

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 31: 2 August to 8 August, 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	0.70	0.00	8	6		
Green Bank (Burlington Co.)/25	Coastal	3.89	1.84	46 (59)	7 (8)		
Corbin City (Atlantic Co.)/25	Coastal	0.99	0.44	142 (153)	8 (9)		
Dennisville (Cape May Co.)/50	Coastal	6.49	0.00	197	8		
Winslow (Camden Co.)/50	Inland	1.27	1.18	965	24	1	1.04
Centerton (Salem Co.)/50	Inland	1.54	0.38	542	17		
Turkey Swamp (Monmouth Co.)/49	Inland	1.07	0.51	134 (159)	9 (10)		
Glassboro (Gloucester Co.)/50	Inland	0.53	0.18	135	10		

*Current week (in parentheses) results pending.

Remarks: A total of two positive mosquito pools for EEE have been detected in NJ. First detection of EEE in a pool of *Culiseta melanura* was collected at the Winslow resting box site on the 27th of July. Current MFIR at that resting box site is 1.04. An additional positive pool of *Culiseta melanura* was collected at a county resting box site on 3 Aug.

Traditional Resting Box Sites: One EEE positive *Cs. melanura* pools has been detected at the state resting box sites to date. 2169 *Cs. melanura* from 89 pools have been tested for EEE with an additional 3 pools containing 49 *Cs. melanura* to be tested. MFIR for the traditional resting box sites is 0.46 with an overall state MFIR of 0.29.

		Additional <i>Cs. melanura</i> trapped by counties *traps with positives indicated in BOLD .			
County	Trap types*	Pools	Mosquitoes	Positives	MFIR
Atlantic	CO ₂	8	72		
Burlington	CO₂	38	1545	1	0.65
Cape May	GR, RB	23	167		
Cumberland	CO ₂ , RB	8	68		
Middlesex	RB	5	38		
Ocean	CO ₂ , GR, RB	9	36		
TOTAL		91	1926	1	0.52

Additional *Cs. melanura*: Counties maintain trap sites for *Cs. melanura* in other areas. One additional pool from Burlington County, collected from a CO₂ trap on 3 August was positive.

Species other than <i>Cs. melanura</i>	Pools	Mosquitoes	Positives	MFIR
<i>Aedes cantator</i>	16	26		
<i>Aedes sollicitans</i>	6	231		
<i>Anopheles bradleyi</i>	3	5		
<i>Anopheles crucians</i>	1	1		
<i>Anopheles punctipennis</i>	5	17		
<i>Anopheles quadrimaculatus</i>	2	51		
<i>Coquillettidia perturbans</i>	47	1070		
<i>Culex erraticus</i>	2	2		
<i>Culex pipiens</i>	103	809		
<i>Culex restuans</i>	2	2		
<i>Culex salinarius</i>	23	456		
<i>Culex</i> sp.	9	19		
State Total	219	2689		

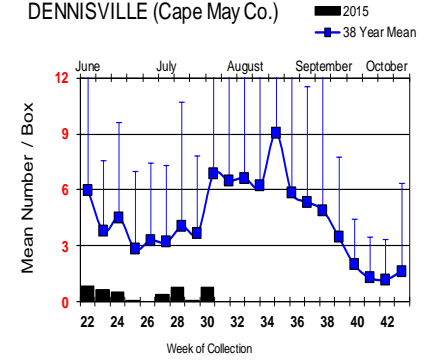
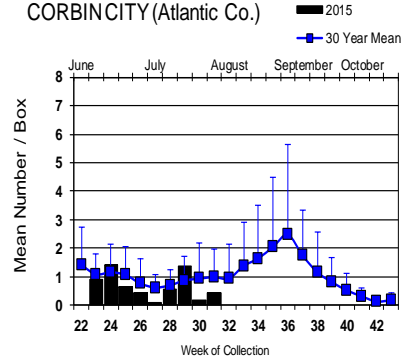
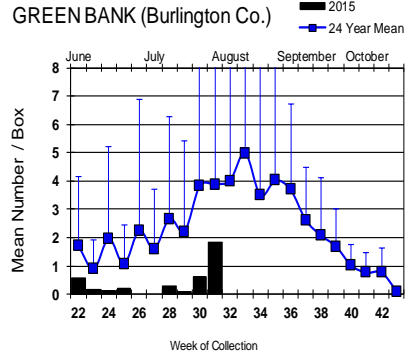
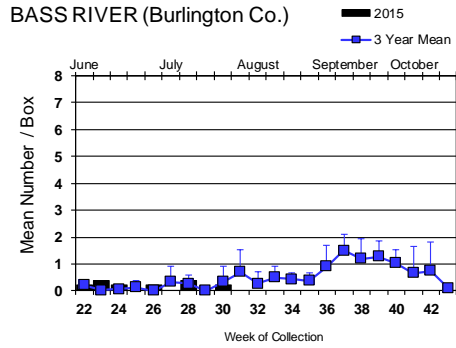
Additional Species: Eleven additional species were tested for EEE and no positives were detected.

