

Invasive Plants
of the
Crown of the Continent

Third Edition



Acknowledgements

This book was made possible by the vision and contributions of many people. Thanks goes out to the Crown Managers Partnership (CMP) for their project support since inception of this field guide and to all members of the Crown Invasive Plant Network (CIPN) for their contributions. CIPN members identified the creation of this invasive plant field guide as their first priority in identifying existing and potential plant invaders in the Crown of the Continent Ecosystem. In particular, we would like thank Dawn LaFleur and Kelly Cooley for their enthusiasm, expertise, and contributions to this guide. Additionally, this project could not have been accomplished without the help of past and present staff at the Crown of the Continent Research Learning Center. We thank them for their management, research, and layout contributions.

We are grateful to Phil Matson for his talent and helpfulness in creating the third field guide edition's distribution maps. Without his expertise, they would not have been possible. An additional thanks goes out to Natalie Poremba for her support and for steering the members of the CIPN.

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About This Field Guide

Included Species

Crown Invasive Plant Network (CIPN) members extensively discussed which species to select for *Invasive Plants of the Crown of the Continent*. It was not an easy or quick process. In the end, we decided to emphasize invasive plants that particularly threaten protected areas and parks, though many of these species will invade agricultural, commercial, industrial, and urban lands as well.

Selected species include those listed on state, provincial, and/or regional weed legislation in Montana, Alberta, and British Columbia. CIPN managers also tried to include unregulated invasive species, a subset of invasive species, that are a priority in their ecological subregion, as well as species with the potential to emerge as new invaders in the Crown of the Continent Ecosystem. Using the aforementioned criteria, CIPN members agreed to the 78 species included in this guide. Comprehensive information about each of these species is provided within.

Using the Field Guide

In this field guide, invasive plants are organized taxonomically according to the family in which they belong. The plants within each family are organized alphabetically by their common name. Color tabs represent separate family groups. Each species is presented on

two pages with photos and short descriptions of identifying characteristics, native look-alike species, habitat, and manual treatment recommendations.

A distribution map within the Crown of the Continent Ecosystem is also included for each

Canada Thistle (*Cirsium arvense*)

A perennial, up to 1.2 meters (4 feet) tall, that often forms colonies from stems sprouting from the base. Introduced from southeastern Europe to Canada in contaminated crop seed.

QUICK ID

- Prickly stems and dull/leaves
- Achroites covering flowers
- Purple/pink flowers less than 2.5 cm across
- Floral bracts generally lack sharp spines

Flowers: Clusters of purple-pink (occasionally white) flowers attach to top of branches or emerge from the joint where leaves attach to stem. Usually below the flower petals are several rows of overlapping floral bracts, which generally lack sharp spines.

Leaves and Stems: Stems, stemless leaves 1 to 21 cm long. Leaves are prickly and often tipped with a sharp spine, notched margins, and irregularly shaped lobes. Soft seeds have often cover underside of leaf. Hairs, leafy stems lack wings, branch near the top, and become hairy with age.

Seeds: Light brown seeds, 2 to 4 mm long, with hairy white pappus attached. Each plant may produce over 4000 seeds that remain viable for up to 25 years.

Reeds: Deep covering mats, or dunes, allow plant to survive below the cultivation zone.

Reproduction and Dispersal: Although seeds are dispersed by wind, reproduction is primarily from creeping underground rhizomes, or roots with buds.

Habitat Preferences: Grasslands, pastures, fields, forest openings, stream banks, and disturbed sites. Tolerant moist soil. Typically grows in areas heavily trampled.

Manual Treatment: Occasional hand pulling and cultivation may increase infestations by dispersing seed fragments. However, repeated cultivation, mowing, or hand-weeding reduces and can eventually eliminate infestations.

Interesting Facts: Each plant has both male and female flowers. Female flowers have a pleasant vanilla-like aroma.

Distribution Map: A map of the Crown of the Continent Ecosystem showing the distribution of Canada Thistle in red.

species (see Understanding the Distribution Maps on page 12). Any sightings of invasive plant populations, especially those not abundant in the Crown of the Continent Ecosystem, should be reported to the appropriate resource manager for the area (see Management Partners Contact List on pages 178–182).

Introduction

The Crown of the Continent Ecosystem (CCE) encompasses approximately 16,000 square miles (44,000 square kilometers) of the Northern Rocky Mountains. A shared landscape and watershed between southeast British Columbia, southwest Alberta, and northwest Montana, it is one of the world's premier mountain eco-regions. Glaciers cling to mountain peaks, waterfalls pour into streams, and rivers flow through U-shaped valleys. These valleys descend through vast forested areas down to deep blue lakes on both sides of the Continental Divide, transitioning to foothills and prairies on the eastern portion of the CCE.

The Crown of the Continent Ecosystem is an international destination. People come in hopes of seeing grizzly bears, black bears, wolves, elk, mountain goats, and bighorn sheep. They come to view stunning mountain vistas and marvel at the incredible variety of wildflowers flourishing in the Crown.



Danny Smart

Diverse landscapes exist within the CCE. These grasslands are part of the Rocky Mountain Trench in southeastern British Columbia.

It is a beautiful landscape, but its value is far greater than aesthetics. The Crown of the Continent is the most biologically intact ecosystem in North America. From lush alpine meadows to the windswept prairie, this ecosystem supports a diversity of habitat.

The Continental Divide splits the CCE north to south, creating distinct eastern and western biomes characterized by differences in climate. Within those two biomes are five ecoregions supporting over 70 species of mammals, more than 260 species of birds, and over 1,000 native plant species. These native plant communities are the foundation of the Crown of the Continent Ecosystem; they stabilize soil and provide nutrients and habitat to plants, animals, and insects.

These ecoregions are among the most protected landscapes in North America. The CCE includes provincial, state, and federal protected areas. Examples of protected areas include the Bob Marshall Wilderness Complex, numerous Montana state parks, BC provincial parks such as Top-Of-The World, Kikomun Creek, and Morrissey, Alberta provincial parks such as Beauvais Lake, Castle, and Castle Wildland, and the Beehive Natural Area, Black Creek Heritage Rangeland, and Bob Creek Wildlands in Alberta. Additionally, the CCE contains Waterton-Glacier International Peace Park, formed by Glacier National Park in the United States and Waterton Lakes National Park in Canada. Other lands are conserved by First Nations including the Kainai (Blood), Piikani (Peigan), Niitsitapi (Blackfeet), Ktunaxa (Kootenai), and Salish-Kootenai Confederacy. Additional lands in the CCE are protected by the Nature Conservancy of Canada, Montana Association of Land Trusts member organizations, and the Southern Alberta Land Trust Society.

Even with these large tracts of protected lands, native plant communities in the Crown of the Continent are at serious risk. The single greatest threat facing land managers in the CCE today is the invasion of non-native, invasive plant species. At least ten percent of the plants in the CCE are non-native. By outcompeting and thus eliminating existing native plant communities, invasive species reduce the biodiversity of the area. Many of these invasive species are harmful or deadly to wildlife and livestock. Invasive seeds travel by wind, water, animals, and human activity, allowing them to spread throughout the Crown of the Continent.

Invasive Plants of the Crown of the Continent is intended as an educational resource to help **all of us** prevent the introduction, and stop the spread of invasive plant species where we work or play within the Crown of the Continent. Use this guide to help identify invasive plants, discern them from native plant look-alikes, learn about their reproduction and dispersal strategies, and prevent them from overtaking native plant communities. **Please do your part to protect the Crown of the Continent Ecosystem.**

Invasive Plants...What's the Problem?

The word "weed" is a general term for a "plant out of place," or any plant not desired in the area it inhabits. Some "weeds" are non-native plants used as ornamentals in garden settings or as agricultural crops, and are relatively harmless. Other non-native plants are also **invasive plants**. Invasive plants can move from intentionally planted gardens or crops into disturbed, as well as undisturbed areas, and can be very harmful to the native flora and fauna. Many invasive plants were never intentionally brought into the region, but have spread here accidentally from other areas, sometimes hundreds to thousands of miles away. Certain invasive plants are particularly destructive to both native and managed lands, and watersheds. These plants are designated by government agencies as **noxious weeds**. Everyone has a legal responsibility to help control them.

Invasives are carried into new places by people, equipment, animals, water, and wind. Invasive plants have been introduced to the Crown of the Continent Ecosystem for many decades. These invasive plants come from different ecosystems in other parts of the world. They arrive in North America without the natural controls of insects, plant diseases, and competing plants, which keep their populations in check in their native areas. Once established, invasive plants are tough to get rid of because they produce hundreds to thousands of seeds per plant, and/or they have the ability to reproduce and spread through extensive and expanding, creeping root systems.

The most aggressive invasives spread into grasslands and forests, reducing wildlife habitat, increasing soil erosion, and diminishing the diversity of flora. Invasive plants are able to spread rapidly because they are incredibly resilient. They often adapt and develop new reproduction strategies in order to cope with the stresses of their new environment. For example, Spotted knapweed secretes a chemical from its foliage and roots into the soil, which prevents seed germination of other plant species that try to grow nearby.

For example, Spotted knapweed secretes a chemical from its foliage and roots into the soil, which prevents seed germination of other plant species that try to grow nearby.



Invasive Spotted knapweed threatens native plants.

Areas of recent and/or constant disturbance, such as roadsides, are the most susceptible to invasion. While some disturbance mechanisms are natural, such as flooding and wildfire, human activities along roadsides and construction sites are primary vectors for invasive plants to establish and spread.

Invasives outcompete native plants for water, soil nutrients, sunlight, and space to grow. Once invasive plants become established, there are far-reaching consequences for native plant and wildlife communities throughout the ecosystem. In a healthy plant community, native plants fill every ecological niche in the system. Especially important are the variety of root systems, from different species of plants, that work together to hold the soil in place. When an invasive plant species takes over an area, one type of root system dominates, and often soil erosion can occur. This can put local water resources at risk due to increased runoff. Such damage cannot be easily fixed, even if invasive plant species are removed from the environment.

Invasive plants also decrease suitable wildlife habitat. Native fauna have evolved with native plants species and rely on them for their food. When invasive plants become prevalent in an area, they severely reduce the number and variety of native species. This causes wildlife to seek out new areas to forage, and in turn can change the movement patterns of not only herbivores and ungulates, but also the predators that depend on them.

Invasive plants reduce economic productivity as well as the ecological integrity of the land and water within the Crown of the Continent. The rate of introduction and spread of invasive species has increased dramatically over the past 150 years with increases in human activities, trade, and commerce. Alarming, invasive plant species listed in Canada and the United States are increasing in quantity, area, and density.

Managers in the CCE are concerned invasive plants will spread even more rapidly in the near future due to predicted climate change impacts, including increasing frequency and severity of wildfires, and ecosystem-scale changes in growing conditions for all plants. As the amount of land covered by invasive plants continues to increase, the severity of the threat grows exponentially day by day. This is especially true in pristine areas of the Crown of the Continent Ecosystem where invasion, establishment, and spread of invasive non-native plants is perhaps the single greatest threat facing resource managers today.

Agronomic & Unregulated Invasive Species

Agronomic invasive species are a subset of invasive plant species. These plants were intentionally introduced into western North America, in most cases many decades ago, as plants thought to provide economic benefits to agricultural producers as forage crops and livestock feed. When introduced, little to no attention was given to their potential to become highly invasive in agricultural or natural areas. Examples include legume species such as Alfalfa (*Medicago sativa*), White sweetclover (*Melilotus albus*), and Yellow sweetclover (*Melilotus officinalis*) as well as grassy species like Timothy (*Phleum pratense*), Smooth brome (*Bromus inermis*), and Crested wheatgrass (*Agropyron cristatum*).



Matt Lavin

Crested wheatgrass is an example of an agronomic invasive species found in the CCE.

Unregulated invasive species are another subset of overall invasive species. This subset can be further divided into two general subgroups of unregulated invaders. The first subgroup is unregulated invasive species either currently not found, or only recently introduced,

into the Crown of the Continent Ecosystem. The second subgroup includes unregulated invasive species in western North America that have been present for decades and are so widespread that effective regulation of their spread is thought to be legislatively unenforceable on a state/provincial or federal level. Examples include species such as Common dandelion (*Taraxacum officinale*), Field pennycress (*Thlaspi arvense*), and Couchgrass/Quackgrass (*Elymus repens*).

In previous editions of this guide, some agronomic and other unregulated invasive species noted above were included with specific species descriptions. Editors of this edition recognize these species remain a concern, threatening and displacing native species within the Crown of the Continent Ecosystem. However, we decided not to include specific species descriptions for them, instead conserving available space to feature currently regulated and more recent, but still broadly unregulated, invaders to the CCE.

Managing Invasive Plants

Most invasive species managers choose to employ **Prevention, Early Detection and Rapid Response (EDRR), and Integrated Management (IM)** principles.

Prevention is considered the most important and effective method of stopping the introduction and spread of invasive plants. Preventing invasives from being introduced into new areas requires adopting ethics in how we work and play. These preventative actions help avoid the much greater difficulty of trying to remove established populations of invasive plants. Lands and waterways can be managed to avoid unnecessary disturbances, enhancing growth of desirable plants and discouraging undesirable species. In short, land managers should manage for what they want to grow, not for what they don't want to grow.

Every person and industry plays a part in reducing the spread of invasive species. Construction projects can use "weed free" sources of soil, gravel, and reclamation materials, as well as washing their equipment before moving off one work site and into another. Agricultural producers and public land managers can create a demand for "weed free forage" to avoid introducing invasives through contaminated hay and straw used to feed livestock and wildlife. Firefighters can clean their equipment and gear prior to entering and



Pat Morrow

Volunteers pull invasive/ noxious weeds.

leaving fire management areas. The internationally recognized invasive plant prevention campaign "**PlayCleanGo: Stop Invasive Species In Your Tracks,**" encourages recreationalists to watch for and remove mud, debris,

and plant materials on clothing, shoes, boots, pets, horses, vehicles, and off-highway equipment. These actions ensure they head into their recreational areas clean, and leave them clean.

Early Detection and Rapid Response (EDRR) requires everyone, from the general public to professional invasive species managers, to educate themselves to recognize invasive species where they work and play. Quickly reporting them to a recognized invasive management authority helps control invasives before becoming well established or spreading to other locations.

Integrated Management (IM) is a multidisciplinary approach using a combination of methods and treatments best suited for specific invasive species and locations. Treatment methods can be manual, mechanical, cultural, biological, and/or chemical. Where an invasive plant problem already exists, IM is exercised to control invasive plant populations effectively and keep them from spreading.

Integrated Control Methods for invasive plants include:

- Manual—hand pulling, hand cutting, or hand digging.
- Mechanical—machine assisted cutting, mowing, or cultivation.
- Cultural—establishing native plant species and/or the use of fire as a management tool.
- Biological—insects, animals, or other species that specifically feed on invasive plants.
- Chemical—application of herbicides by qualified individuals.

IM makes use of all tools available, rather than relying on any single treatment method, and are chosen to minimize harm to desired native plant, animal, and aquatic communities. Control measures are undertaken cautiously and actions are based on research and consultation with field experts. In some cases, revegetation with desirable species may be necessary in order to restore the desired ecological conditions.

More information about comprehensive Prevention, EDRR, and IM strategies is available online from the organizations listed below.

Crown Managers Partnership—Crown Invasive Plant Network

South West Invasive Managers (SWIM)—Alberta/British Columbia

East Kootenay Invasive Species Council (EKISC)—British Columbia

Alberta Invasive Species Council (AISC)

Invasive Species Council of British Columbia (ISCBC)

Invasive Alien Plant Program (IAPP)—British Columbia

Montana Weed Control Association (MWCA)

Montana Invasive Species Council (MISC)

Centre For Invasive Species & Ecosystem Health (CISEH)

Early Detection & Distribution Mapping System (EDDMapS West;

EDDMapS Alberta)

USDA National Invasive Species Information Center (NISIC)

Canadian Council On Invasive Species (CCIS)

North American Invasive Species Management Association (NAISMA)

The Crown Managers Partnership

Managing an ecosystem is tough. Managing an ecosystem divided by political and national borders can be even more challenging. Recognizing these challenges, a group of resource managers created the Crown of the Continent Ecosystem Managers Partnership (CMP) in 2001. This partnership includes representatives from more than twenty local, state, provincial, tribal, and federal government agencies.

Each year the Crown Managers Partnership holds a forum that highlights a common theme of interest or concern to the region. In 2005, the theme was invasive plant management. Presentations were given on invasive plant management programs and strategies from both the Canadian and American perspectives. During facilitated sessions, group participants identified priority invasive plant management action items that could be supported throughout the CMP. The primary action item identified was the creation of a **Crown Invasive Plant Network (CIPN)**, which incorporated representatives from agencies throughout the Crown of the Continent Ecosystem who wanted to continue communication on invasive plant issues.

Goals identified for the CIPN include:

- Facilitate application of a risk assessment approach to jurisdictions in Canada.
- Support the design and production of education and outreach products across the CCE.
- Establish best management practices for a range of activities that may discourage spread and establishment of invasive plants.
- Provide web-based information for invasive plant managers in the CCE.

CIPN members share knowledge of prevention and management practices, monitoring techniques, education tools, and coordinating projects. This inter-jurisdictional cooperation encourages Prevention, EDRR, and IM of invasive plant species, and native species restoration.



East Kootenay Invasive Species Council

It takes all of us working together to stop the spread of invasive plants!

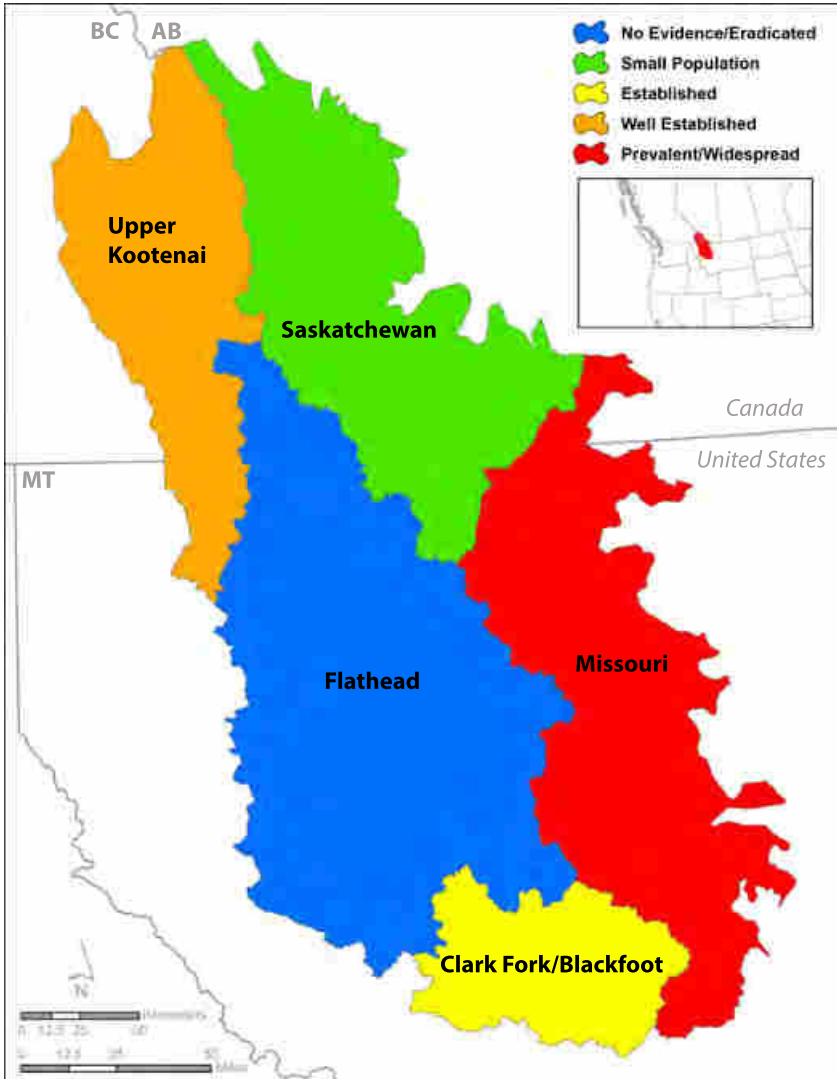
INVASIVE PLANTS IN THE CROWN

Understanding the Distribution Maps



The Crown of the Continent Ecosystem (CCE) is a dynamic concept, causing the boundaries to fluctuate. For updated information regarding the CCE, please refer to the Crown Managers Partnership website, www.crownmanagers.org. This field guide uses the defined boundary of the CCE as of 2008, which is delineated by the gray outline on the above map.

DISTRIBUTION MAP



The Invasive Weed Distribution Maps capture a moment in time. Based on current findings, these maps show the present distribution of invasive plants. The map above demonstrates the different regions of the Crown of the Continent Ecosystem. The colors on the map correspond with the key to indicate the status of each species' distribution. If you see invasive plant populations, especially those in a green or blue region (indicating little to no existence), please record the location and contact the appropriate manager (see pages 178–182).

Kochia (*Kochia scoparia*)

Summer annual with deep taproot and gray-green, hairy foliage; varies in height, 0.3 to 2.1 meters (1–7 feet). Introduced from Eurasia. Breaks off at maturity to form a tumbleweed, widely distributing seeds.



Chris Neeser. Inset: Chris Neeser

NATIVE “LOOK-ALIKE” SPECIES

Povertyweed, *Blitum nuttallianum* or *Monolepis nuttalliana*, is a native plant from the Amaranth Family. It is similar in appearance to an immature Kochia, but Povertyweed only grows to 40 cm (16 in.) tall.



Matt Lawin

Blitum nuttallianum

QUICK ID

- Gray-green, hairy foliage
- Bushy; rounded at maturity
- Forms tumbleweed
- Lobed fruits (five lobes)

Flowers: Late summer/fall, form as spikes of inconspicuous flowers lacking petals which mature into abundant five-lobed fruits resembling wings only 1 mm long and wide.

Leaves and Stems: Generally gray-green and covered with soft hairs. Flat leaves are linear to lanceolate, arranged alternate on the stems, and make a very bushy overall appearance. Foliage may gradually turn bright red in the fall, but a quick frost will turn the foliage light brown to gray.

Seeds: Abundant fruits mature to each yield one horizontal seed enclosed in the calyx, only spreading when the plant has formed a tumbleweed that breaks off to distribute seeds as it tumbles in the wind.

Roots: Deep taproots for a summer annual species, between 1.8 and 2.5 meters (6 to 8 feet) deep.

Reproduction and Dispersal: Seed is the primary reproductive strategy. Spread by tumbleweed in the fall and winter months, that eventually germinate in one of the following two spring seasons.

Habitat Preferences: Disturbed areas, roadsides, waste areas, ephemeral wetlands, crop and fallow fields.

Manual Treatment: Digging, pulling or mowing of immature patches pre-flowering. Till emerged seedlings, stimulates germination of seed in soil. Grazing pre-flower, contains mild toxins and nitrates. Burning is ineffective.

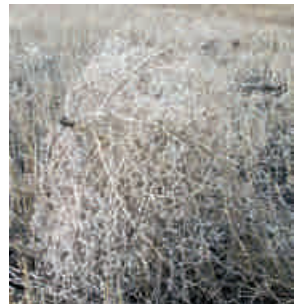
Interesting Facts: Kochia can photosynthesize very quickly under high light intensity and high temperatures.



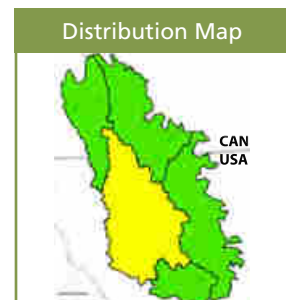
Chris Neeser



Chris Neeser



Chris Neeser



Russian Thistle (*Salsola tragus*)

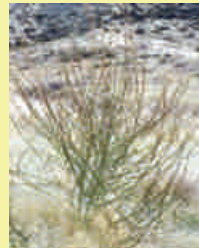
Rounded, bushy, multi-branched annual forb that grows up to 1.2 meters (4 feet) tall and 1 meter wide. Accidentally introduced from Russia. Commonly called “tumbling tumbleweed” in the West.



Matt Lavin. Inset: Craig Althen

“LOOK-ALIKE” SPECIES

Rush skeletonweed, *Chondrilla juncea*, is a **non-native** perennial with many branched stems, similar to Russian thistle. Rush skeletonweed is also found in disturbed areas but has no spines.



Matt Lavin

Chondrilla juncea

QUICK ID

- Plant is rounded, bushy, bristly at maturity
- Leaves are spine-tipped
- "Tumbleweed" mature plants blow across the landscape with the wind

Flowers: Inconspicuous petal-less green flowers with a pair of spiny bracts. Flowers at junction of leaf base and stem.

Leaves and Stems: Linear, alternate leaves. Young leaves are dark green, fleshy, long and thin, like pine needles. Older leaves are short and stiff with sharp pointed tip. Numerous stems, usually red or purple striped, are slender and flexible. Stems vary from 20 to 91 cm. Stems become woody at maturity.

Seeds: Round and snail shaped. Coiled plantlet within the seed lacks a protective coat. One plant can produce up to 250,000 seeds that are viable for one year.

Roots: Taproot can grow over 1.8 meters (6 feet) deep with extensive lateral roots over 1.5 meters long.

Reproduction and Dispersal: Seeds spread as mature plants break off at ground level and tumble with the wind. Plantlet within the seed uncoils and young taproot extends into the soil within 12 hours.

Habitat Preferences: Dryland agricultural fields; common in disturbed and overgrazed rangeland. Extremely drought tolerant. Plants thrive in alkaline soils.

Manual Treatment: Hand pulling small infestations can be effective when the plants are young. Gloves should be worn because of the thorns.

Interesting Facts: Accumulated toxins can cause death in cattle and sheep. Can cause skin rashes and allergic reactions in humans.



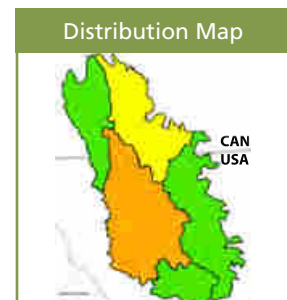
Matt Lavin



Matt Lavin



Matt Lavin



Absinth Wormwood (*Artemisia absinthium*)

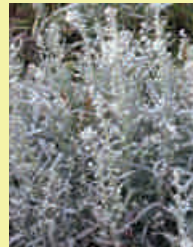
Erect, long-lived perennial. Fragrant, up to 1.5 meters (5 feet) tall. Often has 20 or more stems from a woody base.



Matt Lavin. Inset: Craig Atthen

NATIVE "LOOK-ALIKE" SPECIES

Absinth wormwood is larger and has a stronger smell than native artemisia species. Hairier leaves than *Artemisia campestris*. Leaves are more finely divided than *Artemisia ludoviciana*, also known as White sagebrush.



Mary Ellen Harte, Invasives.org

Artemisia ludoviciana

QUICK ID

- Medicinal sage-like odor; bitter to taste
- Small, nodding, yellow flower heads
- Leaves divided 2 to 3 times into narrow segments
- Covered with fine, grayish-silver hair



Matt Lavin

Flowers: Pale yellow, tubular, and clustered in spherical bent-down heads.

