



# Preventing, Managing, & Eradicating INVASIVE PLANTS & NOXIOUS WEEDS

## What is an invasive species, and what is a noxious weed?

The term **invasive species** refers to “a species that is non-native to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health.” (National Invasive Species Management Plan) In order to be considered invasive, the species must be able to quickly disperse and reproduce in the ecosystem. A common example of environmental harm is the displacement of plants or wildlife that are beneficial to the ecosystem, such as native flowers or fish. Economic harm may be caused by the displacement of crops or grazing plants, thus causing reduced profitability of farms. Invasive plants may also be a threat to human or animal health, such as the Tree of Heaven, a tree native to Asia that can cause inflammation of the heart and related symptoms with exposure of its sap to broken skin. (Source: [https://www.doi.gov/sites/doi.gov/files/uploads/isac\\_definitions\\_white\\_paper\\_rev.pdf](https://www.doi.gov/sites/doi.gov/files/uploads/isac_definitions_white_paper_rev.pdf))

The term **noxious weed** is similar to “invasive species,” and most noxious weeds are considered invasive species. However, in Maryland, a noxious weed is specifically defined as an annual, biennial, or perennial weed or plant that adversely affects or threatens **agricultural production**. Noxious weeds may also be injurious to public health, agriculture, recreation, wildlife or property. (Sheley, Petroff, and Borman, 1999. (Source: <https://www.blm.gov/programs/natural-resources/weeds-and-invasives/about>)



## What are the negative impacts of invasive plants and noxious weeds?

Invasive species cause a profound effect on native species. They threaten biodiversity and are the cause of more than 50% of our native species being classified as threatened or endangered. Invasive species outcompete for resources, and more than 100 million acres in the US are affected, leading to a massive economic cost. Invasive species can clog waterways and can be a threat to pavement and buildings. (Source: [www.maine.gov/dacf/php/documents/nisaweconomics.pdf](http://www.maine.gov/dacf/php/documents/nisaweconomics.pdf))

Invasive grasses can alter fire regimes, change habitat dynamics, impede shrub establishment, and reduce the stability and chemical makeup of soil. They can also cause injury to wildlife and livestock foraging on them. (Source: [esajournals.onlinelibrary.wiley.com/doi/pdf/10.1002/ecs2.1531](http://esajournals.onlinelibrary.wiley.com/doi/pdf/10.1002/ecs2.1531))

Additionally, invasive plants interrupt interactions between soil communities and native plants to favor invasive species. Roots of some invasive species contain allelopathic compounds, which alter the chemical makeup of the soil to benefit the non-native species over the native.

Introduced species that become invasive usually escape much of the disease that may have kept them in check within their native areas, thus leading to out-of-control spreading. They can even undergo genetic changes in response to their new environments (for example, kudzu). Invasive species can cause damage that far outweighs their numbers. Once recognized, the plant can be present in such numbers that its hugely expensive, or impossible, to eradicate – leaving reduced numbers or containing the populations as the only options to minimizing negative impacts. (Source: [dnr.maryland.gov/Invasives/Pages/Invasive-Description.aspx](http://dnr.maryland.gov/Invasives/Pages/Invasive-Description.aspx))

**Why should we care?** In addition to the profound environmental impacts, invasive species may also have significant economic effects. Clogged waterways, decreased agricultural crop yields, impact to recreational opportunities, and decrease in property values result in significant costs. Additional economic costs are incurred to control, remove, and prevent spread. Overall, it is estimated that invasive species cost the U.S. upwards of \$138 billion per year.

Human health can be affected as well, as some invasive plant species cause illness/rash when handled and can alter the natural community enough to increase diseases, such as Lyme disease, mosquito-borne diseases, etc. These health impacts also result in economic impacts. (Source: [www.sleloinvasives.org/invasives/why-should-we-care-about-invasive-species/](http://www.sleloinvasives.org/invasives/why-should-we-care-about-invasive-species/))

Recreational pursuits affected include hunting, fishing, bird watching, and foraging. Impacts may also limit land use and degrade natural resources. (Source: [www.purdue.edu/fnr/extension/invasive-species/](http://www.purdue.edu/fnr/extension/invasive-species/))

## Weed Control Technical Assistance

Each year, Maryland Department of Agriculture (MDA) enters into an agreement with participating counties to provide technical assistance to County Weed Control Coordinators and landowners. For more information on the Weed Control program in Carroll County, to report noxious weeds along County or State roads, or for assistance with weed identification, please contact our local University of Maryland (UMD) Extension Service at 410-386-2760 or [chill1@umd.edu](mailto:chill1@umd.edu) or visit <https://extension.umd.edu/locations>.

