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

25 September to 1 October 2022, CDC Week 39
Data download 2:40 pm 30 September

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

- **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.**

- **One pool of *Culex* Mix tested positive for EEE virus in Morris County, collected 17 August. No pools of *Culiseta melanura* have tested positive. No horse or human cases have been reported.**
- **576 pools have tested positive for WN virus, the first in *Aedes cantator*, collected in Burlington County on 2 June. Also positive were pools of *Culex* Mix, *Culex pipiens*, *Culex restuans*, *Culex erraticus*, *Aedes albopictus*, *Ae. canadensis canadensis*, *Aedes cantator*, *Ae. japonicus*, *Ae. triseriatus*, *Ae. vexans*, *Anopheles punctipennis*, *An. quadrimaculatus*, and *Coquillettidia perturbans*. 13 humans have been reported with WNV infection, in Bergen (3), Camden, Middlesex, Monmouth (2), Morris, Ocean (2) and Union counties. One Cooper's Hawk (*Accipiter cooperii*) and four Red-tailed Hawks (*Buteo jamaicensis*) tested positive for WNV. No horse cases have been reported.**
- **No pools tested for SLE, LAC, DENG, CHIK, or ZIKA virus have been detected positive in any species submitted to date.**
- **3 pools have tested positive for JC virus, the latest in *Anopheles punctipennis*, collected 18 Aug in Sussex County. The first two were both in *Aedes cantator*, collected in Bergen County at the same location, first collected on 3 June.**

- **In 2021, there were 35 positive EEE pools in *Culiseta melanura*, *Culex erraticus*, *Ae. taeniorhynchus*, *and Ae. triseriatus*. There were 3 horse case reported. There were no human cases reported.**
- **There were 997 positive WNV pools, in *Culex* Mix, *Culex pipiens*, *Culex restuans*, *Culex*, *erraticus*, *Culiseta melanura*, *Aedes albopictus*, *Aedes japonicus*, *Ae. taeniorhynchus*, *Ae. triseriatus*, *Ae. trivitattus*, *Ae. vexans*, *Anopheles bradleyi*, *An. punctipennis*, *An. quadrimaculatus*, *Coquillettidia perturbans*, *Psorophora ciliate*, and *Ps. ferox*. There were 36 human cases with 5 fatalities, plus 13 positive birds. There were no horse cases.**
- **There were 8 positive JVC pools in *Aedes albopictus*, *Ae. vexans*, *Anopheles punctipennis* and *Culex* Mix. There were 2 human cases reported.**

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**	1.38	0.00	1	1		
Green Bank (Burlington Co.)/25	**Coastal**	1.49	0.00	17	7		
Corbin City (Atlantic Co.)/25	**Coastal**	0.77	0.32	177	20		
Dennisville (Cape May Co.)/50	**Coastal**	1.66	0.00	27	7		
Winslow (Camden Co.)/50	**Inland**	0.88	0.04	224 (225)	14 (15)		
Centerton (Salem Co.)/50	**Inland**	1.51	0.12	43‡	12‡		
Turkey Swamp (Monmouth Co.)/50	**Inland**	0.44	0.02	145	24		
Glassboro (Gloucester Co.)/50	**Inland**	0.37	0.00	33‡	13‡		

*Current week (in parentheses) results pending. ‡ Corrected from previous week. PW = Previous week na =not available ND=No Data NR=Not Recorded

Remarks: Currently, there in one positive EEE pools detected in a pool of *Culex* Mix, caught 17 August in Morris County, in northern NJ. EEE is thought to be refractory in *Culex pipiens.* Minimally, this positive pool can indicate virus circulating, but from this species, would not likely be involved in transmission. No pools of *Culiseta melanura* have been found positive.

