VECTOR SURVEILLANCE IN NEW JERSEY

EEE, WNV, SLE, LAC, DENV, CHIK, ZIKV, and JCV

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Data download 4:30 pm 16 August

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NOTE: County/species tables for arboviruses are now in a supplemental file (linked at end of this report)

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**	0.30	0.40	4 (6)	2 (3)		
Green Bank (Burlington Co.)/25	**Coastal**	4.42	0.96	37 (61)	7 (8)		
Corbin City (Atlantic Co.)/25	**Coastal**	1.37	0.28	110 (117)	9 (10)		
Dennisville (Cape May Co.)/50	**Coastal**	5.61	0.00	45	8		
Winslow (Camden Co.)/50	**Inland**	1.59	1.56	393	12	1	2.545
Centerton (Salem Co.)/50	**Inland**	3.44	0.04	115	8		
Turkey Swamp (Monmouth Co.)/50	**Inland**	1.63	1.18	348 (407)	14 (16)	4	11.494
Glassboro (Gloucester Co.)/50	**Inland**	0.35	0.12	138	8	1	7.246

*Current week (in parentheses) results pending. ‡ corrected from previous week NC=no collection

Remarks: ***EEE activity in the state is ramping up and due diligence is needed***. Currently in 2019, there are 27 detections of EEE virus: 23 pools of *Culiseta melanura* (six collected at traditional resting box sites, and 17 collected at county trap sites) and four pools in *Aedes albopictus* and *Culex* Mix. The first positive pool was collected on 3 July at Turkey Swamp, Monmouth County. There are four animal cases and one human case (Somerset County).

Statewide, 6,923 *Cs. melanura* from 437 pools have been tested, with an overall *Cs. melanura* MFIR of 3.322. 110,833 specimens in 4,726 pools from 36 other species have also been tested, with four positive pools detected (*Aedes albopictus* and *Culex* Mix pools). Overall MFIR for all species statewide is 0.229.

Traditional Resting Box Sites: 1,197 *Cs. melanura* from 70 pools have been tested, with six positive pools detected – four at Turkey Swamp, 1 at Glassboro and 1 at Winslow. An additional 92 *Cs. melanura* in four pools are at labs to be tested.

	Additional *Cs. melanura* trapped by counties *traps with positives indicated in **BOLD UNDERLINED.**				
County	**Trap types***	**Pools**	**Mosquitoes**	**Positives**	**MFIR**
Atlantic	BGS, **CO_2**, GR, **RB**	57	1841	4	2.173
Bergen	CO_2, RB	4	13		
Burlington	**ULVT**	39	1520	7	4.605
Cape May	GR, RB	117	272		
Cumberland	AGO, RB	16	125		
Gloucester	CO_2, **RB**	33	1086	3	2.762
Middlesex	RB	9	49		
Monmouth	CO_2, **Other**	14	93	1	10.753
Morris	CO_2,RB	19	307		
Ocean	**CO_2**, GR, RB	39	287	1	3.484
Salem	CO_2, GR, **RB**	16	63	1	15.873
Sussex	CO_2	4	70		
TOTAL		**367**	**5726**	**17**	2.969

Additional County-set *Cs. melanura*: Counties maintain trap sites for *Cs. melanura* in other areas, using a variety of traps. Last year, half of the EEE detection came from such trappings. In 2019, 17 pools of *Cs. melanura* have been found positive – the latest with 1 additional pool in Atlantic County and 5 additional pools in Burlington County. Earliest positive pools were found in Salem County, collected 9 July, and Ocean County collected 10 July.