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

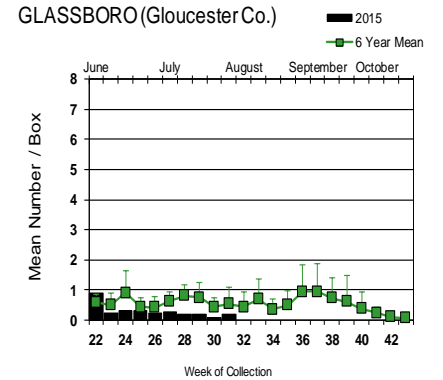
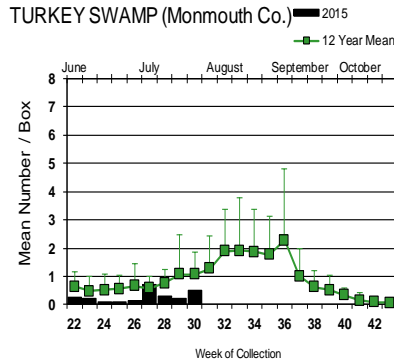
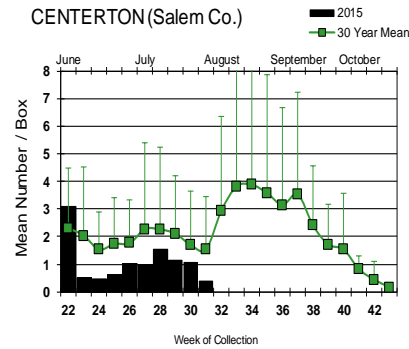
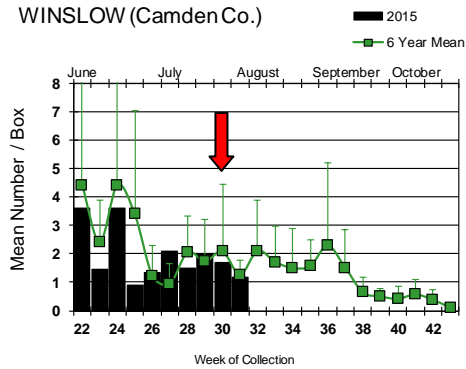
Horses and Vaccinations: The fate of unvaccinated equids reinforces the necessity of maintaining a vaccination schedule for arboviruses. For vaccination schedules recommended by the American Association of Equine Practices, see: http://www.aaep.org/vaccination_guidelines.htm

Culiseta melanura Population Graphs

Coastal



Inland



Populations of *Cs. melanura* at the traditional resting box sites continue to remain at or well below their averages. First detection of a EEE positive pool in *Cs. melanura* has occurred at the Winslow site, sampled on 27th July. A second positive collected on 3 Aug at a supplemental county site also has occurred.

= 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(18/1goat) LA(1) MS(2) NC(1) SC(3) TX(6) VA(1)
- mosquito pools: NJ (2) NY(13)
- sentinel: FL(56), TX(16)
- human: LA (1)

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					1
Alaska					
Arizona	0	59		0	6/17
Arkansas				0	1/2
California	301/362	1058/1333	45/90		8/18
Colorado	3	30		2	3
Connecticut		5/16			0
Delaware	1/2				1
DC					0
Florida		6	33		3
Georgia	0	0		0	0
Hawaii					
Idaho	0	12		1	2
Illinois	4	16		0	0
Indiana	0	41/63			0
Iowa		0		0	1
Kansas		0			4
Kentucky				0	
Louisiana	3	178/251			4/11
Maine					
Maryland					
Mass.		37/49		0	0
Michigan	5/10	2/3			
Minnesota	2	1			
Mississippi		25/26		0	3/7
Missouri		1		0	0

