INVASIVE SPECIES MANAGEMENT
ADIRONDACKS

FIELD GUIDE TO

# TERRESTRIAL INVASIVE SPECIES OF THE ADIRONDACKS

Adirondack Partnership for Regional Invasive Species Management

# WHAT ARE INVASIVE SPECIES?

An invasive species is any species—plant, animal, fungus, microorganism—that is not native to a region and that is likely to cause harm to the environment, economy, or public health. They can be found on the land, in the water, or even in our backyards.

Invasive species compete with native plants and animals for space, nutrients, and/or water. Once an infestation is established, invasive species damage forests, destroy wildlife habitat, take over fields and wetlands, dominate waterways, ruin crops, and cause human health problems.

You can protect the places you love by following the tips on the next page of this field guide when hiking, hunting, camping, biking, horseback riding, and landscaping in New York's Adirondack region.

Together we can conserve the recreational opportunities, scenic beauty, wildlife habitat, and economic vitality of the Adirondacks.

Visit **www.adkinvasives.com** to learn more about invasive species and how you can help protect the lands you love.

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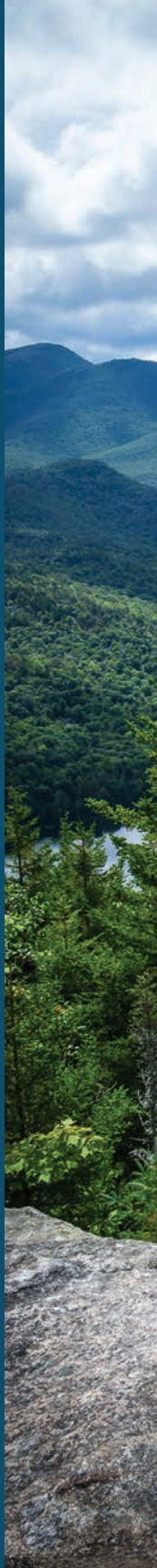


## STOP THE SPREAD

The best way to keep invasive species at bay is to take appropriate steps to prevent them from spreading across the landscape. Fortunately, there are simple precautions everyone can take to aid this effort.

### PLANTS

- Clean dirt and debris from footwear, pets, bikes, and gear after every outdoor adventure
- Avoid picking roadside wildflowers, which may transport seeds
- Stay on designated trails and roads to avoid picking up or spreading invasive plant seeds
- Landscape only with native or noninvasive plants
- Read seed mix labels before planting to be sure the mix does not contain invasive species
- Remove invasive plants from your property
- Never compost terrestrial invasive plants
- Use weed-free seed, mulch, topsoil, and fill

### ANIMALS

- Don't move firewood—buy it where you plan to burn it
- Always clean gear and outdoor recreation equipment
- Buy and plant only safe and approved nursery trees
- Carefully inspect trees for invasive insects before transplanting
- Never release unwanted pets into the wild

# USING THIS GUIDE

The *Field Guide to Terrestrial Invasive Species of the Adirondacks* is a quick reference for identifying 30 invasive plant and animal species found in the Adirondack region of New York. It is not meant to be a comprehensive guide to invasive species. To learn more about species of concern in the Adirondacks, visit **www.adkinvasives.com**.

Each entry in this guide contains important information on the identification, habitat, impact, and management of the species. When identifying a plant, first consider the habitat in which it is found. Carefully read the species description, looking at the plant in question for the indicators described. You will notice some plant descriptions—primarily of trees, woody shrubs, and herbaceous plants—use the terms *opposite, alternate, simple,* and *compound* to describe how the leaves are arranged on the stem. *Opposite* means the leaves grow across from one another; *alternate* indicates that they are staggered along the stem or branch. *Simple* leaves have one leaf per stem; *compound* leaves have two or more leaflets originating from the same stem.

When identifying invasive plants, be aware that they may look like native plants. Familiarize yourself with the native plants in your area and pay close attention to leaves, flowers, and other plant structures to help distinguish among species. If you think you have found an invasive species, use the iMapInvasives app to report it. More information on iMapInvasives can be found on the inside back cover of this guide.

**Each species in this guide has been assigned a color-coded grouping based on common characteristics and management strategies. They appear in the following order:**

- **CLONAL PLANTS**
- **GRASSES**
- **HERBACEOUS PLANTS AND VINES**
- **TREES**
- **WOODY VINES AND SHRUBS**
- **ANIMALS**

Refer to the back of this guide to learn more about general management of invasive species on your property. More specific management practices accompany each species.

# COMMON REED GRASS

*Phragmites australis*

**NATIVE RANGE** Europe, Asia

**DESCRIPTION** Common reed grass, or *Phragmites*, is a tall, herbaceous perennial ranging in height from 3-15 feet tall. Leaves and stems are stiff, sharp, and dark blue-green in color. Large, feathery plumes of flowers change from purple-brown in July to tan-grey by late in the season.

