



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

October 8, 2021

9:00 AM Board Meeting

Video conference hosted in MS Teams, to join the meeting:

Join on your computer or mobile app

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Or call in (audio only)

+1 207-209-4724 United States, Portland

Phone Conference ID: 440 033 928#

AGENDA

1. Introductions of Board and Staff
2. Minutes of the August 27, 2021 Board Meeting
Presentation By: Megan Patterson, Director
Action Needed: Amend and/or approve
3. Introduction of Dr. Hillary Peterson, Integrated Pest Management Specialist with the Department of Agriculture, Conservation and Forestry

Following a competitive interview process, Dr. Hillary Peterson was hired in August of 2021. Dr. Peterson began serving as the Integrated Pest Management Specialist with the DACF on September 7th. This position was formerly held by Dr. Kathy Murray until April 30, 2021, when she retired after 22+ years of service.

MEGAN PATTERSON, DIRECTOR
90 BLOSSOM LANE, DEERING BUILDING



PHONE: (207) 287-2731
WWW.THINKFIRSTSPRAYLAST.ORG

Presentation By: Megan Patterson, Director

Action Needed: Information only

4. Staff Memo: Introduction of Laboratory Equipment for Pesticide Analyses

Periodically, EPA makes available funds for expansion of pesticide program laboratory capacity. In 2021, these funds were used to purchase equipment capable of conducting automated ELISA analysis. Staff will now introduce the equipment and its current and future capabilities.

Presentation By: Dr. Pam Bryer, Pesticides Toxicologist

Action Needed: Information only

5. Staff Memo: Feasible Definition of PFAS in Pesticide Products

LD 264 directs the Board to amend its rules governing registration of pesticides to require two affidavits pertaining to the product containment and product formulation. The first affidavit requires manufacturers and distributors to affirm that the pesticide product they are registering/reregistering has or has not been stored, distributed, or packaged in a fluorinated HDPE container. The second affidavit requires manufacturers to affirm that the pesticide they are registering/reregistering does or does not contain, as a part of its formulation, PFAS. For registrants to attest via these affidavits, the Board must define PFAS. Given the rapidly changing science related to PFAS, staff suggests adoption of a policy that may be referenced in rule.

Presentation By: Dr. Pam Bryer, Pesticides Toxicologist

Action Needed: Discuss and determine the next steps

6. Review of Potential Rulemaking Concepts Pertaining to LD 155 (neonicotinoids used in residential turf/landscape management) and LD 264 (registration affidavits related to PFAS and container fluorination)

On June 10, 2021 LD 155 and LD 264 were signed into Maine law. LD 155 is a resolve and directs that Board to prohibit the use of any product containing the active ingredients dinotefuran, clothianidin, imidacloprid or thiamethoxam used for application in outdoor

residential landscapes such as on lawn, turf, or ornamental vegetation. The resolve directs the Board to provide exemptions for certain applications related to wood preservation, structural pests, pets, and emerging invasive insects. LD 264 is a resolve and directs the Board to amend its rules governing pesticide product registration to require manufacturers and distributors to provide affidavits stating whether the registered pesticide has ever been stored, distributed, or packaged in a fluorinated high-density polyethylene container. It further directs the Board to require manufacturers to provide an affidavit stating whether a polyfluoroalkyl or polyfluoroalkyl substance is in the formulation of the registered pesticide. At its August 27, 2021 meeting, the Board held stakeholder information gathering sessions addressing these two bills. Following the August meeting, the Board directed staff to return with a review of rulemaking concepts.

Presentation By: Megan Patterson, Director

Action Needed: Refine the rulemaking concepts and schedule a hearing

7. 2021 Preliminary Water Quality Monitoring Related to Aerially Applied Herbicides in Forestry

Executive Order 41 FY 20/21 directed the Board to develop a surface water quality monitoring effort to focus on aerial application of herbicides in forestry to be conducted in 2022. In an effort to be responsive to this request and to accommodate what was a changing timeline for completion of the EO request, staff conducted a small preliminary surface water quality monitoring pilot in 2021. Sampling was limited and all samples were collected in advance of planned 2021 aerial applications of herbicides for site preparation and conifer release.

Presentation By: Mary Tomlinson, Pesticide Registrar and Water Quality Specialist

Action Needed: Discuss and provide feedback on results

8. Consideration of a Consent Agreement with Central Exterminating Services, Inc., Lincolnville, Maine

The Board's Enforcement Protocol authorizes staff to work with the Attorney General and negotiate consent agreements in advance on matters not involving substantial threats to the environment or public health. This procedure was designed for cases where there is no dispute of material facts or law, and the violator admits to the violation and acknowledges a willingness to pay a fine to resolve the matter. This case involves an unauthorized application.

Presentation By: Raymond Connors, Manager of Enforcement

Action Needed: Approve/disapprove the consent agreement negotiated by staff

9. Other Old and New Business

- a. Obsolete Pesticide Collection Press Release
- b. LD 1503—An Act to Stop Perfluoroalkyl and Polyfluoroalkyl Substances Pollution
- c. EPA’s Analytical Chemistry Branch Method for the Analysis of PFAS in an Oily Matrix
- d. Comments in Response to LD 155 and 524 Received After the August Board Meeting
- e. Massachusetts Spotted Lanternfly Pest Alert
- f. Medical Advisory Committee Update
- g. Other items?

10. Schedule of Future Meetings

The board asked staff to return to the October 8 meeting with a proposal of tentative Board meeting dates. To accommodate the rulemaking agenda, staff propose November 19 and December 17 meeting dates. The Board will decide whether to change and/or add dates.

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.



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JANET T. MILLS
GOVERNOR

AMANDA E. BEAL
COMMISSIONER

BOARD OF PESTICIDES CONTROL

August 27, 2021

9:00 AM Board Meeting
9:15-10:45 AM Stakeholder Information Gathering on LD 155, LD 264, and LD 524
10:45 AM Continue Board Meeting

MINUTES

Present: Adams, Bohlen, Flewelling, Granger, Jemison, Morrill, Waterman

1. Introductions of Board and Staff
2.
 - The Board, Staff, and Assistant Attorney General Mark Randlett introduced themselves.
 - Boyd, Brown, Bryer, Connors, Couture, Nelson, Patterson, Pietroski, Saucier, Tomlinson

2. Minutes of the July 16, 2021 Board Meeting

Presentation By: Megan Patterson, Director

Action Needed: Amend and/or approve

- **Jemison/Flewelling: Moved and seconded to approve minutes as amended**
- **In Favor: Unanimous**

3. Stakeholder Information Gathering Work Session on LD 155—Resolve, Directing the Board of Pesticides Control To Prohibit the Use of Certain Neonicotinoids for Outdoor Residential Use

On June 10, 2021 LD 155 was signed into Maine law. This resolve directs the Board to prohibit the use of any product containing the active ingredient dinotefuran, clothianidin, imidacloprid or thiamethoxam used for application in outdoor residential landscapes such as

on lawn, turf, or ornamental vegetation. The resolve directs the Board to provide exemptions for certain applications related to wood preservation, structural pests, pets, and emerging invasive insects. The Board is now soliciting informal stakeholder input on its rulemaking concepts prior to formally initiating rulemaking. Written comments may be sent to the Board's main office at Maine Board of Pesticides Control, 28 State House Station, Augusta, ME 04333-0028, or e-mailed to megan.l.patterson@maine.gov.

Presentation By: Megan Patterson, Director

Action Needed: Determine what rule changes the Board wishes to pursue and how to implement those changes

- Patterson stated that this law directs the Board to prohibit the use of certain neonicotinoids in residential landscapes for lawn, turf, and ornamental use, but applications for wood preservation, pets, and applications around structures are exempted. It also does not prohibit licensed pesticide applicators to use the listed active ingredients to treat emerging invasive pests.
- Mary Ann Nahf told the Board that she was pleased to see the bill had passed and also addressed exemptions for certain applications. She would like preference given to applications of products that have a shorter half-life to slow down bio accumulation in soil.
- Karen Reardon, from Responsible Industry for a Sound Environment (RISE) told the Board that they were seeking a two-year discontinuance process to have time to remove all products from the channels of trade. They would like the Board to provide additional clarification about tree applications other than ornamental tree care.
- Andy Hackman, from Trugreen Lawn Care stated that he was involved in testimony around LD 155 and he was looking for much greater clarity. He added he would like to make it consistent with other states to make the products restricted use pesticides, and to see January 1, 2024 as a phase out date.
- Bohlen stated he would like clarification around the meaning of structures.
- Hackman asked if it would be square footage or linear feet and how far out from a building could products be applied.
- Flewelling asked what other states had made neonicotinoids restricted use.
- Hackman added that this would be the most restrictive law on neonicotinoids in the country and that both Connecticut and Maryland have designated these products as restricted use pesticides.
- Spalding thanked the Board for convening this stakeholder information gathering meeting. She stated that threats to pollinators regarding neonicotinoids have been discussed for many years and the swift phaseout of these products on shelves is really important. Spalding stated that she worried that allowing two years posed unnecessary harm and wanted the Board to work as aggressively as possible to phase them out. She

added that the sponsor of the bill did an incredible job reaching out to all stakeholders and everyone should be happy that this is the strongest rule in the country.

- Flewelling asked Spaulding what her expectation of a timeline was.
- Spalding replied that she would like to see no more sales beginning in the coming year and wanted the same as the legislation laid out in the chlorpyrifos bill.
- Fish stated the importance of creating a good definition of what emerging invasive pest means as well as what ornamental means. He added if the rule is really restrictive it could hamper keeping invasive species out of the state.
- Morrill stated that the Board also did not know what emerging invasive pests meant and asked Fish what he would consider as a definition.
- Fish replied that he did not like the word emerging and added that the examples given in the law are already here and already established. He added that he did not know what the legislative intent was when using the term “emerging”.
- Morrill asked Fish for the definition of an invasive insect.
- Fish replied that he would not want to limit the definition of invasive to insects specifically and that the term invasive pest would be more appropriate. He added that he would look for some definitions and send them to Patterson. Fish stated that the other term ornamental could have many definitions as well and asked if this law would prevent the treatment of forest trees.
- Granger agreed that sometimes the same species were both forest trees and ornamental. It was going to be very hard to define how the same species can be both.
- Fish stated that one example is emerald ash borer, EAB, and ash seed trees. New Hampshire uses clothianidin to treat for EAB and these trees are important to Wabanaki people who will be wanting to prevent death of seed trees for collection of seeds and the continuation of the species.
- Jemison asked what percentage of ornamental use of neonicotinoids goes beyond lawn care and grubs, which are both pretty clearly ornamentally oriented, and that use can be a real damaging use to bees foraging on dandelions.
- Patterson stated she could look at a number of products labeled for such uses.
- Fish stated that in the nursery industry some pests were difficult to manage without clothianidin, but he did not have numbers.
- Adams asked if LD 155 went beyond restriction of use on residential and outdoor landscapes and if it would apply to nursery and forestry as well. He said to focus on lawncare and turf and going to restricted use brings the Board to 50% of the resolve.
- Jemison asked if staff would know how much product is available to consumers.
- Tomlinson stated that there was a total of 164 products registered including for lawn and ornamental treatment.
- Bohlen asked if the term ‘ornamental’ was used in a consistent way on labels when thinking of a definition and if that was something the Board could lean on.

- Patterson stated that there was a definition of “ornamental plant” in Chapter 10 of rule which the Board could use or modify if they would like.
- The Board decided this was the definition they would use.
- Bohlen commented that the Board may want to think about how staff could respond if there was an emerging pest we needed to respond to quickly. He asked if there was a procedure the Board could put in rule stating that they had authority to make applications if the state horticulturalist agreed there was an immediate need to control an emerging pest.
- Morrill asked what the next step would be.
- Randlett stated the next step was to get through the stakeholder information gathering meeting today and then direct staff to come back to the next meeting with a draft concept of rule that best represented the Board’s desires.

4. Stakeholder Information Gathering Work Session on LD 264—Resolve, Directing the Board of Pesticides Control To Gather Information Relating to Perfluoroalkyl and Polyfluoroalkyl Substances in the State

On June 10, 2021 LD 264 was signed into Maine law. This resolve directs the Board to amend its rules governing pesticide product registration to require manufacturers and distributors to provide affidavits stating whether the registered pesticide has ever been stored, distributed, or packaged in a fluorinated high-density polyethylene container. It further directs the Board to require manufacturers to provide an affidavit stating whether a polyfluoroalkyl or polyfluoroalkyl substance is in the formulation of the registered pesticide. This resolve also directs the board to conduct a study and report back on the distribution and use of fluorinated adjuvants in Maine, how to regulate adjuvants, and how to prohibit distribution and use pesticides and adjuvants containing perfluoroalkyl or polyfluoroalkyl substances in Maine. The Board is now soliciting informal stakeholder input on its rulemaking concepts prior to formally initiating rulemaking. Written comments may be sent to the Board’s main office at Maine Board of Pesticides Control, 28 State House Station, Augusta, ME 04333-0028, or e-mailed to megan.l.patterson@maine.gov.

Presentation By: Megan Patterson, Director

Action Needed: Determine what rule changes the Board wishes to pursue and how to implement those changes

- Karen Reardon provided comments in letter and wanted to provide options for registrant compliance with this resolve, and that it is an emerging and evolving situation. She proposed that the confidential statement of formula that is submitted to EPA should suffice for the affidavit. Reardon would like sufficient time provided to all registrants selling products into Maine since this would be a new obligation for them. She said that there was not a clear definition of what PFAS was yet and there are not intentionally added PFAS in these products.

- Bohlen stated that the issue of data confidentiality may be very hard to protect since there was an intent to provide a report. He had thoughts about how this report could be provided without releasing information that may be of concern.
- Reardon stated it would be very complicated because as of right now those substances are not part of pesticide formulations.
- Flewelling asked about what other products may be contaminated with PFAS.
- Reardon responded that fluorinated packaging was ubiquitous in our environment, including food packaging and surfaces, tubing and medical equipment, semi-conductors, and many kinds of plastic material around us.
- Spalding stated that almost all legislative committees this past session had a PFAS bill. She stated that when Representative Pluecker first brought this bill forward it was thought that PFAS were intentionally being added to pesticides. Spaulding stated that aggressive and swift action needed to be taken to eliminate use of PFAS in all consumer products.
- Morrill asked what Patterson needed from the Board.
- Patterson asked if the Board wanted to collect data on manufactures or submitters to provide affidavits about whether the product has been in HDPE container. She said that the Board had authority to collect a confidential statement of formula but would need to make it part of rule that it is required for all products registered in Maine, as well as create a definition for PFAS.
- Bohlen noted that Bryer's memo was fabulous and it was very helpful.
- Patterson stated staff had received quotes on what costs would be associated with collecting affidavits and the confidential statement of formula in the registration flow. She said that PFAS science is evolving and creates issues with compliance/enforcement sampling with consistent results. There is also currently no way to test for all of these substances in the case of an enforcement process—there are no verified methods and this would be cost prohibitive.
- Bohlen stated that the ultimate goal should be some sort of risk assessment because he felt those definitions were evolving.
- Patterson asked if the Board wanted to go with an affidavit and/or confidential statement of formula.
- Morrill replied that he would lean on staff to implement whatever was easier.

5. Stakeholder Information Gathering Work Session on LD 524—Resolve, Directing the Board of Pesticides Control To Research Workable Methods To Collect Pesticide Sales and Use Records for the Purpose of Providing Information to the Public

On June 14, 2021 LD 524 was signed into law. The resolve directs the Board to research workable methods to collect pesticide sales and use records for the purpose of providing information to the public. The resolve also directs the Board to research the best methods for

collecting information from schools, private applicators, and commercial applicators. The Board is further directed to research the best methods for collecting information on pesticide sales in the State. The Board is now soliciting informal stakeholder input on its rulemaking concepts prior to formally initiating rulemaking. Written comments may be sent to the Board's main office at Maine Board of Pesticides Control, 28 State House Station, Augusta, ME 04333-0028, or e-mailed to megan.l.patterson@maine.gov.

Presentation By: Megan Patterson, Director

Action Needed: Determine what rule changes the Board wishes to pursue and how to implement those changes

- Patterson explained what the resolve requests were and that they included collecting use info from both commercial and private applicators, from schools, and all sales of pesticides. She told the Board that annual summary reports from commercial applicators were currently required, but annual reports are not required from private and agricultural basic applicators.
- Spalding stated that this had been a topic of discussion for many years and was very important to MOFGA. She said it was very easy for people to provide online reporting of records with current technology. She further indicated that this data with better understanding the quantity of pesticides annually. Spalding said she thought the fiscal note assigned to LD 1599 was astounding to hire eight additional people and spend millions of dollars to track this information. She objected to the fiscal note.
- Patterson told the Board she was concerned about the ability for all applicators to have access to technology to be able to enter the information.
- Bohlen commented that this seemed to obscure what information people want--mashing all of this information together. He said the Board needed to think about what we were trying to learn and report on, what questions we are answering, and if there was clarity in the discussion.

6. Discussion of Powered Application of Disinfectants and Licensing Requirements

In 2020 and 2021 the Board discussed the use of powered equipment for the application of disinfectants. While the Board does not have the authority to allow unlicensed individuals to use powered equipment without a license, the Board did vote to support a Governor's Office executive order providing a license exemption for certain individuals conducting these types of applications in areas open to use by the public. That executive order, EO 7A FY20/21, has now expired and previously exempted individuals and others are inquiring about an extended or permanent licensing exemption. Staff have compiled relevant information for the Board's consideration.

Presentation By: Dr. Pam Bryer, Pesticides Toxicologist and
Megan Patterson, Director

Action Needed: Discussion

- Bryer gave an overview of the memo and how the public health relevance of surface disinfection has changed over the course of the pandemic, and that it was also salient to remember that some members of the public do not recognize the risk from use of disinfectants. She added that we now know surfaces are not how COVID-19 is spread. Bryer explained that electrostatic spraying had been around for a long time, but recent EPA research has demonstrated that when shifting formula, or even when water is used, efficacy can vary radically.
- Patterson stated that she had been fielding lots of inquiries from schools, EMS professionals, ambulance services, legislators, and a number of other entities that had previously been allowed to use this equipment under the now expired Executive Order 7-A 20/21. The Board does not have the authority to change it without submitting a bill because the Board may only change rules for powered application equipment in statute. Patterson explained what entities were allowed to use electrostatic sprayers without licensure, but now would be required to be licensed.
- Randlett stated that statute was very clear about the application of pesticides using powered application equipment and the executive order made it legal to use them but that was no longer in effect.
- Ron Souza with the University of New England asked if there was any consideration to provide relief by extending this exemption month by month or did it have to go through the legislature.
- Patterson replied that the exemption expired with the civil state of emergency and a bill would have to be submitted to the legislature.
- Souza asked if there would be consideration given to renewing or extending the executive order since COVID-19 cases have risen. Would someone be successful in extending the executive order if they approached the governor's office?
- Patterson stated that unlicensed applicators were allowed to use non-powered application for the application of disinfectants for routine cleaning and aerosol products for stinging insects. These are currently the only exemptions from commercial licensure in the Maine.

7. Review of Potential Rulemaking Concepts Pertaining to LD 316—An Act To Prohibit the Use of Chlorpyrifos

On June 8, 2021 LD 316 was signed into Maine law. This law prohibits, beginning January 1, 2022, the distribution of pesticides containing chlorpyrifos as an active ingredient. The law allows the Board to grant temporary permits from January 1, 2022 to December 31, 2022 authorizing licensed pesticide applicators to use pesticides containing chlorpyrifos, as long as the product was in the State and in the possession of the applicator before January 1, 2022. On July 16, 2021, the Board directed staff to return with a review of rulemaking concepts.

Presentation By: Megan Patterson, Director

Action Needed: Refine the rulemaking concepts and schedule a hearing

- Patterson stated that EPA recently announced they are cancelling all food tolerances for chlorpyrifos within six months of notice of publication in the Federal Register. Following the six-month phase-in there will be no lawful use on food crops, but federal law may still permit use on Christmas trees, golf courses, etc. Patterson said that this eliminated the Board's need to issue temporary permits for any food uses.
- There was discussion about what the process of issuing a permit for use of chlorpyrifos in Maine should look like. Staff were directed to bring this back to the Board for the next meeting.

8. Proposed Ad Hoc Member of the Medical Advisory Committee

At the July 16, 2021 meeting, the Board revised its Medical Advisory Committee (MAC) policy. While the Board has identified a qualified individual to serve in the standing role formerly reserved for the State Toxicologist, the Board has not reviewed and approved any ad hoc members. This MAC is charged with assessing the human health risk posed by the application of herbicides on school grounds. The Board will now consider the appointment of a proposed ad hoc member.

Presentation By: Megan Patterson, Director

Action Needed: Discussion and approve/disapprove ad hoc member proposal

- Waterman stated that Emily Poulin, member of the Board of School Nurses, will serve in a very important role since the focus of the legislative request is pesticide use on school grounds. He added that she is ready and willing to serve on the MAC to look at the pros and cons regarding the use of herbicides on school grounds.
 - **Morrill/Adams: Moved and seconded to approve ad hoc member for the Medical Advisory Committee**
 - **In Favor: Unanimous**

9. Consideration of Enforcement Action with Mosquito Squad of Southern Maine,

The Board has previously indicated an interest in determining the appropriate enforcement response in cases involving significant violations of pesticide laws and regulations. Typically, staff follows the Board's Enforcement Protocol which authorizes staff to work

with the Attorney General to negotiate consent agreements in advance on matters not involving substantial threats to the environment or public health. Staff have identified this as a case involving significant violations of pesticides laws and regulations and will now present the case for Board deliberation and discussion of next steps.

Presentation By: Raymond Connors, Manager of Enforcement

Action Needed: Discussion and approve/disapprove next steps

- **Morrill/Bohlen: Moved and seconded to approve to enter executive session under statute 405(6e) to discuss with legal counsel regarding the Board's legal rights, duties, and enforcement actions regarding the consent agreement with Mosquito Squad of Southern Maine.**
- **In Favor: Unanimous**
- The Board exited executive session.
- Erik Hanson from Mosquito Squad of Southern Maine said they employ twenty people, and want to comply and practice IPM. Mosquito Squad provided a detailed written statement, and this was provided with the documentary materials for the meeting. He added that the company hired a former inspector who spent a day training employees on compliance. The company has since hired an outside contractor who specializes in state law to ensure future compliance.

10. Other Old and New Business

a. State Plan Update (Pietroski)

- Patterson stated that staff had received responses back from EPA and were working to incorporate them.

b. Online Exams Update (Pietroski)

- Patterson told the Board that the request for proposals process had been finalized and the selected company would be offering on-site exams more frequently and throughout the state.

c. Governor's Office Executive Order 41 FY 20/21 Update (Patterson)

- Patterson stated that staff were collaborating with Inland Fisheries and Wildlife, the Maine Forest Service, and have hired a contractor. She added that the Board had been asked to review the best management practices and discuss how they could be revised.

d. LD 808—An Act to Repeal the Pesticide Container Fee and Tick Laboratory and Pest Management Fund

- Patterson said this act died on the appropriations table, so the tax still stands, and staff are working to assist retailers in complying with this law.

e. Final Remote Meeting Policy

f. Revised Medical Advisory Committee Policy

11. Schedule of Future Meetings

October 8, 2021 is next tentative Board meeting date. The Board will decide whether to change and/or add dates.

- There was general discussion about future meeting dates and the need to complete rulemaking.
- Possible meeting dates of November 19 and December 17 were discussed.
- Morrill asked Patterson to return to the next meeting with proposed meeting dates for November and December.

12. Adjourn

- **Granger/Bohlen: Moved and seconded to adjourn 12:15 PM**
- **In Favor: Unanimous**



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4

JANET T. MILLS
GOVERNOR

AMANDA E. BEAL
COMMISSIONER

Memorandum

To: Board of Pesticides Control
From: Pamela J Bryer, Ph.D. | Pesticides Toxicologist
Subject: Introduction of laboratory equipment for pesticide analyses
Date: October 8, 2021

As part of the funding associated with the state's cooperative agreement with EPA, the BPC has purchased a piece of analytical equipment. EPA periodically makes available funds for equipment purchase to the BPC. Previously, these monies have been used to purchase disposable sampling equipment or passed through to other agencies due to a lack of a state laboratory able to conduct pesticide analyses. Prior to 2012, funds were dispersed to the University of Maine, Department of Food Science Food and Chemical Safety Laboratory and to the Health and Environmental Testing Laboratory. EPA stipulates that the money is not to be used for pesticide analyses but as capacity building for pesticide analytical testing. As such, staff identified a piece of equipment that expands the ability to test surface water samples but does not require highly technical personnel for its use.

System specifics

The Caas Cube is manufactured by Eurofins Abraxis. It is a fully contained system that automates the ELISA analysis. All of the pipetting, reagent addition, timing, rinsing, calibration, and absorption reading is done without aid after the samples have been added. The unit is approximately two by two feet, does not require plumbed drainage or compressed gasses, and plugs into standard electrical outlets.

