2019 Season highlight:
- Three cases of Powassan have been reported in Sussex County.
- Two equine cases of Eastern equine encephalitis (EEE) have been reported in Ocean County in week 30. There have been no human EEE cases reported in 2019.
- EEE has been detected in mosquito pools in 5 counties (Atlantic, Camden, Monmouth, Ocean, and Salem).
- One case of West Nile virus was reported in Hunterdon County. WNV has been detected in mosquito pools in 11 counties. The number of WNV positive pools is lower than historical averages.

1. Human Testing

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.

Table 1.1 Human Cases

<table>
<thead>
<tr>
<th>Mosquito-borne diseases</th>
<th>2019 b</th>
<th>2018</th>
<th>Tickborne Diseases</th>
<th>2019 b</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chikungunya</td>
<td>3</td>
<td>16</td>
<td>Anaplasmosis</td>
<td>64</td>
<td>118</td>
</tr>
<tr>
<td>Dengue</td>
<td>12</td>
<td>20</td>
<td>Babesiosis</td>
<td>93</td>
<td>249</td>
</tr>
<tr>
<td>Eastern equine encephalitis</td>
<td>-</td>
<td>-</td>
<td>Borrelia miyamoto</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Jamestown Canyon</td>
<td>-</td>
<td>-</td>
<td>Ehrlichiosis</td>
<td>55</td>
<td>94</td>
</tr>
<tr>
<td>Malaria</td>
<td>52</td>
<td>93</td>
<td>Lyme disease</td>
<td>1403</td>
<td>4000</td>
</tr>
<tr>
<td>West Nile</td>
<td>1</td>
<td>61</td>
<td>Powassan</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Zika</td>
<td>4</td>
<td>10</td>
<td>Spotted fever group rickettsioses</td>
<td>76</td>
<td>147</td>
</tr>
</tbody>
</table>

aData for 2019 reflect confirmed and probable cases that have been approved by NJDOH. This does not include cases under investigation. All 2019 numbers are preliminary and are subject to change. 2018 numbers represent total number of cases for the year.
bCumulative through week 30 (week ending July 27, 2019).

2. Mosquito Testing

The New Jersey Department of Health Public Health and Environmental Laboratories (PHEL) and the Cape May County Department of Mosquito Control Bio-safety Level 3 Laboratory (CMBSL3) perform arboviral testing on mosquito pools collected by county mosquito control agencies throughout New Jersey.

West Nile virus (WNV):
- A total of 4340 mosquito pools have been tested for WNV; 18 mosquito pools from 11 counties were positive for WNV. The first positive pool was detected in week 22 (Passaic county). In 2018 the first WNV positive mosquito pool was identified in week 23.
- The positive pools were detected in Aedes cantator, Aedes japonicus, Aedes triseriatus, Culex pipiens, Culex spp and Culiseta melanura species.

*Test results may be incomplete; Counties submit pools for testing on specific weekdays. Mosquito testing data reflects test results received from PHEL, CMBSL3 and US Army Public Health as of July 31, 2019.

<table>
<thead>
<tr>
<th>County</th>
<th>Week 30</th>
<th>Cumulative Total (week 30)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2019*</td>
<td>2018</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2019*</td>
</tr>
<tr>
<td>Atlantic</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Bergen</td>
<td>16</td>
<td>51</td>
</tr>
<tr>
<td>Burlington</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Camden</td>
<td>2</td>
<td>14</td>
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<tr>
<td>Cape May</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Cumberland</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Essex</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Gloucester</td>
<td>8</td>
<td>26</td>
</tr>
<tr>
<td>Hudson</td>
<td>9</td>
<td>19</td>
</tr>
<tr>
<td>Hunterdon</td>
<td>13</td>
<td>19</td>
</tr>
<tr>
<td>Mercer</td>
<td>11</td>
<td>21</td>
</tr>
<tr>
<td>Middlesex</td>
<td>2</td>
<td>23</td>
</tr>
<tr>
<td>Monmouth</td>
<td>6</td>
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<td>Morris</td>
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<td>21</td>
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<tr>
<td>Ocean</td>
<td>3</td>
<td>5</td>
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<tr>
<td>Passaic</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Salem</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Somerset</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Sussex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Union</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Warren</td>
<td>12</td>
<td>14</td>
</tr>
<tr>
<td>Total</td>
<td>2</td>
<td>18</td>
</tr>
</tbody>
</table>

Week 30: July 22-28, 2018; July 21-27, 2019
Eastern equine encephalitis virus (EEE)

- A total of 3905 mosquito pools have been tested for EEE; 8 EEE positive mosquito pools have been identified in 2019.
- The first positive pool was detected in week 27 (Monmouth county). In 2018, the first EEE mosquito pool was reported in week 26 (see chart below).
- The positive pools were detected in *Culiseta melanura* (Atlantic, Camden, Monmouth, Ocean and Salem county), *Culex* spp (Camden County) and *Aedes albopictus* (Ocean County).

<table>
<thead>
<tr>
<th>EEE Positive Mosquito Pools</th>
<th>Week 30</th>
<th>Cumulative Total (week 30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>County</td>
<td>2019*</td>
<td>2018</td>
</tr>
<tr>
<td>Atlantic</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Bergen</td>
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<td></td>
</tr>
<tr>
<td>Burlington</td>
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<td></td>
</tr>
<tr>
<td>Camden</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Cape May</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Cumberland</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Essex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gloucester</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hudson</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hunterdon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mercer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middlesex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monmouth</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Morris</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ocean</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Passaic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salem</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Somerset</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sussex</td>
<td></td>
<td></td>
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<tr>
<td>Union</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warren</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2</td>
<td>8</td>
</tr>
</tbody>
</table>

Week 30: July 22-28, 2018; July 21-27, 2019
Other viruses:

In 2019, PHEL and Cape May County BLS3 brought on new capacity to test for viruses as a panel. Mosquito pools from all counties have been tested for other arboviruses: St. Louis encephalitis virus (SLE), Jamestown Canyon Virus (JCV), La Crosse encephalitis virus (LAC), Chikungunya virus (CHIKV), Dengue virus (DENV), Zika Virus (ZIKV).

