

Mosquito Monitoring Program Conducted by Maine Department of Agriculture, Conservation and Forestry IPM Program. Year-end Report 2020.

Each season beginning in 2015 the Maine DACF IPM Program has conducted a mosquito trapping program to collect and identify mosquitoes of concern as vectors of human and domestic animal disease. This program is conducted as a component of the statewide arbovirus surveillance program led by the Maine Center for Disease Control and Prevention. Mosquitoes collected by our program, as well as Maine Medical Center Research Institute and Maine Municipal Pest Management are tested for Eastern equine encephalitis (EEE), West Nile virus and Zika virus to inform public health awareness, education and management.

The Maine DACF mosquito surveillance program used two types of traps intended to optimize detection of EEE, deployed at nine sites in Kennebec, Waldo and Androscoggin Counties. At each site 10 resting boxes (RB) and/or one CO2-baited CDC mini light trap (LT) was deployed.

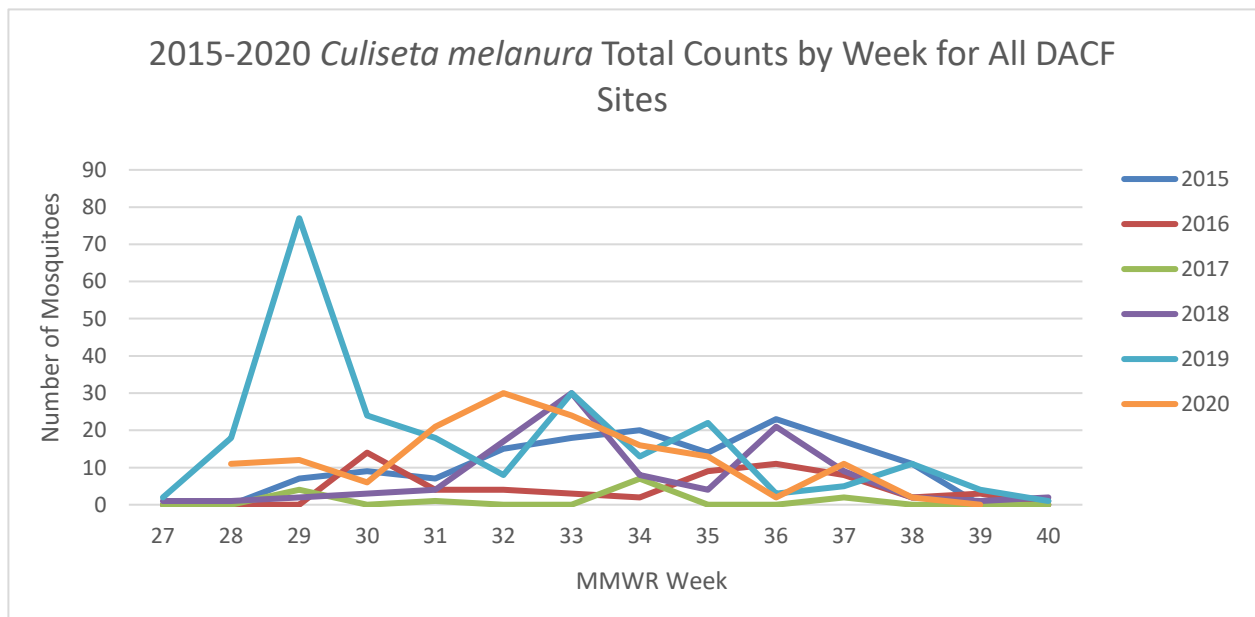
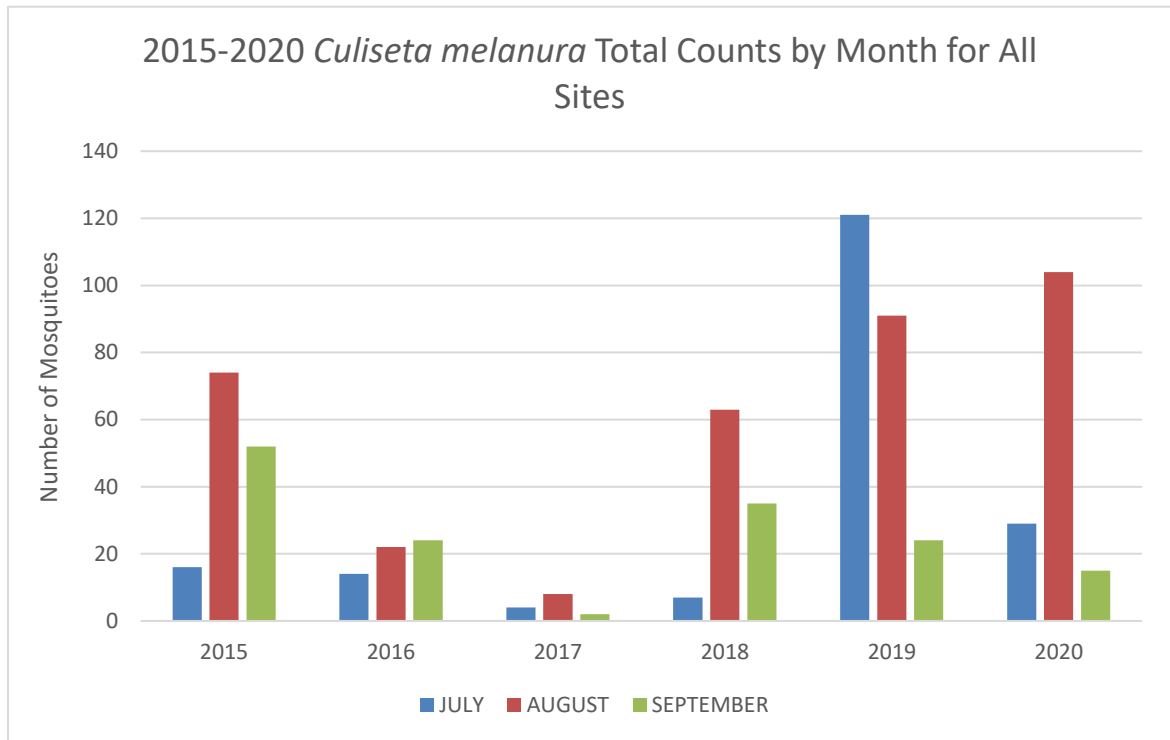
Sites and Traps Deployed in 2020.

