THE CITY OF GRESHAM OREGON

Invasive Plants Reference Manual

A Field Guide for Property Owners

Shrubs

Vines

Forbs

Prepared by the City of Gresham | Department of Environmental Services | Watershed Division

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Invasive Plants Reference Manual

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Introduction

Invasive plant species are commonly refered to as "non-native" plants that adversely affect the landscape and surrounding regions they invade. They cause damage to local economies and native environments by over-growing and dominating the landscape.

Purpose of This Field Guide

The purpose of this field guide is to give property owners the knowledge to *identify* and *remove* invasive plant species in a safe and effective manner. The City of Gresham understands the threat that invasive plants pose to our City and needs the support of property owners to be succesfull in controling this threat.

This guide has been designed to give property owners an introduction to the plant list, detailed identification and eradic information on a select group of those species thought to be the most threatening to our City. Descriptive text and photographs are used to aid in identification of non-native species which may look similar to native species.

To suppliment the plant identification, control methods have been provided. Because each invasive species has its own unique characteristics, it is important to follow the control methods specific to each species to ensure that invasive plants are not spread unintentionally.

Purple Loosestrife invading a wetland

English Ivy invading a deciduous tree stand

Why are Invasive Plants a Problem?

Invasive plants are considered to be the second most important threat to biodiversity, after habitat destruction (Westbrook 1998). Land clearing and development put significant pressure on native plant species and create areas that are prone to invasion by introduced species. Once established, invasive plants can change the functions of the ecosystems. This can lead to fire hazards, property loss, damage to roads, utility pipes, and even the extinction of native plant species.

For example, invasive plants have spread over 17 million acres of public rangeland in the western United States at a rate of 4,600 acres per day (Westbrook 1998), threatening the ecosystems and ways of life for those living there.

Best Management Practices

A set of best management practices has been developed to prevent the introduction and spread of invasive plant species. These practices should be followed whenever in contact with invasive plants:

1. Identify all plants to be controlled before any work begins.

2. Work carefully to minimize soil distrubance.

3. Dispose of invasive plant material as indicated for each invasive plant species. If not disposed of correctly, the invasive plant could spread.

    - You should never dump clippings of invasive plant species in parks or natural areas!

4. Use Herbicides Safely:

    - Wear protective clothing and safety devices as recommended on the label.
    - Shower after each use.
    - Read the herbicide label carefully and follow the directions.
    - Know your legal responsibilities as a pesticide applicator.

5. Clean equipment, clothing, and shoes before leaving the infested site to prevent seeds and plant fragments from being transplanted.

6. Invasive plant materials should be covered when being transported.

7. Do not plant known invasive plants listed on the City of Gresham's Invasive Plant List.

Best Management Practices - Field team preparing for site work

Remember

- Avoid transporting weed seeds by clothing, pets, equipment or vehicles.
- Retain shade as much as possible with dense plantings of native trees and shrubs to suppress and prevent the establishment of invasive plants.
- Report any new infestations of known invasive plants to the City of Gresham Department of Environmental Services - Watershed Division - (503) 618-2246.
- Invasive plant management is a long-term commitment. Invasive plant seeds can last 5 to 50 years in the soil and pieces of root can start a new plant and a new infestation.

Dish Wand - Herbacide Applicator

A dish wand can usually be purchased at your local general store. Dish wands with fillable handles are ideal for a quick and easy application.

When using this herbicide applicator, follow the instructions listed on each specific invasive plant species hand-out.

Dish Wand Examples:

Weed Wrench

A Weed Wrench can be purchased through www.weedwrench.com

Be sure to choose the appropriate size Weed Wrench with a jaw capacity at least equal to the maximum diameter of stem on targeted plants.

Weed Wrench Examples:

Invasive Plants Reference Manual

City of Gresham Must Eradicate List

Must Eradicate | These species pose such a threat to the City that the City and private property owners are required to eradicate them whenever found.

Class I - City to Arrange Eradication

These species require specialized equipment and resources to control, therefore, the City will arrange eradication of these species whenever found.

Scientific Name	Common Name
Brachypodium sylvaticum	False brome
Heracleum mantegazzianum	Giant hogweed
Polygonum cuspidatum (=Fallopia japonica)	Japanese knotweed
Polygonum sachalinense (=Fallopia sachalinensis)	Giant knotweed
Polygonum x bohemicum (=Fallopia x bohemica)	Bohemian, hybrid Japanese knotweed
Pueraria lobata	Kudzu

Notes

Species were classified based on their known potential for causing ecosystem and infrastructure damage, in conjunction with their existing distribution levels within Gresham, and their existing rank by Oregon Dept. of Agriculture, City of Portland, and Cooperative Weed Management Association. As such, the proposed City of Gresham classification does not necessarily correlate with any one of these lists, and may be revised as additional information or need for control becomes apparent.

Class I - Landowner to Arrange Eradication

These species require methods that are reasonable for the average property owner to perform. Therefore, the property owners are responsible for eradicating these species whenever found.

Scientific Name	Common Name
Acroptilon repens (=Centaurea repens)	Russian knapweed
Amorpha fruticosa	Indigo bush
Alliaria officinalis (=A. petiolata)	Garlic mustard
Daphne laureola	Spurge laurel
Hieracium aurantiacum	Orange hawkweed
Impatiens glandulifera	Policeman's helmet
Lamiastrum galeobdolon	Yellow archangel
Onopordum acanthium	Scotch thistle
Phytolacca americana	Pokeweed
Silybum marianum	Milk thistle
Tribulus terrestris	Puncture vine

Class II - Highly Recommended Removal

These species are known to be invasive. These species exist in the region but may be limited or wide spread in distribution. These species should be removed as resources allow.

Scientific Name	Common Name
Calystegia sepium ssp. angulata	Edge False Bindweed, Morning Glory
Clematis vitalba	Old Man's Beard
Cytisus scoparius	Scotch Broom
Hedera helix	English Ivy
Ilex aquifolium	English Holly
Rubus armeniacus	Himalayan Blackberry
Vinca minor & Vinca major	Periwinkle

Notes

Species were classified based on their known potential for causing ecosystem and infrastructure damage, in conjunction with their existing distribution levels within Gresham, and their existing rank by Oregon Dept. of Agriculture, City of Portland, and Cooperative Weed Management Association. As such, the proposed City of Gresham classification does not necessarily correlate with any one of these lists, and may be revised as additional information or need for control becomes apparent.

Annual

A plant that usually germinates, flowers, and dies in one year or season.

Biennial

A flowering plant that takes two years to germinate, flower and die.

Deciduous

Deciduous plants, including trees, shrubs and herbaceous perennials, are those that lose all of their leaves for part of the year.

Evergreen

An evergreen plant is a plant that has leaves in all seasons.

Invasive Plant

Plants that have been introduced into an environment outside of their native habitat. When in a new environment, they have few or no natural enemies and therefore tend to reproduce and spread at rates much faster than the native plants.

Node

The place on a plant stem where a leaf is attached.

Ovate

Leaf: broad and rounded at the base and tapering toward the end.

Perennial

A plant that lives for more than two years.

Rhizome

A characteristically horizontal stem of a plant that is usually found underground, often sending out roots and shoots from its nodes. Rhizomes may also be referred to as creeping rootstalks or rootstocks.

Root

The organ of a plant that typically lies below the surface of the soil.

Rosette

A circular arrangement of leaves, with all the leaves at a single height. Often, rosettes form in perennial plants whose upper foliage dies back with the remaining vegetation, protecting the plant.

Shoot

Shoots are new plant growth, they can include stems, flowering stems with flower buds, and/or leaves.

Web Resources:

"Best Management Practices." kingcounty.gov. 13 July 2011. 12 December 2011.
<http://www.kingcounty.gov/environment/animalsAndPlants/noxious-weeds/weed-control-practices/bmp.aspx>

"Management Strategies for Invasive Plants." greenseattle.org. first accessed: 12 February 2011.
<http://greenseattle.org/how-to-remove-invasive-plants>

"Weed-Specific Removal." greenseattle.org. 12 February 2011
<http://greenseattle.org/files/weed-specific-removal/>

"State of Oregon: Oregon Invasive Species Council." Oregon.gov. 10 January 2011.
<http://www.oregon.gov/OISC/index.shtml>

"Weeds." emswcd.org 14 February 2011.
<http://www.emswcd.org/weeds>

"The Bradley Method." edgehill.net. 12 December 2011.
<http://edgehill.net/bradley.htm>

"Weed Photo Index." kingcounty.gov. 13 July 2011. 12 December 2011.
<http://www.kingcounty.gov/environment/animalsAndPlants/noxious-weeds/weed-identification.aspx>

English Holly

Ilex aquifolium

Class 2 - Removal Highly Recommended
Removal methods are reasonable for the average property owner to perform

Overview

English holly has been present in Gresham for decades. It was once considered a valuable crop and planted for decorative purposes. Unfortunately, holly has escaped into natural forests and is crowding out native trees. One tree can send many suckers up from its roots to develop new trees or dense thickets. Although English holly can be found as a single tree, it often grows in shrubby clusters. Berries eaten by birds and other animals help seeds travel to new locations. Because of these growing patterns, one newly established plant can quickly develop into a large shrubby nuisance.

How to Identify

Holly can grow either in a dense thicket or as a single tree up to 50 feet tall. The leaves are 1-3 inches long, thick and waxy. Younger or disturbed plants have very spiny, lobbed leaves, but older trees may have some flatter leaves with smooth edges. The females produce small white flowers and red to orange berries develop in the winter. English holly can be tolerate both sun and shade and seems to prefer dry-moist soil.

When to Remove

Flowers appear in early to late summer and the tree will carry berries beginning in late fall. The berries are a serious attractant to birds, which can spread seeds very effectively, so removal should be complete by the arrival of fall.

Lookalikes

American Holly looks similar to English holly but is only native in the southeastern United States – there are no native lookalikes in the Pacific Northwest.

Form Example, by jnshaumeyer

Fruit Example, by George Brett

Seedling Example, by Mullica

Basic Manual Control Methods

Tools to chose from:

- Gloves and long sleeves
- Loppers / Hand pruners
- Saws / Chainsaws
- Weed wrenches / Shovels / Claw-mattocks

1. For smaller plants and runners from larger plants, PULL shoots and roots from the ground. Remove as much of the plant above and below ground as possible.
2. When a trunk is about wrist width or smaller, use a WEED WRENCH to grasp the trunk and pull up the entire tree (with roots) from the ground. Shovels or claw-mattocks may also be used to pull and dig roots from the ground.
3. Larger trees need to be CUT DOWN manually with a saw or chainsaw. English holly will often send shoots up from their roots when the bulk of the tree is removed. Immediately applying a vinegar-based herbicide to the stump will reduce the chances of new shoots developing (see Chemical Control Methods).
4. COMPOST the tree in an area where it can be monitored yearly for new growth or sprouting. Chipping trees will ensure quick decomposition. Debris may also be taken to a composting dump site. Call the City for a list of locations.
5. PLANT native plants in the area that is being controlled after the bulk of the invasive plants are removed. This will help to repopulate the area with desired species and prevent new and recurring invasions.
6. MONITOR sites every 3-12 months to ensure that holly is fully eradicated. If new shoots appear, simply pull or cut as much as possible and continue monitoring.

