

2019 Season highlight:

- Four cases of West Nile virus have been reported (Atlantic (2), Bergen and Hunterdon counties). WNV has been detected in mosquito pools in all NJ counties. The number of WNV positive pools is significantly lower than historical averages.
- EEE has been detected in 65 mosquito pools in 13 counties. This is the highest number of positive pools reported at this point in the season in the past 7 years.
- One human case of Eastern equine encephalitis (EEE) has been reported in Somerset County.
- Nine equine cases of EEE have been reported in Atlantic (1), Monmouth (1), Morris (1), Ocean (5) and Salem (1) counties. One alpaca case of EEE was reported from Camden County.

1. Human Testing

New Jersey Administrative Code (N.J.A.C.) Title 8 Chapter 57 mandates public health reporting of specified vector-borne diseases to prevent further disease spread.

Table 1.1 Human Cases^a

Mosquito-borne diseases			Tickborne Diseases		
	2019 ^b	2018		2019 ^b	2018
Chikungunya	4	16	Anaplasmosis	106	118
Dengue	42	20	Babesiosis	167	249
Eastern equine encephalitis	1	-	<i>Borrelia miyamotoi</i>	13	8
Jamestown Canyon	-	-	Ehrlichiosis	100	94
Malaria	72	93	Lyme disease	2094	4000
West Nile	4	61	Powassan	3	1
Zika	6	10	Spotted fever group rickettsioses	132	147

^a Data for 2019 reflect confirmed and probable cases that have been approved by NJDOH. This does not include cases under investigation. All 2019 numbers are preliminary and are subject to change. 2018 numbers represent total number of cases for the year.

^b Cumulative through week 37(week ending September 14, 2019).

2. Mosquito Testing

The New Jersey Department of Health Public Health and Environmental Laboratories (PHEL) and the Cape May County Department of Mosquito Control Bio-safety Level 3 Laboratory (CMBSL3) perform arboviral testing on mosquito pools collected by county mosquito control agencies throughout New Jersey.

West Nile virus (WNV):

- A total of 8601 mosquito pools have been tested for WNV; 278 mosquito pools were positive for WNV with the highest number reported from Bergen County.
- The first positive pool was detected in week 22 (Passaic county). In 2018 the first WNV positive mosquito pool was identified in week 23.
- The total number of positive mosquito pools detected this season is significantly lower than historical averages (see chart below).
- The positive pools were detected in *Aedes albopictus*, *Aedes cantator*, *Aedes japonicus*, *Aedes triseriatus*, *Anopheles punctipennis*, *Coquilleltidia perturbans*, *Culex erraticus*, *Culex pipiens*, *Culex spp* and *Culiseta melanura* species.
- 87% (n=242) of the positive pools were *Culex sp*.