Town	Site Name	County	State	Trap Type
Palermo	Iron Ore Point	Waldo	Maine	RB
Troy	Ward Hill Rd	Waldo	Maine	LT
Troy	Carlton Bog	Waldo	Maine	RB
Unity Township	Unity Plantation	Kennebec	Maine	RB
Chelsea	Togus VA Hospital	Kennebec	Maine	RB
Augusta	Viles Arboretum	Kennebec	Maine	RB & LT
Farmingdale	Jamie's Pond	Kennebec	Maine	RB
Livermore	River Road	Androscoggin	Maine	LT

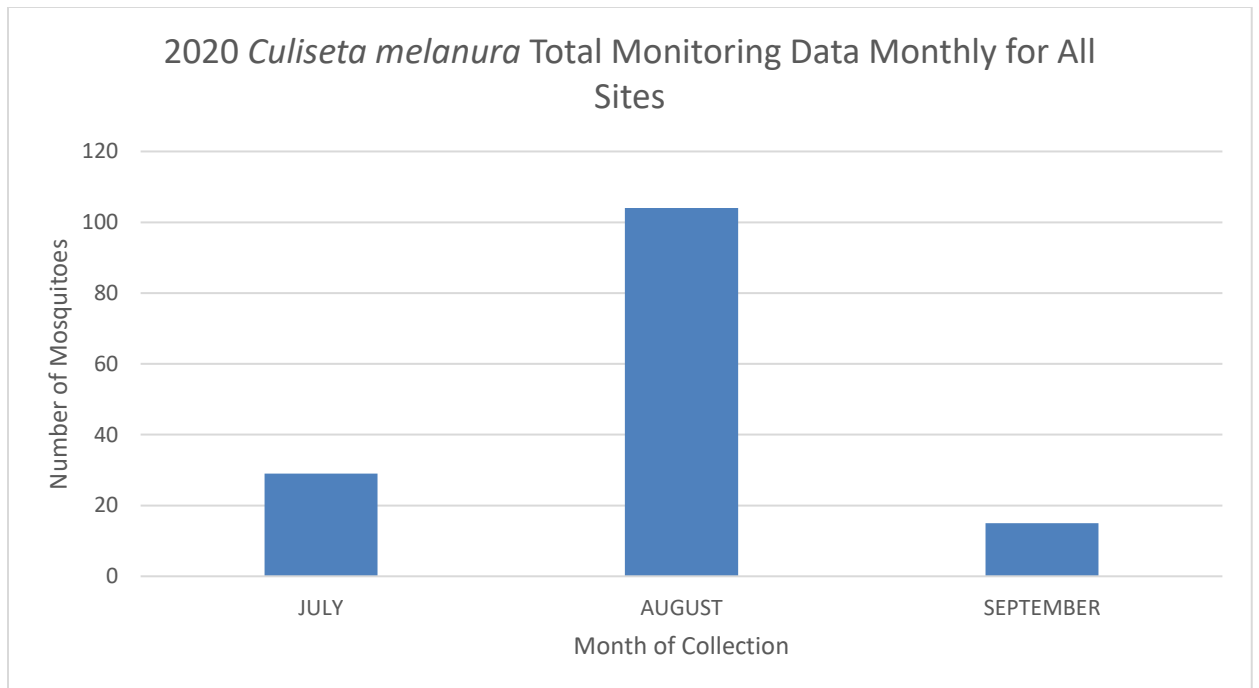
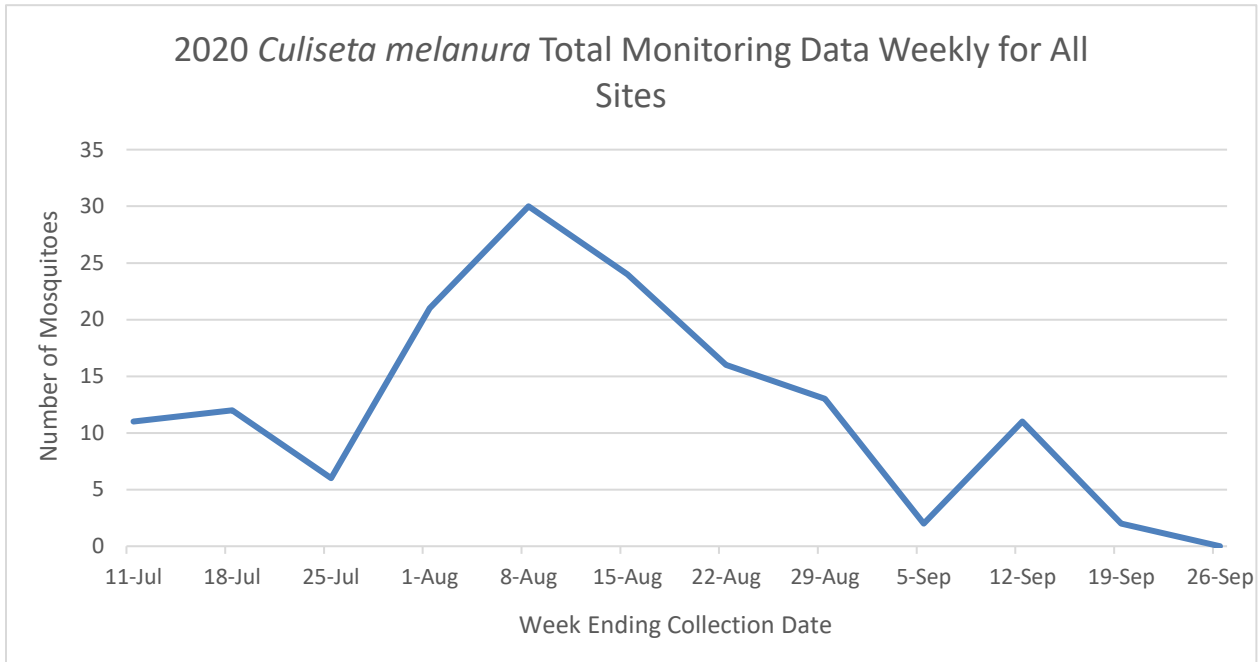
Results