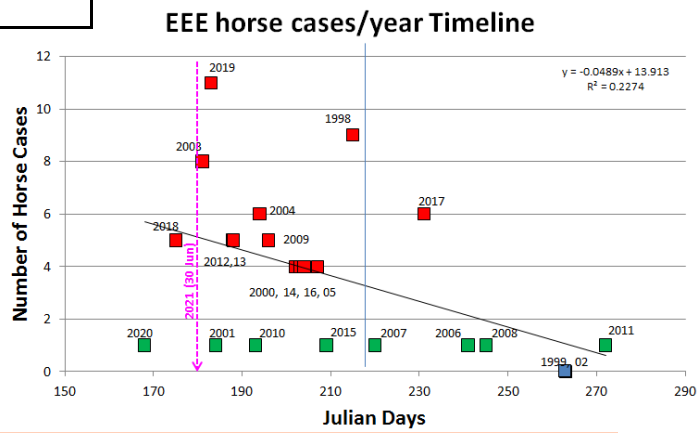
Statewide: 2182 *Cs. melanura* from 304 pools have been submitted for testing, with no positive pools detected and an overall *Cs. melanura* MFIR of 0.000. 160,083 specimens in 6130 pools from 36 other species have also been tested with one positive pool in *Culex* Mix detected. Overall MFIR for *all* species statewide is 0.006.

Traditional Resting Box Sites: 667 *Cs. melanura* from 98 pools have been collected at the traditional resting box sites with no positive pools detected and 2 pools of 4 total mosquitoes pending. Overall *Cs. melanura* MFIR at the traditional resting box site is 0.00.

	Additional *Cs. melanura* trapped by counties *traps with positives indicated in **BOLD UNDERLINED.**				
County	**Trap types***	**Pools**	**Mosquitoes**	**Positives**	**MFIR**
Atlantic	CO2, RB	43	538		
Bergen	RB	2	42		
Burlington	UVLT	19	169		
Cape May	GRA, RB	12	20		
Cumberland	CO2, GRA, RB	29	102		
Gloucester	RB	13	129		
Middlesex	NJLT	3	15		
Monmouth	CO2	4	7		
Morris	ASP, CO2, GRA, RB	39	205		
Ocean	CO2	3	5		
Salem	CO2, RB	14	121		
Sussex	CO2, RB	24	155		
Union	BGPRO	1	7		
TOTAL		**206**	**1515**		

Additional County-set *Cs. melanura*: Counties maintain trap sites for *Cs. melanura* in other areas, using a variety of traps. In 2021, first positive pools of *Cs. melanura* were detected at a non-traditional resting box site in Gloucester County, collected 30 Jun. Currently, there are no positive EEE pools detected.

Graph to the right indicate start times to detection of EEE in *Culiseta melanura* and associated number of horse cases from 1998 to 2021. Early detections are associated with multiple horse cases.



Horses and Humans: In 2021, 3 horses were reported with EEE. Currently, no horse or humans have been reported. For more information, see DOH Vectorborne Surveillance reports: https://www.nj.gov/health/cd/statistics/arboviral-stats/

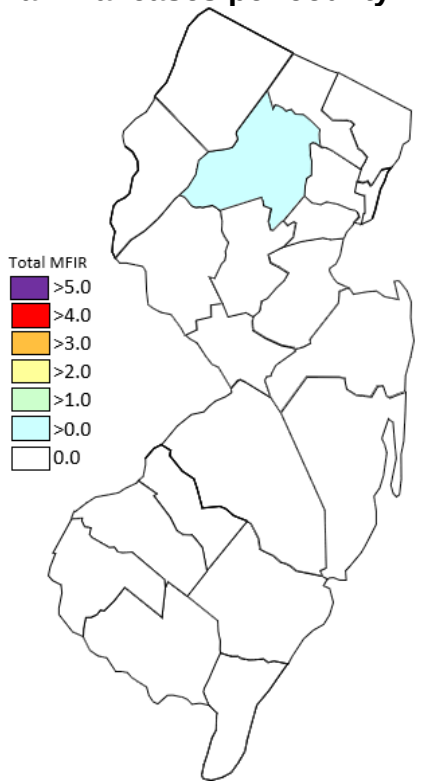
Case	Animal	Age	Sex	County	Date of Onset	Euthanized?	Vaccinated?	Comment