**HABITAT** Non-native *Phragmites* thrives in wetlands and disturbed and degraded soil. It is often along roadsides and in ditches. It can tolerate a wide range of pH conditions and salt water.

**THREAT** Plants can sprout from a rhizome fragment and form populations that can overtake hundreds of acres and displace critical wetland species.

**MANAGEMENT** Non-native *Phragmites* is very difficult to control. The most effective control method is treatment with a systemic herbicide.

**FAST FACT**

Native *Phragmites* is present in the Adirondack PRISM but it is much less common than its invasive counterpart.

# KNOTWEED SPECIES

*Reynoutria spp.*

**NATIVE RANGE** Asia

**DESCRIPTION** Japanese knotweed (*Reynoutria japonica*), giant knotweed (*Reynoutria sachalinensis*), and Bohemian knotweed (*Reynoutria x bohemica*) are three closely related knotweed species present in the Adirondack region. Knotweeds are fast-growing, herbaceous perennials with jointed, hollow, green stems that resemble bamboo. Leaves are alternate, leathery, and ovate. A cascade of white flowers blooms in August. Dormant reddish-brown stems persist through winter.

**HABITAT** Knotweed species are found along forest edges and stream banks, and in disturbed and open areas such as roadsides.

**THREAT** Knotweed can take over large areas due to its early emergence and dense growth. Its thick rhizomes can extend more than 60 feet horizontally and do not hold stream banks together as well as native plants with fine root material.

**MANAGEMENT** Knotweed is very difficult to control, and the best control methods are a stem injection or foliar treatment with a systemic herbicide.

**FAST FACT**
Knotweed spreads via fragmentation and pieces as small as half an inch can form new plants.

# YELLOW IRIS

*Iris pseudacorus*

**NATIVE RANGE** Europe, Asia, Africa

**DESCRIPTION** Yellow iris is an herbaceous perennial with broad, stiff, erect, lance-shaped leaves that can grow 3-4 feet tall. The yellow, showy flowers bloom from April-June.

**HABITAT** Yellow iris is found along the edges of lakes, ponds, rivers, and streams. It grows well in freshwater wetlands and can tolerate high acidity.

**THREAT** Yellow iris forms large, clonal populations that displace native species. It is a nutrient-poor forage for wildlife.

**MANAGEMENT** Caution should be used when hand-pulling this plant, as its sap can cause skin irritation. Digging up the root ball of individual plants can be effective. Cutting and injecting systemic herbicide into each flowering stalk can also be effective.

**FAST FACT**
The root interiors of yellow iris are orange-pink, while the root interiors of native blue flag iris (*Iris versicolor*) are white.

# JAPANESE STILTGRASS

*Microstegium vimineum*

**NATIVE RANGE** Asia

**DESCRIPTION** Japanese stiltgrass sprawls along the ground as it grows. The leaves are pale green, narrow, and lance shaped with a silvery off-center midrib. The leaves are smooth in both directions. Tiny flowers appear on slender stalks August-early September.

**HABITAT** Japanese stiltgrass is adapted to low light conditions. It thrives in woodlands, wetlands, fields, and roadsides.

**THREAT** Japanese stiltgrass forms extensive mats, displacing native plant species. Invasions can change soil nutrient cycling processes, inhibit tree survival, and reduce light availability. After dieback in late fall, it forms a thick layer of thatch that is slow to decompose and creates a fire hazard. Seeds are easily transported on shoes, tires, and construction equipment.

**MANAGEMENT** Individual plants or small infestations can be hand pulled. Mowing can be effective if performed in late August or early September, when the plants are in flower but have not yet produced seed. Systemic herbicides can be effective for large infestations.

**FAST FACT**
Most native grass leaves feel rough when rubbed.

# SLENDER FALSE BROME

*Brachypodium sylvaticum*

**NATIVE RANGE** Europe, Asia, North Africa

**DESCRIPTION** Slender false brome is a perennial bunch grass that grows up to 2.5 feet tall. Leaves are bright green, 1/4 inch wide, and floppy. Fine white hairs appear along leaf edges and lower stems. Blooms June-September, producing pale-green spikes that release hundreds of seeds. Roots have a faint wintergreen aroma.

**HABITAT** Slender false brome invades forest understories and open grasslands. It thrives in a variety of soil moisture conditions and can occur in full sun or shade.

**THREAT** One of the first plants to emerge in spring, slender false brome has a competitive advantage over native understory species. Dense, sprawling mats crowd and shade out native plants. Fall dieback results in a thick layer of dead thatch material that can increase the risk of wildfires.

**MANAGEMENT** Small infestations can be managed by hand pulling or digging prior to seed set. Larger infestations can be treated using a selective foliar spray of systemic herbicide.

