Worms, plants & bugs

Slowing the spread of invasive species?

maine DEPARTMENT OF Agriculture Conservation & Forestry

PLANT HEALTH

Maine School IPM Program

MAINE IPM COUNCIL

INTEGRATED PEST MANAGEMENT

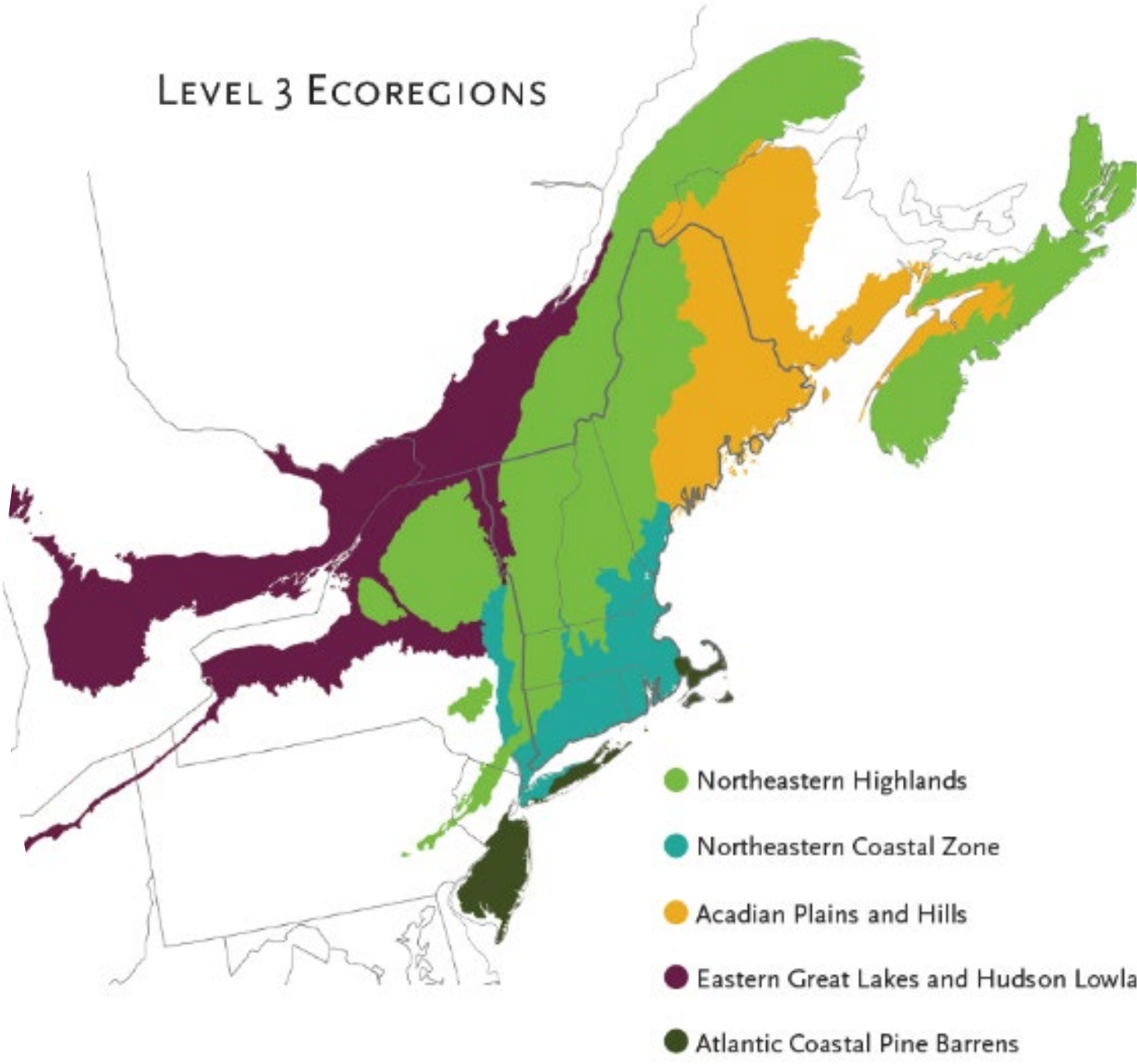
CAPS COOPERATIVE AGRICULTURAL PEST SURVEY MAINE

PEST DETECTION

MAINE BUG WATCH

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!

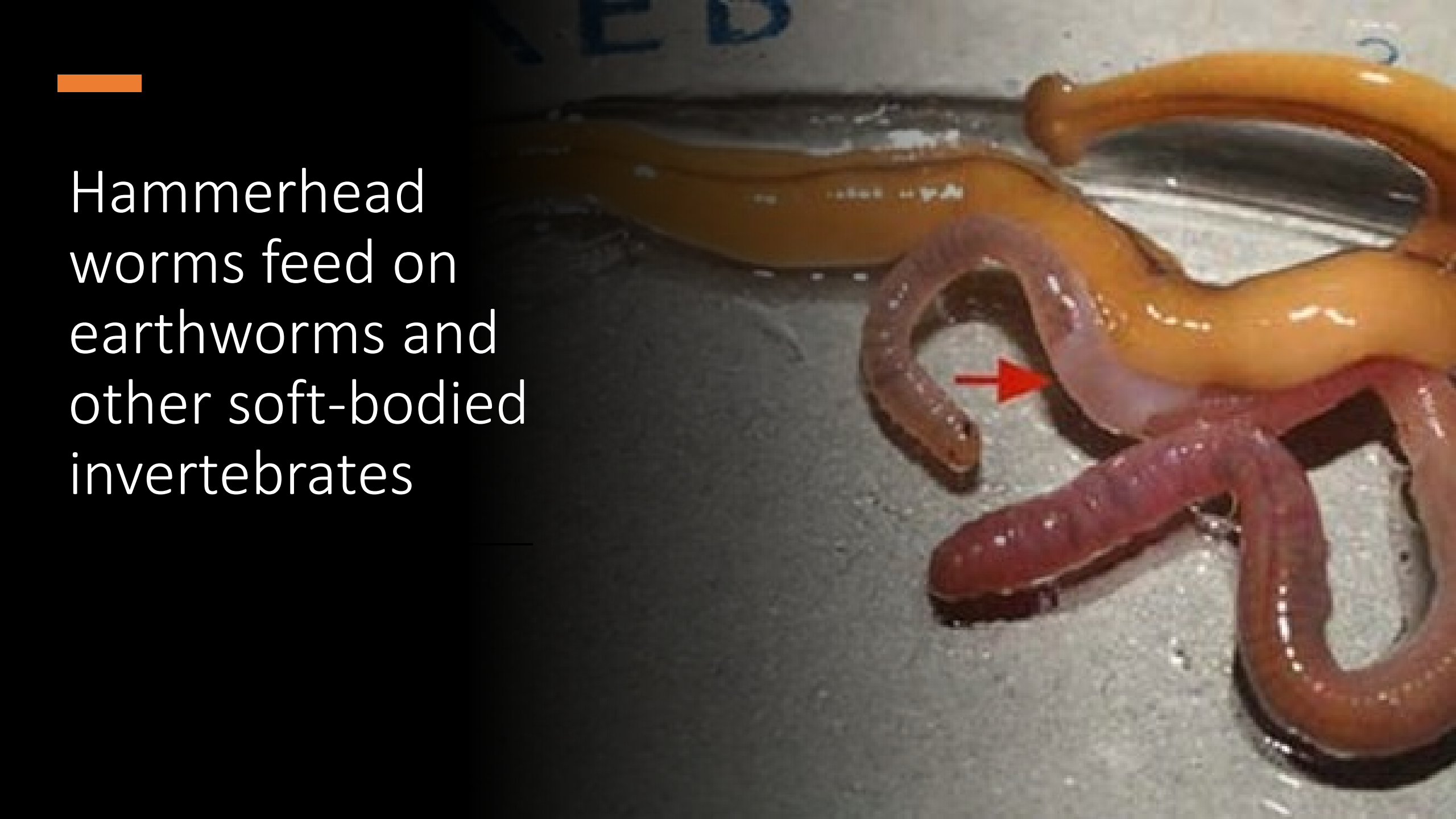
Invasive species don’t fit into Maine’s ecological puzzle

CREEPY CRAWLIES

Hammerhead worms – aka land planaria

https://www.maine.gov/dacf/php/gotpests/othercritters/worms.htm#hammerhead

Hammerhead worms feed on earthworms and other soft-bodied invertebrates



Where can you find them?

Leaf litter

Mulch piles

Garden beds

Flower beds

Under pots

Hammerhead worms secrete toxins

https://www.instagram.com/p/DL8LH81vmAd/?img_index=5

What to do if you find one?

https://www.instagram.com/p/DL8LH81vmAd/?img_index=5

https://www.maine.gov/dacf/php/horticulture/jumpingworms.shtml

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FAQ
Laws & Rules
Programs
- Agricultural Compliance
- Animal Health
- Animal Welfare
- Apiary (Bees)
- Arborist
- Board of Pesticides Control (BPC)
- Compost

Horticulture Program

Jumping/Snake (Amynthas) Worms in Maine

On this page:

What are Amynthas Worms?

Due to our history of glaciation, there are no native earthworms in Maine. Non-native earthworms from Europe (such as nightcrawlers) have become well established here through early colonial trading. Though they are beneficial

FEATURED LINKS

Jumping Worms: A Conversation (June 17–18, 2025) - YouTube

Jumping Worm Report Form

2024 Jumping Worm Update (PDF) / Video Presentation at Curtis Memorial Library

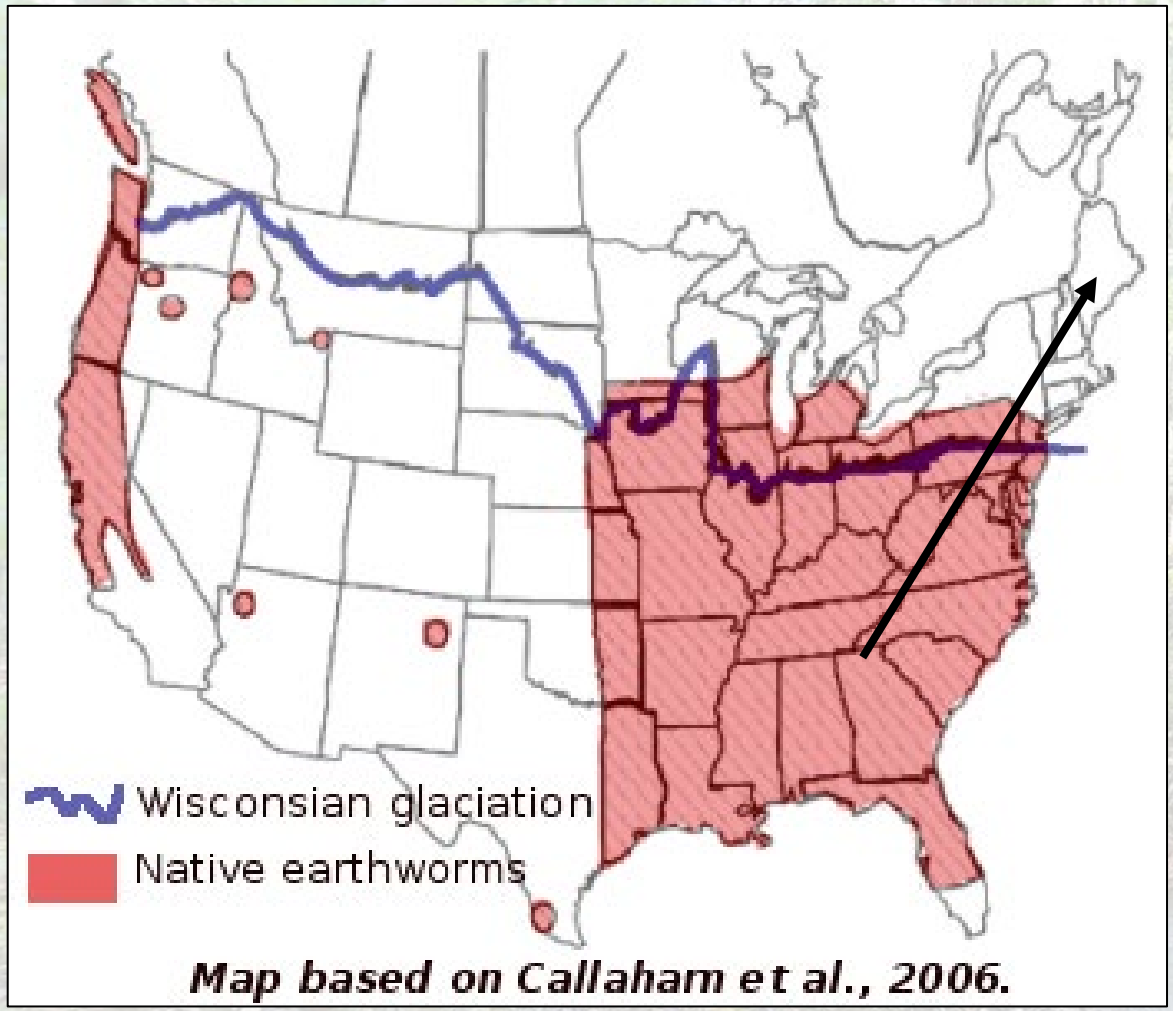
Invasive Jumping Worm Frequently Asked Questions (UMass Extension)

Jumping/Crazy/Snake Worms Fact Sheet (UMass Extension)

Factsheet for Homeowners

Impacts and Implications of Non-native Earthworms in

There are no native earthworms in Maine



Map based on Callaham et al., 2006.

