

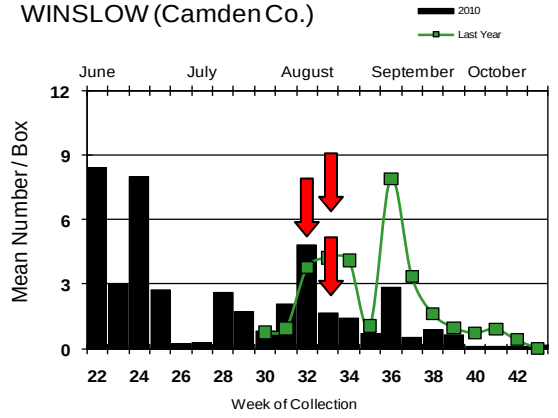
Coastal

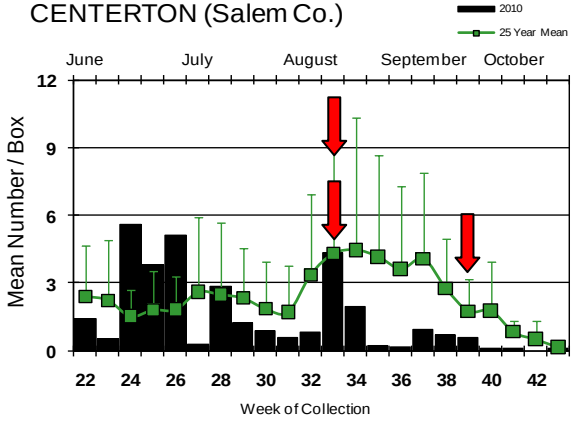


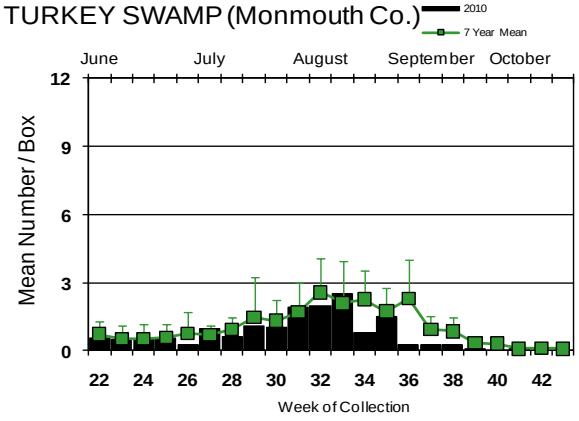




Inland

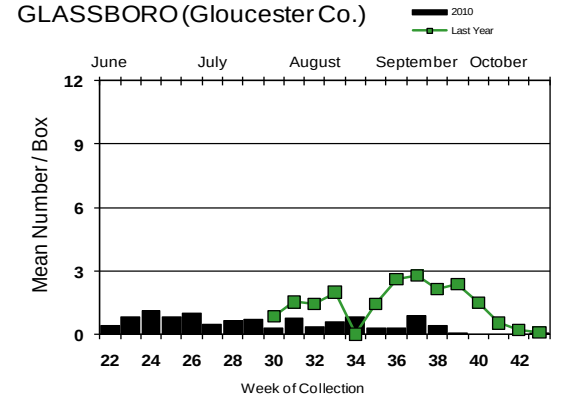






Culiseta melanura populations were at zero at Dennisville, Turkey Swamp and Glassboro. Populations at all other resting box monitoring sites were averaging less than one per box.

= Positive pool(s) detected.



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

- equine: 8(AL) 93(FL) 9(GA) 11(IN) 4(MA) 24(MS) 57(MI) 6(NC) 1(NJ) 1(NH) 8(NY) 4(OH) 1(SC) 1(TX) 1(VA) 1(WI) – note removal of NE horse case.
- mosquito pools: 4(CT) 2(GA) 6(FL) 3(IN) 65(MA) 1(NH) 21(NJ) 65(NY) 2(RI) 8(VA)
- sentinel: 2(AL) 159/34(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	5	324	14	2	140/142
Arkansas					6
California	401	1284/1294	263/277	18/19	82/92
Colorado	9	47		7	77/78
Connecticut		219/220			8
Delaware		1	15		
DC		15			2
Florida	1Flavi		358/412	20/22	10/12
Georgia	4	93		2	11
Hawaii					
Idaho				3	1
Illinois	64	2226/2290		1	47/50
Indiana	1	325/328		6	8
Iowa		7	14	1	7/8
Kansas					6
Kentucky	1	5		6	3
Louisiana		550	21	3	29/31
Maine		1			
Maryland		8		1	17/23
Mass.		121		1	7
Michigan	3	1		1	27
Minnesota	3	10/11			5/6
Mississippi		6		3	7
Missouri		55		1	3

