Vector-borne Surveillance Report

CDC WEEK 40: September 29-October 5, 2019

2019 Season highlight:

- *Three human cases of Eastern equine encephalitis (EEE) have been reported in Atlantic, Somerset and Union Counties.*
- *Eleven equine cases of EEE have been reported in Atlantic, Burlington, Camden, Monmouth, Morris, Ocean (5) and Salem counties. One alpaca case of EEE was reported from Camden County. EEE has been detected in 73 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	**7**	16	Anaplasmosis	**108**	118
Dengue	**48**	20	Babesiosis	**182**	249
Eastern equine encephalitis	**3**	-	*Borrelia miyamotoi*	**14**	8
Jamestown Canyon	**-**	-	Ehrlichiosis	**103**	94
Malaria	**83**	93	Lyme disease	**2357**	4000
West Nile	**7**	61	Powassan	**4**	1
Zika	**6**	10	Spotted fever group rickettsioses	**147**	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 40 (week ending October 5, 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):

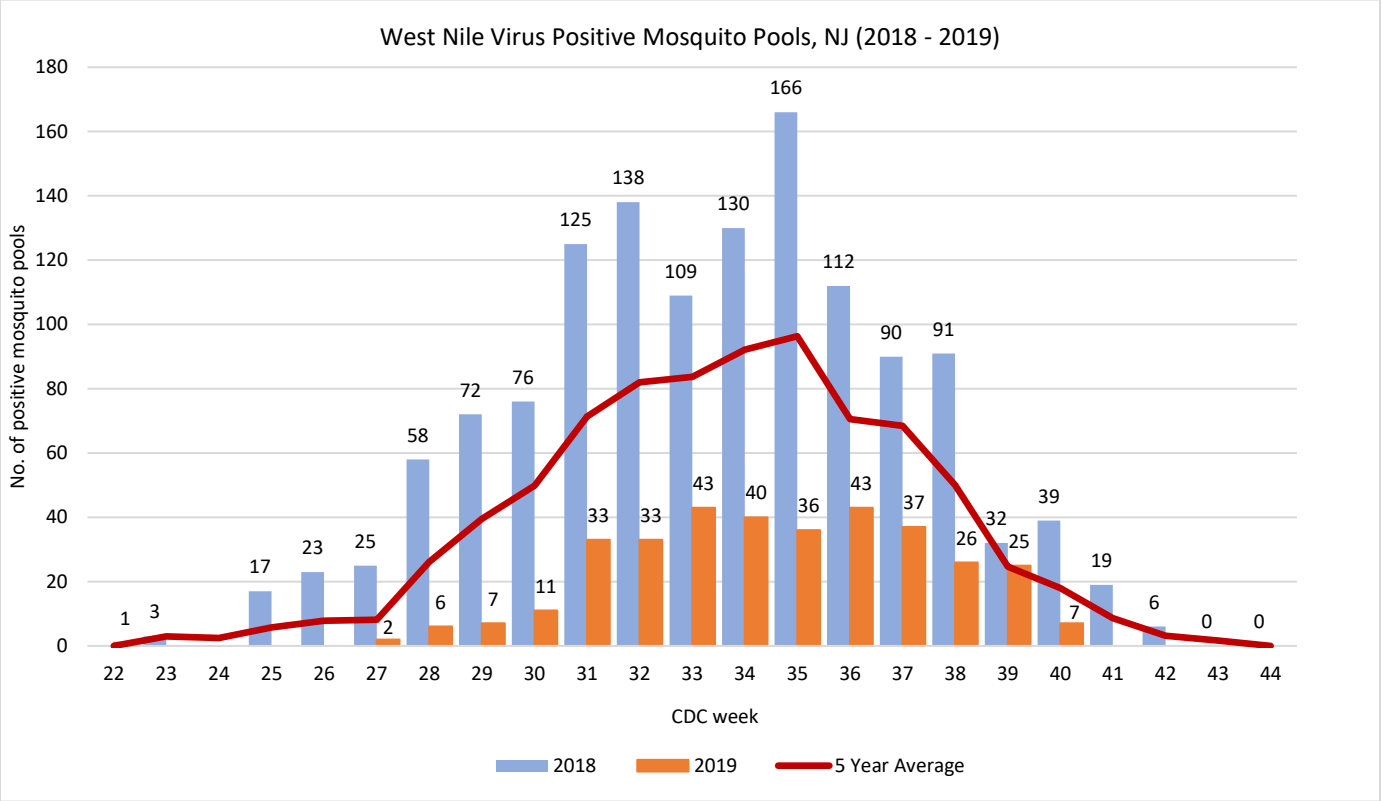
- A total of 10,402 mosquito pools have been tested for WNV; 350 mosquito pools were positive for WNV with the highest numbers reported from Bergen and Burlington counties.
- The first positive pool was detected in week 22 (Passaic county). In 2018 the first WNV positive mosquito pool was identified 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, Coquillettidia perturbans, Culex erraticus, Culex pipiens, Culex* spp and *Culiseta melanura* species.
- 88% (*n=307*) 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 10, 2019.*

