

2019 Season highlight:

- Three human cases of Eastern equine encephalitis (EEE) have been reported in Atlantic, Somerset and Union Counties.
- 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. EEE has been detected in 71 mosquito pools in 13 counties.
- Seven cases of West Nile virus have been reported (Atlantic (2), Bergen (2), Burlington, Gloucester 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.
- Four cases of Powassan have been reported in Sussex 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	108	118
Dengue	46	20	Babesiosis	179	249
Eastern equine encephalitis	3	-	<i>Borrelia miyamotoi</i>	14	8
Jamestown Canyon	-	-	Ehrlichiosis	103	94
Malaria	81	93	Lyme disease	2268	4000
West Nile	7	61	Powassan	4	1
Zika	6	10	Spotted fever group rickettsioses	143	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 39 (week ending September 28, 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 9722 mosquito pools have been tested for WNV; 327 mosquito pools were positive for WNV with the highest numbers reported from Bergen and Burlington counties.
- 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*, *Coquillettia perturbans*, *Culex erraticus*, *Culex pipiens*, *Culex spp* and *Culiseta melanura* species.
- 87% (n=285) of the positive pools were *Culex sp*.

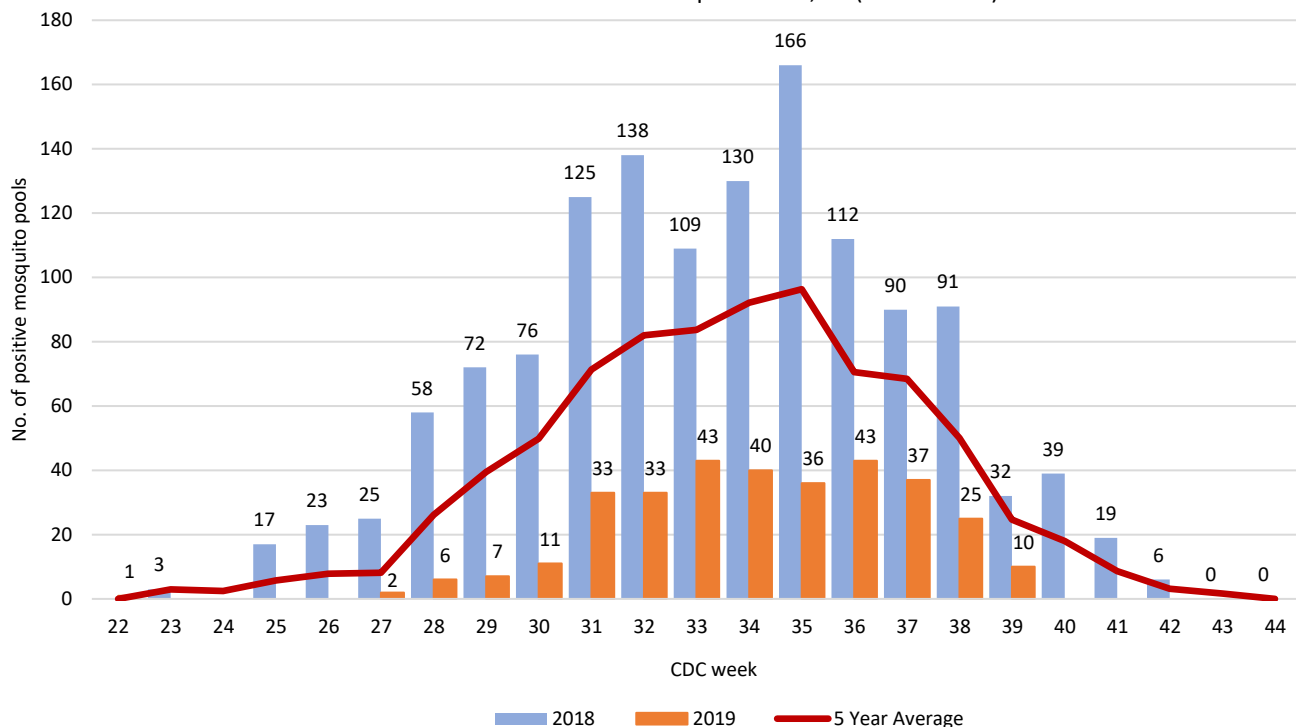
*Test results may be incomplete; Counties submit pools for testing on specific weekdays. Mosquito testing data reflects test results received from PHEL, CMBSL3 and US Army Public Health as of October 2, 2019.

