

A FIELD
GUIDE TO

NORTHEAST
OREGON'S
NOXIOUS
WEEDS



Tri-County CWMA

*protecting northeast oregon's
natural resources*

NORTHEAST OREGON'S
NOXIOUS WEEDS
**A Field
Identification
Guide**
4th Edition



By: Tri-County CWMA
Director: Samantha Bernards

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CONTACTS

For Weed Identification
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Tri-County Region



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BAKER COUNTY WEED
CONTROL DEPARTMENT:
..... **541.523.0618**

UNION COUNTY
WEED CONTROL:
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PARTNERSHIP:
..... **541.426.8053**

WALLOWA COUNTY
VEGETATION DEPARTMENT:
..... **541.426.3332**

OREGON DEPARTMENT
OF AGRICULTURE:
..... **541.215.3912**

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PREFACE

TRI-COUNTY CWMA

There are many organizations and agencies throughout northeast Oregon who are dedicated to the cause of reducing the negative impacts of weeds on our private and public lands. Tri-County Cooperative Weed Management Area (CWMA) was created in 1994 to contribute to the "War on Weeds, throughout the Baker, Union, and Wallowa Counties. Tri-County's mission is to facilitate cooperation among all land managers and landowners, acting as responsible stewards of the land and resources in the state of Oregon by protecting and preserving all lands and resources in the Tri-County area from the degrading impact of exotic, invasive noxious weeds.

WHAT ARE NOXIOUS WEEDS?

Oregon's noxious weeds are plant species that have been classified "noxious" by the Oregon State Weed Board that are particularly injurious to public health, agriculture, recreation, wildlife, or any public or private property. There are many definitions used to categorize noxious weeds. The Oregon Department of Agriculture defines noxious weeds as non-native plants that have been legally designated as serious pests because they cause economic loss and harm to the environment.

The Oregon State Weed Board establishes a noxious weed list with prioritized management goals for weeds on the "A" or "B" and/or "T" lists. Both the policy and system can be found on the Oregon Department of Agriculture (ODA) Noxious Weed Program website at: <http://www.oregon.gov/ODA/PLANT/WEEDS/programoverview.shtml>

IMPACTS TO OUR NATURAL RESOURCES

Noxious weeds impose negative impacts upon crops, native plant communities, livestock, and the management of natural and/or agricultural systems. There are more than 118 weeds on Oregon's Noxious Weed List. The introduction and spread of noxious weeds have become a biological emergency, negatively impacting Oregon's natural resources. In Oregon alone we lose more than \$83.5 million a year to just 25 of the 99 State Listed Noxious Weeds. If left unchecked, there is a potential annual loss of \$1.8 billion. The estimated annual loss of productivity caused by invasive species in the U.S. is \$120 billion.

THE PURPOSE OF THIS GUIDE & HOW TO USE IT

The purpose of this guide is to serve as a reference source of information about the noxious weeds of Eastern Oregon. This guide is designed for landowners, land managers, homeowners, recreationists and others. Being able to identify noxious weeds is the first step in control and/or eradication. Although the information in this handbook was current at the time of printing, users should be aware that new and updated information is constantly becoming available. Please consult your county weed supervisor to obtain the latest information.

The 29 weeds in this guide are arranged first by flower color and then alphabetically by weed common name. Flower color along with the weed's scientific and common names are given on the top edges of this guide. For weeds that have more than one common name, the guide uses the name in Oregon's official noxious weed list.

WEED HERBICIDE RECOMMENDATIONS TO THIS GUIDE

Use Herbicides Safely! Wear protective clothing and safety devices as recommended by the label. This handbook is not intended as a complete guide to herbicide use. Tri-County assumes no responsibility for recommendations. Always Read and Follow the Label!

If site-specific help is needed, land managers should contact a licensed consultant. The label will describe legal use of the herbicide for pasture, right-of-ways, rangeland, etc., and it will document restrictions on re-entry intervals and subsequent haying or grazing restrictions.

The Pacific Northwest Weed Management Handbook contains more detailed information on control and identification of most weed species encountered in Oregon. The handbook is available online at: <http://pnwpest.org/pnw/weeds>.

Further information can be obtained from The Oregon Department of Agriculture Plant Division, Noxious Weed Control: <http://egov.oregon.gov/ODA/PLANT/WEEDS/>.

This guide provides the chemical names for herbicide recommendations as a starting point for chemical control options. To help individuals identify the common name, some trade names of commercial products are provided on pages 79-80.

MANAGEMENT

PREVENTION, ERADICATION, CONTROL & RESTORATION

Prevention- Preventing new introductions of noxious weeds is the first line of defense. Weeds specialize in colonizing highly disturbed ground and tend to invade plant communities that have been degraded by poor land management. Consider preventive measures that can be used to reduce the likelihood of future weed infestations. Some common prevention tactics include:

- Always use hay, straw, or mulch that has been certified weed free.
- Avoid transporting weed seeds on clothing, gear, pets, vehicles and equipment.
- Clean contaminated equipment.
- Become aware of weed identification and report new infestations of known weeds.
- Educate neighbors, family, recreationists and others.
- Establish and maintain weed resistant, desirable plant communities.

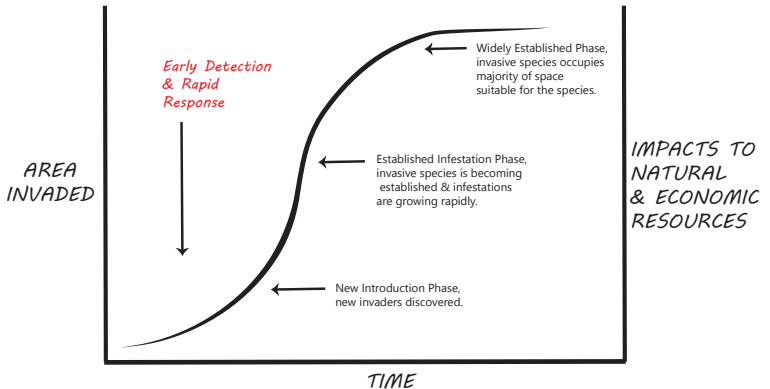
Eradication- The permanent elimination from a site. By implementing early detection/rapid response, you can eliminate new invaders when the population is small and you not only save time and money, but also much effort in the long run.

Control- Some noxious weeds are found in such large numbers that it is no longer realistic to think we will be able to rid the entire state of their presence. Instead the management goal would be by stopping their spread and eradicating small outlier populations. Some weed control tactics are:

- Biological – Organisms (insects or diseases) used to suppress the population of a noxious weed.
- Cultural – Methods applied to reduce the suitability of the soil for weed growth, such as grazing strategies, crop rotation, planting date, applying fertilizer to encourage wanted vegetation, increasing the canopy cover, and revegetation of an infested area.
- Mechanical – Methods that kill or suppress weeds through physical disruption, including pulling, digging, cutting, plowing, mowing and burning.
- Chemical – A method that consists of the careful use of herbicides.

Restoration- Establish a healthy and competitive stand of desirable plants to protect a site from re-invasion.

Invasion Curve



The figure above illustrates the typical species invasion curve. During the introduction phase, fewer impacts are seen to natural resources, therefore invasive plant species have a high probability of eradication. As a population of the invasive plant enters the established phase, it begins to spread rapidly, impacting natural resources. At some point the introduced plant species will reach it's widely established phase where it occupies all the space available to the species, and has maximized impacts to natural and economic resources. Prevention and treatment of new invasive plant introductions is the most successful, cost effective, and least environmentally damaging means of control. After initial introduction of a new invasive plant, there is a short period of opportunity for eradication and containment. Once permanently established, a new invader becomes a long-term management problem.

COMMON BUGLOSS

Anchusa officinalis

Family Name: Boraginaceae
(borage family)

Other Common

Names: Common anchusa, Alkanet, Bee bread, Ox's tongue, Starflower, Common borage, Orchanet, Spanish bugloss, Enchusa, Lingua bovina & Blue bugloss.



seed = 2mm



IDENTIFICATION

Type: Perennial herbaceous plant that has a covering of bristly hairs.

Size: 1 to 2 feet tall.

Leaves: Lower leaves narrow & oblong. Mid-leaves progressively smaller up the stem. Upper leaves clasping. Fleshy leaves with a covering of bristly hairs.

Stalks: Fleshy with a covering of bristly hairs. Can cause hay bales to mold.

Flowers: Numerous symmetrical 5-petaled flowers that are usually a deep sapphire blue color with white throats, found in coiled clusters at the end of stems. Flowers May to October.

Fruit: 4-chambered nutlet. Each nutlet contains 1 seed.

Look Alikes: Small bugloss, a winter annual, can be mistaken for Common bugloss, but can be distinguished by lance-shaped leaves, hairs arising from small bumps and a floral tube with a distinct curve.



Origin:

Introduced from Europe & west Asia.



Habitat:

Prefers dry, sandy to gravelly soils.

Control:

Chemical / Timing:
~ Chlorsulfuron / Rosette & prior to bolting stage
~ Metsulfuron / Rosette & prior to bolting stage.
*Always read & follow the label.

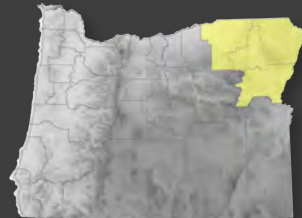


History: Common Bugloss was cultivated in medieval gardens and is now naturalized throughout Europe and in much of eastern North America. It's considered invasive in the Pacific Northwest. This herb has numerous medicinal uses as well as its historical use as a dye plant. The first report in Oregon was in 1933 from Wallowa County.



Impacts:

This plant invades alfalfa fields, pastures, pine forests, rangeland, riparian, and waste areas. The fleshy stalks can cause hay bales to mold. Large, very dense stands can occur, offering strong competition.



■ abundant distribution in county
■ limited distribution in county
■ historical site in county
■ not known to be present in county

LEAFY SPURGE

Euphorbia esula

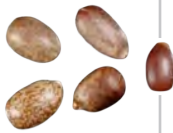
Family Name: Euphorbiaceae
(spurge family)

Other Common

Names: Wolf's milk,
Faitour's grass,
Hungarian spurge.



nutlet = 4mm



seed = 3mm



IDENTIFICATION

Type: Perennial that produces by seed & by root

Size: 2 to 3 feet tall

Leaves: Narrow, alternate (nearly opposite), 1 to 4" long

Stalks: The stems ooze a milky sap when damaged. Fleshy and thickly clustered. Can cause hay bales to mold.

Flowers: Yellowish-green, small, arranged in small clusters & are surrounded by yellowish-green heart-shaped bracts during midsummer. Blooms during the months of June or July.

Fruit: Seeds are oblong, grayish to purple, contained in a 3-celled capsule (each containing 1 seed). Mature fruits rupture & expel seed up to 15 feet. First-year plants do not produce seeds. Seed may remain viable in the soil for up to five years

Root: Brown with pink buds that can produce new shoots. The root system can exceed over 20 ft in length.

Look Alikes : Yellow toadflax at seedling stage.



Origin:

Introduced in the United States through seed impurities from Eurasia around 1827.



Impacts:

Milky sap from roots & stem is toxic & has resulted in temporary blindness in humans & livestock. Leafy spurge competes strongly in pastures and healthy rangelands reducing more desirable forage.

Habitat: Leafy spurge is a flexible plant that tolerates extremely dry to extremely wet soil conditions. It can often be found along waterways & irrigations ditches, but also found in draws & sagebrush. It grows in a wide variety of soil types, but is most abundant in sandy to gravelly soils arid conditions.



Control:

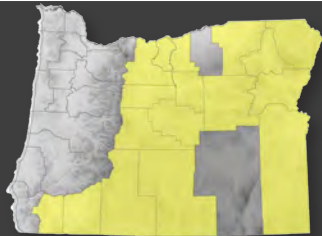
Biological: Flea beetle, moth, Gall midge, beetle (stem borer).
Contact ODA for a list of agents.

Cultural/Mechanical: Mechanical control & hand pulling is ineffective. Grazing throughout the summer & fall can set back production.

Chemical/Timing:
~ Imazapic / After summer dry period when plants begin to grow
~ Picloram + 2,4-D / Bloom stage
~ Picloram / Bloom stage
~ Glyphosate / Spring to early summer

* Always read & follow the label

History: Leafy spurge currently is found throughout the world with the exception of Australia. It was introduced into the United States as a contaminant in imported grain. Since its introduction, the plant has become a serious management problem, particularly for the north and central plains states. Counties containing significant populations of leafy spurge include Crook, Malheur, Baker, Union and Wallowa counties.



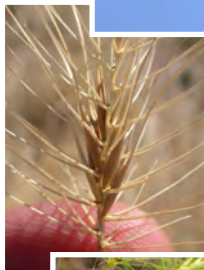
■ abundant distribution in county
■ limited distribution in county
■ historical site in county
■ not known to be present in county

MEDUSAHEAD RYE

Taeniatherum caput-medusae

Family Name: Poaceae
(grass family)

Other Common Names:
Medusahead, Medusa's head.



seed with awn = 2-10cm



IDENTIFICATION

Type: Medusahead is winter annual grass. Because medusahead matures several weeks later than most other annual grasses, its green color stands out against a backdrop of brown grasses.

Size: 6 to 24" tall.

Leaves: Leaf blades are somewhat rolled, & approximately 1/8" wide.

Flowers: The inflorescence contains 2 to 3 spikelets per node. The longer of 2 awns in each spikelet contains upward pointing barbs that is nearly as wide as long. Awns are straight when green, but twist as they dry into a "snake-like" fashion reminiscent of the mythological medusa head. Flowering occurs in May and June.

Fruit: Seeds are housed in spikelets in a densely crowded bristly spike one to two inches long. Seed formation also occurs in May and June.

Root: Shallow root system.

Look Alikes : Medusahead is sometimes confused with foxtail barley or squirreltail, but can be distinguished by a seed head that

Origin: Eurasia.

Habitat: Medusahead predominantly grows on semi arid rangeland. It is usually found in clay soils.



Impacts: Stiff awns may cause injury to grazing animals by working into ears, eyes, nose, & tongue. Medusahead rye demonstrates its negative qualities out-competing other grasses by extracting the majority of moisture well before perennial grasses have begun to grow.

Medusahead is rich in silica becoming unpalatable in late spring as livestock forage. Once the grass dominates an area, the land base becomes unable to support wildlife or livestock. Medusahead rye changes the moisture dynamics of the soil, greatly reducing seed germination of other species, and creating flash fuel for wildfires.

History: Medusahead rye is one of the most destructive grasses to invade North America. The first record of Medusahead rye in Oregon was recorded in 1887 in Douglas County. It was a wide distribution statewide; expanding rapidly in fire scarred areas and low moisture rangeland. It is adaptable, persisting in high moisture sites in Western Oregon also.

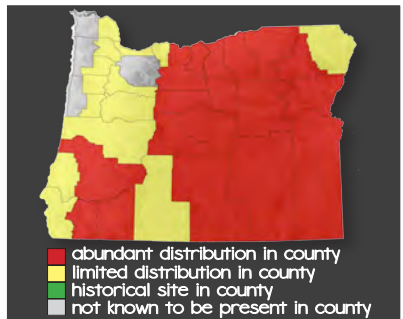


Control: Medusahead rye is a rapidly spreading annual that requires multiple management stages for control. First, thatch layers need to be minimized so that herbicide can reach the actively growing plant. Secondly, the plant communities must be reestablished to keep medusahead & other invasive plants from further establishment.

Biological: No approved biological control agents are currently available, although two seed attacking fungal smut diseases are being researched.

Chemical / Timing:

- ~Imazapic / Late summer to early fall
- Glyphosate / See label.
- *Always read & follow the label.



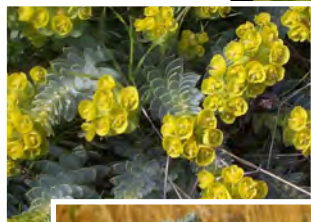
MYRTLE SPURGE

Euphorbia myrsinites

Family Name: Euphorbiaceae
(spurge family)

Other Common

Names: Creeping
spurge & Donkey tail.



seed = 4mm



IDENTIFICATION

Type: Biennial or perennial with trailing stems that grow close to the ground.

Size: It reaches a height of 8", although its leaning stems are up to 16" long.

Leaves: Leaves are succulent, gray green, ovate with sharp tips & arranged spirally along the succulent stem.

Flowers: Heart-shaped, showy, yellow-green bracts surround inconspicuous yellow flowers near the top of the stem. Flowering occurs in the spring.

