

# Introduction to Invasive Plants in Maryland

 [extension.umd.edu/resource/introduction-invasive-plants-maryland](https://extension.umd.edu/resource/introduction-invasive-plants-maryland)



Invasive English ivy vines. Photo: Randy Cyr, Greentree, Bugwood.org

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Why should invasive plants be a concern? Invasive species are non-native organisms that cause harm to the environment, economy, or human health with damages costing the United States approximately \$120 billion every year (Simberloff, 2013). Learn what you can do to reduce invasive plants in your environment.

## Examples of the negative impact on pollinators, wildlife, and natural areas caused by invasive plants

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- Many Marylanders grow fresh fruits and vegetables for their families. Unlike commercial operations, home food gardens rely almost exclusively on



*The black cherry sapling (back right), Joe Pye weed (center), common milkweed (center left, invisible at this scale), and black raspberries (foreground) would support a plethora of butterflies and songbirds if it were not smothered by oriental bittersweet.*

native pollinators. As our wild native plant populations succumb to invasive plants, the pollinators that rely upon them disappear.

- Light cannot reach the foliage of the native wildflower (lavender blossoms at center) because it is blocked by the foliage of Japanese honeysuckle. Eventually, this will prove fatal for the wildflower. Marylanders find their outdoor adventures duller as botanical treasures like this one disappear, and to worsen matters, with the wildflowers and other native plants go the insects, and with the insects go the birds. Recreational bird watching and game bird hunting are very popular sports in Maryland. As we know, songbird populations are in precipitous decline and some of the most popular game birds (woodcock, bobwhite) have all but disappeared.
- Oriental bittersweet vines smother native plants in a meadow at this county park. In addition to their other duties, park staff are charged with preserving the biological diversity, ecological function, and natural beauty of the land in their jurisdiction. The proliferation of invasive plants makes it necessary to divert staff time, volunteer hours, and budget dollars to the unpleasant task of invasive plant control. The alternative is a park devoid of the natural beauty that would make people want to work or visit there in the first place.
- In a Prince George's County bog, Asian vines smother all the native plants, obscuring the stems where a dragonfly would normally perch to bask in the sun. This dragonfly landed too close to a mile-a-minute leaf and became fatally ensnared in its prickles. The proliferation of alien plants doesn't just impact pollinators and songbirds, the majority of our state's animal species will be affected, as will citizens who appreciate the beauty and diversity of our wildlife heritage.
- Motorists and pedestrians pass through a county park during an April shower. Without these alien shrubs and trees, which leaf out much sooner than native ones do, these park visitors would have clear views of the massive bedrock outcrops to the left, and a gurgling stream to the right. They would also see drifts of spring ephemeral wildflowers such as bloodroot and trout lily. These wildflowers are disappearing because they cannot get the light they need below the dense cover of invasive shrubs and vines. As invasive plants spread, scenery, and the people who enjoy it suffer.

## **What other problems do invasive plants create?**

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### **Invasive plants cause ecosystem-level changes**

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#### **The big picture:**

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Invasive plants displace native plants, reducing both the amount of native plant cover and the number of native species present in an ecosystem. This decline reverberates up the food web, causing, for example, losses in insect and songbird diversity. This type of damage can usually be reversed by removing the invasive plants and allowing natives to re-establish on their own, or if the seed bank is depleted, by planting nursery-grown natives. However, some invasive plant species alter the very structure or function of the ecosystems they invade, so

that those ecosystems no longer provide growing conditions suitable to their original flora. To restore these areas, it is usually necessary to address the ecosystem-level changes that have occurred before re-introducing native vegetation. Here we describe some of the plant species that have invaded and altered Maryland ecosystems.

## **Destruction of the physical structure**

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Invasive vines provide an extreme example of the destruction of the physical structure of an ecosystem.

Kudzu, porcelainberry, wisteria, Japanese honeysuckle, English ivy, and Oriental bittersweet are invasive vines that, given enough time, will kill trees. If intervention is early enough, such a forest can be restored by simply killing the vines. Once the canopy layer is destroyed, however, removal of the vines yields a site that is too sunny for forest plants. At that point, restoration requires the establishment of a native meadow containing early successional trees, and a long-term monitoring and maintenance program.

## Change of fire frequency

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**Cheatgrass (*Bromus tectorum*)**

**Photo:** Chris Evans, University of Illinois, Bugwood.org

Fire frequency is another important ecosystem characteristic. Cheatgrass is an alien, annual species that is adapted to very frequent fires, more frequent than any of our native plant communities. It dries out in late spring/early summer. This creates highly flammable material at a time of year when it would not be found in native ecosystems. Cheatgrass-invaded habitat is like dry tinder waiting for a spark. When fire does occur, it favors even more cheatgrass invasion. The increased fire frequency in the Western United States is partly due to cheatgrass. Cheatgrass also occurs in Maryland, where it invades native meadows, degrading valuable plant, pollinator, and songbird habitats. Thanks to our more humid climate, however, it does not cause large-scale fires and loss of human life. Controlled

burning is a technique that is frequently and successfully used to restore native meadows that have been invaded by alien plants, however, this technique would be a poor choice if cheatgrass were present.