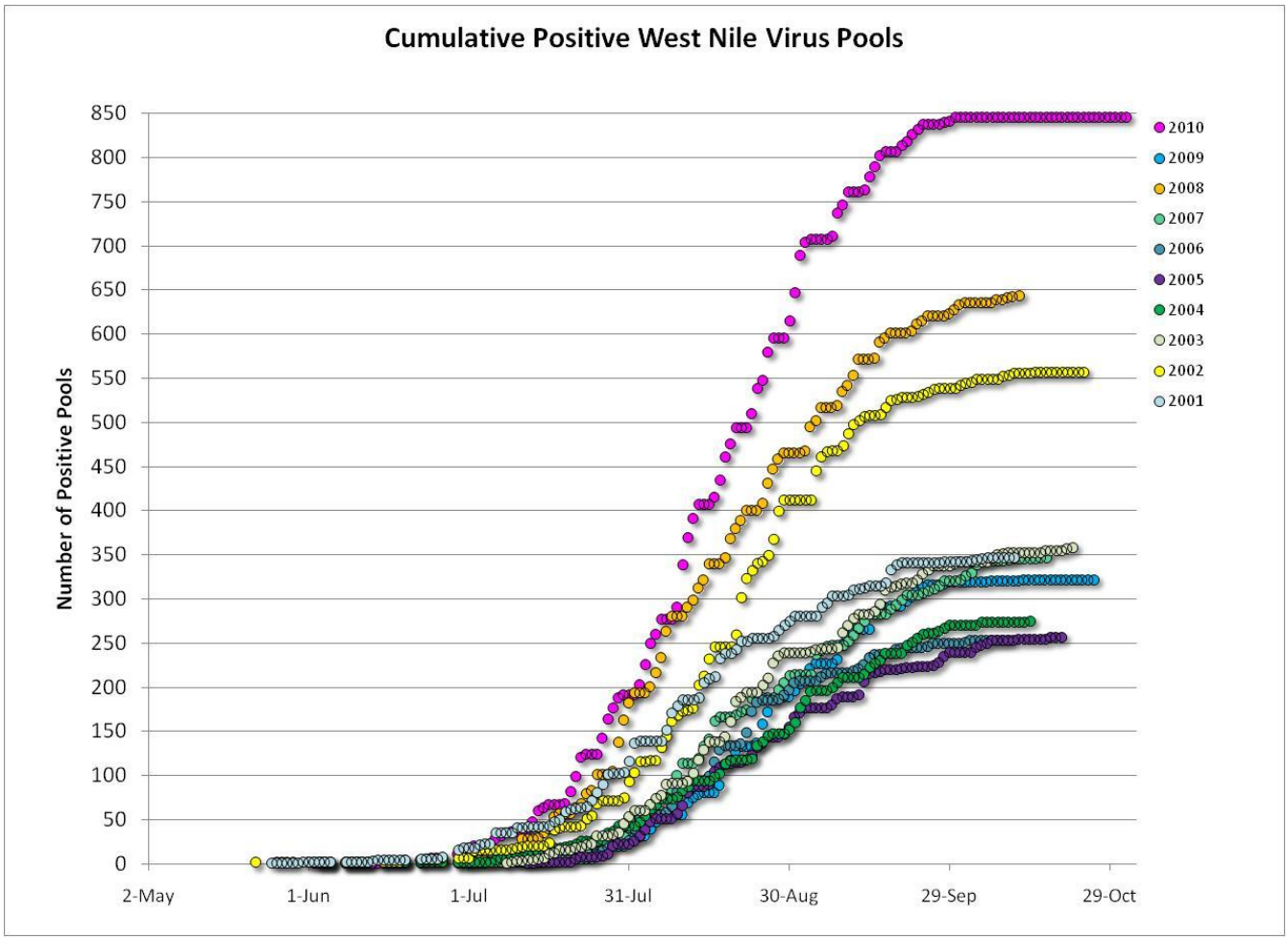
	Birds	Mosquito Pools	Sentinels	Horses	Humans
Montana		2			
Nebraska	9	111		0	39
Nevada	1/2	19		2	3
New Hampshire		1		0	1
New Jersey	129	846	0	2	29
New Mexico					17/20
New York	13/14	904/907		0	127/128
North Carolina			1	1	
North Dakota				3	8
Ohio		260		1	2/4
Oklahoma		3			
Oregon	0	3/4	0	0	0
Pennsylvania	20	1057		7	26/27
Rhode Island		2			
South Carolina		15/16			1
South Dakota		1/2			20
Tennessee	0	374/377		2	2/4
Texas	2	120/290		6	69
Utah		31	1	3	2
Vermont	1	9		0	0
Virginia		104	13		2
Washington	2	126		0	0
West Virginia	0	26		0	0
Wisconsin	4	3		0	1
Wyoming		16		1	6