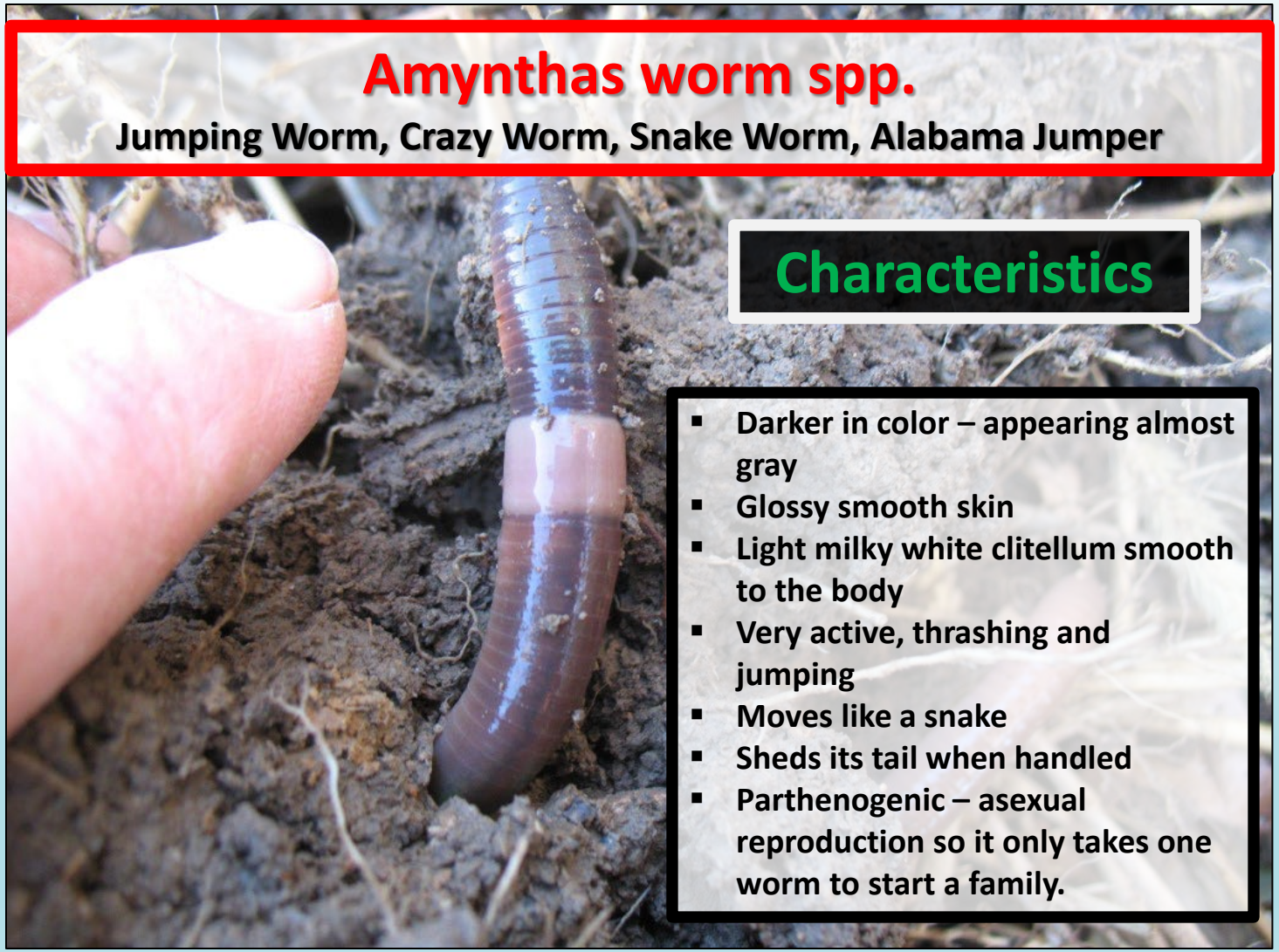
- Native earthworms have expanded northward
- Introduction of invasive worms…

What are Jumping Worms?

- 3 species in Maine
  - *Amynthas agrestis, Amynthas tokioensis, and Metophire hilgendorfi*
- AKA: Crazy Worms, Snake Worms, “Jumpers”
- Native to eastern Asia
- Non-native & invasive

Photo: Brittany Schappach, Maine Forest Service


Amynthas tokioensis
Amynthas agrestis



Amynthas 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.

Where are Jumping Worms?

Found on the top 2 inches of soil, leaves, mulched garden beds, crop beds, shaded forests, newly disturbed areas

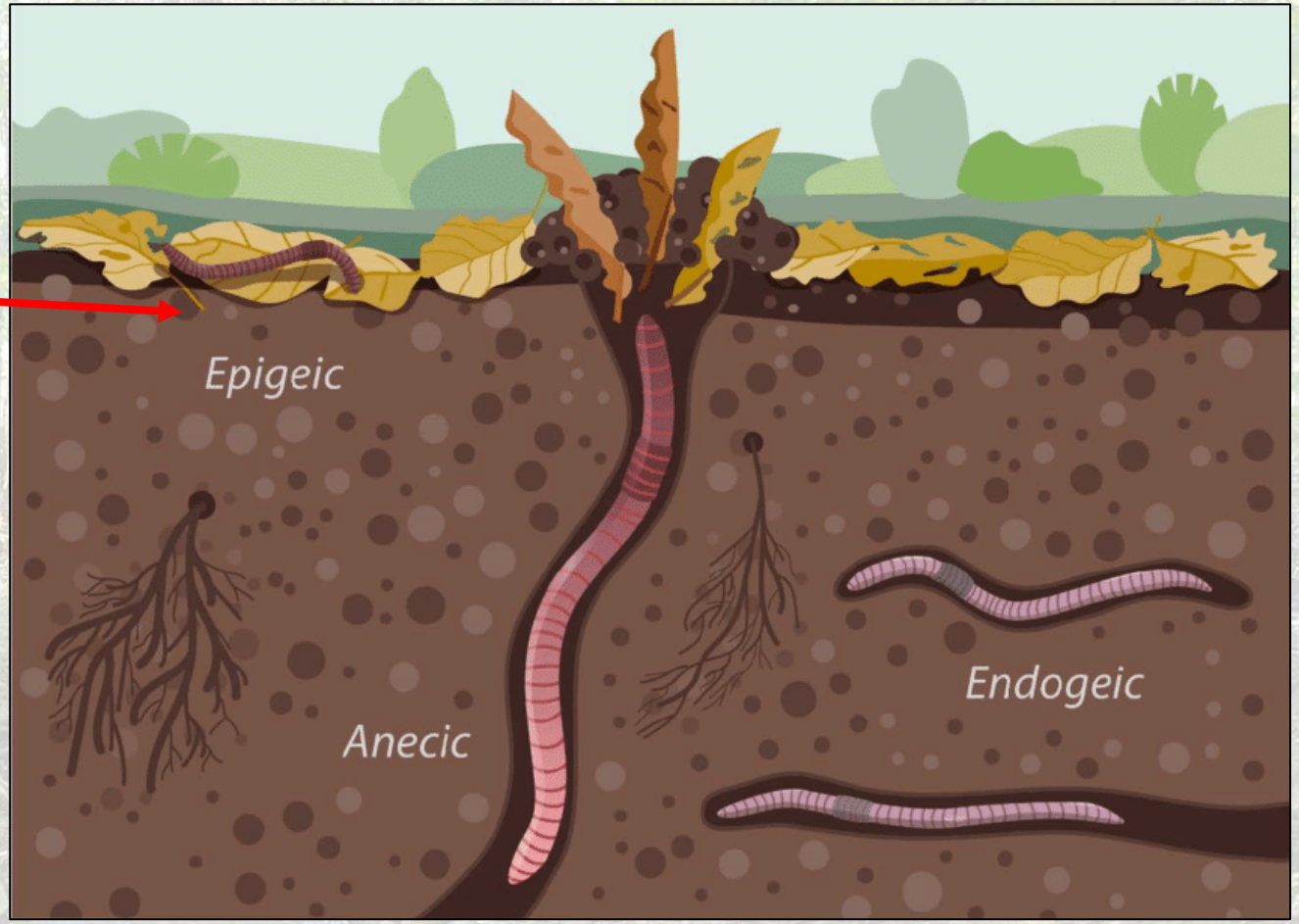
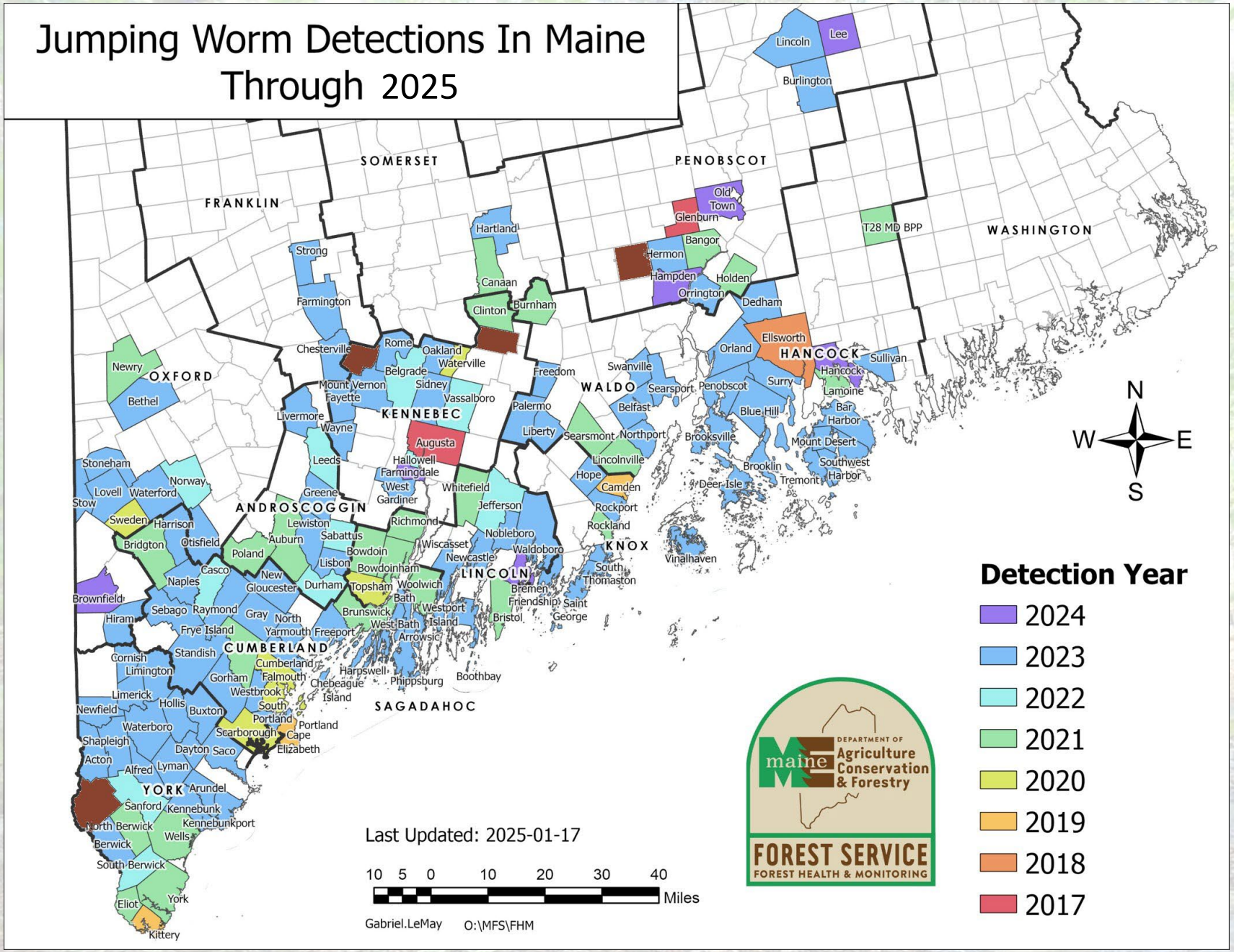
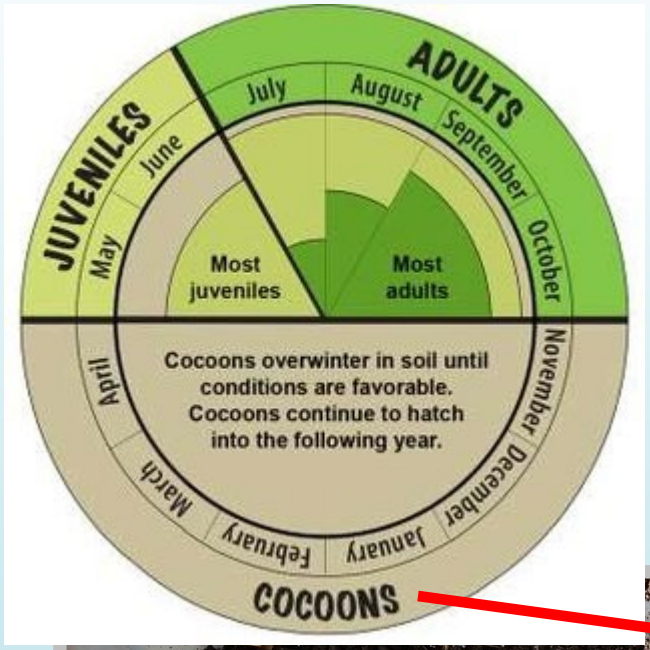


Image: Eisenhauer, N., and E. Eisenhauer. 2020. The intestines of the soil: the taxonomic and functional diversity of earthworms." DOI: 10.32942.



4 new towns in 2025 in brown


ADULTS
July
August
September
October
November
December
January
February
March
April
May
June
JUVENILES
Most juveniles
Most adults
Cocoons overwinter in soil until conditions are favorable. Cocoons continue to hatch into the following year.
COCOONS

Life Cycle

Jumping Worms – Soil ID

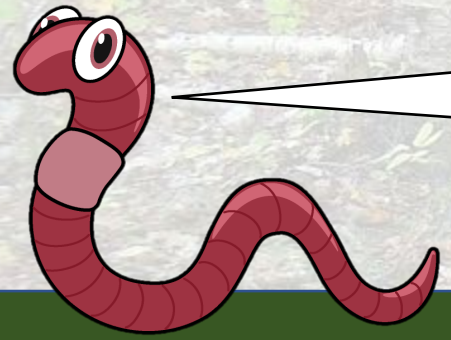
- Loose & dry soil
- Coffee grounds/nerds candy/ ground beef consistency
- Tree roots may be exposed

Photo: Brittany Schappach, Maine Forest Service

Jumping Worms – Worm ID

1. **Check the clitellum (Aug - Oct):**
   - ✓ Smooth and flat
   - ✓ Milky white or gray
   - ✓ Fully encircles worm
   - ✓ Found on segments 14-16