**FAST FACT**

This plant can form a solid carpet along forest floors.

# CUP PLANT

*Silphium perfoliatum*

**NATIVE RANGE** Central US and Canada

**DESCRIPTION** Cup plant is an herbaceous perennial that can grow 10 feet tall. Rough, coarsely toothed leaves grow up to 8 inches long. Leaves appear opposite of each other along the stem and join at the base, forming a cup that can hold water. The stem is distinctly 4 sided. Flowers late July-early September, producing numerous yellow flowers with 20-25 petals and a dark yellow center.

**HABITAT** Cup plant prefers moist soil and full sun. It often grows along the river and stream banks, in wet meadows, open forested wetlands, and right-of-way drainage ditches.

**THREAT** Cup plant's large size and high seed production allow it to crowd out native vegetation.

**MANAGEMENT** Small infestations can be managed by digging or pulling. Larger infestations can be treated via a foliar spray using a systemic herbicide.

**FAST FACT**

Cup plant is native to the central plains of the U.S. but is invasive outside of its native range, where it was introduced as an ornamental plant.

# GARLIC MUSTARD

*Alliaria petiolata*

**NATIVE RANGE** Europe

**DESCRIPTION** Garlic mustard is a biennial herb. In its first year, it grows as a rosette of kidney-shaped leaves. Second-year plants can grow multiple stems up to 4 feet tall with triangular, sharply toothed leaves. Leaves have a garlic odor when crushed. Plants bloom in May with white, 4-petaled flowers growing in clusters at the top of the stem.

**HABITAT** Garlic mustard prefers partially shaded, moist habitats and is commonly found in deciduous forests, roadsides, and disturbed sites.

**THREAT** Garlic mustard emerges early in the season, giving it an advantage over later emerging native species and allowing it to dominate forest understories.

**MANAGEMENT** Individual plants or small infestations can be pulled or dug while in flower and before seed set. Monitor the site in the fall and pull any emerging first-year plants. Systemic herbicides can be used to control larger infestations.

**FAST FACT**

Garlic mustard releases chemicals that inhibit the growth of other species, a process known as allelopathy.

# GIANT HOGWEED

*Heracleum mantegazzianum*

**NATIVE RANGE** Asia

**DESCRIPTION** Giant hogweed is a biennial herb that grows 8-14 feet tall. Plants sprout in early spring from forked taproots or seeds. The hollow, green stems have purplish-red splotches and course hairs. Leaves are lobed and can reach 5 feet wide. Plants bloom in June and July with small, white flowers arranged in a broad, flat-topped flower head that can grow over 2 feet wide.

**HABITAT** Giant hogweed prefers rich, moist soils along roadside ditches, stream banks, waste areas, and forest edges.

**THREAT** Giant hogweed sap contains toxic chemicals that can cause serious burns and blisters if skin that was in contact with the sap is exposed to sunlight.

**MANAGEMENT** This plant contains toxic sap that can cause severe skin irritation, blistering, and scarring. If you've found giant hogweed, please contact APIPP for management advice before treating it on your own.

**FAST FACT**

There are many look-a-likes for giant hogweed including native cow parsnip, which is smaller and lacks purplish-red splotches on the stem.

# LESSER CELANDINE

*Ficaria verna*

**NATIVE RANGE** Europe

**DESCRIPTION** Lesser celandine is a low-growing herbaceous perennial that forms dense mats of vegetation. Leaves radiate from the base of the stem and are glossy, dark green, and kidney shaped. Flowers emerge March-May and are bright yellow with 7-12 petals and borne on stalks that emerge above the leaves. Lesser celandine has tuberous (potato-like) roots.

**HABITAT** Lesser celandine is well suited to moist soil and found in forested floodplains, meadows, open woods, and roadsides.

**THREAT** Lesser celandine emerges in early spring and quickly forms dense, sprawling mats that shade and crowd out native plants.

**MANAGEMENT** Small infestations can be managed by digging or pulling. When hand pulling, it is important to remove all tubers to prevent reemergence of plants during the next growing season. Larger infestations can be treated via a foliar spray using an herbicide.

**FAST FACT**

Lesser celandine has a native look-a-like, marsh marigold (*Caltha palustris*). Lesser celandine has 7-12 petals; marsh marigold has 5-9.

# MILE-A-MINUTE

*Persicaria perfoliata*

**NATIVE RANGE** Asia

**DESCRIPTION** Mile-a-minute is an herbaceous, annual vine that grows more than 20 feet long. Its delicate stems are covered with small, recurved barbs that are also present on the underside of the leaf blades. Leaves are light-green, triangular, and alternate along the stem. Circular leaves can also be found encircling the stem. Round, green berries turn blue or purple when ripe. Berries are produced mid-summer and continue until fall, when the plants are killed by frost.

