

1. Human Cases

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. Final 2022 [Reportable Disease Statistics](#) will be posted online in mid-2023. Data for 2022 reflect confirmed and probable cases that have been approved by NJDOH. This does not include cases under investigation. All 2022 numbers are preliminary and are subject to change.

2022 Rare / Emerging Domestic Arbovirus Cases

- In 2022, there were 2 Powassan virus cases, with 1 co-infected with Jamestown Canyon Virus.
- NJ has reported 15 cases of Powassan virus; 12 cases in Sussex County (2014-2022), 1 case in Essex County (2017), 1 case in Morris County (2017), and 1 case in Warren County (2013).
- NJ has reported a total of 4 JCV human cases, 3 in Sussex County (2015, 2021, 2022); and 1 case in Essex County (2021).

County	Powassan Virus		Jamestown Canyon Virus	
	Cases	Deaths	Cases	Deaths
Sussex	2		1	

^a Provisional

2022 West Nile Virus Cases

- In 2022, 20 human cases of West Nile Virus (WNV) were reported from 9 counties and 4 were fatalities (**Table 1.2**). One presumptive viremic blood donor was detected in Middlesex County. The number of human WNV cases is the fifth highest number since 2012 (**Figure 1.3**).
- 13 of the 20 (58%) WNV cases were 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.
- 14 cases (70%) were hospitalized for an average length of stay of 14 days; 6 of the 14 hospitalized cases (43%) required additional medical care after hospitalization in a long-term care/rehabilitation facility
- The median age of cases was 65 years (range, 45 to 86 years) and 75% of cases were male.
- The dates of symptom onset ranged from August 6 to October 16 (CDC weeks 31-42, **Figure 1.2**).

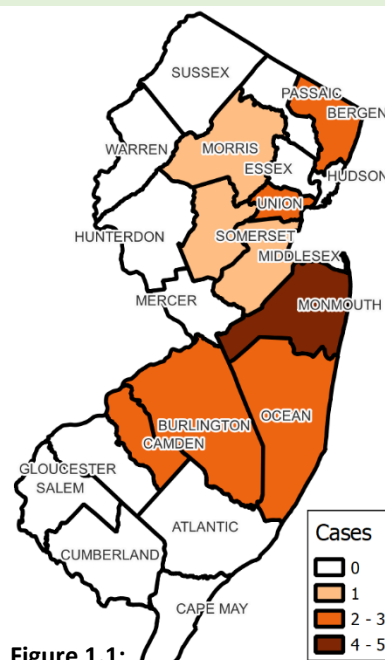


Figure 1.1: WNV Cases, NJ (2022)

County	Cases	Deaths	Presumptive Viremic Blood Donor
Monmouth	5	1	
Bergen	3	1	
Camden	3		
Burlington	2	1	
Ocean	2		
Union	2		
Middlesex	1		1
Morris	1		
Somerset	1	1	
TOTAL	20	4	1

^a Provisional

Figure 1.2: West Nile Virus Human Cases by Week of Illness Onset, 2021-2022

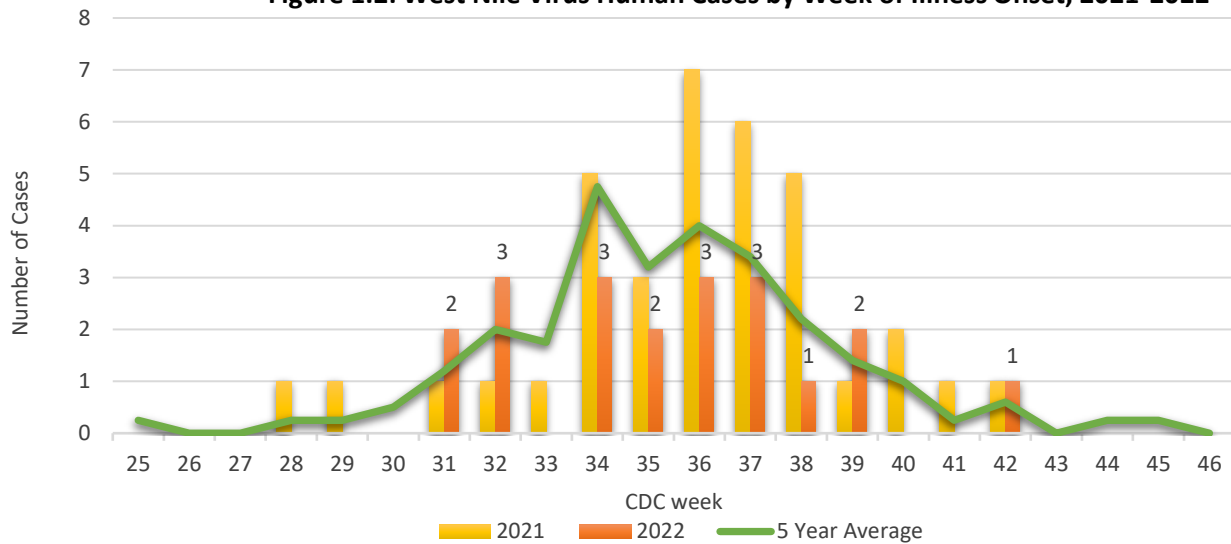
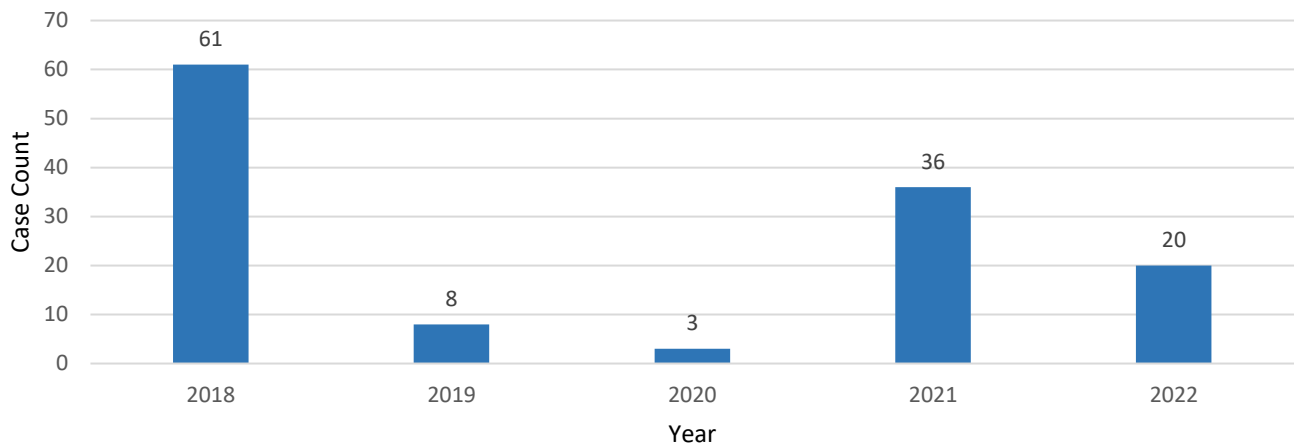


Figure 1.3 WNV Human Cases, NJ (2018-2022)