The Caas Cube is an automated ELISA system that has the potential to analyze various chemicals and it currently includes kits that have been optimized for glyphosate. Going forward with this equipment the BPC will have capacity to increase

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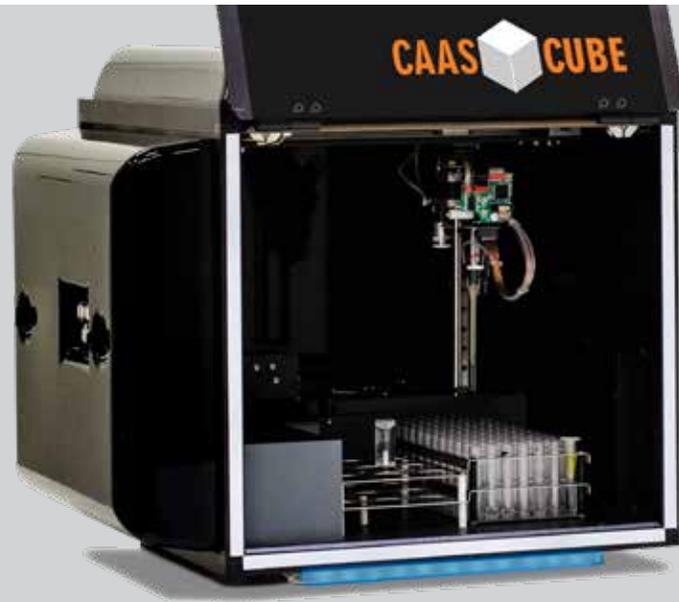
the number of water samples tested for glyphosate due to the much lower per-sample cost the Caas Cube allows. Methods have been worked out for glyphosate in various matrices, like oats, urine, soil, and the system has been used by producers to test commodities to ensure tolerance violations do not occur. Atrazine is another currently available pesticide for use in this system. Additional pesticides will be available with time as the Eurofins technical staff are able to validate the methods. The Eurofins website lists several pesticides that are likely to be available for the Caas Cube shortly, including: 2,4-D, alachlor, azoxystrobin, DDT/DDE, diuron, neonicotinoids (as a group), metolachlor, OPs and carbamates (as a group), pyrethroids (as a group), and trifluralin.

Quality assurance

The BPC is held to rigorous standards for analytical work by EPA. Staff are currently working on the standard operating procedures (SOP) and a quality assurance project plan (QAPP) for submission to EPA Region 1 for review. It is important to note that it would be inappropriate to take enforcement actions based on analyses performed by this system. Enforcement sampling requires a different degree of accuracy and precision than is available from the test method utilized by this system. However, the detection limit for glyphosate in drinking water using this system is still comparable to the laboratory we currently send our samples to. The combination of lower price per sample with detection limits equivalent to the currently contracted analytical laboratory makes this system ideal for wide area screening projects whose goals are related to environmental surveillance.

Current and future activities

In September, as part of the purchase agreement, Eurofins Abraxis came to Augusta to set up the instrument and three BPC staff had the opportunity for a day long hands-on training event. Following acceptance of the QAPP by EPA Region 1, staff will be able to implement water quality studies focusing on glyphosate. As testing kits become available, additional analytes may be utilized.



“CAAS Cube” Modular, Fully-Automated ELISA + CLIA Analysis System

CAAS Cube Single Plate Analyzer

CAAS Cube is a fully automated, single plate analysis system with spectrophotometric and fluorescent reading options. Its compact, modular design allows several units to be networked to a single computer for data analysis, conserving bench space and allowing the system to expand with lab testing requirements. CAAS Cube comes standard with a no-spill linear shaker for speeds up to 900 RPM as well as a forced convection incubator for even heating with no edge effect.

Applications

- Water quality analysis
- Waste water analysis
- Food & agriculture testing
- Veterinary analysis
- Environmental testing
- Life science research

CAAS Cube’s open, fully customizable software with multi-language support permits use of pre-programmed or custom assays.

The fully automated CAAS Cube analyzer helps labs of all sizes expand their sample testing capacities and add new analyses.

Key Features & Benefits

- Compact, modular design conserves bench space and allows the system to expand as your testing needs increase
- Allows up to 3 analytes to be scheduled and run during normal lab downtime
- Multiplex up to 3 analytes to save time
- Reduces operator associated testing and calculation errors
- Easy maintenance
- Large field-based support team
- Status light visible across room

“CAAS Cube” Modular, Fully-Automated ELISA + CLIA Analysis System



Ordering Information

CAAS Cube System Package includes:

- CAAS Cube analyzer
- Installation and on-site training (up to 3 operators)
- Training supplies
- 1 year CAAS Cube service contract
- Netbook with MS Windows to serve as user interface

Related Products & Services

- ELISA plate kits
- Standards and quality control materials
- Sample collection materials
- Sample preparation reagents and accessories
- Annual service contracts
- Refresher and new operator training

Available System Upgrades and Options

- Continuation of service contract after first year
- CLIA reader addition (ELISA only is standard configuration) - detection type: glow, spectral range 300-500 nm, dark count
- Glyphosate analysis package; includes equipment required for off-line, pre-analysis sample derivatization

Product Specifications

Dimensions (L x W x H)	48 cm x 53 cm x 56 cm (19 in x 21 in x 22 in)
Weight	27 kg (60 lb)
Dispensing volume range	1 µL to 300 µL
Maximum test positions	48*
Reagent positions	24 (bottle diameter 12-35 mm) + 3 external wash bottle positions
Calculation mode	Point to point, linear regression, cubic spline, 4PL, 5 PL, Lin-Lin, Lin-Log, Log-Log
Absorbance	405, 450, 490, 550 and 630 nm (custom wavelengths also available)
Number of wash heads/probes	1 probe, dual needle
Assay vessel compatibility	Standard 96 well assay plates and strips
Incubation temperature control	Ambient to 40 °C
Electrical specifications	100 – 265 VAC, 50/60 Hz; 120 WATT max power
Compliance	CE Mark
Networking and data output	Bi-directional, RS232, USB, TCP/IP, LIS/LIMS compatible
Linear shaker speed	Up to 900 RPM

*Rack accommodates 15 mm diameter standard & sample vials up to 93 mm tall

R09202019

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Abraxis



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

Memorandum

To: Board of Pesticides Control
 From: Pamela J Bryer, Ph.D. | Pesticides Toxicologist
 Subject: Feasible definition of PFAS in pesticide products
 Date: October 8, 2021

Background

LD 264 directs the Maine Board of Pesticides Control to implement affidavits as part of the pesticide product registration process. These affidavits are to affirm to the state that none of the pesticide products being registered contain per- and polyfluoroalkyl substances (PFAS). In order for registrants to attest via these affidavits the BPC must define PFAS.

The term PFAS has several different meanings based on both the chemical structural definition and how the jargon has been used. At its most restrictive PFAS indicates five chemicals that were commonly used for a variety of consumer goods whose health effects were the first to raise alarm about PFAS. In all early regulations on this class of chemicals, the term PFAS referred to those five chemicals. The reality, however, is that there are thousands of structures, more or less related to one another, that can be classified as PFAS. The unifying characteristic of PFAS chemicals is fluorine atoms bonded to carbon atoms, typically many fluorines to each carbon in long carbon chains. On EPA's CompTox Dashboard many PFAS lists can be found, the largest of these lists contains 9,252 different chemicals.

The goal of chemicals regulation is to protect human and environmental health. Typically, decisions on a chemical's use in the marketplace follows a risk assessment to estimate the potential of harm. The depth of risk assessment differs by how the chemical will be used. Medicine and pesticides, because of their close relationship to humans, are scrutinized to a much deeper degree than other industrial chemicals

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that may only be used in small quantities in manufacturing processes. The science is still developing on what should be considered a PFAS of concern. Approximately 20 pesticide active ingredients registered in Maine, turn up on the list of 9,252 chemicals and as such we do know those particular active ingredients have passed the risk assessment stage and are not likely to cause undue harm to humans or the environment. There is even one pesticide inert ingredient that qualifies for use in organic agriculture due to its historical use and lack of toxicity. Currently, on the EPA CompTox Dashboard there is a list of 75 compounds that have been flagged, by the National Toxicology Program, as candidates for expedited toxicological screening due to the potential for harm based on chemical structure. This list of 75 includes the five historically referenced PFAS.

The PFAS of concern share some structural commonalities, however, structural identification, and therefore structural definitions, are not the best indicators of risk. Each compound needs to be evaluated independently and assessed based on its unique properties. The PFAS that are most concerning five years from now will be different from the PFAS of concern twenty years from now. Our understanding of risk due to PFAS will be evolving over time. The list of PFAS used on the BPC affidavits should be revisited repeatedly over time to ensure the registration review process remains current with the best available science.

Proposed PFAS to be included on the registration affidavits

The BPC is reliant on other agencies at the state and federal level in determining the potential risk posed by PFAS chemicals. These largely industrial chemicals are outside of the purview and authority of the BPC. Attached to this memo are the 75 PFAS EPA has identified as potential candidates for expedited toxicological screening. Adopting these compounds for use on the required affidavits makes sense because the best available science currently points to these chemicals as having the greatest potential for risk. Ensuring that none of these 75 PFAS are present in pesticides and spray adjuvants is currently the closest BPC can be to estimating potential for harm in a sound and not arbitrarily capricious manner. It is expected that this list will change in the future and the BPC should be ready to be responsive to future work by partner agencies.

Referenced website:

https://comptox.epa.gov/dashboard/chemical_lists

EPA's Prioritized PFAS List

CAS Number	Chemical Name
1691-99-2	N-Ethyl-N-(2-hydroxyethyl) perfluorooctanesulfonamide
678-39-7	8:2 Fluorotelomer alcohol
375-73-5	Perfluorobutanesulfonic acid
307-24-4	Perfluorohexanoic acid
375-95-1	Perfluorononanoic acid
1763-23-1	Perfluorooctanesulfonic acid
335-67-1	Perfluorooctanoic acid
4151-50-2	N-Ethylperfluorooctanesulfonamide
2795-39-3	Potassium perfluorooctanesulfonate
29420-49-3	Potassium perfluorobutanesulfonate
3825-26-1	Ammonium perfluorooctanoate
3871-99-6	Potassium perfluorohexanesulfonate
754-91-6	Perfluorooctanesulfonamide
163702-08-7	Perfluoroisobutyl methyl ether
647-42-7	6:2 Fluorotelomer alcohol
333-36-8	Flurothyl
28523-86-6	Sevoflurane
2144-53-8	6:2 Fluorotelomer methacrylate
19430-93-4	3,3,4,4,5,5,6,6,6-Nonafluorohexene
1652-63-7	Perfluorooctanesulfonamido ammonium iodide
335-99-9	1H,1H,7H-Dodecafluoro-1-heptanol
355-80-6	1H,1H,5H-Perfluoropentanol
356-24-1	Heptafluorobutyryl methyl ester
375-01-9	1H,1H-Heptafluorobutanol
375-22-4	Perfluorobutanoic acid
376-90-9	Hexafluoroamylene glycol
662-50-0	Heptafluorobutyramide
1623-05-8	Perfluoro(propyl vinyl ether)
2043-47-2	4:2 Fluorotelomer alcohol
31506-32-8	N-Methylperfluorooctanesulfonamide
163702-05-4	Ethyl perfluorobutyl ether
406-58-6	1,1,1,3,3-Pentafluorobutane
56860-81-2	Difluoromethyl 1H,1H-perfluoropropyl ether
1763-28-6	3,3-Bis(trifluoromethyl)-2-propenoic acid
375-02-0	Perfluorobutyraldehyde
678-78-4	Perfluoroglutaryl difluoride
1694-30-0	3H-Perfluoro-4-hydroxy-3-penten-2-one

CAS Number	Chemical Name
374-41-4	Methyl perfluoroethyl ketone
355-66-8	Octafluoroadipamide
424-18-0	Methyl perfluorohexanoate
2648-47-7	5H-Perfluoropentanal
355-81-7	Perfluoropentanamide
15242-17-8	Allyl perfluoroisopropyl ether
55621-21-1	Perfluoro-3,6-dioxaoctane-1,8-dioic acid
423-65-4	11:1 Fluorotelomer alcohol
330562-41-9	Perfluoro-3,6,9-trioxatridecanoic acid
3792-02-7	4:4 Fluorotelomer alcohol
355-27-1	1H,1H-Perfluoropentylamine
74427-22-8	2,2-Difluoroethyl triflate
679-02-7	3-(Perfluoropropyl)propanol
355-95-3	1-Propenylperfluoropropane
77953-71-0	3H-Perfluoro-2,2,4,4-tetrahydroxypentane
239795-57-4	2-Vinylperfluorobutane
813-03-6	5H-Octafluoropentanoyl fluoride
1767-94-8	6H-Perfluorohex-1-ene
243139-64-2	3-(Perfluoroisopropyl)-2-propenoic acid
129301-42-4	1H,1H,8H,8H-Perfluoro-3,6-dioxaoctane-1,8-diol
883498-76-8	Bis(1H,1H-perfluoropropyl)amine
151772-58-6	Perfluoro-3,6-dioxaheptanoic acid
31253-34-6	2-Aminohexafluoropropan-2-ol
125070-38-4	3-(Perfluoro-2-butyl)propane-1,2-diol
58244-27-2	tris(Trifluoroethoxy)methane
13485-61-5	Nonafluoropentanamide
132424-36-3	Methyl 2H,2H,3H,3H-perfluoroheptanoate
329710-76-1	2-(Trifluoromethoxy)ethyl trifluoromethanesulfonate
1619-92-7	2-Amino-2H-perfluoropropane
863090-89-5	Perfluoro(4-methoxybutanoic) acid
375-72-4	Perfluorobutanesulfonyl fluoride
356-42-3	Pentafluoropropanoic anhydride
914637-49-3	2H,2H,3H,3H-Perfluorooctanoic acid
374-40-3	1-Pentafluoroethylethanol
13252-13-6	Perfluoro-2-methyl-3-oxahexanoic acid
757124-72-4	4:2 Fluorotelomer sulfonic acid
679-12-9	4H-Perfluorobutanoic acid

Reference:

Patlewicz, Grace, Ann M. Richard, Antony J. Williams, Christopher M. Grulke, Reeder Sams, Jason Lambert, Pamela D. Noyes, Michael J. DeVito, Ronald N. Hines, Mark Strynar, Annette Guiseppi-Elie, and Russell S. Thomas. 2019. A Chemical Category-Based Prioritization Approach for Selecting 75 Per- and Polyfluoroalkyl Substances (PFAS) for Tiered Toxicity and Toxicokinetic Testing. *Environmental Health Perspectives* Jan 2019. Vol. 127, No. 1
<https://doi.org/10.1289/EHP4555>

Below is the referenced paper's abstract reprinted:

Abstract

Summary: Per- and polyfluoroalkyl substances (PFASs) are a group of fluorinated substances of interest to researchers, regulators, and the public due to their widespread presence in the environment. A few PFASs have comparatively extensive amounts of human epidemiological, exposure, and experimental animal toxicity data (e.g., perfluorooctanoic acid), whereas little toxicity and exposure information exists for much of the broader set of PFASs. Given that traditional approaches to generate toxicity information are resource intensive, new approach methods, including *in vitro* high-throughput toxicity (HTT) testing, are being employed to inform PFAS hazard characterization and further (*in vivo*) testing. The U.S. Environmental Protection Agency (EPA) and the National Toxicology Program (NTP) are collaborating to develop a risk-based approach for conducting PFAS toxicity testing to facilitate PFAS human health assessments. This article describes the construction of a PFAS screening library and the process by which a targeted subset of 75 PFASs were selected. Multiple factors were considered, including interest to the U.S. EPA, compounds within targeted categories, structural diversity, exposure considerations, procurability and testability, and availability of existing toxicity data. Generating targeted HTT data for PFASs represents a new frontier for informing priority setting.

01 DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY**026 BOARD OF PESTICIDES CONTROL****Chapter 20: SPECIAL PROVISIONS**

SUMMARY: These provisions regulate the use, storage and disposal of pesticides with specific emphasis on registered pesticides, right of way and aquatic applications and employer/employee requirements.

Section 1. Registered Pesticides

- A. The use of any pesticide not registered by the Maine Board of Pesticides Control in accordance with Title 7 M.R.S.A. §601 is prohibited except as otherwise provided in this chapter or by FIFRA, Section 2(ee).
- B. The use of registered pesticides for other than registered uses, or at greater than registered dosages, or at more frequent than registered intervals is prohibited, provided that application or use of unregistered pesticides and unregistered applications or uses of registered pesticides may be made for experimental purposes if in accordance with requirements of the Maine Board of Pesticides Control, and the U.S. Environmental Protection Agency.
- C. Retailers and end users of pesticides no longer registered in Maine may continue to sell and use those items provided they were properly registered when obtained and such distribution and use is not prohibited by FIFRA or other Federal law.
- D. In conducting review of registration or re-registration pursuant to 7 M.R.S.A. §607-A, the Board may consider the potential for environmental damage by the pesticide through direct application on or off-target or by reason of drift. If the Board finds that the use of the pesticide is anticipated to result in significant adverse impacts on the environment, whether on or off-target, which cannot be avoided or adequately mitigated, registration or re-registration will not be granted unless the Board finds that anticipated benefits of registration clearly outweigh the risks. In any case where the Board may request data in connection with registration or re-registration of any pesticide, such data may include that concerning pesticide residues, propensity for drift and testing therefor. Such data, if requested, shall provide information regarding residues and residue effects on plant tissues, soil and water and other potential deposition sites, and shall take into consideration differences in plants, soils, climatic conditions at the time of application and application techniques.

Section 2. Right-of-Way

Deciduous growth over six feet in height and evergreen growth over three feet in height shall not be sprayed with a herbicide within the right-of-way of any public way except that deciduous growth which has been cut to the ground and which has grown more than six feet during the growing season following the cutting, may be sprayed that following season. In addition, chemical pruning of single limbs of trees over the prescribed heights may be performed.

Section 3. Pesticide Storage and Disposal

- A. Unused pesticides, whether in sealed or open containers, must be kept in a secure enclosure and otherwise maintained so as to prevent unauthorized use, mishandling or loss; and so as to prevent contamination of the environment and risk to public health.
- B. Obsolete, expired, illegal, physically or chemically altered or unusable pesticides, except household pesticide products, shall be either:
 - 1. stored in a secure, safe place under conditions that will prevent deterioration of containers or any contamination of the environment or risk to public health, or
 - 2. returned to the manufacturer or formulator for recycling, destruction, or disposal as appropriate, or
 - 3. disposed of in a licensed hazardous waste facility or other approved disposal site that meets or exceeds all current requirements of the Maine Department of Environmental Protection and the U.S. Environmental Protection Agency for facilities receiving such waste.

Section 4. Aquatic Applications

No person, firm, corporation or other legal entity shall, for the purpose of controlling aquatic pests, apply any pesticide to or in any waters of the state as defined in 38 M.R.S.A. §361-A(7) without approval of the Maine Department of Environmental Protection.

Section 5. Employer/Employee Requirements

- A. Any person applying pesticide shall instruct their employees and those working under their direction about the hazards involved in the handling of pesticides to be employed as set forth on the pesticide label and shall instruct such persons as to the proper steps to be taken to avoid such hazards.
- B. Any person applying pesticides shall provide and maintain, for the protection of their employees and persons working under their direction, the necessary safety equipment as set forth on the label of the pesticide to be used.

Section 6. Authorization for Pesticide Applications

- A. Authorization to apply pesticides to private property is not required when a pesticide application is made by or on behalf of the holder of an easement or right of way, for the purposes of establishing or maintaining such easement or right of way.
- B. When the Maine Center for Disease Control and Prevention (CDC) has identified that an organism is a vector of human disease and the vector and disease are present in an area, a government entity shall obtain authorization for ground-based applications by:
 - 1. Sending a written notice to the person(s) owning property or using residential rental, commercial or institutional buildings within the intended target site at least three days but not more than 60 days before the commencement of the intended spray applications. For absentee property owners who are difficult to locate, mailing of the notice to the address listed in the Town tax record shall be considered sufficient notice; and
 - 2. Implementing an “opt out” option whereby residents and property owners may request that their property be excluded from the application by submitting written notice to the government entity at least 24 hours before spraying is scheduled to commence. Authorization is considered given for any property for which written notice was submitted and no “opt out” request was received by the sponsoring government entity.
- C. When the Maine Center for Disease Control and Prevention (CDC) recommends control of disease vectors, government entities are not required to receive prior authorization to apply pesticides to private property, provided that the government entity sponsoring the vector control program:
 - 1. Provides advance notice to residents about vector control programs using multiple forms of publicity which may include, but is not limited to, signs, newspaper, television or radio notices, direct mailings, electronic communication or other effective methods; and
 - 2. Implements an “opt out” option whereby residents and property owners may request that their property be excluded from any ground based control program and the government entity makes a reasonable effort to honor such requests; and
 - 3. If aerial applications are made, takes affirmative steps, to the extent feasible, to avoid applications to exclusion areas as identified by Board policy.
- D. **General Provisions.** For any pesticide application not described in Chapter 20.6(A),(B) or (C), the following provision apply:
 - 1. No person may contract with, or otherwise engage, a pesticide applicator to make any pesticide application to property unless that person is the owner, manager, or legal occupant of the property to which the pesticide is to be applied, or that person has the authorization of the owner, manager or legal occupant to enter into an agreement for pesticide applications to be made to that property. The term “legal occupant” includes tenants of rented property.

2. No person may apply a pesticide to a property of another unless prior authorization for the pesticide application has been obtained from the owner, manager or legal occupant of that property. The term “legal occupant” includes tenants of rented property.
3. No commercial applicator may perform ongoing, periodic non-agricultural pesticide applications to a property unless:
 - i. there is a signed, written agreement with the property owner, manager or legal occupant that explicitly states that such pesticide applications shall continue until a termination date specified in the agreement, unless sooner terminated by the applicator or property owner, manager or legal occupant; or
 - ii. the commercial applicator utilizes another system of verifiable authorization approved by the Board that provides substantially equivalent assurance that the customer is aware of the services to be provided and the terms of the agreement.

Section 7. Positive Identification of Proper Treatment Site

- A. Commercial applicators making outdoor treatments to residential properties must implement a system, based on Board approved methods, to positively identify the property of their customers. The Board shall adopt a policy listing approved methods of positive identification of the proper treatment site.
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STATUTORY AUTHORITY: Title 22 M.R.S.A., Chapter 258-A

EFFECTIVE DATE:

July 6, 1979

AMENDMENT EFFECTIVE:

April 1, 1985

January 1, 1988

May 21, 1996

EFFECTIVE DATE (ELECTRONIC CONVERSION):

March 1, 1997

AMENDED:

May 7, 1997 - Section 5

CONVERTED TO MS WORD:

March 11, 2003

CORRECTED HEADER CHAPTER NUMBER:

January 10, 2005

AMENDED:

January 1, 2008 – new Sections 6 and 7, filing 2007-65
September 13, 2012 – Section 6(E) and references added, filing 2012-270 (Emergency – expires in 90 days unless proposed and adopted in the meantime as non-emergency)
December 12, 2012 – emergency filing expires, chapter reverts to January 1, 2008 version
September 13, 2012 – Section 6(E) and references added, filing 2012-270 (Emergency – expires in 90 days unless proposed and adopted in the meantime as non-emergency)
December 12, 2012 – emergency filing expires, chapter reverts to January 1, 2008 version
June 12, 2013 – Emergency major substantive filing 2013-134

CORRECTIONS:

February, 2014 – agency names, formatting

AMENDED:

September 11, 2014 – filing 2014-163 (Final adoption, major substantive)
December 9, 2014 – Section 7 added, filing 2014-279

01 DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY**026 BOARD OF PESTICIDES CONTROL****Chapter 41: SPECIAL RESTRICTIONS ON PESTICIDE USE**

SUMMARY: This chapter describes special limitations placed upon the use of (1) aldicarb (Temik 15G) in proximity to potable water bodies; (2) trichlorfon (Dylox, Proxol); (3) hexazinone (Velpar, Pronone), (4) aquatic herbicides in the State of Maine and (5) plant-incorporated protectants.

Section 1. ALDICARB (TEMIK®)

The registration of aldicarb (Temik 15G) is subject to the following buffer zone requirements:

- A. Aldicarb (Temik 15G) shall not be applied within 50 feet of any potable water source if that water source has been tested and found to have an aldicarb concentration in the range of one to ten parts per billion (ppb). The 50 foot buffer would be mandatory for one year with a required retesting of the water at the end of the period.
- B. Aldicarb (Temik 15G) shall not be applied within 100 feet of any potable water source if that water source has been tested and found to have an aldicarb concentration in excess of 10 ppb. The 100 foot buffer would be mandatory for one year with a required retesting of the water at the end of this period.

