# VECTOR SURVEILLANCE IN NEW JERSEY

## EEE, WNV, SLE and LAC

Prepared by Lisa M. Reed, Scott Crans and Mark Robson
Center for Vector Biology, Rutgers University

CDC WEEK 30: 20 July to 26 July, 2014

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## *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** | 0.50 | 0.00 | 4 | 3 | | |
| **Green Bank (Burlington Co.)/25** | **Coastal** | 3.99 | 0.00 | 64 | 8 | | |
| **Corbin City (Atlantic Co.)/25** | **Coastal** | 0.96 | 0.20 | 137 | 8 | | |
| **Dennisville (Cape May Co.)/50** | **Coastal** | 6.96 | 1.88 | 201 | 8 | 1 | 4.975 |
| **Winslow (Camden Co.)/40** | **Inland** | 2.41 | 2.10 | 710 | 18 | | |
| **Centerton (Salem Co.)/48** | **Inland** | 1.74 | 0.30 | 272 | 10 | | |
| **Turkey Swamp (Monmouth Co.)/50** | **Inland** | 1.19 | 0.14 | 66 (73) | 8 (9) | | |
| **Glassboro (Gloucester Co.)/49** | **Inland** | 0.37 | 0.30 | 320 | 10 | | |

*Current week (in parentheses) results pending.

**Remarks:** First EEE activity has been detected in two mosquito pools in New Jersey, one at the traditional resting box sites and one in an additional county resting box site. Statewide, for all mosquitoes tested, MFIR is 0.293. *Cs. melanura* activity has increased moderately at some sites (see page 3 population graphs).

**Traditional Resting Box Sites:** The first detection of EEE in *Cs. melanura* has occurred at the Dennisville site, a long-standing endemic focal site. This single pool, collected on 21 July results in an MFIR value of 4.975 at the site. To date, 1774 *Cs. melanura* from 73 pools have been tested for EEE. Overall MFIR for these traditional sites is 0.564. One additional pool containing 7 *Cs. melanura* remains to be tested.

| Additional *Cs. melanura* trapped by counties<br>*traps with positives indicated in **BOLD.** | | | | |
|---|---|---|---|---|
| **County** | **Trap types*** | **Number collected (pools)** | **Number of positive pools** | **MFIR** |
| Atlantic | $CO_2$ | 1 (1) | | |
| Burlington | $CO_2$ | 2793 (56) | | |
| Cape May | RB | 90 (6) | | |
| Cumberland | $CO_2$, RB | 59 (9) | | |
| Gloucester | **RB** | 462 (33) | 1 | 2.165 |
| Monmouth | Other | 2 (1) | | |
| Ocean | $CO_2$, RB | 18 (5) | | |
| Salem | $CO_2$ | 6 (3) | | |
| **TOTAL** | | **3431 (114)** | | |

**Additional *Cs. melanura***: Counties submit additional pools of *Cs. melanura* caught in other trap types as well as resting boxes. Currently, virus has been detected in one pool of *Cs. melanura,* sampled from a resting box on 23 July in Gloucester County.

| **Species other than *Cs. melanura*** | **Pools** | **Mosquitoes** | **Positives** | **MFIR** |
|---|---|---|---|---|
| *Aedes canadensis canadensis* | 3 | 81 | | |
| *Aedes taeniorhynchus* | 2 | 20 | | |
| *Aedes vexans* | 1 | 14 | | |
| *Anopheles bradleyi* | 5 | 167 | | |
| *Anopheles punctipennis* | 18 | 335 | | |
| *Anopheles quadrimaculatus* | 11 | 321 | | |
| *Coquillettidia perturbans* | 21 | 481 | | |
| *Culex erraticus* | 3 | 31 | | |
| *Culex restuans* | 1 | 1 | | |
| *Culex salinarius* | 12 | 162 | | |
| *Culex* spp. | 1 | 1 | | |
| *Culiseta morsitans* | 1 | 1 | | |
| State Total | **79** | **1615** | | |

