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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		
	2020 ^b	2019		2020 ^b	2019
Chikungunya	3	15	Anaplasmosis	114	142
Dengue	2	73	Babesiosis	238	236
Eastern equine encephalitis	-	4	<i>Borrelia miyamotoi</i>	9	16
Jamestown Canyon	-	-	Ehrlichiosis	78	142
Malaria	24	102	Lyme disease	2566	3620
West Nile	3	8	Powassan	1	4
Zika	3	12	Spotted fever group rickettsioses	35	209

^a Data for 2020 reflect confirmed and probable cases that have been approved by NJDOH. This does not include cases under investigation. All 2020 numbers are preliminary and are subject to change.

^b Cumulative through CDC week 53 (week ending January 2, 2021).

2020 West Nile Virus Cases

- In 2020, 3 human cases of West Nile virus (WNV) were reported from Essex and Monmouth (2 cases) (Figure 1.1).
- All 3 (100%) confirmed cases were diagnosed with encephalitis (including meningoencephalitis) and classified as having neuroinvasive disease meaning the patient presented with meningitis, encephalitis, acute flaccid paralysis, or other acute signs of central or peripheral neurologic dysfunction.
- All cases were hospitalized for an average of 15 days; with 1 of the 3 cases requiring additional medical care after hospitalization in a long-term care/rehabilitation facility.
- The median age of cases was 55 years (range, 44 to 70 years). All cases were male.
- Dates of symptom onset of the WNV cases ranged from July 29 to August 21 (CDC weeks 30-35).
- One asymptomatic presumptive viremic blood donor (PVD) report was reported Burlington County. These are not considered as cases but are reported to CDC as presumptive viremic blood donors (PVD).

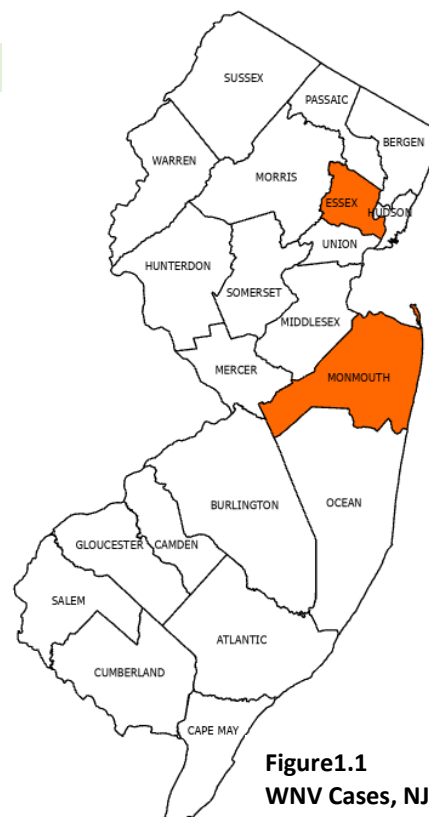
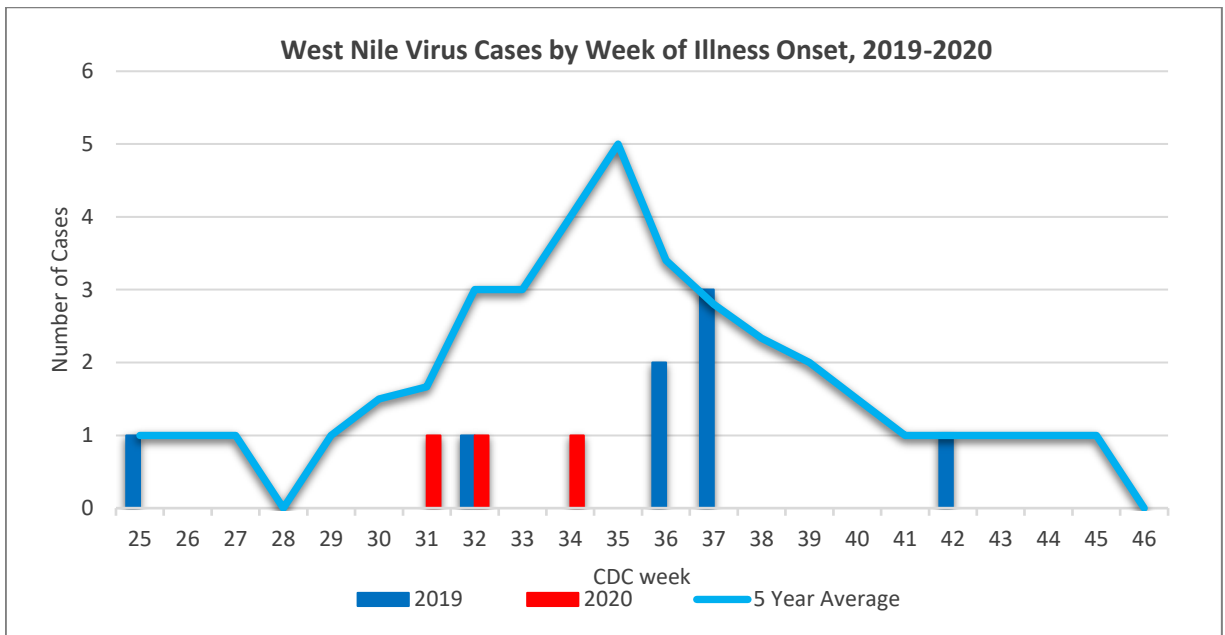


Figure 1.1
WNV Cases, NJ (2020)



2. Mosquito Testing

West Nile virus (WNV):

- In 2020, a total of 8994 mosquito pools were tested for West Nile virus of which 241 pools (0.3%) from 17 counties tested positive.
- The highest number of positive pools were detected weeks 33 to 35 (figure 2.1). Bergen, Monmouth and Union counties reported the most positive pools in 2020.
- Compared with the previous 5 years, 2020 was the least active season for some NJ counties (figure 2.2). Four counties (Cumberland, Essex, Ocean and Sussex) did not report any positive pools.
- The positive pools in 2020 were detected in *Aedes albopictus*, *Aedes canadensis*, *Culex pipiens*, *Culex* species mix and *Culiseta melanura* species; 96% (n=231) of the positive pools were *Culex* sp.

