



HITCHHIKING GUIDE TO INVASIVE PLANTS

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Invasive Plant Workshop

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OVERVIEW

How do plants hitchhike

Hitchhiking plants that could show up at your nursery

Common invasive plants seen in and around Maine nurseries that could leave with your nursery stock

BMPs for preventing invasive weeds at horticultural facilities

WHAT IS HITCHHIKING?

To travel by securing free rides from passing vehicles

To be carried or transported by chance or unintentionally

Consequences:

👍 Help someone out!

👎 Break the law

👎 Potentially dangerous situation



<https://theroadtripguy.com/become-a-hitchhiker/>

<https://www.pinterest.com/pin/fox--289848926002449857/>



<https://www.quora.com/What-do-US-guys-call-maple-seeds>

<https://www.invasivespecies.org/site-study-japanese-knotweed-control-dunkeld-bridge-river-tay>



<https://www.gardeningknowhow.com/ornamental/vines/bittersweet/autumn-revolution-bittersweet.htm>



PLANTS ARE HIGHLY EVOLVED TO HITCHHIKE NATURALLY ON:

- Wind
- Water
 - Floating
 - Erosion releases root fragments
- Animals/birds
 - On fur and feathers
 - Through digestive system



HUMAN ASSISTED HITCHIKING

- Vehicles/Tools/Equipment
 - Tires/mud
 - Undercarriage
- Shoes/boots
- Clothing
- Nursery stock



Tom Mannion,
<https://www.cnn.com/2023/08/11/world/rewild-the-run-shoes-nature-seeds-london-spc/index.html>



<https://horttechsystems.com/tree-spades-and-digging-1#52c38e37-0ff2-423a-b07e-d059c656dd64>

HOW INVASIVE PLANTS HITCHHIKE ON NURSERY STOCK

- Seeds/Fruit
- Vegetative fragments or underground structures in soil

Weeds and seedlings can be hard to identify

UNTIL YOU
CAN IDENTIFY
WEEDS
ASSUME ALL
WEEDS ARE
INVASIVE

- Use seedling ID guide provided in binder







Leslie J. Mehrhoff, University of Connecticut, Bugwood.org



➤ Parrot feather (*Myriophyllum aquaticum*)- Aquatic invasive plant sometimes seen for sale

Banned invasive terrestrial plant list does not include all invasive plants, only those:

- sold in trade or
- proven to hitchhike on nursery stock

➤ Perennial pepperweed (*Lepidium latifolium*)- invasive but not known to to be sold or move on nursery stock



INVASIVE HITCHHIKERS PROVEN TO MOVE ON NURSERY STOCK

- **STILTGRASS**
- **MILE-A-MINUTE**
- **GARLIC MUSTARD**

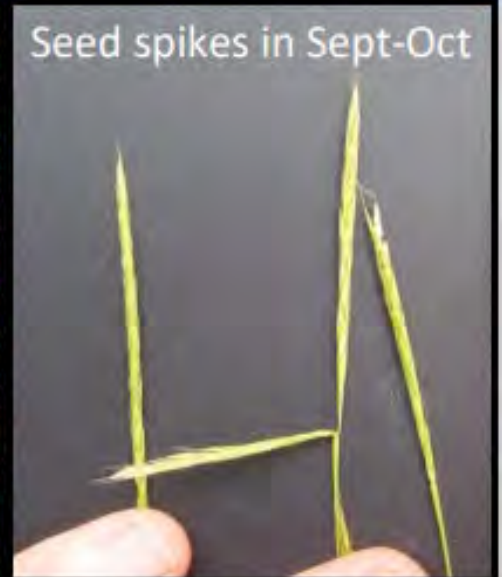
STILTGRASS (*MICROSTEGIUM VIMINIUM*)

- 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



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.

STILTGRASS (and other annual plant) CONTROL



Pull, mow, cover or treat infested area before seed set

Will require vigilance for many years



Seeds can be viable for at least 3 years.