Positive pools for other viruses have been detected in 4 counties (Bergen, Burlington, Passaic and Sussex).

**La Crosse encephalitis virus (LAC):**
- A mosquito pool collected on May 31st (week 22) in Passaic County tested positive for La Crosse virus at PHEL. The positive pool was detected in *Aedes triseriatus* species.
  - In 2014, 2 mosquito pools collected from the Joint Base MDL (Burlington County) by the Department of the Airforce tested positive for LACV. The virus was detected in both *Ochlerotatus triseriatus* and *Aedes albopictus*.
- There have not been any human La Crosse virus cases reported in at least the past 20 years.

**Jamestown Canyon virus (JCV):**
- Three mosquito pools have tested positive for Jamestown Canyon virus at PHEL. The first pool was from Sussex County (week 23), second from Bergen County (week 25) and the third from Burlington County (week 27).
- The positive pools were detected in *Aedes abserratus*, *Aedes cantator* and *Anopheles crucians* species.
- NJ reported its first and only human case of Jamestown Canyon virus in 2015 in a Sussex County resident.
## Cumulative 2019 Mosquito Pool Testing (Other Viruses *)

<table>
<thead>
<tr>
<th>County</th>
<th>SLE Pools</th>
<th>JCV Pools</th>
<th>LAC Pools</th>
<th>CHIKV Pools</th>
<th>DENV Pools</th>
<th>ZIKV Pools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atlantic</td>
<td>195</td>
<td>195</td>
<td></td>
<td>27</td>
<td>27</td>
<td>27</td>
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<tr>
<td>Bergen</td>
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<td>1</td>
<td>17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Burlington</td>
<td>150</td>
<td>150</td>
<td>1</td>
<td>14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Camden</td>
<td>27</td>
<td>20</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Cape May</td>
<td>1140</td>
<td>21</td>
<td>125</td>
<td>232</td>
<td>232</td>
<td></td>
</tr>
<tr>
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<td>102</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Essex</td>
<td>59</td>
<td>59</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gloucester</td>
<td>165</td>
<td>159</td>
<td></td>
<td></td>
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<tr>
<td>Hudson</td>
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<tr>
<td>Hunterdon</td>
<td>126</td>
<td>126</td>
<td>3</td>
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</tr>
<tr>
<td>Mercer</td>
<td>167</td>
<td>167</td>
<td>16</td>
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</tr>
<tr>
<td>Middlesex</td>
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<td>4</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
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<tr>
<td>Morris</td>
<td>210</td>
<td>210</td>
<td></td>
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</tr>
<tr>
<td>Ocean</td>
<td>175</td>
<td>175</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Passaic</td>
<td>118</td>
<td>118</td>
<td>16</td>
<td>1</td>
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<td></td>
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<tr>
<td>Salem</td>
<td>230</td>
<td>225</td>
<td>16</td>
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<td></td>
</tr>
<tr>
<td>Somerset</td>
<td>112</td>
<td>112</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Sussex</td>
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<td></td>
</tr>
<tr>
<td>Union</td>
<td>60</td>
<td>60</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warren</td>
<td>167</td>
<td>167</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>3905</td>
<td>-</td>
<td>2768</td>
<td>3</td>
<td>255</td>
<td>1</td>
</tr>
</tbody>
</table>

* 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 to date in 2019

Numbers in blue shaded columns represent positive pools in 2019

### 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.

- Two equine cases of EEE have been reported from Ocean County in week 30. This is the earliest report of equine cases in the state since 2012.
  - The first case was a 12-year-old mare (onset July 23rd, euthanized July 23rd). The mare was vaccinated in 2019.
  - The second case was a 20-year-old gelding with unknown vaccination status (onset July 29th, euthanized July 29th).
- Routine avian testing has been discontinued but is available upon request at PHEL.

### WNV/EEE Positive Test Results

<table>
<thead>
<tr>
<th>Week 30</th>
<th>Cum. Total (Year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WNV</td>
<td>2019</td>
</tr>
<tr>
<td>EEE</td>
<td>2</td>
</tr>
<tr>
<td>WNV</td>
<td></td>
</tr>
<tr>
<td>Avian</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

Week 30: July 22-28, 2018; July 21-27, 2019
4. Surveillance Maps

West Nile Virus (WNV)

Week 30 WNV Activity (2019)*
Cumulative WNV Activity 2019

WNV Positive Pools
- > 50
- ≤ 50
- ≤ 20
- ≤ 20
- < 10
- 0

WNV human case
WNV equine case

Eastern equine encephalitis (EEE)

2018 EEE Activity
Cumulative EEE Activity 2019

EEE Positive Pools
- ≥ 1
- 1
- No EEE activity

Equine case
Human case

Jamestown Canyon Virus Activity 2019
La Crosse Virus Activity 2019

JCV positive mosquito pool
No JCV activity

LAC positive mosquito pool
No LAC activity
5. Syndromic Surveillance for 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 percent reporting) facilities statewide. The system collects “chief complaint” information and limited patient registration data from existing ED computer systems.

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

As of week 30, the number of tick related ED visits was lower than trends observed in past 5 years.

For More Information

- Rutgers Center for Vector Biology: [http://vectorbio.rutgers.edu/](http://vectorbio.rutgers.edu/)