	Birds	Mosquito Pools	Sentinels	Horses	Humans
Montana					1
Nebraska	0	32/50		0	5
Nevada		63			
New Hampshire		0		0	0
New Jersey	2/7	116/136		0	2
New Mexico					1
New York		12/36			
North Carolina					
North Dakota	0	4		1	1
Ohio		28			2
Oklahoma		2			8/11
Oregon	0	7	0	0	0
Pennsylvania	3/5	565/784			1
Rhode Island		0		0	0
South Carolina					
South Dakota		1/7			2/5
Tennessee		117			1
Texas	3	483		2	9
Utah		22/32			
Vermont		4/6			
Virginia					
Washington	2	62/85		6	8
West Virginia					
Wisconsin	8	0		0	0
Wyoming					1

* 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 10 August 2015

Species	Pools	Mosquitoes	Positives	MFIR
<i>Aedes albopictus</i>	366	2549	1	0.392
<i>Aedes atlanticus</i>	1	6		
<i>Aedes canadensis canadensis</i>	16	166		
<i>Aedes cantator</i>	22	196		
<i>Aedes grossbecki</i>	9	40		
<i>Aedes japonicus</i>	162	1051		
<i>Aedes sollicitans</i>	6	231		
<i>Aedes taeniorhynchus</i>	3	35		
<i>Aedes triseriatus</i>	41	134		
<i>Aedes trivittatus</i>	3	4		
<i>Aedes vexans</i>	31	597		
<i>Anopheles bradleyi</i>	4	20		
<i>Anopheles crucians</i>	1	1		
<i>Anopheles punctipennis</i>	21	69		
<i>Anopheles quadrimaculatus</i>	32	557		
<i>Coquilletidia perturbans</i>	52	1123		
<i>Culex erraticus</i>	9	60		
<i>Culex pipiens</i>	225	7325	12	1.638
<i>Culex restuans</i>	187	1652	2	1.211
<i>Culex salinarius</i>	25	492		
<i>Culex sp.</i>	1220	49357	118	2.391
<i>Culex territans</i>	4	6		
<i>Culiseta melanura</i>	183	4111	3	0.730
<i>Psorophora ciliata</i>	3	20		
<i>Psorophora columbiae</i>	7	206		
<i>Psorophora ferox</i>	5	12		
Grand Total	2638	70020	136	1.942

Remarks: To date, 2638 pools of 70,020 mosquitoes from 25 species have been tested, with 136 positive pools detected, most in ornithophilic *Culex/Culiseta* pools. First positive of the season occurred in Middlesex County, in a pool of mixed *Culex*, collected on the 22nd of June. First positive pool in non-*Culex* was in an *Aedes albopictus* pool, collected in Monmouth County on 10 July. First positive pool in a non-*Culex* ornithophilic species was found in *Culiseta melanura* in Cape May 21 July. Overall state MFIR is 1.942, up from the previous week of 1.797.

Humans, Horses and Wild Birds: Two human cases of WNV have been reported, one each in Burlington and Camden counties. 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. Seven positive birds have been reported, mostly corvids. To date, 32 birds have been tested. Species includes: American Crow (*Corvus brachyrhynchos* 3/4) Fish Crow (*Corvus ossifragus* 1/9), Blue Jay (*Cyanocitta cristata* 1/3), unidentified corvid (1/2), Hawk/Raptor (0/1) and other avian species (1/13). Counties (positives) submitting birds are Atlantic, Bergen, **Burlington**, **Cumberland**, Essex, **Gloucester**, Hunterdon, Mercer, Monmouth, Morris, Ocean, Salem and Warren.