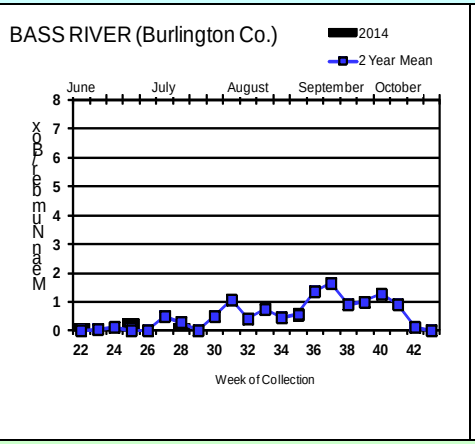
**Additional Species:** Counties submit additional pools of species other than *Cs. melanura* for EEE virus testing. Currently, no detection of EEE in other species has occurred.

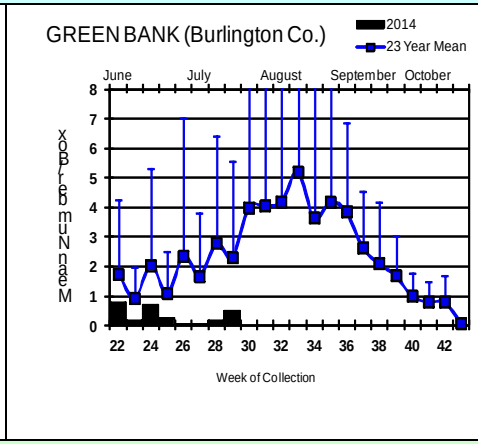
**Horses and Humans:** Currently there is no reported horse or human cases

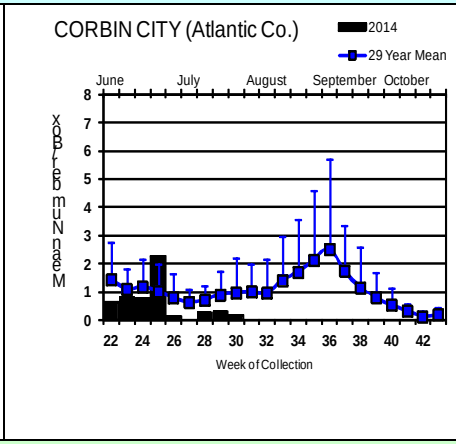
**Horses and Vaccinations:** The fate of unvaccinated equids reinforces the necessity of maintaining a vaccination schedule for arboviruses. For vaccination schedules recommended by the American Association of Equine Practices, see: http://www.aaep.org/vaccination_guidelines.htm

