



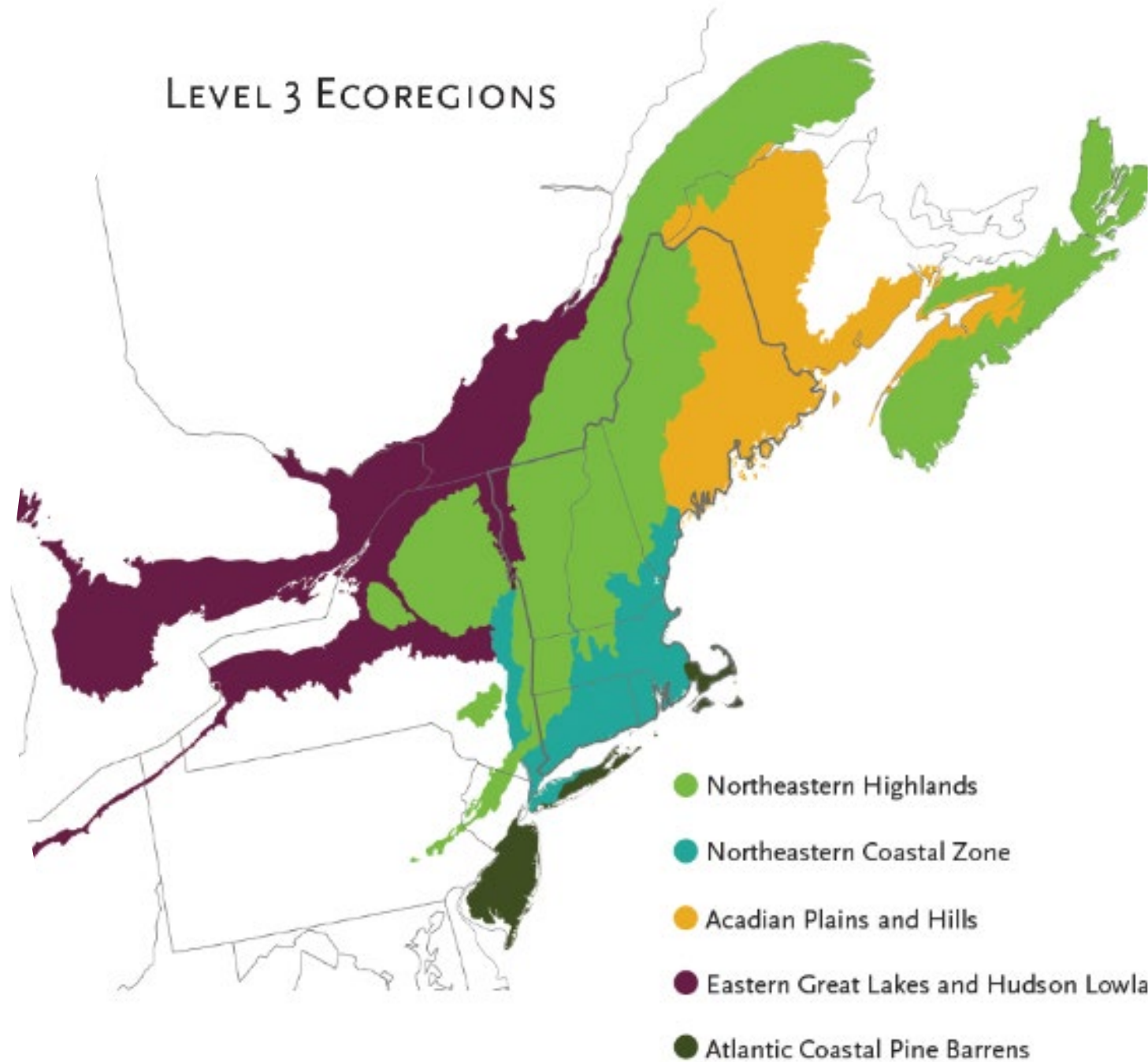
Plants, worms & bugs

Slowing the spread of invasive species?



Definition

An "invasive species" is defined as a species that is non-native to the ecoregion; and whose introduction causes or is likely to cause economic or environmental harm or harm to human health.





Native species are NOT invasive species



Why be concerned about
invasive species?

Because we
love Maine!



Invasive
species don't
fit into Maine's
ecological
puzzle

Invasive species can exacerbate climate change



CLIMATE CHANGE POLICY MUST ADDRESS INVASIVE SPECIES' CAPACITY TO:



Damage ecosystem function and reduce nature-based solutions like carbon sequestration



Degrade natural and built infrastructure resilience, impacting rural and urban communities



Reduce coastal communities' resilience to storms, erosion, flooding, and biodiversity loss



Imperil Indigenous cultural practices, food security, and ways of life



Threaten island sustainability, human health, food systems, and transitional practices



Terrestrial invasive plants

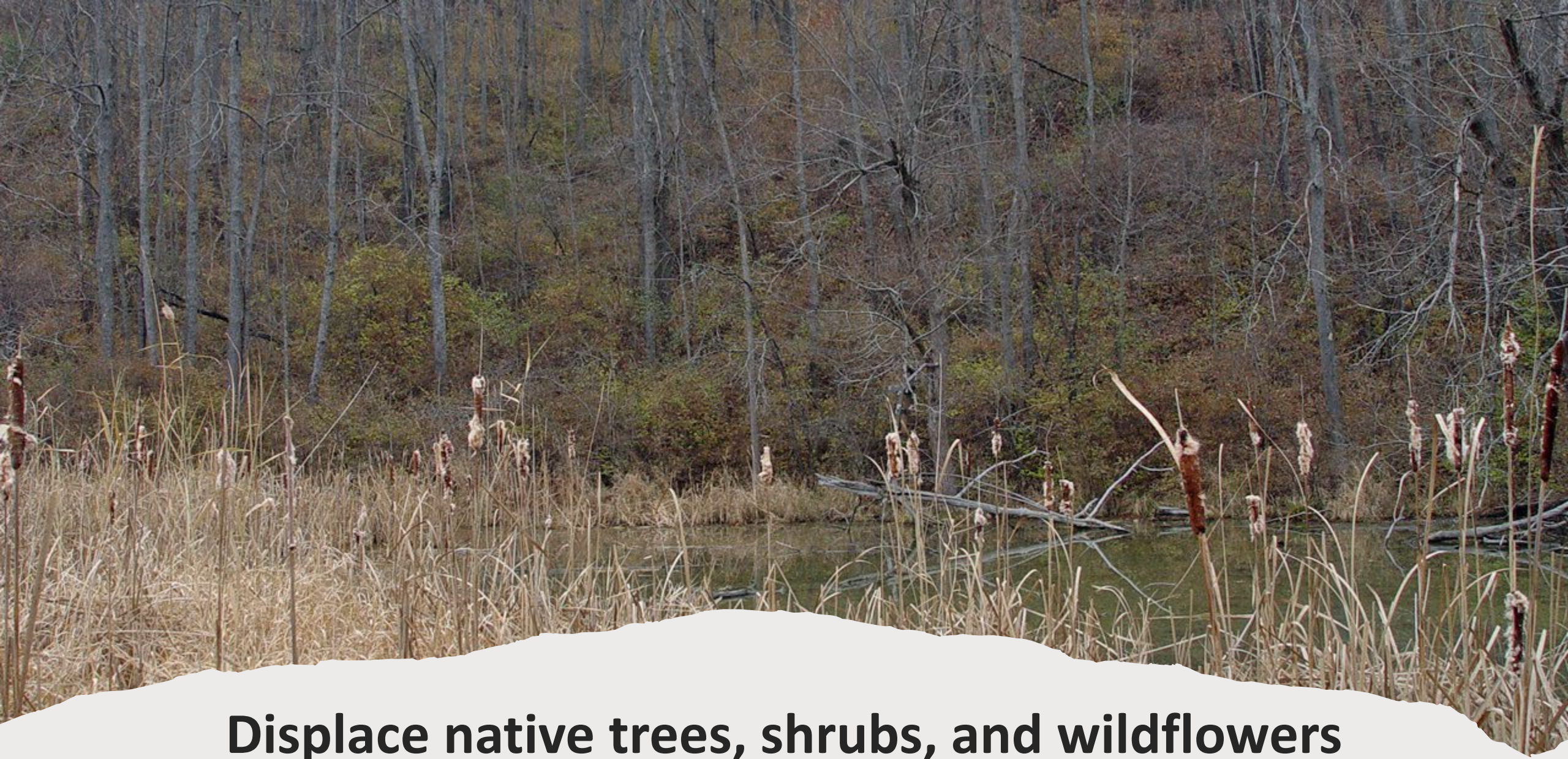
What harm do invasive plants cause?



Out-compete native plant species, overrun habitats



**Damage or kill plants
directly or indirectly**



Displace native trees, shrubs, and wildflowers

**Alter wildlife
habitat &
prevent forest
regeneration**



Harm food webs that depend on native plants

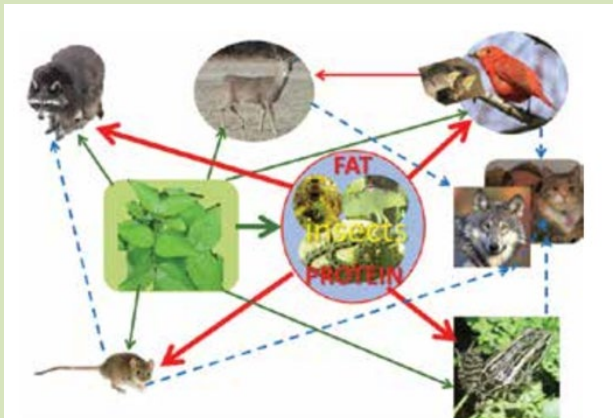
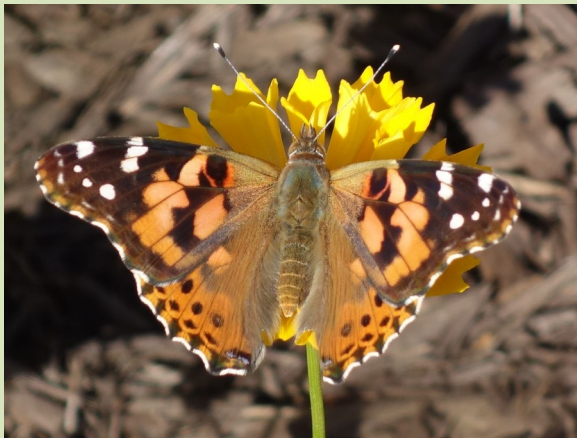


Figure 4. A simple food web showing the importance of insects in transforming plant material into food for many other animals.



Figure from Jordan 2014, Novel ecosystems, invasion and the forgotten food web, Quarterly Newsletter of the Long Island Botanical Society, Spring edition.

Chapter 273 - Criteria for Evaluating Terrestrial Plant Species

- In order to include a plant on a list of invasive terrestrial plant species administered by the Maine Department of Agriculture, Conservation, and Forestry, ALL the following criteria must be met:
 - Be non-native to Maine, and
 - Have the potential for rapid growth, dissemination, and establishment in minimally managed habitats, and
 - Have the biological potential for widespread dispersion and for dispersing over spatial gaps, and
 - Have the biological potential for existing in high numbers or large colonies in minimally managed habitats, and
 - Have the potential to displace native species in minimally managed habitats.

Invasive Plants Prohibited from Sale or Import in Maine What you need to Know



CMR 01-001 Chapter 273: Criteria for Listing Invasive Terrestrial Plants makes it illegal to sell, import, export, buy or intentionally propagate for sale the 33 plant species listed below.