- Mosquitoes were collected, sorted, identified and submitted for disease testing at State of Maine Health and Environmental Testing Laboratory (HETL) weekly from 7/06/20 through 9/25/20. None of the samples were found to be positive for West Nile Virus, Eastern equine encephalitis virus or Zika virus in 2020.
- Labor: summer temporary staff member (Autumn St.Pierre): 15 weeks (@ \$14.00/hr + \$2.11/hr staffing agency fee) was employed through Maine Staffing, Inc. In addition, DACF entomologist, Kathy Murray contributed approximately 100 hours to train and supervise Autumn and to service three sites weekly in the Unity/Troy area.

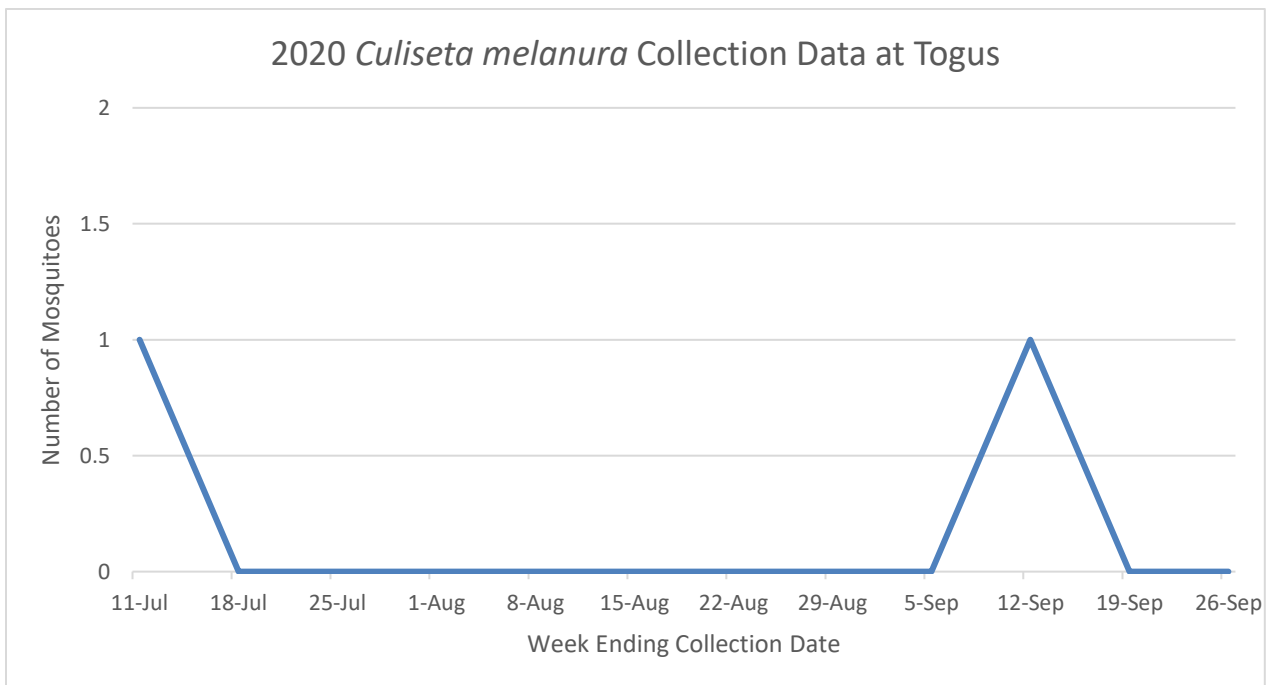
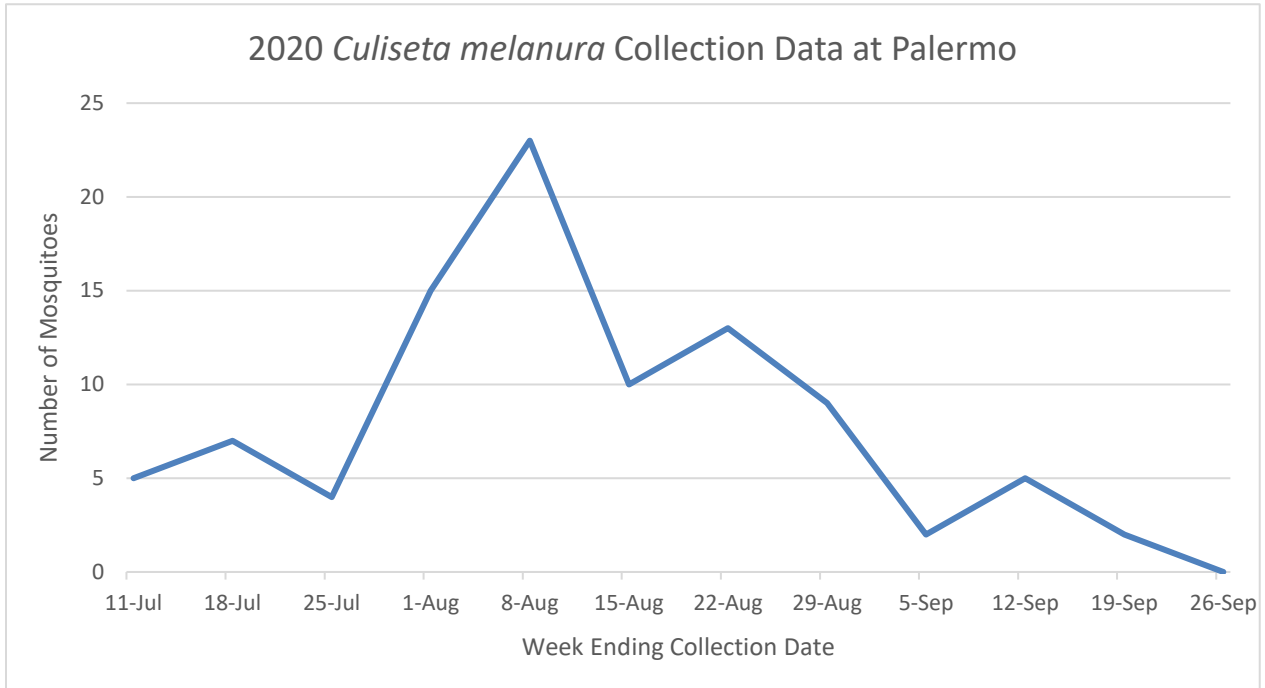
- Resting boxes are used to collect primarily *Culiseta spp.* mosquitoes, which are important vectors of EEE. The pattern of activity varies annually, but peak activity is usually in August. 2019 stands out as showing higher numbers of *Cs. melanura*, earlier in the season (week ending July 20, 2019) than other years. 2019 was a very active EEE year nationwide, with 38 cases (19 fatal) in the US. Twelve cases (3 fatal) occurred in Massachusetts. The weekly total number of *Culiseta melanura* collected in DACF traps from July 1 through Sept 31st, 2020, are shown below.