## What's Inside...

- Maryland Law ..... Page 2
- Manage, Prevent, Eradicate ..... Page 2
- Common in Carroll County ..... Pages 3-4
- Additional Resources ..... Page 4

## What are the laws in Maryland regarding invasive plant species?

Some invasive species management is accomplished by enacting law. In Maryland, multiple State agencies are involved in managing invasive species. The federal government also manages species through laws enacted by several federal agencies and Congress. Laws may be general or specific to a species or area. Carroll County has not adopted any laws specific to invasive plants or noxious weeds. However, **State** laws in place include:

### • Noxious Weeds:

- ♦ **Code:** [MD. Agriculture Code § 9-401 to 406](#)
- ♦ **Regulations:** [COMAR 15.06.05.02](#)

### • Invasive Plants:

- ♦ **Code:** [Agriculture, Title 9.5 - Invasive Plants Prevention and Control](#)
- ♦ **Regulations:** [COMAR 15.06.04](#)

The State law identifies invasive plants as either Tier I or Tier II and lists the species included in each at [COMAR 15.06.04.06](#). A person may not sell, transport, or propagate, among other things, a Tier I invasive species. Exceptions can be found at [COMAR 15.06.04.04](#).

Violation of both the invasive species or the noxious weed laws is subject to penalties and/or certain actions by the State.

**Federal** laws in place include Public Law 108-412, [Noxious Weed Control and Eradication Act](#), requires the elimination and control of noxious weeds and is administered by the U.S. Department of Agriculture. 🚫



## What can property owners do to prevent, manage, or eradicate them?

There are several **basic steps** to preventing, managing, and/or eradicating invasive and noxious plants.

1. Identify the problem,
2. Learn more about the plants' biology,
3. Utilize a variety of control methods and tools to eradicate,
4. Replant the area with competitive plantings, and
5. Continue to monitor the area and take action as needed.

Learning to identify some common species is critical to being able to control their spread. This helps you to know which plants to remove from your yard or avoid planting. Identifying them as young plants is important in controlling them before they seed or spread.

**Buying New Plants:** When buying plants for your yard or garden, verify that they are not invasives. Replace the invasive plants in your garden with native plants or non-invasive alternatives. Your local nursery staff can help with selecting the best plants for your environment.

**Controlling Invasive/Noxious Plants:** Learn the best approach to eradicating specific invasive plants by understanding their biology. The size of the area, the number of invasive/noxious plants, and the species will determine your approach to control and eradication. In all cases, prevention or early identification and control will make your job much easier. Some tips to follow...

- Replace cleared areas with native plants as soon as possible to hinder the return of the invasive/noxious plants.
- Mechanical methods may suffice, such as pulling the plants by hand, mowing, or smothering them with plastic or cardboard. Try this before using chemicals.
- Chemical control might be called for if done safely and correctly. Consult the University of Maryland (UMD) Extension Service for more information (below).
- Since weed seeds can hitchhike on shoes, pants, and tires, clean soil from those items before entering nature areas. Likewise, clean soil from your shoes when you return home as well. Pets and wildlife help disperse weed seeds, too.

**Resources:** There are many resources available that provide more specific, detailed information to help figure out how to follow the tips above.