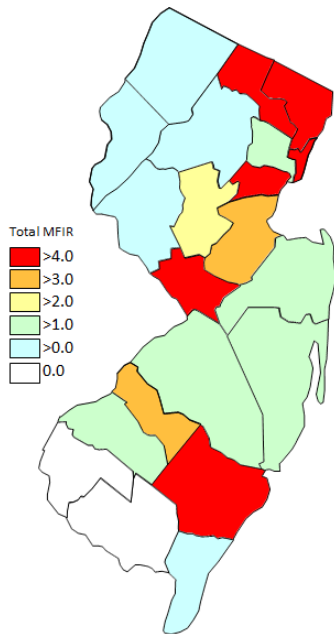
WNV Results by County through 10 August 2015

County	Species	Pools	Mosquitoes	Positives	MFIR
Atlantic		100	2964		
	<i>Aedes albopictus</i>	15	112		
	<i>Aedes japonicus</i>	7	30		
	<i>Aedes taeniorhynchus</i>	1	5		
	<i>Aedes vexans</i>	5	231		
	<i>Coquillettidia perturbans</i>	14	415		
	<i>Culex</i> spp.	41	1956		
	<i>Culiseta melanura</i>	16	214		
	<i>Psorophora ferox</i>	1	1		
Bergen		55	3800	14	3.684
	<i>Aedes japonicus</i>	5	175		
	<i>Culex</i> spp.	50	3625	14	3.862
Burlington		92	3142	4	1.273
	<i>Aedes albopictus</i>	3	59		
	<i>Aedes japonicus</i>	1	15		
	<i>Coquillettidia perturbans</i>	1	1		
	<i>Culex salinarius</i>	4	152		
	<i>Culex</i> spp.	32	1316	4	3.040
	<i>Culiseta melanura</i>	51	1599		
Camden		138	4809	15	3.119
	<i>Aedes albopictus</i>	6	16		
	<i>Aedes canadensis canadensis</i>	2	12		
	<i>Aedes cantator</i>	1	1		
	<i>Aedes japonicus</i>	29	304		
	<i>Anopheles punctipennis</i>	2	6		
	<i>Culex</i> spp.	71	3499	13	3.715
	<i>Culiseta melanura</i>	25	966	2	2.070
	<i>Psorophora ferox</i>	2	5		
Cape May		463	2939	5	1.701
	<i>Aedes albopictus</i>	19	28		
	<i>Aedes canadensis canadensis</i>	5	5		
	<i>Aedes cantator</i>	16	26		
	<i>Aedes japonicus</i>	53	130		
	<i>Aedes triseriatus</i>	21	27		
	<i>Aedes vexans</i>	2	5		
	<i>Anopheles bradleyi</i>	3	5		
	<i>Anopheles punctipennis</i>	5	5		
	<i>Anopheles quadrimaculatus</i>	26	513		
	<i>Coquillettidia perturbans</i>	14	420		
	<i>Culex erraticus</i>	2	2		
	<i>Culex pipiens</i>	103	809	3	3.708
	<i>Culex restuans</i>	139	532	1	1.880
	<i>Culex salinarius</i>	14	48		
	<i>Culex</i> spp.	6	14		
	<i>Culex territans</i>	4	6		
	<i>Culiseta melanura</i>	31	364	1	2.747