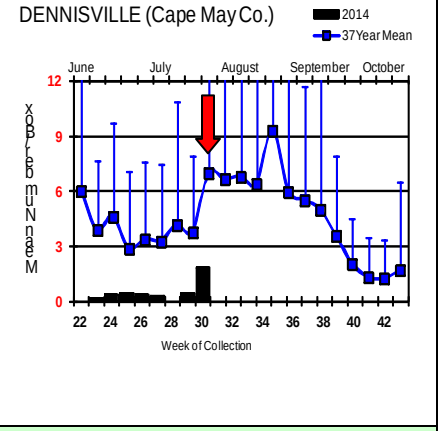
# *Culiseta melanura* Population Graphs

## Coastal

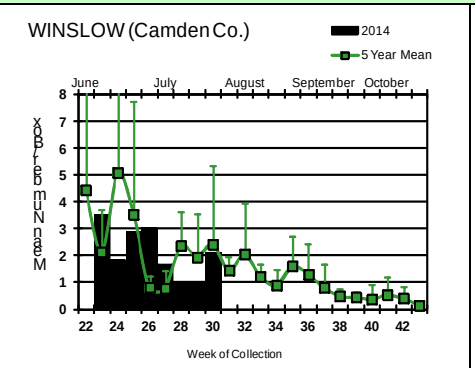


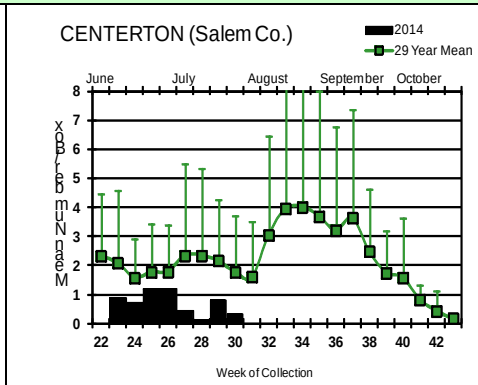



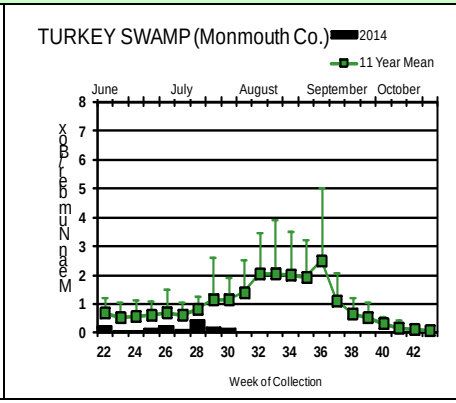



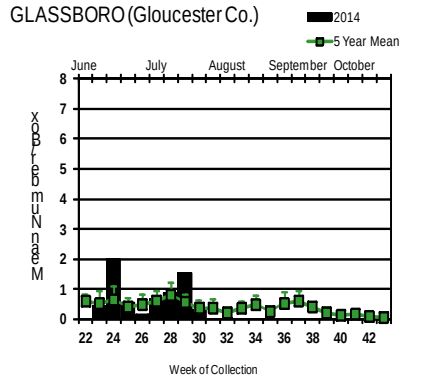




## Inland




*Culiseta melanura* populations at Dennisville increased from previous weeks, but are still below historical values at a time when positive detection of EEE has occurred there. Dennisville is a well-known enzootic focal site for EEE activity in the state, and detection has also occurred at other resting box sites with low populations of mosquitoes. At this time, we would expect the second generation (and any remaining early stage overwintering instars) to emerge and to build the populations up at a time when amplification of EEE virus would occur.

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

EEE in US (2014 cumulative cases): (Black or Red = previous + new reported cases occurring)

- equine: AL(1) FL (27 +2 deer) GA(2)
- mosquito pools: GA(1) MA(4) NJ(2) NY(4) VA(1) VT(1)
- sentinel: AL(3) GA(1) FL(100)
- human:

# West Nile Virus Positive Organisms in US

West Nile in US (2014 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 | 1 | 1 | | | 1/2 |
| Arkansas | | | | | |
| California | 708/872 | 771/978 | 14/39 | | 11/19 |
| Colorado | | 16 | | 1 | 2 |
| Connecticut | | 1 | | | 0 |
| Delaware | | | | | |
| DC | | | | | |
| Florida | | | 6 | | |
| Georgia | | | | | 1 |
| Hawaii | | | | | |
| Idaho | | 14/15 | | | |
| Illinois | 7 | 58/91 | | | |
| Indiana | | 6/17 | | | |
| Iowa | | 1 | | | 2/3 |
| Kansas | | 0 | | | 0 |
| Kentucky | | | | | |
| Louisiana | | 119/226 | 3 | | 1/9 |
| Maine | | 0 | | 0 | 0 |
| Maryland | | | | | |
| Mass. | | 3/5 | | 0 | 0 |
| Michigan | | 1 | | | |
| Minnesota | 1 | 2/5 | | | 1 |
| Mississippi | | 1/8 | | 0 | 2/3 |
| Missouri | | 0 | | 0 | 1 |