Photo: Brittany Schappach, Maine Forest Service

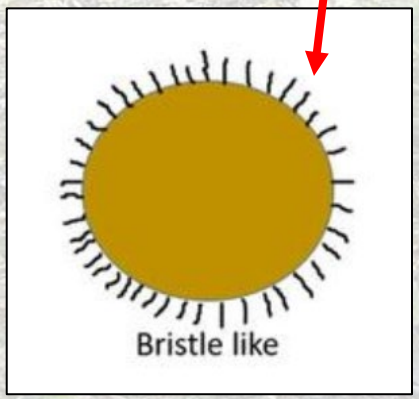


Young worms are more difficult to identify

Jumping Worms – Worm ID

2. Check the setae (“hairs”)

Hair pattern can be used to ID juvenile worms with no clitellum



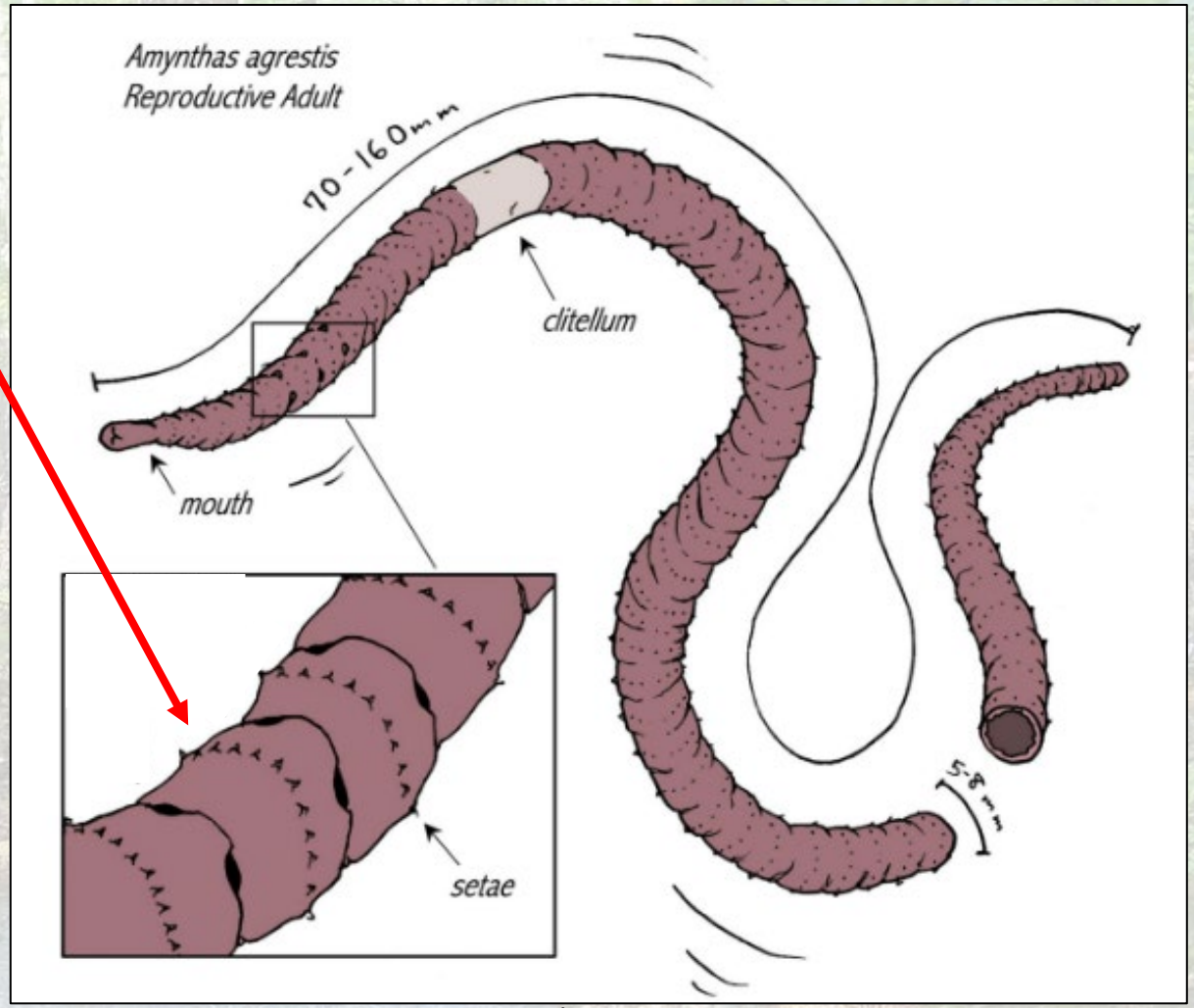
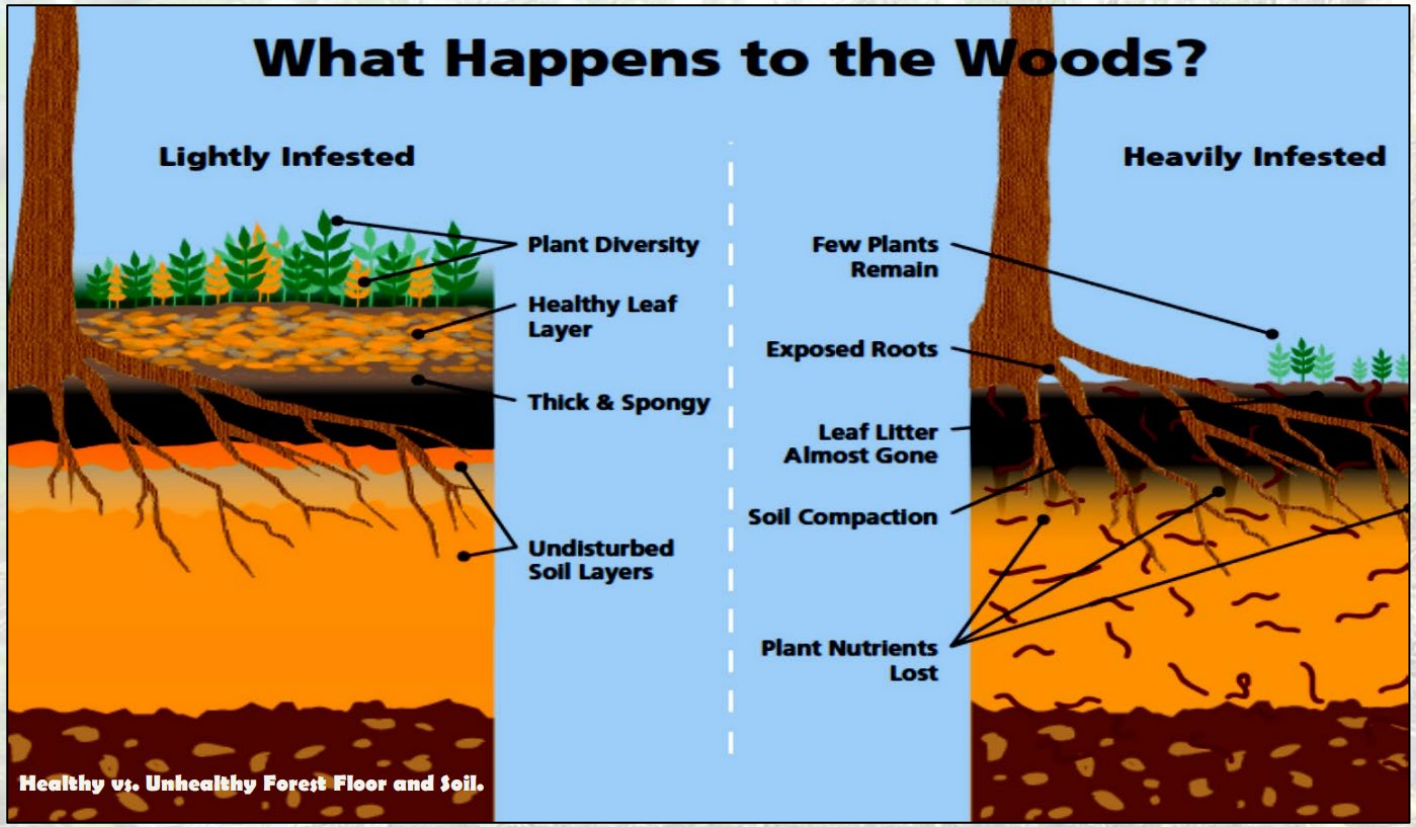


Photo: Portland State University/Oregon State University

HOW ARE THEY SPREADING?

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

What can Jumping Worms do to our forests?



- Plant diversity
- Native plants & insects
- Healthy tree roots
- Leaf litter
- Soil nutrients & moisture
- Supported wildlife

Photo: Wisconsin DNR

What can Jumping Worms do to our forests?

Forest damage = Invasive plant presence

Garlic mustard
Alliaria petiolata

Japanese barberry
Berberis thunbergii

Glossy buckthorn
Rhamnus cathartica

What is Maine doing?

- Illegal to import, but not a regulated invasive species – DACF cannot take action beyond education and outreach
- Multi-agency working group cooperating with University of Massachusetts, Cornell University, the University of Vermont, Yale University, and the University of Minnesota
- MFS has long term monitoring sites

Management: Pesticides

- **There are currently no products registered for use to manage jumping worms**

- Using pesticides for pests not listed on the label is likely ineffective and may cause unintended consequences
- Research on effective products is ongoing

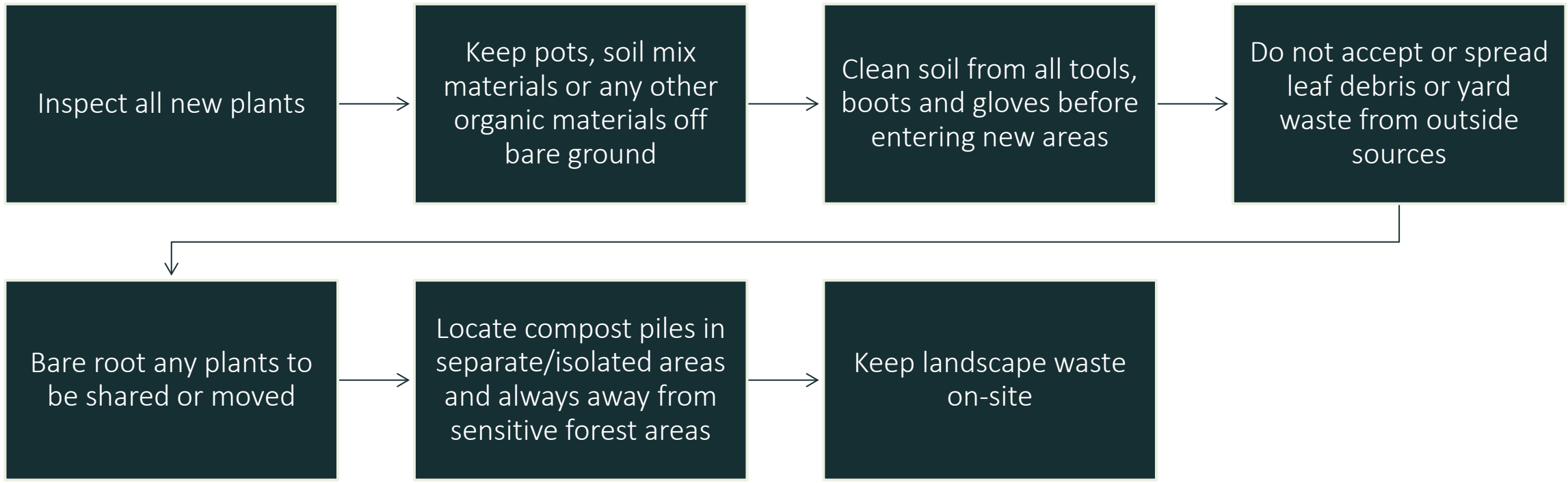
Prevention – Arrive clean, leave clean

- Clean soil and debris from vehicles, equipment, boots, and other gear before arriving/leaving hiking trails or forests

Photo: Brittany Schappach, Maine Forest Service

Prevention

- **Don’t** purchase jumping worms for composting, vermicomposting, gardening, or fishing bait
- **Don’t** discard live worms in the wild
- **Don’t** discard infested yard waste in the woods
- **Do** teach others about jumping worms



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.
EWR_0039_22

Report suspected jumping worms in Maine

https://www.maine.gov/dacf/php/horticulture/jumpingworms.shtml

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- Division of Animal and Plant Health
- About Us
- FAQ
- Laws & Rules
- Programs
  - Agricultural Compliance
  - Animal Health
  - Animal Welfare
  - Apiary (Bees)
  - Arborist
  - Board of Pesticides Control (BPC)
  - Compost

Horticulture Program

Jumping/Snake (Amynthas) Worms in Maine

On this page:

- What are Amynthas Worms?
- History in Maine
- Why are Amynthas Worms a problem?
- Amynthas Worm Identification
- What can you do?

What are Amynthas Worms?

Due to our history of glaciation, there are no native earthworms in Maine. Non-native earthworms from Europe (such as nightcrawlers) have become well established here through early colonial trading. Though they are beneficial

FEATURED LINKS

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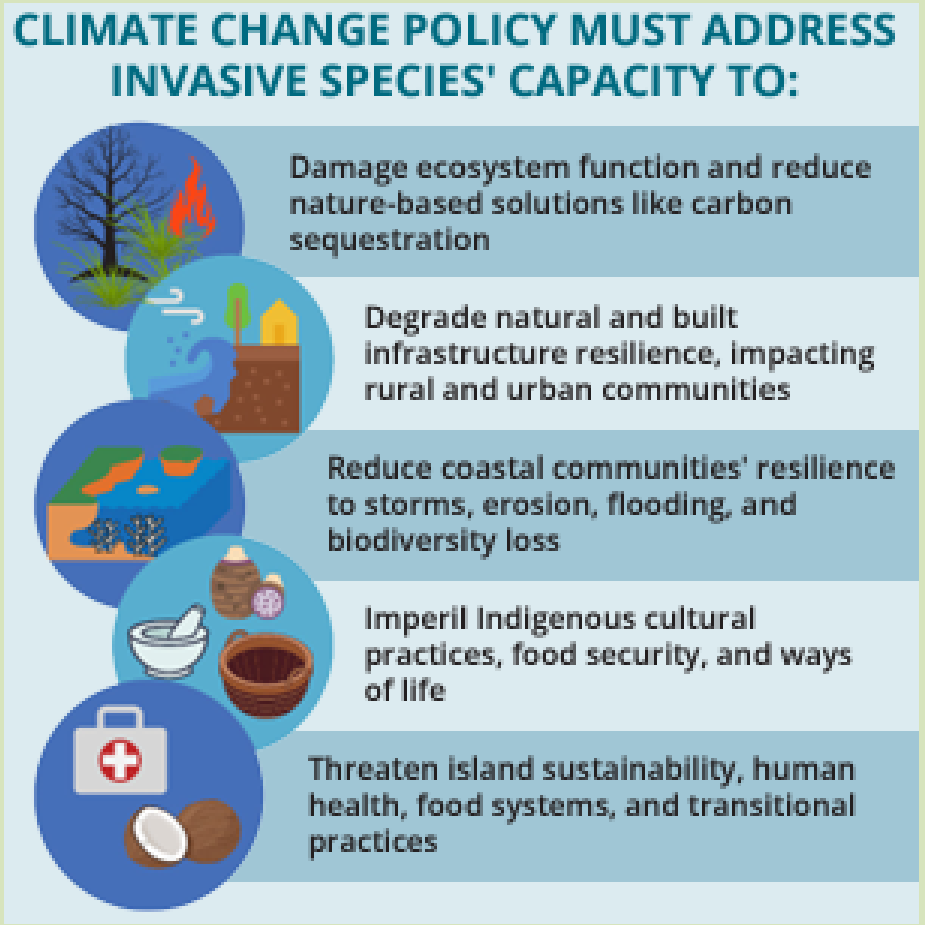
- Factsheet for Homeowners
- Impacts and Implications of Non-native Earthworms in

