# VECTOR SURVEILLANCE IN NEW JERSEY

## EEE, WNV, SLE and LAC

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CDC WEEK 28: July 7 – July 13, 2013

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## *Culiseta melanura* and Eastern Equine Encephalitis

| SITE/Boxes | Inland / Coastal | Historic Population Mean | Current Weekly Mean | Total (Collected) Tested* | Total Pools (Submitted) Tested* | EEE Isolation Pools | MFIR |
|---|---|---|---|---|---|---|---|
| **Bass River (Burlington Co.)/5** | **Coastal** | 0 | 0.30 | 8 (11) | 4 (4) | | |
| **Green Bank (Burlington Co.)/25** | **Coastal** | 2.89 | 0.36 | 12 (21) | 6 (7) | | |
| **Corbin City (Atlantic Co.)/25** | **Coastal** | 0.72 | 0.72 | 67 | 7 | | |
| **Dennisville (Cape May Co.)/50** | **Coastal** | 4.25 | 0.00 | 30 | 4 | | |
| **Winslow (Camden Co.)/50** | **Inland** | 1.96 | 3.48 | 466 | 12 | | |
| **Centerton (Salem Co.)/50** | **Inland** | 2.33 | 2.36 | 286 | 9 | | |
| **Turkey Swamp (Monmouth Co.)/44** | **Inland** | 0.81 | 0.70 | 126 (157) | 7 (8) | | |
| **Glassboro (Gloucester Co.)/50** | **Inland** | 0.61 | 1.40 | 132 | 6 | | |

*Current week (in parentheses) results pending.

**Remarks:** Currently, there are no positive EEE pools of *Cs. melanura* from any site in New Jersey.

*For counties accessing the West Nile database: Results from samples recently tested at the Cape May labs will be entered soon (above table include samples currently not in the system).*

To date 1127 *Cs. melanura* from 54 pools have been tested from the traditional resting box sites for an MFIR of 0 with an additional 3 pools of 43 mosquitoes to be tested. There has been no detection of EEE in any samples collected in the state.

**Additional *Cs. melanura***: Ninety additional pools containing 2588 *Cs. melanura* have been tested from other sites using other traps in addition to resting boxes. No positive *Cs. melanura* pools from these sites have been detected.

| **Additional *Cs. melanura* trapped by counties**<br>*traps with positives indicated in **BOLD.** | | | | |
|---|---|---|---|---|
| **County** | **Trap types*** | **Number collected (pools)** | **Number of positives pools** | **MFIR** |
| Burlington | $CO_2$ | 2207 (38) | | |
| Cape May | Gravid, RB | 96 (14) | | |
| Gloucester | RB | 236 (20) | | |
| Monmouth | $CO_2$ | 14 (2) | | |
| Ocean | $CO_2$, RB | 21 (13) | | |
| Salem | $CO_2$ | 14 (3) | | |
| **TOTAL** | | **2588 (90)** | **0** | 0.00 |

**Additional Species:** The table below indicates non-*Cs. melanura* mosquitoes tested for EEE. Last year, *Culex erraticus*, a known enzootic vector and potential bridge vector, was found positive. Currently, no other species have been found positive.

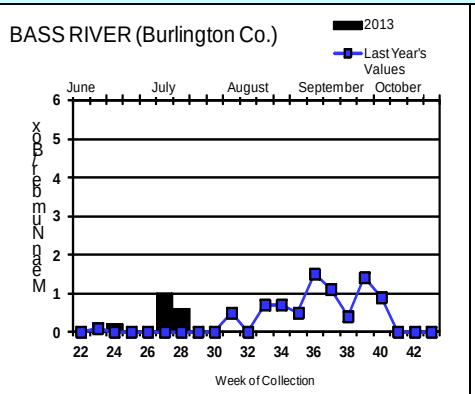
| **Species other than *Cs. melanura*** | **Pools** | **Mosquitoes** | **Positives** | **MFIR** |
|---|---|---|---|---|
| *Aedes atlanticus* | 1 | 44 | | |
| *Aedes cantator* | 4 | 4 | | |
| *Aedes sticticus* | 2 | 3 | | |
| *Coquillettidia perturbans* | 1 | 71 | | |
| *Culex erraticus* | 2 | 35 | | |
| *Culex pipiens* | 54 | 602 | | |
| *Culex restuans* | 2 | 2 | | |
| *Culex salinarius* | 2 | 52 | | |
| *Culex* spp. | 21 | 88 | | |
| State Total | **89** | **901** | **0** | **0.00** |