WNV Positive Mosquito Pools

	Week 40		Cumulative Total (week 40)	
County	**2019***	2018	**2019***	2018
Bergen		7	79	154
Burlington		2	55	35
Hudson			38	67
Union	1	3	33	78
Hunterdon	2	8	20	152
Monmouth	2	1	18	63
Somerset		4	17	84
Atlantic	1		15	23
Gloucester		3	12	117
Ocean	1		11	26
Middlesex			9	56
Morris		2	9	166
Mercer			8	43
Camden			6	39
Cape May			5	20
Passaic			4	16
Salem			3	9
Sussex		1	3	54
Warren		8	3	80
Cumberland			1	10
Essex			1	14
Total	**7**	39	**350**	1306

Week 40: Sep 30-Oct 6, 2018; Sep 29-Oct 5, 2019



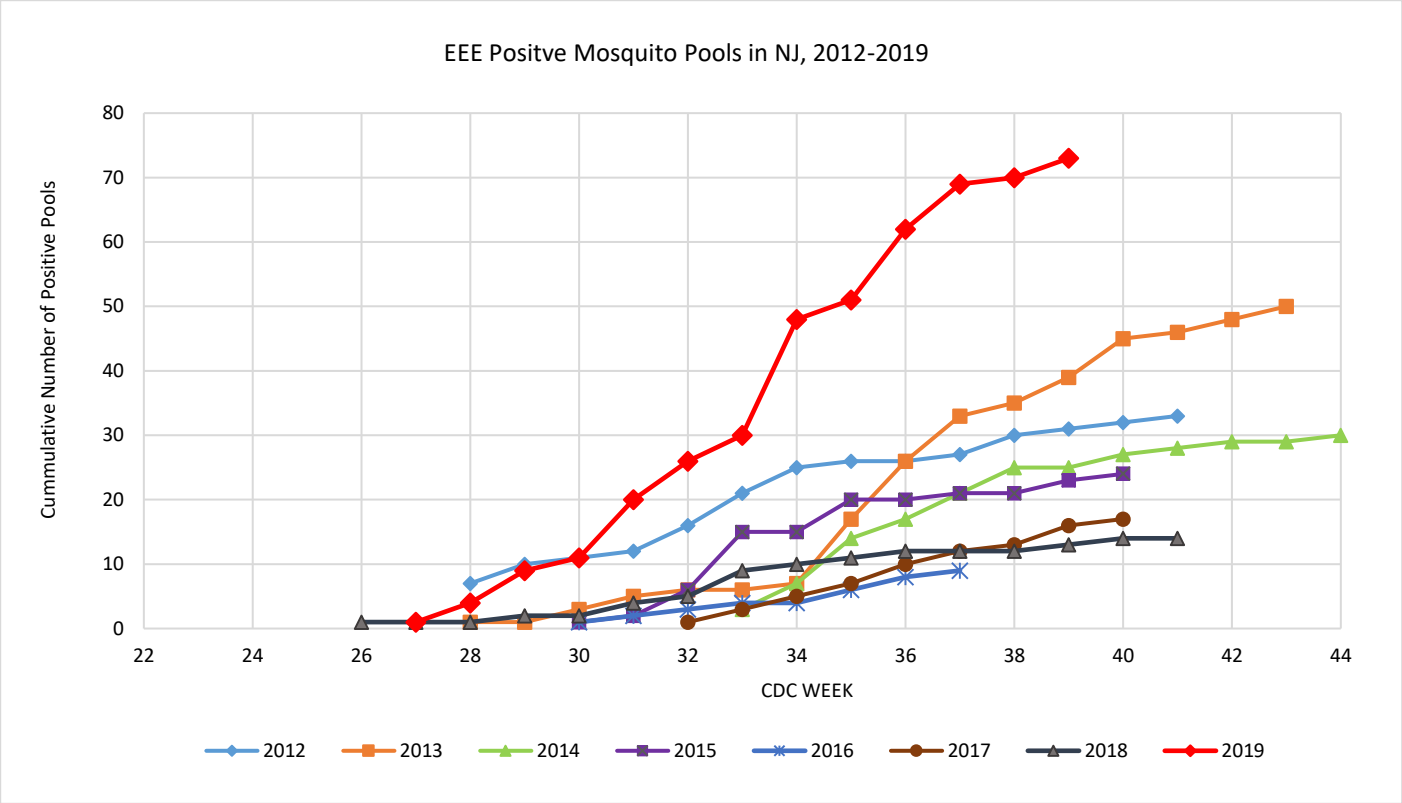
Eastern equine encephalitis virus (EEE)