Fruit: Seeds can burst explosively 15 ft or more upon drying in late summer. These seeds remain viable in the soil at least 8 years.

Root: Tap root.

Look Alikes: Many species of Euphorbia resemble myrtle spurge. The majority of those that occur in the Northwest are exotic. These species can be differentiated by comparing the succulent leaves of myrtle spurge to other exotic and native Euphorbia, which often lack this trait.

Impacts: This plant has escaped and is spreading on to open lands in dryer parts of the state. Seeds can be ejected when plants are disturbed, sticking to wildlife hair and enabling transport far from the parent plants.

Aside from displacing desirable native species, the plant invades playgrounds and parks in some states. Myrtle spurge is poisonous if digested, causing nausea, vomiting & diarrhea. Additionally, the milky sap can cause swelling, redness & blistering of the skin & irritation to possible temporary blindness to the eyes.

Origin: A native to Eurasia.



History: Myrtle Spurge was introduced to North America as an ornamental and is often used in rock gardens. This plant has escaped cultivation in some areas, invading disturbed & well drained areas. Populations of myrtle spurge are reported in the NE Oregon counties. It is also reported in Klamath and Wasco counties.

Habitat: This plant prefers well-drained, dry to moist soils in partial shade to full sun. Myrtle spurge is an escaped ornamental inhabiting disrupted areas and non-crop areas. Known to like dry rocky areas as well.

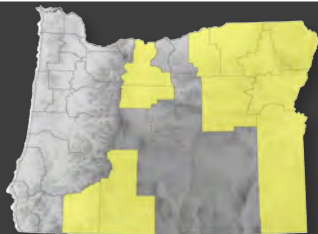
Control: When root segments are scattered by tillage, they can produce new plants. These segments can be transported through birds, animals, or in soil.

Biological: One approved biological control agent, a leafy spurge flea beetle, has had a high survival rate on myrtle spurge in laboratory studies.

Mechanical: Small infestations can successfully be dug or pulled. In order to gain control over a population, it must be pulled over multiple years. Pull plants early in the season prior to seed formation. Use caution when pulling to not get any sap on your skin. If sap contacts skin, make sure to wash that area.

Chemical / Timing:
~ 2,4-D ester / Spring or fall
~ Dicamba + 2,4-D / During spring or fall regrowth
~ Picloram + 2,4-D / At flowering growth stage during spring or to fall regrowth
~ Picloram / At flower growth stage during spring or to fall regrowth
~ Surfactant use is important

*Always read & follow the label.



■ abundant distribution in county
■ limited distribution in county
■ historical site in county
■ not known to be present in county

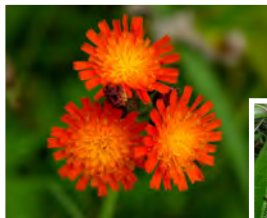
ORANGE HAWKWEED

Pilosella aurantiacum

Family Name: Asteraceae
(sunflower family)

Other Common Names:

Orange paintbrush, Red daisy, Flameweed, Devil's weed, Grim-the-collier, Devil's-paintbrush, Fox-and-cubs, King-devil, Missionary weed.



IDENTIFICATION

Type: Perennial.

Size: 10 to 36 inches tall.

Leaves: Hairy rosette made up of entire or minutely toothed leaves, spatula-shaped, 4-6" long. Dark green above and lighter green beneath.

Stalks: Erect stems usually do not have stem leaves, contain a milky juice and are covered with stiff hairs.

Flowers: Conspicuous orange-red ray flowers, blooms June - September with 5 to 35 flower heads.

Fruit: Each flower bears 12-30 tiny, columnar seeds with a light-brown tuft of bristles (resembles a dandelion) for wind dispersal. Seeds are viable in the soil for up to 7 years.

Root: Spreads primarily vegetatively through stolons (resembles strawberry runners), 4-12 per flowering plant, rhizomes and sporadic root buds.

Look Alikes: Without flowers, orange hawkweed can resemble other hawkweeds, native or non-native. When flowering there are no species that look like orange hawkweed.

fruit = 12mm

O **origin:** A native to Europe.



H **History:** Introduced as an ornamental for desirable flame-colored flowers. People have been very instrumental in distributing this plant throughout the country. Found from western Washington to Wyoming and is known to occur in eastern states. It is very aggressive, rapidly invading any habitat where it is introduced. Oregon's populations are still limited but increasing in urban areas. Oldest site in Oregon is a well-established population in Clackamas County. Newer populations have been reported throughout central and south central Oregon.

H **Habitat:** Thrives in a range of soil conditions but prefers soils that are well drained and coarse-textured and full sun or partial shade. Occurs on native meadows, gravel pits, forest openings, permanent pastures, roadsides, and hayfields.

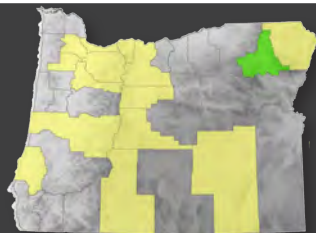
I **Impacts:** Quickly develops into a monoculture that continues to expand until it covers the site. A dense mat has the potential to eliminate or restrict other vegetation. Its unpalatable vegetation displaces native vegetation posing a serious threat to native plant communities while also invading pastures.

C **Control:** When root segments are scattered by tillage, they can produce new plants.

C **Cultural/Mechanical:** Small infestations can successfully be dug or pulled. Dig deeply to remove below ground rhizomes and fibrous roots. Mowing reduces seed production, but encourages vegetative spread.

C **Chemical / Timing:**
~ Aminopyralid / Rosette to bolting
~ Clopyralid / Prebloom
~ Picloram + 2,4-D / During spring
~ Picloram / During spring

✳ Always read & follow the label.



■ abundant distribution in county
■ limited distribution in county
■ historical site in county
■ not known to be present in county

COMMON CRUPINA

Crupina vulgaris

Family Name: Asteraceae
(sunflower family)

Other Common Names: Bearded
creeper.



seed = 5mm



IDENTIFICATION

Type: Winter Annual.

Size: Up to 3 feet tall.

Leaves: Leaves are alternate, with short, stiff, barb-tipped hairs on leaf margins. Cotyledons (seed leaves) have a dark purple vein.

Stalks: Rigid and have short stiff spines. Leafy up to where it openly branches at the top.

Flowers: Flower heads are pink, lavender or purple flowers in groups of up to five. Each one is thin and vase-shaped with a few rows of tapering bracts at its base. Blooms in June to July.

Fruit: Seeds are barrel-shaped. Brown-black bristles occur on one end spreading widely.

Root: Short, dense, fibrous taproot.

Look Alikes : Several knapweed species, such as Russian knapweed, appear similar to Common Crupina in overall appearance, but lack bristly, barb-tipped hairs on the leaf margins.

Impacts: It forms solid stands that reduces the quantity and quality of forage. It is unpalatable to most grazing animals, which avoid it, allowing the weed to thrive and spread.

Habitat: Common crupina can be found in range, forest, and disturbed non-crop lands. The primary Pacific Northwest habitat is southern slopes in steep canyon grasslands. It is adapted to a wide range of soil and climate.



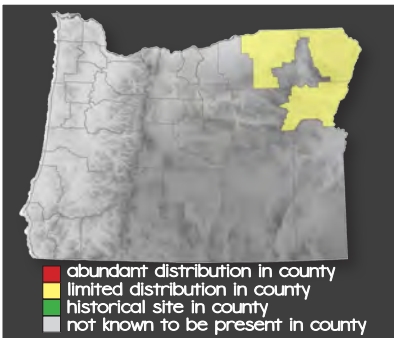
History: The source and means of its introduction into the U.S. is not known. The first population was discovered in Idaho in 1969. The plant was spread to northeastern Oregon through contaminated hay. Common crupina has limited distribution in Willowa, Baker, and Umatilla Counties.

Origin: Native to the Mediterranean region of Europe.



Control:

C i 'h fU#AYWUblWU' Ga U'' bZyghUhcbg'
 WUb VY fYa cj YX Vma ck]b[' cf di '']b['
 UbX' g'ci ' X' VY' XcbY' VYZfY' gYX]b[' UbX fYdYUHYX'
 Yj Yfmi' 'hc' (' k Y Y_g'hc' Ybgf FY Vta d'YHYX fYa cj U''
 7\Ya]WU' # 'Ha]b[.
 r ' 7'cdntU'X' Z' AYrgi' Z' fcb' # FcgYHY' hc'
 na i b[' Vc'h]b[' ghU] Y
 r ' 7'cdntU'X' # : U'' /' gdf]b[
 r ' 8]Wla VU # F Ud]Xm] fck]b[' d'Ubhg
 r ' D]VcfUa # : U'' cf' k]bhYf
 r ' 7\cfgi' Z' fcb' # F Ud]Xm] fck]b[' d'Ubhg
 f 5k Uhg fYUX /' Zc'ck' hY' UYV''



RUSSIAN KNAPWEED

Acroptilon repens

Family Name: Asteraceae
(sunflower family)

Other Common Names:
Turestan thistle, Creeping
knawweed, Mountain bluet,
Russian corn ower, Hardheads.



seed =
4mm



IDENTIFICATION

Type: Perennial

Size: 3 feet tall.

Leaves: Lower leaves are deeply lobed & the upper leaves are entire or serrate.

Stalks: Erect & openly branched, 18–36" long.

Flowers: 0.25" to 0.5" in diameter, numerous in clusters on the ends of branches, pink to lavender in color forming from bracts that are rounded with papery margins. Flowers bloom from June to September.

Fruit: Seeds are small with whitish bristles attached. Seeds viable for up to 9 years.

Root: Differs from diffuse & spotted knapweed primarily in that it has a rhizomatous, or extensive, root system. Can grow up to 3 ft in depth & forms dense colonies due to this root system. Roots are also distinguishable by their black color, bark-like texture, & by buds that develop into shoots.

Look Alikes: Many native members of Asteraceae



Origin: Introduced from Eurasia around 1898.



Impacts: Produces a chemical that inhibits the growth of the surrounding vegetation. Once established, it can overrun native grasslands as well as irrigated crops. It has dense growth spreading by root fragments or seed. Some Russian knapweed stands have persisted for 75 years.

Habitat: Commonly grows along roadsides, pastures, croplands, irrigation ditches as well as riverbanks and disturbed areas. It prefers clay soils and a semi-arid environment.



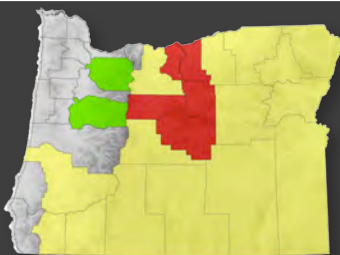
Control:
Biological: Stem-galling midge & stem-galling wasp. Contact ODA for a list of agents

Cultural: Soil disturbance has no effect on plants because root fragments have the ability to resprout. Grazing sheep, goats, & cattle have aided in controlling seed production. Grazing needs to be done several times during the growing season to avoid flowering.

Chemical / Timing:
 ~ Clopyralid + 2,4-D / After rosettes form in spring; before bolting
 ~ Aminopyralid / Bud to flowering stage; fall
 ~ Glyphosate / Bud Stage
 ~ 2,4-D / Early bolting

* Always read & follow the label

History: Introduced into North America in contaminated alfalfa seed. It is found in every western state infesting both native range and irrigated cropland. Concentrated in the central, north central and southeastern parts of Oregon. West of the Cascades, a few infestations have been identified and eradicated.



■ abundant distribution in county
■ limited distribution in county
■ historical site in county
■ not known to be present in county

SCOTCH THISTLE

Onopordium acanthium

Family Name: Asteraceae
(sunflower family)

Other Common Names: Cotton
thistle, Heraldic thistle, Woolly thistle.



seed = 5.5mm



IDENTIFICATION

Type: Biennial or winter annual.

Size: Up to 12 feet tall.

Leaves: Basal leaves, which are armed with sharp, yellow spines, are up to 2 ft long & 1 ft wide. Upper leaves are alternate & coarsely lobed. Upper & lower leaf surfaces are covered with a thick mat of cotton-like or woolly hairs, which give the foliage a gray-green appearance.

Stalks: Stems have vertical rows of prominent, spiny, ribbon-like leaf material or "wings" that extend to the base of the flower heads.

Flowers: The globe-shaped flower heads are borne in groups of 2 or 3 on branch tips. Flower heads are up to 2" in diameter, with long stiff, needle-like bracts at the base. Flowers range from dark pink to lavender; sometimes white. Blooms May to June.

Fruit: Seeds are produced in a honeycomb shaped receptacle, deep brown to black, wrinkled, 3/16" long, & plumed. Seed can be viable for over 30 years.

Look Alikes: Canada thistle, Musk thistle.



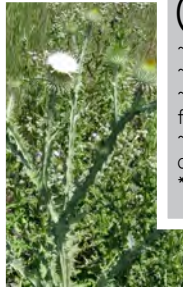
Habitat: It is primarily a rangeland invader preferring light, well-drained soils but it also does quite well in clay soils. It is often a significant issue in non-crop areas near barns and stock handling facilities.

Impacts: Scotch thistle is a serious rangeland and pine woodland invader. Forage production is greatly diminished as well as native plants. The costs of scotch thistle treatments are also quite high and must be repeated for years.

Control:

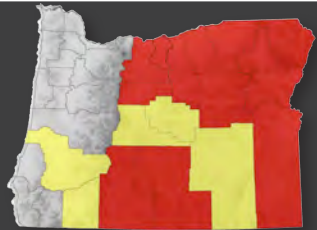
Cultural/Mechanical: Avoid soil disturbance in established infestations, pulling can be successful in small areas. Burning plant material prevents regrowth from going to seed.

Chemical / Timing:
 ~ Chlorsulfuron / Actively growing rosettes
 ~ Clopyralid / Up to bud stage
 ~ Picloram / In fall before bolting
 ~ Metsulfuron + Dicamba + 2,4-D / Spring prior to flowering
 ~ Aminopyralid / Rosette to bolting. Use high rate at bolting
 * Always read & follow the label



Oorigin: Native to Europe and eastern Asia.

History: The first documented site in Oregon was in 1892 in Benton County though it rarely ever shows up in Western Oregon. It is common in all Eastern Oregon Counties with populations rapidly expanding despite control efforts.



■ abundant distribution in county
■ limited distribution in county
■ historical site in county
■ not known to be present in county

CANADA THISTLE

Cirsium arvense

Family Name: Asteraceae
(sunflower family)

Other Common Names:

Californian thistle, Canadian thistle, Creeping thistle, Field thistle, Corn thistle, Perennial thistle.



seed = 2mm



IDENTIFICATION

Type: Perennial

Size: 1 to 4 feet tall.

Leaves: Alternate, lacking petioles, oblong, divided into spiny-tipped irregular lobes, and armed with yellowish spines.

Flowers: Both male & female on separate plants. Flowers are purple, occasionally white, with ovoid heads 1/2" to 3/4" in diameter; occur solitary on branch tips. Flowers bloom July to August.

Fruit: Seeds are 1/8" long & brownish, with a tuft of hairs at the top. Seeds viable up to 8 years. It has large seed production but a low percentage of viable seeds.

Root: Roots are deep & rhizomatous.

Look Alikes : Bull thistle, a biennial, is often confused with Canada thistle, but can be distinguished by the profuse hairs present on the upper leaf surface. Bull thistle will often appear as a single specimen, whereas Canada thistle will almost always be present with several daughter plants.

Habitat: Habitat includes croplands, pastures, meadows, lawns, gardens, roadsides, waterways, clear-cuts, rangelands & waste areas.

Impacts: Poor weed control of Canada

Thistle can result in crop reductions up to 25% in heavily infested ground. It is the most common and impacting thistle species in the U.S.



Origin: A native of southeastern Eurasia and Europe.

Control: Biological: Rust fungus. Cryptic & highly variable, but excellent control effectiveness overall. Contact ODA for a list of agents.

Cultural/Mechanical: Mechanical & physical removal is not effective. Grazing provides varying degrees of control.

Chemical / Timing:
~ Clopyralid + Triclopyr or Clopyralid / Up to bud stage

~ Aminopyralid / In spring to plants in the pre-bud growth stage, in fall to plant regrowth

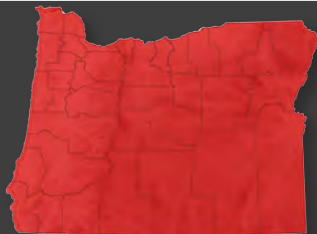
~ Picloram / Before budding

~ Metsulfuron + Chlorsulfuron / Rosette through flowering stage but prior to seed development

~ Metsulfuron + Dicamba + 2,4-D / In spring to plants in the rosette to early bolt stage

* Always read & follow the label

History: Accidentally introduced to the US starting in the early 1600s. Multiple introductions over the centuries have been linked to imported grains. It is the most common weedy thistle found in the U.S. and occurs in every county in Oregon.