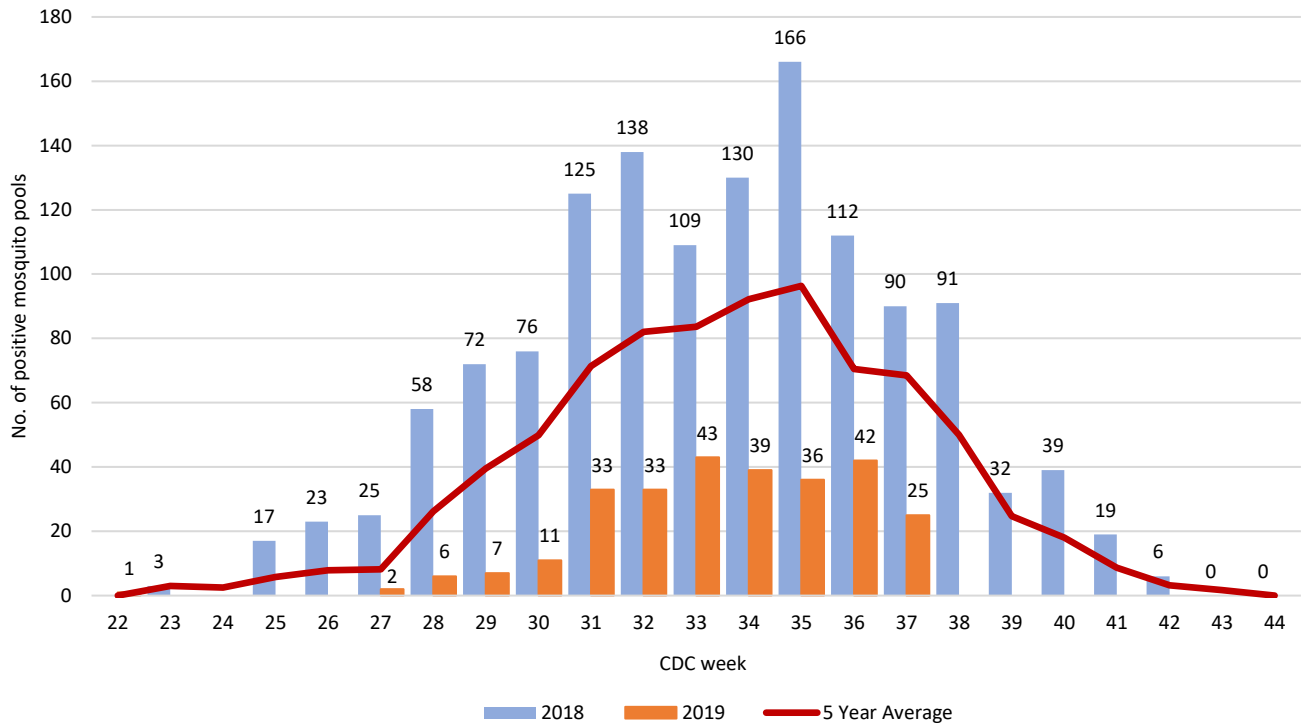
*Test results may be incomplete; Counties submit pools for testing on specific weekdays. Mosquito testing data reflects test results received from PHEL, CMBSL3 and US Army Public Health as of September 18, 2019

WNV Positive Mosquito Pools

County	Week 37		Cumulative Total (week 37)	
	2019*	2018	2019*	2018
Bergen		6	60	124
Burlington	10		48	31
Union	2	8	31	69
Hudson		7	27	66
Somerset	2	9	16	80
Hunterdon	2	14	14	123
Monmouth		1	13	57
Atlantic	2		9	23
Middlesex	1	2	9	53
Ocean	5	4	9	26
Camden		3	6	34
Gloucester		6	6	98
Mercer			6	43
Morris		9	6	147
Cape May	1	2	4	17
Passaic		3	4	16
Salem		1	3	9
Warren		4	3	65
Sussex		11	2	40
Cumberland			1	10
Essex			1	13
Total	25	90	278	1144

Week 37 September 9-15, 2018; September 8-14, 2019

West Nile Virus Positive Mosquito Pools, NJ (2018 - 2019)