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

Species other than *Cs. melanura*	Pools	Mosquitoes	Positives	MFIR
Aedes abserratus	17	393		
Aedes albopictus	651	6773		
Aedes atlanticus	3	7		
Aedes atropalpus	1	1		
Aedes aurifer	16	154		
Aedes canadensis canadensis	78	1254		
Aedes cantator	51	1663		
Aedes cinereus	4	48		
Aedes grossbecki	9	51		
Aedes japonicus	487	2996		
Aedes provocans	2	3		
Aedes sollicitans	42	983		
Aedes sticticus	7	166		
Aedes stimulans	13	71		
Aedes taeniorhynchus	60	2025		
Aedes triseriatus	99	252		
Aedes trivittatus	9	68		
Aedes vexans	171	3773		
Anopheles spp.	3	97		
Anopheles barberi	4	4		
Anopheles bradleyi	28	586		
Anopheles crucians	10	52		
Anopheles punctipennis	229	2296		
Anopheles quadrimaculatus	102	1216		
Coquillettidia perturbans	185	3945		
Culex erraticus	179	3782		
Culex Mix	3209	116470	1	0.009
Culex pipiens	241	7834		
Culex restuans	141	2057		
Culex salinarius	32	694		
Culex territans	1	1		
Culiseta inornata	8	17		
Culiseta morsitans	2	2		
Orthopodomyia signifera	2	2		
Psorophora ciliata	3	9		
Psorophora columbiae	9	43		
Psorophora ferox	19	265		
Uranotaenia sapphirina	3	30		
State Total	**6130**	**160083**	**1**	**0.006**

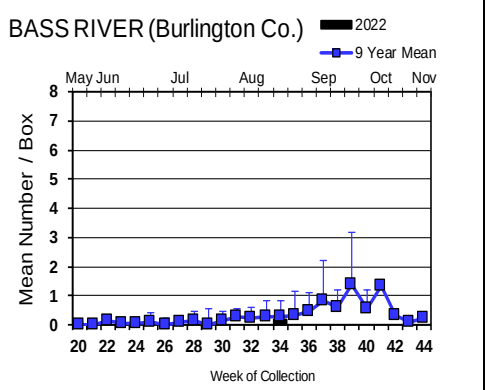
Additional Species: 36 additional species were tested for EEE. No positive pools were detected. In 2021, the first positive non-*melanura* pool was detected in of *Culex erraticus* in Atlantic County on 5 Aug.

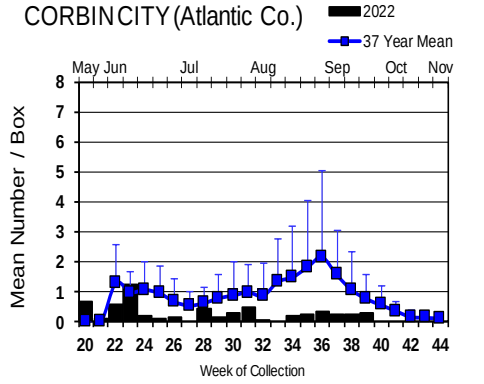
Overall MFIR rates, human and animal cases per county:

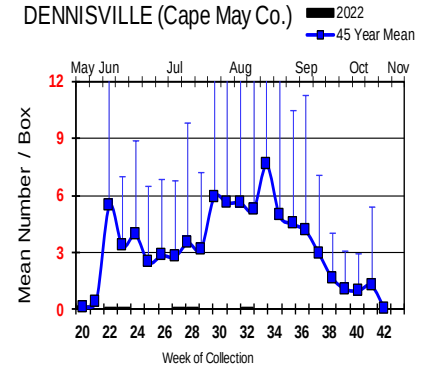


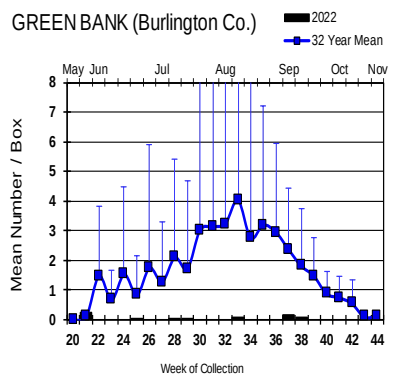
Culiseta melanura Populations

Coastal

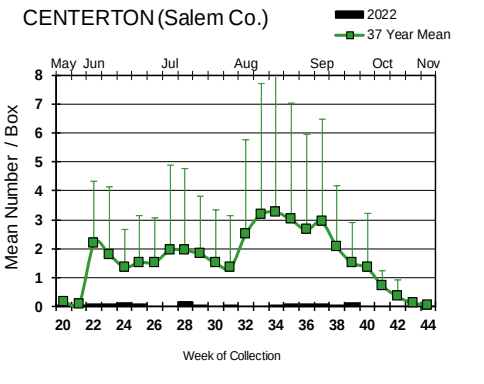


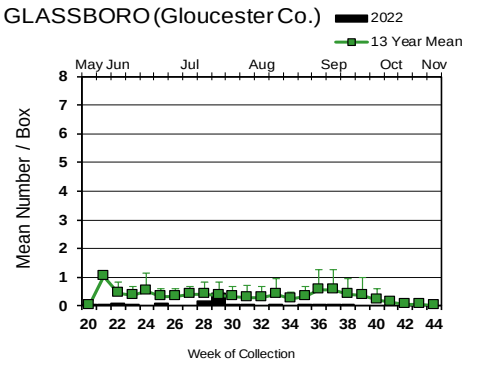


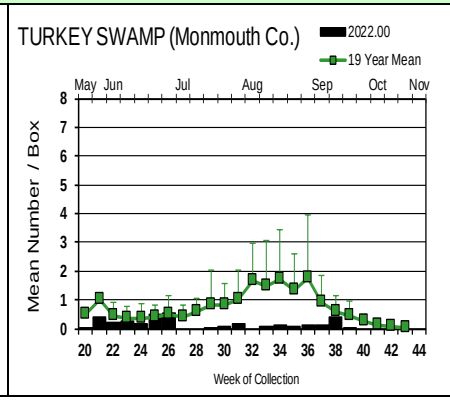


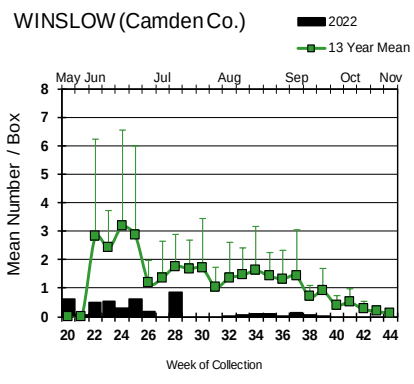


Inland









Cs. melanura **populations continue to remain below historic levels at the traditional resting box sites, although populations on the eastern side of the state show slight population increases (typically, western populations first show higher abundances, followed by eastern populations later in the season). Currently, one positive EEE pool have been detected at a Morris County (northern part of the state) in a pool of *Culex pipiens* (refractory for the EEE virus). No *Culiseta melanura* pools have been detected positive for EEE.**

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

EEE in US (2022 cumulative cases): (Black or Red = previous + new reported cases occurring)

- **equine: 11(FL) 1(IN) 1(MI)**
- **mosquito pools:** 1(NJ) 1(RI)
- **sentinel: 57(FL)**
- **human:**

West Nile Virus Positive Organisms in US, 2022

West Nile in US (2022 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					1
Alaska					
Arizona		2	0		5/29
Arkansas					1
California	153/166	2817/2817	119/123	8/11	69/81
Colorado		281/281			135/176
Connecticut		183/185			2
Delaware					
Florida		2/4	183/223	2/3	1/1
Georgia					1/6
Hawaii					
Idaho	0	36/38		3/3	1/3
Illinois	13/19	2255/2326		1/1	12/20
Indiana	0	211/237		1/2	2/2
Iowa					1
Kansas					2
Kentucky					1
Louisiana					31
Maine					
Maryland(+DC)					2
Mass.		94/95		0	4/5
Michigan	9/11	32/62		2/3	4/7
Minnesota					2
Mississippi		65/72			5/6
Missouri		0		2	5/7