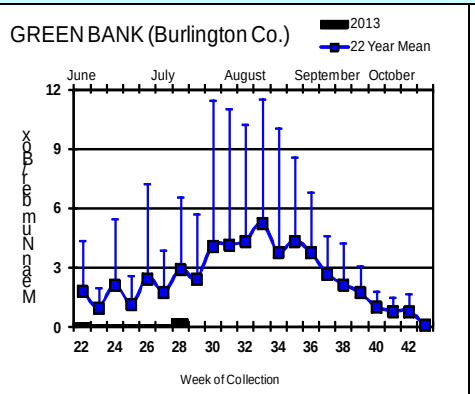
**Horses and Humans:** Currently there is no reported horse, other livestock or human cases.

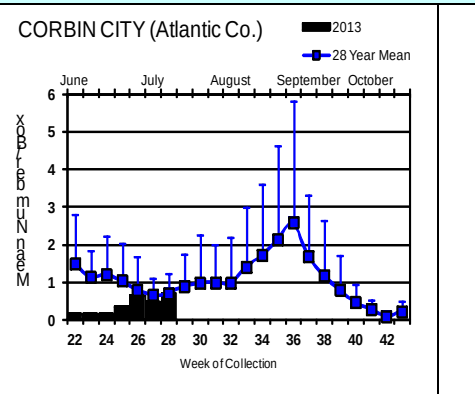
**Horses and Vaccinations:** The fate of unvaccinated equids reinforces the necessity of maintaining a vaccination schedule for arboviruses. For vaccination schedules recommended by the American Association of Equine Practices, see: http://www.aaep.org/vaccination_guidelines.htm