| | Birds | Mosquito Pools | Sentinels | Horses | Humans |
|---|---|---|---|---|---|
| Montana | | | | | |
| Nebraska | 26 | 2/14 | | 0 | 3 |
| Nevada | | | | | |
| New Hampshire | | 0 | | 0 | 0 |
| New Jersey | 2/5 | 16/36 | | | |
| New Mexico | | | | | |
| New York | | 21/24 | | | 1 |
| North Carolina | | | | | |
| North Dakota | 0 | 1 | | 0 | 0 |
| Ohio | | | | | |
| Oklahoma | | | | | 1 |
| Oregon | 0 | 5 | 0 | 0 | 0 |
| Pennsylvania | 2 | 118/218 | | | |
| Rhode Island | | 0 | | | |
| South Carolina | | | | | |
| South Dakota | | 7/18 | | | 8/9 |
| Tennessee | 0 | 14/22 | | 0 | 1 |
| Texas | 14 | 266/443 | | 0 | 1 |
| Utah | 1/2 | 3/10 | | | |
| Vermont | | | | | |
| Virginia | | | | | |
| Washington | 0 | 2/3 | | 0 | 0 |
| West Virginia | | | | | |
| Wisconsin | 10/15 | 0 | | 0 | 1 |
| Wyoming | | 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 Testing through 29 July 2014

| Species | Pools | Mosquitoes | Positives | MFIR |
|---|---|---|---|---|
| *Aedes albopictus* | 92 | 573 | | |
| *Aedes canadensis canadensis* | 24 | 475 | | |
| *Aedes cantator* | 8 | 183 | | |
| *Aedes japonicus* | 206 | 1217 | | |
| *Aedes sollicitans* | 2 | 6 | | |
| *Aedes sticticus* | 3 | 7 | | |
| *Aedes taeniorhynchus* | 6 | 216 | | |
| *Aedes triseriatus* | 55 | 246 | | |
| *Aedes trivittatus* | 6 | 9 | | |
| *Aedes vexans* | 26 | 176 | | |
| *Anopheles bradleyi* | 10 | 253 | | |
| *Anopheles punctipennis* | 37 | 407 | | |
| *Anopheles quadrimaculatus* | 25 | 732 | | |
| *Coquillettidia perturbans* | 48 | 861 | | |
| *Culex erraticus* | 11 | 54 | | |
| *Culex pipiens* | 268 | 8221 | 1 | 0.122 |
| *Culex restuans* | 117 | 3142 | 2 | 0.637 |
| *Culex salinarius* | 15 | 167 | | |
| *Culex spp.* | 1337 | 54868 | 33 | 0.601 |
| *Culiseta melanura* | 205 | 5238 | | |
| *Culiseta morsitans* | 1 | 1 | | |
| *Psorophora columbiae* | 2 | 6 | | |
| *Psorophora ferox* | 6 | 17 | | |
| **State Total** | **2510** | **77075** | **36** | **0.467** |

**Remarks:** To date, 2510 pools of 77,075 mosquitoes from 22 species have been tested, with 36 positive pools detected, all *Culex*. First positive was detected in a Mixed *Culex* pool collected on 20 May in Camden County. Second positive in Mixed *Culex* collected on 25 June in Bergen County and third positive Mixed *Culex* pool collected 2 July in Camden County. Eleven counties have now detected positive pools, including Atlantic, Bergen, Burlington, Camden, Gloucester, Hudson, Hunterdon, Mercer, Middlesex, Passaic and Union counties. Overall MFIR for the state is 0.467.

**Humans, Horses and Wild Birds:** To date, no human cases have been reported. For further information, see http://www.state.nj.us/health/cd/westnile/techinfo.shtml.

Bird testing began in mid-April. First positive bird (Fish Crow in Mercer County collected 8 July) has been reported. To date, 61 birds have been tested, with 5 positives. Species includes: Fish Crow (*Corvus ossifragus* 4/19), Blue Jay (*Cyanocitta cristata* 0/6), Hawk/Raptor (1/4) and other avian species (0/32). Counties (positives) submitting birds are Atlantic, Bergen, Burlington, Cape May, Essex, Hunterdon, Mercer, Monmouth, Morris, Ocean, Salem, Sussex and Warren.

