STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY
BOARD OF PESTICIDES CONTROL
28 STATE HOUSE STATION
AUGUSTA, MAINE 04333

JANET T. MILLS
GOVERNOR

AMANDA E. BEAL
COMMISSIONER

BOARD OF PESTICIDES CONTROL

April 19, 2019
9:00 AM

Room 101 Deering Building
32 Blossom Lane, Augusta, Maine

AGENDA

1. Introductions of Board and Staff

2. Minutes of the March 8, 2019 Board Meeting

   Presentation By: Megan Patterson, Director

   Action Needed: Amend and/or Approve

3. Continued Discussion of Funding to CDC for Mosquito Monitoring

   The Maine Center for Disease Control and Prevention (Maine CDC) coordinates state activities around preventing vector-borne diseases. As part of its responsibilities, the CDC coordinates mosquito and disease monitoring in Maine. The presence of mosquito-borne diseases and the species of vector mosquitoes present in Maine have been on the rise in recent years. Maine CDC and BPC entered into a Memorandum of Understanding in 2013 to establish cooperation to conduct surveillance for mosquito-borne diseases to protect public health. At the March 8, 2019 meeting, Sara Robinson of the Maine CDC provided an overview of the trends and the state's monitoring program and the Board requested more information regarding funding. The Board will now discuss the information provided and discuss the possibility of increased BPC financial support for the 2019 season.

   Presentation By: Sara Robinson, Program Director

   Action Needed: Discussion and Determination if the Board Wishes to Increase Funding to CDC for Environmental Monitoring of Mosquitoes

MEGAN PATTERSON, DIRECTOR
32 BLOSSOM LANE, MARQUARDT BUILDING

PHONE: (207) 287-2731
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4. Funding for University of Maine Extension Manual Writer/PSEP Position

At the October 27, 2017 meeting, the Board voted to approve a $65,000 grant to the University of Maine Cooperative Extension for a combined Pesticide Safety Education Program and Pesticide Applicator Training position for one year. As part of the approval, the Board requested that it revisit the grant in June every year to ensure funding for the state fiscal year (October 1-September 30). The Board will now discuss whether to provide this grant for the upcoming year.

Presentation By: Megan Patterson, Director

Action Needed: Discuss and Determine if the Board Wants to Fund this Grant

5. Discussion About the Use of Permethrin to Control Browntail Moth Within 50-250 feet of Marine Waters

Chapter 29, Section 5B states that only products with active ingredients approved by the Board may be used to control browntail moth within 50-250 feet of marine waters. After discussions over several meetings, the Board adopted a policy with a list of approved active ingredients on January 11, 2017. Following a discussion with the Board Director, Jeffrey Gillis, President of WellTree, Inc submitted a letter to the Board on April 1, 2019 raising several questions about the current list. The Board will now discuss Mr. Gillis' letter and determine whether action is warranted.

Presentation By: Megan Patterson, Director

Action Needed: Discuss and Determine if Current Policy Requires Modification

6. Continued Discussion About Development of Additional Functionality Within Existing MEPERLS Framework of Digital Inspection Flows and Digital Reports for Submission of Existing Applicator and Dealer End of Year Reports

At the March 8, 2019, the board discussed a request by staff for additional funding for the Maine Pesticide Enforcement, Registration and Licensing System (MEPERLS). Recommended enhancements include incorporating required reporting within the system, allowing dealers and applicators to report sales/use using in an online fillable with some capacity for auto-filling data; and replacing the current digital, but static, fillable PDFs used for the inspection process with tablet compatible interactive flows. The Board requested more information. The Board will now discuss the information provided by staff and determine whether to approve funding.

Presentation By: Megan Patterson, Director

Action Needed: Approve or disapprove funding for the proposed development effort

7. Discussion About Funding an Education Campaign Around IPM

Interest has been expressed interest in expanding public awareness of the Board and its function. An advertisement campaign has been suggested as a reasonable approach to this request. Given the breadth of directions this type of campaign might pursue, staff would like the Board to provide feedback on the type information it sees as valuable for the public. Staff would also like the Board to discuss potential avenues for education (i.e. electronic media, radio pieces, articles, etc).

Presentation By: Megan Patterson, Director

Action Needed: Discuss and provide guidance to staff

8. Correspondence

a. Email and article from Jody Spear

9. Other Items of Interest

a. Update of certification activities—John Pietroski, Manager of Licensing and Certification
b. Variance requests, use of certain active ingredients within 25 feet of water
c. Status of Rulemaking—no public comments were received
d. Status of LD 908— An Act To Require Schools To Submit Pest Management Activity Logs and Inspection Results to the Board of Pesticides Control for the Purpose of Providing Information to the Public
e. LD 1273—An Act To Ensure Funding for Certain Essential Functions of the University of Maine Cooperative Extension Pesticide Safety Education Program
f. LD 1518— An Act To Establish a Fund for Portions of the Operations and Outreach Activities of the University of Maine Cooperative Extension Diagnostic and Research Laboratory and To Increase Statewide Enforcement of Pesticide Use

10. Schedule of Future Meetings

May 24, 2019 and June 28, 2019 as proposed meeting dates.

The Board requested that a summer meeting, focused on forestry be held Maine and include a visit to a forestry management sites. Staff proposes a tentative meeting on July 12, 2019.

Adjustments and/or Additional Dates?

11. Adjourn

NOTES

- The Board Meeting Agenda and most supporting documents are posted one week before the meeting on the Board website at www.thinkfirstspraylast.org.
- Any person wishing to receive notices and agendas for meetings of the Board, Medical Advisory Committee, or Environmental Risk Advisory Committee must submit a request in writing to the Board's office. Any person with technical expertise who would like to volunteer for service on either committee is invited to submit their resume for future consideration.
- On November 16, 2007, the Board adopted the following policy for submission and distribution of comments and information when conducting routine business (product registration, variances, enforcement actions, etc.):
  - *For regular, non-rulemaking business*, the Board will accept pesticide-related letters, reports, and articles. Reports and articles must be from peer-reviewed journals. E-mail, hard copy, or fax should be sent to the Board's office or pesticides@maine.gov. In order for the Board to receive this information in time for distribution and consideration at its next meeting, all communications must be received by 8:00 AM, three days prior to the Board meeting date (e.g., if the meeting is on a Friday, the deadline would be Tuesday at 8:00 AM). Any information received after the deadline will be held over for the next meeting.
- During rulemaking, when proposing new or amending old regulations, the Board is subject to the requirements of the APA (Administrative Procedures Act), and comments must be taken according to the rules established by the Legislature.

Janet T. Mills
Governor

Jeanne M. Lambrew, Ph.D.
Commissioner

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Maine CDC arboviral surveillance

Maine CDC coordinates arboviral surveillance throughout the state including mosquito monitoring as well as pesticide resistance monitoring. Funding for these activities varies by year, so this document represents what surveillance will be completed based on the amount of funding available:

Amount available	Surveillance activities
$25,000	Mosquito surveillance in York and Cumberland counties using light traps and resting boxes (EEE, WNV surveillance)
$50,000	Surveillance listed above as well as: mosquito surveillance in the Mid Coast area using light traps and resting boxes (EEE, WNV surveillance)
$75,000	Surveillance listed above as well as: mosquito surveillance in Augusta, Bangor, and Lewiston/Auburn areas. Surveillance will now include light traps, resting boxes, and GAT traps (EEE, WNV, *Aedes* species)
$100,000	Surveillance listed above as well as: mosquito surveillance in 1-2 additional areas (Aroostook county, Downeast)
$150,000	Surveillance listed above as well as pesticide resistance monitoring in up to two species
$150,000 plus	• Add or expand trapping sites • Add mosquito species to pesticide resistance monitoring • Add additional pesticides to pesticide resistance monitoring • Add additional pathogen testing (Jamestown Canyon or other emerging pathogens)

Created 3/14/2019

Maine Medical Center
Research Institute

End of Season Report 2018
MMCRI - Vector-borne Disease Laboratory
Scarborough, ME
Compiled by Charles Lubelczyk, Elizabeth F. Henderson, and Margret Welch

Mosquito Surveillance

Background

Mosquito trapping by MMCRI and its contractors occurred in several counties of Maine. The focus of the 2018 surveys was to continue surveillance in those areas with historical activity of eastern equine encephalitis virus (EEEV) with refined use of resting boxes to facilitate field collections of *Culiseta melanura*, the enzootic vector of EEEV. In addition, we concluded our second year of urban mosquito surveys, looking for container breeding (exotic) *Aedes* mosquitoes. A side endeavor examined relevant mosquitoes for the presence of Jamestown Canyon virus, which was detected for a second year, following two cases reported in 2017.

This report summarizes work completed by just MMCRI and its contractors, but does include information mosquito surveys conducted by the Maine Department of Agriculture, Conservation, and Forestry.

Methods

Trapping: In addition to the use of CDC Miniature Light Traps (baited with CO_2), resting boxes (n = 270) were widely deployed in June and kept at surveillance locations through the surveillance season, being removed in November. Mosquito surveys began during the first week of July and continued through the last week of September. Sampling at sites occurred once per week, with light traps placed in late afternoon and picked up before 10am the following morning. In urban locations in Biddeford/Saco, Portland, Augusta, Lewiston/Auburn and Bangor, up to twelve Biogents Gravid *Aedes* Traps (BG-GATs) were placed.

New sites in 2018 were chosen, for the most part, because of a geographic information system designed to identify prospective habitats for resting sites of *Cs melanura*. Parameters examined for site selection included a coniferous canopy, proximity to wetlands, proximity to public access areas, and distance to roads. Once surveillance sites were established for the season, resting boxes were placed adjacent to forested wetlands and remained in place throughout the season.

In 2018, surveys were conducted in the following communities – Alfred, Biddeford, Lebanon, Saco, Sanford, Waterboro, Eliot, and Kittery (York County); Harpswell, Portland, South Portland, Standish, Yarmouth (Cumberland County); Hiram (Oxford County); Augusta (Kennebec County); Auburn, Lewiston (Androscoggin County); Arrowsic, Georgetown (Sagadahoc County); Dresden, Edgecomb, Wiscasset (Lincoln County); Bar Harbor, Mount Desert, Southwest Harbor (Hancock County); Dennysville, East Machias, Machias (Washington County); Argyle Twp, Bangor, Old Town (Penobscot County); Cross Lake, Fort Kent, Saint Agatha, and Wallagrass (Aroostook County). In total, 115 sites were used for surveys in 2018 (Appendix 1).

Identification: Female mosquitoes were either frozen at -20°C or cold-shocked before identification. Mosquitoes were identified on a cold surface using a binocular dissecting microscope and pooled by site, trapping date, and individual species. Staff relied on the recently published key by Andreadis et al. (2005) to identify specimens. Identification keys were supplemented by Darsie and Ward (2005) and Means (1979, 1987).

Based on arbovirus response plan guidelines (DHHS 2017), identified mosquito species pools were stored at −80°C and those intended for testing were shipped on dry ice to the Maine Health and Environmental Testing Laboratory (HETL). Mosquitoes were submitted for testing in pools of 1-50 mosquitoes of a single species from one trapping site. In 2018, species of concern (enzootic or bridge vectors of West Nile virus or eastern equine encephalitis) that were submitted for testing included:

a. Phase I - July 1 through August 15, 2018 or first Maine or New Hampshire EEE or WNV detection (dates pertain to date of collection):

i. *Cs melanura, Cs morsitans, Cx pipiens, Cx restuans,* and *Cx pipiens/restuans*: Only these species will be tested. Any pool size may be submitted for testing but pool size cannot exceed 50 mosquitoes. As soon as EEE or WNV is detected in Maine or New Hampshire, mosquito submissions will follow phase II.

ii. Other mosquito species: During the mosquito season, please discard (or hold internally if interested) any mosquitoes that are not *Cs melanura, Cx pipiens, Cx restuans*, or *Cx pipiens/restuans*. Other mosquito species may be tested on a case by case basis, as resources and time allow. As soon as EEE or WNV is detected in Maine, mosquito submissions will follow phase II.

b. Phase II – August 15 or first Maine or New Hampshire EEE or WNV detection through October 1, 2018 (dates pertain to date of collection):

i. *Ae cinereus, Ae vexans, Cq perturbans, Cs melanura, Cs morsitans, Cx pipiens, Cx restuans,* and *Cx pipiens/restuan, Cx salinarius, Oc candensis and Oc sollicitans*

As Jamestown Canyon virus (JCV) is historically linked with early season, mammalian-biting mosquitoes (such as 'snowpool' *Aedes*), many of these are not routinely submitted for testing at HETL (Andreadis et al. 2008). As a consequence, these mosquitoes were stored at -80°C, until opportunistic testing could occur in the winter of 2018-2019. Testing focused on 'black-legged' *Aedes* spp (such as *Ae/Oc provocans*) as well as *Ae canadensis, Ae cantator, Ae sollicitans*, and *Cq perturbans*. Mosquitoes were tested in pools of 1-50 individuals of one species collected from one trapping site per date. RNA was extracted using the QIAamp Viral RNA Mini Kit (Qiagen, Valencia, CA), and RT-PCR was performed using a primer pair targeting the small genomic sequence. Following the detection JCV by RT-PCR, the sample was purified and sent for sequencing to the University of Maine sequencing facility for confirmation. Mosquitoes tested for JCV were collected from the following counties – York (Alfred, Lebanon, Sanford), Cumberland (Yarmouth), Sagadahoc (Georgetown, Arrowsic), Lincoln (Dresden, Edgecomb, Wiscasset), Penobscot (Bangor), and Washington (Dennysville).