Leaves and Stems: Leaves covered with fine grayish-silver hair and divided into narrow segments. Stems are straight, growing to 0.8 to 1.2 meters (sometimes even over 1.5 meters, but rarely), grooved, branched, and silvery-green. Leaves are spirally arranged, greenish-gray above and white below, covered with silky, silvery-white trichomes, and bearing minute oil-producing glands.



Craig Althen

Seeds: Easily scattered, small seeds. Prolific seed producer. Up to 50,000 seeds per stem. Seeds retain viability for 3 to 4 years.

Roots: Well developed root system consists of a taproot occasionally reaching 5 cm in diameter with shallow lateral branches extending 3 meters in all directions.



Craig Althen

Reproduction and Dispersal: Reproduces by seed and through short runners or rhizomes. Seeds dispersed by wind, water, animals and equipment.

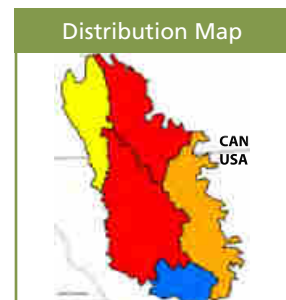
Habitat Preferences: Prolific in disturbed areas such as along fence lines and roadsides, on borrow pits and gravel piles, and on overgrazed pastures and fields recently abandoned from cultivation.



Matt Lavin

Manual Treatment: For individual plants or small patches, hand pull or dig up roots when soil is moist, making sure to remove all of the roots.

Interesting Facts: It is an ingredient in the spirit absinthe.



Bighead Knapweed (*Centaurea macrocephala*)

First-year growth is a large, basal rosette with no flowering stems; establishes taproot. Subsequent years growth yields a large stem and branches topped by solitary, 2.5–3.5 cm wide, globe-shaped flower heads. Introduced from Eurasia.



Matt Lavin. Inset: Matt Lavin

“LOOK-ALIKE” SPECIES

There are no native species resembling Bighead knapweed. **Non-native** species Safflower, *Carthamus tinctorius*, has similar yellow-tipped flowers, broader leaves with prickly margins, and many branches with several flowers on each branch.



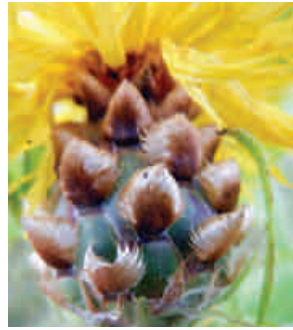
Matt Lavin

Carthamus tinctorius

QUICK ID

- Large first-year rosettes with basal leaves up to one meter in diameter
- Lance-shaped leaves broader at the base and progressively smaller up stem
- Stems yield solitary, large flower heads

Flowers: Solitary, large, striking yellow head emerging from rounded, tan bracts.



Matt Lavin

Leaves and Stems: Lance-shaped leaves, variable, broader at base of plant (10 to 30 cm long) and gradually smaller (5 to 10 cm long) moving up the stem. Rough texture, short hairs, and smooth margins. Flowering stems are erect, solitary or sparsely branched, up to 1.5 meters (5 feet) tall.

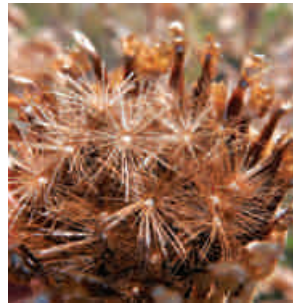


Matt Lavin

Seeds: Golden brown; 7 to 8 mm long with flat bristles 5 to 8 mm long, and remain inside seed head for some time after maturity. Up to 200 seeds per plant. Seeds fall and germinate close to parent plant unless carried away by animals or humans.

Roots: Thick, woody taproot in year one and generates a large, stalked plant in year two.

Reproduction and Dispersal: Reproduces from seed in the wild; spread by its bristles clinging to animals. In horticultural practice, a mature root crown divides into portions to regenerate. Perennial.

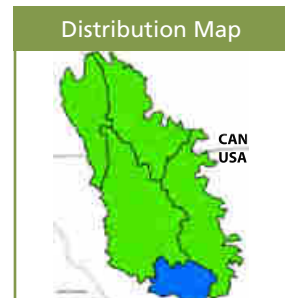


Matt Lavin

Habitat Preferences: Disturbance required for germination in open, moist meadows. Once established, it is exceedingly difficult to eradicate due to its deep, woody taproot.

Manual Treatment: Hand pulling is difficult due to deep taproot. Repeated mowing or pulling will reduce seed production. Removing seed heads to bag and burn will reduce seed yield. Cultivation to bury seeds deeply is effective.

Interesting Facts: A long-prized ornamental species grown by Thomas Jefferson. Sold in garden centers (often called Lemon puff and Yellow hardhat).



Bull Thistle (*Cirsium vulgare*)

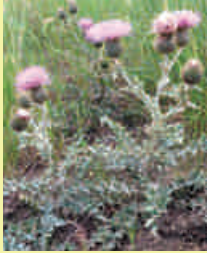
First year has large basal rosette and no flowering stems; establishes taproot. Second year grows large, dark green leaves with spines along midrib, lobe tips, and spear-like leaf tips. Pink-magenta flowers. Introduced from Europe.



Matt Lavin. Inset: Chris Nesser

NATIVE "LOOK-ALIKE" SPECIES

Wavyleaf thistle, *Cirsium undulatum*, and White thistle, *Cirsium hookerianum*, are both native biennial thistles that resemble Bull thistle. Foliage is light green to silver, flowers are pink to white, and both species are shorter in mature height.



Cirsium undulatum

Kelly Cooley, CoolPro Solutions

QUICK ID

- Large first-year rosettes; basal leaves up to 1 meter (3 feet) in diameter
- Pink-magenta flower heads with spiny bracts; solitary and/or clustered
- Mature plants .6–2.1 meters (2–7 feet)

Flowers: One to 400 pink-magenta, solitary or clustered flowers per plant on single or branched stems.

Leaves and Stems: Large basal rosette leaves do not survive end of first-year killing frost; second year's leaves are dark green, deeply lobed, have a spear-like tip, and spines on midrib, lobes, and tips. Undersides of leaves are more woolly than prickly. Flowering stems erect, solitary or branched, standing between 0.6 and 2.1 meters tall.

Seeds: Spiny-bracted flowers yield 100 to 300 seeds each, with a feathery pappus that detaches at maturity. Seeds fall and germinate close to the parent plant and are viable for 1 to 3 years.

Roots: Thick, woody taproot establishes in year one. Generates large, stalked plant in year two. Biennial.

Reproduction and Dispersal: Reproduces only from seed. May germinate spring or fall depending on moisture conditions.

Habitat Preferences: Disturbed areas—heavily grazed rangeland, pastures, forest cut blocks, roadsides, and waste areas. Foothills to open, dry meadows and riparian areas.

Manual Treatment: Dig/pull first-year rosettes and second-year pre-flowering plants when soils are moist. Plants in bud and flower should be bagged and burned or buried. Taproot must be removed below root crown to prevent regeneration. Mowing just prior to flowering can be effective.

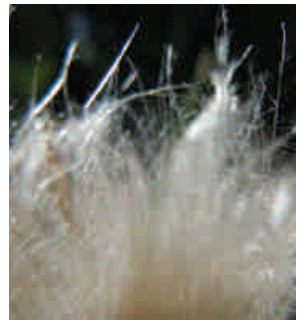
Interesting Facts: Bull thistle is found in every state in the U.S. and all Canadian provinces.



Matt Lavin

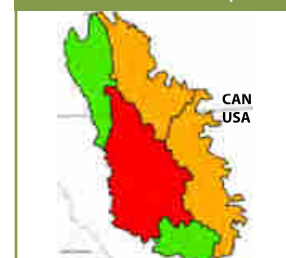


Matt Lavin



Matt Lavin

Distribution Map



Canada Thistle (*Cirsium arvense*)

A perennial, up to 1.2 meters (4 feet) tall, that often forms colonies from deep, spreading roots. Produces a non-flowering rosette its first year. Introduced from southeastern Eurasia to Canada in contaminated crop seed.



Dr. Amadej Trnkoczy. Inset: The Nature Conservancy

NATIVE "LOOK-ALIKE" SPECIES

Hooker's thistle, *Cirsium hookerianum*, tends to grow individually rather than in dense colonies. It typically has white to pink flowers and has a taproot rather than rhizomes. This species also referred to as Elk thistle.



Ben Legler

Cirsium hookerianum

QUICK ID

- Prickly stems and stalkless leaves
- Extensive creeping rhizomes
- Purplish-pink flowers less than 2.5 cm across
- Floral bracts generally lack sharp spines

Flowers: Clusters of pinkish-purple (occasionally white) flowers attach to top of branches or emerge from the joint where leaves attach to stem. Directly below the flower petals are several rows of overlapping floral bracts, which generally lack sharp spines.

Leaves and Stems: Stalkless, alternate leaves 5 to 15 cm long. Leaves are prickly and spine-tipped with a wavy surface, toothed margins, and irregularly shaped lobes. Soft wooly hairs often cover underside of leaf. Hollow, leafy stems lack wings, branch near the top, and become hairy with age.

Seeds: Light brown seeds, 3 to 4 mm long, with feathery white plume attached. Each plant may produce over 40,000 seeds that remain viable for up to 21 years.

Roots: Deep, creeping roots, or rhizomes, allow plant to survive below the cultivation zone.

Reproduction and Dispersal: Although seeds can be dispersed by wind, reproduction is primarily from creeping underground rhizomes, or roots with buds.

Habitat Preferences: Roadsides, pastures, fields, forest openings, stream banks, and disturbed sites. Prefers moist soil. Typically does not tolerate heavy shade.

Manual Treatment: Occasional hand-pulling and cultivation may increase infestations by dispersing root fragments. However, repeated cultivation, mowing, or hand-cutting reduces and can eventually eliminate infestations.

Interesting Facts: Each plant has both male and female flowers; female flowers have a pleasant vanilla-like aroma.



Seve Dewey, Invasive.org



Louis M. Landry



Dr. Shawn Askew, Virginia Tech

Distribution Map



Common Burdock (*Arctium minus*)

Large, dull green, rhubarb-like leaves; a stout, hollow, multi-branched center stem; clusters of pink-purple flowers maturing into globe-shaped seed capsules covered in large, hooked bristles. Biennial. Introduced from Eurasia.



Craig Allthen. Inset: Kelly Cooley, CoolPro Solutions

NATIVE "LOOK-ALIKE" SPECIES

The annual, native Common cocklebur, *Xanthium strumarium*, is similar in height at maturity but leaves are irregularly lobed compared to Burdock's rhubarb-like leaves. Cocklebur burrs are two chambered, oblong/elliptical.



Jan Samanek, Phytosanitary Administration

Xanthium strumarium

QUICK ID

- Small, spade-shaped leaves first year
- Large, dark green, rhubarb-like leaves with grayish undersides second year
- Mature plants yield purple-pink, flowered 'burr' seed capsules

Flowers: Pink-purple to white flower clusters on branched stems, yielding burred capsules.

Leaves and Stems: First-year basal rosette leaves do not survive killing frost. Second year leaves have dull green top, grayish underside; larger than first year leaves. Flowering stems erect and hollow, 1 to 2.5 meters tall. Variably branch out from main stem with flowering clusters.

Seeds: Flowers yield clustered capsules (burrs) with long, hooked burr-needles. Up to 25 seeds inside burrs, each topped by a short pappus. Can produce 6,000 to 16,000 seeds per plant; viable 1 to 3 years.

Roots: Deep taproot establishes in year one. Generates large, stalked plant in year two.

Reproduction and Dispersal: Burrs caught in hair, fur, or clothing of animals and humans "hitchhike" from parent plant to new location, where they rub or fall off, breaking open to germinate seeds. Burrs may remain on dead stalks for months for a chance to "hitchhike" to other locations.

Habitat Preferences: Disturbed areas along trails or in tree cover, where animals carrying burr-capsules feed or bed down. Seeds germinate when rubbed off.

Manual Treatment: Dig/pull first-year rosettes and second-year pre-flowering plants when soils are moist. Burdock in bud and flower should be bagged and burned or buried. Remove taproot below plant root crown to prevent regeneration.

Interesting Facts: Burdock's hooked burrs inspired George de Mestral to invent Velcro.



Craig Althen

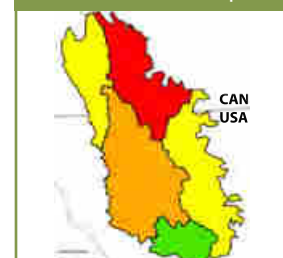


Craig Althen



Craig Althen

Distribution Map



Common Crupina (*Crupina vulgaris*)

Slender, erect, short-lived annual, up to 1 meter (3 feet) tall. Begins as a fleshy oval seedling then develops into a basal rosette. Originally from Mediterranean region.



UT State University, Invasive.org. Inset: Joseph M. DiTomaso, UC Davis

“LOOK-ALIKE” SPECIES

Several **non-native** knapweed species, such as this Russian knapweed, appear similar to Common crupina in overall appearance, but lack bristly, barb-tipped hairs on the leaf margins.



Steve Dewey, Invasive.org

Acroptilon repens

QUICK ID

- Long, narrow, rose-purple flowers
- Short, stiff, barb-tipped hairs on leaf margins
- Fleshy, oval-shaped rosette leaves with distinct purple midribs
- Seeds with a ring of dark, stiff bristles

Flowers: Narrow, 1.3 cm-long flower heads composed of 3 to 6 rose-purple disk flowers. One to five flower heads occur at branch tips or in upper leaf axils (where leaves are attached to stems).

Leaves and Stems: One stiff, branched flower stem develops during its second year; rosette leaves wither. Stem leaves are alternate, stalkless, and smaller toward the top. Rosette and stem leaves are deeply lobed with short, stiff, barb-tipped hairs on the leaf margins, making the plant prickly feeling.

Seeds: Iridescent, black-brown, oblong seeds with a ring of dark, stiff bristles encircling the end.

Roots: Short, dense, fibrous taproot.

Reproduction and Dispersal: By seed only. Seeds typically fall near the parent plant but seeds and whole flower heads can be dispersed further by soil movement, water, animals, and human activity.

Habitat Preferences: Prefers dry, south-facing slopes. Disturbed areas, grasslands, open forests, canyons, riparian areas, croplands, pastures, and roadsides.

Manual Treatment: Eradication can be effective if this weed is caught early and seed production is prevented. Hand pulling before flowering is generally effective for controlling small infestations. Mowing after flowering is not recommended due to the likelihood of increased dissemination.

Interesting Facts: Unpalatable forage for grazing animals. Currently most prolific in Idaho.



UT State University, invasive.org



Steve Dewey, invasive.org



UT State University, Invasive.org



Joseph M. DiTomaso, UC Davis

Distribution Map



Common Tansy (*Tanacetum vulgare*)

Erect, bushy perennial 30 cm to 1.8 meters (1–6 feet) tall. Forms dense patches. Introduced from Europe in the 1600s for its medicinal qualities.



MT SNWEC. Inset: Anne Elliott

NATIVE “LOOK-ALIKE” SPECIES

Bracted lousewort, *Pedicularis bracteosa*, has similar fern-like leaves but can be easily distinguished during flowering when its spike of pale yellow to purplish flowers, composed of a short lower lip and a longer, hooded upper lip, emerge.



Ben Lagler

Pedicularis bracteosa

QUICK ID

- Dark green, fern-like leaves
- Stems often purplish-red
- Yellow, button-like flowers in a dense, flat-topped cluster
- Leaves and flowers aromatic when crushed

Flowers: Dense, flat-topped clusters of 20 to 200 yellow-orange, button-like flowers at tops of stems. Flower heads consist of disk flowers surrounded by a ring of ray flowers that lack petals. Greenish-brown bracts below the flower heads overlap in 2 to 3 rows and have papery tips.

Leaves and Stems: Dark green, fern-like leaves are deeply divided into leaflets with toothed margins and are dotted with small pitted glands. Stems are green or purplish-red, dotted with glands and somewhat woody near the base. Several branched stems per plant. Stem leaves are alternate.

Seeds: Oblong, tan to gray, five-angled seeds, 1.5 mm long. Can produce over 50,000 seeds.

Roots: Extensive, short, thick, creeping roots, or rhizomes, with numerous lateral roots.

Reproduction and Dispersal: By seeds, creeping roots, and root fragments.

Habitat Preferences: Disturbed areas, streambanks, riverbanks, waterways, roadsides, and fields. Prefers full sun and well-drained soil.

Manual Treatment: Repeated pulling, hand cutting or mowing before flowering limits seed production and may deplete energy reserves stored in roots.

Interesting Facts: Has been used medicinally to expel intestinal worms, to repel insects, and to stimulate menstrual bleeding. Toxic if ingested in large quantities, but can be grazed safely by sheep and goats.



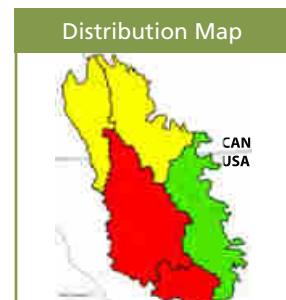
Ben Legler



Louis-M. Landry



Joseph M. DiTomaso, UC Davis



Diffuse Knapweed (*Centaurea diffusa*)

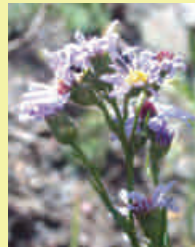
Erect, short-lived perennial, biennial, or annual up to 0.6 meters (2 feet) in height. Introduced from Eurasia in contaminated alfalfa and clover seed.



Matt Lavin. Inset: Matt Lavin

NATIVE "LOOK-ALIKE" SPECIES

Many native species of Purple aster appear similar at first glance, but can be distinguished by the presence of white or purplish, petal-like ray flowers, a center of yellow disk flowers, and bracts below the flower heads in series of unequal length.



Mary Ellen Harte, Invasive.org

Symphotrichum laeve

QUICK ID

- ✓ White (or pinkish-purple) flowers
- ✓ Deeply lobed basal & lower stem leaves
- ✓ Triangular floral bracts tipped with slightly recurved spines
- ✓ Stems break off at ground level after seed matures, creating a tumbleweed

Flowers: One white (or pinkish-purple), urn-shaped flower head, composed of 12 to 13 disk flowers, develops on the end of each stem branch. The triangular floral bracts are tipped with a short, cream to brown-colored spine that is slightly recurved. Margins of bracts have slender, comb-like teeth.

Leaves and Stems: Coarse; covered with fine hairs that give them a grayish-green appearance. First year basal rosette has leaves up to 15 to 24 cm long with deeply-lobed segments. Flowering stalks with alternate leaves grow from the rosette during the second year. Single main stem divides into numerous spreading branches on mature plant, giving it a bushy appearance.

Seeds: Oblong, 3 mm long, dark brown or gray.

Roots: Deep, elongated taproot.

Reproduction and Dispersal: Primarily by seed but root and crown fragments also resprout. Wind-blown “tumbleweeds” help to disperse seeds greater distances.

Habitat Preferences: Found in fields, roadsides, and other open areas. Can spread rapidly in disturbed sites. Prefers well-drained, light textured soils that receive ample sunlight. Prefers a drier site than Spotted knapweed.

Manual Treatment: Hand pull or dig entire plant before seed set, removing as much of the taproot as possible to prevent regeneration. If any portion of the flower is beginning to emerge or if seed heads have formed, bag and remove. Wear gloves.

Interesting Facts: A fertile hybrid between Diffuse & Spotted knapweed has been identified.



Steve Dewey, Invasive.org

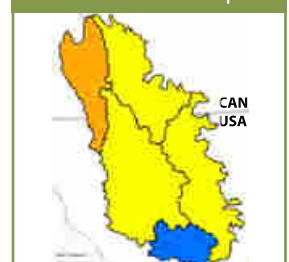


Ben Legler



Ben Legler

Distribution Map



Marsh Plume Thistle (*Cirsium palustre*)

Herbaceous biennial that can grow 1.25 to 1.5 meters (4–5 feet) tall. Strong stems have few branches and are covered in small spines; much of the plant is covered in long, sticky hairs. It is native to Europe.



Caleb Stemmons, National Ecological Observatory Network (NEON). Inset: Caleb Stemmons, (NEON)

NATIVE “LOOK-ALIKE” SPECIES

The lower leaves are similar in shape to the native Swamp thistle, *Cirsium muticum*, and the phyllaries are much like the invasive Canada thistle, *Cirsium arvense*, but Marsh thistle has spiny winged stems, which the other two species lack.



Rob Routledge, Sault College

Cirsium muticum

QUICK ID

- Up to 2.5 m tall with a single stem
- Unbranched except near the top; long, nearly leafless ascending branches
- Short-stalked flower heads densely clustered at branch tips

Flowers: Many lavender to pinkish-purple flower heads borne on short peduncles reaching no more than 1 cm in length. The ovoid involucre is 1 to 2 cm across. The bracts are covered with a thin layer of fine, cobweb-like hairs. The bract tips are pointed but lack sharp spines.

Leaves and Stems: Deeply lobed, toothless leaves. Some lobes further segmented with sharp spines at each lobe tip. Basal leaves up to 30 cm long and 10 cm wide, becoming smaller as they ascend stem. Erect, single, and ridged stems with silky, curly hairs.

Seeds: Fruit is light brown to straw-colored seed with a tuft of long, white hairs to carry it off in the wind, spreading far and wide.

Roots: Marsh thistle produces a taproot with clusters of fibrous roots and lacks rhizomes.

Reproduction and Dispersal: Classified as both a biennial and a monocarpic perennial, flowering and reproduction typically occur within two years. Seeds readily dispersed by wind and water, as well as through ingestion and deposit by birds and animals.

Habitat Preferences: Grows best in moist, acidic soils but can be found in disturbed areas. It is cold hardy and commonly found on roadsides and wet ditches.

Manual Treatment: Where infestations are small, hand pulling may be effective. If this method is implemented while flowers and seeds are present, flower heads must be bagged and removed from site.

Interesting Facts: The plant provides a great deal of nectar for pollinators.



Rob Routledge, Sault College



Rob Routledge, Sault College



Rob Routledge, Sault College

Distribution Map



Meadow Knapweed (*Centaurea pratensis*)

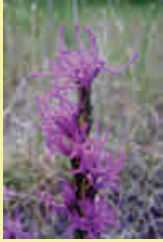
Erect, short-lived perennial or biennial up to 1.2 meters (4 feet) in height. Meadow knapweed is a fully fertile hybrid between Black knapweed and Brown knapweed. Because it is a hybrid, its traits can vary. Introduced from Eurasia.



Don Knoke. Inset: Cindy Roche, Invasive.org

NATIVE "LOOK-ALIKE" SPECIES

Dotted blazing star, *Liatris punctata*, a native perennial found in dry grasslands and hillsides appears similar, but can be distinguished by its dense spikes of tube-shaped flowers with 5 florets.



<http://montana.plant-life.org>

Liatris punctata

QUICK ID

- ✓ Pinkish-purple flowers
- ✓ Leaves have entire margins or shallow lobes
- ✓ Floral bracts are papery with a brownish fringe
- ✓ Seed head from previous year persists

Flowers: One pinkish-purple (or occasionally white), globe-shaped flower head develops on the end of each stem branch. The papery bracts below the flower head have a tan to dark brown, bushy fringe. During flowering, the bracts reflect a metallic, golden sheen.

Leaves and Stems: Coarse; covered with fine hairs that give it a grayish-green appearance. Entire, undivided leaves with margins that may be wavy or toothed distinguish it from other knapweeds. Basal rosette leaves are up to 15–24 cm long, taper at both ends, and may be shallowly lobed. Middle and upper leaves are smaller, nearly stalkless, and are not lobed.

Seeds: Ivory white to light brown seeds.

Roots: Deep, stout taproot. Mature plants develop a cluster of somewhat fleshy roots below the woody crown.

Reproduction and Dispersal: Primarily by seed but root and crown fragments also resprout. Seeds are often sold in seed catalogs or wildflower mixes and may be found in gardens as an ornamental plant.

Habitat Preferences: Found in fields, roadsides, and other open areas. Tolerates partial shade and likes wetter environments, such as irrigated pastures or moist meadows, more than Spotted knapweed.

Manual Treatment: Hand pull or dig entire plant before seed set, removing as much of the taproot as possible to prevent regeneration. If any portion of the flower is beginning to emerge or if seed heads have formed, bag and remove. Wear gloves.

Interesting Facts: May be capable of hybridizing with Yellow starthistle & Diffuse knapweed.



Mandy Tu, The Nature Conservancy



King County Noxious Weed Control



Joseph M. DiTomaso, UC Davis

Distribution Map



Musk/Nodding Thistle (*Carduus nutans*)

Winter annual or biennial, growing up to 2.5 meters (8 feet) tall. Forms a rosette in the first year and a flowering stem the second year. Originated in Eurasia or North Africa.



Dr. Shawn Askeew, Virginia Tech. Inset: Al Schneider, www.swcoloradowildflowers.com

NATIVE "LOOK-ALIKE" SPECIES

Native thistles generally do not have leaves whose bases extend down, and are fused to the stem all the way from node to node. Many native thistles have hairy upper and lower leaf surfaces.



Ben Legler

Cirsium undulatum

QUICK ID

- Solitary, reddish-purple flower heads droop, or nod, at maturity
- Purplish bracts below the seed head are broad and bent back
- Spiny wings cover stem where leaves are present

Flowers: Reddish-purple flowers (up to 5 cm in diameter) are solitary at the end of branches. Purplish spiny bracts below the seed head are broad (2 mm wide) and bent back. Stalk directly below the flower head is covered with soft, white hairs instead of spiny wings.

Leaves and Stems: Hairless stem leaves have a light midrib, long, sharp spines along usually white leaf margins, and are stalkless with bases extending down the stem as spiny wings. Wings present only where leaves exist and not directly below the flower head. Basal rosette leaves up to 30 cm long and often covered with fine, wooly hairs on both surfaces.

Seeds: Single seeded fruits are 4 to 5 mm long, pale yellow to orange-brown with longitudinal dotted stripes. Averages 10,000 seeds per plant with up to 90% viability.

Roots: Large, fleshy taproot is often hollow near the ground surface.

Reproduction and Dispersal: Reproduces by seed only. Dispersed by wind, water, and animals.

Habitat Preferences: Pastures, grasslands, forest lands, crop fields, river valleys, roadsides, and disturbed open sites.

Manual Treatment: Hand pulling with heavy gloves or cutting the taproot at least 5 cm below the soil before flowering prevents seed production and can be effective at reducing populations if done repeatedly throughout the growing season.

Interesting Facts: Similar in appearance to exotic Plumeless thistle but has larger flowers and leaves with a prominent white margin.



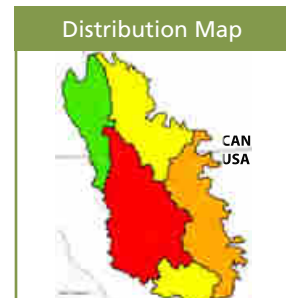
Chris Evans, Invasive.org



Dr. Shawn Askew, Virginia Tech



Matt Lavin



Orange Hawkweed (*Hieracium aurantiacum*)

A 30 cm to 1 meter (1–3 feet) tall perennial with above-ground runners, similar to those of strawberries. Introduced from Europe as a garden ornamental.