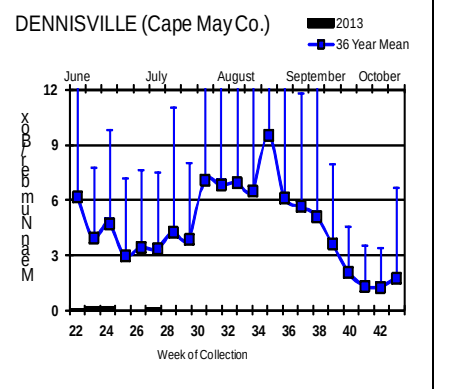
# *Culiseta melanura* Population Graphs

## Coastal

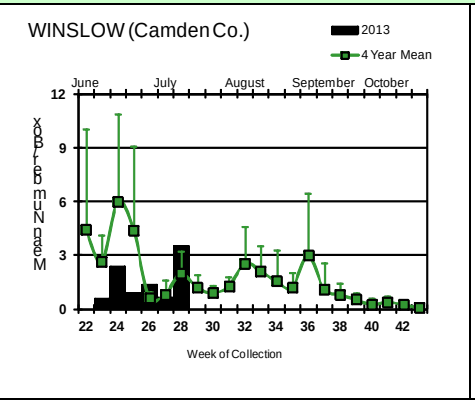


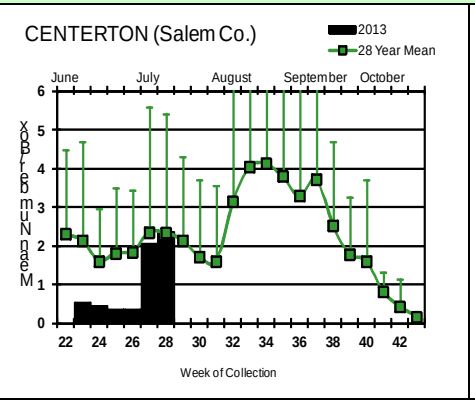



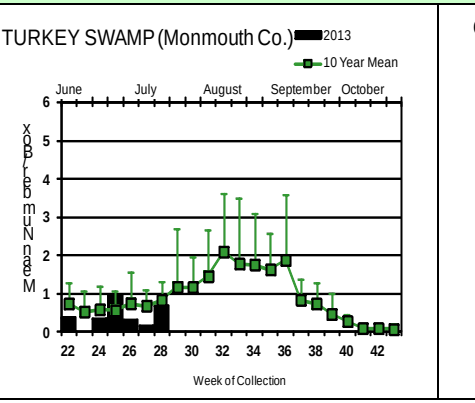



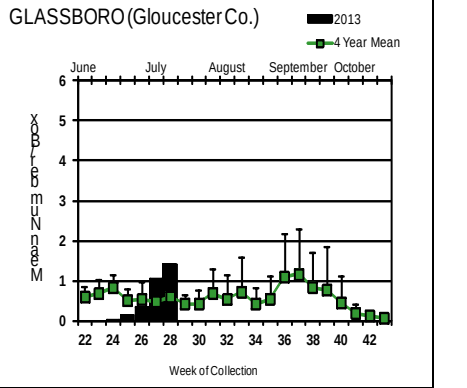




## Inland




*Cs. melanura* numbers at Bass River, Winslow and Glassboro resting box sites were above historical values. At Corbin City, Centerton and Turley Swamp, values were within historical averages. Populations at Green Bank and Dennisville remain well below historical trends.

Note axis change (from 12 to 6) on Bass River, Corbin City, Centerton, Turkey Swamp and Glassboro sites.

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

EEE in US (2013 cumulative cases): (Black or Red = previous + new reported cases occurring)

- equine: 3(AL) 4(GA) 16(FL) 1(SC)
- mosquito pools:
- sentinel: 1(AL) 64/3 wild(FL)
- human: 2(FL)

## West Nile Virus in US

West Nile in US (2013 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 | | | | | |
| Alaska | | | | | |
| Arizona | 0 | 1 | 0 | 0 | 0 |
| Arkansas | | | | 0 | 0 |
| California | 106/155 | 237/396 | 7/12 | 0 | 1 |
| Colorado | | 12/49 | | | 1 |
| Connecticut | | 0/1 | | | |
| Delaware | | | | | |
| DC | | 1 | | | |
| Florida | | | 49 | | |
| Georgia | 0 | 0 | | 0 | 0 |
| Hawaii | | | | | |
| Idaho | | 2/6 | | | |
| Illinois | 1 | 21/39 | | 0 | 0 |
| Indiana | 0 | 2/10 | | 0 | 0 |
| Iowa | | 0 | 1 | | 1/2 |
| Kansas | | 0 | | | 0 |
| Kentucky | | | | | |
| Louisiana | | 6 | | | |
| Maine | | 0 | | 0 | 0 |
| Maryland | | | | | |
| Mass. | | 1 | | 0 | 0 |
| Michigan | 3 | | | 0 | |
| Minnesota | | 1 | | | |
| Mississippi | | 2 | | 0 | 6 |
| Missouri | | 0 | | 0 | 0 |