Terrestrial invasive plants

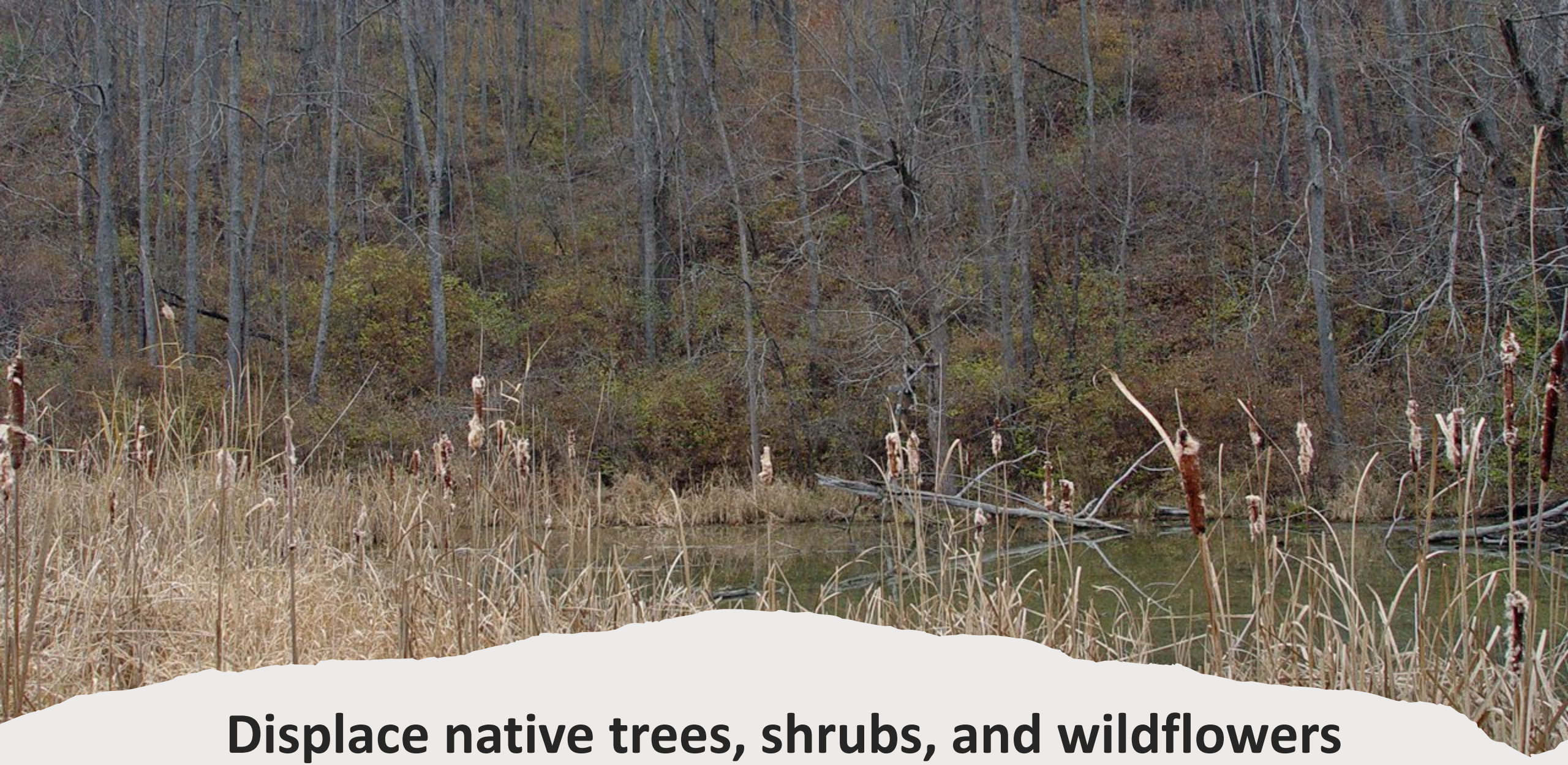
What harm do invasive plants cause?

Out-compete native plant species, overrun habitats

Invasive plants can exacerbate climate change



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

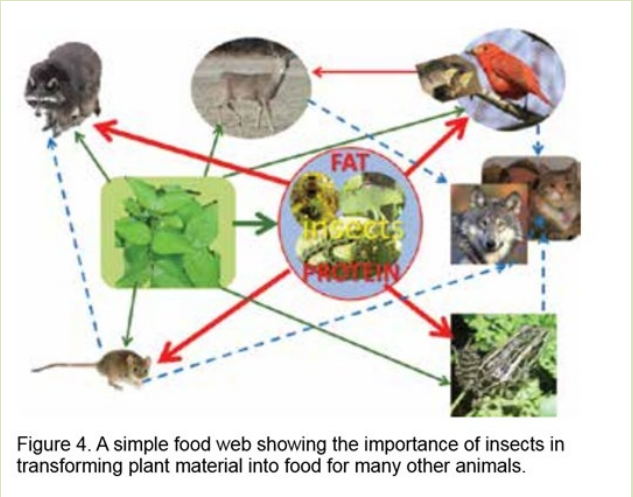


Figure 4. A simple food web showing the importance of insects in transforming plant material into food for many other animals.

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

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

- 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!

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.

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

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/dacf/php/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
207-287-3891
HORTICULTURE@MAINE.GOV
WWW.MAINE.GOV/HORT

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

Invasive Terrestrial Plant Species of Special Concern

Scientific Name	Common Name
Rosa rugosa	Rugosa rose, beach rose

Rosa rugosa – invasive species of special concern starting 1/1/2024

1. Must provide signage or plant tags (next slide)
   A. The plant vendor must provide species specific guidance at the time of sale to notify the purchaser about the invasive potential of the species and what habitat types to avoid when installing the plant.

   B. No person selling or offering for sale an invasive terrestrial plant species of special concern shall conceal, detach, alter, deface, or destroy any label, sign, or notice required under this section.

New requirements for *Rosa rugosa*

Rosa rugosa

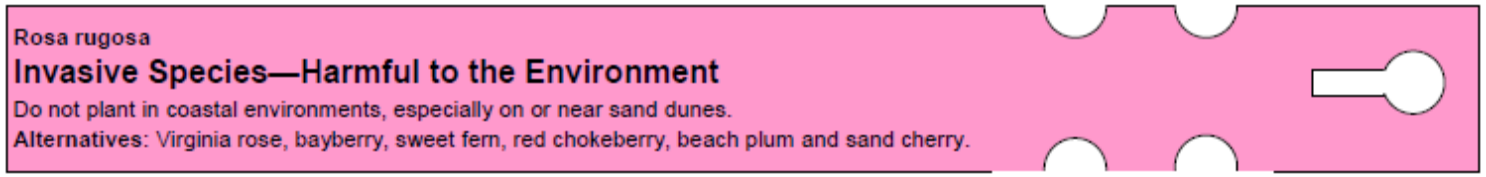
Invasive Species – Harmful to the Environment

Ask About Alternative Plants

Follow Species Specific Instructions Provided by the Vendor

Protect native species; do not plant in coastal areas, especially on or near sand dunes.

Alternative plants include: virginia rose and other roses, bayberry, sweet fern, red chokeberry, beach plum and sand cherry.



Plants on the “Watch List”

- Hardy kiwi
- Chocolate vine
- Italian arum
- Paper mulberry
- Butterfly bush
- Sweet autumn
- Indian yam
- Chinese yam
- Weeping lovegrass
- Queen of the meadow
- Two-colored bush clover
- California privet
- Honeyberry
- Ragged robin
- White mulberry
- Sawtooth oak

Plants on the “Watch List”

- Rosa rugosa
- Hardy pampas grass
- Sticky sage
- Milk thistle
- Japanese spiraea
- Sapphire-berry
- Japanese tree lilac
- Chinese cedar
- Siberian elm
- Linden arrowwood
- Siebold viburnum
- Japanese wisteria
- Chinese wisteria

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?

MAINE DEPARTMENT OF AGRICULTURE CONSERVATION & FORESTRY

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*)

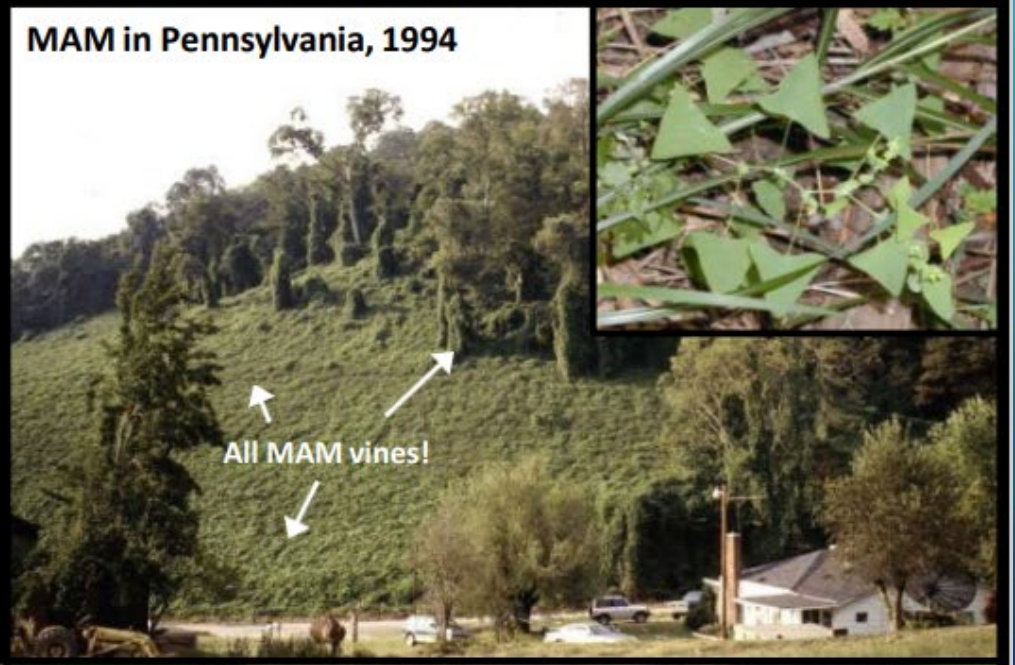
- Not yet established in Maine
- Several reports/interceptions in 2023
- Climbing/sprawling annual vine
- Can grow 6” in one day
- Produces seeds June-Sept
  - Be vigilant in cutting back
- Seeds viable up to 6yrs
- Lots of look-a-likes

Photo credit: Richard Gardner, Bugwood.org

Mile-a-minute Vine (MAM)

Persicaria perfoliata

1. Triangular leaves- no lobes or indentations



2. Small barbs along stems

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

Have you seen this plant?

MAINE DEPARTMENT OF AGRICULTURE CONSERVATION & FORESTRY

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**.

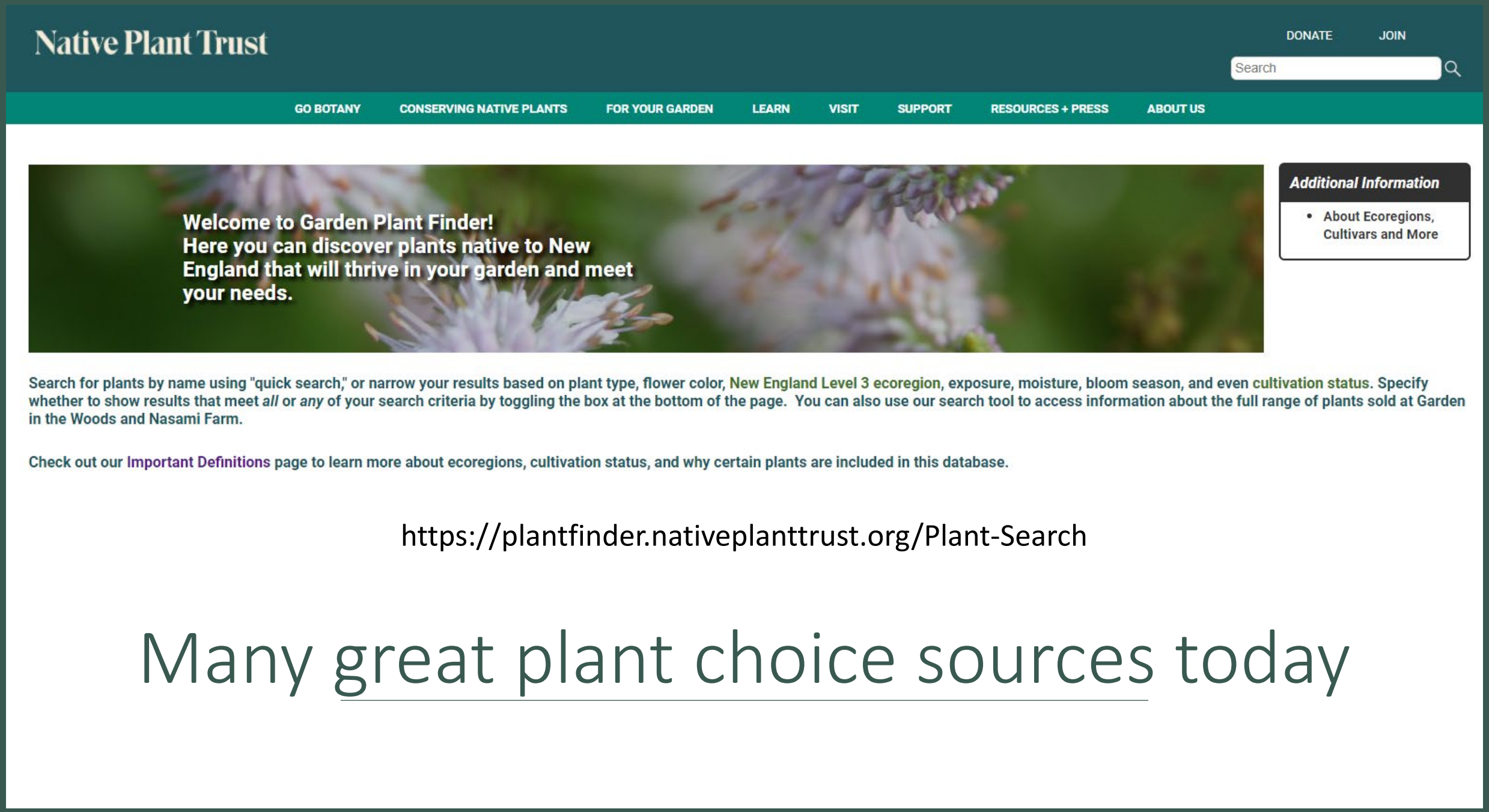



Photos: Bruce Patterson | Glen Mittelhauser | Arthur Haines | Arieh Tal

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.

