



JANET T. MILLS
GOVERNOR

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
PLANT HEALTH PROGRAM
28 STATE HOUSE STATION
AUGUSTA, MAINE 04333

AMANDA E. BEAL
COMMISSIONER

To: Board of Pesticides Control
From: Hillary Peterson, Integrated Pest Management Specialist
Re: Request for Funding
Date: February 24, 2023

The Department of Agriculture, Conservation and Forestry (DACF) based in Augusta, Maine and the Maine Medical Center Research Institute (MMCRI) based in Portland, Maine are two of the major mosquito surveillance agencies in Maine. Adult and larval mosquito surveillance data from all over the state has been collected for almost twenty years. Mosquito surveillance is important for early detection of vector borne diseases such as Eastern equine encephalitis, West Nile virus, Jamestown Canyon virus, and more. The DACF IPM Program monitors mosquitos at approximately six sites per summer (early July through the end of September) in Kennebec and Waldo counties, including in Farmingdale, Augusta, Palermo, and Unity Twp. Mosquitoes are collected, sorted, identified, and submitted for disease testing at State of Maine Health and Environmental Testing Laboratory (HETL) weekly, and data is entered into a secure database online for further analysis. In 2015, a mapping project was initiated by the Department of Agriculture, Conservation and Forestry to optimize the efficiency and effectiveness of surveillance of *Culiseta melanura*, the primary vector of Eastern equine encephalitis (EEE). In 2019, the habitat map was revised to include new site coordinates and updated geospatial data.

The Integrated Pest Management Program is requesting funds to assist with ongoing efforts for mosquito surveillance and identification, and continued outreach around vector-borne diseases. Assistant will **not** be available to perform additional tasks for BPC (as in previous years) if mosquito activity is low due to weather or other unforeseen factors, as the temporary hire will also be hired jointly with 20hr/week responsibilities with an already funded invasive plant grant with the DACF Horticulture program.

The IPM program is requesting a total budget of \$10,310.40 for the 2023 program. Please see the following page for a breakdown of costs.

GARY FISH, STATE HORTICULTURIST
90 BLOSSOM LANE, DEERING BUILDING



PHONE: (207) 287-7545
WEB: WWW.MAINE.GOV/HORT

Budget Request:

Item	Rate / hr	Salary plus temp staffing fee	Hours / Week	# Weeks	Total Hours	Total \$
Summer field and lab assistant	\$15.00	\$18.57	20	21	420	\$7,799.40
Item	Cost / mile	Distance (miles)	# Trips	Total Miles		
Mileage	\$0.20	145	15	2175		\$435.00
Item	Cost / month	Number of Months*				
Car Payment	\$411.00	4				\$1,644.00
Item	Number	Cost / item	Total			
New stockings for trapping mosquitos (80)	40	\$10.00				\$400.00
Zip ties (multi-pack)	1	\$10.00				\$10.00
Flagging tape (12-pack)	1	\$22.00				\$22.00
					Total	\$10,310.40

**Four months based on June setup time and October take down time, will pay for the month of June for the extra four weeks*

Breakdown of Summer Temp Position:

Project Responsibility	Hrs / Wk	Start Date	End Date	# Weeks	Pay / Hr	Temp Fee / Hr	Total Pay / Hr	Total Budget for Position	State of Funding
Mosquito	20	5/22/2023	10/10/2023	21	\$15.00	\$3.57	\$18.57	\$7,799.40	Need to request from BPC
Invasive Plant (summer part-time)	20	5/22/2023	10/10/2023	21	\$15.00	\$3.57	\$18.57	\$7,799.40	Already available
Invasive Plant (fall/winter fulltime)	40	10/17/2023	1/23/2024	15	\$15.00	\$3.57	\$18.57	\$11,142.00	Already available

Sincerely,



Hillary Peterson,
 IPM Entomologist
 Maine Department of Agriculture, Conservation and Forestry

2022 Mosquito Monitoring Report

Results of Mosquito Trapping Conducted in the Field Season of 2022



Genus *Aedes* or *Ochlerotatus*

State of Maine
Department of Agriculture, Conservation, and Forestry
Division of Animal and Plant Health IPM Program

Results of Mosquito Monitoring Conducted by Maine Department of Agriculture, Conservation and Forestry IPM Program - 2022

Mosquitoes were collected at 6 sites. 10 resting boxes (RB) were used at each site.