Section 2. TRICHLORFON (DYLOX, PROXOL)

The registration of trichlorfon (Dylox, Proxol) is subject to the following requirements:

- A. Trichlorfon shall only be used for control of subsurface insects on turf.
- B. Prior to application the target pest must be identified and the severity of the infestation must be determined, including the extent of the damage.
- C. Only infested areas shall be treated with trichlorfon. Broadcast treatments of the entire turf area are prohibited.
- D. Following application, the trichlorfon must be watered into the soil with at least ½ inch of water and according to the label directions. The applicator must assure that the appropriate watering will take place prior to re-entry by any unprotected person.

Section 3. HEXAZINONE (VELPAR, PRONONE)

The registration of hexazinone is subject to the following limitations and conditions.

A. Licenses Required

No person shall use or supervise the use of any pesticide containing the active ingredient hexazinone unless they have obtained an applicators license in accordance with 22 M.R.S. §1471-D.

Section 4. AQUATIC HERBICIDES

The registration of pesticides for which there is an aquatic herbicide use on the product label shall be subject to the following limitations and conditions.

A. Board Publication of List

The Board of Pesticides Control will publish by May 23, 2003 and by March 15th of each year thereafter a list of herbicide products registered in Maine for which the manufacturer has verified that there is an aquatic use on the pesticide label. Based on available information, the Board may exempt from this list pesticides that it determines are not for use in the control of aquatic vegetation. Pesticides labeled solely for use in aquariums and antifouling paints, are specifically exempt from this list.

B. Licenses Required

- I. Unless exempted under Chapter 41, Section 4 (B) (III), no person shall purchase, use or supervise the use of any aquatic herbicides identified on the Board's annual listing unless they have obtained a private or commercial pesticide applicator's license from the Board.
- II. No person shall:
 - a. Distribute any aquatic herbicides identified on the Board's annual listing without a restricted use pesticide dealer's license from the Board; or
 - b. Unless exempted under Chapter 41, Section 4 (B) (III), distribute any aquatic herbicides identified on the Board's annual listing to any person who is not licensed as a private or commercial applicator by the Board.
- III. Registered herbicides containing only the active ingredients erioglaucline (Acid Blue 9 or FD&C Number 1, CAS Registry No. 1934-21-0) and/or tartrazine (Acid Yellow 23 or FD&C Yellow Number 5, CAS Registry No. 2650-18-2 (trisodium salt) or 3844-45-9 (triammonium salt)) are exempt from the applicator licensing requirements described in Chapter 41, Section 4 (B) (I) and Chapter 41, Section 4 (B) (II) (b).

C. Disclosure

The Board will make a disclosure form available to dealers distributing any aquatic herbicides identified on the Board's annual listing. The Board requests that dealers present to customers the disclosure form that advises purchasers that, (1) an aquatic discharge license must be obtained from the Maine Department of Environmental Protection before any application may be made to any surface waters of the State as defined in 38 M.R.S.A. Section 361-A(7) including any private ponds that may flow into such a body of water at any time of year, (2) that Best Management Practices developed jointly by the Board and the Maine Department of Environmental Protection on the use of aquatic herbicides are available.

D. Records and Reporting

Dealers distributing any aquatic herbicides identified on the Board's annual listing shall keep records of such sales and provide reports to the Board as described for restricted use pesticides in Chapter 50, "Record Keeping and Reporting Requirements."

E. Use of Best Management Practices

Aquatic herbicides applied to private ponds and not subject to an aquatic discharge permit may only be applied consistent with Best Management Practices developed jointly by the Board and the Maine Department of Environmental Protection.

Section 5. PLANT-INCORPORATED PROTECTANTS

The registration, distribution and use of plant-incorporated protectants are subject to the following limitations and conditions:

A. Definitions

"Plant-incorporated protectant" means a pesticidal substance that is intended to be produced and used in a living plant, or in the produce thereof, and the genetic material necessary for the production of such a pesticidal substance.

B. License Required

No person shall distribute any plant-incorporated protectant without either a general use pesticide dealer license or a (restricted or limited use) pesticide dealer license from the Board.

C. Dealer Requirements

Dealers distributing plant-incorporated protectants are subject to the following requirements:

- I. General use and (restricted or limited use) pesticide dealers shall notify the Board of their intent to distribute plant-incorporated protectants on all initial license and license renewal application forms provided by the Board.
- II. General use and (restricted or limited use) pesticide dealers shall maintain sales records showing the list of the names and addresses of all purchasers of plants, plant parts or seeds containing plant-incorporated protectants. These records must be made available to representatives of the Board for inspection at reasonable times, upon request, and must be maintained for two calendar years from the date of sale.
- III. Any general use and (restricted or limited use) pesticide dealer who discontinues the sale of plant-incorporated protectants shall notify the Board in writing and shall provide the Board, upon request, with all records required by Section 5(C)II of this chapter.

D. Grower Requirements

- I. All users of plant-incorporated protectants shall maintain the records listed below for a period of two years from the date of planting. Such records shall be kept current by recording all the required information on the same day the crop is planted. These records shall be maintained at the primary place of business and shall be available for inspection by representatives of the Board at reasonable times, upon request.
 - a. Site and planting information, including town and field location, a map showing crop location and refuge configuration in relation to adjacent crops within 500 feet that may be susceptible to cross-pollination;
 - b. Total acres planted with the plant-incorporated protectant and seeding rate;
 - c. Total acres planted as refuge and seeding rate;
 - d. Detailed application information on any pesticide applied to the refuge as described in Section 1(A) of Chapter 50, "Record Keeping and Reporting Requirements"; and
 - e. Planting information for each distinct site including:
 - i. date and time of planting; and
 - ii. brand name of the plant-incorporated protectant used.
- II. There are no annual reporting requirements for growers.

E. Product-Specific Requirements

- I. Requirements for plant-incorporated protectant corn containing *Bacillus thuringiensis* (Bt) protein and the genetic material necessary for its production.
 - a. Prior to planting plant-incorporated protectant corn containing any *Bacillus thuringiensis* (Bt) protein and the genetic material necessary for

its production, the grower must have completed a Board-approved training course and possess a valid product-specific training certificate.

- b. Product-specific training certificates shall be issued following each Board-approved session. The certificates will remain valid until December 31 of the third year after issuance.
 - c. Non-Bt-corn growers whose crops are or will be located within 500 feet of a prospective Bt-corn planting site can request that the Bt-corn grower protect the non-Bt-corn crop from pollen drift.
 - i. the request must be made prior to planting of the Bt-corn crop;
 - ii. the request must identify the non-Bt-corn crop to be protected; and
 - iii. the growers may agree on any method for protection but, if an agreement cannot be reached,
 - 1. the Bt-corn grower must plant any refuge required by the Bt-corn grower agreement, grower guide or product label in a configuration that provides maximum protection from pollen drift onto the adjacent non-Bt-corn crop; or
 - 2. if no refuge is required, the Bt-corn grower shall maintain at least a 300-foot Bt-corn-free buffer to non-Bt-corn crops.
 - d. Bt-corn growers are encouraged to follow all best management practices developed by the Board or the Department of Agriculture, Conservation and Forestry.
- II. Dealers distributing Bt-sweet corn shall only sell the seed in quantities large enough to plant one acre or more.

F. **Confidentiality**

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Any person providing information to the Board in connection with the record-keeping and reporting requirements of Section 5 of this chapter may designate that information as confidential in accordance with 7 M.R.S.A. §20.

STATUTORY AUTHORITY: 5 M.R.S.A. §§ 8051 *et seq.*
7 M.R.S.A. §§ 601-610
22 M.R.S.A. §§ 1471-A, 1471-B, 1471-C, 1471-D, 1471-M

EFFECTIVE DATE:
March 8, 1981 (Captan)

AMENDED:
May 7, 1981 (Trichlorfon)
January 2, 1984 (Aldicarb)
May 8, 1988 (Trichlorfon)
August 5, 1990 (Captan)
August 17, 1996 (Hexazinone)
October 2, 1996

EFFECTIVE DATE (ELECTRONIC CONVERSION):
March 1, 1997

AMENDED:
May 7, 1997 - Section 3(B)(II)

CONVERTED TO MS WORD:
March 11, 2003

AMENDED:
May 12, 2003 - Section 4 added

NON-SUBSTANTIVE CORRECTIONS:
June 24, 2003 - summary only

AMENDED:
February 2, 2004 - Section 4, 1st paragraph and sub-section A, filing 2004-31
April 30, 2007 – filing 2007-154
February 3, 2008 – filing 2008-36
July 16, 2009 – filing 2009-253 (final adoption, major substantive)
May 3, 2012 – filing 2012-99 (final adoption, major substantive)

CORRECTIONS:
February, 2014 – agency names, formatting

AMENDED:
December 9, 2014 – Section 3, filing 2014-283



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

JANET T. MILLS
GOVERNOR

AMANDA E. BEAL
COMMISSIONER

To: Board Members
From: Staff
Re: Review of Potential Rulemaking in Response to LD 155 and LD 264
Date: October 8, 2021

On June 10, 2021 LD 155 and LD 264 were signed by the Governor. These resolves, in part, directed the Board to conduct rulemaking. Staff have proposed potential responses to these rulemaking directives. All items are organized by the resolve in which they are referenced and are otherwise organized as follows:

The provided rule chapters include numbers corresponding to those in column one. These are the proposed locations of the rulemaking concepts.

The second column details the actionable item.

The third column provides a detailed description of the potential rulemaking concept.

Complete list of possible rulemaking chapters: 20, 41

MEGAN PATTERNSON, DIRECTOR
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LD 264— Resolve, Directing the Board of Pesticides Control To Gather Information Relating to Perfluoroalkyl and Polyfluoroalkyl Substances in the State	
1 Chapter 20—new subsection—confidential statement of formula and affidavits	<p>For review of registration or reregistration, the Board shall require submission of the confidential statement of formula and the following affidavits:</p> <ul style="list-style-type: none"> • a completed and signed form provided by the Board at the time of application for product registration review or reregistration which attests that the pesticide has or has never been stored, distributed, or packaged in a fluorinated high-density polyethylene container; and • a completed and signed form provided by the Board at the time of application for product registration review or reregistration which attests that the pesticide formulation does or does not contain perfluoroalkyl or polyfluoroalkyl substances as defined by the Board for the purpose of this section. <p>Given the emerging nature of PFAS science, staff proposes creation of a policy to address the definition of PFAS as referenced in this subsection.</p>
LD 155— Resolve, Directing the Board of Pesticides Control To Prohibit the Use of Certain Neonicotinoids for Outdoor Residential Use	
2 Chapter 41—new section—definition	<p>“Invasive invertebrate pests” means any invertebrate species, including its eggs or other biological materials capable of propagating that species, that is not native to that ecosystem, whose introduction does or is likely to cause economic or environmental harm or harm to human health.</p> <p>Staff suggest incorporating either a definition OR the recommendation of expert provided lists noted in item 5.</p>
4 Chapter 41—new section—publication of a product list	<p>The Board of Pesticides Control will publish by X, 2022 and by March 15th of each year thereafter a list of insecticide products containing dinotefuran, clothianidin, imidacloprid or thiamethoxam registered in Maine for which the manufacturer has verified that there is an outdoor ornamental vegetation or turf use on the pesticide label. Based on available information, the Board may exempt from this list pesticides that it determines are not for use in the control of outdoor ornamental plant or turf. Pesticides labeled solely for use in preserving wood, managing indoor pests, managing structural pests within five (5) feet of a human dwelling, and treating pets are specifically exempt from this list.</p>

5	Chapter 41—new section—licensing requirements	<ul style="list-style-type: none"> • No person shall purchase, use, or supervise the use of any pesticides containing dinotefuran, clothianidin, imidacloprid or thiamethoxam identified on the Board's annual listing unless they have obtained a private or commercial pesticide applicator's license from the Board. • Unless exempted for the purposes of managing invasive pests of ornamental plants, no person shall purchase, use, or supervise the use of any pesticides containing dinotefuran, clothianidin, imidacloprid or thiamethoxam in outdoor residential landscapes to include ornamental plants and turf. • Distribute any pesticides containing dinotefuran, clothianidin, imidacloprid or thiamethoxam identified on the Board's annual listing without a restricted use pesticide dealer's license from the Board. • Registered pesticides containing dinotefuran, clothianidin, imidacloprid or thiamethoxam and identified on the Board's annual listing are exempt from the prohibition of use in outdoor residential landscapes to include ornamental plants and turf where these pesticides will be used for management of an invasive pest of ornamental plants as identified by the Maine State Horticulturalist and Maine State Entomologist.
6	Chapter 41—new section—records and reporting	Dealers distributing any pesticides containing dinotefuran, clothianidin, imidacloprid or thiamethoxam identified on the Board's annual listing shall keep records of such sales and provide reports to the Board as described for restricted use pesticides in Chapter 50, "Record Keeping and Reporting Requirements."
7	Chapter 41—new section—effective date	<p>LD 155 is silent on a suggested timeline for implementation. During the stakeholder information gathering meetings, members of the public suggested:</p> <ul style="list-style-type: none"> • implementation similar to the timeline outlined in LD 316 • a two-year discontinuance • a “phase out date” of January 1, 2024 <p>Another state implementing a similar restriction offered the following approach:</p> <ul style="list-style-type: none"> • notification for registrants of new state restricted status; • a letter to registrants offering one-time cancellation with a requirement to actively remove products from the channels of trade; and • the option of two-year discontinuance in the future.



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Status and Trends in State Invasive Species Policy: 2002-2009



May 2010

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Environmental Law Institute
May 2010



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Status and Trends in State Invasive Species Policy: 2002-2009

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Status and Trends in State Invasive Species Policy: 2002-2009

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Status and Trends in State Invasive Species Policy: 2002-2009

I. Executive Summary

Invasive species are non-native species that cause harm to the environment, economy, or public health.¹ These species occupy diverse habitats, ranging from coastlines to deserts, and they span the entire web of life on Earth, from viruses to plants and animals. Invasive species enter and move within the United States through a variety of pathways, including geographic routes and corridors, economic activities, and transportation vectors. For example, Burmese pythons were intentionally imported into the United States in the pet trade, while emerald ash borers arrived accidentally as hitchhikers in wooden packing materials and are expanding due to the transportation of firewood. The diverse biological and anthropogenic factors influencing invasion can at times make invasive species management seem intractable. However, global efforts to understand invasion biology and invasion pathways are beginning to enable development of effective, prospective invasive species solutions.

States bear primary responsibility for on-the-ground prevention, control, and management activities related to biological invasion. States often are first to detect and react to emerging threats and pathways. In most cases, they continue to manage responses to invasion even after a species is detected in multiple states. As a result, each state government has evolved a unique, complex web of authorities to enable it to address different

types of invasive species and different invasion pathways. The status of and trends in state invasive species policy thus provide important insights into the effectiveness of invasive species management currently and into potential future needs for developments in invasive species policy. However, it is important to recognize that few states address all pathways and, because invasive species reproduce, spread, and are often moved by people, each state is hindered or helped by the quality of neighboring states' laws. As a result, state and local efforts depend on effective interstate collaboration and on federal help

“While states are the primary locus of invasive species management, they cannot act alone. Federal action is needed to support and provide a foundation and mandate for state invasive species policy.”

In 2002, the Environmental Law Institute (ELI) published a seminal report on state invasive species policy. Entitled *Halting the Invasion: State Tools for Invasive Species Management*, the report was based on a 50-state survey of state invasive species laws and regulations that states use to regulate wildlife, aquatic species, plants, plant pests and diseases, and insects. This report builds on and updates the earlier report in order to: identify how state laws and policies have changed since 2002; determine whether there are any trends in state invasive species law development; and identify needs for future policy development that are shared across states. We have identified the following recent key developments in state invasive species policy:



- **Expanded use of invasive species councils and management plans:** Since 2002, many states have created interagency invasive species councils. These councils take several forms, including those focused on aquatic species and more general, comprehensive councils. The creation of these councils has been associated with increased interagency invasive species management planning.
- **Legal authorities develop primarily in response to crisis:** States have amended many laws and regulations in the past decade, but few paradigm-shifting amendments have occurred without crisis. Recent notable invasive species crises have included expansion of quagga mussel range into the West, expansion of chronic wasting disease and other animal diseases, detection and expansion of emerald ash borer and other forest and agriculture pests, detection of new shipborne species such as Chinese mitten crab, and proposals for planting known invasive species as biofuel crops. Absent such well-publicized, “charismatic” invasions, most legal and regulatory changes have been marginal and limited.
- **Fragmented state listing and regulation authority:** Despite amendments to state laws and regulations, states continue to apply different approaches to listing and use limitations for invasive species. Several states have created white lists for wildlife since 2002. However, the majority of study states continue to rely on blacklists to prohibit import, possession, sale, purchase, transport, release, or propagation of non-native species. These blacklists may be updated rarely and may not effectively restrict all uses of non-native species that pose a threat to the economy or the environment.
- **Regulation of invasion pathways:** One major change in the past decade has been an increasing focus on prevention by closing off invasion pathways. While many states have begun to shift their regulatory focus to a pathway-based



COGONGRASS (*IMPERATA CYLINDRICAL*) HAS SPREAD THROUGHOUT THE SOUTHEASTERN U.S. SINCE IT WAS INTRODUCED IN THE EARLY 1900S AND CONTINUES TO BE SOLD IN SOME NURSERIES.

approach, this process has been slow and will continue for many years.

Although significant changes have occurred in state invasive species policy in the past decade, further developments are necessary to avoid future harm. Continued development of effective and proactive invasive species laws and regulations requires the following:

- **Prospective legal development is needed to prevent invasions across all taxa and pathways:** The positive developments in state invasive species policy notwithstanding, further work is needed specifically to prevent future invasions. Prevention of invasion is the most effective and cost-efficient approach to



THE LIONFISH (*PTEROIS VOLITANS*) IS NATIVE TO TROPICAL WATERS IN THE PACIFIC BUT WAS INTRODUCED TO THE ATLANTIC IN 1992 VIA AQUARIUM RELEASES. A VORACIOUS PREDATOR, THE LIONFISH IS NOW ESTABLISHED FROM NORTH CAROLINA TO FLORIDA AND HAS BEEN SEEN AS FAR NORTH AS NEW YORK.

addressing invasive species, yet governments have not regulated some known pathways or addressed weaknesses such as incomplete listing authorities. Attention to long-neglected statutes and regulations is needed to effectively prevent future harm.

- **Federal action is needed to support states:** While states are the primary locus of invasive species management, they cannot act alone. Federal action is needed to support and provide a foundation and mandate for state invasive species policy. In particular, the federal government bears primary authority for governing importation and trade. In addition, federal environmental laws, including those for invasive species, play an important role in

ensuring that all states meet certain minimum standards. Strong federal authority is needed to support state policymakers in the invasive species context.

- **Increased funding is needed to assist state invasive species planning and implementation:** Funding and staffing limitations are a major cause of gaps in existing state laws, regulations, and programs. States would benefit from devoting additional targeted resources to agencies for preventing introduction of invasive species. Expansion of federal grant programs for invasive species management also would aid states in carrying out their interagency management efforts.



II. Developments in State Invasive Species Policy: 2002-2009

This study is based on secondary research and interviews with key personnel in eleven representative states. States chosen represent diverse geographical areas and their known invasive species threats differ in type and severity. The study states include California, Colorado, Florida, Louisiana, Maine, Maryland, New Jersey, New Mexico, Oregon, Rhode Island, and Tennessee. This study revealed four main themes in the development of state invasive species policies. These include: (a) an expansion in the number and sophistication of interagency invasive species councils and other interagency management planning initiatives at the state level; (b) passage of new legal authorities primarily in response to crisis rather than as a prospective matter; (c) continued dependence on incomplete lists as the primary regulatory tool to prevent invasive species introduction; and (d) a burgeoning shift towards pathway-based management to prevent introduction of new invasive species.

A. *Expanded Use of Invasive Species Councils and Management Plans*

Since 2002, interagency councils and management plans have become the norm, rather than the exception, in invasive species management. In 2002, 36 states had established some form of interagency coordinating body, and of these, only 12 had created “comprehensive” invasive species councils – i.e., those responsible for all invasive species taxa rather than solely aquatic species, plants, or other species or habitat groups. Among the study states, Florida, Maryland, Oregon, and Rhode Island had established a comprehensive

council by 2002. In the ensuing years, the number of comprehensive councils has expanded. California and New Jersey now have established comprehensive councils, and others have established comprehensive management plans (Table 1).

Moreover, without exception, every state in the study also has established one or more councils or interagency coordinating bodies to address specific issues or taxa. Examples include aquatic invasive species councils (e.g. New Mexico Aquatic Invasive Species Advisory Council), weeds councils (e.g. Colorado Noxious Weed Advisory Committee), and wildlife councils (e.g. Florida Invasive Animal Task Team²).

“According to both economic and environmental analysis, the best way to address harm from invasive species is to prevent their introduction. In turn, the most effective way to prevent introductions is to close of the pathways through which non-native species enter the U.S.”

The expansion of invasive species councils and plans inevitably will result in increased attention to and analysis of council effectiveness. As in 2002, the structure and function of state invasive species councils vary, and their effectiveness may be limited in some cases. Legal authorization, permanent staffing, and funding may be the primary factors affecting council effectiveness. Neither these nor other factors have been studied adequately to date.³ Nonetheless, it is reasonable to assume that legal authority will play an important role in council permanence and appropriations; that hiring permanent staff increases the likelihood that councils successfully achieve the goals for which they were created; and that stable and sufficient funding is needed to enable councils to operate successfully without decreasing the effectiveness of other departmental programs. As a result, the absence of legal authority and a concomitant lack of funding or staff may present a significant hurdle to council effectiveness.

Table 1. Status of state invasive species councils and plans, 2009

State	Management Plan? ¹	Council Type	Authorization?
California	Yes	Comprehensive	None
Colorado	In development	Weed / In Development	Legislative
Florida	Yes	Comprehensive/Animal	None
Louisiana	Yes	Aquatic	Legislation
Maine	Yes	Aquatic	Legislation
Maryland	No	Comprehensive	None
New Jersey	Yes	Comprehensive	Exec. Order
New Mexico	Yes	Aquatic/Weeds	Exec. Order/None
Oregon	Yes	Comprehensive	Legislation
Rhode Island	Yes	Comprehensive/Aquatic	None
Tennessee	Yes	Aquatic	None

¹ Includes aquatic invasive species plans and comprehensive plans

In practice, few councils are based on explicit legal authority, and few are permanently funded through direct appropriation (Table 1).⁴ In this study, one state – New Jersey – created an inter-agency council by executive order. Oregon alone authorized its comprehensive council by statute, although a number of states have authorized tax-specific councils through legislation.⁵ The remaining councils are ad hoc groups created by agencies (generally at the behest of the governor). Even ad hoc councils differ tremendously, however. For example, Maryland’s council is not authorized by statute or other legal authority, and it operates on a volunteer basis with no permanent staff or funding. On the other hand, California’s invasive species council was created by six agency secretaries with the governor’s assent and is supported by a stakeholder advisory committee.⁶ More study is needed to determine whether such differences result in different impacts on invasive species prevention, control, or management. In most states, the invasive species council’s initial responsibility is to create an invasive species management plan, either for all species or for the subset of species for which the council bears responsibility.⁷ That is, aquatic invasive

species councils create aquatic invasive species plans, while comprehensive councils create comprehensive plans. Predictably, the expansion in the number of councils has been accompanied by an increase in invasive species management planning initiatives. These management plans are likely to yield dividends in the future by, among other things, identifying key pathways, clarifying responsibilities among agencies, identifying and addressing gaps in existing state legal authorities, and enhancing interagency cooperation and collaboration. However, little study has occurred on the outcomes of management planning in the invasive species context, and their impact remains uncertain to date.

Federal policy has played a defining role in the creation of new councils and plans. Under the National Aquatic Nuisance Prevention and Control Act (NANPCA), federal funding is available to states to implement aquatic invasive species plans. A majority of states have created federally-approved plans to qualify for this funding, and many have gone beyond the aquatic species context to create plans that address terrestrial species as well.⁸ In this respect, federal legislation



has provided effective incentives for states to create and carry out new initiatives. Some states' councils may also have been created due to a lack of federal leadership in other areas, driving them to engage increasingly with similar bodies in neighboring states.⁹

Consideration of the effects of management planning on invasive species policy remains a fruitful topic of research, however, insofar as policy development has increasingly focused on prevention of invasive species introductions and on a pathway-based approach rather than one based on habitat or on individual species. As more and more states have qualified for federal funding under NANPCA, the amount of funding per state has decreased. In addition, most states have written plans, so the statute no longer provides incentives for them to continue policy development. Given the diminishing financial returns to states and diminishing incentives for extension of invasive species policy, the time is ripe for reconsideration of NANPCA's funding mechanism. At a minimum, additional funding is needed to provide meaningful support for plan implementation. However, more substantive amendment to NANPCA could provide second-generation, targeted incentives for states that meet specific performance goals or that participate in interstate management.



DREISSENIID MUSSELS, LIKE THE ZEBRA MUSSELS (*DREISSENA POLYMORPHA*), CAUSE MILLIONS OF DOLLARS OF DAMAGE EACH YEAR AND HAVE PROMPTED NEW STATE LAWS REQUIRING CLEANING OF RECREATIONAL VESSELS.