Chemical Control Method

As with any pesticide use, follow instructions on the label and always wear protective clothing and eye-wear. Always use a product appropriately labeled for the site and strictly follow label rates. Unless approved by City of Gresham staff site manager, do not apply herbicide closer than 70 feet from a waterway or surface water (such as a lake, stream or pond). See herbicide regulations.

This method should be used when:

- Walking may be difficult on slope
- Invasion is >70ft from surface water
- Manual removal is unfeasible

Tools to choose from:

- Herbicide applicator; dishwand
- Herbicide (see recommendations below)
  - An aquatic/fish approved herbicide product of up to 53.8% Glyphosate such as Rodeo or Aquamaster.
  - For a more natural solution, try a vinegar-based herbicide. These can be made at home by combining vinegar with salt, citrus or soap (visit gardening websites or call the City for recipes)

1. CUT-STEM APPLICATION may be used with large trees or shrubs that are more difficult to monitor or remove manually. This method is most effective when herbicide is applied within 30 seconds after the cut. Apply rates as specified for "English Holly" when using chemical herbicide. Apply product liberally, directly and evenly to a freshly cut stem. Avoid dripping product on other plants. If using a dish wand, fill wand with herbicide and keep upright unless applying herbicide.
2. PLANT and MONITOR as described in the Recommended Manual Control Methods.

Indigo Bush

Amorpha fruticosa

Class 1 - Eradication Required by Property Owner
Removal methods are reasonable for the average property owner to perform

Overview

Indigo bush has taken a strong hold here in the west and competes with native plants along fragile stream corridors and waterways. It is native to the eastern and southern United States, but has been introduced to Oregon as a garden ornamental. A very hearty and showy plant, indigo bush grows well in less-favorable soils. Today, it is taking over the natural habitat of important native shrubs and pollinators. The aggressive growing patterns of the plant are generally overwhelming to homeowners; the airy shrub can easily grow twice its height in width.

How to Identify

This plant typically grows to about 6-10 feet but may grow as tall as 15 feet after a decade or two. Leaves are made up of many fuzzy, oval shaped, spine-tipped leaflets that are arranged oppositely and spaced evenly apart. The flowers grow in long, dense bunches and are distinctive because of the deep indigo color of the petals which contrast with the ochre orange of the anthers. Each flower has only one petal that wraps around the reproductive parts. Seeds are small, brown, flat, bean-shaped and sometimes warty.

When to Remove

Most of the growth occurs during spring and summer, with the flowers emerging in late spring. Seed pods begin to appear in the summer and fall. Removal is best when done before seed pods develop. If using a cut-stump treatment, treat in late summer before dormancy.

Lookalikes:

They have a similar leaf structure to locust, but indigo bush is a shrub and generally grows wider and has lots of airy but bushy branches emerging from the ground. Alternatively, locusts will have only a single trunk.

Form Example, by Anne McCormack

Flower Example, by Jenn Forman Orth

Seedling Example, by Mary Trisha

Basic Manual Control Methods

Tools to chose from:

- Shovels
- Loppers / Hand pruners
- Saws
- Weed wrenches

1. Because this shrub can send suckers from roots, it is best to REMOVE all above and below-ground plant parts. Use hand tools to prune down and remove most of the above-ground portion. Leave larger stalks emerging from the ground.
2. Use a weed wrench or a shovel to remove stalks and as much of the roots as possible. Dig out major roots found underground.
3. COMPOST in a yard or curb bin.
4. PLANT native plants in the area that is being controlled after the bulk of the invasive plants are removed. This will help to repopulate the area with desired species and prevent new and recurring invasions.
5. MONITOR the site. It is crucial to come back every 6-12 months to reassess the area and to pull the inevitable regrowth that has sprouted. This will effectively prevent reinfestation. Pull resprouted shoots from the ground and dig out any larger roots that are found.

Other Control Methods

As with any pesticide use, follow instructions on the label and always wear protective clothing and eye-wear. Always use a product appropriately labeled for the site and strictly follow label rates. Unless approved by City of Gresham staff site manager, do not apply herbicide closer than 70 feet from a waterway or surface water (such as a lake or pond). See herbicide regulations.

For larger infestations (more than 10 plants) it may be easier to use a cut-stump treatment. This method is best performed from late August until late September. It also is acceptable to treat indigo bush at other times of the year, but it will be ineffective if plant is dormant (late fall-early spring).

This method should be used when:

- Walking may be difficult on slope
- Invasion is >70ft from surface water
- There are few desired plants in or around invasion

Tools to choose from:

- Hand-pruners or loppers
- Herbicide applicator; dishwand
- Herbicide (see recommendations below)
  - An aquatic/fish approved herbicide product of up to 53.8% Glyphosate such as Rodeo or Aquamaster.
  - For a more natural solution, try a vinegar-based herbicide. These can be made at home by combining vinegar with salt, citrus or soap (visit gardening websites or call the City for recipes)

1. Fill dishwand with herbicide.
2. Cut stalks as close to the ground as possible and immediately (within 0-5 seconds) apply herbicide to the fresh cut-face of the stump. Waiting more than 15 seconds to apply herbicide will greatly decrease effectiveness.
3. PLANT native plants in the area that is being controlled after the bulk of the invasive plants are removed. This will help to repopulate the area with desired species and prevent new and recurring invasions.
4. MONITOR the site. It is crucial to come back every 6-12 months to reassess the area and to pull the inevitable regrowth that has sprouted. This will effectively prevent reinfestation. Pull resprouted shoots from the ground and dig out any larger roots that are found.

Spurge Laurel

Daphne laureola

Class 1 - Eradication Required
Removal methods are reasonable for the average property owner to perform

Overview

The spurge laurel, native to Britain, has been used as an ornamental shrub in the Pacific Northwest because it does well in the local climate. Like many tough invasives, spurge laurel grows well in heavy shade and thus can thrive in understory plant communities. Once established, it grows into thickets. Plants can either grow upright or droop over and "crawl" over the soil.

*The berries, leaves, sap, and bark of the spurge laurel are **poisonous** to humans and pets both through physical contact and ingestion. Take care to wear gloves and cover skin when handling this plant.*

How to Identify

Spurge laurels are evergreens, generally grow to be about 3-4 feet tall, and resemble small leafy trees. Leaves are a deep olive green, but newer growth can be a lighter yellow-green. Leaves are thick and waxy and grow in dense whorls. Stems are green to grayish-green and may produce an unpleasant odor if cut. Flowers are small and green, and berries are a dark purple-black and loved by birds.

When to Remove

This weed is difficult to eradicate because of its relentless growing habits. Once an effort begins, the site should be visited every month or two during the growing season. The spurge laurel flowers in late winter, and the growing season occurs nearly year round. It is best to remove plants before flowers or seeds form.

Lookalikes:

Spurge laurel may look similar to other laurel varieties or rhododendrons. Spurge laurel generally stands out from these plants because of its long, thin, dark olive-green leaves.

Form Example, by Peganum

Flower Example, by Pixeltoo

Seedling Example, by HermannFalkner

Basic Manual Control Methods

This method should be used when:

- Terrain is flat or gently sloped
- Invasion may be near surface water
- There are desired plants in or around invasion

Tools to choose from:

- Gloves and protective clothing to prevent contact with skin
- Loppers/Handpruners/Machetes
- Weed whackers or hedge trimmers
- Shovels or claw-mattocks
- Weed wrenches (weedwrench.com)
- Bag for seeds/flowers

1. WEAR PROTECTIVE CLOTHING AND GLOVES.
2. When soil is moist, PULL smaller shrubs out of the ground using gloves. If the spurge laurel is too large to be pulled from the ground, use a weed wrench to pull plant and as much root matter as possible from the soil.
3. If plants are older than 3 years, CUT IT DOWN below the soil surface and cover with MULCH to avoid shoots emerging from roots left in the ground. For younger plants, it is very common for many shoots to emerge after the stump is cut; do not leave younger roots in the ground if possible.
4. If SEEDS or FLOWERS are present, remove from site. Place seeds and flowers in a bag labeled "INVASIVE PLANTS – DO NOT COMPOST". It is believed that seeds can live up to two years in soils. If soil or compost comes in contact with seeds, be sure to monitor soil or compost for seedlings.
5. Compost leaves and branches with other plants, but monitor closely for new growth. It is not well known if this plant can continue growing if left on top of the ground. Be sure to remove seeds and flowers and watch for new growth or developing roots.
6. PLANT native plants in area which is being controlled after the bulk of the invasive plants are removed. This will help to prevent new and recurring invasions.
7. MONITOR site once spurge laurel eradication begins to check for new growth. Because roots left in soil may resprout, sites should be checked every few months and new growth should be pulled or dug out. Once the majority of roots have been removed, site should only need yearly or bi-yearly monitoring.

Other Control Methods:

Spraying herbicide on the thick waxy leaves will not cause enough damage to kill spurge laurel. If you feel that your infestation of spurge laurel is too large or difficult to remove by hand and with basic tools, contact the City for assistance and to discuss other options.

Scotch Broom

Cytisus scoparius

Class 2 - Removal Highly Recommended
Removal methods are reasonable for the average property owner to perform

Overview

Scotch broom, native to southern Europe and northern Africa, was introduced here as an ornamental garden plant. Once used to help stabilize erosive road cuts, Scotch broom has now taken over roadsides, native grasslands, and many other types of disturbed areas. It has become increasingly widespread throughout the Pacific Northwest through its prodigious seed production and ability to create dense, hearty monoculture brush fields over six feet tall.

Scotch broom will reproduce primarily through seeds, but may potentially reproduce through roots, and plant fragments.

How to Identify

Scotch broom is a perennial evergreen shrub that grows to heights of three to six feet tall and prefers full sunlight. It does not grow in densely forested areas but can quickly appear in recently cleared and disturbed land. It has stiff, dark green stems with many erect straw-like branches, resembling an upturned broom end. Flowers appear between March and June and are typically bright yellow and individually located along the stem. Dark brown seed pods are produced within the base of the flower and reach a length of 3-5 cm.

When to Remove

Scotch broom plants are best pulled when soil is moist and when flowers make it easy to see – typically in the spring. Weed wrenching the larger plants may be effective year round, though removal before seed formation is always preferable.

Lookalikes:

French broom is not common in the area but looks similar to Scotch broom and is equally invasive.

Form Example, by Cosmo Spacely

Flower Example, by Lynette Schimming

Seedling Example, by Lynette Schimming

Basic Manual Control Methods

This method should be used when:

- Terrain is flat or gently sloped
- Invasion may be near surface water
- The soil is moist
- There are desired plants in or around invasion
- Seeds are not present on plants

Tools to choose from:

- Gloves
- Hand pruners or loppers
- Saws or axes
- Weed-wrenches (weedwrench.com)
- Shovels

1. PULL out the entire plant, including roots. Small plants can be removed by hand when the soil is moist. Larger plants must be removed with a tool such as a weed wrench or shovel.
2. If the base of the plant is difficult to reach, use loppers to CUT back branches. Then PULL the plant out as usual. Be sure to remove the entire plant because broken root pieces have the ability to resprout when left in the ground.
3. PILE the removed pieces. If the pulled plants do not have seeds it is ok to leave them as they have a very low potential of regrowth. If seeds are present, cautiously remove plants from the area.
4. PLANT the area, when appropriate, with fast growing native plants that will cover the entire ground.
5. MONITOR the site to remove new growth for several years. Scotch broom is very persistent and requires several years of maintenance after the initial removal. Seeds may sprout decades after removal of plants.