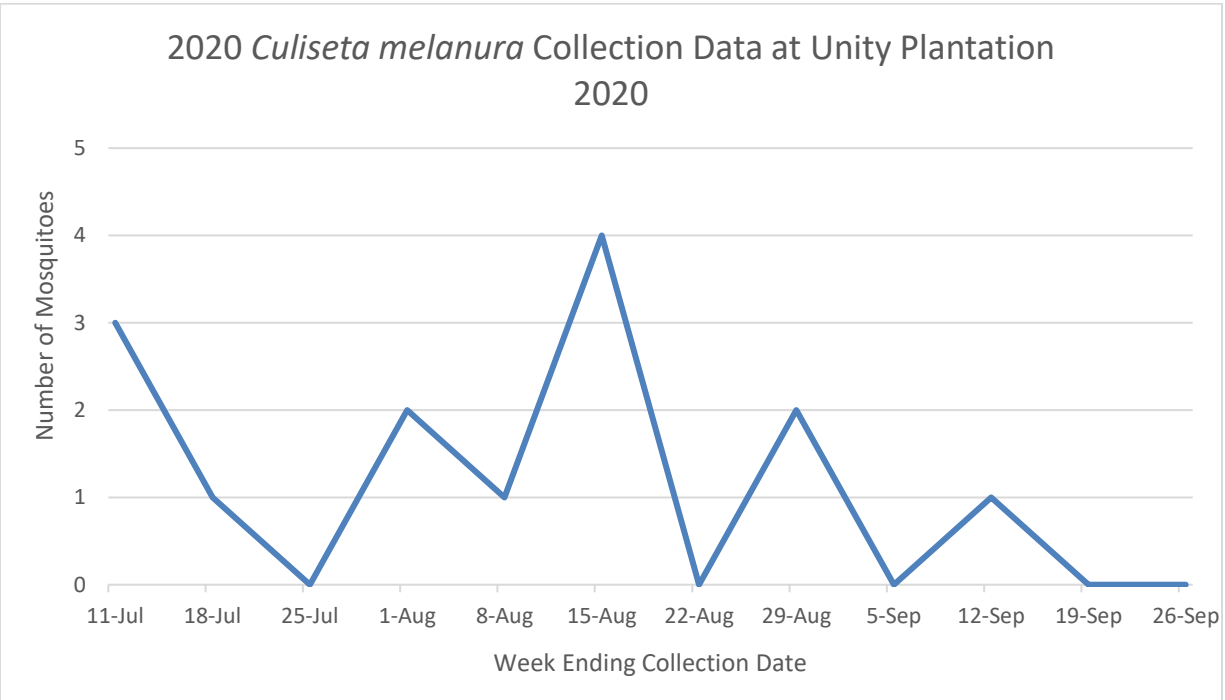
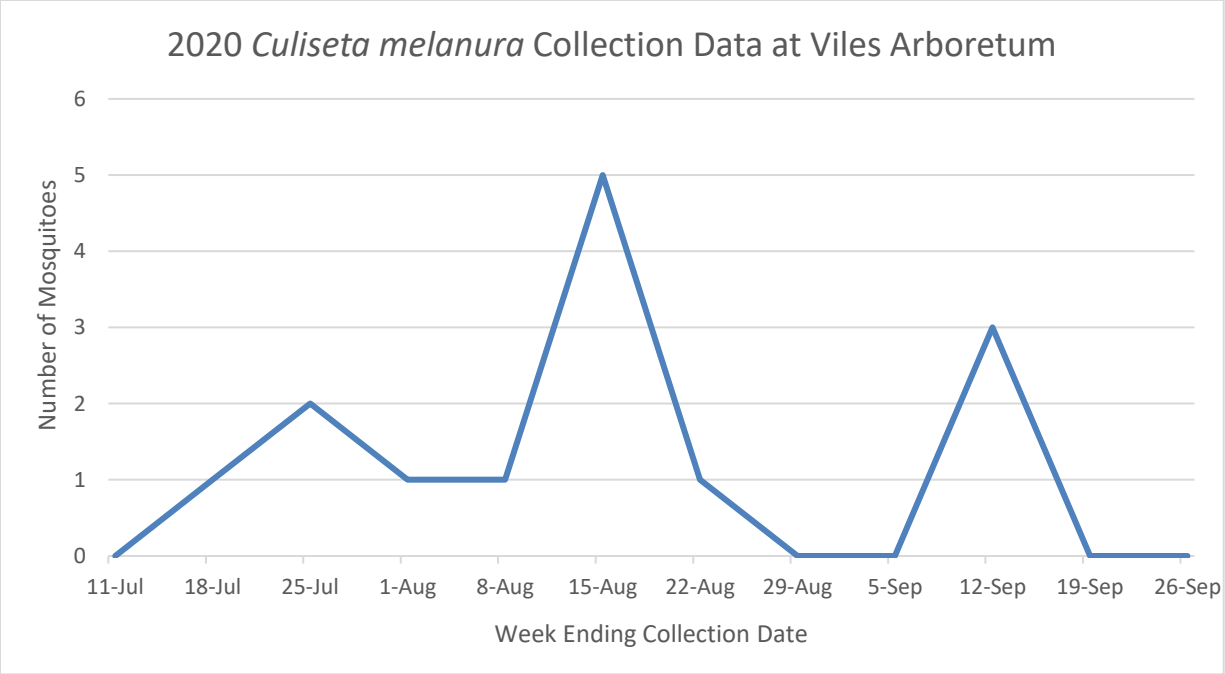