<i>Acer ginnala</i> (amur maple)	<i>Impatiens glandulifera</i> (ornamental jewelweed)
<i>Acer platanoides</i> (Norway maple)	<i>Iris pseudacorus</i> (yellow iris)
<i>Aegopodium podagraria</i> (bishop's weed)	<i>Ligustrum vulgare</i> (common privet)
<i>Ailanthus altissima</i> (tree of heaven)	<i>Lonicera japonica</i> (Japanese honeysuckle)
<i>Alliaria petiolata</i> (garlic mustard)	<i>Lonicera mackii</i> (amur or bush honeysuckle)
<i>Amorpha fruticosa</i> (false indigo bush)	<i>Lonicera morrowii</i> (Morrow's honeysuckle)
<i>Ampelopsis glandulosa</i> (porcelain berry)	<i>Lonicera tatarica</i> (Tatarian honeysuckle)
<i>Artemisia vulgaris</i> (common mugwort)	<i>Lythrum salicaria</i> (purple loosestrife)
<i>Berberis thunbergii</i> (Japanese barberry)	<i>Microstegium vimineum</i> (Japanese stilt grass)
<i>Berberis vulgaris</i> (common barberry)	<i>Paulownia tomentosa</i> (paulownia, princess tree)
<i>Celastrus orbiculatus</i> (Asiatic bittersweet)	<i>Persicaria perfoliata</i> (mile-a-minute)
<i>Elaeagnus umbellata</i> (Autumn olive)	<i>Phellodendron amurense</i> (amur cork tree)
<i>Euonymus alatus</i> (winged euonymus)	<i>Populus alba</i> (white cottonwood)
<i>Euphorbia cyparissias</i> (cypress spurge)	<i>Robinia pseudoacacia</i> (black locust)
<i>Fallopia baldschuanica</i> (Chinese bindweed)	<i>Rosa multiflora</i> (multiflora rose)
<i>Fallopia japonica</i> (Japanese knotweed)	
<i>Frangula alnus</i> (glossy buckthorn)	
<i>Hesperis matronalis</i> (dame's rocket)	

Quick Facts

- The sale/import ban includes the listed species and all cultivars, varieties and hybrids.
- Variances may be applied for and granted for scientific research and for varieties, cultivars or hybrids that have been shown to not be invasive through peer reviewed scientific research.
- The invasive plant rule and included prohibited plant list will be reviewed every 5 years.
- Recent changes to the rule will prohibit the sale of an additional 30 species starting January 1, 2024 (see back).
- Find more information at www.maine.gov/da/ct/np/np/horticulture/invasiveplants.shtml



FOR MORE INFORMATION:
MAINE DEPARTMENT OF AGRICULTURE,
CONSERVATION AND FORESTRY
DIVISION OF ANIMAL AND PLANT HEALTH
28 STATE HOUSE STATION
AUGUSTA, ME 04333
207-287-3991
HORTICULTURE@MAINE.GOV
WWW.MAINE.GOV/HORT

Scientific name	Common name	Effective Date
<i>Alnus glutinosa</i>	European alder	1/1/2024
<i>Angelica sylvestris</i>	Woodland angelica	1/1/2024
<i>Anthriscus sylvestris</i>	Wild chervil, raven's wing	1/1/2024
<i>Aralia elata</i>	Japanese angelica tree	1/1/2024
<i>Butomus umbellatus</i>	Flowering rush	1/1/2024
<i>Elaeagnus angustifolia</i>	Russian olive	1/1/2024
<i>Euonymus fortunei</i>	Wintercreeper, climbing spindle tree	1/1/2024
<i>Festuca filiformis</i>	Fine-leaved sheep fescue	1/1/2024
<i>Ficaria verna</i>	Lesser celandine	1/1/2024
<i>Glaucium flavum</i>	Yellow hornpoppy	1/1/2024
<i>Glechoma hederacea</i>	Ground ivy, creeping charlie	1/1/2024
<i>Glyceria maxima</i>	Great manna grass, reed manna grass	1/1/2024
<i>Hippophae rhamnoides</i>	Sea buckthorn	1/1/2024
<i>Ligustrum obtusifolium</i>	Border privet	1/1/2024
<i>Lonicera xylosteum</i>	Dwarf honeysuckle	1/1/2024
<i>Lythrum virgatum</i>	European wand loosestrife	1/1/2024
<i>Miscanthus sacchariflorus</i>	Amur silvergrass	1/1/2024
<i>Petasites japonicus</i>	Fuki, butterbur, giant butterbur	1/1/2024
<i>Phalaris arundinacea</i>	Reed canary grass, variegated ribbon grass	1/1/2024
<i>Photinia villosa</i>	Photinia, Christmas berry	1/1/2024
<i>Phragmites australis</i>	Common reed	1/1/2024
<i>Phyllostachys aurea</i>	Golden bamboo	1/1/2024
<i>Phyllostachys aureosulcata</i>	Yellow groove bamboo	1/1/2024
<i>Pyrus calleryana</i>	Callery ("Bradford") pear	1/1/2024
<i>Ranunculus repens</i>	Creeping buttercup	1/1/2024
<i>Rubus phoenicolasius</i>	Wineberry	1/1/2024
<i>Silphium perfoliatum</i>	Cup plant	1/1/2024
<i>Sorbus aucuparia</i>	European mountain-ash	1/1/2024
<i>Tussilago farfara</i>	Coltsfoot	1/1/2024
<i>Valeriana officinalis</i>	Common valerian	1/1/2024

Invasive Terrestrial Plant Species of Special Concern

Scientific Name	Common Name
<i>Rosa rugosa</i>	Rugosa rose, beach rose

The other list of invasive plants

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Maine Natural Areas Program

Advisory List of Invasive Plants - 2019

This is a list of non-native plants found to pose a threat to habitats and natural resources in Maine. The Advisory List is an informal tool for landowners, wildlife biologists, foresters, land stewards, conservation commissions, and others interested in controlling invasive plants and preventing their spread. It is intended for education and outreach, land management, and other **non-regulatory** uses.

How is the Advisory List different than the Do Not Sell list?

The [Do Not Sell list](#) is a regulatory list of terrestrial invasive plants found in the horticulture trade. Plants on the Do Not Sell list may not be imported, exported, bought, sold, or intentionally propagated for sale. An important distinction between the two lists is that the Do Not Sell list only addresses species known from the horticulture trade, while the Advisory List includes numerous species not sold for planting, which are invasive via other pathways. For information on Maine's **Regulatory Do Not Sell List**, please visit [Maine Horticulture Program's Invasive Plant Rules](#).

Search: Show entries

Common Name	Scientific Name	Invasive Ranking	Habitats Threatened	Status in Maine
American water lotus	Nelumbo lutea	1-Severely invasive	Open Water, Open Wetlands	Localized
Amur Cork Tree	Phellodendron amurense	2-Very invasive	Open Uplands, Wooded Uplands	Not Yet Detected
Amur honeysuckle	Lonicera maackii	1-Severely invasive	Open Uplands, Wooded Uplands, Wooded Wetlands	Localized
Amur maple	Acer ginnala	2-Very invasive	Open Uplands, Wooded Uplands, Wooded Wetlands	Localized
Asiatic bittersweet	Celastrus orbiculatus	1-Severely invasive	Open Uplands, Wooded Uplands, Open Wetlands, Wooded Wetlands	Widespread
Autumn olive	Elaeagnus umbellata	2-Very invasive	Open Uplands, Wooded Wetlands	Widespread
Bella honeysuckle	Lonicera x bella	1-Severely invasive	Open Uplands, Wooded Uplands, Open Wetlands, Wooded Wetlands	Localized
Bicolor lespedeza, two-colored bush-clover	Lespedeza bicolor	3-Invasive, habitat-specific threats	Open Uplands, Wooded Uplands	Not Yet Detected

ADVISORY LIST & RULE RESOURCES

- [Printable list - common name](#)
- [Printable list - scientific name](#)
- [Invasive Plant Gallery](#)
- [2019 Advisory List Endorsement](#)
- [Invasive Plant Rules](#)

https://www.maine.gov/dacf/mnap/features/invasive_plants/invsheets.htm

STILTGRASS (*MICROSTEGIUM VIMINIUM*)

- Found at York county nursery and two Georgetown properties
- Be on the lookout for dense patches of unfamiliar grass
- Built up thatch is fire risk
- Crowds out natives



Stiltgrass



- 5 Known Sites
- Found in Forests



Invasive Stiltgrass

Microstegium vimineum



Have you seen this plant?



Invasive stiltgrass (*Microstegium vimineum*) is a highly invasive annual weed that causes ecological and economic harm by forming a thick thatch layer that makes it difficult for native trees, shrubs and wildflower seeds to establish and grow. The presence of invasive stiltgrass in a forest may also increase fire risk.

Please help us find this Early Detection, Rapid Response plant in Maine. **You can help!** If you suspect invasive stiltgrass, **note the location** and **send a photo** to invasives.mnap@maine.gov. Look for these characteristics:

1. 2-4" long leaves that are ½" wide and alternate along the stem.
2. Upper leaf surface has a stripe of reflective hairs along the mid-rib.
3. Leaf edges that feel smooth to the touch. Unlike some native grasses that have stiff hairs that make the leaf edges feel rough or sticky.
4. Plants that flower and set seed late in the season (September-October), much later than many other grasses. Seed spikes are similar to crabgrass.
5. Stems may develop a reddish tint late in the season.



MILE-A-MINUTE VINE (*Persicaria perfoliata*)

- Not yet established in Maine
- Several reports/interceptions in 2023
- Climbing/sprawling annual vine
- Can grow 6" in one day
- Produces seeds June-Sept
 - Be vigilant in cutting back
- Seeds viable up to 6yrs
- Lots of look-a-likes

Photo credit: Richard Gardner, Bugwood.org

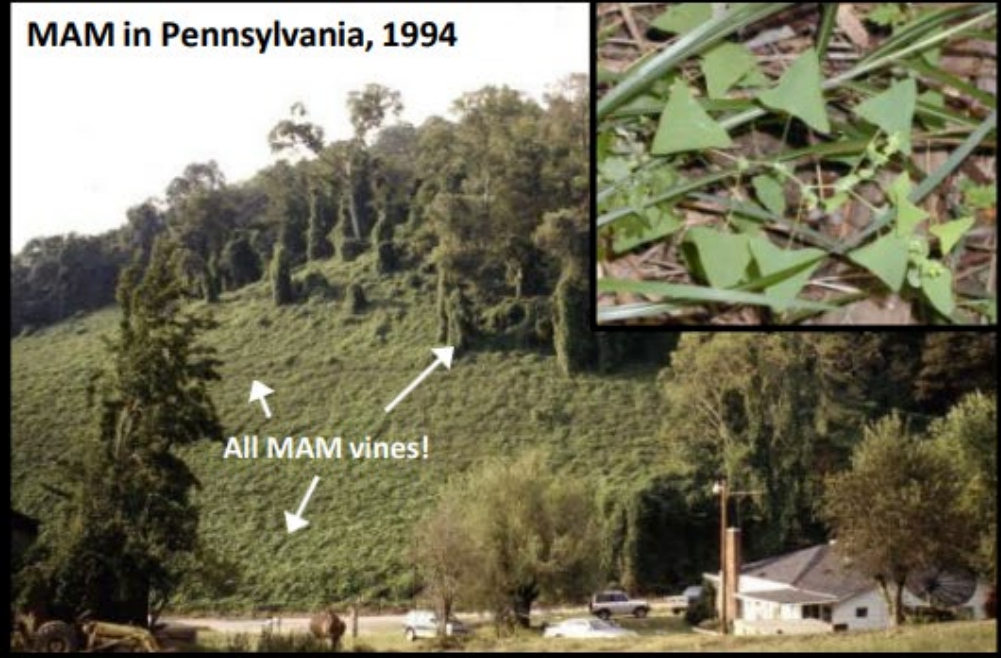
Mile-a-minute Vine (MAM)

Persicaria perfoliata

1. Triangular leaves- no lobes or indentations



MAM in Pennsylvania, 1994



2. Small barbs along stems



3. Saucer-shaped leaves (called ocrea) at nodes



Have you seen this plant?



Mile-a-minute vine (*Persicaria perfoliata*) is a highly invasive annual weed that causes ecological and economic harm by out competing and overgrowing native species. A single mile-a-minute vine can grow up to 6 inches per day and will climb trees and posts and scramble over other vegetation.

Please help us find this Early Detection, Rapid Response plant in Maine. **You can help!** If you see a vine with **all three** of these characteristics (1) very triangular leaves, (2) very sharp barbs on the stem, and (3) clasping ocrea, **note the location** and **send a photo** to invasives.mnap@maine.gov.

Yes



Suspect mile-a-minute and report.

NO



Leaf shapes of other vines. These species should **NOT** be reported.

Photos & thanks to Todd Mervosh, Les Mehrhoff, Hope Leeson, Judy Hough-Goldstein, Renee Sullivan & the CT Invasive Plant Working Group

MILE-A-MINUTE LOOK-A-LIKES

Tearthumbs are closely related to Mile-a-Minute vine. Many have prickles on the stem, but their leaves are longer, less triangular, and often lobed at the base. There are many species, most lack the clasping bract. Top photos of **Halberd-leaved Tearthumb**, bottom photos of **Arrow-leaved Tearthumb**.



Photos: Bruce Patterson | Glen Mittelhauser |
Arthur Haines | Arie Tal



https://www.maine.gov/dacf/mnap/features/invasive_plants/mile-a-minute.pdf

Fringed Bindweed, **Climbing Bindweed**, and **Black Bindweed** are similar vining plants in the genus *Fallopia*. The first two are native, though Black Bindweed is non-native and weedy. These three species have nodes along their stems and superficially resemble each other. The nodes are fringed in Fringed Bindweed but not the other two. Keels on flower petals and fruit texture distinguish the other two species.



Fringed Bindweed (left and right above): Don Cameron | Frank Bramley

WHAT CAN WE DO ABOUT INVASIVE SPECIES?

Key steps in addressing invasive species

- Prevent new introductions
- Identify, assess,
- Report (horticulture@maine.gov) (iMapInvasives.org)
- Prioritize
- Control
- Monitor
- (repeat)



Identification of invasive plants

- Plant ID requires practice
- Go outside, look at plants
- Use the MNAP field guide
- Use the GoBotany website to look at photos



Maine Invasive Plants Field Guide



Maine Invasive Plants Field Guide

Maine Natural Areas Program
Department of Agriculture, Conservation and Forestry

GOUTWEED
(Bishop's weed)
Aegopodium podagraria
Status in Maine: widespread

SEVERELY INVASIVE



Description: Herbaceous, perennial ground cover, 1-2' tall, with many common names. Leaves: Compound with variable triternate leaflets; pointed leaflets have serrate margins. Most leaves are basal with long petioles. Wild type is a medium green color while the variegated form is pale bluish green with white margins. Flowers/seeds: Typical carrot family flowers; 2-5" diameter umbels of tiny white flowers atop 2-3' stalk. Plants require at least partial sun to flower. Seeds are brown, small and flat. Roots: Fleshy long white rhizomes, like quackgrass (*Elymus repens*).

Native range: Europe & Northern Asia. How arrived in U.S.: As an ornamental.