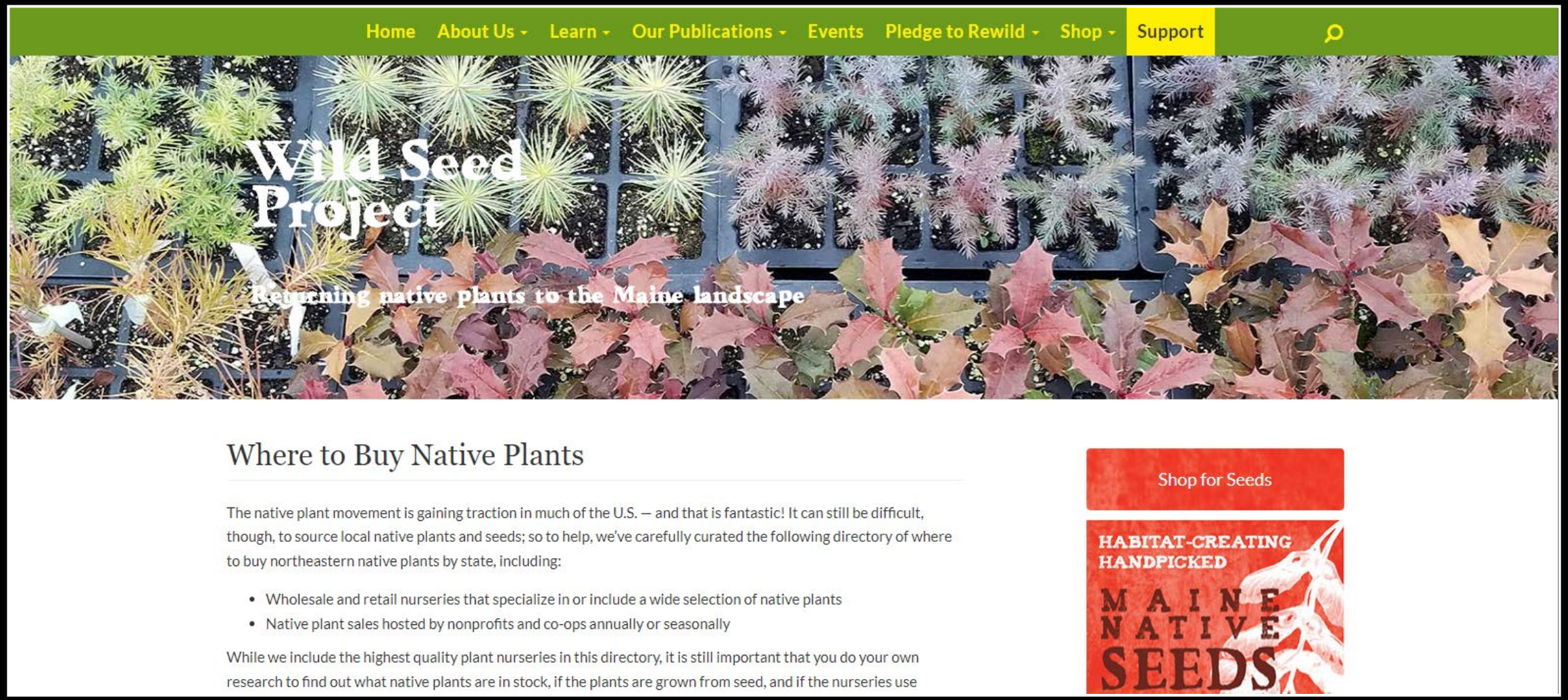

Fringed Bindweed (left and right above): Don Cameron | Frank Bramley



https://plantfinder.nativeplanttrust.org/Plant-Search

Many great plant choice sources today

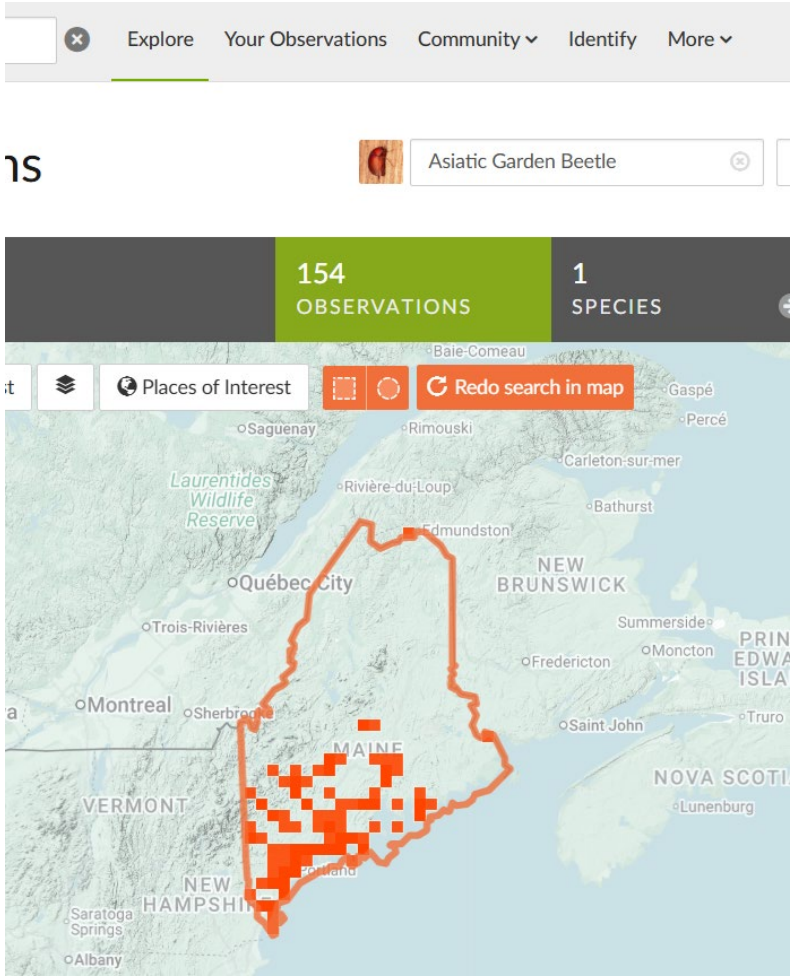
https://wildseedproject.net/buy-native-plants/



Where to buy native plants

Agricultural, Tree & Forest Insects and Diseases

Asiatic garden beetle



Asiatic garden beetle

Feed on more than 100 plant species

Favorites include: butterfly bush, rose, dahlia, aster & chrysanthemum

May strip leaves to the midrib and destroy flowers

The grubs are seldom dense enough to cause severe damage on their own, but they do feed on the fine roots of many plants

The key to Japanese beetle management

- Biological control
- Winsome fly eggs
- Let the parasitized beetles live

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

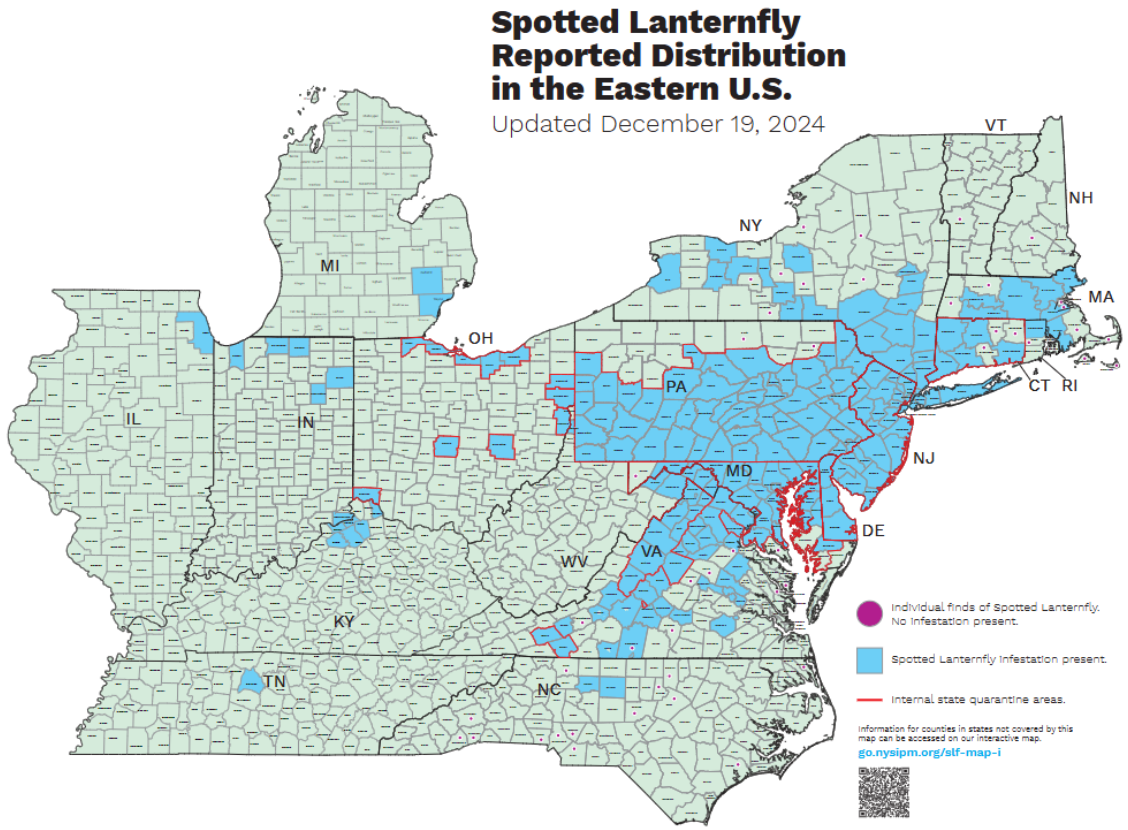
May-July

4th instar nymph

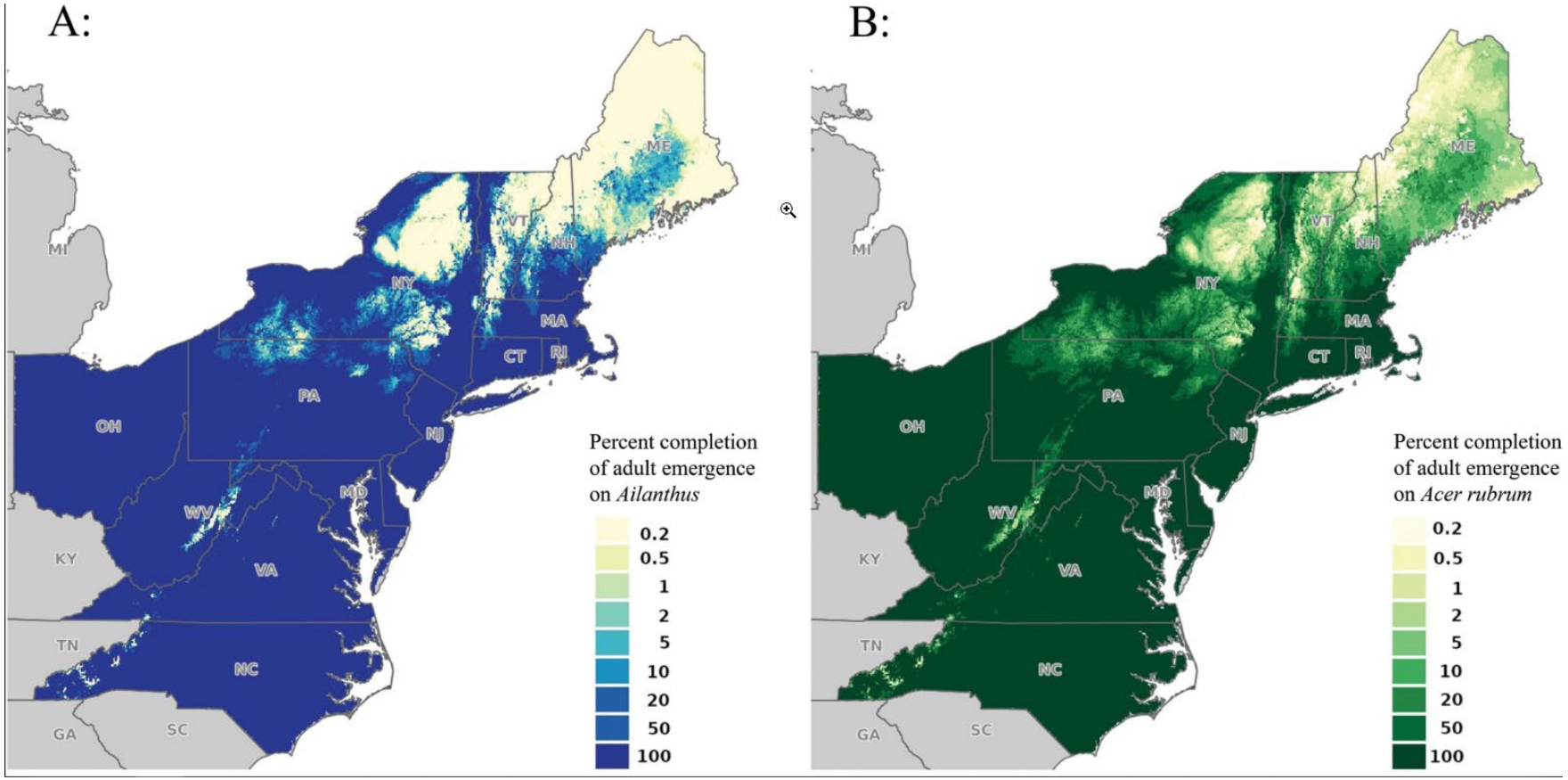
July-September

Adult

August-November


Spotted Lanternfly
Reported Distribution
in the Eastern U.S.
Updated December 19, 2024
VT
NH
NY
MA
MI
OH
PA
CT
RI
IL
IN
NJ
MD
DE
WV
VA
KY
TN
NC
Individual finds of Spotted Lanternfly. No infestation present.
Spotted Lanternfly infestation present.
Internal state quarantine areas.
Information for counties in states not covered by this map can be accessed on our interactive map.
go.nysipm.org/slf-map-i
CornellCALS
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

Beech Leaf Disease – a newer concern

BEECH LEAF DISEASE

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

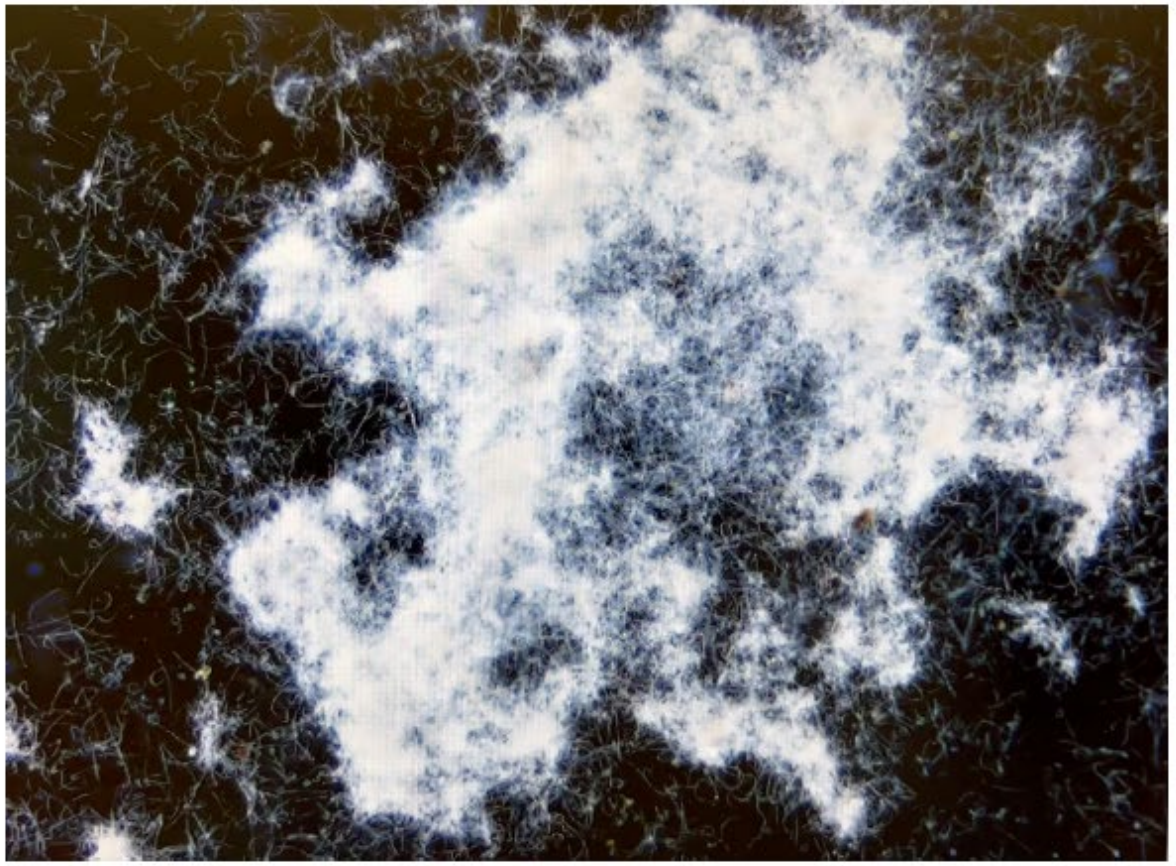
- Perhaps caused by a foliar nematode, *litylenchus crenatae*