WNV Positive Mosquito Pools

County	Week 39		Cumulative Total (week 39)	
	2019*	2018	2019*	2018
Bergen		14	68	147
Burlington	4	1	55	33
Hudson			38	67
Union	1		32	75
Hunterdon	2	6	18	144
Somerset			17	80
Monmouth			16	62
Atlantic	2		14	23
Ocean			10	26
Middlesex		1	9	56
Gloucester		1	8	114
Mercer	1		8	43
Morris		1	8	164
Camden		1	6	39
Cape May		2	5	20
Passaic			4	16
Salem			3	9
Sussex		2	3	53
Warren		3	3	72
Cumberland			1	10
Essex			1	14
Total	10	32	327	1267

Week 39: September 23-29, 2018; September 22-28, 2019

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



Eastern equine encephalitis virus (EEE)

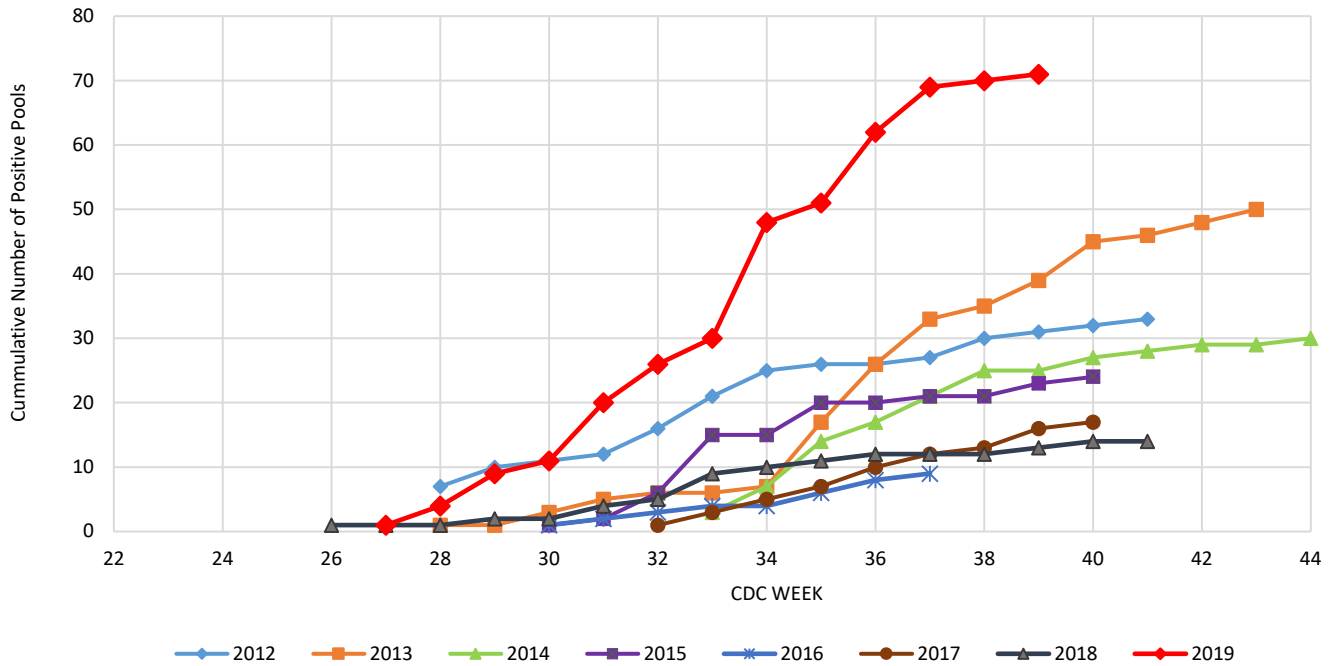
- A total of 8950 mosquito pools have been tested for EEE; 71 mosquito pools from 13 counties were positive for EEE. This is the highest number of pools reported in the past 7 years (see chart below) and exceeds the total number of EEE positive mosquito pools in 2018 ($n=14$).
- As of week 39, 5 northern 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 and Morris counties.
- The first positive pool was detected in week 27 (Monmouth county). In 2018, the first EEE mosquito pool was reported in week 26.
- 73% ($n=52$) 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 39		Cumulative Total (week 39)	
	2019*	2018	2019*	2018
Atlantic			10	1
Morris			10	
Burlington			9	4
Sussex			9	
Camden	1		8	4
Monmouth			8	1
Gloucester			6	
Hunterdon			2	
Ocean			3	
Salem			3	2
Cape May			1	
Union			1	
Warren			1	
Bergen				
Cumberland				
Essex				
Hudson				
Mercer				
Middlesex				
Passaic				
Somerset				
Total	1	-	71	12

Week 39: September 23-29, 2018; September 22-28, 2019

EEE Positive Mosquito Pools in NJ, 2012-2019



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):

