VECTOR SURVEILLANCE IN NEW JERSEY

EEE, WNV, SLE and LAC

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

CDC WEEK 30: July 21 – July 27, 2013

Data Downloaded 2:07 pm 29 July 2013

This New Jersey Agricultural Experiment Station report is supported by Rutgers University, Hatch funds, funding from the NJ State Mosquito Control Commission and with the participation of the Department of Health, Department of Agriculture and of the 21 county mosquito control agencies of New Jersey.

Culiseta melanura and Eastern Equine Encephalitis

SITE/Boxes	Inland / Coastal	Historic Population Mean	Current Weekly Mean	Total (Collected) Tested*	Total Pools (Submitted) Tested*	EEE Isolation Pools	MFIR
Bass River (Burlington Co.)/5	**Coastal**	0	1.00	11 (16)	4 (5)		
Green Bank (Burlington Co.)/25	**Coastal**	4.09	1.84	22 (68)	8 (9)		
Corbin City (Atlantic Co.)/25	**Coastal**	0.98	0.40	91 (101)	8 (9)		
Dennisville (Cape May Co.)/50	**Coastal**	7.11	1.60	112	7		
Winslow (Camden Co.)/50	**Inland**	0.90	6.80	1016	24		
Centerton (Salem Co.)/50	**Inland**	1.72	2.46	551	16		
Turkey Swamp (Monmouth Co.)/42	**Inland**	1.15	1.12	199 (246)	9 (10)		
Glassboro (Gloucester Co.)/50	**Inland**	0.43	0.64	226	9		

*Current week (in parentheses) results pending.

Remarks: Two additional positive EEE pools of *Cs. melanura* were detected in Cape May County, again from a resting box not from the traditional resting box sites. Both pools were collected on 22 July. A total of 3 positive pools have been detected to date, all from sites not part of the traditional resting box sites.

For counties accessing the West Nile database: Results from samples recently tested at the Cape May labs have been entered with quality control being conducted.

Traditional Resting Box Sites: To date 2228 *Cs. melanura* from 85 pools have been tested from the traditional resting box sites with an additional 4 pools of 108 mosquitoes to be tested. While other sites have produced positive pools, there has been no detection of EEE in samples collected at these sites.

Additional *Cs. melanura*: One hundred eight additional pools containing 3063 *Cs. melanura* have been tested from other sites using other traps in addition to resting boxes. A total of 3 positive *Cs. melanura* pools from Cape May County have been detected. 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.

Additional *Cs. melanura* trapped by counties *traps with positives indicated in **BOLD.**				
County	**Trap types***	**Number collected (pools)**	**Number of positives pools**	**MFIR**
Burlington	CO_2	2483 (43)		
Cape May	Gravid, RB	241 (21)	3	12.45*
Gloucester	RB	287 (24)		
Monmouth	CO_2	14 (2)		
Ocean	CO_2, RB	23 (14)		
Salem	CO_2	15 (4)		
TOTAL		**3063 (108)**	**3**	0.98*

Additional Species: The table below indicates non-*Cs. melanura* mosquitoes tested for EEE. Last year, *Culex erraticus*, a known enzootic vector and potential bridge vector, was found positive. Currently, no other species have been found positive.

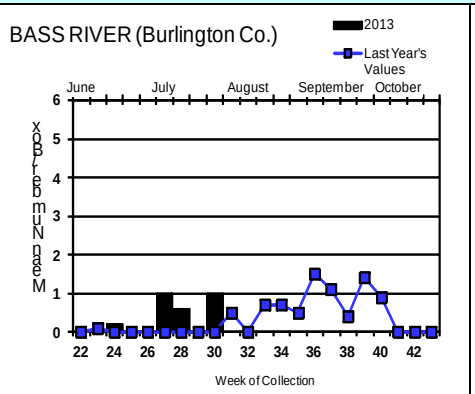
Species other than *Cs. melanura*	**Pools**	**Mosquitoes**	**Positives**	**MFIR**
Aedes atlanticus	1	44		
Aedes cantator	4	4		
Aedes sticticus	2	3		
Anopheles punctipennis	1	49		
Coquillettidia perturbans	2	80		
Culex erraticus	3	55		
Culex pipiens	62	660		
Culex restuans	2	2		
Culex salinarius	3	53		
Culex spp.	24	96		
State Total	**104**	**1046**	**0**	**0.00**