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 1 Nov 2010

Species	Pools	Mosquitoes	Positives	MFIR
Aedes albopictus	704	3979	9	2.262
Aedes canadensis canadensis	29	485		
Aedes cantator	10	24		
Aedes japonicus	402	1807		
Aedes sollicitans	25	324		
Aedes sticticus	1	1		
Aedes stimulans	3	8		
Aedes taeniorhynchus	9	116		
Aedes triseriatus	179	388		
Aedes trivittatus	9	41		
Aedes vexans	151	1604		
Anopheles barberi	2	2		
Anopheles bradleyi	63	536		
Anopheles crucians	3	124		
Anopheles punctipennis	65	437		
Anopheles quadrimaculatus	128	1232		
Anopheles walkeri	5	29		
Coquillettidia perturbans	108	1655	1	0.604
Culex erraticus	190	4538		
Culex pipiens	1067	20170	173	8.577
Culex restuans	411	2005	6	2.993
Culex salinarius	85	1066	1	0.938
Culex spp.	3113	104116	641	6.157
Culex territans	3	4		
Culiseta inornata	1	1		
Culiseta melanura	670	12015	15	1.248
Culiseta minnesotae	2	2		
Orthopodomyia signifera	5	6		
Psorophora ciliata	1	1		
Psorophora columbiae	5	13		
Psorophora cyanescens	1	1		
Psorophora ferox	4	5		
Uranotaenia sapphirina	3	13		
State Total	**7457**	**156748**	**846**	**5.397**

Remarks: The number of positive WNV mosquito pools to date remains at 846. This year 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). The trend for new positive pools has leveled out.



Humans, Horses and Wild Birds: To date in 2010, twenty-nine human cases of West Nile virus have been detected (five additional from last week) and include the following counties: Atlantic (1 case), Burlington (2), Camden (7), Cumberland (1), Essex (4), Hudson (2), Mercer (3), 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.

No new positive birds detected this week. One hundred and twenty-nine dead, wild birds out of 241 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 115/160 corvids (25 positives/32 tested American Crows, 33/46 Fish Crows, 46/61 Blue Jays and 11/21 unidentified Crows), 2/8 Hawks (unknown species) and 12/73 unknown species. All three identified corvids show marked increases in mortality from 2009. In 2009, although Fish Crows were sent in about the same number as American Crows, they did not show positive for WNV. This year, Fish Crows were again positive (graph below).