B. Legal Authorities Develop Primarily in Response to Crisis

In 1993, the Office of Technology Assessment (OTA) noted that invasive species issues “often receive governmental attention on a piecemeal basis after major infestations Attention wanes between harmful episodes.”¹⁰ This statement holds true for state invasive species laws in the 21st century. Of the many new invasive species laws and regulations that have been created since publication of *Halting the Invasion* in 2002, the vast majority of the significant amendments – particularly at the legislative level – were created in response to the discovery of a well-publicized, “charismatic” invader. As noted in the OTA report, crisis-provoked amendments generally come too late to prevent the foreseeable harm caused by the target species. As a result, the success of these amendments depends on their effectiveness at preventing or more effectively responding to future invasions.

By definition, species-specific laws and regulations created in response to crisis do not consider other species that pose a potential future harm, even those that are taxonomically similar or that share invasion pathways. While species-specific legal authorities are important, they can be characterized as a missed opportunity unless they are developed in tandem with legal authorities that offer more general, prospective regulatory tools to prevent future introductions. Despite the importance of general regulations, the vast majority of amendments are technical in nature and wholesale amendments of invasive species authorities are rare, even in response to crisis. Nonetheless, general regulations have occurred in some states and with respect to some categories of invasive species.

Changes to wildlife regulations have been sporadic and inconsistent on a state-to-state basis. Although a few states have amended their wildlife authorities substantially, most amendments related to wildlife have occurred on the margins, without altering the fundamental requirements for wildlife importation, possession, or use. New non-native wildlife regulations have been adopted in some states, however, including Maryland and Florida, where invasive wildlife have been problematic and charismatic (e.g. nutria, Burmese python). In addition, several states, including Tennessee, Rhode Island, Louisiana, and Florida, have significantly amended their animal disease provisions to address emerging threats such as chronic wasting disease.

Aquatic invasive species amendments have been substantial and have taken two forms. Several states have enacted new aquatic invasive species (AIS) laws in response to the detection of Dreissenid (quagga and zebra) mussels or Eurasian water-milfoil. These laws generally target recreational vessels by authorizing inspection and disinfection of those vessels and prohibiting launching of contaminated vessels. Second, California and Oregon (among the study states) have acted to prevent the introduction of invasive species from ships, whether via ballast water or hull fouling.¹¹ Recent developments suggest that Federal authorities have been monitoring these state amendments and likely will adopt many of their provisions in coming years.

In general, legal developments for plants have been limited to actions in response to specific threats, and noxious weed and noxious weed seed laws remain the primary mechanism for invasive plant prevention. Similarly, nursery authorities have been little-changed in recent years. However, there have been some incremental changes in important areas. Several states have updated and expanded their noxious weed lists, and several also have joined the Interstate Pest Control Compact. Five states, including Rhode Island, Louisiana, Maine, Maryland, and Florida,

have expanded their laws and regulations specifically to address aquatic plants. This development has been associated with increased attention to aquatic species in general.

One truly novel legal authority has occurred in the plant context; Florida has adopted a novel permit requirement for planting non-native crops for fuel production. As for the other examples cited here, this new law responded to a proposal to cultivate for fuel production giant reed (*Arundo donax*), a known invader and listed noxious weed in some states. To date, no other study state has adopted any legal authority governing the use of non-native species in biofuel production, although non-native species biofuel development projects have been proposed in at least one other study state. While the lack of attention to biofuel regulation may be troubling, it is important to recognize that some states may have determined that their general regulatory authority is sufficient to address biofuel production.

Finally, every state has altered its regulations governing plant pests and diseases, but these changes primarily have been targeted at specific issues rather than through alteration of general authorities such as import inspection or survey authority. As a result, states appear committed to continuing to take an approach based on rapid response followed by pest-specific regulations in cases where rapid response fails to successfully eradicate a pest.

In summary, several study states have altered substantially their provisions relating to invasive aquatic species, and some states have also amended their general provisions for wildlife, plants, and plant pests and diseases. Moreover, *all* states have amended their legal authorities to better address specific new and emerging species, including threats to public health or safety (e.g. mosquito-borne illness, venomous snakes), threats to agriculture or industry (e.g. Asian long-horned beetle) or threats to the environment (e.g. sudden oak death).¹² It is important to recognize





that, although species-specific legal development can be considered a missed opportunity to develop prospective general regulation, species-specific legal authority is vital to successful control and management of emerging threats. States should be commended for successfully developing and implementing timely authority to address these threats.

C. *Fragmented state listing and regulation authority for wildlife and plants*

For more than a century, legislators and agencies have used lists to separate species that are subject to regulation and those that can be possessed and used freely. Today, every state uses lists to restrict uses of particular species including, but not limited to, importation, possession, propagation, transportation, release, sale, and purchase.¹³ Thus, the content of a list in many cases is fundamental to the reach and effectiveness of a regulatory system.

States use two types of listing systems: black lists and white lists. Under a black list regulation, restrictions apply *only* to those species listed by the legislature or the agency. Conversely, restrictions apply to *all* non-native species except listed species when a white list is used. These listing paradigms can also be combined into a tiered system that include, for example, a default rule against possession except for “safe” listed species, but with enhanced penalties for certain listed high-risk species. Tiered systems thus allow states to tailor the restrictions on use of species to the risk they prevent.

While lists are key components in invasive species regulation, experience shows that they are not always effective at preventing harm from invasive species. Neither lists nor prohibitions are consistent from state to state: states have implemented different suites of restrictions, activities that are

prohibited or require a permit in one state may be unregulated elsewhere. In addition, the content of lists differs substantially from state to state, making cooperative enforcement and management difficult. Despite efforts to harmonize the treatment of certain taxa by groups like the National Plant Board, these differences tend to persist; agencies generally do not update lists regularly due to factors including, but not limited to, the costs of regulation, political pressure, and industry opposition. Lists may also be difficult to enforce effectively in practice, particularly as the internet-based trade in exotic species has developed. As a result, the efficacy of black listing as a regulatory tool is fragmented and incomplete, and its effectiveness is uncertain.

Ineffective listing regimes may be particularly problematic when they allow new invasive species introductions through intentional economic activity, such as via the pet, food, or nursery trades.



WHEN THEY ARE RELEASED FROM CAPTIVITY OR ESCAPE, SPECIES LIKE THIS AFRICAN ROCK PYTHON (*PYTHON SEBAE*) -- A RECENT DISCOVERY IN FLORIDA -- MAY BECOME ESTABLISHED IN THE WILD.

Restrictions on importation and sale may be particularly effective at reducing the risk of new species introduction through these pathways, but such restrictions apply to few species under existing listing regimes. Prospective risk screening of wildlife and plant species proposed for import is one potential solution,¹⁴ but neither any state nor

Table 2. Illustration of tiered wildlife restriction system (based on Florida I

Tier	Applies to:	Permit Needed for:
Exempt	Listed species	No permit needed
General	All unlisted species	Transport into state, introduction, possession if “reasonable expectation of liberation”
Conditional	Listed species	Possession
Prohibited	Listed species	Import, sale, possession, or transport

the federal government requires such screening at this time. However, an increasing number of states have strengthened their listing authorities tied to prohibitions on importation, sale, and other uses.

Some states studied for this report have moved towards proactive, tiered regulatory systems with respect to wildlife regulation, and to a lesser extent, plant importation. In surveying all 50 states, *Halting the Invasion* described no active tiered systems combining white and black listing paradigms. Today, Florida uses such a system (Table 2), and other states have extensively supplemented or altered their wildlife listing paradigms to tailor restrictions to the risks posed by particular users. For example, Colorado now prohibits any possession or other uses of listed aquatic wildlife species, and also prohibits releasing any live aquatic wildlife without a license for a particular purpose. Nonetheless, although restrictions on animals are generally stronger than for other taxa, they continue to differ from state to state (Table 3). In addition, agencies may struggle to implement and enforce even sophisticated systems.

Development of listing and pre-screening requirements for plants has not developed equally with wildlife listing systems in most states. Many states continue to lack noxious weed laws and/or list few species of noxious weeds or noxious weed seeds, and no state has established a comprehensive prohibition or white list for all plants (Table 4). However, several states now prohibit introduction of any or specific species of non-native aquatic

plants into state waters (Table 5). These laws were often introduced as an element of heightened efforts to prevent and manage aquatic invasive species generally. As a consequence, restrictions on aquatic plants are generally broader than those that apply to terrestrial plant species.

Among the study states, Florida has created legal language requiring its noxious weed listing program to use information from scientific experts to determine whether a plant will negatively impact native communities in the future.¹⁵ Revised listing and permitting provisions can be characterized as a first step toward a more thorough pre-screening paradigm for all taxa. However, the criteria for listing and permitting remain limited in most states, potentially undermining the effectiveness of novel listing regimes. Few states in the study use explicit standards or criteria based on science or on potential harm to the economy or environment to determine whether to list a species or to issue permits, in either the wildlife or plant contexts. Some states, however, do use such standards. For example, Maine law requires the Commissioner of the Department of Inland Fisheries and Wildlife, during wildlife permitting decisions, to consider the likelihood that an organism will survive if introduced into the wild, the organism’s history of causing adverse environmental impacts in other places, the possibility that it harbors harmful agents, the possibility that it will inflict serious bodily harm on humans, and the organism’s health status. Maine also has developed criteria to evaluate non-native terrestrial plant species for potential invasiveness. Similar requirements apply in California, Florida, and New



Mexico for certain taxa, but have not been developed in other study states.

In summary, since 2002, state actions generally have tended to strengthen the legal authorities available to agencies engaged in invasive species prevention, control, and management. The trends in state law are for increased use of white listing and tiered systems. Despite this trend, no states provide comprehensive white listing authority over all taxa; instead, they continue to rely on black lists for invasive species management for at least some taxa. In addition, reliance on scientific listing or permitting criteria remains the exception to the norm. As a result, state lists in general remain limited in scope and effectiveness.

D. Regulation of Invasion Pathways

According to both economic and environmental analysis, the best way to address harm from invasive species is to prevent their introduction. In turn, the most effective way to prevent introductions is to close off the pathways through which non-native species enter the U.S. Non-native species invade and spread through three types of pathways, including geographic routes and corridors, economic activities, and transportation vectors.¹⁶ Pathway analysis can identify the mechanisms through which species enter and disperse, enabling policymakers to address weaknesses through appropriate regulation. In practice, however, pathways can be difficult to identify and regulate, especially as they

often cross jurisdictional and political boundaries and, if not carefully considered, can run afoul of the Constitution's commerce clause. As a result, regulation of even well-recognized pathways often requires a complex legislative and regulatory response, as well as extensive and sophisticated public outreach efforts.

Pathway analysis requires a shift in long-standing agency responsibilities. Invasive species are regulated by a variety of state and federal agencies with different perspectives, responsibilities, and regulatory approaches, resulting in a patchwork legal system that contains significant gaps and overlaps.¹⁷ This system regulates invasive species from different taxa and ecosystems in substantially different ways – aquatic species, wildlife, plants, and plant pests are regulated through entirely separate mechanisms by agencies that place different priorities on and use different strategies to address invasive species.¹⁸ Despite the difficulty of the task, states are increasingly taking action to shift from regulation based on historical agency mandates to a system that regulates specific invasion pathways.



EMERALD ASH BORER (*AGRILUS PLANIPENNIS*) ARRIVED IN MICHIGAN IN 2002 AS STOWAWAYS IN UNTREATED WOOD PACKING MATERIAL. DESPITE QUARANTINES, THEY HAVE SPREAD RAPIDLY VIA USED FIREWOOD AND OTHER PATHWAYS.



U.S. CUSTOMS AND BORDER PROTECTION IMPORT INSPECTIONS ARE HINDERED BY LIMITED RESOURCES AND LAX LAWS. BECAUSE FEW STATES INSPECT SHIPMENTS THAT CROSS STATE LINES, SPECIES THAT ARE NOT DETECTED BY CUSTOMS MAY SPREAD RAPIDLY ONCE INTRODUCED.

States have begun to transition to laws and regulations based on invasion pathways in an attempt to address the most harmful sources of new invasions. To the extent that interagency cooperation is required to effectively regulate problematic pathways, however, states may struggle to craft and implement effective solutions. In part, these complications have driven the development of invasive species councils and management plans, as state agencies increasingly require a comprehensive understanding of invasive species issues to enable cooperative regulation. In general, states have implemented new taxa- and pathway-specific laws and regulations as demanded by specific threats and as recommended by these management plans and coordination bodies.

For example, California has begun a process of evaluating how its legal frameworks apply to known invasion pathways, with an eye toward comprehensively regulating problematic pathways to eliminate gaps. In practice, a number of new regulations take a pathway-based approach – including, but not limited to, Oregon’s ballast water management law, Florida’s biofuel production law, and Rhode Island’s cervid importation inspection regulations. It is likely that the shift to pathway-specific regulation will continue in the future as an outcome of management planning and increased interagency communication.



III. Needs for the Future: Meeting the Invasive Species Challenge

Trends in the development of state invasive species law and policy suggest that states are increasingly focused on interagency coordination and pathway regulation to prevent harm caused by invasive species. However, states also continue to struggle with implementation of some regulation, particularly with respect to listing. Continued attention to these problems is needed to prevent future invasions. This section of the report recommends actions that can fill gaps in invasive species policy to address these regulatory challenges.

E. Prospective legal development is needed to prevent invasions across all taxa and pathways

State invasive species laws and regulations have advanced significantly in many states since 2002, but further legal development is necessary to prevent future invasions. Most amendments to state laws and regulations have responded to crisis by creating species-specific provisions in existing regulatory frameworks rather than by creating new legal structures that may be needed to anticipate and prevent future harm. In particular, state laws remain highly dependent on agency listing to be effective, and restrictions on the use of non-native species remain irregular. The iterative, crisis-driven approaches to legal development may be politically expedient, but it is also resource-intensive and has resulted in laws that do not comprehensively address all invasion pathways and taxa (Table 3).

Enhanced legal authorities are needed to fill gaps and shortcomings in existing authorities and to alter the default rules governing species listing. No state is likely to re-imagine its biodiversity regulation framework in order to implement a new, comprehensive framework specifically for invasive species, but many states could profit from investments in understanding interactions

between and among their agencies responsible for different elements of invasive species regulation. Efforts to develop councils and plans are an effective start, as is California's pathway analysis. These are only first steps, however; binding legal authorities are needed to support invasive species management activity.

“Enhanced legal authorities are needed to fill gaps and shortcomings in existing authorities and to alter the default rules governing species listing.”

Examination of existing authorities is particularly important in light of new and emerging threats. To prevent harm, states must predict and respond to species that are foreseeable future invaders. Moreover, they must identify and predict new species and invasion pathways that are likely to emerge in the future due to climate change or other factors.¹⁹ Prediction of emerging threats is necessary to enable effective response before harm is unavoidable. However, until legal authorities mandate such prospective analysis, the default response will continue to echo the “too little, too late” story exemplified by the Dreissenid mussels in the West.

Box 1. Recent Key Federal Actions and Proposals on Invasive Species

Plant importation: The United States Department of Agriculture-Animal and Plant Health Inspection Service (USDA-APHIS) recognizes the need for enhanced authority with regard to the intentional importation of nursery stock (“quarantine 37”).²⁴ In 2004, the agency issued an advance notice of proposed rulemaking to evaluate the invasive potential of nursery stock, and it recently released a proposed rule, including a category called “Not Approved Pending Pest Risk Assessment” (NAPPRA) that would restrict the importation of certain species until a risk assessment has been performed.²⁵

Wildlife importation: In the last Congress, legislators introduced a draft bill, H.R. 669, which would amend the Lacey Act to require the Fish and Wildlife Service to screen imported animals for invasiveness before they can be imported. While H.R. 669 was not enacted, discussion of the issue continues. Until legislators reach a final disposition of animal screening issues, states may be unlikely to substantially alter their own importation requirements.

Ballast water: In 2008, EPA issued a vessel general permit for vessel discharges under the Clean Water Act in response to a judicial order. USCG followed in 2009 by issuing a proposed rule governing living organisms in ballast discharges based on its authority under the Nonindigenous Aquatic Nuisance Prevention and Control Act (NANPCA). These rules largely respond to ballast water management laws and regulations previously established by states that are significantly affected by vessel-borne invasions.

F. Federal action is needed to support states

This report focuses on state laws and regulations. However, effective invasive species prevention, control, and management require cooperation between and among states and the federal government. Federal regulation is important to states, framing their regulatory paradigms and enabling them to build from a uniform foundation, as well as providing financial and technical support to state agencies.²⁰ For example, state noxious weed laws elaborate on federal authority (particularly in the West), and state wildlife importation restrictions are generally similar to the federal Lacey Act model. Similarly, inconsistencies and weaknesses in state laws can be connected to similar flaws in federal authorities in many cases. Federal agencies also play an important direct role, in cooperation with states, in enforcing laws governing the trade in non-native species.

Although strong federal laws and regulations are essential to the overall success of invasive species policies, existing federal laws and regulations do not comprehensively address invasive species issues. This is particularly true with respect to prospective risk screening for intentional importation of animals and plants; neither the federal government nor any state in this study has established a comprehensive risk screening framework. Federal legislative action is needed in this and other urgent areas to provide a model for adequate state regulation and to provide a baseline for environmental protection across state lines.

In the last decade, much of the attention to invasive species at the federal level has focused on intentional trade in non-native species. The three most important developments in the past decade include proposed regulatory actions for plant importation, wildlife importation,²¹ and vessel discharge.²² (see box). The federal Lacey Act currently



prohibits importation of a few “injurious” species, but proposed legislative amendments would require risk screening of wildlife species prior to importation into the United States. Similarly, the Department of Agriculture (USDA) does not currently screen plants for invasiveness before they can be imported for sale or other use. USDA’s proposed “Quarantine 37” regulation would establish new standards for screening plants imported into the United States. In both cases, the proposed federal actions would be innovations that would support states in areas where they do not regulate currently – and, in fact, where they may face constitutional restrictions on regulation.

In contrast to the two examples previously discussed, vessel discharge regulations address unintentional introduction and have a complex interaction with state regulation. In the past decade, states have focused on regulation of particular pathways that pose particular threats within their borders – notably including ballast water discharge. In this area, states that have suffered particular adverse impacts from this pathway have driven regulatory innovation.²³ More recently, the Environmental Protection Agency (EPA) has finalized and the Coast Guard (USCG) has proposed regulations on ballast water discharge, which neither agency previously regulated despite long-standing statutory authority. A series of bills also has been introduced in Congress to specifically regulate this pathway. As written, the agency rules do not preempt the existing state programs, but rather provide a minimum standard with which regulated entities must comply in all states. However, some proposed bills have preempted such state actions, which could weaken standards in states that have been innovators on regulation of this pathway.

Insofar as the federal government intends to support state management and to fill gaps in state authority, its appropriate response should vary depending on the status of state legal regimes. Where states are regulatory innovators, the federal government should avoid providing disincentives for or preemption of this innovation.



PURPLE LOOSESTRIFE (*LYTHRUM SALICARIA*) HAS WELL-DOCUMENTED IMPACTS ON WETLANDS BUT IS NOT A FEDERAL NOXIOUS WEED AND MAY BE SOLD FOR USE IN LANDSCAPING IN SOME STATES.



KUDZU (*PUERARIA LOBATA*), A NOTORIOUSLY FAST-GROWING VINE BLANKETING LARGE SWATHES OF THE SOUTH, IS POISED TO EXPAND NORTHWARD AS CLIMATE CHANGES.

Noxious and Exotic Weeds (FICMNEW).²⁶ These efforts attempt to coordinate the diverse initiatives, programs, and divisions within the at least 21 federal agencies with responsibility for some element of the invasive and non-native species issues.²⁷ However, the adequacy of these and other existing federal coordination initiatives has been questioned; in 2003, for example, a Government Accountability Office (GAO) report on its survey of state invasive species managers

On the other hand, where states have not effectively responded to or cannot legally address invasion pathways, or where they have not acted to constrain the spread of species that have successfully invaded, the federal government should act more assertively to create legislative and regulatory solutions.

In addition to promoting invasive species management through legislative and regulatory action, the federal government also can support states through non-regulatory mechanisms. Federal agencies have significant technical expertise in invasion biology and are well-situated to assist states in listing and other program areas. Development of the scientific information required to support listing (whether for black or for white lists) is difficult and expensive, but regulatory agencies can reduce their costs by sharing information and experience. Shared access to this information among agencies can enhance the effectiveness of listing by state agencies even without amendments to existing laws.

The federal government has established some information-sharing infrastructure, including, but not limited to, the National Invasive Species Council (NISC), the Aquatic Nuisance Species Task Force (ANSTF) and its regional panels, and the Federal Interagency Committee for the Management of

noted that respondents characterized the existing federal effort as “fragmented” and “ineffective” and that coordination with multiple levels of multiple agencies is complicates communication and coordination, particularly with respect to interstate issues.²⁸ Modification of existing programs, or creation of a new, centralized program, potentially could address these criticisms by simplifying federal-state coordination.²⁹

Finally, the federal government may not be as crisis-motivated as states, enabling it to be relatively more forward-looking and comparative. Invasive species crises occur in one or a few states at a time, and rarely promote regulatory action outside affected states. Federal agencies can take a wider view by characterizing trends in invasions rather than by responding to particular cases. A prospective approach may enable the federal government to assist states in identifying and responding effectively to emerging invasive species pathways and species. The federal government has been active in assisting states in some areas; for example, EPA’s Global Change Research Program evaluated consideration of climate change in state aquatic invasive species management plans.³⁰ Further investment in such prospective activities an substantially aid states in their management planning efforts.



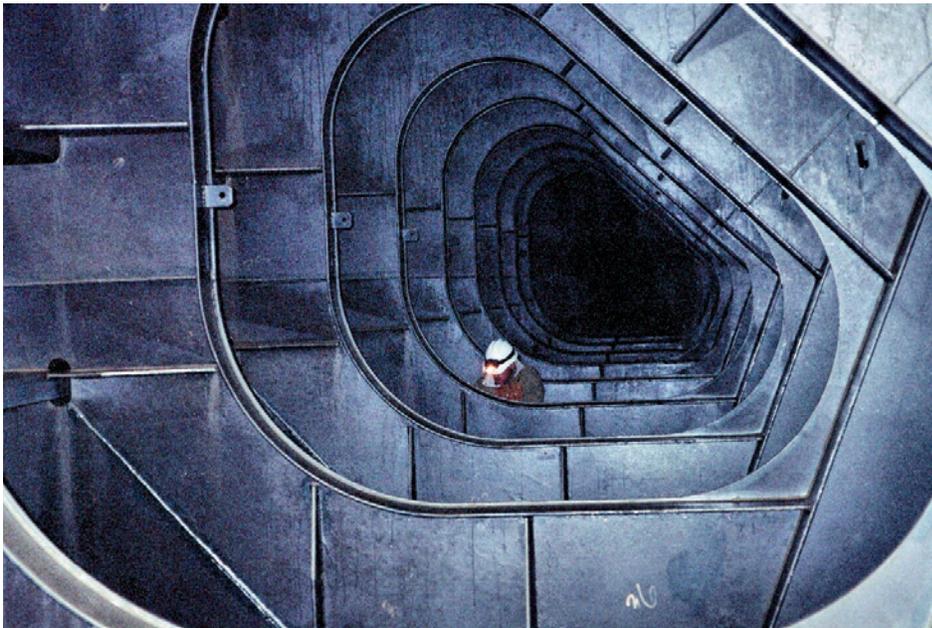
G. Increased funding is needed to assist state invasive species planning and implementation

While this report focuses on the provisions of state laws and regulations, implementation of those legal authorities is equally important. Invasive species threaten to impose massive economic and environmental harm, and states face a massive burden in attempting to prevent, detect, control, and manage those harms. Unfortunately, state agencies are underfunded and understaffed, hindering their ability to implement existing laws and regulations or to plan for future impacts. As invasive species funding is unlikely to significantly increase at the state level, agencies must seek efficiencies to enable more effective management.

In particular, increased funding for intra- and inter-state coordination may be particularly valuable. Although the number of state invasive species councils has dramatically increased in recent years, these councils often have limited or no staff or ongoing funding, and management planning funding often is taken from already-strapped

agency budgets. Under such conditions, coordination is unlikely to succeed over a long term, and management plans may not receive the attention they need for effective implementation. States can improve this situation through provision of legal authority for their councils and by creating direct appropriations for council staff. Small investments in council personnel in particular are likely to pay outsized dividends to multiple agencies.

While states could do more to support invasive species management on their own, federal support plays a critical role in promoting prospective thinking. The federal government provides limited funding for aquatic invasive species management through the Aquatic Nuisance Species Task Force.³¹ This funding arguably is a primary reason why state aquatic invasive species planning has advanced so significantly since 2002, and in this sense it has been a success. However, the program now has become a victim of this success – as more states take advantage of federal funding, less funding is available to each participating state. Enhanced funding for the program and development of similar programs targeted at specific



invasion pathways, terrestrial ecosystems, or other purposes, would strengthen coordination efforts on a nationwide basis and potentially drive prospective regulation. In addition, the ANSTF regional panels have successfully driven interstate coordination on a regional level. Increasing the funding for and profile of these regional panels could benefit cooperative prevention efforts.

