“Alien Invaders”

The Dirty Thirty: Invasive Species of Greatest Concern in Forest Park

Forest Park Ivy Removal Project
Http://www.noivyleague.com
(503)-823-3681
What are characteristics of an invasive species?

**Disrupts** the ecosystem
- Threatens the survival of native species
- Resistant to eradication; costly and difficult to control

**Displaces** native species
- Can hybridize with species and cause negative genetic impacts
- Rapid, widespread growth
- Rapid, widespread reproduction and dispersal

Becomes the *dominant* species
- Can readily establish a monoculture
- Opportunistic: quickly colonizes disturbed ecosystems of vulnerable environments

A Thistle field

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Globally, invasive species are the second greatest cause of species extinction
Garlic Mustard

- Cool season biennial herb in mustard family with *stalked, triangular to heart shaped, coarsely toothed leaves* that give off *an odor of garlic* when crushed.
- Flowering plants reach from *1.3 - 3 ft* and produce button-like clusters of small white flowers.
- May be *mistaken for* several white flowered native plants including, *toothworts, sweet cicely, and early saxifrage*.
- Threatens native plants and animals by monopolizing light, moisture, nutrients, soil and space.
- Introduced by settlers for food/medicinal purposes. First recorded 1868.
- Garlic Mustard’s *seeds have long life* in the soil - *5 years* or more.
- Control methods include *herbicides, hand-pulling, cutting at ground level, and burning*. The goal is to prevent seed production. For small plants, hand removal is best while larger infestations may require clipping the plants, using systematic herbicide glyphosate, or burning area for 3-5 consecutive years.

↑ Garlic Mustard is beginning to get a foothold in Forest Park. One plant can hold up to thousands of seeds.
Japanese Knotweed

- Native range is in **Eastern Asia**
- Member of buckwheat family; upright, shrub-like, herbaceous perennial growing to over 10 ft. **Stems are smooth, stout and swollen at joints** where leaf connects to stem. Leaves are normally 6 in. long by 3-4 in. wide and are oval to somewhat triangular shape. It has greenish white flowers and triangular, shiny, 1/10 in. long seeds.
- Poses a threat by altering ecosystem and forming dense thickets that exclude native plants. **Spreads quickly** and **able to survive severe floods**.
- Introduced in late 1800’s for ornamental purposes and erosion control.
- Control methods include **grubbing, burning, the cut stem treatment**, and **the foliar spray method**. For small populations, a digging tool is used to remove the entire plant. A juvenile plant can be hand-pulled. The cut stem treatment includes cutting the plant 2 in. above the ground and applying a 25 % solution of glyphosate and water.

↑ Japanese Knotweed leaves in their youth

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Text: PCA Alien Plant Working Group

Photo: [http://www.magi.com/%7Eehaber/factbomb.html](http://www.magi.com/%7Eehaber/factbomb.html)
**Melissa officinalis**  
**Lemon Balm**

- Leaves are *lemon scented, ovate, toothed*, found on hairy, square, branched stems. Flowers range from light blue, and yellow to rose and plants are 18-30 inches high.
- Looks very *similar* to many varieties of *mint*.
- Spread prolifically by its fibrous root system, as well as self sowing.
  - Edible, has many household uses, including insect repellent, perfume and medicinal purposes.
  - Manual removal and control can be effective if *flower heads or entire plants are removed before the seeds ripen in July- September.*

← Good looks can be deceiving- gardeners beware!
In today’s world of global transportation and commerce, invasive species can spread quicker than before.
**Ilex aquifolium**

**English Holly**

- Prickly, glossy evergreen leaves armed with spines and red berries
- Wood is hard and very pale, *flowers are small and whitish*
- Originates from Eurasia, common in moist nutrient rich soil but can grow in harsher environments.
- Stem tips in *contact with soil can develop roots*, root buds *can develop stems*
- Seeds spread by birds and shoots can be sent up from the roots
- Creates a *deep shade* so *native species can neither grow or germinate*
- Removed by *pulling by hand* (when trunk is less than 0.5” in diameter) *or with a weed wrench* (when trunk is less than 1” in diameter), otherwise a trained *specialist will apply herbicide to the plant*