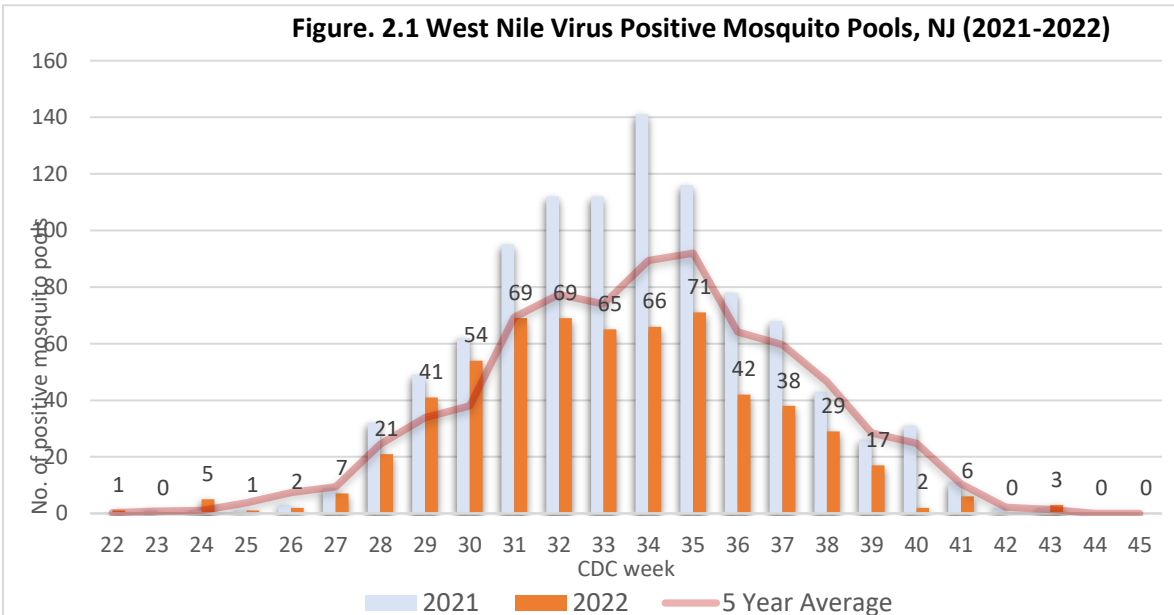
2. Arboviral Testing in Mosquitoes

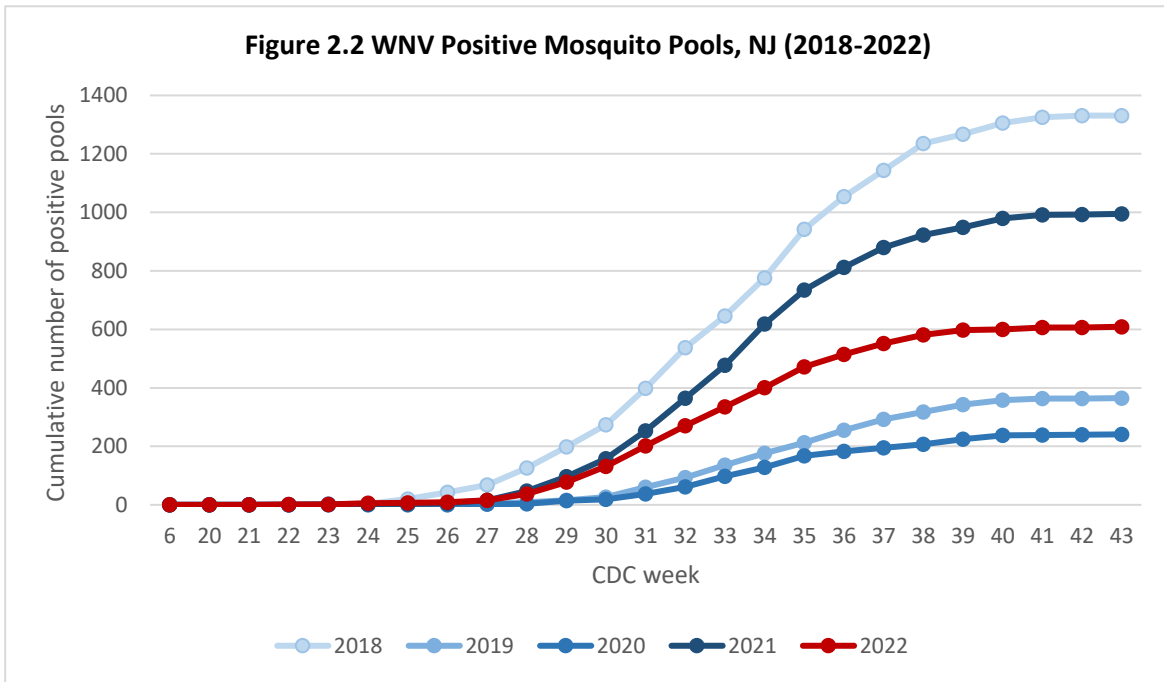
West Nile virus (WNV)

- In 2022, a total of 7,693 mosquito pools (176,826 mosquitoes) were tested for West Nile virus of which 609 pools (7.9%) from all counties tested positive. The number of pools tested is 22% lower compared to last year, mostly due to a decrease in testing in Cape May County. The number of positive pools is also 39% lower.
- 576 out of 609 WNV positive mosquito pools (95%) were detected in *Culex pipiens* or other combinations of *Culex* species mosquitoes (**Table 2.1**).
- The highest number of positive pools was detected between weeks 31 to 35 (**Figure 2.1**). Bergen, Hudson, and Middlesex counties reported the most positive pools in 2022 (**Table 2.2**).
- Compared with the previous 5 years, 2022 was the third most active season for WNV detection in mosquitoes (**Figure 2.2**).

Table 2.1 Number of positive pools per species	
Species	Positive Pools
Culex pipiens/restuans/salinarius	426
Culex (unspeciated)	76
Culex pipiens/quinqüefasciatus/restuans	48
Culex pipiens	21
Aedes albopictus	14
Aedes japonicus	11
Culex restuans	3
Aedes triseriatus	2
Culex erraticus	2
Aedes canadensis	1
Aedes cantator	1
Aedes vexans	1
Anopheles punctipennis	1
Anopheles quadrimaculatus s.l.	1
Coquillettia perturbans	1

Table 2.2 WNV Mosquito Pool Testing			
County	Cumulative Pos. Total		# Pools Tested
	2022*	2021	2022*
Bergen	97	109	477
Hudson	86	44	301
Middlesex	67	93	307
Passaic	49	20	238
Union	44	104	226
Mercer	34	25	481
Monmouth	34	45	516
Burlington	32	79	362
Morris	29	63	567
Somerset	29	88	299
Camden	24	94	234
Gloucester	21	33	393
Hunterdon	15	59	335
Essex	11	4	154
Ocean	10	23	307
Sussex	8	18	491
Warren	8	25	501
Atlantic	6	40	488
Cape May	2	26	149
Salem	2		455
Cumberland	1	3	412
Total	609	995	7693