- *Good Green: Homeowner's Guide to Managing Invasive Plants.* Maryland Dept. of Natural Resources. [https://dnr.maryland.gov/forests/Documents/forest-health/Good-Green\\_Homeowners.pdf](https://dnr.maryland.gov/forests/Documents/forest-health/Good-Green_Homeowners.pdf)
- *Manage Weeds Without Chemicals in Maryland.* UMD Extension. <https://extension.umd.edu/resource/manage-weeds-without-chemicals-maryland>
- *Removing Invasive Plants and Planting Natives.* UMD Extension. <https://extension.umd.edu/resource/removing-invasive-plants-and-planting-natives-maryland>. 🚫

## What are some common invasive species and noxious weeds in Carroll County?

The Maryland Invasive Species Council lists 243 terrestrial plants as invasive or "species of concern," as approved in 2019. Those include herbaceous flowering plants, vines, shrubs, trees, and grasses. This list can be found at <https://mdinvasives.org/species-of-concern/terrestrial-plants/>.

Bamboo, Japanese Knotweed, and Mile-a-minute are some of the most prevalent and challenging invasives that residents will encounter in their yards and parks. English ivy is a climbing vine that can damage structures and smother even large trees. Wineberry is an aggressive invader of open spaces, forming a dense and shady thicket that can displace natives and change habitats.

The Maryland Department of Agriculture (MDA) has been taking control measures on six priority noxious weeds—Johnsongrass, Shattercane, and four types of thistle (Canadian, Bull, Musk/Knodding, Plumeless)—for many years. A list of noxious weeds addressed by Maryland Code and Regulations can be found at <https://www.invasive.org/species/list.cfm?id=189>.

Garlic mustard, stilt grass, barberry, multi-flora rose, honeysuckle, burning bush (& other Euonymus species), bittersweet, Tree of Heaven, phragmites, greater celandine, privet, and Bradford pear are other invasive and noxious plants commonly found in Carroll County. A few species have been highlighted on Pages 3 and 4. 🚫

## Johnsongrass

- **Scientific Name:** *Sorghum halepense*
- **Status:** MD Designated Noxious Weed
- **Identification:** Fast-growing with connected root systems. Pale yellow-green leaves (initially resembling corn but don't widen like corn). Single shoot grows up from the cluster of leaves with erect brownish-color seed head. Flowers appear in summer and fall, displaying flowers clustered on short branches. Each flower

produces hundreds of seeds that remain viable for many years, which makes it a particular nuisance for agricultural crops.

- **Restrictions:** Maryland law requires that these weeds not be allowed to produce seed.
- **Control:** Control methods include repeated mowing over multiple years, cultivating, or treating with an approved herbicide, such as glyphosate. Horticultural vinegar is also an affordable, effective way to get rid of the plant. Young plants may be pulled by hand, but use a trowel to get all root systems. Repeated treatment will be needed. Other possible methods are available.
- **More Information:**
  - ♦ [Johnsongrass](#) - USDA National Invasive Species Information Center
  - ♦ [Invasives in Your Woodland: Johnsongrass](#) - UMD Extension
  - ♦ [Johnsongrass](#) - Maryland Biodiversity Project
  - ♦ [How to Get Rid of Johnsongrass in Your Lawn or Garden](#) - Angi

## Japanese Barberry

- **Scientific Name:** *Berberis thunbergia*
- **Status:** MD Tier 2 Invasive
- **Identification:** Compact woody perennial shrub. Typically grows to about 4 feet tall but up to 8 feet. Branches droop to ground and root where they touch. Leaves up to 1" in length are in thick, leathery spoon-shaped leaf clusters of green, purple, or mixed shading. Stems are grooved, rusty brown with very sharp single spines, unlike Barberrys that have double spines. In spring, clusters of 2 to 4 six-petal creamy yellow blooms appear. By mid-summer, bright red ¼"-long berries appear and last through winter. Grows in many areas due to adaptability.

• **Restrictions:** MDA discourages planting Tier 2 invasives. Retail stores must identify as Tier 2 with signage. Landscapers may not supply it without providing the customer with list of Tier 2 invasive plants.

• **Control:** Pull entire plant out early in season before seeds set, getting entire root system to prevent resprouting. Wear gloves, as plants are spiny. Mechanical mowing or top removal alone are not sufficient but can be used followed by herbicide to eradicate more efficiently. Spray mixture of glyphosate and triclopyr (2:1) to suppress. Backpack sprayers are very effective for foliar spraying of low to moderate plant population. Basal bark treatments and flame weeding are additional approaches.