- abundant distribution in county
- limited distribution in county
- historical site in county
- not known to be present in county

MUSK THISTLE

Cardus nutans

Family Name: Asteraceae
(sunflower family)

Other Common Names:
Nodding thistle.



seed =
3.5mm



IDENTIFICATION

Type: A biennial & sometimes winter annual.

Size: Up to 6 feet tall.

Leaves: Green with a light green to white midrib, hairless, deeply lobed with spiny margins.

Flowers: Solitary head, terminal, 1 to 3" in diameter, color: deep rose, violet, purple or white, flower usually has bent over appearance. Many spine tipped bracts. Musk thistle produces many heads. The terminal, or tallest shoots flower first, then lateral shoots develop in leaf axils. A robust plant may produce 100 or more flowering heads. Flowers bloom June through August.

Fruit: Seeds are 3/16" long, shiny, yellowish-brown with a plume of white hair-like fibers. It begins to disseminate seed from a head about 2 weeks after it first blooms. Musk thistle is a prolific seed producer. One plant can set up to 20,000 seeds. However, only 1/3 of the seeds are viable.

Look Alikes: The invasive, non-native plumeless thistle can be confused with musk thistle. The flowers of plumeless thistle are smaller & musk thistle has solitary drooping flower heads.



Origin: Native to southern Europe.

Habitat: It is found in pastures, range, forestlands, waste areas, ditch banks, & along roadsides. It spreads by seeds, taking advantage of human disturbance. It is especially prolific in moist conditions.

Control: Biological: A crown weevil, a seed head weevil and a flower fly.

Contact ODA for a list of agents.

Mechanical: Mechanical tillage provides limited control. High seed production hinders mechanical control involving soil disturbance. First year rosettes can be hand pulled with little effort. Pull or chop mature plants before they go to seed.

Chemical / Timing:

~ Chlorsulfuron / After rosettes forming spring; before bolting.

~ Metsulfuron / Actively growing rosettes

~ Metsulfuron + Dicamba + 2,4-D.

~ Metsulfuron + chlorsulfuron / Prior to flowering.

~ Clopyralid / Rosette to early bolting stages.

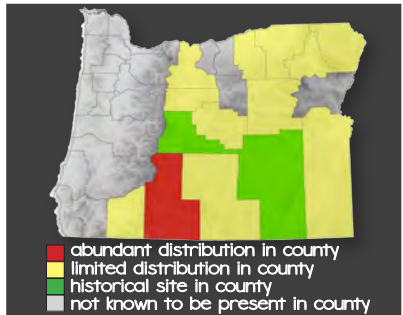
~ Aminopyralid / Rosettes, bolting plants early flowering growth stages.

~ Picloram / Rosettes in fall.

*Always read & follow the label.

Impacts: Musk thistle is unpalatable to wildlife and livestock hence selective grazing leads to severe degradation of native meadows and grasslands as grazers focus their foraging on native plants, giving musk thistle a competitive edge. It is also thought to produce chemicals that hinders the growth of other plants.

History: Introduced through ship's ballast in the eastern United States in the mid 1800s. Today musk thistle occupies several million acres throughout the west in pasture, rangeland and in pine forests. Klamath County is the most heavily infested musk thistle county in Oregon. Other counties contain smaller populations that are targeted for eradication or containment.

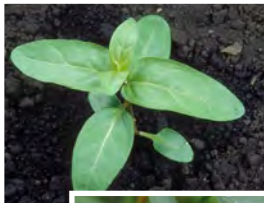


PURPLE LOOSESTRIFE

Lythrum salicaria

Family Name: Lythraceae
(loosestrife family)

Other Common Names:
Spiked loosestrife.



capsule =
3-4mm



IDENTIFICATION

Type: Perennial.

Size: Up to 7 feet tall.

Leaves: Clasping leaves have smooth margins, are lance shaped, & are heart-shaped or rounded at the base. Leaves are covered by downy fine hairs & whorled or alternate on the stem.

Stalks: Numerous square stems that are green to purple and woody in appearance. Mature plants can have from 30 to 50 stems arising from a single rootstock.

Flowers: Showy display of magenta-colored flower spikes blooming throughout much of the summer. Flowers have 5-7 petals.

Fruit: A small capsule containing numerous minute seeds. Seeds burst at maturity around late July or early August, with each stem producing up to three million tiny seeds per year. Germination can occur the following season, but seeds may lay dormant for several years before sprouting.

Root: Rhizomatous.

Look Alikes: Blazing star, Fireweed.

Impact: Extensive root system & the prolific seed production results in rapid spread. In addition, stems of the plant that are broken off or disturbed often grow shoots. Seeds escaping from ornamental plantings were transported into wetlands, lakes, and rivers. Once in aquatic systems, seed was rapidly dispersed by moving water and birds to additional areas. Decreased waterfowl and songbird production has been well documented in heavily infested marshes. Many rare and endangered wetland plant and animal populations had become at risk from purple loosestrife impenetrable stands though the biocontrol insects have reduced that risk significantly.



Habitat: Prefers aquatic sites, stream banks, shorelines, shallow ponds, marsh area and ditches.

Origin: Introduced from Europe as an ornamental



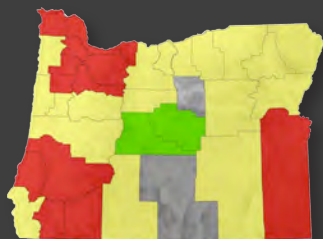
Control:

Biological: Loosestrife leaf feeding beetle, flower weevil, root mining weevil. Generally controlled well by bugs except in areas where mosquito control exist. Contact ODA for a list of agents.

Mechanical: Hand pulling is effective in small areas - entire plant must be removed. Dispose of plant particles to prevent resprout.

Chemical / Timing:
 ~ Glyphosate / Before bloom or full to late flowering
 ~ Metsulfuron / Actively growing plants
 ~ Triclopyr / Bloom stage or seeding
 * Always read & follow the label.

History: Introduced into the least coast of North America in the 1800s. It has become established in the U.S. and all Canadian border provinces. Occurs in most Oregon counties wherever suitable habitat occurs.



■ abundant distribution in county
■ limited distribution in county
■ historical site in county
■ not known to be present in county

SPOTTED KNAPWEED

Centaurea stoebe

Family Name: Asteraceae
(sunflower family)

Other Common Names: None.



seed =
2-3mm



IDENTIFICATION

Type: A biennial or short lived perennial.

Size: 1 to 3 feet tall.

Leaves: Leaves are oblong & wider at the tip. Deeply lobed & in early stages covered with a layer of fine hairs. Upper leaves are finely divided at maturity. Stem leaves are alternate, sessile, & have few lobes, or they are linear & entire, & are smaller toward the uppermost part of the stem.

Stalks: Stems can have more than one stem & are branched on the upper half.

Flowers: Flower heads are born solitary or in clusters of 2 or 3 & are found at the branch ends. Flower heads are ovate to oblong and are pink to pinkish-purple in color. Flowers are surrounded by oval bracts with black tips, thus the name spotted knapweed. One plant can produce up to 300 flower heads. Flowers bloom from June to October.

Fruit: Seeds are dark brown to tan & plumed. Each plant can produce up to 25,000 seeds that are dispersed by wind, animals, water & people.

Root: Strong taproot as well as lateral roots.

Look Alikes: Other Knapweeds, Corn ower, Bachelor's buttons, Canada thistle.



Impact: Spotted knapweed forms dense

stands on any open ground, excluding more desirable forage species and native plants. On heavily infested range, control costs restoration programs often exceed the income potential derived from grazing. Seed longevity creates a challenge for land managers wishing to restore land to productive uses. There is also evidence that spotted knapweed may produce allelopathic chemicals that inhibit the growth of other plants (Rutledge and McLendon, 1998)



History: Considered endangered in parts of Eastern Europe, the plant now dominates millions of acres of prime grasslands and forestland in the western U.S. It is a major economic issue for agriculture. Occurs in 30 of the 32 counties in Oregon primarily in Central Oregon, Hood River County and Willowa County.

Origin: Introduced from Europe.

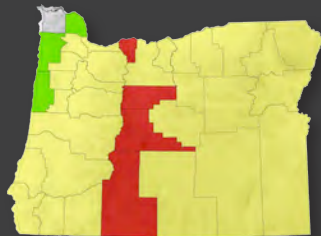
Habitat: Grows along roadsides, disturbed areas, waste areas, & dry to moist rangelands.

Control: Biological: Seed head moth, root-boring moth, seed-head weevil, broad-nosed knapweed seedhead

weevil, seedhead peacock fly, root weevil. Contact ODA for a list of agents.

Cultural/Mechanical: High seed production limits benefits of soil disturbance such as tillage. Sheep & goats provide some control of seed production if grazed several times during the growing season.

Chemical / Timing:
~ Tricloyr + Clopyralid / Rosette to early bolting stages
~ Picloram / Spring before bolting
~ Clopyralid / Up to bud stage
~ Aminopyralid / Up to bud stage
~ 2,4-D / Early bolting
~ Glyphosate / Bud stage
* Always read & follow the label.



■ abundant distribution in county
■ limited distribution in county
■ historical site in county
■ not known to be present in county

HOUNDSTONGUE

Cynoglossum officinale

Family Name:

Boraginaceae (borage family)

Other Common Names:

Gypsy flower, Rats & Mice, Dog bur, Beggars lice.



seed =
5mm



IDENTIFICATION

Type: A biennial.

Size: 1 to 4 feet tall.

Leaves: First year plants form a rosette of long, rough, hairy, tongue-shaped leaves. Leaves alternate, long and narrow, smaller higher up the stem, 1 to 3 inches wide, rough, hairy, lacking teeth and lobes, with distinctive veins. Lower leaves up to a foot long and resemble a hound's tongue, broader at the tips and tapering to a petiole at the base; upper leaves are reduced, narrower, and lack petioles.

Flowers: Reddish-purple, terminal, born in a coil-like panicle at end of stem. Typically blooms from June to August.

Fruit: Produces barbed seeds, or burrs, which allow the plant to adhere to hair, wool and fur; Velcro-like burrs. Reproduces from seed only & each plant can produce up to 2,000 seeds.

Root: Plants have a thick, black, woody taproot that can reach 3 feet deep.

Look Alikes: Exotics: Rosettes may resemble burdock. Natives: If not flowering, could be mistaken for members of the *Hackelia* or *Lappula* genus (stickseeds).

Origin:

Europe



Impact: A serious problem in rangeland and pasture. It is highly invasive and can significantly reduce forage. Produces barbed seeds, or burrs, which allow the plant to readily adhere to hair, wool, and fur and can in turn reduce the value of sheep wool. The burrs can become embedded in the eye or eyelids and cause eye damage to animals. This can increase the cost of raising

livestock as well as reduce overall health and value. Also toxic to livestock, containing pyrrolizidine alkaloids, damaging liver cells. Animals may survive six months or longer after they have consumed a lethal amount but are unthrifty. Sheep are more resistant than cattle or horses. In addition, it is a nuisance to recreationists due to its bur-like seeds.



Control:

Mechanical: Hand pulling can be used in small infestations.

Chopping & hand pulling must occur before plant goes to seed.

Chemical / Timing:

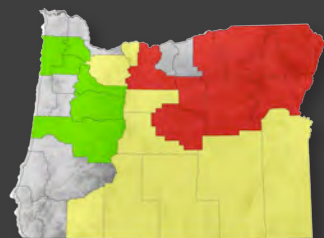
~ Chlorsulfuron / Rosette to flowering stage.

~ Metsulfuron / Rosette to flowering stage.

*Always read & follow the label.

Habitat: Prefers well drained, relatively sandy & gravelly soils, & can be found in disturbed sites, rangelands & meadows.

History: This plant was introduced to North America from Europe as a contaminant of cereal seed in the late 1800s. Occurs in many counties in eastern Oregon. Highly invasive pest of pine woodlands in Eastern Oregon especially in areas where cattle are grazed. There are historical sites in Lane and Marion Counties. It continues to expand its range.



■ abundant distribution in county
■ limited distribution in county
■ historical site in county
■ not known to be present in county

SUMMER PHEASANT'S EYE

Adonis aestivalis

Family Name: Ranunculaceae
(buttercup family)

Other Common Names:
Pheasant's eye, Blood drop.



seed =



IDENTIFICATION

Type: Upright Annual.

Size: Up to 3 feet tall.

Leaves: The leaves are alternately arranged along the stem, 3 to 5" long & bright green. They are deeply divided with individual linear segments up to 2 1/2" long.

Stalks: The slender stems have many branches & they are covered in soft hairs near the base of the plant.

Flowers: Red to orange or yellow in color, but usually orange. Solitary, terminal on stalks that lengthen as the flower matures, 5-10 petals, oblong in shape, petal base is blue to purplish. Sepals a dark-purplish brown & slightly hairy at the base. Flowers from midsummer to early fall.

Fruit: The plant produces seeds in a small fruit that can attach to clothing & animals. The seeds can also be spread through contaminated hay or grains.

Root: Light to dark brown, short, robust taproot.

Look Alikes: Summer Pheasant's eye closely resembles field poppy. Leaves of the poppy are not as finely divided, & its petals are larger & more numerous.



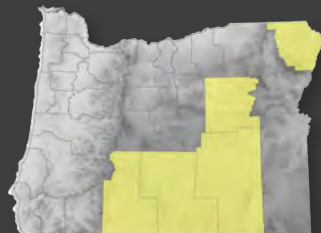
History: It was introduced in the U.S. as an ornamental and for use in the herbal market trade. Populations throughout the west are reported to be increasing though associated reports of livestock poisoning are limited to a few cases. Counties reporting wild populations include Klamath, Lake, Harney, Wallowa, and Grant. In California, two northern counties, adjacent to the Oregon border, have reported infestations.

Oorigin: Native to Eurasia and known to exist in a wide geographic range.

Habitat: Prefers well drained, relatively sandy & gravelly soils, & can be found in disturbed sites, rangelands & meadows. Populations can be highly variable from year-to-year.

Impact: Horses and pigs are very susceptible to summer pheasant's eye poisoning. The dried plant material found in hay is more toxic to grazing animals than green plant material. A few horse deaths have been recorded in northern California. Alfalfa and grass hay contaminated by Summer Pheasant Eye can be of limited or reduced value.

Control: Cultural/Mechanical: Digging & tilling can effectively control small infestations. Mowed or grazed plants can still flower and produce seeds.
Chemical / Timing:
~ Metsulfuron / Rosette to bolting stage
~ Chlorsulfuron / Actively growing plants
* Always read & follow the label



■ abundant distribution in county
■ limited distribution in county
■ historical site in county
■ not known to be present in county

ARMENIAN BLACKBERRY

Rubus armeniacus

Family Name: Rosaceae
(rose family)

Other Common Names:
Himalayan blackberry.



seed =
2mm



IDENTIFICATION

Type: Perennial.

Size: Up to 15 ft tall with canes up to 40 ft long.

Leaves: Leaves are large, round to oblong & toothed, & typically come in sets of 3 (side shoots) or 5 (main stems).

Stalks: The most characteristic feature is probably the robust spine covered, reddish stems often extending more than 20 feet per season.

Flowers: Small, white to pinkish flowers with 5 petals. Blooms June to August.

Fruit: The fruit are aggregate, shiny, large, black drupelets. Fruit ripen beginning in mid-summer until fall. Seeds remain viable in soil for many years.

Root: Main plants have large, deep, woody root balls that sprout at nodes. The canes root at tips, creating daughter plants.

Look Alikes : Among the many native blackberries & raspberries, one can differentiate Armenian blackberry by the 5 leaflets & curved spines with wide bases. This blackberry species also has furrowed, angled stems while others are typically round.



O **Origin:** A native of Western Europe.

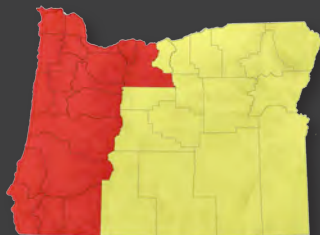
I **mpact:** It is the most widespread and economically disruptive of all the noxious weeds in western Oregon. It aggressively displaces native plant species, dominates most riparian habitats, and poses a significant economic impact on right-of-way maintenance, agriculture, park, and forest production. It is a significant impediment in riparian restoration projects and physically inhibits access to wild lands. Expands rapidly by reproduction which occurs through rooting at cane tips, by root fragments or by seeds, and then are dispersed by birds and animals.