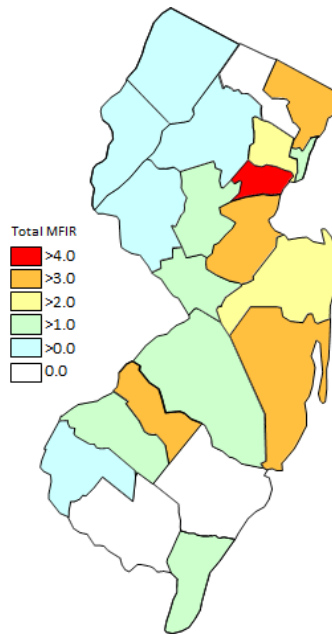
Cumberland	91	1646		
<i>Aedes albopictus</i>	9	25		
<i>Aedes atlanticus</i>	1	6		
<i>Aedes canadensis canadensis</i>	2	53		
<i>Aedes cantator</i>	1	2		
<i>Aedes grossbecki</i>	9	40		
<i>Aedes japonicus</i>	1	6		
<i>Aedes sollicitans</i>	6	231		
<i>Aedes taeniorhynchus</i>	2	30		
<i>Aedes triseriatus</i>	1	4		
<i>Aedes trivittatus</i>	1	2		
<i>Aedes vexans</i>	9	274		
<i>Anopheles bradleyi</i>	1	15		
<i>Anopheles punctipennis</i>	1	13		
<i>Anopheles quadrimaculatus</i>	3	23		
<i>Coquillettidia perturbans</i>	7	60		
<i>Culex restuans</i>	1	1		
<i>Culex salinarius</i>	5	256		
<i>Culex</i> spp.	14	332		
<i>Culiseta melanura</i>	9	78		
<i>Psorophora ciliata</i>	3	20		
<i>Psorophora columbiae</i>	5	175		
Essex	99	1751	5	2.856
<i>Aedes albopictus</i>	2	4		
<i>Aedes japonicus</i>	13	30		
<i>Aedes trivittatus</i>	1	1		
<i>Anopheles punctipennis</i>	1	2		
<i>Anopheles quadrimaculatus</i>	2	17		
<i>Culex</i> spp.	78	1691	5	2.957
<i>Psorophora ferox</i>	2	6		
Gloucester	188	6565	8	1.219
<i>Aedes albopictus</i>	75	536		
<i>Aedes japonicus</i>	4	35		
<i>Aedes triseriatus</i>	1	3		
<i>Coquillettidia perturbans</i>	1	2		
<i>Culex pipiens</i>	97	5854	8	1.367
<i>Culiseta melanura</i>	10	135		
Hudson	89	4038	8	1.981
<i>Aedes albopictus</i>	9	138		
<i>Culex</i> spp.	80	3900	8	2.051
Hunterdon	113	5650	4	0.708
<i>Culex</i> spp.	113	5650	4	0.708
Mercer	130	3685	4	1.085
<i>Aedes albopictus</i>	12	42		
<i>Aedes japonicus</i>	1	7		
<i>Aedes vexans</i>	12	82		
<i>Coquillettidia perturbans</i>	3	30		
<i>Culex pipiens</i>	24	661	1	1.513
<i>Culex restuans</i>	44	1116	1	0.896
<i>Culex</i> spp.	34	1747	2	1.145

Middlesex	159	5747	21	3.654
<i>Aedes albopictus</i>	56	139		0.000
<i>Culex</i> spp.	98	5570	21	3.770
<i>Culiseta melanura</i>	5	38		
Monmouth	244	4462	11	2.465
<i>Aedes albopictus</i>	110	945	1	1.058
<i>Aedes canadensis canadensis</i>	6	93		
<i>Aedes cantator</i>	4	167		
<i>Aedes japonicus</i>	2	9		
<i>Aedes trivittatus</i>	1	1		
<i>Aedes vexans</i>	1	2		
<i>Anopheles crucians</i>	1	1		
<i>Anopheles punctipennis</i>	7	20		
<i>Anopheles quadrimaculatus</i>	1	4		
<i>Coquillettidia perturbans</i>	1	1		
<i>Culex erraticus</i>	6	57		
<i>Culex restuans</i>	1	1		
<i>Culex salinarius</i>	2	36		
<i>Culex</i> spp.	89	2955	10	3.384
<i>Culiseta melanura</i>	10	139		
<i>Psorophora columbiae</i>	2	31		
Morris	132	5191	5	0.963
<i>Aedes albopictus</i>	12	218		
<i>Culex</i> spp.	120	4973	5	1.005
Ocean	108	1545	5	3.236
<i>Aedes albopictus</i>	28	180		
<i>Aedes canadensis canadensis</i>	1	3		
<i>Aedes japonicus</i>	20	91		
<i>Aedes triseriatus</i>	1	11		
<i>Aedes vexans</i>	1	2		
<i>Coquillettidia perturbans</i>	3	125		
<i>Culex</i> spp.	45	1097	5	4.558
<i>Culiseta melanura</i>	9	36		
Passaic	9	149		
<i>Aedes japonicus</i>	2	5		
<i>Aedes triseriatus</i>	2	3		
<i>Aedes vexans</i>	1	1		
<i>Culex</i> spp.	4	140		
Salem	74	1015	1	0.985
<i>Aedes albopictus</i>	10	107		
<i>Aedes japonicus</i>	9	17		
<i>Aedes triseriatus</i>	5	6		
<i>Coquillettidia perturbans</i>	7	23		
<i>Culex erraticus</i>	1	1		
<i>Culex pipiens</i>	1	1		
<i>Culex restuans</i>	2	2		
<i>Culex</i> spp.	22	316	1	3.165
<i>Culiseta melanura</i>	17	542		

