VECTOR SURVEILLANCE IN NEW JERSEY

EEE, WNV, SLE, LAC, DENV and CHIK

Prepared by Lisa M. Reed, Scott Crans and Mark Robson
Center for Vector Biology, Rutgers University

CDC WEEK 27: 5 June to 11 July, 2015

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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**	0.33	0.00	5	4		
Green Bank (Burlington Co.)/25	**Coastal**	1.60	0.00	22	4		
Corbin City (Atlantic Co.)/25	**Coastal**	0.63	0.12	86 (89)	4 (5)		
Dennisville (Cape May Co.)/50	**Coastal**	3.18	0.40	120	5		
Winslow (Camden Co.)/50	**Inland**	0.95	2.08	649	16		
Centerton (Salem Co.)/50	**Inland**	2.27	1.00	336	10		
Turkey Swamp (Monmouth Co.)/50	**Inland**	0.66	0.14	65† (72)	5 (6)		
Glassboro (Gloucester Co.)/50	**Inland**	0.63	0.26	103	6		

*Current week (in parentheses) results pending. †site totals adjusted.

Remarks: No detection of EEE in the samples tested to date.

Traditional Resting Box Sites: No EEE positive *Cs. melanura* pools were detected at the state resting box sites since the season began. To date, 1386 *Cs. melanura* from 54 pools have been tested for EEE with an additional 2 pools containing 10 *Cs. melanura* to be tested.

Additional *Cs. melanura* trapped by counties *traps with positives indicated in **BOLD.**				
County	**Trap types***	**Number collected (pools)**	**Number of positive pools**	**MFIR**
Atlantic	CO_2	38 (5)		
Burlington	CO_2	700 (19)		
Cape May	GR, RB	8 (3)		
Cumberland	CO_2, RB	45 (6)		
Middlesex	RB	18 (2)		
Ocean	CO_2, GR, RB	30 (7)		
TOTAL		**839 (42)**		

Additional *Cs. melanura*: Counties maintain trap sites for *Cs. melanura* in other areas. Additional pools from these sites were not positive.

Species other than *Cs. melanura*	**Pools**	**Mosquitoes**	**Positives**	**MFIR**
Aedes cantator	2	8		
Aedes sollicitans	2	45		
Anopheles crucians	1	1		
Anopheles punctipennis	1	2		
Coquillettidia perturbans	25	633		
Culex pipiens	19	143		
Culex salinarius	3	68		
Culex sp.	3	5		
State Total	**56**	**905**		

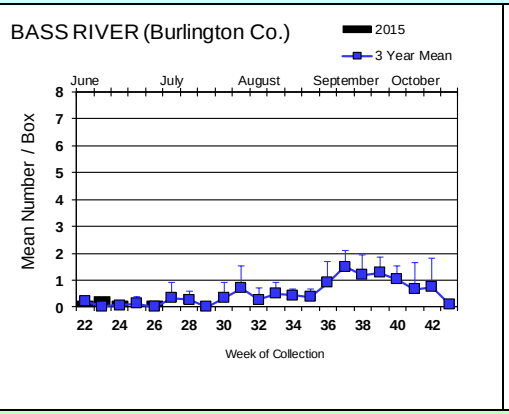
Additional Species: Seven (+) additional species were tested for EEE and no positives were detected.

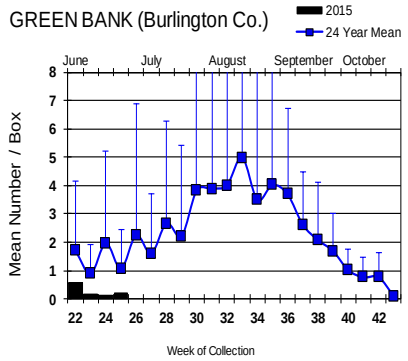
Horses and Humans: No horses or humans have been reported with EEE.