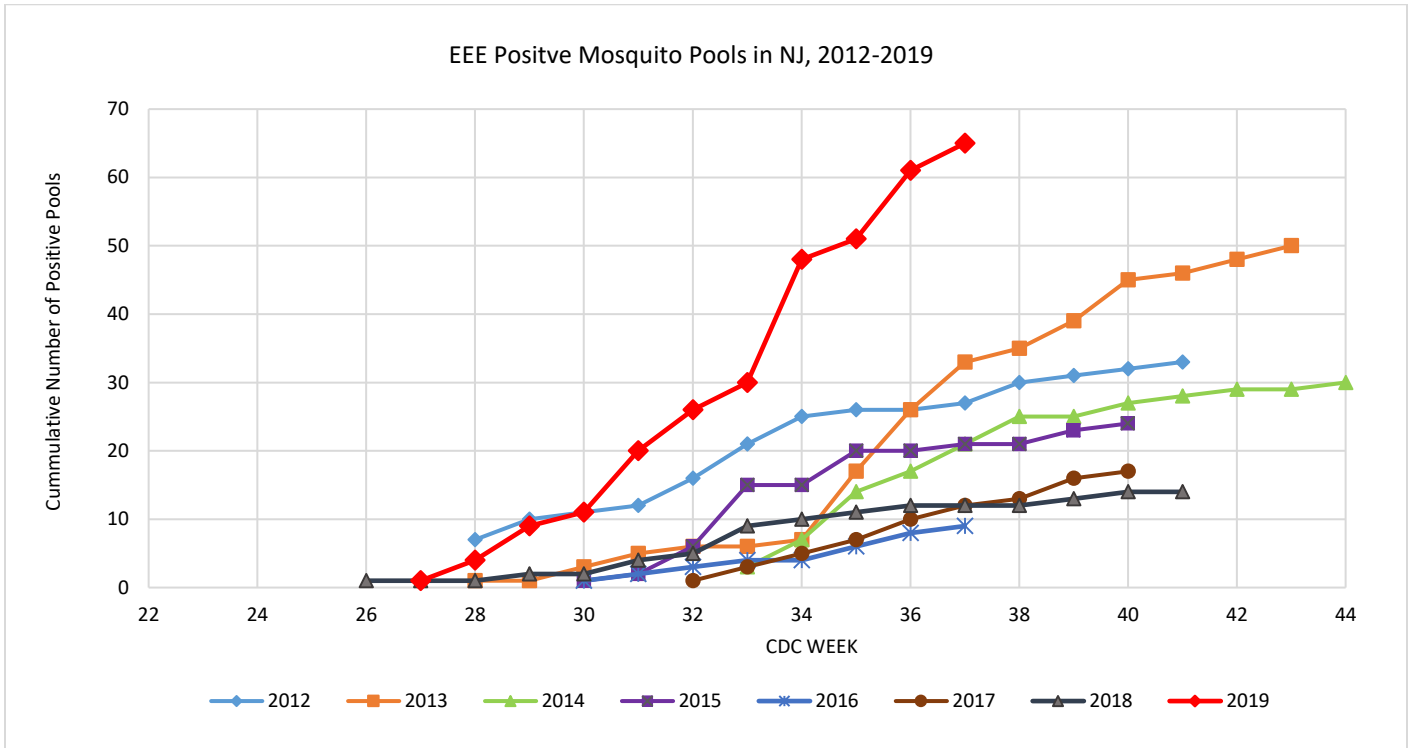
Eastern equine encephalitis virus (EEE)

- A total of 7838 mosquito pools have been tested for EEE; 65 mosquito pools from 13 counties were positive for EEE. This is the highest number of pools reported in the past 7 years (see chart below) and exceeds the total number of EEE positive mosquito pools in 2018 ($n=14$).
- As of week 37, 5 northern counties (Morris, Hunterdon, Sussex, Union and Warren) have detected EEE positive pools. These are the first EEE positive pools detected in the northern part of the state in at least 7 years.
- The highest number of positive pools was reported in Atlantic County.
- The first positive pool was detected in week 27 (Monmouth county). In 2018, the first EEE mosquito pool was reported in week 26.
- 75% ($n=49$) of the positive pools were *Culiseta melanura*. *Culiseta melanura* species was detected in 10 counties reporting positives.
- Other positive species detected were *Aedes albopictus* (Atlantic and Ocean), *Aedes canadensis* (Morris and Sussex), *Aedes triseriatus* (Morris) and *Culex* spp (Atlantic, Camden, Hunterdon, Morris, Ocean, Sussex, Union and Warren).

EEE Positive Mosquito Pools

County	Week 37		Cumulative Total (week 37)	
	2019*	2018	2019*	2018
Atlantic			10	1
Morris			9	
Burlington	1		8	4
Monmouth			8	1
Sussex			8	
Camden			7	4
Gloucester			5	
Ocean			3	
Salem	1		3	2
Cape May			1	
Hunterdon	1		1	
Union	1		1	
Warren			1	
Bergen				
Cumberland				
Essex				
Hudson				
Mercer				
Middlesex				
Passaic				
Somerset				
Total	4	-	65	12

Week 37 September 9-15, 2018; September 8-14, 2019



Other viruses:

In 2019, PHEL and Cape May County BLS3 brought on new capacity to test for viruses as a panel. Mosquito pools from all counties have been tested for other arboviruses: St. Louis encephalitis virus (SLE), Jamestown Canyon Virus (JCV), La Crosse encephalitis virus (LAC), Chikungunya virus (CHIKV), Dengue virus (DENV), Zika Virus (ZIKV).

Positive pools for other viruses have been detected in 5 counties (Bergen, Burlington, Passaic, Salem and Sussex).