- A total of 9627 mosquito pools have been tested for EEE; 73 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 40, 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 Sussex County (*n=11*).
- The first positive pool was detected in week 27 (Monmouth county). In 2018, the first EEE mosquito pool was reported in week 26.
- 74% (*n*=54) 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

	Week 40		Cumulative Total (week 40)	
County	**2019***	2018	**2019***	2018
Sussex			11	
Atlantic			10	1
Morris			10	
Burlington			9	5
Camden			8	4
Monmouth			8	1
Gloucester			6	
Ocean			3	
Salem			3	2
Hunterdon			2	
Cape May			1	
Union			1	
Warren			1	
Bergen				
Cumberland		1		1
Essex				
Hudson				
Mercer				
Middlesex				
Passaic				
Somerset				
Total	-	1	**73**	14

Week 40: Sep 30-Oct 6, 2018; Sep 29-Oct 5, 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 Coquillettidia 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])

	SLE		JCV		LAC		CHIKV		DENV		ZIKV	
County	Pools	Pos	Pools	Pos	Pools	Pos	Pools	Pos	Pools	Pos	Pools	Pos
Atlantic	468		468				76		76		76	
Bergen	303		303	1	23		5		5		5	
Burlington	418		418	1	22							
Camden	132		106				16		16		16	
Cape May	2559		21		190		444				444	
Cumberland	338		338		9							
Essex	152		152		1							
Gloucester	542		528		7		17		17		17	
Hudson	231		231		8							
Hunterdon	332		332		3							
Mercer	408		408		33		24		24		24	
Middlesex	277		277		4		10		10		10	
Monmouth	519		519		20							
Morris	580		580									
Ocean	391		391									
Passaic	207		207		18	1						
Salem	550		535	1	20							
Somerset	295		295									
Sussex	372		372	2	21							
Union	209		209		10							
Warren	344		344									
Total	9627	-	7034	**5**	389	**1**	592	-	148	-	592	-

[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[a]

Equine testing for WNV and EEE is conducted at the New Jersey Department of Agriculture's Animal Health and Diagnostic Laboratory.
Eleven equine cases and one alpaca case of EEE have been reported this season (see table below). The first cases were reported in week 30. This is the earliest report of equine cases in the state since 2012.

No equine West Nile cases have been reported this season.