Reproduction: While research shows that goutweed's insect pollinated flowers can produce viable seed, seedlings are rarely encountered. Its branching network of rhizomes allows it to grow aggressively away from plantings or colonize a new site via contaminated soil.

Habitat: Moist soil and light shade are preferred garden spots, but goutweed is content in many habitats. It typically enters forests from runaway plantings or via fill contaminated with rhizome fragments.

Similar native species: Golden alexanders (*Zizia aurea*) has somewhat similarly shaped leaves but yellow flowers. Anisewood and sweet-cicely (*Osmorhiza* spp.) also have somewhat similarly shaped leaves but are anise-scented,

herbs & grasses



- Essential ID and control information
- 46 species
- Waterproof, small
- \$30 including S&H
- Visit MNAP website to order
- Read the “Managing Invasive Plants” section in the back!

Managing invasive plants

Physical removal – may cause significant soil disturbance

Covering with mulch or tarps – takes years to work and causes significant loss of soil life

Solarization – not very effective in northern climates, very short window of opportunity

Cutting or mowing – not very effective on established perennial plants, may take years to be effective or may increase the population density

Herbicides – most effective and least disruptive, allows for immediate establishment of native plants

Invasive Plant Management

Herbicide choice and timing are different for each species

A variance is needed to do application within 25 feet of high-water mark

Herbicides are effective as foliar applications (triclopyr or glyphosate)

Cut-stump applications (glyphosate or triclopyr solution applied immediately after cutting except in early spring), or basal bark application (for stems <6" diameter, triclopyr ester in oil)




Foliar applications have higher risk of drift

Cut surface and
basal treatments
are extremely
low risk for
people and the
environment





Then what?

- Invasive plant management requires persistence
 - Seedbanks can last for many years
 - Re-sprouting must be pulled or mowed before it gets established
 - Birds will continue to deposit new seeds
 - In some areas, native plants should be added to reduce re-invasion
- 

[DACF Home](#) → [Bureaus & Programs](#) → [Maine Forest Service](#) → [Projects](#) → Invasive Plant Management Program

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Wildfire Danger Report
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Cities and Towns
Working in the Woods
Education
Projects
Fall Foliage
Forestry Fridays
Invasive Plant Management Program
Invasive Plant Academy
Maine's Healthy Forests Program
Maine Adaptive BMP Cooperative (ABC)

Maine Forest Service

Invasive Plant Management Program



Attention Woodland Owners and Natural Resource Professionals:

- 🌳 PLEASE NOTE: THIS PROGRAM IS OPEN TO LANDOWNERS WITH PARCELS OF AT LEAST 10 WOODED ACRES.
- 🌳 Invasive plants choke out native trees, shrubs, and wildflowers, and harm wildlife habitat in your woods!

This Program Will Provide Landowners (public or private ownerships 10 to 10,000 acres) with:

- 🌳 A list of trained professionals available for contracting to assess your property and prepare an [Invasive Plant Control Practice Plan \(IPCPP\)](#).

Important Documents/Forms

[List of Eligible Invasive Plant Control Practice Plan Preparers \(PDF\)](#)

https://www.maine.gov/dacf/mfs/projects/invasive_plant_mgmt/index.html

INVASIVE PLANT EDUCATIONAL WORKSHOP SERIES

Time: 10 am – 4:30 pm

Locations:

Saturday, June 7 – Oxford County
Tuesday, July 22 – Piscataquis County
Tuesday, Aug. 5 – Aroostook County
Tuesday, Sept. 9 (Maple Focused) – York County

Participants will learn about Invasive plant biology, ecological impacts, identification, fundamental concepts of invasive plant management and related state and federal programs in classroom and field settings.

Each participant will receive an Invasive Plant Field Guide and lunch

Fee: \$30
Pesticide Credits Anticipated



Scan the QR code for more info or visit:



extension.umaine.edu/agriculture/invasive-plant-educational-workshops

For more information or to request an accommodation, please contact Nick Rowley at nicholas.rowley@maine.edu or 207.778.4650.

In complying with the letter and spirit of applicable laws and pursuing its own goals of diversity, the University of Maine System does not discriminate on the grounds of race, color, religion, sex, sexual orientation, transgender status, gender, gender identity or expression, ethnicity, national origin, citizenship status, familial status, ancestry, age, disability physical or mental, genetic information, or veterans or military status in employment, education, and all other programs and activities. The University provides reasonable accommodations to qualified individuals with disabilities upon request. The following person has been designated to handle inquiries regarding non-discrimination policies: Director of Equal Opportunity, 5713 Chadbourne Hall, Room 412, University of Maine, Orono, ME 04469-5713, 207.581.1226, TTY 711 (Maine Relay System).

← → ↻ 🏠 maine.gov/dacf/php/gotpests/solutions/terrestrial-invasive-companies.shtml Paused

🔄 USDA APHIS Applic... 📌 Division of Animal... 📌 Office of Informatio... 📌 Hemp Database 📌 MaineIT - Third-Par... 📌 Office of Informatio... 📌 Agriculture - Docu... 📌 OIT Service Catalog... 📌 Jenna Hinkley 📌 MS-TAMS Logon »

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[Home](#) → [Pest Solutions](#) → List of Licensed Companies Offering Services for Control of Invasive Terrestrial Plants

Pest Solutions
Terrestrial Invasive Plant Control Companies
Tick/Mosquito Companies

List of Licensed Companies Offering Services for Control of Invasive Terrestrial Plants

The following list includes companies that are licensed to provide services for control of invasive terrestrial plants in Maine. The Maine Board of Pesticides Control does not recommend these above any others. This is not a complete list of licensed companies; these responded to a letter asking if they wanted to be listed. Others wanting to be listed should contact the Board by emailing pesticides@maine.gov or calling (207) 287-2731 (*created October 2018*).

Company Name	Address	Phone	Email / Website	Area Served
Absolutely Complete Property Services	8 Evergreen Farms Rd, Scarborough, ME 04074	207-415-8011	nbjort@acps.me	Androscoggin, Cumberland, Oxford, Sagadahoc, and York counties
Aroostook Arboriculture Inc.	PO Box 402, Presque Isle, ME 0769	207-227-4726	darren@groundperfectionspecialists.com	Statewide
Bartlett Tree	9 Washington	207-883-	ntucker@bartlett.com	Cumberland

RELATED LINKS

[Maine Natural Areas Program](#)

State Rules re Invasive Plants administered by the Maine Horticulture Program

Who can do the control work?

<https://www.maine.gov/dacf/php/gotpests/solutions/terrestrial-invasive-companies.shtml>



||

CREEPY CRAWLIES

Amyntas worm spp.

Jumping Worm, Crazy Worm, Snake Worm, Alabama Jumper

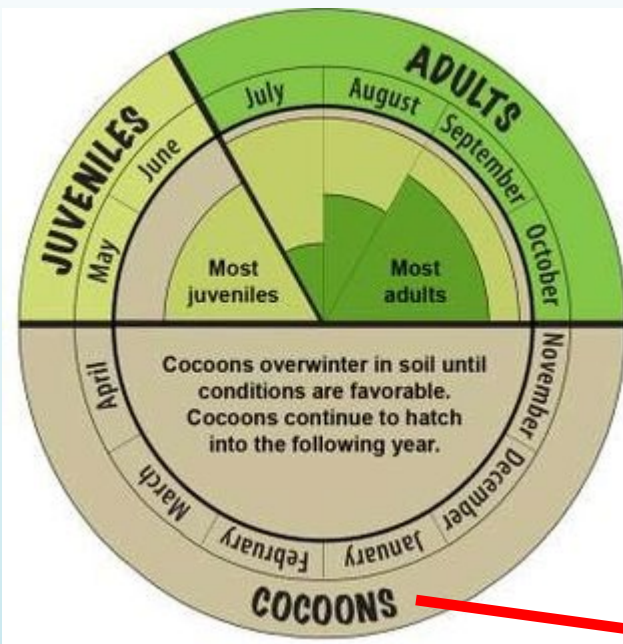
Characteristics

- Darker in color – appearing almost gray
- Glossy smooth skin
- Light milky white clitellum smooth to the body
- Very active, thrashing and jumping
- Moves like a snake
- Sheds its tail when handled
- Parthenogenic – asexual reproduction so it only takes one worm to start a family.



Amynthes tokioensis

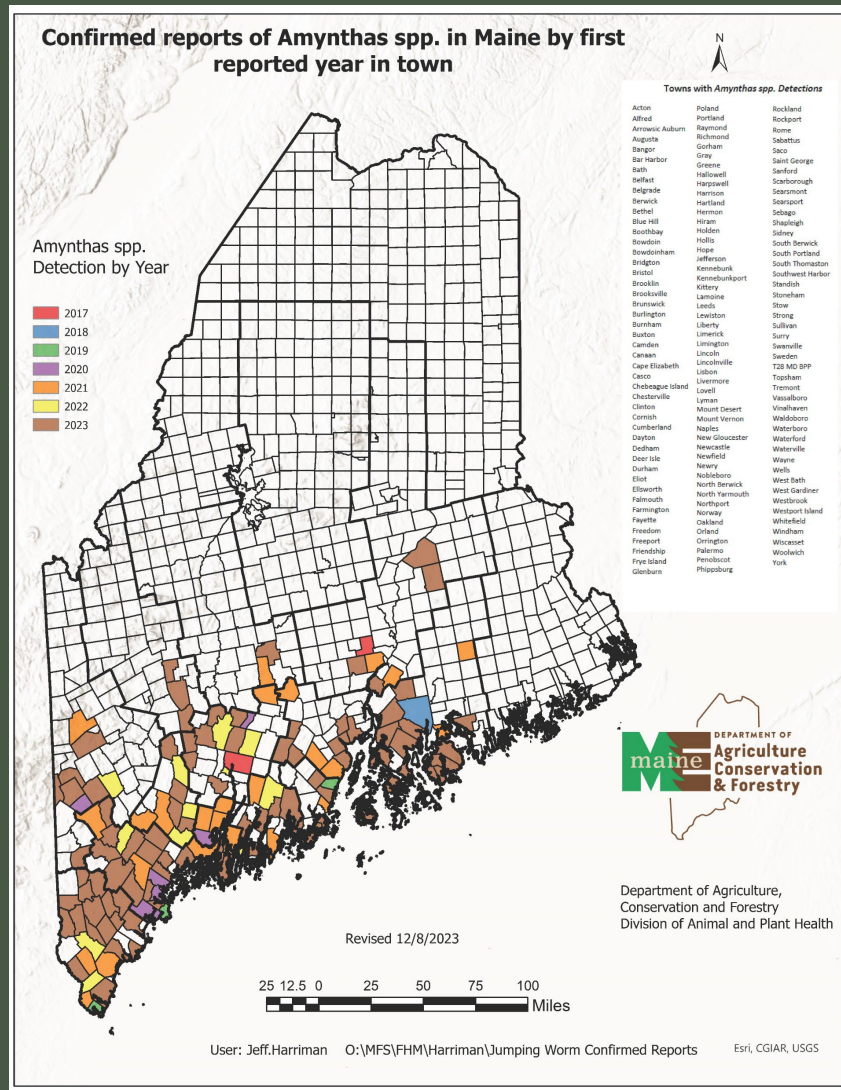
Amynthes agrestis



Life Cycle



Jumping worms are now reported in 13 of 16 Counties

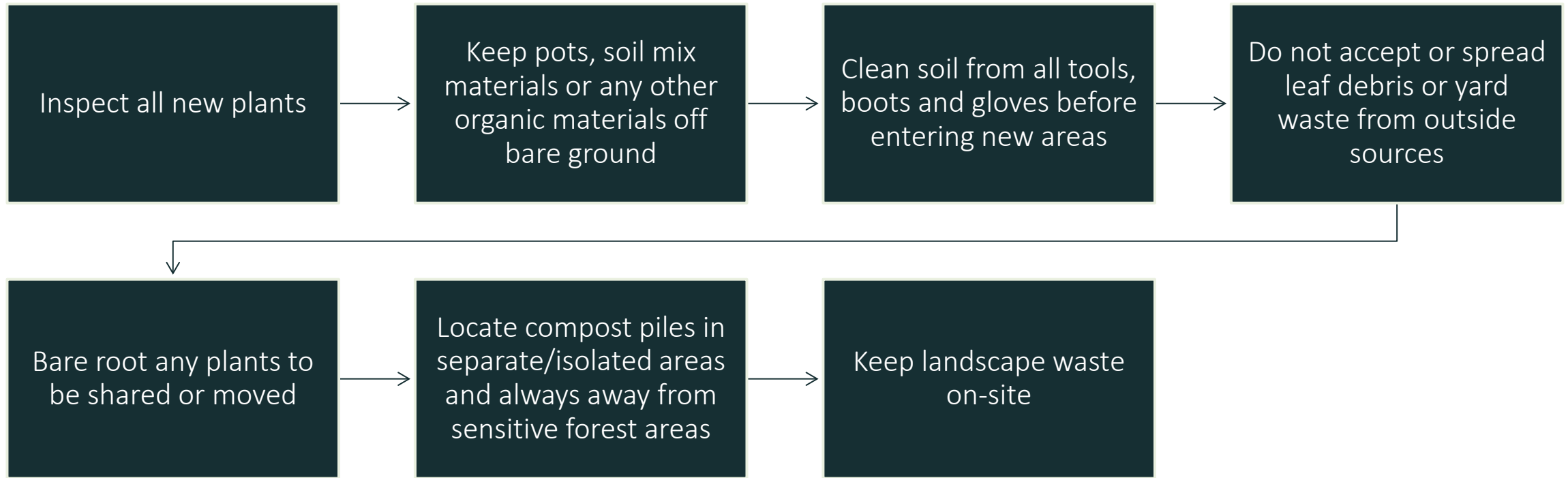


HOW ARE THEY SPREADING?