Results & Discussion

Mosquito collections: In total, surveys this year collected 10,304 mosquitoes over the course of the season. Despite lesser effort (# of traps in total), the proportion of collected specimens was still highest from CO2/light traps (Fig 1), as seen at two longterm surveys sites in York County. Overall, in light traps, *Cq perturbans*, several species of *Aedes,* as well as *Cs melanura* were most abundant. *Cs melanura* was the most abundant species in resting boxes, followed by *Ae canadensis*, *Cx territans*, *An puntipennis* and *Cs morsitans* (Table 1).

Mosquitoes collected with the BG-GAT were predominantly *Ae japonicus*, with *Ae triseriatus* and *Cx pipiens/restuans* also found, though in lesser numbers (Fig. 2). No *Ae albopictus* or *Ae aegypti* were collected, despite 232 trap nights of collections (Table 1).

Mosquito Testing: Collections from MMCRI and affiliates resulted in 486 pools (totaling 3,339 individual mosquitoes) submitted to HETL (Table 2). These submissions included the vector species mentioned above but also included occasional mosquitoes such as the exotic species *Ae japonicus*. Of the mosquitoes submitted for testing, four pools tested positive for WNV from August and September, with two pools collected from Penobscot and York Counties each. Positive pools were identified as *Culex pipiens/restuans* complex (Penobscot and York County) and *Cs melanura* (York County).

A total of 188 pools consisting of 3,333 individual mosquitoes were tested for JCV by MMCRI (Fig. 3). A total of 22 species were tested, with the highest numbers coming from specimens of *Ae canadensis, Ae cantator,* and *Cq perturbans.* Of the mosquitoes tested, two pools tested positive for JCV both collected on 7/19/2018, from two sites in Lincoln County. The positive pools were identified as *Ae sollicitans* and *Uranotaenia sapphirina.*

In 2018, the planning phase for the field season saw us rely on a GIS model developed in conjunction with the Maine Dept of Agriculture Conservation and Forestry, along with pre-season site visits to determine placement that would optimize sampling for placement of resting boxes. Species composition in boxes was not dramatically different from previous years however, with *Cs melanura*, *An quadrimaculatus*, *An punctipennis*, and *Ae canadensis* dominating (Table 1). Despite these increased numbers, no positive mosquitoes were collected during resting box surveys, possibly indicative of the low positivity in mosquito populations and the low numbers of mosquitoes collected per resting box. 2018 was a third consecutive year of below average rainfall for Maine, with low EEEV activity notice regionally, as well in the state.

This regional 'drought' may also explain low numbers seen at some survey locations, such as sites in Presque Isle (Aroostook County) (Fig. 4). Here, at both the Aroostook Farm and Manany Road locations, very few mosquitoes, particularly the target species *Cs melanura*, were collected throughout the season. Other sites associated with Presque Isle sampling, such as the Washburn School or Campground Road, found no mosquitoes.

In York County, other survey locations, such as the Massabesic Experimental Forest (MEF - US Forest Service) in Alfred and Waterboro, and Long Swamp Road in Lebanon, ME, maintained higher numbers of *Cs melanura* in resting boxes (Fig. 5) and light traps (Fig. 6), although at levels lower than some previous years. The MEF has been a site with recorded high numbers of Cs melanura, and like long Swamp Road is a consistent site for EEEV activity in vector mosquitoes. The MEF, in particular, has abundant breeding sites ('crypts') in the dominant red maple swamps, common throughout the forest (Dibble et al. 2007).

The contents of CO_2/light trap surveys on the MEF was from one site, Ida Jim Road, found that *Cq perturbans* remained the dominant species collected, followed by *Ae excrucians* (a nuisance mammalian biter) and *Ur sapphirina*. This site has been in use since 2010, with reliable collections of *Cs melanura*, but also relevant bridge vectors for EEEV including *Cq perturbans*, *Ae vexans*, and *Ae canadensis* (Fig. 6). In the past WNV-positive mosquitoes have also been recovered from the MEF.

Long Swamp Road has been used as a survey site since the 2009 EEEV epizootic (Gibney et al. 2011), and has also consistently produced similar vectors found on the MEF, with positive *Cs melanura* reported since 2009. Collections from light traps show that, although present, *Cq perturbans* was largely overshadowed by *Ae canadensis*, at least in 2018 (Fig. 7). But, with *Cs melanura* and *Ae vexans* still present, it remains an important site to monitor for EEEV activity. The final long-term monitoring site in York County, Shaw's Ridge Road, contains only a CO2/light trap, but data derived from this site was surprisingly sparse (Fig. 8). The site, on land owned by the town of Sanford, constitutes part of the Mousam River watershed. Town foresters severely thinned the forested habitat in spring of 2018. Increased light regimes and growth in adjacent wetlands by emergent vegetation post-silviculture, may have contributed to the reduced number of mosquitoes collected.

This year also marked the second year of surveillance on Mount Desert Island, working in cooperation with Acadia National Park (ANP) and the Somes-Meynell Wildlife Sanctuary. Because of a personnel issue, students from College of the Atlantic were not available for this year's survey, resulting in late sampling. As a consequence, we obtained relied on information from both resting boxes and a limited number of BG-GAT. The dominant species collected in resting boxes across several sites on MDI (private and federal land) were *Cs melanura* and *An punctipennis*, with Culex pipiens/restuans complex also found (Fig. 9). Of the sites sampled, Duck Brook Road (ANP) was exclusively *Cs melanura*, indicating that the GIS model used to predict optimal sampling locations worked correctly.

Although our overall mosquito activity in Maine was lower, on average, than regional estimates, WNV activity was present in the state, shown by collections of WNV-positive mosquitoes in both York and Penobscot Counties. All positive mosquitoes were collected later in the survey season (late-August-September), which is typical for the appearance of the virus. No mosquitoes tested positive for EEEV in 2018. Although Maine reported an additional case of Jamestown Canyon virus in September 2018, confirmation arrived later in the field season, after closeout of the surveillance program.

References

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Tables

Table 1. Statewide mosquito surveillance, Maine, 2018. Trapnights were – GAT: 232, Light/CO_2: 227, and resting box: 205.

species	GAT		Light CO2		Resting Box	
	count	number per trap night	count	number per trap night	count	number per trap night
Ae abserratus	0	0	23	0.10	0	0
Ae atropalpus	0	0	0	0	0	0
Ae canadensis	0	0	230	1.01	0	0
Ae cantator	0	0	1146	5.03	0	0
Ae cinereus	0	0	148	0.65	0	0
Ae communis	0	0	25	0.11	0	0
Ae decticus	0	0	0	0	0	0
Ae diantaeus	0	0	0	0	0	0
Ae dorsalis	0	0	0	0	0	0
Ae excrucians	0	0	95	0.42	4	0
Ae fitchii	0	0	27	0.12	0	0
Ae hendersoni	0	0	37	0.16	0	0
Ae implicatus	0	0	0	0	0	0
Ae intrudens	0	0	36	0.16	0	0
Ae japonicus	373	1.60	205	0.90	0	0
Ae provocans	2	0.01	105	0.46	0	0
Ae punctor	0	0	27	0.12	3	0.01
Ae sollicitans	0	0	169	0.74	0	0
Ae sticticus	0	0	8	0.04	0	0
Ae stimulans	0	0	61	0.27	1	0
Ae taeniorhynchus	0	0	2	0.01	0	0
Ae triseriatus	36	0.15	194	0.85	3	0.01
Ae trivittatus	0	0	14	0.06	0	0
Ae vexans	0	0	415	1.82	5	0.02
An barberi	0	0	11	0.05	3	0.01
An crucians	0	0	0	0	0	0
An earlei	0	0	0	0	0	0
An punctipennis	0	0	334	1.46	149	0.73
An quadrimaculatus	0	0	173	0.76	20	0.10
An walkeri	0	0	27	0.12	4	0.02
Cq perturbans	0	0	3588	15.74	19	0.09
Cs impatiens	0	0	0	0	0	0
Cs inornata	0	0	0	0	0	0
Cs melanura	2	0.01	47	0.21	300	1.46
Cs minnesota	0	0	0	0	0	0
Cx morsitans	0	0	2	0.01	29	0.14
Cx pipiens	0	0	0	0	0	0
Cx pipiens restuans	52	0.22	310	1.36	107	0.52
Cx restuans	0	0	0	0	0	0

Cx salinarius	0	0	17	0.07	0	0
Cx species	0	0	0	0	0	0
Cx territans	0	0	0	0	7	0
Ps ciliata	0	0	0	0	0	0
Ps columbiae	0	0	0	0	0	0
Ps ferox	0	0	1	0	0	0
Ur sapphirina	0	0	161	0.71	6	0.03
Wy smithii	0	0	0	0	0	0

Table 2. Vector-borne Disease Lab (VBDL) mosquito testing effort, 2000-2012.

Mosquitoes were shipped to the Maine Health and Environmental Testing Lab for testing by PCR.
Testing information includes a collaborator who ships pools to HETL through the VBDL (SWAMP Inc).

source	year	pools shipped	mosquitoes tested
Vector-borne Disease Lab	2001	156	918
	2002	380	2815
	2003	44	181
	2004	224	4230
	2005	128	831
	2006	319	2958
	2007	541	5153
	2008	539	5906
	2009	318	3182
	2010	382	2736
	2011	529	3385
	2012	907	16650
	2013	222	1127
	2014	255	2065
	2015	357	1810
	2016	330	1351
	2017	651	4317
	2018	484	3399
	Totals	6766	63014