- Five mosquito pools from 4 counties have tested positive for Jamestown Canyon virus. Positive pools were identified in the following counties: Sussex (week 23 and week 37), Bergen (week 25), Burlington (week 27) and Salem (week 34).
- The positive pools were detected in *Aedes abserratus*, *Aedes cantator*, *Anopheles crucians*, *Anopheles punctipennis* and *Coquillettia perturbans* 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	445		445				71		71		71	
Bergen	283		283	1	23		4		4		4	
Burlington	390		390	1	22							
Camden	124		99				16		16		16	
Cape May	2356		21		190		444				444	
Cumberland	338		338		9							
Essex	152		152		1							
Gloucester	494		480		7		17		17		17	
Hudson	219		219		8							
Hunterdon	309		309		3							
Mercer	384		384		30		24		24		24	
Middlesex	265		265		4		10		10		10	
Monmouth	463		463		20							
Morris	506		506									
Ocean	376		376									
Passaic	191		191		18	1						
Salem	524		510	1	20							
Somerset	280		280									
Sussex	324		324	1	21							
Union	198		198		10							
Warren	329		329									
Total	8950	-	6562	5	386	1	587	-	143	-	587	-

^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 39		Cum. Total (Year)	
	2019	2018	2019	2018
Equine (EEE)	-	-	9	5
Equine (WNV)	-		-	1
Other: Alpaca (EEE)	-	-	1	-

Week 39: September 23-29, 2018; September 22-28, 2019

- Equine cases:
 - Atlantic: One-year-old yearling of unknown vaccination status (onset unknown, euthanized August 24th)
 - Monmouth: One-year-old vaccinated colt (onset August 5th, euthanized August 5th)
 - Morris: 18-year-old gelding of unknown vaccination status (onset August 15th, euthanized August 16th)
 - 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).
 - 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.

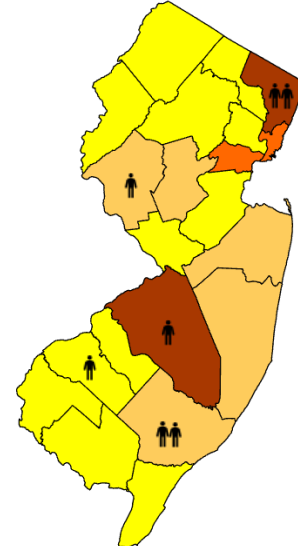
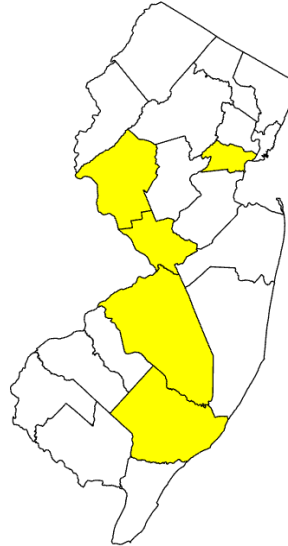
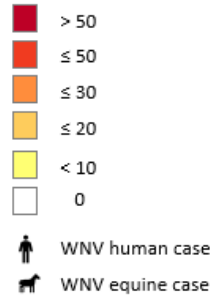
4. Surveillance Maps

West Nile Virus (WNV)

Week 39 WNV Activity (2019)*

Cumulative WNV Activity 2019

WNV Positive Pools

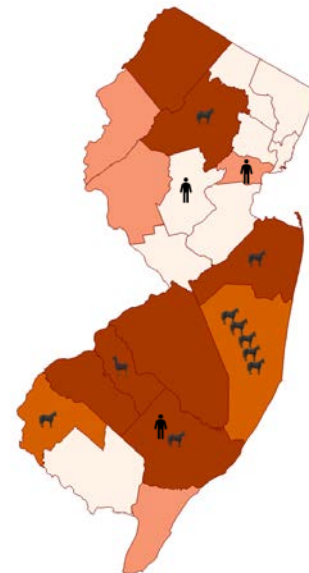
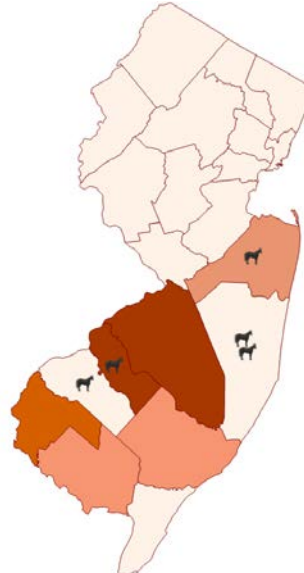
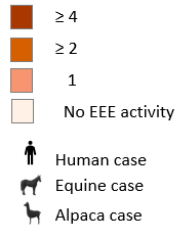