Equine Cases (EEE)

CDC Week	County	Age	Sex	Vaccination Status	Onset Date	Animal Status
30	Ocean	12-year-old	Mare	Unvaccinated	7/23/19	Euthanized 7/23/19
30	Ocean	20-year-old	Gelding	Unvaccinated	7/26/19	Euthanized 7/26/19
32	Monmouth	1-year-old	Colt	EWT 2019	8/05/19	Euthanized 8/05/19
33	Ocean	2-year-old	Gelding	Incomplete	8/15/19	Euthanized 8/16/19
33	Morris	18-year-old	Gelding	Unvaccinated	8/15/19	Euthanized 8/16/19
35	Salem	4-month-old	Colt	Unknown	Unknown	Euthanized 8/25/19
35	Atlantic	1-year-old	Filly	Unknown	Unknown	Euthanized 8/24/19
35	Ocean	Unknown	Gelding	Unknown	Unknown	Euthanized 8/26/19
35	Ocean	4-year-old	Gelding	Unknown	Unknown	Euthanized 8/26/19
39	Burlington	1-year-old	Filly	Unknown	9/24/19	Euthanized 9/29/19
40	Camden	3-year-old	Gelding	EWT 2019	9/30/19	Euthanized 9/30/19

Other:

Alpaca Case (EEE)

CDC Week	County	Age	Sex	Vaccination Status	Onset Date	Animal Status
31	Camden	7-year-old	Male	Unknown	8/02/19	Euthanized 8/3/19

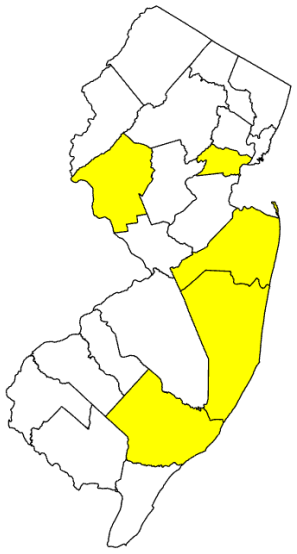
[a] Cumulative through week 40 (week ending October 5, 2019)

Routine avian testing has been discontinued but is available upon request at PHEL.

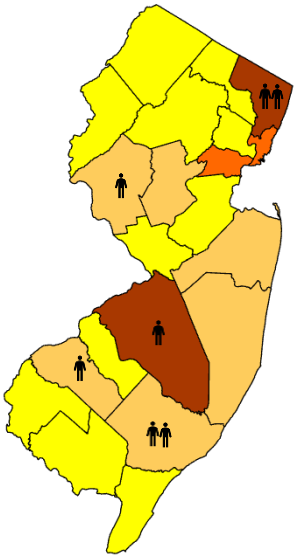
4. Surveillance Maps

West Nile Virus (WNV)

Week 40 WNV Activity (2019)*



Cumulative WNV Activity 2019



WNV Positive Pools

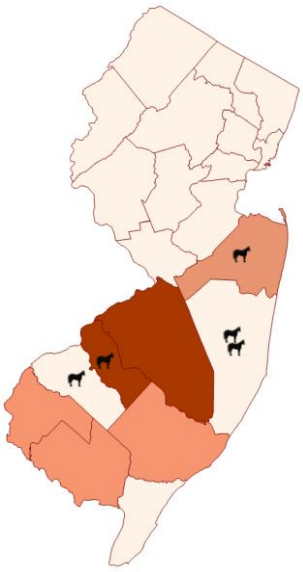
- > 50
- ≤ 50
- ≤ 30
- ≤ 20
- < 10
- 0

WNV human case

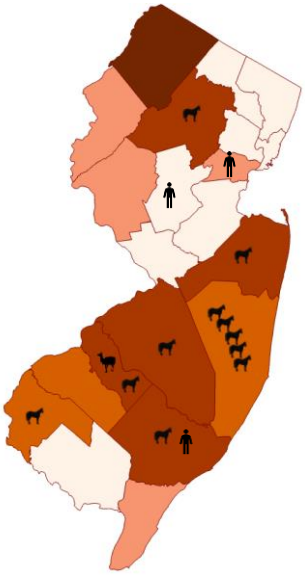
WNV equine case

Eastern equine encephalitis (EEE)

2018 EEE Activity



Cumulative EEE Activity 2019



EEE Positive Pools

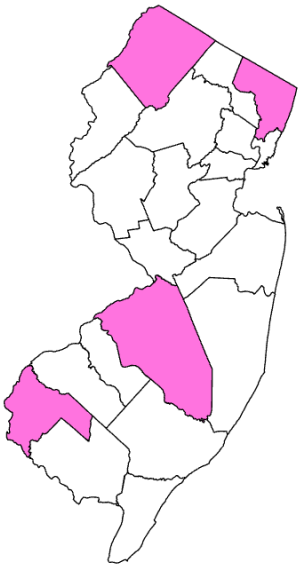
- > 10
- ≤ 10
- ≤ 6
- ≤ 2
- No EEE activity