Kelly Cooley, CoolPro Solutions. Inset: Louis-M. Landry

NATIVE “LOOK-ALIKE” SPECIES

Orange mountain dandelion, *Agoseris aurantiaca*, also has milky latex juice but has solitary flowers and is mostly hairless. Many native hawkweeds exist in this ecosystem as well, but all have white or yellow flowers.



Donna Franklin

Agoseris aurantiaca

QUICK ID

- ✓ Vibrant orange-red flowers
- ✓ Milky latex juice when broken
- ✓ Hairy leaves mostly found at base of plant
- ✓ Stems mostly leafless with black bristly hairs



Jessie Patoposki

Flowers: Cluster of 5 to 30 dandelion-like, showy, red-orange flower heads. Petals have notched tips.

Leaves and Stems: Entire, hairy leaves in a rosette at the base of the plant. Leaves darker green on top than underneath. Few to no leaves on stem.

Seeds: Tiny, purplish-black seeds with tawny-white, brittle plumes attached on the flattened end.

Roots: Rhizomatous. Shallow fibrous roots with a woody stem base.

Reproduction and Dispersal: By above-ground runners (stolons), seeds, and roots.

Habitat Preferences: Low to mid-elevations. Disturbed areas, meadows, roadsides, grasslands, forest openings, and lawns. Will not tolerate heavy shade.

Manual Treatment: Hand pull entire plant (including runners and roots), cut below ground or cut flower seed head. Mowing prevents seed production but encourages spread by ground runners.

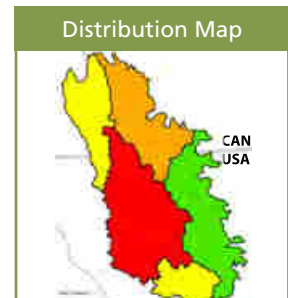
Interesting Facts: Above-ground runners create a dense mat that impedes other vegetation. Grazed by sheep, goats, horses, occasionally by cattle, and native grazing animals.



Ben Legler



Michael Shephard, Invasive.org



Oxeye Daisy (*Leucanthemum vulgare*)

Erect, short-lived perennial herb up to 1 meter (3 feet) tall. Often grows in dense clumps due to creeping root system. Introduced from Eurasia as an ornamental and as a contaminant in seed.



Dr. Shawn Askew, Virginia Tech. Inset: Anne Elliott

NATIVE "LOOK-ALIKE" SPECIES

Native Asters, *Aster* spp., and Fleabanes, *Erigeron* spp., such as *Erigeron caespitosus*, resemble Oxeye daisy, but typically have undivided leaf margins, without lobes or teeth. Seeds of Asters and Fleabanes also have a pappus while Oxeye daisy seeds do not.



Amélie Fousseau

Erigeron caespitosus

QUICK ID

- Showy, daisy-like flowers
- Short creeping roots
- Stem leaves have clasping bases; basal leaves are stalked
- Leaves with wavy to lobed margins

Flowers: A single, daisy-like flower head, composed of yellow disk flowers in center surrounded by 20 to 30 notched, white ray flowers, develops on the end of each stem branch. Green floral bracts with brown margins appear in several overlapping rows.

Leaves and Stems: Spoon-shaped basal rosette leaves are 5 to 12.7 cm long, attached to the stem by long, narrow stalks, and have wavy, scalloped margins. Stem leaves are arranged in an alternate pattern and progressively reduce in size upward on stem. Upper stem leaves are narrower and lack stalks.

Seeds: Ovate, dark brown to black seeds, 3 mm long. Each plant can produce 500 or more seeds and are viable for 20 years.

Roots: Short, fibrous creeping roots.

Reproduction and Dispersal: By seed, underground creeping roots, and root fragments. Quickly forms dense and expansive populations due to rhizomatous nature.

Habitat Preferences: Found in disturbed areas, fields, meadows, roadsides, and forest openings. Tolerates a wide range of environmental conditions.

Manual Treatment: Hand pull or dig entire plant before seed set, removing as much of the fibrous roots and rhizomes as possible to prevent regeneration. If flowers have already gone to seed, pick flower heads, bag, and remove. Mowing during or after flowering will disperse seeds.

Interesting Facts: Often included in popular seed mixes. Flowers have an unpleasant odor, reminiscent of stale perspiration.



MT SNVAEC



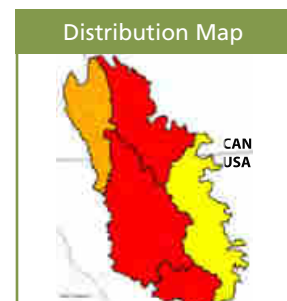
Ohio State Weed Lab, Invasive.org



Steven J. Baskauf



Steve Dewey, Invasive.org



Perennial Sowthistle (*Sonchus arvensis*)

Erect perennial up to 1.8 meters (6 feet) tall. Native to Eurasia. Most likely introduced as a contaminant in seed crops.



Michael Shepard, Invasive.org. Inset: Ben Legler

NATIVE "LOOK-ALIKE" SPECIES

Pale agoseris, *Agoseris glauca*, has solitary flower heads and entire leaves without prickly margins.



Al Schneider

Agoseris glauca

QUICK ID

- Yellow, dandelion-like flower heads
- Dandelion-like leaves w/ prickly margins
- Bracts beneath flowers covered with yellow, gland-tipped hairs
- Exudes milky juice when broken

Flowers: Bright yellow, dandelion-like flower heads, 2.5 to 5 cm across, in loose clusters at top of stems. Up to 20 flower heads per cluster. Flower stalks and bracts below flower heads are usually covered in yellow, gland-tipped hairs.

Leaves and Stems: Foliage exudes bitter, milky juice when broken and is covered with a waxy coat, which can be rubbed off. Succulent, hollow stems are finely grooved and branch near the top. Leaves with prickly margins. Lower leaves stalked, deeply lobed, and dandelion-like. Upper leaves alternate, less deeply lobed, and stalkless.

Seeds: Reddish-brown seeds, 3 mm long, with a wrinkled surface. Can produce 4,000 seeds per plant. Seeds survive about 3 years.

Roots: Yellowish-white creeping roots with milky juice. Deep, vertical root.

Reproduction and Dispersal: By seeds and creeping roots. Root system is easily broken and gives rise to new plants from buds on the rhizomes. Seeds are dispersed primarily by wind and also by birds, other animals, and human activities.

Habitat Preferences: Disturbed areas, native plant communities, marshes, ponds, riparian areas, fields, croplands, and roadsides. Prefers moist soils and full sunlight, but will tolerate dry conditions.

Manual Treatment: Hand pull young plants before extensive root system develops.

Interesting Facts: Most of the milky juice of perennial sowthistle is oil and may be a potential crop for oil or hydrocarbon production.



Ben Legler



Richard Old, www.xidsservices.com



Richard Old, www.xidsservices.com

Distribution Map



Rush Skeletonweed (*Chondrilla juncea*)

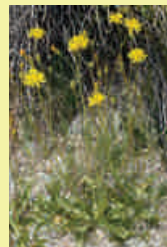
Erect, long-lived perennial up to 1.2 meters (4 feet) tall. Three forms of the plant exist in the United States, each differing in flower characteristics and susceptibility to control measures. Native to Eurasia.



Joseph M. DiTomaso, UC Davis. Inset: Joseph M. DiTomaso, UC Davis

NATIVE "LOOK-ALIKE" SPECIES

Fiddleleaf hawksbeard, *Crepis runcinata*, is a perennial common in meadows, grasslands, and around wetlands. Like Rush skeletonweed, it has yellow flowers, milky sap, and a dandelion-like rosette, but it has a greater number of ray flowers (20–50).



Steve Maltson

Crepis runcinata

QUICK ID

- ✓ Small, yellow flowers scattered along branches
- ✓ Overall skeleton-like appearance
- ✓ Dandelion-like basal rosette leaves
- ✓ Reddish down-turned hairs at stem base

Flowers: Single, or clusters of 2 to 5, scattered, yellow flower heads. Seven to 15 ray flowers clustered into a dandelion-like flower head. Ray flowers (“petals”) are flat across the end and terminate with distinct lobes.

Leaves and Stems: Foliage exudes a milky juice when cut or broken. A dandelion-like basal rosette with hairless leaves emerges upon germination, then withers as flower stem develops. Wiry, many branched stems have downward pointing, coarse, reddish hairs on bottom four inches of stem. Stem leaves are narrow, linear, and often inconspicuous.

Seeds: Light brown to black, ribbed seeds are about 3 mm long. Mature plants can produce up to 20,000 seeds per plant. Seeds require rainfall to establish.

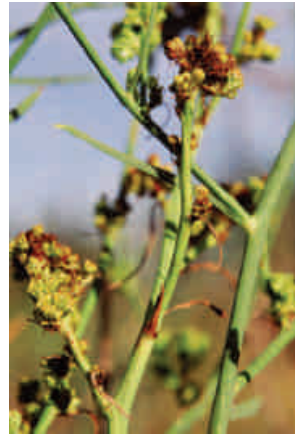
Roots: Extensive, deep taproot can reach 2.5 meters, with occasional lateral root formation.

Reproduction and Dispersal: Disperses by seed and lateral root buds. Seeds are primarily dispersed by wind. Root fragments scattered by cultivation can also aid in spread.

Habitat Preferences: Found in well-drained sandy or rocky soils in disturbed areas, cultivated areas, rangelands, pastures, and roadsides. Rarely invades healthy native plant communities.

Manual Treatment: Diligent hand pulling can provide effective control of very small infestations if all parts of plant are pulled two to three times per year for 6 to 10 years. Mowing and cultivation are ineffective and may actually increase the infestation.

Interesting Facts: Competes with other plants for soil moisture and nutrients (esp. nitrogen).



Clayton J. Antieau



Richard Old, www.xidsservices.com



Richard Old, www.xidsservices.com

Distribution Map



Russian Knapweed (*Acroptilon repens*)

Erect, perennial herb up to 1 meter (3 feet) tall. Longer lived than other knapweeds due to extensive, rhizomatous root system. Forms dense colonies. Introduced from Eurasia in contaminated alfalfa seed.



Steve Dewey, Invasive.org. Inset: Richard Od, www.xidsservices.com

“LOOK-ALIKE” SPECIES

Ornamental relatives of knapweed species include *Centaurea montana* and *Centaurea cyanus* (Bachelor buttons). Both **non-natives** have linear leaves with entire margins. These relatives often escape cultivation but do not tend to invade large areas.



Louis-M. Landry

Centaurea cyanus

QUICK ID

- Silvery flower buds open into pinkish-purple flowers
- Papery, green, floral bracts
- Black, scaly, creeping roots
- Woolly, hairy basal leaves



Steve Dewey, Invasive.org

Flowers: One pinkish-purple, urn-shaped flower head develops on the end of each stem branch. Egg-shaped floral bracts are green at the base, have a whitish papery margin, and are slightly hairy towards the tip.

Leaves and Stems: Coarse; covered with fine hairs that give plant a grayish-green appearance. First year basal rosette has wavy or deeply-lobed leaves, up to 10 cm long. Flowering stalks with alternate leaves grow from rosette in second year. Narrow upper stem leaves with toothed margins that are attached directly to the stem.



Joseph M. DiTomaso, UC Davis

Seeds: Flattened, egg-shaped, ivory seeds; 3 to 4 mm long. Not a prolific seed producer.

Roots: Rhizomatous with a vigorous root system. Can grow to depth of 7.6 meters (25 feet). Creeping adventitious shoots branch off the heavily scaled, black, bark-like roots, enabling plant to spread rapidly.



Richard Old, www.xidservices.com

Reproduction and Dispersal: Primarily by creeping roots (rhizomes).

Habitat Preferences: Found in fields, roadsides, cultivated lands, and other open areas. Often found in poorly-drained and saline or alkaline soils. Does not tolerate dense shade.

Manual Treatment: Hand pull or dig entire plant before seed set, removing as much of the root system as possible. Wear gloves. Hand pulling, cutting, or mowing may control but will not eliminate infestations.

Interesting Facts: Smooth-tipped bracts & blackish, scaly creeping roots distinguish it from other knapweeds.

Distribution Map



Scentless Chamomile (*Tripleurospermum inodorum*)

Erect to semi-erect, short-lived, annual, biennial, or occasionally perennial herb from 15 cm (6 inches) to over 1 meter (3 feet) tall. Plants can be very bushy. Introduced from northern Europe and western Asia.



Ben Legler. Inset: Ben Legler

“LOOK-ALIKE” SPECIES

The similar looking flowers of **non-native** Oxeye daisy, *Leucanthemum vulgare*, can be confused with Scentless chamomile, but the leaves of Oxeye daisy are spoon-shaped and have wavy, scalloped margins.



www.floracyberia.net

Leucanthemum vulgare

QUICK ID

- White, daisy-like flowers
- Leaves & flowers odorless when crushed
- Leaves divided into narrow, thread-like segments
- Extensive, fibrous taproot

Flowers: A single, daisy-like flower head develops on the end of each stem branch. Yellow centers composed of compact clusters of disk flowers; white “petals” are actually ray flowers. Flowers are nearly odorless when crushed. Floral bracts are numerous and arranged in several overlapping rows.

Leaves and Stems: Flowering stems emerge from a basal rosette. The stems are smooth, often reddish-purple, and highly branched near the top, creating a bushy appearance. Basal leaves similar in appearance to carrot leaves. Stem leaves are alternate, very finely divided, and have a feathery overall appearance.

Seeds: Rectangular, dark brown seeds; 2 mm long. A single plant can produce 10,000–400,000 seeds.

Roots: Extensive, fibrous taproot.

Reproduction and Dispersal: Entirely by seed. Seeds typically fall close to parent plant or are carried short distances by wind. Can be moved longer distances by water.

Habitat Preferences: Found in disturbed areas, fields, meadows, roadsides, forest openings, and dry shorelines. Can germinate and persist under periodic flooding conditions. Tolerates a wide range of environmental conditions but does not compete well in vigorous, undisturbed native plant areas.

Manual Treatment: Hand pulling or digging before seed production is effective. Remove as much of the fibrous roots and rhizomes as possible. If flowers have already gone to seed, pick flower heads, bag, and remove.

Interesting Facts: Scentless chamomile is commonly sold in wildflower seed mixes.



Richard Od, xidservices.com

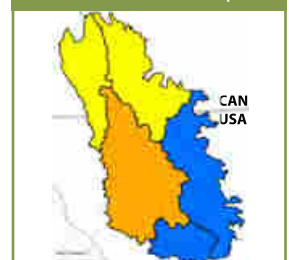


Ben Legler



Kelly Cooley, CoolPro Solutions

Distribution Map



Scotch Thistle (*Onopordum acanthium*)

A vigorously growing biennial or perennial plant up to 3 meters (10 feet) tall. Native to Europe and eastern Asia and introduced to North America in the 1800s.



Matt Lavin. Inset: Scott Sutherland

NATIVE "LOOK-ALIKE" SPECIES

Hooker's thistle, *Cirsium hookerianum*, tends to grow individually rather than in dense colonies. It typically has white to pink flowers and has a taproot rather than rhizomes. This species also referred to as Elk thistle.



Craig Althen

Cirsium hookerianum

QUICK ID

- █ Extremely tall with large, bright, reddish to purple flowers
- █ Large, winged leaves
- █ Silvery appearance from woolly hairs
- █ Stems are erect and branched



Matt Lavin

Flowers: Flowers from late June to October with a large, globe-shaped flower head in groups of 2 or 3. Flowers up to 5 cm in diameter, bright violet to reddish, are supported by large, spine-tipped bracts.

Leaves and Stems: Leaves are large, 10 to 60 cm long, and rosette leaves up to 30 cm wide, alternately arranged, and irregularly lobed. Leaves have woolly hairs with sharp yellow spines. Stems are erect, branched, and numerous with broad, spiny wings. Mature plants can grow up to 3 meters tall and woolly hairs give the plant a silvery appearance.



Matt Lavin

Seeds: Brown to grayish, one seeded achene and tipped with slender bristled pappus.

Roots: Large, fibrous and fleshy taproot.

Reproduction and Dispersal: Reproduces by seed only (70 to 100 flowering heads, each with 100 to 140 seeds). Seeds can stay viable for up to 39 years in the soil until ideal growing conditions are met.

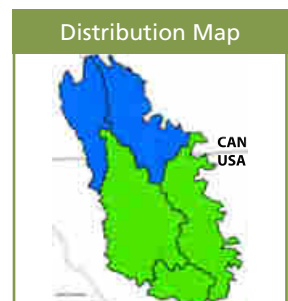


Scott Mincemyer

Habitat Preferences: Prefers moist soils such as wet meadows and pastures but can be found in dry pastures and rangelands as well.

Manual Treatment: Hand pulling can be effective on small infestations if completed prior to seed set. Mowing can be effective but plants can regrow from severed roots and cut stems.

Interesting Facts: It is said that Scotch thistle saved Scotland from invasion when guards were alerted by cries of pain in the night from the attacking army because they were walking through infestations in bare feet.



Spiny Plumeless Thistle (*Carduus acanthoides*)

Winter annual or biennial, growing up to 1.2 meters (4 feet) tall. Forms a rosette in the first year and a flowering stem the second year. Introduced from Eurasia.



Biopix.dk. Inset: Biopix.dk

“LOOK-ALIKE” SPECIES

Similar in appearance to **non-native** Musk thistle, *Carduus nutans*, but differs by having spiny wings densely covering stem, smaller flowers (less than 3 cm in diameter), and leaves lacking a prominent white margin. Musk thistle and Plumeless thistle can hybridize.



Kelly Cooley, CoolPro Solutions

Carduus nutans

QUICK ID

- ✓ Reddish-purple flower heads
- ✓ Stem leaves hairy only on underside
- ✓ Spiny wings densely covering stem up to base of flower heads
- ✓ Narrow bracts below the seed head appear as sharp spines

Flowers: Reddish-purple flowers (less than 3 cm in diameter) are either solitary or in clusters of two to five. Narrow bracts below the seed head appear as sharp spines.

Leaves and Stems: Leaves have hair only on the underside, spines along the leaf margin, and a light midrib. Stem leaves are stalkless, extend down the stem like spiny wings. The stems are branched near the top and are densely covered with these spiny wings up to base of flower heads. Rosette leaves are deeply serrated nearly to the midrib.

Seeds: Single seeded fruits are 2 to 3 mm long, light brown with faint longitudinal stripes, and have a plume (pappus) with bristles 11 to 12 mm long.

Roots: Large, fleshy taproot.

Reproduction and Dispersal: Reproduces by seed only. Dispersed primarily by wind. Extremely prolific seed producer; up to 9,000 seeds per plant.

Habitat Preferences: Pastures, grasslands, crop fields, river valleys, roadsides, and disturbed open sites.

Manual Treatment: Hand pulling with leather gloves, or cutting the taproot at least two inches below the soil line before flowering, prevents seed production and can be effective at reducing populations if done repeatedly throughout the growing season.

Interesting Facts: Unpalatable to grazing animals.



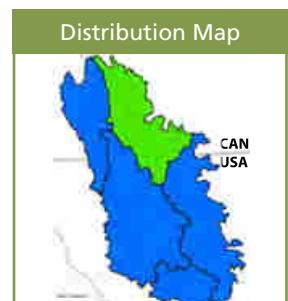
Biopix.dk



Steve Dewey, Invasive.org



Joseph M. DiTomaso, UC Davis



Spotted Knapweed (*Centaurea stoebe/biebersteinii*)

An erect, short-lived perennial or biennial up to 1.2 meters (4 feet) in height. Introduced from Eurasia in contaminated alfalfa and clover seed.



Michael Shepard, Invasive.org. Inset: Gary Fewless

NATIVE "LOOK-ALIKE" SPECIES

The rosettes of many native members of the Sunflower Family, such as Blanketflower, *Gaillardia aristata*, are similar in appearance to knapweed rosettes. The two plants are very easy to distinguish during flowering.



Mary Ellen Harte, Invasive.org

Gaillardia aristata

QUICK ID

- Pinkish-purple flowers
- Grayish-green stem and leaves
- Floral bracts have brown, triangular tips with comb-like fringe
- Seed head persists until following year

Flowers: One pinkish-purple (sometimes white), urn-shaped flower head, comprising of 30 to 50 disk flowers, develops on the end of each stem branch.

Leaves and Stems: Coarse; covered with translucent resin dots and fine hairs. First-year basal rosette has deeply-lobed leaves. Flowering stalks with deeply-lobed, alternate leaves grow from rosette in second year. Short, narrow upperstem leaves. Stems on mature plants have many branches. Bitter to taste.

Seeds: Brownish or black seeds, 3 mm long. Seeds are notched on one side of the base and have a short tuft of bristles at the tip. A single plant can produce up to 40,000 seeds.

Roots: Deep, stout taproot that helps plant compete for water and nutrients.

Reproduction and Dispersal: Primarily by seed but root fragments also resprout. Seeds that do not germinate form a seedbank in the soil and may remain viable for eight or more years.

Habitat Preferences: Found in disturbed areas, fields, roadsides, and other open areas. Prefers well-drained, light-textured soils that receive summer rainfall and ample sunlight. Does not tolerate dense shade.

Manual Treatment: Hand pull or dig entire plant before seed set, removing as much of the taproot as possible to prevent regeneration. If any portion of flower is beginning to emerge or if seed heads have formed, bag and remove. Wear gloves.

Interesting Facts: Exudes a chemical called catechin into the soil, which prevents the germination of neighboring plants.



Joseph M. DiTomaso, UC Davis



Gary Fewless



Steve Dewey, Invasive.org



Barry A. Rice, The Nature Conservancy

Distribution Map



Tansy Ragwort (*Senecio jacobaea*)


Erect biennial, or occasionally annual or short-lived perennial, generally 30 cm to 1 meter (1–3 feet) tall. Occasionally up to 1.8 meters tall. Native to Eurasia.



Ben Legler. Inset: Ben Legler

NATIVE “LOOK-ALIKE” SPECIES

Woolly groundsel flowers are similar in appearance to Tansy ragwort but Woolly groundsel has grayish-white leaves and is shorter in height (30 cm or less).



Amelie Fousseau

Senecio canus

QUICK ID

- ✓ Clusters of yellow, daisy-like flowers
- ✓ Stems and leaf stalks often purple
- ✓ Rosettes have 10 to 20 leaves with web-like hairs
- ✓ Crushed leaves have unpleasant odor

Flowers: 20 to 60 daisy-like flower heads, one inch across, with a yellow center of disk flowers and 10 to 15 ray flowers. Has a dense, flat-topped cluster at the top of stems. 10 to 15 bracts below the flower heads are black-tipped and arranged in a single row.

Leaves and Stems: Rosette and stem leaves are covered with cottony, web-like hairs. First-year rosette has 10 to 20 leaves, 5 to 25 cm long. One to several purple, branching stems develop in the second year. Stem leaves are alternate, evenly distributed along the stem, and decrease in size and stalk length at top of stem.

Seeds: Light brown, cylindrical, slightly ribbed seeds, 1.5 to 3mm long with a pappus of soft white bristles attached to the tip.

Roots: Small taproot with fibrous roots and fleshy lateral roots.

Reproduction and Dispersal: Primarily by seed. Dispersed by wind, water, animals, vehicles, and human activities. Root fragments can also sprout. Viable for 20 years.

Habitat Preferences: Disturbed areas, riparian areas, forests (especially after logging or clear-cutting), fields, croplands, and roadsides. Prefers well drained soils.

Manual Treatment: Hand pull when soils are moist. Mulch area after pulling to block light. Repeated hand cutting or mowing before flowering prevents seed production but may enhance survival by stimulating vegetative reproduction.

Interesting Facts: Causes irreversible liver damage if ingested in large quantities or in small amounts over a long period of time.



Ben Legler



Ben Legler



Joseph M. DiTomaso, UC Davis

Distribution Map



Western Salsify/Goatsbeard (*Tragopogon dubius*)

Biennial with yellow flower heads and large, dandelion-like seed heads. Originally introduced as an ornamental.



Matt Lavin. Inset: Matt Lavin

“LOOK-ALIKE” SPECIES

Common dandelion, *Taraxacum officinale*, has yellow flowers and similar seed heads, however its leaves are lobed rather than linear.



John Hlby, Illinois Wildflowers

Taraxacum officinale

QUICK ID

- Linear, grass-like leaves
- Exudes milky juice when broken
- Yellow flowers with bracts extending past the flowers
- Large, globe-shaped seed head

Flowers: Flower head at the terminus of the stem, with secondary flower heads often developing from the leaf axils. Heads composed of yellow ray flowers with inner flowers shorter than the outer ones. Bracts linear and longer than the flowers (2.5 to 4 cm).

Leaves and Stems: Leaves and stems glabrous with a blue-green tint. Stem leaves alternate and linear, up to 20 cm long. Basal leaves are grass-like.

Seeds: Long, narrow achenes measuring to 14 mm, with a beak as long as the seed and feathery pappus bristles. Together the seeds form a large, globe-shaped seed head similar to a dandelion, but much larger.

Roots: Stout, fleshy taproots exude milky sap.

Reproduction and Dispersal: Seeds are the only means of reproduction and are well adapted to wind dispersal.

Habitat Preferences: Prefers disturbed areas, but can also grow in a range of native grassland types.

Manual Treatment: Hand pull before seed set.

Interesting Facts: Flowers close by mid-afternoon and remain closed on cloudy days.



Matt Lavrin

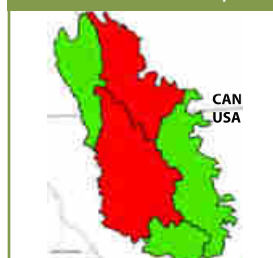


Craig Althen



Craig Althen

Distribution Map



Yellow Hawkweed Complex

(*Hieracium pratense/caespitosum/loribundum/lactucella*)

Perennial with a creeping growth form ranging from 30 cm to 1 meter (1–3 feet) tall. Species are difficult to distinguish from one another because they interbreed. Introduced from Europe as garden ornamentals and medicinal herbs.



Richard Old, www.xidservices.com. Inset: Louis-M. Landry

NATIVE “LOOK-ALIKE” SPECIES

There are many native hawkweeds in this ecosystem with yellow or white flowers, but native hawkweeds lack above-ground runners, usually have leafy branched stems, and have flowers arising from stalks that are attached to the stem at the same point.



Dr. Amadej Trnkoczy

Hieracium umbellatum

QUICK ID

- Clusters of yellow flowers at top of stem
- Broken stems and leaves excrete a milky sap
- Basal leaves often more hairy than stems
- Some species reproduce by stolons

Flowers: Crowded terminal clusters (5 to 30 flower heads) of dandelion-like, yellow flowers. Petals have notched tips.

Leaves and Stems: Entire, hairy leaves in a rosette at the base of the plant. Leaves are narrow and club-shaped; darker green on topside of leaf and lighter green underneath. Stems leafless (or with 1 to 3 small clasping leaves below midpoint of stem) with short, stiff hairs. One rosette can produce 10 to 25 flowering stems.

