

VECTOR SURVEILLANCE IN NEW JERSEY EEE, WNV, SLE, LAC, DENV, CHIK, ZIKV, and JCV

Prepared by Lisa M. Reed and Dina Fonseca

Center for Vector Biology, Rutgers University

17 October to 23 October, 2021, CDC Week 42

Data download 3:00 am 22 October



This New Jersey Agricultural Experiment Station report is supported by Rutgers University, Hatch funds, funding from the NJ State Mosquito Control Commission and with the participation of the Department of Health, Department of Agriculture and of the 21 county mosquito control agencies of New Jersey. Data is held in JerseySurv, a subset of the CalSurv system.

NOTE: County/species tables for arboviruses are now in a supplemental file [here](#)

Arbovirus Summary

- Currently, there are 990 positive WNV pools (924 pools of *Culex Mix*, *Cx. pipiens* or *Cx. restuans*, 12 pools of *Cs melanura*, 30 pools of *Ae albopictus*, 5 pools of *Ae. japonicus*, 3 pools of *Ae. triseriatus*, *Ae. vexans* and *Anopheles punctipennis* each, 2 pools of *Coquillettidia perturbans* and *Cx. erraticus* each, one pool each of *Ae. taeniorhynchus*, *Ae. trivittatus*, *An. bradleyi*, *An. quadrimaculatus*, *Psorophora ciliata*, and *Ps. ferox*). Six positive birds (1 *Corvus brachyrhynchus*, 4 *Accipiter cooperii* and 1 *Falco peregrinus*) have been detected. There are a total of 32 confirmed or probable human cases statewide with 1 fatality.
- There are 27 positive EEE pools, 19 detected in *Cs. melanura*, 4 in *Cx. Mix*, 2 in *Culex erraticus* and one each in *Ae. taeniorhynchus* and *Ae. triseriatus*. There have been 3 EEE horse cases, 1 each in Atlantic, Camden and Cumberland County.
- There are 8 positive JCV pool, first detected in *Aedes vexans*, from Sussex County, collected 8 July. Positive pools were also detected in *Anopheles* spp. (3), *Anopheles punctipennis* (2), *Culex Mix* (1), and *Aedes albopictus* (1). There is one human case of Jamestown Canyon virus, in Sussex County. Date of onset was May 8.
- Note: Data downloads times are noted and do not necessarily reflect all pools submitted and analyzed to that point in time. This report may vary from other reports from the same dataset as they are all snapshots in time.
- In 2020, there were 13 positive EEE pools in *Culiseta melanura*.
- There were 241 positive WNV pools, in *Culex Mix* (231), in *Culex pipiens* (4), *Culex restuans* (1), *Culiseta melanura* (2), *Aedes albopictus* (2), and *Aedes canadensis canadensis* (1).
- There were 6 positive JVC pools in *Aedes cantator* (2), *Aedes taeniorhynchus* (1), *Anopheles quadrimaculatus* (1) and *Coquillettidia perturbans* (2).
- There was one EEE horse case reported. There are no WNV horse cases. There were 3 human WNV cases; in Essex County (1) and Monmouth County (2). There was one WNV positive Red-tailed Hawk (*Buteo jamaicensis*) in Cumberland County (regular surveillance of birds is no longer done in NJ).

Culiseta melanura and Eastern Equine Encephalitis

SITE/Boxes	Inland or Coastal	Historic Population Mean	Current Weekly Mean	Total Tested* (Collected)	Total Pools Tested* (Submitted)	EEE Isolation Pools	MFIR
Bass River (Burlington Co.)/5	Coastal	0.89	5.40	51	5		
Green Bank (Burlington Co.)/25	Coastal	0.71	1.80	126	13		
Corbin City (Atlantic Co.)/25	Coastal	0.33	1.36	496	21		
Dennisville (Cape May Co.)/50	Coastal	1.00	0.06	114	16	2	17.544
Winslow (Camden Co.)/50	Inland	0.44	1.48	965	29	4	4.145
Centerton (Salem Co.)/50	Inland	0.74	0.16	288	22		
Turkey Swamp (Monmouth Co.)/50	Inland	0.12	0.02	161	16		
Glassboro (Gloucester Co.)/50	Inland	0.11	0.00	110	7		