**Earthworms in the genus
Amyntas soil amendments many
which may be used in landscaping
and horticulture.**





BMPs to slow the spread of *Amynthas* worms



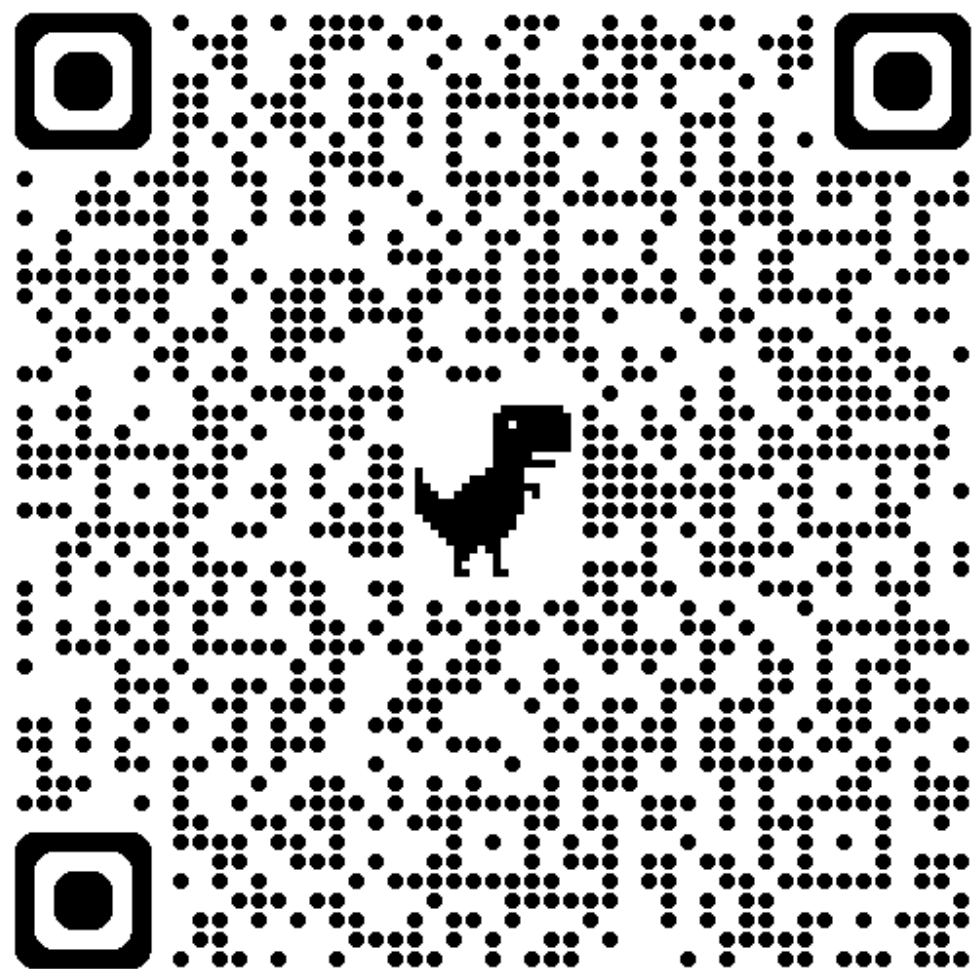
I pledge to protect our waters
from invasive species

Never Release Bait

I will always **DISPOSE**
of unwanted bait
in the trash.

EWB_0039_22





SAVE THE DATE!

JUMPING WORMS: A CONVERSATION WHAT WE KNOW & WHAT WE'RE LEARNING

A VIRTUAL WORKSHOP

maine
DEPARTMENT OF
AGRICULTURE
CONSERVATION
& FORESTRY

JUNE 17 AND 18, 2025

The Maine Department of Agriculture, Conservation and Forestry is hosting a free, two-day virtual workshop on invasive jumping worms (*Amyntas* spp.) and their impacts to soil nutrients, ecosystems and forests, and the methods being tested by researchers and citizen scientists to answer the questions on everyone's minds: what do we know about jumping worms and what can we do to effectively manage them?



Tree, Forest & Agricultural Insects and Diseases





Beech Leaf Disease – a newer concern



BEECH LEAF DISEASE

- First reported in OH, 2012
- American, European, and Oriental beech are susceptible



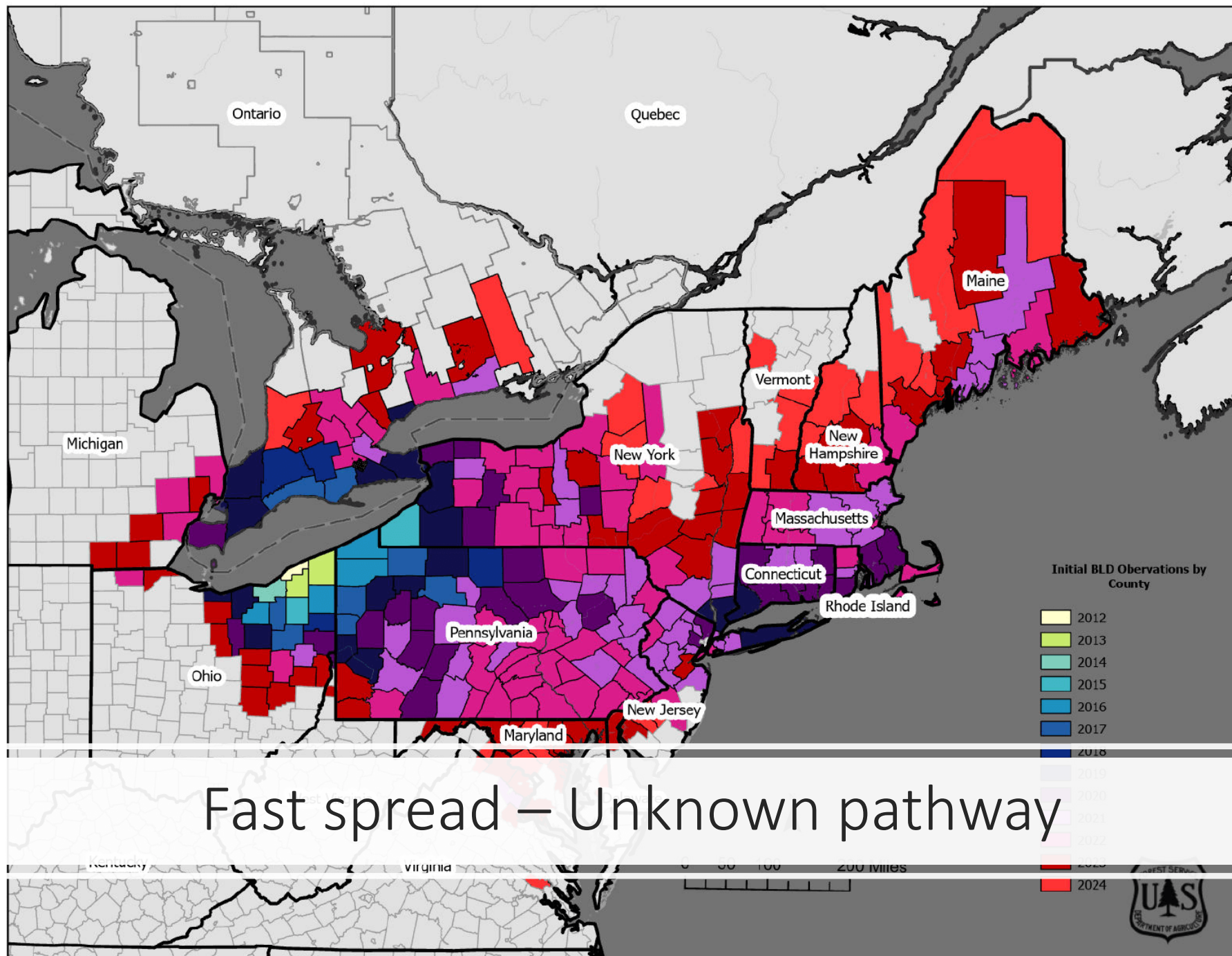
- Perhaps caused by a foliar nematode, *litylenchus crenatae*

**BLD leaf**

Late summer - fall season

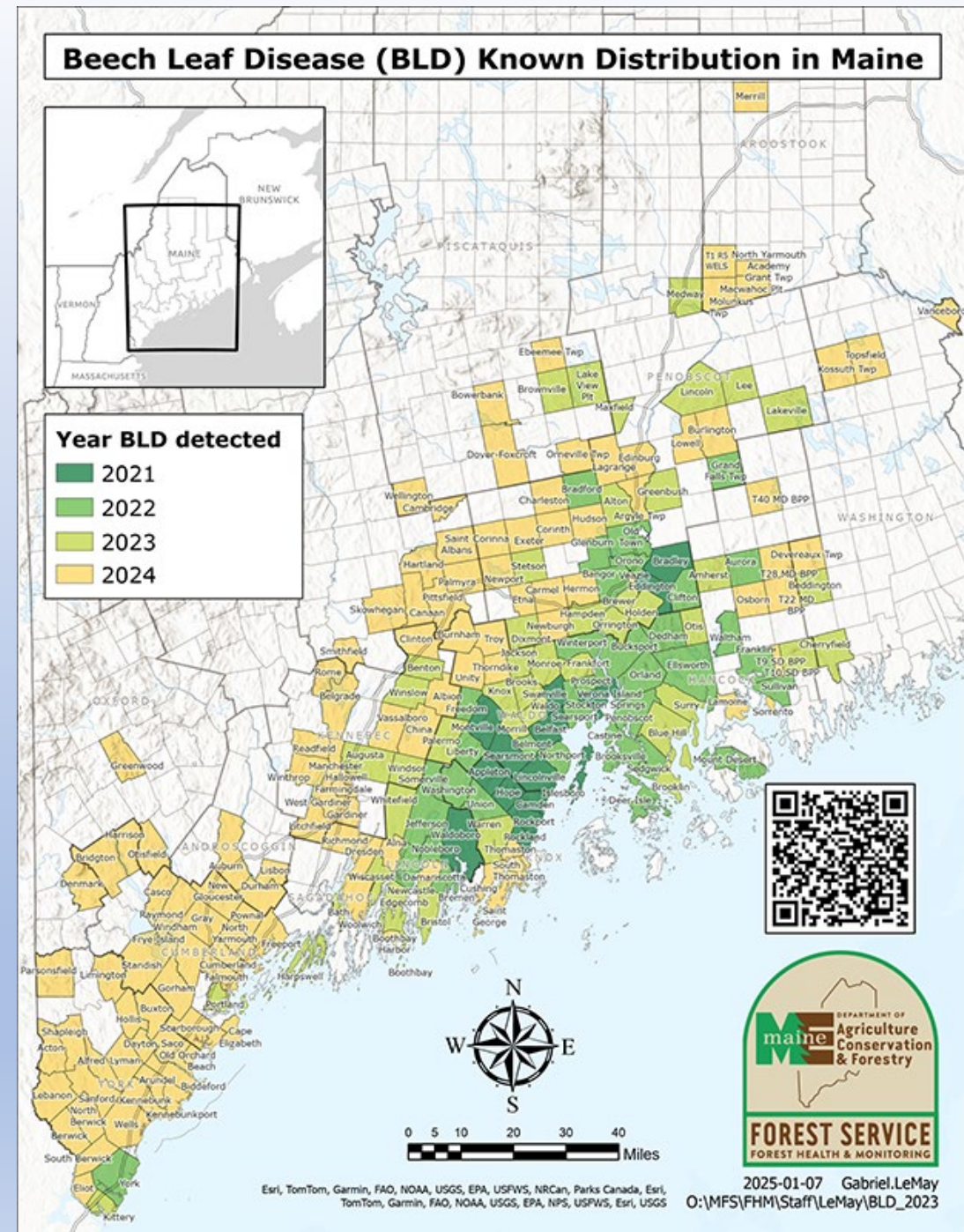
Nematodes collected from 10-15 BLD leaves

Nematode-wool: typical agglomeration of nematodes within this family



First reported in Maine – June 2021

- Cumberland Co. – 2023
- Hancock Co. – 2022
- Kennebec Co. – 2023
- Knox Co. – 2021
- Lincoln Co. – 2021
- Penobscot Co. – 2021
- Piscataquis Co. – 2023
- Sagadahoc Co. – 2023
- Waldo Co. – 2021
- Washington Co. – 2023
- York Co. – 2023
- Oxford Co. – 2024
- Aroostook Co. – 2024
- Somerset Co. – 2024
- Androscoggin Co. – 2024



Beech leaf disease symptoms

- Early symptoms - interveinal dark bands as leaves emerge in spring
- Later, leaves thicken, shrivel, curl
- Reduced bud and leaf production
- Mortality
 - 2 – 5 years – saplings
 - ~6 years – mature trees



Beech leaf disease experimental treatments

- Multiple organizations are working on BLD treatments
- Polyphosphite–30 soil drench – MFS trials done at Viles Arboretum
- Fluopyram – a foliar fungicide that also works as a nematicide – CAES and Bartlett Tree doing trials
- Thiabendazole – an injectable fungicide used for Dutch elm disease in the past – many folks trying this





Accident caused by falling ash in Hudson, NH Image: WMUR



Emerald ash borer – A reason for concern?