Seeds: Tiny, black seeds with tawny-white plumes attached on the flattened end. Microscopic barbs easily attach to passersby. Seeds are viable up to seven years.

Roots: Shallow, fibrous roots with a woody stem base.

Reproduction and Dispersal: May reproduce sexually or asexually, with wind-borne seeds; can also regenerate from root system. Some species reproduce by stolons (above-ground runners), which can form dense mats.

Habitat Preferences: Low to mid-elevations in disturbed areas, pastures, meadows, wetlands, roadsides, grasslands, forest clearings, or openings and lawns. Will not tolerate heavy shade.

Manual Treatment: In small infestations, hand pull entire plant (including stolons), cut below ground, or cut flower seed head. Mowing prevents seed production but encourages spread by stolons.

Interesting Facts: Similar to Orange hawkweed but have yellow instead of orange flowers. Grazed by sheep and goats.



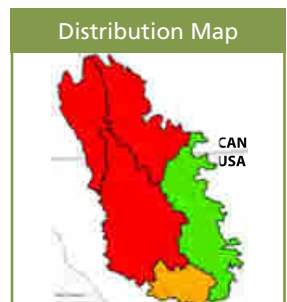
Louis-M. Landry



Richard Old, www.xidsservices.com



Richard Old, www.xidsservices.com



Yellow Starthistle (*Centaurea solstitialis*)

Erect, winter hardy, annual herb up to 1.5 meters (5 feet) tall. Forms impenetrable stands. Introduced from Europe in contaminated alfalfa.



Steve Dewey, Invasive.org. Inset: Barry A. Rice, The Nature Conservancy

NATIVE "LOOK-ALIKE" SPECIES

Blazing stars, *Mentzelia* spp., which can also be found in open habitats with dry soils, have a similar overall appearance, but can be distinguished by the presence of large, showy petals and the lack of sharp, stiff spines on the bracts.



Amélie Fousseau

Mentzelia laevicaulis

QUICK ID

- Bright yellow flowers
- Wing-like leaves run down length of stem
- Hairy "cotton ball" seed head persists throughout winter
- Long, sharp spines radiate from bracts

Flowers: One yellow flower on the end of each stem. Floral bracts have sharp, stiff, straw-colored spines that radiate outward in a star-like pattern. Below these is a pair of short, lateral spines covered in cotton-like hair.

Leaves and Stems: Basal rosette leaves are deeply lobed and pointy tipped, similar to dandelion rosette. One main flowering stalk. Rigid stems are coarse and covered with cottony hairs. Stem leaves are vertical, flat extensions along the stem. Upper leaves are entire and sharply pointed, becoming progressively smaller toward top of plant.

Seeds: Produces two types: seeds with fluffy plume and seeds without. After dispersal, a fuzzy cotton ball remains on end of stem. Large plants can produce nearly 75,000 seeds.

Roots: Deep, stout taproot, 1.8+ meters in length.

Reproduction and Dispersal: By seed. Most seeds fall within a four foot radius of the parent plant. Seeds travel by soil movement, water, animals, humans, machines and vehicles, or by use of commercial seed.

Habitat Preferences: Best adapted to open grasslands with deep, well drained soils but also capable of establishing on shallow, rocky soils with minimal rainfall. Does not tolerate dense shade.

Manual Treatment: Hand pulling can be effective if entire plant is removed, including taproot. Wear gloves. Bag and remove flowers or seed heads. Minimize soil disturbance. Follow up treatments will be required each year.

Interesting Facts: Destroys livestock rangelands.



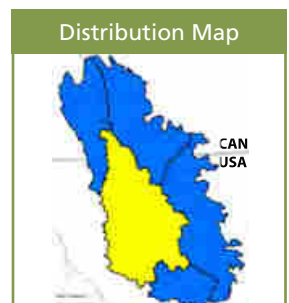
Richard Old, www.xidsservices.com



Barry A. Rice, The Nature Conservancy



Richard Old, www.xidsservices.com



Himalayan Balsam (*Impatiens glandulifera*)

Himalayan balsam is an annual plant with an exotic look. Also known as Policeman's helmet, it was introduced from India as an ornamental but has since been discovered to have invasive properties.



Caleb Stemmons, National Ecological Observatory Network. Inset: Jessie Paloposki

NATIVE "LOOK-ALIKE" SPECIES

Himalayan balsam has a similar look to the native species Wild bleeding heart, *Dicentra formosa*, which has lacy leaves and a tight cluster of hanging, pink, flattened bells.



John Ruter, University of Georgia

Dicentra formosa

QUICK ID

- Large, hollow stem
- Short roots
- Purple-reddish tinge on stems and leaves
- Explosive seed capsules



Jessie Paloposki

Flowers: Irregular, showy, pink to purple flower with 5 petals and distinct shape.

Leaves and Stems: Leaves are oblong to egg-shaped and 6 to 15 cm long with a serrated edge. Leaves are in whorls (usually in threes). Stems are large, hollow, and square—often described as bamboo-like due to their hollow character. The plant is highly branched and can grow up to 2 meters tall. Leaves and stems have a reddish tinge.



Jessie Paloposki

Seeds: Seed capsules are 3 to 5 cm long and up to 1.5 cm wide, with up to 16 seeds per capsule that explode when ripe.



Jessie Paloposki

Roots: Poor root structure, only growing up to 15 cm deep.

Reproduction and Dispersal: Exclusively propagates by seed that remain viable for up to 18 months in the soil, with 80% germination rate. Seed capsules explode when dry, reaching up to 7 meters away from the parent plant.



Jessie Paloposki

Habitat Preferences: Tolerant of a wide range of soil textures but prefers disturbed, riparian systems. It may also be found on roadsides, damp natural woodland, and forest cut blocks.

Manual Treatment: Perform treatment before the plant flowers or when seedpods are present. Poor root structure allows for easy and effective removal.

Interesting Facts: Also known as Policeman's helmet due to the shape of the flower, which resembles an old-fashioned policeman's helmet.

Distribution Map



Creeping Bellflower (*Campanula rapunculoides*)

Creeping bellflower is native to Europe and was introduced in North America as an ornamental flower. It can grow up to 1 meter tall and has a creeping root (rhizome), which is reflected in the name.



Matt Lavin. Inset: Matt Lavin

NATIVE "LOOK-ALIKE" SPECIES

Native harebell, *Campanula rotundifolia*, looks similar to creeping bellflower except its flowers and leaves are generally smaller and the plant is shorter overall.



Matt Lavin

Campanula rotundifolia

QUICK ID

- Large, bell-shaped, purple flowers
- Tall, erect stems in large clusters
- Long, heart-shaped and long-stalked (3–7 cm) leaves
- Stems are often purple in color.

Flowers: Light purple, nodding, and grow in the axils of upper leaves. Generally occur on one side of stem. Composed of 5 united sepals and 5 united petals. Typically flowers from June until fall.

Leaves and Stems: Alternate leaves, upper leaves sessile. Lower leaves are long-stalked and heart-shaped with coarsely toothed margins. Upper leaves are lance-shaped with hairs on lower surface. Leaf size is 3 to 7 cm long. Stems erect and can be hairy or smooth, often purplish, and up to one meter tall.

Seeds: Fruit is a round capsule containing numerous small, elliptical, light brown seeds with small wings. The light weight structure of the seeds allows easy transportation by wind. Each plant can produce up to 3,000 seeds annually.

Roots: Creeping rhizome which make manual treatment challenging.

Reproduction and Dispersal: Accomplished by both seed production and rhizomes. Seeds dispersed by wind. Roots spread rapidly, travelling under fences, through lawns, and under sidewalks and concrete.

Habitat Preferences: Growth can occur in full sun, part-shade, or shade. Prefers light, sandy to medium loamy, well-drained soils.

Manual Treatment: Hand pulling or cutting and bagging flowers can help to reduce seed spread, but will not reduce spread by rhizomes. Digging out root system takes years of consistency and effort.

Interesting Facts: Known to be included in many “wildflower” seed mixes.



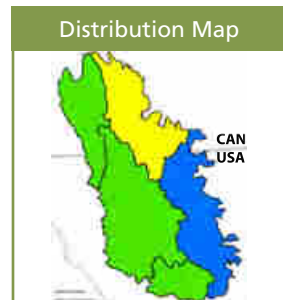
Chris Neeser



Matt Lavin



Matt Lavin



Blueweed (*Echium vulgare*)

Erect biennial to short-lived perennial herb up to 1 meter (3 feet) tall. Introduced from North Africa as a garden ornamental.



Kelly Cooley, CoolPro Solutions. Inset: Louis-M. Landry

NATIVE "LOOK-ALIKE" SPECIES

Shining penstemon, *Penstemon nitidus*, a native plant found in grasslands and rock outcrops, can be distinguished by its smooth, hairless foliage and waxy, opposite leaves.



GNP Archives

Penstemon nitidus

QUICK ID

- Purplish-blue, funnel-shaped flowers
- Flowers on the upper side of short, arching branches
- Seed stalk resembles a viper's head
- Entire plant bristly/hairy

Flowers: Numerous, bright, purplish-blue (occasionally white or pink), funnel-shaped flowers arranged on the upper side of short, arching branches. Five petals. Buds are reddish-purple before opening.

Leaves and Stems: First-year basal rosette radiates from central point. Rosette leaves have entire margins, taper toward stalk, and are rounded at the tips. Flowering stalks grow from the rosette during the second year. Stem leaves are lance-shaped with entire margins, and are alternately arranged. Stem hairs are painful to touch.

Seeds: Fruit is a cluster of four, angular, wrinkled seeds that are grayish-brown when mature. Each plant may produce up to 2,800 seeds.

Roots: Stout, black taproot with smaller, fibrous, lateral roots. Reaches 60 cm (2 feet) long.

Reproduction and Dispersal: By seed. Most seeds fall close to the parent plant but seeds also travel through infested gravel, water, animals, heavy machinery and vehicles, or by use of commercial seed or hay.

Habitat Preferences: Found in gravelly riparian areas, roadsides, pastures, and meadows at low to mid-elevations. Well-adapted to dry, rocky, sandy or shallow soils, especially glacial till.

Manual Treatment: Hand pulling or digging is effective; best done when soil is moist. Wear gloves, avoid skin contact. If any portion of flower is beginning to emerge, or if seed heads have formed, pick, bag, and remove.

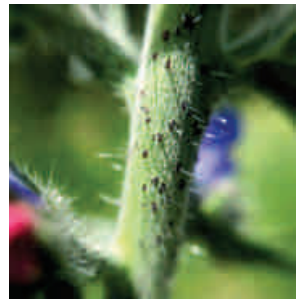
Interesting Facts: Typically not eaten by grazing animals and thus increases in overgrazed pastures.



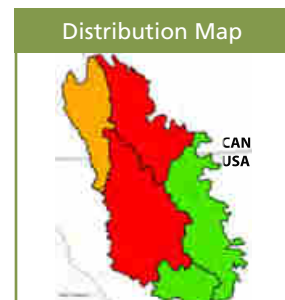
Jessie Paloposki



Louis M. Landry



Jessie Paloposki



Houndstongue (*Cynoglossum officinale*)

A biennial or short-lived perennial 30 cm to 1.2 meters (1–4 feet) tall. Produces a rosette during the first year and a flowering stem during the second year. Introduced from Europe.



Invasive.org. Inset: Werner Egelsreiter

NATIVE “LOOK-ALIKE” SPECIES

Blue stickseed, *Hackelia micrantha*, has similar leaves to houndstongue, but often grows in less disturbed areas. Houndstongue is more robust and often produces a large basal rosette. Blue stickseed has typical forget-me-not flowers.



Ben Legler

Hackelia micrantha

QUICK ID

- Reddish-purple flowers with five petals
- Soft, hairy rosette of leaves in first year
- Bur-like seeds stick to fur and clothing

Flowers: Reddish-purple flowers in terminal branches with five petals, united at the base.

Leaves and Stems: Rough, hairy/velvety, 2.5 to 30 cm-long leaves with entire margin (lacking teeth or lobes). Alternate leaves in second year. Erect, hairy stem, usually branched near the top. May produce a single flowering stem or multiple stems per plant.

Seeds: Fruit is composed of four prickly, flattened, bur-like nutlets (seeds) that are green when immature and roughly the size of a corn kernel. Seeds turn brown and become adhesive when mature, readily clinging to clothing or animals.

Roots: Woody taproot.

Reproduction and Dispersal: By seed. "Hitchhiking" seeds can easily be spread great distances by animals and humans. Mature plants can produce hundreds of seeds per year. Viable for 2 to 3 years.

Habitat preferences: Shade tolerant. Open forested and meadow areas, along roads and trails, and disturbed areas.

Manual Treatment: Hand pull plants and/or remove flowering stems before seed-set (by mowing or picking). Wear gloves to prevent skin irritation.

Interesting facts: Contains toxic alkaloids that cause liver cells to stop reproducing. Also contains allantoin, a compound that has been used to treat ulcers on the skin and in the intestine.



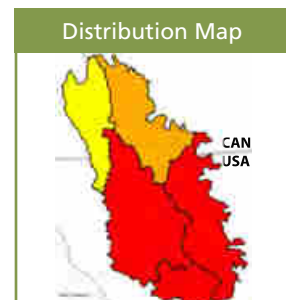
Kelly Cooley, CoolPro Solutions.



Joseph M. DiTomaso, UC Davis



Werner Egelsreiter



Common Buckthorn (*Rhamnus cathartica*)

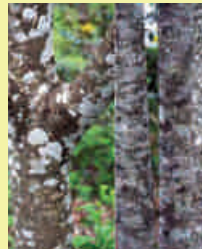
Deciduous shrub to small tree featuring dark green, oval shaped foliage and stiff woody thorns on branched stems. Reaches up to 7.6 meters (25 feet) at maturity. Introduced from Europe.



Matt Lavin. Inset: Leslie J Mehrhoff, University of Connecticut, Bugwood.org

NATIVE "LOOK-ALIKE" SPECIES

Cascara buckthorn, *Rhamnus purshiana*, is a native shrub to small tree of similar to larger mature height. It can be distinguished from Common buckthorn by its brownish to silver-gray, splotchy outer bark, and yellow to light brown inner bark.



Pat Breen, Oregon State University

Rhamnus purshiana

QUICK ID

- Dark green, oval leaves with pointed and often folded tips
- Stiff thorns on branches
- Fragrant, yellow-green, four-petaled and clustered flowers

Flowers: In spring, yellow-green, fragrant, four-petaled flowers develop; clustered in groups of 2 to 6.

Leaves and Stems: Dark green, oval leaves, slightly serrated margins, 3.8 to 7.6 cm long, arranged sub-opposite, opposite or alternate. Leaves near branch tips remain green until mid-fall. Branching stems tipped with woody thorns. Bark is dark gray outside, orange inner bark. Older bark is scaly with leaf scars.

Seeds: Individual to small clusters of green to red, eventually purple and black fruits, appear in fall (60 mm in diameter) and may remain through winter. Each fruit has 3 to 4 seeds.

Roots: Taproots can regenerate a tree when cut or burned. Not rhizomatous.

Reproduction and Dispersal: Seed is primary reproductive strategy. Also spread by animals ingesting fruit and excreting seeds. Cut or burned trees resprout from the root crown. Forms dense thickets in forested infestations.

Habitat Preferences: Woodlots, managed and natural forest areas preferred. Highly adaptable, thrives in open and shaded areas.

Manual Treatment: Remove seedlings and saplings with roots while soil is moist. Prescribed fire or stump burning reduces seed production. Apply herbicide treatment on regenerating plants. Removal of fruit can limit seed distribution by birds.

Interesting Facts: Introduced and planted as an ornamental shrub and wind shelter species in Canada and the United States.



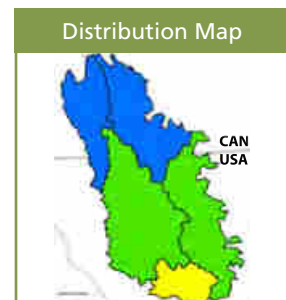
Matt Lavin



Matt Lavin

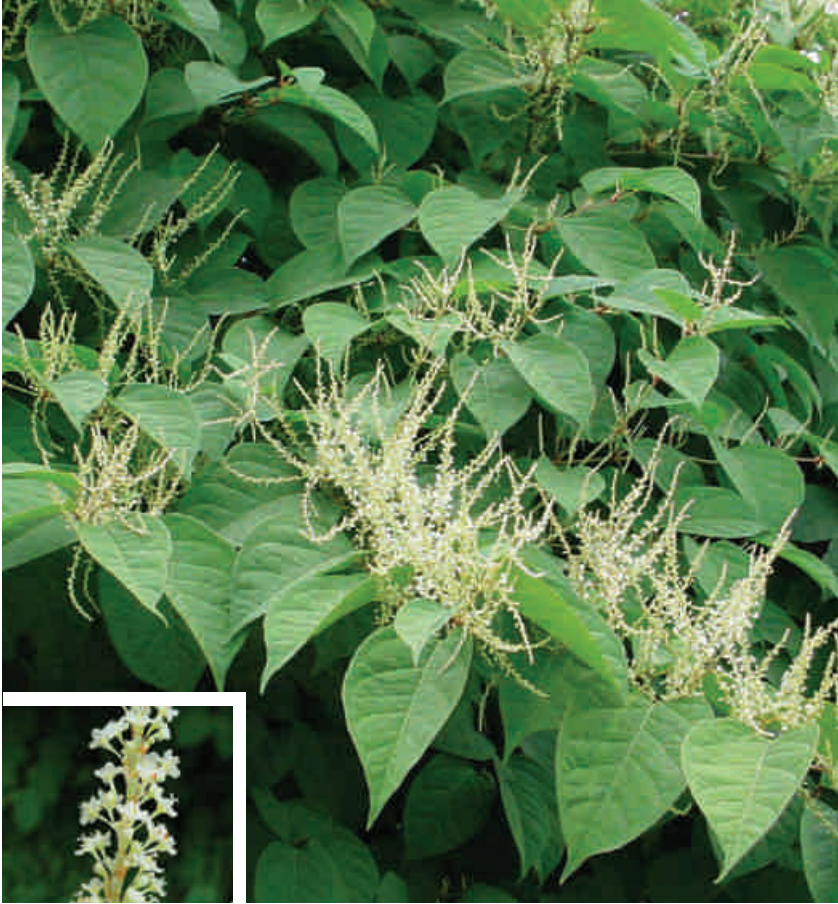


Matt Lavin



Knotweed Complex (*Fallopia* spp.)

Herbaceous, shrub-like, erect perennial varying in height from 1.5 meters to more than 5.8 meters (4–9 feet) tall. Introduced ornamental from Asia.



Richard Old, www.xidsservices.com. Inset: Richard Old

NATIVE “LOOK-ALIKE” SPECIES

Black elderberry, *Sambucus racemosa*, also has hollow, spotted stems clustered with white flowers. Distinguished from knotweeds by opposite branches, leaves divided into 5 to 9 sharply toothed leaflets, and clusters of dark red fruits.



Dave Powell, Invasive.org

Sambucus racemosa

QUICK ID

- Hollow, bamboo-like stems with spots
- Greenish to creamy-white flowers in clusters from leaf joints
- Heart-shaped leaves are lighter green on underside
- Forms dense thickets

Flowers: Green to creamy white flowers in large, plume-like clusters at leaf axil. Composed of five slightly fused, sepal-like petals. Petals are lacking. Papery, cup-like bracts surround the flowering stalk at each joint.

Leaves and Stems: Stout, hollow stems with reddish-brown spots at maturity. Grows in clumps. Nodes, or stem joints, are slightly swollen and surrounded by thin sheaths; usually fringed at the top. Alternate, heart-shaped, leathery leaves; 5 to 15 cm long, on short stalks.

Seeds: Three-sided fruits with narrowly winged sepals. Seeds are glossy, brown/black.

Roots: Creeping rhizomes usually 5 to 6 meters (16–20 feet) long.

Reproduction and Dispersal: Primarily from rhizomes and stems. Rhizomes and stem fragments disperse with water currents, flooding, and with natural or human-facilitated soil movement. Rapid and aggressive growth; forms dense stands.

Habitat Preferences: Disturbed areas, riparian areas, wetlands, roadsides, pastures, and ditches. Prefers moist soils. Primarily shade intolerant.

Manual Treatment: Cutting the stalks at least three times per growing season for several years.

Interesting Facts: Species typically included in the complex are Japanese knotweed, Giant knotweed, and Bohemian knotweed. Commonly found on old homesteads where



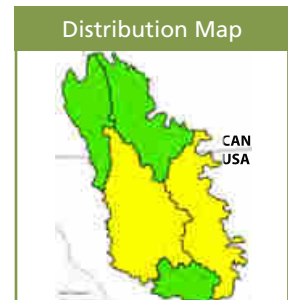
Ben Legler



Joseph M. DiTomasso, UC Davis



Amelie Pousseau



Tall Buttercup (*Ranunculus acris*)

Perennial up to 1 meter (3 feet) tall. Originated in Europe.



Biopix.dk. Inset: Michael Lemmer, www.naturkamera.de

NATIVE "LOOK-ALIKE" SPECIES

Many native buttercups appear similar to Tall buttercup. One native species, *Ranunculus macounii*, has a similar overall appearance, but has leaves that are divided into three stalked, spade-shaped leaflets, each deeply 3-lobed with toothed margins.



Jamie Fenteman

Ranunculus macounii

QUICK ID

- Bright yellow flowers on long stalks
- Stem leaves with three deeply cut lobes
- Plant covered with prominent soft hairs
- Long, erect stems



Ben Legler

Flowers: Golden yellow, saucer-shaped flowers with five glossy petals on long stalks.

Flowers are 19 to 25 mm diameter and have a greenish center. Green sepals underneath flower petals are hairy and drop off soon after flowering.

Leaves and Stems: Leaves near the base are on long stalks, deeply divided into 3 to 5 lobes then divided again into 2 to 3 narrow, pointed segments. Stem leaves are smaller, short-stalked; uppermost leaves reduced to 3 or 4 narrow segments. Stem and basal leaves are covered with soft hairs on both sides.



Dr. Amadej Trnkoczy

Seeds: Seed pod is a hairless, globe-shaped cluster of 20 to 40 tiny, curved beaks. Disc-shaped, reddish-brown seeds, with a short hook.

Roots: Thick, fleshy, fibrous roots.

Reproduction and Dispersal: By seeds that are easily carried by water.

Habitat Preferences: Along creeks, wet ditches, in meadows, pastures, and other open disturbed or undisturbed sites with moist to well-drained soil.

Manual Treatment: Hand pull or dig entire plant, keeping soil disturbance to a minimum. Wear gloves and long sleeves to prevent blistering and redness from plant's juices.

Interesting Facts: Often found in overgrazed pastures because livestock find it unpalatable. Contains a bitter juice that causes inflammation. The poisonous property is lost when plant is dried, as in hay.



Steve Hurst

Distribution Map



Giant Hogweed (*Heracleum mantegazzianum*)

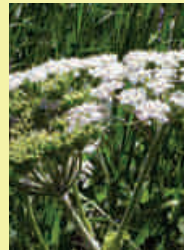
A member of the parsley or carrot family, Giant hogweed was introduced as an ornamental from Caucasus Mountains in central Asia because of its bold, tropical-looking leaves and sturdy, architectural look. It is highly toxic.



Jan Samanek, Photosanitary Administration. Inset: Jan Samanek, Photosanitary Administration

NATIVE "LOOK-ALIKE" SPECIES

Giant hogweed can be easily misidentified for Cow parsnip, *Heracleum maximum*, which blooms earlier, has much smaller flower heads, and shows purple marks on the stem, not blotches or spots like Giant hogweed.



Mart Lavin

Heracleum maximum

QUICK ID

- Large plant, grows up to 6 meters tall
- Purple spots/blotches on the stem
- Small, white flowers in an umbel
- Highly toxic sap

Flowers: Large, umbrella-shaped flower head up to 75 cm wide. Small, white flowers with 5 petals. Flowering occurs in late spring to early summer. Additional satellite umbels occur above and below the main terminal flower head.

Leaves and Stems: Leaves are dark green, alternate, deeply lobed, coarsely toothed. Upper side is smooth, underside covered in coarse, white hairs. Leaves grow up to 80 cm in diameter; compound, 3 leaflets. Hollow stems covered in bristles and purple spots, up to 10 cm wide. Grows up to 6 meters tall.

Seeds: Produces up to 120,000 seeds per plant and remain viable for 15 years. Seeds are flat, and each have 2 wings which can float for 3 days before becoming water logged.

Roots: Large, deep taproot with the crown sitting 10 cm below the soil surface.

Reproduction and Dispersal: Reproduces by seed only. Can spread 10 meters away from parent plant by wind, and can easily travel in waterbodies.

Habitat Preferences: Prefers well disturbed areas with moist soil including vacant lots, riverbanks, roadways, and waste areas.

Manual Treatment: Digging in spring before flowers develop can be effective on small infestations. Make sure you have appropriate personal protective equipment, no exposed skin, and conduct removal on a cloudy day.

Interesting Facts: A highly toxic plant which causes severe dermatitis and/or burns if sap gets on skin and it is exposed to sunlight.



Jan Samanek, Photosanitary Administration



Donna R Ellis, University of Connecticut



Bob Floutledge, Stult College

Distribution Map



Poison Hemlock (*Conium maculatum*)

A biennial with a basal rosette 20–45 cm across in the first year, producing a flowering stock the second year. All parts of the plant are highly poisonous.



Craig Allthen. Inset: Craig Allthen

NATIVE “LOOK-ALIKE” SPECIES

Common cow parsnip, *Heracleum maximum*, is also very large with white flowers in umbels, however it has hairy stems and its leaves are lobed rather than dissected and fern-like.



John Hltby, Illinois Wildflowers

Heracleum maximum

QUICK ID

- Large, fern-like leaves
- Smooth, tall stems with purplish blotches
- Small, white flowers forming umbels

Flowers: Compound umbels 2–8 cm across, each umbel with a small bract. Individual flowers are white, 2–4 mm across.

Leaves and Stems: Stems 1.8 to 3 meters tall; hollow with distinct ridges and purplish blotches. Alternate leaves and at least doubly pinnate, up to 45 cm long and 30 cm across near the base of the plant. Basal and lower leaves have long petioles, which become shorter as they ascend the plant.

Seeds: A schizocarp composed of two mericarps. As a whole, nearly spherical, with 5 ridges on each half (mericarp).

Roots: Long, fleshy taproot. Many lateral roots.

Reproduction and Dispersal: By seed, with most seeds germinating near the parent plant. Seed dispersal occurs from late summer until February.

Habitat Preferences: Usually found in disturbed areas but can also invade native habitats. Grows at edge of wetlands, prairies and woodlands, along roadsides, and in abandoned fields and pastures. Prefers rich soil, good moisture content, and full to partial sun.

Manual Treatment: Wear protective clothing and gloves when removing this plant. Small patches may be dug up as long as entire taproot is removed. Seed heads can also be removed after flowering. Mowing is ineffective as the plants readily re-sprout.