Chemical Control Methods

As with any pesticide use, follow instructions on the label and always wear protective clothing and eyewear. Always use a product appropriately labeled for the issue and strictly follow label rates. Unless approved by City of Gresham staff, do not apply herbicide closer than 70 feet from waterway or surface water (such as a stream or pond). See herbicide regulations.

This method should be used when:

- Walking may be difficult on slope
- Invasion is >70ft from surface water
- There are few desired plants in or around invasion

Tools to choose from:

- Herbicide applicator; dish wand
- Herbicide (see recommendations below)
  - An aquatic/fish approved herbicide product of up to 53.8% Glyphosate such as Rodeo or Aquamaster.
  - For a more natural solution, try a vinegar-based herbicide. These can be made at home by combining vinegar with salt, citrus or soap (visit gardening websites or call the City for recipes)

1. CUT-STEM APPLICATION may be used with large, woody stems. Apply rates as specified for "Broom, Scotch" when using chemical herbicide. Apply product liberally, directly and evenly to a freshly cut stem. Avoid dripping product on other plants. This method is most effective when herbicide is applied within 30 seconds after the cut. If using a dish wand, fill wand with herbicide and keep upright unless applying herbicide to prevent drips.
2. PLANT and MONITOR as described in the Recommended Manual Control Methods.

English Ivy

Hedera helix (also Hedera hibernica)

Class 2 - Removal Highly Recommended
Removal methods are reasonable for the average property owner to perform

Overview

English ivy is native to Europe and western Asia but it is a major nuisance here in the United States. Since English ivy thrives in moist, shaded environments, it has grown to take over and crowd out many native plants in Oregon's forests. Trees covered with ivy will likely suffocate and potentially topple from the weight of the vines. The invasive nature of the plant caused the Oregon Department of Agriculture to ban the sale and purchase of English ivy as of February of 2010.

How to Identify

English ivy is a trailing evergreen vine that can also climb structures vertically. Alternately growing dark green leaves generally have light green veins. Leaf size and shape vary among varieties from small, tightly lobed leaves to broad, non-lobed leaves. Some cultivars have white or yellow variegations. Most growth lacks flowers unless vines are climbing with whorl-like clusters of leaves. Small yellow-green flowers generally appear in the fall, followed by dark purple-black berries.

When to Remove

Ivy is most easily removed when soil is moist and soft, such as the spring and early summer. When removing ivy from a potentially erosive slope, it may be best when soil is drier in order to prevent erosion.

Lookalikes:

There are several different cultivars (variants) of English ivy, all of which are similar looking and invasive.

Climbing Example, by Tom Forney, Oregon Dept. of Agriculture

Flower Example, by Tom Forney, ODA

Creeping Example, Tom Forney, ODA

Basic Manual Control Methods

This method should be used when:

- Terrain is flat or gently sloped
- Invasion may be near surface water
- Soil is moist
- There are desired plants in or around invasion

Tools to choose from:

- Able hands and gloves
- Loppers/Hand Pruners/Saws
- Shovels, Claw-mattocks or Pulaskis
- Tarps or large cardboard sheets

1. PREPARE an area to heap the ivy being removed where it will not be in contact with soil. Bare ground, covered by at least two layers of cardboard, is a good place to pile English ivy. Ivy can also be placed on a large pile of fallen branches or cut blackberry canes, to avoid contact with the soil. To prevent vines from re-rooting, move or flip the pile every few months.
2. Removal from trees should be first priority. If ivy is growing up a tree, CUT all ivy vines at waist or shoulder height. PRY and REMOVE all trunk ivy from below the cut. The upper vines will die within a couple months. Do not pull upper vines from the tree as it can do further harm to the tree. Next, remove at least a 5-10 ft ring of ivy around base of trees to prevent regrowth up the trunk.
3. If ivy is on the ground, PULL ivy out from the soil. Pull carefully so as to remove the roots and to prevent breakage. If encountering very large roots, use a shovel or claw-mattock to loosen soil and pry roots out of the ground. When removing ivy from the ground, areas near the base of trees should be given priority.
4. ROLL or BALL up ivy around itself to create manageable sized balls. This helps to reduce re-rooting.
5. PILE in designated area as described in step 1. Prevent new and recurring invasions.
6. PLANT native plants in the area that is being controlled after the bulk of the invasive plants are removed. This will help to repopulate the area with desired species and prevent new and recurring invasions
7. MONITOR the site. It is crucial to come back every 6-12 months to reassess the area and to pull regrowth. This will effectively prevent reinfestation.

Sushi Roll Method

This method should be used when:

- Walking may be difficult on slope
- Invasion is large and "carpet like"
- There are few desirable species present
- There are few obstructions within invasion

Tools to choose from:

- Able hands and gloves
- Loppers/Hand Pruners
- Tarps or large cardboard sheets

1. With a team of at least 3 people, begin upslope at the "mat's edge". If there is no definite edge, cut across the mat to sever vines and create a starting point.
2. Line people up, kneeling, along the edge or cut and begin pulling the ivy downslope, ensuring the ivy is being removed evenly across the edge. As ivy is removed, roll it into itself. This will begin to look like a sushi roll or a burrito.
3. Once the roll is about 15-20" in diameter, cut a new edge and remove the roll from the site or pile as described in step 1 of the Recommended Methods. If the roll is too heavy for the crew to carry, use loppers to cut the "sushi roll" into pieces.
4. If desirable species are present, the roll must be cut to avoid rolling over trees or shrubs.
5. PLANT and MONITOR area as described in Basic Manual Control Methods.

Himalayan & Evergreen Blackberry

Rubus armeniacus (syn. R. discolor or R. procerus) and *Rubus laciniatus*

Class 2 - Removal Highly Recommended
Removal methods are reasonable for the average property owner to perform

Overview

Himalayan blackberry has taken over many streamsides and natural areas in the Pacific Northwest. Areas which were once a pleasure to view are now impassable to hikers and nature enthusiasts. This invasive blackberry species out-competes native understory vegetation and prevents the establishment of native trees and shrubs that require sun for germination.

How to Identify

Himalayan blackberry is a European species that grows quickly and heartily in the Pacific Northwest. Its canes (or vines) have five sides and mature plants have leaves in groups of five. The white flowers bloom in summer and have five petals. Thorns are hard, sharp and often hooked. Thickets are often over 8 feet tall and brambles will climb and tent over shrubs, trees and narrow streams.

When to Remove

Removal is best done once flowers begin to emerge and before seeds begin to form. Arguably, eradication can occur at any time if proper follow-up maintenance is available. During late spring and summer months, it is crucial to check blackberry thickets for bird nests. If you find a nest in a thicket, it is best to leave a 15ft radius around the nest and avoid loud power tools.

Lookalikes:

There is a native blackberry in the northwest commonly known as trailing, creeping or Pacific blackberry. It is also sometimes referred to as Pacific dewberry. This native plant can be identified by its weak vines that are generally covered in a white waxy coating and has 3 leaflets instead of 5.

Form Example, by Suzanne Phillips

Flower Example, by Frank Carey

Fruit Example, by Bryant Olsen

Basic Manual Control Methods

1. **PREPARE** an area to pile the blackberry. Either find bare ground or clear an area of blackberry, including rootballs. Place two layers of cardboard (compostable) or a single tarp (removable/reusable) on top of the soil to prevent plant matter from rerooting. If neither of these options are available, build a thick mat of sticks and branches. Canes may also be chipped or composted.
2. **CUT** above ground blackberry thickets so canes are in 1-2ft long pieces using weed whackers, loppers, hand pruners and/or machetes. If left in contact with soil, longer canes may grow roots and continue to thrive. Leave 2ft cane stumps coming off rootballs in ground to mark where each root crown is located. If using a weed whacker, be careful not to cut canes so short that you can't locate the root crowns.
3. **PILE** the bulk of blackberry canes off to one side of your site so you have clear access to the root crowns left in the ground.
4. **REMOVE ROOTBALLS** from the soil using shovels, or claw-mattocks. Removing as much root material as possible will decrease the amount of blackberry "resprouts". Resprouts and small roots may be hand-pulled from moist soil. Either throw rootballs on top of the pile of canes away from the soil or remove and compost them.
5. **PLANT** native plants in the area that is being controlled after the bulk of the invasive plants are removed. This will help to repopulate the area with desired species and prevent new and recurring invasions.
6. **MONITOR** area for resprouts. It is almost certain that blackberry root fragments you have missed will continue to grow and produce new canes. After initial removal, the area needs to be managed at least twice a year to remove new growth. After 2-3 years of diligent removal, the area should be blackberry free.

Chemical Control Method

As with any pesticide use, follow instructions on the label and always wear protective clothing and eye-wear. Always use a product appropriately labeled for the site and strictly follow label rates. Unless approved by City of Gresham staff site manager, do not apply herbicide closer than 70 feet from a waterway or surface water (such as a stream or pond).

This method should be used when:

- Walking may be difficult on slope
- Invasion is >70ft from surface water
- There are few desired plants in or around invasion

Tools to choose from:

- Herbicide applicator; dish wand
- Herbicide (see recommendations below)
  - An aquatic/fish approved herbicide product of up to 53.8% Glyphosate such as Rodeo or Aquamaster.
  - For a more natural solution, try a vinegar-based herbicide. These can be made at home by combining vinegar with salt, citrus or soap (visit gardening websites or call the City for recipes)

1. CUT-STEM HERBICIDE APPLICATION is the best method for eliminating blackberry. Read label for regulations on location and rates.
   a. Fill dishwand with herbicide.
   b. Cut blackberry cane 1-2 inches above rootball, then immediately apply herbicide-soaked dishwand to the bare stem. Ensure the herbicide covers the entire cut-face of the stem.
   c. Avoid dripping excess on soil or desirable plants by keeping dish-wand upright between applications. Keep wand in a pail or tub if dripping is unavoidable.
2. PLANT and MONITOR as described in steps 5 and 6 of the Basic Manual Control Method. Repeat cut-stem herbicide application as needed.

Mowing Method

This method should be used when:

- There is little or no slope
- The ground is dry and firm year-round
- There are no desired plants in or around invasion

1. MOW blackberry at least 4 times each year during the growing season (March-November). Continued mowing over several years will starve the roots and kill the plants, but mowing must be consistent. If blackberry is left alone for a prolonged amount of time, thickets will grow too large to control by mowing.
2. PLANT and MONITOR as described in steps 5 and 6 of the Basic Manual Control Method. It will likely take longer than 3 years to remove blackberry by mowing alone. Do not plant until mowing has successfully eradicated the blackberry.