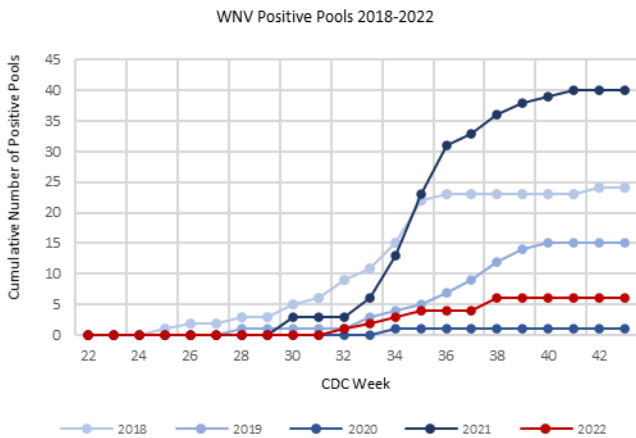




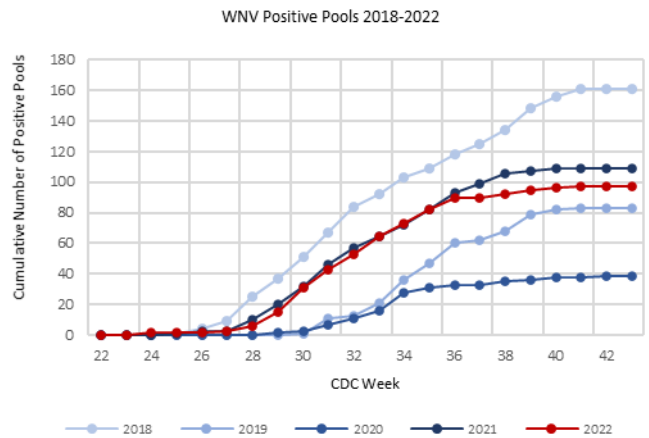
WNV Positive Mosquito Pools by NJ County 2018-2022*

Compared to statewide relative numbers, the number of WNV positive mosquito pools was the highest number reported in the past 5-years in Hudson and Passaic counties with comparably high numbers also reported in Essex, Mercer, and Middlesex counties. *In 2020, several counties submitted less pools (or no pools) due to the COVID-19 pandemic. No lines are shown for years without positive pools.