Figures

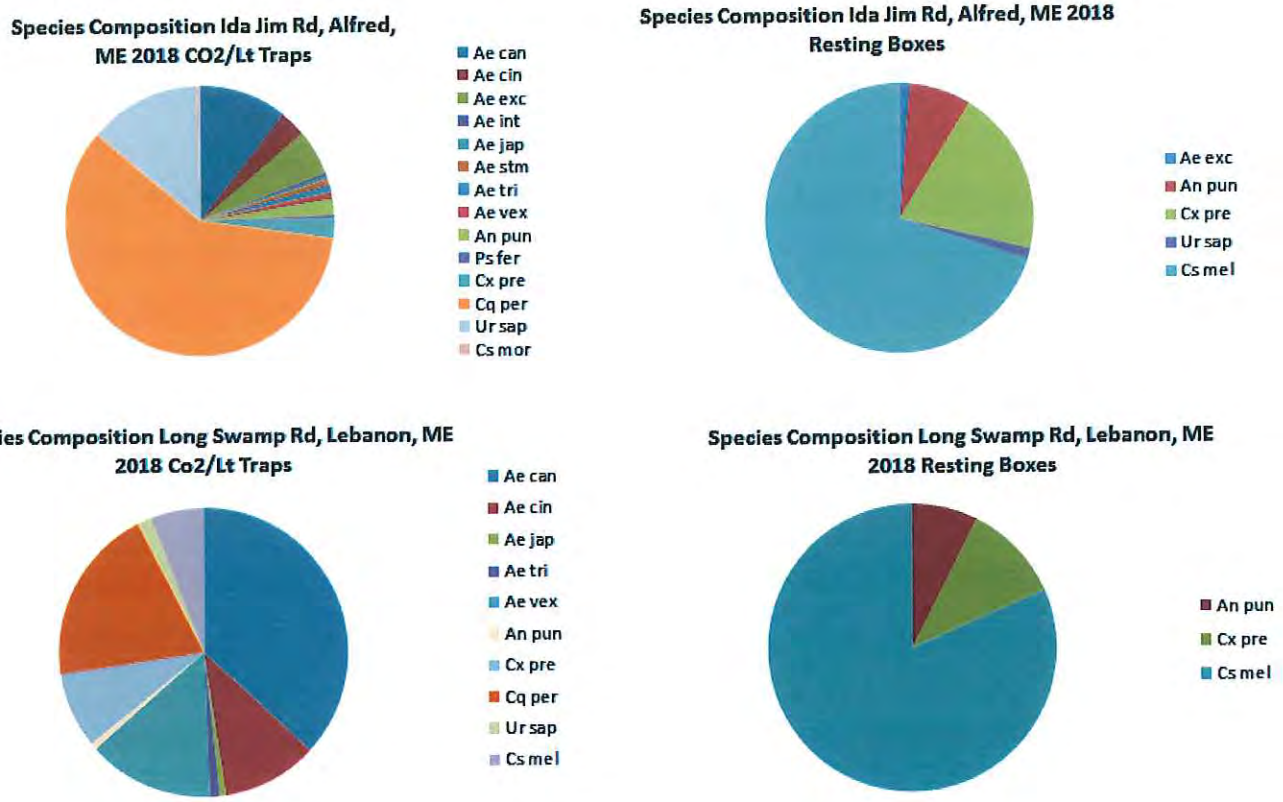

Figure 1. Composition of mosquitoes collected at two York County survey sites, CO_2/light traps vs resting boxes, July-September 2018.

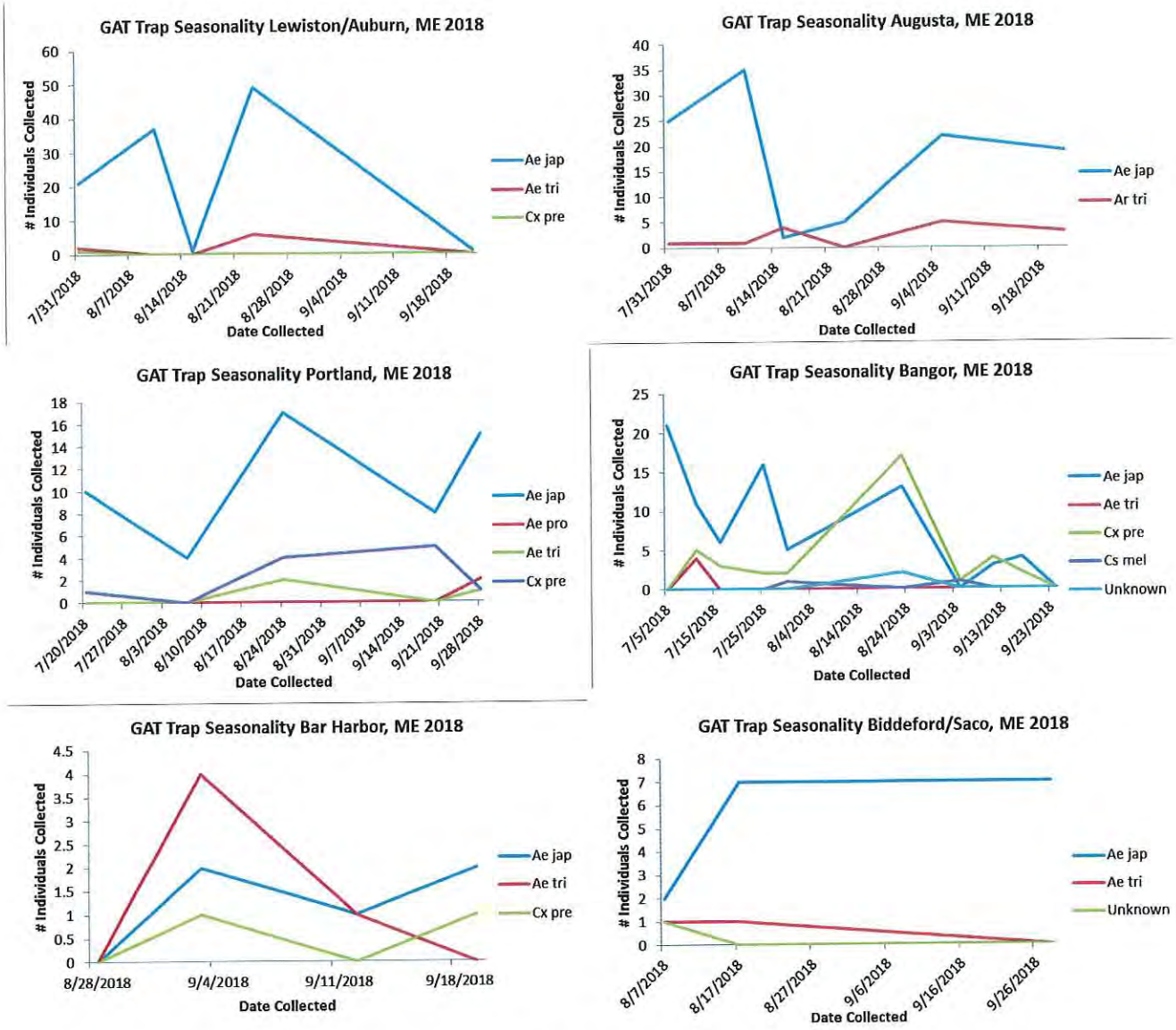

Figure 2. Species'seasonality of mosquitoes collected in BG GAT, July-Sept 2018.

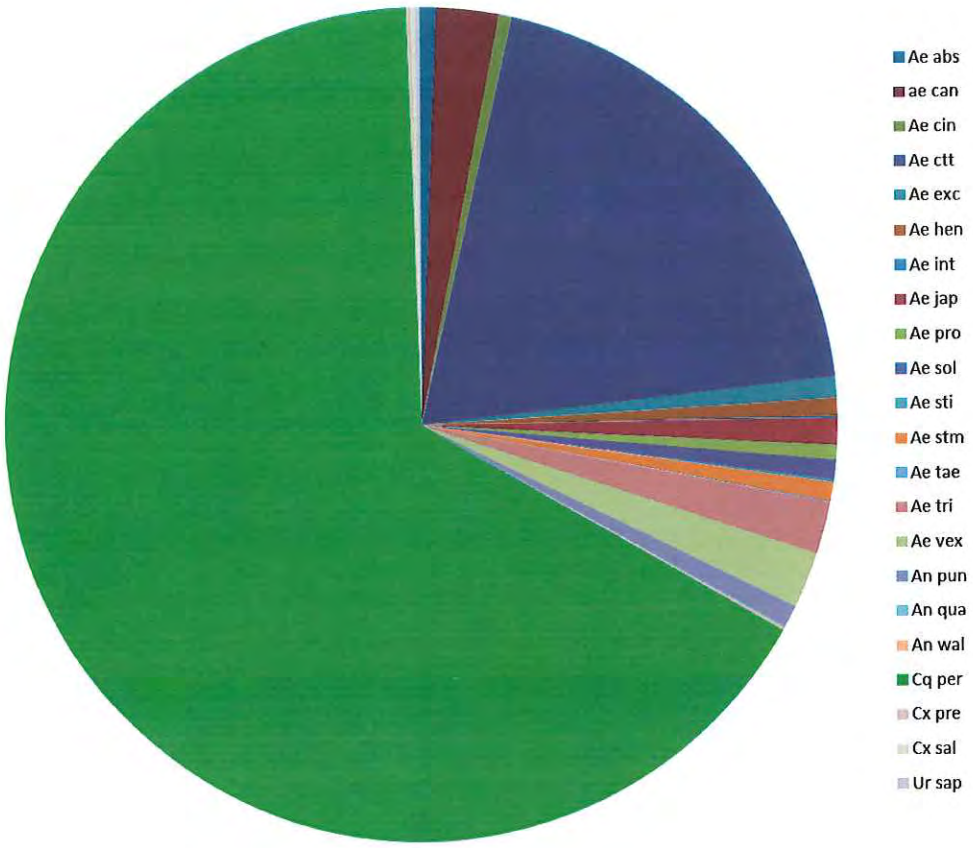

Figure 3. Species composition of mosquitoes tested for Jamestown Canyon virus, 2018.

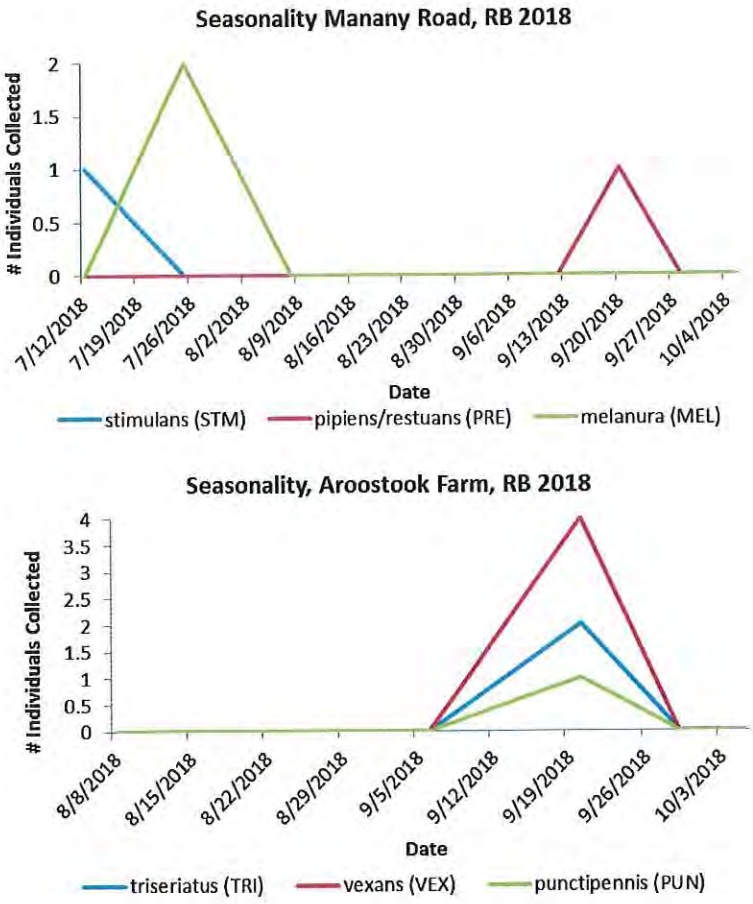

Figure 4. Mosquito collections from resting boxes at two traps sites, Presque Isle, ME (Aroostook County). July-October 2018.