Consider using preemergence herbicides



Prevent seed spread by cleaning shoes, clothes, vehicles and equipment thoroughly



Prevent pets and other animals from entering area if possible



Dispose of plants properly

DO NOT put into compost

Double bag and bring to landfill

Deep burial in some cases



STILTGRASS VIDEO

https://www.youtube.com/watch?v=CB_Oe6GxqHs

Invasive Stiltgrass in Maine

What is it and its impacts



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

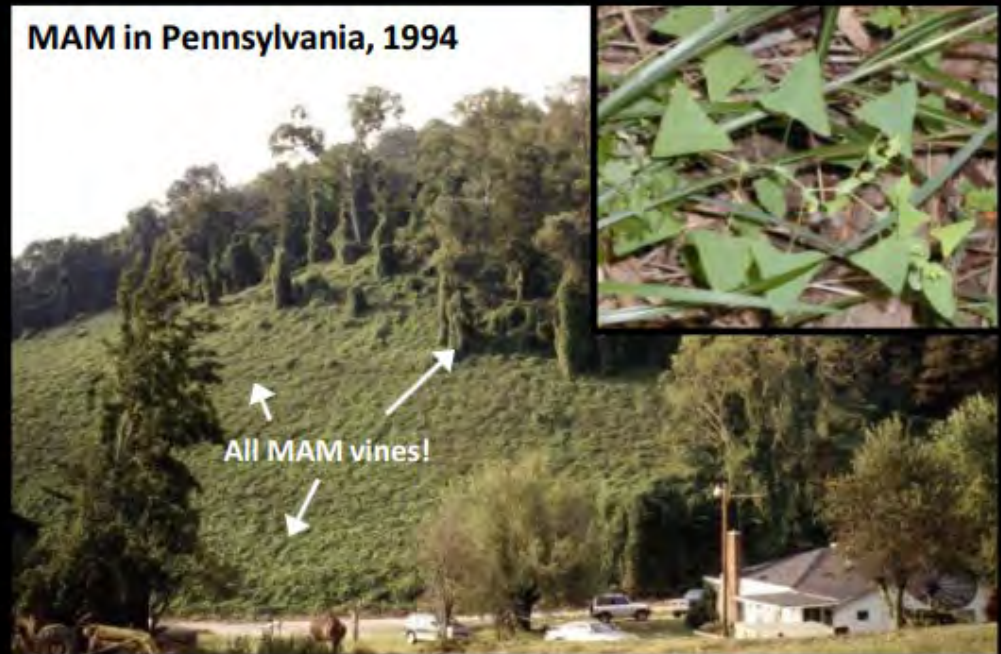
Mile-a-minute Vine (MAM)

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

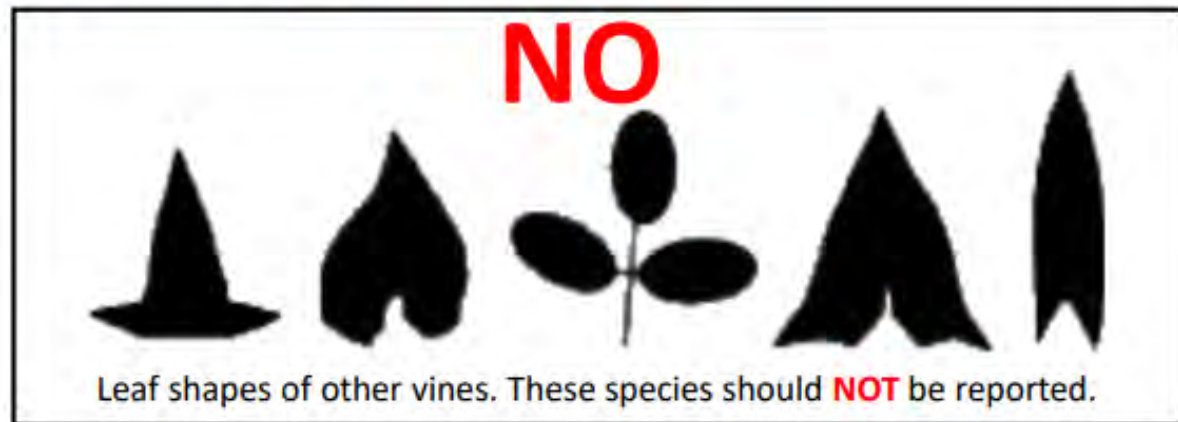


Have you seen this plant?



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.