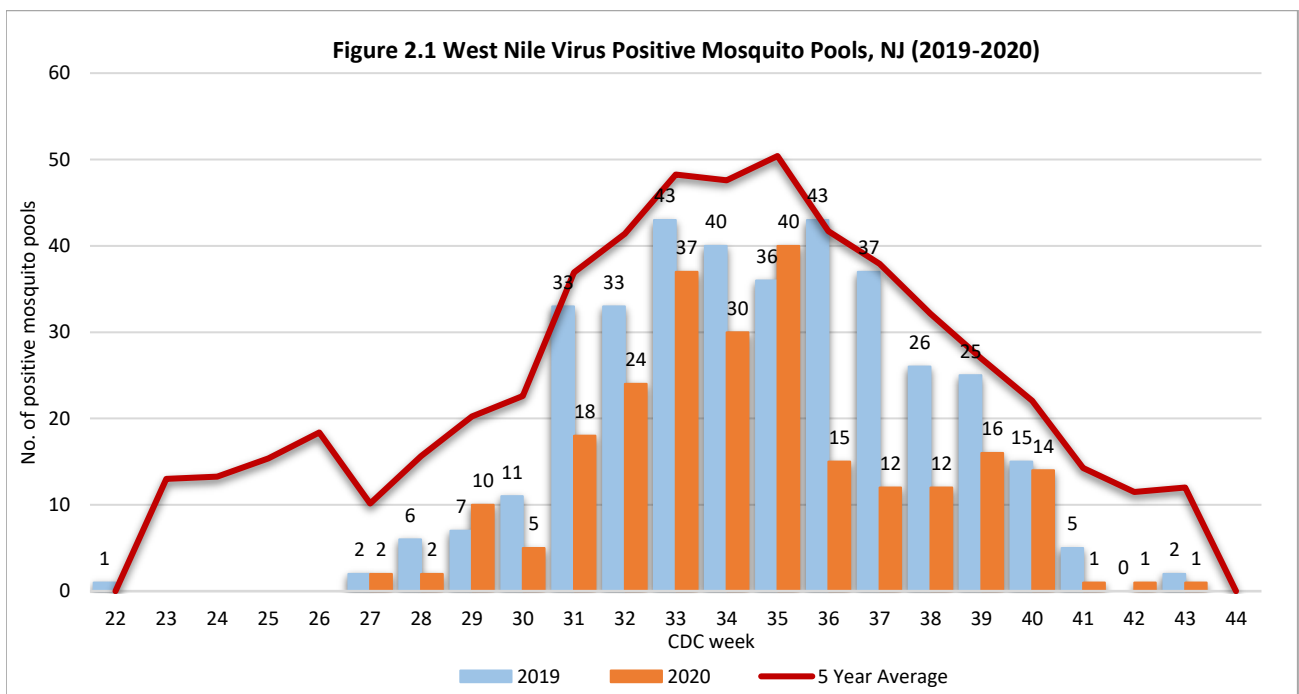
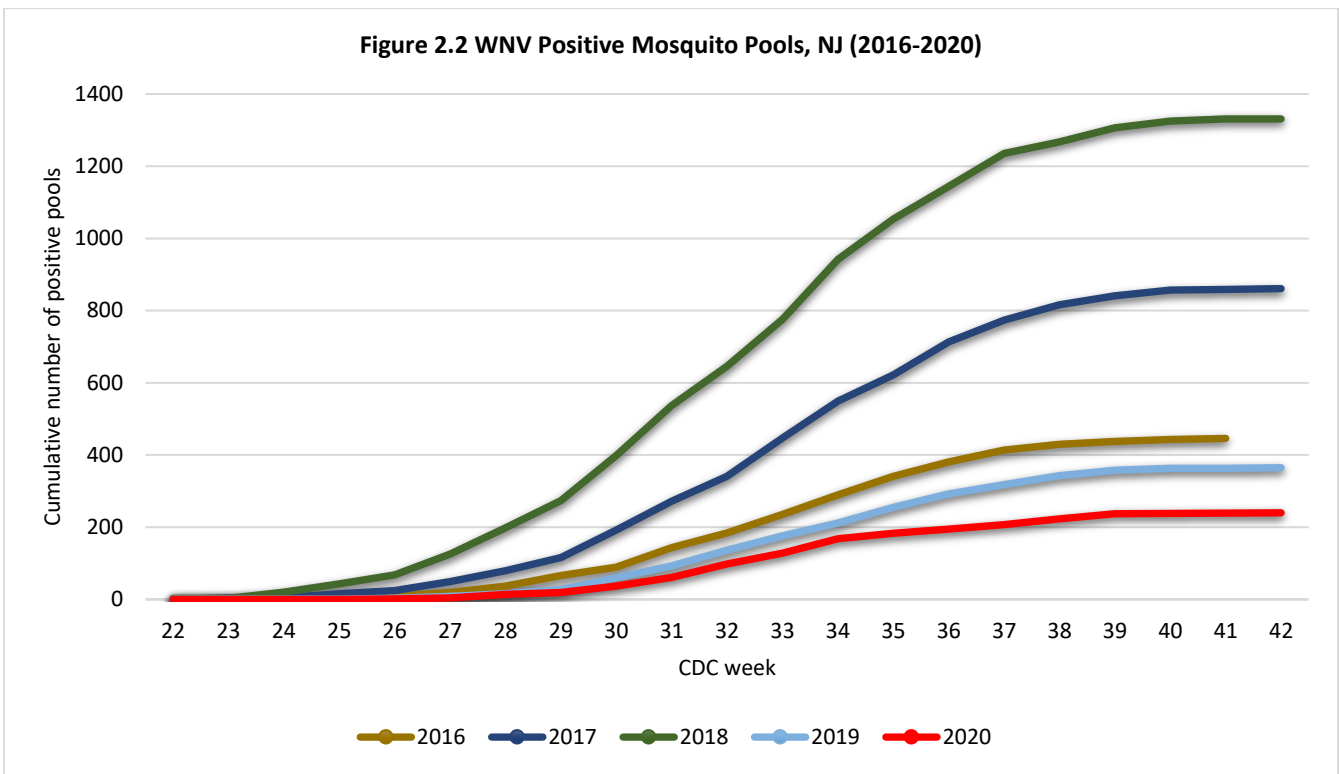
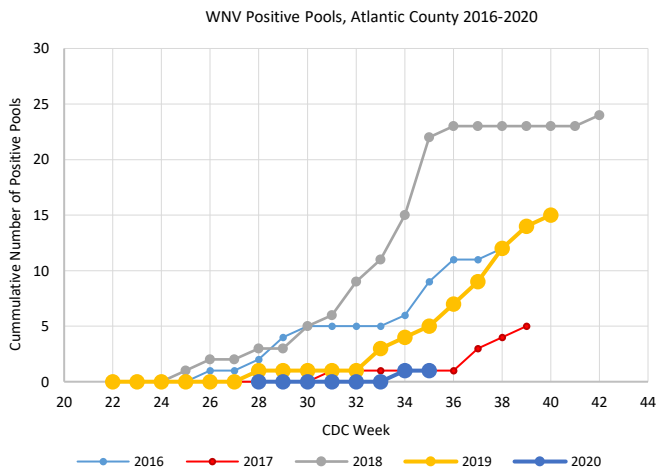