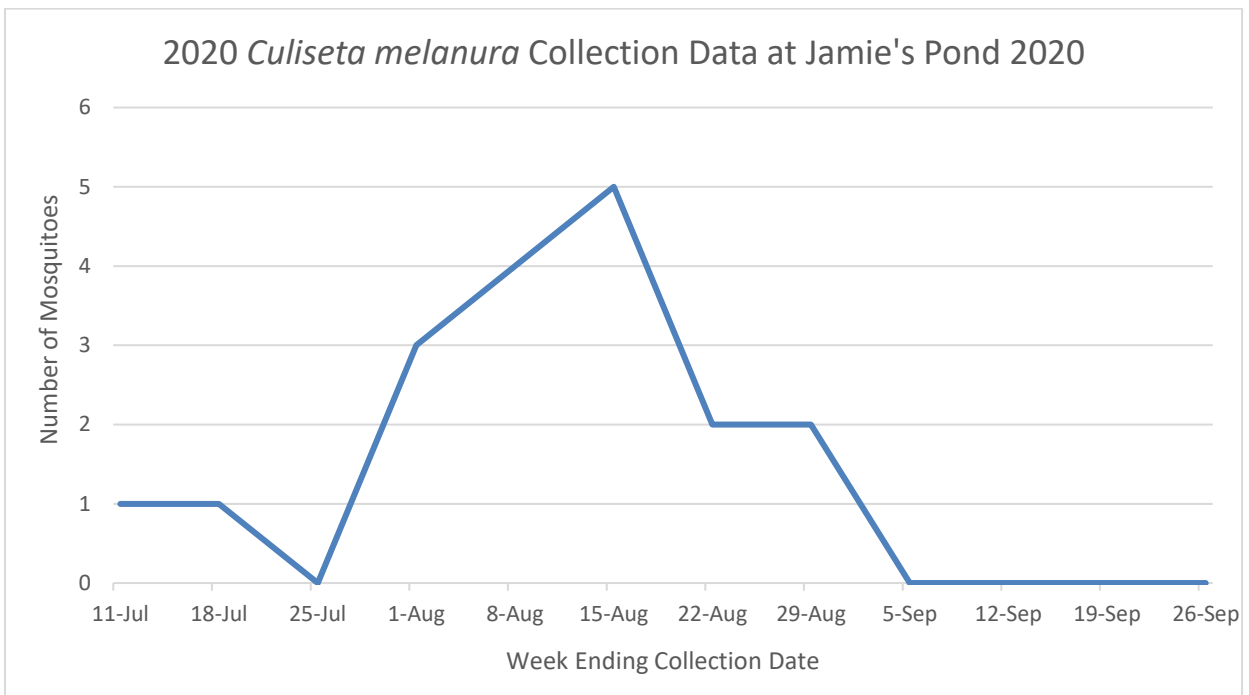
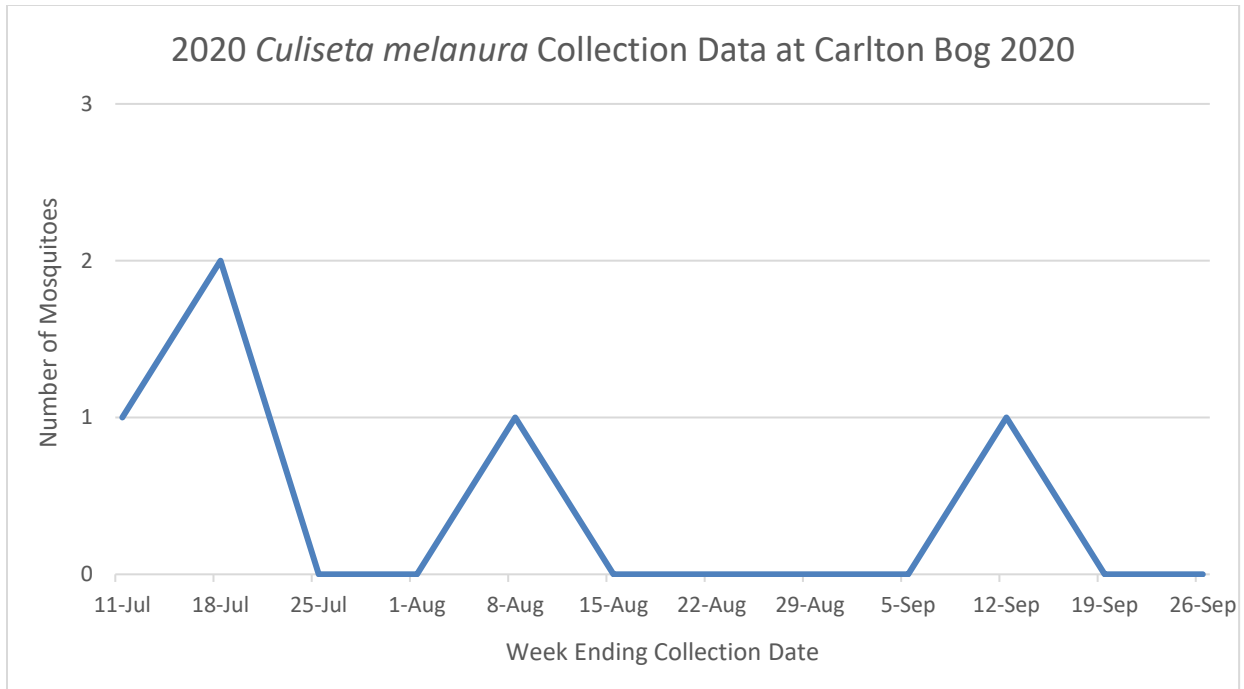
In 2020, peak abundance of *C. melanura* in DACF traps was during the week of August 8, 2020.



Of the sites monitored by DACF, four tend to have higher numbers of *C. melanura*. The following show the numbers trapped each week at each site in 2020.