## WNV Results by County through 29 July 2014

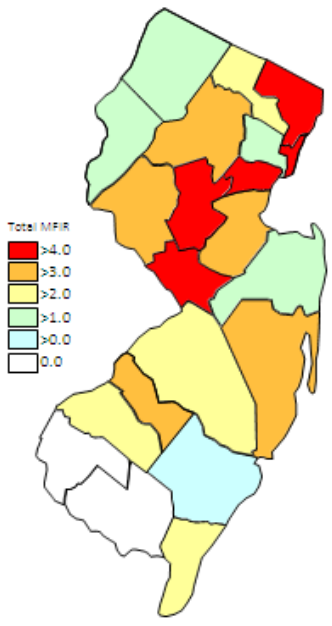
| County | Species | Pools | Mosquitoes | Positives | MFIR |
|---|---|---|---|---|---|
| **Atlantic** | | **60** | **1520** | **1** | **0.658** |
| | *Aedes albopictus* | 3 | 9 | | |
| | *Aedes canadensis canadensis* | 3 | 26 | | |
| | *Aedes cantator* | 2 | 5 | | |
| | *Aedes japonicus* | 1 | 13 | | |

| | | | | | |
|---|---|---|---|---|---|
| | *Aedes sollicitans* | 1 | 5 | | |
| | *Aedes sticticus* | 1 | 1 | | |
| | *Aedes taeniorhynchus* | 4 | 196 | | |
| | *Aedes vexans* | 4 | 24 | | |
| | *Anopheles bradleyi* | 1 | 2 | | |
| | *Anopheles punctipennis* | 2 | 4 | | |
| | *Coquillettidia perturbans* | 3 | 20 | | |
| | *Culex* spp. | 23 | 1062 | 1 | 0.942 |
| | *Culiseta melanura* | 10 | 141 | | |
| | *Psorophora ferox* | 2 | 12 | | |
| **Bergen** | | **75** | **5625** | **7** | **1.244** |
| | *Culex* spp. | 75 | 5625 | 7 | 1.244 |
| **Burlington** | | **177** | **5812** | **3** | **0.516** |
| | *Aedes canadensis canadensis* | 1 | 75 | | |
| | *Aedes japonicus* | 15 | 182 | | |
| | *Aedes taeniorhynchus* | 2 | 20 | | |
| | *Aedes triseriatus* | 2 | 28 | | |
| | *Aedes vexans* | 3 | 62 | | |
| | *Anopheles bradleyi* | 1 | 45 | | |
| | *Anopheles punctipennis* | 3 | 13 | | |
| | *Anopheles quadrimaculatus* | 1 | 21 | | |
| | *Coquillettidia perturbans* | 1 | 64 | | |
| | *Culex erraticus* | 1 | 3 | | |
| | *Culex salinarius* | 6 | 64 | | |
| | *Culex* spp. | 74 | 2374 | 3 | 1.264 |
| | *Culiseta melanura* | 67 | 2861 | | |
| **Camden** | | **215** | **6627** | **6** | **0.905** |
| | *Aedes albopictus* | 8 | 10 | | |
| | *Aedes japonicus* | 53 | 201 | | |
| | *Culex* spp. | 136 | 5706 | 6 | 1.052 |
| | *Culiseta melanura* | 18 | 710 | | |
| **Cape May** | | **151** | **2239** | | |
| | *Aedes japonicus* | 1 | 8 | | |
| | *Aedes triseriatus* | 5 | 29 | | |
| | *Anopheles bradleyi* | 4 | 122 | | |
| | *Anopheles quadrimaculatus* | 10 | 324 | | |
| | *Culex erraticus* | 2 | 29 | | |
| | *Culex pipiens* | 79 | 1041 | | |
| | *Culex restuans* | 32 | 339 | | |
| | *Culex salinarius* | 4 | 56 | | |
| | *Culiseta melanura* | 14 | 291 | | |
| **Cumberland** | | **58** | **778** | | |
| | *Aedes canadensis canadensis* | 1 | 2 | | |
| | *Aedes japonicus* | 2 | 2 | | |
| | *Aedes vexans* | 4 | 40 | | |
| | *Anopheles bradleyi* | 4 | 84 | | |
| | *Anopheles punctipennis* | 4 | 19 | | |
| | *Coquillettidia perturbans* | 7 | 239 | | |
| | *Culex pipiens* | 1 | 5 | | |
| | *Culex salinarius* | 2 | 42 | | |