Kudzu

Pueraria lobata

Class 1 - Eradication Required
Property owners should not attempt to remove this plant. Call the City to arrange removal

Overview

Kudzu is one of the most difficult weeds to control in the entire United States. It is most prevalent in the southeastern part of the country. Native to Japan, Kudzu was introduced as early as 1876 as an ornamental garden plant. Growing up to 60 feet a year, it poses a serious danger to the balance of our local ecosystems and timber industry. Because kudzu is much more aggressive even than English ivy, it is important to be vigilant about preventing its growth in Oregon. It was first spotted in Oregon in 2000 and was immediately eradicated.

How to Identify

Kudzu is a climbing, coiling, and trailing vine in the pea family. It has compound leaves with three fuzzy leaflets. The individual leaflets are spade or mitten-shaped and usually about three inches in length and lobed. The stems are brown and covered in a velvety hair. In the summer, pea-like purple and red flowers bloom along the mature vines. Kudzu can spread aggressively in several different ways, making it extremely important to control. It will expand by roots and by stolons (runners) that root to form new plants – much like strawberries. It can also spread through seeds which grow in the pea-like pods and mature in the fall.

When to Remove

It is easiest to remove root masses when the soil is moist, as in the early spring. Kudzu is easily spread by seed, so begin removal before the seed pods have a chance to mature. Thus, spring and early summer are the best times to remove kudzu.

Lookalikes:

Kudzu has similar growing patterns to clematis and some grape vines, but should be easily distinguished by its' large spade or mitten-like leaves.

Form Example, by Tom Forney, Oregon Department of Agriculture

Flower Example, by Tom Forney

Tendril Example, by Tom Forney

Basic Manual Control Method:

This method should be used when:

- Terrain is flat or gently sloped
- Invasion may be near surface water
- There are fewer than 50 stems
- There are desired plants in or around invasion

Tools to choose from:

- Gloves
- Hand saw
- Loppers or hand pruners
- Shovel or Pulaski

For small/new infestations:

1. If you find kudzu in Gresham, please call the Department of Environmental Services, Watershed Division (503-618-2246) and REPORT any sightings of this weed.
2. CUT back an area of vines over the ground to uncover where the plant attaches to the soil. Leave a portion of the stem attatched to identify root masses.
3. CUT and REMOVE ROOT CROWNS and all rooting runners. Use a shovel or a Pulaski as older crowns tend to be deeply rooted. Crowns can range from pea-size to basketball-size. If any portion of a root crown remains after attempted removal, the plant will likely grow back. Leave other parts of the root system.
4. If kudzu has climbed into a tree: CUT the vines as high as possible and remove root crowns from the soil as described above. Leave vines in trees for at least one dry season to be removed later if necessary.
5. PLANT native plants in the area that is being controlled after the bulk of the invasive plants are removed. This will help to repopulate the area with desired species and prevent new and recurring invasions.
6. MONITOR the site. It is crucial to come back every 1-4 months to reassess the area and to pull any regrowth that has sprouted.

Chemical Control Method

As with any pesticide use, follow instructions on the label and always wear protective clothing and eyewear. Always use a product appropriately labeled for the site and strictly follow label rates. Unless approved by City of Gresham staff site manager, do not apply herbicide closer than 70 feet from a waterway or surface water (such as a stream or pond).

This method should be used when:

- Walking may be difficult on slopes
- Invasion may be near surface water such as wetlands, ponds or streams
- There are fewer than 50 stems
- There are desired plants in or around invasion

Tools to choose from:

- Herbicide applicator; dishwand
- Herbicide (see recommendations below)
  - An aquatic/fish approved herbicide product of up to 53.8% Glyphosate such as Rodeo or Aquamaster.
  - An aquatic/fish approved herbicide product of Triclopyr such as Renovate or Garlon 3A.
  - For a more natural solution, try a vinegar-based herbicide. These can be made at home by combining vinegar with salt, citrus or soap (visit gardening websites or call the City for recipes)

1. CUT-STEM APPLICATION may be used with large, woody stems. Apply rates as specified for kudzu when using chemical herbicide. Apply product liberally, directly and evenly to a freshly cut stem. Avoid dripping product on other plants. Apply herbicide within 30 seconds of the cut.
2. PLANT native plants in the area that is being controlled after the bulk of the invasive plants are removed. This will help to repopulate the area with desired species and prevent new and recurring invasions.
3. MONITOR the site. It is crucial to come back every 1-4 months to reassess the area and to pull any regrowth that has sprouted.

Old Man's Beard or Traveler's Joy

Clematis vitalba

Class 2 - Removal Highly Recommended
Removal methods are reasonable for the average property owner to perform

Overview

Clematis is a climbing vine that can completely cover whole groves of trees at any height. Clematis shades out leaves and weighs trees down, posing a hazard to buildings, vehicles and pedestrians in high wind and rain events. Often found near roadways and at the forest edge, clematis is a quickly spreading vine that is threatening our native plants. This invasive is widespread throughout the entire Pacific Northwest and has diminished the diversity of forests and green spaces.

How to Identify

Clematis is a fast growing perennial vine, with obvious grooves along its length. Leaves are lime green, ovate and deciduous. Flowers are small, thin, greenish white, and tend to grow in loose clusters. Fruits emerge and are often showier than the flowers. Fluffy and feathery tendril-like hairs hang from each tiny seed, which gave the plant its common name "Old Man's Beard."

When to Remove

The best time to manually remove clematis is when the soil is moist. Removing the roots will be easiest during fall and spring when temperatures are mild. If using the chemical control method, May-August is the ideal time to treat.

Clematis vines can grow 20-50 feet per year depending on various conditions, thus it is crucial to remove this plant as quickly as possible.

Lookalikes:

Honeysuckle (Lonicera ciliosa) is a wide-spread climbing native that can look like clematis when it isn't in bloom. However, the flower of the native honey suckle is distinctive, with a bright orange, trumpet shaped flower.

Form Example, by Tom Forney, Oregon Dept. of Agriculture

Flower Example, by Tom Forney

Seed Example, by Tom Forney

Basic Manual Control Method:

This method should be used when:

- Terrain is flat or gently sloped
- Invasion may be near surface water
- There are desired plants in or around invasion

Tools to choose from:

- Gloves
- Loppers or hand pruners
- Shovel
- Cardboard

1. Depending on whether the vine is running along the ground or in a tree, different removal methods should be used. Pulling vines down from trees can harm the tree by pulling off bark, twigs and leaves. This could also cause large branches or entire trees to fall on people or other valuable things! DO NOT pull vines off of trees.
2. If a clematis vine is in a tree, CUT the vine well above ground, at about eye level or as high as possible. Remove the lower portion of the cut vine and pull or dig out the attached roots, the hanging vines will die on their own.
3. If a clematis vine is running along the ground, use gloves to PULL up the entire vine. Either pull or dig roots from the ground.
4. When disposing vines, make sure to keep all plant parts off of the soil as they can reroot in certain conditions. Either pile vines on top of 2-3 layers of cardboard on site, or compost vines off site. To further prevent clematis from rerooting, it may be helpful to turn piles over occasionally and check the underside for new growth.
5. PLANT native plants in the area that is being controlled after the bulk of the invasive plants are removed. This will help to repopulate the area with desired species and prevent new and recurring invasions.
6. MONITOR the site. It is crucial to come back every 6-12 months to reassess the area and to pull the inevitable regrowth that has sprouted. This will effectively prevent re-infestation.

Chemical Control Method

As with any pesticide use, follow instructions on the label and always wear protective clothing and eyewear. Always use a product appropriately labeled for the site and strictly follow label rates. Unless approved by City of Gresham staff site manager, do not apply herbicide closer than 70 feet from a waterway or surface water (such as a lake or pond).

This method should be used when:

- Walking may be difficult on slopes
- Invasion is >70ft from surface water such as wetlands, ponds or streams
- There are few desired plants in or around invasion

Tools to choose from:

- Herbicide applicator; dish wand
- Herbicide (see recommendations below)
  - An aquatic/fish approved herbicide product of up to 53.8% Glyphosate such as Rodeo or Aquamaster.
  - For a more natural solution, try a vinegar-based herbicide. These can be made at home by combining vinegar with salt, citrus or soap (visit gardening websites or call the City for recipes)

1. Fill dish-wand with herbicide. If dish-wand has no fillable handle, soak sponge in small amount of herbicide ensuring it does not drip on soil or desirable plants.
2. Cut clematis vine 1-2 inches above the ground, then immediately apply herbicide-soaked dish-wand to the bare stem. Ensure the herbicide covers the entire cut-face of the stem.
3. Avoid dripping excess on soil or desirable plants by keeping dish-wand upright between applications. Keep wand in a pail or tub if dripping is unavoidable.

Periwinkle

Vinca major, Vinca minor

Class 2 - Removal Highly Recommended
Removal methods are reasonable for the average property owner to perform

Overview

Vinca major and *Vinca minor* were both introduced to Oregon originally as flowering ornamental garden plants. Native to Europe, the *Vinca* plant is also commonly known as Periwinkle because of the color of its flowers. Due to its ability to create dense, rapidly spreading mats that choke out native plants, it has the potential to become highly invasive. The California coast has already been fighting the spread of *Vinca* for several years, and thus, we need to be aware of its presence here in Oregon. It is a fairly common plant and becomes a nuisance as it "smothers" native species, increases erosion and reduces water quality in nearby lakes and streams.

How to Identify

Vinca is an herbaceous plant with slender trailing stems typically about 3-6 feet in length. It is a low-lying groundcover and grows to a height of about 8-30 inches above the ground, creating a dense mass. *Vinca* leaves are opposite and fairly small - ranging from ¼ of an inch to 3 inches in length. The dark green, thick, leathery leaves are evergreen on both species.

When to Remove

Since most *Vinca* reproduces through resprouting roots and stems and not by seed, it can be pulled at any time of the year. However, it is typically easiest to pull when the soil is moist. Early spring is usually the best time to attempt a large-scale removal effort.

Lookalikes:

Vinca major and *Vinca minor* look very similar; the *V. major* is simply a larger plant. Both are potentially invasive in our area and should be pulled to prevent infestation.

Vinca minor Form Example, by Leonora Enking

Vinca minor Flower Example, by Nedra

Vinca major Example, by Leonora Enking

Basic Manual Control Method:

Hand pulling is labor-intensive but will yield the best results if all root nodes and stolons are removed.

This method should be used when:

- The soil is moist
- Invasion may be near surface water
- There are desired plants in or around invasion
- Seeds are not present on plant

Tools to choose from:

- Able hands and gloves
- Hand trowels or Dandelion forks
- Tarps or large cardboard sheets
- Mulch

1. HAND PULL or RAKE the plant to remove it from the soil. It is important to remove all root pieces to prevent resprouting. This may require the use of a hand trowel.
2. PILE on two layers of cardboard and make sure to turn the pile often (at least once every two months) to prevent rerooting. If possible, bag small root fragments and dispose of them in a landfill to prevent regrowth. Label the bag "INVASIVE PLANT PARTS – DO NOT COMPOST".
3. If plants cannot be left on site, BAG and dispose of them with the root pieces.
4. Covering site with at least two layers of cardboard, mulching or both should help prevent regrowth.
5. PLANT native plants in the area that is being controlled after the bulk of the invasive plants are removed. This will help to repopulate the area with desired species and prevent new and recurring invasions.
6. MONITOR the site. It is crucial to come back every 2-3 months to reassess the

   area and to pull the inevitable regrowth that has sprouted. Riparian zones are particularly sensitive to *Vinca's* ability to sprout and reroot in moist environments. Monitor carefully.