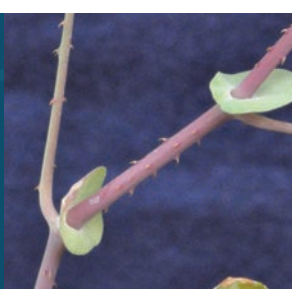
**HABITAT** Mile-a-minute typically colonizes open and disturbed areas such as forested floodplains, stream-side wetlands, upland forests, uncultivated fields, and roadsides. It will tolerate some shade.

**THREAT** Mile-a-minute grows quickly, allowing it to smother tree seedlings and negatively impact forest regeneration.

**MANAGEMENT** The most common management methods for mile-a-minute include manual pulling of juvenile plants and selective herbicide treatments for larger plants.

**FAST FACT**

In ideal growing conditions, a single vine can grow as much as 6 inches per day!



# PURPLE LOOSESTRIFE

*Lythrum salicaria*

**NATIVE RANGE** Europe, Asia

**DESCRIPTION** Purple loosestrife is an erect, herbaceous perennial that grows 3-7 feet tall. Lance-shaped leaves grow oppositely or in whorls of 3 along square stems. Plants bloom July-September with showy, magenta, 5-petaled flowers that grow in a spike.

**HABITAT** Purple loosestrife grows in a variety of wet habitats, including wet meadows, marshes, river banks, and the edges of ponds and reservoirs. It tolerates a wide variety of moisture, nutrient, and pH conditions.

**THREAT** Purple loosestrife invades both natural and disturbed wetlands and alters their ecological structure and function.

**MANAGEMENT** Individual plants and small infestations can be hand pulled while in flower and before seeds are fully formed. Systemic herbicides can be effective for large infestations.

**FAST FACT**

Biological controls are used throughout the Adirondack region. Holes in the leaves are evidence of this management technique.

# SWALLOW-WORT SPECIES

*Vincetoxicum spp.*

**NATIVE RANGE** Europe

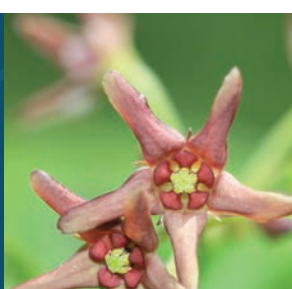
**DESCRIPTION** Black (*Vincetoxicum nigrum*) and pale swallow-worts (*Vincetoxicum rossicum*) are herbaceous, perennial, twining vines. Leaves are opposite and glossy. Small maroon (black swallow-wort) or pale-pink flowers (pale swallow-wort) are present in late May-late July. Seed pods are smooth, slender, pointed, and abundant in late summer. Pods split open, releasing innumerable downy seeds that are easily carried miles by wind.

**HABITAT** This plant thrives in a wide range of soil, moisture, and light conditions and is found in many habitats, including woodlands, fields, and roadsides.

**THREAT** Swallow-wort vines choke out large areas of favorable species and can interfere with forest regeneration. Toxic chemicals in the plant make it poor forage for deer and other wildlife.

**MANAGEMENT** Individual plants or small infestations can be dug out by hand. Cut plants resprout vigorously, making control difficult and warranting the careful use of herbicide for larger infestations.

**FAST FACT**
Monarch butterflies sometimes lay their eggs on swallow-worts. When the larvae hatch, they cannot survive on this plant.



# WILD PARSNIP

*Pastinaca sativa*

**NATIVE RANGE** Europe, Asia

**DESCRIPTION** Wild parsnip is a biennial herb that grows 2-6 feet tall. Leaves are alternate, compound, and have serrated edges. Plants bloom June-August with small, 5-petaled, yellow flowers arranged in a flat-topped, broad umbel (picture an overturned umbrella) that is 2-6 inches wide.

**HABITAT** Wild parsnip thrives in full sun and grows along roadsides, fields, fence rows, and waste areas.

**THREAT** Wild parsnip sap contains toxic chemicals that can cause serious burns and blisters if the skin that was in contact with the sap is exposed to sunlight. Infestations in agricultural fields can also degrade hay and other crop values.

**MANAGEMENT** For individual plants, digging or root cutting can be effective. For larger infestations, mowing while in flower and before seeds are formed can be effective as well as selective herbicide treatments. Always wear proper personal protective equipment when managing this plant to protect yourself from contact with its sap.

**FAST FACT**
Wild parsnip leaves resemble large celery leaves.

# JAPANESE ANGELICA TREE

*Aralia elata*

**NATIVE RANGE** East Asia

**DESCRIPTION** Japanese angelica tree is a fast-growing deciduous tree that reaches 40 feet tall. Trunk and larger stems are covered with sharp spines. Compound leaves can have 80 oval leaflets and reach 4 feet long. Leaflet undersides have fine hairs. Flowers in July and August, producing clusters of white 5-petaled flowers that ripen into purple or black fruits.