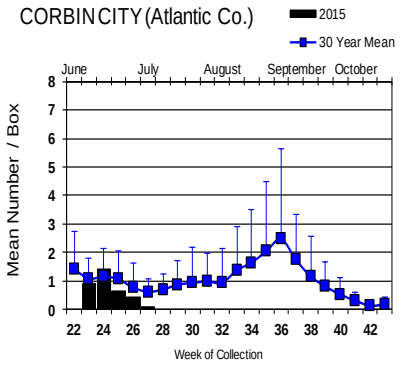
Horses and Vaccinations: The fate of unvaccinated equids reinforces the necessity of maintaining a vaccination schedule for arboviruses. For vaccination schedules recommended by the American Association of Equine Practices, see: http://www.aaep.org/vaccination_guidelines.htm

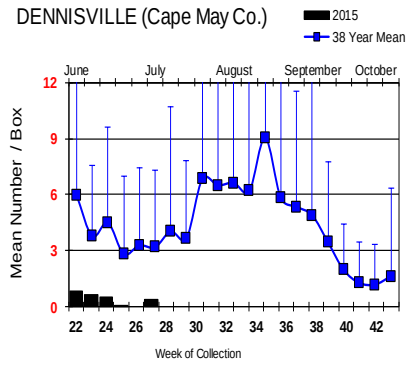
Culiseta melanura Population Graphs

Coastal

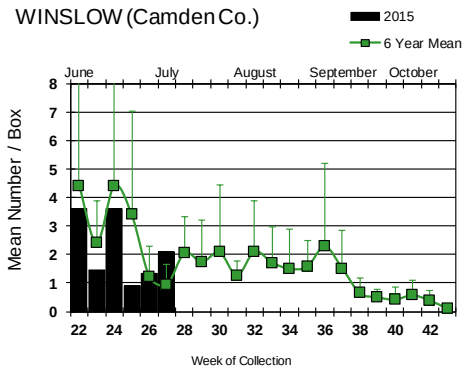


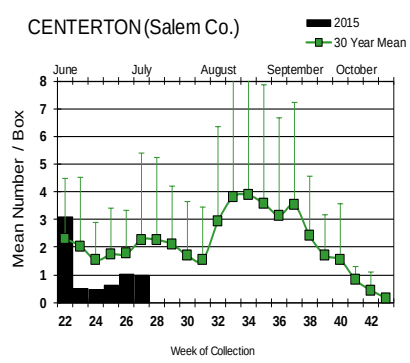


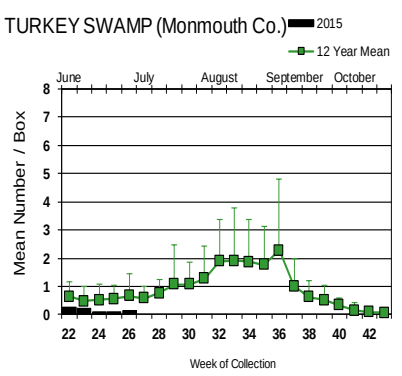


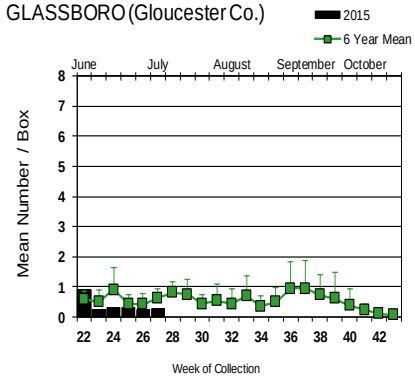


Inland









While most populations of *Cs. melanura* at the traditional resting box sites continued to be near or well below historical averages, the Winslow site had a population that was significantly above the historical mean. No positive pools detected to date.

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

EEE in US (2015 cumulative cases): (Black or Red = previous + new reported cases occurring)

- equine: FL(8/1goat) NC(1) VA(1)
- mosquito pools:
- sentinel: FL(35), TX(5)
- human:

West Nile Virus Positive Organisms in US, 2015

West Nile in US (2015 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					
Alaska					
Arizona	0	2		0	0
Arkansas				0	0
California	112/152	234/348	3		0
Colorado		2			1
Connecticut		0			0
Delaware					1
DC					0
Florida			10		
Georgia	0	0		0	0
Hawaii					
Idaho	0	2/8		0	0
Illinois	1	3/7		0	0
Indiana	0	3/5			0
Iowa		0		0	0
Kansas		0			2
Kentucky				0	
Louisiana					
Maine					
Maryland					
Mass.		0		0	0
Michigan	3				
Minnesota					
Mississippi		1		0	0
Missouri		1		0	0

	Birds	Mosquito Pools	Sentinels	Horses	Humans
Montana					
Nebraska	0	1		0	1
Nevada		7			
New Hampshire		0		0	0
New Jersey	2	2/6		0	0
New Mexico					1
New York		3			
North Carolina					
North Dakota	0	0		0	0
Ohio		2/5			
Oklahoma					3/4
Oregon	0	0	0	0	0
Pennsylvania	1	11/24			
Rhode Island		0		0	0
South Carolina					
South Dakota		1			1
Tennessee		6			
Texas		49/64			3
Utah		1			
Vermont					
Virginia					
Washington	2	5/16		0	1
West Virginia					
Wisconsin	3	0		0	0
Wyoming					