Horses and Humans: The fourth animal case involved a 7 year old alpaca in Camden County. This alpaca had an onset date of 2 August, and was euthanized on 3 August. There is an unknown vaccination history. The third horse was a Monmouth County yearling male with an onset date of 5 Aug, and was euthanized the same day. Vaccinations included an April date. The second horse case reported was a 20 year old gelding in Ocean County with date of onset 26 July, euthanized the same day. Vaccination history is unknown. The first horse case involved a 12-year-old mare in Ocean County, with onset date of 23 July, was euthanized the same day. This horse was about 11-14 miles from two active sites. There appears to be an incomplete vaccination history, with the first dose of EEE vaccine administered in April, but no follow up vaccination 4-6 weeks later was reported. Over the past ten years, first onset dates for horses have been in August or October except for 2012, where an onset date was 22 July. Last year five horses were reported with EEE. All had either an incomplete or no vaccination history. ***Horse owners are urged to make sure their horses are up to date on their vaccinations. Horse cases are known to occur through October and sometimes into November (see link below).*** Other sensitive species are non-native birds, such as Ostriches/Emus and Gallinaceous birds such as pheasants of Eurasian origins.

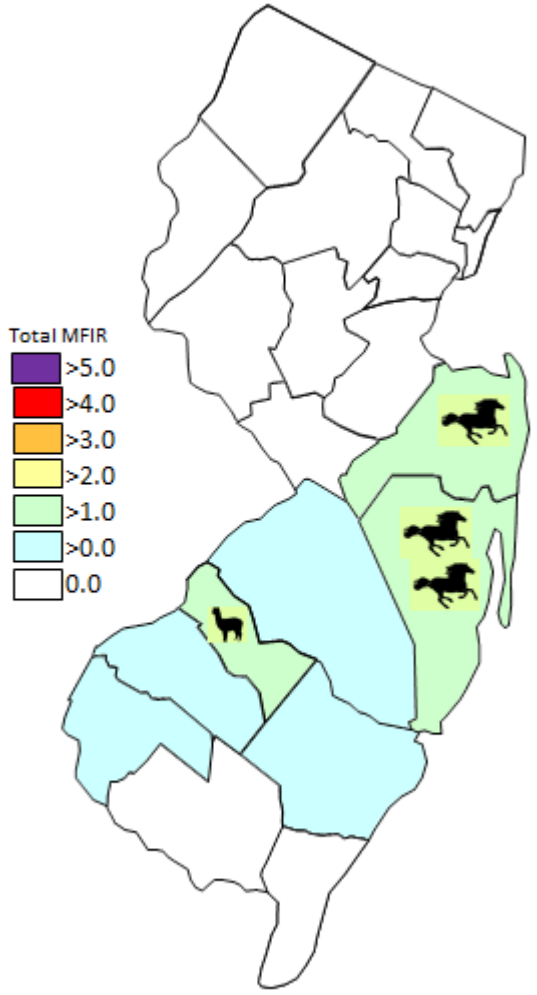
Horses and Vaccinations: The fate of unvaccinated equids reinforces the necessity of maintaining a vaccination schedule for arboviruses. For vaccination schedules recommended by the American Association of Equine Practices, see: http://www.aaep.org/vaccination_guidelines.htm

There is one human case from Somerset County. For more information, see DOH press release:
https://www.nj.gov/health/news/2019/approved/20190816a.shtml

Species other than *Cs. melanura*	Pools	Mosquitoes	Positives	MFIR
Aedes abserratus	13	258		
Aedes albopictus	406	3555	2	0.563
Aedes atlanticus	12	125		
Aedes aurifer	3	14		
Aedes canadensis canadensis	102	2113		
Aedes cantator	16	292		
Aedes grossbecki	5	12		
Aedes infirmatus	1	1		
Aedes japonicus	481	3466		
Aedes mitchellae	1	1		
Aedes provocans	2	8		
Aedes sollicitans	12	366		
Aedes sticticus	4	95		
Aedes stimulans	2	10		
Aedes taeniorhynchus	6	214		
Aedes thibaulti	2	27		
Aedes triseriatus	73	213		
Aedes trivittatus	23	458		
Aedes vexans	59	573		
Anopheles barberi	2	2		
Anopheles bradleyi	56	249		
Anopheles crucians	9	146		
Anopheles punctipennis	57	340		
Anopheles quadrimaculatus	91	674		
Coquillettidia perturbans	153	3145		
Culex Mix	2075	87125	2	0.023
Culex erraticus	59	395		
Culex pipiens	383	3864		
Culex restuans	335	1025		
Culex salinarius	191	1208		
Culex territans	31	87		
Orthopodomyia signifera	5	5		
Psorophora ciliate	1	1		
Psorophora columbiae	10	87		
Psorophora ferox	33	656		
Psorophora howardii	1	1		
Uranotaenia sapphirina	11	22		
State Total	**4726**	**110833**	**4**	**0.036**