| | Birds | Mosquito Pools | Sentinels | Horses | Humans |
|---|---|---|---|---|---|
| Montana | | | | 0 | 0 |
| Nebraska | | 4 | | | 0 |
| Nevada | | 1 | | | 2/5 |
| New Hampshire | | | | | |
| New Jersey | 0 | 2/10 | | 0 | 0 |
| New Mexico | | | | | 0 |
| New York | | 5 | | 0 | 0 |
| North Carolina | | | | | |
| North Dakota | 0 | 0 | | 0 | 0 |
| Ohio | | | | 1 | |
| Oklahoma | | | | | |
| Oregon | 0 | 9/11 | 0 | 0 | 0 |
| Pennsylvania | 1 | 2/4 | | 0 | 0 |
| Rhode Island | | | | | |
| South Carolina | | | | | |
| South Dakota | 1 | 3/24 | | | 1/4 |
| Tennessee | 0 | 69/72 | | 0 | 1 |
| Texas | | 19/20 | | 1 | 2 |
| Utah | | 9 | 0 | 0 | 0 |
| Vermont | | | | | |
| Virginia | | | | | |
| Washington | 0 | 2 | | 0 | 0 |
| West Virginia | | 6 | | | |
| Wisconsin | 1/4 | 0 | | 0 | 0 |
| 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 15 July 2013

| Species | Pools | Mosquitoes | Positives | MFIR |
|---|---|---|---|---|
| *Aedes albopictus* | 113 | 809 | | |
| *Aedes atlanticus* | 3 | 47 | | |
| *Aedes canadensis canadensis* | 31 | 723 | | |
| *Aedes cantator* | 15 | 92 | | |
| *Aedes grossbecki* | 1 | 1 | | |
| *Aedes japonicus* | 130 | 849 | | |
| *Aedes sticticus* | 3 | 5 | | |
| *Aedes taeniorhynchus* | 2 | 4 | | |
| *Aedes triseriatus* | 20 | 87 | | |
| *Aedes trivittatus* | 5 | 57 | | |
| *Aedes vexans* | 16 | 332 | | |
| *Anopheles bradleyi* | 2 | 2 | | |
| *Anopheles punctipennis* | 9 | 50 | | |
| *Anopheles quadrimaculatus* | 9 | 82 | | |
| *Coquillettidia perturbans* | 7 | 132 | | |
| *Culex erraticus* | 4 | 39 | | |
| *Culex pipiens* | 231 | 7105 | | |
| *Culex restuans* | 159 | 1628 | | |
| *Culex salinarius* | 2 | 52 | | |
| *Culex spp.* | 1032 | 41329 | 10 | 0.242 |
| *Culiseta melanura* | 140 | 3212 | | |
| *Psorophora ciliata* | 1 | 1 | | |
| *Psorophora columbiae* | 7 | 71 | | |
| *Psorophora ferox* | 11 | 257 | | |
| *Psorophora howardii* | 1 | 10 | | |
| **State Total** | **1954** | **56976** | **10** | **0.176** |

**Remarks:** To date, 1954 pools of 56976 mosquitoes from 24 species have been tested. First positive was detected in a pool collected on 26 June in Middlesex County. All positive pools continue to be from *Culex* Mixed (*Culex pipiens, Cx. restuans, Cx. salinarius*). Currently, positive pools are from 5 counties (Bergen, Camden, Middlesex, Somerset, Sussex).

**Humans, Horses and Wild Birds:** No human cases have been reported. See http://www.state.nj.us/health/cd/westnile/techinfo.shtml for further information.

Last year the first horse was detected in mid July. No horse or other livestock have been reported positive in 2013 to date.

Bird testing began in mid-April. No positive birds have been reported. To date, 47 birds have been tested, all negative. Testing includes: American Crow (*Corvus brachyrhynchos* 0/3), Fish Crow (*C. ossifragus* 0/4), unidentified Crow (*Corvus* spp. 0/1), Blue Jay (*Cyanocitta cristata* 0/2), Hawk/Raptor (0/4) and other avian species (0/33). Counties submitting birds are Bergen, Burlington, Cumberland, Gloucester, Hunterdon, Mercer, Monmouth, Morris, Ocean, Sussex, Union and Warren.

| 2013 Positive Mosquito pools to date / Total Mosquito Pools Submitted | This time last year |
|---|---|
| 10 / 1954 (0.005) | 173 / 2990 (0.058) |

| 2013 Positive Birds to date / Total Birds Submitted | This time last year |
|---|---|
| 0 / 47 (0.0) | 10 / 65 (0.154) |