Other Control Methods:

Because it is possible to eradicate *Vinca* through manual means it is not recommended to use herbicide on the dense mats. The thick waxy coating on the leaves prevents herbicide from entering the plant. If you are having trouble eradicating this noxious weed on a particular site, please contact the City of Gresham for a consultation on alternative methods. There are herbicides that, when used in combination with other methods, may be effective.

Puncturevine

Tribulus terrestris

Class 1 - Eradication Required
Removal methods are reasonable for the average property owner to perform

Overview

Puncturevine is native to tropical areas of southern Europe and Asia, as well as some areas of Africa and Australia. In America, it has invaded dunes, coastal lands, median strips and many other disturbed areas. It was first introduced to coastal regions because of its' extreme tolerance of salt and drought conditions. Puncture vine can grow quickly and prevent other native plants from thriving. The plant gets its name from the spiny fruit it produces which is infamous for puncturing bicycle tires. Puncturevine is known to be toxic to sheep, but its' thorny fruit also creates dangerous conditions for other livestock, people, and pets. It is not yet widespread in Gresham, but it is important to make sure any plants found are destroyed before they have a strong hold.

How to Identify

The plant is a low lying annual herb that forms dense, flat groundcover patches. However, on occasion it will grow upwards when surrounded by taller plants or in shaded areas. The dark green leaves look similar to locust leaves (pinnately compound) and leaflets are generally a quarter of an inch long. The flowers, appearing throughout the summer, are bright yellow and only about an inch in diameter. A week after flowering, the plant produces the spiny fruit which are ½ inch wide.

When to Remove

Puncturevine germinates in the spring from seeds left in the soil during previous years. It's best to remove plants before May.

Lookalikes:

Puncturevine is relatively easy to identify and there are no native plants that look similar to puncturevine.

Form Example, by David Prasad

Flower Example, by Tony Rodd

LeafExample, by D. Eickhoff

Basic Manual Control Method:

Long term puncturevine control is achieved through depleting the number of seeds in the soil. Persistence is important as seeds are viable for many years.

This method should be used when:

- Terrain is flat or gently sloped
- Invasion may be near surface water
- There are desired plants in or around invasion

Tools to choose from:

- Able hands and thick gloves
- Thick, protective clothing and shoes
- Hand trowel or dandelion fork
- Shovel, hoe, or Pulaski
- Rake
- Old carpet or clothing to collect burrs

1. HAND PULL or HOE up the plants, preferably when no flowers or seeds are present. Make sure to sever the taproot to remove the above-ground mass. Puncturevine is not known to resprout from cut taproots.
2. RAKE and inspect area for dropped seed burrs. It is important to remove as many visible seeds as possible to prevent growth the next year. This can also successfully be done by laying a piece of carpet face-down or loose-knit fabric on the ground rubbing it lightly into the ground, allowing the burrs to become attached to it.
3. DO NOT COMPOST seeds. Bag them (and any plants with seeds or flowers attached) and label the bag "INVASIVE PLANT PARTS – DO NOT COMPOST". Dispose of this in a trash bin destined for a landfill.
4. If no seeds or flowers are present, COMPOST plant parts in a yard or curbside compost bin, or take to a composting facility. It is unknown if puncturevine will continue to grow if left on-site above ground. If left onsite, the pile must be monitored at least 3 times during the growing season for new growth.
5. CHECK shoes, gear and clothing for attached burrs and remove them to prevent spreading and re-infestation.
6. PLANT native plants in the area that is being controlled after the bulk of the invasive plants are removed. This will help to repopulate the area with desired species and prevent new and recurring invasions.
7. MONITOR the area every few months and pull the plants that develop from seeds left in the soil. This will have to be done over the course of at least 5 years if seeds may be present in the ground.

Other Control Methods:

If manual control is not feasible with the population of puncture vine you are trying to control, the City can assist you in finding an appropriate alternative. For most populations, manual control is much easier than chemical or biological methods.

Hedge False Bindweed, Morning Glory

Calystegia sepium ssp. angulata

Class 2 - Removal Highly Recommended
Removal methods are reasonable for the average property owner to perform

Overview

Field bindweed is native to Europe and Western Asia. It was introduced to America during colonial times. In Gresham, as well as all over the Pacific Northwest, it is prevalent in backyards and natural areas. It grows rapidly and will often out-compete agricultural crops for water and nutrients. The twining nature of field bindweed has been known to bind up equipment, and reduce agricultural yields by up to 50% in some areas, especially in orchards and vineyards.

How to Identify

Field bindweed is a long-lived perennial that creates a dense, viney ground cover and has the ability to climb. The climbing, twining stems can grow to over six feet in length. Bright-green leaves are arrowhead shaped and typically 1-2 inches long. The flowers are white or pinkish in color and are shaped like a funnel with a 1-2 inch diameter. The seeds are a dark, brownish gray color and only about 1/8 inch in length. The flowers typically go to seed in late summer.

When to Remove

It is best to remove hedge false bindweed when the soil is still quite moist, such as in early spring. It is also a good idea to remove the plants before seeding (in late summer) since they are viable for many years.

Lookalikes:

Hedge bindweed (*Calystegia sepium*) looks similar to hedge false bindweed and has similar invasive characteristics. The plant parts tend to be somewhat larger than field bindweed. This can be treated with the same methods used for field bindweed. There are also many ornamental cultivars with varying flower colors.

Form Example, by Weed Science Society of America

Flower Example, by Weed Science Society of America

Leaf Example, by csfgirl

Basic Manual Control Method:

This method should be used when:

- Terrain is flat or gently sloped
- Invasion may be near surface water
- The soil is moist
- There are desired plants in or around invasion

Tools to choose from:

- Able hands and gloves
- Loppers/Hand Pruners
- Hand trowels or dandelion forks
- Tarps to collect vines as they are pulled
- Mulch, fiber matting or black plastic

1. PULL bindweed from the ground when soil is moist. Remove as much plant matter as possible. This may require the use of a shovel if the soil is dry or if the plant is mature. Seeds and roots left in the ground will often sprout and continue to grow.
2. If there are no seeds or flowers present in the pulled plant matter, COMPOST the plant with any yard debris.
3. If there are seeds or flowers present, dispose of the seeds, flower heads, or the entire plant in a waste bag or bin destined for a landfill. Label the bag "INVASIVE PLANT PARTS – DO NOT COMPOST" to ensure it is not mistaken for yard waste.
4. For better results, MULCH area where the invasive has been pulled. Mulch or fiber matting should completely cover control site as well as a 5-30 foot border around the site depending on length of roots. If mulching a site, monitor border and any openings in the covering at least twice a year and pull out any growth.
5. PLANT native plants in the area that is being controlled after the bulk of the invasive plants are removed. This will help to repopulate the area with desired species and prevent new and recurring invasions.
6. MONITOR the area yearly. Seeds remain viable for up to 20 years.

Chemical Control Method

As with any pesticide use, follow instructions on the label and always wear protective clothing and eye-wear. Always use a product appropriately labeled for the site and strictly follow label rates. Unless approved by City of Gresham staff site manager, do not apply herbicide closer than 70 feet from a waterway or surface water (such as a stream or pond).

This method should be used when:

- Walking may be difficult on slope
- Invasion is >70ft from surface water
- There are few desired plants in or around invasion
- Invasion is too large to remove manually

Tools to choose from:

- Herbicide applicator; dishwand
- Herbicide (see recommendations below)
  - An aquatic/fish approved herbicide product of up to 53.8% Glyphosate such as Rodeo or Aquamaster.
  - For a more natural solution, try a vinegar-based herbicide. These can be made at home by combining vinegar with salt, citrus or soap (visit gardening websites or call the City for recipes)

1. When leaves are dry, wipe or spray on leaves at the labeled rate. If using a Glyphosate based herbicide, it may be most efficient to treat right after flowering occurs in late summer. In the spring, triclopyr generally yields the best results.
2. It may be most efficient to mulch area and then control any new growth with spot treatments of herbicide. This treatment will require bi-yearly monitoring and control, best performed in the spring and then again in late summer.
3. PLANT native plants in the area that is being controlled after the bulk of the invasive plants are removed.
4. MONITOR the area.

False Brome

Brachypodium sylvaticum

Class 1 - Eradication Required
Removal methods are reasonable for the average property owner to perform

Overview

False brome is a perennial bunchgrass that stays green throughout the year and is very shade tolerant. This grass is native to North Africa and Eurasia, but spreads quickly here in the Pacific Northwest. False brome is a particularly problematic weed because of its ability to grow both in open areas such as prairie and roadsides as well as in shaded areas such as a forest understory.

How to Identify

Because of the difficulty in distinguishing false brome from other bunch grasses, it is advised that the City of Gresham is contacted to confirm a positive identification. It is easiest to identify between August and November because other grasses generally turn brown at this time; false brome remains green year-round.

One of the most distinctive features of false brome is its' bright green color. Leaves are long, flat and floppy, ranging from 1/4 to 1/3 inch wide. The leaves are bordered with a fringe of tiny hairs that are visible to the naked eye. Flowers (look like wheat seeds), called spikelets, are tiny, long and are attached directly to the stalk.

When to Remove

Seeds appear in June and may continue to develop until October. Removal is best when done before seed pods develop, but it may be easier to spot false brome in the fall when other bunch grasses brown.

Lookalikes:

False brome is hard to identify because it looks like many other grasses. If you believe you have found false brome on a site, contact the City for assistance in identifying and managing the plants.

Form Example, by Glenn Miller, Oregon Dept. of Agriculture

Flower Example, courtesy of Institute for Applied Ecology

Leaf Example, by Glenn Miller, ODA

Basic Manual Control Method:

This method should be used when:

- Terrain is flat or gently sloped
- Invasion may be near surface water
- The soil is moist
- There are desired plants in or around invasion

Tools to choose from:

- Trowels, gloves and able hands
- Shovels

1. Using gloves and a trowel, loosen roots in the soil and then PULL plant, including roots, from the ground. It is easiest to pull false brome from the base of the plant, when soil is moist and unfrozen.
2. REMOVE as much of the plant as possible, taking care to pull roots from soil.
3. If there are no seeds present, COMPOST in a yard or curb bin. Bag seeds or plants containing seeds and label bags for the landfill with "INVASIVE PLANT PARTS – DO NOT COMPOST". Do not compost seeds. NEVER dump clippings in parks or natural areas.
4. CLEAN all vehicles, shoes and equipment on site that may have come in contact with false brome seeds. Seeds travel easily and many infestations are spread through field equipment.
5. PLANT native plants in the area that is being controlled after the bulk of the invasive plants are removed. This will help to repopulate the area with desired species and prevent new and recurring invasions.
6. MONITOR the site every 6-12 months for at least 3 years to ensure false brome does not return. Simply pull any new growth from the ground and dig out any roots that you find.