H **istory:** First introduced to North America in 1885 as a cultivated crop. First noted in Oregon in 1922 in Marion County. Originally named Himalayan blackberry after its place of origin, it was introduced by Luther Burbank for berry breeding in the Willamette Valley. Widely distributed throughout Western Oregon. Populations in Eastern Oregon are on the increase in Hells Canyon and along most other river systems.

H **abitat:** Thrives in wastelands, pastures, forest plantations, roadsides, creek gullies, river flats, riparian areas, fence lines & right-of-way corridors preferring moist soil.

C **ontrol:**
Cultural/Mechanical: Removal of or grazing with goats will eventually kill blackberry if done regularly & over several years. Cutting followed by digging up root crowns is much more effective than cutting alone.

C **hemical / Timing:**
~ Glyphosate / Fall, actively growing & after berries are formed.
~ Metsulfuron / Apply to fully leafed-out vegetation before fall leaf coloration
~ Picloram / Apply in late spring after leaves are fully developed
~ Imazapyr / Late fall or early spring
~ Triclopyr / Fall
Always read & follow the label.



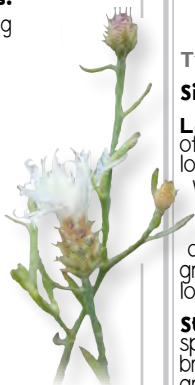
■ abundant distribution in county
■ limited distribution in county
■ historical site in county
■ not known to be present in county

DIFFUSE KNAPWEED

Centaurea diffusa

Family Name: Asteraceae
(sunflower family)

Other Common Names:
White knapweed, Spreading
knapweed, Tumble knapweed.



IDENTIFICATION

Type: Biennial.

Size: 1 to 2 feet tall.

Leaves: The rosette consists of greatly divided & feathery looking leaves that are covered with small hairs. On the stem, leaves become alternate, smaller & less divided. They are lance-shaped & grayish-green in color, growing up to 6" long. Stems have rough texture.

Stalks: It is single-stemmed sporting numerous lateral branches resulting in a bushy growth form.

Flowers: Numerous & narrow, & tend to be white but, flowers can also be pink to purple. Flower head forms comb-like bracts that are tipped with a definite slender spine. Blooms from July to September.

Fruit: Seeds are 4mm in size, brown to grayish & are tipped with plumes that fall off at maturity. Each plant can produce up to 18,000 seeds annually.

Look Alikes : Squarrose knapweed can be confused with Diffuse knapweed. Squarrose knapweed's central spine on the bract below the flower is curved downward while Diffuse knapweed's central spine is not bent.

Origin:

Mediterranean region.



Habitat:

Grows under a wide range of conditions, such as riparian areas, sandy river shores, gravel banks, rock outcrops, rangelands and roadsides.



Impact: Once established on rangeland, control measures are often more expensive than the income potential of the land. There are possible skin health hazards from bare hand pulling of plants.

It is recommended that gloves be worn while handling plants. Diffuse knapweed also supports small mites that bite humans and cause skin irritation.



History: First introduced to the Pacific Northwest at the turn of the century as a contaminant in alfalfa seed imported from Turkestan, Turkmenistan or hybrid alfalfa seed from Germany. Limited distribution throughout much of Oregon with the exception of the northeastern and central counties having heavy infestations at many sites.

Control:

Biological: Several seed feeding flies and weevils, and a root-boring beetle. One beetle species results in large reductions. Contact ODA for a list of agents.

Cultural/Mechanical: Control would be sheep & goats to help reduce seed production. Physical removal is successful in small areas.

Chemical / Timing:

~ Triclopr + Clopyralid / Rosette to early bolting stages

~ Pictoram / Spring - rosette to early bolting stage

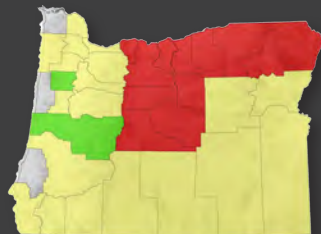
~ Clopyralid + 2,4-D / After rosettes form up to bolting

~ Clopyralid / Up to bud stage

~ Aminopyralid / Rosette to bolting stage or in fall

~ Glyphosate / Bud stage

* Always read & follow the label.



- abundant distribution in county
- limited distribution in county
- historical site in county
- not known to be present in county

JAPANESE KNOTWEED

Polygonum cuspidatum

Family Name: Polygonaceae
(buckwheat family)

Other Common Names:

Mexican bamboo, Fleeceflower,
Huzhang, Sakhalin knotweed,
Japanese bamboo.



fruit = 6-10mm



IDENTIFICATION

Type: Perennial.

Size: 4 to 9 ft tall.

Leaves: Short petioles, broadly ovate, 2 to 6" long, narrowed at point, alternate & born on zigzag stem.

Stalks: Stout, reddish-brown, 4 to 9 ft tall, woody & hollow. Nodes are slightly swollen & surrounded by thin papery sheaths. The stems are smooth & resemble bamboo.

Flowers: Greenish-white to cream in large plume-like clusters at the ends of the stems. Bloom time occurs late July, to October.

Fruit: Glossy; brown to dark brown.

Root: Grows from deep-rooted creeping rhizomes that can reach up to 18 feet long and forms extensive clonal patches that are expensive to treat or remove.

Look Alikes: Giant knotweed & Himalayan knotweed. Also invasive, nonnative plant species.



Impact:

Japanese

knotweed grow vigorously along roadsides, waste areas, streams, and ditch banks and create dense colonies that exclude native vegetation and greatly alter natural tree regeneration. Large infestations can be reduced with approved herbicides, but treatments are costly and time consuming. It poses a significant threat in riparian areas, where it disperses during flood events rapidly colonizing scoured shorelines, islands and adjacent forestland.

History:

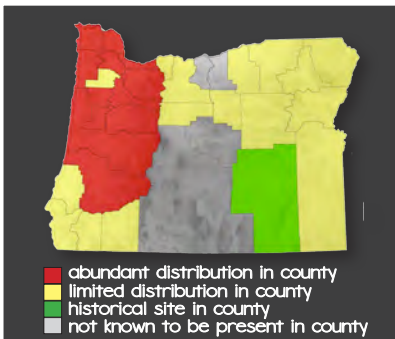
Introduced to the United States as an ornamental and for stream bank stabilization. Frequently planted in logging camps and along the headwaters of streams during the 1900s, flood events have transported root masses from these early plantings downstream, creating huge infestations on many Oregon rivers. Most coastal and Willamette Valley streams host populations of knotweed with the Nehalem and Molalla Rivers two of the most severely infested. A large infestation was also located in Hells Canyon.

Habitat: Prefers full sunlight, but can tolerate full shade as well. Thrives in warm weather in riparian areas, but will tolerate dry soil and salt. ivers, floodplains, low-lying areas & wetlands.

Origin: Introduced from Japan & China

Control:

Chemical / Timing:
~ Triclopyr / Actively growing plants
~ Imazapyr / Mid-summer after seed head forms
~ Glyphosate / Actively growing plants
* Always read & follow the label.



MEDITERRANEAN SAGE

Salvia aethiopsis

Family Name: Lamiaceae
(mint family)

Other Common Names:
African sage, Ethiopian sage.



IDENTIFICATION

Type: Biennial.

Size: 2 to 3 ft tall.

Leaves: The first season it forms rosettes with large, grayish woolly leaves. All the leaves are white to blue-green, woolly, felt-like leaves, ovate to triangular, lobed or deeply toothed, up to 12" long on stalks. Stem leaves are opposite, smaller, & aromatic when crushed.

Flowers: Yellowish-white, borne in clusters on branched stems, bilabiate (2 lipped), in whorls of 5-10. Flowering occurs June through August.

Fruit: Each flower produces 4 nutlets & holds thousands of seeds. At maturity, the plant will break off, tumble with the wind & disperse its seed.

Look Alikes: The opposite leaves and square stems differentiate this plant from non-Lamiaceae look alikes. Within the family, there are species of Salvid that it resembles. Most do not have white flowers; those that do are not strongly 2-lipped. They also do not have flowers in such long, tight clusters as Mediterranean sage and have very different leaves. The rosettes of common mullein can be confused with those of Mediterranean sage, but can be distinguished by their yellow-tinted and stalkless leaves and absence of pungent sage-like smell when the leaves are crushed.

Origin: The Mediterranean and northern Africa.



History: Its introduction was the result of importing contaminated alfalfa seed. It is primarily a rangeland invader. The first record of this plant in Oregon is 1921 in Wheeler County. It grows densely in many locations especially in Lake and Klamath Counties. Many other counties are host to expanding populations.

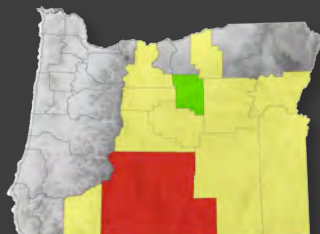
Habitat: This weed can be found in rangeland, alfalfa, and wheat, particularly on dry, south-facing slopes.

Impact: Though not as impacting as many other weed species, Mediterranean sage is still a troublesome pest in pastures and rangelands throughout eastern Oregon. It reduces grassland quality and yields, is unpalatable to most grazing animals and often forms dense monocultures.

Control:
Biological: Crown/root weevil species
BContact ODA for a list of agents

Mechanical: Mechanical removal has been effective for controlling this plant by uprooting rosettes any time of the year, & removing the mature plant before it flowers. This plant can be removed with soil disturbance, but timing is important to prevent further seed dispersal.

Chemical / Timing:
~ Metsulfuron + 2,4-D / Rosette to bolting stage
~ Picloram / Rosette to bolting stage
~ Glyphosate / Rosette to bolting stage
* Always read & follow the label



■ abundant distribution in county
■ limited distribution in county
■ historical site in county
■ not known to be present in county

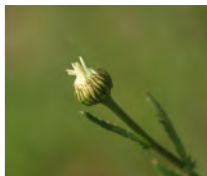
OXEYE DAISY

Leucanthemum vulgare

Family Name: Asteraceae
(sunflower family)

**Other
Common**

Names:
White daisy,
marguerite,
field daisy,
aspen daisy,
poor-land flower,
and moon-penny.



seed = 1mm



IDENTIFICATION

Type: Perennial.

Size: 1 to 3 ft tall.

Leaves: Basal and lower leaves are lance-shaped with toothed margins and petioles that may be as long as the leaves. The upper leaves are alternately arranged, narrow and often clasp the stem.

Stalks: Smooth, frequently grooved and sometimes branch near the top.

Flowers: Flower heads are usually solitary and grow at the ends of the branches. Flowers are showy and daisy-like, with 20 to 30 white ray flowers and numerous yellow disk flowers. Flowers June through August.

Fruit: The fruit is a round achene, brown to black in color, 1/16 of an inch long, with 8 to 10 ridges down the sides and no pappus. One flower head can contain up to 200 seeds.

Root: The plant has shallow, branched rhizomes and strong adventitious roots.

Look Alikes: Scentless chamomile (*Anthemis arvensis*) and Shasta daisy (*Chrysanthemum maximum*) look very similar to oxeye daisy. However, chamomile is an annual plant with smaller flowers and much more finely dissected leaves. Shasta daisy usually grows 6 to 12 inches taller than oxeye daisy and has larger flower heads.

Origin: Introduced from Europe.



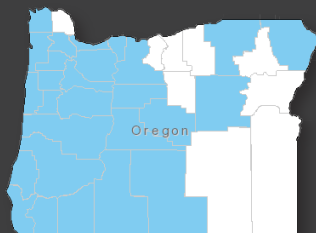
Habitat: Oxeye daisy prefers upland meadows and pastures but can be found in landscapes, along roadways, and in fields, rangelands and waste areas.

Impact: Once established, it competes against grasses, reducing forage production. It also exposes soil in the fall making the infested area vulnerable to erosion and other aggressive weeds.

Control:
Cultural/Mechanical: Mowing may reduce population if plants are mowed as soon as flower buds appear. Mowing may have to be repeated during a long growing season. Hand pulling may be practical for controlling small populations of oxeye daisy. Root systems are shallow and the plant can be dug up and removed.

Chemical / Timing:
~ Aminopyralid / Prebud stage
~ Aminopyralid + 2,4-D / Rosette to early flower
~ Metsulfuron / Rosette to early flower
~ Picloram / Rosette to early flower
~ Clopyralid / Young, actively growing plants
~ Clopyralid + 2,4-D / Young, actively growing plants
* Always read & follow the label

History: introduced to North America both intentionally as an ornamental and incidentally as a contaminant of imported hay and grain seeds. It escaped from agricultural lands and spread quite readily. Occurs in 17 Idaho counties, 20 Oregon counties, and 40 Washington counties. It is a noxious weed in Washington, and several Idaho counties have added oxeye daisy to their county noxious weed lists.



■ present in county
■ not known to be present in county

PERENNIAL PEPPERWEED

Lepidium latifolium

Family Name: Brassicaceae
(mustard family)

Other Common

Names: Tall whitetop,
Giant whiteweed,
Perennial peppergrass,
Slender perennial
peppercress, Broadleaf
or broadleaved
pepperweed,
& Ironweed.



fruit = 1,6mm
seed = 1mm



IDENTIFICATION

Type: Perennial.

Size: 1 to 6 ft tall.

Leaves: Basal leaves are bright green to gray-green; lance shaped, has long petioles, up to 12" long, & covered with a waxy layer. Stem leaves are smaller & have shorter petioles, but don't clasp the stem. Leaves have a prominent, whitish mid-vein.

Flowers: White, 4-petaled, less than 1/8" wide, formed in dense, rounded clusters at the branch tips. Flowering occurs in early summer until fall.

Fruit: Seeds are small & flattened pods about one tenth of an inch long & containing 2 seeds. These seeds remain on the plant throughout the winter & drop at irregular intervals.

Root: Deep-seated root systems with creeping rhizomes make this noxious plant hard to control. Rooting depth extends more than 9 ft.

Look Alikes: Whitetop, leaves have clasping bases; perennial pepperweed can also be distinguished by its waxy

Origin: Native of southern Europe & western Asia

Habitat: Prefers wet sunny conditions, but can grow in dry areas as well. Can be found in disturbed areas or bare soil, on agricultural land, rangeland and in roadside and irrigation ditches wherever sufficient growing season moisture is available.

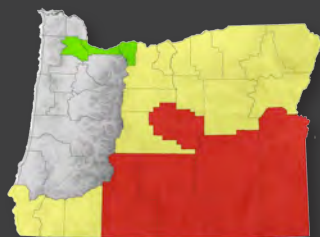


History: Introduction is thought to have originated in contaminated sugar beet seed in the 1930s. Perennial pepperweed is widespread in eastern Oregon with occasional small outbreaks in the western half of the state.

Impact: Perennial pepperweed establishes and colonizes rapidly, degrading wetlands, nesting habitat and out competing desirable grasses in natural areas and hay meadows. Plants are known to mine subsurface salts, depositing them on the soil surface through leaf drop. Infestations can be so damaging that they can affect cropland values by reducing forage production and increasing weed control costs associated with forage production.

Control:
Cultural/Mechanical: Mechanical control reduces seed if cut several times. Cultivation spreads root fragments increasing plant abundance with soil disturbance. Persistent grazing with goats, sheep, & cattle reduces seed production.

Chemical/Timing:
~ Chlosulfuron or metsulfuron / Flower to bud stage
~ Metsulfuron + chlosulfuron / Actively growing plants less than 4 feet tall
~ Glyphosate / Flower bud stage
~ 2,4-D amine / Flower bud stage
~ 2,4-D ester / Resprouting stems in late summer
~ Surfactant use is recommended to penetrate leaf surface
*Always read & follow the label.



■ abundant distribution in county
■ limited distribution in county
■ historical site in county
■ not known to be present in county

POISON HEMLOCK

Conium maculatum

Family Name: Apiaceae
(carrot family)

Other Common Names:

Spotted parsley, Spotted cowbane, Poison parsley, Spotted hemlock, Spotted conium, ξ Poison snakeweed. ξ Ironweed.



seed = 3-4mm



IDENTIFICATION

Type: Biennial.

Size: 3 to 8 ft tall.

Leaves: Shiny green, highly dissected resembling those of a fern. The leaves are alternately arranged on the stem, dividing 3 to 4 times ξ pinnately compound. Can also be characterized by its rank, pungent odor when one is near the plant or has crushed the leaves or stem. Lower leaves on long stalks clasp at the stem; upper leaves on short petioles.