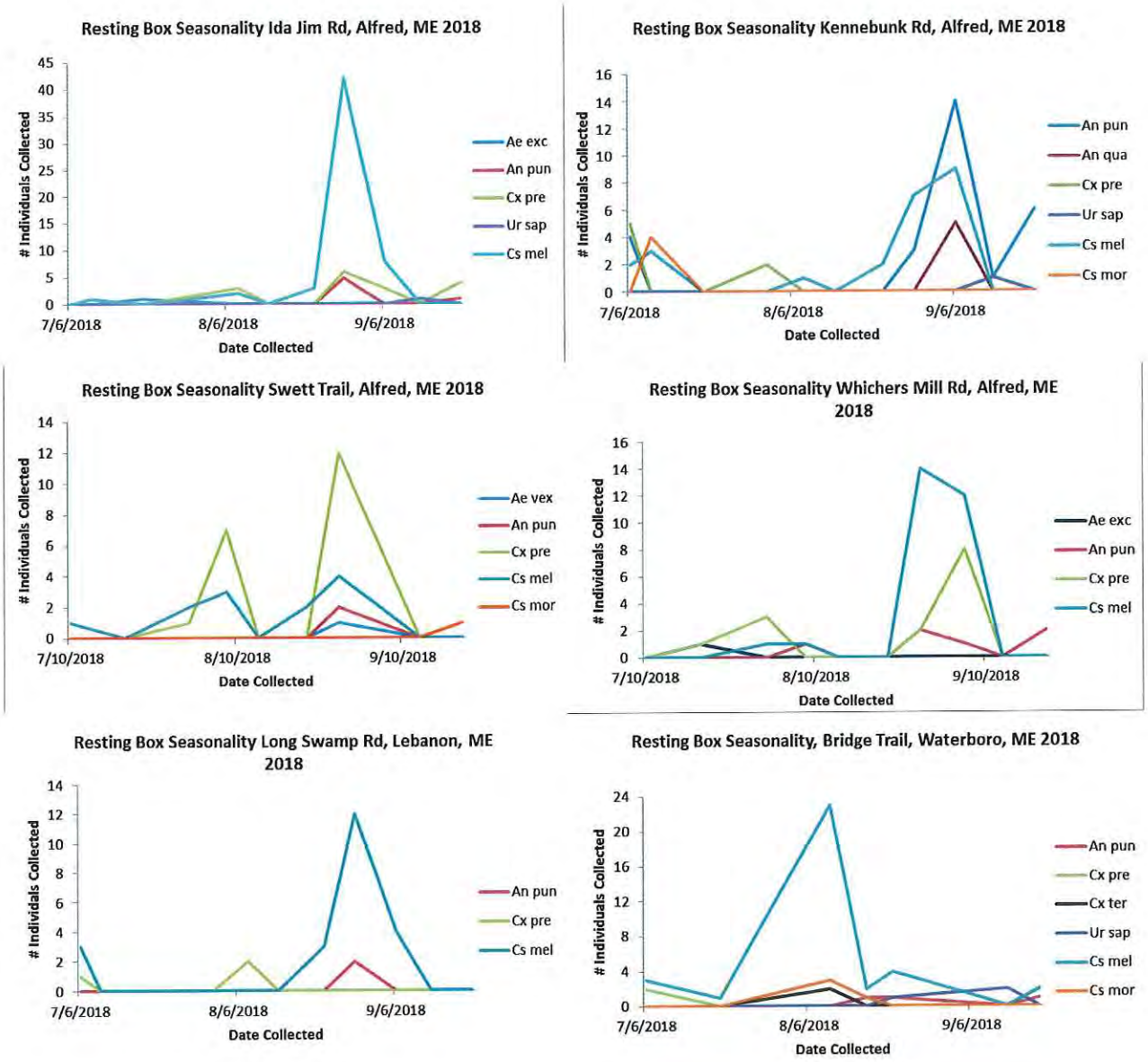

Figure 5. Seasonality of collections from resting boxes on the Massabesic Experimental Forest (York County). July-Sept 2018.

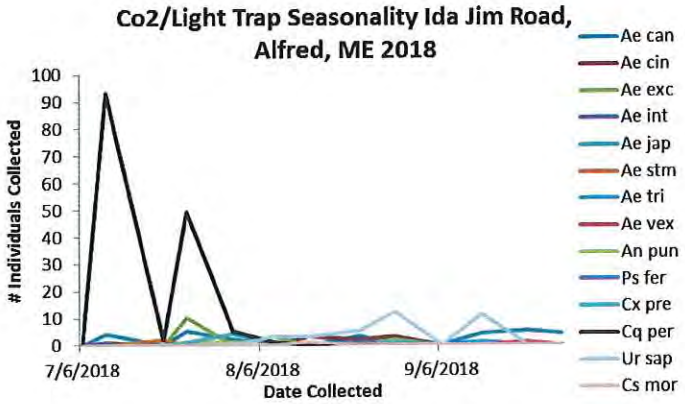

Figure 6. Seasonality of collections from CO2/light traps, Ida Jim Road (MEF). July-Sept 2018.

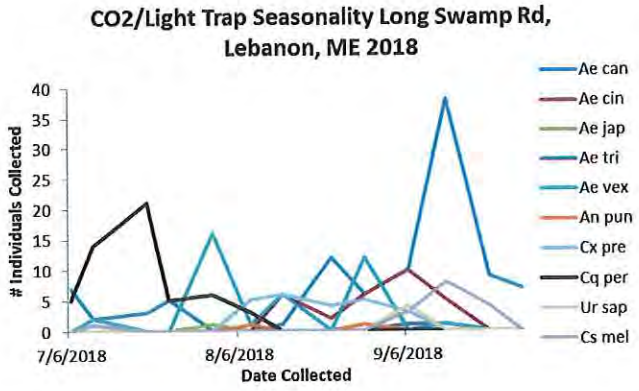

Figure 7. Seasonality of collections from CO2/light traps, Long Swamp Road (Lebanon, ME). July-Sept 2018.

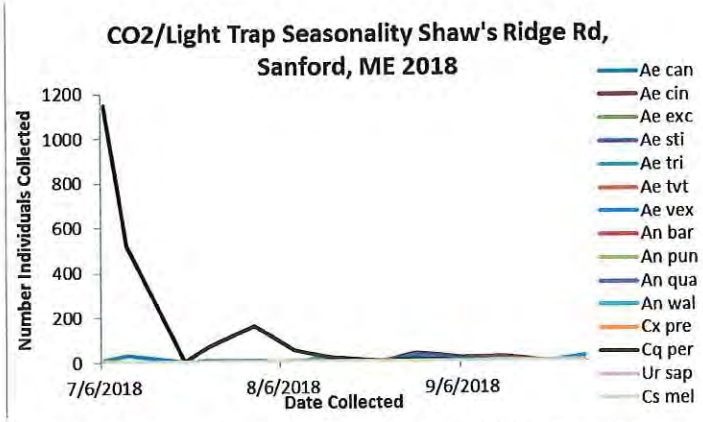

Figure 8. Seasonality of collections from CO2/light traps, Shaw's ridge Road (Sanford, ME). July-Sept 2018.

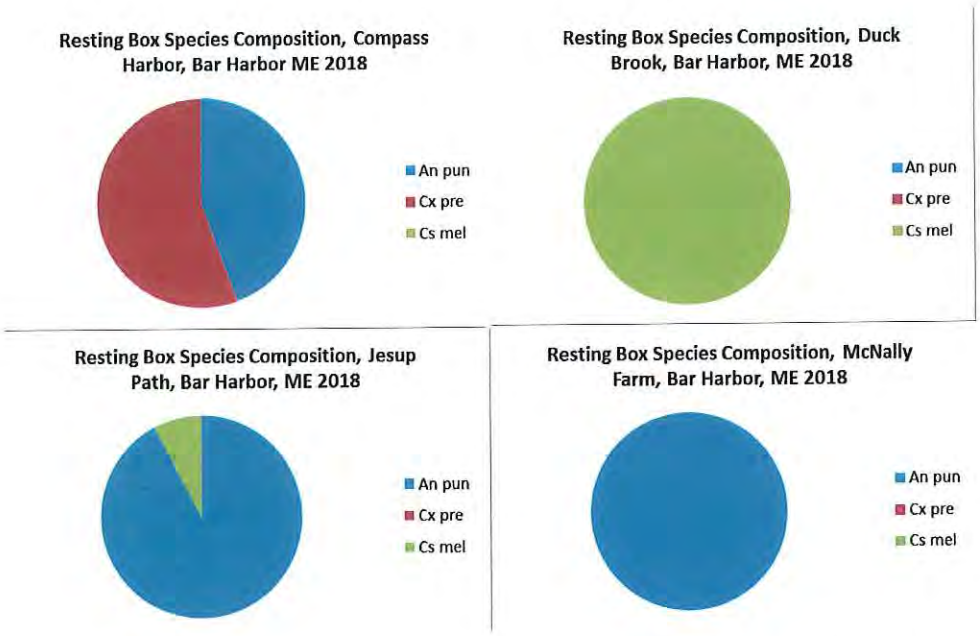

Figure 9. Mosquito composition of resting boxes from Mount Desert Island, ME. Aug-Sept, 2018.

Appendix 1. Survey sites, 2018

Appendix 1. Mosquito trpping locations, 2018.

Site Name	Lat	Long	Town	County	Trap Type	Notes
100 7th Street	44.79732	-68.78643	Bangor	Penobscot	CDC Gravid	
111 4th Street	44.79781	-68.7811	Bangor	Penobscot	GAT	
120 Leighton Street	44.81414	-68.77634	Bangor	Penobscot	Light	
124 Webster Street	44.79636	-68.79308	Bangor	Penobscot	CDC Gravid	
135 Forest Ave	44.80984	-68.76389	Bangor	Penobscot	GAT	
139 14th Street	44.80622	-68.79198	Bangor	Penobscot	GAT	
14 Coombs Street	44.80866	-68.76296	Bangor	Penobscot	CDC Gravid	
145 Allen Street	44.80276	-68.79787	Bangor	Penobscot	GAT	
149 Fountain Street	44.81501	-68.77695	Bangor	Penobscot	CDC Gravid	
15 Williams Street	44.79972	-68.78349	Bangor	Penobscot	Light	
15 Wood Street	44.80419	-68.79462	Bangor	Penobscot	CDC Gravid	
156 7th Street	44.79568	-68.78812	Bangor	Penobscot	Light	
19 Frances Street	44.80682	-68.79047	Bangor	Penobscot	Light	
194 Elm Street	44.81312	-68.76623	Bangor	Penobscot	Light	
199 Forest Ave	44.81203	-68.76444	Bangor	Penobscot	CDC Gravid	
204 Palm Street	44.81447	-68.76457	Bangor	Penobscot	CDC Gravid	
21 Poplar Street	44.81745	-68.77523	Bangor	Penobscot	Light	
26 Coombs	44.80875	-68.76227	Bangor	Penobscot	Light	
243 Grove Street	44.81276	-68.76668	Bangor	Penobscot	GAT	
306 Lincoln Ave	44.79511	-68.78864	Bangor	Penobscot	GAT	
31 Parkview Ave	44.80674	-68.76108	Bangor	Penobscot	CDC Gravid	
38 Forest Ave	44.80621	-68.76345	Bangor	Penobscot	GAT	
389 Pearl Street	44.8191	-68.75934	Bangor	Penobscot	CDC Gravid	
43 Manners Ave	44.80565	-68.79062	Bangor	Penobscot	CDC Gravid	
438 Birch Street	44.81953	-68.76175	Bangor	Penobscot	Light	
51 Poplar Street	44.81726	-68.77661	Bangor	Penobscot	Light	
67 Oak Point Lane	45.0945	-68.6533	Bangor	Penobscot	Resting Box	
70 Juniper Street	44.8172	-68.75706	Bangor	Penobscot	GATS	
73 Harthorn Ave	44.79635	-68.78897	Bangor	Penobscot	Light	
88 Poplar Street	44.81668	-68.77871	Bangor	Penobscot	GAT	
89 Cottage Street	44.80662	-68.78583	Bangor	Penobscot	GAT	
Babson Creek	44.373183°	-68.331119°	Mount Desert	Hancock	GAT	
Ball Field	44.327142°	-69.780786°	Augusta	Kennebec	GAT	
Boat Launch- Biddeford	43.473825°	-70.410131°	Biddeford	York	GAT	
Bridge Trail	43.550243°	-70.655775°	Waterboro	York	Resting box	
Broadway Gardens	43.628856°	-70.301214°	South Portland	Cumberland	GAT	
CAT	43.661233°	-70.245161°	Portland	Cumberland	GAT	
CC Road	43.568700°	-70.641956°	Waterboro	York	Resting box	
Cobscook Bay State Park	44.840258°	-67.148972°	Dennysville	Washington	CO2/Li	
Cole Road	43.476947°	-70.483531°	Biddeford	York	GAT	
Compass Harbor	44.373836°	-68.197469°	Bar Harbor	Hancock	Resting box/GAT	
Depot Road	43.894233°	-70.266908°	Standish	Cumberland	Resting box	
Depot Road B	43.893739°	-70.267864°	Standish	Cumberland	Resting box	
DHHS	44.099903°	-70.217553°	Lewiston	Androscoggin	GAT	
Dog Park	44.325528°	-69.771711°	Augusta	Kennebec	GAT	
Dresden Bog	44.104456°	-69.679592°	Dresden	Lincoln	CO2/Li	