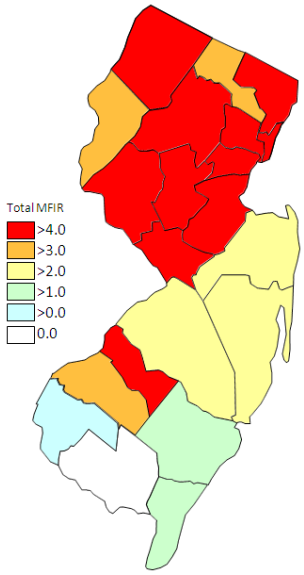
## WNV Results by County through 15 July 2013

| County | Species | Pools | Mosquitoes | Positives | MFIR |
|---|---|---|---|---|---|
| **Atlantic** | | **61** | **1192** | | |
| | *Aedes albopictus* | 4 | 22 | | |
| | *Aedes canadensis canadensis* | 3 | 73 | | |
| | *Aedes cantator* | 2 | 34 | | |
| | *Aedes grossbecki* | 1 | 1 | | |
| | *Aedes japonicus* | 3 | 12 | | |
| | *Aedes sticticus* | 2 | 3 | | |
| | *Aedes taeniorhynchus* | 1 | 3 | | |
| | *Aedes triseriatus* | 2 | 8 | | |
| | *Aedes vexans* | 4 | 117 | | |
| | *Anopheles bradleyi* | 1 | 1 | | |
| | *Anopheles punctipennis* | 1 | 11 | | |
| | *Coquillettidia perturbans* | 3 | 25 | | |
| | *Culex* spp. | 19 | 651 | | |
| | *Culiseta melanura* | 10 | 99 | | |
| | *Psorophora ciliata* | 1 | 1 | | |
| | *Psorophora columbiae* | 1 | 1 | | |
| | *Psorophora ferox* | 2 | 120 | | |
| | *Psorophora howardii* | 1 | 10 | | |
| **Bergen** | | **45** | **3000** | **1** | **0.333** |
| | *Culex* spp. | 45 | 3000 | 1 | 0.333 |
| **Burlington** | | **99** | **4205** | | |
| | *Aedes atlanticus* | 1 | 44 | | |
| | *Aedes japonicus* | 3 | 21 | | |
| | *Coquillettidia perturbans* | 1 | 71 | | |
| | *Culex pipiens* | 2 | 15 | | |
| | *Culex restuans* | 1 | 1 | | |
| | *Culex salinarius* | 1 | 51 | | |
| | *Culex* spp. | 43 | 1775 | | |
| | *Culiseta melanura* | 47 | 2227 | | |
| **Camden** | | **86** | **3318** | **5** | **1.507** |
| | *Aedes albopictus* | 9 | 16 | | |
| | *Aedes japonicus* | 5 | 27 | | |
| | *Culex* spp. | 67 | 3093 | 5 | 1.617 |
| | *Culiseta melanura* | 5 | 182 | | |
| **Cape May** | | **357** | **3181** | | |
| | *Aedes albopictus* | 10 | 18 | | |
| | *Aedes cantator* | 5 | 5 | | |
| | *Aedes japonicus* | 33 | 63 | | |
| | *Aedes triseriatus* | 3 | 3 | | |
| | *Aedes vexans* | 1 | 1 | | |
| | *Anopheles punctipennis* | 1 | 1 | | |
| | *Anopheles quadrimaculatus* | 6 | 75 | | |
| | *Culex erraticus* | 3 | 38 | | |