Eastern equine encephalitis (EEE)

2018 EEE Activity

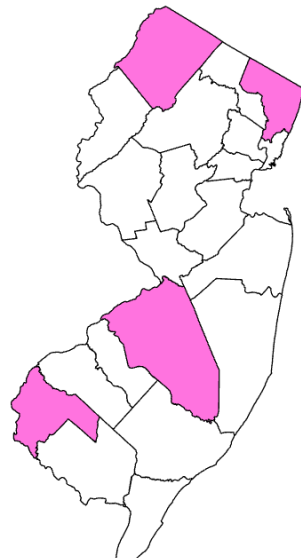
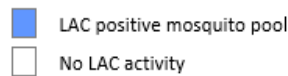
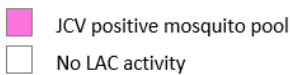
Cumulative EEE Activity 2019

EEE Positive Pools



Jamestown Canyon Virus Activity 2019

La Crosse Virus Activity 2019

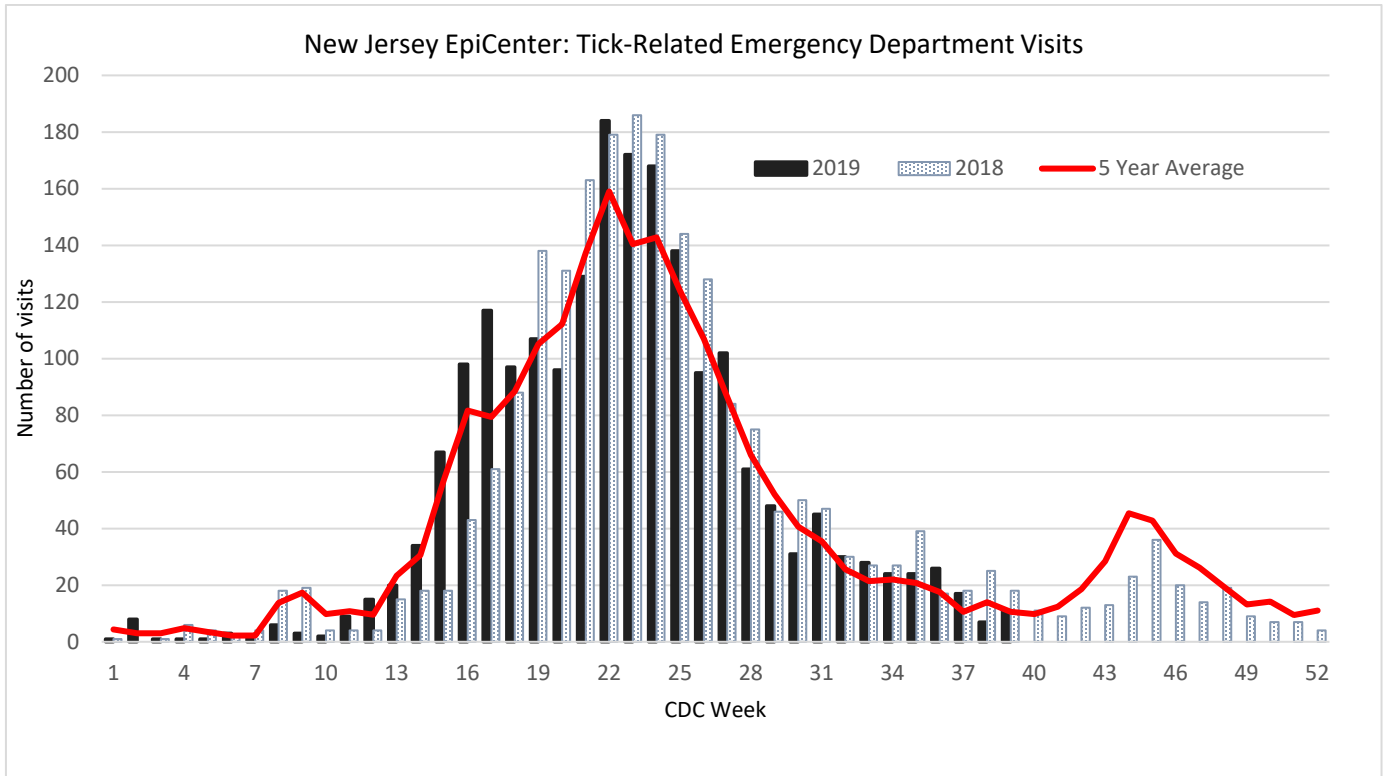


5. Syndromic Surveillance for Tick-related Emergency Department Visits

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 39, 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 October 1, 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/>
- **New!** New Jersey Arboviral Activity Maps: <http://bit.ly/JerseySurv>