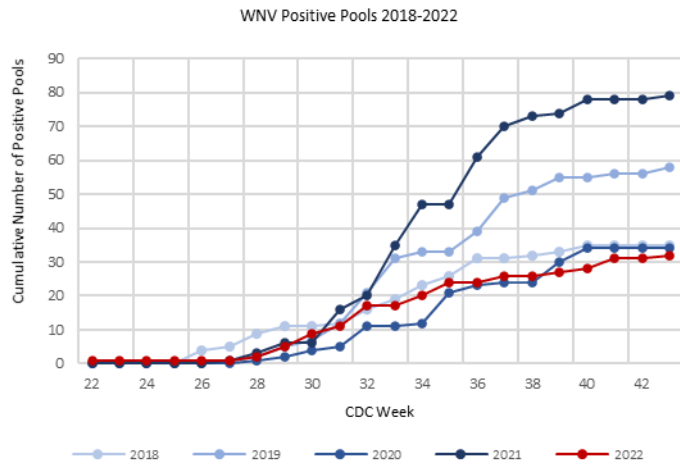
Atlantic



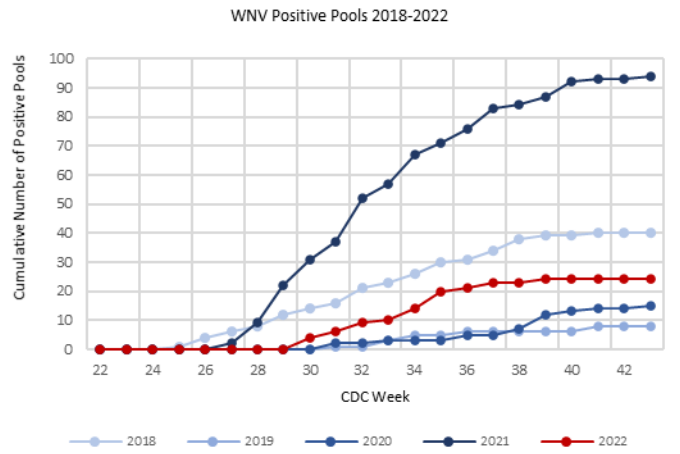
Bergen



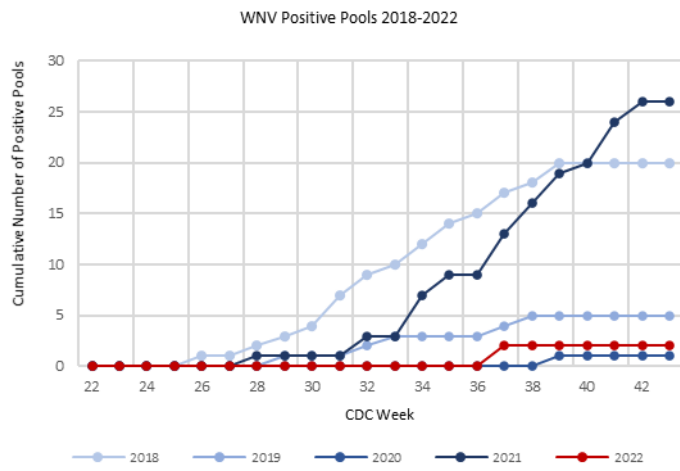
Burlington



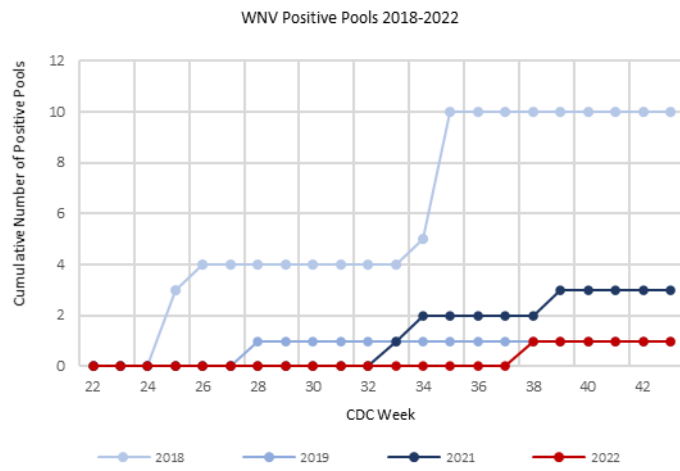
Camden



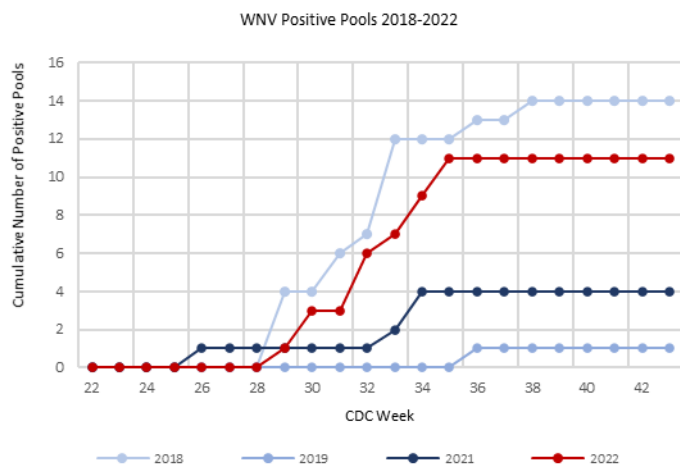
Cape May



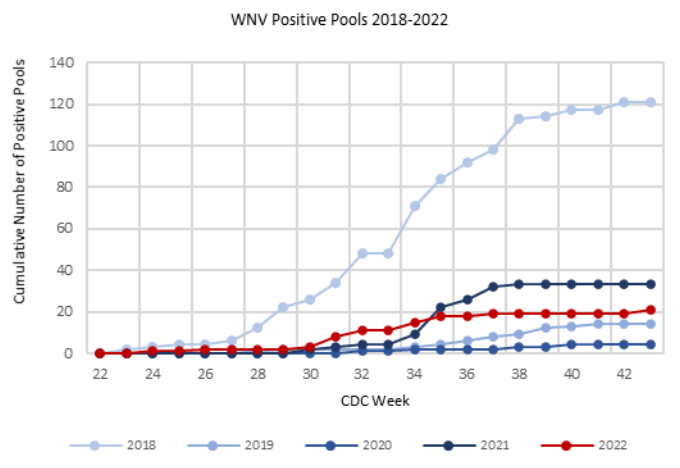
Cumberland



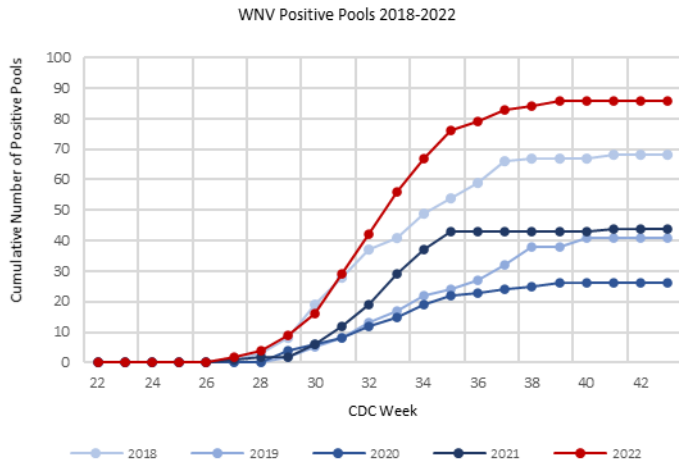
Essex



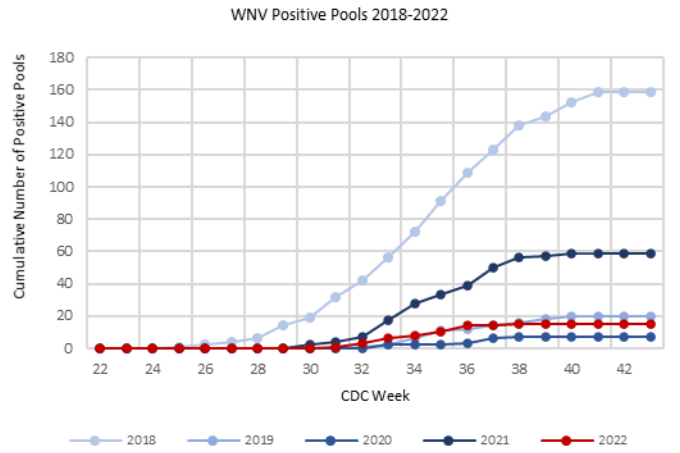
Gloucester



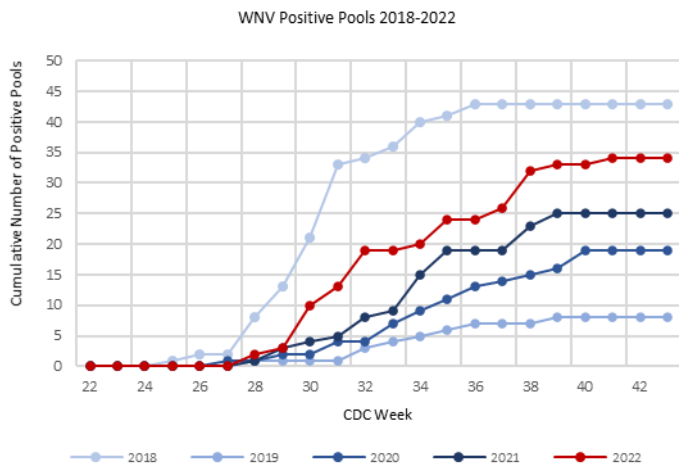
Hudson



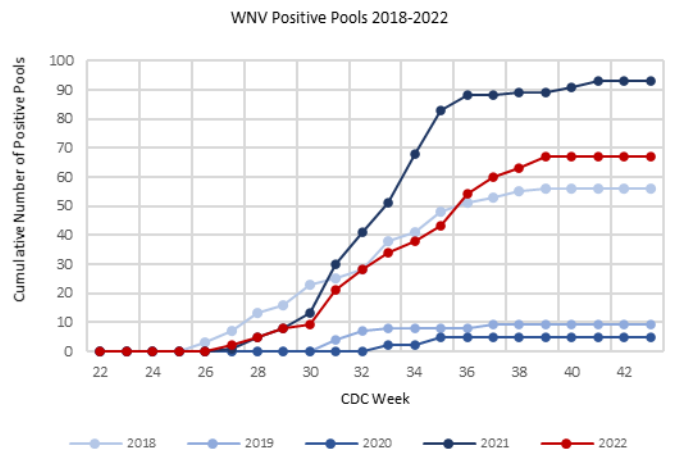
Hunterdon



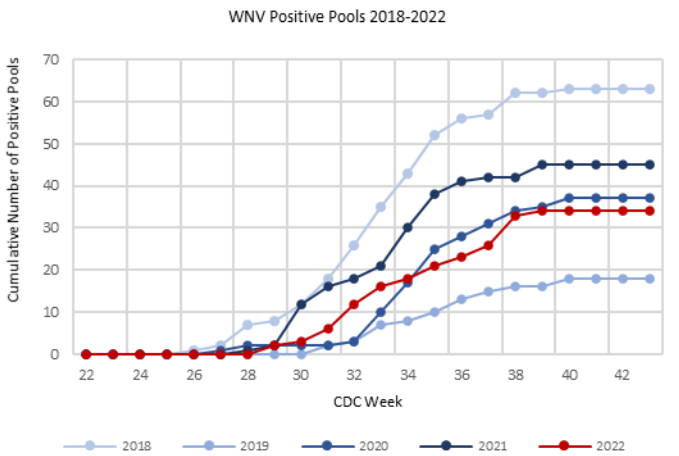
Mercer



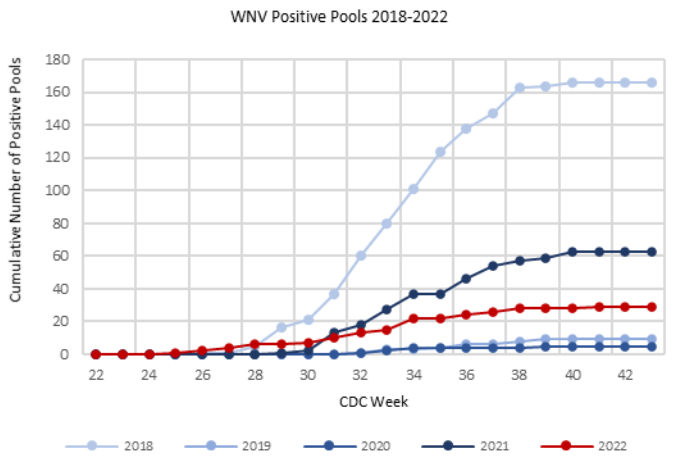
Middlesex



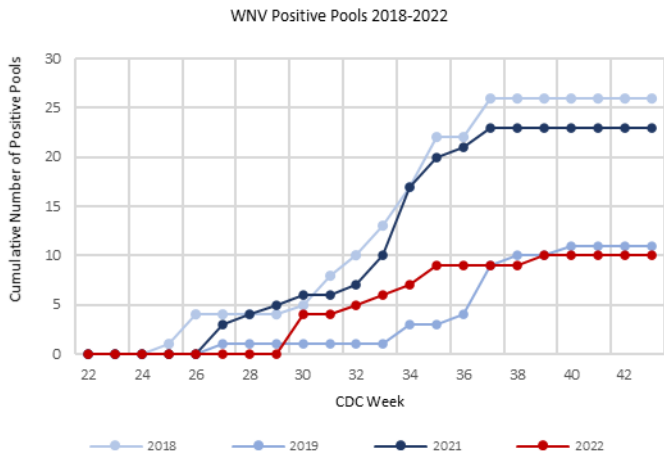
Monmouth