* 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 13 July 2015

Species	Pools	Mosquitoes	Positives	MFIR
Aedes albopictus	68	191		
Aedes atlanticus	1	6		
Aedes canadensis canadensis	10	102		
Aedes cantator	7	159		
Aedes grossbecki	4	23		
Aedes japonicus	63	386		
Aedes sollicitans	2	45		
Aedes triseriatus	8	66		
Aedes trivittatus	1	2		
Aedes vexans	10	216		
Anopheles crucians	1	1		
Anopheles punctipennis	5	13		
Anopheles quadrimaculatus	8	102		
Coquillettidia perturbans	26	634		
Culex erraticus	3	6		
Culex pipiens	75	2951		
Culex restuans	63	971		
Culex salinarius	5	104		
Culex sp.	496	18068	6	0.332
Culiseta melanura	97	2230		
Psorophora ciliata	3	20		
Psorophora columbiae	2	21		
Psorophora ferox	4	8		
Grand Total	**962**	**26325**	**6**	**0.228**

Remarks: To date, 962 pools of 26,325 mosquitoes from 22 species have been tested, with 6 positive pools detected, all in mixed *Culex* pools. First positive of the season occurred in Middlesex County, in a pool of mixed *Culex*, collected on the 22nd of June and second positive also in mixed *Culex* was collected in Somerset County on 24 June. Overall state MFIR is 0.228, up from the previous week of 0.115.

Humans, Horses and Wild Birds: No human cases of WNV have been reported. For further information, see http://www.state.nj.us/health/cd/westnile/techinfo.shtml.

No horse cases have been detected.

Bird testing began in mid-April. Two positive birds have been reported, both corvids. To date, 17 birds have been tested. Species includes: American Crow (*Corvus brachyrhynchos* 0/1) Fish Crow (*Corvus ossifragus* 1/7), Blue Jay (*Cyanocitta cristata* 1/2), Hawk/Raptor (0/1) and other avian species (0/6). Counties (positives) submitting birds are Atlantic, Burlington, Essex, Gloucester, Hunterdon, Mercer, Monmouth, Morris, Ocean, Salem and Warren.

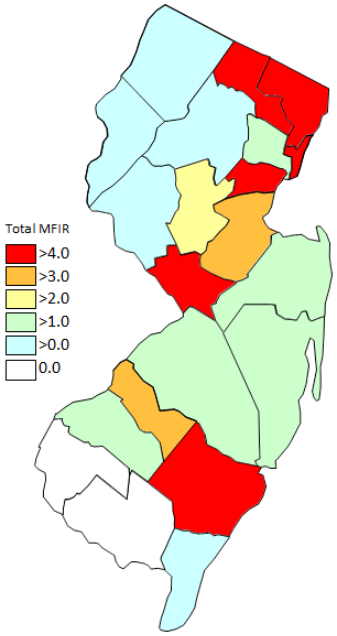
WNV Results by County through 13 July 2015

County	Species	Pools	Mosquitoes	Positives	MFIR
Atlantic		**43**	**1242**		
	Aedes albopictus	2	28		
	Aedes japonicus	4	6		
	Aedes vexans	1	4		