2010 Positive Mosquito pools to date / Total Mosquito Pools Submitted	This time last year
846/ 7457 (11.3312/7652 %)	312 / 7652 (4.1%)
2010 Positive Birds to date / Total Birds Submitted	This time last year
129/ 241 (53.5%)	31/ 116 (26.7%)

WNV Results by County through 1 Nov 2010

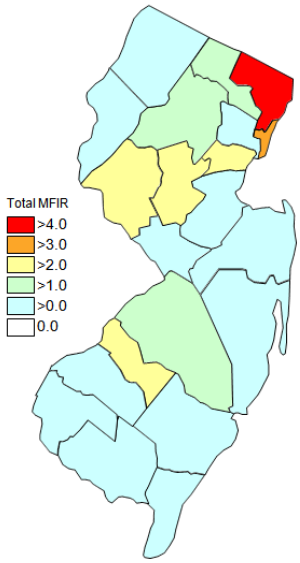
County	Species	Pools	Mosquitoes	Positives	MFIR
Atlantic		**292**	**6726**	**60**	**8.921**
	Aedes albopictus	36	312	1	3.205
	Aedes canadensis canadensis	3	56		
	Aedes cantator	3	14		
	Aedes japonicus	12	24		
	Aedes sollicitans	3	11		
	Aedes taeniorhynchus	1	24		
	Aedes triseriatus	4	8		
	Aedes trivittatus	3	26		
	Aedes vexans	30	448		
	Anopheles bradleyi	8	19		
	Anopheles punctipennis	7	110		
	Anopheles quadrimaculatus	5	9		
	Coquillettidia perturbans	10	37		
	Culex erraticus	8	28		
	Culex spp.	125	5125	57	11.122
	Culex territans	1	1		
	Culiseta melanura	32	473	2	4.228
	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		**342**	**9495**	**46**	**4.845**
	Aedes albopictus	30	289		
	Aedes canadensis canadensis	5	111		
	Aedes japonicus	4	17		
	Aedes sollicitans	6	185		
	Aedes taeniorhynchus	2	9		
	Aedes triseriatus	1	7		
	Aedes vexans	25	367		
	Anopheles bradleyi	8	190		
	Anopheles crucians	2	122		
	Anopheles punctipennis	1	13		
	Anopheles quadrimaculatus	4	11		
	Coquillettidia perturbans	9	352		
	Culex erraticus	18	637		
	Culex pipiens	8	107	1	9.346
	Culex restuans	1	1		
	Culex salinarius	9	51		
	Culex spp.	114	4181	42	10.045
	Culiseta melanura	95	2833	3	1.059
	Culiseta minnesotae	1	1		
	Psorophora columbiae	1	5		
	Uranotaenia sapphirina	1	6		
Camden		**262**	**5992**	**76**	**12.684**
	Aedes albopictus	45	152	3	19.737
	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.	139	4625	71	15.351
	Culex territans	1	2		
	Culiseta melanura	33	1068	2	1.873
	Orthopodomyia signifera	2	3		
	Psorophora columbiae	1	1		
	Uranotaenia sapphirina	2	7		
Cape May		**1955**	**19393**	**11**	**0.567**
	Aedes albopictus	132	234		
	Aedes canadensis canadensis	3	6		
	Aedes cantator	3	3		
	Aedes japonicus	51	84		
	Aedes sollicitans	10	81		
	Aedes taeniorhynchus	6	83		
	Aedes triseriatus	44	71		
	Aedes vexans	10	201		
	Anopheles bradleyi	36	312		
	Anopheles punctipennis	6	14		
	Anopheles quadrimaculatus	62	819		
	Coquillettidia perturbans	16	157		
	Culex erraticus	140	3764		
	Culex pipiens	614	6496	6	0.924
	Culex restuans	343	1476	2	1.355
	Culex salinarius	55	738	1	1.355
	Culex spp.	196	1445	1	0.692
	Culiseta melanura	228	3409	1	0.293
Cumberland		**81**	**720**	**1**	**1.389**
	Aedes albopictus	13	58		
	Aedes triseriatus	7	10		
	Anopheles bradleyi	3	4		
	Anopheles punctipennis	3	4		
	Anopheles quadrimaculatus	5	13		
	Culex erraticus	9	61		
	Culex pipiens	10	45		
	Culex restuans	6	15		
	Culex territans	1	1		
	Culiseta melanura	24	509	1	1.965
Essex		**337**	**3644**	**25**	**6.861**
	Aedes albopictus	58	195		
	Aedes japonicus	41	301		
	Aedes sollicitans	1	18		
	Aedes stimulans	1	3		
	Aedes triseriatus	21	42		
	Aedes vexans	26	155		
	Culex spp.	189	2930	25	8.532
Gloucester		**462**	**11421**	**117**	**10.244**