Over 100 million ash trees killed

Recognizing EAB

Up close

Bark splitting



S-shaped galleries under bark



EAB

NOT EAB



D-shaped exit holes

Recognizing EAB

From afar

Woodpecker activity!!!



USDA APHIS PPQ, Bugwood.org

Crown dieback



04/24/2012

USDA APHIS PPQ, Bugwood.org



J. Ellis, Purdue University

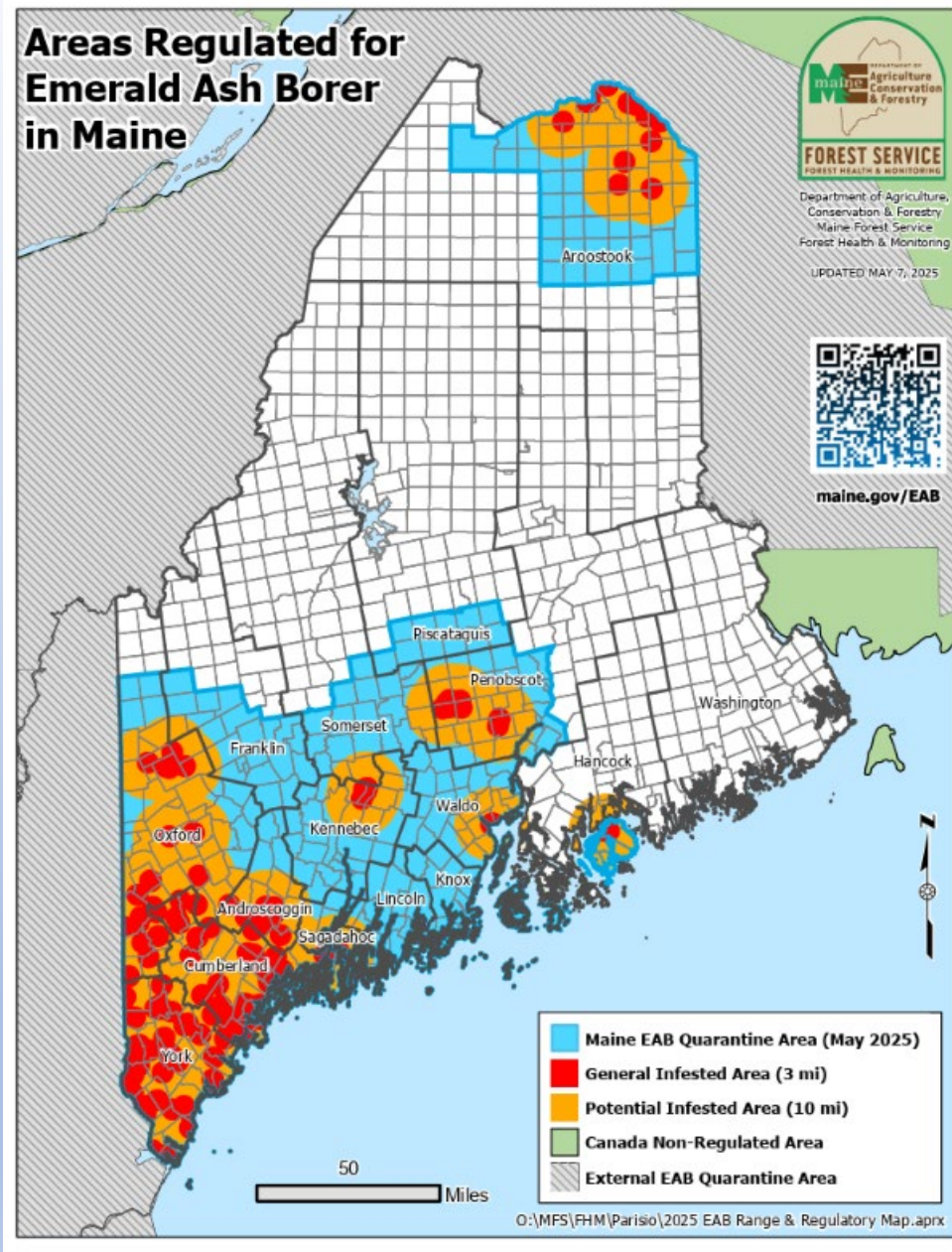
Epicormic shoots

What to look for in the winter



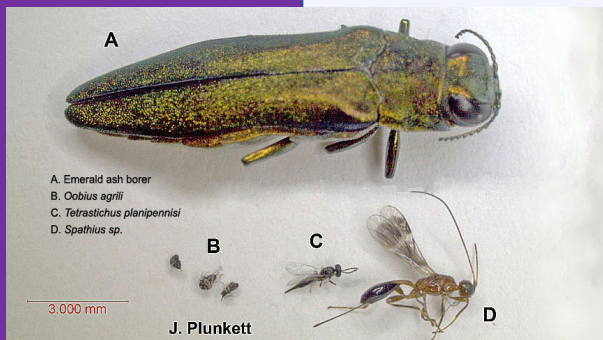
Emerald Ash Borer Quarantine

Quarantine Expanded in Aroostook and added MDI

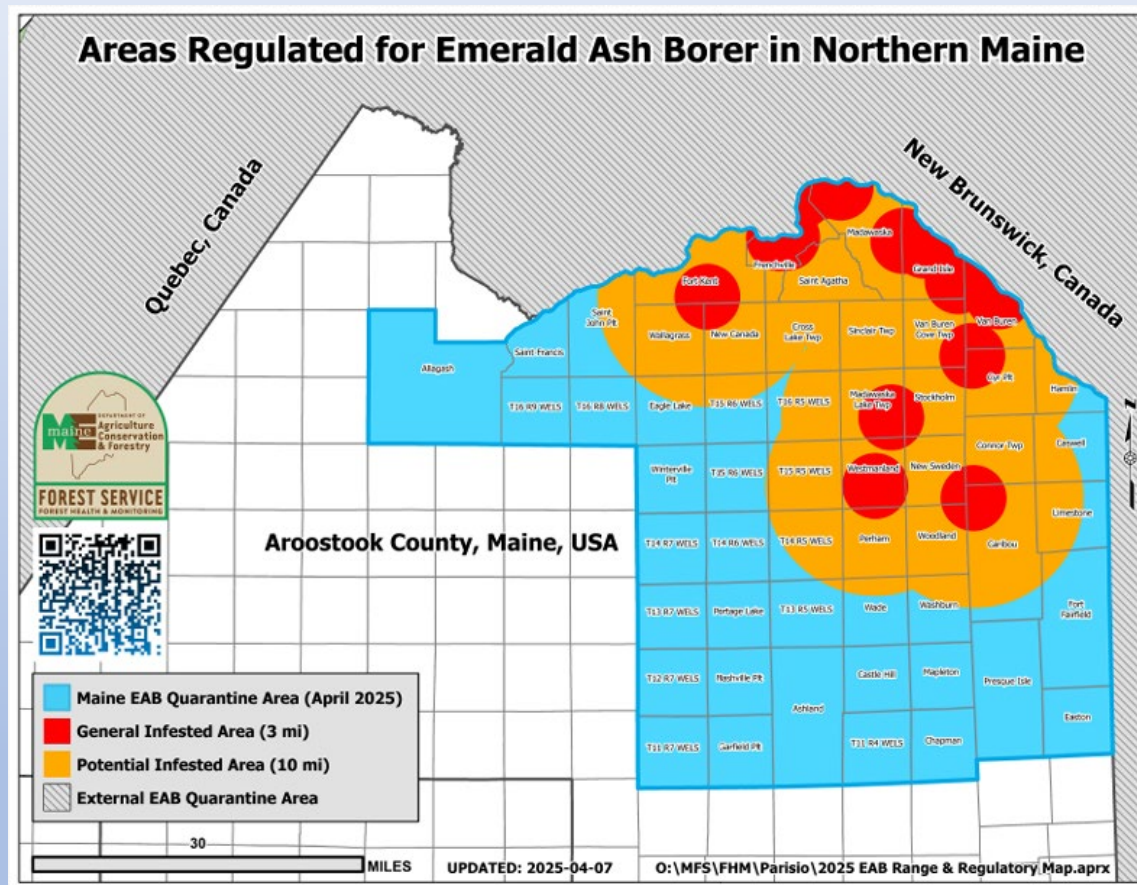


- Quarantine expanded in the northern and southern regions
- 40% of ash still uninfested
- 15 counties now have towns within the EAB quarantine area

<https://maine.maps.arcgis.com/apps/dashboards/8ab0defa38514c128e8b6dc67e40d9be>

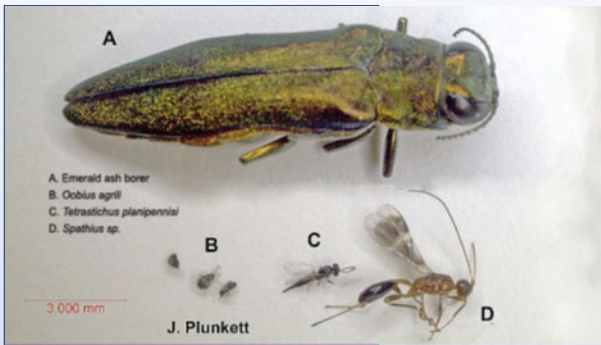


Emerald Ash Borer Quarantine Northern Maine



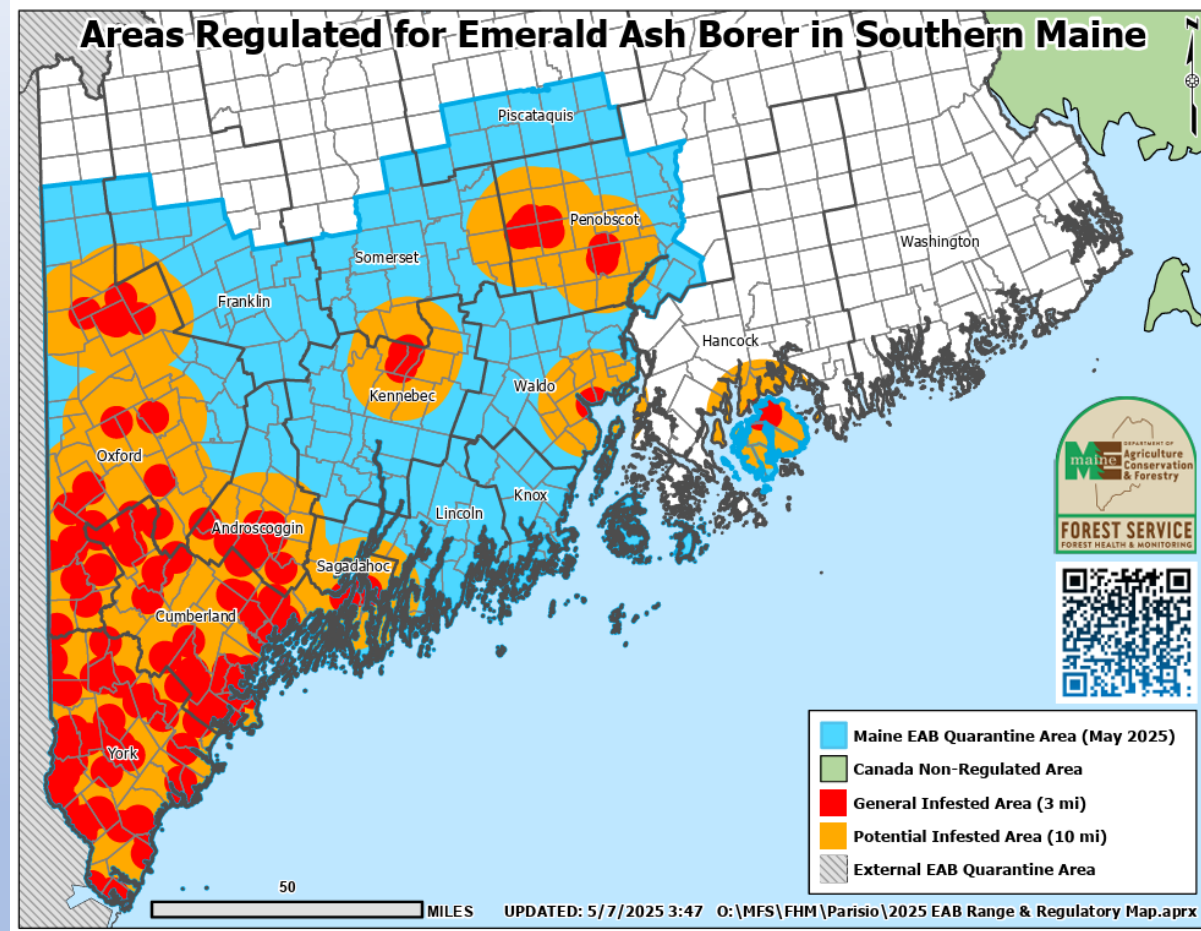
Many new Townships Added to the Quarantine in Northern Maine