**Sturnus vulgaris**

**European Starling**

- Medium sized *black bird with short tail*, approximately 8.5 inches total, feathers are black iridescent in summer, speckled white in winter with yellow beak and red legs; juveniles are brown with darker beak.
- Omnivorous feeders, diet includes insects, moths and butterflies as well as most seeds, grains and fruits.
- Intentionally introduced into Central Park in New York City in the 1800s, now found abundantly throughout the country.
- Negative impacts on ecosystems are due to abundance and omnivorous, aggressive nature; *often displace cavity nesting birds like tree swallows and woodpeckers*.
- Control methods include *exclusion, eliminating possible nesting and feeding areas, trapping*, and *tactile and sound repellents*

Text: [http://edis.ifas.ufl.edu/UW118](http://edis.ifas.ufl.edu/UW118)  
Sciurus vulgaris
Red Squirrel

- Is a *Medium-sized tree squirrel*, no color or size differences between males and females, dark *gray* to cinnamon toned body with pale gray to white ears
- Native to the Eastern U.S., introduced to Western states, some of Canada, Italy and the U.K.
- Found in *deciduous and coniferous forests* where there is an abundance of seeds, nuts and fruits, as well as in urban and suburban settings, where they feed on bones, bird eggs and nestlings, frogs, and refuse
- Economically important in some parts of the Southern U.S. for hunting and trapping, as well as wildlife watching
- The Gray Squirrel *Competes aggressively with the red squirrel* (*Tamiasciurus hudsonicus*) in Oregon for food and habitat, can degrade trees by stripping bark and is considered to be one of the main causes of property destruction in the UK
- Control techniques *focus on elimination of food sources, trapping*, and *rodent repellents and poisons*

Don’t you get the feeling that this guy knows how photogenic he is?

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Photo: http://212.187.155.84/wnv/Subdirectories_for_Search/SpeciesKingdoms
Weeds have invaded 17 million acres of public rangelands in the West.
**Passer domesticus**  
**English (House) Sparrow**

The **males have brown and white striped back**, with gray crown and brown back of neck, mature males have distinctive black bib; **females and juveniles are striped with buff undersides** and **eyestripes**, beaks are short and black

- Intentionally introduced by immigrants in the mid-1800s for crop pest control, now found abundantly throughout the country, one current estimation is **150 billion birds in the continental U.S.**
- Non-migratory, flocks will move within a 1.5- 2 mile area where food is abundant, particularly around animal feedlots and bird feeders
- It **competes with native species** like the purple martin and bluebird **by predating young and taking over nests**
- Control methods include **exclusion from nesting sites, eliminating feed areas** and **trapping and destroying young and eggs**

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Text: [http://www.nabluebirdssociety.org/sparrow.htm](http://www.nabluebirdssociety.org/sparrow.htm) and [http://edis.ifas.ufl.edu/UW119](http://edis.ifas.ufl.edu/UW119)  
Himalayan Blackberry

*Rubus discolor*

Any hiker would agree that Himalayan Blackberry is by far the most insidious plant on the face of the earth. H. Blackberry is the #1 weed in the state of Oregon.

- Has **green or reddish, thorn-covered canes** can grow up to 15 feet in one season, and roots are perennial.
- Leaves have three to five leaflets with serrated edges and white flowers with five petals bloom in the spring.
- Shiny, **black, edible berries** ripen in mid-late summer.
- Escaped from modern cultivation and is most often found in fields and open areas, as well as along roadsides.

\[\text{Control is most effective when young shoots are pulled in early spring; the root systems (crown) of more established plants must be removed completely.}\]

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Text: The Oregonian, Thurs. 12/9/99
Horse Chestnut

- Large, *showy tree with large leaves divided into five to seven leaflets* with finely toothed margins. Flowers appear in tall white spikes, and seeds are large brown nuts surrounded by a green, softly spined hull.
- Native to Greece and Asia, later cultivated in North America and Europe for medicinal use of seeds, leaves and bark.
- Allelopathic, *excretes poison into soil* around roots that inhibits growth of other plants.
- Becoming a *significant problem in Forest Park*.