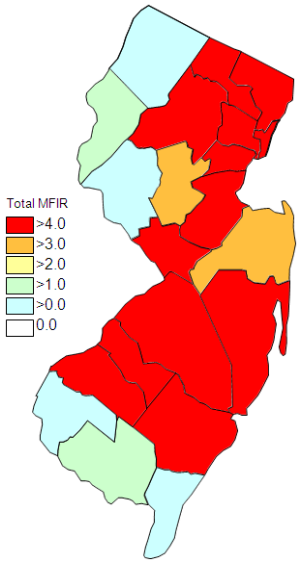
	Aedes albopictus	36	324	1	3.086
	Aedes japonicus	6	27		
	Aedes vexans	4	70		
	Anopheles barberi	1	1		
	Anopheles punctipennis	6	64		
	Anopheles quadrimaculatus	4	46		
	Coquillettidia perturbans	5	15	1	66.667
	Culex pipiens	291	9025	112	12.410
	Culiseta melanura	109	1849	3	1.622
Hudson		**232**	**11403**	**94**	**8.243**
	Aedes albopictus	1	25		
	Culex spp.	231	11378	94	8.262
Hunterdon		**300**	**12270**	**11**	**0.896**
	Aedes albopictus	2	61		
	Culex spp.	298	12209	11	0.901
Mercer		**241**	**5302**	**59**	**11.128**
	Aedes albopictus	52	143	1	6.993
	Aedes japonicus	25	38		
	Aedes triseriatus	4	5		
	Aedes vexans	3	75		
	Culex pipiens	105	4321	54	12.497
	Culex restuans	37	389	3	7.712
	Culex salinarius	12	264		
	Culex spp.	3	67	1	14.925
Middlesex		**266**	**10058**	**53**	**5.269**
	Aedes albopictus	11	74		
	Aedes japonicus	3	21		
	Aedes triseriatus	1	6		
	Culex spp.	251	9957	53	5.323
Monmouth		**373**	**2668**	**9**	**3.373**
	Aedes albopictus	70	428		
	Aedes canadensis canadensis	10	89		
	Aedes cantator	3	6		
	Aedes japonicus	43	112		
	Aedes sollicitans	4	27		
	Aedes triseriatus	14	22		
	Aedes vexans	7	14		
	Anopheles barberi	1	1		
	Anopheles crucians	1	2		
	Anopheles punctipennis	6	10		
	Anopheles quadrimaculatus	10	15		
	Coquillettidia perturbans	6	10		
	Culex erraticus	8	28		
	Culex pipiens	1	1		
	Culex restuans	3	5		
	Culex salinarius	2	2		
	Culex spp.	111	1123	8	7.124
	Culiseta melanura	70	770	1	1.299
	Orthopodomyia signifera	2	2		
	Psorophora cyanescens	1	1		

Morris		**251**	**7906**	**47**	**5.945**
	Aedes albopictus	4	17		
	Aedes japonicus	25	204		
	Aedes triseriatus	1	1		
	Aedes vexans	1	5		
	Anopheles punctipennis	2	6		
	Anopheles quadrimaculatus	3	82		
	Coquillettidia perturbans	6	207		
	Culex spp.	209	7384	47	6.365
Ocean		**331**	**4099**	**18**	**4.391**
	Aedes albopictus	86	1004	1	0.996
	Aedes canadensis canadensis	7	222		
	Aedes japonicus	34	98		
	Aedes sollicitans	1	2		
	Aedes sticticus	1	1		
	Aedes triseriatus	12	29		
	Aedes trivittatus	2	2		
	Aedes vexans	7	20		
	Anopheles bradleyi	4	6		
	Anopheles punctipennis	5	8		
	Anopheles quadrimaculatus	4	4		
	Coquillettidia perturbans	13	103		
	Culex erraticus	2	2		
	Culex pipiens	1	2		
	Culex restuans	6	7	1	142.857
	Culex salinarius	5	7		
	Culex spp.	101	2346	15	6.394
	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		**310**	**2708**	**1**	**0.369**
	Aedes albopictus	58	235		
	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		

