

## 2019 Season highlight:

- 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.
- EEE has been detected in 61 mosquito pools in 11 counties. This is the highest number of positive pools reported at this point in the season in the past 7 years.
- Two cases of West Nile virus have been reported (Atlantic and Hunterdon counties). WNV has been detected in mosquito pools in 19 counties. The number of WNV positive pools is significantly lower than historical averages.

## 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<sup>a</sup>

Mosquito-borne diseases			Tickborne Diseases		
	2019 <sup>b</sup>	2018		2019 <sup>b</sup>	2018
Chikungunya	5	16	Anaplasmosis	101	118
Dengue	29	20	Babesiosis	162	249
Eastern equine encephalitis	1	-	<i>Borrelia miyamotoi</i>	13	8
Jamestown Canyon	-	-	Ehrlichiosis	91	94
Malaria	68	93	Lyme disease	1981	4000
West Nile	2	61	Powassan	3	1
Zika	6	10	Spotted fever group rickettsioses	126	147

<sup>a</sup> 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.

<sup>b</sup> Cumulative through week 36 (week ending September 7, 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 7830 mosquito pools have been tested for WNV; 224 mosquito pools from 19 counties 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 pipiens*, *Culex* spp and *Culiseta melanura* species.
- 89% (n=200) of the positive pools were *Culex* sp.

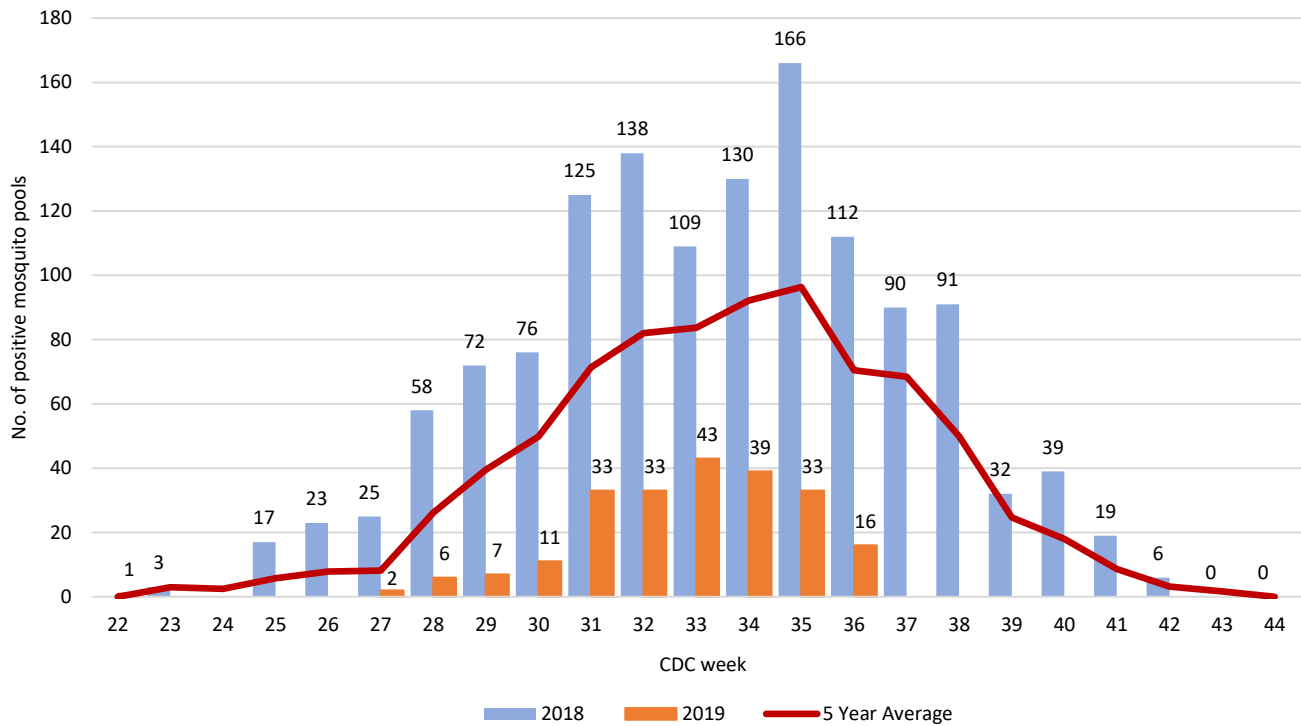
\*Test results may be incomplete; Counties submit pools for testing on specific weekdays. Mosquito testing data reflects test results received from PHEL, CMBSL3 and US Army Public Health as of September 12, 2019