WATER DISCHARGED FROM BALLAST TANKS LIKE THIS ONE NOW IS SUBJECT TO REGULATION IN MANY STATES. THESE PROGRAMS PROMISE TO PREVENT INVASIONS THROUGH THE BALLAST PATHWAY IF EFFECTIVELY IMPLEMENTED AND ENFORCED.

Endnotes

- 1 Exec. Order No. 13,112, 64 Fed. Reg. 6183 (Feb. 8, 1999).
- 2 The Task Team was not created by the state of Florida, but rather is an initiative of the South Florida Ecosystem Restoration Task Force, which oversees Everglades restoration. Nonetheless, the Task Team plays an important role in bringing together state, federal, and private sector stakeholders to address invasive wildlife issues.
- 3 Efforts are underway to better understand these dynamics in Oregon.
- 4 Funding and legal authority may not be directly linked.
- 5 Although they are not addressed in this study, additional states, including New York and Indiana, have developed councils through legislation.
- 6 The legislature enacted legislation authorizing a California Invasive Species Council, but that council was not created due to disapproval by the Governor. Similarly, the Governor did not sign a proposed executive order to create an invasive species council. However, he did not bar the multi-agency effort to create the current, informal collaborative council.
- 7 In some cases, a council may be directly charged with taking substantive action to coordinate interagency prevention, control, or management efforts.
- 8 See EPA, EFFECTS OF CLIMATE CHANGE ON AQUATIC SPECIES AND IMPLICATIONS FOR MANAGEMENT AND RESEARCH (2008) (reviewing state plans)
- 9 See GAO, INVASIVE SPECIES: STATE AND OTHER NONFEDERAL PERSPECTIVES ON CHALLENGES TO MANAGING THE PROBLEM 16-17, GAO-03-1089R (2003).
- 10 U.S. Congress, Office of Technology Assessment, HARMFUL NON-INDIGENOUS SPECIES IN THE UNITED STATES, OTA-F-565 (Washington, DC: U.S. Government Printing Office, September 1993) (emphasis in original) [hereinafter OTA Report].
- 11 See ELI, NEW TOOLS FOR RESPONSIBLE SHIPPING IN THE GREAT LAKES: USING FINANCIAL RESPONSIBILITY POLICIES TO PREVENT BALLAST-BORNE BIOLOGICAL POLLUTION (2009) (reviewing developments in state ballast water management).
- 12 For complete description of these changes, please refer to the appendix to this report.
- 13 This list is not exhaustive, and additional restrictions may be used in other states or for other taxa.
- 14 Defenders of Wildlife, BROKEN SCREENS: THE REGULATION OF LIVE ANIMAL IMPORTS IN THE UNITED STATES (2007); USDA, *Foundation Document Demonstrating the Risk Basis for Establishing the Regulatory Category "Not Authorized Pending Pest Risk Analysis" (NAPPRA) Associated with the Importation of Plants for Planting Rev. 1* (2007).
- 15 Some commentators have characterized the new plant petition process as disappointing. For example, although a petition was filed in 2005 to list *Arundo donax* (giant reed) as a noxious weed, but the committee has yet to meet to review the petition and make a decision. Personal communication.
- 16 For a description of pathway analysis for one state, see UNION OF CONCERNED SCIENTISTS, INVASIVE SPECIES IN OHIO: PATHWAYS, POLICIES, AND COSTS 16 *et seq.* (2008).
- 17 OTA Report, *supra* note 10.
- 18 For example, the U.S. Department of Agriculture was created in 1862 for the general purpose of promoting agriculture, and in subsequent years it reasonably focused its invasive species efforts on agricultural pests – such as rangeland weeds, insect crop pests, and plant diseases. 7 U.S.C. § 2201 (“There shall be at the seat of government a Department of Agriculture, the general design and duties of which shall be to acquire and to diffuse among the people of the United States useful information on subjects connected with agriculture, rural development, aquaculture, and human nutrition, in the most general and comprehensive sense of those terms, and to procure, propagate, and distribute among the people new and valuable seeds and plants.”). Although the role and responsibilities of the department have greatly expanded, invasive aquatic and forest plants and plant pests continue to attract limited attention and funding in comparison to agriculture pests.
- 19 See EPA, *supra* note 8; Pyke et al., *Current Practices and Future Opportunities for Policy on Climate Change and Invasive Species*, 22 Con. Bio. 585 (2008).
- 20 In some cases, it should be noted that federal laws preempt more stringent state regulations. For example, where the Secretary of Agriculture has issued an order to prevent the dissemination of a plant pest, noxious weed, or biological



control organism, the Plant Protection Act prohibits states from regulating interstate commerce in such species except as consistent with the federal regulations. 7 U.S.C. § 7756.

- 21 Defenders of Wildlife, *supra* note 14.
- 22 ELI, *supra* note 11; United States Coast Guard, *Standards for Living Organisms in Ships' Ballast Water Discharged in U.S. Waters*, 74 Fed. Reg. 48,190 (Sept. 22, 2009).
- 23 See generally ELI, *supra* note 11.
- 24 United States Dep't Ag., *Addressing the Risks Associated with the Importation of Plants for Planting* (2005), available at http://www.aphis.usda.gov/import_export/plants/plant_imports/downloads/q37_whitepaper.pdf ("The United States Department of Agriculture (USDA) regulation on the importation of plants for planting and propagation (nursery stock) is outdated and does not provide U.S. agriculture and the environment with adequate protection against the introduction of noxious weeds and plant pests including arthropods, plant pathogens, etc. The USDA proposes a comprehensive review and modernization of this regulation.").
- 25 USDA-APHIS, *Nursery Stock Regulations*, 69 Fed. Reg. 71,736 (Dec. 10, 2004). The agency has issued several relevant regulations since 2004, but has not finalized its general rule regarding importation of nursery stock for planting.
- 26 See NISC, *Welcome to InvasiveSpecies.gov*, at <http://www.invasivespecies.gov/>; ANSTF, *ANS Task Force*, at <http://www.anstaskforce.gov/default.php>; FICMNEW, *Federal Interagency Committee for the Management of Noxious and Exotic Weeds (FICMNEW)*, at <http://www.fs.fed.us/ficmnew/>.
- 27 OTA Report, *supra* note 10, at 170.
- 28 GAO, *supra* note 9.
- 29 See Don C. Schmitz & Daniel Simberloff, *Needed: A National Center for Biological Invasions*, *ISSUES IN SCI. & TECH.*, Summer 2001, at 57.
- 30 EPA, *supra* note 8.
- 31 16 U.S.C. § 4724(b).



NUTRIA (*MYOCASTOR COYPUS*) WERE BROUGHT TO THE U.S. FOR USE IN FUR FARMING. THEY NOW CONTRIBUTE TO LOSSES OF COASTAL WETLANDS IN LOUISIANA AND ELSEWHERE, REDUCING PROTECTION AGAINST SEA LEVEL RISE, FLOODING, AND STORM DAMAGE.



Summary of State Invasive Species Laws and Regulations



In this study, ELI revisited invasive species laws and regulations in 11 states to determine what changes have occurred in the past decade. This section summarizes the legal developments in each study state between 2002 and 2009 and indicates the present status of each state's laws and regulations in key areas. By necessity, these summaries are focused on provisions of particular importance and therefore are not intended to be comprehensive. For a thorough description of the legal authorities and amendments in each state, please refer to the appendix to this report, available at the ELI website.

We recognize that there are legitimate policy reasons to implement different policy tools and to establish differential listing regimes from state to state. It is important to note that this section is intended to be descriptive in nature; the scope of this report precludes comparative analysis of particular state regulatory systems. That is, we summarize each state's regulatory programs not to compare or criticize, but rather to illustrate the wide variety of ways in which states currently address their myriad invasive species problems. This report does draw normative conclusions about the structure of state and federal invasive species policy, but these conclusions are based on generalized views of existing and potential policy responses rather than on models that exist in specific states.

Each state summary consists of three parts:

- An overview of key amendments to state laws and regulations between 2002 and 2009.
- A chart depicting how the state currently regulates certain areas of concern for each invasive species category (see page 11 for explanatory note).

- A description of how the state currently applies each of the six categories of policy tools identified in Halting the Invasion.

Each element of the summaries is drawn from the statutory and regulatory analysis performed as the basis for this study. The first element identifies the key regulatory and statutory initiatives in the state, each of which is described fully in the appendix section for that state. The regulatory chart is designed to indicate at a glance the state's regulations as they apply to several questions of current policy concern. Finally, the policy tool chart is intended to provide an overview of how states are applying different types of policy tools – that is, it does not reflect the substantive stringency or substance of the legal authorities listed, but rather indicates how each state has used the diverse array of policy tools available to prevent, control, or manage different types of invasive species. Like the overview, the latter two charts do not and cannot comprehensively list all of each state's provisions; instead, these charts focus on programs and standards of particular interest.

In Halting the Invasion, the Environmental Law Institute comprehensively evaluated state laws and regulations to identify the policy tools that states use to address invasive species. This analysis identified 19 policy tools in six categories. These categories include: 1) definitions; 2) coordination; 3) prevention; 4) regulation; 5) control and management; and 6) enforcement and implementation (Table 4).



Table 4. Explanation of policy tools

	Policy Tools
Definition	<p>To effectively manage invasive species states must define which non-native species will be considered invasive for the purposes of regulation. States use two tools to address this issue:</p> <ul style="list-style-type: none"> • Comprehensive definition • Listing of harmful and non-harmful species
Coordination	<p>States are better equipped to implement and enforce existing authorities and tools aimed at the prevention, control, and management of invasive species if they coordinate their use through two fundamental tools:</p> <ul style="list-style-type: none"> • Invasive Species Council • Invasive Species Management Plan
Prevention	<p>Over the long term, preventing the introduction and establishment of invasive species is the most effective and cost-efficient strategy. To help prevent the entry and spread of unwanted invasive species, states may develop the following prevention tools:</p> <ul style="list-style-type: none"> • Identification and mitigation of future threats (including research, data collection, and pathway identification). • Detection (including inspection, survey, and mapping programs). • Import/Introduction/Release requirements (including scientifically based standards for introductions and permit requirements). • Quarantine authority (including authority for quarantines of facilities, incoming shipments, and means of conveyance). • Education (including programs for the benefit of landowners, businesses and other stakeholders, and the public at large).
Regulation	<p>Some states may establish authorities to control the deliberate possession, movement, and release of certain invasive species. These authorities include:</p> <ul style="list-style-type: none"> • Permits and licenses (including permits for importation, release, and even possession of invasive species). • Transportation and shipping requirements (including notice requirements and best practices). • Monitoring (including post-release monitoring and reporting). • Bonds and insurance (to ensure recovery of costs and damages resulting from permitted or accidental releases).
Control & Management	<p>As a second line of defense, some states may authorize emergency control measures for rapid response to an early detection of an infestation of invasive species. Some states may also authorize programs to control, manage, and mitigate widespread infestations. State control and management strategies include the following:</p> <ul style="list-style-type: none"> • General control and management authority (including notice requirements and authority to enter private lands for control actions). • Emergency power (to rapidly respond to newly identified or severe infestations). • Biological controls (including standards and procedures governing the release of bio-control species). • Restoration (to help restore areas where invasives have been controlled and to prevent other infestations).
Enforcement & Implementation	<p>Adequate enforcement authority and resources are essential to effective implementation of invasive species programs. States may utilize the following tools:</p> <p>Enforcement authorities (including administrative and criminal penalties).</p> <ul style="list-style-type: none"> • Funding (including dedicated funding sources).

I.

California



Summary of State Invasive Species Laws and Regulations

A. Developments since 2002

California has a complex invasive species regulatory system that it has altered substantially since 2002. Notably, the state created a comprehensive invasive species council in 2009, and it also has completed an aquatic invasive species management plan and weed plan. The new focus on interagency coordination is tied to California’s developing focus on the use of pathway-management for invasive species prevention, control, and management.

California has also enacted numerous legal and regulatory reforms. Notably, the state enacted a comprehensive definition of “invasive pests” as part of a new law directing the prospective creation of management plans for use when priority pests are detected. The state also revised its unique law governing ballast discharge and hull fouling, including adoption of enhanced vessel inspection authorities and funding mechanisms. In addition, the state revised its wildlife laws, repealed an aquatic invasive species law, created new authorities to address Dreissenid mussels in recreational vessels, clarified the relationship between noxious weeds and pest plants, and altered many other provisions applicable to specific species and pathways.

B. Use of Policy Tools for Invasive Species Prevention

	U.S.	CA
<i>Prevent intentional introduction of potential invasive species</i>		
1. Require science-based risk screening for non-native plant species?	P	✓
2. Develop specific policies to govern non-native biofuel crop production?		
3. Implement mandatory, science-based pre-import risk screening for wildlife?		
<i>Minimize unintentional introduction of non-native species via known invasion pathways</i>		
1. Require ballast treatment and address biofouling in commercial shipping?	P	✓
2. Require recreational watercraft to be cleaned prior to transport?		✓
<i>Eradicate invasive species before they become established through early detection and rapid response</i>		
1. Create ongoing funds used to detect, research, and eradicate invasive species?		✓
2. Establish early detection requirements, including monitoring requirements?		✓
3. Require prospective research & planning to predict invasions?		✓





C. Laws and regulations, by policy tool category

	California...
Definition	<ul style="list-style-type: none"> recently adopted two separate comprehensive definitions of invasive species, but they only apply to a prospective planning program based exclusively on federal funding and ballast water treatment, respectively. has not established a white list for wildlife and has a limited wildlife black list.
Coordination	<ul style="list-style-type: none"> recently created an invasive species council, but the council lacks legal authority and independent funding. has coordination efforts for aquatic species, plant pests, weeds, and forest pests. has not yet developed a comprehensive invasive species management plan. created management plans for aquatic species and for noxious and invasive weeds.
Prevention	<ul style="list-style-type: none"> authorizes studies to identify future threats, but only with federal funding. authorizes inspections and surveys to enable early detection for non-native species. generally restricts the importation and possession of listed harmful species, including non-native wild animal species and noxious weeds and aquatic species. requires permission to release any fish, aquatic animal, or aquatic plant in state waters. requires the use of scientific standards to determine importation or possession requirements for wildlife, but not for other taxa. authorizes broad quarantine authority for specific species, facilities, and regions authorizes education programs for a variety of species.
Regulation	<ul style="list-style-type: none"> requires a permit to possess non-native wildlife, aquatic species, and plant pests, or to operate a facility containing wildlife or aquatic species, including aquaculture. regulates the transportation of all species within the state. has strong ballast water treatment requirements. has not authorized a post-release monitoring program to monitor introduced species. authorizes financial responsibility bonds for possession of wildlife but has not required other bonds or insurance to undertake risky activity.
Control & Management	<ul style="list-style-type: none"> authorizes control and management on public and private lands for all taxa. has a program for control and management of invasive species across taxa, but requires the program to be funded by the federal government. requires reporting only for of the escape of wildlife and the presence of mussels. has authorized the use of emergency powers for rapid response programs for aquatics, plants, and plant pests and diseases, but not for wildlife.
Enforcement & Implementation	<ul style="list-style-type: none"> has established both civil and criminal penalties for all taxa. makes possessors of invasive species liable for environmental damages caused by only wildlife and aquatic species. uses a positive incentives program for experimental ballast water treatment systems. has authorized several funding mechanisms for specific invasive species activities.

II. Colorado



Summary of State Invasive Species Laws and Regulations

A. Developments since 2002



THE NOXIOUS WEED CHEATGRASS (*BROMUS TECTORUM*) INCREASES WILDFIRE FREQUENCY AND SEVERITY.

Colorado has made several substantial amendments to its invasive species programs since 2002. First, it has created new inter-agency bodies to coordinate the state response for weeds and aquatic species. The most important legal amendment was the enactment of a new aquatic nuisance species law responding to the “devastating economic, environmental and social impacts of aquatic nuisance species on the aquatic resources and water infrastructure of the state.” The law responded to detection of Dreissenid mussels in the region. It defines aquatic nuisance species and is intended to detect, prevent, contain, control, monitor, and eradicate these species in Colorado waters by authorizing enhanced regulation of recreational vessels. Colorado also strengthened the Colorado Noxious Weed Act by creating

a three-tiered listing system that must be updated every three years. The state also implemented additional reforms for aquatic species, plants, and plant pests and diseases.

B. Use of Policy Tools for Invasive Species Prevention

	U.S.	CO
<i>Prevent intentional introduction of potential invasive species</i>		
1. Require science-based risk screening for non-native plant species?	P	✓
2. Develop specific policies to govern non-native biofuel crop production?		
3. Implement mandatory, science-based pre-import risk screening for wildlife?		
<i>Minimize unintentional introduction of non-native species via known invasion pathways</i>		
1. Require ballast treatment and address biofouling in commercial shipping?	P	
2. Require recreational watercraft to be cleaned prior to transport?		✓
<i>Eradicate invasive species before they become established through early detection and rapid response</i>		
1. Create ongoing funds used to detect, research, and eradicate invasive species?		✓
2. Establish early detection requirements, including monitoring requirements?		
3. Require prospective research & planning to predict invasions?		



C. Laws and regulations, by policy tool category

	Colorado...
Definition	<ul style="list-style-type: none"> • does not have a comprehensive definition of invasive species, but recently enacted a definition of “aquatic nuisance species.” “Insect pests,” “pests,” “plant diseases,” and “weeds” are also defined. • has no state white list framework, except in relation to wildlife.
Coordination	<ul style="list-style-type: none"> • has not established a state invasive species council, but a statutory State Noxious Weed Advisory Committee was established in 2003. • has no state comprehensive management plan, but has a statewide strategic plan to address the spread of noxious weeds and a new statutory requirement to develop an aquatic nuisance species plan.
Prevention	<ul style="list-style-type: none"> • does not authorize routine inspection of private land, or surveys, for early detection of invasive wildlife. • generally prohibits/requires a permit for import, introduction, or release of wildlife, listed aquatic nuisance species, non-native fish, listed noxious weeds, and pests. • has authorized education programs in respect of aquatics and noxious weeds.
Regulation	<ul style="list-style-type: none"> • generally requires permits in order to possess non-native species or to operate facilities where they are located. • has established strong regulations relating to transportation and shipping of non-native species, including inspection of vehicles, shipping permits, and labeling of shipments. • does not provide for post-release monitoring of introduced species.
Control & Management	<ul style="list-style-type: none"> • has authorized control and management plans for aquatic nuisance species and noxious weeds. • does not have a general requirement for persons to notify the authorities of the presence of invasive species on their land, although a new provision requires the reporting of aquatic nuisance species. • does not regulate the use of biological control agents.
Enforcement & Implementation	<ul style="list-style-type: none"> • provides criminal and civil sanctions for all taxa. • can hold the possessors of wildlife, fish, and noxious weeds liable for environmental damage caused by an illegal release/escape/introduction. • has authorized specific funding mechanisms to control noxious weeds, aquatic nuisance species, and certain pests.

III. Florida



Summary of State Invasive Species Laws and Regulations

A. Developments since 2002

Florida has extensively overhauled its invasive species programs since 2002. It has published a state-wide invasive species management plan, but its invasive species council was inactive until recently. However, it has been replaced in some respects by other new interagency coordination bodies. With respect to legal developments, the state updated its rules specifically relating to invasive wildlife and aquatic animals, including its tiered listing system. In addition, the state created specific requirements for possession and sale of six species of “reptiles of concern.” Florida has also extensively amended its laws and regulations governing invasive plants. Authority over aquatic plants has been shifted to different agencies and enhanced in some areas. Florida also created new authority specific to the planting of non-native crops for fuel production and now requires a permit and a financial bond for this activity. The state noxious weed law listing process was updated to allow petitions and to proactively use information from scientific experts to determine whether a plant will negatively impact native communities. Specific amendments have also been made with respect to nursery stock, noxious weeds, and specific plant pests and diseases.

B. Use of Policy Tools for Invasive Species Prevention

	U.S.	FL
<i>Prevent intentional introduction of potential invasive species</i>		
1. Require science-based risk screening for non-native plant species?	P	✓
2. Develop specific policies to govern non-native biofuel crop production?		✓
3. Implement mandatory, science-based pre-import risk screening for wildlife?		
<i>Minimize unintentional introduction of non-native species via known invasion pathways</i>		
1. Require ballast treatment and address biofouling in commercial shipping?	P	
2. Require recreational watercraft to be cleaned prior to transport?		
<i>Eradicate invasive species before they become established through early detection and rapid response</i>		
1. Create ongoing funds used to detect, research, and eradicate invasive species?		✓
2. Establish early detection requirements, including monitoring requirements?		✓
3. Require prospective research & planning to predict invasions?		



C. Laws and regulations, by policy tool category

	Florida...
Definition	<ul style="list-style-type: none"> • does not have a comprehensive definition of invasive species, but defines “conditional,” “prohibited,” and “captive” wildlife, which apply to terrestrial, freshwater, and marine species, and additional definitions for “invasive plant,” “noxious weed,” and “noxious weed seed.” • repealed “nonindigenous aquatic plant” definition but extended statute to all aquatic plants. • established tiered lists for wildlife and aquatic plants and black lists for noxious weeds and weed seeds.
Coordination	<ul style="list-style-type: none"> • invasive species council has been inactive due to completion of the council’s mandate; Everglades restoration includes an “invasive animal task team”. • created a new state wildlife commission section to coordinate exotic species issues. • has comprehensive state invasive species management plan, but plan needs update.
Prevention	<ul style="list-style-type: none"> • changed its noxious weed listing program to proactively use scientific experts to determine whether a plant will negatively impact native communities. • authorizes surveys for early detection of plant pests but not for other types of invasive species. • prohibits or requires a permit for import, introduction, and release of terrestrial and aquatic wildlife, aquatic plants, biofuel crops, and noxious weeds. • authorizes surrender of unpermitted non-native wildlife at FWC events. • has specifically authorized a public education program for aquatic plants.
Regulation	<ul style="list-style-type: none"> • created the first permitting and financial bonding requirements for biofuel crops. • required bonds and unique identification to possess certain reptile species. • regulates transportation and shipping of non-native species through inspection of conveyances, shipping permits, and labeling of shipments for all taxa. • has established a pilot program for planting windbreaks with non-native Australian pine that includes post-release monitoring.
Control & Management	<ul style="list-style-type: none"> • has no general requirement for persons to notify the authorities of the presence of non-native species on their land, but escapes of captive wildlife must be reported. • law includes emergency powers for plant and plant pest control and includes an Agricultural Emergency Eradication Trust Fund. • permits research on biological control agents for plant control only if the agent is unlikely to become a pest in Florida. • seeks to restore land and water areas by reducing non-native species pursuant to the the Florida Forever Act.
Enforcement & Implementation	<ul style="list-style-type: none"> • provides for criminal and civil sanctions for all taxa and has recently enhanced penalties for a number of species categories. • authorizes specific funding mechanisms to fund local control of mosquitoes and aquatic weeds. • is a member of the Interstate Pest Control Compact.

IV. Louisiana



Summary of State Invasive Species Laws and Regulations

A. Developments since 2002

Louisiana has made substantial changes to its invasive species laws and regulations since 2002. It has created an aquatic invasive species management plan and, by legislation, subsequently created an aquatic invasive species task force and council with an ongoing mandate to implement the plan. Legal and regulatory amendments include alteration of the details of several laws and regulations governing certain classes of wildlife, including creation of a new list of nuisance wildlife. The legislature and agencies also have amended provisions applicable to specific wildlife species and animal diseases. Louisiana also substantially amended the laws governing aquatic animals, including by amending the state list of exotic fish, creating a new list of domestic aquatic organisms for use in aquaculture, and creating new authorities, including a fund, for control of invasive, noxious aquatic plants. The state made more limited amendments have been made to the state’s plant and plant pest provisions.

B. Use of Policy Tools for Invasive Species Prevention

	U.S.	LA
<i>Prevent intentional introduction of potential invasive species</i>		
1. Require science-based risk screening for non-native plant species?	P	
2. Develop specific policies to govern non-native biofuel crop production?		
3. Implement mandatory, science-based pre-import risk screening for wildlife?		
<i>Minimize unintentional introduction of non-native species via known invasion pathways</i>		
1. Require ballast treatment and address biofouling in commercial shipping?	P	
2. Require recreational watercraft to be cleaned prior to transport?		
<i>Eradicate invasive species before they become established through early detection and rapid response</i>		
1. Create ongoing funds used to detect, research, and eradicate invasive species?		✓
2. Establish early detection requirements, including monitoring requirements?		
3. Require prospective research & planning to predict invasions?		