*Current week (in parentheses) results pending. ‡ corrected from previous week NC=No Collection ND=No Data (site offline) NR=Not Recorded a=pool tested

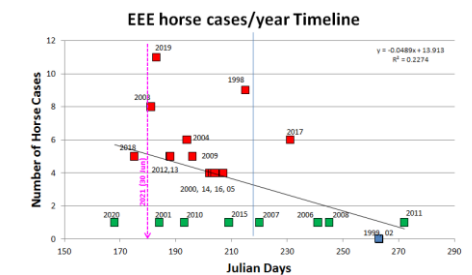
Remarks: Currently, 27 positive EEE pools (19 in *Cs. melanura*, 4 in *Cx. Mix*, 2 in *Culex erraticus*, and one each in *Aedes taeniorhynchus* and *Ae. triseriatus*) have been detected. First detected pool of *Cs. melanura* was from a county-run site in Gloucester, sampled 30 June. Current weekly mean is for Week 41.

Statewide: 12,894 *Cs. melanura* from 688 pools have been tested, with 19 positive pools detected and an overall *Cs. melanura* MFIR of 1.474. 190,656 specimens in 6721 pools from 39 other species have also been tested with 8 positive pools detected, two in *Culex erraticus* (first non-*melanura* detection), and one each in *Aedes taeniorhynchus*, *Ae. triseriatus* and 4 in *Culex Mix*. Overall MFIR for all species statewide is 0.133.

Traditional Resting Box Sites: 2311 *Cs. melanura* from 128 pools have been tested, with 6 positive pools detected, 4 at Winslow in Camden County and 2 at Dennisville, Cape May County. The latest positive came in Winslow during week 39. Overall *Cs. melanura* MFIR at the traditional resting box site is 2.596. The Winslow resting box site produced not only EEE positive pools, but 1 pool of WNV (in *Cs. melanura*) and three pools of JCV (in *Anopheles* spp.).

Additional <i>Cs. melanura</i> trapped by counties *traps with positives indicated in BOLD UNDERLINED>					
County	Trap types*	Pools	Mosquitoes	Positives	MFIR
Atlantic	CO2, GRA, RB	87	2249	5	2.223
Bergen	NJLT, RB	14	236		
Burlington	ULVT	66	2517	3	1.192
Camden	GRA	1	2		
Cape May	GRA, RB	49	921		
Cumberland	CO2, GRA, RB	45	355		
Gloucester	RB	111	3400	5	1.471
Middlesex	CO2, NJLT	6	18		
Monmouth	CO2, Other	5	8		
Morris	CO2, GRA, RB	39	149		
Ocean	CO2, GRA	28	128		
Salem	CO2, GRA, RB	38	237		
Sussex	CO2, GRA, RB	67	322		
Union	NJLT	3	25		
Warren	CO2	1	16		
TOTAL		560	10583	13	1.228

Additional County-set *Cs. melanura*: Counties maintain trap sites for *Cs. melanura* in other areas, using a variety of traps. First positive pools of *Cs. melanura* have been detected at a non-traditional resting box site in Gloucester County, collected 30Jun. The latest positive pools came from Burlington County for a total of 13 positive pools from county-set sites.



Graph above indicate start times to detection of EEE in *Culiseta melanura* and associated number of horse cases from 1998 to 2020.

Horses and Humans: Last year, only 1 horse was reported with EEE, detected in September. **Horse owners are urged to make sure their horses are up to date on their vaccinations. Horse cases are known to occur through October and sometimes into November (see link below).** Other sensitive species are non-native birds, such as Ostriches/Emus and Gallinaceous birds such as pheasants of Eurasian origins.