**HABITAT** Japanese angelica tree can be found along forest edges, in canopy openings, along riparian corridors, in forested wetlands, and in disturbed sites.

**THREAT** Japanese angelica tree grows rapidly, adding up to 2 feet of growth annually. It forms dense thickets that can exclude native plant species.

**MANAGEMENT** Small plants can be managed by hand pulling or digging; however, aggressive root sprouting limits the effectiveness of mechanical treatment for larger plants. Treat mature individuals with a foliar spray, cut-stump, or basal bark treatment using a systemic herbicide.

**FAST FACT**

Japanese angelica tree is commonly confused with its native look-alike, devil's walking stick (*Aralia spinosa*).

# TREE-OF-HEAVEN

*Ailanthus altissima*

**NATIVE RANGE** Asia

**DESCRIPTION** Tree-of-heaven is a rapidly growing deciduous tree that reaches 80 feet tall. It has large, alternate compound leaves with 10-41 leaflets, each with smooth edges and a tooth near the base. Leaves have a rancid aroma when crushed. Small, yellow-green flower clusters appear in June and early July. Clusters of winged samaras, similar to maple tree helicopters, appear in late summer.

**HABITAT** Tree-of-heaven prefers open, disturbed sites.

**THREAT** Trees produce large quantities of seeds and exude chemicals from their roots that suppress surrounding plant growth. It is a preferred host of spotted lanternfly (*Lycorma delicatula*), an invasive insect.

**MANAGEMENT** Remove small seedlings by hand pulling or digging. This plant responds to mechanical controls by re-sprouting. Herbicides can reduce re-sprouting. Larger plants and infestations can be treated with systemic herbicide via foliar spray, cut-stump, basal bark, or "hack-and-squirt" treatments.

**FAST FACT**

Tree-of-heaven resembles native sumac species (*Rhus typhina* and *Rhus glabra*), whose leaves are smaller and have toothed edges.

# BUSH HONEYSUCKLES

*Lonicera spp.*

**NATIVE RANGE** East Asia

**DESCRIPTION** Amur (*Lonicera maackii*), Morrow's (*Lonicera morrowii*), and Tartarian (*Lonicera tatarica*) honeysuckles are referred to as bush honeysuckles. All 3 species reach 6-15 feet tall with opposite leaves, hollow stems, and gray, shreddy bark. Bush honeysuckles flower in May or June with pink, white, or yellow blooms. In July or August, they produce clusters of red or orange berries.

**HABITAT** Bush honeysuckles prefer full sunlight and grow best in open and edge areas. Morrow's honeysuckle can grow in wetland habitats.

**THREAT** One of the first species to leaf out in the spring, bush honeysuckles have a competitive advantage over native shrubs and herbaceous plants.

**MANAGEMENT** For small plants, digging or grubbing up from the roots followed by drying or burning of the plant material is effective. For larger plants or infestations, herbicide treatments via cut-stump or foliar spray are effective.

**FAST FACT**

There are several native species of *Lonicera spp.* Invasive bush honeysuckles have hollow stems, native look-alikes do not.

# JAPANESE BARBERRY

*Berberis thunbergii*

**NATIVE RANGE** Asia

**DESCRIPTION** Japanese barberry is a spiny deciduous shrub that reaches 6 feet tall. Leaves are small, teardrop shaped with smooth edges and are usually green. Ornamental cultivars with deep purple or yellow leaves are also available. Bark is gray with sharp, single thorns along the stem. Flowers are small, white-to-yellow, and bloom in April or May. Small, bright-red berries are present in fall. The inner roots and stem are vibrant yellow.

**HABITAT** Japanese barberry can dominate forest understories, edges, and riparian corridors, and it grows well in both full sun and shade.

**THREAT** Barberry is resistant to herbivory and creates dense thickets, creating excellent tick habitat.

**MANAGEMENT** For small plants, digging or grubbing up from the roots followed by drying or burning of plant material is effective. For larger plants or infestations, herbicide treatments via cut-stump or foliar spray can be effective.

**FAST FACT**

The green form is usually associated with shaded sites, while the purple form is more common in full sun.

# ORIENTAL BITTERSWEET

*Celastrus orbiculatus*

**NATIVE RANGE** Asia

**DESCRIPTION** Oriental bittersweet is a perennial, deciduous vine that reaches 60 feet and has alternate, glossy, finely toothed leaves. Leaves are ovate to round with pointed tips. Stems have dark brown, striated bark. Flowers along the stem bloom in May-early June and give way to reddish-orange fruit in fall.

**HABITAT** Oriental bittersweet grows in disturbed woodlands, fields, and roadsides. It prefers sunny locations but can tolerate dense shade.

**THREAT** Oriental bittersweet can girdle native plants as it grows around them. It adds weight to branches on native trees and plants, leading to mechanical damage.