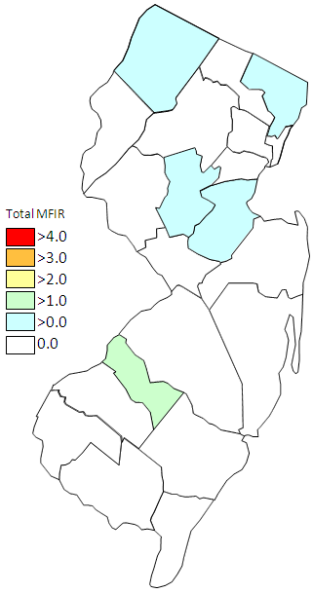
| | | | | | |
|---|---|---|---|---|---|
| | *Culex pipiens* | 105 | 1178 | | |
| | *Culex restuans* | 150 | 1603 | | |
| | *Culex salinarius* | 1 | 1 | | |
| | *Culex* spp. | 22 | 76 | | |
| | *Culiseta melanura* | 17 | 119 | | |
| **Essex** | | **50** | **1063** | | |
| | *Aedes albopictus* | 10 | 20 | | |
| | *Aedes japonicus* | 12 | 154 | | |
| | *Culex* spp. | 28 | 889 | | |
| **Gloucester** | | **165** | **6623** | | |
| | *Aedes albopictus* | 11 | 302 | | |
| | *Aedes japonicus* | 12 | 173 | | |
| | *Aedes triseriatus* | 1 | 30 | | |
| | *Aedes vexans* | 2 | 87 | | |
| | *Anopheles punctipennis* | 2 | 32 | | |
| | *Coquillettidia perturbans* | 1 | 29 | | |
| | *Culex pipiens* | 108 | 5634 | | |
| | *Culiseta melanura* | 26 | 275 | | |
| | *Psorophora ferox* | 2 | 61 | | |
| **Hudson** | | **40** | **1045** | | |
| | *Culex* spp. | 40 | 1045 | | |
| **Hunterdon** | | **105** | **4757** | | |
| | *Culex* spp. | 105 | 4757 | | |
| **Mercer** | | **40** | **575** | | |
| | *Aedes albopictus* | 17 | 173 | | |
| | *Aedes japonicus* | 1 | 1 | | |
| | *Aedes triseriatus* | 1 | 2 | | |
| | *Aedes vexans* | 2 | 102 | | |
| | *Culex pipiens* | 14 | 276 | | |
| | *Culex restuans* | 5 | 21 | | |
| **Middlesex** | | **71** | **2158** | **2** | **0.927** |
| | *Aedes albopictus* | 2 | 12 | | |
| | *Aedes japonicus* | 4 | 20 | | |
| | *Culex* spp. | 65 | 2126 | 2 | 0.941 |
| **Monmouth** | | **129** | **1493** | | |
| | *Aedes albopictus* | 16 | 74 | | |
| | *Aedes atlanticus* | 2 | 3 | | |
| | *Aedes canadensis canadensis* | 15 | 245 | | |
| | *Aedes cantator* | 6 | 20 | | |
| | *Aedes japonicus* | 14 | 55 | | |
| | *Aedes taeniorhynchus* | 1 | 1 | | |
| | *Aedes triseriatus* | 5 | 24 | | |
| | *Aedes trivittatus* | 4 | 7 | | |
| | *Aedes vexans* | 3 | 7 | | |
| | *Anopheles punctipennis* | 2 | 2 | | |
| | *Coquillettidia perturbans* | 1 | 5 | | |
| | *Culex restuans* | 2 | 2 | | |
| | *Culex* spp. | 39 | 828 | | |