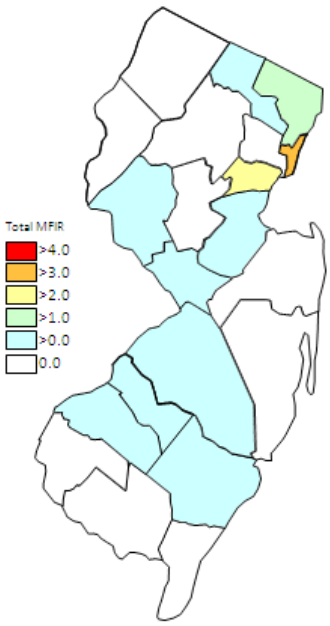
| | | | | | |
|---|---|---|---|---|---|
| | *Culex* spp. | 21 | 276 | | |
| | *Culiseta melanura* | 10 | 63 | | |
| | *Psorophora columbiae* | 1 | 5 | | |
| | *Psorophora ferox* | 1 | 1 | | |
| **Essex** | | **140** | **1617** | | |
| | *Aedes albopictus* | 7 | 17 | | |
| | *Aedes japonicus* | 17 | 38 | | |
| | *Aedes triseriatus* | 1 | 3 | | |
| | *Aedes trivittatus* | 2 | 3 | | |
| | *Aedes vexans* | 1 | 4 | | |
| | *Culex* spp. | 110 | 1550 | | |
| | *Psorophora ferox* | 2 | 2 | | |
| **Gloucester** | | **249** | **8587** | **1** | **0.116** |
| | *Aedes albopictus* | 7 | 132 | | |
| | *Aedes japonicus* | 8 | 127 | | |
| | *Aedes triseriatus* | 4 | 45 | | |
| | *Anopheles punctipennis* | 16 | 332 | | |
| | *Anopheles quadrimaculatus* | 10 | 320 | | |
| | *Coquillettidia perturbans* | 2 | 26 | | |
| | *Culex pipiens* | 159 | 6823 | 1 | 0.147 |
| | *Culiseta melanura* | 43 | 782 | | |
| **Hudson** | | **27** | **1371** | **5** | **3.647** |
| | *Culex* spp. | 27 | 1371 | 5 | 3.647 |
| **Hunterdon** | | **135** | **6691** | **1** | **0.149** |
| | *Culex* spp. | 135 | 6691 | 1 | 0.149 |
| **Mercer** | | **164** | **3961** | **2** | **0.505** |
| | *Aedes albopictus* | 12 | 51 | | |
| | *Aedes canadensis canadensis* | 2 | 5 | | |
| | *Aedes japonicus* | 19 | 76 | | |
| | *Aedes triseriatus* | 9 | 21 | | |
| | *Aedes vexans* | 2 | 10 | | |
| | *Culex pipiens* | 25 | 346 | | |
| | *Culex restuans* | 82 | 2799 | 2 | 0.715 |
| | *Culex salinarius* | 1 | 2 | | |
| | *Culex* spp. | 12 | 651 | | |
| **Middlesex** | | **123** | **6800** | **6** | **0.882** |
| | *Aedes triseriatus* | 2 | 14 | | |
| | *Culex* spp. | 121 | 6786 | 6 | 0.884 |
| **Monmouth** | | **167** | **2634** | | |
| | *Aedes albopictus* | 17 | 68 | | |
| | *Aedes canadensis canadensis* | 13 | 268 | | |
| | *Aedes cantator* | 3 | 43 | | |
| | *Aedes japonicus* | 23 | 116 | | |
| | *Aedes sollicitans* | 1 | 1 | | |
| | *Aedes triseriatus* | 9 | 35 | | |
| | *Aedes trivitattus* | 4 | 6 | | |
| | *Aedes vexans* | 5 | 10 | | |
| | *Anopheles punctipennis* | 5 | 6 | | |