Figure 2.2 WNV Positive Mosquito Pools, NJ (2016-2020)

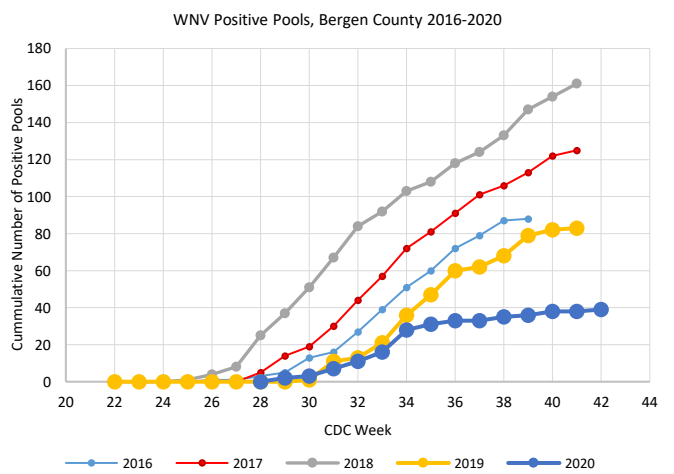


WNV Positive Mosquito Pools by NJ County 2016-2020*

Atlantic County

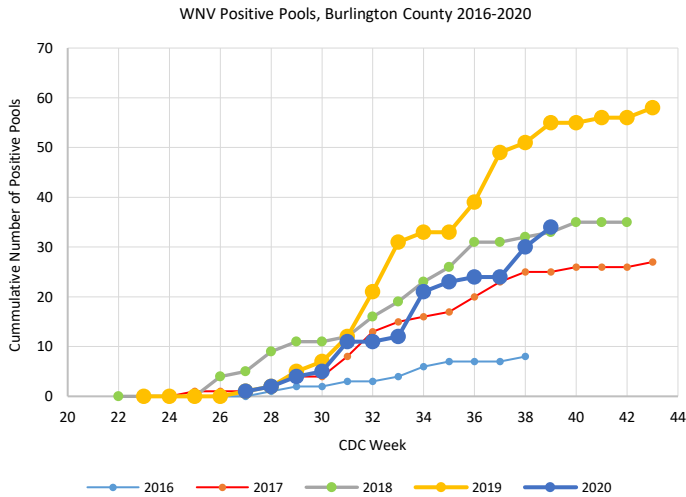


Bergen County

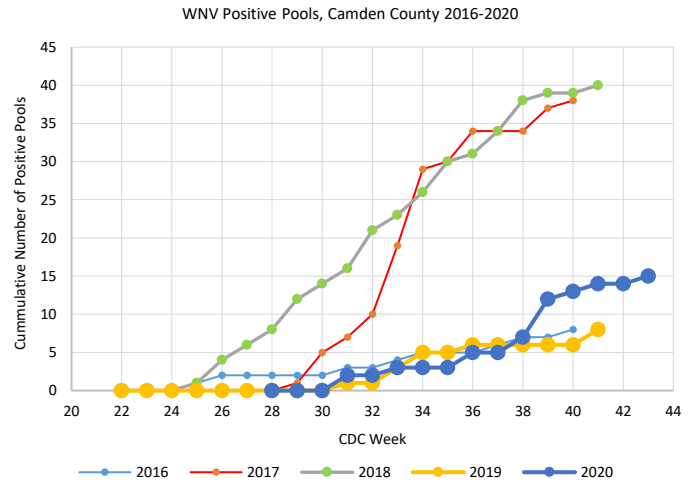


*counties reporting positive pools in 2020

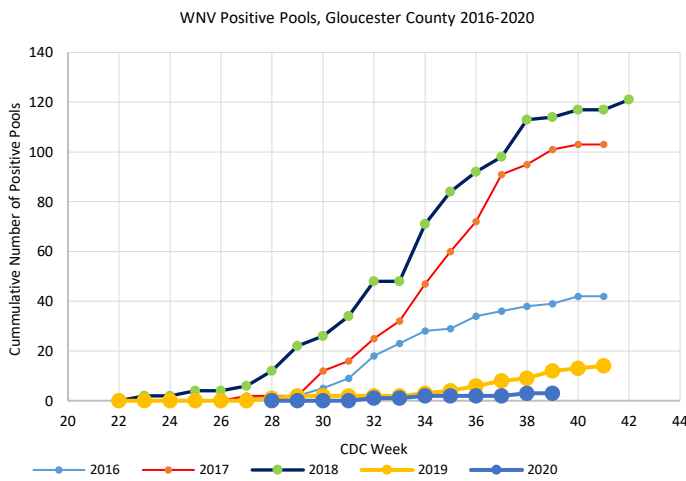
Burlington County



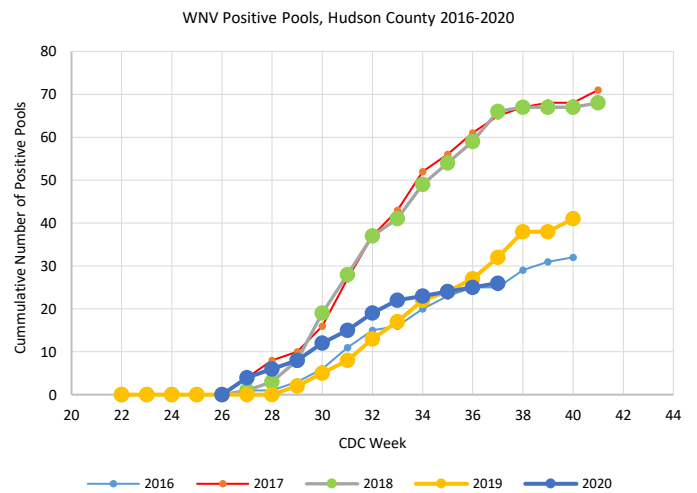
Camden County



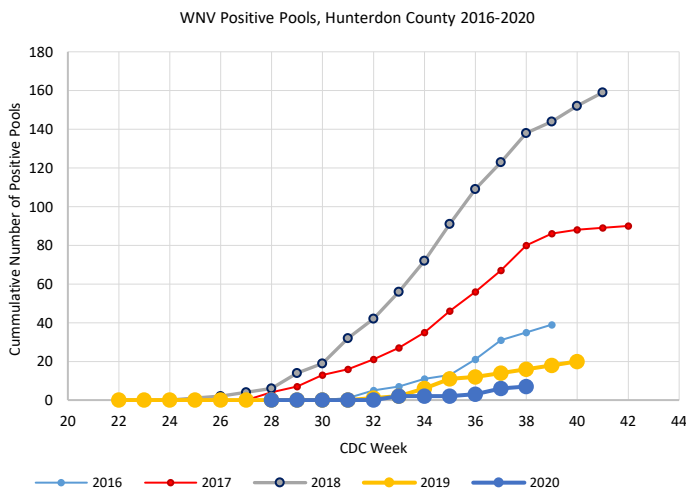
Gloucester County



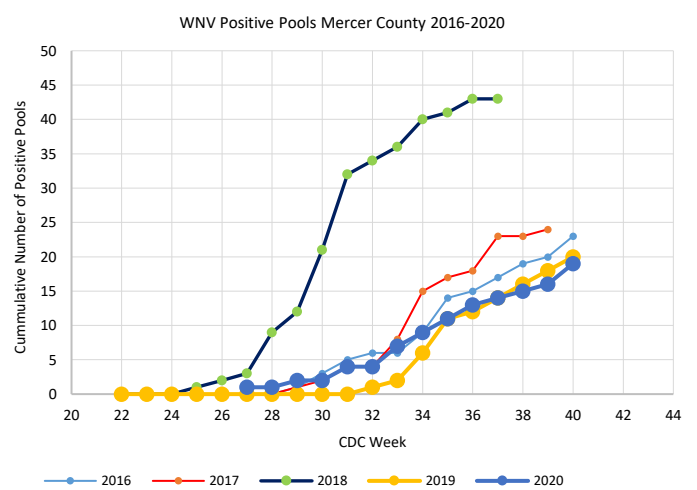