### WNV Positive Mosquito Pools

County	Week 36		Cumulative Total (week 36)	
	2019*	2018	2019*	2018
Bergen		10	47	118
Burlington	5	5	38	31
Union	1	3	25	61
Hudson		5	24	59
Somerset		12	14	71
Monmouth	3	4	13	56
Hunterdon	1	18	12	109
Middlesex		3	8	51
Atlantic	2	1	7	23
Morris	2	14	6	138
Camden		1	5	31
Mercer		2	5	43
Gloucester		8	4	92
Ocean	1		4	22
Cape May		1	3	15
Passaic			3	13
Warren		11	3	61
Sussex	1	13	2	29
Cumberland			1	10
Essex		1		13
Salem				8
<b>Total</b>	<b>16</b>	<b>112</b>	<b>224</b>	<b>1054</b>

Week 36: September 2-8. 2018: September 1-7. 2019

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



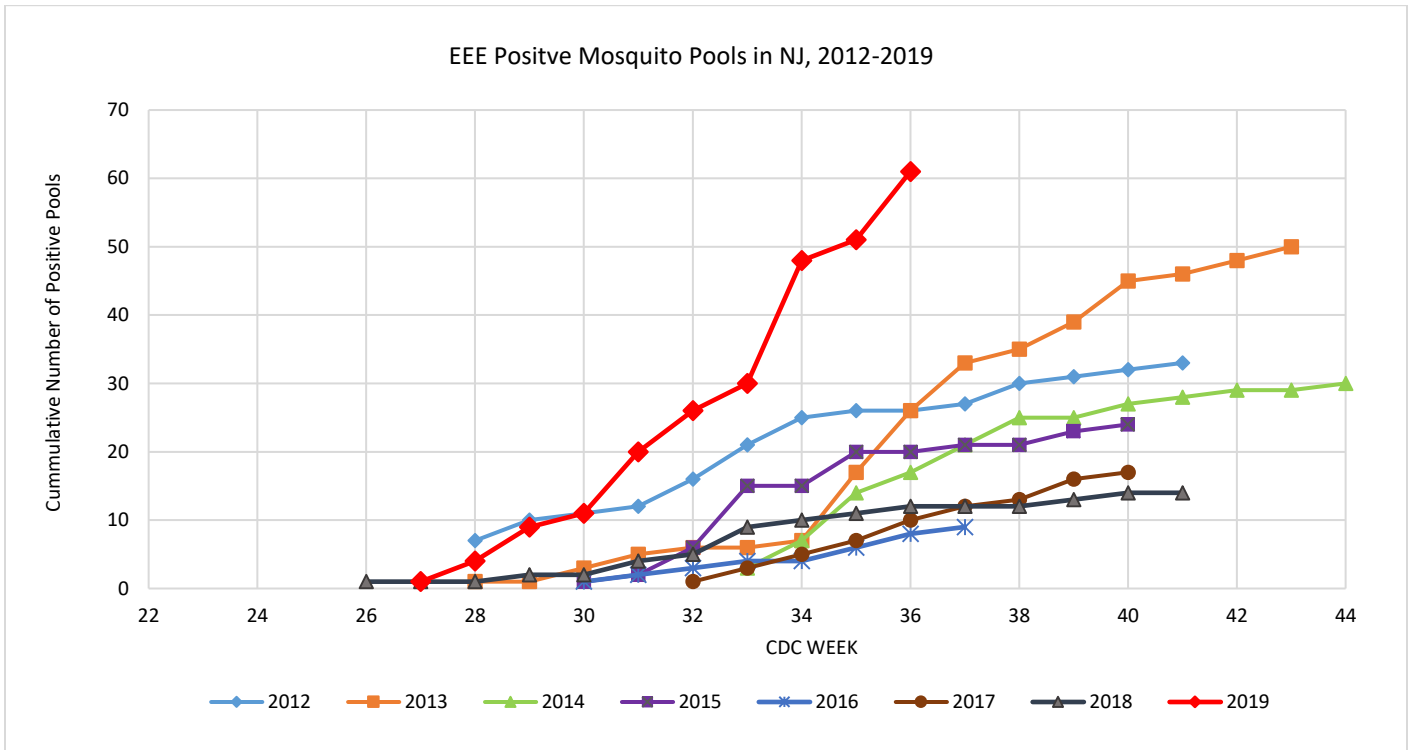
### Eastern equine encephalitis virus (EEE)

- A total of 7074 mosquito pools have been tested for EEE; 61 mosquito pools from 11 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 36, 3 northern counties (Morris, Sussex 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.
- 77% ( $n=47$ ) 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, Morris, Ocean, Sussex and Warren).