Stalks: Extensively branched, with an erect stem with distinct ridges. Its stems are hollow, except at the nodes. The stems are purplish in color with the lower portions of the stems containing purple spots.

Flowers: White, forming an umbrella-shaped cluster, each supported by a stalk. Foliage has strong musty odor, flowers lacking sepals. This plant can flower from spring to fall.

Fruit: Reproduces solely by seeds. Seeds are paired, 1/8 inch long, light brown, barrel-shaped capsules with conspicuous longitudinal ribs.

Look Alikes : Wild Carrot but wild carrot is much smaller than poison hemlock. Cow parsnip differs from poison hemlock by its palmately compound leaves unlike the pinnately compound leaves of hemlock.

Habitat: Tolerates poorly drained soils. It grows in pastures, streams, irrigation ditches, & cropland. Highly adaptable to a wide range of climates as long as sufficient growing season moisture is available.



Origin: Native to Europe, North Africa, and Asia

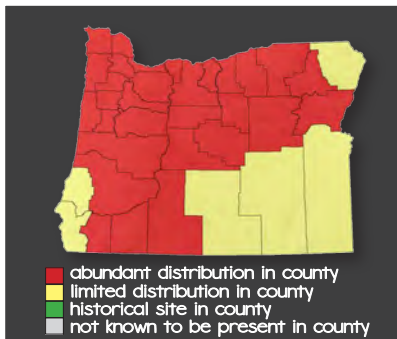


Impact: Thrives in pastures, along streams, and irrigation ditches and in non-crop areas. Poor pasture management may lead to contaminated hay and forage. Several livestock deaths are attributed each year to this species. Wildlife such as elk are also susceptible to the toxins though they avoid eating it. Considered to be one of the most poisonous plants in North America. All parts of the plant are poisonous especially the root and root crown. An extract from the plant was used to execute Socrates in ancient Greece. It is recommended that gloves be worn when handling the plant, as some people develop dermatitis when contacting the sap. Children should be monitored when in areas containing poison hemlock.

Control:
Cultural/Mechanical: Removing this plant with machinery may reduce seed production. It is not recommended to graze with livestock. Humans should not touch any part of the plant with bare hands.
Chemical/Timing:
~ Metsulfuron / Rosette in spring
~ 2,4-D / Rosette in spring
~ MCPA / Rosette in spring
~ Glyphosate / Rosette in spring
~ Metsulfuron + Dicamba + 2,4-D / Bud to bloom stage
~ Metsulfuron + chlorsulfuron / Bud to bloom stage
~ Clorsulfuron / Rosette in spring
* Always read & follow the label



History: Brought in to the United States as a garden plant sometime in the 1800s. The first documented site of poison hemlock in Oregon was in 1919 in Multnomah County. It is known as the plant that poisoned Socrates. Found in every county in Oregon.



Cardaria draba

Family Name: Brassicaceae
(mustard family)

Other Common Names:

Hoary cress, Heart-podded hoary cress & Perennial peppergrass.



fruit = 4mm
seed = 1-2mm



IDENTIFICATION

Type: Perennial.

Size: Up to 2 ft tall.

Leaves: Consists of both basal & stem leaves. Basal leaves taper to a short stalk that attaches to the crown near the ground. Stem leaves are grayish- to bluish-green, lance-shaped, with smooth & occasionally finely toothed edges. All leaves have a covering of short, soft white hairs. The base of each leaf clasps around the stem at the point of attachment.

Flowers: The plant consists of a distinctive inflorescence of several small white 4-petaled flowers that give the plant a white, flat topped appearance. Blooms by May into mid-summer. After blooming, it continues to grow until frost.

Fruit: Seed capsules are broad, flat & heart shaped. Each capsule contains two reddish-brown seeds.

Root: Reproduces from seed and root segments. Vertical roots can reach depths up to 6 feet. The root system consists of a vertical taproot with a mesh of lateral roots. Vertical & lateral roots produce adventitious buds which develop into rhizomes & shoots.

Look Alikes : Whitetop can be confused with the native plant yarrow, but yarrow can be most easily distinguished by having parsley-like leaves. Whitetop can also be confused with other mustards, such as lens-podded & hairy whitetop but can be most easily distinguished by having heart-shaped seedpods whereas lens-podded has round seedpods & hairy whitetop has globe-shaped seedpods. Annual pepperweed can also resemble whitetop.

Habitat: Common on alkaline and disturbed soils. Whitetop prefers open, unshaded areas and can be found on a wide variety of soil types. Whitetop generally grows better in moist sites or areas of moderate rainfall. Its attraction to moisture results in it being found in sub-irrigate pastures, ditch banks, irrigated cropland and at the edge of riparian areas.

Impact: It forms dense patches that can completely dominate sites, restricting the growth of other species and degrading pastures. The species is not toxic to livestock, but it is not generally grazed either. Tens of thousands of acres can be found in Oregon.



Origin: Native to southwest Asia.



History: Distributed throughout the Pacific Northwest, primarily east of the Cascade mountains. It blankets significant acreages in Oregon. The first documented site in Oregon was 1909 in Union County. Grant, Baker, Crook and Wheeler Counties are host to thousands of acres of the weed.

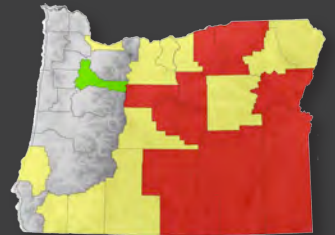
Control: The deep root system & the weeds' ability to reproduce vegetatively make it difficult to control. Due to its extensive system of roots, this weed can form a monoculture that squeezes out all other plants & vegetation.

Biological: One biocontrol agent is under quarantine now and hoping for release soon. Contact ODA for more information.

Cultural: Soil disturbance invigorates establishment. Repetitive grazing reduces seed production if continued through the growing season.

Chemical/Timing:
~ Chlorsulfuron + 2,4-D + Dicamba / Bud to bloom stages or rosette in fall
~ Metsulfuron or chlorsulfuron / Bud to bloom stage or rosette in fall
~ Imazapic / Rosette in fall
~ Surfactant is recommended for successful results

*Always read & follow the label.



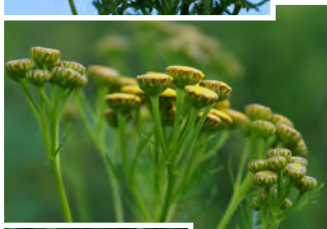
■ abundant distribution in county
■ limited distribution in county
■ historical site in county
■ not known to be present in county

COMMON TANSY

Tanacetum vulgare

Family Name: Asteraceae
(sunflower family)

Other Common Names:
Bitter buttons, Garden tansy,
Golden buttons.



IDENTIFICATION

Type: Perennial.

Size: 2 to 6 feet tall.

Leaves: Alternate leaves are deeply toothed and appear fern-like when emerging in the spring. Leaves are strongly aromatic when crushed.

Stalks: Tall purplish stems. Stems are strongly aromatic when crushed.

Flowers: Dense clusters of bright yellow flowers. Each flower head has 20-200 button-like disk flowers that do not have petals. Flower heads turn brown and maintain their shape at seed set. Flowers from July to September.

Fruit: Seeds are yellowish brown achenes with short, five-toothed crowns. Greater than 1000 viable seeds produced per square meter and the duration of seed viability is unknown.

Root: Tenacious, fibrous root system produces creeping rhizomes; cannot be easily pulled out.

Look Alikes: Tansy Ragwort. Distinguished from tansy ragwort by lack of ray petals and more sharply toothed leaves.



Impact: Considered undesirable forage for livestock. The plant is considered toxic; fortunately animals rarely ingest it as it is very unpalatable. Can impact forage quality and quantity. With adequate moisture common tansy will displace native and other desirable species. Can be toxic to humans if large quantities are consumed.



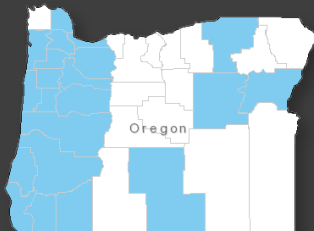
History: Introduced into North America as an ornamental and medicinal herb. It has been used over the centuries for treating various ailments and as an insect repellent. It is common along the Pacific Northwest Coast from northern Oregon to southern British Columbia. Occurred in Oregon between 1891 and 1900.

Origin: Native of Europe.

Habitat: Generally found in full sun along trails and roadsides, on streambanks, in waste areas and vacant lands, and pastures.



Control:
Mechanical: Tillage can control common tansy but follow-up tillage or herbicide will be needed & rhizomes will spread. Persistent hand pulling can be used on small infestations as long as all rhizomes are removed.
Chemical/ Timing:
 ~Metsulfuron / Actively growing plants before bloom
 ~Chlorsulfuron / Actively growing plants before bloom
 * Always read & follow the label



present in county
 not known to be present in county

DALMATIAN TOADFLAX

Linaria dalmatica

Family Name: Scrophulariaceae
(figwort family)

Other Common Names:
Broadleaf toadflax,
Wild snapdragon.



seed =
1-2mm



IDENTIFICATION

Type: Perennial.

Size: Up to 4 feet tall.

Leaves: Dense blue-green and waxy-like, heart shaped & clasping the stem. Less than 2" long, alternate & entire. Upper leaves are conspicuously broad-based. Thick water-conserving leaves.

Stalks: Thick water-conserving stems.

Flowers: 2-lipped resembling snapdragons, yellow with orange centers. Blooms from mid-summer to fall.

Fruit: Seeds are produced in a 1/2" pod with many irregular shaped angles. These seeds can remain viable for up to 10 years & each plant can produce up to 500,000 seeds annually.

Root: Deep rooted, creeping root system.

Look Alikes: Dalmatian toadflax can be confused with Yellow toadflax by having nearly identical flowers. It is distinguished from Yellow toadflax by having linear leaves while Dalmatian toadflax has ovate to lance-shaped leaves.



Habitat:

This non-palatable plant prefers dry areas and will invade roadsides, rangelands and disturbed areas.



Origin:

The native range is the Dalmatian Coast of Croatia in the Mediterranean.

Impact: The economic impacts of this weed are felt on rangeland where toadflax displaces native forbs and grasses, reducing the carrying capacity of the land. It is a very tough plant to kill with herbicides. Will hybridize with Yellow toadflax.



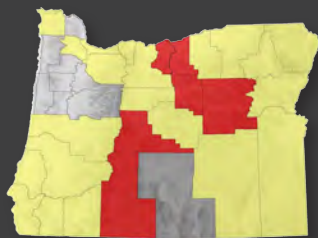
Control:

Biological: Defoliating moth, Stem boring weevil. Biocontrols are very effective. Contact ODA for a list of agents.
Cultural/Mechanical: Dalmatian toadflax is a perennial; it is very difficult to control via mechanical means. Livestock do not consume this noxious plant.

Chemical/ Timing:
 ~ Chlorsulfuron / Bud to bloom stage.

Fall is most effective
 ~ Picloram + Chlorsulfuron / Bud to bloom stage
 ~ Picloram / Late summer to fall or later winter
 *Always read & follow the label.

History: Introduced to the U.S. in the mid 1800s and is now considered an escaped ornamental. Decades ago, it was often included in wildflower mixes for roadside beautification programs. Though predominantly an Eastern Oregon pest with large outbreaks in Harney, Grant and Klamath Counties, the plant also survives in Western Oregon mainly on well-drained road shoulders.



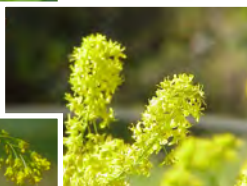
■ abundant distribution in county
■ limited distribution in county
■ historical site in county
■ not known to be present in county

Isatis tinctoria

Family Name: Brassicaceae
(mustard family)

Other Common

Names: Asp of
Jerusalem.



fruit = 8-18mm
seed = 3-4mm



IDENTIFICATION

Type: A winter annual, biennial or short-lived perennial depending on conditions.

Size: 1 to 4 feet tall.

Leaves: Blue-green with a prominent cream colored mid-vein that is especially noticeable on the rosettes. Alternate, sessile with a base clasping the stem & covered with fine hairs.

Stalks: Multiple stems arise from the base sporting foliage having a distinctive blue-green cast with whitish glaze.

Flowers: Numerous, yellow & found in clusters at the end of the branch tips, 4-petaled.

Fruit: Seed pods are purplish-brown & 1-celled, tear drop shaped, containing a single seed. When flowers go to seed, the large purplish-brown seed pods are very distinguishable. Blooms from April to July.

Root: A tap root that can reach 5 feet in depth that hinders control strategies.

Look Alikes: Common Mustard.



Impact: Forms dense colonies in rangelands crowding out

native vegetation. This plant is highly competitive, thriving in waste areas, gravel pits, road sides, pastures, field edges, and disturbed soils. It reduces forage availability by suppressing grasses and has low palatability for grazing animals. It is allelopathic.

Habitat: Inhabits roadsides, waste areas, rangeland, pastures, grain field & alfalfa fields.



History: It was introduced to Virginia in colonial times as a source material for making of blue dye. Though Eastern U.S. distribution is spotty it is far more widespread in the western states. There are multiple historic sites scattered throughout Oregon that have been eradicated. Currently, Klamath and Lake Counties have the most infested pastures.

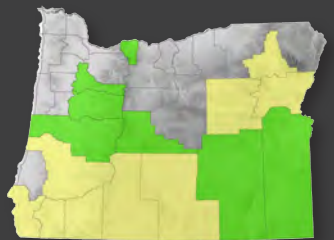


Oorigin: Dyer's woad is native to Europe.

Control: Biological: Rust control available. Contact ODA for this agent.

Mechanical: Hand pulling or removing foliage below the crown has successful results

Chemical/Timing:
 ~ Metsulfuron / Actively growing plants
 ~ Chlorsulfuron / Before or just after emergence
 ~ Metsulfuron + Dicamba + 2,4-D / Actively growing plants
 ~ Metsulfuron + Chlorsulfuron / Actively growing plants
 ~ 2,4-D LV ester / Rosette or bud stage
 * Always read & follow the label



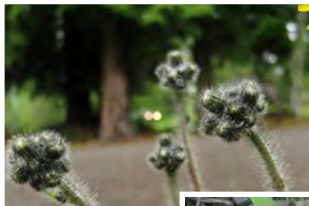
■ abundant distribution in county
■ limited distribution in county
■ historical site in county
■ not known to be present in county

MEADOW HAWKWEED

Hieracium pratense

Family Name: Asteraceae
(sunflower family)

Other Common Names:
Yellow hawkweed.



IDENTIFICATION

Type: Perennial.

Size: Up to 3 feet tall.

Leaves: Rosettes contain narrow, spatula shaped leaves that are up to 6" long with small bristles, almost exclusively basal, & dark green on the top of the leaf & lighter green underneath. Leaves exude milky sap when broken.

Stalks: The stems are bristly and usually leafless, although occasionally a small leaf appears near the midpoint. Stems exude milky sap when broken.

Flowers: Yellow, born in cluster, up to 30 flower heads near top of plant, 1/2" to 1" in diameter. Ray petals with square tips, that resemble dandelions. Flowers in bud are distinctively rounded and black-hairy in tight clusters at the tops of the stems. Flowers from May to July.

Fruit: Seeds look very similar to dandelion seeds & are spread by wind.

Root: Shallow, fibrous roots and long rhizomes.

Look Alikes: Dandelions and Native Hawkweeds.

Impact: With the production of highly mobile seeds, stoloniferous roots and allelopathic compounds, this species is truly an aggressive invader. Plants of the hawkweed complex produce dense rosette mats preventing desirable plants from establishing or surviving. Hawkweeds dominate sites by out-competing other species for water, nutrients and by releasing allelopathic compounds from their decaying leaves. Wilderness areas in the Pacific Northwest are at risk of invasion.

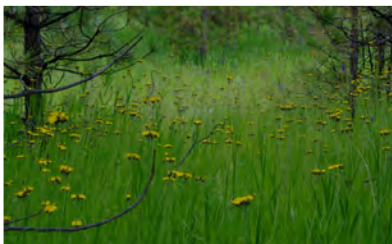
Oorigin: Europe



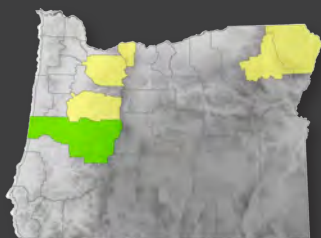
Habitat: Plants grow well in moist grassy areas but do tolerate deep shade. Hawkweeds are becoming troublesome in native meadows, prairies, pastures, and lawns.