Case	Animal	Age	Sex	County	Date of Onset	Euthanized?	Vaccinated?	Comment
1	horse	7	mare	Cumberland	Aug 18	Aug 19	no	https://jerseyfresh.nj.gov/agriculture/news/press/2021/approved/press210824.html
2	horse	8	mare	Atlantic	Aug 26	Aug 27	no	
3	horse	7	stallion	Camden	Aug 28	Aug 29	no	Miniature horse

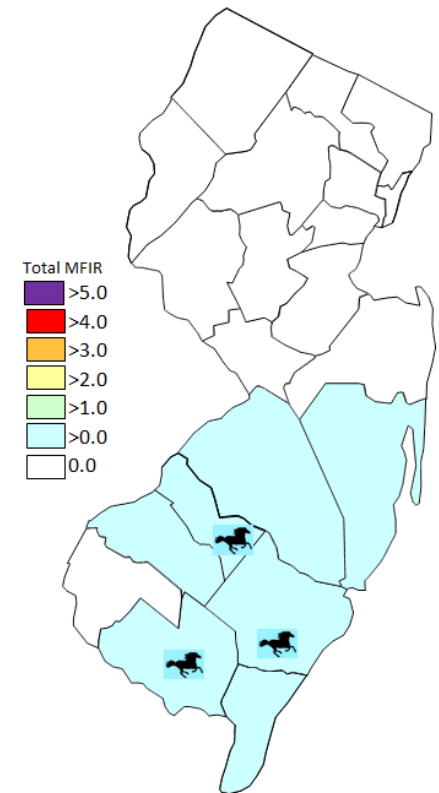
Horses and Vaccinations: The fate of unvaccinated equids reinforces the necessity of maintaining a vaccination schedule for arboviruses. For vaccination schedules recommended by the American Association of Equine Practices, see: http://www.aaep.org/vaccination_guidelines.htm

There are no human cases of EEE currently reported. For more information, see DOH Vectorborne Surveillance reports: <https://www.nj.gov/health/cd/statistics/arboviral-stats/>

Species other than <i>Cs. melanura</i>	Pools	Mosquitoes	Positives	MFIR
<i>Aedes abserratus</i>	15	129		
<i>Aedes albopictus</i>	558	5331		
<i>Aedes atlanticus</i>	22	349		
<i>Aedes atlanticus/tormentor</i>	1	17		
<i>Aedes aurifer</i>	5	102		
<i>Aedes canadensis canadensis</i>	96	1390		
<i>Aedes cantator</i>	42	573		
<i>Aedes cinereus</i>	3	80		
<i>Aedes grossbecki</i>	9	33		
<i>Aedes japonicus</i>	305	1579		
<i>Aedes mitchellae</i>	1	1		
<i>Aedes sollicitans</i>	25	576		
<i>Aedes sticticus</i>	16	275		
<i>Aedes stimulans</i>	6	29		
<i>Aedes taeniorhynchus</i>	38	1534	1	0.652
<i>Aedes thibaulti</i>	2	105		
<i>Aedes triseriatus</i>	70	134	1	7.463
<i>Aedes trivittatus</i>	71	2481		
<i>Aedes vexans</i>	233	7189		
<i>Anopheles spp.</i>	29	1000		
<i>Anopheles bradleyi</i>	44	1085		
<i>Anopheles crucians</i>	33	352		
<i>Anopheles punctipennis</i>	264	3579		
<i>Anopheles quadrimaculatus</i>	114	1878		
<i>Anopheles walkeri</i>	13	902		
<i>Coquillettidia perturbans</i>	215	6593		
<i>Culex erraticus</i>	197	3202	2	0.625
<i>Culex Mix</i>	3531	128930	4	0.031
<i>Culex pipiens</i>	445	15520		
<i>Culex restuans</i>	116	2440		
<i>Culex salinarius</i>	68	1093		
<i>Culex territans</i>	1	1		
<i>Culiseta inornata</i>	18	244		
<i>Culiseta morsitans</i>	4	8		
<i>Orthopodomyia signifera</i>	3	4		
<i>Psorophora ciliata</i>	11	119		
<i>Psorophora columbiae</i>	37	773		
<i>Psorophora cyanescens</i>	1	1		
<i>Psorophora ferox</i>	55	981		
<i>Psorophora howardii</i>	3	18		
<i>Uranotaenia sapphirina</i>	1	26		
State Total	6721	190656	8	0.042