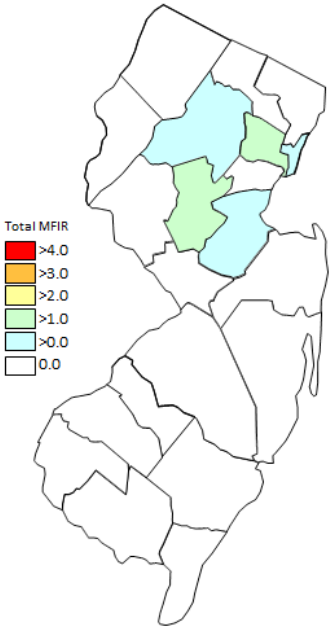
	Coquillettidia perturbans	10	398		
	Culex spp.	16	681		
	Culiseta melanura	9	124		
	Psorophora ferox	1	1		
Bergen		**10**	**705**		
	Aedes japonicus	1	30		
	Culex spp.	9	675		
Burlington		**45**	**1451**		
	Coquillettidia perturbans	1	1		
	Culex salinarius	2	66		
	Culex spp.	15	657		
	Culiseta melanura	27	727		
Camden		**66**	**2193**		
	Aedes albopictus	2	7		
	Aedes canadensis canadensis	2	12		
	Aedes cantator	1	1		
	Aedes japonicus	12	152		
	Anopheles punctipennis	1	1		
	Culex spp.	31	1370		
	Culiseta melanura	16	649		
	Psorophora ferox	1	1		
Cape May		**90**	**706**		
	Aedes canadensis canadensis	2	2		
	Aedes cantator	2	8		
	Aedes japonicus	20	65		
	Aedes triseriatus	1	1		
	Anopheles quadrimaculatus	4	75		
	Coquillettidia perturbans	5	154		
	Culex pipiens	19	143		
	Culex restuans	27	126		
	Culex salinarius	1	2		
	Culex spp.	1	2		
	Culiseta melanura	8	128		
Cumberland		**42**	**512**		
	Aedes albopictus	3	5		
	Aedes atlanticus	1	6		
	Aedes cantator	1	2		
	Aedes grossbecki	4	23		
	Aedes japonicus	1	6		
	Aedes sollicitans	2	45		
	Aedes triseriatus	1	4		
	Aedes trivitattus	1	2		
	Aedes vexans	4	205		
	Anopheles quadrimaculatus	3	23		
	Coquillettidia perturbans	3	50		
	Culex restuans	1	1		
	Culex spp.	6	54		
	Culiseta melanura	6	45		
	Psorophora ciliata	3	20		
	Psorophora columbiae	2	21		

Essex		**41**	**559**	**1**	**1.789**
	Aedes albopictus	1	1		
	Aedes japonicus	6	18		
	Culex spp.	32	534	1	1.873
	Psorophora ferox	2	6		
Gloucester		**61**	**2616**		
	Aedes albopictus	11	52		
	Aedes japonicus	1	16		
	Culex spp.	43	2445		
	Culiseta melanura	6	103		
Hudson		**41**	**1954**	**1**	**0.512**
	Culex spp.	41	1954	1	0.512
Hunterdon		**53**	**2650**		
	Culex spp.	53	2650		
Mercer		**62**	**1671**		
	Aedes albopictus	2	8		
	Aedes vexans	5	7		
	Coquillettidia perturbans	1	10		
	Culex pipiens	13	363		
	Culex restuans	34	843		
	Culex spp.	7	440		
Middlesex		**60**	**2465**	**2**	**0.811**
	Aedes albopictus	17	26		
	Culex spp.	41	2421	2	0.826
	Culiseta melanura	2	18		
Monmouth		**81**	**1600**		
	Aedes albopictus	16	27		
	Aedes canadensis canadensis	5	85		
	Aedes cantator	3	148		
	Aedes japonicus	1	7		
	Anopheles crucians	1	1		
	Anopheles punctipennis	2	4		
	Anopheles quadrimaculatus	1	4		
	Coquillettidia perturbans	1	1		
	Culex erraticus	3	6		
	Culex salinarius	2	36		
	Culex spp.	40	1211		
	Culiseta melanura	6	70		
Morris		**60**	**2225**	**1**	**0.449**
	Culex spp.	60	2225	1	0.449
Ocean		**53**	**502**		
	Aedes albopictus	12	35		
	Aedes canadensis canadensis	1	3		
	Aedes japonicus	9	37		
	Culex spp.	24	397		
	Culiseta melanura	7	30		

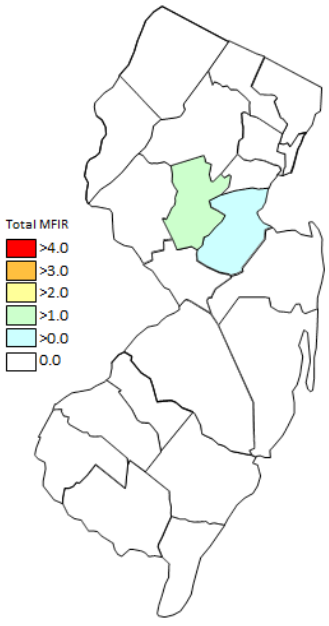
Salem	**28**	**490**		
Aedes albopictus	2	2		
Aedes japonicus	3	6		
Coquillettidia perturbans	5	20		
Culex restuans	1	1		
Culex spp.	7	125		
Culiseta melanura	10	336		
Somerset	**47**	**989**	**1**	**1.011**
Aedes japonicus	1	10		
Aedes triseriatus	1	4		
Anopheles punctipennis	1	4		
Culex spp.	44	971	1	1.030
Sussex	**49**	**1037**		
Aedes japonicus	4	33		
Aedes triseriatus	5	57		
Anopheles punctipennis	1	4		
Culex spp.	39	943		
Warren	**30**	**758**		
Culex spp.	30	758		
Grand Total	**962**	**26325**	**6**	**0.228**



Cumulative WNV activity in 2014.