**MANAGEMENT** Where practical, individual vines should be pulled up by the roots and removed from the area by hand. Vines can also be cut by hand and cut stems spot-treated with selective herbicides.

**FAST FACT**

Invasive bittersweet looks like American bittersweet (*Celastrus scandens*), which flowers at the end of stems and is a native species in NY.

# PORCELAIN BERRY

*Ampelopsis glandulosa*

**NATIVE RANGE** Northeast Asia

**DESCRIPTION** Porcelain berry is a woody perennial vine that reaches 20 feet long. Leaves are simple, alternate, and range from slightly lobed to deeply dissected. Leaf edges have distinct, coarse teeth. Clusters of small, greenish-white flowers appear in July and August. Small, round berries range from yellow to blue to purple.

**HABITAT** Porcelain berry prefers moist soil and is commonly found along forest edges, pond edges, stream banks, and waste sites.

**THREAT** Thick mats formed by porcelain berry can shade out native trees and shrubs. Animals disperse the seeds over long distances.

**MANAGEMENT** Small infestations and young plants can be controlled by hand pulling. Larger infestations can be treated via cut-stump or foliar spray with a systemic herbicide.

**FAST FACT**

Native grapes (*Vitis*) have a brown pith (center of the stem); porcelain berry has a white pith.

# SCOTCH BROOM

*Cytisus scoparius*

**NATIVE RANGE** Central Europe and British Isles

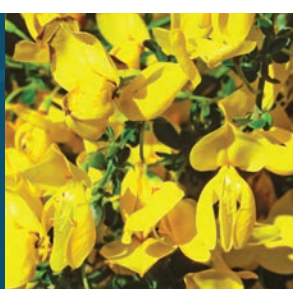
**DESCRIPTION** Scotch broom is a perennial shrub that reaches 10 feet tall. Leaves are small, alternate, and compound with 3 leaftlets. Stems are green and 5-sided. Shrubs bloom late-May to June, producing small, bright-yellow flowers along the length of the stem. Flowers give rise to fuzzy, flat seed pods that can be up to 1.5 inches long.

**HABITAT** Scotch broom grows in a range of conditions but is typically found in open and disturbed habitats.

**THREAT** Scotch broom takes nitrogen from the air, allowing it to become established in poor sites. It forms dense thickets and outcompetes native plants. The foliage is of little value to wildlife.

**MANAGEMENT** Small plants can be managed using mechanical techniques such as pulling or digging, while large plants and extensive infestations are most efficiently treated with herbicide. Systemic herbicides can be utilized for foliar spray and cut-stump treatments.

**FAST FACT**
Mature seedpods open explosively and can launch seeds up to 20 feet away.



# WINEBERRY

*Rubus phoenicolasius*

**NATIVE RANGE** Eastern Asia

**DESCRIPTION** Wineberry is a spiny, deciduous shrub that reaches 9 feet tall. It resembles native raspberry (*Rubus*) species—leaves are alternate, light green, and deeply divided into 3 leaflets with toothed edges. End leaflets are largest and leaf undersides are pale white. Unlike native raspberries, wineberry has fine red hairs covering its stem. White, 5-petaled flowers occur in May and June, and give way to large, bright-red berries.

**HABITAT** Wineberry prefers disturbed habitats with rich, moist soils and can occur in a variety of habitats.

**THREAT** Wineberry grows quickly and forms dense thickets that shade out native species. It can spread long distances via bird and animal dispersed seeds.

**MANAGEMENT** Small infestations can be managed by digging or pulling. Gloves should be worn to prevent injury from the plant's numerous spines. Larger infestations can be treated via foliar spray or cut-stump using a systemic herbicide.

**FAST FACT**
Wineberry was introduced to the U.S. in the 1800s for its edible berries.

# WINGED BURNING BUSH

*Euonymus alatus*

**NATIVE RANGE** Asia

**DESCRIPTION** Winged burning bush, or winged euonymus, is a deciduous shrub that reaches 20 feet tall and wide. Leaves are simple, opposite, and 1-3 inches long with smooth edges. Leaves transition from green in summer to vibrant red in fall. Stems are green to brown and feature 4 distinctive, corky wings. Small green flowers appear in May and June. Small, oval, bright-red berries mature in late summer.

**HABITAT** Winged burning bush grows in forested wetlands, forest understories, riparian corridors, and rights-of-way. It is often planted as an ornamental.

**THREAT** Winged burning bush is shade tolerant and birds spread its seeds long distances. It can quickly become established in forest understories, displacing native woody vegetation.

**MANAGEMENT** Small infestations can be managed by digging or pulling. Larger infestations can be treated via foliar spray or cut-stump using a systemic herbicide.

**FAST FACT**

Red-osier dogwood (*Cornus sericea*) and winterberry holly (*Ilex verticillata*) are native alternatives that provide red color in autumn and winter.