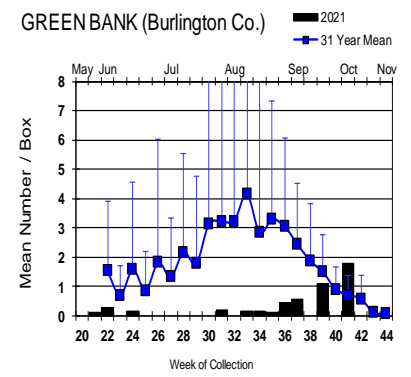
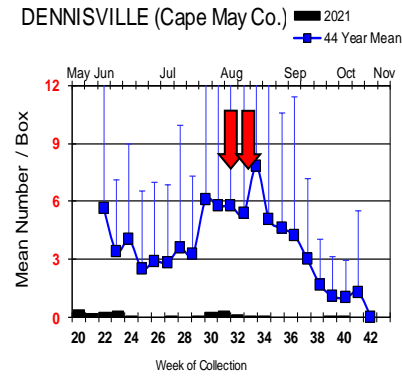
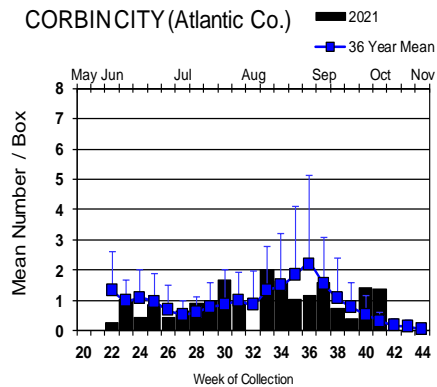
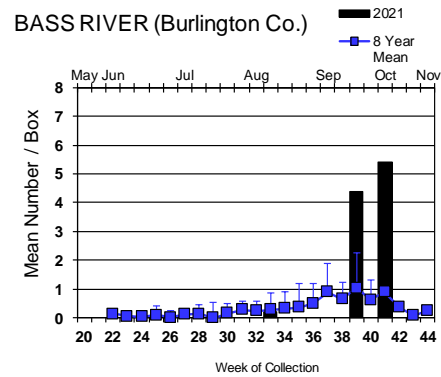
Additional Species: 39 additional species were tested for EEE. 8 positive pools in four species have been detected positive. The first included a pool of *Culex erraticus* in Atlantic County on 5 Aug. The latest positive pools were detected *Culex Mix* and *Cx. erraticus*.

Overall MFIR rates, human and animal cases per county:

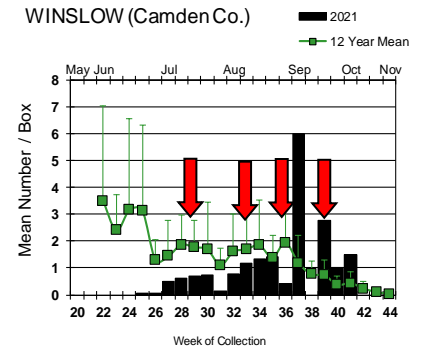
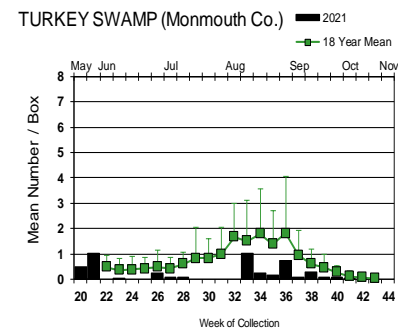
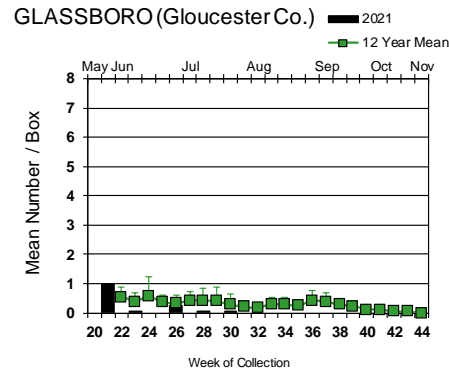
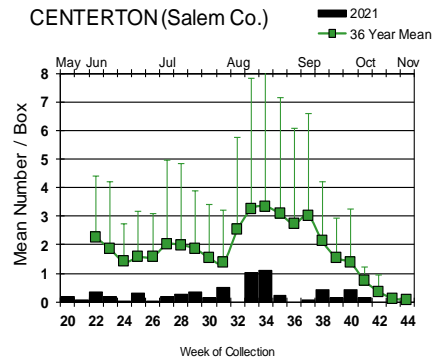