La Crosse encephalitis virus (LAC):

- A mosquito pool collected on May 31st (week 22) in Passaic County tested positive for La Crosse virus at PHEL. The positive pool was detected in *Aedes triseriatus* species.
In 2014, 2 mosquito pools collected from the Joint Base MDL (Burlington County) by the Department of the Airforce tested positive for LACV. The virus was detected in both *Ochlerotatus triseriatus* and *Aedes albopictus*.
- There have not been any human La Crosse virus cases reported in at least the past 20 years.

Jamestown Canyon virus (JCV):

- Four mosquito pools have tested positive for Jamestown Canyon virus at PHEL. The first pool was from Sussex County (week 23), second from Bergen County (week 25), the third from Burlington County (week 27) and the fourth from Salem County (week 34).
- The positive pools were detected in *Aedes abserratus*, *Aedes cantator*, *Anopheles crucians* and *Anopheles punctipennis* species.
- NJ reported its first and only human case of Jamestown Canyon virus in 2015 in a Sussex County resident.

Cumulative 2019 Mosquito Pool Testing (Other Viruses ^a)

County	SLE		JCV		LAC		CHIKV		DENV		ZIKV	
	Pools	Pos	Pools	Pos	Pools	Pos	Pools	Pos	Pools	Pos	Pools	Pos
Atlantic	389		389				58		58		58	
Bergen	251		251	1	23		3		3		3	
Burlington	334		334	1	20							
Camden	105		85				10		10		10	
Cape May	2116		21		190		444				444	
Cumberland	281		281		9							
Essex	128		128		1							
Gloucester	419		406		2		17		17		17	
Hudson	190		190		8							
Hunterdon	269		269		3							
Mercer	335		335		29		20		20		20	
Middlesex	237		237		4		10		10		10	
Monmouth	400		400		20							
Morris	423		423									
Ocean	336		336									
Passaic	179		179		18	1						
Salem	464		452	1	20							
Somerset	231		231									
Sussex	276		276	1	21							
Union	178		178		10							
Warren	297		297									
Total	7838	-	5698	4	378	1	562	-	118	-	562	-

^a St. Louis encephalitis virus (SLE), Jamestown Canyon Virus (JCV), La Crosse encephalitis virus (LAC), Chikungunya virus (CHIKV), Dengue virus (DENV), Zika Virus (ZIKV)
 Numbers in white columns represent number of pools tested to date in 2019

Numbers in blue shaded columns represent positive pools in 2019

3. Equine/Avian /Other Animal Testing

Equine testing for WNV and EEE is conducted at the New Jersey Department of Agriculture's Animal Health and Diagnostic Laboratory.

Nine equine cases and one alpaca case of EEE have been reported this season. The first cases were reported in week 30. This is the earliest report of equine cases in the state since 2012.

WNV/EEE Positive Test Results

	Week 37		Cum. Total (Year)	
	2019	2018	2019	2018
Equine (EEE)	-	1	9	5
Equine (WNV)	-		-	1
Other:				
Alpaca (EEE)	-	-	1	-

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- Equine cases:
 - o Atlantic: One-year-old yearling of unknown vaccination status (onset unknown, euthanized August 24th)
 - o Monmouth: One-year-old vaccinated colt (onset August 5th, euthanized August 5th)
 - o Morris: 18-year-old gelding of unknown vaccination status (onset August 15th, euthanized August 16th)
 - o Ocean: 5 cases. The first case was a 12-year-old mare (onset July 23rd, euthanized July 23rd). The mare was not currently vaccinated. The second case was an unvaccinated 20-year-old gelding (onset July 26th, euthanized July 26th). The third case was a 2-year-old gelding of unknown vaccination status (onset August 15th, euthanized August 16th). The fourth and fifth were geldings of unknown vaccination status (onset unknown, both euthanized August 26th).
 - o Salem: Four-month-old colt of unknown vaccination status (onset unknown, euthanized August 25th)
- The alpaca case was reported from Camden County in a 7-year-old male alpaca of unknown vaccination status (onset August 2nd, euthanized August 3rd).
- Routine avian testing has been discontinued but is available upon request at PHEL.