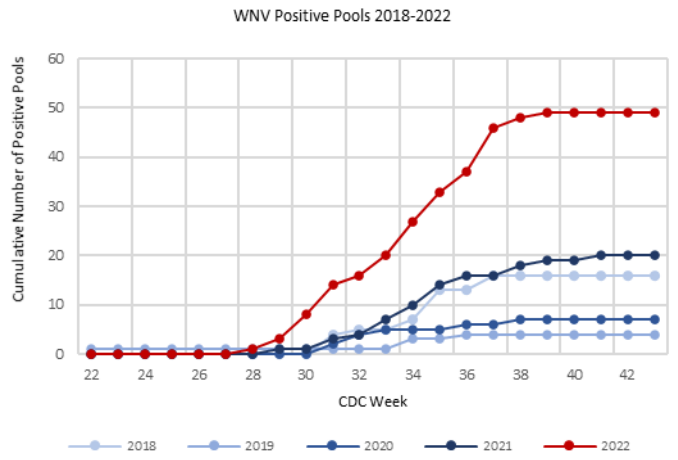
Morris



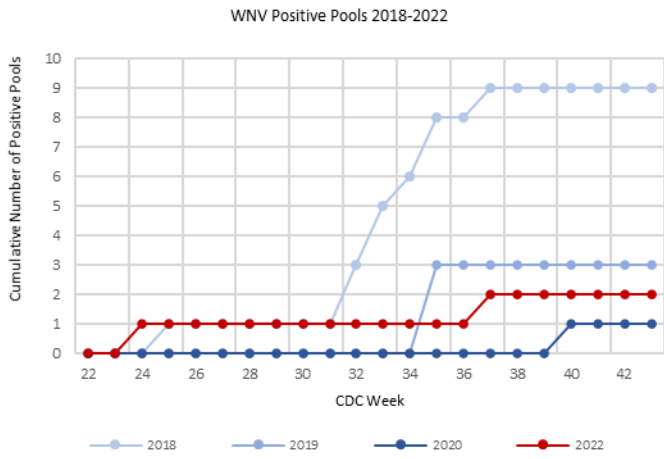
Ocean



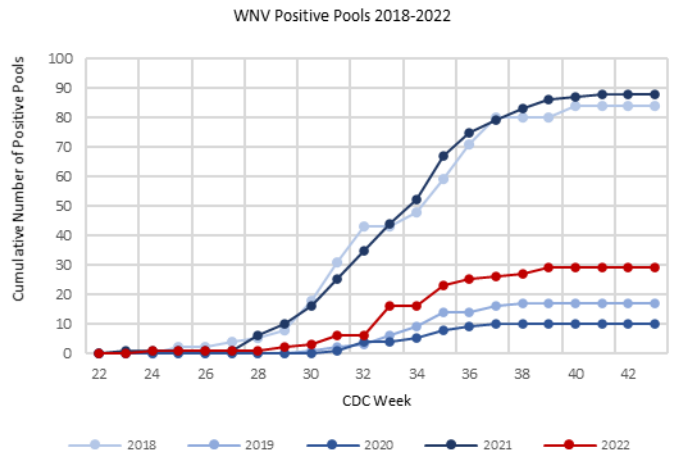
Passaic



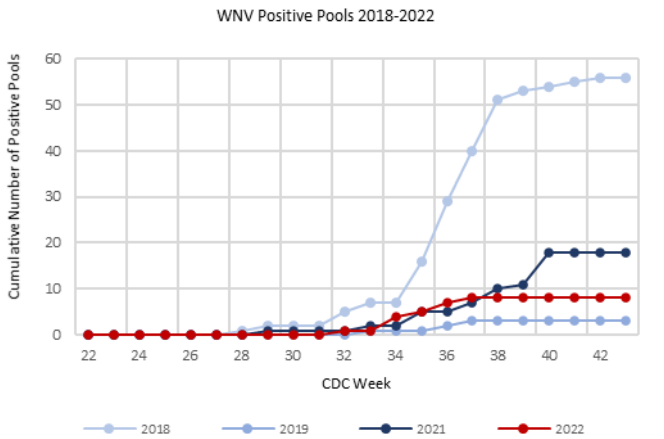
Salem



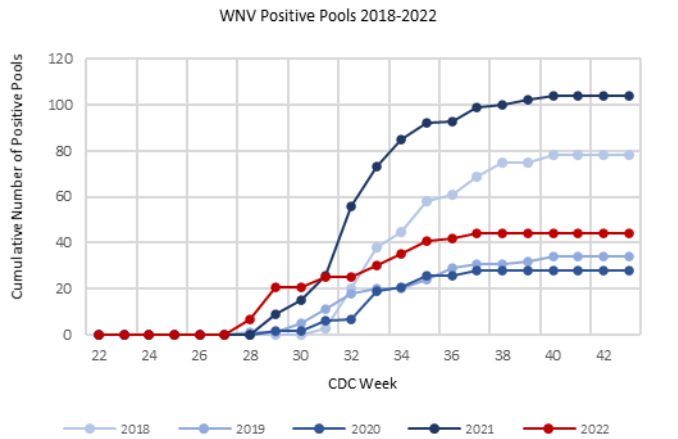
Somerset



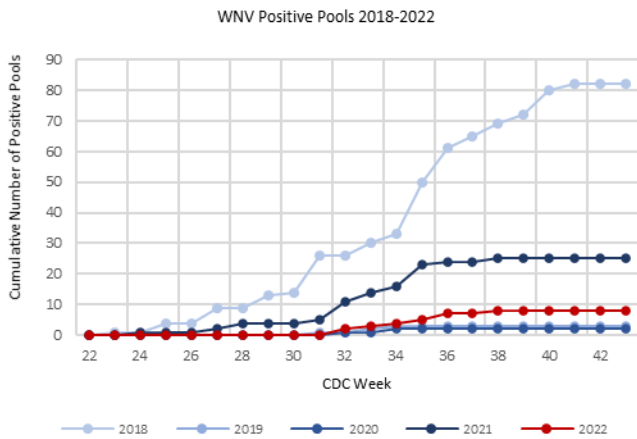
Sussex



Union



Warren

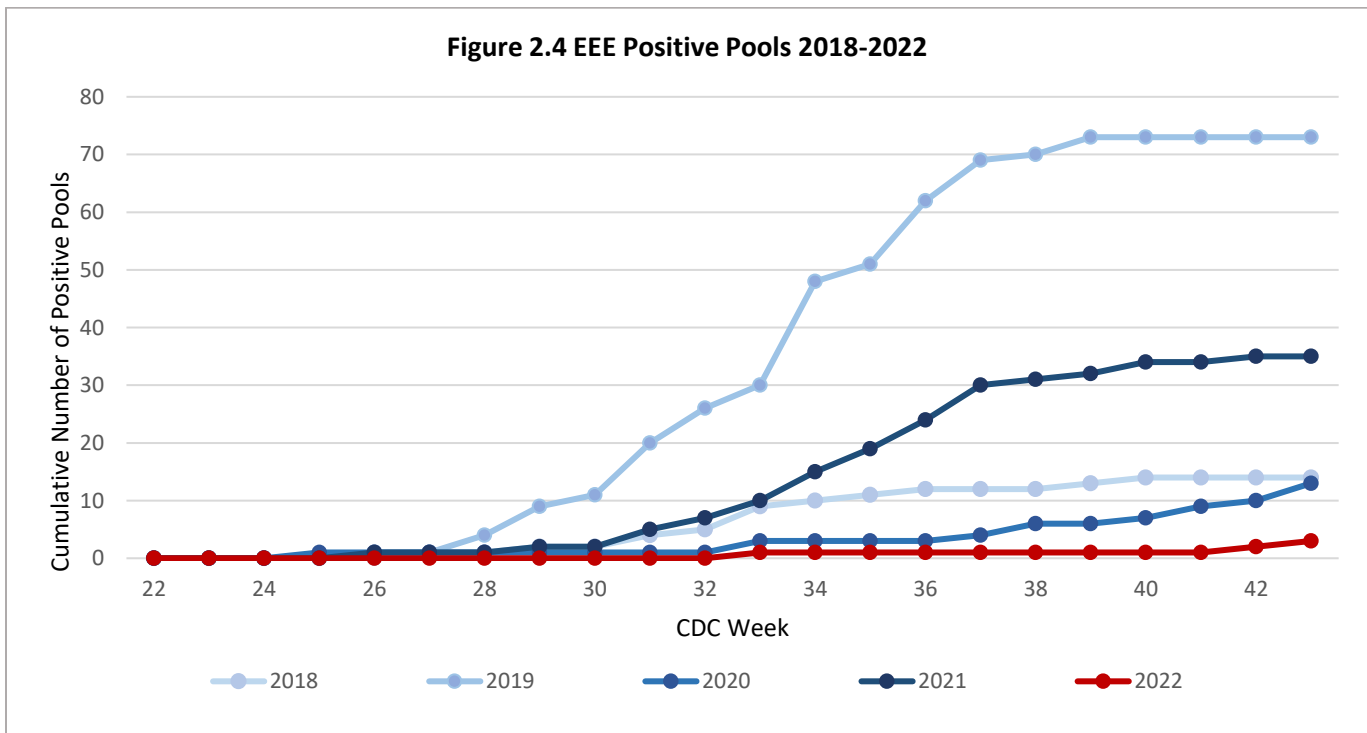
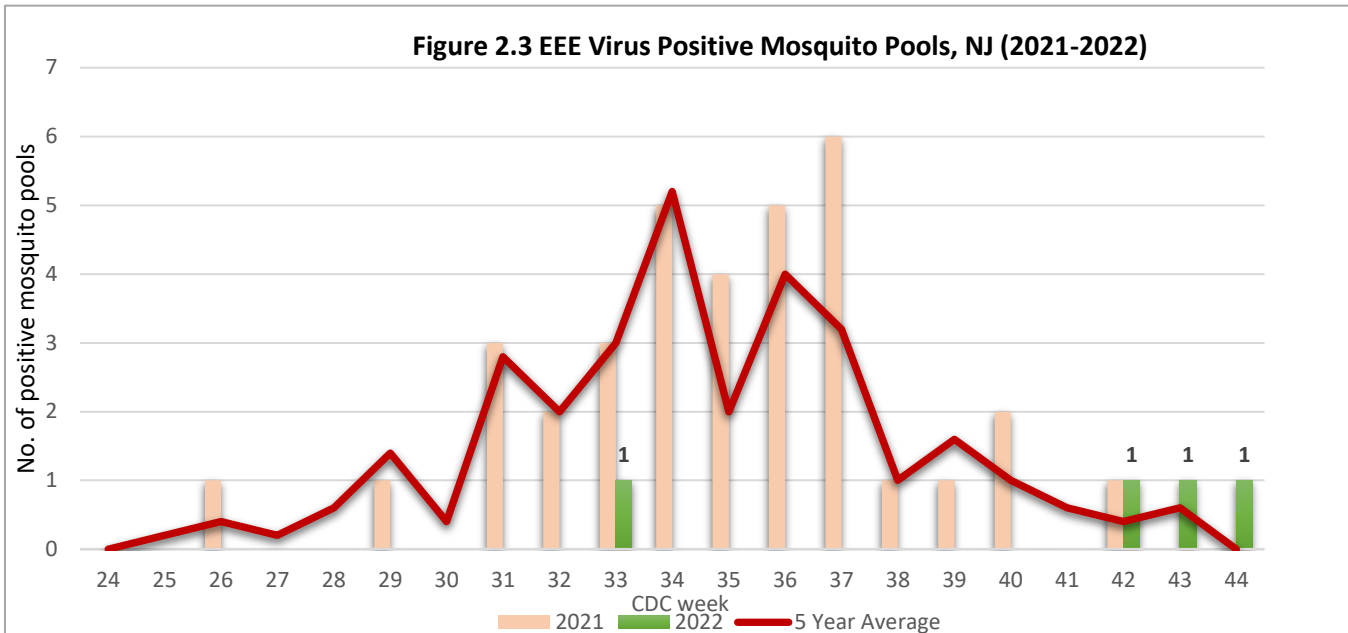


Eastern equine encephalitis virus (EEE)

- In 2022, a total of 7,532 mosquito pools were tested for EEE of which 4 pools from 3 counties tested positive (**Table 2.3, Figure 2.3**). This is the lowest number of EEE positive mosquito pools reported in the past 5 years and considerably less than the number reported in 2021 (**Figure 2.4**).
- Three out of the 4 positive pools were detected in *Cs. melanura* mosquitoes:
 - Atlantic county: week 42
 - Burlington county: weeks 43, 44
- One positive mosquito pool was identified in *Culex sp.* mosquitoes in Morris County, week 33.

Table 2.3 EEE Mosquito Pool Testing

County	Positive Pools		# Pools Tested
	2022	2021	
Burlington	2	3	359
Atlantic	1	9	488
Morris	1		567
Bergen			438
Camden		13	233
Cape May		2	149
Cumberland		1	412
Essex			154
Gloucester		6	379
Hudson			301
Hunterdon			334
Mercer			465
Middlesex			303
Monmouth			515
Ocean		1	306
Passaic			231
Salem			440
Somerset			295
Sussex			479
Union			220
Warren			464
Total	4	35	7532