# BEECH LEAF DISEASE NEMATODE

*Litylenchus crenatae mccannii*

**NATIVE RANGE** Unknown

**DESCRIPTION** Beech leaf disease (BLD) symptoms include dark striping between leaf veins, curling, and/or a leathery texture. Striping is most easily seen on the underside of leaves. A single tree can have both heavily infected and unaffected branches. There are many look-alikes that cause discoloration and curling of beech leaves.

**HABITAT** Beech leaf disease has appeared on various beech species, including American beech (*Fagus grandifolia*).

**THREAT** Beech leaf disease can kill mature trees in 6-10 years and young trees in as little as 2-3 years.

**MANAGEMENT** Little is known about the cause of this disease; therefore, management strategies have not yet been developed. Research is ongoing. Please report beech leaf disease using the free iMapInvasives app. Location information can also be reported to NYSDEC at **foresthealth@dec.ny.gov** or **1-866-640-0652**.

**FAST FACT**

BLD is thought to be associated with a nematode (worm) *Litylenchus crenatae mccannii*; however, the nematode has been found on asymptomatic trees.

# EMERALD ASH BORER

*Agrilus planipennis*

**NATIVE RANGE** Asia

**DESCRIPTION** Emerald ash borer (EAB) has a golden-green body with dark, metallic-green wings and a purplish-red abdomen. Adult beetles average 3/8 to 3/4 inch long and 1/6 inch wide. EAB emerges in late spring, flying from June-August. Infested trees may exhibit crown dieback, bark flaking, bark cracking, D-shaped exit holes, excessive woodpecker activity, and sucker growth off the trunk.

**HABITAT** Emerald ash borer lives only on ash trees (*Fagus* species), which are common in hardwood forests.

**THREAT** Emerald ash borer larvae feed on the tissue of the tree and are able to kill trees in 2-5 years.

**MANAGEMENT** Eradication is impossible, making slowing the spread important. Reducing the transportation of firewood and other ash products can slow the spread and prevent the insect's introduction into new areas. Insecticide can be used to save ornamental or street trees, but is not viable for treating at a landscape level and must be applied by a certified pesticide applicator.

**FAST FACT**
Emerald ash borer can hitchhike long distances via untreated firewood.

# HEMLOCK WOOLLY ADELGID

*Adelges tsugae*

**NATIVE RANGE** Asia and Northwestern U.S.

**DESCRIPTION** Hemlock woolly adelgid is a tiny insect, less than 1/16 inch long. It is dark, reddish-brown to purplish-black. A white, wool-like covering called an ovisac appears on mature egg-laying adults. The white, woolly ovisacs can be identified on the undersides of hemlock branch tips from late fall to early summer.

**HABITAT** Hemlock woolly adelgid develops and reproduces on all hemlock species but attacks only Eastern (*Tsuga canadensis*) and Carolina (*Tsuga caroliniana*) hemlocks.

**THREAT** Hemlock woolly adelgid can cause hemlock decline and mortality within 4-20 years of infestation. During fall and winter, developing adelgids feed on young twig tissue, including starch reserves critical to the tree's survival.

**MANAGEMENT** Moving bird feeders away from hemlocks, removing infested trees from woodlots, and following state quarantines may help to slow the spread. Insecticides can be used for local control and to protect desirable ornamental trees, while biological controls can provide long-term, landscape-level suppression.

**FAST FACT**
Biological controls are being released in NY to help control this species.

# JUMPING WORM

*Amynthas spp. & Metaphire spp.*

**NATIVE RANGE** Eastern Asia

**DESCRIPTION** There are 3 species of jumping worm that are similar in appearance. Mature worms are 4-5 inches long with dry, smooth bodies. The clitellum (a band that circles the body) is white or gray. Jumping worms thrash or wiggle violently when handled. Mature worms are found from August to September. Invaded soil becomes granular and resembles dried coffee grounds.

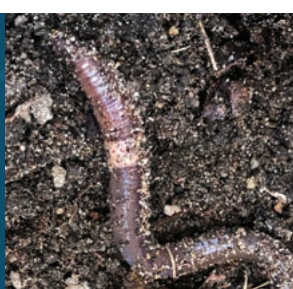
**HABITAT** Jumping worms inhabit upper soil layers or leaf litter.

**THREAT** Jumping worms reproduce asexually, meaning one individual can create an entire infestation. Their rapid growth and aggressive nature allow them to outcompete other European earthworms. Jumping worms significantly alter soil structure and nutrient cycles in forested ecosystems. They damage plant roots, leading to a decline in native vegetation abundance and diversity.

**MANAGEMENT** Prevention is critical. Once established, there are no known management strategies for this species. Never use jumping worms for bait, composting, or gardening.

**FAST FACT**

Jumping worms can be inadvertently introduced when they are transported in the soil of ornamental plants.