Interesting Facts: Entire plant is poisonous, causing paralysis of the central nervous system and death via respiratory failure.



John Hilty, Illinois Wildflowers



Craig Althen



Craig Althen

Distribution Map



Wild Caraway (*Carum carvi*)

Upright, erect plant up to 1 meter (3 feet) tall. Biennial or occasionally perennial. Rosette leaves difficult to notice until emergence of second-year flowering stalk. Brought from Eurasia as a cultivated species.



Biopix.dk. Inset: Biopix.dk

NATIVE "LOOK-ALIKE" SPECIES

Common yarrow, *Achillea millefolium*, has similar leaves and is very common in pastures and disturbed areas. Like Wild caraway, yarrow leaves are fern-like and finely divided, but the leaves often have a blue hue.



Patrick J. Alexander, USDA-NRCS PLANTS

Achillea millefolium

QUICK ID

- Leaves similar to carrot leaves
- Small, white flowers
- Upper leaves slender with a lacy appearance
- All parts aromatic when crushed

Flowers: Small, white, occasionally pink flowers with five petals; occur in compound umbels, or umbrella-like clusters at the top of flowering stalks.

Leaves and Stems: Fern-like leaves are similar to carrot leaves; alternately arranged on the stem. Upper leaves are lacy, finely divided into slender segments. Smooth, furrowed stems are hollow and lack spots. Several unbranched stems arise from a single plant.

Seeds: Fruits have a distinct odor. When dry, oblong fruits split into two seeds. Seeds are narrow, oblong, and brown with five conspicuous linear ribs.

Roots: Narrow taproot is an edible tuber.

Reproduction and Dispersal: Spreads rapidly by prolific seed production. Brittle seed heads shatter upon contact, dispersing seeds. Hay harvested in infested areas causes dispersal.

Habitat Preferences: Moist, disturbed meadows, croplands, and along irrigation ditches and roadways from lowland to mountain elevations. Grows in a wide range of soil types and tolerates spring flooding and light frosts.

Manual Treatment: Hand pulling or cutting during flowering is effective at preventing seed production. If hand pulling is done after seed set, place a plastic bag over the plant and close it tightly over the stem while pulling.

Interesting Facts: Wild caraway is used medicinally to treat bronchitis and increase appetite. Grown commercially as a specialty crop; fruits are ground and used as a spice.



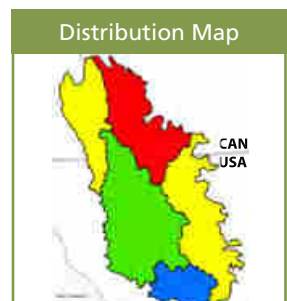
Biopix.dk



Mary Ellen Harré, Invasive.org



Steve Hurst



Wild Parsnip (*Pastinaca sativa*)

Biennial/perennial which can grow 0.5 to 1.5 meters (1.5–5 feet) tall. Toxic compounds are present during the plant's entire life cycle.



Jessie Paloposki. Inset: Jessie Paloposki

“LOOK-ALIKE” SPECIES

Non-native species Lovage, *Levisticum officinale*, is similar in height and leaf structure, and produces umbrella-shaped yellow clusters of flowers. However, Lovage forms a more "bushy" type plant, and does not produce a toxic sap.



Native Plant Trust

Levisticum officinale

QUICK ID

- Grows up to 1.5 meters tall.
- Stem is 2–5 cm thick with sparse hairs.
- Compound leaves arranged in pairs, sharply-toothed leaflets, and shaped like a mitten.

Flowers: Flat-topped umbel, 10 to 20 cm across. The umbels are composed of 6 to 25 rays with the florets borne at the tips. Florets have 5 yellow petals (rarely white), with edges entire and rolled back. Second-year flowering occurs for several weeks in Canada, starting in May, peaking in June or July.

Leaves and Stems: Leaves alternate, once or twice pinnately compound, and up to 40 cm long. Leaves can be smooth or hairy. Leaves become reduced in size and division up the stem, until reduced to narrow, sessile bracts. Petioles (leaf stems) are grooved and clasp the stem. Stems grow 2 meters high; are grooved, hollow, and with sparse hairs.

Seeds: Rounded or oval, narrowly winged, 4–8 mm long, straw to light brown colored. Four oil tubes on the outer surface and two to four on the inner surface.

Roots: Long, fleshy taproot.

Reproduction and Dispersal: Seedlings develop taproot and a rosette of leaves in first season of growth. Seeds mature midsummer and disperse late summer.

Habitat Preferences: Grows in a wide variety of soils, from sandy loam to heavy clay. Thrives in rich, calcareous, alkaline soils.

Manual Treatment: Wear protective clothing. Digging up taproot most effective when soil is moist; follow-up digging required. Mowing effective after peak blooming and before seeds set late summer or early fall.

Interesting Facts: Edible roots; sap can cause severe burns. Caution should be used when handling the plant.



Jessie Paloposki

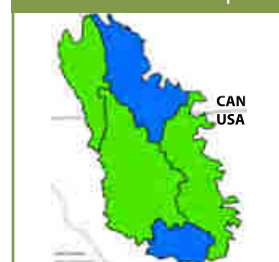


Jessie Paloposki



Jessie Paloposki

Distribution Map



Common Mullein (*Verbascum thapsus*)

Common mullein is a densely woolly, torch-like biennial that may reach more than 1.8 meters (6 feet) tall in its second year. A basal rosette of large, furry leaves and a substantial crown are produced in the first year.



Chris Neeser. Inset: Matt Lavin

“LOOK-ALIKE” SPECIES

Lamb’s ear, *Stachys byzantine*, is also an introduced **invasive species**. It often escapes and spreads from garden beds. Similar to Common mullein, it has fuzzy, gray leaves and upright flower stalks but can be distinguished by its square stem and bluish hue.



Ansel Commen. Bugwood.org

Stachys byzantine

QUICK ID

- Fuzzy, felt-like, light green leaves
- Yellow, five-lobed flowers attach to stem in a dense, compact spike
- Dead plants are woody; torch-like

Flowers: Flowers have five stamen, a five-lobed calyx tube, and a five-petaled, bright yellow corolla. Flowers are almost sessile, with very short pedicels, and densely arranged on a spike-like, terminal inflorescence.

Leaves and Stems: Simple basal leaves measure 8–50 cm long. Alternate stem leaves; their size is reduced toward the inflorescence. Stem is stiff and straight, resembling a torch. Entire plant is covered in hairs appearing fuzzy.

Seeds: Seed capsules are small and ovoid, that split open by way of two valves. Each capsule contains large numbers of minute, brown seeds, less than 1 mm. Seed can remain viable in the soil for more than 100 years.

Roots: Shallow taproot.

Reproduction and Dispersal: Produces abundant seed. It has no means of vegetative regeneration.

Habitat Preferences: Most likely to proliferate in disturbed areas, often on gravelly south-facing slopes where other species cannot establish.

Manual Treatment: Physical control methods may be effective at removing small, above ground populations. Plants severed through the root crown below the basal leaves do not sprout. Flowering stalks should be removed from the site to limit seed additions to the area.

Interesting Facts: Mullein was brought to North America by early settlers who used it medicinally and made tea from the leaves.



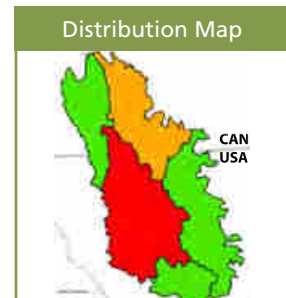
Dave Powell, Invasive.org



Chris Neeser



Parks Canada



Dalmatian Toadflax (*Linaria dalmatica*)

Rhizomatous perennial up to 1.2 meters (4 feet) tall. Usually found in patches due to creeping roots. Introduced as an ornamental from southeastern Europe.



Ben Legler. Inset: Werner Eigelstreiter

NATIVE "LOOK-ALIKE" SPECIES

Bastard toadflax, *Comandra umbellatum*, has similar waxy, bluish-green foliage but has white or greenish flowers with five petal-like sepals.



Merel Black

Comandra umbellatum

QUICK ID

- Bright yellow flowers with a long spur
- Alternate, waxy, heart-shaped leaves
- Leaves are a whitish or bluish shade of green
- Flowers have an unpleasant odor

Flowers: Bright, showy, yellow flowers, 5 cm long; downward spur, fuzzy orange spot on lower lip. Short stalks arranged in elongated cluster at the top of flowering stalk.

Leaves and Stems: Smooth, hairless foliage has a waxy or rubbery feel; whitish-blue. Heart-shaped leaves with entire margins. Alternately or spirally arranged. Stems may be unbranched or form dense branching.

Seeds: Fruit is egg-shaped with two cells that contain several seeds. Seeds are brown and sharply angular or pyramid-like with ridges. Remains viable for up to ten years.

Roots: Rhizomatous. Woody, well branched roots may grow several meters long. Horizontal creeping rhizomes have regenerative buds.

Reproduction and Dispersal: By seeds, rhizomes (creeping roots). Most seeds fall close but can be dispersed over short distances by wind. Animals and birds eat fruits, dispersing seeds over longer distances.

Habitat Preferences: Prefers dry, sandy, burned, or gravelly soils. Roadsides, pastures, grasslands, forest clearings, and disturbed or cultivated areas. Rapidly colonizes open sites.

Manual Treatment: Removing upper plant prior to seed set reduces seed production. Repeatedly hand pull young plants. Waxy leaf surface impedes herbicide uptake.

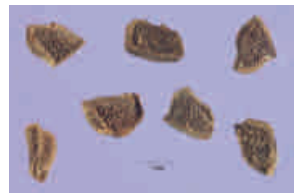
Interesting Facts: Contains a glucoside that is mildly toxic although poisoning is rare as plant is generally considered unpalatable to grazing animals.



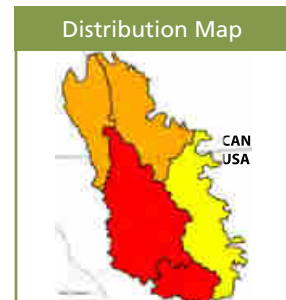
Ben Legler



Kelly Cooley, CoolPro Solutions



Steve Hurst



Veronica (*Veronica officinalis*)

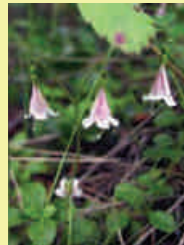
Perennial herbaceous plant growing to 0.3 meter (1 foot) tall. Native to Europe and western Asia. Veronica has recently been reclassified as part of the Plantain (Plantaginaceae) Family.



Rob Routledge, Sault College. Inset: Randall G. Proszak, University of Massachusetts

NATIVE "LOOK-ALIKE" SPECIES

Veronica is similar in appearance to Twin flower, *Linnaea borealis*. Twin flower will seldom form large mats on the ground; flowers are in twos and grow at the end of the stalk. Veronica has multiple flowers growing along the stem.



Scott Mcemoyer

Linnaea borealis

QUICK ID

- Low, ground cover-like plant
- Opposite, hairy, oval leaves with toothed margins
- Pale bluish-purple and nearly stalkless flowers

Flowers: Four blue, violet, or pinkish-purple petals with purplish lines. Flowers are stalked, short, and tubular. Flowers have two stamens. Stalks are hairy.

Leaves and Stems: Leaves are simple, opposite, oval, and slightly serrated. Two leaves per node along the stem. Leaves are 1.3 to 5 cm long, hairy on both sides, with toothed edges. Stems have small, soft hairs; spreading and climbing up to 30 cm long.

Seeds: Seeds are contained in heart-shaped pods that split open when ripe. Pods contain several flat seeds.

Roots: Shallow roots with rhizomes and stolons rooting at nodes to form a dense mat.

Reproduction and Dispersal: Reproduces by seed, stolons, and rhizomes.

Habitat Preferences: Part shade, sun, moist to dry disturbed soil, woodland clearings, trail edges, fields, logging sites, and roadsides. Can proliferate in native plant communities and persist under a native forest canopy.

Manual Treatment: Frequent hand pulling of seedlings can be effective. Cutting or mowing have little effect unless plants are cut below the root crown at an early stage.

Interesting Facts: Veronica is important in European traditional medicine, with uses ranging from internal (as a cough remedy and tonic) to external (as a salve). Escaped cultivation.



Rob Routhledge, Sault College



Randall G. Probstak, University of Massachusetts



Randall G. Probstak, University of Massachusetts

Distribution Map



Yellow Toadflax (*Linaria vulgaris*)

Rhizomatous perennial up to 1 meter (3 feet) tall. Introduced from Eurasia in the mid-1800s as an ornamental, fabric dye, and folk remedy.



MT SNWAC. Inset: Dr. Amadej Trnkoczy

NATIVE "LOOK-ALIKE" SPECIES

The foliage of *Lithospermum ruderale*, commonly called Lemonweed or Stoneseed, is similar in appearance but is hairy instead of smooth. It has small, pale yellow to greenish, five-lobed flowers.



Don Knokke

Lithospermum ruderale

QUICK ID

- Bright yellow flowers with orange spots
- Stems with numerous narrow leaves
- Alternate, pale green leaves are pointed at both ends
- Flowers have an unpleasant odor

Flowers: Bright, showy, yellow flowers are attached by short stalks, fuzzy orange spot on the lower lip. Flowers have a prominent upper and lower lip; long narrow spur. Arranged in a dense, elongated cluster, or terminal raceme.

Leaves and Stems: Smooth, hairless foliage is a pale shade of green. Long, linear, narrow leaves are pointed at both ends; attached directly to stem. Several stems emerge from each rootstock.

Seeds: Seeds are brown to black and flattened. Viable for eight years.

Roots: Rhizomatous, woody, well branched roots may grow several meters long. Horizontal creeping rhizomes have regenerative buds.

Reproduction and Dispersal: By seeds and rhizomes. Most seeds fall close to parent plants but seeds can be dispersed over short distances by wind and longer distances by birds that eat the fruits.

Habitat Preferences: Prefers moist, rich soils; roadsides, pastures, stream and river banks, grasslands, forest clearings, and disturbed or cultivated areas. Aggressive competitor in grasslands and burned areas.

Manual Treatment: Removing the above-ground portion of the plant prior to seed set reduces seed production. Repeated hand pulling can be effective if done for up to ten years.

Interesting Facts: Also known as “butter and eggs.” Leaves and stems look extremely similar to another exotic, Leafy spurge. Yellow toadflax, however, lacks a milky latex.



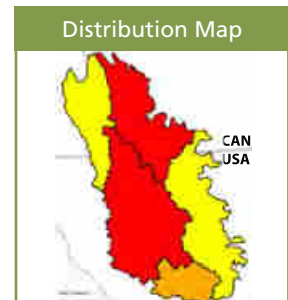
Anne Elliott



Ben Legler



Ben Legler



Flowering Rush (*Butomus umbellatus*)

Aquatic perennial found submerged in, or emerging up to 1.2 meters (4 feet) above water surface. Grows along shorelines of freshwater lakes, reservoirs, and slower moving watercourses.



Blpix.dk. Inset: Louis M. Landry

NATIVE "LOOK-ALIKE" SPECIES

Native Bur-reed, *Sparganium* spp., species have similar leaves and growth habit, but are very distinguishable when Flowering rush is in flower.



Susan McDougall

Sparganium spp.

QUICK ID

- ✓ Tall rush-like perennial
- ✓ Showy flowers with three white or pale pink petals
- ✓ Leaves are triangular in cross-section
- ✓ Found on shorelines or in water

Flowers: Numerous showy flowers (visible from late June to late August) with three petals, ranging from deep pink to white. Arranged in a large umbel atop a leafless stem. Three brownish bracts are found at the base of the umbel. Flowers have scent of bitter almonds.

Leaves and Stems: Leaves and stems are triangular in cross-section. Parallel-veined leaves originate in two rows on opposite sides of the base of the rhizome, have smooth edges, and twisted ends; leaves above the water are stiff and sword-shaped. Submerged leaves are limp.

Seeds: Flowers produce dark brown, beaked fruits, each with numerous seeds.

Roots: Thick, creeping rhizomes.

Reproduction and Dispersal: Dispersed locally by rhizomes or root pieces transported by flowing water. Seed dispersal is possible, but not common. Flowering rush is commonly dispersed over longer distances by boaters, animals, and people.

Habitat Preferences: Ponds, streams, rivers, lakes, wetlands, ditches, and canals near shorelines; prefers slowly moving water up to 3 meters deep. Decreased water levels may result in infestation establishment or spread.

Manual Treatment: Cutting below the water surface will only decrease the abundance. Very important to remove all root fragments and cut plant parts. Any disturbance to the root system, that is not removed, will cause increased reproduction.

Interesting Facts: Competes with native aquatic vegetation and reduces wildlife habitat.



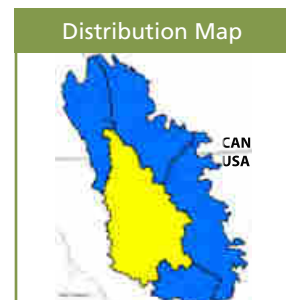
Biopix.dk



Ben Legler



Ben Legler



Cheatgrass/Downy Brome (*Bromus tectorum*)

Annual or winter grass, up to 40 cm (2 feet) tall. Flowers in early spring, dries by mid-summer. First introduced from the Mediterranean region in the late 1800s and is now the most common plant in the Intermountain West.



Chris Evans, University of Illinois, Bugwood.org. Inset: Dr. Shawn Askew, Virginia Tech

“LOOK-ALIKE” SPECIES

Japanese brome, *Bromus japonicus*, is a **non-native**, later-maturing, winter annual invader. Distinguished from Cheatgrass by hairier stems, no reddish color at maturity, and more plump and tightly clumped seed heads with shorter awns.



Matt Lavin

Bromus ciliatus

QUICK ID

- Droopy seed heads
- Seed heads purplish at maturity
- Plant covered with soft, white hairs
- Seed heads cling to socks, fur, and clothing



Biopix.dk

Flowers: Slender, branched flowering structures usually drooping to one side, with 8–18 mm long awns (stiff bristles) emerging from tip of each flower spikelet.

Leaves and Stems: Flat leaf blades, densely covered with soft, white hairs; closed at the base; leaf sheath encases stem. A papery thin ligule, 1–3 mm long, with a ragged edge located at leaf base. Leaf sheaths lack auricles.

Seeds: Light brown, elliptical seeds with a red tinge. Stiff bristled awn emerges from seed tip. Single-seeded fruits, five to ten in each flower spikelet. Quick to mature and seeds may remain dormant for several years.

Roots: Fibrous roots may reach depth of 30 cm. Roots also develop during winter, allowing them to utilize higher levels of water and nutrients than other grasses.

Reproduction and Dispersal: By seed. Dispersed by animals, wind, water, soil movement, and by clinging to fur, clothing, and shoes.

Habitat Preferences: Roadsides, pastures (particularly dominant in overgrazed areas), meadows, and in cultivated or disturbed areas. Early colonizer in severe burns.

Manual Treatment: Hand pull entire plant, preferably in March, April, or early May, before seeds have formed. Begin on south and east-facing slopes. Frequent mowing (every three weeks) prior to seed set can reduce seed production.

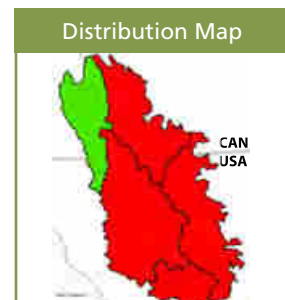
Interesting Facts: Competes with more desirable native grasses for moisture because of ability to grow in winter and early spring.



WSSA (Weed Science Society of America)



Steve Hurst



Crested Wheatgrass (*Agropyron cristatum*)

Perennial introduced grass that forms clumps, which merge into dense mats. An agronomic plant with the ability to invade native plant communities.



Matt Lavin. Inset: Craig Althen

NATIVE "LOOK-ALIKE" SPECIES

Slender wheatgrass, *Elymus trachycaulus*, is another tufted grass with blades at a 45° angle from the main stem. However, blades are often in-rolled with ridges on the upper surface. Seed heads lack comb-like appearance of Crested wheatgrass.



Matt Lavin

Elymus trachycaulus

QUICK ID

- Bunchgrass
- Seed heads resemble a two-sided comb
- Light green leaves at a 45 degree angle from main stem
- Previous year's dry leaves ring its

Flowers: Dense spike of flowers in two, closely spaced, vertical rows—like teeth on a two-sided comb. Spike generally less than 10 cm long, oblong, and flattened. Spikelets close together but spreading. Lemmas about 6 mm long, hairy, with awns 2–4 mm long. Glumes 3–5 mm long with awns 1–2 mm.

Leaves and Stems: Leaves 2–7 mm broad, stiff, and flat; hairy on upper side and smooth to slightly rough below. Fringed ligules about 1.5 mm; claw-like auricles generally present. Stems 40–60 cm tall. Sheaths smooth and split, though hairy lower down.

Seeds: Long-lived, spreading primarily via seed. Seed heads form a dense spikelet, with a conspicuously flattened head, tapering toward the tip. Seed heads shatter easily. Eaten by birds and small rodents and grazed by deer, antelope, and elk.

Roots: Densely fibrous, extensive root system, growing up to 2.4 meters deep.

Reproduction and Dispersal: Reproduction by seed or tillers. Wind pollinated.

Habitat Preferences: Grows in grasslands with well-drained, loamy soils. Extremely drought and cold tolerant.

Manual Treatment: Mowing may reduce Crested wheatgrass, however in some cases it has also been shown to promote growth.

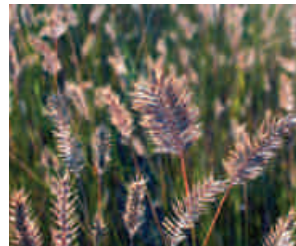
Interesting Facts: Provides good forage in the spring, however, it loses nutritional content in late summer and is a poor food source in winter. Not compatible in mixes with native species—it is highly competitive and outcompetes native species.



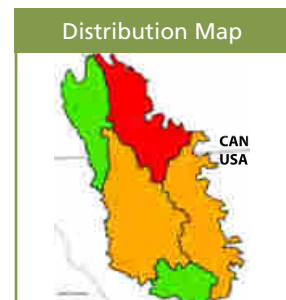
Matt Lavin



Craig Althen



Matt Lavin



Kentucky Bluegrass (*Poa pratensis*)

Cool season perennial with creeping rhizomes, forming mat-like turf. Cultivation as a lawn grass has aided its spread and is an invasive threat to native grasslands. Widely present in the Crown of the Continent Ecosystem.



Craig Althen. Inset: Craig Althen

NATIVE "LOOK-ALIKE" SPECIES

Plains bluegrass, *Poa arida*, is uncommon but may be locally abundant, growing in dry to sandy grassland or saline habitats. Distinguished from Kentucky bluegrass by its pointed ligule; lacks webbing on the lower part of seed head spikelets.



Matt Lavin

Poa arida

QUICK ID

- Leaves have boat-shaped tips when viewed from side; prominent mid-vein
- Deeper green than many other grasses
- Aerial stems (not leaves) are compressed and nearly round

Flowers: Bluish flower heads when grown to maturity (May–July). Open, pyramid-shaped flowering heads, variable length branches; in whorls, with 3–5 purple-green to gray florets in each spikelet.

Leaves and Stems: Leaf blades up to 5 mm wide, 5–40 cm long. Leaves may be flat or folded with a prominent midvein, boat-shaped at tips. Aerial stems capable of heights of 30–100 cm, and are compressed and rounded. Short ligules (up to 1 mm long), flat at the top with tiny, jagged serrations. Auricles are not present.

Seeds: May produce 100–200 seeds up to 2 mm long, viable up to 2 years. Seeds germinate in fall after a cool period.

Roots: Creeping, shallow, perennial rootstock with many branching rhizomes.

Reproduction and Dispersal: Reproduces by seed and creeping rhizomes; generates low, dense mats of leaves close to the ground.

Habitat Preferences: Disturbed areas including rangeland and pastures, forest cut blocks, roadsides, and waste areas; from foothills to open dry meadows and riparian areas.

Manual Treatment: Repeated tilling; single till ineffective. Similarly, spring prescribed burns may achieve successful control with precise timing, and may need to be carried out over multiple years. Mowing, grazing, hand pulling, and cutting are ineffective.

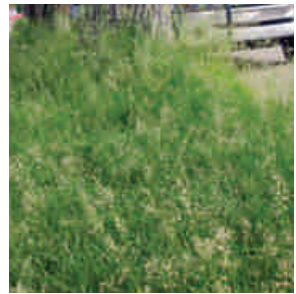
Interesting Facts: Once widely considered an introduced species, some scientists suggest *Poa pratensis* may be native to a portion of the continent, though this is disputed.



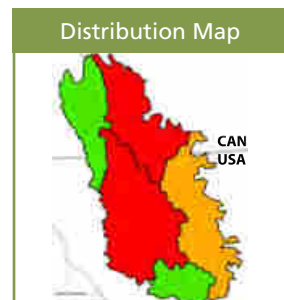
Matt Lavin



Matt Lavin



Matt Lavin



Medusahead (*Taeniatherum caput-medusae*)

A highly invasive winter annual grass with a shallow root system. Typically 0.15 to 0.5 meters (6–20 inches) tall with distinct, bristly seed heads. It is used for erosion control and has minimal value for livestock grazing.



Matt Lavin. Inset: Chris Evans, University of Illinois. Bugwood.org

NATIVE “LOOK-ALIKE” SPECIES

The seed heads are similar in appearance to Foxtail barley, *Hordeum jubatum*, but Medusahead seed heads do not disarticulate.



Matt Lavin

Hordeum jubatum

QUICK ID

- Short, bristly, spike-type seed head
- Matures later than most other annuals; stays green when others are brown
- Seed heads have 2 sets of long bristles

Flowers: Flowering occurs late spring and early summer, developing flower heads at apex of stems.

Leaves and Stems: Leaves are less than 0.32 cm wide. One or more stems grow from base of plant; up to 0.6 meters tall. Each stem produces a single, short, spike-type seed head. Infestations leave litter layers after maturity that may persist several years.

Seeds: Each seed head is a spike inflorescence, each node will produce 2 to 3 spikelets, and each spikelet will contain one viable seed. Twenty or more seeds are produced per seed head. Long awns are straight initially, but tend to twist as they mature.

Roots: Up to one meter; root growth can occur during winter, growing downward, while in the spring it occurs laterally.

Reproduction and Dispersal: Small silica barbs allow seeds to disperse by clinging to animals, clothing, and machinery. Seeds can also be dispersed by wind, water, and animal droppings.

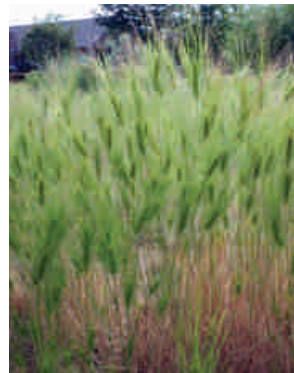
Habitat Preferences: Typically colonizes sites where the existing perennial vegetation has been destroyed or weakened; degraded ecological sites with dry, stony soils. It will colonize native communities but not overrun them until a disturbance occurs.

Manual Treatment: Fire, diking, and intensive early grazing can all reduce infestations. Revegetation with desirable species is vital to prevent Medusahead from dominating area.