Appendix 1. Survey sites, 2018

Site Name	Lat	Long	Town	County	Trap Type	Notes
Duck Brook Road	44.392989°	-68.230700°	Bar Harbor	Hancock	GAT/Resting Box	
Eastern Prom	43.669856°	-70.244275°	Portland	Cumberland	GAT	
Elm Street School	44.742044°	-67.390111°	East Machias	Washington	Resting box	
Flying Point Road	43.863258°	-69.754336°	Georgetown	Sagadahoc	CO2/Li	
Forest Grove Cemetery	44.315608°	-69.788774°	Augusta	Kennebec	GAT	
Gardner Lake Boat Landing	44.794292°	-67.382339°	East Machias	Washington	Resting box	
Gardner Lake- Lakeside West	44.753125°	-67.353636°	East Machias	Washington	Resting box	
Glassworks	44.101733°	-70.219661°	Lewiston	Androscoggin	GAT	
Hamilton Marine	43.661094°	-70.247561°	Portland	Cumberland	GAT	
Hannaford- Augusta	44.314700°	-69.764736°	Augusta	Kennebec	GAT	
Heath Road	43.426519°	-70.899444°	Lebanon	York	Resting box	
Heritage Trail	47.247297°	-68.574814°	Fort Kent	Aroostook	CO2/Li	
Holt Forest	43.869611°	-69.767183°	Arrowsic	Sagadahoc	CO2/Li	
Ida Jim Road	43.447556°	-70.681522°	Alfred	York	Resting Box, CO2/Lt	
Jellerson Road	43.555792°	-70.646642°	Waterboro	York	Resting box	
Jesup Path	44.419997°	-68.324567°	Bar Harbor	Hancock	Resting box/GAT	
Kennebec Humane Society	44.312831°	-69.800044°	Augusta	Kennebec	GAT	
Kennebunk Road	43.463125°	-70.688511°	Alfred	York	Resting box	
Landry Road	44.121014°	-70.205264°	Lewiston	Androscoggin	GAT	
Larabee's Landing	43.787769°	-70.161444°	Yarmouth	Cumberland	CO2/Li	
Laurel Hill Cemetery	43.492469°	-70.432903°	Saco	York	GAT	
Long Swamp Road	43.362914°	-70.872586°	Lebanon	York	Resting box, CO2/Lt	
Loring Memorial Park	43.672725°	-70.255122°	Portland	Cumberland	GAT	
Lubec Park	44.856376°	-66.988496°	Machias	Washington	Resting box	
McNally Farm	44.366244°	-68.210761°	Bar Harbor	Hancock	Resting box	
Mechanics Park	43.492403°	-70.448842°	Biddeford	York	GAT	
Mount Cutler	43.877131°	-70.805667°	Hiram	Oxford	GAT	
Mount Vernon Cemetery (Airport)	44.318844°	-69.788074°	Augusta	Kennebec	GAT	
Northeast Creek	44.425319°	-68.304419°	Bar Harbor	Hancock	GAT	
Outback Trail- UMaine Machias	44.707394°	-67.455028°	Machias	Washington	Resting box	
Perch Pond	44.9654	-68.7594	Old Town	Penobscot	Resting box	
Portland Trails	43.671231°	-70.249944°	Portland	Cumberland	GAT	
Reo Marina	43.644100°	-70.240828°	South Portland	Cumberland	CDC Gravid	
Ripples Pond	44.354928°	-68.351344°	Mount Desert	Hancock	GAT	
Riverside Cemetery A	44.109181°	-70.215500°	Lewiston	Androscoggin	GAT	
Riverside Cemetery B	44.108964°	-70.214139°	Lewiston	Androscoggin	GAT	
Saco School District	43.499856°	-70.438478°	Saco	York	GAT	
Saint Augustine	44.337925°	-69.783036°	Augusta	Kennebec	GAT	
Saint Mary's	44.103292°	-70.199461°	Lewiston	Androscoggin	GAT	
Savage Park	44.334431°	-69.760919°	Augusta	Kennebec	GAT	
Schmid Preserve	43.966869°	-69.613694°	Edgecomb	Lincoln	CO2/Li	
SFWMA	43.830411°	-70.606967°	Standish	Cumberland	Resting box	
Shaw's Ridge Road	43.458981°	-70.776656°	Sanford	Cumberland	CO2/Li	
Skate Park	44.090881°	-70.229589°	Auburn	Androscoggin	GAT	
SMCC	43.648539°	-70.228953°	South Portland	Cumberland	Gravid	Rapid response possible WNv case
Snowmobile Trail Above Fish River	47.205106°	-68.586483°	Fort Kent	Aroostook	CO2/Li	
Soldier Pond Brook	47.155581°	-68.579411°	Wallagrass	Aroostook	CO2/Li	
Somes Meynell Wildlife Sanctuary	44.357378°	-68.347081°	Southwest Harbor	Hancock	Resting box	

Appendix 1. Survey sites, 2018

Site Name	Lat	Long	Town	County	Trap Type	Notes
Sortwell Forest	44.013586°	-69.675586°	Wiscasset	Lincoln	CO2/Li	
1433 South Gate	45.0717	-68.6682	Argyle Twp	Penobscot	Resting box	
Spring Street	44.317125°	-69.781536°	Augusta	Kennebec	GAT	
Strawberry Lane	44.117817°	-70.208233°	Lewiston	Androscoggin	GAT	
Swett Trail	43.428869°	-70.668742°	Waterboro	York	Resting box	
UMaine Augusta	44.337536°	-69.797622°	Augusta	Kennebec	GAT	
UNE- Maintenance	43.455119°	-70.389622°	Biddeford	York	GAT	
UNE Water Treatment	43.459117°	-70.389191°	Biddeford	York	GAT	
USCG Station	43.643886°	-70.247178°	South Portland	Cumberland	CDC Gravid	Rapid response possible WNv case
USM- Lewiston	44.075486°	-70.171850°	Lewiston	Androscoggin	GAT	
West End Cemetery	43.646159°	-70.275695°	Portland	Cumberland	GAT	
Whichers Mill Road	43.436406°	-70.680100°	Alfred	York	Resting box	
Cundy's Harbor Road	43.800619°	-69.893847°	Harpswell	Cumberland	CO2/Li	
Job Road	43.740156°	-70.579950°	Standish	Cumberland	Resting box	
Libby Preserve	43.442925°	-70.730562°	Sanford	York	Co2/Li	Rapid response to positive horse
Rand Road A	43.801375°	-69.891428°	Harpswell	Cumberland	CO2/Li	
Rand Road B	43.802383°	-69.889825°	Harpswell	Cumberland	CO2/Li	
Thorncrag Bird Sanctuary	44.106822°	-70.178658°	Lewiston	Androscoggin	GAT	
Wallagrass Stream	47.167211°	-68.645772°	Wallagrass	Aroostook	CO2/Li	
Cyr Road	47.119925°	-68.319519°	Cross Lake	Aroostook	Resting Box, CO2/Lt	
Sinclair Road	47.158936°	-68.297993°	Saint Agatha	Aroostook	CO2/Li	

Appendix 2.

Throughout the past year Maine Medical Center Research Institute (MMCRI) Vector-borne Disease Lab (VBDL) has been working to establish the capacity in the state of Maine to add pesticide-resistance monitoring to our annual mosquito surveillance efforts. The early months of this process involved research to identify best rearing and pesticide resistance testing methods. This was followed by procurement of necessary equipment and pesticides. Once our supplies arrived we were able to begin to establish the insectary within which reference strains of mosquitoes would be reared. During this time troubleshooting of pesticide resistance testing methods has taken place. We are still determining if it is possible to test formulation pesticides or if strictly technical grade pesticides will work with our testing methods however we have successfully built the capacity to maintain mosquitoes to be used for pesticide resistance monitoring in the state of Maine. Details of each stage are outlined in the following paragraphs. Attached as appendices are: our monthly rearing schedule, CDC bottle bioassay methods, and the Vosshall Lab mosquito rearing methods.

Prior to establishing an insectary for pesticide resistance monitoring it was necessary to identify testing and rearing methods to be used as 'standard operating procedures'. We realized early in this process that adult mosquitoes and larval mosquitoes could not be tested via the same pesticide resistance bioassay because larval mosquitoes are aquatic and adult mosquitoes are terrestrial. This observation led us to identify the CDC bottle bioassay as a viable method for testing adult mosquitoes for pesticide resistance. The CDC bottle bioassay requires bottles be coated with a diagnostic dose of pesticide (a dose that will kill susceptible mosquitoes in 30-60 min) and outlines how to obtain this information. The CDC bottle bioassay does have some drawbacks, namely the methods outlined for cleaning bottles after use wouldn't actually clean the bottle of pesticide and the methods outlined for coating bottles are over simplified and could result in uneven coating of bottles. We corrected these issues by implementing cleaning methods known to clean bottles of chemicals and limiting bottle use to one diagnostic does of one pesticide. We corrected the bottle coating issues by obtaining a hot dog roller that rolls continuously when on. This ensures the bottle never stops rolling and is evenly coated with pesticide dilutions.

The larval pesticide resistance monitoring protocol identified was the WHO Guidelines for Laboratory and Field Testing of Mosquito Larvicides. We have not begun troubleshooting and implementing this protocol yet but plan to in the coming months. The WHO does have its own bioassay that is commonly used to test for pesticide resistance. We opted not to use that protocol because it requires the use of papers pre-impregnated with pesticide to be bought from WHO and used in their kit. Unfortunately they don't offer papers pre-impregnated with our pesticides of interest. As such, we went with the CDC bottle bioassay for adult testing and the WHO Guidelines for Laboratory and Field Testing of Mosquito Larvicides for larval testing.

We based our rearing protocols off of the mosquito rearing experience of Dr. Rebecca Robich, staff scientist for VBDL, and the Vosshall Laboratory Mosquito Rearing Standard Operating Procedures which are published online by Leslie B. Vosshall PhD from Rockefeller University.

The testing and rearing protocols informed the procurement process. After necessary equipment was identified those manufacturers not in our purchasing software (Lawson)

needed to be added the the purchasing system. This was a time consuming process but once it was done equipment and supplies were easily purchased. During the procurement phase of establishing the insectary we identified a location to house the insectary. There was some debate as to whether it would be possible to house the mosquitoes at MMCRI or if another location was preferable. Ultimately it was decided that the best place to house the insectary would be at the University of Southern Maine's (USM) Gorham Maine campus. Dr. Joseph Staples from USM's Environmental Science and Policy Department offered the use of his lab space in Bailey Hall room 114A. The arrangement is working well and we have been able to not only have space for the insectary but access to a separate classroom within which the pesticide testing can be done. This enables us to minimize accidental pesticide exposure to mosquitoes housed within the insectary.

With identified Percival incubators as viable habitats within which mosquitoes can live. Two of these incubators are housed in the insectary. We are currently rearing a colony of Culex pipiens, obtained from Ohio State University, as our susceptible reference strain. This strain (Buckeye strain) was first established by Dr. Rebecca Robich in 2003. Our plan is to use this strain as our 'susceptible strain' by which we calibrate the CDC bottle bioassay. We calibrate the test by performing diagnostic dose response testing as outlined in the CDC bottle bioassay protocol. This enables us to ensure that we are comparing test results from wild mosquitoes against test results from a susceptible strain. Currently, we do not have enough of the Buckeye strain to perform the diagnostic dose testing however, two of the three adulticides we have chosen to test have diagnostic dose values published by the CDC. Starting testing with these adulticides (permethrin and sumethirn) enables our Buckeye strain to fully establish prior to subjecting a subset of Buckeye strain mosquitoes to diagnostic dose testing. This is ideal because the diagnostic dose testing potentially requires hundreds of mosquitoes. Testing this colony before it has had the chance to reproduce for a few generations could kill too many mosquitoes or could reduce the amount of genetic variation available to the mosquitoes that are left to reproduce.