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



Annemarie Smith, ODNR Division of Forestry, Bugwood.org

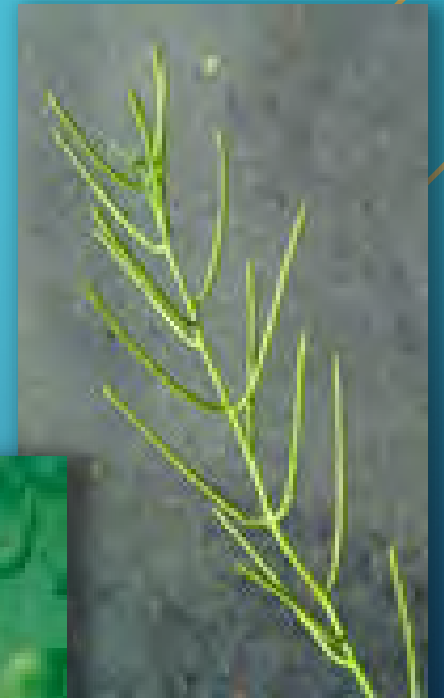
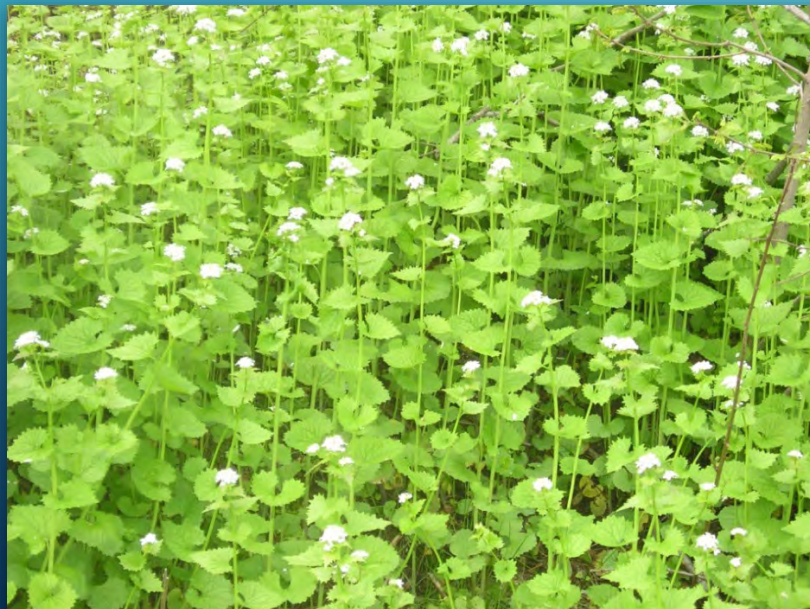



GARLIC MUSTARD (*Alliaria petiolata*)

- Biennial established in Maine
 - Year 1- basal rosette
 - Year 2- vertical growth and flower
- Can thrive in shade
- Threatens native woodland plants
- Can be used in pesto

GARLIC MUSTARD (*Allairia petiolata*)

- Identification
 - Heart shaped leaves
 - 4 parted white flower (crucifer)
 - Plants dieback in June
 - Strong garlic odor
- Spread exclusively by seed





INVASIVE
HERBACEOUS
PLANTS CREEPING
INTO YOUR
NURSERY OR
MANAGED LAND

- ORNAMENTAL
JEWELWEED
- PURPLE
LOOSESTRIFE
- KNOTWEED
- COLTSFOOT



Jan Samaanek, Phytosanitary Administration, Bugwood.org



ORNAMENTAL JEWELWEED

aka Himalayan balsam and
ornamental touch me not

- Annual
- Habitat- wetlands, forests, gardens, ditches, field edges, disturbed areas
- Native jewelweeds have smaller orange flowers and fewer leaf serrations

Impatiens glandulifera Identification



Stems- square, hollow, smooth and often red or purple

Leaves- opposite, serrate,

Flowers- mainly pink

Fruit- capsules with seeds explode when ripe and touched



ORNAMENTAL JEWELWEED (*Impatiens glandulifera*)



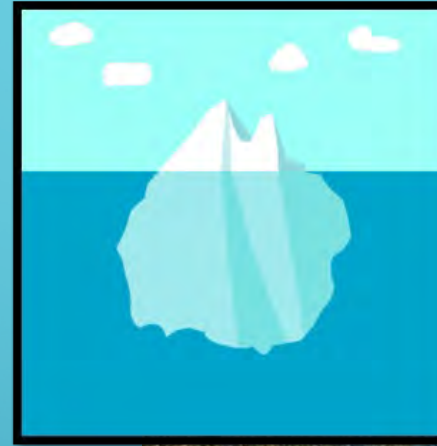
PURPLE LOOSESTRIFE (*Lythrum salicaria*)