Hudson County



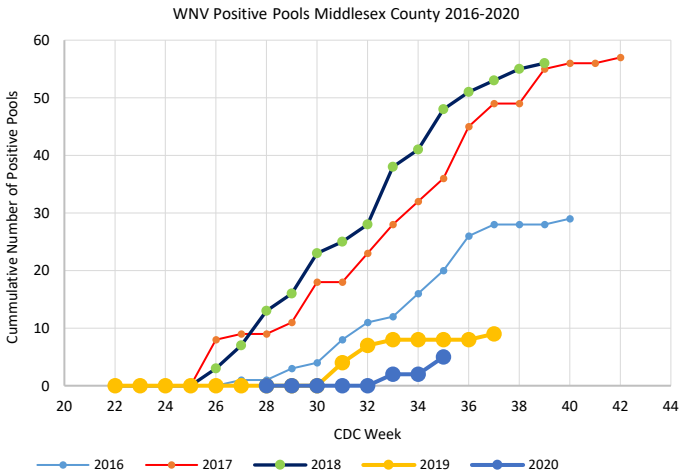
Hunterdon County



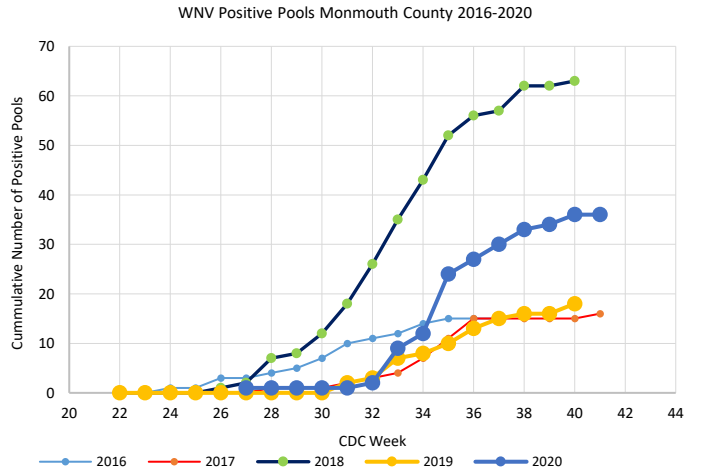
Mercer County



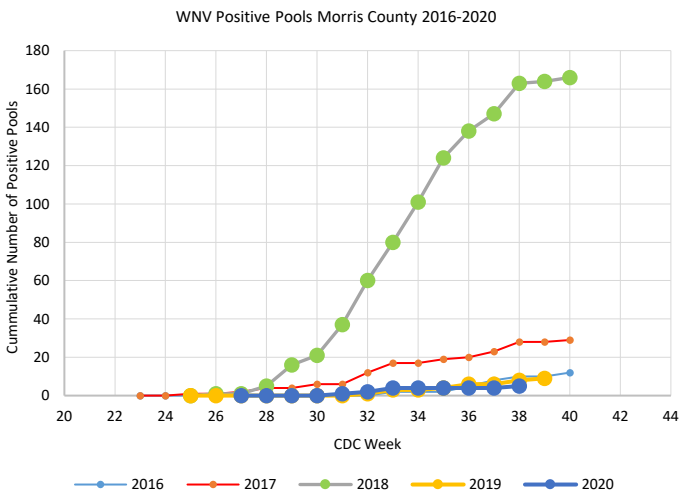
Middlesex County



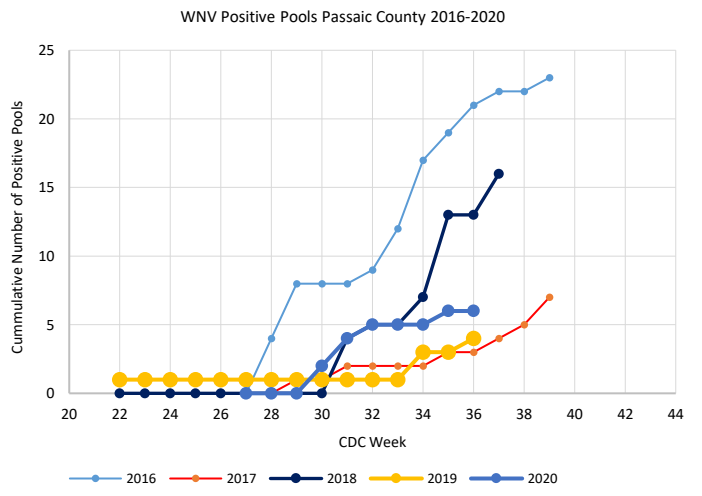
Monmouth County



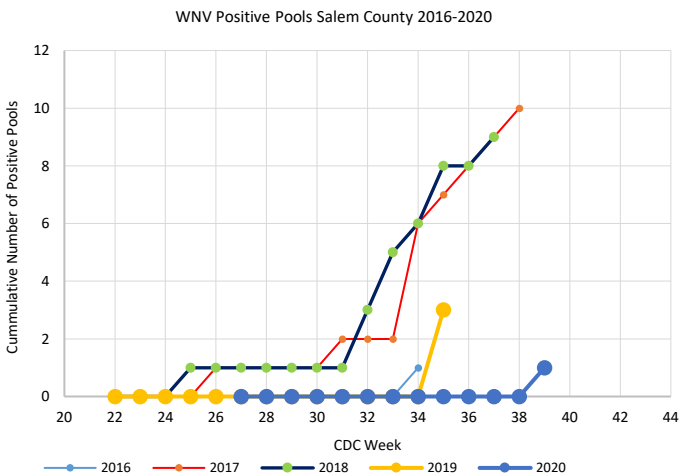
Morris County



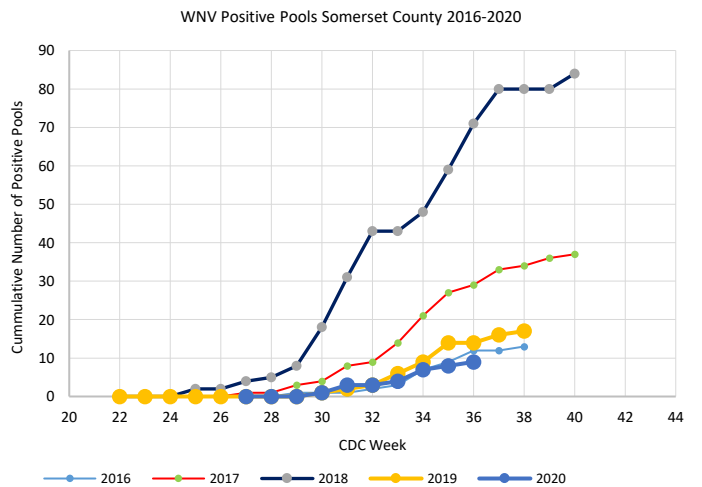
Passaic County



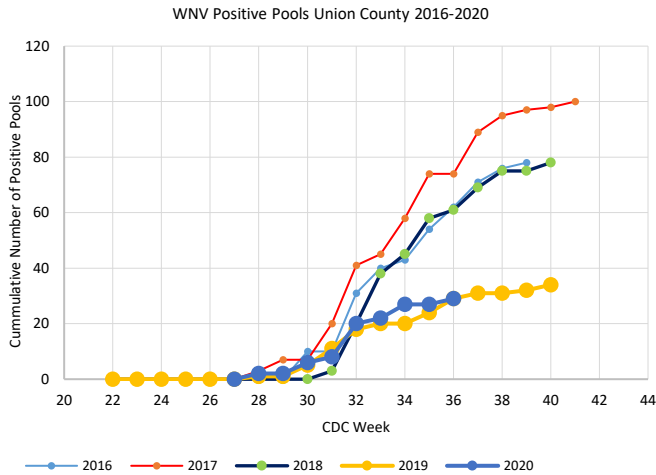
Salem County



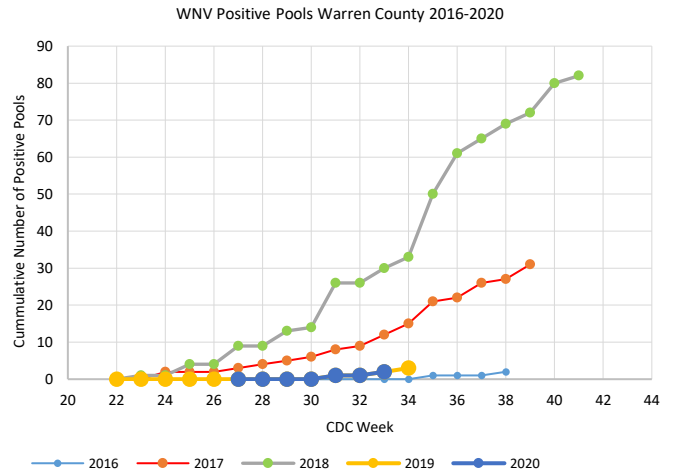
Somerset County



Union County



Warren County



Eastern equine encephalitis virus (EEE)

- In 2020, a total of 9151 mosquito pools were tested for EEE of which 10 pools from 4 counties tested positive (Table 2.1).
- The first positive pool in 2020 was detected in week 25 (Atlantic County). This is the earliest detection of EEE in mosquito pools in the state in at least 5 years (figure 2.1).
- All positive pools were detected in *Culiseta melanura* species.
- In 2019, the first EEE mosquito pool was reported from Monmouth County in week 27.