C. Laws and regulations, by policy tool category

	Louisiana...
Definition	<ul style="list-style-type: none"> • does not have a comprehensive definition of invasive species. • has black lists of wild quadrupeds, nuisance quadrupends, exotic fish, domesticated aquatic organisms, game fish, invasive, noxious aquatic plants, noxious plants, noxious weed seeds, and plant pests, diseases, and hosts.
Coordination	<ul style="list-style-type: none"> • does not have a comprehensive invasive species council or management plan, but does have an approved aquatic invasive species management plan. • created an aquatic invasive species council and task force by legislation and charged it with implementing the state plan and reporting on its progress. • has an interagency aquaculture council to develop the industry.
Prevention	<ul style="list-style-type: none"> • laws do not explicitly authorize identification and mitigation of future threats through research programs, data collection, or pathway identification. • does not require agencies to implement mapping or survey programs. • prohibits importation, introduction, and release of species including wild quadrupeds and invasive, noxious aquatic plants but has not implemented scientific standards to guide the listing process. • authorizes nursery and aquaculture facility inspection. It authorizes quarantines and inspection of private property for plant pests. • prohibits or requires a permit for import, introduction, and release of terrestrial and aquatic wildlife, aquatic plants, biofuel crops, and noxious weeds. • has not explicitly authorized public education programs.
Regulation	<ul style="list-style-type: none"> • requires permits for several taxa, including exotic fish, aquaculture, and some wildlife. • does not impose financial bonding requirements for non-native species. • regulates transportation and shipping of non-native species through inspection of conveyances, shipping permits, and labeling of shipments for plant pests, fish, wildlife, and plants. • does not mandate post-release monitoring of non-native species.
Control & Management	<ul style="list-style-type: none"> • requires veterinarians to report the detection of certain animal diseases, but no general requirement to notify authorities when invasive species present on private land. State agencies authorized to enter land to control plant/fruit pests. • law includes emergency powers for wildlife control but not for other taxa. • does not have legal authority on the use of biological control agents. • requires surface mines to establish vegetative cover that does not include noxious species. The state has no general restoration authority.
Enforcement & Implementation	<ul style="list-style-type: none"> • provides criminal and civil sanctions for all taxa and recently enhanced fines for a number of species categories. • provides specific funding for nutria control and authorizes unlimited take of nuisance species. • has established an aquatic plant control fund. • is a member of the Interstate Pest Control Compact.

v. Maine



Summary of State Invasive Species Laws and Regulations

A. Developments since 2002

Since 2002, Maine has primarily amended and developed its programs related to aquatic invasive species. The state completed an aquatic invasive species management plan and the state aquatic invasive species task force is currently revising that plan. In addition, Maine repealed and replaced its laws and the Department of Inland Fisheries and Wildlife regulations governing wildlife and aquatic species. New laws were created in 2001 to prevent the spread of aquatic plants and fish through recreational vessel inspection and inspection authority, public education, and a new funding mechanism. The state has made a limited number of specific amendments to its legal authorities governing plants, plant pests and diseases, and insects.



MAINE REQUIRES WATERCRAFT AND SEAPLANES TO HELP FUND AQUATIC INVASIVE SPECIES PREVENTION EFFORTS.

B. Use of Policy Tools for Invasive Species Prevention

	U.S.	ME
<i>Prevent intentional introduction of potential invasive species</i>		
1. Require science-based risk screening for non-native plant species?	P	P
2. Develop specific policies to govern non-native biofuel crop production?		
3. Implement mandatory, science-based pre-import risk screening for wildlife?		✓
<i>Minimize unintentional introduction of non-native species via known invasion pathways</i>		
1. Require ballast treatment and address biofouling in commercial shipping?	P	
2. Require recreational watercraft to be cleaned prior to transport?		
<i>Eradicate invasive species before they become established through early detection and rapid response</i>		
1. Create ongoing funds used to detect, research, and eradicate invasive species?		✓
2. Establish early detection requirements, including monitoring requirements?		✓
3. Require prospective research & planning to predict invasions?		



C. Laws and regulations, by policy tool category

	Maine...
Definition	<ul style="list-style-type: none"> • does not have a comprehensive definition of invasive species. • has specialized definitions for invasive aquatic plants, noxious weed seeds, and plant pests, and uses blanket provisions to restrict all wildlife and aquatic species.
Coordination	<ul style="list-style-type: none"> • has a legislatively-authorized aquatic species task force and an approved aquatic invasive species management plan.
Prevention	<ul style="list-style-type: none"> • authorizes research, data collection, and surveys of insects and diseases in forests, but it has no other authorization to identify or mitigate future threats. • carries out an ongoing inventory of state natural areas via Maine Natural Areas Program. The state also requires documentation of invasive aquatic plants. • has implemented scientific standards to guide permitting decisions for import, introduction, or release of wildlife and fish and authorizes inspection of nurseries, private forests, and wildlife facilities for the purpose of detecting pests. • has quarantine authorities for waterbodies, and requirements for shipments of animals and plants to detect diseases and pests. • has explicitly authorized public education programs for aquatic species and has a volunteer Courtesy Boat Inspection program to educate recreational vessel owners on invasive aquatic plant issues.
Regulation	<ul style="list-style-type: none"> • requires permits for wildlife, fish, aquaculture leases, seed dealers, & other purposes. • regulates transportation and shipping of non-native species through voluntary boat inspection, shipping certification for animals and plants, and labeling. • does not mandate post-release monitoring of non-native species. • does not impose financial bonding requirements for non-native species.
Control & Management	<ul style="list-style-type: none"> • requires reporting of certain animal diseases but does not require notification of the authorities when invasive taxa are detected on private land. State agencies have the authority to enter land for control of plant pests • authorizes the use of emergency powers for wildlife control and for waterbodies where invasive species are detected. • biological control agents for animals and insects may be used if approved by the Department of Inland Fisheries and Wildlife. • has no general restoration authority but authorizes discharge of aquatic pesticides by state agencies with a valid permit to restore biological communities in some waters.
Enforcement & Implementation	<ul style="list-style-type: none"> • provides a variety of criminal and civil sanctions that apply to all taxa. • has established funding for enforcement of aquatic plant laws, inspections, control and management, and education. There is also a cost share program for vessel inspection and control of invasive aquatic plants. • is a member of the Interstate Pest Control Compact.

VI. Maryland



Summary of State Invasive Species Laws and Regulations

A. Developments since 2002

Maryland has made limited changes to its invasive species programs since 2002. It has not amended its coordination programs or developed management plans for any taxa. Most of the state laws and regulations relating to invasive species also have remained static in recent years. However, Maryland has strengthened its legislative tools for the control of aquatic invasive species. In particular, the state introduced new provisions for control of “nonnative aquatic organisms.” As a result, the Department of Natural Resources now has a tiered listing system for non-native species and has new inspection authorities to prevent adverse impacts on state waters. Other changes include repeal of the Ballast Water Management provisions in 2005 and specific regulations for non-native aquatic species. The state has not significantly amended its laws or regulations for plants or plant pests and diseases.



MARYLAND HAS ESTABLISHED NEW LAWS GOVERNING THE POSSESSION AND TRADE OF MUTE SWANS (CYGNUS OLOR)

B. Use of Policy Tools for Invasive Species Prevention

	U.S.	MD
<i>Prevent intentional introduction of potential invasive species</i>		
1. Require science-based risk screening for non-native plant species?	P	
2. Develop specific policies to govern non-native biofuel crop production?		
3. Implement mandatory, science-based pre-import risk screening for wildlife?		
<i>Minimize unintentional introduction of non-native species via known invasion pathways</i>		
1. Require ballast treatment and address biofouling in commercial shipping?	P	
2. Require recreational watercraft to be cleaned prior to transport?		
<i>Eradicate invasive species before they become established through early detection and rapid response</i>		
1. Create ongoing funds used to detect, research, and eradicate invasive species?		✓
2. Establish early detection requirements, including monitoring requirements?		✓
3. Require prospective research & planning to predict invasions?		



C. Laws and regulations, by policy tool category

	Maryland...
Definition	<ul style="list-style-type: none"> • has no comprehensive definition of invasive species. However, it recently enacted definitions of aquatic “nonnative” and “nuisance” organisms and also defines “noxious weed” and “plant pest”. • uses a white list framework only in relation to some aquatic invasive species.
Coordination	<ul style="list-style-type: none"> • established the Maryland Invasive Species Council as an ad hoc body in April 2000, but it is not authorized by statute and does not include permanent staff or funding. • has created neither a comprehensive invasive species management plan nor an aquatic invasive species management plan but has established a multiagency Emergency Response Plan for Invasive Forest Pests.
Prevention	<ul style="list-style-type: none"> • has generally strong importation, possession, and release requirements: It has established general permit requirements/prohibitions to import, possess or introduce listed wildlife, non-native aquatic species, listed noxious weeds and plant pests. • recently repealed its ballast water management provisions. • authorizes transportation quarantines across all taxa. • authorizes surveys for weeds and some aquatic species but does not specifically authorize study of future threats or mapping of invasive species locations. • does not authorize education programs by statute.
Regulation	<ul style="list-style-type: none"> • requires permits in order to possess/operate facilities containing non-native species, except for non-native plants. • recently introduced restrictions on the possession, sale, and transportation of aquatic invasive species. • does not require financial responsibility bonds or insurance to possess risky species.
Control & Management	<ul style="list-style-type: none"> • provided for control and management plans in relation to specific species (e.g. nutria, mute swans, and phragmites). • authorizes the use of emergency powers for invasive species rapid response. • does not generally require persons to notify authorities of invasive species on their land. • has no provision for the restoration of native species. • does not regulate the use of biological control agents.
Enforcement & Implementation	<ul style="list-style-type: none"> • provides for criminal and/or civil penalties. • has no general requirement requiring possessors of invasive species to be held liable for environmental damage caused through an illegal release/escape. • authorizes no positive incentive programs. • has specifically designated funding only in relation to plant pests and noxious weeds.

VII. New Jersey



Summary of State Invasive Species Laws and Regulations

A. Developments since 2002

New Jersey has made no significant changes to its laws and regulations related to invasive species in recent years. However, it has issued some guidance and other policies relating to plants and plant pests and diseases. More importantly, New Jersey established a comprehensive invasive species council by executive order in 2004. The council completed a comprehensive invasive species management plan for the state in 2009. In the next few years, this plan may yield legal and regulatory developments.



NEW JERSEY MONITORS AREAS NEAR ITS PORTS FOR PESTS SUCH AS THE ASIAN LONGHORNED BEETLE (*ANOPLOPHORA GLABRIPENNIS*).

B. Use of Policy Tools for Invasive Species Prevention

	U.S.	NJ
<i>Prevent intentional introduction of potential invasive species</i>		
1. Require science-based risk screening for non-native plant species?	P	
2. Develop specific policies to govern non-native biofuel crop production?		
3. Implement mandatory, science-based pre-import risk screening for wildlife?		
<i>Minimize unintentional introduction of non-native species via known invasion pathways</i>		
1. Require ballast treatment and address biofouling in commercial shipping?	P	
2. Require recreational watercraft to be cleaned prior to transport?		
<i>Eradicate invasive species before they become established through early detection and rapid response</i>		
1. Create ongoing funds used to detect, research, and eradicate invasive species?		
2. Establish early detection requirements, including monitoring requirements?		✓
3. Require prospective research & planning to predict invasions?		



C. *Laws and regulations, by policy tool category*

	New Jersey...
Definition	<ul style="list-style-type: none"> • has not established a comprehensive definition of invasive species. • defines or has a list of exotic and nongame species, potentially dangerous species, game animals and birds, noxious weeds (none currently listed), noxious weed seeds, dangerous plant diseases and dangerously injurious insects.
Coordination	<ul style="list-style-type: none"> • has established a state invasive species council and completed a comprehensive state management plan. The council is authorized by executive order. • is likely to recommend many improvements to state laws and regulations in the upcoming management plan, such as defining invasive species. However, the result of these recommendations will require regulatory action.
Prevention	<ul style="list-style-type: none"> • has not authorized research, data collection, or pathway identification to identify or mitigate future threats. • authorizes inspection of nurseries and private land to inspect for weed seeds and authorizes quarantine both for plant pests and animal diseases. • authorizes surveys near ports of entry to detect the introduction of foreign and domestic pests. • prohibits or requires permits to import and release wildlife, noxious weed seeds, and pest-infested plant material, but no general restrictions apply to aquatic species. • does not require a scientific determination for listing or permitting decisions. • does not provide funding for education programs.
Regulation	<ul style="list-style-type: none"> • requires permits for possession of exotic and dangerous wildlife, aquaculture facilities, and nurseries and other horticultural businesses. • requires notice and authorizes inspections of shipments of plant material but does not authorize inspection or notice of other shipments. • does not require post-release monitoring of non-native species or financial responsibility bonds or insurance.
Control & Management	<ul style="list-style-type: none"> • authorizes general control and management on both private and public lands for most taxa, and carries out specific programs to manage certain species. Authority to enter private land for control is not provided. • does not provide emergency powers to state agencies for invasive species control. • has extensive expertise in biological control but has no legal authorities governing the use of biological control species. • has no laws or regulations mandating restoration of native species.
Enforcement & Implementation	<ul style="list-style-type: none"> • has criminal and civil sanctions that apply to wildlife and plant violations. • are not authorized to hold the possessors of invasive species liable for environmental damage caused by an illegal release/escape. • authorizes no specific funding programs for detection, response, or outreach.

VIII.

New Mexico



Summary of State Invasive Species Laws and Regulations

A. Developments since 2002

New Mexico has made significant regulatory and non-regulatory changes to its invasive species programs. With respect to interagency coordination, New Mexico created an aquatic invasive species advisory council with a mandate to create a state aquatic invasive species management plan. That plan is now complete, as is the separate management plan for exotic riparian trees, completed in 2005. Legislative developments in New Mexico have been more limited but have been significant in key areas. Most notably, the legislature enacted a new law governing aquatic invasive species, prompted by discovery of Dreissenid mussels in nearby waters. The new law defines aquatic invasive species, prohibits their spread, and authorizes state agencies to regulate and inspect recreational vessels and to monitor for the presence of these species. Other legal and regulatory amendments in New Mexico include an update to the noxious weed law (including a new watch list) and minor changes relating to game animals, bait dealers, and certain species of wildlife and plant pests.

B. Use of Policy Tools for Invasive Species Prevention

	U.S.	NM
<i>Prevent intentional introduction of potential invasive species</i>		
1. Require science-based risk screening for non-native plant species?	P	
2. Develop specific policies to govern non-native biofuel crop production?		
3. Implement mandatory, science-based pre-import risk screening for wildlife?		✓
<i>Minimize unintentional introduction of non-native species via known invasion pathways</i>		
1. Require ballast treatment and address biofouling in commercial shipping?	P	
2. Require recreational watercraft to be cleaned prior to transport?		✓
<i>Eradicate invasive species before they become established through early detection and rapid response</i>		
1. Create ongoing funds used to detect, research, and eradicate invasive species?		
2. Establish early detection requirements, including monitoring requirements?		
3. Require prospective research & planning to predict invasions?		





C. Laws and regulations, by policy tool category

	New Mexico...
Definition	<ul style="list-style-type: none"> • has no comprehensive definition of invasive species. • recently enacted a new definition of “aquatic invasive species” and uses lists or general prohibitions to regulate wildlife, fish, noxious weeds, harmful plants, noxious weed seeds, and pests.
Coordination	<ul style="list-style-type: none"> • has not created a comprehensive invasive species council or management plan. • has an aquatic invasive species advisory council and aquatic invasive species management plan. The council currently is not authorized by legal authority. • has two interagency weed action groups and management plans for exotic riparian trees and for noxious weeds.
Prevention	<ul style="list-style-type: none"> • created a new noxious weed watch list for weeds that may enter the state in the future; the state has specifically authorized no other research, data collection, or pathway identification programs. • detects invasive species via recreational vessel check stations and monitoring, nursery inspections, sampling and inspection of seeds for sowing, and inspection of private land in control zones for noxious weeds, seeds, & harmful plants. • has imposed importation, introduction, and release limits across all taxa. • listing and permitting decisions are based on scientific standards for aquatic invasive species and wildlife. • has quarantine authorities that may apply to specific locations for most taxa. • does not explicitly authorize education programs except for plants.
Regulation	<ul style="list-style-type: none"> • requires a permit or license to operate horticultural and wildlife businesses. • authorizes inspection of conveyances and shipments, affixes warning tags to boats in infested waters, and requires prior notice of imported fish shipments. • does not mandate border inspection of shipments, but operates international border inspections for livestock. • has not authorized post-release monitoring programs for non-native species. • does not require financial responsibility bonds or insurance to possess risky species.
Control & Management	<ul style="list-style-type: none"> • authorizes control on both public and private land via impoundment of boats and creation of pest control districts. Agents require permission to enter private land. • does not require landowners to provide notice of invasive species on their lands, but imposes a duty on them to destroy harmful weeds before they produce buds. • has emergency control powers when landowners do not respond to pest infestation. • does not regulate biological control agents and has not authorized native species restoration programs.
Enforcement & Implementation	<ul style="list-style-type: none"> • has established criminal or civil sanctions for most, but not all taxa. • cannot generally hold violators liable for environmental damages their actions cause. • has not created funds to support implementation of invasive species authorities. • Is a member of the pest control compact.

IX. Oregon



Summary of State Invasive Species Laws and Regulations

A. Developments since 2002

Oregon has made a number of recent changes to its invasive species legal authorities. The state has strengthened the powers of its legislatively-authorized, comprehensive invasive species council, including a new comprehensive definition of “invasive species” and through the creation of a new Invasive Species Control Account to support council activities. Other notable legal developments include consolidation and strengthening of the state’s quarantine and pest control provisions for wildlife, insects, and plants. Legislation also was enacted to prevent the spread of aquatic invasive species. This legislation includes a new definition of aquatic invasive species, new authorities governing recreational and commercial watercraft, and new prohibitions on the spread of aquatic invasive species. In addition, the state has enacted new a ballast water law that includes prohibitions on discharge without exchange, reporting requirements, and a task force to recommend actions on the issue. With respect to plants, the state has extended to all noxious weeds the provisions that formerly only applied to the control of tansy ragwort. Plant pest has been newly defined and the state has new prohibitions on the spread of such species, as well as a new emergency response fund. Other amendments have occurred for specific species and uses for wildlife, fish, plants, and plant pests.

B. Use of Policy Tools for Invasive Species Prevention

	U.S.	OR
<i>Prevent intentional introduction of potential invasive species</i>		
1. Require science-based risk screening for non-native plant species?	P	
2. Develop specific policies to govern non-native biofuel crop production?		
3. Implement mandatory, science-based pre-import risk screening for wildlife?		
<i>Minimize unintentional introduction of non-native species via known invasion pathways</i>		
1. Require ballast treatment and address biofouling in commercial shipping?	P	✓
2. Require recreational watercraft to be cleaned prior to transport?		✓
<i>Eradicate invasive species before they become established through early detection and rapid response</i>		
1. Create ongoing funds used to detect, research, and eradicate invasive species?		✓
2. Establish early detection requirements, including monitoring requirements?		✓
3. Require prospective research & planning to predict invasions?		





C. Laws and regulations, by policy tool category

	Oregon...
Definition	<ul style="list-style-type: none"> • defines “invasive species” as non-native organisms that cause economic or environmental harm and are capable of spreading to new areas of the state. They do not include humans, domestic livestock or non harmful exotic organisms. • uses a white list framework in relation to wildlife and aquatics.
Coordination	<ul style="list-style-type: none"> • has both a comprehensive Invasive Species Council and a State Weed Board. Both are authorized by statute. • provides for the development of a comprehensive invasive species management plan.
Prevention	<ul style="list-style-type: none"> • generally prohibits, or requires a permit for, the import or release of wildlife and aquatic species. • authorizes quarantines for all taxa. • does not specifically authorize the study of future threats and mapping, except in relation to noxious weeds. • authorizes education programs by statute.
Regulation	<ul style="list-style-type: none"> • generally requires permits in order to possess/operate facilities containing non-native species • provides for broad transportation and shipping requirements across all taxa. • does not specifically authorize post-release monitoring for non-native species. • does not require financial responsibility bonds or insurance to possess risky species.
Control & Management	<ul style="list-style-type: none"> • provides for a statewide control and management plan. • does not generally require owners to notify the state when invasive species are detected on their land, except for certain escaped wildlife. • authorizes the use of emergency powers for rapid response. • has a bio control program but does not regulate the use of biological control agents.
Enforcement & Implementation	<ul style="list-style-type: none"> • authorizes criminal and civil penalties for all taxa. • has no general requirement that possessors of invasive species may be liable for environmental damage caused through an illegal release/escape. • has a new “Invasive Species Control Account” for the funding of efforts to eradicate or control new infestations or infections of invasive species.

X.

Rhode Island



Summary of State Invasive Species Laws and Regulations

A. Developments since 2002



RHODE ISLAND CREATED AN AQUACULTURE BIOSECURITY BOARD TO PROTECT OYSTERS AND OTHER SPECIES FROM INVASIVE PATHOGENS.

Since 2002, Rhode Island has developed new and amended laws and regulations relating to several types of invasive species. With respect to interagency coordination, an ad hoc interagency working group has completed an aquatic invasive species management plan. Legal and regulatory amendments include minor amendments to wildlife possession and nuisance species regulations and substantial change to the regulations governing animal diseases, including strengthening quarantine and identification requirements. New authorities governing aquatic species include a new law specifically targeted at non-native, freshwater aquatic plants and creation of a new aquaculture biosecurity board to assist the state in preventing aquaculture disease and harm from non-indigenous species. Specific provisions have also been adopted to address particular issues applicable to wildlife, aquatic life, and plant pests and diseases. Rhode Island has not significantly altered its invasive plant provisions since 2002.

B. Use of Policy Tools for Invasive Species Prevention

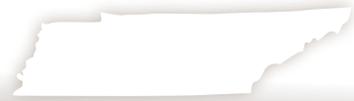
	U.S.	RI
<i>Prevent intentional introduction of potential invasive species</i>		
1. Require science-based risk screening for non-native plant species?	P	
2. Develop specific policies to govern non-native biofuel crop production?		
3. Implement mandatory, science-based pre-import risk screening for wildlife?		
<i>Minimize unintentional introduction of non-native species via known invasion pathways</i>		
1. Require ballast treatment and address biofouling in commercial shipping?	P	
2. Require recreational watercraft to be cleaned prior to transport?		
<i>Eradicate invasive species before they become established through early detection and rapid response</i>		
1. Create ongoing funds used to detect, research, and eradicate invasive species?		
2. Establish early detection requirements, including monitoring requirements?		
3. Require prospective research & planning to predict invasions?		



C. Laws and regulations, by policy tool category

	Rhode Island...
Definition	<ul style="list-style-type: none"> • does not have a comprehensive definition of invasive species. • defines and/or uses lists for wildlife, exotic wildlife, non-native freshwater invasive aquatic plants, noxious weed seeds, and plant pests.
Coordination	<ul style="list-style-type: none"> • has an inactive comprehensive invasive species council but has no comprehensive management plan. • has an aquatic species task force that has created an approved aquatic invasive species management plan. • has a new biosecurity board to maintain understanding of threats from aquaculture diseases and ensure compliance by recommending inspections.
Prevention	<ul style="list-style-type: none"> • does not have legal authorities authorizing research, data collection, or pathway identification to identify or mitigate future threats. • authorizes inspection of nurseries, wild and exotic animal facilities, and authorizes inspection and tests on private land for noxious weed seeds. • has issued a survey of aquatic plants in the state but has no authority for systematic surveys or mapping. • has protocols to prevent release of aquaculture species but has not established scientific standards to guide its permitting decisions. • quarantine authorities include facility quarantine for plant pests; animal, plant, & nursery stock shipment quarantines, and quarantines on plant pest transportation. • has not explicitly authorized public education programs.
Regulation	<ul style="list-style-type: none"> • requires permits for wild and exotic animals, fish, aquaculture, and nurseries. • regulates shipments of animals for diseases, of aquaculture species, and of nursery stock. Certain wildlife species must be individually identified. • does not mandate post-release monitoring of non-native species. • may require financial bonds for aquaculture facilities.
Control & Management	<ul style="list-style-type: none"> • requires reporting of escaped wild animals but does not require notification of the authorities when invasive taxa are detected on private land. • authorizes state agents to enter land to control plant pests when owners fail to do so, and authorizes agents to enter and order the removal of aquaculture facilities. • authorizes declaration of plant pests as public nuisances. • does not authorize emergency powers or biological control agents. • has no general restoration authority but authorizes and funds programs to restore coastal and estuary habitat via non-native species control.
Enforcement & Implementation	<ul style="list-style-type: none"> • provides limited criminal sanctions that do not apply to wildlife but provides civil sanctions for all taxa. • has not established funding mechanisms specifically for invasive species, but violators must pay the control costs incurred by the state in some cases. • is a member of the Interstate Pest Control Compact.

XI. Tennessee



Summary of State Invasive Species Laws and Regulations

A. Developments since 2002



IN 2005, TENNESSEE CREATED A TASK FORCE TO ADDRESS HEMLOCK WOOLY ADELGID (*ADELGES TSUGAE*).