Culiseta melanura Populations



Coastal



Inland



This year's surveillance season began two weeks earlier to accommodate increasing indications of earlier population emergences. To date, 6 positive pools have been detected, two at Dennisville, and four at Winslow, the latest at Winslow coming in week 39. Significant population emergences have occurred at several sites including Bass River, Corbin City, Green Bank and Winslow. The first seasonal positive pool on the state had been detected at Winslow. Adult mosquito surveillance reports at <http://vectorbio.rutgers.edu/reports/mosquito/> continue to suggest resting box collections are lower than light box collections, although some populations are beginning to reflect NJLT trapping patterns. WNV positive pools were also detected in *Cs. melanura* as well as JCV in three pools of *Anopheles* spp. at Winslow.



 = Positive pool(s) detected (red = melanura, purple = other species).

EEE in US (2021 cumulative cases): (Black or Red = previous + new reported cases occurring)

- equine: ~~4(AZ lab error)~~ 2(AK) **17(FL)** 1(MD) 1(MI) 1(MN) 3(NC) 3(NJ) 4(NY) 2(SC) 3(TX) 5(WI) 1(Ontario)
- mosquito pools: 2(CT) 1(MD) **27(NJ)** 2(TX)
- sentinel: **176(+1 emu, FL)**
- human:

West Nile Virus Positive Organisms in US, 2021

West Nile in US (2021 cumulative cases): Single black values indicate no change from previous week. Black values / red values equals previous week/**New totals**.

Note: Data reported by all states should be considered provisional and subject to change. Sources for this table can be found [here](#).

	Birds	Mosquito Pools	Sentinels	Horses*	Humans
Alabama					9/10
Alaska					
Arizona		457	13	3	164
Arkansas					1
California	207/208	2247	87	13	75/88
Colorado		290		20	139/155
Connecticut		207			3
Delaware					1
Florida		8	96/109	2	4
Georgia					2
Hawaii					
Idaho	2	54		13	15
Illinois	27	2658/2660	0	1	46/53
Indiana	0	257		1	6/9
Iowa					2
Kansas					1
Kentucky				4	
Louisiana					3/11
Maine					
Maryland(+DC)		126/146			2/4
Mass.		144		1	8/9
Michigan				1	20/40
Minnesota				2	1/13
Mississippi		39		3	5/6
Missouri				3	7/8

	Birds	Mosquito Pools	Sentinels	Horses*	Humans
Montana					2
Nebraska		37/38		4	61/89
Nevada					
New Hampshire		6			
New Jersey	6	965/990		0	32
New Mexico					9/11
New York				2	14/24
North Carolina					
North Dakota	2	22		5	26/27
Ohio		1286			9
Oklahoma				4	31
Oregon	2	49/74	0	7/8	1/5
Pennsylvania	0	76	0	1	5/16
Rhode Island					
South Carolina				1	2/4
South Dakota	2	22		5	49/50
Tennessee					3/4
Texas	10	1448	5	6	33/35
Utah				9	18/21
Vermont					
Virginia					1/2
Washington		51		11	3
West Virginia					
Wisconsin					
Wyoming		17			1

* Can include other species (e.g., dogs, cows) reported positive.

Protocol: New Jersey Department of Health (NJDH Public Health Environmental and Agricultural Laboratories, PHEAL) and the Cape May County Department of Mosquito Control tests mosquito pools using RT-PCR Taqman techniques.