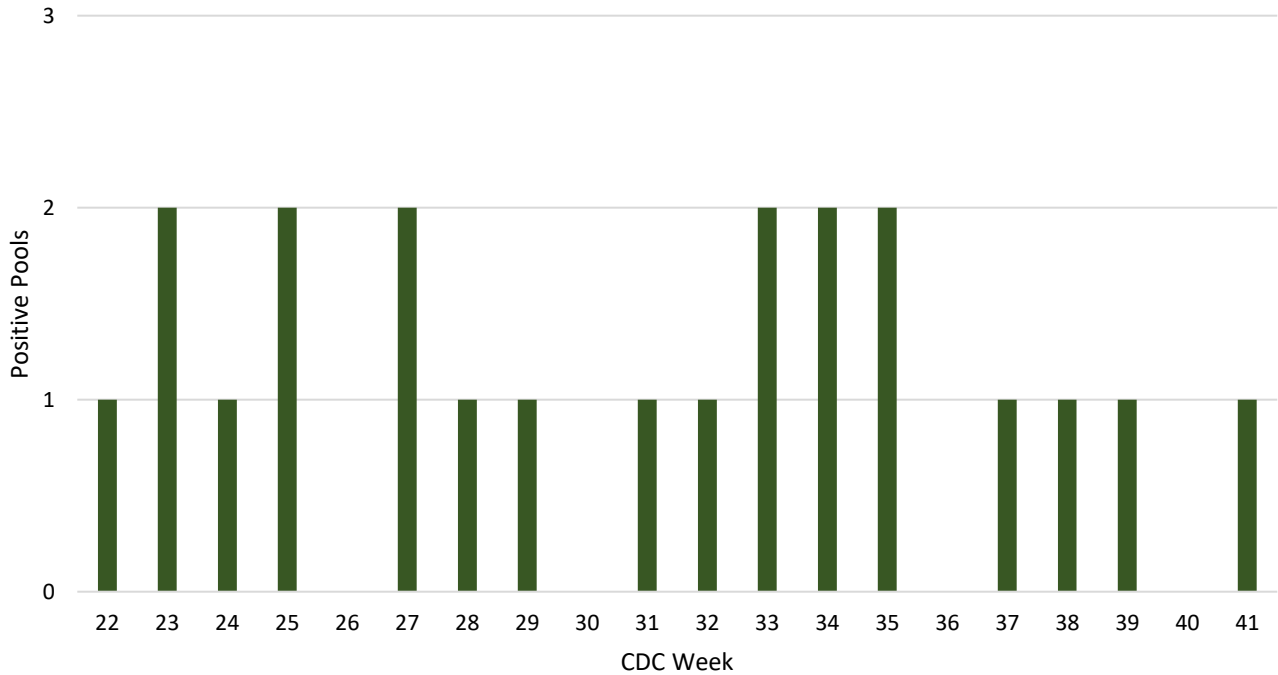
Jamestown Canyon virus (JCV)

- In 2022, a total of 7,343 mosquito pools were tested for JCV in 2022, of which 3 pools from 2 counties tested positive (Table 2.4).
- The first mosquito pool (*Ae. cantator*) positive for JCV was from Bergen County in Week 22.
- JCV has been detected in 9 mosquito species, and in 4 genera between 2019 and 2022. (Table 2.5).
- Between 2019 and 2022, JCV has been detected between weeks 22 and 41, or between the 1st week of June and mid-October (Figure 2.5).

Table 2.5 JCV Detections per species, 2019-2022		
Species	Count	% Of Total
Aedes cantator	5	23%
Anopheles punctipennis	4	18%
Anopheles	3	14%
Coquillettidia perturbans	3	14%
Aedes abserratus	1	5%
Aedes albopictus	1	5%
Aedes taeniorhynchus	1	5%
Aedes vexans	1	5%
Anopheles crucians s.l.	1	5%
Anopheles quadrimaculatus s.l.	1	5%
Culex sp.	1	5%

Table 2.4 JCV Mosquito Pool Testing, 2022			
County	2022*	2021	2022*
Bergen	2		438
Sussex	1	1	479
Atlantic		1	488
Burlington			359
Camden		3	218
Cape May			
Cumberland			412
Essex		1	154
Gloucester		2	367
Hudson			301
Hunterdon			334
Mercer			465
Middlesex			306
Monmouth			515
Morris			567
Ocean			306
Passaic			231
Salem			427
Somerset			298
Union			214
Warren			464
Total	3	8	7343

Figure 2.5 JCV Positive Mosquito Pools, NJ (2019-2022)



Other arboviruses

No mosquitoes tested positive for St. Louis encephalitis, La Crosse virus, Chikungunya virus, Dengue virus, or Zika virus in 2022 (Table 2.6).

Table 2.6: 2022 Mosquito Pool Testing (other arboviruses ^{a)})

County	SLE		LAC		CHIKV		DENV		ZIKV	
	Pools	Pos	Pools	Pos	Pools	Pos	Pools	Pos	Pools	Pos
Atlantic	488				4		4		4	
Bergen	438		17		2		2		2	
Burlington	359		3		8		8		8	
Camden	233		1		13		13		13	
Cape May	149									
Cumberland	412									
Essex	154									
Gloucester	379		14							
Hudson	301									
Hunterdon	334		1							
Mercer	465		16							
Middlesex	306		1							
Monmouth	515		1							
Morris	567				4		4		4	
Ocean	306		1							
Passaic	231		7							
Salem	440		16		4		4		4	
Somerset	298									
Sussex	479		11							
Union	214		12							
Warren	464		37		1		1		1	
Total	7532	-	138	-	36	-	36	-	36	-

^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 in 2022

Numbers in green shaded columns represent positive pools in 2022

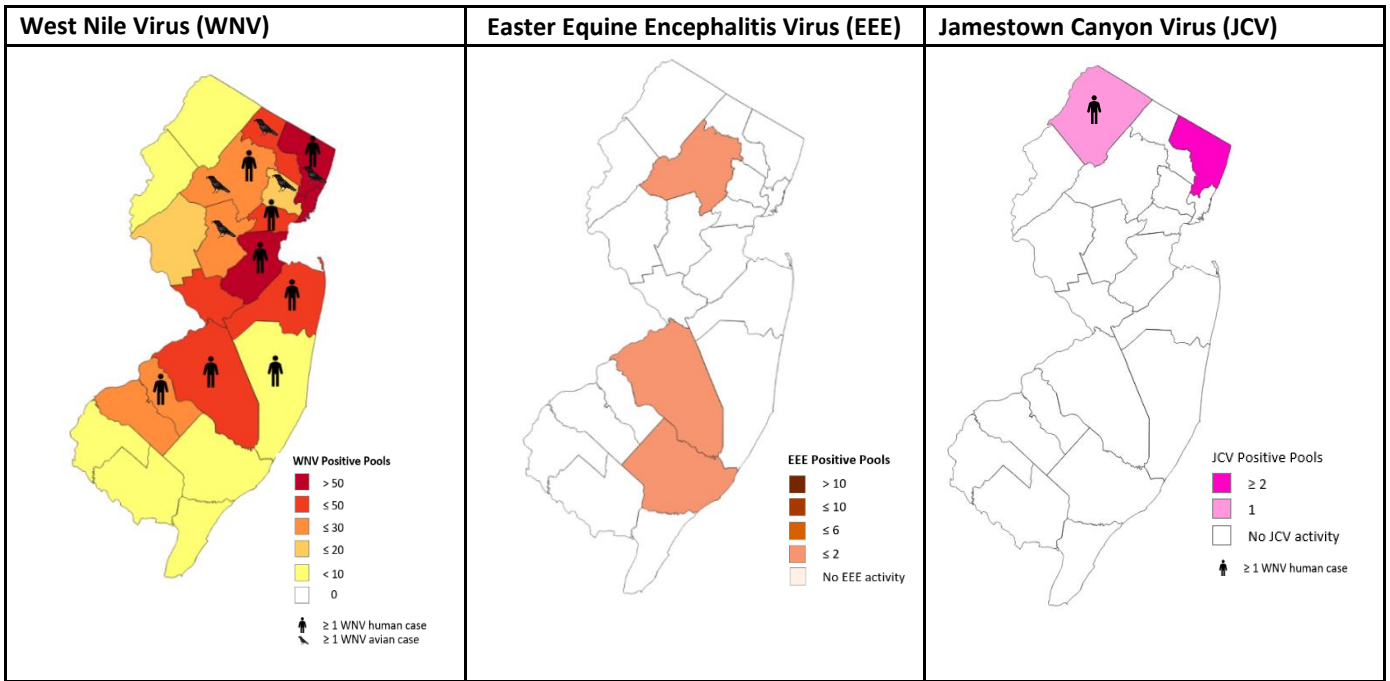
3. Equine/Avian /Other Animal Testing

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

- No horses or other animals tested positive for arboviruses in 2022 (Table 3.1).
- Seven birds tested positive for WNV in 2022:
 - 5 red-tailed hawks, week 31 (Somerset County); week 34 (Morris, Essex, and Somerset Counties); and week 36 (Bergen County).
 - 1 Cooper's hawk, week 34 (Morris County).
 - 1 blue jay, week 41 (Passaic County).