We identified three adulticides to use with the CDC bottle bioassay: sumethrin, permethrin, and bifenthrin. We worked with Justin Adams of Swamp Inc. to identify pesticides that are both legal for use in Maine and commonly used by pesticide applicators. We initially procured formulation pesticide for use in the CDC bottle bioassay. Formulation pesticides are those used in the field by pesticide applicators. Formulations contain a percentage of active ingredient (pesticide) and a percentage of other, undisclosed, ingredients. The formulations used for initial testing were: Astro (active ingredient: permethrin), Anvil 2+2 (active ingredient: sumethrin), and Crosscheck (active ingredient: bifenthrin). Astro and Anvil were diluted so that there were 30ug/mL of each active ingredient, per CDC published diagnostic dose values1 for Culex pipiens. Dilutions of Astro and Anvil were introduced into 250 mL bottles, per CDC bottle bioassay protocol, and allowed to dry in bottles rotating on the hot dog roller overnight. Unfortunately, the formulation pesticide did not dry inside the bottles. I did a trial run in one set of Astro (permethrin) bottles and found that the majority of mosquitoes stuck to the sides of the bottle, this did not happen in the control (ethanol) bottles. A second set of Astro bottles were prepared and allowed to dry for 9 days, as was the Anvil bottle set. The formulation pesticide within the bottles still did not dry. It is possible that this is caused by the 'other ingredients' that the active ingredients are suspended in. To determine if ingredients inside the formulation pesticide are responsible for the dilutions not drying, technical grade pesticides (98%-100% active ingredient) were ordered and will be used in subsequent tests.

Early in the planning process we had determined that 4 or 5 mosquito species would be tested for pesticide resistance. As the insectary became functional this number was pared down to 1 mosquito species, Culex pipiens. Culex pipiens was chose as an initial focal species because it is easy to maintain in colony and we could obtain a subset of the Buckeye strain for use as a reference strain. Each species tested for pesticide resistance must have the chosen bioassay 'dialed in' or calibrated for use against a strain of the same species that is known to be susceptible. The Buckeye strain has been in colony long enough that any pesticide resistance that may have been present in the colony founders has likely been bred out. This can be confirmed via sequencing methods designed to identify genetic mechanisms for pesticide resistance. We will need to identify susceptible strains to calibrate pesticide resistance bioassays against for each species we eventually test. Currently, we are focusing our efforts on Culex pipiens because both a reference strain and wild populations are available. Culex pipiens has also been identified as a potential bridge vector of West Nile Virus and, as such, is a species of interest to the vector-borne disease community.

Mosquitoes are maintained at 25°C in 70%-80% relative humidity with at 15 hour light, 9 hour dark light cycle. Each cage of adult mosquitoes are house in a clear trash bag. The trash bag acts as secondary containment and helps trap humidity inside the cage. Adult mosquitoes are offered damp sponges and 10% sucrose around the clock unless a testing or blood feeding protocol requires removal of sucrose the day prior to testing/blood feeding. Whole blood from chickens is used to feed our Buckeye strain. Blood feeding is accomplished via a glass membrane feeder and a parafilm membrane. Feeding mosquitoes on a membrane feeder eliminates the need to feed them on live animals. Blood is kept warm during feeding via water pump submerged in water warmed to 35°C. Gravid females are offered a container of water within which they can lay their eggs. Egg rafts are removed soon after laying and placed in individual larval pans. Newly hatched larvae are provided approximately 1/8th" of a rabbit food pellet and 1/16 tsp of finely ground tetramin tropical fish food. The same quantity of fish food is provided in larval pans daily.

Egg rafts from field sites are obtained by placing black restaurant bussing tubs at field sites and pouring about 1" of hay broth into the tub. Egg rafts are collected the next morning and returned to the lab. Each egg raft is placed in its own larval pan for ease of identification once the 4th instar stage is reached.

During the past year the VBDL has built the capacity to maintain both wild and colony strains in an insectary house on USM's Gorham campus. We have identified a species of mosquito that is stable in the insectary and can be used to troubleshoot rearing and testing methods and have successfully maintained this species in the insectary for a few months. We are in the process of identifying whether formulation pesticide, technical grade pesticide, or both are viable for use in our chosen pesticide resistance monitoring protocol. Our next steps will be to test technical grade pesticide in the CDC bottle bioassay and to develop diagnostic dose response values with our Buckeye strain.

References

1. https://www.cdc.gov/zika/vector/insecticide-resistance.html

From: Jeffrey Gillis
Sent: Monday, April 1, 2019 1:30:40 PM
To: Patterson, Megan L

Subject: Questions regarding approved pesticides for browntail spraying

Dear Meghan,

From our recent phone conversations and email exchanges, you have confirmed that permethrin is not a permissible insecticide for browntail spraying within 250 feet of water bodies.

I have several questions:

Permethrin, or at least the brand name Astro, used to be allowed and I would like to know if it could once again be considered as an allowable insecticide within the 50'-250' water setback. Several companies, including WellTree, used to use permethrin on select trees with extremely high browntail populations prior to caterpillar emergence or during later stages of caterpillar development which were still defoliating the trees. It was also labeled for use on many fruits and vegetables, which made it acceptable to apply when infested trees included both harvestable fruit trees such as apple, and non fruiting, or non harvestable trees such as oak.

My understanding is that bifenthrin is currently allowed within the 50'-250' setback area. It is also my understanding that bifenthrin labels do not support use on most fruits and vegetables. Lastly, it's always been my understanding that bifethrnin is extremely toxic to many marine organisms.

If my understandings are correct, why is permethrin no longer allowed, but bifenthrin is?

I am interested to know why imidicloprid is listed as an acceptable insecticide to use between the 50'-250' setback area,

or at all. I am confused by this as several of my professional colleagues and I are not aware that imidicloprid is in any way effective in the control of browntail caterpillars.

I am concerned that if the mission of the Board of Pesticides and or the Maine Forest Service is to support judicious and minimal pesticide use, it seems that allowing imidicloprid for browntail use may support the contrary. Additionally, listing imidicloprid as an allowable product could suggest to the greater public that imidicloprid is effective. This in turn could spur much greater use of the readily available product by the public, and needlessly expose the surrounding environment to the pesticide.

I look forward to discussing these questions with you further during the April 19th meeting at 9am in the Deering Building.

Sincerely,

Jeff Gillis
President
WellTree, Inc.
3 MacMillan Drive
Brunswick, ME 04011

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STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY
BOARD OF PESTICIDES CONTROL
28 STATE HOUSE STATION
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PAUL R. LEPAGE
GOVERNOR

WALTER E. WHITCOMB
COMMISSIONER

MAINE BOARD OF PESTICIDES CONTROL POLICY ON ALLOWABLE PESTICIDES FOR THE CONTROL OF BROWNTAIL MOTH WITHIN 250 FEET OF MARINE WATERS

Adopted January 11, 2017

BACKGROUND

On January 25, 2008, the Board adopted Section 5 of Chapter 29 which regulates the use of insecticides used to control browntail moth within 250 feet of marine waters. Section 5 limits insecticide active ingredients to those approved by the Board. Since that time, a number of newer chemistries have been registered for use and far more data is available on the efficacy of many products. On November 4, 2016 and December 16, 2016 the Board discussed the browntail moth populations and the available products. On January 11, 2017, the Board approved the following active ingredients for control of browntail moth in coastal areas located between 50 and 250 feet from the mean high water mark in accordance with CMR 01-026 Chapter 29: Standards for Water Quality Protection.

Acetamiprid
Bifenthrin
Clothianidin
Deltamethrin
Diflubenzuron
Dinotefuran
Fluvalinate
Imidacloprid
Spinosad

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STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY
BOARD OF PESTICIDES CONTROL
28 STATE HOUSE STATION
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PAUL R. LEPAGE
GOVERNOR

WALTER E. WHITCOMB
COMMISSIONER

12/29/16

TO: Board Members
FROM: Lebelle Hicks PhD DABT
RE: Active Ingredients for Approval for Use in the 50 to 250 Foot Area from the Mean High Tide Mark, in Accordance with Chapter 29 Section 5 for Control of Browntail Moths

Background

In 2006, the Board's Environmental Risk Advisory Committee reviewed insecticides for aquatic toxicity to marine invertebrates. The relative aquatic risks for marine and freshwater invertebrates were evaluated for insecticides currently registered for:

- foliar applications to hardwood,
- use on landscape ornamental trees, and
- demonstrated efficacy for Browntail moth caterpillar control

Since 2006, new chemistries with known browntail moth efficacy have become available including, neonicotinoids and spinosad. Other active ingredients with potential efficacy are also available such as azadirachtin, several Bt strains, chlorantraniliprole, cyantraniliprole, indoxacarb, methoxyfenozide and tebufenozide. These latter compounds may be evaluated for relative risks when specific efficacy on browntail moth is available.

December 2016 Review

The methodology for the relative risk determination is similar to that used by the ERAC in 2006. The most sensitive marine invertebrate toxicity endpoint (acute LC50) was chosen and an Estimated Environmental Concentration (EEC) based on use rates from the product label were determined. EECs for a worst case scenario, of a spill of 100 gallons of use mix into a 1 acre body of water with depths of ½ foot (shallow), 6 feet (deep) and 23 feet deep (this is the average depth of inner Casco bay according to Gustafsson 1998) were determined.

The ratios (modified risk quotients (modRQ), based on the worst case scenario) of the EEC to the LC50 were calculated and the resulting relative risks were analyzed. Active ingredients and their relative risk quotients are presented in Tables 1 and 2, with a risk quotient of 500 used to segregate the active ingredients.

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Table 1. Invertebrate Modified Risk Quotients less than 500 for Aquatic Invertebrates, for Acute Worst Case Scenarios of 100 gallons of use mix spilled into a ½ foot deep, 1 Acre body of Water			
Compound	**Invertebrate Modified Risk Quotients**		**Status in 2006 Review**
	Marine	**Freshwater**	
Acetamiprid	11	36	Not registered for this use
Bifenthrin	4	28	Not registered for this use
Clothianidin	6	14	Not registered for this use
Deltamethrin	54	2	Not evaluated
Diflubenzuron	**125**	**31**	**Approved by the Board**
Dinotefuran	1	0	Not registered for this use
Fluvalinate	**278**	**16**	**Approved by the Board**
Imidacloprid	5	3	Not registered for this use
Permethrin	**306**	**833**	**Approved by the Board**
Spinosad	1	0	Not registered for this use

Table 2. Invertebrate Modified Risk Quotients Greater than 500 for Aquatic Invertebrates, for Acute Worst Case Scenarios of 100 gallons of use mix spilled into a ½ foot deep, 1 Acre body of Water			
Compound	**Invertebrate Modified Risk Quotients**		**Status in 2006 Review**
	Marine	**Freshwater**	
Acephate	no data	454	Not evaluated
Carbaryl	***1,326***	***4,447***	***Not approved by Board in 2006***
Cyfluthrin	**967**	**93**	**Approved by the Board, new Marine toxicity data in 2010; 2016**
Cyhalothrin	1,220	62,500	Not evaluated
Malathion	8,591	192,857	Not evaluated

From: jody spear
Sent: Tuesday, March 5, 2019 4:56:29 PM
To: Patterson, Megan L
Subject: jack heinemann's critique of GM potato

https://responsibletechnology.org/wp-content/uploads/2017/01/Why-Scientists-are-worried-about-the-GMO-potato-and-apple-4.8.151.pdf

Why Scientists are Worried about the GMO Potato and Apple

When Brazilian research scientists fed tiny pieces of RNA to young honey bees, they expected little to happen—certainly nothing earth-shaking. The RNA used is not naturally found in bees. It was taken from jellyfish, chosen because it was *supposed* to have an insignificant impact. The RNA didn't cooperate.

After mixing just a single meal of RNA into the natural diet of the worker bee larvae, as the bees grew older, scientists discovered that a staggering 1461 genes showed significant changes compared to controls.[1] In other words, about 10% of all the bees' genes, including those vital to health, were either turned up in volume, or more often than not, turned down.[2] The authors of the study concluded that such a massive change "undoubtedly" triggered changes in the bees' development, physiology, and behavior.

Perhaps the scientists from the United States Department of Agriculture (USDA) missed this 2013 study when they recently approved potatoes and apples genetically engineered not to brown. "Arctic" apple slices (nicknamed the "Botox apple") can supposedly sit on the shelf for 15-18 days without discoloring to reveal their age. Sliced up "Innate" potatoes will similarly not show any darkening day after day until they eventually dry up.

To accomplish this effect, scientists at Okanagan Specialty Fruits and J. R. Simplot introduced genetically engineered genes that make their apples and potatoes produce double stranded RNA (dsRNA) to shut off the browning genes. dsRNA is the same type of RNA that was fed to bees.

The question that serious scientists are asking is: If we (or bees, or birds, or deer) consume the dsRNA in the apple or potato, can it influence how our genes work? Will these genetically modified organisms (GMOs), eaten as apple pies, french fries, or whatever, change *our* development, physiology, and behavior?