*If you see any trees with these leaves on your property, watch out! Horse chesnut out of control, looks like some tree out of Dr. Seuss’s worst nightmare.*

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**Text:** [http://www.botanical.com/botanical/mmgmh/c/chehor58.html](http://www.botanical.com/botanical/mmgmh/c/chehor58.html)

**Photo:** [http://www.mobot.org](http://www.mobot.org)
**Convolvulus sepium**

**Morning Glory**

- Green, *arrow shaped leaves* 1 to 2 in. wide, and 2 to 4 in. long. *White to pin bell shaped flowers. Grows as a perennial vine*
- Also *confused with Polygonum convolvulus* which has red and twisted vines, and slender stems
- Both *Convolvulus sepium* and *Convolvulus arvensis* are commonly called Morning Glory or bindweed. *Convolvulus sepium* is more invasive and has *larger leaves, stems, can climb, twine and cover great distances* and has larger flowers that *rarely have any pink*
- Found in riparian areas, agricultural type areas and clay soil. *Prefers sunny areas* with little competition and *moderate moisture*
- Spreads mostly vegetatively and by seeds through water and birds
- Control methods include *persistent pulling and cultivation, burning, grazing by hogs,* and *herbicides such as 2, 4-D AND Glyphosate.*

Familiar face? You might think differently when you stop to admire this femme fatal again.

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Text: Element Stewardship Abstract for *Convolvulus arvensis* L.
http://tncweeds.udavis.edu/esadocs/documents/convarv.html

Photo: http://www.webreed.edu/canyon/natu/invasives,
1/3 to 2/3 of all federally listed endangered species are threatened by invasive plant species.
Anoplophora glabripennis
Asian Long-horned Beetle

- Newly hatched *larvae 3mm in length*, feed in sapwood and heartwood
- Adults *black body with white spots*, 0.75 - 1.25 inches long
- Native to China and Korea
- Preferred hosts are *maples, poplars, willows, horse chestnut* and *birch*
- When caught, will chew through plastic bags
- Signs of damage caused: *pencil-sized holes, wilting or brown leaves at branch tips, oval/round scars (may occur in rows), sap flowing down trunks/branches*
- 500-1000 eggs can pass the winter on or under tree bark, rocks, fallen branches
- Most common eradication method is *removal of infested trees*
Arum italicum
Lords and Ladies

• Large *arrow shaped green leaves that bloom in late autumn/early winter*
• Bright orange berries in autumn, grows
• up to 1.5 feet
• Yellow, green or cream-colored flowers, stemless
• Originates from southwest Europe
• Found in herbaceous *perennial landscape, woodlands*, and also a common houseplant
• The whole plant is poisonous
• Remember: *DO NOT EAT!* Will cause severe mouth pain!
• Remove by *hand pulling*
Brown-headed Cowbird

- Found in woodland edges and agricultural/residential spots
- Males have a brown head and black body, wings and tail
- Confused with blackbirds and grackles
- Feeds mostly on seeds and some insects
- Are mostly controlled now by trapping

The female cowbird will lay her eggs in the nest of other birds, some birds will throw the egg(s) out or put a new nest over it.
**Sudden Oak Death**

- Symptoms vary between the 38 affected species, and plants and trees may become *foliar, bark-canker hosts, or a combination* of the two.
- Prefers cool, *wet conditions* in 50°- 65° F.
- Invades susceptible trees and *kills portions of the tree*, making an ideal environment for insects and other fungi.
- A *fungus -like organism* was identified as the culprit, and it has spread throughout a dozen counties in California and Curry County in Oregon.
- Attacks Douglas firs, Big Leaf Maple, Tan Oak, Rhododenron, Madrone, Manzanita, Witch Hazel, Coast Live Oak, and Western Star Flower.
- Produces *spores* that spread and start other infections.
- Some *prevention* methods include maintaining tree health by *clipping and pruning dead branches, washing your vehicle and shoes after visiting an infected area, REPORT infected areas*, do not *transport oak firewood of infected trees*.

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**Phytophthora ramorum**

First seen in 1995 as tan oaks and coast live oaks were dying in large numbers along the California coast.