	Birds	Mosquito Pools	Sentinels	Horses*	Humans
Montana					
Nebraska		16/88		1	16/23
Nevada					
New Hampshire					
New Jersey	5/5	554/576			11/13
New Mexico					4
New York					31
North Carolina					4
North Dakota	1/1	29/29		0	18/18
Ohio		734/830		0	4/4
Oklahoma					1
Oregon	0	36/38	0	1/2	0
Pennsylvania	6/6	2666/2763		2	15/15
Rhode Island		1/2			
South Carolina					
South Dakota		7/7			52/60
Tennessee					
Texas	1/1	264/299	0	0	16/16
Utah					
Vermont		6/6		0	0
Virginia					4
Washington		5			1
West Virginia					
Wisconsin	1			1	
Wyoming		9/9		0	1/2

* 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 30 September 2022

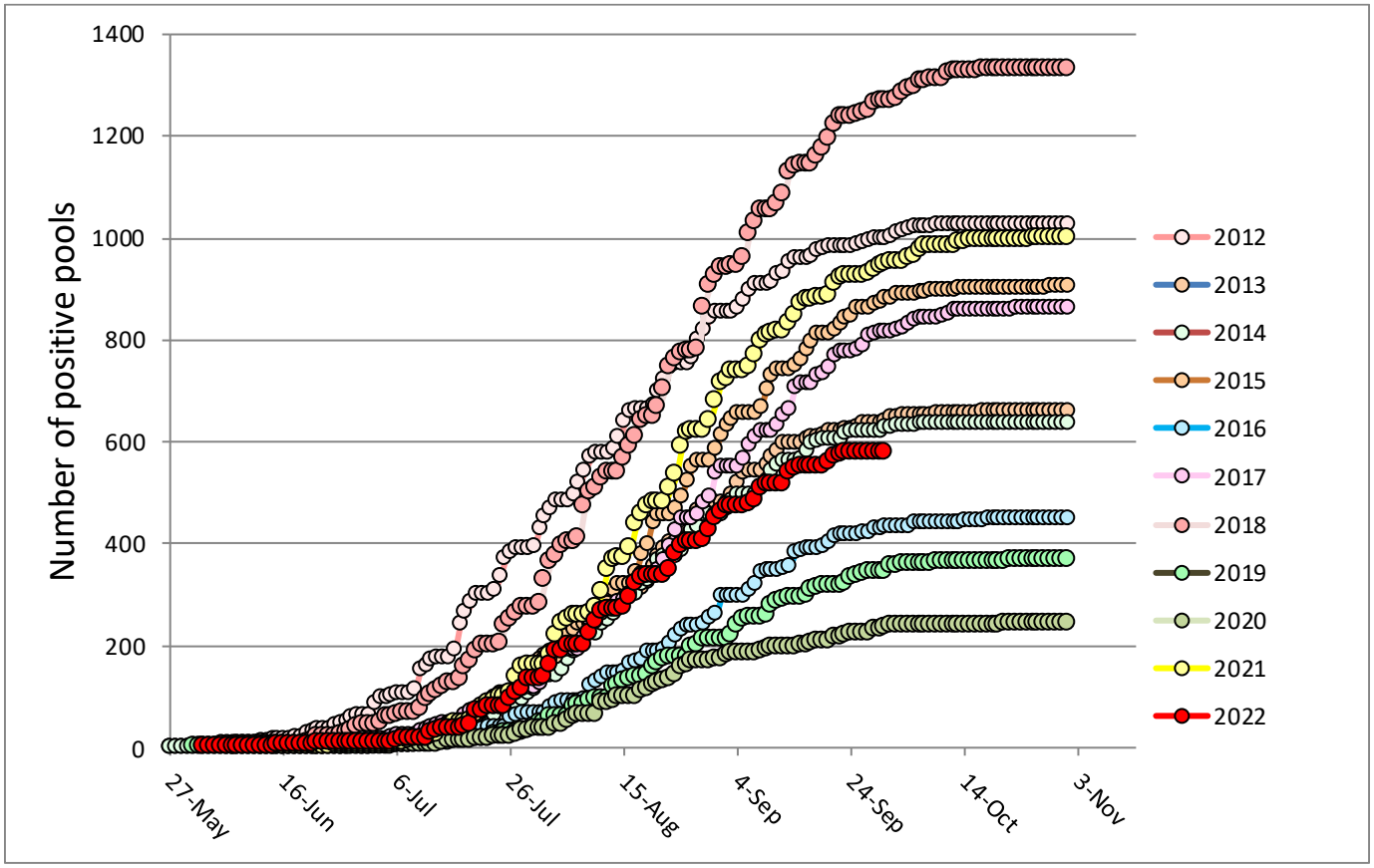
Species	Pools	Mosquitoes	Positives	MFIR
Aedes abserratus	17	393		
Aedes albopictus	651	6773	13	1.919
Aedes atlanticus	3	7		
Aedes atropalpus	1	1		
Aedes aurifer	16	154		
Aedes canadensis canadensis	78	1254	1	0.797
Aedes cantator	51	1663	1	0.601
Aedes cinereus	4	48		
Aedes grossbecki	9	51		
Aedes japonicus	514	3231	10	3.095
Aedes provocans	2	3		
Aedes sollicitans	44	1050		
Aedes sticticus	7	166		
Aedes stimulans	13	71		
Aedes taeniorhynchus	60	2025		
Aedes triseriatus	192	568	2	3.521
Aedes trivittatus	9	68		
Aedes vexans	172	3782	1	0.264
Anopheles spp.	3	97		
Anopheles barberi	4	4		
Anopheles bradleyi	28	586		
Anopheles crucians	10	52		
Anopheles punctipennis	229	2296	1	0.436
Anopheles quadrimaculatus	102	1216	1	0.822
Coquillettidia perturbans	185	3945	1	0.253
Culex erraticus	179	3782	2	0.529
Culex spp.	3224	116905	523	4.474
Culex pipiens	241	7834	19	2.425
Culex restuans	141	2057	1	0.486
Culex salinarius	32	694		
Culex territans	1	1		
Culiseta inornata	8	17		
Culiseta melanura	304	2182		
Culiseta morsitans	2	2		
Orthopodomyia signifera	2	2		
Psorophora ciliata	3	9		
Psorophora columbiae	9	43		
Psorophora ferox	19	265		
Uranotaenia sapphirina	3	30		
Grand Total	**6572**	**163327**	**576**	**3.527**