# SPONGY MOTH

*Lymantria dispar*

**NATIVE RANGE** Europe and Asia

**DESCRIPTION** Spongy moth females are white with brown markings; males are mottled brown and gray. Each reach 1.5 inches long. Caterpillars hatch in spring and reach 2.5 inches long, are green, and have five pairs of raised blue spots followed by 6 pairs of raised red spots along their backs. Spongy egg masses are present throughout winter.

**HABITAT** Spongy moths feed on many tree species, but oak (*Quercus* species) is preferred.

**THREAT** Spongy moth outbreaks occur every 10-15 years. During outbreaks, the large number of caterpillars can cause noticeable defoliation. Deciduous trees typically regrow their leaves annually and can withstand 2-3 years of successive defoliation. Conifers do not regrow their leaves as easily and can die from defoliation.

**MANAGEMENT** Eradication is not possible, but options do exist to help protect ornamental trees. Methods of control vary from squishing and scraping egg masses, to mechanical barriers such as bands and traps, to insecticides.

**FAST FACT**

Outbreaks typically end when viral and fungal diseases kill the caterpillars.

# SPOTTED LANTERNFLY

*Lycorma delicatula*

**NATIVE RANGE** China, India, Vietnam

**DESCRIPTION** Spotted lanternfly is an invasive planthopper. Adults are 1 inch long. Forewings are pinkish-tan with black spots; hind wings are black and red with a white band; abdomens are yellow with black bands. The multiple young-insect stages vary in size (1/4-3/4 inch) and appearance. The first 3 stages are black with white spots, the fourth stage is red with white spots.

**HABITAT** Spotted lanternfly feeds on more than 70 host species, but tree-of-heaven is preferred. Adult females lay grayish-brown egg masses on hard surfaces.

**THREAT** Spotted lanternfly poses significant threats to the agricultural industry. Large swarms of insects can damage crops like grapes and hops.

**MANAGEMENT** Eradication is impossible and slowing the spread is important. Reducing the transportation of infested material can prevent its introduction. Egg scraping, trap trees, and insecticides are all viable control methods that can protect trees.

**FAST FACT**

When traveling to an area where spotted lanternfly has been documented, inspect your vehicle, trailer, and outdoor gear for egg masses.

# INVASIVE SPECIES MANAGEMENT

Management techniques vary according to the species, and it is important for landowners to follow proper protocols to ensure well-intentioned management methods don't do more harm than good. Many aggressive invasive plants resprout from tiny roots, stems, or leaf fragments. Be informed about the appropriate management and plant disposal methods for each species, and about any permits needed, before beginning any management program.

Below are some tips landowners should be aware of before attempting to manage invasive species on their property. Visit **www.adkinvasives.com/resources** to find APIPP's best management practices for managing invasives.

- When using pesticides, always read the label to ensure safe and appropriate use.
- Be patient. Invasive species management takes multiple treatment cycles.
- Always monitor treatment areas and treat invasive plants as they reemerge.
- Never mow invasive plants while they are in seed, as doing so can spread the infestation.
- Most herbaceous plants should be solarized after removal. To solarize, put the plant material in a plastic bag, leave it in the sun for 2-3 weeks until it begins to decompose, then dispose of the bag in a landfill.
- Woody material and non-fruit-bearing plants can also be chipped.

**The Adirondack Park Invasive Plant Program (APIPP)** serves as the Adirondack Partnership for Regional Invasive Species Management (PRISM), one of eight PRISMs across New York. APIPP is a partnership program founded in 1998 by The Nature Conservancy, New York State Department of Environmental Conservation (NYSDEC), New York State Department of Transportation, and New York State Adirondack Park Agency, and it is hosted by the Adirondack Chapter of The Nature Conservancy. Funding is provided via five-year contracts from the New York State Environmental Protection Fund as administered by NYSDEC. Since APIPP's founding, the program has grown to include more than 30 partner organizations and hundreds of volunteers.


## REPORTING AN INVASIVE SPECIES IS EASY!

The iMapInvasives app is an expansive database for documenting the presence of invasive species, making it an essential tool for both tracking and managing the spread of these plants and animals. Community scientists can help by reporting any invasive species they see. Follow these simple steps to get started:

**STEP 1** **Download the free iMapInvasives app** on your mobile device.

**STEP 2** **Create an account** on the iMapInvasives website.

**STEP 3** **Use this field guide** to identify invasive species and report any species you find to the iMapInvasives database. Be sure to provide your location and at least one image of the invasive plant or animal.

**STEP 4** **Visit www.imapinvasives.org** to find tutorials, resources, and more.

*Note: This field guide uses the same naming conventions found on the iMapInvasives app.*

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INVASIVE SPECIES MANAGEMENT ADIRONDACKS

The Nature Conservancy

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