EEE Positive Mosquito Pools

County	Week 36		Cumulative Total (week 36)	
	2019*	2018	2019*	2018
Atlantic	4		10	1
Morris	1		9	
Monmouth	1		8	1
Sussex	3		8	
Burlington		1	7	4
Camden	1		7	4
Gloucester			5	
Ocean			3	
Salem			2	2
Cape May			1	
Warren			1	
Bergen				
Cumberland				
Essex				
Hudson				
Hunterdon				
Mercer				
Middlesex				
Passaic				
Somerset				
Union				
<b>Total</b>	<b>10</b>	<b>1</b>	<b>61</b>	<b>12</b>

Week 36: September 2-8, 2018; September 1-7, 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 31<sup>st</sup> (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 <sup>a</sup>)**

County	SLE		JCV		LAC		CHIKV		DENV		ZIKV	
	Pools	Pos	Pools	Pos	Pools	Pos	Pools	Pos	Pools	Pos	Pools	Pos
Atlantic	360		360				58		58		58	
Bergen	234		234	1	23							
Burlington	309		309	1	20							
Camden	89		71				4		4		4	
Cape May	1707		21		190		444				444	
Cumberland	263		263		4							
Essex	121		121		1							
Gloucester	382		370		2		17		17		17	
Hudson	180		180		8							
Hunterdon	249		249		3							
Mercer	312		312		27		20		20		20	
Middlesex	224		224		4		10		10		10	
Monmouth	400		400		20							
Morris	423		423									
Ocean	311		311									
Passaic	171		171		18	1						
Salem	412		401	1	20							
Somerset	215		215									
Sussex	276		276	1	21							
Union	155		155		10							
Warren	281		281									
<b>Total</b>	<b>7074</b>	<b>-</b>	<b>5347</b>	<b>4</b>	<b>371</b>	<b>1</b>	<b>553</b>		<b>109</b>	<b>-</b>	<b>553</b>	<b>-</b>

<sup>a</sup> 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 36		Cum. Total (Year)	
	2019	2018	2019	2018
Equine (EEE)	-	2	9	3
Equine (WNV)	-	1	-	1
Other:				
Alpaca (EEE)	-	-	1	-

Week 36: September 2-8, 2018; September 1-7, 2019

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

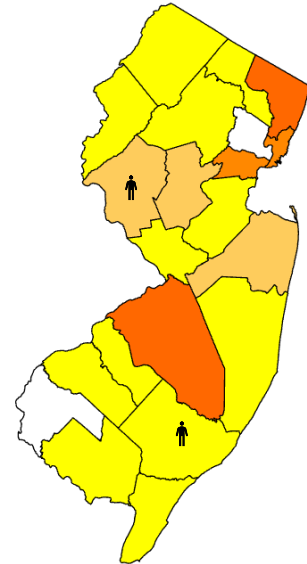
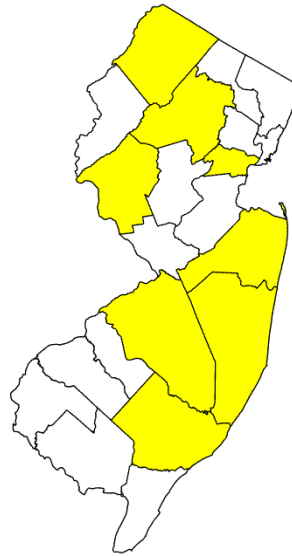
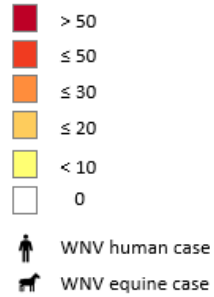
## 4. Surveillance Maps

### West Nile Virus (WNV)

Week 36 WNV Activity (2019)\*

Cumulative WNV Activity 2019

#### WNV Positive Pools

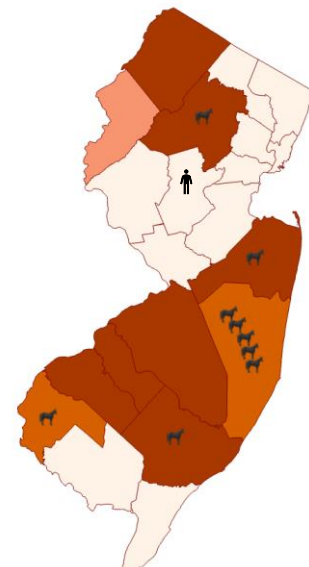
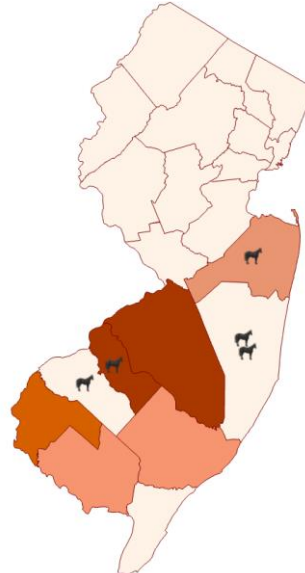
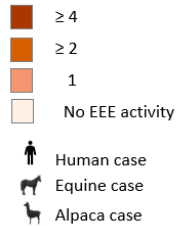