Remarks: To date 6572 pools of 163,327 mosquitoes from 36 species have been tested, with 576 positive pools of WNV detected. First positive pool was detected in *Aedes cantator,* collected 2 June in Burlington County at a traditional resting box site. Positive species include *Culex* Mix, *Culex pipiens, Cx. erraticus, Cx. Restuans, Aedes albopictus, Ae. canadensis*

canadensis, Ae. cantator, Ae. japonicus, Ae. triseriatus, *Ae. vexans, Anopheles punctipennis, An. quadrimaculatus, and Coquillettidia perturbans.* Cumulative MFIR for all mosquitoes in New Jersey is 3.527, up from last week's value of 3.489.

Humans, Horses and Wild Birds: 13 human cases of WNV have been detected in Bergen (3), Burlington, Camden (2), Middlesex, Monmouth (2), Morris, Ocean (2) and Union counties. Last year, no horses have been reported infected but 36 human cases were detected. 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, last year 13 corvids and birds of prey were reported positive for WNV. This year, WNV was first detected in a Red-tailed Hawk (*Buteo jamaicensis*) from Somerset County. Infections also include one Cooper's Hawk (*Accipiter cooperii*) and three Red-tailed Hawks (*Buteo jamaicensis*), all adult males from a raptor rehabilitation center (Essex, Morris, and Somerset county origins).



Above is a graph showing cumulative number of positive pools for the previous 10 years, inclusive of the most active (2018) year. 2022 is represented in RED (first positive collected 2 June).

Go here for the table supplement of arbovirus by county by mosquito species.