	Cum. Total	
	2022*	2021
Equine (EEE)		3
Equine (WNV)		
Avian (WNV)	7	13
Other		

4. 2022 Surveillance Maps



4. 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% reporting) facilities statewide. The system collects “chief complaint” information and limited patient registration data from existing ED records.

Figure 5.1 represents NJ residents seen at emergency departments with a tick bite complaint or signs/symptoms associated with a reported tick bite. Tick-related ED visits occur throughout the year with the peak number of visits occurring in the summer months and a smaller peak in the fall weeks when adult *Ixodes scapularis* ticks are active.

In 2022, tick-related ED visits were lower than the 5-year average during the peak nymphal tick season (weeks 20 to 27) but were higher than the five-year average during the fall / peak adult tick season. The number of tick-related visits was highest during the nymphal season in the Central East region of the state (Middlesex, Monmouth, Ocean, Union counties), followed by the Southwest region (Burlington, Camden, Gloucester, Salem counties, **Figure 5.2**).

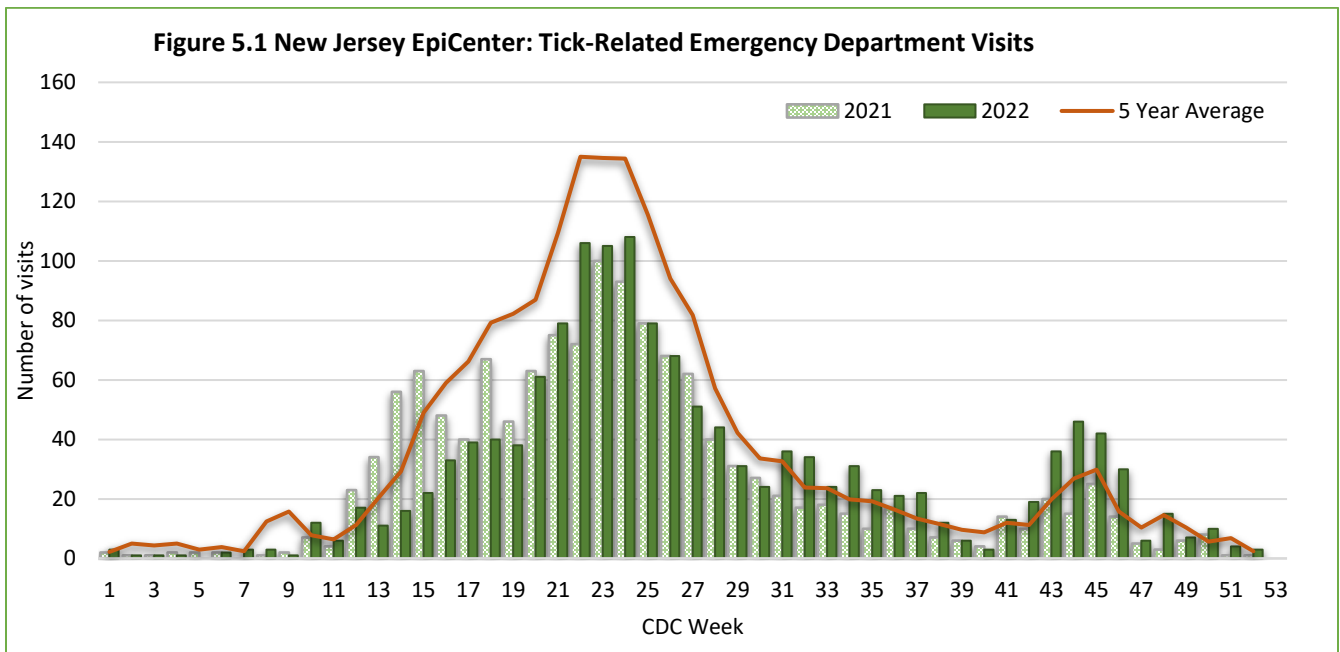
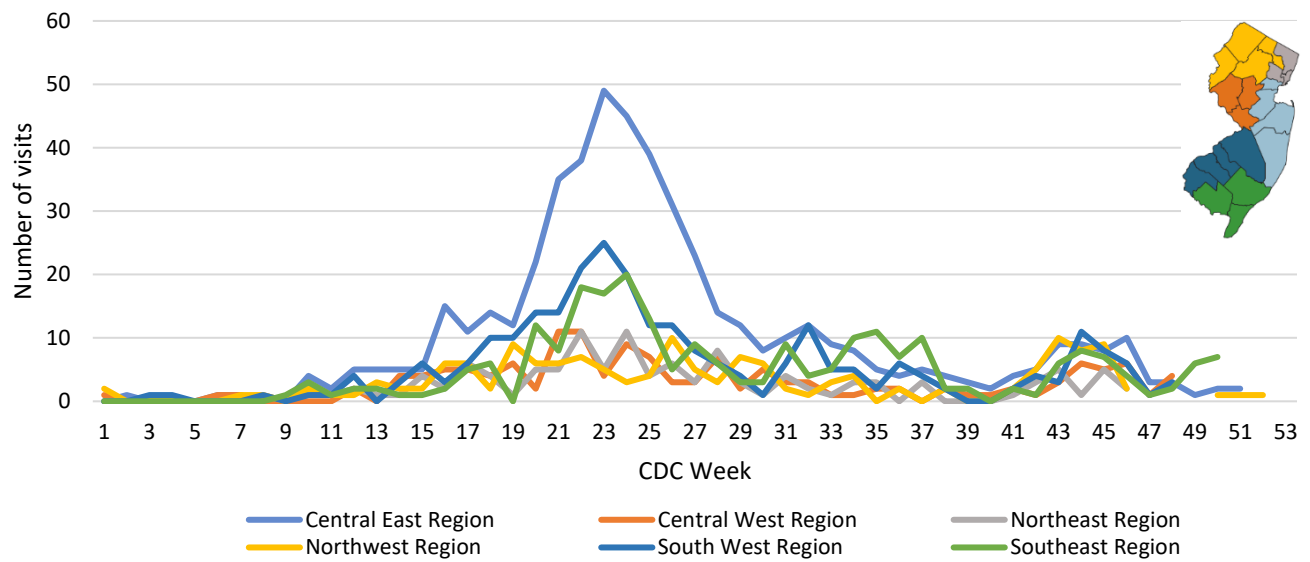


Figure 5.2 Tick-Related Emergency Department Visits by Region (2022)



Data reflects ED visits downloaded from EpiCenter as of Jan 10, 2023

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/>