### Eastern equine encephalitis (EEE)

2018 EEE Activity

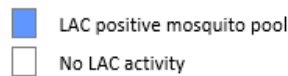
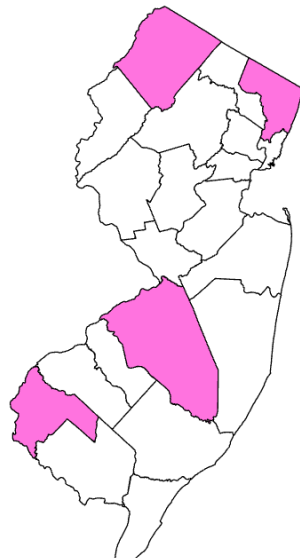
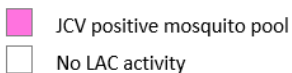
Cumulative EEE Activity 2019

#### EEE Positive Pools



Jamestown Canyon Virus Activity 2019

La Crosse Virus Activity 2019

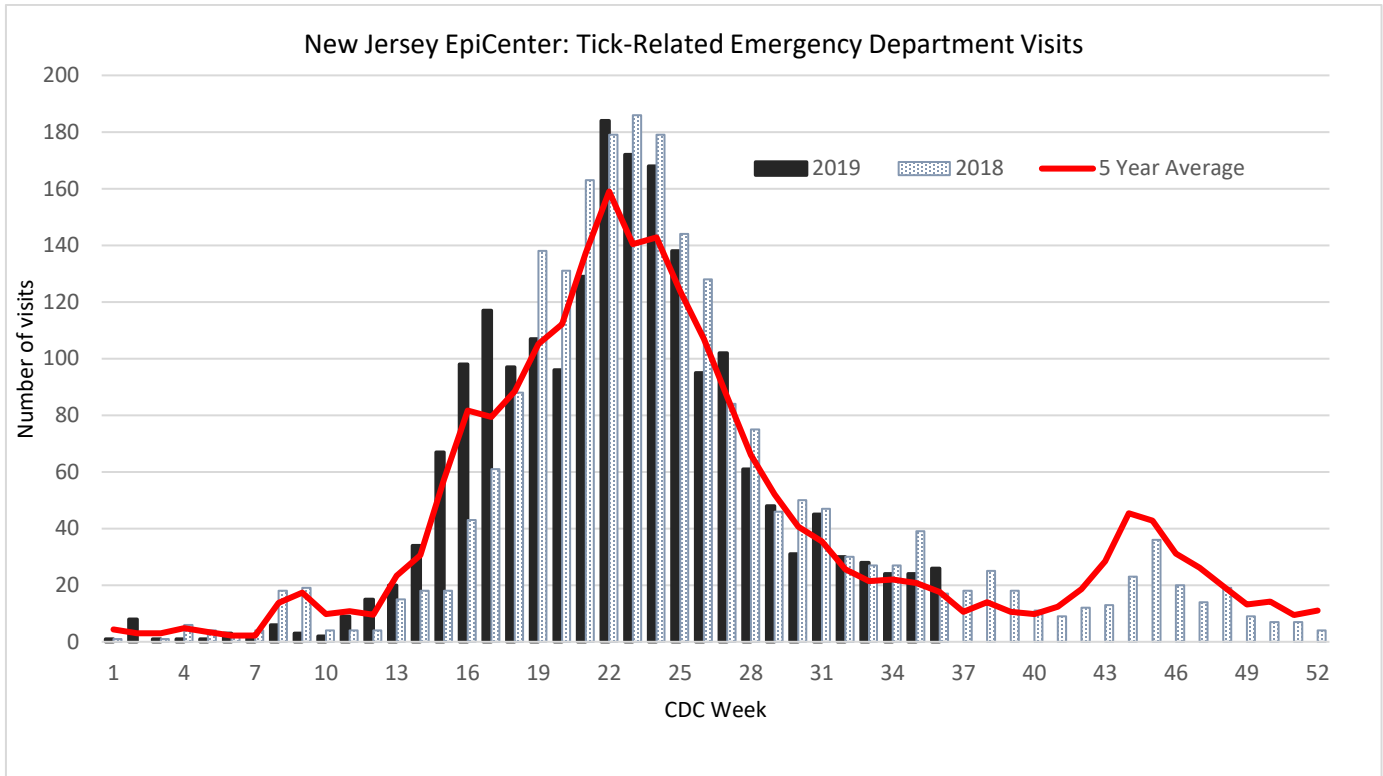


## 5. Syndromic Surveillance for Tick-related Emergency Department Visits

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 36, 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 11, 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/>