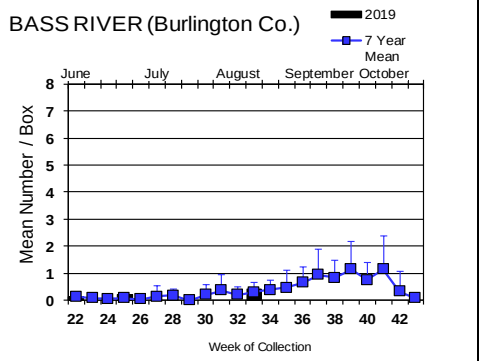
Additional Species: 35 additional species were tested for EEE. Three positive pools have been detected in two species. (One positive pool in *Aedes albopictus*, collected in Ocean County on 9 July was found. On 16 July, a positive pool of *Culex* Mix was detected in Camden County. A second *Culex* pool was detected in Ocean County 31 July. Note: *Culex pipiens* is refractory for EEE virus).

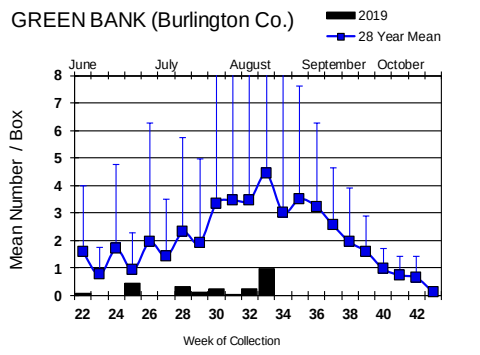
Overall MFIR rates per county:

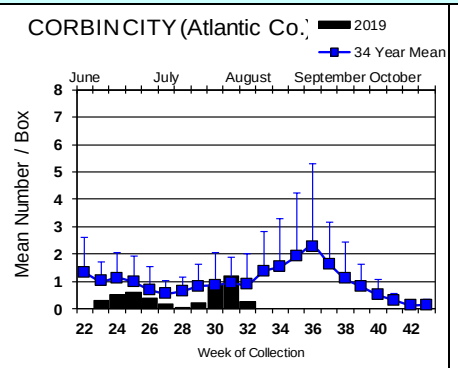


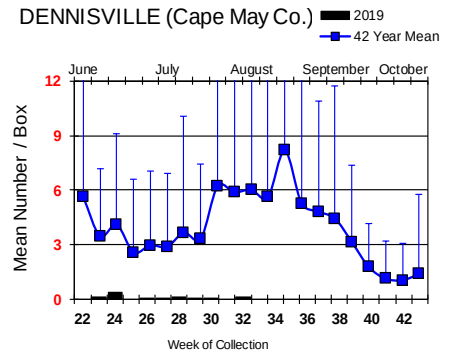
Culiseta melanura Populations

Coastal

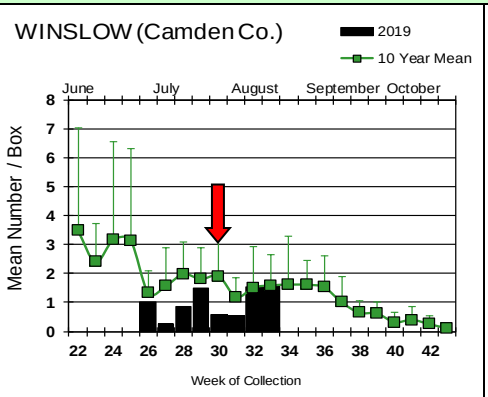


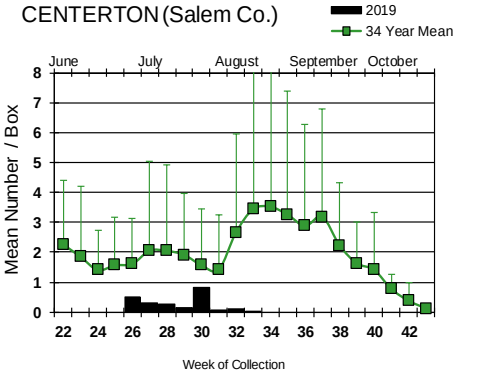


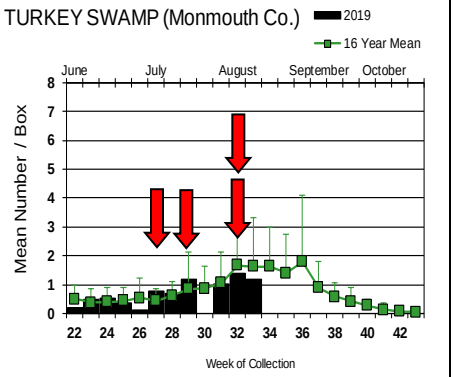


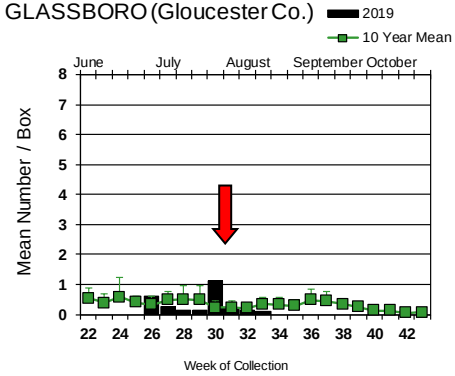


Inland









Culiseta melanura populations at a few resting box sites continue to be near historical values, while others are clearly well below. Positives continue to be detected (2 pools at Turkey Swamp). Positive *Cs. melanura* also continue to be detected at other non-traditional sites (see table 2 above).

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

EEE in US (2019 cumulative cases): (Black or Red = previous + new reported cases occurring)

- **equine:** 2(CT) 25(FL) 1(GA) 1(MA) 2(MI) 7(MS) 1(NC) 4(NJ) 1(NY) 3(SC) 1(WI) 1(CAN-ON)
- **mosquito pools:** 6(CT) 288(MA) 2(MD) 5(NH) 27(NJ) 10(NY) 2(RI)
- **sentinel:** 93(+1 emu 1 BAEA, FL) 3(DE)
- **human:** 2(MA) 1(NJ)

West Nile Virus Positive Organisms in US, 2019

West Nile in US (2019 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	0
Alaska					
Arizona	0	305/318	1	1	110/126
Arkansas					2
California	58/67	1647/1988	10/26	0	10/14
Colorado		7			1
Connecticut		10/13		0	3
Delaware					
Florida			55/69	1	
Georgia					
Hawaii					
Idaho	0	16		2	0
Illinois	2	171/263		0	1
Indiana	0	38/50		0	0
Iowa				2	2
Kansas					0
Kentucky					1
Louisiana					
Maine		0			0
Maryland(+DC)					1
Mass.		34/46		0	0
Michigan	2/8	7/12			0
Minnesota					
Mississippi		12/21		5	5/6
Missouri		0		0	1