- Commonly found in or near nurseries
- Prefers a variety of wet areas
- Square stems, sessile leaves
- Spreads mainly by seed and root fragments



KNOTWEED (*Fallopia japonica*)

- Widespread perennial
- Problematic along-
 - River corridors where rhizomes transported downstream
 - Disturbed areas such as roadsides
- Can grow 3-10ft yearly





Jan Samanek, Phytosanitary Administration, Bugwood.org



KNOTWEED

(*Fallopia japonica*)

- Identification


- Round hollow stem with swollen nodes
- Fruit - papery and winged
- Alternate leaves with flat base and pointed tip



COLTSFOOT (*TUSSILAGO FARFARA*)

- Herbaceous perennial
- Survives in a variety of habitats including wetlands
- One of earliest flowers in spring before leaves emerge
- Extensive brittle root system that can produce new plants from small segments
- Salt tolerant





WOODY INVASIVE PLANTS SURROUNDING YOUR NURSERY OR MANAGED LAND

- ASIATIC BITTERSWEET
- HONEYSUCKLES
- MULTIFLORA ROSE
- BURNING BUSH



Nancy Loewenstein, Auburn University, Bugwood.org



ASIATIC BITTERSWEET

(*Celastrus orbiculatus*)

- Woody vine
- Can grow 10ft per year
- Smothers, girdles other plants
- Often growing in areas surrounding nurseries
- Talk to neighbors



ASIATIC BITTERSWEET

- Leaves-
 - Alternate
 - Rounded with pointed tip
 - Serrated margins,
 - Yellow fall color
- Fruit-
 - Green turning to bright orange/red
 - Borne along the stems
- Roots are bright orange



Cesariuk
Tahoe, Palmer, MA
August 14, 2008
T.J. Reavitt





MULTIFLORA ROSE (*Rosa multiflora*)

- Widely dispersed in Maine
- Forms impenetrable thickets
- Excludes native plants
- Commonly found on and around nursery stock



MULTIFLORA ROSE

Identification

- Alternate leaves with fringed stipules
- Thorns!!!
- Clusters of fragrant white flowers
- ¼" egg shaped rosehips





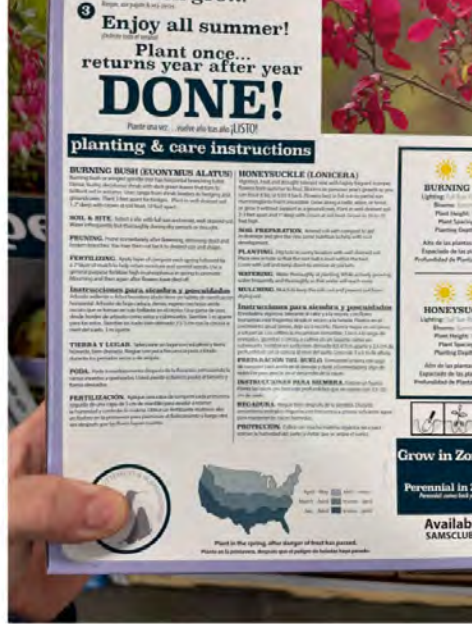
Theodore Webster, USDA Agricultural Research Service, Bugwood.org

HONEYSUCKLES (*LONICERA SPP.*)

Identification

- Woody shrubs or vines
- Leaves opposite, simple,
- Hold leaves later than native plants
- Fruit- red, paired berries 1/3"
- Shade tolerant





BURNING BUSH *(Euonymus alatus)*

- Woody shrub
- Forms dense thickets in forest understory-shade tolerant
- Corky, winged stems
- Vivid red fall color
- Prolific seed set

Dormant burning bush and honeysuckle, invasive plants on the Do Not Sell List, that were found at a box store.





Best Management Practices (BMPs) to prevent weeds

BMPs are measures implemented at a critical control point to prevent, eliminate or reduce the risk associated with a specific hazard.

CRITICAL CONTROL POINTS (CCPs)

CCPs are any point, step or procedure at which controls can be applied and the hazard prevented, eliminated or reduced to an acceptable level.