Site Name	Town	County	State	Trap Type
Jamie's Pond	Farmingdale	Kennebec	Maine	RB
Viles Arboretum	Augusta	Kennebec	Maine	RB
Garcelon WMA	Augusta	Kennebec	Maine	RB
Iron Ore Point	Palermo	Waldo	Maine	RB
Beech Pond	Palermo	Waldo	Maine	RB
Unity Plantation	Unity Twp	Waldo	Maine	RB

- Mosquitoes were collected, sorted, identified, and submitted for disease testing at State of Maine Health and Environmental Testing Laboratory (HETL) weekly from 7/05/22 through 9/20/22. None of the samples were found to be positive for West Nile Virus, Eastern equine encephalitis (EEE) virus or Zika virus in 2022.
- Labor: summer temporary staff member (Michael Galli): 15 weeks (@ \$15.00/hr) to deploy traps and service sites weekly for the entire season.
- Resting boxes are used to collect primarily *Culiseta spp.* mosquitoes, which are important vectors of EEE. *Culiseta spp.* were found at all six sites with the highest numbers at Iron Ore Pt. and Viles Arboretum.

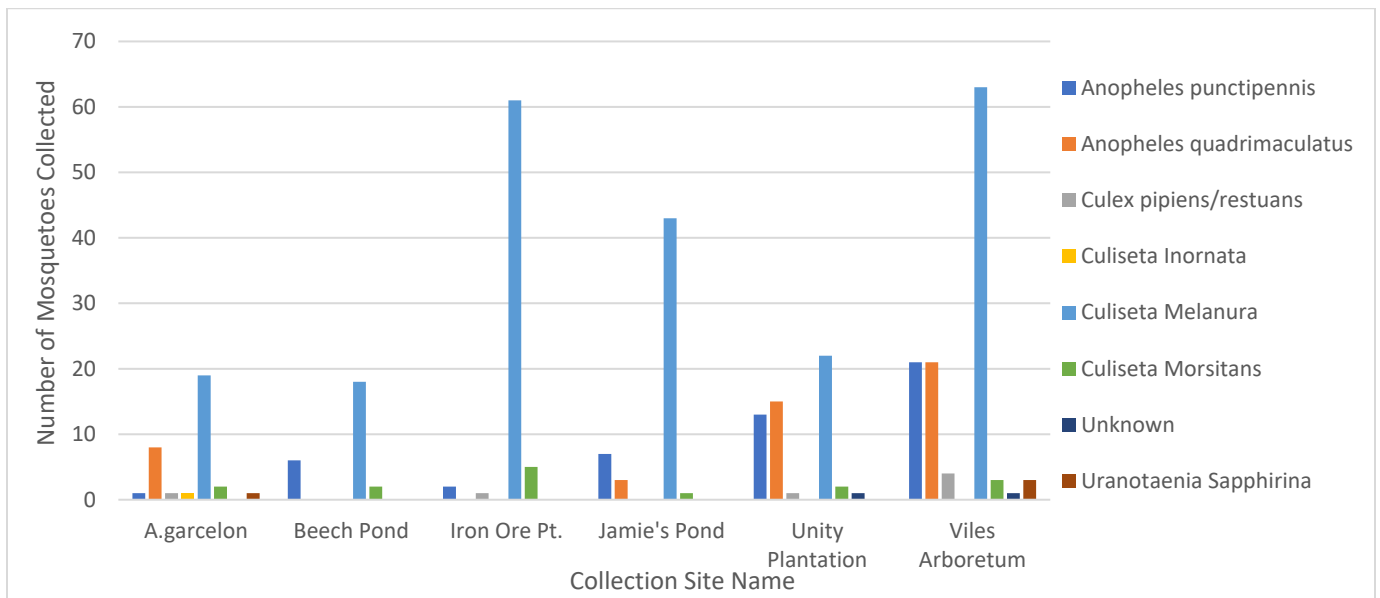


Figure 1: Sum of mosquitos from each species found at each sample site.

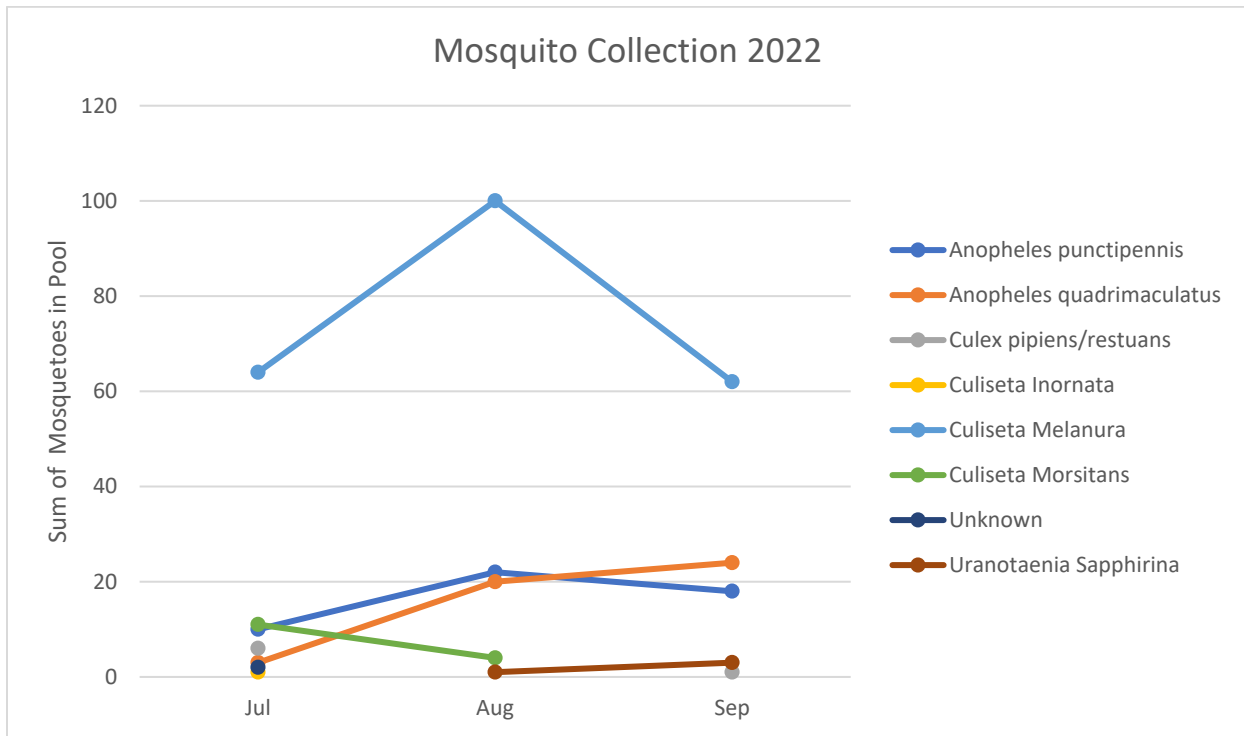


Figure 2: The total number of each mosquito species collected from resting boxes in 2022.