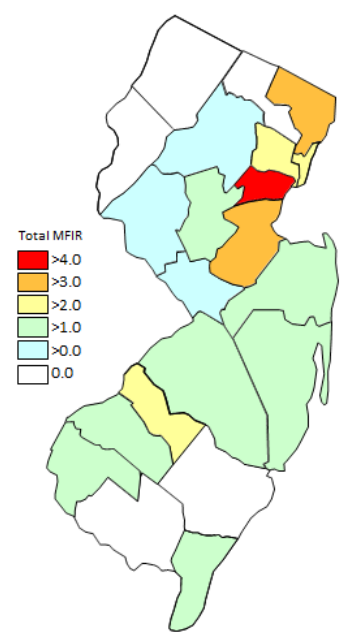
Somerset		102	1826	2	1.095
	<i>Aedes japonicus</i>	8	121		
	<i>Aedes triseriatus</i>	5	23		
	<i>Anopheles punctipennis</i>	1	4		
	<i>Culex</i> spp.	88	1678	2	1.192
Sussex		107	2194	1	0.456
	<i>Aedes japonicus</i>	7	76		
	<i>Aedes triseriatus</i>	5	57		
	<i>Anopheles punctipennis</i>	4	19		
	<i>Coquillettidia perturbans</i>	1	46		
	<i>Culex</i> spp.	90	1996	1	0.501
Union		57	4084	21	5.142
	<i>Culex</i> spp.	57	4084	21	5.142
Warren		88	2818	2	0.710
	<i>Culex</i> spp.	88	2818	2	0.710
Grand Total		2638	70020	136	1.942



Cumulative WNV activity in 2014.



WNV activity to 10 August 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				
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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 10 August 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 20 imported human cases reported in New Jersey.

County	Species	DENV1		DENV2		DENV3		DENV4		Positives	MFIR
		Pool	Mos.	Pool	Mos.	Pool	Mos.	Pool	Mos.		
Atlantic		15	112	15	112	15	112	15	112		
		15	112	15	112	15	112	15	112		
Burlington		3	59	3	59	3	59	3	59		
		3	59	3	59	3	59	3	59		
Camden		5	14	5	14	5	14	5	14		
		5	14	5	14	5	14	5	14		
Cumberland		9	25	9	25	9	25	9	25		
		9	25	9	25	9	25	9	25		
Gloucester		75	536	75	536	75	536	75	536		
		75	536	75	536	75	536	75	536		

Hudson	9	138	9	138	9	138	9	138		
	9	138	9	138	9	138	9	138		
Mercer	12	42	12	42	12	42	12	42		
	12	42	12	42	12	42	12	42		
Middlesex	56	139	56	139	56	139	56	139		
	56	139	56	139	56	139	56	139		
Monmouth	109	940	109	940	109	940	90	829		
	109	940	109	940	109	940	90	829		
Morris	12	218	12	218	12	218	12	218		
	12	218	12	218	12	218	12	218		
Salem	10	107	10	107	10	107	10	107		
	10	107	10	107	10	107	10	107		
Grand Total			315	2330	315	2330	296	2219		

Chikungunya (CHIK) to 10 August 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 17 imported human cases reported in New Jersey.

County	Species	Pools	Mosquitoes	Positives	MFIR
Atlantic		15	112		
	<i>Aedes albopictus</i>	15	112		
Burlington		3	59		
	<i>Aedes albopictus</i>	3	59		
Camden		5	14		
	<i>Aedes albopictus</i>	5	14		
Cape May		19	28		
	<i>Aedes albopictus</i>	19	28		
Cumberland		9	25		
	<i>Aedes albopictus</i>	9	25		
Gloucester		75	536		
	<i>Aedes albopictus</i>	75	536		
Hudson		9	138		

	<i>Aedes albopictus</i>	9	138		
Mercer		12	42		
	<i>Aedes albopictus</i>	12	42		
Middlesex		56	139		
	<i>Aedes albopictus</i>	56	139		
Monmouth		109	940		
	<i>Aedes albopictus</i>	109	940		
Morris		12	218		
	<i>Aedes albopictus</i>	12	218		
Salem		10	107		
	<i>Aedes albopictus</i>	10	107		
Grand Total		334	2358		