Critical Control Point (CCP)- Plant Sources

BMPs

- Choose suppliers that are reputable
 - Ex: certified for weed free seed
- Ask suppliers about weed management programs and weed levels
 - What do they do to prevent weeds from traveling on nursery stock?
- Isolate and inspect incoming plant material for weeds
 - If found identify and implement best method for removal





CCP- Media

BMPs

- Manage in a sanitary manner
- Store growing media properly to prevent seed incorporation
- Keep opened/broken bags closed or covered
- Avoid using field soil



CCP- Containers

BMPs

- Store containers where they won't be contaminated with weed seed
- If pots must be reused,
 - Wash to remove all media and debris
 - Sanitize

CCP- Site

BMPs

- Manage weeds surrounding the facility
- Work with neighbors if invasive plants on property boundary
- Maintain weed barrier around greenhouses
- Control all weeds in production areas before bringing in plants



CCP- Water

BMPs

- Filter water from irrigation ponds
- Manage drainage to prevent weed seed runoff into production areas





CCP- PRODUCTION PRACTICES CONTAINER CROPS

BMPs

- Maintain weed free area around and in container areas
- Cover ground with nursery fabrics
- Keep area clean and free of spilled media and soil
- In containers, use surface cover such as rice hulls to prevent weed seeds from reaching soil

CCP- PRODUCTION PRACTICES

FIELD GROWN CROPS

BMPs

- Maintain weed free rows of nursery stock with cover crop rows in between
 - Mulch and/or cultivate rows near base of plants to prevent:
 - Weeds being dug with nursery stock
 - Competition for water and nutrients
 - Rodent damage
- Use cover crops in fallow fields to prevent weed establishment
- Shorter production cycles prevent establishment of perennial weeds



CCP- Scouting

BMPs

- Scout all areas of the nursery on a regular basis
- Fields, greenhouses inside and out, production and holding areas, surrounding areas and property edges
- Special attention to weeds that might be new to the nursery
- Keep records of anything new or different



CCP- Training

BMPs

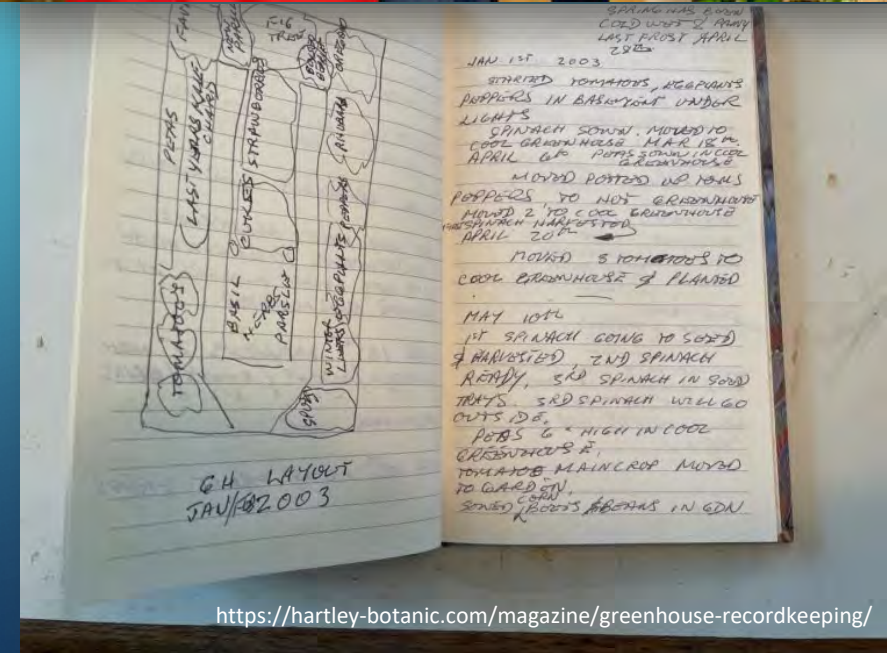
- Train staff to recognize invasive plants
- Train staff to do weed seed check between infested and uninfested areas
- Designate staff member to be licensed to apply herbicides



CCP- Record Keeping

BMPs

- Develop weed management program
- Identify weeds found while scouting
- Research life cycle and control methods
- Outline strategies to be implemented





CCP- Sanitation/Disposal

BMPs

- Equipment should be cleaned between areas if weeds are different
- Do not allow trucks to sweep out trailers on site
- When removing invasive plants
 - Use disposal guidance
 - Do not put into compost pile