Tennessee has made targeted statutory, regulatory changes to its invasive species programs since 2002. Its interagency coordination efforts now included establishment of a new aquatic invasive species task force in 2005 to create a state aquatic invasive species management plan. That plan was completed in 2007. Legal authorities have been amended in several respects. Most notably, the state has amended its list of restricted wildlife species, including by designating as restricted all species of freshwater aquatic life unless otherwise excepted. Similarly, the definition of pest plants was expanded and the list revised. Other changes primarily have been aimed at prevention or control of harm from to specific species of wildlife, animal diseases, and plant pests and diseases.

B. Use of Policy Tools for Invasive Species Prevention

	U.S.	TN
<i>Prevent intentional introduction of potential invasive species</i>		
1. Require science-based risk screening for non-native plant species?	P	
2. Develop specific policies to govern non-native biofuel crop production?		
3. Implement mandatory, science-based pre-import risk screening for wildlife?		
<i>Minimize unintentional introduction of non-native species via known invasion pathways</i>		
1. Require ballast treatment and address biofouling in commercial shipping?	P	
2. Require recreational watercraft to be cleaned prior to transport?		
<i>Eradicate invasive species before they become established through early detection and rapid response</i>		
1. Create ongoing funds used to detect, research, and eradicate invasive species?		
2. Establish early detection requirements, including monitoring requirements?		
3. Require prospective research & planning to predict invasions?		



C. Laws and regulations, by policy tool category

	Tennessee...
Definition	<ul style="list-style-type: none"> • does not have a comprehensive definition of invasive species. • defines and uses lists for nongame and native wildlife, noxious weed seeds, pest plants, insect pests, and plant diseases.
Coordination	<ul style="list-style-type: none"> • has neither a comprehensive invasive species council nor a comprehensive invasive species management plan. • has established an aquatic invasive species task force that has created an aquatic invasive species management plan.
Prevention	<ul style="list-style-type: none"> • has no legal authorities authorizing research, data collection, or pathway identification to identify or mitigate future threats. • authorizes inspection of nurseries, plant dealers, landscapers, and other areas where pests may be found, as well as facilities with wildlife. • has no authorities for surveys or mapping to detect invasive species. • has prohibitions and permit requirements for all taxa, but has not established scientific standards to guide its listing or permitting decisions. • authorizes quarantine of wildlife, fish, and plant shipments, and quarantines on importation necessary to protect the agricultural, horticultural, or silvicultural interests of the state. • authorizes Division of Forestry to provide technical information on forest pests.
Regulation	<ul style="list-style-type: none"> • requires permits for wildlife, fish and bait dealers, fish stocking, aquaculture, and nurseries. • requires notice to the state for receipt of shipments including plant pests but not in other cases. • does not mandate post-release monitoring of non-native species. • does not require financial bonds for invasive species activities.
Control & Management	<ul style="list-style-type: none"> • has general authority to control and manage invasion, including in cities, and authorizes agents to enter any forest land and private land (with landowner approval or a court order) for plant pests control. • authorizes declaration of plant pests as public nuisances. • does not authorize emergency powers or biological control agents. • has no general restoration authority but has a volunteer native wildflower program and authorizes control and prohibits introduction of exotic species in natural resource areas.
Enforcement & Implementation	<ul style="list-style-type: none"> • provides criminal and administrative sanctions for all taxa. • has not established funding mechanisms specifically for invasive species, but funds its enforcement programs partly through permit fees. • is a member of the Interstate Pest Control Compact.

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Proposed Administrative Consent Agreement Background Summary

8

Subject: Central Exterminating Services, Inc.
175 Main Street
Lincolntonville, Maine 04849

Date of Incident(s): July 11, 2018

Background Narrative: The owner of Central Exterminating Services, Inc. self-reported a misplaced pesticide application by one of their applicators. Gary Nevius applied Cy-Kick CS insecticide as a perimeter treatment to a home at 41 Melvin Heights Road in Camden on July 11, 2018. The owners of this residence were not company customers. The intended property was at 61 Melvin Heights in Camden.

Summary of Violation(s): CMR 01-026 Chapter 20 Section 6(D)2 No person may apply a pesticide to a property of another unless prior authorization for the pesticide application has been obtained from the owner, manager, or legal occupant of that property.

Rationale for Settlement: Central Exterminating Services, Inc. did not have the property owners' authorization to apply a pesticide to their property and did not take the necessary steps to confirm the correct address.

Attachments: Proposed Consent Agreement

Amt: 1000-
Ck# 14756
Date 9-24-21

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY
BOARD OF PESTICIDES CONTROL

In the Matter of:) ADMINISTRATIVE CONSENT
Central Exterminating Services, Inc.) AGREEMENT
175 Main Street) AND
Lincolnvile, Maine 04849) FINDINGS OF FACT

This Agreement by and between Central Exterminating Services, Inc (hereinafter called the "Company") and the State of Maine Board of Pesticides Control (hereinafter called the "Board") is entered into pursuant to 22 M.R.S. §1471-M (2)(D) and in accordance with the Enforcement Protocol amended by the Board on December 13, 2013.

The parties to this Agreement agree as follows:

1. That the Company provides commercial pest control services and has the firm license number SCF 741 issued by the Board pursuant to 22 M.R.S. § 1471-D (1)(B).
2. That on June 12, 2018 Rebecca Richards, a licensed applicator and owner for the Company, called the Board's office to report one of the Company's licensed applicators made a pesticide application to the wrong property in Camden the previous day.
3. That in response to the call described in paragraph two, a Board inspector met Company applicator, Gary Nevius, on June 13, 2018. Nevius completed a written statement about the misapplication. The inspector met with Rebecca Richards the same day and she also filled out a written statement about the incident.
4. That from the inspections described in paragraph three, the inspector documented that Nevius applied Cy-Kick CS insecticide as a perimeter treatment to the Sidiris' home at 41 Melvin Heights Road in Camden on July 11, 2018. The owners of this residence were not a Company customer. The intended property was the Ducharme residence at 61 Melvin Heights in Camden.
5. That from the inspection with Nevius described in paragraphs three and four, Nevius reported that he relied solely on his GPS unit which told him he was at the correct address and in his haste mistook # 41 for # 61. In Nevius' written statement he said he should have checked the CMP meter number, but he did not.
6. That CMR 01-026 Chapter 20 Section 6(D)2 requires prior consent from the property owner before a person can apply pesticides to the property of another.
7. That the Company did not have the homeowner's authorization to make a pesticide application at 41 Melvin Heights Road in Camden.
8. That the circumstances described in paragraphs one through seven constitute a violation of CMR 01-026 Chapter 20 Section 6(D)2.
9. That the Board has regulatory authority over the activities described herein.
10. That the Company expressly waives:
 - A. Notice of or opportunity for hearing;

- B. Any and all further procedural steps before the Board; and
- C. The making of any further findings of fact before the Board.

11. That this Agreement shall not become effective unless and until the Board accepts it.

That in consideration for the release by the Board of the cause of action which the Board has against the Company resulting from the violation referred to in paragraph eight, the Company agrees to pay a penalty to the State of Maine in the sum of \$1,000.00. (Please make checks payable to Treasurer, State of Maine).

IN WITNESS WHEREOF, the parties have executed this Agreement of two pages.

CENTRAL EXTERMINATING SERVICES, INC.

By: Evetchen Richards Date: 9.24.21

Type or Print Name: Evetchen M. Richards, Office Mgr

BOARD OF PESTICIDES CONTROL

By: _____ Date: _____
Megan Patterson, Director

APPROVED:

By: _____ Date: _____
Mark Randlett, Assistant Attorney General

For Immediate Release

September 24, 2021

Contacts: [Karla Boyd](#), [Jim Britt](#)

Maine Collecting Unwanted Pesticides Free of Charge

AUGUSTA—The [Obsolete Pesticide Collection Program](#) protects Maine's natural resources and prevents agriculture pollution by promoting the safe and proper disposal of outdated, unused, or unwanted pesticides. The program is made possible by the Maine Department of Agriculture, Conservation and Forestry's Board of Pesticides Control (BPC) and the Maine Department of Environmental Protection. The program is open to homeowners and family-owned farms who are encouraged to bring unwanted pesticides—including herbicides, insecticides, rodenticides, fungicides, and similar products used in agricultural production or around the home to collection sites in Presque Isle, Bangor, Augusta, and Portland. **Pre-registration is required by October 8** to participate, drop-ins are not permitted, and drop-off locations will be announced soon.

Details including registering and supplying the obsolete pesticides inventory form, a list of banned and unusable products, storage and transportation guidelines, other disposal options are found on the BPC website www.thinkfirstspraylast.org.

About Maine's Obsolete Pesticide Collection Program

Removal of obsolete and unwanted pesticides is important for protecting the public, wildlife, and environmental health. Improper pesticide handling and disposal, such as placing it in the trash or pouring it down the drain, can contaminate land and water resources. The Maine Obsolete Pesticide Collection Program ensures that they are handled properly. Since 1982, the program has saved more than 250,000 lbs. of pesticides from entering the waste stream. Collected pesticides are taken to licensed, out-of-state disposal facilities by the federal Environmental Protection Agency. Learn more on www.thinkfirstspraylast.org

Photo courtesy: Board of Pesticides Control, Maine DACF



STATE OF MAINE

—
IN THE YEAR OF OUR LORD
TWO THOUSAND TWENTY-ONE

—
H.P. 1113 - L.D. 1503

An Act To Stop Perfluoroalkyl and Polyfluoroalkyl Substances Pollution

Emergency preamble. Whereas, acts and resolves of the Legislature do not become effective until 90 days after adjournment unless enacted as emergencies; and

Whereas, contamination of soil and water in the State from perfluoroalkyl and polyfluoroalkyl substances, or PFAS, poses a significant threat to the environment of the State and to the health of its citizens; and

Whereas, the full extent of PFAS contamination in the State is not presently known but is anticipated to be widespread and to require a significant expenditure of resources to identify and remediate; and

Whereas, PFAS continue to be used across a variety of industries for a variety of purposes and are ultimately contained in a variety of products sold in the State; and

Whereas, to address the imminent threat of further contamination of soil and water in the State, it is imperative to collect information regarding the use of PFAS in and to phase out the sale of certain nonessential products containing PFAS, as proposed in this legislation; and

Whereas, in the judgment of the Legislature, these facts create an emergency within the meaning of the Constitution of Maine and require the following legislation as immediately necessary for the preservation of the public peace, health and safety; now, therefore,

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

Sec. 1. 38 MRSA §1612 is enacted to read:

§1612. Products containing PFAS

1. Definitions. As used in this section, unless the context otherwise indicates, the following terms have the following meanings.

A. "Carpet or rug" means a fabric marketed or intended for use as a floor covering.

B. "Currently unavoidable use" means a use of PFAS that the department has determined by rule under this section to be essential for health, safety or the functioning of society and for which alternatives are not reasonably available.

C. "Fabric treatment" means a substance applied to fabric to give the fabric one or more characteristics, including but not limited to stain resistance or water resistance.

D. "Intentionally added PFAS" means PFAS added to a product or one of its product components to provide a specific characteristic, appearance or quality or to perform a specific function. "Intentionally added PFAS" also includes any degradation by-products of PFAS.

E. "Manufacturer" means the person that manufactures a product or whose brand name is affixed to the product. In the case of a product imported into the United States, "manufacturer" includes the importer or first domestic distributor of the product if the person that manufactured or assembled the product or whose brand name is affixed to the product does not have a presence in the United States.

F. "Perfluoroalkyl and polyfluoroalkyl substances" or "PFAS" means substances that include any member of the class of fluorinated organic chemicals containing at least one fully fluorinated carbon atom.

G. "Product" means an item manufactured, assembled, packaged or otherwise prepared for sale to consumers, including its product components, sold or distributed for personal, residential, commercial or industrial use, including for use in making other products.

H. "Product component" means an identifiable component of a product, regardless of whether the manufacturer of the product is the manufacturer of the component.

I. "Publicly owned treatment works" has the same meaning as in section 361-A.

2. Notification. A manufacturer of a product for sale in the State that contains intentionally added PFAS shall comply with the requirements of this subsection.

A. Beginning January 1, 2023, a manufacturer of a product for sale in the State that contains intentionally added PFAS shall submit to the department a written notification that includes:

(1) A brief description of the product;

(2) The purpose for which PFAS are used in the product, including in any product components;

(3) The amount of each of the PFAS, identified by its chemical abstracts service registry number, in the product, reported as an exact quantity determined using commercially available analytical methods or as falling within a range approved for reporting purposes by the department;

(4) The name and address of the manufacturer, and the name, address and phone number of a contact person for the manufacturer; and

(5) Any additional information established by the department by rule as necessary to implement the requirements of this section.

B. With the approval of the department, a manufacturer may supply the information required in paragraph A for a category or type of product rather than for each individual product.

C. In accordance with rules adopted by the department, a manufacturer shall update and revise the information in the written notification whenever there is significant change in the information or when requested to do so by the department.

3. Waiver of notification; coordination with other states; extension of deadline.

The department may waive all or part of the notification requirement under subsection 2 if the department determines that substantially equivalent information is already publicly available. The department may enter into an agreement with one or more other states or political subdivisions of a state to collect notifications and may accept notifications to a shared system as meeting the notification requirement under subsection 2. The department may extend the deadline for submission by a manufacturer of the information required under subsection 2 if the department determines that more time is needed by the manufacturer to comply with the submission requirement.

4. Exemptions. The following are exempt from this section:

A. A product for which federal law governs the presence of PFAS in the product in a manner that preempts state authority; and

B. A product subject to Title 32, chapter 26-A or 26-B.

5. Prohibition on sale of products containing intentionally added PFAS. This subsection governs sales of products containing intentionally added PFAS.

A. Effective January 1, 2023, a person may not sell, offer for sale or distribute for sale in this State a carpet or rug that contains intentionally added PFAS. This prohibition does not apply to the sale or resale of a used carpet or rug.

B. Effective January 1, 2023, a person may not sell, offer for sale or distribute for sale in this State a fabric treatment that contains intentionally added PFAS. This prohibition does not apply to the sale or resale of a used fabric treatment.

C. The department may by rule identify products by category or use that may not be sold, offered for sale or distributed for sale in this State if they contain intentionally added PFAS. The department shall prioritize the prohibition of the sale of product categories that, in the department's judgment, are most likely to cause contamination of the State's land or water resources if they contain intentionally added PFAS. Products in which the use of PFAS is a currently unavoidable use as determined by the department may be exempted by the department by rule. The department may not prohibit the sale or resale of used products.

Rules adopted pursuant to this paragraph are major substantive rules as defined in Title 5, chapter 375, subchapter 2-A.

D. Effective January 1, 2030, a person may not sell, offer for sale or distribute for sale in this State any product that contains intentionally added PFAS, unless the department has determined by rule that the use of PFAS in the product is a currently unavoidable use. The department may specify specific products or product categories in which it has determined the use of PFAS is a currently unavoidable use. This prohibition does not apply to the sale or resale of used products.

6. Fees. The department may establish by rule and assess a fee payable by a manufacturer upon submission of the notification required under subsection 2 to cover the department's reasonable costs in developing rules under subsection 5, paragraphs C and D and administering the requirements of subsections 2 and 9.

7. Failure to provide notice. A person may not sell, offer for sale or distribute for sale in the State a product containing intentionally added PFAS if the manufacturer has failed to provide the information required under subsection 2.

A. The department may exempt a product from the prohibition under this subsection if the department determines that the use of PFAS in the product is a currently unavoidable use.

B. The prohibition in this subsection does not apply to a retailer in the State unless the retailer sells, offers for sale or distributes for sale in the State a product for which the retailer has received a notification pursuant to subsection 8, paragraph B that the sale of the product is prohibited.

8. Certificate of compliance. If the department has reason to believe that a product contains intentionally added PFAS and is being offered for sale in violation of subsection 7, the department may direct the manufacturer of the product to, within 30 days:

A. Provide the department with the certificate attesting that the product does not contain intentionally added PFAS; or

B. Notify persons who sell that product in this State that the sale of that product is prohibited in this State and provide the department with a list of the names and addresses of those notified.

9. PFAS source reduction program. To the extent funds are available and in consultation with relevant stakeholders, the department shall develop and implement a program to reduce the presence of PFAS in discharges to air, water and land by encouraging the use of safer alternatives and the proper management of materials containing PFAS. The program may include:

A. Information resources targeted to industrial or commercial users of PFAS;

B. Education of the general public;

C. To the extent funds are available, grants to operators of publicly owned treatment works for the purposes of developing, expanding or implementing pretreatment standards for PFAS and education of users on sources of PFAS and proper management;

D. To the extent funds are available, grants to municipalities for the purposes of educating solid waste disposal users on sources of PFAS and proper management; and

E. Other efforts determined by the department to be prudent to achieve the program's purpose.

10. Rules. The department shall adopt rules to implement this section. Except as provided in subsection 5, paragraph C, rules adopted to implement this section are routine technical rules as defined in Title 5, chapter 375, subchapter 2-A.

Emergency clause. In view of the emergency cited in the preamble, this legislation takes effect when approved.

Subject:

FW: Pesticide Program Update: Updates on EPA Efforts to Address PFAS in Pesticide Packaging



9c



Pesticide Update

EPA's Office of Chemical Safety and Pollution Prevention

Updates on EPA Efforts to Address PFAS in Pesticide Packaging

The U.S. Environmental Protection Agency (EPA) continues to work diligently to address per- and polyfluoroalkyl substances (PFAS) in the environment and is providing important updates on its progress in testing pesticide products and containers for PFAS.

Today, with the purpose of advancing sound science and providing transparency in its research, EPA is releasing an internally validated method for the detection of 28 PFAS compounds in oily matrices, such as pesticide products formulated in oil, petroleum distillates, or mineral oils. The oily matrix method is modified from [EPA Method 537.1](#), a method that is mainly used for drinking water and was previously used in analyzing PFAS in fluorinated high-density polyethylene (HDPE) containers.

The new method is intended to help pesticide manufacturers, state regulators, and other interested stakeholders test oily matrix products for PFAS and join the effort in uncovering any possible contamination. In a shared interest to remove PFAS from the environment, if companies find PFAS in their product, EPA is requesting that they engage in good product stewardship and notify the Agency.

Through close collaboration with the Maryland Department of Agriculture, EPA used this oily matrix method to analyze three stored samples of mosquito control pesticide products (Permanone 30-30 and PermaSease 30-30) and obtained samples directly from the product line from the pesticide manufacturer. After thoroughly analyzing the samples and conducting an in-depth quality assurance and quality control process, the Agency determined that none of the tested samples contained PFAS at or above the Agency's method limit of detection. To date, the only PFAS contamination in mosquito control pesticide products that the Agency has identified originated from fluorinated HDPE containers used to store and transport a different mosquito control pesticide product (Anvil 10-10).

While it continues its investigation, the Agency will use all available regulatory and non-regulatory tools to determine the scope of this emerging issue and its potential impact on human health and the environment. EPA continues to test additional fluorinated containers to determine whether they contain and/or leach PFAS and will be presenting those results when the studies are complete. The Agency is working with other federal agencies and trade organizations to raise awareness of this emerging issue and discuss expectations of product stewardship. EPA also is encouraging the pesticide industry to explore alternative packaging options, like steel drums or non-fluorinated HDPE.

As more information becomes available, EPA will continue to work in collaboration with other federal entities to provide guidance to states and localities that may be affected by PFAS in pesticide containers.

To access the oily matrix method report and to learn more, please visit: https://www.epa.gov/pesticides/pfas-packaging_

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Amy Sullivan
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON D.C., 20460

Analytical Chemistry Branch
701 Mapes Road
Ft. Meade, Maryland 20755-5350

OFFICE OF
CHEMICAL SAFETY AND
POLLUTION PREVENTION

September 28, 2021

MEMORANDUM

SUBJECT: EPA's Analytical Chemistry Branch Method for the Analysis of PFAS in Oily Matrix.
ACB Project B21-02

FROM: Thuy Nguyen, Chief 
Analytical Chemistry Branch
Biological and Economic Analysis Division

To: Kimberly Nesci, Director
Biological and Economic Analysis Division
EPA Office of Pesticide Programs

The EPA's Analytical Chemistry Branch (ABC) Laboratory at Fort Meade has developed and validated a method for the analysis of twenty-eight (28) per-and polyfluoroalkyl substance (PFAS) compounds (listed in **Appendix I**) extracted from oily matrices. This memorandum describes the processing and analysis method for these PFAS compounds from samples of oily matrix, such as pesticide products formulated in oil, petroleum distillates, or mineral oils. The method limit of quantitation is 0.025 ppb for most of the analytes, based on the lowest level validated at the ACB laboratory.

METHOD SUMMARY

Briefly, oily samples are passed through a Florisil solid phase extraction (SPE) cartridge and the oily matrix is washed off the SPE by a mixed solvent of hexane and ethyl acetate (9/1, v/v). The PFAS compounds are eluted from the SPE with methanol/acetone mixture (9/1, v/v). The collected eluate samples are concentrated and analyzed with a liquid chromatography tandem mass spectrometer (LC-MS/MS). The instrumental analysis of samples with LC-MS/MS follows the

analysis described in EPA Method 537.1¹. Isotopically labeled internal standards are used for quantitation. Isotopically labeled extraction standards are added prior to sample processing and the recoveries from each sample are monitored. Detailed information of the method, including sample preparation and analysis can be found in **Appendix II**.

METHOD VALIDATION SUMMARY

A single laboratory validation of the method was conducted at the ACB using a control oil matrix (middle distillate of crude oil). Aliquots of the control oil sample were fortified with PFAS analytes at four different concentration levels between 0.025 and 0.630 ppb in replicates (triplicate at two levels and quintuplicate at two other levels). Recoveries of the PFAS analytes and the isotopically labeled extraction standards were evaluated to determine the performance of the method.

Matrix enhancement was present for some analytes. The recoveries of these analytes, including their respective isotopically labeled extraction standards, are consistently high (greater than 120%) at every level of fortification when calibration standards in solvent (no matrix present) are used for quantitation. **Table 1** is the summary of the analyte recoveries obtained from the single lab method validations. Only the analytes listed in **Table 1** have been validated by the ACB.

Because the method is validated thus far only at the ACB, it is highly recommended that a method validation be conducted the first time a laboratory uses this method and/or if additional analytes are added to this method. Minor modifications may be necessary if acceptable results cannot be achieved during validation.

NOTE: As mentioned above, this method was validated at ACB using a clean oil matrix. When analyzing a product formulated in oil, petroleum distillates, or mineral oils, matrix interference is expected. Therefore, it is recommended that any detection of PFAS at low levels (around or below 10 times the reported limits of quantitation) be confirmed using different analytical techniques. Otherwise, the compound(s) should be reported as “tentatively identified.” The ACB relies on a high resolution accurate mass (HRAM) Mass Spectrometer coupled with liquid chromatography (LC-MS) for confirmation. The instrument parameters for this confirmation technique are listed in **Appendix II**.