Table 2.1 EEE Positive Mosquito Pools

County	Cumulative Total	
	2020*	2019
Atlantic	7	10
Camden	3	8
Burlington	1	9
Salem	1	3
Bergen		
Cape May		1
Cumberland		
Essex		
Gloucester	1	6
Hudson		
Hunterdon		2
Mercer		
Middlesex		
Monmouth		8
Morris		10
Ocean		3
Passaic		
Somerset		
Sussex		11
Union		1
Warren		1
Total	13	73

Figure 2.3 EEE Virus Positive Mosquito Pools, NJ (2016-2020)

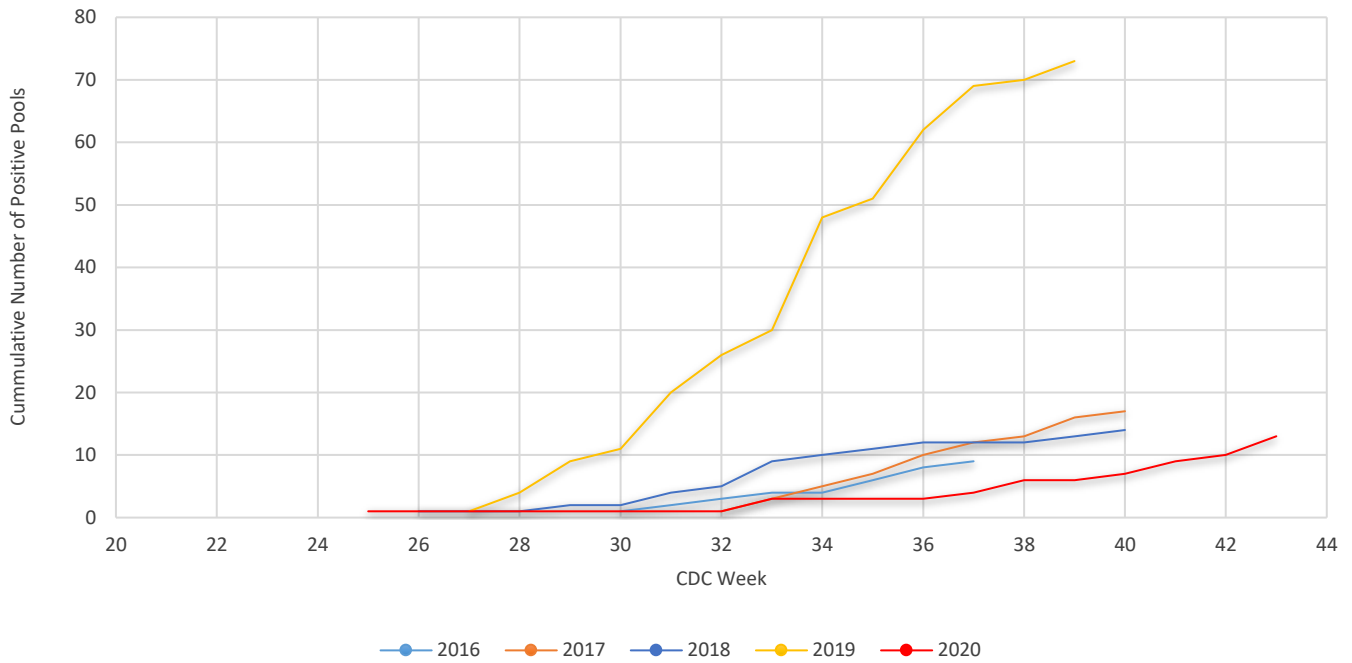
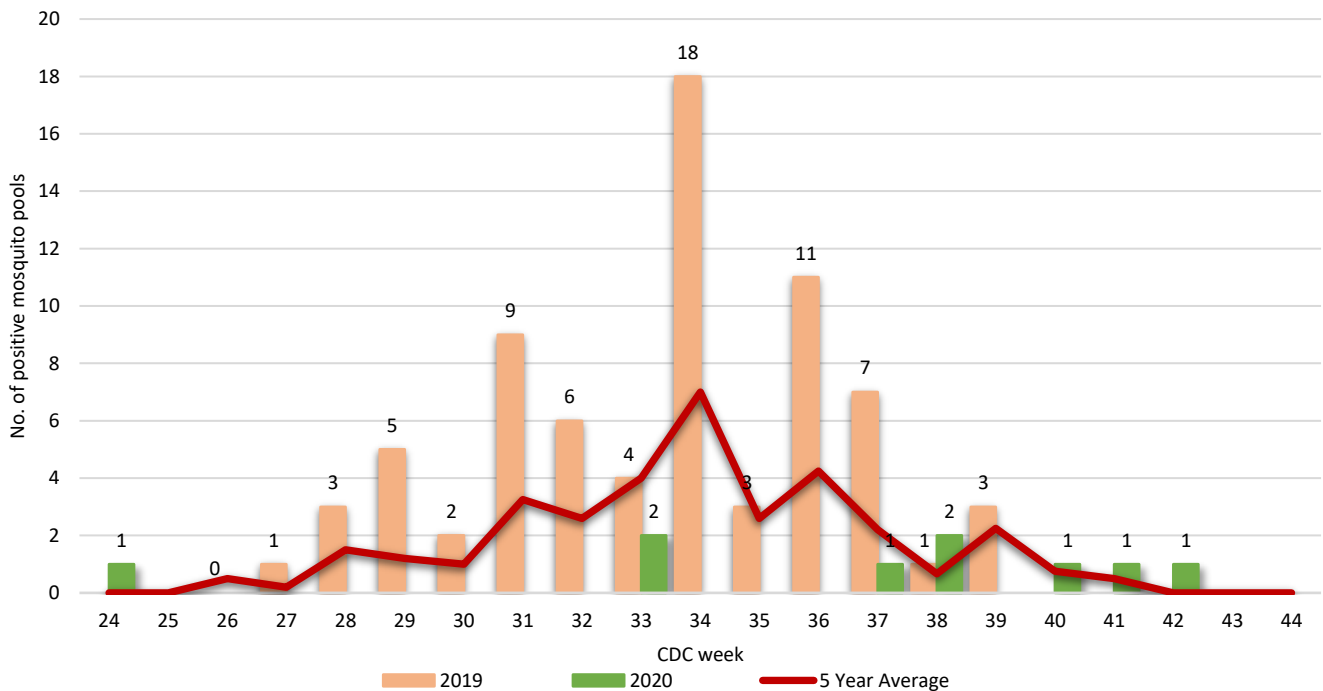