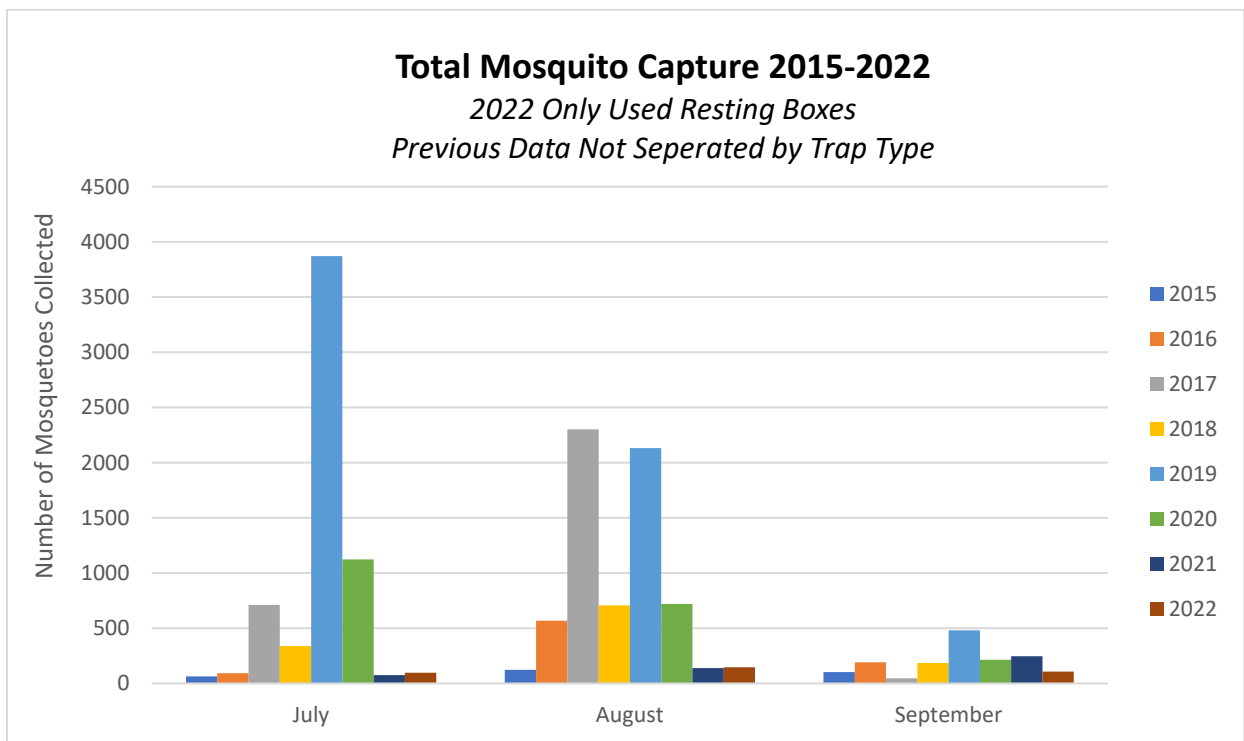


Figure 3: Total mosquitoes collected by month each year. 2022 data only contains resting boxes while previous years contain multiple trap types.