Control: chemical/Timing:
~ Aminopyralid /

Rosette to bolting stage
~ Picloram / Apply after basal leaves form; before flower bud stage
~ Clopyralid / Apply after basal leaves form, before flower bud stage
*Always read & follow the label.



History: Meadow hawkweed is established in Wallowa, Union, and Clackamas Counties and occasionally emerges in other counties. Containment efforts are underway across the state to reduce further colonization of this plant.



■ abundant distribution in county
■ limited distribution in county
■ historical site in county
■ not known to be present in county

PUNCTUREVINE

Tribulus terrestris

Family Name: Zygophyllaceae
(caltrop family)

Other Common Names:
Mexican sandbur, Texas sandbur,
Bullhead, Caltrop, Goathead.



IDENTIFICATION

Type: Prostrate,
summer annual.

Size: Up to 2 inches tall.

Leaves: Opposite, hairy,
and divided into 4 to 8 pairs of
leaflets up to 1/2" long.

Stalks: Highly branched, green
to reddish-brown, prostrate and
spreading radially from the
crown on open ground up to 4 ft
across.

Flowers: Yellow with 5 petals,
1/2" wide, and borne singly in leaf
axils from July until October.

Fruit: After each flower
blooms, it is followed by a fruit
that easily falls apart into 4 or 5
single-seeded nutlets. The seeds
are hard and bear 2 to 3 sharp
spines. Seed can remain
dormant in soils for 4 to 5 years.

Root: Slender, branched, often
somewhat woody deep taproot
with a network of fibrous roots.

Look Alikes: Puncturevine is
unlikely to be confused with other
plants.



seed =
1-1.5cm

Origin: Introduced from southern Europe & is widely scattered throughout much of North America.

Habitat: Plants can grow in pastures, ditches, cultivated fields, waste areas, along roadways, & in disturbed areas. It is often found on sandy, dry & gravel sites.



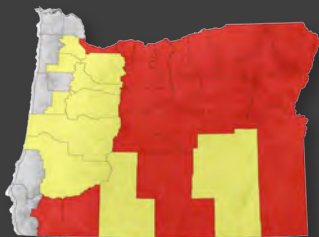
History: Puncturevine was first documented in the Pacific Northwest in 1924 and is suspected to have been a contaminant in wool from Europe. Widely distributed in eastern, southeastern and central Oregon and is increasing in many counties in the Willamette Valley.

Impact: Infests the edges of fields, ditches, and roadsides where it forms dense mats. Animals, humans, and vehicles easily spread the heavily spined seeds. Puncturevine seeds are very painful to step on and easily puncture bicycle tires or light summer footwear. Even though it is not readily grazed, it is toxic to animals. If growing in orchards or vineyards, it is a problem to the fruit packers.

Control:
Biological: Seed & stem boring weevils provide fair to good control of puncturevine in warmer southern climates but not likely to be successful in Oregon. Contact ODA for a list of agents.

Mechanical: Physical removal reduces seed production. Continuous monitoring will be needed to eliminate plant establishment from dormant seeds for up to 5 years.

Chemical/Timing:
~ Chlorsulfuron / Early summer, late fall or winter
~ Bromacil + Diuron / Fall or spring
~ 2,4-D / Seedlings; will require retreatment when seedlings emerge
* Always read & follow the label



■ abundant distribution in county
■ limited distribution in county
■ historical site in county
■ not known to be present in county

RUSH SKELETONWEED

Chondrilla juncea

Family Name: Asteraceae
(sunflower family)

Other Common Names:
Skeletonweed, Hogbite, Gum
succory, Naked weed.



seed = 3mm



IDENTIFICATION

Type: Perennial.

Size: 1 to 4 feet tall.

Leaves: Sharply-lobed leaves, similar to those of dandelion, form a rosette that withers as the flower stem develops. Other leaves up the stem are inconspicuous, narrow, & entire. Leaves produce a milky latex sap.

Stalks: Downwardly bent coarse reddish hairs that cover the base of the stem are a diagnostic characteristic of rush skeletonweed. The stem also produces a milky latex sap.

Flowers: Yellow, 3/4" in diameter, contain 7-15 star-shaped flowers. Flowers bloom from July to September.

Fruit: Seeds are pale brown to black, several ribbed, about 1/8" long & have numerous soft white plumes.

Root: A slender, simple taproot that can reach 10 ft deep. Lateral roots branch off the main taproot and form satellite plants.

Look Alikes: Rush skeletonplant (*Lygodesmia juncea*) has pink (occasionally white) flowers. It can also resemble dandelion or chicory at rosette stage.



Habitat: Generally grows in well drained & light textured soils. This plant is found in pastures, rangeland, grain fields, & along roadsides.



Origin: Introduced from Eurasia.

Impact: An aggressive plant in both rangeland and cropland, particularly in lower elevation, light textured soils. Cereal grain and potato production areas are impacted by skeletonweed invasion. Impacts include: reduced yield due to competition, harvest difficulties with combine harvesters gumming up with latex sap exuded from the plant.

Control: Biological: Rust, gall midge, gall mite - Not successful in cooler climates. A root-mining moth has also been established in western Oregon. Contact ODA for a list of agents.

Mechanical: Tillage can drag root fragments to noninfested areas where they can take root and form new colonies.

Chemical/Timing:
 ~ Aminopyralid / After rosettes form in spring
 ~ Clopyralid / Rosettes in spring or fall
 ~ Picloram / Rosettes in fall or spring
 * Always read & follow the label



History: This invader of rangeland and cereal grain production now infests several million acres in the Pacific Northwest and California. The first documented site in Oregon was 1974 in Douglas County. It is common in SW Oregon counties, Columbia River counties and in Malheur and Baker Counties. It is only a roadside invader in the Willamette Valley. Skeletonweed is the target of a concerted effort to reduce the spread and impact throughout eastern Oregon.



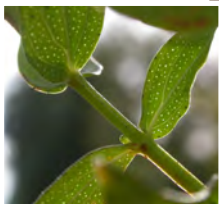
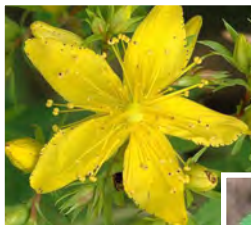
■ abundant distribution in county
■ limited distribution in county
■ historical site in county
■ not known to be present in county

ST. JOHNSWORT

Hypericum perforatum

Family Name: Clusiaceae
(st. johnswort family)

Other Common Names:
Klamath weed, Common
goatweed, Tipton.



seed = 1mm



IDENTIFICATION

Type: Perennial.

Size: 1 to 3 feet tall.

Leaves: Opposite, sessile, entire, elliptic to oblong in shape & usually not exceeding 1" in length. Leaves contain tiny transparent dots visible when held up to the light.

Stalks: Erect, having numerous branches, somewhat 2-ridged, rust colored, and woody at their base.

Flowers: Bright yellow & 5-petaled. Tiny black dots can be found along the edges of the petals. Flowers are found in clusters at the ends of the stems & are 1" or less in diameter.

Fruit: Seeds are born in a 3-celled capsule & rust-brown. Each pod has many seeds. Reproduces from seeds and short runners.

Root: A long taproot & shallow rhizomes which extend from the root crown.

Look Alikes: May be confused with Tansy Ragwort. Mostly distinguished by the difference in the appearance of their leaves.

Origin: Introduced from Europe.

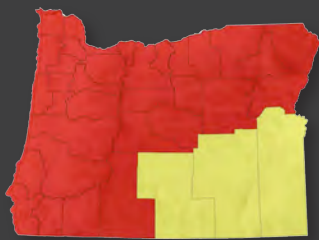
Habitat: Prefers sand or gravel soils. Found along roadsides, disturbed areas & waste areas.



History: Abundant in the Pacific Northwest on well-drained soils. Used historically in herbal medicine it is still widely sold in the herbal medicine trade. Widely distributed plant throughout the state except in the SE region counties.

Impact: This difficult persistent pest is found throughout most of the western U.S. It invades pasture and rangeland and is poisonous to livestock. Livestock seldom eat the plant unless pasture is scarce. It can invade rangelands to open timber. Infestations spread rapidly on disturbed, well-drained sites such as roadways, trails, overgrazed range, and logged areas.

Control:
Biological: St. Johnswort root borer, St. Johnswort moth, Klamath beetle, Klamath weed beetle, gall midge. Contact ODA for a list of agents.
Cultural/Mechanical: Mechanical control is ineffective. Livestock avoid grazing St. Johnswort. Removal prevents plants from going to seed.
Chemical / Timing:
~ Round Up, 2,4-D / Spring
~ Picloram / fall
* Always read & follow the label



■ abundant distribution in county
■ limited distribution in county
■ historical site in county
■ not known to be present in county

SULFUR CINQUEFOIL

Potentilla recta

Family Name: Rosaceae
(rose family)

Other Common Names:

Five-finger
cinquefoil,
Rough-fruited
cinquefoil, Tall
five-finger,
Tormentil,
Upright
cinquefoil,
& Yellow
cinquefoil.



fruit = 5mm
seed = 1mm



IDENTIFICATION

Type: Perennial.

Size: 1 to 2 feet tall.

Leaves: Leaves are greenish, coarse-hairy on both sides, & palmately compound with 5 or 7 toothed leaflets. Leaves are approximately 2 to 4" long and up to 1" wide and resemble marijuana leaves. Leaves of sulfur cinquefoil have green coloring rather than silver on the underside of the leaf.

Stalks: Stems are tufted, erect, simple or branched, & very leafy with both coarse and fine hairs & no branches below the flowers.

Flowers: 5 light sulfur-yellow petals surrounding a dark yellow center. Each flower is 1/2" to 1" in diameter. Flowering occurs May to July.

Fruit: Seeds single-seeded achenes that are numerous, clustered, brownish, & strongly net-veined.

Look Alikes: May be confused with buttercups (*Ranunculus* spp) or with several of our native cinquefoils (*Potentilla* spp). However, the flowers of buttercups & all of the native cinquefoils are bright yellow, not the distinctive sulfur-yellow of sulfur cinquefoil. Sulfur cinquefoil can also be distinguished from native cinquefoils by the presence of long hairs that are oriented perpendicular to the stem or leaf stalk.



Origin: Native to the eastern Mediterranean region of Eurasia.

Habitat: Sulfur cinquefoil prefers full sunlight & has adapted to a wide range of soil conditions. It can commonly be found in grasslands, shrubby/forested areas, logged areas, roadsides and waste areas.

Impact: This plant is a problem in areas such as roadsides, pastures and in old fields in northeastern Oregon. It is occasionally found in cultivated fields.

Sulfur cinquefoil can be found replacing yellow starthistle in areas where moisture is adequate and biocontrols have reduced starthistle seed production. Native plants can be excluded in dense patches and grazing forage is reduced.

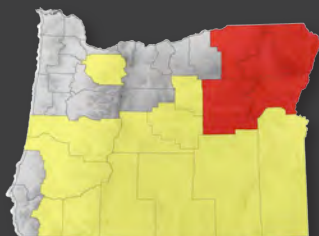


Control: Cultural/Mechanical: Digging & tilling can effectively control small infestations. Mowed or grazed plants can still flower and produce seeds.

Chemical / Timing:
~ Picloram / Fall.
..Aminopyralid / Preferably at rosette stage but effective anytime..

*Always read & follow the label.

History: The exact time and place of the original introduction of sulfur cinquefoil to North America is not known. The first known collection in western North America was on western Vancouver Island in 1914. Northeastern Oregon counties contain the largest populations of sulphur cinquefoil in mountain meadows and grasslands. Smaller populations are becoming more prevalent in the Cascade Mountains.



TANSY RAGWORT

Senecio jacobaea

Family Name: Asteraceae
(sunflower family)

Other Common Names:

Stinking willie, ragwort, tansy
butterweed, stinking
davies, sinking ninny,
tansy ragweed.



IDENTIFICATION

Type: Biennial or short-lived perennial.

Size: 1 1/2 to 4 feet tall.

Leaves: Leaves are dark green on top, whitish-green underneath, and have deeply cut, blunt-toothed lobes with a ragged/ruffled appearance.

Stalks: Stout, erect or slightly spreading, and may be branched. Often groups of stems arise from the plant crown.

Flowers: Daisy-like flower clusters. Each flower cluster is composed of many bright-yellow flowers with (usually) 13 petals. Flowering occurs late July to September.

Fruit: A single large plant may produce 150,000 seeds, which may lie dormant in the soil for as long as 15 years.

Root: Fibrous system of coarse, light colored roots spreading from the crown can produce small adventitious shoots when stimulated by mechanical destruction or pulling.

Look Alikes: May be confused with Common tansy. The two "tansies" are most readily distinguished by their flowers. Tansy ragwort has outer ray petals on its blooms and common tansy just has button-like blooms with no outer petals.

Impact:

The leaves are toxic to cattle and horses, causing irreversible liver damage. In the 1960's and 70's livestock losses in Oregon amounted to 5 million dollars a year. Unlike cattle and horses, sheep appear to be unaffected by ragwort's toxicity. Once considered Western Oregon's most economically serious noxious weed, biological controls have reduced the severity of outbreaks below economic threshold levels.



History:

Tansy Ragwort has become a serious rangeland pest in New Zealand, Tasmania, Australia, South Africa, and the Americas. The first documented site in Oregon was in 1922 in Multnomah County and is now wide spread throughout western Oregon. Tansy ragwort is still very limited on the east side of Oregon. All eastside infestations are under intense management.

Origin:

Native to Europe and western Asia.

Habitat: Prolific in pastures, clear cuts, and disturbed roadside areas, tansy populations can become quite dense.



Control:

Biological: Three biological control agents, a seed head fly, a flea beetle and a moth, are well established but not on the east side of Oregon. Contact ODA for a list of agents.

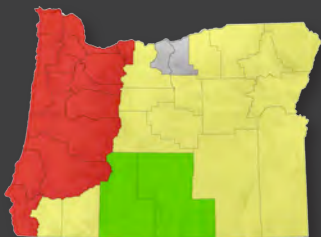
Mechanical: Can be controlled through hand digging and/or pulling. Plants are easiest to pull after plants have bolted but before flowering

Chemical / Timing:
~ 2,4-D / Spring or Fall when plants are small or in rosette stage

~ 2,4-D + Dicamba / Anytime up to flowering & Fall

~ 2,4-D + Triclopyr / Anytime up to flowering & fall

* Always read & follow the label



- abundant distribution in county
- limited distribution in county
- historical site in county
- not known to be present in county

YELLOW FLAG IRIS

Iris pseudocorus

Family Name: Iridaceae
(iris family)

Other Common Names:
Yellow iris, Water flag, Pale
yellow iris, European yellow
iris.



fruit capsule= 4-7cm



IDENTIFICATION

Type: Perennial.

Size: 2 to 5 feet tall.

Leaves: Erect, flattened, sword-like, 3/4" wide, raised midrib, with parallel veins. The leaves are mostly basal & folded clasp the stem at the base in a fan-like fashion.

Flowers: Deep yellow, 2 or 3 on one stalk, flower stalk round, shorter than outer leaves, three outer drooping sepals, with brownish mottled markings, surrounding the true flower. Flowering occurs in summer months.

Fruit: Seedpods are large, glossy green, egg-shaped capsules. Each capsule contains numerous smooth, flattened seeds. These seeds fall into the water, remain buoyant & can spread over long distances by waterways.

Root: Rhizomatous, 4-12" long & form dense mats. This plant also spreads vegetatively through its extensive root system.

Look Alikes: When it is not flowering it may be confused with cattails. Look for the fruits in the summer, or the fan-shaped plant-base at other times of year. Can also be confused with other ornamental irises.



Origin: Introduced from Europe.

Habitat: Prefers wet meadows and wetland margins & can often occupy habitats that have low oxygen.

Impact: Infestations present a dual impact on both human interests and native environments. Irrigation canals and flood control ditches can be severely restricted by the physical nature of the plant clumps. Control of heavily infested waterways can be cost prohibitive due to the huge volume of plant material needing to be removed. Any rhizome fragments that remain quickly reestablish a population. Invaded marshes in some eastern states are experiencing a significant displacement of native sedges and rushes with monocultures of iris. Many over-wintering waterfowl species are dependent on sedge and rush seeds as a high-energy food source. Replacement of this food source reduces the carrying capacity of these marshes to sustain waterfowl populations.



Control: Mechanical: Small infestations can be dug by hand; rhizomes must be expelled to ensure eradication.

Chemical/Timing:
C~ Imazapyr / Late fall or early spring
* Always read & follow the label

History: Yellow flag iris is an escaped ornamental introduced in the early 1900's. It is particularly popular as a large and colorful flowering element in ponds and has been planted in wastewater ponds where it is used to remove heavy metals. Unfortunately, this iris commonly escapes from cultivation. The species has naturalized extensively and is currently distributed across the United States.