Emerald
Ash Borer
Quarantine
Southern
Maine

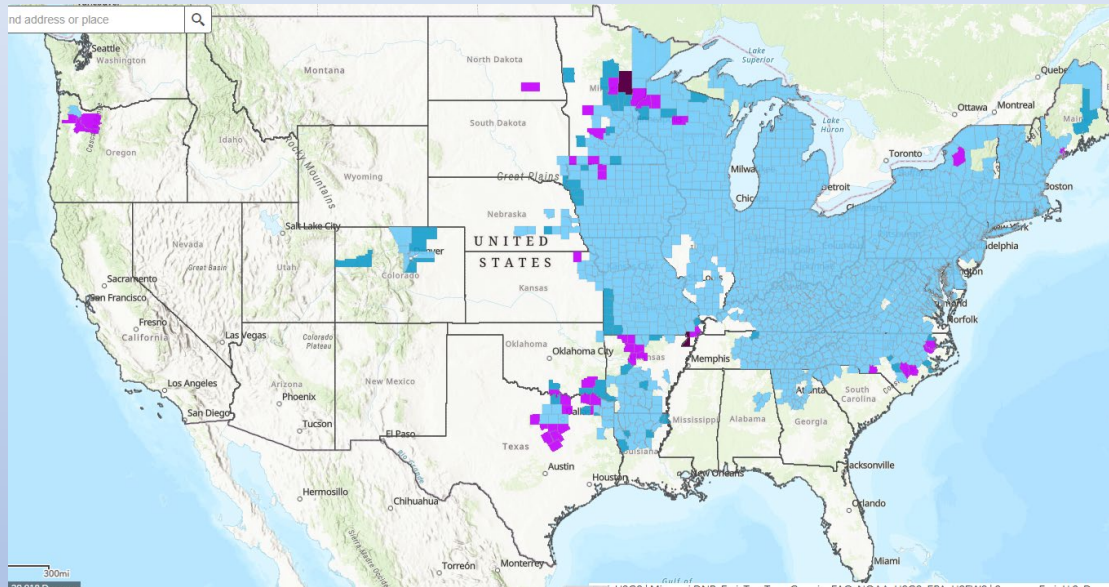
Mortality is
accelerating



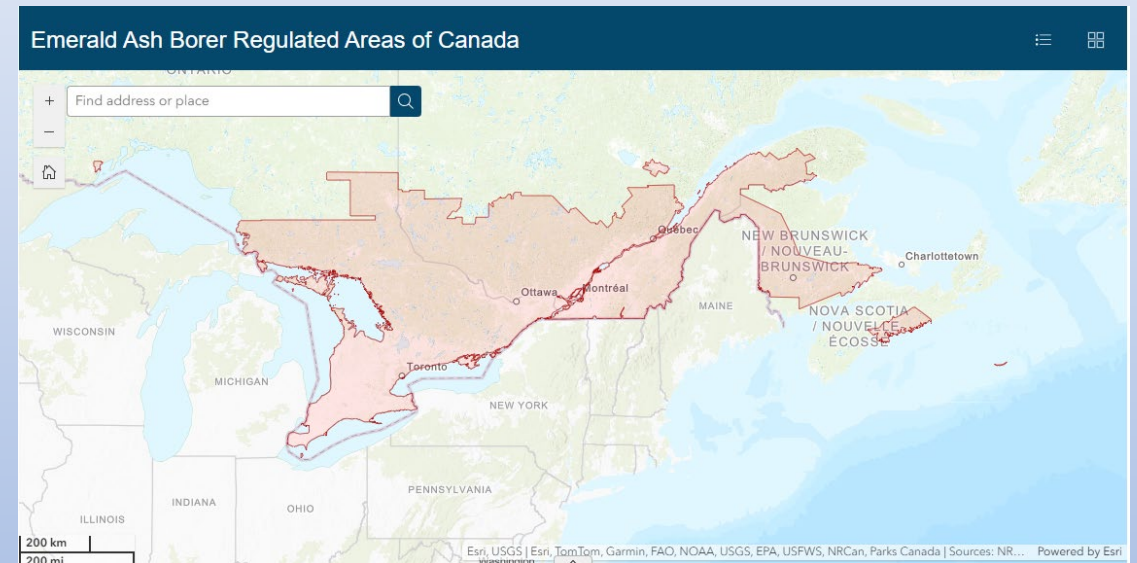
MDI Just Added to the Quarantine New infestation just found in Belfast

- All of Androscoggin, Knox, Lincoln, Sagadahoc, and Waldo Counties
- 22 towns in southern Franklin County
- All but 7 northern towns in Oxford County
- 31 Towns in southern Penobscot County

EAB infestations across the US and Canada



<https://www.aphis.usda.gov/plant-pests-diseases/eab/eab-infestation-map>



<https://inspection.canada.ca/en/plant-health/invasive-species/directives/forest-products/03-08/regulated-areas#a1>

Emerald Ash Borer Biocontrol in Maine

Three tiny, non-stinging parasites released at suitable sites with EAB



Oobius agrili
parasitizes
EAB eggs on
ash bark



Tetrastichus planipennisi
parasitizes
EAB larvae
under ash
bark



Spathius galinae
parasitizes
EAB larvae
under ash
bark

These parasites will not save the trees standing now, but they
should help the next generation of ash to survive.



www.maine.gov/eab

Photos: Maine
Forest Service &
UMFK Forestry

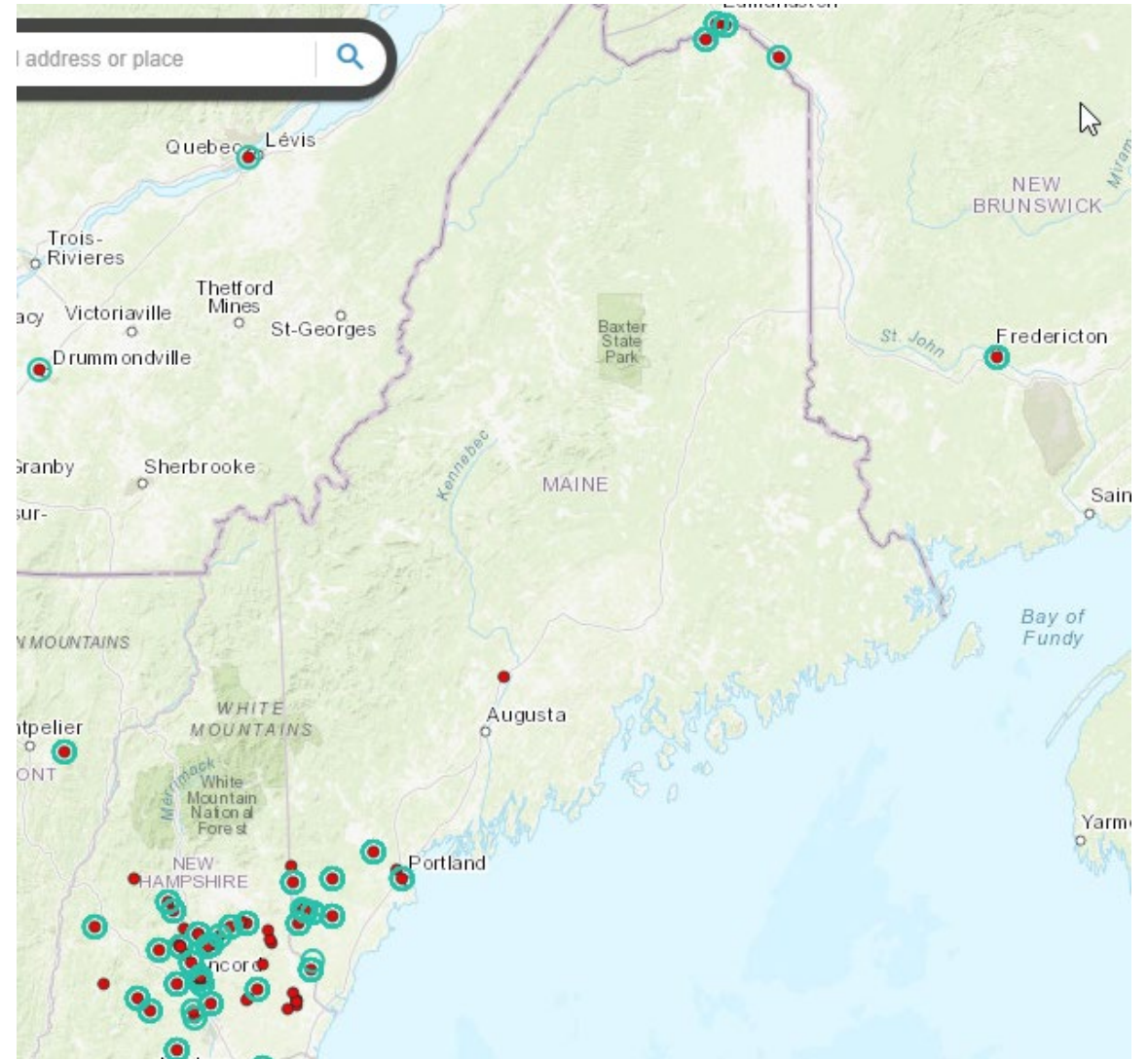
Biological controls may save our future ash

Is it safe to release wasps
since they are non-native
insects?

Before the wasps were
released, research in China
and in the United States
revealed that the wasps
prefer EAB over other
insects

No adverse effects were
found or raised through the
environmental assessment
process

Parasitoid wasp release sites for control of emerald ash borer



<https://msugis.maps.arcgis.com/apps/webappviewer/index.html?id=255045037dbb455a8f836a19e9d4a172>

EAB treatments

Emamectin benzoate injections are the most effective treatment.

Last for 3 years. Generally used on ornamentals of high value

Dinotefuran bark or soil treatments have been used for forest seed tree protection, but only give one year of protection

Azadirachtin trunk injections have also been successful, but only give one year of control



Winter Moth

Geometrid moth; “inchworm”

Adults
emerge
late Fall



Tom Murray, BugGuide.net

Nov - Jan



Waltham Services

Eggs
overwinter



Gyorgy Csoka,
Hungary Forest
Research Institute,
Bugwood.org

Dec - Apr

Pupa looks
like soil



Maine Forest Service



Hannes Lemme, Bugwood.org

Jun - Nov



Cape Cod Times/Steve Heaslip

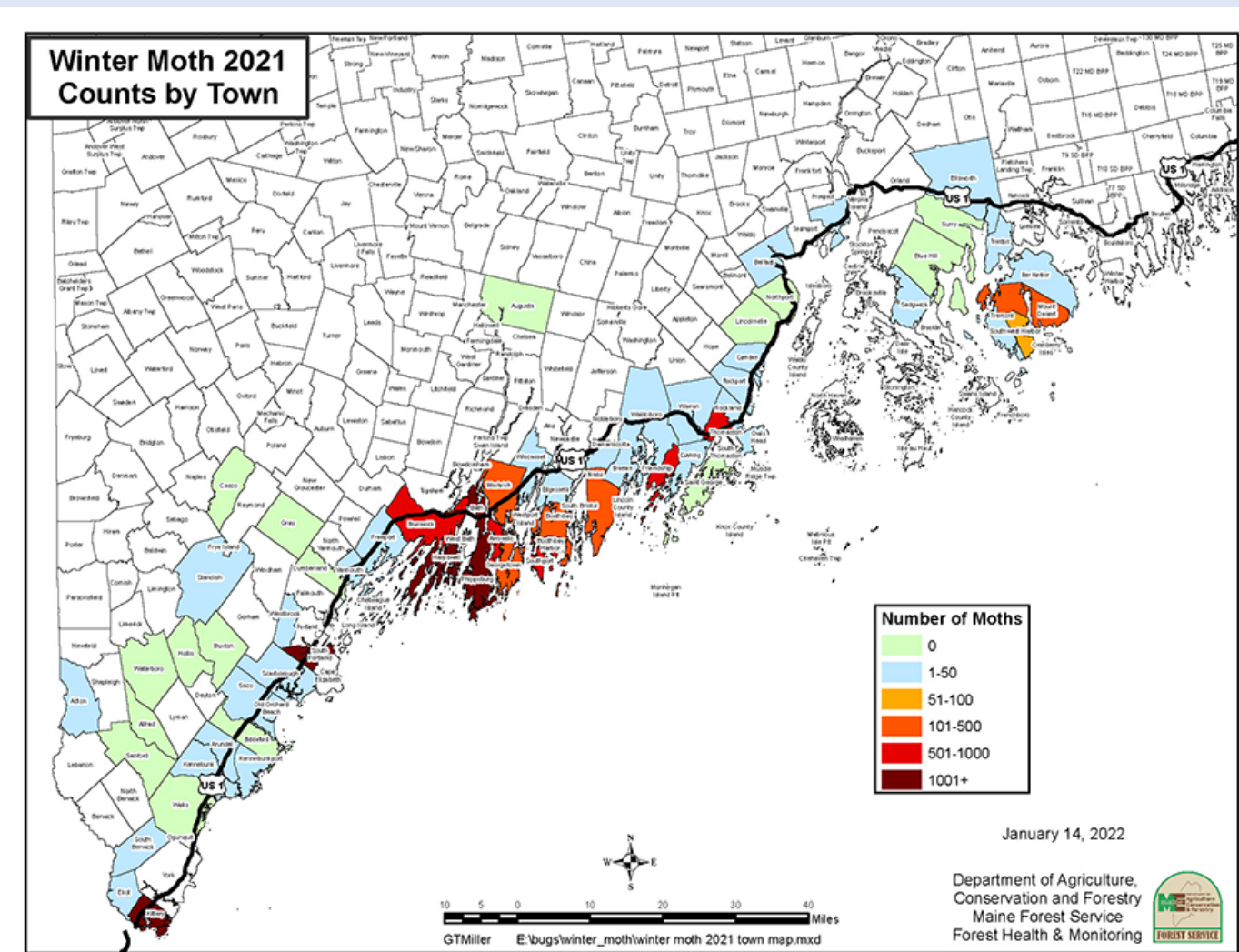
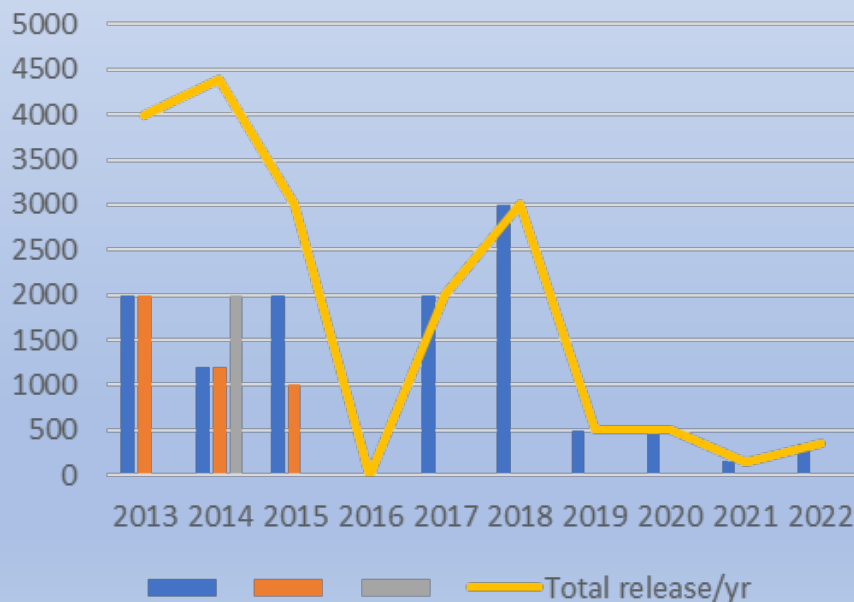
Caterpillars
chew leaves