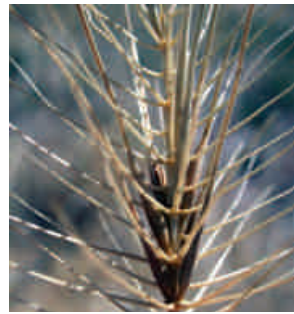
Interesting Facts: Like Cheatgrass, it is a fire-adapted species. Awned seeds can cause injury to eyes, nose, and mouths of grazers.



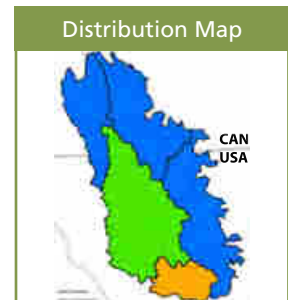
Matt Lavin



Matt Lavin



Matt Lavin



Phragmites (*Phragmites australis*)

Erect perennial grass 2 to 5 meters (6–15 feet) tall and has plume-like inflorescences.



Kelly Cooley, CoolPro Solutions. Inset: Kelly Cooley, CoolPro Solutions

NATIVE “LOOK-ALIKE” SPECIES

American common reed, *Phragmites australis* subsp. *americanus*, is a native subspecies, shorter than invasives with varied vegetation, lower density of stalks, and less conspicuous inflorescence.



Matt Lavin

Phragmites australis
subsp. *americanus*

QUICK ID

- Can grow up to 5 meters (15 feet)
- Extremely dense with as many as 200 stems per square meter
- Tan/beige stems with blue-green leaves
- Large, dense, feather-like seed heads

Flowers: Panicles are oblong, purplish when young, straw colored at maturity; looks like an ostrich feather.

Leaves and Stems: Culms (stems) erect, hollow, and reed-like. Leaves are linear to lanceolate-linear, flat, and drooping; leaf-blades deciduous at the ligule.

Seeds: Ostrich feather-like seed head

Roots: Forms a dense network of roots and rhizomes, which can go down up to two meters in depth to reach deep ground water.

Reproduction and Dispersal: Vegetative reproduction and by seeds.

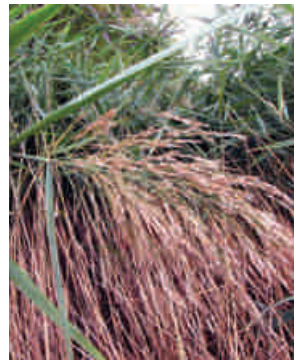
Habitat Preferences: Disturbed sites, exposed soil, and often wet or marshy areas with high nutrient content, such as along railways, roadsides, construction sites, near agricultural fields, or near developed shorelines of slow moving watercourses, lakes, or reservoirs.

Manual Treatment: Mechanical methods must always be used carefully to avoid stimulating growth. Excavation of sediments may be effective at control, but if small fragments of root are left in the soil, they may lead to reestablishment. Manual treatments in combination with herbicide treatment are recommended.

Interesting Facts: Along with being introduced as an ornamental, the invasive Phragmites may have been brought into North America for use as duck hunting blinds. Capable of forming dense thickets that choke out native vegetation, block sunlight to shoreline habitat, and make it difficult to walk through.



Kelly Cooley, CoolPro Solutions



Kelly Cooley, CoolPro Solutions



Doug McCauley, Alberta Ag and Forestry

Distribution Map



Reed Canary Grass (*Phalaris arundinacea*)

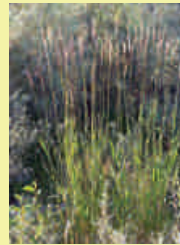
Bunch forming perennial grass with seed heads extended above the leaves. Genetic analysis is the only reliable way to distinguish between native and invasive species. Invasive Reed canary grass is an escaped cultivar from Eurasia.



Kelly Cooley, CoolPro Solutions. Inset: Craig Althen

NATIVE "LOOK-ALIKE" SPECIES

Native Reed canary grass, *Phalaris arundinacea*, forms sparse stands in shallow water among rocks, along lake shores, and large river shorelines. Invasive species can form monocultures in marshes, ditches, and slow-moving streams.



Craig Althen

Phalaris arundinacea

QUICK ID

- Robust, hairless perennial grass in large clumps or mats
- Bluish-green stems up to 2 meters tall
- Straw-colored to pinkish flowers in a cluster with short, erect branches

Flowers: Florets arranged in dense, spiky, and narrow panicles. As they grow, they change color from green to dark purple-brown. The panicle is on a long stalk high above the leaves.

Leaves and Stems: Stems are smooth, sturdy, and usually hollow. They grow 1 to 2 meters in height. The leaf blades of Reed canary grass are wide, flat, and held at a 45 degree angle from the stem. Where the leaf meets the stem, a distinctive, transparent ligule clasps the stem.

Seeds: Produces numerous seeds, which drop to the ground when mature. Afterwards, the panicles dry out and turn straw colored.

Roots: Shallow roots with rhizomes.

Reproduction and Dispersal: Occurs through seed and rhizomes. Seeds are light and can float on water.

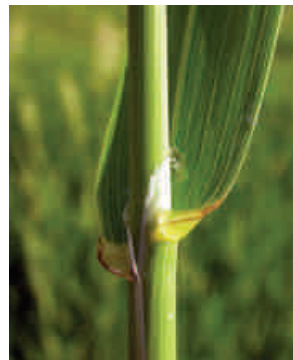
Habitat Preferences: Can proliferate in native plant communities with moist soils; often found in marshes, ditches, and along slow-moving streams.

Manual Treatment: Plant native tree and shrub cuttings to shade out Reed canary grass; prescribed burning and adding sawdust mulch has been shown to work under the right applications. Removing the entire plant and its roots may also work in smaller infestations.

Interesting Facts: Invasive Reed canary grass is usually one of the first species to emerge during spring in wetland areas.



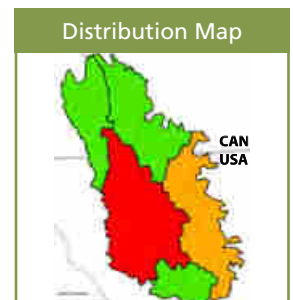
Matt Lavin



Matt Lavin



Craig Althen



Smooth Brome (*Bromus inermis*)

Perennial grass often forming sod. 50 cm to 1 meter (1.6–3.2 feet) tall with green to bronze or purplish, branched flower clusters. An agronomic species from Europe.



Matt Lavin. Inset: Matt Lavin

NATIVE "LOOK-ALIKE" SPECIES

Native to western North America, California brome, *Bromus carinatus*, has flattened spikelets and keeled, rather than rounded, lemma backs such as those found in Smooth brome.



Matt Lavin

Bromus carinatus

QUICK ID

- Hairless stems and leaves
- Closed sheaths
- Leaves are flat and 5–10 mm wide
- "M" or "W"-shaped crimp in the leaf

Flowers: Erect flower head with crowded branches. Ranges in color from green to bronze to purplish. Glumes and lemmas are hairless. Awns are short, less than two mm, or lacking.

Leaves and Stems: Foliage is mainly hairless. Stems with closed sheaths. Leaves flat and 5–10 mm wide with a midrib that does not extend down the sheath. Ligules to 1 mm long and auricles rudimentary or lacking.

Seeds: Light brown or tan seeds about 0.8 cm long.

Roots: Rhizomes and fibrous roots.

Reproduction and Dispersal: Spreads by seeds, rhizomes, and tillers.

Habitat Preferences: Pastures, roadsides, disturbed areas, and native grasslands. Can dominate in habitat with good nutrient and moisture content.

Manual Treatment: Yearly mowing or prescribed burning while in the boot stage can stress Smooth brome and reduce its density.

Interesting Facts: Has the ability to hybridize with Pumpelly's brome, *Bromus pumpellianus*. Produces intermediates which are difficult to identify.



Craig Althen



Craig Althen



John Hilty, Illinois Wildflowers

Distribution Map



Ventenata (*Ventenata dubia*)

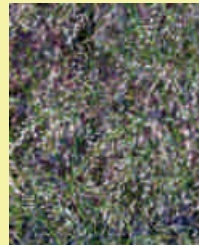
Annual cool season grass native to Europe and northern Africa. Shallow rooted; highly invasive in both annual and perennial grassland areas. Open flowering heads make dense field infestations look like yellow fog or mist.



Matt Lavin. Inset: Matt Lavin

NATIVE "LOOK-ALIKE" SPECIES

Tufted hairgrass, *Deschampsia caespitosa*, looks similar to Ventenata. Tufted hairgrass has larger ligules, and Ventenata has more purple to reddish-brown nodes on its stems in late spring.



Alberta Biodiversity Monitoring Institute

Deschampsia caespitosa

QUICK ID

- ✓ Floret awns are straight at the base; upper awns are angled and twisted
- ✓ Mature plants are narrow and wiry
- ✓ Inflorescence resemble a yellow fog when viewed at a distance

Flowers: Flowering heads are an open panicle, 20 to 40 cm wide; narrow, wiry, long branches at right angles. Flowers June–August, 2 to 3 fertile florets per spikelet. Ribbed or veined glumes at base of spikelets surround florets. Upper awns within florets are bent at a sharp angle and may twist.

Leaves and Stems: Few stems, bunched out from roots, 50 to 75 cm tall. Leaf blades erect, rolled, and narrow (1–3 mm). Stems and seed heads thin and wiry.

Seeds: Germinate in late fall (winter annual), or following year's late winter/early spring (summer annual). Viability is 1 to 3 years.

Roots: Shallow, fibrous annual roots send out tufted shoots.

Reproduction and Dispersal: Reproduces exclusively from seed. Dispersed by animals, equipment, wind, and water, and along roads and trails.

Habitat Preferences: Prefers open, disturbed areas (both wet and dry), invading out from adjacent roads or trails. Prefers moderate to low precipitation in warm temperate climates.

Manual Treatment: Tillage over multiple seasons effective due to seed viability limitations and annual nature of the species. Repeat mowing early; ineffective after flowering. Grazing ineffective, unpalatable.

Interesting Facts: Ventenata has proved more competitive than established stands of other invaders such as Cheatgrass and Medusahead.



Matt Lavin



Matt Lavin



Matt Lavin

Distribution Map



Yellow Flag Iris (*Iris pseudacorus*)

Erect perennial up to 1.2 meters (4 feet) tall and found in wet areas. Native of Europe and Africa. Introduced as an ornamental in the early 1900s.



MT SNWAEC. Inset: Ben Legler

NATIVE "LOOK-ALIKE" SPECIES

Yellow flag iris is easy to identify in flower. When not in bloom, it could be confused with native irises, such as the smaller Western blueflag, *Iris missouriensis*, a 30 to 60 cm tall native perennial with blue-violet flowers.



Al Schneider

Iris missouriensis

QUICK ID

- Showy, yellow flowers
- Long, sword-like leaves
- Only completely yellow-flowered Iris in North America
- Forms dense colonies in wet areas

Flowers: One to several large, yellow flowers on each stem; has three upward pointing petals and three downward pointing, tongue-shaped sepals; often adorned with brown spots or purple veins.

Leaves and Stems: Leaves are 0.5 to 1 meter long, sword-like, flat, with pointy tip; 8 to 25 mm wide; raised midribs and smooth edges; arranged with sheathing, fan-like. Branched, flowering stems have few to no leaves.

Seeds: Fruit is an erect, three-chambered, glossy-green, cylindrical capsule. Each chamber contains many disc-shaped, pitted, pale brown seeds densely packed in vertical rows.

Roots: Thick, fleshy rhizomes may extend 10 to 20 cm (4–8 inches) deep. Rhizomes often form horizontal mats, and can grow for several months without water.

Reproduction and Dispersal: By rhizomes and seeds. Seeds germinate and grow well after being burnt.

Habitat Preferences: Found in moist soils near lakes and ponds, streambanks, irrigation ditches, and wetlands.

Manual Treatment: Hand pulling or digging can successfully control small, isolated patches if the entire rhizome mass is removed and treatment is repeated every year for several years to weaken and eventually kill the plant. Wear gloves.

Interesting Facts: Has been used for erosion control, sewage treatment, and is known to remove metals from wastewater. Can be toxic to humans and animals. Yellow flag iris continues to be sold through garden dealers.



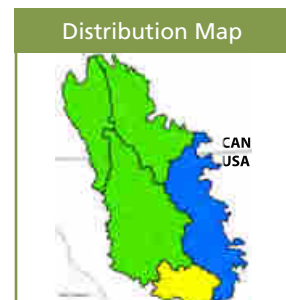
Ben Legler



Clayton J. Antieau



Steve Hurst



Flat Peavine (*Lathyrus sylvestris*)

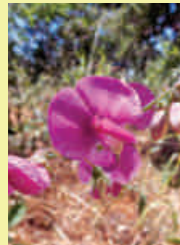
The narrow-leaved, everlasting pea is a perennial plant which can grow 200 cm (79 inches) by climbing with its tendrils. Without any support it can reach about 75 cm (30 inches) tall.



Jessie Paloposki. Inset: Jessie Paloposki

"LOOK-ALIKE" SPECIES

Flat peavine closely resembles Sweet pea, *L. odoratus*, Yellow sweet pea, *L. belinensis*, and Perennial pea, *L. latifolius*, all of which are **non-native** and invasive.



Matt Lavin

L. latifolius

QUICK ID

- Narrow-leaved, everlasting pea forms a mat of herbage
- Stem is floppy and flat with wide wings
- Fruit is a legume pod about 5 cm long
- Uses tendrils to travel over other plants

Flowers: Light pink, pea-like flowers in clusters of 5 to 15. Five sepals, five petals, irregular. Uppermost petal is known as the "standard," lateral two as the "wings," lowest two join forming the "keel." Flowers June to October.

Leaves and Stems: Leaves (7.5 x 2.5 cm) are alternate with short, winged stalks and stipules. Leaf blades are pinnate with a single pair of narrow lanceolate leaflets with entire margins and three tendrils. Smooth leaves.

Seeds: Fruit is a long pod containing 5–15 seeds. Fruits mature in fall as dehiscent pods; seeds are dispersed explosively as the fruits burst open, spilling the seeds onto the ground.

Roots: Rhizomatous; plant can die back each winter and grow from the roots.

Reproduction and Dispersal: Mainly via rhizomes—horizontal roots form buds and grow new plants.

Habitat Preferences: Prefers dry soil, tolerates partial to full sun. Thrives on disturbed sites. Becomes dense, especially along roadsides.

Manual Treatment: Digging, mowing, and cutting can be challenging for control because it reproduces from underground roots. Mowing will likely spread plants to new locations. Small infestations can be manually treated if all roots are removed. Several treatments will be necessary.

Interesting Facts: Fruit and leaves contain a toxic amino acid; ingesting large amounts can cause Laythyrism, causing stiffness, weakness, and no muscle control. Horses and humans most susceptible compared to cattle or sheep.



Jessie Paloposki



Jessie Paloposki



Jessie Paloposki

Distribution Map



Scotch Broom (*Cytisus scoparius*)

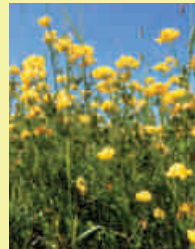
Long-lived, perennial, woody shrub can reach up to 4 meters (13 feet) tall. Native to western and central Europe. Introduced as a garden ornamental.



Jessie Paloposki. Inset: East Kootenay Invasive Species Council

“LOOK-ALIKE” SPECIES

Similar in appearance to **non-native** Birdsfoot trefoil, *Lotus corniculatus*, but differs because Birdsfoot is shorter (up to 2 meters), has clover-like leaves, and forms a dense mat.



Matt Lavin

Lotus corniculatus

QUICK ID

- Large, yellow, pea-like flowers
- Large, woody shrub; ridges on stems
- Flat seed pods
- Oval leaves in threes

Flowers: Numerous small, showy, bright yellow, pea-like flowers, sometimes with red markings in the middle, along entire stem.

Leaves and Stems: Stalked lower leaves composed of three leaflets (4–8 mm long); un-stalked upper leaves are simple, alternate, and oval. Produces numerous erect branches with prominent ridges.

Seeds: Flat, hairy seed pods are initially green, then black. Pods are filled with numerous seeds, producing up to 10,000 seeds. Seeds are toxic to humans and livestock.

Roots: Deep root system with a forked taproot. Roots have nitrogen fixing bacteria, which allows it to establish in nutrient poor soils.

Reproduction and Dispersal: Flowers attract pollinating honey and bumble bees. Reproduces by seed and vegetatively, by re-sprouting. Mature plants can produce up to 3,500 pods, each containing 5–12 seeds. Pods open explosively and send seeds up to 5 meters away.

Habitat Preferences: Can thrive in nutrient-poor areas. Grows in dry, sandy soils in grasslands, woodlands, and areas near water. Thrives in full sun. Establishes quickly in disturbed areas.

Manual Treatment: For small populations, pull or dig up plants, removing as much of the root as possible.

Interesting Facts: Highly flammable, potential fire hazard. Pollen can trigger allergic reactions.



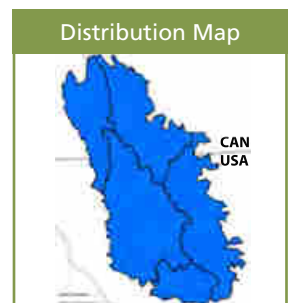
Eric Coombs, Oregon Dept. of Agriculture, Bugwood.org



Tom Heurffé, USDA Forest Service, Bugwood.org



Ben Legler



Purple Loosestrife (*Lythrum salicaria/virgatum*)

Perennial species that often forms solid stands in aquatic to semi-aquatic sites. One plant can produce many stout, 1 to 3 meters (6–10 feet) tall, branched stems. Introduced as an ornamental from Europe in the early 1800s.



Biopix.dk. Inset: Gary Fewless

NATIVE "LOOK-ALIKE" SPECIES

Fireweed, *Chamerion angustifolium*/*Epilobium angustifolium*, also has pink flowers in long, dense clusters at the top of the plant, but has a four-lobed flower and alternate stem leaves.



Louis-M. Landry

Chamerion angustifolium

QUICK ID

- ✓ Pink-purple flowers in long, dense clusters
- ✓ Leaves opposite
- ✓ Square stem
- ✓ Found in moist habitats

Flowers: Flowers in long, dense, vertical clusters (or terminal racemes) with leaves. Showy flowers with 4 to 8 wrinkled petals. Sepals have 8, 10, or 12 prominent green veins.

Leaves and Stems: Opposite leaves without stalks, sometimes in spirals (or whorls) around the stem. Lance-shaped, slightly hairy with smooth edges. Stiff, square, or octagonal stem. Can be smooth or with soft hairs.

Seeds: Numerous brown to black seeds in a small, brown, two-chambered capsule. Can produce over two million seeds annually. Viable for up to 20 years.

Roots: Woody taproot and extensive branching, fibrous root system.

Reproduction and Dispersal: By seeds and underground horizontal roots (rhizomes). Detached root or stem fragments can also form new plants.

Habitat Preferences: Near shorelines in wetlands, floodplains, ponds, streams, rivers, lakes, ditches, canals and other disturbed wet soil areas. Well-established plants can persist on dry sites for many years. Can tolerate a wide range of growing conditions.

Manual Treatment: Hand pull young plants, removing all roots and underground stems.

Interesting Facts: Invades wetland areas and can expand quickly due to abundant seed production. Astringent herb used for treatment of diarrhea and dysentery.



Louis-M. Landry

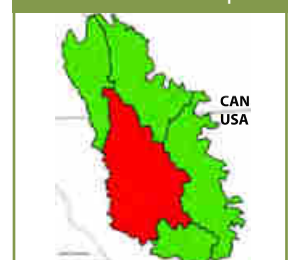


Steven J. Baskauf



Kelly Cooley, CoolPro Solutions

Distribution Map



Yellow Bedstraw (*Galium verum*)

Rhizomatous perennial 60 cm to 120 cm (2–4 feet) tall. Introduced from Europe as a garden ornamental.



Marilee Lovit. Inset: Paul Busselen

NATIVE “LOOK-ALIKE” SPECIES

Solidago canadensis, commonly called Canadian goldenrod, is a rhizomatous, upright perennial native to North America. Goldenrod leaves are alternate and not whorled like the leaves of bedstraw.



Matt Lavin

Solidago canadensis

QUICK ID

- ✓ Fruit is a two-lobed, two-seeded nutlet
- ✓ Clustered, yellow flowers
- ✓ Whorled, sword-like leaves
- ✓ Stems up to 25 cm with minute hairs

Flowers: Yellow flowers densely clustered at ends of branches. Showy, yellow flowers are 3 mm, four-petaled, and petals are longer than they are wide.

Leaves and Stems: Linear, sharply pointed leaves with margins slightly rolled under, generally in whorls of six or more. Leaves are 1–3 cm long and 2 mm broad. Leaves are dark green and hairy underneath. Stems are four-sided and covered with short hairs.

Seeds: Fruit is a hairless, two-lobed, two-seeded nutlet. Fruit is dry and does not split open when ripe. Seed viable up to five years.

Roots: Spreads by underground lateral roots (rhizomes) and above ground stolons. Can form extensive mats of new growth.

Reproduction and Dispersal: By seeds and creeping roots. Root system is easily broken and gives rise to new plants from buds on rhizomes. Above ground stolons also start new plants where there is soil contact. Seeds are covered in hooked bristles to promote dispersal by animals.

Habitat Preferences: Disturbed areas and native plant communities. Prefers semi-shade but can tolerate full sun and will tolerate dry conditions.

Manual Treatment: Hand pull young plants before extensive root system develops.

Interesting Facts: The only Yellow bedstraw in North America. Yellow flowers can be used to dye butter, cheese, and textiles; roots make a red dye.



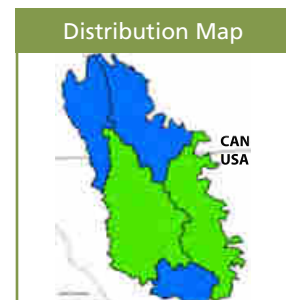
Louis-M. Landry



Paul Busselen



Ulf Liedén, floracyberia.net



Wood Sage (*Salvia nemorosa*)

A hardy, herbaceous perennial. Native to a wide area of central Europe and western Asia, it is an attractive plant that is easy to grow and propagate.



Jacquie Rasmussen, Lillooet Regional Invasive Species Society (LRIS). Inset: Danny Smart

NATIVE “LOOK-ALIKE” SPECIES

Giant hyssop, *Agastache foeniculum*, is a native mint that flowers about the same time (June to September) as Wood sage. Giant hyssop is usually taller (0.6–1.2 meters) with purple flowers. Wood sage grows up to 0.6 meters with pink-purple flowers.



David L. Clement, University of Maryland

Agastache foeniculum

QUICK ID

- Leafy, branched, upright perennial
- Usually 75 cm (30 in) tall and spreads about 30 cm (12 in) across
- Typical of many mints, the bruised foliage is aromatic

Flowers: Pink, purple, or violet-blue flowers 1.5 cm long in abundant, terminal, upright, spike-like racemes. Individual flowers are tubular, expanding into two lips. Upper lip is helmet or boat-shaped, and extends over the lower lip, which is more or less flat. Calyx is often colorful as well.

Leaves and Stems: Square stems, densely felted with white, wooly hairs. Leaves are borne opposite one another, oblong, and wrinkled, fuzzy beneath; have scalloped margins (often hidden by the hairs), and get up to 8 cm long. Lower leaves on petioles, upper ones sessile, and stems usually leafy all the way to their tips.

Seeds: Nutlets, four clustered together.

Roots: Rhizomatous perennial.

Reproduction and Dispersal: Mainly pollinated by Hymenoptera species. Easy to propagate from softwood cuttings taken during growing season. Spreads easily along rhizomes.

Habitat Preferences: Introduced horticulturally and escaped. Prefer areas with more moisture or shallow, submerged soils. Tolerant of a variety of soil—sandy, loam, clay, limestone and combinations thereof. They prefer fertile, loamy soil.

Manual Treatment: Repeated hand pulling prior to seed set can provide effective control.

Interesting Facts: Deer find it uninteresting. Wood sage wildflowers are a big hit with butterflies. Some susceptibility to powdery mildew, leaf spot, and rust.



Christler Johansson



Danny Smart



Jacquie Pasmussen, LRISS

Distribution Map



Field Bindweed (*Convolvulus arvensis*)

Perennial vine up to 3 meters (10 feet) long. Grows horizontally along the ground or climbs. Native to Eurasia.



Michael Lemmer, www.naturkamera.de. Inset: Ben Legler

“LOOK-ALIKE” SPECIES

Wild buckwheat, *Polygonum convolvulus*, is a **non-native** with inconspicuous greenish-pink flowers, heart-shaped, sharp leaves, and a small, papery sheath that encircles the stem at the leaf base.



Louis-M. Landry

Polygonum convolvulus

QUICK ID

- Two small, scale-like bracts below the base of flower
- Twining, vine-like stems
- White to pink, funnel-shaped flowers
- Arrowhead-shaped leaves

Flowers: White to pinkish, funnel-shaped flowers; 2.5 cm diameter. Two small bracts are attached to the long flower stalk below the flower's base. Flowers close when it is dark, overcast, or raining. They last a single day.

Leaves and Stems: Vine-like stems twine around supports, fences, and other plants. Dark green, arrowhead-shaped leaves; alternately arranged and attached by 2.5 cm-long leaf stalks.

Seeds: Four seeds produced in a small, round fruit capsule. Seeds are dark gray to reddish-brown and three sided. Seeds are viable for over 60 years.

Roots: Extensive system of deep, creeping roots and rhizomes. Roots are whitish, cord-like, fleshy, and brittle. Can be 6 meters (20 feet) deep.

Reproduction and Dispersal: By seeds and creeping roots. Produces up to 500 seeds per plant. Seeds generally fall near parent plant but are also dispersed by soil movement, water, animals, human activity, and as a contaminant in crop seed.

Habitat Preferences: Disturbed areas, pastures, cultivated fields, roadsides, and occasionally found in riparian areas. Highly adaptive; grows best on moist, fertile soils.

Manual Treatment: Frequent hand pulling of seedlings can be effective. Cutting and mowing have little effect unless plants are cut below the root crown at an early stage.

Interesting Facts: Will host viruses affecting crops such as potatoes and tomatoes. May be present in bags of bird seed.



Kelly Cooley, CoolPro Solutions



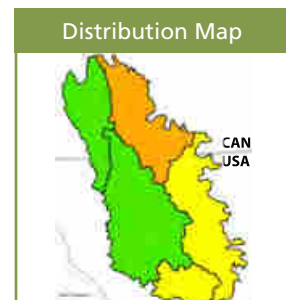
Ben Legler



Matt Lavin



Steve Hurst



Dame's Rocket (*Hesperis matronalis*)

Biennials or short-lived perennials native to Eurasia. Cultivated in other areas of the world for their attractive, spring-blooming flowers. In some of those areas, it has escaped from cultivation and become a weed species.