Other Control Methods:

As with any pesticide use, follow instructions on the label and always wear protective clothing and eye-wear. Always use a product appropriately labeled for the site and strictly follow label rates. Unless approved by City of Gresham staff site manager, do not apply herbicide closer than 70 feet from a waterway or surface water (such as a stream or pond).

This method should be used when:

- Walking may be difficult on slopes
- Invasion is >70ft from surface water such as wetlands, ponds or streams
- There are few desired plants in or around invasion
- Treatment is performed mid-summer through fall

Tools to choose from:

- Herbicide applicator; dishwand
- Herbicide (see recommendations below)
  - An aquatic/fish approved herbicide product of up to 53.8% Glyphosate such as Rodeo or Aquamaster.
  - For a more natural solution, try a vinegar-based herbicide. These can be made at home by combining vinegar with salt, citrus or soap (visit gardening websites or call the City for recipes)

1. Ensure plants to be sprayed have had a chance to DRY for at least 24 hours.
   - To increase the success of herbicide, it may be beneficial to MOW larger populations of false brome a few times during the spring and summer before herbicide application.
   - In the fall, SPRAY Glyphosate-based herbicide on plants. Aquamaster and Rodeo are appropriate for Gresham sites. Check the label for appropriate rates.
   - If there is a large seedbank at the site, it may be necessary to SPRAY again the following spring to manage seedlings.
2. SEED area immediately with sterile grass mix or a native grass and wildflower mix.
3. PLANT the controlled area with native species once the area has been cleared. This will help repopulate the area with desired species and stress any false brome that is left behind.
4. MONITOR all false brome sites that are being controlled. Check for new seedlings from April until October for 3 years.

Garlic Mustard

Alliaria petiolata

Class 1 - Eradication Required
Removal methods are reasonable for the average property owner to perform

Overview

Garlic mustard was originally introduced in North America for culinary uses. Today it has proven to be a very serious invasive species in many states. Garlic mustard is a groundcover that can grow in established forests, wetlands, disturbed soil, and people's yards. Once established, it exudes a chemical which impedes native shrubs and trees from getting the nutrients they need.

How to Identify

Garlic mustard is a biennial that takes two different forms in it's first and second years. The first year it forms a small rosette of round, kidney-shaped leaves. In the second year, an elongated flower stalk appears (growing 12-48 inches) and the leaves grow alternately along the stem. These leaves are different from the first year growth in that they are sharply toothed with a triangular shape. Plants have one long, flowering stem with several white flowers. When crushed between the fingers the plant gives off a distinct garlic smell, thus distinguishing it from lookalikes.

When to Remove

It is most important to prevent plants from flowering and going to seed. Handling garlic mustard when seed pods are opening will scatter seeds. First year growth will not produce seed and may be removed at any time. Second year growth must be removed by late April or May.

Lookalikes:

Garlic mustard has several different look-alikes including wild ginger (*Asarum caudatum*), the piggy-back plant (*Tolmiea menziesii*), and fringecup (*Tellima grandiflora*). It also looks like the 'silver dollar' or 'money plant' (*Lunaria annua*) when it's young. Make sure to check for the garlicky smell of the leaves when removing plants to confirm garlic mustard.

Form Example, by Glenn Miller, Oregon Dept. of Agriculture

Flower Example, by Glenn Miller

Leaf Example, by Glenn Miller

Basic Manual Control Method:

This method should be used when:

- Terrain is flat or gently sloped
- Invasion may be near surface water
- The soil is moist
- There are desired plants in or around invasion

Tools to choose from:

- Gloves
- Large Bags or 5-Gallon buckets
- Tarp
- Small garden spade (optional)

1. HAND-PULL and REMOVE rosettes if at all possible. These are first year growths and will not flower and seed until the second year. Simply put in a yard compost or a yard debris bin. NEVER dump clippings in parks or natural areas.
2. HAND-PULL and REMOVE all stalks that have not yet started budding (do this by April). It is important to remove the roots, as these can continue to grow stalks.
3. Garlic mustard is notorious for seeding after it has been pulled and piling the plants may give them enough moisture and warmth to do this, so spread plants out in a DRY area. Place plants on top of a TARP if available. If there are no signs of flowers, compost these once they are dry. For larger infestations, see step 4.
4. If plants cannot be dried, bag them and wait three months to see if they have seeded. If they have not seeded, they may be composted in a closed container such as a yard or curb-side bin. They may also be taken to a composting facility.
5. For plants that have FLOWERS or SEEDS, take special precautions.
   - Carefully remove seeds and place into garbage bags labeled "INVASIVE PLANT PARTS – DO NOT COMPOST".
   - Place the entire garbage bag into a non-organic waste bin destined for the landfill.
6. CLEAN off equipment, shoes, pets, and any clothes that have potentially come in to contact with seeds. Seeds can be transported very easily to new places and thus create a new invasion.
7. PLANT native plants in the area that is being controlled after the bulk of the invasive plants are removed. This will help to re-populate the area with desired species and prevent new and recurring invasions.
8. Seeds can remain viable in the soil for up to five years. It is important to MONITOR the site once or twice a year to remove any new growth.

Chemical Control Method:

As with any pesticide use, follow instructions on the label and always wear protective clothing and eye-wear. Always use a product appropriately labeled for the site and strictly follow label rates. Unless approved by City of Gresham staff site manager, do not apply herbicide closer than 70 feet from a waterway or surface water (such as a stream or pond).

Herbicide is not recommended because hand-pulling is effective.

If the infestation is very large or in a dangerous location, herbicide use may be an option. Contact the City of Gresham to determine an appropriate herbicide method for the control site.

Giant Hogweed

Heracleum mantegazzianum

Class 1 - Eradication Required

Property owners should not attempt to remove this plant, Call the City to arrange removal

Overview

Giant hogweed is not only an invasive plant, but it is also a serious health hazard to humans and possibly other animals. Growing fast and tall, this is truly a giant plant and its watery sap can cause serious damage to skin. The sap is a phototoxin which makes skin ultra-sensitive to the sun. Contact may cause blisters and various types of rashes that can last for over a year and often leave scars. Contact with the eyes can lead to blindness. Always wear protective clothing that entirely covers any exposed skin.

How to Identify

Giant hogweed is most easily identified by its sheer size both in stalk height and in leaf spread. Plants generally grow 8-15 feet tall on a hollow, ridged stalk that is light green with a deep red/purple coloring along ridges and speckled or 'smeared' between nodes. Full-grown stalks can be as thick as a forearm. Leaves are 2-5 feet wide and are deeply lobed. Flowers are relatively small, white and grow in large umbrella-like formations. Stalks are covered in small stubble-like hairs that emerge from small bumps. Giant hogweed has small seeds that travel easily by wind, water, and on animals.

When to Remove

Giant hogweed flowers from May-July, but generally only flowers after three years. Early spring or late winter is an ideal time to control this weed. If flowers and seeds are contained and properly disposed of, control may occur at any time.

Lookalikes:

Giant hogweed closely resembles a native plant commonly known as cow parsnip (*Heracleum lanatum*). These are distinguishable from giant hogweed as they grow to a maximum of 'only' 6-7 feet and leaves are much smaller and less lobbed. Also, cow parsnip does not have hairs or bumps along stems.

Form Example, by Tim Butler, Oregon Dept. of Agriculture

Leaf Example, by Tim Butler

Stock Example, by Tim Butler

Basic Manual Control Method:

This method should be used when:

- Terrain is flat or gently sloped
- Invasion may be near surface water
- There may be desired plants in or around invasion
- There are fewer than 100 plants being treated

Tools to choose from:

- Gloves and able hands
- Shovels, trowels and loppers

1. **PREPARE by wearing clothing that completely covers all skin that may come in contact with giant hogweed sap or plant parts.**
2. PULL stalks out of the ground if possible. Care should be taken to do this smoothly so roots remain attached to the stalk. It may be helpful to use a trowel to loosen roots and ease the root mass from the ground. Larger plants may need to be cut in stages, removing smaller stalks first and leaving a few feet of the main stalk to locate the root mass.
3. DIG out larger root masses with a shovel. It is important to remove as much plant matter as possible because giant hogweed will grow new plants from roots left behind.
4. If there are no flowers present, COMPOST this plant in an area that will not be disturbed. Ensure people and pets will not come in contact with the plant. The plant matter may be buried after it has dried for a month. NEVER dump clippings in parks or natural areas.
5. PLANT the controlled area with native species once the area has been cleared. This will help repopulate the area with desired species and stress any hogweed that is left behind.
6. MONITOR all giant hogweed sites that are being controlled. Check for new shoots and pull or dig up new growth. It is easiest to pull new growth when it is a foot or two tall and soil is moist.

Other Control Methods:

As with any pesticide use, follow instructions on the label and always wear protective clothing and eye-wear. Always use a product appropriately labeled for the site and strictly follow label rates. Unless approved by City of Gresham staff site manager, do not apply herbicide closer than 70 feet from a waterway or surface water (such as a stream or pond).

This method should be used when:

- There are more than 50 stems
- Walking may be difficult on slopes
- Invasion is >70 feet from surface water such as wetlands, ponds and streams
- The soil may be dry
- There are no desired plants in or around invasion

Tools to choose from:

- Herbicide injector gun (JKInjectorTools.com); similar herbicide applicator
- Herbicide (see recommendations below)
  - An aquatic/fish approved herbicide product of up to 53.8% Glyphosate such as Rodeo or Aquamaster.
  - Triclopyr 3 SL or Renovate (will not harm grasses)
  - For a more natural solution, try a vinegar-based herbicide. These can be made at home by combining vinegar with salt, citrus or soap (visit gardening websites or call the City for recipes)

1. INJECTION is an incredibly effective way of controlling giant hogweed and generally yields very high mortality rates. Place a cork on the injection needle when not in use.
   - This method is best done in April or October. It may be performed any time between April and October.
   - INJECT each stem with 3-5ml of herbicide near the base of the stem, not higher than the third node.

- MARK stems that have been injected with bright paint. Bingo-markers or similar pens work well. Spray paint may be used but can be hard to localize on single stems.
- Small stems won't be large enough to inject. Instead, leaves may be wiped with herbicide.

2. FOLIAR SPRAY may be used to treat giant hogweed if injection is impossible.
   - CUT giant hogweed to the ground (may be unnecessary in early spring) and wait until new shoots reach an optimum height of 3-4 feet.
   - SPRAY Glyphosate (2-8%) or Triclopyr (0.75-5%) on leaves. Aquamaster, Rodeo and Renovate are appropriate for Gresham sites.
3. PLANT the controlled area with native species once the area has been cleared. This will help re-populate the area with desired species and stress any giant hogweed that is left behind.
4. MONITOR all sites that are being controlled. Check often for new shoots during the growing season.