## Hijacking natural succession

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*Eastern featherbells, shown above, are a state-endangered species and a member of the trillium family. The meadow habitat it requires is being lost to invasives. The oval leaves at the top of the photograph are Callery pear, the oval leaves at the bottom of the photograph are Japanese honeysuckle.*

The successional stage is another important ecosystem characteristic. In our region, when a forest is disturbed by a storm or fire, the opening becomes a meadow, then shrubland, and finally a forest again. This process, called natural succession, normally takes about 20 years. While the meadow gap is open, it provides much-needed meadow habitat to plant and animal species that cannot live in the forest. The invasive alien tree Callery (a.k.a. Bradford) pear cuts the meadow/shrub phase down to less than 5 years, depriving our region of meadow habitat. We do not yet know how the interruption of natural succession will affect native forests of the future.

## Changing soil chemistry

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Invasive plant species excel at using nutrient-rich soils to support rapid and abundant growth. Many invasive plant species alter soil chemistry in a way that gives future generations of invasive plants a competitive advantage. Common reed, for example, has roots that go deeper than other marsh roots, collecting nutrients other plants can't reach. Each fall the decaying stems and leaves release those nutrients to the soil, creating the perfect medium for growing more common reed. Johnsongrass, listed as a noxious weed by the Maryland Department of Agriculture, also does this. Japanese stiltgrass and barberry take it a step further, changing the pH of the soil, too. The more amenable, nearly neutral (6.5 - 7.5) soil pH favors more barberry growth.

Barberry's altered ecosystem has changed the animal community as well. Changes in soil chemistry are accompanied by higher densities of alien, invasive earthworms. The invasive worms rapidly break down forest floor leaf litter, causing higher rates of erosion and more sediment in local streams. Barberry also changes the microclimate, creating higher humidity which is ideal for blacklegged ticks (a.k.a. deer ticks), the hosts of the bacteria that causes Lyme disease (Ward and Williams 2012).

Manage Japanese Barberry to Keep Tick Levels Low, Reduce Lyme Risk | Entomology Today

## Altering hydrology

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Hydrilla is an aquatic plant that alters ecosystem structure by establishing dense surface mats that shade out the native vegetation below. The mats are so dense that they impede water flow, resulting in zones of low oxygen and accompanying fish kills. Surface areas of stagnant water provide ideal habitat for mosquito larvae. Hydrilla hosts a bacteria that poisons aquatic birds that consume it. This poison can move up the food chain, as documented when some bald eagles in Georgia ate poisoned water birds and died (Simberloff, 2013).



**Hydrilla (*Hydrilla verticillata*)**

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

## What can I do to reduce invasive plants?

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### 1. Don't introduce invasive plants

- Don't plant them. Learn what plants to avoid buying and planting in your yard and garden.
- Don't share them with others and be careful what you bring home from plant sharing events.
- Don't accidentally transport them. Remove seeds from muddy shoes, burrs stuck on clothes. Avoid mixing their root pieces or seeds in soil with other plants.
- Avoid disturbing soils unnecessarily; invasives are quick to colonize. Quickly replant or cover vacant soils.

### 2. Encourage native plants

- Increase use of natives in home landscapes to order to increase the native seed and gene pool.
- Set aside some untouched natural areas to preserve native genotypes.
- Support deer control where deer overpopulation is decimating native plants.
- Replace invasive plants with a native plant or, at least, a non-invasive plant.



### 3. Educate yourself and others

- Encourage local nurseries to stock native plants, particularly local genotypes, and buy them.
- Bring nurseries' attention to invasive stock and invasive weeds hitchhiking in on stock, for example, invasive weeds in a container.
- Share the news about invasive plants with friends, neighbors, and family.

### 4. Remove invasive plants

- Familiarize yourself with invasive species in local parks and natural areas.
- Report sightings of invasive plants in parks to the managing agency.
- Support community efforts to clear invasive plants and restore native plants. Look into "Weed Warrior" volunteer projects typically organized by your county's Parks and Rec Department.

### Resources

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*By Dr. Sara Tangren, former Sr. Agent Associate, University of Maryland Extension, Home & Garden Information Center, May 2019.*

## **Related information**

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[Invasive Plants to Avoid Buying for Your Yard and Garden in Maryland](#)

[Removing Invasive Plants and Planting Natives](#)

[Invasive Species](#)

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