- **More Information:**
  - ♦ [Japanese Barberry](#) - PennState Extension
  - ♦ [Invasives in Your Woodland: Japanese Barberry](#) - UMD Extension

## Palmer Amaranth, aka Palmer Pigweed

- **Scientific Name:** *Amaranthus Palmeri*
- **Status:** MD Designated Noxious Weed
- **Identification:** Plant can reach 6-8 feet tall, with the seed head up to 2 to 3 feet long. Stems and diamond-shaped leaves are hairless. The stem of the leaf can be longer than the leaf itself, with the leaf up to 8" long. Proper identification is important, as other members of the pigweed

family have different management strategies.

- **Restrictions:** Maryland law requires that these weeds not be allowed to produce seed.
- **Control:** Aggressive and tolerant of heat, drought, and herbicides, including glyphosate. For small infestations, hand-pulling is effective. Cutting, when the plant is flowering, is more effective for larger infestations. Herbicide can be applied any time of year but is best done in late fall when the plant is dormant.

- **More Information:**
  - ♦ [Palmer Amaranth in Maryland](#) - UMD Extension
  - ♦ [Noxious Weed Fact Sheet: Palmer Amaranth](#) - UMD Extension
  - ♦ [Palmer Amaranth](#) - USDA NRCS Fact Sheet
  - ♦ [The Dangerous Superweed that's Resistant to Herbicides | Maryland Farm & Harvest](#) - YouTube video



## Creeping Thistle, aka Canada Thistle, and Bull Thistle

- **Scientific Name:** *Cirsium arvense* (Canada), *Cirsium vulgare* (Bull)
- **Status:** MD Designated Noxious Weed
- **Identification:** Bull thistle and Canada thistle are similar in appearance; both have spiked leaves and display large purple flowers from July to September. One

difference is that Bull thistle has a tap root and is biennial, while Canada thistle has extensive connected root system. Another is the stalks, which have spiny wings the length of its needle-shaped stem. [Scientists at Acadia National Park write](#) "Bull thistles have also been described to be larger and 'meaner-looking' than the Canada thistle." Leaves are lance-shaped, 3" to 12" long, with stout spines on lobes. Leaves have prickly hair on top and very hairy underneath. Grows to maturity over 2 years, reaching 7 feet tall, followed by seed production and dissemination.

• **Restrictions:** Maryland law requires that these weeds not be allowed to produce seed.

• **Control:** Canada thistle's connected root system requires repeated action to weaken the population and may take several years for mature plants. For both thistles, hand-pulling, mowing, and chemical application may work. Pull young plants early to prevent maturity, ensuring to sever tap root for Bull thistle. These plants do not like consistent shading. Reseeding with native plants is recommended and may create shade that helps control it.

- **More Information:**
  - ♦ [Canada Thistle](#) - UMD Extension
  - ♦ [Invasives in Your Woodland: Canada Thistle](#) - UMD Extension
  - ♦ [Canada Thistle](#) - iNaturalist
  - ♦ [Canada Thistle](#) - Invasive.org
  - ♦ [Invasives in Your Woodland: Bull Thistle](#) - UMD Extension



## Garlic Mustard

- **Scientific Name:** *Alliaria petiolata*
- **Status:** Invasive but not yet designated in Maryland
- **Identification:** Biennial, low-growing plant that quickly takes over open spaces. Prefers shady areas and floodplains. Kidney-shaped leaves look different in first year than in second, when they are heart shaped with irregular edges. Produces 4-petaled white flowers that appear in spring of the second year on stalks 1 to 4 feet tall. Flowers give way to seed pods. Seeds are brown and brittle, with individual seeds about 1/4"-long. Smells like garlic when crushed.

- **Restrictions:** No legal restrictions yet.
- **Control:** Because it has a taproot, it will not regenerate from root fragments. Therefore, it's easy to pull by hand for small infestations, but must be done before going to seed. Cutting, when the plant is flowering, is more effective for larger infestations. Herbicides applied during above-ground stage may be effective and are most effective in fall and winter. Preemergent herbicides lose efficacy. Due to biennial nature, eradication can take 2 to 5 years.