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*Text: [http://www.oda.state.or.us/plant/ppd/Ent/Gypsy_moth.html](http://www.oda.state.or.us/plant/ppd/Ent/Gypsy_moth.html)*

The economic impact from invasive species is $137 billion per year in the US alone
Poison Hemlock

- Biennial Herb, introduced from Eurasia
- Found most often along roadsides and in disturbed areas
- Leaves pinnately dissected 3-4 times
- Is an umbrella shaped clusters of small, white flowers; purple spotted stems
- Broadly ovate, laterally flattened fruits
- Flowers between June and August
- Stems, leaves, seeds and fruits produce poison that was used in ancient Rome and Greece for murders and suicides
- Plant is most toxic as seeds mature, and reaction in humans can consist of vomiting, weakness, trembling, depression of the central nervous system, dilation of the pupils, coma, and death
- Remember! - avoid all contact with eyes, nose, mouth and hands, and wash clothing after contact

Poison Hemlock kills plants, animals, and Greek philosophers alike

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Text and photos: Weed Science Society of America, http://www.wssa.net/subpages/weed/herbarium0.html
English Laurel

- Evergreen small tree/shrub with simple, alternate, smooth leaves and clusters of small black fruits.
- The flowers are white, in elongated clusters
- Native to Europe, used as ornamental shrub in landscaping
- Very poisonous leaves, twigs, and seeds when ingested
- Becoming a significant problem in Forest Park

Sadly, this picture was taken from a nursery, if you are thinking of buying English Laurel try getting Salmonberry, Thimbleberry or snowberry instead→

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Text: http://www.ces.ncsu.edu/depts/hort/consumer/poison/prunula.htm
English Ivy

Hedera helix

- Woody vine with lobed, dark green leaves; once established, easily grows into strong, woody vines exceeding 6 inches in diameter with leaves that are deeply lobed with light color veins
- Introduced from Europe, now found all over the continental US especially a problem in the Southeast and Pacific Northwest
- Immature or juvenile form has green leaves that grow on the ground, or climbs fences, trees, or walls.
- Mature form has more rounded, lighter-colored leaves and produces small greenish-white flowers in a 1 in. helix and fleshy, purple-black berries
- Overwhelms and dominates all landscaped and natural areas where it is allowed to become established and ground cover prevents growth of native species.
- Provides habitat and food for undesirable animals such as vermin and European starlings, increases likelihood of erosion
- Control methods include hand pulling, cutting and herbicides.

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Text: Forest Park Ivy Removal Project
Photo: http://www.noivyleague.com
After ivy gets enough light, nutrients, stored sugar and enough biomass for photosynthesis, then it changes from the juvenile form on the right into a mature fruit-bearing form of the left.
More habitat is lost annually in the US from invasive species than from the combination of development and pollution.
Nutria

- Semi-aquatic rodents with rat-like features; adults weigh between 15 and 20 pounds and can be up to 25 inches in length including their bristly, scaly tail, can be confused with the beaver, herbivorous
- Originally introduced into the U.S. from South America in the late 1800s to augment the fur market, released what into the wild, where they were considered beneficial for weed control and trapping; without any natural predators, populations exploded
- Now found in 22 states in marshes, and swamps, along the shores of rivers and lakes
- Compete with native animals and plants because of high productivity and aggressive nature; eat marsh plants from the roots, which increases erosion, take over habitat and nests of otter and beaver, destroy habitat of marshland birds and fish, also invade croplands and carry diseases and parasites
- Control methods include trapping and commercialization of nutria meat

When the fur market collapsed in the 1950’s farmers released what was left of their stock into the wild

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Text and Photo:
http://www.mds.g.umd.edu/exotics/workshop/nutria.html
Asian Gypsy Moth

Lymantria dispar

- Brought from Europe in 1869 to develop a disease resistant silkworm
- Lays its eggs on solid surfaces such as *tree trunks and outdoor furniture*
- Often arrive on bulk cargo ships
- Feed on conifers such as Larch
- Caterpillars feed on over 500 species of trees/shrubs such as: *Oak, Alder, Aspen, Willow, Madrone and Birch*
- Does not like Ash, Basalm, Fir, and Cedar
- Reproduces very rapidly
- Females can fly up to 25 miles
- Gypsy Moth is often controlled by using Baccillus thuringiensis kurstaki, a naturally occurring bacteria that causes *caterpillars that ingest it to die* in 7 - 10 days
- Causes deforestation by *weakening and killing trees*

Text and Photo: [http://www.oda.state.or.us/plant/ppd/Ent/Gypsy_moth.html](http://www.oda.state.or.us/plant/ppd/Ent/Gypsy_moth.html)
Scot’s Broom