■ abundant distribution in county
■ limited distribution in county
■ historical site in county
■ not known to be present in county

YELLOW STAR THISTLE

Centaurea solstitialis

Family Name: Asteraceae
(sunflower family)

Other Common Names:
Geeldissel, Golden star thistle,
St. Barnaby's thistle, Yellow
centaury & Yellow cockspur.



IDENTIFICATION

Type: Annual.

Size: 1 to 3 feet tall.

Leaves: Grayish-green color & covered with a cottony wool. Lower leaves are up to 3" long & deeply lobed, while upper leaves are short & narrow with fewer lobes.

Stalks: Erect, grayish-green, rigid, winged, & branched with a hairy cotton-like pubescence.

Flowers: Solitary flowers are a bright yellow & sharp spines up to 3/4" in length surround the base of the flower. Flowers occur from May to October.

Fruit: Outer seeds are dark brown without bristles & inner seeds are mottled light brown with a tuft of white bristles. Primarily spreads by seed, & each plant can produce up to 150,000 seeds. Seed is viable for up to 12 years.

Look Alikes: Most closely resembles maltese starthistle, another invasive weed with its yellow flower heads, very long and spiny bracts, and can be found in similar habitat but differs in its less gray-green appearance of foliage & less narrow leaves. Other thistles such as Purple and Iberian Starthistle, have similar growth characteristics but are different in color with light purple to deep purple flower heads.

Habitat:

Found in rangeland, pastures, waste areas, & along roadsides. Ability to grow in various soil types.



Impact:

The economic losses in grazing areas can be huge. Yellow starthistle can completely displace desirable forage species in warm, semiarid environments. Opportunities for bird hunting have been impacted in Idaho due to the thick stands of starthistle. It forms dense infestations and rapidly depletes soil moisture, thus preventing the establishment of other species.

Origin:

Native to Eurasia.



Control:

Biological: Starthistle bud weevil, hairy weevil, flower weevil, gallfly & Peacock fly. Contact ODA for a list of agents.

Cultural/Mechanical: Soil disturbance should be limited in established infestations. Pulling can be successful in small infestations. Grazing is effective in reducing seed production. Sheep, goats, or cattle eat yellow starthistle before spines form on the plant.

Chemical/Timing:
~ Aminopyralid / Rosette to bolting stage

~ Clopyralid / Rosette to early bolting stage

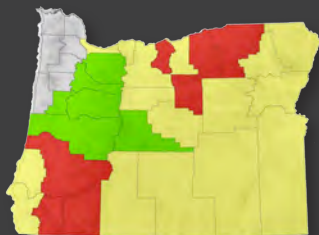
~ Picloram / Rosette to bolting stages

~ Chlorosulfuron / Rosette stage

~ Clopyralid + 2,4-D / Rosette to bolting stages

* Always read & follow the label

History: Introduced to California around 1850 via South America. It is now common throughout the west in open areas, roadsides, rangeland, wildlands, hay fields, pastures, and waste areas. Recent reports indicate that yellow starthistle infests between 10 and 15 million acres in California (courtesy UC IPM Online). Tens of thousands of acres are present in southwestern Oregon. Douglas, Jackson and Josephine Counties have significant acreages of YST. Other areas include Grant, Morrow, Umatilla, Wheeler and Union counties.



■ abundant distribution in county
■ limited distribution in county
■ historical site in county
■ not known to be present in county

YELLOW TOADFLAX

Linaria vulgaris

Family Name: Scrophulariaceae
(figwort family)

Other Common Names: Butter
& eggs, Wild snapdragon, Common
toadflax, Ramsted, Flaxweed &
Jacob's ladder.



fruit = 1cm
seed = 2mm



IDENTIFICATION

Type: Perennial.

Size: 1 to 3 feet tall.

Leaves: Numerous, pale green to gray-green in color, narrow & pointed at both ends and have smooth margins, 2 1/2" or more in length. Alternately arranged on the stem. Mainly alternate but may appear to be opposite due to crowding.

Stalks: Somewhat woody at the base & smooth towards the top of the plant.

Flowers: Flowers grow at the base of the upper leaves in a dense cluster of 15 to 20. The upper lip is yellow, the corolla is 2-lobed, & the lower lip is 3-lobed with an orange spot. A long spur is located at the base of the flower & can be up to 1" long.

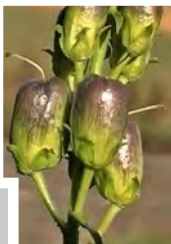
Fruit: Round, 1/4" in diameter, brown, 2-celled, many seeds. Seeds are dark brown to black, flattened with a papery circular wing.

Root: An extensive, deep root system

Look Alikes: Seedlings of yellow toadflax resemble leafy spurge at young stages, but do not produce a milky sap when broken. Unlike Dalmatian toadflax, yellow toadflax only grows to a height of 1 to 2 ft & leaves are linear, rather than lance shaped. Yellow toadflax also resembles the typical snapdragon.

Habitat: This creeping perennial is an aggressive invader of rangelands, roadsides, waste areas & cultivated fields.

Origin: Native to Eurasia.



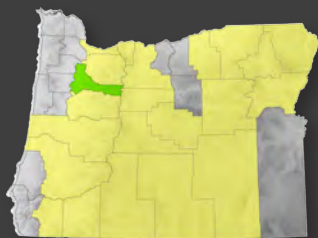
History: This plant was introduced in the mid 1800's as an ornamental. This invader is still occasionally found in wildflower seed mixes and can be found throughout the U.S. First documented in Oregon in 1880 in Multnomah County. It is not a common species in any county but has a wide distribution throughout the state.

Impact: a potential weed problem in zero and minimum till areas because of its prolific seed production and creeping rhizome. It is an aggressive weed in rangeland where it quickly replaces grasses and herbs and is an alternate host for tobacco mosaic virus. Some sources report that toadflax is poisonous to cattle.

Control: Biological: Defoliating moth, seed head weevil, stem-boring weevil & a flower feeding beetle provide fair to good control. Contact ODA for a list of agents.

Cultural/Mechanical: This perennial noxious weed cannot be controlled by mechanical means. Livestock generally don't consume this plant.

Chemical/Timing:
~ Chlorsulfuron / Bud to bloom
~ Picloram + metsulfuron / Bud to bloom
~ Picloram / Late summer to fall or late winter
~ Dicamba / Early spring
Non-ionic surfactant use is recommended in combination with these chemicals.
*Always read & follow labels



■ abundant distribution in county
■ limited distribution in county
■ historical site in county
■ not known to be present in county

HERBICIDES

These herbicide recommendations are to be used as a starting point. Due to the large number of trade (brand) names of commercial products that exist, common names (active ingredients) and a few of these trade names are provided. Mention of a specific product should not be interpreted as an endorsement. Other trade names are available.

This handbook is not intended as a complete guide to herbicide use. Tri-County assumes no responsibility for these recommendations.

ACTIVE INGREDIENTS(S): PRODUCT(S):

2,4-D	SEVERAL PRODUCTS
AMINOPYRALID	MILESTONE
BROMOXNYL	BURCTIL
CHLORSULFURON	TELAR
CLOPYRALID	STINGER TRANSLINE
CLOPYRALID + 2,4-D	CURTAIL
CLOPYRALID + TRICLOPYR	REDEEM
DICAMBA	BANVEL CLARITY VANQUISH
DICAMBA + 2,4-D	PASTUREMASTER WEEDMASTER
DIQUAT	REWARD
ENDOTHALL	AQUATHOL HYDROTHOL
FENOXAPROP	ACCLAIM HORIZON
FLUAZIFOP	FUSILADE
FLURIDONE	AVAST!

Remember....

Always Use Herbicides Safely! Wear protective clothing and safety devices as recommended by the label and....

ALWAYS READ AND FOLLOW THE LABEL!

ACTIVE INGREDIENTS(S): PRODUCT(S):

GLYPHOSATE

**RODEO
ROUNDUP
TOUCHDOWN**

GLYPHOSATE + 2,4-D

LANDMASTER

IMAZAPIC

PLATEAU

IMAZAPIC + GLYPHOSATE

JOURNEY

IMAZAPYR

**ARSENAL
HABITAT**

MCPA

SEVERAL PRODUCTS

METSULFURON

**ALLY
CIMARRON
ESCORT**

METSULFURON + DICAMBA + 2,4-D

CIMARRON MAX

PICLORAM

TORDON

SETHOXYDIM

POAST

SULFOMETURON

OUST

TRIBENURON

EXPRESS

TRICLOPYR

**GARLON
REMEDY
RENOVATE**

TRICLOPYR + 2,4-D

CROSSBOW

WEED WEBSITES

- » Baker County Weed Control: <http://www.bakercounty.org/weed/Weeds.html>
- » BLM Noxious Weed Management: <http://www.blm.gov/or/resources/weeds/index.php>
- » Center for Invasive Plant Management: <http://www.weedcenter.org/>
- » Federal Weed List: <http://plants.usda.gov/java/noxiousDriver>
- » iMapInvasives: <http://www.imapinvasives.org/>
- » National Network of Invasive Plant Centers: <http://www.invasive-plantcenters.org/>
- » North American Weed Management Association: <http://www.nawma.org/>
- » Oregon Biological Control Program: <http://oregon.gov/ODA/PLANT/WEEDS/biocontrolprogram.shtml>
- » Oregon CWMA List: http://oregon.gov/ODA/PLANT/WEEDS/weed_cwmacontactlist.shtml
- » Oregon Invasive Species Council: <http://oregon.gov/OISC/>
- » Oregon Noxious Weed List: <http://www.oregon.gov/ODA/PLANT/WEEDS/statelist2.shtml>
- » Oregon State Weed Board: http://www.oregon.gov/ODA/PLANT/WEEDS/oswb_index.shtml
- » Oregon Weed Free Forage Program: <http://oregon.gov/ODA/PLANT/WEEDS/weedfreeforageprogram.shtml>
- » Tri-County CWMA: <http://tricountycwma.org/>; facebook: <https://www.facebook.com/profile.php?id=100009470814316>
- » Union County Weed Control: <http://unioncountyweedcontrol.org/index.html>
- » Weed Mapper: <http://www.weedmapper.org/>
- » Western Society of Weed Science: <http://www.wsweedsociety.org/>
- » XID Services; Weed Identification: <http://xidservices.com/>

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GLOSSARY



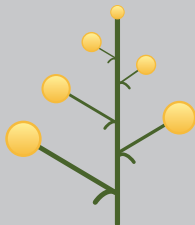
adventitious roots	Roots appearing in an unusual or unexpected place on a plant
alternate	Leaf arrangement where one leaf arises from the stem at a time
annual	A plant that flowers and dies within a period of one year from germination
apex	Tip
awn	Bristle-like appendage on grass seeds that extends beyond the seed, as throughout the seed heads of wheat
axil	Where a leaf attaches to the stem
basal	At the base of a plant or plant part
biennial	A plant that flowers and dies between its first and second years and often does not flower in its first year
bolting	To develop a flowering stem from a rosette
bract	A small, leaf-like structure below the flower
capsule	Dry fruit with more than one seed
clasping	Partly surrounding the stem
divided	A leaf whose margin is not entire but rather extends inward to the midvein, creating numerous small leaflets
entire	Leaf edges are not toothed or serrated
exotic	Not native
brous roots	Root system with many, fine, diffuse roots
floret	One of the small, closely clustered flowers forming the head of a composite flower in the sunflower family
flower head	Cluster of numerous florets, which is common in the sunflower family; resembles one individual flower
glabrous	Smooth; without hairs
globular	Spherical
inflorescence	The flowering part of a plant
leaflet	One small blade of a compound leaf
ligule	Thin, papery outgrowth at the junction of leaves and leaf stems in grass species

lobed	A leaf with shallow or rounded, deeply indented margins, as in a thistle rosette leaf
midrib	The central axis or vein of the leaf blade or leaflet
monoculture	Area where only one type of plant grows
node	Joint on a stem where stems and leaves originate
nutlet	Hard, small, one-seeded fruit, usually referring to fruits of the Boraginaceae members
oblong	Longer than wide
opposite	Leaf arrangement where two leaves arise from the stem at the same height but on opposite sides of the stem
palmate	Leaflets, lobes, or veins which arise from the same point at the tip of the stalk
perennial	A plant that lives more than two years
pinnate	Leaflets or lobes developing from several different points on the main leaf axis
pistil	Female reproductive part of flower
plume	A hair-like or featherlike structure, often on a seed
rhizomatous	Having a rootlike subterranean stem, commonly horizontal in position, that produces roots below and sends up shoots progressively to the upper surface
rosette	A compact, circular, and normally basal cluster of leaves
seed head	Synonym for flower head
sepal	One of the outermost flower structures, usually enclosing the other flower parts in the bud
silicle	Dry fruit usually twice as long as wide with two sections that release seeds when ripe
spur	Any long, narrow (sometimes tubular) extension of a petal
stamen	Male reproductive part of flower
stolon	A horizontal stem growing above the ground, which can develop roots or sprouts at the joints
succulent	Thick and fleshy
taproot	The primary descending root along the vertical axis of the plant which is larger than the branching roots
terminal	Borne at or belonging to the extremity or summit
umbel	Cluster of flowers where all flower stalks are of similar length and originate from the same point
variegated	Of different colors, not monochrome
whorled	Cluster of three or more leaves rising out of the stem at the same height in a ring around the stem

INFLORESCENCE TYPES

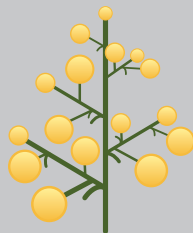


SPIKE

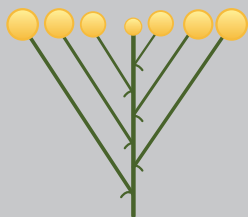
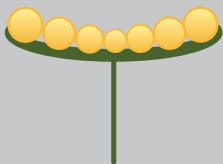


RACEME

PANICLE

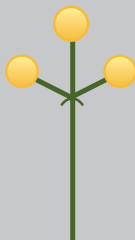


HEAD



CORYMB

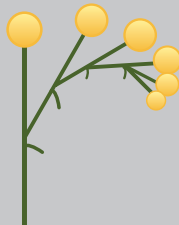
DICHASIMUM



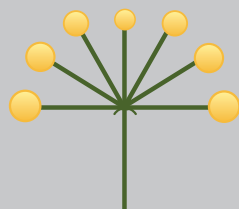
CATKIN



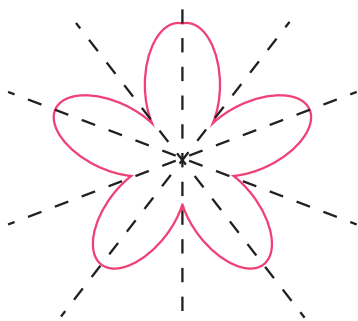
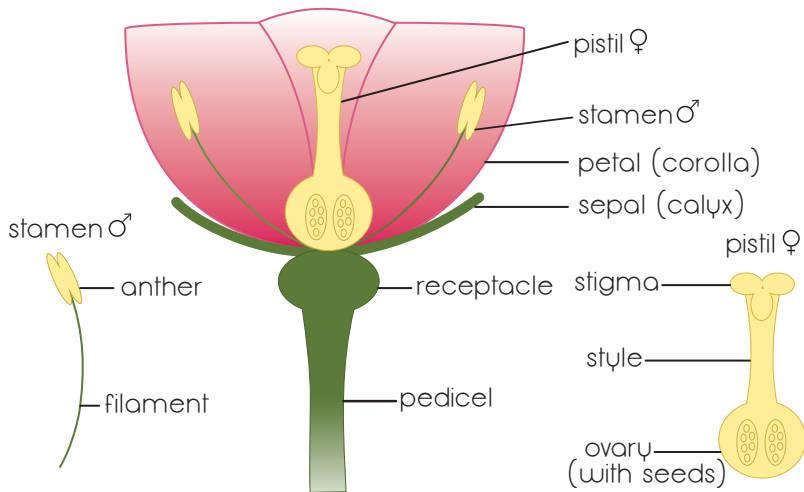
CYME



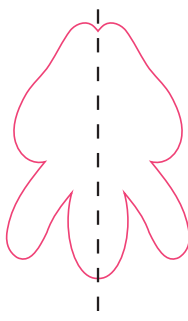
UMBEL



CROSS SECTION OF A TYPICAL FLOWER



A. Actinomorphic Flower (radially symmetrical)



B. Zygomorphic Flower (bilaterally symmetrical)

LEAF SHAPES



LANCEOLATE.