- **More Information:**
  - ♦ [Garlic Mustard](#) - Invasive Species Center, Canada
  - ♦ [Garlic Mustard](#) - PennState Extension
  - ♦ [Invasive Plants in Pennsylvania: Garlic Mustard](#) - Pennsylvania Dept. of Conservation and Natural Resources



Photo by Annemarie Smith, Bugwood.org.



## Tree of Heaven, aka stinking sumac, Chinese sumac

- **Scientific Name:** *Ailanthus altissima*
- **Status:** Invasive but not yet designated in Maryland
- **Identification:** Grows rapidly and can grow into a large tree and in poor conditions, although not shade tolerant. Secretes a toxin that kills other plants. Long compound leaves, with 11 to 25 lance-shaped leaflets, smell like peanut butter or burnt coffee when crushed. Plant releases strong, offensive smell, particularly from its flowers. Pinnately compound leaves (arranged in pairs across plant's stem) are similar to native plants, such as ash, staghorn sumac, and black walnut. However, fuzzy reddish-brown twigs make it stand out. Produces huge quantities of wind-borne seeds or "samaras." Tree is favored by the invasive spotted lanternfly.

- **Restrictions:** No legal restrictions yet.
- **Control:** Pull seedlings by hand before the taproot develops. For seedlings, apply herbicide (ex. glyphosate) or paint basal bark treatment. Target roots with systemic herbicide, such as glyphosate or triclopyr, in mid-late summer, then monitor for regrowth. [Verticillium nonalfalfae](#) is a promising, naturally occurring biological herbicide for this tree. Once established, tree cannot be removed by mechanical means alone.

- **More Information:**
  - ♦ [Tree of Heaven](#) - PennState Extension
  - ♦ [Tree of Heaven](#) - UMD Extension
  - ♦ [Invasives in Your Woodland: Tree of Heaven](#) - UMD Extension



Photo by Lawrence Barringer, PA Dept of Agriculture, Bugwood.org, 2013.

## Additional Resources (as of July 2023)

### Identifying Invasive Plants & Noxious Weeds:

- **Ask Extension.** University of Maryland Extension. <https://extension.umd.edu/ask-extension>. Ask questions and/or submit photographs for identification of plants.
- **Browse by Family (Plantae).** Maryland Biodiversity Project. <https://www.marylandbiodiversity.com/viewFamilies.php?kingdom=Plantae>.
- **Invasive Plant List.** Maryland Department of Agriculture. [https://mda.maryland.gov/plants-pests/Documents/List\\_target\\_spp\\_for\\_assessment\\_27Feb2023.pdf](https://mda.maryland.gov/plants-pests/Documents/List_target_spp_for_assessment_27Feb2023.pdf)
- **Maryland Noxious Weeds.** Invasive.org. <https://www.invasive.org/species/list.cfm?id=49>.
- **Native Plants.** University of Maryland Extension. <https://extension.umd.edu/resources#!/category/3/subcategory/866>
- **Plant Invaders of Mid-Atlantic Natural Areas, Field Guide.** Swearingen, J.M. and J.P. Fulton. 2022. Passiflora Press. 200 pp. <https://bugwoodcloud.org/imageSites/pdf/midatlantic-web.pdf>
- **Weed Identification Photos in Maryland.** University of Maryland Extension. <https://extension.umd.edu/resource/weed-identification-photos-maryland>

### Other Resources:

- **Invasive Plants to Avoid Buying for your Yard and Garden in Maryland.** UMD Extension Service. <https://extension.umd.edu/resource/invasive-plants-avoid-buying-your-yard-and-garden-maryland>.
- **Pollinator Gardens.** University of Maryland Extension Service. <https://extension.umd.edu/resource/pollinator-gardens>. June 2023.
- **USDA Animal and Plant Health inspection (APHIS).** <https://www.aphis.usda.gov/aphis/ourfocus/planthealth/import-information/plant-import-information>
- **What's the Buzz: All About Pollinators.** Maryland Dept. of Natural Resources. <https://dnr.maryland.gov/wildlife/Pages/habitat/wawhatsthebuzz.aspx> 🚫