*Perennial evergreen shrub in the legume family, can grow up to 10ft of stiff, green, broom-like branches, many of which are leafless or have only a few simple (upper) or three parted (lower) leaves*

*Scot’s Broom flowers are numerous, small and bright yellow*

*Introduced as an ornamental, now covers thousands of acres of rangeland west of the Cascades*

*Very aggressive, creates monocultures and is poisonous to most animals*

*Seeds are still able to germinate after being buried 40 years; are transported by humans on car tires and in infested gravel, and animals*

*Removal methods include use of Goats, moths and weevils, as well as herbicides, but manual pulling of root crown has been proven to be the most effective for eradication*

—I’m sure this is a familiar sight to many people who visit the beach, would it surprise you to know that all of that hill is covered by Scot’s Broom?
Sorbus aucuparia
European Mt. Ash

- Tree rarely more than 30 ft. high
- The leaves are similar to that of an Ash
- Clusters of small white flowers
- Bark is soft, spongy and yellowish-gray
- Has orange-red fruit that are globe shaped
- Distributed over country in its wild state, but it can be cultivated as an ornamental tree
- Can be spread by birds
- Native to Europe

- Lives in urban areas
- Mountain Ash can be used as poles and hoops for barrels
- Bark and fruit have medical properties

↑ In autumn Mt. Ash will bear fruit, my recommendation would be not to eat it (they’re very sour)
Invasive plants spread an estimated 4,600 acres per day on federal lands in just the western United States.
Herb Robert/Robert’s Geranium

Geranium robertianum

The flowers shown here are magenta, but sometimes Herb Robert can sprout white flowers as well→

- Low growing, annual or biennial with **fern-like leaves**, grows 6 - 12 ft tall, **stems turn red when exposed to sufficient sunlight**, small, delicate **flowers range from white to dark pink**, can be **confused with bleeding heart**
- Native to European, Asian and African forests, introduced into similar forests as an ornamental in U.S.
- Found on dry, rocky outcroppings, along roadsides, in residential neighborhoods
- Disturbs natives by **forming a 50-100% ground cover**
- Hand **pulling is an effective form of removal due to shallow roots, herbicides** also effective

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Text and photo:
http://www.wa.gov/agr/weedboard/weedinfo
**Giant Hogweed**

- Grows to maximum height of 10-15 ft with dark reddish-purple stems 2-4 inches in diameter and umbrella shaped flowers.
- Large compound leaves are deeply incised and 3-5 ft wide. Hairs on underside of leaf are dense, and leaf stalks have short, coarse white hairs at base.
- Easily confused with native “cow parsnip”, hogweed is much larger.
- Health hazard: watery sap contains toxins which cause blisters and scars.
- Found in ravines, wooded open space areas and prefers moist soils.
- Introduced from Asia as an ornament.
- Some control methods: herbicides and hand removal (preferably with gloves).

↑ Giant Hogweed on a roadside, keyword “giant”

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Text: Written Findings of the State Noxious Weed Control board
Http://www.nwcb.wa.gov/weed info/hogweed.html
Photo: http://dnr.metrokc.gov/wrl/LANDS/weeds/hogwee.htm
Traveler’s Joy

*Clematis vitalba*

• Aggressive, *climbing vine* that has 6 prominent longitudinal ribs on stems
• Medium sized, *pointed leaves with 3-5 leaflets on each leaf*
• Has *creamy white flowers* appear from autumn to spring
• Is confused with native *clematis and smooth vine*
• Found on roadsides, riverbanks, gardens, shrubs and in the forest
• Travelers Joy is monoecious, meaning *it can fertilize itself*
• Seeds spread by wind
• Also *spread by its own growth* up to 40 inches in one year

↑A clematis infestation on Cornell Road
← Clematis flowers are often white but in some strains they are be pink, purple or red

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Text: http://www.doc.govt.nz/cons/pests/fact45.htm#top
Photo: http://www.doc.govt.nz/cons/pests/fact45.htm
Crataegus monogyna

English Hawthorn

- Deciduous tree growing 15-30 ft. tall and spreading 15-20 ft. wide with a rounded top. Has straight to zigzag, thorny branches with 3-5 lobed dark green leaves. The leaves are 2.5 in. long and don’t change colors in the fall.