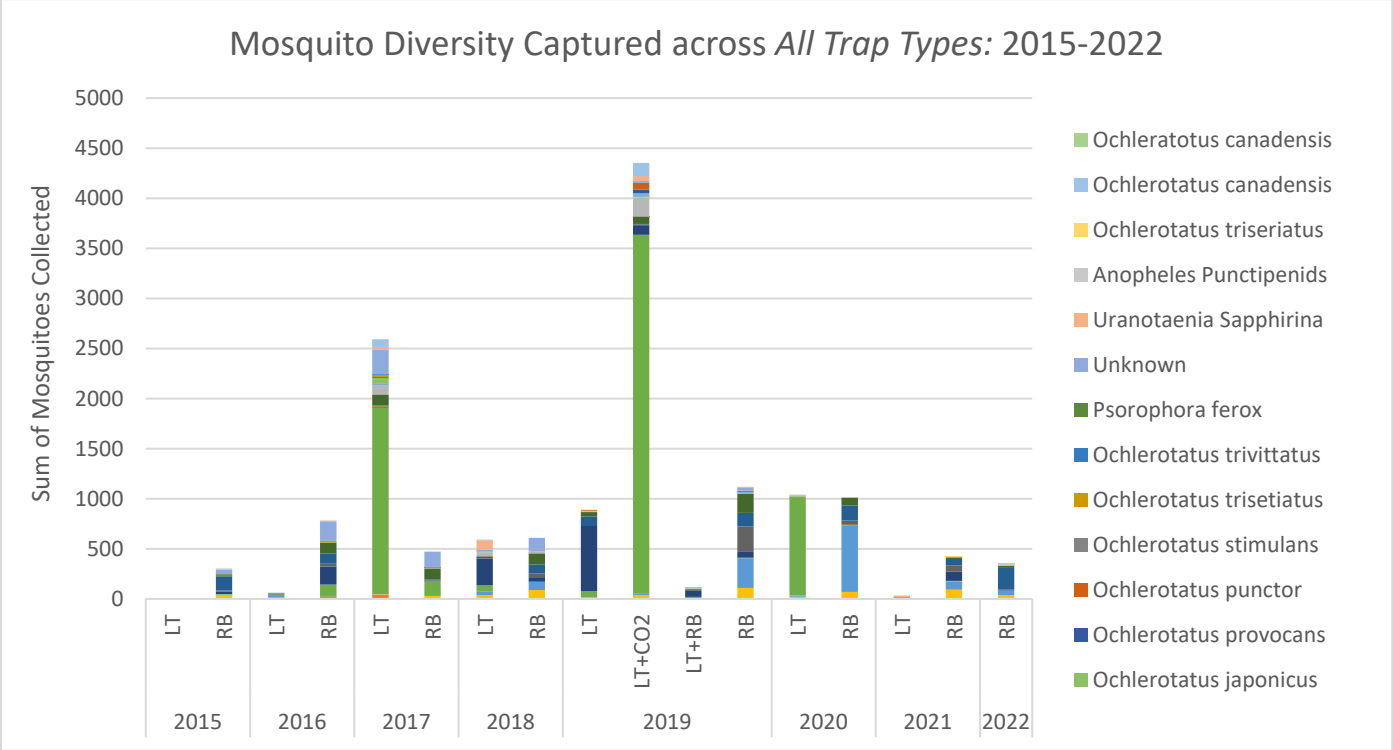


Figure 4: The diversity of mosquito species captured across all trap types from 2015-2022.

Table 1: Sum of each species collected during the 2022 season.

Row Labels	Sum of number in pool
2022	
<i>Anopheles punctipennis</i>	37
<i>Anopheles quadrimaculatus</i>	47
<i>Culex pipiens/restuans</i>	7
<i>Culiseta inornata</i>	1
<i>Culiseta melanura</i>	226
<i>Culiseta morsitans</i>	15
<i>Uranotaenia sapphirina</i>	4
<i>Anopheles punctipennis</i>	13
Unknown	2
Grand Total	352