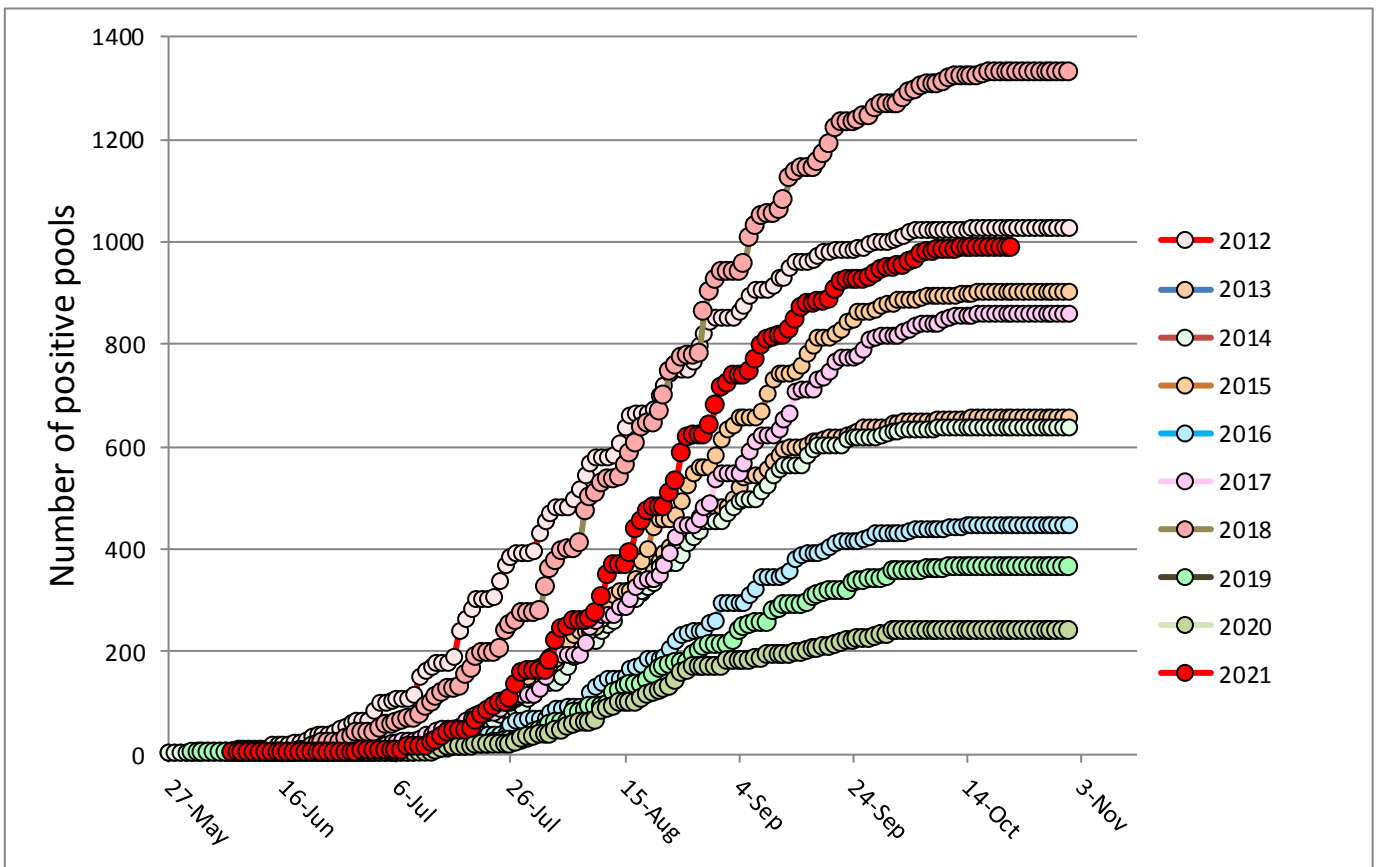
Mosquito Species Submitted and Tested for West Nile Virus through 22 October 2021