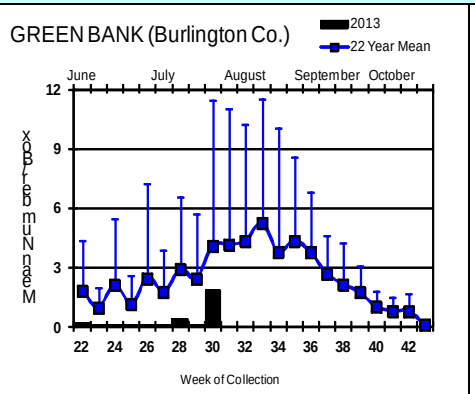
Horses and Humans: Currently there is no reported horse, other livestock or human cases.

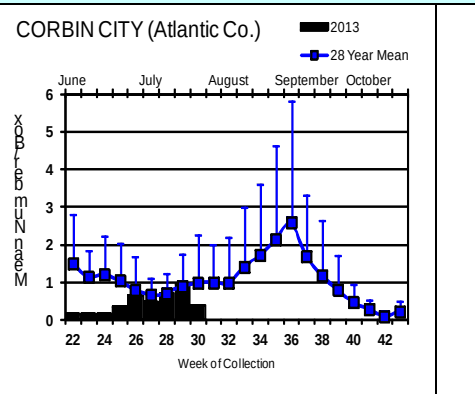
Horses and Vaccinations: The fate of unvaccinated equids reinforces the necessity of maintaining a vaccination schedule for arboviruses. For vaccination schedules recommended by the American Association of Equine Practices, see: http://www.aaep.org/vaccination_guidelines.htm