B) BLD cell biology

BLD leaf

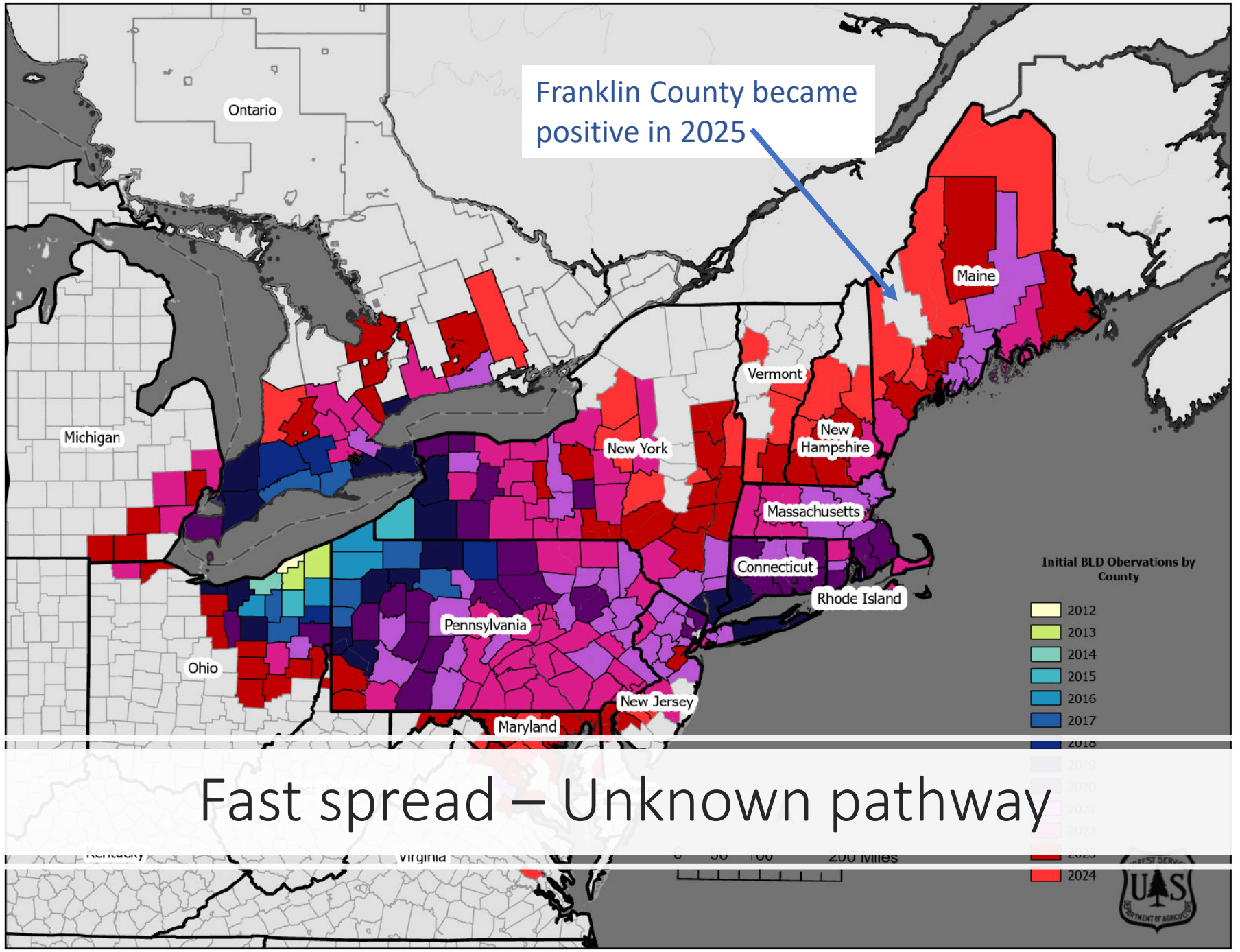
Late summer - fall season

Nematodes collected from 10-15 BLD leaves



Nematode-wool: typical agglomeration of nematodes within this family

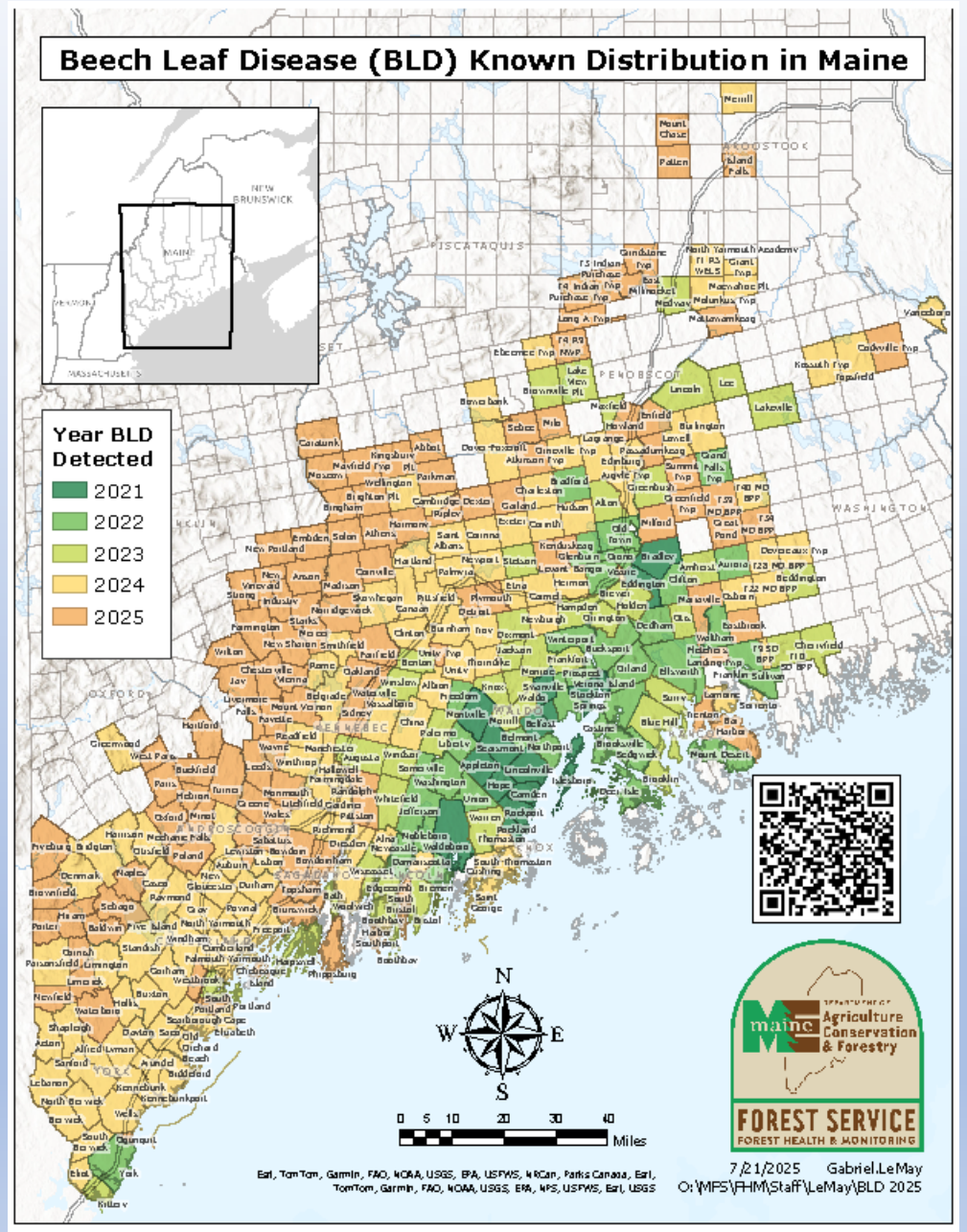
Paulo Vieira, ARS USDA, Beltsville, MD



Fast spread – Unknown pathway

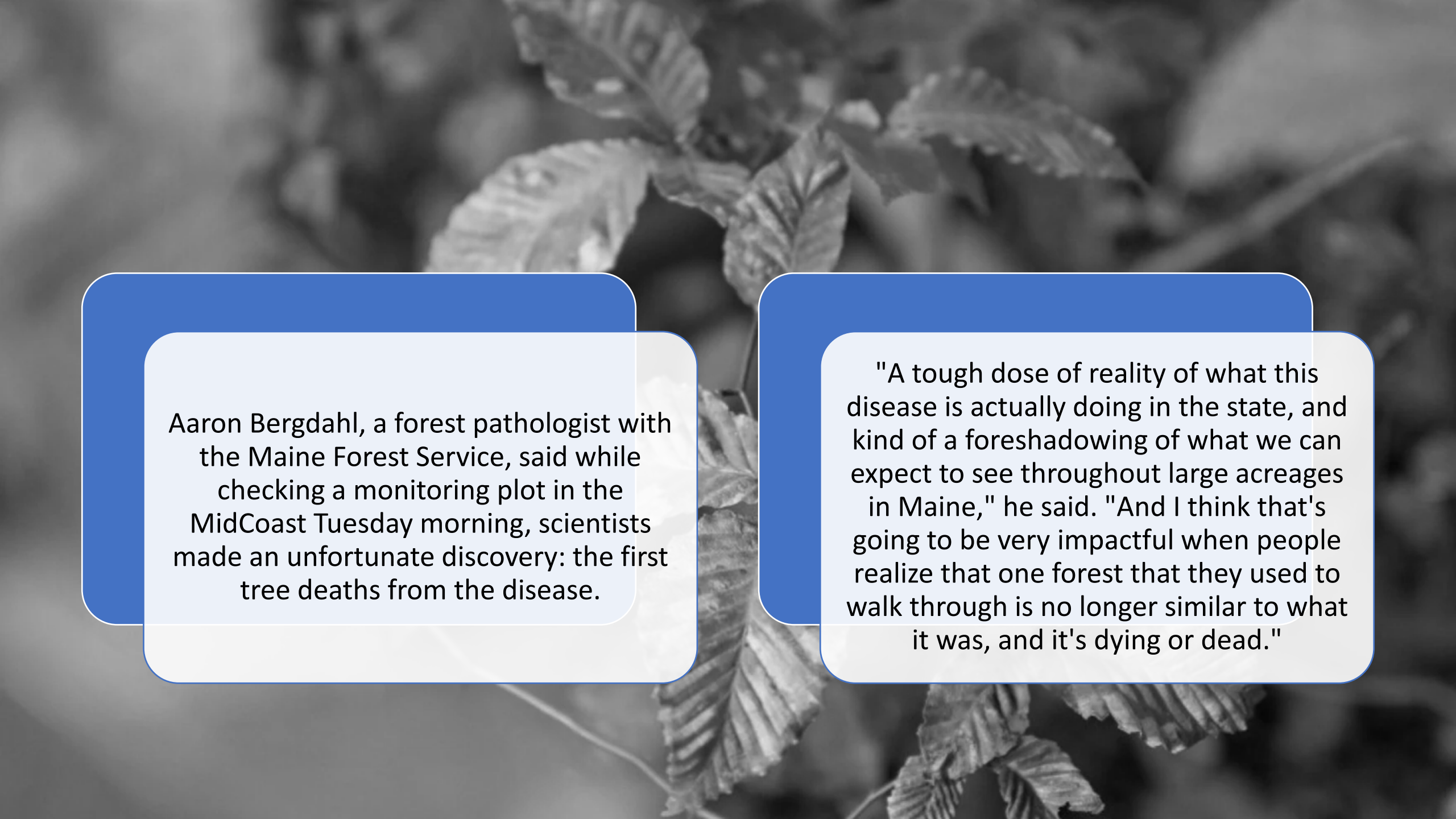
First reported in Maine – June 2021

- Knox Co. – 2021
- Lincoln Co. – 2021
- Penobscot Co. – 2021
- Waldo Co. – 2021
- Hancock Co. – 2022
- Cumberland Co. – 2023
- Kennebec Co. – 2023
- Piscataquis Co. – 2023
- Sagadahoc Co. – 2023
- Washington Co. – 2023
- York Co. – 2023
- Oxford Co. – 2024
- Aroostook Co. – 2024
- Somerset Co. – 2024
- Androscoggin Co. – 2024
- Franklin Co. - 2025



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
  - ~4 years – mature trees



Aaron Bergdahl, a forest pathologist with the Maine Forest Service, said while checking a monitoring plot in the MidCoast Tuesday morning, scientists made an unfortunate discovery: the first tree deaths from the disease.

"A tough dose of reality of what this disease is actually doing in the state, and kind of a foreshadowing of what we can expect to see throughout large acreages in Maine," he said. "And I think that's going to be very impactful when people realize that one forest that they used to walk through is no longer similar to what it was, and it's dying or dead."

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

Michigan Dept. of Agriculture, Bugwood.org

S-shaped galleries under bark

John Obermeyer, Purdue

EAB

NOT EAB

Pennsylvania Dept. of Conservation an Natural Resources

D-shaped exit holes

Recognizing EAB

From afar

Woodpecker activity!!!