Figure 2.4 EEE Virus Positive Mosquito Pools by CDC week, NJ (2019-2020)



Other viruses:

Jamestown Canyon virus (JCV):

In 2020, six mosquito pools from 4 counties tested positive for Jamestown Canyon virus at PHEL. The positive pools were identified in the following counties: Bergen (week 23 and week 25), Cumberland (week 28 and week 32), Middlesex (week 31) and Monmouth (week 29). The positive pools were detected in *Aedes cantator*, *Aedes taeniorhynchus*, *Anopheles quadrimaculatus* and *Coquillettidia perturbans* species.

In 2019, five mosquito pools from 4 counties (Sussex, Bergen, Burlington and Salem) tested positive for Jamestown Canyon virus.

NJ reported its first and only human case of Jamestown Canyon virus in 2015 in a Sussex County resident.

No pools tested positive for SLE, LAC, CHIKV, DENV or ZIKV.

Cumulative 2020 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	472		472				92		92		92	
Bergen	340		340	2			2		2		2	
Burlington	316		316		23							
Camden	221		208									
Cape May	2056											
Cumberland	543		543	2	1							
Essex	100		100									
Gloucester	449		439		5							
Hudson	187		187									
Hunterdon	375		375									
Mercer	414		414		21							
Middlesex	309		309	1	19		1		1		1	
Monmouth	552		552	1	5							
Morris	437		437									
Ocean	345		346									
Passaic	191		191		6							
Salem	673		660		24							
Somerset	275		275									
Sussex	421		421		18							
Union	186		186									
Warren	271		271		2							
Total	9133	-	7042	6	124	-	95	-	95	-	95	-

^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 2020

Numbers in green shaded columns represent positive pools in 2020

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.

In 2020, one EEE equine case was reported from Atlantic County in a 4-year-old unvaccinated mare in week 37 (onset September 7th, euthanized September 8th). In 2019, there were eleven equine cases, one alpaca case and one deer case of EEE reported in New Jersey. Since 2013, there has been an average of 3 EEE cases per year in New Jersey.

In 2020, one WNV avian case was reported from Cumberland County in a red-tailed hawk in week 41. The bird was rescued on October 6th and died October 7th.

	Cum. Total (Year)	
	2020*	2019
Equine (EEE)	1	11
Equine (WNV)		
Avian (WNV)	1	
Other		

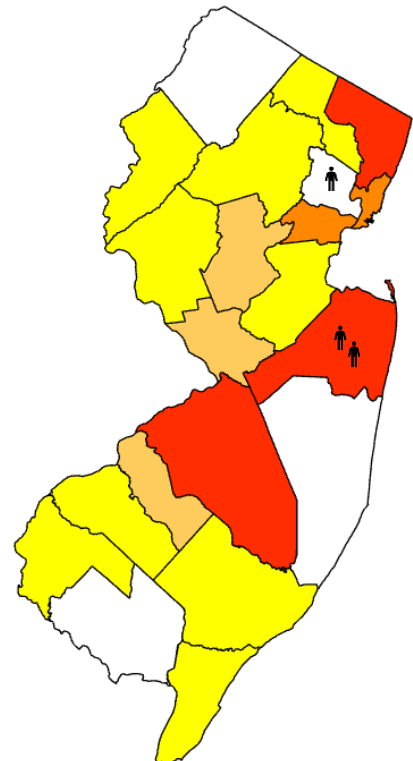
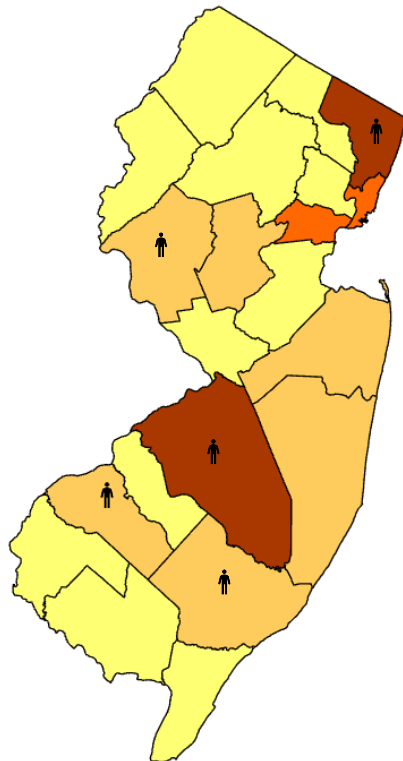
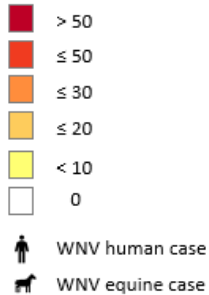
4. Surveillance Maps

West Nile Virus (WNV)

2019 WNV Activity

2020 WNV Activity

WNV Positive Pools



Eastern equine encephalitis (EEE)

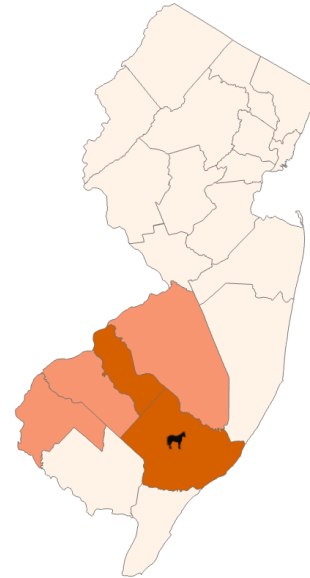
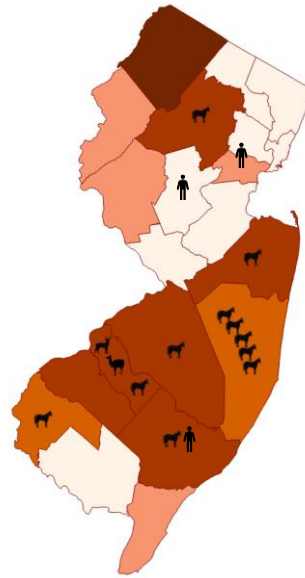
2019 EEE Activity