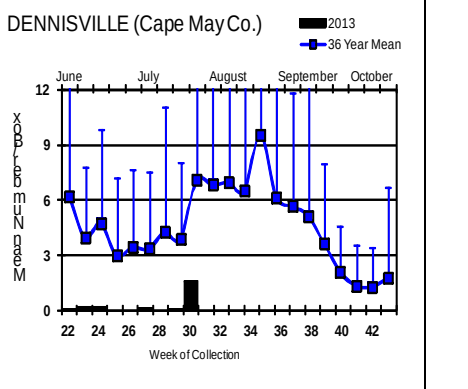
Culiseta melanura Population Graphs

Coastal

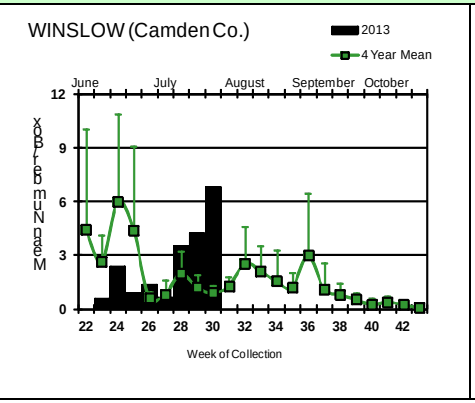


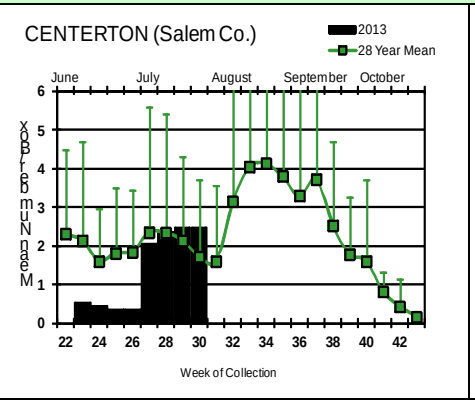


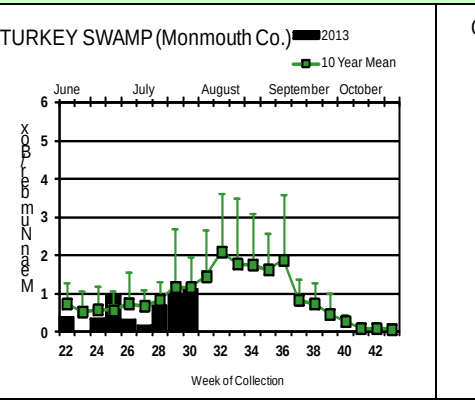


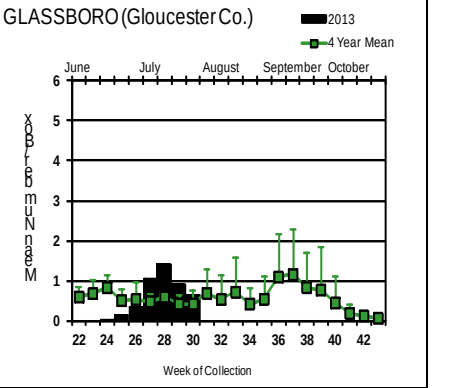


Inland









Cs. melanura numbers increased at several sites including Green Bank, Dennisville and Winslow. Activity appears to be well within historical values at most sites, with higher activity being seen in the Winslow site.

Note axis change (from 12 to 6) on Bass River, Corbin City, Centerton, Turkey Swamp and Glassboro sites.

= 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) 18(FL) 4(GA) 1(LA) 1(NC) 1(TX) 1(SC)
- mosquito pools: 2(CT) 3(NJ)
- sentinel: 7(AL) 70/3 wild(FL)
- human: 2(FL)

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					1
Alaska					
Arizona	0	98/103	0	0	3
Arkansas				0	0
California	228/323	555/761	27/76	0/2	1/4
Colorado		60/95			1
Connecticut		2			
Delaware			1		
DC		1			
Florida			49/51	1	
Georgia	0	3		0	1
Hawaii					
Idaho		20/31		1/2	1
Illinois	2/4	87/149		0	0
Indiana	0	10/27		0	1
Iowa		1	1		2
Kansas		0			0
Kentucky					
Louisiana		6/16	9/19	1	1
Maine		0		0	0
Maryland					
Mass.		10/24		0	0
Michigan	3			0	
Minnesota	1	2/5			1
Mississippi		10/15		0	7
Missouri		0		0	0

	Birds	Mosquito Pools	Sentinels	Horses	Humans
Montana				0	0
Nebraska		11/26			1/4
Nevada		4			5
New Hampshire					
New Jersey	0	23/57		0	0
New Mexico					1
New York		7/33		0	0
North Carolina					
North Dakota	1/2	6		0	1
Ohio		1		1	
Oklahoma					
Oregon	1	32	0	0	0
Pennsylvania	1/2	30/124		0	0
Rhode Island					
South Carolina					
South Dakota	1	24/109			4/7
Tennessee	0	83/105		0	1
Texas		25/39		1	2
Utah		12/13	0	0	0
Vermont		1			
Virginia					
Washington	0	2/3		0	1
West Virginia		9			
Wisconsin	10/17	0		0	1
Wyoming		3/6			