Human case

Equine case

Alpaca case

Jamestown Canyon Virus Activity 2019



JCV positive mosquito pool

No LAC activity

La Crosse Virus Activity 2019

LAC positive mosquito pool

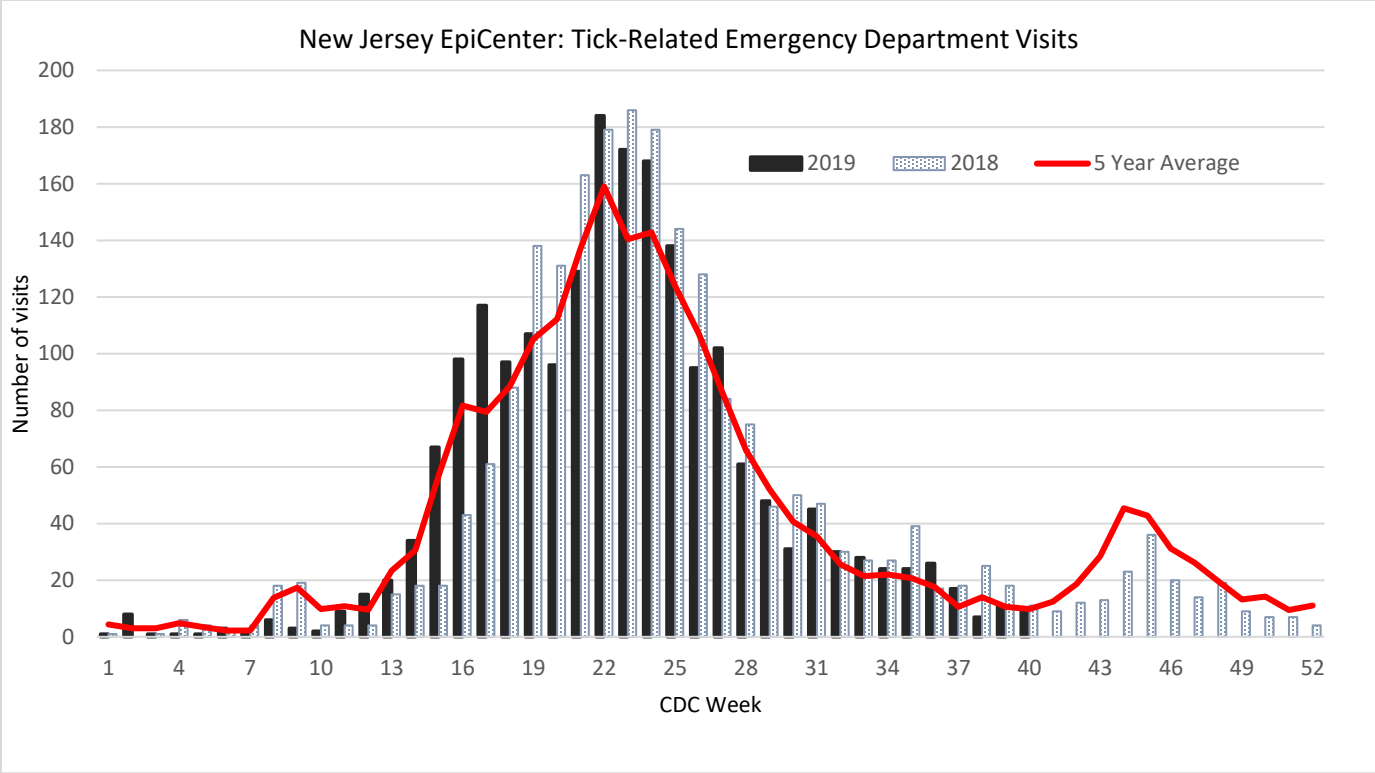
No LAC activity

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 40, 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 9, 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