| | | | | | |
|---|---|---|---|---|---|
| | *Anopheles quadrimaculatus* | 1 | 1 | | |
| | *Coquillettidia perturbans* | 2 | 2 | | |
| | *Culex erraticus* | 2 | 6 | | |
| | *Culex restuans* | 1 | 1 | | |
| | *Culex salinarius* | 1 | 1 | | |
| | *Culex* spp. | 69 | 2000 | | |
| | *Culiseta melanura* | 9 | 68 | | |
| | *Culiseta morsitans* | 1 | 1 | | |
| | *Psorophora columbiae* | 1 | 1 | | |
| **Morris** | | **100** | **4410** | | |
| | *Aedes albopictus* | 2 | 45 | | |
| | *Coquillettidia perturbans* | 4 | 200 | | |
| | *Culex* spp. | 94 | 4165 | | |
| **Ocean** | | **147** | **2144** | | |
| | *Aedes albopictus* | 27 | 182 | | |
| | *Aedes canadensis canadensis* | 3 | 96 | | |
| | *Aedes cantator* | 3 | 135 | | |
| | *Aedes japonicus* | 20 | 71 | | |
| | *Aedes sticticus* | 2 | 6 | | |
| | *Aedes triseriatus* | 5 | 24 | | |
| | *Aedes vexans* | 6 | 23 | | |
| | *Coquillettidia perturbans* | 10 | 46 | | |
| | *Culex erraticus* | 2 | 3 | | |
| | *Culex salinarius* | 1 | 2 | | |
| | *Culex* spp. | 46 | 1510 | | |
| | *Culiseta melanura* | 21 | 44 | | |
| | *Psorophora ferox* | 1 | 2 | | |
| **Passaic** | | **48** | **1445** | **1** | **0.692** |
| | *Aedes albopictus* | 2 | 15 | | |
| | *Aedes japonicus* | 13 | 130 | | |
| | Aedes triseriatus | 2 | 5 | | |
| | *Aedes vexans* | 1 | 3 | | |
| | *Culex* spp. | 30 | 1292 | 1 | 0.774 |
| **Salem** | | **129** | **1546** | | |
| | *Aedes albopictus* | 4 | 12 | | |
| | *Aedes japonicus* | 15 | 39 | | |
| | *Aedes triseriatus* | 12 | 26 | | |
| | *Anopheles punctipennis* | 6 | 31 | | |
| | *Anopheles quadrimaculatus* | 2 | 61 | | |
| | *Coquillettidia perturbans* | 18 | 247 | | |
| | *Culex erraticus* | 4 | 13 | | |
| | *Culex pipiens* | 4 | 6 | | |
| | *Culex restuans* | 2 | 3 | | |
| | *Culex* spp. | 49 | 830 | | |
| | *Culiseta melanura* | 13 | 278 | | |
| **Somerset** | | **120** | **2827** | | |
| | *Aedes albopictus* | 1 | 3 | | |
| | *Aedes canadensis canadensis* | 1 | 3 | | |
| | *Aedes japonicus* | 12 | 129 | | |
| | *Aedes triseriatus* | 3 | 9 | | |