| | | | | | |
|---|---|---|---|---|---|
| | *Culiseta melanura* | 15 | 180 | | |
| | *Psorophora ferox* | 4 | 40 | | |
| **Morris** | | **127** | **5503** | | |
| | *Culex* spp. | 127 | 5503 | | |
| **Ocean** | | **108** | **1439** | | |
| | *Aedes albopictus* | 21 | 109 | | |
| | *Aedes canadensis canadensis* | 12 | 392 | | |
| | *Aedes cantator* | 2 | 33 | | |
| | *Aedes japonicus* | 15 | 58 | | |
| | *Aedes triseriatus* | 1 | 2 | | |
| | *Aedes vexans* | 2 | 2 | | |
| | *Anopheles punctipennis* | 2 | 3 | | |
| | *Coquillettidia perturbans* | 1 | 2 | | |
| | *Culex* spp. | 39 | 817 | | |
| | *Culiseta melanura* | 13 | 21 | | |
| **Passaic** | | **65** | **2723** | | |
| | *Aedes albopictus* | 2 | 5 | | |
| | *Aedes japonicus* | 7 | 112 | | |
| | *Aedes triseriatus* | 1 | 3 | | |
| | *Aedes trivittatus* | 1 | 50 | | |
| | *Culex* spp. | 54 | 2553 | | |
| **Salem** | | **69** | **630** | | |
| | *Aedes albopictus* | 11 | 58 | | |
| | *Aedes japonicus* | 10 | 46 | | |
| | *Aedes sticticus* | 1 | 2 | | |
| | *Aedes triseriatus* | 6 | 15 | | |
| | *Anopheles bradleyi* | 1 | 1 | | |
| | *Anopheles punctipennis* | 1 | 1 | | |
| | *Anopheles quadrimaculatus* | 3 | 7 | | |
| | *Culex erraticus* | 1 | 1 | | |
| | *Culex pipiens* | 2 | 2 | | |
| | *Culex restuans* | 1 | 1 | | |
| | *Culex* spp. | 17 | 311 | | |
| | *Culiseta melanura* | 6 | 79 | | |
| | *Psorophora columbiae* | 6 | 70 | | |
| | *Psorophora ferox* | 3 | 36 | | |
| **Somerset** | | **105** | **3072** | **1** | **0.326** |
| | *Aedes japonicus* | 11 | 107 | | |
| | *Aedes vexans* | 2 | 16 | | |
| | *Culex* spp. | 92 | 2949 | 1 | 0.339 |
| **Sussex** | | **74** | **2817** | **1** | **0.355** |
| | *Culex* spp. | 73 | 2787 | 1 | 0.359 |
| | *Culiseta melanura* | 1 | 30 | | |
| **Union** | | **50** | **2714** | | |
| | *Culex* spp. | 50 | 2714 | | |
| **Warren** | | **108** | **5468** | | |
| | *Aedes canadensis canadensis* | 1 | 13 | | |

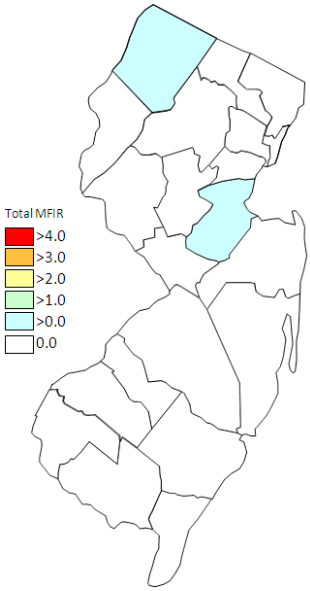
| | | | | | |
|---|---|---|---|---|---|
| *Culex* spp. | | 107 | 5455 | | |
| **Grand Total** | | **1954** | **56976** | **10** | **0.176** |




Cumulative WNV activity in 2012.




WNV activity to 15 July 2013.




WNV activity last week, 2013.

## Saint Louis Encephalitis (SLE) to 15 July 2013.

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 2013.

| County | Species | Pools | Mosquitoes | Positives | MFIR |
|---|---|---|---|---|---|
| **Burlington** | | **7** | **185** | | |
| | *Aedes japonicus* | 1 | 8 | | |
| | *Culex pipiens* | 6 | 177 | | |
| **Cape May** | | **50** | **584** | | |
| | *Culex pipiens* | 50 | 584 | | |
| **Grand Total** | | **57** | **769** | | |

## La Crosse Encephalitis (LAC) through 15 July 2013.

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 2013.

| County | Species | Pools | Mosquitoes | Positives | MFIR |
|---|---|---|---|---|---|
| **Salem** | | **5** | **14** | | |
| | *Aedes triseriatus* | 5 | 14 | | |
| **Grand Total** | | **5** | **14** | | |