* 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 29 July 2013

Species	Pools	Mosquitoes	Positives	MFIR
Aedes albopictus	176	1329		
Aedes atlanticus	3	47		
Aedes atropalpus	1	1		
Aedes canadensis canadensis	33	725		
Aedes cantator	16	94		
Aedes grossbecki	1	1		
Aedes japonicus	174	1187		
Aedes sticticus	3	5		
Aedes taeniorhynchus	3	7		
Aedes triseriatus	30	100		
Aedes trivittatus	6	58		
Aedes vexans	24	371		
Anopheles bradleyi	3	6		
Anopheles punctipennis	14	112		
Anopheles quadrimaculatus	14	147		
Coquillettidia perturbans	8	141		
Culex erraticus	6	65		
Culex pipiens	269	8771	5	0.570
Culex restuans	191	2470	2	0.810
Culex salinarius	7	71		
Culex spp.	1420	61498	50	0.813
Culex territans	1	1		
Culiseta melanura	204	5297		
Psorophora ciliata	1	1		
Psorophora columbiae	11	141		
Psorophora ferox	16	292		
Psorophora howardii	1	10		
State Total	**2636**	**82948**	**57**	**0.687**

Remarks: To date, 2636 pools of 82948 mosquitoes from 26 species have been tested. First positive was detected in a pool collected on 26 June in Middlesex County. All positive pools continue to be from ornithophilic *Culex* Mixed (*Culex pipiens, Cx. restuans, Cx. salinarius*), or pools of *Cx. pipiens* or *Cx. restuans*. Currently, positive pools are from 16 counties (Bergen, Burlington, Camden, Cape May, Gloucester, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union and Warren). As with the EEE data, these tables may be incomplete as there could be data being entered into the West Nile database could be revised.

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

Last year the first horse was detected in mid July. No horse or other livestock have been reported positive in 2013 to date.

Bird testing began in mid-April. Three positive birds have been reported, all corvids. To date, 61 birds have been tested. Testing includes: American Crow (*Corvus brachyrhynchos* 0/3), Fish Crow (*C. ossifragus* 1/9), unidentified Crow (*Corvus* spp. 1/2), Blue Jay (*Cyanocitta cristata* 1/5), Hawk/Raptor (0/6) and other avian species (0/36). Counties submitting birds are Bergen, Burlington, Cape May, Cumberland, Essex, Gloucester, Hunterdon, Mercer, Monmouth, Morris, Ocean, Salem, Sussex, Union and Warren.

2013 Positive Mosquito pools to date / Total Mosquito Pools Submitted	This time last year
57 / 2636 (0.022)	385 / 3731 (0.103)
2013 Positive Birds to date / Total Birds Submitted	This time last year
3 / 61 (0.049)	28 / 107 (0.262)

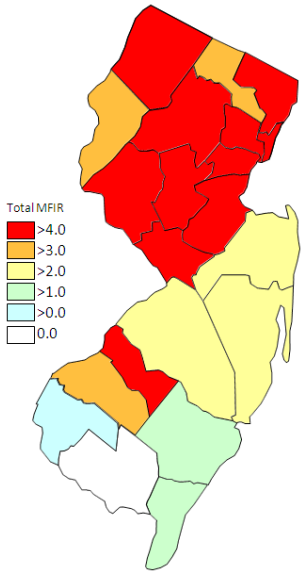
WNV Results by County through 29 July 2013

County	Species	Pools	Mosquitoes	Positives	MFIR
Atlantic		**72**	**1390**		
	Aedes albopictus	5	35		
	Aedes canadensis canadensis	3	73		
	Aedes cantator	3	36		
	Aedes grossbecki	1	1		
	Aedes japonicus	4	13		
	Aedes sticticus	2	3		
	Aedes taeniorhynchus	2	6		
	Aedes triseriatus	2	8		
	Aedes vexans	5	137		
	Anopheles bradleyi	2	5		
	Anopheles punctipennis	1	11		
	Anopheles quadrimaculatus	1	3		
	Coquillettidia perturbans	3	25		
	Culex spp.	22	779		
	Culiseta melanura	11	123		
	Psorophora ciliata	1	1		
	Psorophora columbiae	1	1		
	Psorophora ferox	2	120		
	Psorophora howardii	1	10		
Bergen		**75**	**4732**	**7**	**1.479**
	Aedes japonicus	3	32		
	Culex spp.	72	4700	7	1.489
Burlington		**112**	**4774**	**3**	**0.628**
	Aedes albopictus	1	27		
	Aedes atlanticus	1	44		
	Aedes japonicus	3	21		
	Coquillettidia perturbans	1	71		
	Culex pipiens	2	15		
	Culex restuans	1	1		
	Culex salinarius	1	51		
	Culex spp.	47	2028	3	1.479
	Culiseta melanura	55	2516		
Camden		**124**	**4763**	**9**	**1.890**
	Aedes albopictus	12	63		
	Aedes japonicus	8	35		
	Culex spp.	80	3649	9	2.466
	Culiseta melanura	24	1016		
Cape May		**419**	**3647**	**3**	**0.823**
	Aedes albopictus	17	32		