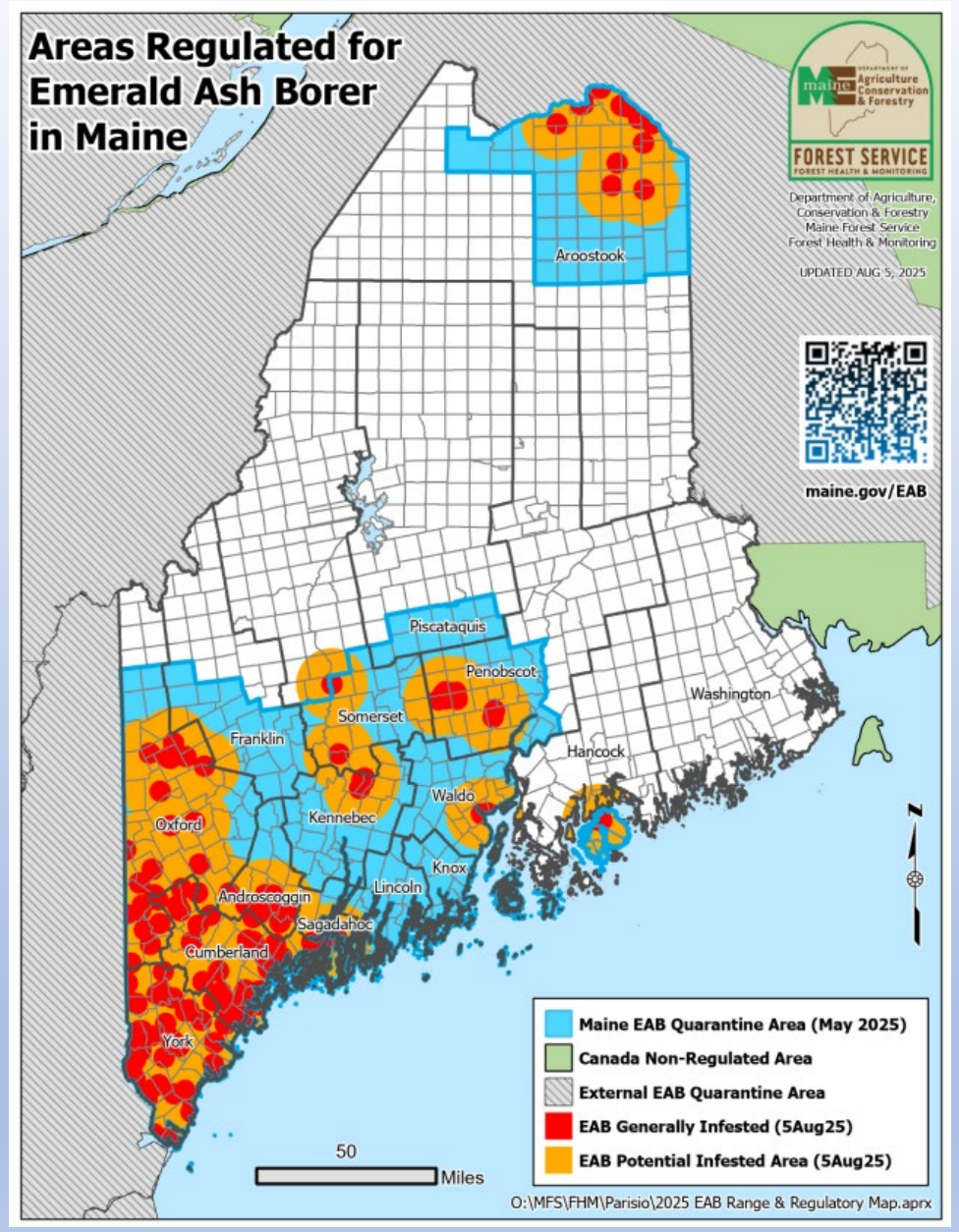
Crown dieback

Epicormic shoots

What to look for in the winter

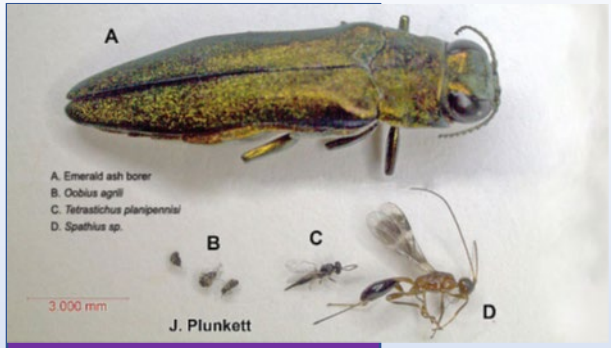
Emerald Ash Borer Quarantine

Quarantine Expanded in Aroostook and added MDI



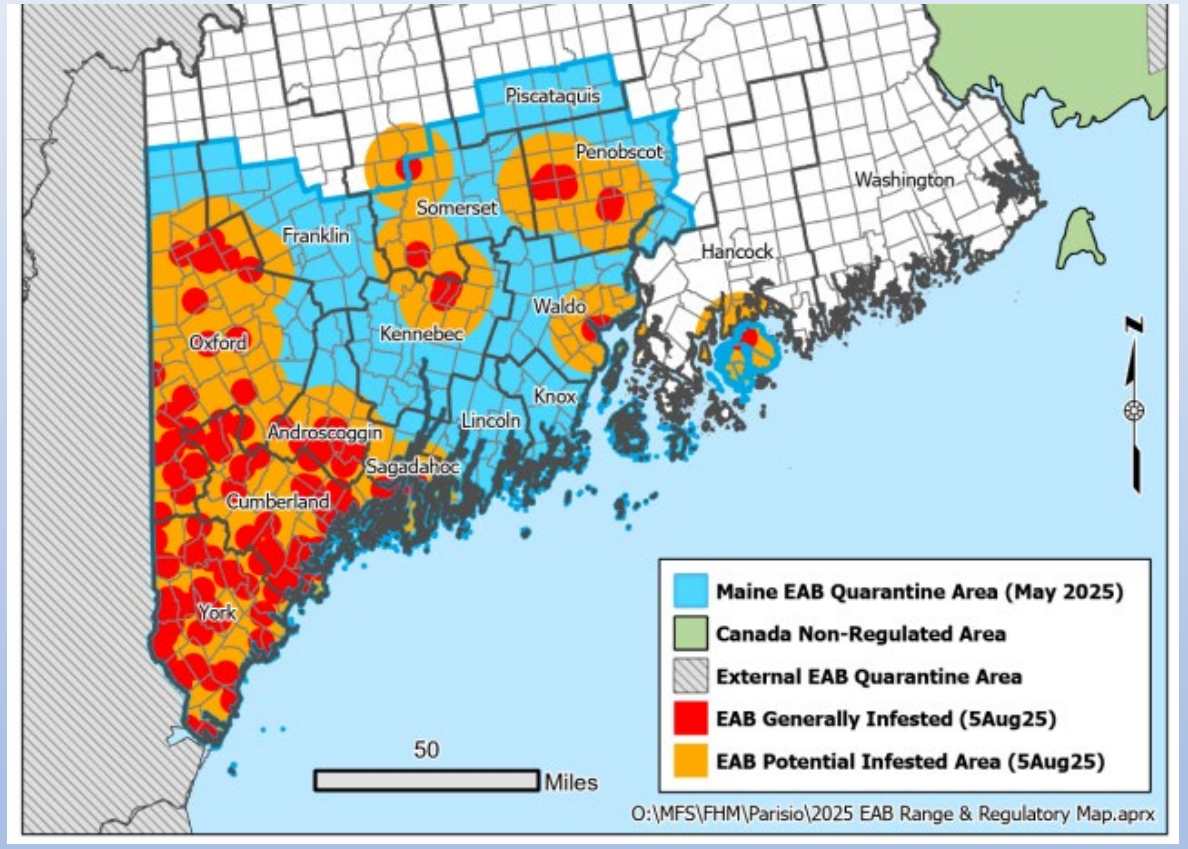
- Quarantine expanded in the northern and southern regions
- 40% of ash still uninfested
- 15 counties now have towns within the EAB quarantine area

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



Emerald Ash Borer Quarantine Southern Maine

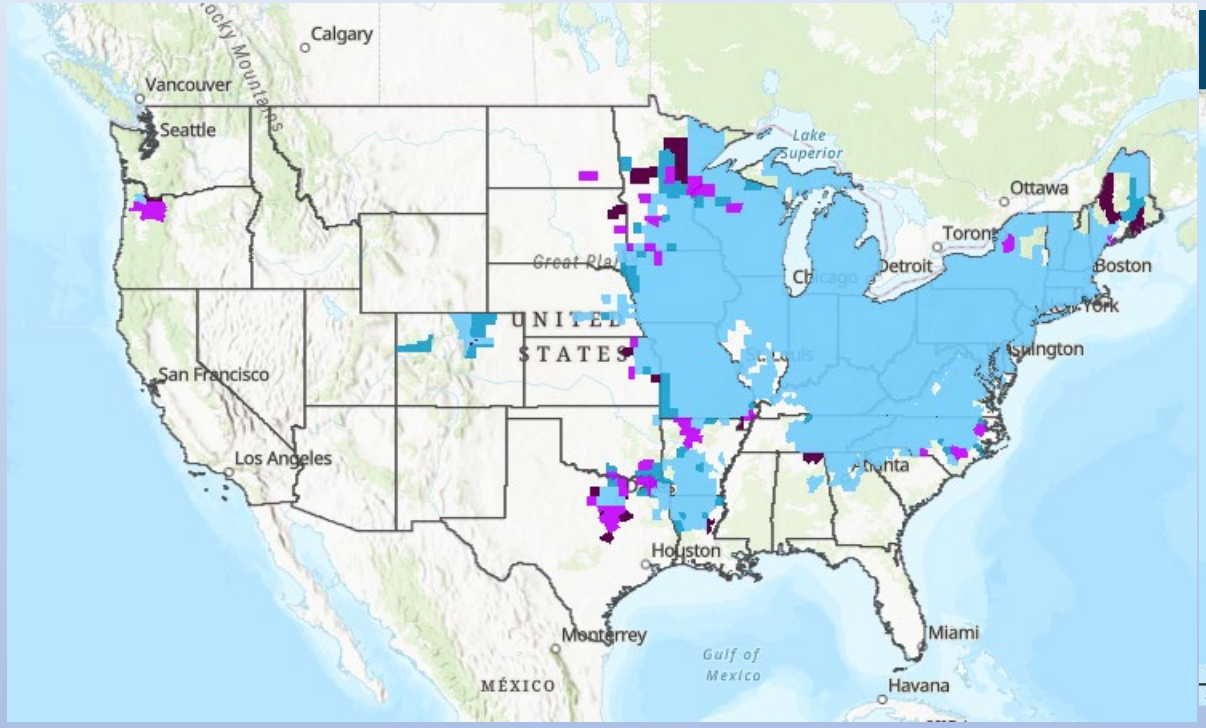
Mortality is accelerating



MDI Added to the Quarantine New infestation 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

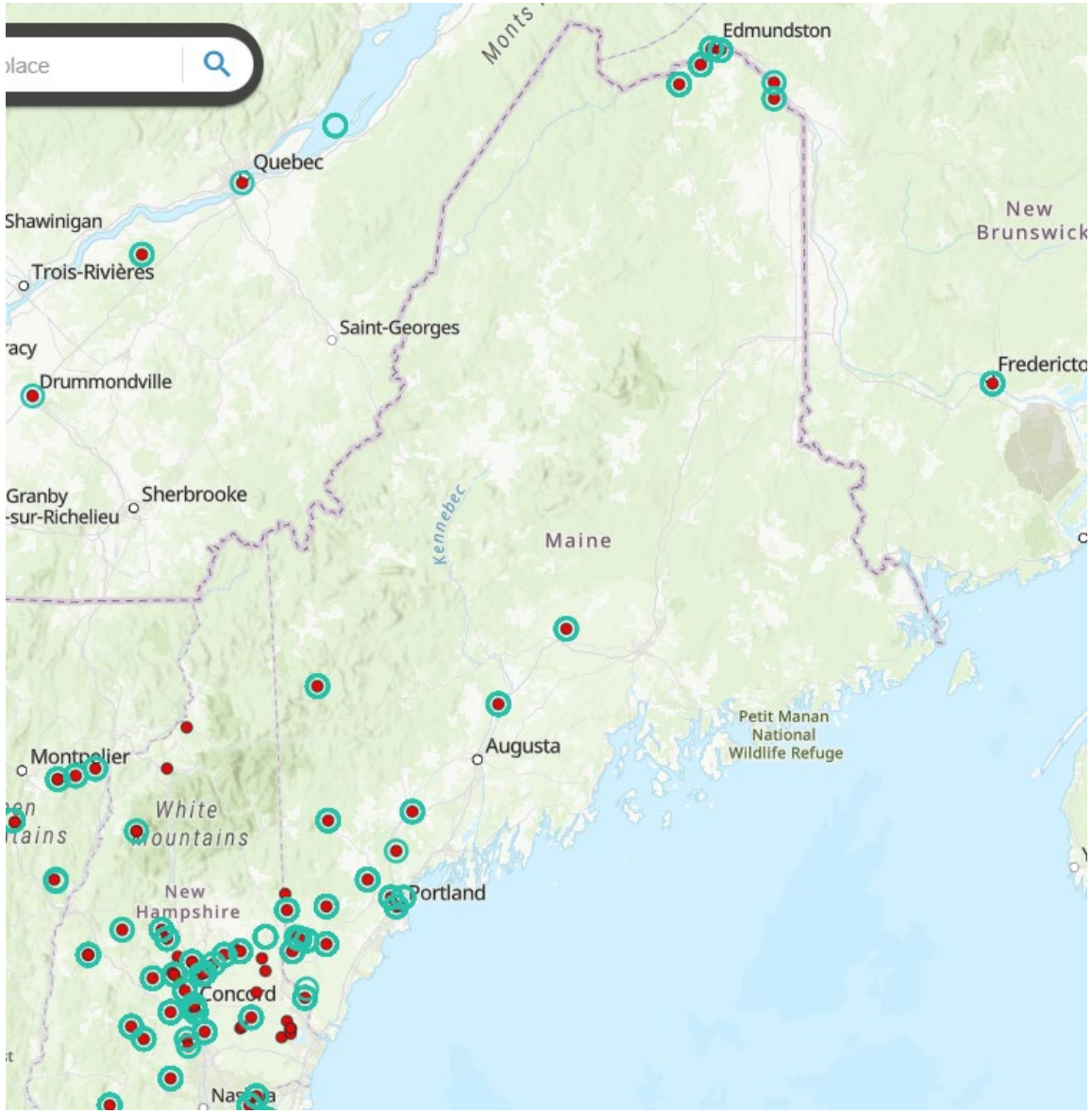
Biological controls may save our future ash

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

Winter Moth

Geometrid moth; "inchworm"