Table 2: Sum of collected mosquitoes by species between 2015-2022

Row Labels	2015	2016	2017	2018	2019	2020	2021	2022	Grand Total
<i>Aedes cinereus</i>	0	0	0	0	2	0	0	0	2
<i>Aedes vexans</i>	6	23	44	1	1	7	12	0	94
<i>Anopheles barberi</i>	0	0	1	1	0	0	0	0	2
<i>Anopheles punctipennis</i>	34	13	31	139	165	86	86	33	587
<i>Anopheles quadrimaculatus</i>	4	18	2	133	317	671	84	25	1254
<i>Coquillettidia perturbans</i>	6	132	2003	64	3660	988	16	0	6869
<i>Culex pipiens/restuans</i>	24	181	3	305	876	7	94	7	1497
<i>Culex salinarius</i>	0	0	1	0	0	5	2	0	8
<i>Culex territans</i>	10	30	17	46	255	37	59	0	454
<i>Culiseta inornata</i>	0	0	10	0	0	0	0	1	11
<i>Culiseta melanura</i>	147	103	14	103	237	149	64	180	997
<i>Culiseta morsitans</i>	13	118	220	122	319	77	15	15	899
<i>Ochlerotatus canadensis</i>	2	3	76	6	140	2	1	0	230
<i>Ochlerotatus triseriatus</i>	0	0	0	0	0	0	1	0	1
<i>Ochlerotatus aurifer</i>	0	0	0	0	1	0	0	0	1
<i>Ochlerotatus cantator</i>	0	0	3	1	8	0	0	0	12
<i>Ochlerotatus excrucians</i>	0	0	98	56	202	5	1	0	362
<i>Ochlerotatus hendersoni</i>	0	0	0	0	13	0	0	0	13
<i>Ochlerotatus intrudens</i>	0	0	20	6	53	2	2	0	83
<i>Ochlerotatus japonicus</i>	0	0	54	9	2	9	4	0	78
<i>Ochlerotatus provocans</i>	0	0	8	0	36	0	0	0	44
<i>Ochlerotatus punctor</i>	0	0	1	1	86	1	8	0	97
<i>Ochlerotatus stimulans</i>	0	0	1	0	0	0	0	0	1
<i>Ochlerotatus trisetiatus</i>	0	17	24	2	0	0	0	0	43
<i>Ochlerotatus trivittatus</i>	0	0	1	0	0	0	0	0	1
<i>Psorophora ferox</i>	10	0	0	0	0	1	0	0	11
<i>Uranotaenia sapphirina</i>	9	13	28	96	61	9	12	4	232
Unknown	45	197	405	143	50	2	1	2	845
Grand Total	310	848	3065	1234	6484	2058	462	267	14728

Table 3: Sum of species collected in each type of trap between 2022-2015.

Row Labels	Light Trap (N=433)	Light Trap + CO2 (N=181)	Resting Box (N=1602)
<i>Aedes cinereus</i>	2	0	0
<i>Aedes vexans</i>	55	0	39
<i>Anopheles barberi</i>	1	0	1
<i>Anopheles punctipennis</i>	84	40	450
<i>Anopheles quadrimaculatus</i>	69	17	1149
<i>Coquillettidia perturbans</i>	2985	3578	288
<i>Culex pipiens/restuans</i>	919	96	416
<i>Culex salinarius</i>	2	0	6
<i>Culex territans</i>	17	8	429
<i>Culiseta inornata</i>	6	0	5
<i>Culiseta melanura</i>	119	5	873
<i>Culiseta morsitans</i>	173	70	642
<i>Ochlerotatus canadensis</i>	88	131	6
<i>Ochlerotatus triseriatus</i>	0	0	1
<i>Ochlerotatus aurifer</i>	0	1	0
<i>Ochlerotatus cantator</i>	3	5	1
<i>Ochlerotatus excrucians</i>	137	183	31
<i>Ochlerotatus hendersoni</i>	0	13	0
<i>Ochlerotatus intrudens</i>	29	34	19
<i>Ochlerotatus japonicus</i>	71	1	6
<i>Ochlerotatus provocans</i>	8	36	0
<i>Ochlerotatus punctor</i>	15	65	15
<i>Ochlerotatus stimulans</i>	0	0	1
<i>Ochlerotatus trisetiatus</i>	26	0	17
<i>Ochlerotatus trivittatus</i>	1	0	0
<i>Psorophora ferox</i>	1	0	10
<i>Uranotaenia sapphirina</i>	139	50	43
Unknown	270	20	555
Grand Total	5220	4353	5003