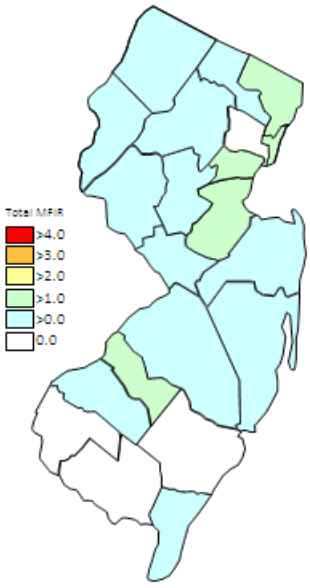
	Aedes atropalpus	1	1		
	Aedes canadensis canadensis	1	1		
	Aedes cantator	5	5		
	Aedes japonicus	35	65		
	Aedes triseriatus	5	5		
	Aedes vexans	1	1		
	Anopheles punctipennis	1	1		
	Anopheles quadrimaculatus	7	125		
	Culex erraticus	4	58		
	Culex pipiens	121	1348	3	2.226
	Culex restuans	168	1688		
	Culex salinarius	2	2		
	Culex spp.	25	87		
	Culex territans	1	1		
	Culiseta melanura	25	227		
Essex		**80**	**1334**		
	Aedes albopictus	25	87		
	Aedes japonicus	25	258		
	Culex spp.	30	989		
Gloucester		**197**	**8328**	**2**	**0.240**
	Aedes albopictus	11	302		
	Aedes japonicus	12	173		
	Aedes triseriatus	1	30		
	Aedes vexans	2	87		
	Anopheles punctipennis	3	81		
	Coquillettidia perturbans	1	29		
	Culex pipiens	127	6995	2	0.286
	Culiseta melanura	37	543		
	Psorophora ferox	3	88		
Hudson		**68**	**2645**	**3**	**1.134**
	Culex spp.	68	2645	3	1.134
Hunterdon		**140**	**6502**	**1**	**0.154**
	Culex spp.	140	6502	1	0.154
Mercer		**80**	**1822**	**2**	**1.098**
	Aedes albopictus	23	214		
	Aedes japonicus	7	38		
	Aedes triseriatus	2	4		
	Aedes vexans	3	103		
	Culex pipiens	17	411		
	Culex restuans	19	778	2	2.571
	Culex salinarius	1	5		
	Culex spp.	8	269		
Middlesex		**113**	**4795**	**9**	**1.877**
	Aedes albopictus	2	12		
	Aedes japonicus	4	20		
	Culex spp.	107	4763	9	1.890
Monmouth		**166**	**1966**	**1**	**0.509**
	Aedes albopictus	22	122		