Apr - Jun

Winter Moth

Damage reported in coastal locations from Kittery to MDI

Cyzenis albicans Releases



Biological control for winter moth

CATERPILLAR COLLECTION SITE	2023 PARASITISM RATES
Bath	18%
Boothbay Harbor	6%
Cape Elizabeth	0%
East Boothbay (first recapture)	41%
Harpswell	2%
Kittery (Release Site)	34%
Kittery (Braveboat Harbor Rd)	23%
South Bristol (first recapture)	36%
South Portland	14%



Town	County	Release Dates	Number of Cyzenis albicans Released	Recovery Comments
Cape Elizabeth	Cumberland	1-May-2013	2,000	First recovery 2016; 27.4% parasitism in 2020
Harpswell	Cumberland	16 & 22-May-2014	1,200	Survival not good
Kittery	York	16 & 23-May-2014	1,200	First recovery 2016; 35.75% parasitism in 2021
Vinalhaven	Knox	21-May-2014	2,000	First recovery in 2018
Portland	Cumberland	15-May-2015	2,000	First recovery in 2018, 4.7% parasitism in 2020
Cape Elizabeth	Cumberland	15-May-2015	1,000	In 2021 parasitism rates at 10.95%
Harpswell	Cumberland	Cage set: 15-Nov-2016	2,000	First recovery 2020 0.85% parasitism in 2021
South Portland	Cumberland	Cage set: 29-Nov-2017	3,000	0.84% parasitism in 2021
Bath	Sagadahoc	21-May- 2020	500	Few flies emerged; cage was tampered with. 5.71% parasitism in 2021 (first recovery)
Boothbay Harbor	Lincoln	29-April-2020	500	Great emergence
East Boothbay Harbor	Lincoln	17-May-2021	150	Good emergence
South Bristol	Lincoln	5-May- 2022	329	Great emergence with breeding observed
South Bristol	Lincoln	May 1 2023	447	Great emergence
West Bath	Sagadahoc	Cage set: oct 13,2023	1300	To be released May 2024

Cyzenis albicans

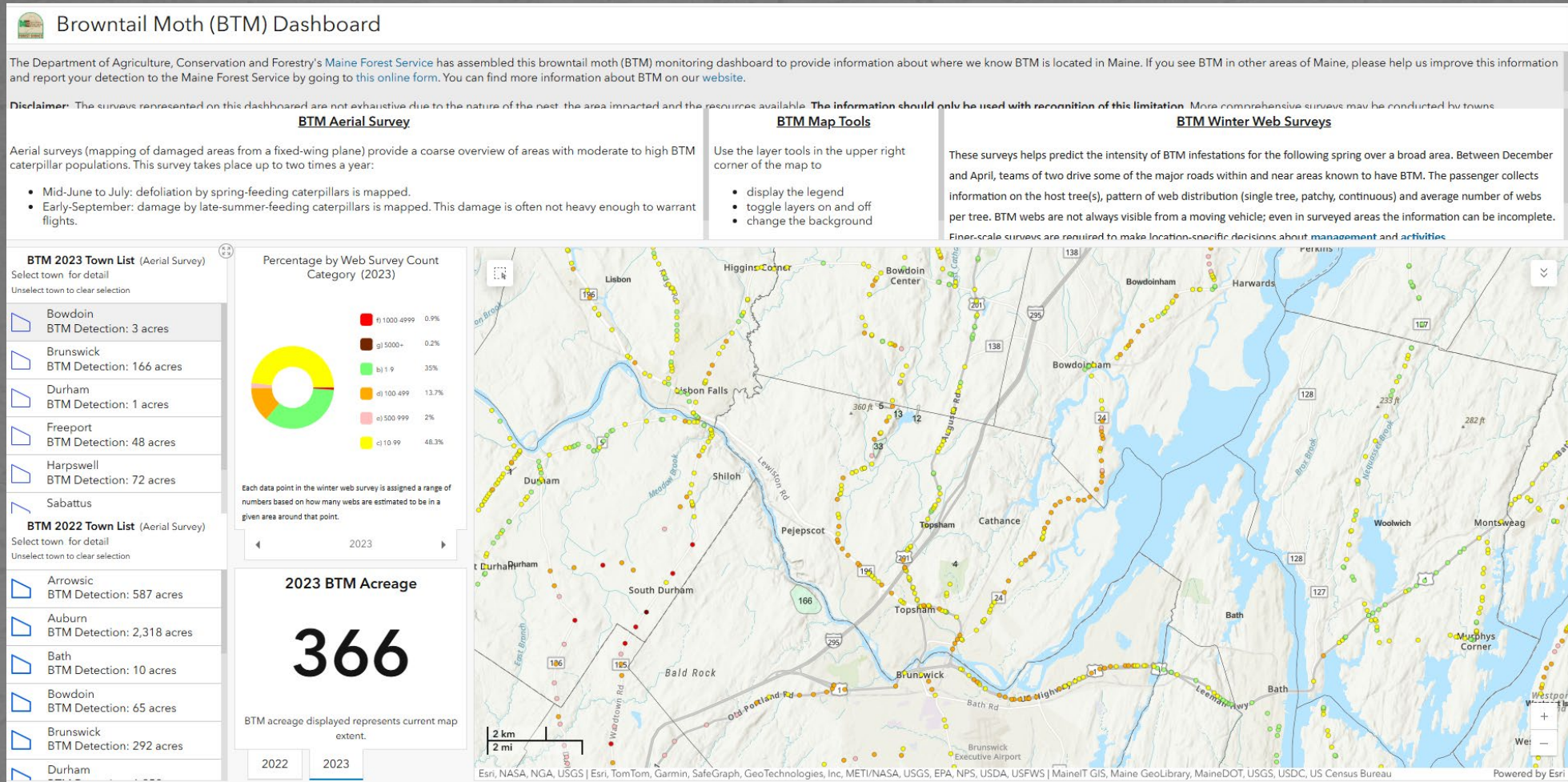
Browntail Moth

Euproctis chrysorrhoea

- Invasive insect from Europe
 - Order: Lepidoptera (moths)
 - Family: Lymantriidae
- Caterpillars have toxic hairs



BTM Dashboard



- <https://www.arcgis.com/apps/dashboards/8f2931a691374ac9853636e71cbb1f40>



Spongy moth still wreaking havoc

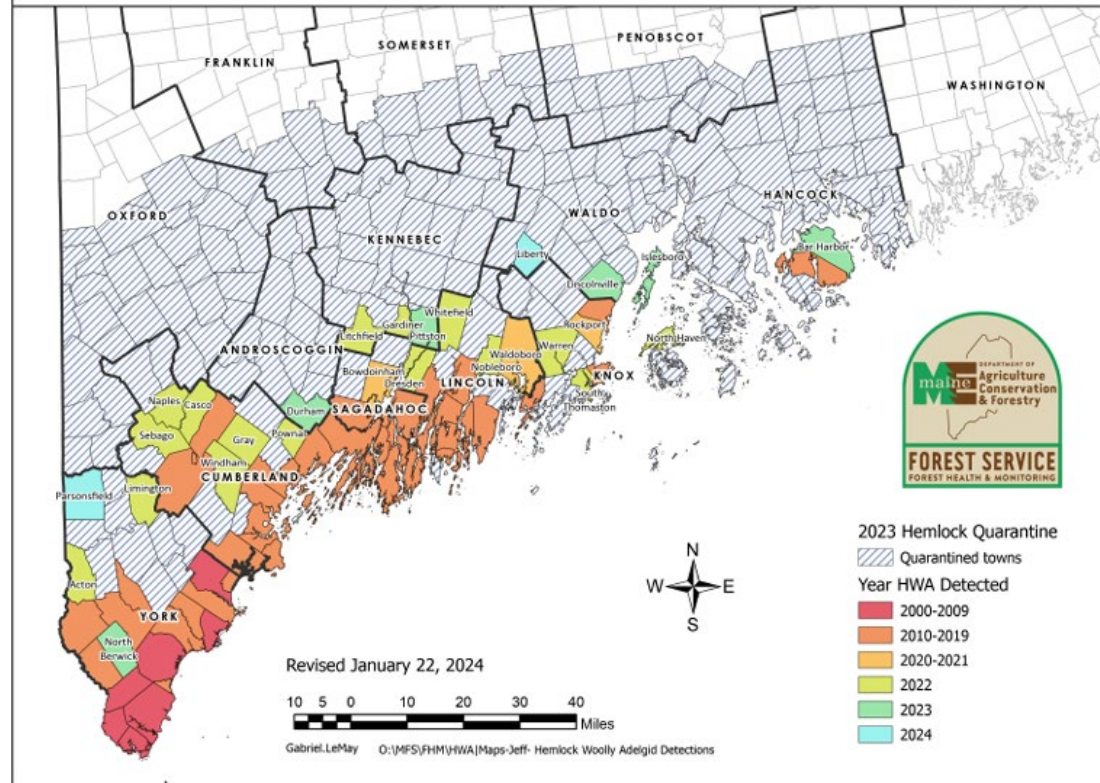
Spongy moth - Andros coggin, Cumberland, Franklin, Hancock, and Oxford Counties



Hemlock Woolly Adelgid Quarantine

**Adopted
November 1, 2023**

Hemlock Woolly Adelgid Detections In Maine Forests Through 2024



- 15 new detections in 2022 - 2023
- Expanding east and inland
- 12 Counties now have towns within the HWA quarantine area

Hemlock Woolly Adelgid

Look at undersides of HEMLOCK twigs



- Discrete white cottony balls at BASE of needles
- found in newer growth
- most visible November thru July

1 – 2 punch for hemlocks

Hemlock Woolly Adelgid



Hemlock tree infested with
Hemlock Woolly Adelgid



Look for white cottony masses
on the undersides of branches

Elongate Hemlock Scale



Hemlock tree infested with
Elongate Hemlock Scale



Hemlock tree infested with Elongate
Hemlock Scale and Hemlock Woolly Adelgid

What is SLF

A “true bug”; Fulgoridae = **planthopper**

- 1 generation/year
- Adults are large – 1” long
- Nymphs have 4 stages
- Eggs overwinter under a protective coating



Egg mass
SEEN: October-June



1st instar nymph
May-July



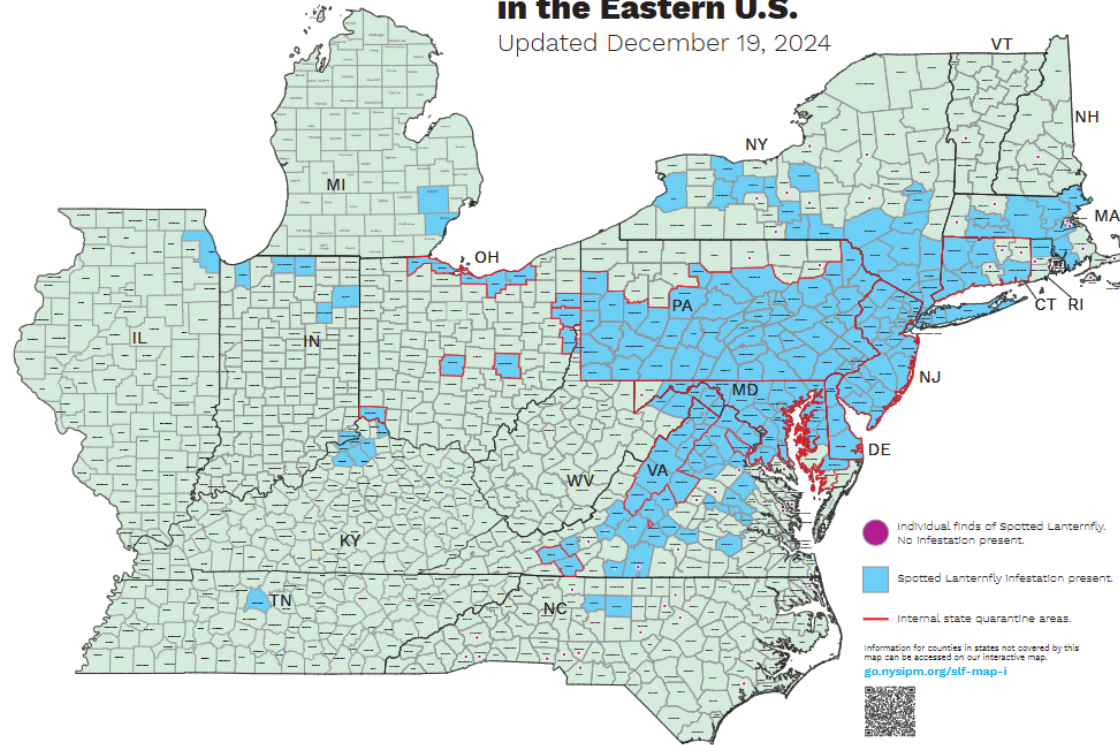
4th instar nymph
July-September



Adult
August-November

Spotted Lanternfly Reported Distribution in the Eastern U.S.