Species	Pools	Mosquitoes	Positives	MFIR
<i>Aedes abserratus</i>	16	131		
<i>Aedes albopictus</i>	611	5791	30	5.180
<i>Aedes atlanticus</i>	23	358		
<i>Aedes atlanticus/tormentor</i>	1	17		
<i>Aedes aurifer</i>	5	102		
<i>Aedes canadensis canadensis</i>	106	1510		
<i>Aedes cantator</i>	48	730		
<i>Aedes cinereus</i>	3	80		
<i>Aedes grossbecki</i>	9	33		
<i>Aedes japonicus</i>	350	2164	5	2.311
<i>Aedes mitchellae</i>	1	1		
<i>Aedes sollicitans</i>	28	706		
<i>Aedes sticticus</i>	16	275		
<i>Aedes stimulans</i>	6	29		
<i>Aedes taeniorhynchus</i>	46	1762	1	0.568
<i>Aedes thibaulti</i>	2	105		
<i>Aedes triseriatus</i>	130	356	3	8.427
<i>Aedes trivittatus</i>	77	2497	1	0.400
<i>Aedes vexans</i>	246	7446	3	0.403
<i>Anopheles</i> spp.	31	1069		
<i>Anopheles bradleyi</i>	46	1210	1	0.826
<i>Anopheles crucians</i>	37	388		
<i>Anopheles punctipennis</i>	293	4105	3	0.731
<i>Anopheles quadrimaculatus</i>	124	2009	1	0.498
<i>Anopheles walkeri</i>	14	927		
<i>Coquillettidia perturbans</i>	215	6593	2	0.303
<i>Culex erraticus</i>	197	3202	2	0.625
<i>Culex</i> spp.	4020	151351	869	5.742
<i>Culex pipiens</i>	510	17424	50	2.870
<i>Culex restuans</i>	123	2497	5	2.002
<i>Culex salinarius</i>	79	1434		
<i>Culex territans</i>	1	1		
<i>Culiseta inornata</i>	19	246		
<i>Culiseta melanura</i>	688	12894	12	0.931
<i>Culiseta morsitans</i>	4	8		
<i>Orthopodomyia signifera</i>	3	4		
<i>Psorophora ciliata</i>	12	128	1	7.813
<i>Psorophora columbiae</i>	42	884		
<i>Psorophora cyanescens</i>	1	1		
<i>Psorophora ferox</i>	66	1157	1	0.864
<i>Psorophora howardii</i>	4	68		
<i>Uranotaenia sapphirina</i>	1	26		
Grand Total	8254	231719	990	4.272

Remarks: To date 8254 pools of 231,719 mosquitoes from 39 species have been tested. 990 positive WNV pools (924 pools of *Culex Mix*, *Cx. pipiens* or *Cx. restuans*, 12 pools of *Cs melanura*, 30 pools of *Ae albopictus*, 5 pools of *Ae. japonicus*, 3 pools of *Ae. triseriatus*, *Ae. vexans* and *Anopheles punctipennis* each, 2 pools of *Coquilletidia perturbans* and *Cx. erraticus* each, one pool each of *Ae. taeniorhynchus*, *Ae. trivittatus*, *An. bradleyi*, *An. quadrimaculatus*, *Psorophora ciliata*, and *Ps. ferox*) have been identified as positive for WNV in all but Salem County. First positive detected in a pool of *Culex Mix* collected on 7 June in Somerset County. Cumulative MFIR for all mosquitoes in New Jersey is 4.289.

Humans, Horses and Wild Birds: No horses have been reported infected with WNV in 2021. 32 human cases (three fatalities from Camden County 2 and Mercer County 1), and cases also in Atlantic, Bergen, Burlington, Camden, Cumberland, Essex, Gloucester, Mercer, Middlesex, Monmouth, Ocean, and Somerset counties have been reported to date. See DOH reports on arbovirus activity for further information: <https://www.nj.gov/health/cd/statistics/arboviral-stats/index.shtml>

Although birds are no longer routinely tested in New Jersey, 1 American Crow (*Corvus brachyrhynchos*) from Burlington County, 3 Cooper’s Hawks (*Accipiter cooperii*) from Union County, 1 Cooper’s Hawk from Middlesex County and 1 Peregrine Falcon (*Falco peregrinus*) from Atlantic County all tested positive for WNV..



Above is a graph showing cumulative number of positive pools for the previous 9 years, inclusive of the most active (2018) year. 2021 is represented in RED, with first positive showing on 7 June.

Go [here](#) for the table supplement of arbovirus by county by mosquito species.