Adults emerge late Fall

Tom Murray, BugGuide.net

Waltham Services

Nov - Jan

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

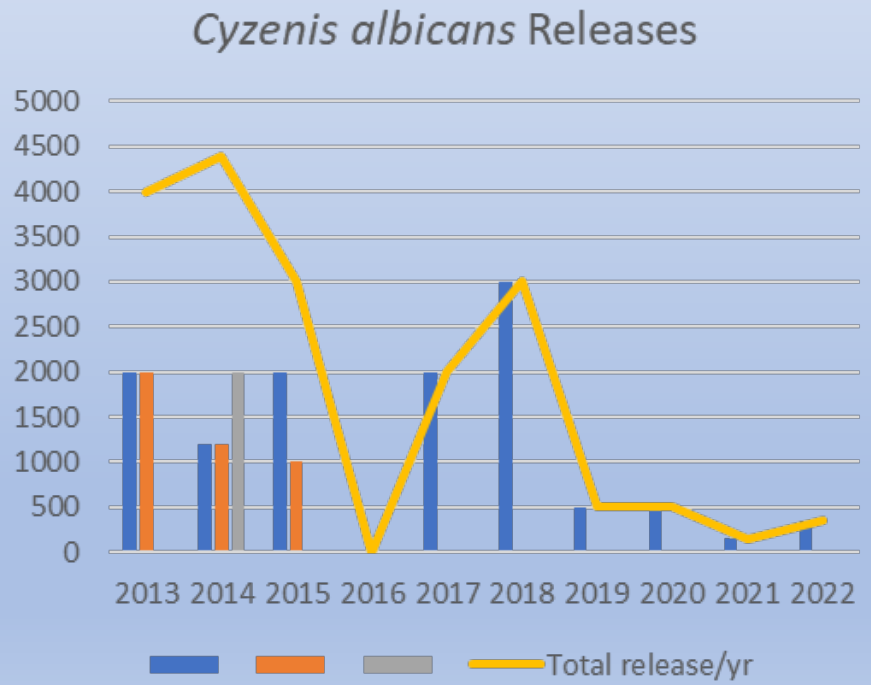
Cape Cod Times/Steve Heaslip

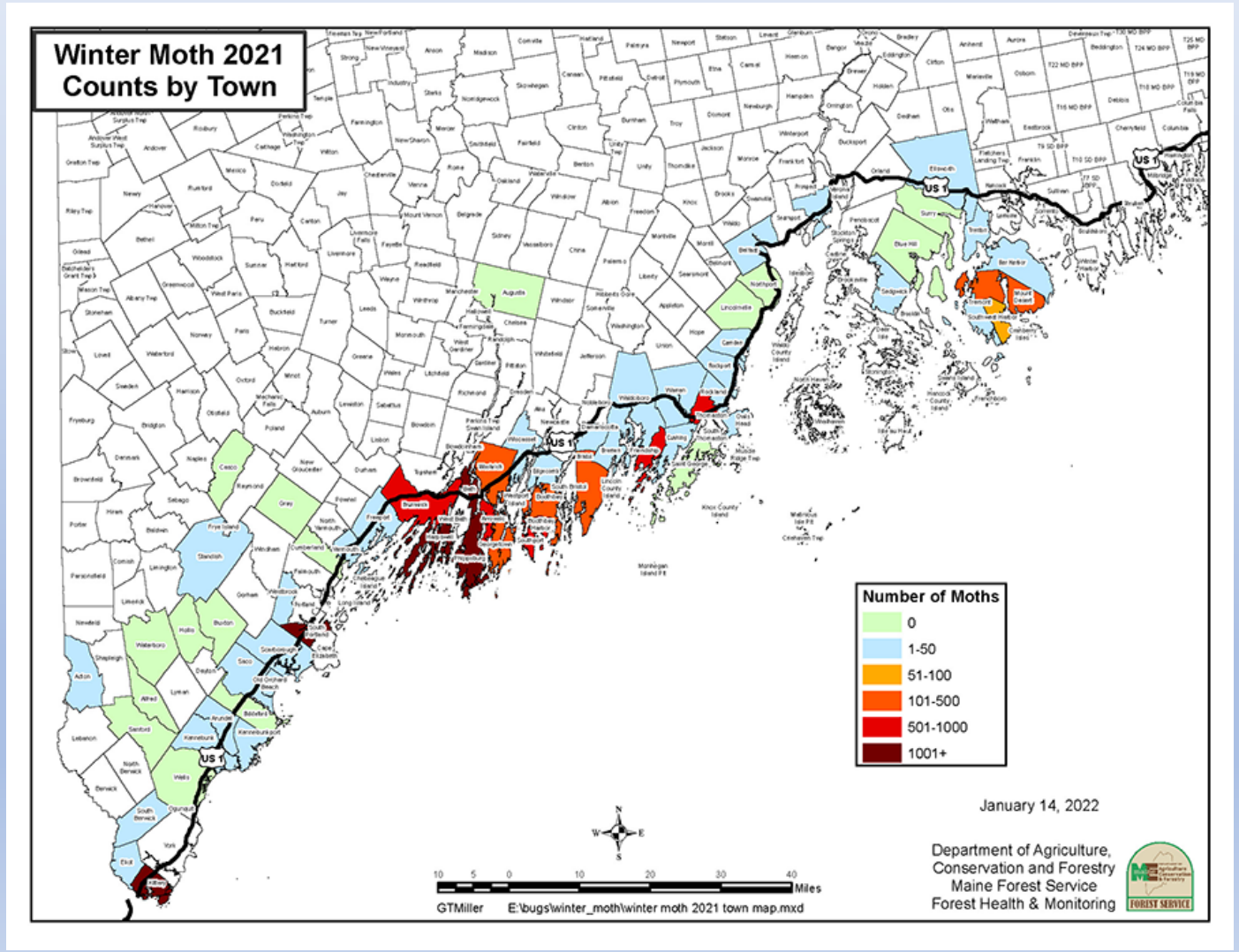
Caterpillars chew leaves

Apr - Jun

Winter Moth

Damage reported in coastal locations from Kittery to MDI





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%

Cyzenis albicans

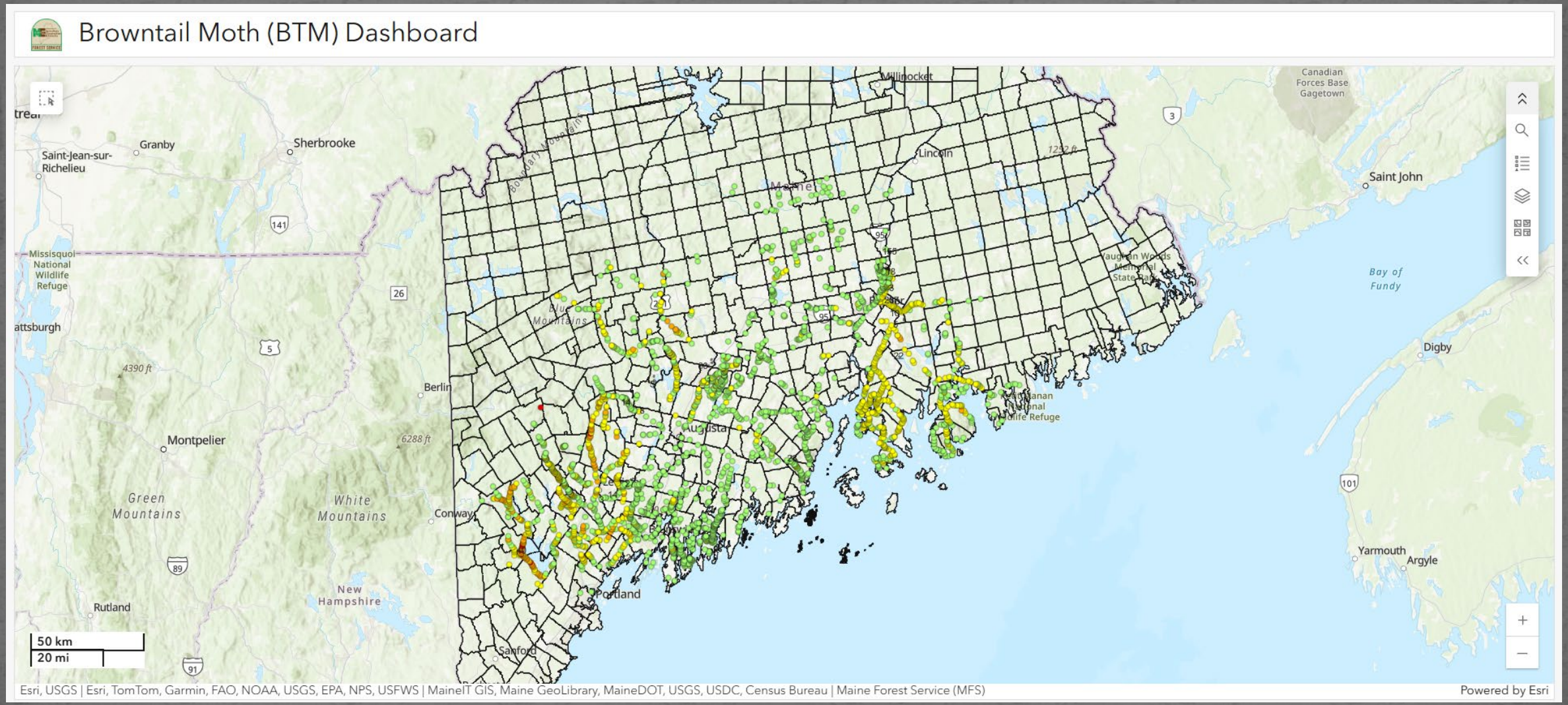
Town	County	Release Dates	Number of Cyzenis albicans Released	Recovery Comments
Cape Elizabeth	Cumberland	1-May-2013	2,000	First recovery 2016; 27.4% parasitism in 2020
Harpswell	Cumberland	16 & 22-May-2014	1,200	Survival not good
Kittery	York	16 & 23-May-2014	1,200	First recovery 2016; 35.75% parasitism 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

Browntail Moth

Euproctis chrysorrhoea

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

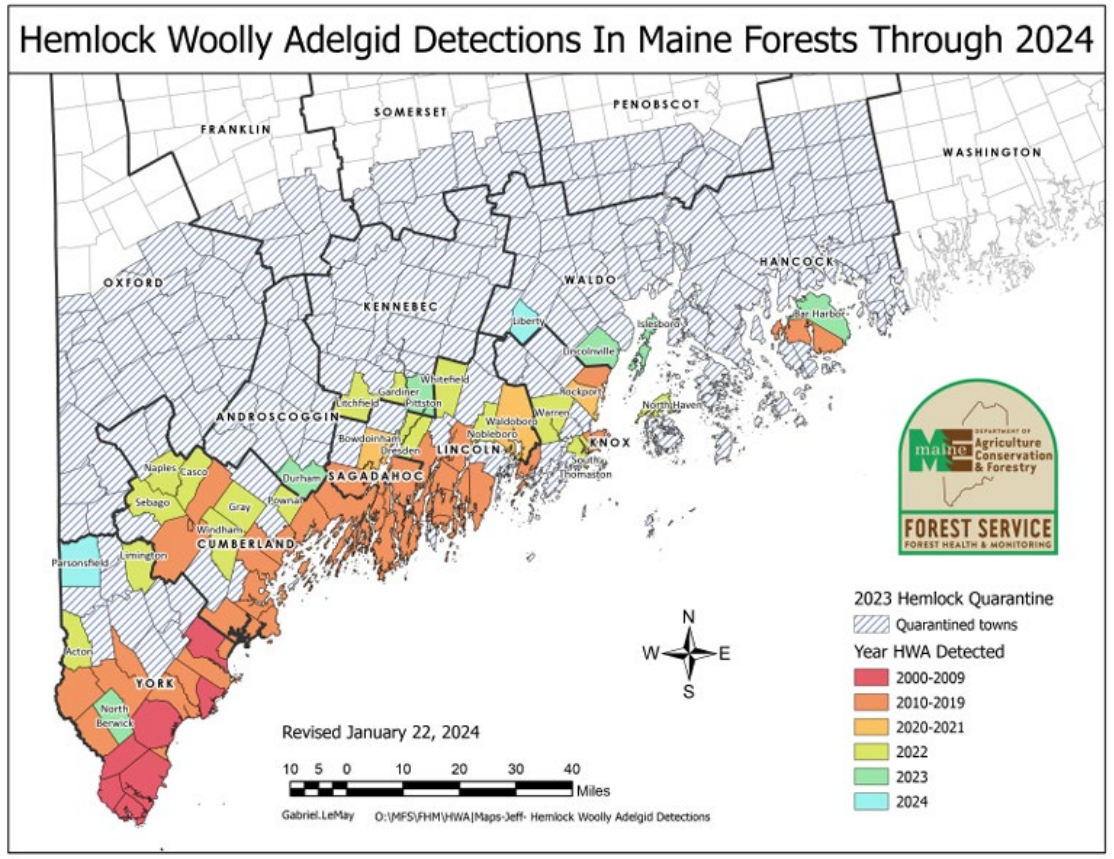
BTM Dashboard



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

Hemlock Woolly Adelgid Quarantine

Adopted November 1, 2023



- 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

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 CO_2 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

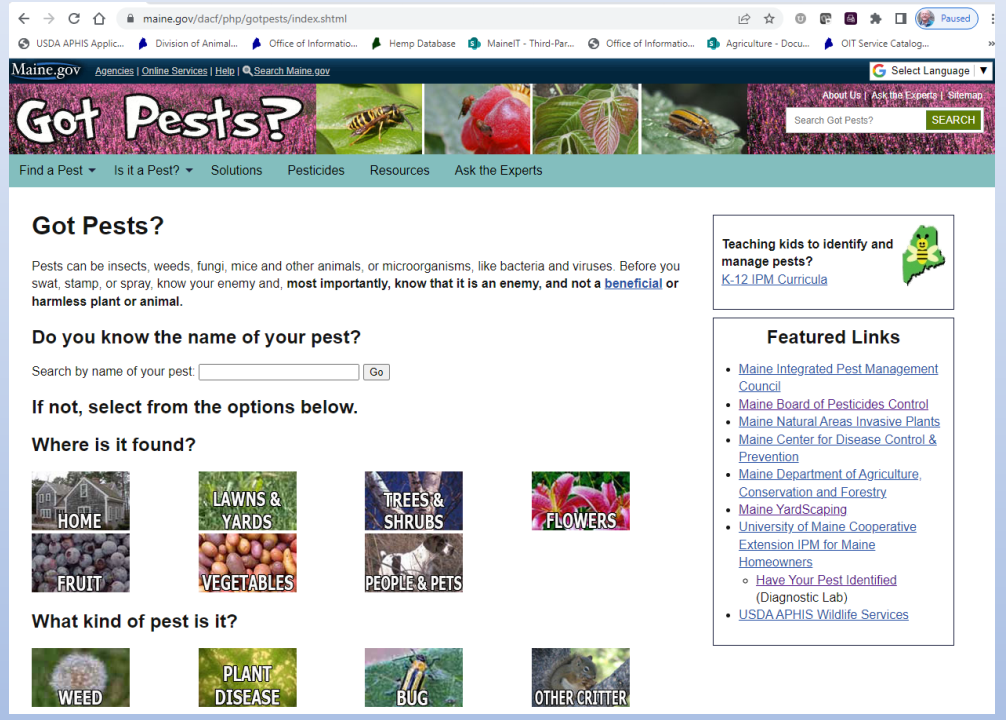
Resources

INVASIVE SPECIES

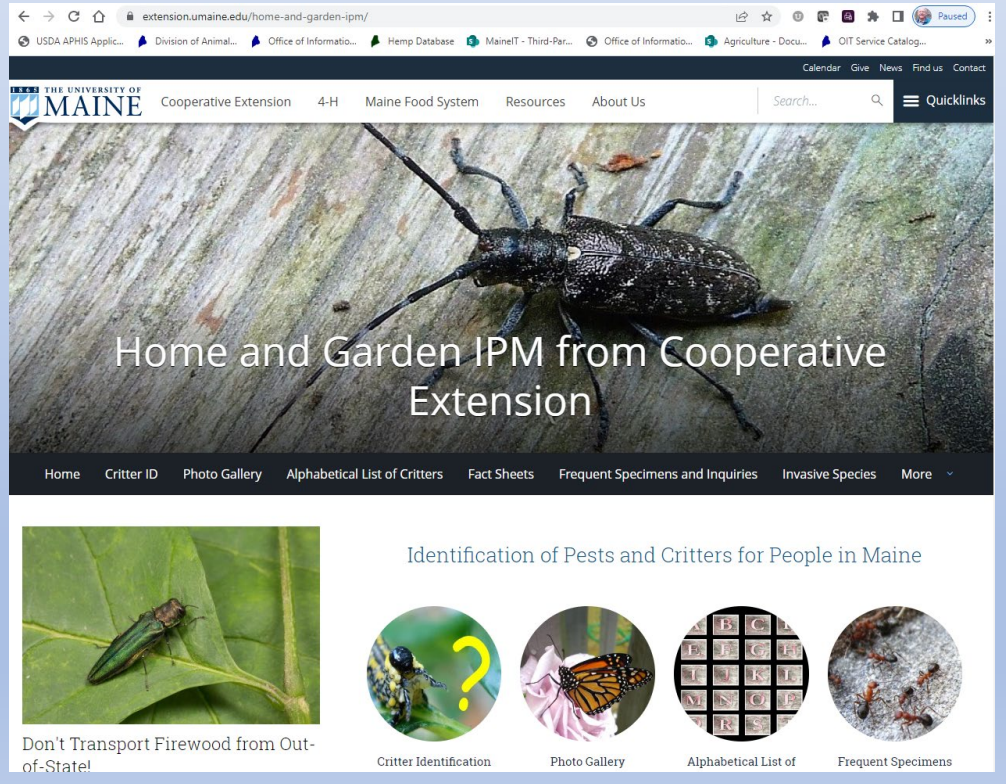
What is an invasive species?

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,

Pest management resources



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



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

Questions?

Gary Fish

Maine State Horticulturist

gary.fish@maine.gov

207-287-7545

Use this QR to download a copy of the slides.