One of those serious scientists is Dr. Jack Heinemann, a professor of genetics and molecular biology, and director of the Centre for Integrated Research in Biosafety at the University of Canterbury in New Zealand. For more than a decade, he has been warning the agencies that approve GMOs about the need to test new dsRNAs for safety.

RNA as Gene Controller

RNA is the way-station molecule between genes (made of DNA) and the proteins that they specify. Years ago, scientists were sure that the influence went only in one direction: DNA would pass on a code to RNA, which would then design proteins on that basis. Now it is understood that types of RNA such as dsRNA exert a significant influence in the opposite direction. "These small dsRNA molecules control genes," says Heinemann. "They turn them on or turn them off."[3]

Genetic engineering can introduce new dsRNAs into our food. This can be done intentionally, as in the case of the apple and potato, or totally by accident. In either case, these may be "new patterns that we've never seen before," says Heinemann. "We can be exposed to these and potentially have genes regulated by those dsRNA molecules."

Author: Jeffrey M. Smith April 8, 2015

"We have to be able to assess, *before we use these foods*," asserts Heinemann, "whether they can have an adverse effect on people or on other organisms in the environment." When he expressed his concerns to the governments' GMO regulators in Australia and New Zealand, they dismissed them.

Government Safety Assurances are a Sham

RNA, according to the regulators, is too unstable. It would be destroyed long before it could enter the blood supply. And even if it were to get into the blood, they claim it wouldn't have any effect whatsoever.

While it's true that most RNA are not stable, Heinemann points out that "surprisingly, the form of RNA called dsRNA is very *very* stable. . . . And it's now been shown that they can be taken up after digestion of the food into our blood supply." More importantly, in a groundbreaking study conducted in China in 2012,[4] dsRNA fed to mice "transferred to the liver and down-regulated an important liver enzyme."

This study provided early evidence that the excuses used by the regulators were just that, and not backed by science. So when Heinemann read the governments' evaluation of a GMO wheat variety that used dsRNA to alter its starch production, he was alarmed to find that all the new published research about dsRNA was totally ignored.

"When we looked at the regulator's risk assessment, we found that they never considered the potential adverse effect of the intended dsRNA either on people—and this was an approval to test it on people—or on unintended targets in the environment." They simply *assumed* "that RNA cannot be toxic."

In addition to regurgitating the same outdated arguments of dsRNA instability and lack of influence, they added three more.

According Heinemann, the regulators claimed, that dsRNA "would never accumulate to levels that would have a biological effect." But he points out, "There are *zero* experiments testing how much dietary dsRNA is necessary for a biological effect." It was a baseless argument.

Then, using rather strained logic, they flatly claimed, according to Heinemann, "because RNA is everywhere, it must be safe. It is our background baseline of safety." While Heinemann acknowledges that "The chemical properties of RNA molecules are generally the same," it's not their chemical composition—the nucleic acids—that is critical. "They miss the most important thing about nucleic acids," he says. "The activity of nucleic acids is the *specific sequence* of nucleotides along the backbone of the molecule." And it's that specific sequence that determines if and how the dsRNA influences gene expression. So some dsRNA will be safe and some will not.

The point becomes obvious when you realize that GMO companies like Monsanto are hoping to get approval for crops they engineered with dsRNA to kill insects. "Every RNA molecule eaten by insects does not kill them," says Heinemann. "But certain dsRNA molecules do, because of the order of their nucleotides."

In their final argument, the regulators contradict themselves by acknowledging that the order of the dsRNA may be important. But the dsRNA used in the GMO wheat, they contend, must be safe. Why? Because the dsRNA sequence comes from wheat itself. And since humans are so far away from wheat in

the biological order of things, there couldn't possibly be a sequence match between wheat RNA and human DNA.

Finding Hundreds of Sequence Matches in the Human Genome

Not only does this betray a certain arrogance, from a mathematical perspective it's preposterous. The active portions of the dsRNA are typically very small—between 7 and 21 nucleotides in length. And there are just 4 types of nucleotides that make up the code. So what is the probability that a sequence of just 7-21 nucleotides will match up with a corresponding section of the human DNA, which stretches *3 billion* nucleotides in length? We don't have to guess. Using the sequence of dsRNA that was likely produced in the GMO wheat, Heinemann and his team used "bioinformatics" to confirm not just one match, but hundreds of them.[5]

Heinemann is quick to point out that just because there's a sequence match does not mean that any particular dsRNA will have an effect on gene regulation. It's a *potential* threat, but one that has to be taken very seriously.

Feeding Studies Required

In order to evaluate the real risk, you can't rely on computer models alone. Heinemann insists there must be at least feeding studies using those organisms that will be exposed to the dsRNA if the GMO is released outdoors or commercialized.

The bee study demonstrates why. While computer analysis identified several sequence matches, only by actually feeding the jelly fish derived dsRNA to the bees were scientists able to confirm which of those matches resulted in "misregulated" genes. In addition to these "direct" effects, many of the changes in the 1461 genes were, according to the authors, attributed to "*indirect* downstream secondary effects" of the dsRNA. That is, the genes that were altered directly due to the matched sequences produced altered amounts of RNA or proteins. These altered amounts in turn influenced the activity of yet more genes, which in turn, affected yet more.

To make things even more complicated, the single dsRNA meal affected hundreds of genes when the bees were quite small, but they influenced a whole different set of genes when the bees were older—with little overlap. Because different genes activate at different stages of development and in different types of cells, feeding studies must be conducted at different ages and evaluate different tissues and organs.

USDA and EPA Cautions About Unpredicted Side Effects

In 2013, Heinemann and colleagues published a full protocol for assessing the risk of dsRNAs in a highly respected risk assessment journal *Environment International*.[6] Not long after, USDA scientists published a similar analysis[7] and cited Heinemann's work. In early 2014, the US Environmental Protection Agency (EPA) also published a white paper[8] that verified Heinemann's concerns about risk assessment, as did a subsequent analysis by the EPA's Science Advisory Panel.[9]

The USDA scientists' paper, for example, called for "sequencing genomes for species" that will be exposed to the dsRNA to "understand those that may be affected." All the papers acknowledged the need for comprehensive testing conducted under a variety of conditions. And they admitted that the current

assessment protocols for evaluating the impact of GMOs or chemical pesticides are not sufficient to evaluate all the risks associated with dsRNA. The EPA paper stated, for example: "The knowledge gaps make it difficult to predict with any certainty whether unintended effects will occur in non-target species as a result of exposure to dsRNA."

Political Science Posing as Science

Knowing that USDA and EPA scientists and advisors warned about unpredictable unintended effects that could escape detection by current risk assessments, one might think that the approval of the apple and the potato should have at least waited until those assessments were thoroughly updated. But that would require those in charge of the USDA to make decisions based on science. Even a cursory review of the history of US GMO regulations demonstrates just the opposite.

In the 1990s, for example, FDA scientists repeatedly warned their superiors about inherent dangers of genetically engineering crops for human consumption. They wrote of possible toxins, allergens, new diseases, and nutritional problems that would be hard to detect in the gene-spliced foods. But the person in charge of GMO policy at the agency was Michael Taylor, a political appointee, not a scientist. In fact, he was the former attorney for Monsanto. The policy he oversaw falsely claimed that the agency was not aware of information showing that GMOs were significantly different, and therefore no safety testing would be required. Companies like Monsanto, who told us that DDT, Agent Orange, and PCBs were safe, would determine on their own if their GMOs were safe.

As a result of Taylor's policy, companies don't even have to inform the FDA before putting a GMO onto the market. While many *do* participate in the FDA's "voluntary consultation," it is pure theater. At the end of this meaningless exercise, the FDA issues a letter that simply reminds the GMO producer that it's *their* job to determine if their GMO is safe. In the case of Monsanto's Roundup Ready herbicide-tolerant soybeans, for example, the FDA letter to the company stated:

> "… it is our understanding that, based on the safety and nutritional assessment *you* have conducted, *you* have concluded that the new soybean variety is not materially different in composition, safety, or any other relevant parameter from soybean varieties currently on the market and that it does not raise issues that would require premarket review or approval." [emphasis added]

Note that these official FDA letters *never* state that the agency approves the GMO or deems it safe. In the case of the new potato, for example, that determination is entirely in the hands of its maker, J. R. Simplot.

In an interview with Simplot's Vice President of Plant Sciences, Haven Baker, he assures us that their potato is just fine. How does he know? He says the USDA's outdoor "field trials demonstrate that their Innate™ potatoes were found to pose no health or environmental risks, [and] create no harm to other species." The USDA did not, however, conduct *any* sequence matching analyses or feeding trials; and there's no evidence that J. R. Simplot did either.

But to make sure we're completely put at ease, Baker adds, "The FDA's parallel review of Innate™ potatoes, which is also underway, will ensure that they are safe for consumption."

Simplot also claims, without releasing their data, that the Innate potato will have lowered amounts of a possible carcinogen that's activated during frying. But even though Simplot supplies McDonalds with roughly half of all its french fries, the fast-food chain stated that they have no plans to use genetically modified potatoes.

The question is, will you?

The Innate potato and Artic apple may be available for consumption as early as 2016. To ask food companies to reject the use of these GMOs, please sign the petition here.

Additional Resources

Judy Carman, Jack Heinemann, and Sarah Agapito-Tenfen, New paper on dsRNA risks - briefing for non-specialists, 21 March 2013 http://www.gmwatch.org/index.php/news/rss/14698-new-paper-on-dsrna-risks-briefing-for-non-specialists

Recent papers providing more evidence that dietary dsRNA survives in humans/mammals and may alter gene expression:

Mlotshwa, S., Pruss, G. J., MacArthur, J. L., Endres, M. W., Davis, C., Hofseth, L. J., Pena, M. M. & Vance, V. A novel chemopreventive strategy based on therapeutic microRNAs produced in plants. *Cell Res*, doi:10.1038/cr.2015.25 (2015). http://www.nature.com/cr/journal/vaop/ncurrent/full/cr201525a.html

Baier, S. R., Nguyen, C., Xie, F., Wood, J. R. & Zempleni, J. MicroRNAs are absorbed in biologically meaningful amounts from nutritionally relevant doses of cow milk and affect gene expression in peripheral blood mononuclear cells, HEK-293 kidney cell cultures, and mouse livers. *J. Nutr.* **144**, 1495-1500, doi:10.3945/jn.114.196436 (2014). http://www.ralf-kollinger.de/wp/wp-content/uploads/2014/02/Milch-micro-RNAs-Are-Absorbed-in-Biologically-Meaningful-Amounts-from...-.pdf

> "We conclude that miRNAs in milk are bioactive food compounds that regulate human genes."

Lukaski, A. & Zielenkiewicz, P. In silico identification of plant miRNAs in mammalian breast milk exosomes - a small step forward? *PLoS ONE* **9**, e99963 (2014). open access http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0099963

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[1] F.M.F. Nunes, et al, Non-Target Effects of Green Fluorescent Protein (GFP)-Derived Double-Stranded RNA (dsRNA-GFP) Used in Honey Bee RNA Interference (RNAi) Assays, *Insects* **2013**, *4*(1), 90-103; http://www.mdpi.com/2075-4450/4/1/90

[2] Because of the limitations of the equipment used, this may be an underestimate of the number of genes affected.

[3] Quotes taken from authors interview with Dr. Jack Heinemann, conducted in person in China, July 2013.

[4] Zhang, L., Hou, D., Chen, X., Li, D., Zhu, L., Zhang, Y., Li, J., Bian, Z., Liang, X., Cai, X., Yin, Y., Wang, C. H., Zhang, T., Zhu, D., Zhang, D., Xu, J., Chen, Q., Ba, Y., Liu, J.-J., Wang, Q., Chen, J.,

Wang, J., Wang, M., Zhang, Q., Zhang, J., Zen, K. & Zhang, C.-Y. Exogenous plant MIR168a specifically targets mammalian LDLRAP1: evidence of cross-kingdom regulation by microRNA. *Cell Res* **22**, 107-126 (2012).