Japanese Knotweed

Polygonum cuspidatum

Class 1 - Eradication Required
Property owners should not attempt to remove this plant, Call the City to arrange removal

Overview

Japanese knotweed is an herbaceous perennial native to Asia. In the Pacific Northwest, knotweed spreads quickly along stream banks, riparian areas, soggy roadsides, and moist disturbed sites. Due to its ability to spread via rhizomes it forms thick, dense colonies, much like bamboo. Colonies tend to completely crowd out other species and destroy local biodiversity. The invasive root system also has the ability to grow under foundations and into pipelines, causing severe structural damage.

How to Identify

The stems are smooth and hollow, though swollen at the nodes, much like bamboo. Stems often have red freckles or shading near nodes, or entire stalks may have a reddish hue to them. Unlike woody bamboo stalks, knotweed stalks are green and herbaceous. Flowers are small and grow in short, slightly drooping, branched clusters near the ends of the stalks. They are creamy white to greenish white in color.

When to Remove

This perennial dries, stiffens and dies back each fall with new growth appearing in the spring. Stalks may remain upright, brown and dead into the next season. Monitor for new populations in May and early June. Flowers form in July and August and often start to form a small amount of seeds by mid-August; complete removal by August. The plant is not self-pollinating and thus is most productively spread by rhizomes and traveling root fragments.

Lookalikes:

Knotweeds may be hard to distinguish between, but all are invasive.

Form Example, by Glenn Miller, Oregon Dept. of Agriculture

Flower Example, by Rich Old, XID Services

Leaf Example, by Glenn Miller

Basic Manual Control Method:

This method should be used when:

- Terrain is flat or gently sloped
- Invasion may be near surface water
- There are fewer than 30 stems
- There are desired plants in or around invasion

Tools to choose from:

- Gloves and able hands
- Shovels and loppers

1. PREPARE a pile where plant parts and soil containing roots can sit and dry out. If there is wet weather, this pile could be made under a covered area. Ensure pile has no potential to enter waterways. Alternatively, dispose of knotweed in bags destined for a landfill. Label bags: "INVASIVE PLANT PARTS – DO NOT COMPOST".
2. CUT back plants twice a month from April until August, then cut once a month until first frost. Cut to the ground using as few cuts as possible, make sure to keep small fragments isolated in a bag or on the pile, because they could re-sprout if left on the ground.
3. DIG out much of the root mass as possible in August. These may be as deep as 7 feet, but removing as much as possible is beneficial.
4. DRY plant matter and soil for 1-3 months in a prepared area. Once thoroughly dried, dispose in compost or simply bury in the ground.
5. After two seasons of control, COVER the knotweed site with geotextile fabric matting (or black plastic) if possible. This matting will have to remain in place for several years. With plastic covering, be sure to remove plastic after the fifth year. Covering should extend >10ft around knotweed colonies and must be sturdy, staked and without holes. If holes are inevitable, monitor these areas closely.
6. PLANT the controlled area with native species once the area has been cleared.
7. MONITOR all knotweed sites that are being controlled. Check for new shoots from April until October, and always check for growth within 20 ft of control site.

Other Control Methods:

As with any pesticide use, follow instructions on the label and always wear protective clothing and eyewear. Always use a product appropriately labeled for the site and strictly follow label rates. Unless approved by City of Gresham staff site manager, do not apply herbicide closer than 70 feet from a waterway or surface water (such as a stream or pond).

This method should be used when:

- Walking may be difficult on slope
- There are desired plants in or around invasion
- Invasions may be large

Tools to choose from:

- Herbicide applicator; dishwand, for wiping
- Herbicide injection gun; JKInjectionTools.com
- Herbicide (see recommendations below and follow label for rates)
  - An aquatic/fish approved herbicide product of up to 53.8% Glyphosate such as Rodeo or Aquamaster.
  - Tricolpyr SL 3 or Renovate may be used as a foliar spray.
  - An aquatic/fish approved Imazapyr-based herbicide such as Habitat may be effective as a foliar spray.
  - For a more natural solution, try a vinegar-based herbicide. These can be made at home by combining vinegar with salt, citrus or soap (visit gardening websites or call the City for recipes)

1. INJECTION is an incredibly effective way of controlling knotweeds and generally yields very high mortality rates. Place a cork on the injection needle when not in use.
   - This method is best done from June through September
   - Enter knotweed site carefully, making sure to recover and dispose of any free plant parts. Loose plant parts can develop roots and may begin new colonies on site or downstream.

- INJECT each stem with 3-5ml of Aquamaster near the base of the stem, not above the third node.
- MARK stems that have been injected with bright paint. Bingo-markers or similar pens work well. Spray paint may be used but can be hard to localize on single stems.

2. FOLIAR WIPE may be used to treat knotweed, but should only be used if plants are too small to inject.
   - CUT knotweed to the ground (may be unnecessary in early spring) and wait until new shoots reach an optimum height of 3-4 feet.
   - Fill dishwand and WIPE Glyphosate, Triclopyr, or Imazapyr on leaves. Aquamaster, Rodeo, Renovate and Habitat are appropriate for Gresham sites.
3. PLANT the controlled area with native species once the area has been cleared. This will help re-populate the area with desired species and stress any giant knotweed that is left behind.
4. MONITOR all sites that are being controlled. Check often for new shoots during the growing season.

Orange Hawkweed

Hieracium aurantiacum

Class 1 - Eradication Required
Removal methods are reasonable for the average property owner to perform

Overview

Orange hawkweed is currently only present in a few counties in Oregon, but it has great potential to take over roadsides, pastures and disturbed areas throughout the state. It is an easily spreading wildflower that can out-compete native vegetation by sending above-ground runners across soil which then root and grow into web-like colonies of flowers. Orange hawkweed seems to do best in disturbed areas with lots of light. Flowerbeds, meadows, pastureland, gardens and lawns are especially vulnerable.

How to Identify

These flower stems generally grow to about 12 inches tall and the basic flower structure resembles a dandelion. It has small clusters of flowers emerging from one stem. Flowers are very distinctive because of the bright red-orange color. The leaves are about six inches long, fuzzy and look like skinny bunny-ears. Although plants may be found alone, they will generally grow into dense mats that crowd out native or desired vegetation. If orange hawkweed is cut, it will exude a milky substance.

When to Remove

It is best to deal with this plant in spring or early summer before the seeds are present and when the soil is moist and loose, though it can be removed at any time.

Lookalikes:

Orange hawkweed looks similar to yellow hawkweed but can be easily identified when compared because of its bright yellow-orange center which is surrounded by a fiery red-orange. Both plants are invasive.

Form Example, by Bonnie Rasmussen, Oregon Department of Agriculture

Flower Example, by Jim Schultz

Leaf Example, by Bonnie Rasmussen

Basic Manual Control Method:

This method should be used when:

- Terrain is flat or gently sloped
- Invasion may be near surface water
- There are desired plants in or around invasion

Tools to choose from:

- Gloves
- Garden trowels or small shovels

1. When soil is moist, PULL plants up from the ground and place in a five-gallon bucket or a bag. Use your hands, a trowel or small shovel to remove roots and stolons.
2. If there are no flowers or seeds present, COMPOST in a yard or curb bin.
3. If there are flowers present, allow pulled plants to DRY up in order to cease seed growth. Do not dry plants on soil where plants may take root. COMPOST plant parts once plants are obviously dried and dead, usually within a month. NEVER dump clippings in parks or natural areas.
4. If there are seeds present, dispose of these parts or the entire plant in a waste bag. Label the bag "INVASIVE PLANT PARTS – DO NOT COMPOST" to ensure it is not mistaken for yard waste. You may compost all plant parts that are not flowers or seeds.
5. PLANT native plants in the area that is being controlled after the bulk of the invasive plants are removed. This will help to repopulate the area with desired species and prevent new and recurring invasions.
6. MONITOR the area once or twice a year after initial removal is completed to ensure new growth is pulled from the ground. Continue control if new plants are found.

Chemical Control Method

We do not advise using chemical control methods with this invasive species because it is easily controlled through manual removal. However, if you believe that manual removal is too difficult due to the nature of the invasion, the City of Gresham Watershed Division is able to assist you and help determine the best herbicide to use on a particular site.

Milk Thistle

Silybum marianum

Class 1 - Eradication Required
Removal methods are reasonable for the average property owner to perform

Overview

Milk thistle has been present in certain parts of Oregon for over a century. Often growing over 6 feet tall, milk thistle causes great damage to ecological health by taking over pasture land, meadows, roadways, and yards. It tends to grow in large patches with full sun. The thorny leaves, flowers and stems are a nuisance for people, pets and wildlife. The patchy growth pattern can take over native meadows, destroy pastureland and become so infested that acres will be unusable by people or wildlife.

This weed has been widely documented in Multnomah County. It is commonly found next to other invasive thistles. When ingested by livestock, it can be fatal.

How to Identify

Milk thistle is easily identified by its large thorny leaves that are a deep green with wide milk-colored marbled veins. The entire plant is covered in short and long spines. Plants will often grow in dense mounds that can be 6 feet tall. Sometimes mounds will grow against each other and sometimes they will be spaced apart. Flowers are distinctive purple thistles about the size of a tangerine. When flowers mature their hair-like purple petals make way for small black seeds which are attached to long white hairs, similar to other thistles and dandelions.

When to Remove

Flowers bloom from April to July. Removal should occur before flowers form in March and April.

Lookalikes:

There are many types of thistle and some are native to Oregon but none will have the milky veins present in the milk thistle leaf. Most thistles found in the county are not native, such as scotch thistle, bull thistle and Canada thistle.

Form Example, by Florent Beck

Flower Example, by Eran Finkle

Seed Example, by Matthew Byrne

Basic Manual Control Method:

This method should be used when:

- Terrain is flat or gently sloped
- Invasion may be near surface water
- There are desired plants in or around invasion

Tools to choose from:

- Gloves
- Loppers
- Shovels
- Hand pruners
- Optional: bag for flower/seed heads

1. If any flowers or seeds have emerged, CUT the flower/seed heads off of the plant and bag them separately. If long stems are left attached to the heads, they could continue to grow and produce seeds. For this reason, cut heads off just below the flower. Label bags "INVASIVE PLANT PARTS – DO NOT COMPOST" and dispose of bags in a trash destined for a landfill.
2. CUT down the rest of the plant and compost as desired. If the area is monitored, it should be okay to leave plant parts (no seeds or flowers!) on site. NEVER dump clippings in parks or natural areas.
3. Use a shovel or sturdy loppers to CUT STEM BELOW GROUND. It shouldn't be necessary to remove roots if there are no plant parts showing above ground. Cutting the plant stem as deep into the ground as possible will minimize regrowth.
4. PLANT native plants in the area that is being controlled after the bulk of the invasive plants are removed. This will help to repopulate the area with desired species and prevent new and recurring invasions.
5. MONITOR the site. It is crucial to come back every 6-12 months to reassess the area and to pull the inevitable regrowth that has sprouted. This will effectively prevent re-infestation.

Chemical Control Method

We do not advise using chemical control methods with this invasive species because it is easily controlled through manual removal. However, if you believe that manual removal is too difficult due to the nature of the invasion, the City of Gresham Watershed Division is able to assist you and help determine the best herbicide to use on a particular site.