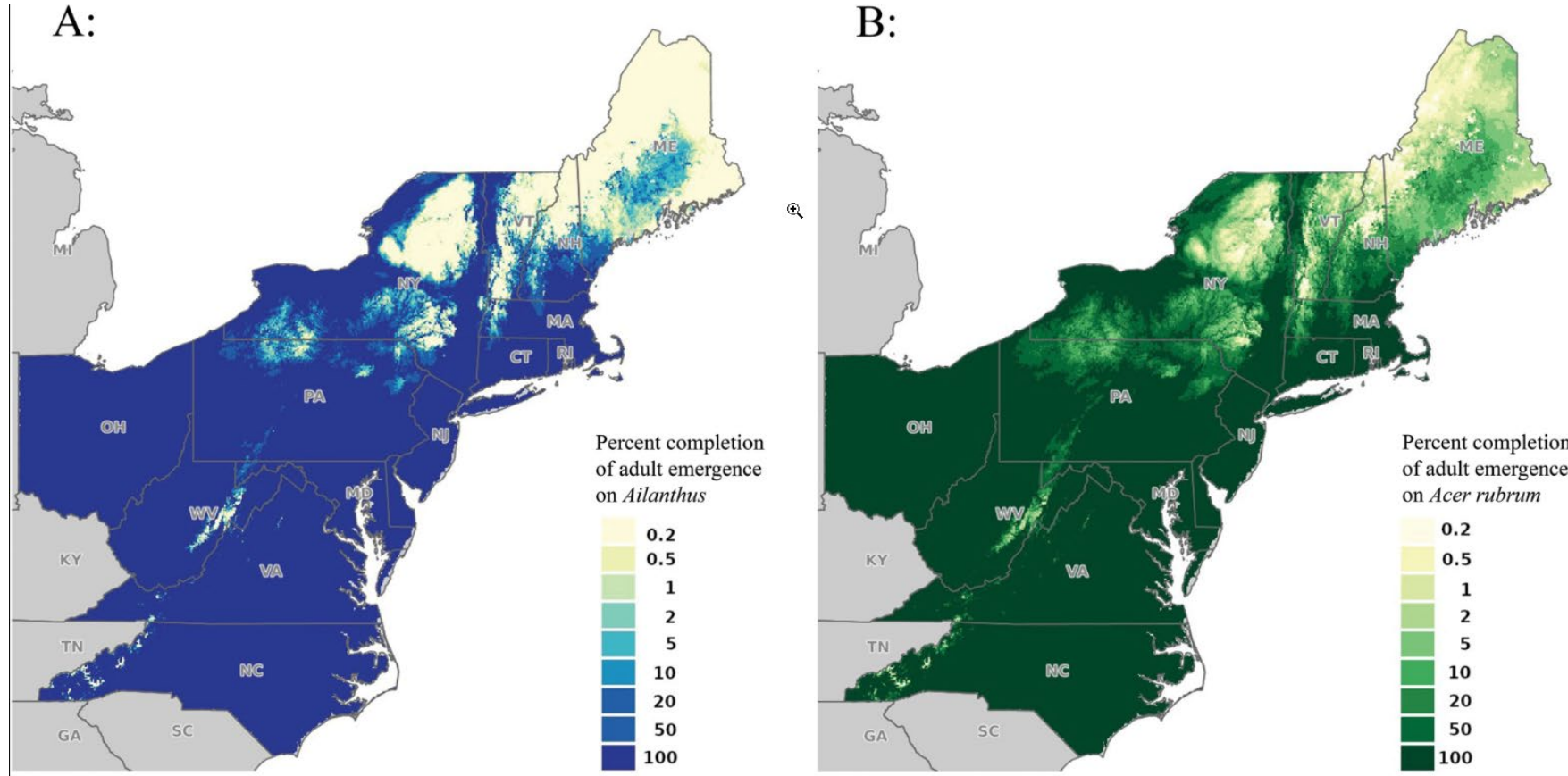
Updated December 19, 2024



Cornell CALS
College of Agriculture and Life Sciences

**New York State
Integrated Pest Management**

SLF risk in Maine



Tree of Heaven (*Ailanthus altissima*)

Feeding on TOH improves female maturity



What could SLF damage?

1. Vineyards - highest known risk
2. Apples
3. Nurseries
4. Maple syrup production
5. Structures



Spotted lanternflies. Photo by Erica Smyers.

Report any potential sightings to bugwatch@maine.gov

Firewood
is a major
source of
deadly
forest
insects &
diseases

Don't
Move
Firewood!

Signs at border crossings
& visitor centers



Help Slow the Spread of **Invasive Pests** in Maine Forests

Forests cover 89 % of the land in Maine. They provide:

Environmental benefits...

- Clean water and air
- Provide habitat and food
- Stabilize soil
- Remove CO₂ from atmosphere

...and economic benefits.

- \$8.5 billion and 33,500 jobs in the forest economy
- Additional jobs and \$ in Maine agriculture, tourism, and recreation economies



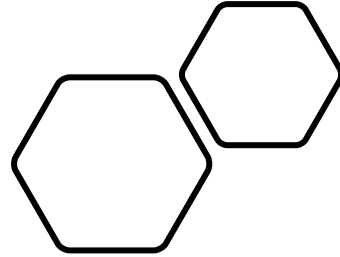
What can **you** do?

- ✓ Use local or heat-treated firewood
- ✓ Check trees for signs of pests and diseases
- ✓ Report signs of invasive pests to Bugwatch@maine.gov
- ✓ Visit www.maine.gov/firewood to learn more

What **else** can **you** do?

- ✓ Use native, locally grown planting material
- ✓ Don't move soil/compost with pests (winter moth, jumping worms)
- ✓ Use an integrated approach to pest management, reduce use of pesticides
- ✓ Use pollinator-friendly practices
- ✓ Learn more, sign up for our newsletters at www.maine.gov/foresthealth
- ✓ **Spread the word, not the pests!**

What you can do!



Report invasive species

- bugwatch@maine.gov
- <https://appengine.egov.com/apps/me/dacf/mfs-tree-ailment>
- invasives.mnap@maine.gov
- milfoil@maine.gov
- <https://www.maineogt.org/>
- <https://survey123.arcgis.com/share/da099be43ba642799f9c359345257b2f>

Resources

Search Maine.gov



TOP ONLINE SERVICES

[Birth, Marriage, & Death Record Searches](#)

[Public Criminal History Records](#)

[Ask a Maine Reference Librarian](#)

[Ask a Law or Legislative Reference](#)

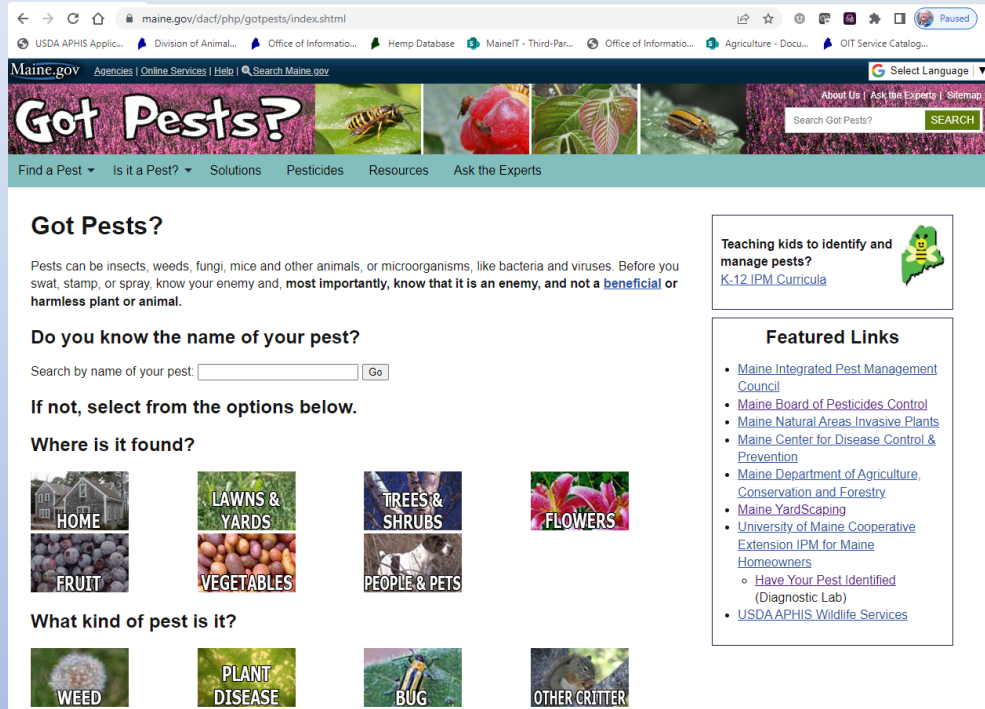
[Home](#) » [About Maine](#) » Invasive Species

INVASIVE SPECIES

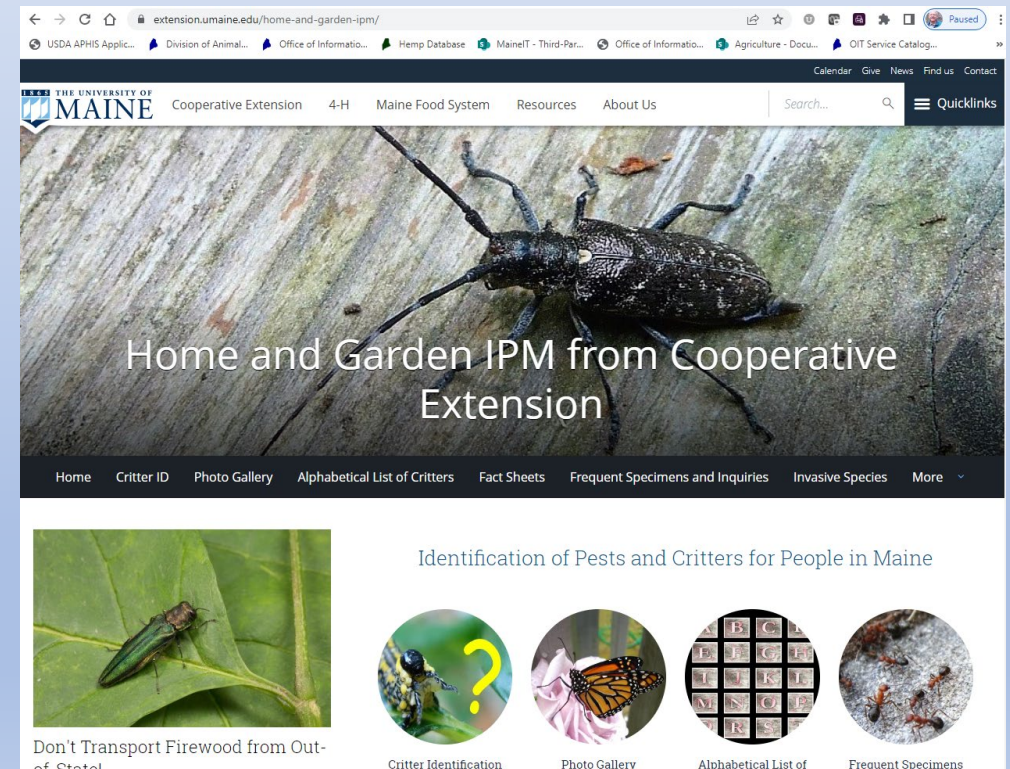
What is an invasive species?

An invasive species is a non-native species (including seeds, eggs, spores, or other propagules) whose introduction causes or is likely to cause economic harm, environmental harm, or harm to human health. The term "invasive" is used for the most aggressive non-native species. These species grow and reproduce rapidly, and can spread with or without human help, causing major disturbances to the areas where they are present.

Pest management resources



<https://www.maine.gov/dacf/php/gotpests/index.shtml>



<https://extension.umaine.edu/home-and-garden-ipm/>



Questions?

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Maine State
Horticulturist

gary.fish@maine.gov

207-287-7545

Use this QR to download a copy of the slides.