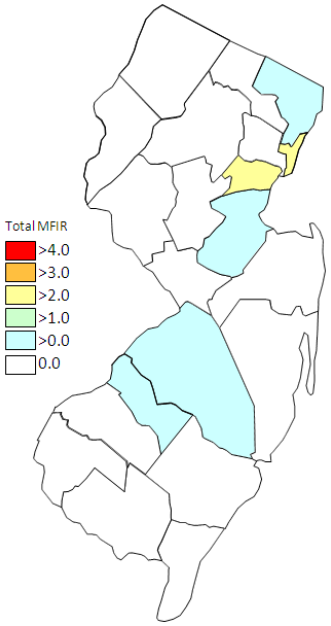
| | | | | | |
|---|---|---|---|---|---|
| | *Anopheles punctipennis* | 1 | 2 | | |
| | *Culex* spp. | 102 | 2681 | | |
| **Sussex** | | **56** | **1958** | | |
| | *Aedes japonicus* | 3 | 40 | | |
| | *Aedes triseriatus* | 1 | 7 | | |
| | *Anopheles quadrimaculatus* | 1 | 5 | | |
| | *Coquillettidia perturbans* | 1 | 17 | | |
| | *Culex* spp. | 50 | 1889 | | |
| **Union** | | **30** | **1421** | **3** | **2.111** |
| | *Aedes albopictus* | 1 | 12 | | |
| | *Aedes japonicus* | 2 | 14 | | |
| | *Culex* spp. | 27 | 1395 | 3 | 2.151 |
| **Warren** | | **139** | **7062** | | |
| | *Aedes albopictus* | 1 | 17 | | |
| | *Aedes japonicus* | 2 | 31 | | |
| | *Culex* spp. | 136 | 7014 | | |
| **Grand Total** | | **2510** | **77075** | **36** | **0.467** |



Cumulative WNV activity in 2013.



WNV activity to 29 July 2014.



WNV activity last week, 2014.

## Saint Louis Encephalitis (SLE) to 29 July 2014.

New Jersey will be selectively testing for SLE this year. SLE has had previous activity in New Jersey, most notably in 1964 and 1975 (CDC's SLE website), the latter prompting the surveillance reporting by Rutgers. SLE is a flavivirus and has a similar transmission pattern to West Nile, with *Culex* species as the predominant vectors.

No pools have been detected positive for SLE in 2014.

| County | Species | Pools | Mosquitoes | Positives | MFIR |
|---|---|---|---|---|---|
| **Burlington** | | **86** | **2525** | | |

| | | | | | |
|---|---|---|---|---|---|
| | *Aedes japonicus* | 14 | 172 | | |
| | *Culex* spp. | 72 | 2353 | | |
| **Grand Total** | | **86** | **2525** | | |

## La Crosse Encephalitis (LAC) through 29 July 2014.

New Jersey will be selectively testing for La Crosse (LAC) virus this year. New Jersey has had 3 cases of this encephalitic disease since 1964 (see CDC's LAC website). The mortality is low but like other encephalitides, LAC can have both personal (lasting neurological sequelae) and economic impacts. LAC is a bunyavirus with a transmission cycle involving mosquitoes such as *Aedes triseriatus* and small mammals such as squirrels and chipmunks. LAC can not only infect *Aedes albopictus* but transovarial transmission was also demonstrated. (Tesh and Gubler 1975 Laboratory studies of transovarial transmission of La Crosse and other arboviruses by *Aedes albopictus* and *Culex fatigans.* American Journal of Tropical Medicine and Hygiene 24(5):876-880).

No pools have been detected positive for LAC in 2014.

| County | Species | Pools | Mosquitoes | Positives | MFIR |
|---|---|---|---|---|---|
| **Burlington** | | **2** | **28** | | |
| | *Aedes triseriatus* | 2 | 28 | | |
| **Cape May** | | **5** | **29** | | |
| | *Aedes triseriatus* | 5 | 29 | | |
| **Salem** | | **3** | **5** | | |
| | *Aedes triseriatus* | 3 | 5 | | |
| **Grand Total** | | **10** | **62** | | |