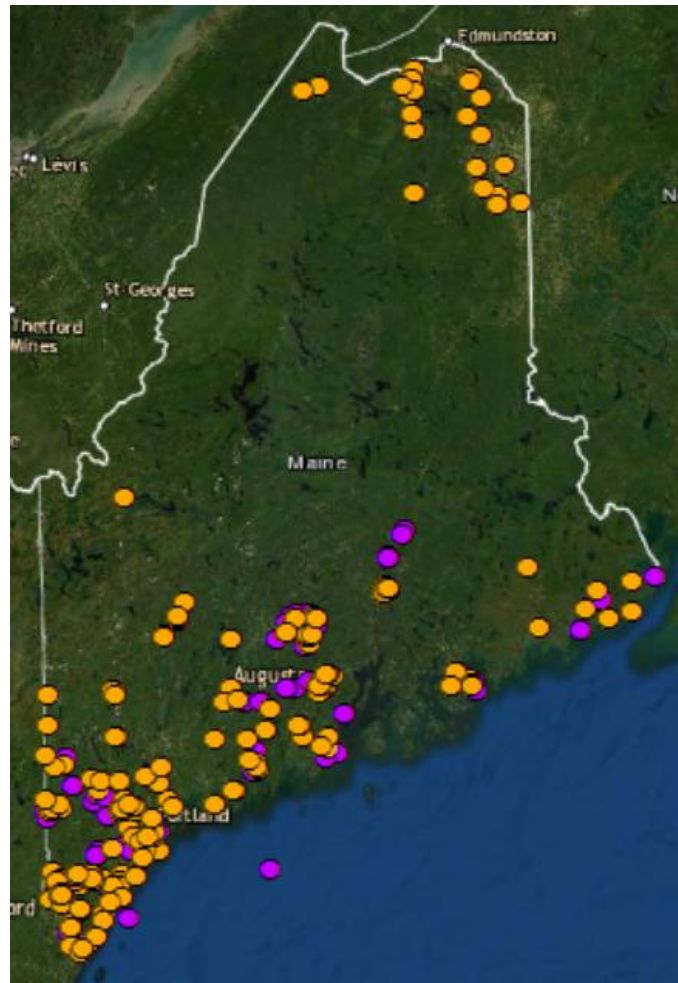


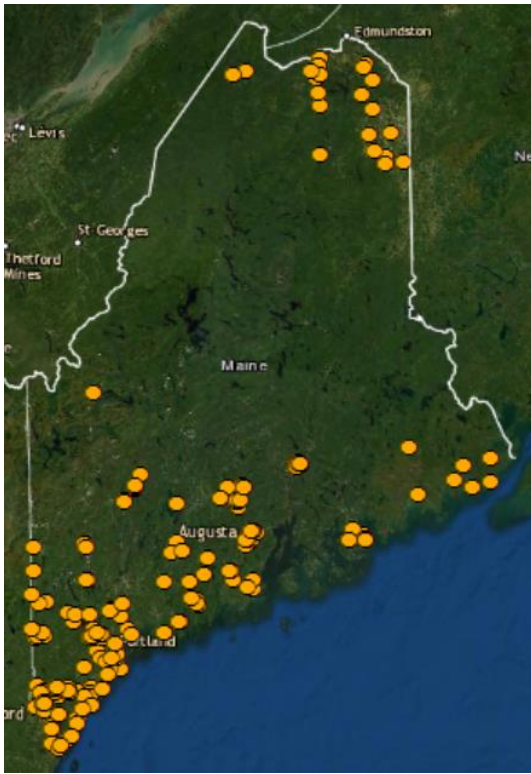
Mapping

In collaboration with Maine Medical Center Research Institute, we summarized the available mosquito trapping data from the statewide surveillance program, for the years 2009-2019 (2020 data were not yet available from MMCRI at the time this report was prepared) to geographically represent eleven years of statewide surveillance data for *Culiseta melanura*, the primary vector of Eastern Equine Encephalitis. By utilizing geographic information system tools, we hope to better understand the distribution and habitat characteristics supporting important vector species and to improve our ability to predict, detect and respond to changes in mosquito and arbovirus activity. Statistical modelling and mapping is ongoing.

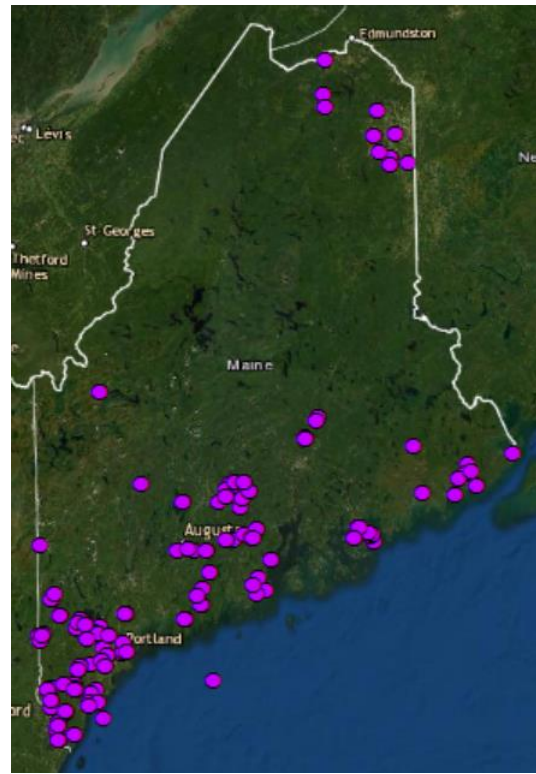
The maps below represent trap locations and relative abundance of *Culiseta melanura* (as indicated by average number of female adult mosquitoes collected per night at each site over the entire season). *In all figures, orange = CDC mini light traps baited with CO₂ (1 trap per site), Purple = resting boxes (10 per site).*

Figures 1-3. Locations of trap sites during any year between 2009 and 2019. Note: not all locations were sampled every year.