Kelly Cooley, CoolPro Solutions. Inset: Craig Althen

NATIVE "LOOK-ALIKE" SPECIES

Dame's rocket is often confused with native Phlox species that also have similar large, showy flower clusters. Dame's rocket has alternately arranged leaves and four petals per flower, while phloxes have opposite leaves and five petals.



Matt Lavin

Phlox longifolia

QUICK ID

- White, lavender or purple, 1.25 cm, four-petaled flowers
- Flowers are very fragrant, particularly in the evening

Flowers: Large, showy terminal racemes reaching 30+ cm tall. Each flower (2 cm across) has four clawed and hairless petals. Purple, pink, or white. Six stamens in two groups; stigmas two-lobed.

Leaves and Stems: Lanceolate-shaped, alternate leaves on upright stems; lack petioles and toothed margins. Short hairs on top and bottom surfaces giving leaves a rough feel. In early spring, a thick mound of low-growing foliage is produced. During flowering, lower parts of stems are generally unbranched and denuded of foliage.

Seeds: Grow in thin, 5 to 14 cm long pods, with two rows of seeds separated by a dimple. Fruit are terete and open by way of glabrous valves. Oblong seeds 3–4 mm long, 1–1.5 mm wide.

Roots: Weak taproot. Appears to have the ability to produce chemicals that prevent or reduce the growth of other plants.

Reproduction and Dispersal: Abundant seed producer. When seed-bearing pods ripen, they pepper seed onto coats of wildlife, resulting in wide seed spread.

Habitat Preferences: Roadside ditches, dumps, and in open woodland settings. Grows best in full sun to partial shade where soils are moist with good drainage.

Manual Treatment: Pull plants in early spring. Plants in bloom should be bagged and disposed of in a landfill. Burn infested areas in seedling or rosette stage.

Interesting Facts: Thought by many to be a native wildflower; found in wildflower seed mixes.



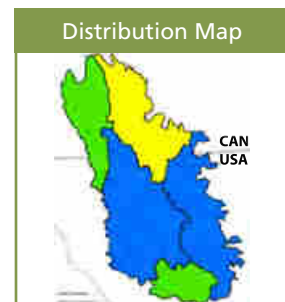
Craig Althen



Craig Althen



Kelly Cooley, CoolPro Solutions



Dyer's Woad (*Isatis tinctoria*)

Erect annual, biennial, or short-lived perennial up to 1 meter (3 feet) tall. Introduced from Eurasia.



Louis-M. Landry. Inset: Michael Lemmer, www.naturkamera.de

NATIVE "LOOK-ALIKE" SPECIES

Dyer's woad is distinguishable from other species in the mustard family, such as the native Slender draba, *Draba albertina*, by its unique fruits.



Mary Ellen Harte, Invasive.org

Draba albertina

QUICK ID

- ✓ Bright yellow, four-petaled flowers
- ✓ Teardrop-shaped seedpods
- ✓ Leaves have prominent white midrib
- ✓ Alternate, hairless stem leaves

Flowers: Bright yellow flowers, each 3 mm across, in a dense, flat-topped cluster at the upper portion of the stem. Four petals are arranged in a cross formation.

Leaves and Stems: A rosette forms the first year, and a flowering stem emerges in the second year. Leaves have a white midrib and a powdery white film. Rosette leaves have soft hairs, slightly wavy margins, and long stalks. Stem leaves are alternate, hairless, and lance shaped. Stems are woody; many branched in the upper portion.

Seeds: Purplish-brown, teardrop-shaped seedpods hanging from one-seeded stalks. Can produce 10,000 seeds a year.

Roots: Thick taproot up to 1.5 meters deep and some lateral roots in the upper 30 cm of soil.

Reproduction and Dispersal: By seed. Most fruits fall near parent plant but some disperse short distances with wind and greater distances with water, soil movement, human activities, and as a contaminant in seed and hay.

Habitat Preferences: Disturbed or undisturbed areas, croplands, waterways, roadsides, grasslands, and open forests. Prefers full sun, dry, rocky, or sandy soils. Often found on south-facing canyon slopes.

Manual Treatment: Hand pulling can be effective if entire crown is removed after the flowering stems have emerged but before seed set. Follow up for several years to prevent infestation.

Interesting Facts: Cultivated as a source of blue dye by early U.S. settlers prior to the trade of indigo from Asia.



Matt Lavin



Joseph M. DiTomasso, UC Davis



Steve Dewey, Invasive.org

Distribution Map



Hoary Alyssum (*Berteroa incana*)

Typically a biennial (rarely perennial). Stiff, 0.3 to 1.1 meter (10–28 inches) tall weed, usually with branches near the top. Introduced from Eurasia.



Biopix.dk. Inset: Gary Fewless

NATIVE “LOOK-ALIKE” SPECIES

Field chickweed, *Cerastium arvense*, is a native perennial found in subalpine meadows and rocky hillsides. It has opposite, slender, stemless leaves and white flowers with five, deeply-lobed petals.



Louis-M. Landry

Cerastium arvense

QUICK ID

- Entire plant covered with grayish, star-shaped hairs
- Oval seedpods close to stem
- White flowers have deeply notched petals
- Upper leaves clasp stem



www.floracyberia.net

Flowers: White (to yellow) flowers with four deeply notched petals on slender stalks in a deeply rounded cluster. Green sepals underneath flower petals are hairy and drop off soon after flowering.

Leaves and Stems: Gray leaves with star-shaped hairs. Leaves at base of plant are 3 to 5 cm long with slender stalks. Stem leaves lack stalks toward top of plant, point upward, and are pressed close to the stem. Multiple stems from the base that are covered with leaves and star-shaped hairs.



Gary Fewless

Seeds: Flattened, oval seedpods, 5 to 8 mm long, with star-like hairs. Held close to the stem. Prominent point on the tip (remaining flower style). Chambered, with each chamber containing 3 to 7 seeds aligned in rows within.

Roots: Slender taproot.

Reproduction and Dispersal: By seed and as a contaminant in commercial seed or hay.

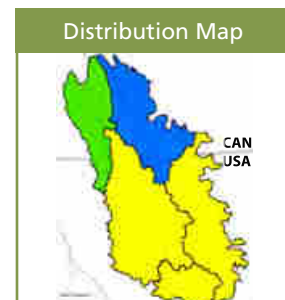
Habitat Preferences: Meadows, pastures, roadsides, embankments, or other disturbed habitat.

Manual Treatment: Hand pull or hoe entire plant. Mowing prevents seed production.

Interesting Facts: Toxic to horses, especially after it is dried in hay.



Gary Fewless



Perennial Pepperweed (*Lepidium latifolium*)

Erect, perennial herb up to 2 meters (6 feet) tall. Grows in dense patches or clumps due to a creeping (rhizomatous) root system. Introduced from Eurasia.



Steve Dewey, Invasive.org. Inset: Jessie Paloposki

NATIVE "LOOK-ALIKE" SPECIES

Common pepperweed, *Lepidium densiflorum*, is a native annual that reproduces only by seed. Distinguishable from Perennial pepperweed by hairless pods, green flower petals, deeply-lobed leaves, and a taproot rather than creeping roots.



Ben Legler

Lepidium densiflorum

QUICK ID

- Waxy leaves with whitish mid-veins
- Grows in dense patches
- Dense, white flower heads in rounded clusters near branch ends
- Seedpods attached by long stalks

Flowers: Fragrant, white flower heads form dense, rounded clusters near the ends of branches. Flowers have four petals arranged in a cross.

Leaves and Stems: Leaves are waxy and have smooth or toothed margins and distinctive whitish mid-veins. Stem leaves are alternately arranged and tapered. Each stem has multiple branches. Dead stems persist for several years.

Seeds: Tiny seedpods are slightly hairy. Seedpod stalks are longer than the seedpods.

Roots: Rhizomatous with a creeping root system. Buds on roots develop into new shoots. Often reaching depths of 1.8 meters or more.

Reproduction and Dispersal: Primarily by rhizomes and root fragments, but also by seed. Roots can remain dormant for several years. Seeds are spread by wind, water, machinery, soil movement, and as a contaminant in hay and crop seed.

Habitat Preferences: Meadows, fields, roadsides, ditches, waterways, floodplains, seasonally wet areas, cultivated lands, and rangelands. Thrives in moist habitats.

Manual Treatment: Cutting or mowing 2 to 3 times per year at bud stage for several years slows spread and decreases vitality, but will not control infestations. Successful hand pulling or digging requires complete removal within ten days after weed emergence.

Interesting Facts: Above-ground parts are high in vitamin C. Seeds may be used like pepper. Roots can be grated and made into a sauce similar to horseradish.



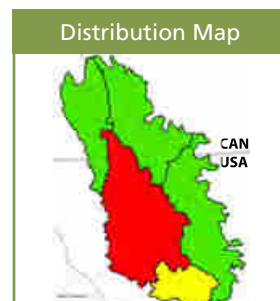
Steve Dewey, Invasive.org



Joseph M. DiTomasso, UC Davis



Steve Dewey, Invasive.org



Whitetop/Hoary Cress (*Lepidium draba*)

Erect, perennial herb up to 0.6 meters (2 feet) tall. Mature flowers have a white, flat-topped appearance. Introduced from Eurasia, most likely in contaminated alfalfa seed. Historically categorized as *Cardaria draba*.



MT-SNWAEC. Inset: Michael Lemmer, www.naturkamera.de

NATIVE "LOOK-ALIKE" SPECIES

Common yarrow, *Achillea millefolium*, has a similar white, flat-topped flower cluster. The leaves are easily distinguished as they are very finely pinnately divided, appearing feather-like, and have a fragrant aroma when crushed.



Pam Dwiggins

Achillea millefolium

QUICK ID

- Dense, white flower heads
- Upper leaves clasp stem
- Inflated, upside down, heart-shaped seedpods
- Grows in dense patches

Flowers: Small, fragrant, white flowers are in dense clusters at the top of plant. Individual flowers have a slender, 1.3 cm stalk.

Leaves and Stems: Leaves on mature plant are shaped like arrowheads, alternately arranged, and have finely toothed edges. Basal rosette has bluish-green, lance-shaped leaves. A single stem, often branched near the top, has one flower cluster.

Seeds: Inflated seedpods are shaped like an upside down heart. Seedpods contain two reddish-brown, egg-shaped seeds separated by a narrow partition. Viable up to three years.

Roots: Rhizomatous, with vigorous creeping root system. Below ground buds develop new shoots. Root system comprises over 75 percent of the plant's total biomass; can grow up to 9 meters (30 feet).

Reproduction and Dispersal: Primarily by rhizomes and root fragments; can form dense patches of clones over an area of 3.6 meters (12 feet). Also reproduces by seed. Can produce two crops of seeds per year.

Habitat Preferences: Meadows, fields, roadsides, ditches, waterways, cultivated lands, and rangelands. Particularly adapted to subirrigated pastures with alkaline soils.

Manual Treatment: Cutting or mowing two or three times per year at bud stage for several years slows spread and may decrease vitality of plants, but will not control infestations. Cultivation or hoeing 1 to 2 times per month over 2 to 4 years may eliminate colonies.

Interesting Facts: High in vitamin C. Dense infestations produce billions of seeds.



Biopix.dk

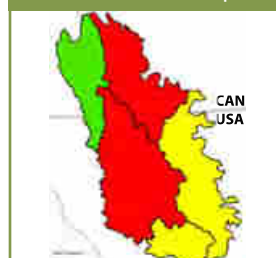


Joseph M. DiTomasso, UC Davis



J. O'Brien, UC Davis

Distribution Map



Bittersweet Nightshade (*Solanum dulcamara*)

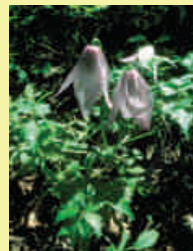
Rhizomatous, slender perennial vine or semi-woody shrub. Native from Eurasia. All plant parts are toxic to people, pets, and livestock.



Jan Samanek, Phyiosanitary Administration. Inset: Craig Althen

NATIVE "LOOK-ALIKE" SPECIES

Rock clematis, *Clematis columbiana*, is a slender-stemmed, creeping vine with nodding, bluish-purple flowers. Unlike Bittersweet nightshade, clematis does not have a prominent yellow pollen sac or red berries.



Dave Powell, Invasive.org

Clematis columbiana

QUICK ID

- ✓ Bluish-purple, star-shaped flowers; prominent yellow pollen sacs
- ✓ Berry clusters from green to bright red
- ✓ Leaves dark green to dark purple with one or more lobes at base

Flowers: Star-shaped, purple, five-petaled flowers point downward, with bright yellow stamens in the center. Flowers grow in clusters along branches on short stalks.

Leaves and Stems: Simple alternate leaves are 5–10 cm long, dark green above, lighter green below. Crushed leaves have an unpleasant smell. Stiff stems are up to 3 meters long, trailing or climbing on other plants.

Seeds: Hanging clusters of bright red berries with numerous, flattened, yellow seeds. Each berry contains about 30 seeds.

Roots: Rhizomatous taproot with lateral roots that break easily to start new plants.

Reproduction and Dispersal: Spreads by seed, stem, and root fragments. Birds eat ripe berries and spread seeds to new locations. Roots and stems are easily broken and give rise to new plants.

Habitat Preferences: Disturbed, moist habitats like backyards, pastures, creeks, roadsides, and vacant lots. Can outcompete native shrubs and small trees.

Manual Treatment: Small infestations may be hand pulled, dug out, or cut back. Pieces of cut vines may re-sprout if left on the soil. Wear gloves and protective gear when handling this species.

Interesting Facts: All plant parts toxic to people, pets, and livestock. Strong unpleasant odor. Provides important fall and winter food for birds.



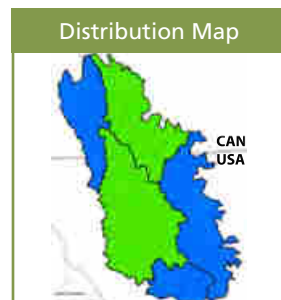
Tom Watson



Craig Althen



Craig Althen



Black Henbane (*Hyoscyamus niger*)

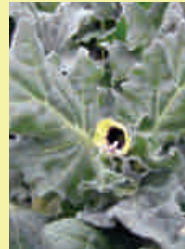
Black henbane is an annual or biennial taproot species in the nightshade family. All parts of the plant are poisonous to humans and wildlife due to tissues containing toxic alkaloids.



Matt Lavin. Inset: Scott Mincemoyer

“LOOK-ALIKE” SPECIES

Black henbane is unlikely to be confused with other species in the field. The **non-native** White or Yellow henbane, *Hyoscyamus albus*, has a more uniformly pale yellow flower.



Manuel Luis Gil Gonzalez, Wikimedia Commons

Hyoscyamus albus

QUICK ID

- ✓ Entire plant is covered in greasy hairs
- ✓ Distinct large, yellow flower with purple veins and throats
- ✓ Flowers have strong, unpleasant smell
- ✓ Large, shallowly-lobed leaves

Flowers: Hermaphroditic flowers have 5 lobes, funnel shaped and arranged in a spike-like inflorescence, with youngest flower at end. Yellow with deep purple veins and throats; unpleasant smell.

Leaves and Stems: Grows 0.3 to 1.8 meters tall. Upright stems, thick (often woody-like), leafy, hairy, and widely branched. Alternate, large, grayish-green leaves have a creamy white mid-vein and are coarsely toothed with shallowly-lobed margins.

Seeds: 2.5 cm long, pineapple-shaped capsules form after flowering. These contain black, pitted seeds; viable up to 4 years.

Roots: Large root is thick, fleshy, and white.

Reproduction and Dispersal: Reproduces by seed only, with each plant producing between 10,000 to 500,000 seeds. New growing sites can occur due to contaminated soil moved via humans.

Habitat Preferences: Grows in a wide range of soil textures and pH levels. Does not tolerate shade well. Does not require well drained soils. Commonly found in disturbed areas, roadsides, waste areas, and rangeland.

Manual Treatment: Small infestations prior to seed set can be effectively treated through pulling or digging the plant if entire taproot is removed. Protective clothing must be worn during treatment to prevent skin irritation. Do not consume this plant.

Interesting Facts: Black henbane contains hallucinogenic properties and was used as a flavouring in beer until the Bavarian Purity Law of 1516.



Matt Lavin



Matt Lavin



Kelly Cooley, CoolPro Solutions

Distribution Map

Russian Olive (*Elaeagnus angustifolia*)

Fast-growing, deciduous tree featuring silver-gray foliage and stiff, woody thorns on branched stems. Introduced from temperate regions of Asia. Sold as an ornamental tree in western North America, where it escaped into the wild.



Chris Neeser. Inset: Chris Neeser

NATIVE "LOOK-ALIKE" SPECIES

Silverberry/Wolf willow, *Elaeagnus commutata*, is a native shrub with similar silver foliage that can be distinguished from Russian olive by its lack of thorns and overall shorter height at maturity (3 meters).



Matt Lavin

Elaeagnus commutata

QUICK ID

- Silver-gray foliage
- Stiff thorns on branches
- Umbel-like, four-petaled, pale yellow flowers
- Fruits resemble small, tan/silvery olives

Flowers: Pale yellow, highly fragrant, and small (5 to 10 mm) with a narrow, bell-shaped calyx with four petal-like lobes.

Leaves and Stems: Alternate silvery-gray leaves, elliptic or lanceolate with smooth margins, 50 mm–10 cm. Gray-green upper leaf surface, star-shaped scales, and some hairs. Silver-gray lower leaf surfaces with shield-shaped scales. Gray, smooth, branching stems with woody thorns; 3 to 8 meters tall at maturity.

Seeds: Oval, similar to an olive. 12–25 mm long, covered with silver scales. Seeds inside dormant at maturity.

Roots: Deeply branched tap and lateral roots, which can regenerate the tree.

Reproduction and Dispersal: Seed spread by animals that ingest and excrete them. Cut trees resprout from crown and root system.

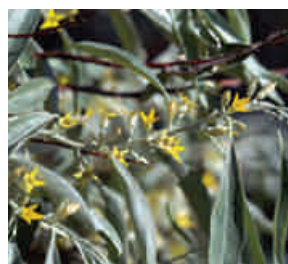
Habitat Preferences: Riparian areas, floodplains, rangeland, pasture, roadsides, and disturbed sites. Highly adaptable. Grows best in warm summers, cold winters.

Manual Treatment: Physical removal of seedlings, saplings, and roots while soil is moist. Prescribed fire/stump burning reduces seed production; ineffective long-term control unless followed by herbicide treatment of regenerating plants. Removing and disposing of fruit prior to or even after maturity can limit seed distribution by birds.

Interesting Facts: In the early 1900s, horticulturalists imported Russian olive to mark property lines, stabilize river banks, and serve as wind breaks.



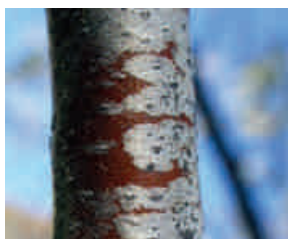
Chris Neeser



Chris Neeser



Matt Lavin



Matt Lavin

Distribution Map



Baby's Breath (*Gypsophila paniculata*)

Erect, bushy perennial up to 1 meter (3 feet) tall. Introduced from Eurasia as an ornamental. Now grown as a crop and used extensively in floral arrangements.



Amelie Rousseau. Inset: Joseph M. DiTomaso, UC Davis

NATIVE "LOOK-ALIKE" SPECIES

Pearly everlasting, *Anaphalis margaritacea*, appears similar but the main distinguishable difference is that Pearly everlasting has soft-hairy foliage, alternate leaves, and is not bushy or heavily branched.



Richard Old, www.xidseervices.com

Anaphalis margaritacea

QUICK ID

- Small, white, sweet-scented flowers
- Flower tops look like wispy clouds
- Bluish-green stems and branches; overall bushy appearance
- Opposite linear leaves with a prominent white mid-vein

Flowers: Numerous, small, white (occasionally pink) flowers at stem's end; heavily branched clusters. Five-petaled flowers, 1.5 to 3 mm wide. A fused, cuplike group of sepals below the flower petals has 5 teeth.

Leaves and Stems: Many-branched, slender stems are swollen at the nodes. Leaves are linear, opposite, hairless, and covered with a powdery white film, which produces a bluish look. Prominent white mid-veins are generally 1.8 to 10 cm, but size decreases towards top. Very few leaves are present when flowers have bloomed.

Seeds: The fruit is a small, egg-shaped capsule with four compartments, each containing 2 to 5 black, kidney-shaped seeds. Can produce over 13,000 seeds per plant.

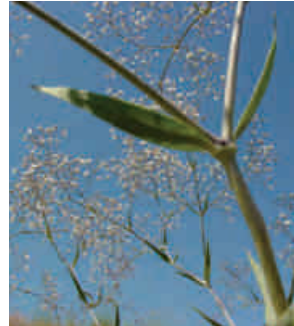
Roots: Up to 3.6 meters deep; thick, woody taproot has sufficient reserves to survive two years of adverse growing conditions.

Reproduction and Dispersal: By seeds only. Most seeds fall near the parent plant, but mature plants often break off at ground level and wind tumble, dispersing seeds much further.

Habitat Preferences: Disturbed areas, grasslands, pastures, roadsides. Prefers sandy and slightly alkaline soils.

Manual Treatment: Severing the crown from the roots by cultivation or hand-cutting below the soil surface usually kills Baby's breath. Regrowth is rare if the complete crown is removed.

Interesting Facts: Can outcompete healthy perennial grasses. Commonly used in wedding bouquets.



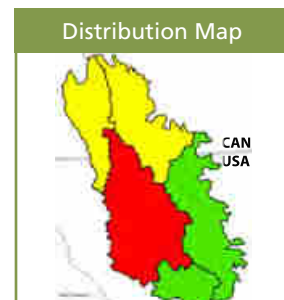
Richard Old, www.xidsservices.com



Joseph M. DiTomaso, UC Davis



Matt Lavin



Bladder Champion (*Silene vulgaris*)

Erect perennial up to 1 meter (3 feet) tall that often grows in clumps. Also known as *Silene cucubalus*. Introduced from Eurasia.



Ben Legler. Inset: Ben Legler

NATIVE "LOOK-ALIKE" SPECIES

Silene menziesii, an uncommon native plant found in open montane forests, aspen groves, and along streams, can be distinguished from Bladder champion by its smaller size (5 to 30 cm tall), its typically trailing stems, and its sticky-hairy foliage.



Steve Mattson

Silene menziesii

QUICK ID

- Fragrant, white flowers clustered at branch tips
- Waxy, bladder-like calyx has veins
- Leaves opposite, hairless, and covered with a waxy, white film
- Plant produces both male & female flowers

Flowers: 5 to 30 white (or pinkish), five-petaled flowers on stalks; deeply notched at tip. Sepals are fused into a tubular calyx—encasing flower with pinkish-purple veins.

Leaves and Stems: Foliage is hairless, pale green, and waxy with a white, powdery film. Smooth, waxy leaves are stalkless, lance-shaped or oblong, and pointed. Distinctive center crease and entire margins.

Seeds: The fruit is an egg-shaped capsule. Numerous gray to brown seeds, covered with bumpy rows. Plants capable of producing over 20,000 seeds.

Roots: Initially forms a white taproot, then branches into numerous, deep, lateral, woody, branching roots, which act as rhizomes.

Reproduction and Dispersal: By seed and by sprouting from lateral root branches. Root fragments can also reproduce. Reseeds close to the parent plant, but can travel by soil movement, water, animals, human activities, or as a contaminant in commercial seed or hay.

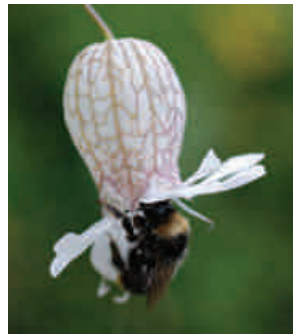
Habitat Preferences: Found in disturbed areas, roadsides, pastures, and meadows at low to mid-elevations. Prefers full sun and medium to coarse, well-drained soils.

Manual Treatment: Hand pull before seed production. Remove as much of the root system as possible. Be careful not to transport root pieces that could start infestations elsewhere.

Interesting Facts: Young shoots and leaves are edible raw or cooked, but may be mildly toxic in large quantities.



Ben Legler

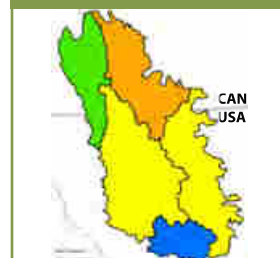


Michael Lemmer, www.naturkamera.de



Joseph M. DiTomaso, UC Davis

Distribution Map



Bouncing-bet (*Saponaria officinalis*)

Erect, unbranched perennial up to 0.7 meters (2.2 feet) tall. Grows in patches or clumps. Introduced from Eurasia.



Ohio State Weed Lab, Ohio State University. Inset: John Cardina, Ohio State University

NATIVE "LOOK-ALIKE" SPECIES

Looks similar to Wild bergamot, or Bee balm, *Monarda fistulosa*, but does not have square stems and the flowers of Wild bergamot are darker purple and more clustered.



Matt Lavin

Monarda fistulosa

QUICK ID

- ✓ Leaves are elliptic and opposite
- ✓ Usually unbranched but branching may occur near the top
- ✓ Green, mostly hairless stems
- ✓ Stem bulges at the leaf nodes



Ohio State Weed Lab, Ohio State University

Flowers: Five petals per flower, each with a notch. Range in color from pink to white. Flowers are in dense terminal clusters on the main stem. The long, tubular calyx has five pointed red teeth. Flowers July–September.

Leaves and Stems: Leaves are opposite, smooth, and narrow, ranging from 4 to 12 cm long. Mature plants can grow up to 1 meter (3 feet) tall.

Seeds: Calyx persists and holds a capsule of numerous, rough seeds. Seeds are dull black, kidney-shaped, 1.5 mm across.

Roots: Rhizomatous root system.

Reproduction and Dispersal: Propagates vegetatively, forming colonies, and by seed.

Habitat Preferences: Found along roadsides, hillsides, along rivers, meadows, in waste places, and old building sites. Prefers moist, well-drained soil, and full sun to partial shade.

Manual Treatment: For manual treatment to be effective, the whole root must be dug out.

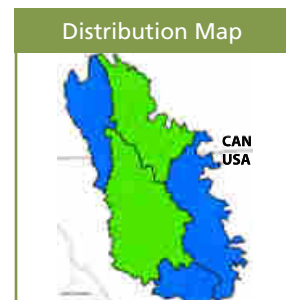
Interesting Facts: Flowers open in the evening, and stay open for about three days. They produce a strong scent at night. Plant can be poisonous to livestock and humans.



Dave Powell, Invasive.org



Parks Canada



Night-flowering Catchfly (*Silene noctiflora*)

Annual forb species with sticky foliage, native to Eurasia, that features nocturnal flowers. Common weed of grain and forage crops, and generally flourishes in areas of disturbance.



Elizabeth Bella, AECOM, Bugwood.org. Insert: Glen Lee, saskwildflower.ca

NATIVE "LOOK-ALIKE" SPECIES

The native Sleepy catchfly, *Silene antirrhina*, is similar, but the tubular calyx is much shorter and lacks sticky hairs.