[5] Jack Heinemann, Evaluation of risks from creation of novel RNA molecules in genetically engineered wheat plants and recommendations for risk assessment, An Expert Opinion by Jack Heinemann, August 28, 2012. Centre for Integrated Research in Biosafety at the University of Canterbury in New Zealand. http://www.thenutritionalhealingcenter.com/wp-content/uploads/2012/10/Wheat-Heinemann-Expert-Scientific-Opinion.pdf. Update on submission: March 21, 2013 http://safefoodfoundation.org/wp-content/uploads/2013/03/opinion-on-possible-dsrna-mediated-adverse-effects_update-1.pdf

[6] Heinemann, J. A., Agapito-Tenfen, S. Z. & Carman, J. A. A comparative evaluation of the regulation of GM crops or products containing dsRNA and suggested improvements to risk assessments. *Environ Int* **55**, 43-55, doi:10.1016/j.envint.2013.02.010 (2013). http://gmojudycarman.org/wp-content/uploads/2013/06/comparative-evaluation-of-the-regulation-of-GM-crops-or-products-containing-dsRNA-and-suggested-improvements-to-risk-assessments.pdf

[7] Lundgren, J. G. & Duan, J. J. RNAi-based insecticidal crops: potential effects on nontarget species. *Biosci.* **63**, 657-665 (2013). http://bioscience.oxfordjournals.org/content/63/8/657

[8] RNAi Technology as a Pesticide: Program Formulation for Human Health and Ecological Risk Assessment. (United States Environmental Protection Agency, 2014. http://www.thecre.com/premium/wp-content/uploads/2012/04/RNAi-White-Paper.pdf

[9] Environmental Protection Agency, Transmittal of Meeting Minutes of FIFRA Science Advisory Panel, January 28, 2014. https://www.epa.gov/sites/production/files/2015-06/documents/012814minutes.pdf

129th MAINE LEGISLATURE

FIRST REGULAR SESSION-2019

Legislative Document **No. 1273**

S.P. 393 In Senate, March 14, 2019

An Act To Ensure Funding for Certain Essential Functions of the University of Maine Cooperative Extension Pesticide Safety Education Program

Reference to the Committee on Agriculture, Conservation and Forestry suggested and ordered printed.

DAREK M. GRANT
Secretary of the Senate

Presented by Senator BLACK of Franklin.
Cosponsored by Representative DUNPHY of Old Town and
Senators: CARPENTER of Aroostook, DIAMOND of Cumberland, LUCHINI of Hancock,
Representatives: DRINKWATER of Milford, HALL of Wilton, SKOLFIELD of Weld,
STANLEY of Medway.

Be it enacted by the People of the State of Maine as follows:

Sec. 1. 7 MRSA §607, sub-§6, ¶¶A and B, as enacted by PL 2013, c. 290, §1 and affected by §4, are amended to read:

A. An annual grant of no less than $135,000 to the University of Maine Cooperative Extension, on or about April 1st, for development and implementation of integrated pest management programs. The University of Maine may not charge overhead costs against this grant; ~~and~~

B. Funding for public health-related mosquito monitoring programs or other pesticide stewardship and integrated pest management programs, if designated at the discretion of the board, as funds allow after expenditures under ~~paragraph~~ paragraphs A and C. The board shall seek the advice of the Integrated Pest Management Council established in section 2404 in determining the most beneficial use of the funds, if available, under this subsection~~.~~; and

Sec. 2. 7 MRSA §607, sub-§6, ¶C is enacted to read:

C. An annual grant of $65,000 to the University of Maine Cooperative Extension, on or about April 1st, for the development and revision of training manuals for applicator certification, licensing and recertification. The University of Maine may not charge overhead costs against this grant.

Sec. 3. 7 MRSA §2406, as enacted by PL 2013, c. 290, §2 and affected by §4, is amended to read:

§2406. University of Maine Cooperative Extension integrated pest management programs

The University of Maine Cooperative Extension shall develop and implement integrated pest management programs and develop and revise training manuals for pesticide applicator certification, licensing and recertification. The extension may seek the advice of the Integrated Pest Management Council established in section 2404 in establishing the programs. The extension shall use the funds deposited pursuant to section 607 for the purposes of this section. The extension shall administer the ~~grant~~ grants pursuant to section 607, subsection 6, ~~paragraph~~ paragraphs A and C.

Sec. 4. Appropriations and allocations. The following appropriations and allocations are made.

UNIVERSITY OF MAINE SYSTEM, BOARD OF TRUSTEES OF THE

University of Maine Cooperative Extension Z172

Initiative: Allocates ongoing funds for the University of Maine Cooperative Extension to develop and revise training manuals for pesticide applicator certification, licensing and recertification.

OTHER SPECIAL REVENUE FUNDS	2019-20	2020-21
All Other	$65,000	$65,000
OTHER SPECIAL REVENUE FUNDS TOTAL	$65,000	$65,000

SUMMARY

This bill requires that the Department of Agriculture, Conservation and Forestry, Board of Pesticides Control award an annual grant of $65,000 on or about April 1st to the University of Maine Cooperative Extension for the development and revision of training manuals for pesticide applicator certification, licensing and recertification.

129th MAINE LEGISLATURE

FIRST REGULAR SESSION-2019

Legislative Document **No. 1518**

H.P. 1111 House of Representatives, April 9, 2019

An Act To Establish a Fund for Portions of the Operations and Outreach Activities of the University of Maine Cooperative Extension Diagnostic and Research Laboratory and To Increase Statewide Enforcement of Pesticide Use

Reference to the Committee on Agriculture, Conservation and Forestry suggested and ordered printed.

ROBERT B. HUNT
Clerk

Presented by Representative STANLEY of Medway.

Be it enacted by the People of the State of Maine as follows:

Sec. 1. 7 MRSA c. 419 is enacted to read:

CHAPTER 419

TICK LABORATORY AND PEST MANAGEMENT FUND

§2471. Tick Laboratory and Pest Management Fund

The Tick Laboratory and Pest Management Fund, referred to in this chapter as "the fund," is established. The fund is administered by the University of Maine Cooperative Extension pest management unit and consists of funds derived from the pesticide container fee under Title 36, section 4911, appropriations and allocations to the fund and funds from other public and private sources. The fund, to be accounted within the University of Maine Cooperative Extension, must be held separate and apart from all other money, funds and accounts. Eligible investment earnings credited to the assets of the fund become part of the assets of the fund. Any balance remaining in the fund must be disbursed on a quarterly basis to the University of Maine Cooperative Extension. The fund may not be used to pay for any administrative costs incurred by the University of Maine or the University of Maine Cooperative Extension.

§2472. Expenditures from the fund

Funds in the fund must be distributed by the University of Maine Cooperative Extension as provided in this section.

1. Pesticide container fee reimbursement. Funds must be provided for ongoing reimbursement to the State Tax Assessor on the same schedule as sales tax collection under Title 36, Part 3 to pay for administrative costs not to exceed $40,000 annually from collection of the pesticide container fee imposed under Title 36, section 4911.

2. Pest management education. Twenty-five percent of the balance remaining in the fund after the amount under subsection 1 is subtracted must be used by the University of Maine Cooperative Extension pest management unit for outreach and education initiatives on pest management and pesticide safety and pesticide application and use.

3. Tick laboratory costs. Fifty percent of the balance remaining in the fund after the amount under subsection 1 is subtracted must be used by the University of Maine Cooperative Extension pest management unit for nonadministrative costs related to a tick laboratory, including:

A. Testing ticks provided by residents of the State for pathogenic organisms and general tick laboratory operations;

B. Salaries;

C. Tick management research, demonstrations and educational outreach, including community integrated pest management; and

D. Medical and veterinary pest management focusing on health-related issues caused by ticks and other arthropods as needed.

4. Pest research. Twenty-five percent of the balance remaining in the fund after the amount under subsection 1 is subtracted must be used by the University of Maine Cooperative Extension pest management unit for a pest research project to be determined every 3 years by a pest research committee designated by the University of Maine. The pest research committee under this subsection consists of 5 members, including:

A. Two members who are extension specialists with pest management expertise, appointed by the dean of the University of Maine Cooperative Extension; and

B. Three members who are faculty of the University of Maine, College of Natural Sciences, Forestry, and Agriculture with pest management expertise, appointed by the dean of the University of Maine, College of Natural Sciences, Forestry, and Agriculture, Maine Agricultural and Forest Experiment Station.

Members serve one-year terms and may be reappointed to one or more successive terms.

Sec. 2. 22 MRSA §1471-M, sub-§8 is enacted to read:

8. Pesticide use enforcement. The board shall investigate any complaint alleging a violation of a local, state or federal law or rule regarding pesticide use.

Sec. 3. 22 MRSA §1471-CC is enacted to read:

§1471-CC. Elimination of use of pesticide in political subdivision

A political subdivision of the State that wants to eliminate use in the political subdivision of a pesticide registered by the United States Environmental Protection Agency shall submit a request to eliminate use of the pesticide to the board. The board shall determine whether the pesticide should be further regulated based upon the board's expertise in toxicology and available scientific information relating to the adverse environmental, health and other effects of the pesticide under Title 7, section 610, subsection 1. The board's review must include participation of the officers of the political subdivision and board staff and may include experts and other interested parties as the board determines appropriate.

Sec. 4. 36 MRSA c. 723 is enacted to read:

CHAPTER 723

PESTICIDE CONTAINER FEE

§4911. Fee imposed

1. Imposition. A fee is imposed on the retail sale in the State of containers of general use pesticides with a United States Environmental Protection Agency pesticide registration number or a closely related product as determined by the Board of Pesticides Control, established in Title 5, section 12004-D, subsection 3 and referred to in this chapter as "the board," in the amount of 20¢ per container. Three cents of the 20¢

container fee imposed under this subsection may be retained by the retailer to defray the costs associated with collecting the fee. For purposes of this section, "general use pesticide" has the same meaning as in Title 22, section 1471-C, subsection 11-B.

2. Exemptions. The following products are exempt from the fee under subsection 1:

A. A container of pesticides labeled "only for agricultural use," "only for industrial use" or "only for commercial use";

B. A container of restricted use pesticides as defined in Title 22, section 1471-C, subsection 23; or

C. A container of paint, stain, wood preservative or sealant bearing a United States Environmental Protection Agency product registration number.

3. Administration of fee. The fee imposed by this chapter is administered as provided in chapter 7 and Part 3, with the fee imposed pursuant to this chapter to be considered as imposed under Part 3. On a monthly basis, the Treasurer of State shall credit all revenue derived from the fee imposed by this chapter to the Tick Laboratory and Pest Management Fund established under Title 7, chapter 419.

4. Inspections. The State Tax Assessor or the assessor's duly authorized agents may inspect the books or records of a retailer, or the premises of a retailer where general use pesticides are stored, handled, transported or merchandised, for the purpose of determining what pesticide products are taxable under this chapter or for the purpose of determining the truth or falsity of any statement or return made by a retailer. The State Tax Assessor may delegate the assessor's authority under this subsection to the Commissioner of Agriculture, Conservation and Forestry or the commissioner's deputies, agents or employees. The board shall assist the State Tax Assessor, the assessor's duly authorized agents or the Commissioner of Agriculture, Conservation and Forestry in carrying out the provisions of this subsection.

5. Responsibilities of the board. By January 1, 2020 and on April 1st of every succeeding year, the board shall provide to a retail store required to collect the fee under this chapter the universal product code for every type of container of pesticide that may be sold by the retail store and is subject to the fee imposed under this chapter.

6. Rules. The board shall adopt rules to carry out the provisions of this chapter. Rules adopted under this subsection are routine technical rules as defined in Title 5, chapter 375, subchapter 2-A.

Sec. 5. University of Maine Cooperative Extension pest management unit to conduct study on browntail moths. Upon the effective date of this Act, the University of Maine Cooperative Extension pest management unit shall commence a study of browntail moths as the first research project to be conducted under the Maine Revised Statutes, Title 7, section 2472, subsection 4.

SUMMARY

This bill establishes the Tick Laboratory and Pest Management Fund administered by the University of Maine Cooperative Extension to fund the tick laboratory and other pest management research and projects and directs the extension's pest management unit to study browntail moths as the first of a series of pest research projects to be determined every 3 years by a committee designated by the University of Maine. The fund is funded by a pesticide container fee of 20¢ per container administered by the State Tax Assessor. This bill also creates a duty of the Board of Pesticides Control to investigate complaints of violations of local, state and federal pesticide laws and requires the Board of Pesticides Control to review any request by a political subdivision to eliminate the use of a certain pesticide within that political subdivision.