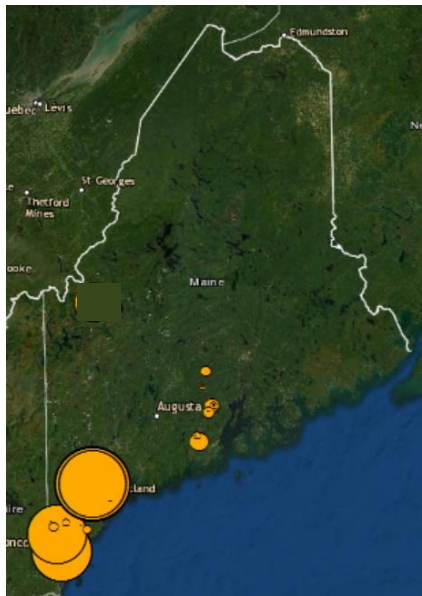


2009 – 2019 All Light Trap Sites

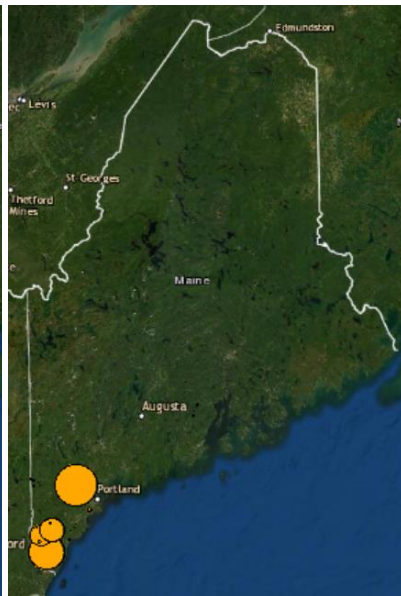


2010 – 2019 All Resting Box Sites

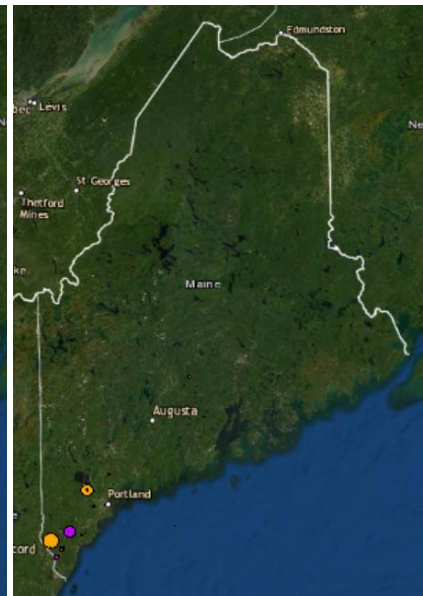
Figures 4-15. In the following figures, the size of the points indicates the relative seasonal average number of *Cs. melanura* collected per night sampled in light traps (yellow) and resting boxes (purple).



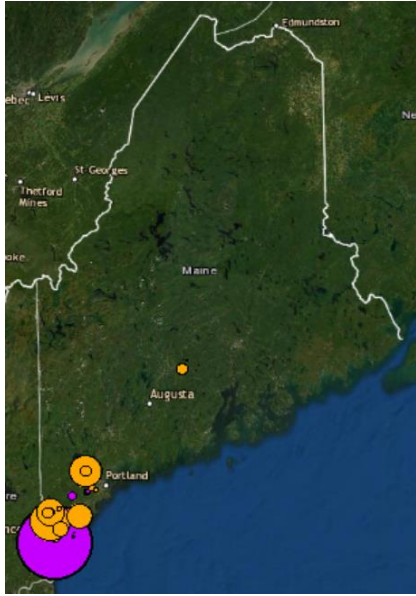
2009



2010



2011



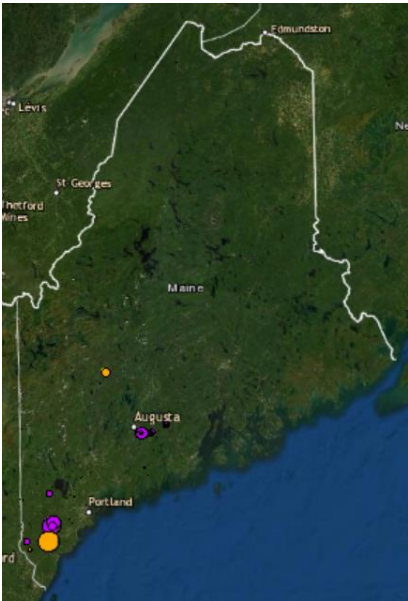
2012



2013



2014



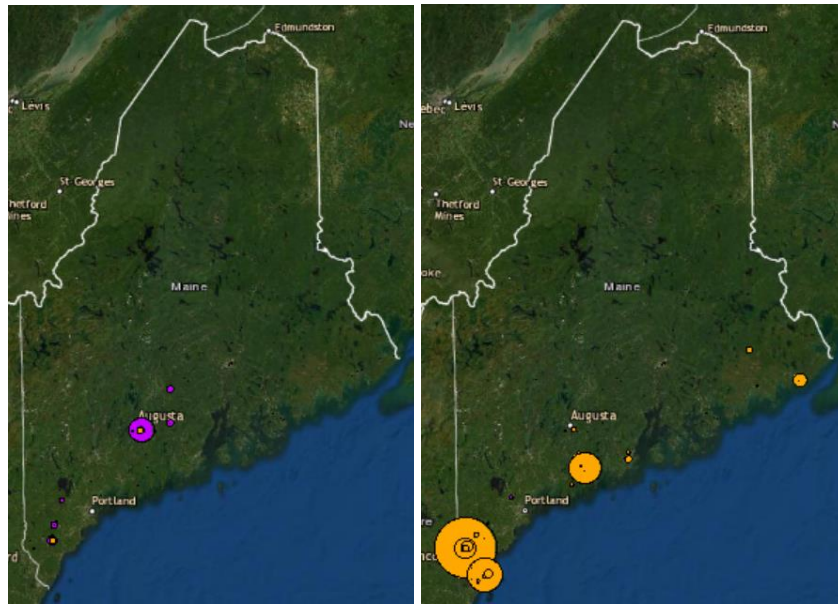
2015



2016



2017



2018

2019

Report prepared by Autumn St.Pierre, Maine Department of Agriculture, Conservation, and Forestry, October 2020.