	Birds	Mosquito Pools	Sentinels	Horses*	Humans
Montana					
Nebraska	0	13		0	4
Nevada					4
New Hampshire					
New Jersey		60/103		0	1
New Mexico					1
New York		122/132		0	0
North Carolina					
North Dakota	0	1/2		0	3/4
Ohio		78		0	0
Oklahoma					3
Oregon	0	18	0	1	1
Pennsylvania		92/133			
Rhode Island		0			
South Carolina	1	3			
South Dakota		9			3
Tennessee					
Texas		47/74			1
Utah		42/83			
Vermont					
Virginia					1
Washington	0	9/11		0	0
West Virginia					
Wisconsin	1	5/7		0	0
Wyoming	0	6		0	2

* 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 through 16 August 2019

Species	Pools	Mosquitoes	Positives	MFIR
Aedes abserratus	13	258		
Aedes albopictus	736	4395		
Aedes atlanticus	12	125		
Aedes aurifer	3	14		
Aedes canadensis canadensis	102	2113		
Aedes cantator	16	292	1	3.425
Aedes grossbecki	5	12		
Aedes infirmatus	1	1		
Aedes japonicus	498	4013	1	0.249
Aedes mitchellae	1	1		
Aedes provocans	2	8		
Aedes sollicitans	12	366		
Aedes sticticus	4	95		
Aedes stimulans	2	10		
Aedes taeniorhynchus	6	214		
Aedes thibaulti	2	27		
Aedes triseriatus	321	1143	1	0.875
Aedes trivittatus	23	458		
Aedes vexans	59	573		
Anopheles barberi	2	2		
Anopheles bradleyi	56	249		
Anopheles crucians	9	146		
Anopheles punctipennis	58	341	1	2.933
Anopheles quadrimaculatus	91	674		
Coquillettidia perturbans	164	3706		
Culex spp.	2075	87125	89	1.022
Culex erraticus	59	395		
Culex pipiens	384	3865	2	0.517
Culex restuans	339	1029		
Culex salinarius	192	1211		
Culex territans	31	87		
Culiseta melanura	437	6923	8	1.156
Orthopodomyia signifera	5	5		
Psorophora ciliata	1	1		
Psorophora columbiae	10	87		
Psorophora ferox	33	656		
Psorophora howardii	1	1		
Uranotaenia sapphirina	10	21		
Grand Total	**5775**	**120642**	**103**	**0.854**