¹ https://cfpub.epa.gov/si/si_public_record_Report.cfm?dirEntryId=343042&Lab=NERL

Table 1. ACB Method Validation Study Results -
Summary of the recoveries of selected PFAS compounds and their labeled extraction standards from a fortified oil matrix at different concentration levels

Targeted PFAS compounds

Analyte	Average recoveries (%) from each fortification level				Average
	<i>0.025 ppb</i>	<i>0.050 ppb</i>	<i>0.126 ppb</i>	<i>0.630 ppb</i>	
PFBA	24%	51%	31%	71%	44%
PFBS	211%	201%	120%	139%	168%
PFPeA	80%	59%	30%	58%	57%
PFPeS	25%	33%	80%	107%	61%
PFHxA	0%	62%	61%	60%	45%
PFHxS	119%	118%	147%	175%	140%
PFHpA	101%	94%	65%	65%	81%
PFHpS	69%	74%	95%	120%	90%
PFOA	61%	50%	162%	157%	107%
PFOS	82%	90%	127%	110%	102%
PFNA	73%	80%	68%	61%	71%
PFNS	96%	97%	178%	136%	127%
PFDA	87%	94%	91%	101%	93%
PFDS	116%	121%	215%	224%	169%
PFUdA	80%	84%	136%	162%	115%
PFDoA	85%	97%	154%	216%	138%
PFDoS	109%	117%	219%	210%	164%
PFTrDA	69%	79%	149%	148%	111%
PFTeDA	80%	95%	140%	152%	117%
PFHxDA	122%	146%	133%	178%	145%
PFODA	158%	169%	398%	382%	277%
FOSAA	41%	65%	153%	104%	91%
N-MeFOSAA	76%	89%	98%	99%	91%
N-EtFOSAA	20%	31%	93%	107%	63%
HFPO-DA	69%	79%	57%	60%	67%
NaDONA	36%	44%	34%	34%	37%
9Cl-PF3ONS	102%	112%	159%	179%	138%
11Cl-PF3OUdS	69%	75%	124%	125%	98%

Labeled Extraction Standards

Average recoveries (%) from each fortification level

Analyte	0.025 ppb	0.050 ppb	0.126 ppb	0.630 ppb	Average
M2PFTeDA	84%	84%	139%	154%	115%
M3PFBS	166%	160%	157%	166%	162%
M3PFHxS	121%	115%	122%	149%	127%
M4PFHpA	103%	89%	77%	64%	83%
M5PFHxA	140%	124%	71%	69%	101%
M5PFPeA	84%	72%	49%	46%	63%
M6PFDA	92%	97%	121%	110%	105%
M7PFUdA	75%	68%	122%	127%	98%
M8PFOA	44%	42%	115%	109%	78%
M8PFOS	91%	96%	113%	111%	102%
M9PFNA	84%	83%	87%	70%	81%
MPFBA	85%	79%	92%	92%	87%
MPFDoA	102%	104%	224%	210%	160%
M					
NMeFOSAA	94%	98%	126%	102%	105%
M NEtFOSAA	35%	36%	106%	101%	69%
M3HFPO-DA	63%	60%	52%	43%	54%

APPENDICES

- I. Full names and CAS numbers of analytes.
- II. Sample preparation and analysis of selected PFAS from oily matrices

APPENDIX I -

CHEMICAL ABSTRACTS SERVICE (CAS) REGISTRY NUMBERS and CHEMICAL NAMES

Analyte	CAS #	Name
PFBA	375-22-4	Perfluorobutanoic Acid
PFBS	375-73-5	Perfluorobutanesulfonic Acid
PFPeA	2706-90-3	Perfluoropentanoic Acid
PFPeS	2706-91-4	Perfluoropentanesulfonic Acid
PFHxA	307-24-4	Perfluorohexanoic Acid
PFHxS	355-46-4	Perfluorohexanesulfonic Acid
PFHpA	375-85-9	Perfluoroheptanoic Acid
PFHpS	375-92-8	Perfluoroheptanesulfonic Acid
PFOA	335-67-1	Perfluorooctanoic Acid
PFOS	1763-23-1	Perfluorooctanesulfonic Acid
PFNA	375-95-1	Perflurononanoic Acid
PFNS	68259-12-1	Perflurononanesulfonic Acid
PFDA	335-76-2	Perfluorodecanoic Acid
PFDS	335-77-3	Perfluorodecanesulfonic Acid
PFUdA	2058-94-8	Perfluoroundecanoic Acid
PFDoA	307-55-1	Perfluorododecanoic Acid
PFDoS	79780-39-5	Perfluorododecanesulfonic Acid
PFTTrDA	72629-94-8	Perfluorotridecanoic Acid
PFTeDA	376-06-7	Perfluorotetradecanoic Acid
PFHxDA	67905-19-5	Perfluorohexadecanoic Acid
PFODA	16517-11-6	Perfluorooctadecanoic Acid
FOSAA	2806-24-8	Perfluorooctane sulfonamidoacetic Acid
N-MeFOSAA	2355-31-9	N-Methyl Perfluorooctane sulfonoamidoacetic Acid
N-EtFOSAA	2991-50-6	N-Ethyl Perfluorooctane sulfonoamidoacetic Acid
HFPO-DA	13252-13-6	Hexafluoropropylene oxide dimer acid
NaDONA	958445-44-8	Sodium dodecafluoro-3H-4,8-dioxanonanoate
9Cl-PF3ONS	756426-58-1	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid
11Cl-PF3OUdS	763051-92-9	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid

Appendix II -

Sample Preparation and Analysis of Selected PFAS from Oily Matrices

Section 1. SAMPLE PREPARATION

1. Measure 4 g (about 5 ml) of samples into a 15 ml polypropylene tube.
2. Prepare a procedural blank and a laboratory blank spike (LBS) samples (5 ml of hexane each).
3. Prepare a matrix spike (MS) sample with one of the samples.
4. Fortify each sample with 50 µl of extraction standards (PFAC-ES-W, 10 ng/ml, isotopically labeled PFAS standards).
5. Fortify the appropriate samples (LBS, MS) with PFAS standard (PFAC-MXC-W, 10 ng/ml, native PFAS).
6. Mix by vortex.
7. Prepare Florisil SPE (1 g) on a SPE manifold. The Florisil SPE cartridges should have non-PFTE frits (e.g., BondElut). Ensure the SPE manifold does not have PTFE valves and dripping tubes.
8. Condition the Florisil SPE by passing through 15 ml of 1% acetic acid in methanol/acetone (9/1, v/v), followed by 5 ml of hexane/ethyl acetate (9/1, v/v).
9. Load the samples on to the SPE. Apply a vacuum to the manifold to ensure the flow through the SPE is dropwise (1-2 ml/min).
10. After all the samples pass through the SPE (do not let the SPE goes to dry), rinse the sample tubes with three aliquots of 4 ml of hexane/ethyl acetate (9/1, v/v). Each time transfer the rinse solution to the SPE and let the hexane/ethyl acetate pass through the SPE. Continue to pull the vacuum to ensure all solvent has passed through (no more dripping).
11. Place 15 ml polypropylene collection tubes under the SPE. Add 10 ml of 1% of acetic acid in methanol/acetone (9/1, v/v) to each SPE and collect the eluant.
12. Remove the collected samples from the manifold and concentrate to dryness/near dryness under a stream of N₂ in a water bath (40-50°C).
13. Add 50 µl of internal standard (PFAC-IS-W, 10 ng/ml) to each sample.
14. Add about 400 µl of 0.1% acetic acid in methanol/water (9/1, v/v) to each sample and vortex.
15. Transfer the samples to polypropylene autosampler vials with polyethylene caps for instrumental analysis, either by liquid chromatography tandem mass spectrometer (LC-MS/MS) (**Section 2.**) or by high resolution accurate mass (HRAM) mass spectrometer coupled with liquid chromatography (HRAM LC-MS, **Section 3.**)
16. A 0.2 µm nylon syringe filter may be used if samples look cloudy and need filtration.

SECTION 2. SAMPLE ANALYSIS by LC-MS/MS

Calibration Standards

Standard materials were purchased from commercial sources. Calibration standards are made in methanol/water (95/5, v/v, with 0.1% acetic acid) in the range of 0.02 ng/ml to 20 ng/ml. Prepared calibration standards contain all native, extraction standard and internal standard analytes.

Instrument Analysis

Sample analysis is performed with a liquid chromatography tandem mass spectrometer (LC-MS/MS), following EPA method 537.1 “*Determination of Selected Per- and Polyfluorinated Alkyl Substances in Drinking Water by Solid Phase Extraction and Liquid Chromatography / Tandem Mass Spectrometry (LC-MS/MS)*”.

A Waters Acquity BEH C₁₈ column (2.1 mm x 100 mm, 1.7 µm) and a gradient of 5 mM ammonium acetate aqueous solution / 5 mM ammonium acetate in acetonitrile mobile phases were used for compound separation. The plumbing of the LC has been replaced with PEEK tubing. A short trap column is placed between the pump head and autosampler valve. Mass spectrometer is operated under ESI- multiple reaction monitoring mode. Instrument parameters for LC and MS/MS are listed in **Table 1** and **Table 2**, respectively. Monitored MS transitions are listed in **Table 3**.

Table 1. LC Instrument Parameters.

LC			
Column	Waters Acquity BEH C18 column (2.1 mm x 100 mm, 1.7 µm)		
Injection Volume	20 µL		
Column Temp.	35°C		
Flow rate	300 µL/min.		
Mobile Phases & Gradient	Time (min.)	5 mM ammonium acetate in water	5 mM ammonium acetate in acetonitrile
	0	90%	10%
	4	75%	25%
	6	50%	50%
	11	5%	95%
	15	5%	95%
	17	90%	10%
	22	90%	10%

Table 2. MS/MS Instrument Parameters

MS/MS	
Polarity	Negative
Ionization	ESI
Scan type	MRM
Curtain gas	30 psi
Ionspray voltage	-4,500 V
Nebulizer current	2.85 μ A
Source temperature	450°C
Ion source gas 1	45 psi
Ion source gas 2	40 psi

Table 3. Analyte Monitored MS Transitions.

Compound	Parent mass	Product mass	DP	CE	CXP
Natives					
PFBA	213	169	-40	-14	-17
PFBS	299	80	-70	-66	-9
	299	99	-70	-36	-11
PFPeA	263	219	-25	-12	-11
PFPeS	349	80	-80	-72	-9
	349	99	-80	-38	-11
PFHxA	313	269	-15	-14	-11
	313	119	-15	-26	-15
PFHxS	399	80	-75	-90	-9
	399	99	-75	-78	-11
PFHpA	363	319	-60	-14	-55
	363	169	-60	-24	-19
PFHpS	449	80	-115	-102	-19
	449	99	-115	-86	-11
PFOA	413	369	-5	-14	-9
	413	169	-5	-22	-17
PFOS	499	80	-80	-108	-9
	499	99	-80	-60	-11
PFNA	463	419	-35	-14	-21
	463	219	-35	-24	-13

Compound	Parent mass	Product mass	DP	CE	CXP
PFNS	549	80	-85	-120	-9
	549	99	-85	-112	-13
PFDA	513	469	-45	-16	-27
	513	269	-45	-26	-33
PFDS	599	80	-65	-132	-9
	599	99	-65	-116	-11
PFUdA (PFUnA)	563	519	-40	-16	-27
	563	169	-40	-30	-15
PFDoA	613	569	-30	-32	-27
	613	169	-30	-18	-15
PFDoS	699	80	-40	-168	-21
PFTrDA	663	619	-50	-18	-31
	663	169	-50	-36	-19
PFTeDA	713	669	-50	-18	-33
	713	169	-50	-34	-17
PFHxDA	813	769	-60	-22	-27
PFODA	913	869	-20	-15	-15
FOSAA	556	498	-65	-44	-29
N-MeFOSAA	570	419	-20	-26	-23
	570	483	-20	-24	-35
N-EtFOSAA	584	419	-30	-30	-25
	584	483	-30	-24	-39
HFPO-DA	329	169	-15	-18	-15
	329	285	-15	-8	-17
NaDONA	377	251	-30	-16	-13
	377	85	-30	-34	-9
9Cl-PF3ONS	531	351	-50	-36	-19
	531	99	-50	-76	-11
11Cl-PF3OUdS	631	451	-50	-40	-25
	631	83	-50	-86	-9

Extraction Standards						
Compound	Parent mass	Product mass	DP	CE	CXP	
M2PFTeDA	715	670	-35	-18	-55	
M3PFBS	302	99	-60	-36	-15	
M3PFHxS	402	99	-65	-74	-11	
M5PFPeA	268	223	-50	-22	-13	
M6PFDA	519	474	-25	-14	-27	
M7PFUdA	570	525	-25	-16	-13	
M8PFOA	421	376	-20	-12	-45	
M8PFOS	507	80	-50	-110	-9	
M9PFNA	472	427	-25	-14	-27	
MPFBA	217	172	-60	-14	-15	
MPFDoA	615	570	-35	-18	-39	
M NMeFOSAA	573	419	-45	-28	-11	
M NEtFOSAA	589	419	-5	-28	-23	
M3HFPO-DA	332	287	-5	-8	-17	
Internal Standards						
M3PFBA	216	172	-35	-6	-11	
MPFDA	515	470	-40	-16	-27	
M2PFOA	415	370	-20	-14	-21	
MPFOS	503	99	-10	-106	-41	
	503	80	-10	-110	-9	

Quantitation is based on internal standard method. The recoveries of the isotopically labelled extraction standards from each sample, in addition to the recoveries of spiked compounds from LBS and matrix spike, are monitored.

SECTION 3. SAMPLE ANALYSIS by HRAM LC-MS

This is an alternative instrumental method for analysis of the perfluoroalkyl substances (PFAS), as compared with the traditional technique using LC-MS/MS and can be used to confirm presence of PFAS at low levels (around or below 10 times the LC-MS/MS reported limits of quantitation). Equivalent analytical columns and materials may be used in place of those described in this method. The instrument parameters may be modified to enhance the performance of the method.

Calibration Standards (same as that in Section 2)

Standard materials were purchased from commercial sources. Calibration standards are made in methanol/water (95/5, v/v, with 0.1% acetic acid) in the range of 0.02 ng/ml to 20 ng/ml. Prepared calibration standards contain all native, extraction standard and internal standard analytes.

Instrument Analysis

Sample analysis is performed with a Q-Exactive™ HF high resolution accurate mass (HRAM) mass spectrometer coupled with liquid chromatography.

A Thermo Hypersil GOLD column (2.1 mm x 100 mm, 1.9 µm particle size) and a gradient of 5 mM ammonium acetate aqueous solution / 5 mM ammonium acetate in acetonitrile mobile phases were used for compound separation. A short trap column (Waters XBridge C₁₈ 3.5 µm, 2.1mm x 50 mm) is placed between the pump head and autosampler. Mass spectrometer is operated in negative ESI mode and the data were acquired using Full MS and ddMS² methods. Instrument parameters for LC and MS/MS are listed in **Table 4** and **Table 5**, respectively. Quantitation and confirmation masses are listed in **Table 6**.

Table 4. LC Parameters.

Column	Thermo Hypersil GOLD column (2.1 mm x 100 mm, 1.9 µm particle size)		
Injection Volume	5 µL		
Column Temp.	40°C		
Flow rate	300 µL/min.		
Mobile Phases & Gradient	Time (min.)	5 mM ammonium acetate in water	5 mM ammonium acetate in acetonitrile
	0	95%	5%
	9	5%	95%
	10	0%	100%
	13	0%	100%
	13.5	95%	5%
	17	95%	5%

Table 5. HRAM MS Instrument Parameters.

Ionization	ESI Negative
Scan type	Full MS and ddMS ²
Resolution	60,000
Inclusion	On
ddMS ²	Top 5
Sheath gas flow	48
Aux gas flow	11
Spray voltage	3
Capillary temperature	260
S-lens	60
Aux gas temperature	410

Table 6. Masses used in quantitation and confirmation.

Compound	m/z	m/z	m/z
Natives			
PFBA	212.9787	168.9885	
PFBS	298.9429	79.9561	
PFPeA	262.9760	218.9857	
PFPeS	348.9398	79.9550	
PFHxA	312.9730	268.9830	
PFHxS	398.9366	79.9546	
PFHpA	362.9699	318.9799	296.9780
PFHpS	448.9335	449.9360	79.9550
PFOA	412.9667	368.9767	
PFOS	498.9307		
PFNA	462.9636	418.9737	428.1716
PFNS	548.9274		
PFDA	512.9602	468.9703	
PFDS	598.9244		
PFUdA (PFUnA)	562.9572	518.9672	563.9606
PFDoA	568.9642	612.9542	
PFDoS	698.9182		
PFTTrDA	662.9513	618.9610	663.9550
PFTTeDA	712.9483	168.9886	668.9580
PFHxDA	812.9421	768.9515	
PFODA	912.9340	868.9441	

FOSAA	555.9520		
N-MeFOSAA	569.9678		
N-EtFOSAA	583.9836		
HFPO-DA	328.9680	284.9780	168.9885
NaDONA	376.9690	250.9760	84.9892
9Cl-PF3ONS	530.8975	350.1258	
11Cl-PF3OUdS	630.8899	632.8868	

Extraction Standards

M2PFTeDA	714.9548		
M3PFBS	301.9531		
M3PFHxS	401.9467		
M4PFHpA	366.9831	321.9900	
M5PFHxA	317.9897	272.9966	
M5PFPeA	267.9928	222.9991	
M6PFDA	518.9803	473.9872	
M7PFUdA	569.9807	524.9872	
M8PFOA	420.9935	376.0002	
M8PFOS	506.9570		
M9PFNA	471.9936	427.0003	
M4PFBA	216.9923	171.9986	
MPFD _o A	614.9609	569.9677	
M NMeFOSAA	572.9867		
M NEtFOSAA	589.0150		
M3HFPO-DA	286.9848	331.9780	

Internal Standards

M3PFBA	215.9888	171.9987	
MPFDA	514.9670	469.9738	
M2PFOA	414.9733	369.9800	
MPFOS	502.9439		

Identifications are based on the retention times and accurate masses. Quantitation is based on internal standard method. The recoveries of the isotopically labelled extraction standards from each sample, in addition to the recoveries of spiked compounds from laboratory blank spike (LBS) and matrix spike (MS), are monitored.

From: **Vincent Ahlholm** <vincentahlholm@gmail.com>

Date: Fri, Aug 27, 2021 at 9:41 AM

Subject: Pesticide records to public

To: <megan.1.patterson@maine.gov>

I wish I could attend meetings but in order to keep my farm alive it's usually pertinent that I be here. This idea of allowing others to see a list or application records is inherently wrong unless its for every product in the supermarket. The vast majority of our food products here are imported from other states and countries. They will have no pesticide app recorded for the customer to view. Mary the concerned mom only buys whats safe,,she buys the ones from BERRY GIANT. as she sees on line that Vincent used (trauma chemical of the day)and therefore his are BAD. Beyond that the BERRY GIANTS are from Mexico(40,000 acres of strawberry there)where the wage rate is 1\$ per hour,chemical certification bought,bribes paid to the cartels,but Mary knows they are safer as there is no chemicals listed.

This is a huge death sentence for all Maine farmers as well as making my competing neighbor know exactly how I grow produce. Can you make Coca-cola give its recipe to Pepsi ??I understand the thought process but it has and must be all products as Maine farmers will be the first to be accused of perfectly legal practices being evil.

Take the recent advertisement for Paraquat issues and lawyers seeking \$\$..Its used on grain crops to dessicate leaves(not in Maine)found in your breakfast cereal,it was used widely by theUSA DEa to spray on Mexican pot fields in the 70's,which was harvested and sent north to be smoked by thousands. Now If I kill weeds in a border area of a berry field with it,I will have it thought that its on Vincents berries. So Mary punches up QR code(it will come to that)on her phone and there it is,,,,,she's buying the BERRY GIANT "safe" berries is she not???

But I will be a vocal supporter of this if it's made into a national rule including all imports. It will not be as the power that is above Maine will not allow it. I would love to speak on this but August its near impossible to find this 10 minutes to compose this message

From: Vincent Ahlholm <vincentahlholm@gmail.com>
Sent: Monday, August 30, 2021 8:46 AM
To: Patterson, Megan L <Megan.L.Patterson@maine.gov>
Subject: Re: Pesticide records to public

EXTERNAL: This email originated from outside of the State of Maine Mail System. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Yes, comments can be added, would like to be able to address those whom think that it's a great idea to impose this on only Maine producers, what seems great will have implications of reducing farmers numbers even further in this state, I realize a farm count has gone up but that's not a true listing of commercial farms, smaller are good also but many farms are listed as existing for tax reasons of those with excess income, this has a definite depression of Maine farmers image on us being the ones listing products, to be equal across the entire food spectrum is an absolute must, I go to buy produce in the off season also, I know what they may or maybe use for crop protection, 99% don't, I am comfortable with that knowledge but most just don't know that most products from breads to muffins to oranges have fungicides in them to retard spoilage, this would or should be known also if I need to list a product application years prior to a young plant to get it to produce .I can and want to speak on this,



August 27, 2021

Maine Board of Pesticides Control
28 State House Station
Augusta, ME 04333-0028

Re: Stakeholder Information Gathering Work Session on LD 155—Resolve, Directing the Board of Pesticides Control to Prohibit the Use of Certain Neonicotinoids for Outdoor Residential Use

Dear Director Patterson and the Maine Board of Pesticides Control:

The New England Pest Management Association (NEPMA), the trade group for structural pest management companies or “pest control” companies in Maine, appreciates the opportunity to share our thoughts on **LD 155—Resolve, Directing the Board of Pesticides Control to Prohibit the Use of Certain Neonicotinoids for Outdoor Residential Use**, as we want to be constructive in the rulemaking process. Also, we want to make it clear that we appreciate the opportunity to share our industry’s thoughts regarding professional structural pest control, protecting public health and property, and exemptions in LD 155 for the products used for “controlling or treating indoor pests, and controlling or treating insects outside around structural foundations and other parts of structures,” which largely encompasses structural pest control.

The professional structural pest control industry and our certified commercial applicators and operators use neonicotinoid pesticides in, on, and around structures to protect public health and property. Our industry professionally manages structural pests with neonicotinoids such as ants, bed bugs, carpenter ants, cockroaches, flies, termites, and many others. Structural pest control uses of neonicotinoid pesticides are exempt from the prohibition in LD 155, largely because of their importance in protecting public health and property and negligible risk to pollinators.¹ Additionally, NEPMA members support, teach, and implement Best Management Practices (BMPs) developed by the National Pest Management Association, which greatly increases the ability of our members to safely use pesticides in a manner that doesn’t impact pollinators.²

The Maine Board of Pesticides Control (BPC) has a creative project before them to both “... prohibit the use of any product containing the active ingredient dinotefuran, clothianidin, imidacloprid or thiamethoxam used for application in outdoor residential landscapes such as on lawn, turf or ornamental vegetation...”, and exempt products used for, “... controlling or treating indoor pests, and controlling or treating insects outside around structural foundations and other parts of structures...” (i.e., structural pest control). There are neonicotinoid pesticide products that are exclusively used for lawn, turf or ornamental vegetation (LTO) that can be easily classified for the prohibition in residential landscapes. Similarly, there

¹ "Neonicotinoid insecticides in New York State: Economic Benefits and Risk to Pollinators," Cornell University, p. 44, <https://pollinator.cals.cornell.edu/pollinator-research-cornell/neonicotinoid-report>

² NPMA Pollinator Best Management Practices (BMPs), <http://www.multibriefs.com/briefs/npma/PollinatorBMPsFINAL.pdf>

are neonicotinoid pest control products that are exclusively used for structural pest control that can be easily classified for the exemption. However, there are products that are labeled for both structural pest control and LTO purposes.

LD 155 requires the BPC to balance and uphold both the exemption for structural pest control and the prohibition of LTO uses in residential landscapes.

Therefore, to address instances where the label includes both structural pest control and LTO uses, NEPMA could envision the BPC changing the classification of these products from general use to restricted use, so the professional structural pest control industry could still have vital access to neonicotinoid products that are used for controlling or treating indoor pests and controlling or treating insects outside around structural foundations and other parts of structures – and the prohibition for LTO uses in residential landscapes could be simultaneously upheld.

Lastly, we acknowledge that this is a complex directive that requires creativity and are open to hearing other ideas on how to achieve both the required exemption and prohibition components in LD 155.

Thank you for the opportunity to provide input on this very important step in the rulemaking process.

Sincerely,

Ted Brayton
Past President
New England Pest Management Association

The Spotted Lanternfly Arrives in Massachusetts

The MA Department of Agricultural Resources (MDAR) announced on September 28th, 2021, that an established population of the invasive spotted lanternfly (*Lycorma delicatula*) was detected in Worcester County, MA. This finding was confirmed by state officials.

For further details regarding what is currently known about the population in Fitchburg, and what MDAR is doing about it, visit the [press release](#).

What Should You Do?

Residents and professionals living and working across the Commonwealth should learn the life stages of the spotted lanternfly and be able to identify their eggs, immatures, and adults. At this time, it is particularly valuable to learn how to ID spotted lanternfly adults and egg masses. If any life stages of this insect are found in Massachusetts, **report them immediately here:** <https://massnrc.org/pests/slfreport.aspx> .

In particular, if you know of [tree of heaven](#) (*Ailanthus altissima*)¹ growing nearby, check that preferred host for adults and egg masses and report anything suspicious to the aforementioned website. That said, spotted lanternfly adults and eggs masses (and immatures when active) may be found just about anywhere.

¹The tree of heaven is a rapidly growing deciduous tree native to China and Taiwan that has become a widespread invasive species across North America. Learn how to identify this invasive tree here: <https://extension.psu.edu/tree-of-heaven> .

If you live or work in the Fitchburg area, please be sure to check your vehicles, tractors, trailers and other transportation equipment and plant material for egg masses, nymphs, and adults to reduce the risk of population spread.

Should You Treat?

At this time, the only established population of spotted lanternfly in Massachusetts is in Fitchburg. Therefore, there is no reason to be preemptively treating for this insect in other areas of Massachusetts at this time. If you suspect you have found spotted lanternfly in additional locations, please report it immediately to MDAR at the link provided above. If you are living and working in the Fitchburg area, please be especially vigilant and report anything suspicious.

What is at Risk?

The spotted lanternfly feeds on over 103 different species of plants, including agriculturally significant crops (apple, peach, grape, etc.) and trees and shrubs that are important in our managed landscapes and natural areas. Due to various factors, spotted lanternflies are also a significant public nuisance once they become established. For more information about this insect, visit: <https://ag.umass.edu/landscape/fact-sheets/spotted-lanternfly>.

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THIS IS A PEST ALERT. THE UMASS EXTENSION FRUIT PROGRAM WILL ASSESS MONITORING AND MANAGEMENT OPTIONS FOR THIS PEST IN MASSACHUSETTS. THE INFORMATION WILL BE PROVIDED TO GROWERS AS IT BECOMES AVAILABLE.

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For More Information:

From UMass Extension:

<https://ag.umass.edu/landscape/fact-sheets/spotted-lanternfly>

From the MA Department of Agricultural Resources:

<https://massnrc.org/pests/pestFAQsheets/spottedlanternfly.html>