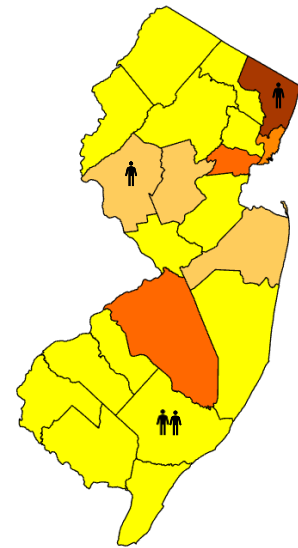
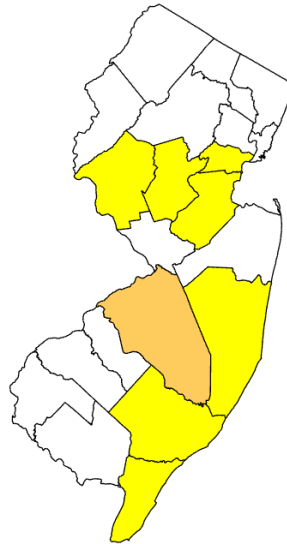
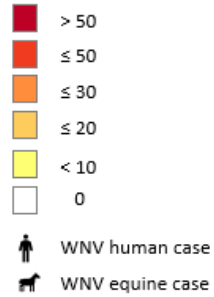
4. Surveillance Maps

West Nile Virus (WNV)

Week 37 WNV Activity (2019)*

Cumulative WNV Activity 2019

WNV Positive Pools

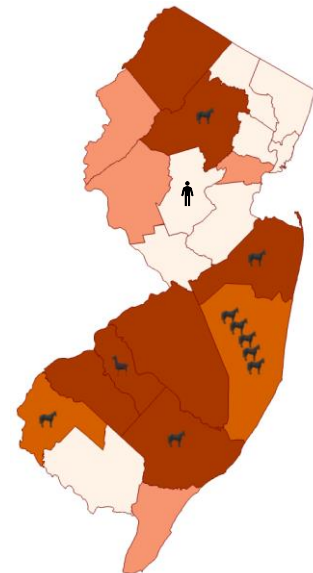
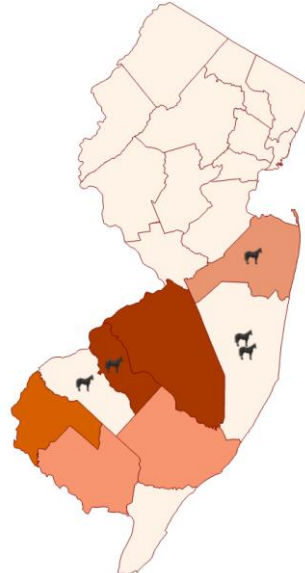
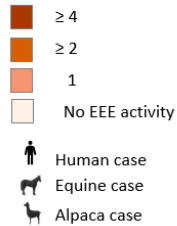


Eastern equine encephalitis (EEE)

2018 EEE Activity

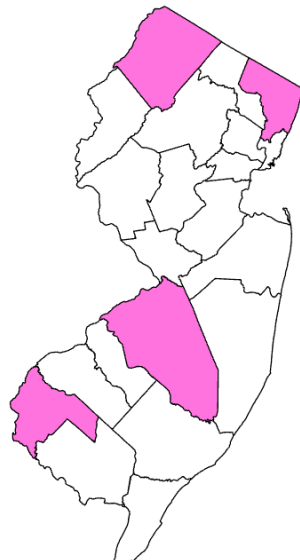
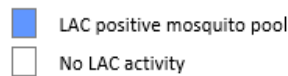
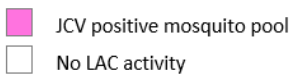
Cumulative EEE Activity 2019