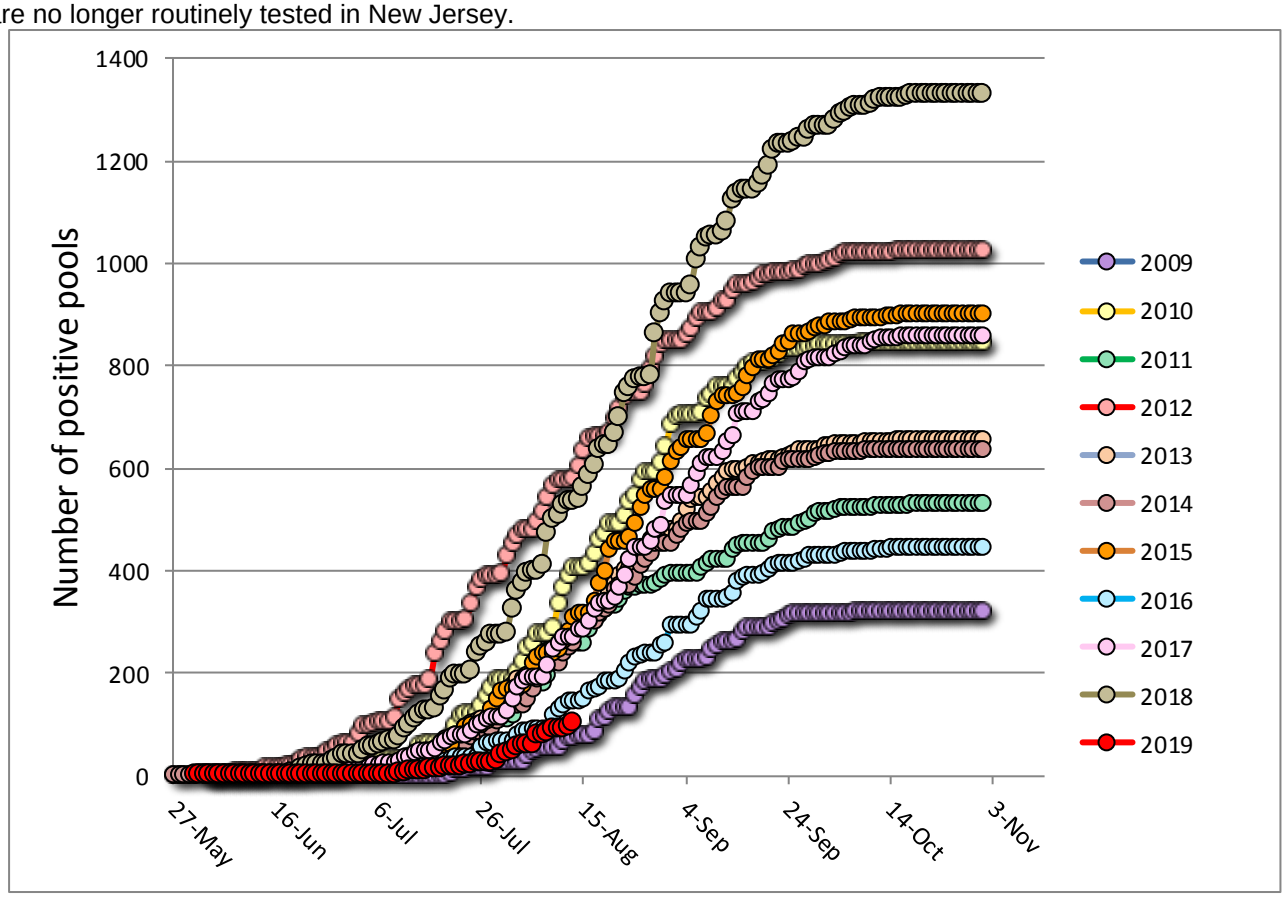
Remarks: To date, 5,775 pools of 120,642 mosquitoes from 37 species have been tested. A total of 103 positive WNV pools have been detected throughout the state beginning with a pool of *Aedes triseriatus*, collected on 31 May, 2019 in Passaic County. This pool was also co-infected with LAC (see table below). 91 (88%) of the positives are in *Culex* species pools. Also positive are *Aedes cantator*, *Ae. japonicus,* and *Culiseta melanura.* Last year was a year of significant activity,

with over 1300 positive pools detected. Currently, the statewide MFIR rate for all mosquitoes increased from 0.569 to 0.854.

Humans, Horses and Wild Birds: There has been one human case of West Nile virus from Hunterdon County reported, with an onset date of 21 June. This represents the earliest typical case reported in New Jersey. (A few years ago, there was one case reported in May from a long-term hospitalized patient making date of infection difficult to determine.) For more information, see NJ arboviral reports from the Department of Health: https://www.nj.gov/health/cd/statistics/arboviral-stats/ . Last year we have over 60 cases reported, the highest to date.

Currently, there are no reported horse cases for WNV. Last year only one WNV horse case has been reported, occurring in Burlington County. This seemed rather unusual, given all the other indicators of high virus activity. For further information, see http://www.nj.gov/health/cd/statistics/arboviral-stats/.

Birds are no longer routinely tested in New Jersey.



Above is a graph showing cumulative number of positive pools for the previous 10 years, inclusive of the most active (2018) and least active (2009) years. The red series represents this year, starting with the first positive pool.

Go here for the table supplement of arbovirus by county by mosquito species.