OBLONG



CORDATE.



OVATE



HASTATE.

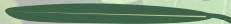


RENIFORM



DELTOID.

LINEAR



ROSETTE



PALMATE



PINNATE

LEAF MARGINS

.DENTATE _____



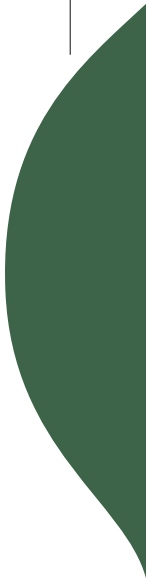
.SERRATE _____



.CRENATE _____



.ENTIRE _____



.LOBATE _____





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Page 3 to 4 - Orange Hawkweed : Joe - Flickr.com

Page 5 to 6 - Thumbnails: See individual species pages.

Page 7 to 8 - Orange Hawkweed Seed: Line Sabroe - Flickr.com

Page 9 - Diffuse Knapweed Bio: Marissa Ermovick - BLM

Distribution Maps: Oregon Department of Agriculture or United States Department of Agriculture

Page 11 to 12 - Common bugloss: Seed, Steve Hurst - USDA NRCS PLANTS Database - Bugwood.org; Infestation and Leaf, Dan Sharratt; Inflorescence, UBC Botanical Garden and Centre for Plant Research; Plant Stand and Nutlet, Robert L. Carr - Flora of Eastern Washington and Adjacent Idaho; Rosette, Kootenai County Noxious Weed Control Department

Page 13 to 14 - Leafy Spurge: Roots, John Jefferies – John Jefferies Spray Service; Seedling and Infestation, Tara Porter – TRP Creative Resources; Stem, Norman Rees – USDA Agricultural Research Service, ipmimages.org; Fruit and Seed, Julia Scher - USDA APHIS PPQ – ipmimages.org; Plant, Kristian Peters - wikimedia.org; Inflorescence, pawpaw67 - flickr.com; Flower, Anne Elliott – flickr.com

Page 15 to 16 - Medusahead rye: Seed, Steve Hurst - USDA-NRCS PLANTS Database; Seed head, Green Flower head and Infestation, Matt Lavin – Montana State University - flickr.com; Seed head, Zoya Akulova - calphotos.berkeley.edu; Plant Stand, Craig Thornsen - California Dept. of Food & Agriculture - Botany Laboratory

Page 17 to 18 - Myrtle spurge: Seed, Steve Hurst USDA NRCS PLANTS Database - Bugwood.org; Flower close-ups, Frank Vincentz - wikimedia.org; Infestation, Bryant Olsen – flickr.com; Plant, Steve Dewey – Utah State University – invasive.org; Stand, Arnie Grammon – Baker County Weed Control

Page 19 to 20 - Orange Hawkweed: Flower head masked, John Flannery – Flickr.com; Flower head top, Joshua Mayer - Flickr.com; Seedheads, Michael Shephard - USDA Forest Service, Bugwood.org; Seed, Ken Chamberlain - The Ohio State University, Bugwood.org; Infestation, Caleb Slemmons - National Ecological Observatory Network, Bugwood.org; leaf, lawnsouthmanchester.co.uk; plant, Neville Walsh - <http://invasives.org.au/>; root, John Cardina - The Ohio State University, Bugwood.org

Page 21 to 22 - Common Crupina: Flower head masked, Joseph M. DiTomaso - University of California - Davis, Bugwood.org; Seed head, jacinta Iluch Valero – Flickr.com; Infestation, USDA APHIS PPQ - Oxford, North Carolina, USDA APHIS PPQ, Bugwood.org; Stem, USDA APHIS PPQ - Oxford, North Carolina, USDA APHIS PPQ, Bugwood.org; Leaf, Utah State University - Bugwood.org; Rosette, Utah State University - Bugwood.org; Seed, Joseph M. DiTomaso - University of California - Davis, Bugwood.org; Seed head empty, Richard Spellenberg - CalPhotos Database

Page 23 to 24 - Russian Knapweed: Masked flower and top view of Flower, Ron Wolfe – [discoverylife.org](#); Seed, Steve Hurst – [USDA-NRCS PLANTS Database - invasive.org](#); Seed head and Infestation, John M. Randall – [invasive.org](#); Three Flowers, Steve Dewey – [Utah State University](#); Root, Washington State Noxious Weed Control Board; Rosette, LL Berry – [invasive.org](#)

Page 25 to 26 - Scotch thistle: Leaves, Bonnie Million – [invasive.org](#); White flower, Dan Sharratt; Rosette, Arnie Grammon – [Baker County Weed Control](#); Stand and Stem, Tara Porter – [TRP Creative Resources](#); Seeds Steve Hurst – [USDA Plants Database](#); Seed heads, Brad Sharp – [SharpFotos.com](#)

Page 27 to 28 - Canada thistle: Plant, Richard Old – [XID Services](#); Stem, Emily Folkestad; Seed, Jim O'Brien - [ANR Communication Services - cecentralsierra.ucanr.org](#); Plumes, Al Schneider - hosted by the [USDA-NRCS PLANTS Database](#); Rosette, Oregon State University - [mint.ipcc.orst.edu](#); Plant Stand and Flowers, Matt Lavin – [Montana State University - flickr.com](#)

Page 29 to 30 - Musk thistle: Seedlings, JJ Dellow - [NSW Department of Primary Industries](#); Seed head, Les Merhoff - [discoverlife.org](#); Stem, Sheryl Pollock - [discoverlife.org](#); Flowers, [opsu.edu](#); Rosette, University of Minnesota Extension; Seed, University of British Columbia Botanical Garden and Centre for Plant Research; Infestation, Nigel Jones – [flickr.com](#)

Page 31 to 32 - Purple loosestrife: Stem, Andrew Williams – [critterzone.com](#); Fruit and flower, Jouko Lehmuskallio – [naturegate.com](#); Seed and Fruit, Gary Piper – [Washington State University](#); Seedling, Ohio State Weed Lab Archive – [forestryimages.org](#); Infestation, Angie Gibbons – [Tri-County CWMA](#)

Page 33 to 34 - Spotted knapweed: Seed head, Richard Old – [XID Services](#); Biocontrol and Plant, Tara Porter – [TRP Creative Resources](#); Leaf, John Cardina – [invasive.org](#); Seeds, Steve Hurst - [USDA NRCS PLANTS Database - Bugwood.org](#); Rosette and Infestation, Leslie J. Mehrhoff – [forestryimages.org](#); Bracts, Jason Hollinger – [flickr.com](#)

Page 35 to 36 - Houndstongue: Flowers, Jeffery S. Pippen – [Utah wildflowers – duke.edu](#); Seed heads, David Fenick – [APHOTOFLORA](#); Leaves, Rodney G. Lym - [ag.ndsu.edu](#); Plant and Rosette, Dan Sharratt; Inflorescence, Tara Porter – [TRP Creative Resources](#); Seed, [USDA Agricultural Research Service \(ARS\)](#)

Page 37 to 38 - Summer pheasant eye: Yellow flower, [nuriatomas.blogspot.com](#); Fruit with Flower, Saint Mary's College of California; Seed, Plant and Seedling, [weed-atlas.eu](#); Orange flower, Steve Dewey – [Utah State University – invasive.org](#); Infestation, Todd Pfeiffer - [Klamath County Weed Control – invasive.org](#)

Page 39 to 40 - Armenian blackberry: Stem, Stan Shebs - [wikimedia.org](#); Seed, Julia Scher - [USDA APHIS PPQ forestryimages.org](#); Infestation, Dan Sharratt; Berries, Daniel Mosquin - [botanicalgarden.ubc.ca](#); Leaves, Richard Old – [XID Services – invasive.org](#); Green Fruits, Keir Morse - [calphotos.berkeley.edu](#)

Page 41 to 42 - Diffuse knapweed: Biocontrol, Marissa Ermovick – [BLM](#); Plant, Richard Old – [XID Services](#); Rosette and Infestation, Dan Sharratt; Flower, Tara Porter – [TRP Creative Resources](#); Plant, Emily Folkestad – [unioncountyweedcontrol.com](#); Stem, Joseph M. DiTomaso – [University of California – invasive.org](#)

Page 43 to 44 - Japanese knotweed: Stem/Leaves, Jack Ranney – [University of Tennessee](#); Seeds and Fruit, Ken Chamberlain - [Ohio State University – forestryimages.org](#); Inflorescence, [Columbia.edu](#); Hollow Stem, Gary Fewless - [University of Wisconsin](#); Infestation, [Tri-County CWMA](#)

Page 45 to 46 - Mediterranean Sage: Flower, Vladimir Sviridenko - plantarium.ru; Plant, Dan Sharratt; Rosette & Infestation, Eric Coombs - Oregon Department of Agriculture, ipmimages.org; Seed, Steve Hurst - USDA NRCS PLANTS Database - Bugwood.org

Page 47 to 48 - Oxeye Daisy: Masked flower, Peter O'Connor – Flickr.com; Bud, Dean Morley – Flickr.com; Leaf, Harry Rose – Flickr.com; Seed, Infestation, Root, Stem/Leaf, Steve Hurst - USDA NRCS PLANTS Database, Bugwood.org; Plant, Mary Ellen (Mel) Harte - Bugwood.org

Page 49 to 50 - Perennial pepperweed: Young fruit, Gary Fewless University of Wisconsin; Root and Infestation, Les Mehrhoff – discoverlife.org; Foliage, Pedro Tenorio-Lezama – invasive.org; Rosette, Dan Sharratt ; Plant, Leigh Dawson – US Forest Service; Seed, Steve Hurst - USDA-NRCS PLANTS Database; Seed head, bdei2.cs.umb.edu

Page 51 to 52 - Poison hemlock: Stem, Steve Baskauf – discoverlife.org; Infestation, Richard Old – XID Services, Leaflet, Robert Vidéki – forestryimages.org; Seed head, Jan Samanek – State Phytosanitary Administration - forestryimages.org; Seed, Steve Hurst – USDA-NRCS PLANTS Database - forestryimages.org; Seedling; Ohio State Weed Lab Archive – forestryimages.org; Flower, Jim Maloney – flickr.com

Page 53 to 54 - Whitetop: Plant, Angie Gibbons – Tri-County CWMA; Single Fruit and Seed, Julia Scher - USDA APHIS PPQ; Infestation and Rosette, Dan Sharratt

Page 55 to 56 - Common Tansy: Flower heads 1 and 2, Randi Hausken – Flickr.com; Plant, Matt Lavin – Flickr.com; Infestation, Steve Dewey - Utah State University, Bugwood.org; Leaf and Plant skeletons- Joseph M. DiTomaso, University of California - Davis, Bugwood.org; Seed head, K. Chayka - www.minnesotawildflowers.info; Seed head 2, Richard Old - XID Services, Inc., Bugwood.org

Page 57 to 58 - Dalmatian toadflax: Foliage and Fruit, Linda Wilson – University of Idaho – ipmimages.org; Seed, Steve Hurst - USDA NRCS PLANTS Database - Bugwood.org; Plants, Utah State University – ipmimages.org; Flowers, William W Dunmire - luiirg.altervista.org; Infestation, Tri-County CWMA

Page 59 to 60 - Dyer's woad: Infestation, Dan Sharratt; Pods and Rosette, Steve Dewey – Utah State University – ipmimages.org; Plant and Flowers, Kurt Stüber - wikipedia.org; Plant, Bonnie Rasmussen - Oregon Dept. of Agriculture; Stem/Leaves, Robert H. Callihan – University of Idaho

Page 61 to 62 - Meadow Hawkweed: Infestation 1, Mike Baybado – Green Balance LLC; Infestation 2, Tri-County CWMA; Plant, Tara Porter – TRP Creative Resources; Stems, Tom Heutte – USDA Forest Service; Flower buds and Leaf, King county Washington Noxious weeds; Seed head with seed, David G. Smith – Discover Life; Seedlings, Richard Old – XID Services

Page 63 to 64 - Puncturevine: Seeds, Steve Hurst – USDA-NRCS PLANTS Database - forestryimages.org; Fruit; Forest & Kim Starr – invasive.org; Stem, Steve Dewey – Utah State University - forestryimages.org; Seed in tire, Arnie Grammon – Baker County Weed Control; Sidewalk Infestation, Ray Hosler; Seedling, plantwise.org; Seed in shoe, Tanya Trevor Saunders - wildernessdiary.com

Page 65 to 66 - Rush Skeletonweed: Masked flower and Stem, Richard Old – XID Services; Plant and Rosette – Tara Porter – TRP Creative Resources; Seed, Steve Hurst – USDA-NRCS PLANTS Database - invasive.org; Root, John Jefferies – John Jefferies Spray Service; Flower, Peter Stevens – flickr.com

Page 67 to 68 - St. Johnswort: Leaves and Seed heads, Matt Lavin – Montana State University – flickr.com; Flower, Bildagentur-Online Science Photo Library; Red Plant, Norman E. Rees - USDA Agricultural Research Service – Retired; Seed, Steve Hurst USDA NRCS PLANTS Database - Bugwood.org; Seedling, Joseph M. DiTomaso - University of California – invasive.org; Plant, Richard Old - XID Services – invasive.org; Infestation, Western Society of Weed Science

Page 69 to 70 - Sulfur cinquefoil: Leaf, missouriplants.com; Stem, Steve Dewey – Utah State University – invasive.org; Stem and Seedling, Joseph M. DiTomaso - University of California – invasive.org; Seed, Steve Hurst USDA NRCS PLANTS Database - Bugwood.org; Plant, Jouko Lehmuskallio – naturegate.org; Infestation, Mike Baybado – Green Balance LLC

Page 71 to 72 - Tansy Ragwort: Moth, Paul Ritchie – Flickr.com; Rosette, George Wesley – Flickr.com; Plant, Cari Hachmann - Outlook Photo; Flowers, Michael Shephard - USDA Forest Service, Bugwood.org; Seed head, Leslie J. Mehrhoff - University of Connecticut, Bugwood.org; Infestation, Eric Coombs - Oregon Department of Agriculture, Bugwood.org; Leaves layout, Leslie J. Mehrhoff - University of Connecticut, Bugwood.org

Page 73 to 74 - YellowFlag Iris: Infestation, Tri-County CWMA; Leaves and Seed Cover, Tara Porter – TRP Creative Resources; Plant, kgnaturephotography.com; all others, wikipedia.org

Page 75 to 76 - Yellow starthistle: Seed heads, Plant and Infestation, Tara Porter – TRP Creative Resources; Stem, Paul Slichter - science.halleyhosting.com; Flower with Seed head, Steve Dewey – Utah State University – invasive.org; Leaf, Mary Ellen (Mel) Harte; Rosette, Joseph M. DiTomaso - University of California

Page 77 to 78 - Yellow Toadflax: Fruit, USDA Agricultural Research Service (ARS); Seed, USDA Agricultural Research Service (ARS); Infestation, Michael Shephard – USDA Forest Service – invasive.org; Green fruit, Jouko Lehmuskallio – naturegate.org; Leaves, John Cardina – Ohio State University – invasive.org; root, Steve Dewey - Utah State University - Bugwood.org

Page 79 to 80 - ATVs and Canyon: Tri-County CWMA

Page 81 to 82 - Blackberry Fruit: Jessie Hirsch - Flickr.com

Page 83 - Yellow Flag Iris: Dean Morley - Flickr.com

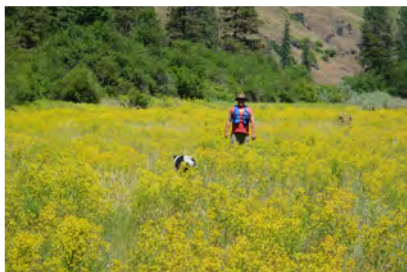
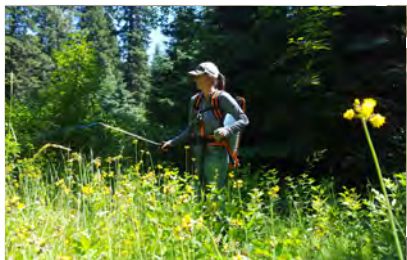
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Page 87 - Japanese Knotweed: Oona Räisänen - Flickr.com

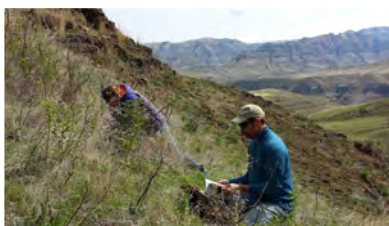
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