	Aedes atlanticus	2	3		
	Aedes canadensis canadensis	15	245		
	Aedes cantator	6	20		
	Aedes japonicus	18	74		
	Aedes taeniorhynchus	1	1		
	Aedes triseriatus	9	30		
	Aedes trivittatus	5	8		
	Aedes vexans	5	14		
	Anopheles punctipennis	4	10		
	Coquillettidia perturbans	1	5		
	Culex erraticus	1	6		
	Culex restuans	2	2		
	Culex spp.	49	1061	1	0.943
	Culiseta melanura	17	253		
	Psorophora columbiae	3	68		
	Psorophora ferox	6	44		
Morris		**169**	**7528**	**2**	**0.266**
	Culex spp.	169	7528	2	0.266
Ocean		**149**	**2069**	**1**	**0.483**
	Aedes albopictus	34	296		
	Aedes canadensis canadensis	13	393		
	Aedes cantator	2	33		
	Aedes japonicus	20	69		
	Aedes triseriatus	1	2		
	Aedes vexans	6	13		
	Anopheles punctipennis	2	3		
	Coquillettidia perturbans	1	2		
	Culex salinarius	3	13		
	Culex spp.	53	1222	1	0.818
	Culiseta melanura	14	23		
Passaic		**96**	**3641**	**1**	**0.275**
	Aedes albopictus	7	31		
	Aedes japonicus	8	115		
	Aedes triseriatus	3	5		
	Aedes trivittatus	1	50		
	Anopheles punctipennis	1	1		
	Culex spp.	75	3438	1	0.291
	Psorophora ferox	1	1		
Salem		**98**	**1412**		
	Aedes albopictus	12	60		
	Aedes japonicus	11	59		
	Aedes sticticus	1	2		
	Aedes triseriatus	7	16		
	Anopheles bradleyi	1	1		
	Anopheles punctipennis	2	5		
	Anopheles quadrimaculatus	6	19		
	Coquillettidia perturbans	1	9		
	Culex erraticus	1	1		
	Culex pipiens	2	2		
	Culex restuans	1	1		
	Culex spp.	22	560		
	Culiseta melanura	20	566		

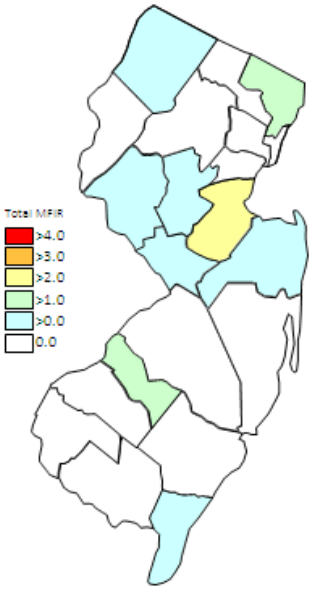
	Psorophora columbiae	7	72		
	Psorophora ferox	4	39		
Somerset		**133**	**4044**	**2**	**0.495**
	Aedes albopictus	3	23		
	Aedes japonicus	13	130		
	Aedes vexans	2	16		
	Culex spp.	115	3875	2	0.516
Sussex		**115**	**5012**	**2**	**0.399**
	Aedes japonicus	2	64		
	Culex spp.	112	4918	2	0.407
	Culiseta melanura	1	30		
Union		**87**	**4904**	**8**	**1.631**
	Aedes albopictus	2	25		
	Aedes japonicus	1	21		
	Culex spp.	84	4858	8	1.647
Warren		**143**	**7640**	**1**	**0.131**
	Aedes canadensis canadensis	1	13		
	Culex spp.	142	7627	1	0.131
Grand Total		**2636**	**82948**	**57**	**0.687**



Cumulative WNV activity in 2012.



WNV activity to 29 July 2013.



WNV activity last week, 2013.

Saint Louis Encephalitis (SLE) to 29 July 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		**13**	**480**		
	Aedes albopictus	1	27		
	Aedes japonicus	1	8		
	Culex pipiens	11	445		
Cape May		**58**	**642**		
	Culex pipiens	58	642		
Grand Total		**71**	**1122**		

La Crosse Encephalitis (LAC) through 29 July 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
Cape May		**2**	**2**		
	Aedes triseriatus	2	2		
Salem		**5**	**14**		
	Aedes triseriatus	5	14		
Grand Total		**7**	**16**		