Russian Knapweed

Acroptilon repens (also Centaurea repens)

Class 1 - Eradication Required
Removal methods are reasonable for the average property owner to perform

Overview

Several types of knapweeds were accidentally introduced from Eurasia in the early 1900s, probably as a contaminant in alfalfa seed. Russian knapweed is an aggressive and invasive noxious weed that grows well in open, disturbed areas. It is commonly found in pastures and fields and along roadsides. Russian knapweed is particularly troublesome due to the fact that it releases allelopathic chemicals which can suppresses other plant species, forming monoculture knapweed stands. This plant is also poisonous to horses. It is important to deal with this weed as quickly as possible and with diligence to prevent an infestation.

How to Identify

Russian knapweed is a creeping, herbaceous perennial with erect shoots up to 36 inches tall and with many branches. Lower leaves are 2 to 4 inches long and deeply lobed. Upper leaves are typically smaller, smoother and may be slightly lobed. The shoots and leaves of young plants are covered with dense gray hairs, giving them a soft appearance. Solitary flowers emerge in June and can be pink, lavender, or white. Flower heads are urn-shaped, single, and resemble thistle flowers although they have no thorns and are quite small. The flowers produce ivory-white seeds with a feather-like plume.

When to Remove

Russian knapweed emerges in early spring and flowers through the summer and into fall. The best time to remove the plant is in the early spring.

Lookalikes:

Spotted knapweed, meadow knapweed and diffuse knapweed are found throughout Oregon. These are also invasive plants and should be eradicated.

Form Example, by Lesley Richman, Burns, BLM

Flower Example, by Eric Coombs, ODA

Leaf Example, by Lesley Richman, Burns, BLM

Basic Manual Control Method:

This method should be used when:

- Terrain is flat or gently sloped
- Invasion may be near surface water
- There are desired plants in or around invasion

Tools to choose from:

- Gloves
- Hand trowel or dandelion fork
- Shovel or Pulaski
- Small weed-wrench

1. PULL individual plants out at the root. Pull out the entire "carrot-like" taproot to prevent re-sprouting. This may require only a small trowel for little plants but be prepared to use a shovel or Pulaski for deeper rooted ones. A weed-wrench may be successful at removing Russian knapweed if roots are stubborn. (If it is impossible to remove the mature, deeply rooted plants, chemical treatment may be necessary to prevent resprouting from root fragments.)
2. If there are no flowers or seeds present, COMPOST in a yard or curb bin. Note that the compost may be affected by allelopathic residues. With proper turning of compost, affected soil should be safe for gardening within two years. NEVER dump clippings in parks or natural areas.
3. If there are seeds or flowers present, dispose of the seeds, flower heads, or the entire plant in a waste bag or bin destined for a landfill. Label the bag "INVASIVE PLANT PARTS – DO NOT COMPOST" to ensure it is not mistaken for yard waste.
4. PLANT other native species once an area has been cleared. This will help to re-populate the area with desired species and to stress any resprouting knapweed.
5. MONITOR the area after initial removal is completed to ensure new growth is consistently pulled from the ground. The area will most likely need monitoring for at least 8 years due to aggressive resprouts. By the 3rd and 4th years, very little effort should be needed.

Chemical Control Method

A herbicide alone will not effectively manage the knapweed. However, due to its ability to resprout from root fragments, mature plants that are difficult to remove can be treated individually. Russian knapweed is very susceptible to fall-applied herbicides. The City of Gresham's Watershed Management Division can assist you in choosing the right method for your problem area. Simply call for assisstance.

Scotch Thistle

Onopordum acanthium

Class 1 - Eradication Required
Removal methods are reasonable for the average property owner to perform

Overview

Scotch thistle is a huge, hearty thistle covered with needle-like spines on the leaves and flowers which make it a painful barrier for people, pets and livestock. It has caused great amounts of damage to rangeland as it grows in large thickets and is so tall and dense that it shades out all native or desired grasses. This thistle has not yet been found around Gresham, but may pose a great threat if it spreads here and thus should be dealt with immediately when found.

How to Identify

In its first year, scotch thistle grows a spiny, leafy rosette 2-3 feet wide and just as tall. During the second year of growth this giant of a weed sends out incredibly long stalks which produce many flowers and leaves. This growth can be up to 8 feet tall in ideal conditions. The leaves are up to two feet long, thin, spiny and lobed. The leaves are generally wider and showier during the rosette stage. In the second year, leaves are partially attached to the stalk which is thick, spiny and lobed. In both stages, the leaves are thickly covered in hairs which give the plant a gray-green hue.

When to Remove

Scotch thistle begins flowering in May and June. It is best to remove plants before flowering, by April at the latest, to ensure that seeds do not form. Plants may continue to grow and flower through the beginning of fall, so the invaded site should be monitored monthly from early spring until mid-fall.

Lookalikes:

There are many other types of thistle in the Pacific Northwest, so be sure to identify the thistle before treating as some require different forms of removal for optimum success. However, most thistles are invasive in the Gresham area.

Form Example, by José María Escolano

Flower Example, by Joost J. Bakker

Leaf Example, by José María Escolano

Basic Manual Control Method:

These methods will be very effective if performed before the thistle goes to seed, especially if it is still in the rosette stage. If scotch thistle is allowed to seed the problem site may quickly become worse.

This method should be used when:

- Terrain is flat or gently sloped
- Invasion may be near surface water
- There are desired plants in or around invasion

Tools to choose from:

- Gloves and thick clothing to prevent sharp spines from coming in contact with skin.
- Eye-protection may be necessary to protect from spines
- Garden spade or similar tools
- Hand pruners and/or loppers
- Shovels

1. In the rosette stage, PULL or DIG OUT plant using a spade or shovel to sever the main root underground. Generally, plants will not grow back if all of the above ground matter is removed along with a portion of the underground root.
2. If the plant is larger, use hand pruners or loppers to TRIM back the plants spiny leaves and stalks. Once enough of the plant is removed to allow access to the main stalk, use a shovel to SEVER THE ROOT below ground and PULL the remaining above ground portions out.
3. If the flowers have emerged, CUT and BAG flower heads or fruiting bodies. These should be labeled "INVASIVE PLANT PARTS – DO NOT COMPOST" and put in the waste bin. The rest of the plant should be removed as in step 2.
4. COMPOST non-seeding plant parts in a yard bin or curbside compost bin. NEVER dump clippings in parks or natural areas.
5. Once scotch thistle is removed from a site, it is best to PLANT native shrubs or ground cover to compete with any new invasive seedlings that may appear. When planting a site after removing thistle, plant according to the amount of shade and water an area will be getting.
6. It is likely that an area infested with scotch thistle will have more than one growing season during a year. After plants are removed in the Spring, site should be MONITORED in summer and fall to check for new rosettes or flowering stalks.

Other Control Methods:

We do not advise using chemical control methods with this invasive species because it is easily controlled through manual removal. However, if you believe that manual removal is too difficult due to the nature of the invasion, the City of Gresham Watershed Division is able to assist you and help determine the best herbicide to use on a particular site.

Yellow Archangel

Lamiastrum galeobdolon

Class 1 - Eradication Required
Removal methods are reasonable for the average property owner to perform

Overview

Yellow archangel is a popular groundcover in North America, originating from Europe and Asia. Because of its ability to grow thick, dense mats, it has been planted in yards, flowerbeds and hanging baskets alike. Although it may be pleasant as a groundcover for a home, it can quickly cause great damage in forest habitat. Unlike many ornamental groundcovers, yellow archangel does extremely well in shade, allowing it to move into forested areas with ease. If left alone, it can take over forests and quickly choke out native flowers and shrubs.

How to Identify

Yellow archangel is a fast growing perennial that occasionally grows upright but generally creates a dense mat of groundcover. The leaves are typically oval-shaped and hairy with greyish-silver markings. Stems are typically purplish, hairy, and square-shaped. Flowering stems can grow 1 to 2 feet tall and produce small, yellow, bell-shaped flowers. These flowers grow in clusters, appearing close to the stem. The oil produced by the plant's leaves has an unpleasant odor, especially when leaves are crushed.

When to Remove

In order to prevent seeds from spreading, removing the plants before June is important. Hand-pulling in early spring when soil is moist will likely yield the best results with the fewest remaining root fragments.

Lookalikes:

Yellow archangel is in the mint family and may look similar to other mint groundcovers, but the coloring and variegation of the leaves easily distinguishes it from others.

Form Example, by Anne Tanne

Flower Example, by anemoneprojectors

Leaf Example, by anemoneprojectors

Basic Manual Control Method:

This method should be used when:

- Terrain is flat or gently sloped
- Invasion may be near surface water
- There are desired plants in or around invasion

Tools to choose from:

- Gloves and able hands
- Weed wrench
- Hand trowel or dandelion fork
- Shovel or Pulaski
- Loppers, hand pruners or saws

1. PULL out all plants and plant roots. Because this shrub can send suckers from roots, it is best to REMOVE all above and below ground plant parts.
2. COMPOST in a composting facility, or a curb-side composting bin. Backyard compost piles will not generate enough heat to destroy the plant. NEVER dump clippings in parks or natural areas.
3. If plants have seeds, CAREFULLY remove plants and bag up all seed heads. Label the bag "INVASIVE PLANT PARTS – DO NOT COMPOST" and dispose of them in the trash.
4. PLANT native plants in the area that is being controlled after the bulk of the invasive plants are removed. This will help to repopulate the area with desired species and prevent new and recurring invasions.
5. MONITOR the area and continue to remove any plants and roots that re-sprout. This should be done every 2-3 months for greatest success.

Chemical Control Method

Herbicide use can be effective on yellow archangel but it is most successful when combined with manual control and extensive monitoring for surviving and re-sprouting plants.

It is crucial to spray the plants in the spring, before they go to seed, as this will help prevent new plants from growing and sprouting from seed.

This method should be used when:

- Walking is difficult on slope and invasion is >70 away from water
- Invasion is too large to remove manually
- There are few desired plants in or around invasion

Tools to choose from:

- Herbicide applicator; dishwand
- Herbicide (see recommendations below)
  - An aquatic/fish approved herbicide product of up to 53.8% Glyphosate such as Rodeo or Aquamaster.
  - A triclopyr based, aquatic-approved herbicide labeled for field bindweed. Renovate is a good option.
  - For a more natural solution, try a vinegar-based herbicide. (visit gardening websites or call the City for recipes)

1. When leaves are dry, WIPE or SPRAY on leaves at the labeled rate. If using a Glyphosate based herbicide, it may be most efficient to treat right after flowering occurs in early summer. In the spring, triclopyr generally yields the best results.
2. One treatment generally does not effectively kill an invasion. We recommend using manual removal methods whenever possible, then using herbicide to destroy tough-to-reach areas or particularly problematic spots. Then, SPOT TREAT any new plants that emerge after treatment.
3. PLANT native plants in the area that is being controlled after the bulk of the invasive plants are removed. This will help to repopulate the area with desired species and prevent new and recurring invasions.
4. MONITOR the area. Yellow archangel is hearty and seeds remain viable for many years, so yearly observance of an area where yellow archangel has a history is very important.