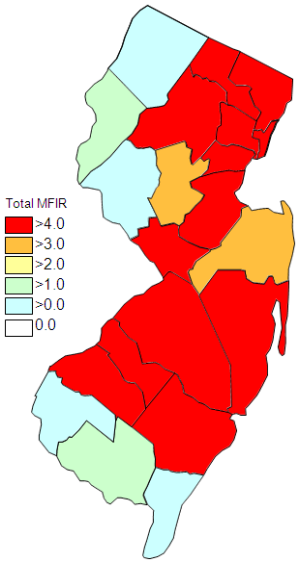
	Anopheles walkeri	4	5		
	Coquillettidia perturbans	11	22		
	Culex erraticus	3	10		
	Culex pipiens	12	26		
	Culex restuans	7	9		
	Culex spp.	84	1188		
	Culiseta melanura	27	840	1	1.190
	Psorophora columbiae	2	3		
Somerset		**266**	**3060**	**10**	**3.268**
	Aedes albopictus	16	54		
	Aedes japonicus	21	132		
	Aedes triseriatus	18	77		
	Anopheles punctipennis	11	35		
	Anopheles quadrimaculatus	2	4		
	Culex spp.	197	2754	10	3.631
Sussex		**403**	**9671**	**6**	**0.620**
	Aedes japonicus	51	399		
	Aedes stimulans	2	5		
	Aedes triseriatus	16	48		
	Coquillettidia perturbans	17	321		
	Culex pipiens	24	119		
	Culex restuans	8	103		
	Culex salinarius	2	4		
	Culex spp.	264	8639	6	0.695
	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		**216**	**6817**	**7**	**1.027**
	Aedes japonicus	3	6		
	Aedes triseriatus	5	18		
	Aedes trivittatus	2	11		
	Aedes vexans	7	48		
	Anopheles punctipennis	4	153		
	Anopheles quadrimaculatus	2	63		
	Anopheles walkeri	1	24		
	Coquillettidia perturbans	10	378		
	Culex spp.	180	6114	7	1.145
	Psorophora ciliata	1	1		
	Psorophora ferox	1	1		
Grand Total		**7457**	**156748**	**846**	**5.397**



Cumulative WNV activity in 2009.



WNV activity to 1 Nov, 2010.



WNV activity last week, 2010.

Saint Louis Encephalitis (SLE) through 1 Nov 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		**316**	**9238**		
	Aedes albopictus	30	289		
	Aedes canadensis canadensis	4	109		
	Aedes japonicus	4	17		
	Aedes sollicitans	6	185		
	Aedes taeniorhynchus	2	9		
	Aedes triseriatus	1	7		
	Aedes vexans	25	367		
	Anopheles bradleyi	8	190		
	Anopheles crucians	2	122		
	Anopheles punctipennis	1	13		
	Anopheles quadrimaculatus	3	10		
	Coquillettidia perturbans	9	352		
	Culex erraticus	17	635		
	Culex pipiens	8	107		
	Culex restuans	1	1		
	Culex salinarius	9	51		
	Culex spp.	113	4180		
	Culiseta melanura	70	2582		
	Culiseta minnesotae	1	1		
	Psorophora columbiae	1	5		
	Uranotaenia sapphirina	1	6		
Camden		**216**	**4771**		
	Aedes albopictus	41	125		

	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.	133	4529		
	Culex territans	1	2		
	Culiseta melanura	1	1		
	Orthopodomyia signifera	2	3		
	Psorophora columbiae	1	1		
	Uranotaenia sapphirina	2	7		
Essex		**298**	**3557**		
	Aedes albopictus	47	171		
	Aedes japonicus	37	291		
	Aedes sollicitans	1	18		
	Aedes triseriatus	6	13		
	Aedes vexans	18	134		
	Culex spp.	189	2930		
Hudson		**190**	**9703**		
	Aedes albopictus	1	25		
	Culex spp.	189	9678		
Salem		**1**	**7**		
	Culex spp.	1	7		
Sussex		**16**	**48**		
	Aedes triseriatus	16	48		
Grand Total		**1045**	**27343**		

La Crosse Encephalitis (LAC) through 1 Nov 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		**18**	**31**		
	Aedes triseriatus	18	31		

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		**40**	**152**		