- Spring blooms of white five pedaled flowers in clusters of 6-12 followed by red fruit.

- Prefers in moist but well-drained soils in full sun, but will grow in many other situations.

- Natural range is in North Europe. Dominates wetlands and upland prairies.

- Interbreeds with native hawthorn creating hybrids that are difficult to accurately identify.

- Becoming serious problem in Portland area.

↑Berries from English Hawthorn are a delight for birds and insects.
The majority of species introduced in a foreign area do not survive, though an estimated 15% become very harmful.
**Periwinkle**

- Evergreen with *erect flowering stems* and *trailing non flowering stems*
- Shiny *dark green leaves*
- Flowers are the color *periwinkle/pink*
- Numerous hairs reside along the midribs on the upper surface
- Prefers *deep shade* and grows in almost *any type of soil*
- Can be removed by chemical control and by using chemicals such as *“paraquat” and “goal”*
- Spreads rapidly by its arching stolons, which root at the tips
- It forms a “dense carpet” that eliminates other plants

Periwinkle vines make a tangly mass similar to that of clematis, which makes manual removal very difficult

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Photo: [http://www.ontarionature.org](http://www.ontarionature.org), [http://www.puyallup.wsu.edu/%7ELinda%20Chalker%2DScott/](http://www.puyallup.wsu.edu/%7ELinda%20Chalker%2DScott/)
Norway Maple

Acer platanoides

- Deciduous tree up to 90 ft high, flowers about 1/2 in wide, **greenish yellow in rounded clusters, leaves are dark green with 5-7 lobes**, seeds have widely spread wings; can be **confused with Bigleaf Maple**
- Native to Eurasia, now found throughout North America in suburban areas
- Considered invasive because it **takes up space**, and **spreads prolifically**
- Mechanical and chemical methods can be used together to eliminate trees, e.g. **chain saws and internally applied pesticides**

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Norway Maple is great in a park, but not in an ecosystem where you need a lot of space, like a forest.

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Ligustrum vulgare
Privet

- Bark is *whitish tan to gray in color* with a smooth texture
- Each flower has petals that are fused into a tube below with four separate lobes above
- The fruit ripens during in late summer and persists through winter
- The *fruit is glossy black* in color
- Grows up to 5 m in height and resembles a large shrub or a medium sized tree
- Has spreading branches
- Native to Europe
- Grows *along roadsides and in old fields*
- Hass a *toxin* that affects both humans and animals, symptoms are *loss of power in hind limbs, rapid pulse, dilated pupils, and death may occur within 48 hours*

To get rid of Privet, remove the individual shrub after cutting the stems at or near ground level and apply a 25% solution of glyphosphate and water to cut the stump, being careful to cover the entire surface.
Reed Canarygrass

- Has **0.6 - 2 meter tall stalks**. 5 mm long hairs on 5-20 cm long section at top of stems.
- Native to Europe and Asia
- Often **confused with harding grass**, orchard grass, and bluejoint. It can be distinguished from these others species by its non-bulbous culms that arise from very stout rhizomes and seeds that are less than 2 mm long
- These stands exclude and displace desirable native plants and animals.
- Control methods include **mechanical, competitive crops, cutting, burning, plowing, altering water levels and chemical methods**.

Reed Canarygrass forms a dense, persistent, monotypic stands in wetlands, moist meadows and riparian areas.
**Cirsium arvense**

**Canadian Thistle**

- Circium arvense have 1.5-4ft branched, hairy, and ridged stems and clusters of *small, pale lavender to deep purple white flower heads*, leaves that are lance-shaped, toothed, spiny and deeply lobed, and extensive colonies of deep and surface roots.
- Flourishes in disturbed upland areas, but can survive in diverse habitats such as barrens, glades, meadows, prairies, stream banks and wetlands.
- Threatens natural communities by out-competing local species for nutrients and light, also impacts cropland with dense root systems.
- Seeds may remain viable in the soil for up to twenty years, and regeneration can occur from root fragments of less than an inch in length.
- Removal methods include *hand cutting, mowing, controlled burning, and chemical* methods. Mowing or hand-cutting should occur before seed set, and burning should happen late in the season to prevent growth stimulation.

Herbaceous perennial, introduced to North America in the 1600s and now found in the northern U.S. and Canada, as well as southward to Virginia↓

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