EEE Positive Pools



Jamestown Canyon Virus Activity 2019

La Crosse Virus Activity 2019

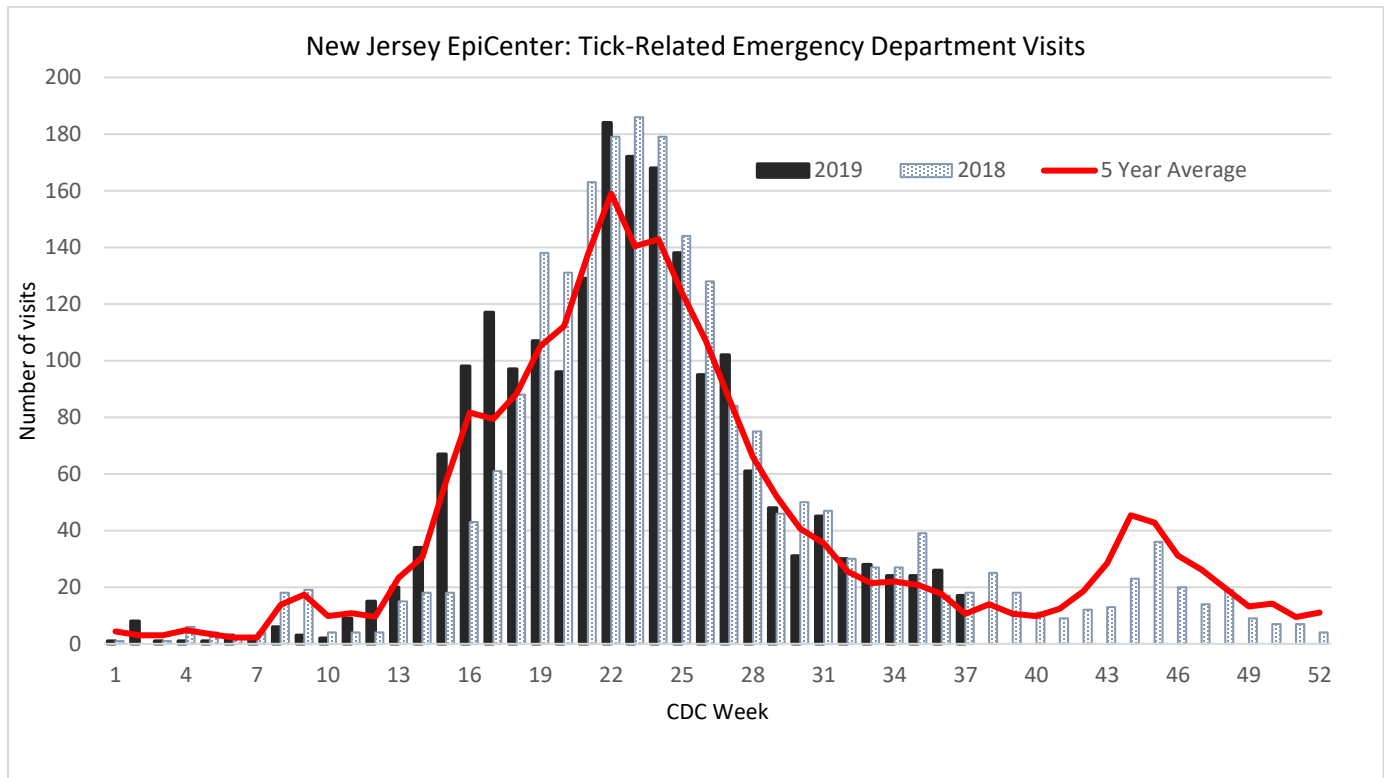


5. Syndromic Surveillance for Tick-related Emergency Department Visits

EpiCenter is a syndromic surveillance system developed and maintained by Health Monitoring Systems, Inc, for monitoring by health departments in the United States. New Jersey's EpiCenter receives real time Emergency Department (ED) data from 78 acute care and satellite health (99 percent reporting) facilities statewide. The system collects "chief complaint" information and limited patient registration data from existing ED computer systems.

The chart below represents NJ residents seen at emergency departments state wide with a tick-bite complaint or signs/symptoms associated with a reported tick-bite. Tick-related ED visits occur throughout the year with peak number of visits in the summer months and a smaller peak in the fall weeks when adult *Ixodes scapularis* (blacklegged ticks) are active.

As of week 37, the number of tick related ED visits is comparable to trends observed in past 5 years.



Data reflects ED visits downloaded from EpiCenter as of September 18, 2019

For More Information

- NJDOH Communicable Disease Service: <http://nj.gov/health/cd/topics/vectorborne.shtml>
- NJDEP Office of Mosquito Control Coordination: <http://www.nj.gov/dep/mosquito/>
- NJDA Division of Animal Health: <http://www.nj.gov/agriculture/divisions/ah/>
- Rutgers Center for Vector Biology: <http://vectorbio.rutgers.edu/>