WNV activity to 13 July 2015.



WNV activity last week, 2015.

Saint Louis Encephalitis (SLE) 2015.

New Jersey will be testing for SLE this year only when adjacent states show human activity. 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.

County	Species	Pools	Mosquitoes	Positives	MFIR
Grand Total					

La Crosse Encephalitis (LAC) 2015.

New Jersey will be testing for LAC this year only when adjacent states show human activity. 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).

County	Species	Pools	Mosquitoes	Positives	MFIR
Grand Total					

Dengue (DENV) to 13 July 2015.

New Jersey will be selectively testing for DENV (including serotypes) this year. Dengue has not had a history of local transmission here in New Jersey, but each year, travelers can bring virus back from areas in the world with virus activity. This is significant as humans are NOT dead-end hosts and thus there is the potential for local transmission (i.e., New Jersey mosquitoes biting a sick person and then biting and transmitting the disease to someone else) to be established. DENV is a flavivirus but unlike WNV, *Aedes* mosquitoes are predominant vectors. In New Jersey, *Aedes albopictus* is a candidate for local transmission. There are 4 serotypes tested for Dengue. There are currently 40 imported human cases in New Jersey, no local transmission.

Note Same pools of *Ae. albopictus* are tested for the four serotypes of Dengue as well as Chikungunya.

No pools have tested positive in 2015. Currently, there are 15 imported human cases reported in New Jersey.

County	Species	DENV1		DENV2		DENV3		DENV4		Positives	MFIR
		Pool	Mos.	Pool	Mos.	Pool	Mos.	Pool	Mos.		
Atlantic		**2**	**28**	**2**	**28**	**2**	**28**	**2**	**28**		
		2	28	2	28	2	28	2	28		
Camden		**1**	**5**	**1**	**5**	**1**	**5**	**1**	**5**		
		1	5	1	5	1	5	1	5		

Cumberland	**3**	**5**	**3**	**5**	**3**	**5**	**3**	**5**		
	3	5	3	5	3	5	3	5		
Gloucester	**11**	**52**	**11**	**52**	**11**	**52**	**11**	**52**		
	11	52	11	52	11	52	11	52		
Mercer	**2**	**8**	**2**	**8**	**2**	**8**	**2**	**8**		
	2	8	2	8	2	8	2	8		
Middlesex	**17**	**26**	**17**	**26**	**17**	**26**	**17**	**26**		
	17	26	17	26	17	26	17	26		
Monmouth	**16**	**27**	**16**	**27**	**16**	**27**	**16**	**27**		
	16	27	16	27	16	27	16	27		
Salem	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**		
	2	2	2	2	2	2	2	2		
Grand Total	**54**	**153**	**54**	**153**	**54**	**153**	**54**	**153**		

Chikungunya (CHIK) to 13 July 2015.

New Jersey will be selectively testing for CHIK this year. Chikungunya is similar in symptoms to Dengue, a "breakbone" fever and has a low mortality rate. But this virus has had recent worldwide activity, and in the past year has come to the Western Hemisphere. As with Dengue, transmission can occur when a mosquito bites an infected human, then bites an uninfected human who subsequently becomes ill. CHIK is an alphavirus with *Aedes* mosquitoes as potential vectors. In New Jersey, *Aedes albopictus* is the mosquito of interest.

No pools have tested positive in 2015. Currently, there are 13 imported human cases reported in New Jersey.

County	Species	Pools	Mosquitoes	Positives	MFIR
Atlantic		**2**	**28**		
	Aedes albopictus	2	28		
Camden		**1**	**5**		
	Aedes albopictus	1	5		
Cumberland		**3**	**5**		
	Aedes albopictus	3	5		
Gloucester		**11**	**52**		
	Aedes albopictus	11	52		
Mercer		**2**	**8**		
	Aedes albopictus	2	8		
Middlesex		**17**	**26**		
	Aedes albopictus	17	26		
Monmouth		**16**	**27**		

	Aedes albopictus	16	27		
Salem		**2**	**2**		
	Aedes albopictus	2	2		
Grand Total		**54**	**153**		