2020 EEE Activity

EEE Positive Pools

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

- Human case
- Equine case
- Alpaca case
- Deer case



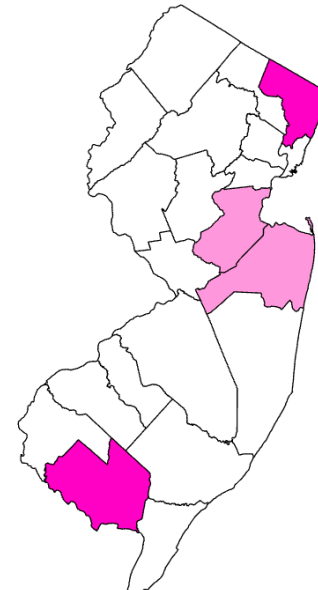
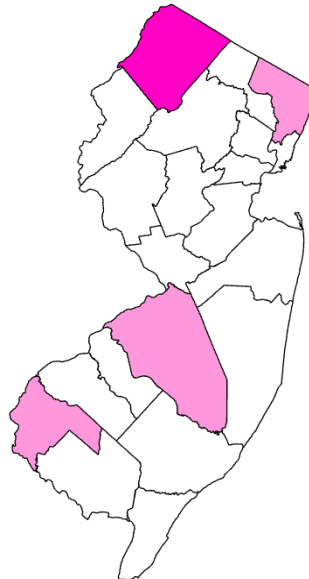
Jamestown Canyon Virus

2019 JCV Activity

2020 JCV Activity

JCV Positive Pools

- ≥ 2
- 1
- No JCV activity



La Crosse Virus Activity 2020

2019 LAC Activity

2020 LAC Activity

LAC Positive Pools

- ≥ 1
- No LAC activity



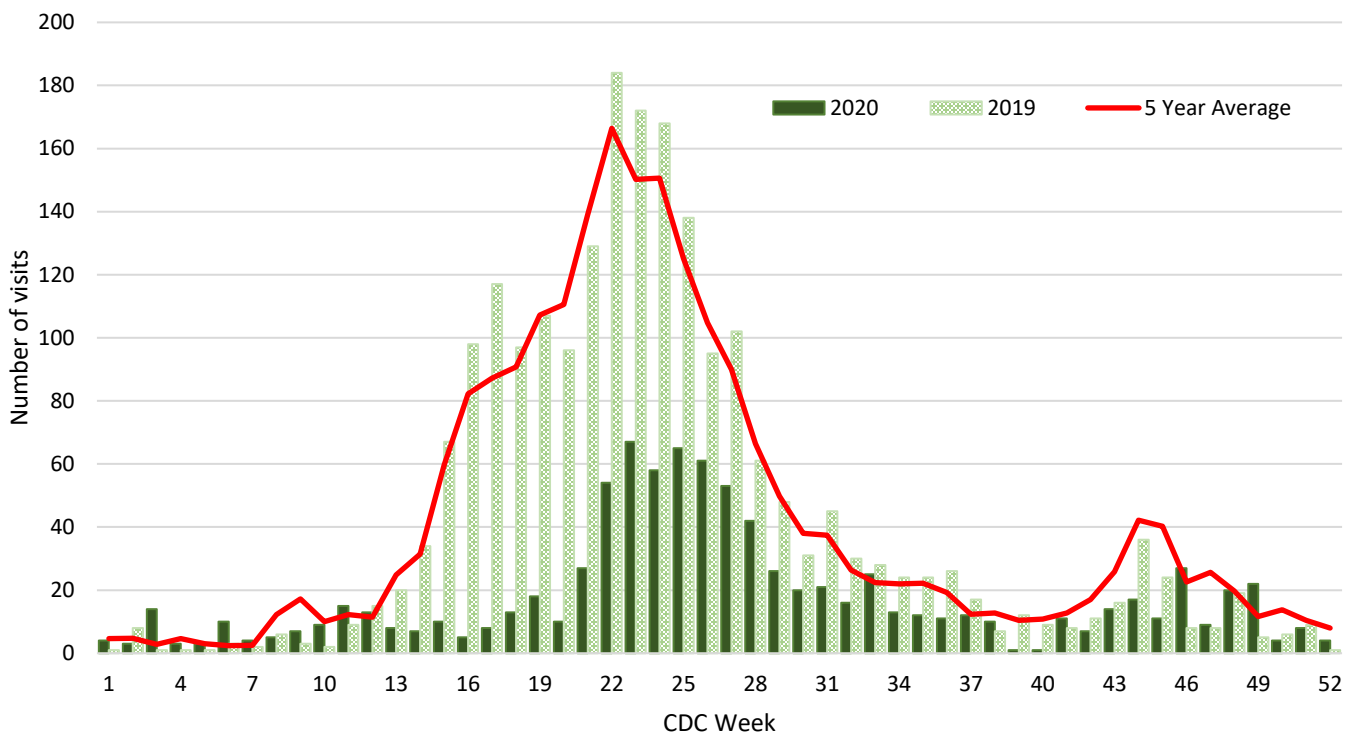
5. Syndromic Surveillance for Tick-related Emergency Department Visits

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 statewide 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.

In 2020, tick-related ED visits are significantly lower than the 5-year average. This was due to the statewide “stay-at-home” orders implemented for the COVID-19 pandemic. Despite the pandemic, tick-related ED visits occurred throughout the year. A slight increase in numbers is seen starting from week 19 when state parks were reopened and from week 46.

Figure 5.1 New Jersey EpiCenter: Tick-Related Emergency Department Visits



For More Information

- NJDOH Communicable Disease Service: <http://nj.gov/health/cd/topics/vectorborne.shtml>
- New Jersey Arboviral Activity Maps: <http://bit.ly/JerseySurv>
- 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/>