Stan Shels, Wikimedia Commons

Silene antirrhina

QUICK ID

- Hairy, sticky foliage; flowering heads
- Fragrant flowers open at night
- Football-shaped mature seed capsules
- Lance-shaped, prominent, opposite leaves

Flowers: Inflorescence is terminal from stems; open, with one to several flowers. White, yellow, or pink flowers, 5–12 mm long. Pink at base of each 5-petaled flower. Extend from a tubular green, white-veined calyx covered in sticky hairs; matures to football-shaped seed capsule. Flowers from June to August.

Leaves and Stems: Erect, stout, and solitary or branched above. Stems smoothly hairy below; becomes stickier up stem. Opposite leaves, lance-shaped with pointed tips on upper stems; wider with blunt tips and sticky hairs on lower stems. Grows up to one meter (3 feet) in height.

Seeds: Form in maturing capsule. Produces 2,500 small (1 mm) seeds per plant.

Roots: Shallow, fibrous annual taproots.

Reproduction and Dispersal: Reproduces exclusively from seed. Dispersed in contaminated seed lots. Spread from cultivated fields into disturbed natural areas via equipment, contaminated hay or harvested crop seed, and birds who ingest and excrete the seeds.

Habitat Preferences: Cultivated cropland (seed contaminant), gardens, waste places, roadsides, and other disturbed areas.

Manual Treatment: Small infestations controlled by hand. Continuous mowing prevents seed production. Grazing ineffective as it is unpalatable.

Interesting Facts: The name "catchfly" refers to the sticky calyx which can trap small insects.



Glen Lee, saskwildflower.ca



Glen Lee, saskwildflower.ca



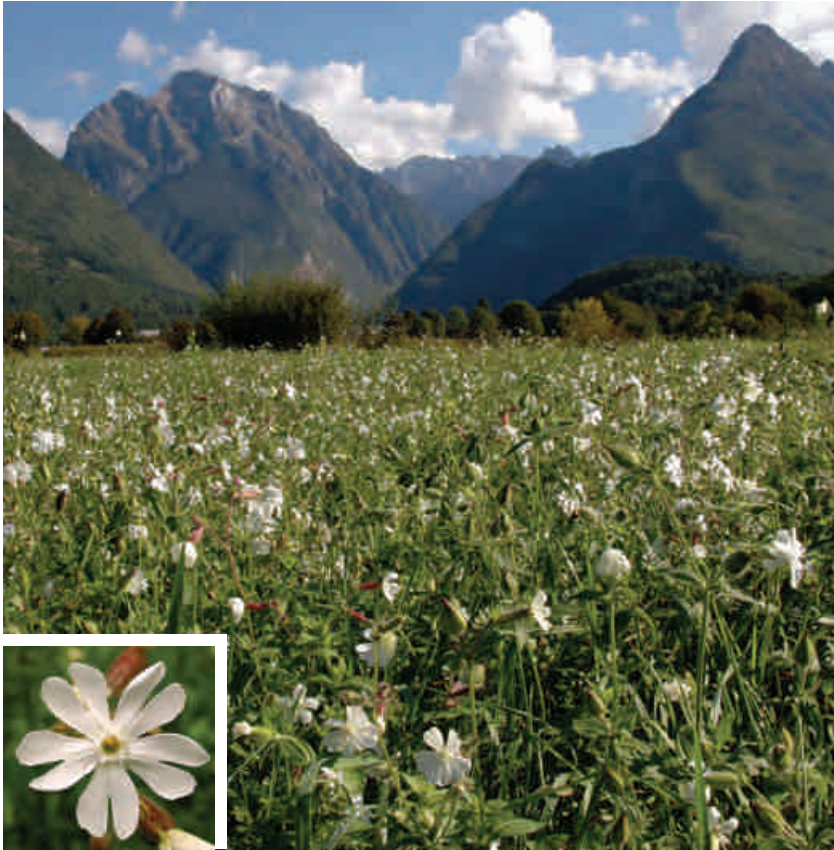
Glen Lee, saskwildflower.ca

Distribution Map



White Campion/White Cockle (*Silene latifolia*)

Erect, short-lived perennial (occasionally biennial) up to 1 meter (3 feet) tall. Can be erect or spreading. Also known as *Lychnis alba* or *Silene alba*. Introduced from Eurasia.



Dr. Amadej Trnkoczy. Inset: Ben Legler

NATIVE "LOOK-ALIKE" SPECIES

Alpine lantern, *Silene uralensis*, is similar in overall appearance but is distinguished by its small size, 5 to 25 cm tall, and its petals that are usually contained within the calyx (not protruding). Found in subalpine to alpine areas.



Alfred Cook

Silene uralensis

QUICK ID

- Hairy, pouch-like calyx with dark green or reddish-purple veins
- Clusters of white flowers with five deeply notched petals
- Stems and leaves covered in hairs

Flowers: Two to three fragrant white or pink flowers, clustered at stem ends; attached by 5 mm stalks. Flowers are 2 cm wide; have five deeply notched petals; sticky/hairy tubular calyx surrounds the flower.

Leaves and Stems: Foliage is covered in short, bristly hairs. Many stems can arise from each root crown. Leaves have entire (untoothed) margins and are lance-shaped with pointed tips. Basal leaves are stalked; 2 to 10 cm long.

Seeds: Seeds are only produced by female flowers; they are covered with rows of warty bumps. The fruit is an egg-shaped capsule that opens by 10 teeth at the tip. Female plants capable of producing over 24,000 seeds.

Roots: Initially forms a taproot, up to 1.2 meters deep. Spreads into thick, fleshy lateral roots.

Reproduction and Dispersal: Primarily by seed. Stem and root fragments can also sprout to form new plants. Most seeds fall close to the parent plant but can transport longer distances by soil movement, water, animals, human activity, or as a contaminant in commercial seed or hay.

Habitat Preferences: Found in disturbed areas, roadsides, pastures, meadows, and cultivated areas at low to mid-elevations. Prefers full sun and dry, rich, well-drained soils.

Manual Treatment: Hand pulling before seed production is often effective. Remove as much of the root system as possible. If flowers or seedheads have formed, pick, bag and remove.

Interesting Facts: Hairy leaves distinguish this plant from similar looking Bladder campion.



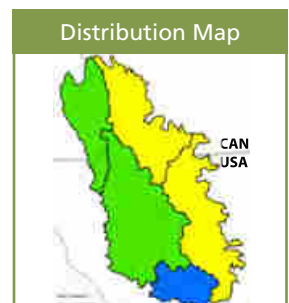
Ben Legler



Dr. Amadej Trnkoczy



Michael Lemmer, www.naturkamera.de



Silver Cinquefoil (*Potentilla argentea*)

Erect to reclining plant that blooms from June to September. A vigorous perennial or biennial that can proliferate in native plant communities and will often form dense colonies.



Matt Lavin. Inset: Craig Althen

NATIVE "LOOK-ALIKE" SPECIES

Elegant or Early cinquefoil, *Potentilla concinna*, has few stem leaves and larger flowers. It is also somewhat hairy on the upper surface of the leaves.



Dave Powell, invasive.org

Potentilla concinna

QUICK ID

- Yellow flowers with five petals
- Palmate leaves; deeply-lobed leaflets
- Foliage green and hairless above and gray-hairy underneath

Flowers: Yellow, five-petaled flowers, 6 to 8 mm across in open clusters. Inflorescences 10 to 80 flowered. Calyx is hairy.

Leaves and Stems: Palmate leaves, 1 to 2 cm long, with 5 leaflets toothed halfway to the mid-vein into 5 to 9 teeth. Leaves alternate, frequently with a basal rosette as well. Lower leaf surfaces densely grayish, woolly/hairy, deep green above. Stems numerous, hairy, and reddish at least at the base.

Seeds: Smooth to slightly rough achenes, 0.8–1.1 mm long.

Roots: Silver cinquefoil is a perennial that regenerates from a woody, branched caudex or rootstock.

Reproduction and Dispersal: Disperses via seed.

Habitat Preferences: Grows in habitats with dry to medium moisture, especially in gravelly soils. More common in disturbed areas.

Manual Treatment: Silver cinquefoil generally does not prefer cultivation, but controlling it through tillage may also lead to disturbance-caused exposure of buried seed. Hand removal of small infestations, while minimizing ground disturbance, may be effective. Larger infestation may need targeted management with grazing and/or mowing if practical.

Interesting Facts: Cinquefoils contain high concentrations of tannic acids, which can aid clotting of minor cuts.



Matt Lavin



Matt Lavin



Craig Althen

Distribution Map



Sulfur (Sulphur) Cinquefoil (*Potentilla recta*)

Erect, long-lived perennial 0.3 to 0.8 meters (1–3 feet) tall. Older plants often form a ring-shaped clump as old roots die in the center and new shoots grow on the outside edges. Native to Eurasia.



Matt Lavin. Inset: Michael Lemmer, www.naturkamera.de

NATIVE "LOOK-ALIKE" SPECIES

Many native cinquefoils, such as *Potentilla gracilis*, appear similar but Sulfur cinquefoil can be distinguished by long, right angled hairs; numerous stem leaves but few basal leaves; and leaves that appear green on the underside.



Ben Legler

Potentilla gracilis

QUICK ID

- Pale yellow flower with 5 petals
- Long, stiff hairs perpendicular to stem
- Relatively few leaves at plant base
- Underside of leaf is green, not silver
- Palmate leaves

Flowers: Pale yellow flowers, 1.3 to 2.5 cm in diameter, five heart-shaped petals; bright yellow centers. Contain 25 to 30 stamens. Found on top of stems.

Leaves and Stems: A rosette of long-stalked leaves develops first and withers before flowering. Stems and leaves are covered with long, coarse, shiny hairs at right angles. Stem leaves are alternate, green on the underside, and composed of 5 to 7 leaflets with toothed margins. Leaflets appear like marijuana leaves (palmately compound).

Seeds: Oval-shaped, dark brown seeds covered with net-like ridges.

Roots: Woody taproot may have several spreading roots but no rhizomes.

Reproduction and Dispersal: By seed only. Most seeds fall near parent plant and disperse greater distances with water, soil movement, human activities, and animals. Seeds survive three years or longer.

Habitat Preferences: Disturbed areas, grasslands, open forests, shrubby areas, roadsides, fields. Can invade healthy plant communities but does not tolerate full shade. Associated with knapweed infestations.

Manual Treatment: Hand digging (not pulling) may eradicate small infestations if root crowns are completely removed and treatment is repeated for several years. Mowing is not an effective control method.

Interesting Facts: Unpalatable to grazing animals due to high tannin content.



Steven J. Baskaur

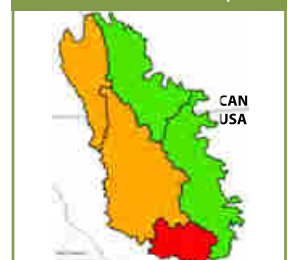


Joseph M. DiTomasso, UC Davis



Michael Lemmer, www.naturkamera.de

Distribution Map



St. Johnswort (*Hypericum perforatum*)

Erect, perennial herb up to 1 meter (3 feet) tall. The whole plant turns a rusty red color at maturity. Introduced from Eurasia.



Ben Legler. Inset: Michael Lemmer. www.naturkamera.de

NATIVE "LOOK-ALIKE" SPECIES

A native species of St. Johnswort, *Hypericum scouleri*, is found at higher elevations and is generally a smaller plant (10 to 19 cm tall).



Keir Morse

Hypericum scouleri

QUICK ID

- ✓ Yellow flowers with black dots at petal edge
- ✓ Leaves with tiny, transparent dots
- ✓ Rust-colored stems
- ✓ Seed pods and dead stalks are rusty

Flowers: Bright yellow, clustered at the top of branches. Less than 2.5 cm in diameter. Five petals with glands along their margins. Petals are 8 to 12 mm long.

Leaves and Stems: Stems are rust-colored, have black glands and two ridges running lengthwise. Oval-shaped leaves are less than 2.5 cm long, hairless, and have prominent veins. Leaf margins are smooth and rolled under.

Seeds: Rust-colored seed pods are sticky. Numerous seeds are contained in each pointed, three-chambered seedpod. Seeds are nearly cylindrical and have a rough texture. Viable for up to 10 years.

Roots: Deep, stout taproot, up to 1.5 meters (5 feet) deep with many branched lateral roots or rhizomes (creeping underground runners) with vegetative buds that form new shoots.

Reproduction and Dispersal: Reproduces by seed and creeping rhizomes. Root fragments can also develop into new plants. Seeds have a gelatinous seed coat that sticks to animals.

Habitat Preferences: Found in disturbed areas, roadsides, pastures, meadows, forest openings and burned areas at low to mid-elevations. Does not tolerate water-saturated soils.

Manual Treatment: Hand pulling or digging young plants before seed production is effective. Remove as much of the taproot and rhizomes as possible. If buds, flowers, or seedheads have formed, pick, bag, and remove.

Interesting Facts: St. Johnswort has become popular as an herbal remedy, mainly for the treatment of depression, as well as for burns and skin disorders.



Ben Legler



Ben Legler



Norman E. Pees, Invasive.org

Distribution Map



Cypress Spurge (*Euphorbia cyparissias*)

An herbaceous to semi-woody perennial native to Europe. It was introduced to North America in the 1860s as an ornamental plant. Considered a toxic weed when ingested by horses and cattle.



Kelly Cooley, CoolPro Solutions. Inset: Kelly Cooley, CoolPro Solutions

“LOOK-ALIKE” SPECIES

Leafy spurge, *Euphorbia virgata*, branches are more ascending and closer to base of the stem. Cypress spurge is smaller, has narrower leaves, blooms earlier, and often has short, non-flowering, leafy branches on upper stem.



Matt Lavin

Euphorbia virgata

QUICK ID

- Produces an acrid, sticky, white juice that can cause irritation
- Often found invading disturbed areas, dry grasslands, pastures
- Deep roots; grows 15 to 30 cm tall



Jessie Paloposki

Flowers: Can have 10+ main stems with yellowish-green flowers. These small, unisexual flowers do not have sepals or petals; crowded together in cyathium clusters.

Leaves and Stems: Stems erect, 0.1–0.8 meters tall, with many branches. Many narrow or club-shaped leaves sit one per node, alternating each other. Where flowers sit on branches, grows a whorl of 10 or more shorter leaves.



Jessie Paloposki

Seeds: Each cluster produces 3 lobed seed pods with 1 to 3 grayish, smooth, egg-shaped seeds.

Roots: Rhizomatic; woody with lateral root buds. Extends up to 3 meters (15 feet) deep, and spreads laterally up to 11 meters (35 feet). Root pieces give rise to new plants.

Reproduction and Dispersal: Reproducing by seeds along with their widely spread root system. Flowers in late spring/early summer, and may spontaneously flower until late autumn.

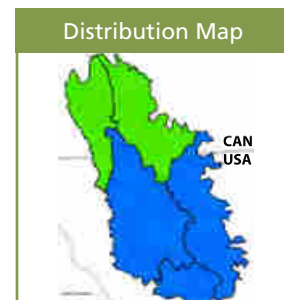


Kelly Cooley, CoolPro Solutions

Habitat Preferences: Prefers part shade, sun in fields, open woods, roadsides, waste areas, and disturbed soil.

Manual Treatment: Mowing every 21 days can be an adequate control method. First mow should be done before or at first bloom. Mowing may stimulate new buds, so continuing with this practice is crucial.

Interesting Facts: Despite serious safety concerns, flowering plant and root are used to make medicine. Milk sap of plant can cause irritation/serious rash to the skin.



Leafy Spurge (*Euphorbia virgata*)

Erect, long-lived perennial up to 1 meter (3 feet) tall.



Anne Elliott. Inset: Ben Legler

NATIVE "LOOK-ALIKE" SPECIES

Western stone seed, *Lithospermum ruderale* (also known as Lemonweed or Yellow puccoon), is distinguishable by stiff, hairy foliage with smaller lower leaves. Light yellow flowers have five spreading lobes. Does not produce a milky latex.



Werner Engelsleiter

Lithospermum ruderale

QUICK ID

- ✓ Heart-shaped floral leaves
- ✓ Yellowish-green flower clusters
- ✓ When cut, stems produce a milky latex
- ✓ Numerous pink buds on roots at stem base

Flowers: Greenish-yellow flowers on long stalks cluster in flat-topped umbrellas. Flowers lack petals and sepals, relatively inconspicuous. Pairs of heart-shaped floral leaves underneath flower clusters.

Leaves and Stems: Pale, bluish-green foliage exudes a milky sap when cut. Thickly clustered, smooth, hairless stems, branched near the top. Leaves, 2.5 to 10 cm long and 6 mm wide, numerous and usually drooping; attached directly to stem in an alternate or spiral arrangement.

Seeds: Oblong, with three-celled capsule. Capsules forcibly burst open when ripe, propelling seeds up to 4.5 meters (15 feet) and aiding in dispersal. Viable up to 8 years.

Roots: Vigorous, creeping root system with pink, scaly buds which develop into new shoots. Can reach depth of 7.6 meters (25 feet) and extend 4.5 meters (15 feet) annually.

Reproduction and Dispersal: Initially by seed then reproduces by re-sprouting from its extensive, creeping root system. Can also re-sprout from root fragments.

Habitat Preferences: Tolerates a wide range of soil types, soil moisture levels, and habitats. High genetic diversity resulting in quick adaptation to local growing conditions.

Manual Treatment: Hand pulling, digging, or mowing are generally ineffective other than on very small infestations in their first year of growth. Wear gloves and wash after handling as milky sap can irritate skin.

Interesting Facts: Dead plants appear to inhibit the growth of other plants. Large quantities can be toxic to grazing animals (and humans).



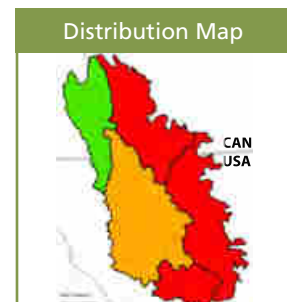
Drake Barron, MT SNAWEC



Kelly Cooley, CoolPro Solutions



Steve Dewey, Invasive.org



Mossy Stonecrop (*Sedum acre*)

Mossy stonecrop is a short, mat-forming perennial that is native to Europe. It's growth condition tolerances and mat-forming nature make it extremely competitive.



Kelly Cooley, CoolPro Solutions. Inset: Kelly Cooley, CoolPro Solutions

NATIVE "LOOK-ALIKE" SPECIES

The native Common stonecrop, *Sedum lanceolatum*, is similar in size as well as flower color, but differs in leaf shape with Mossy stonecrop. Common stonecrop has pointed leaf tips whereas Mossy stonecrop does not.



Matt Lawin

Sedum lanceolatum

QUICK ID

- Low growing and mat-forming
- Very succulent leaves
- Small, yellow flowers
- Found in areas of coarse, sandy, low fertility soils



Pbb Poutledge, Sault College

Flowers: Yellow, 8–10 mm across in small clusters. Each flower has 5 green sepals, 5 yellow petals, 10 stamens, and 5 pistils; most pistils become pointed seedpods containing several seeds. Flowers June to July.

Leaves and Stems: Creeping and densely matted, with many short, semi-erect branches. Stems are 5 to 15 cm high and covered with numerous, small, alternate, overlapping, succulent leaves. Leaf size is approximately 10 to 20 mm long and are round in cross section.



Kelly Cooley, CoolPro Solutions

Seeds: Small and brown, contained within seed pods formed by the pistils of the flower.

Roots: Roots are rhizomatous; spread easily and quickly.

Reproduction and Dispersal: Reproduces by seed, by creeping, horizontal stems rooting at the nodes, and by bits of broken stems with a few leaves, which also root at the nodes and start new patches.



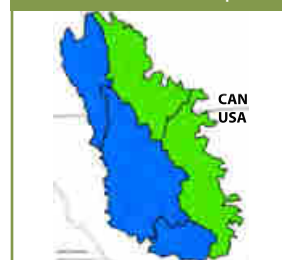
Kelly Cooley, CoolPro Solutions

Habitat Preferences: Grows well in coarse, sandy, shallow soils in low fertility environments. Occurs mostly on roadsides, gardens, and waste areas.

Manual Treatment: Hand pulling/use of hand tools is proven effective as long as the worker practices careful technique and vigilantly removes any fragments that may have been dropped or left behind.

Interesting Facts: Mossy stonecrop smells like pepper when it is crushed.

Distribution Map



Tamarisk/Saltcedar (*Tamarix chinensis/ramosissima*)

Perennial shrub or small tree 1.5 to 6 meters (5–20 feet) tall. Can be deciduous or evergreen. *Tamarix chinensis*, *T. ramosissima*, *T. parviflora*, and *T. gallica* extensively hybridize.



Steve Dewey, Invasive.org. Inset: Richard Old, www.xidsservices.com

“LOOK-ALIKE” SPECIES

Smallflower tamarisk, *Tamarisk parviflora*, is a similar **non-native** species with four-parted flowers and nectar disk lobes that are longer than wide and together with stamens.



Richard Old, www.xidsservices.com

Tamarisk parviflora

QUICK ID

- Deciduous or evergreen shrub
- Small, scaly, cedar-like leaves
- Pinkish-purple to white flowers in finger-like clusters
- Highly branched, reddish-brown stems

Flowers: Small, pale pink to white flowers with five petals in unbranched, finger-like clusters on the ends of branches. Flowers have 5 sepals, 5 petals, and 5 stamens; lobed nectar disk at the base.

Leaves and Stems: Stems highly branched, slender and smooth, with reddish-brown bark; become furrowed with age. Small, scale-like, alternate, overlapping leaves. Foliage turns yellow to orange in fall.

Seeds: Numerous, tiny, cylindrical seeds. Seeds have a tuft of long hairs at the tip.

Roots: Extensive root system grows to five meters deep or more to access the water table. Once water table is reached, taproot branches profusely into lateral roots. Uses both surface and groundwater.

Reproduction and Dispersal: By seeds dispersed primarily with wind and water. Seeds are short-lived and can germinate within 24 hours. Can produce up to 500,000 seeds per plant. Also resprouts from root and stem fragments.

Habitat Preferences: All riparian areas. Uses large amounts of groundwater, often drying up waterways. Now the dominant riparian species in southwestern U.S.

Manual Treatment: Seedlings and small plants should be uprooted by hand before they become established. Remove plant parts to prevent resprouting of stems and shoots.

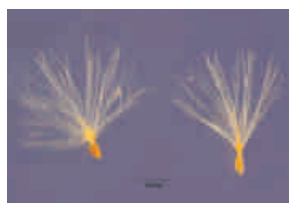
Interesting Facts: Stem and leaves secrete salt, making soils too saline for other vegetation to grow. Most animals do not consume plant.



Nicole Kimmel, Alberta Government



Steve Dewey, Invasive.org



Jose Hernandez

Distribution Map



Field Scabious (*Knautia arvensis*)

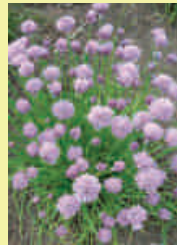
Erect perennial up to 1.5 meters (4 feet) tall. Introduced from Eurasia as an ornamental. Also known as Bluebuttons.



Pbb Broekhuis, www.robspplants.com. Inset: Louis-M. Landry

NATIVE "LOOK-ALIKE" SPECIES

Flowers superficially resemble those of Wild chives, *Allium schoenoprasum*, which has tubular hollow leaves that smell like chives when crushed.



Louis-M. Landry

Allium schoenoprasum

QUICK ID

- Solitary, violet flower heads
- Ring of narrow, green floral bracts
- Leaves deeply lobed into 5 to 15 narrow segments
- Stems and leaves are bristly/hairy

Flowers: Pink to purple, rounded flower heads, up to 4 cm wide; solitary on the end of a long, leafless stalk. Below each flower head are 8 to 12 sepals and a ring of narrow, green bracts. Florets have 4 to 5-lobed petal tubes, four stamens, and a single pistil. Flowers between mid-July and early September.

Leaves and Stems: Low growing rosette in first year. Rosette leaves are coarsely toothed, stalked leaves 10 to 25 cm long. Produces one main stem the second year. Stem leaves are opposite, stalkless, and deeply lobed into 5 to 15 narrow segments.

Seeds: Rectangular, light brown, four-sided seeds that are densely covered with long hairs. Can produce 2,000 seeds and may remain viable in the soil for several years.

Roots: Woody taproot, often with branches.

Reproduction and Dispersal: By seed. Most seeds fall close to parent plant but animals also facilitate seed dispersal in their manure.

Habitat Preferences: Roadsides, pastures, and fields. Prefers nutrient-rich and moderately moist to dry loam soils, but also establishes in gravelly soils. Can invade undisturbed plant communities.

Manual Treatment: Hand pulling is effective if entire plant is removed; must repeat for several years to exhaust seed bank. Repeated cutting or mowing throughout the growing season (preventing flowering) can reduce seed production. Cultivation may be effective if carried out prior to flowering.

Interesting Facts: Still sold as an ornamental and butterfly attractant.



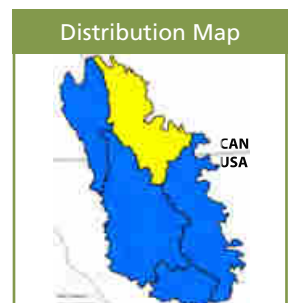
Michael Lemmer. www.naturkamera.de



Louis-M. Landry



Carole Ritchie



Glossary

adventitious roots – Horizontal spreading roots (rhizomes).

alternate – Situated singly at each node.

annual – Plant whose life cycle is completed in one growing season.

auricle – Ear-like appendages found in grasses at the junction of the blade and the sheath.

awns – Stiff bristles.

axil – Where leaves are attached to stems.

basal – Refers to the base of the plant.

biennial – Plant lives for two growing seasons, usually producing a basal rosette the first year and flower/fruit the second year.

bract – Small leaf-like structure surrounding the flower, usually below the petals.

calyx – Collective term for the sepals of a flower.

capsule – A dry, many-seeded fruit with multiple chambers.

compound umbels – Umbrella like clusters at the top of flowering stalks.

disk flowers – Small inner flowers, usually tube shaped, in the aster family.

fibrous roots – Root system with many fine, diffuse roots.

forb – A broad-leaved, non-woody plant that dies back after each growing season.

latex – A milky fluid found in many plants, such as poppies and sparges, which exudes when the plant is cut and coagulates on exposure to the air.

leaflet – A single segment of a compound leaf.

ligule – In grasses, a small flat projection from the top of the sheath.

midrib – Central vein or rib of a leaf.

node – A place where a leaf or branch is attached, a joint.

nutlet – Hard, small, one-seeded fruit.

opposite – Situated across from each other.

palmate – Leaves divided into 3 or more lobes or leaflets diverging from a common point.

pappus – Hairs or bristles that are attached to the seeds of the aster family.

perennial – Plants that live for more than two growing seasons, usually

flowering and producing fruit each year.

pinnate – Leaflets or lobes developing from several different points on main leaf axis, feather-like.

pistil – The female organ of the flower, composed of one or more carpels, each composed of an ovary, stigma, and style.

raceme – An unbranched cluster of stalked flowers attached along a central stalk, blooming from the bottom up.

ray flower – Found in members of the aster family (Asteraceae). A strap-shaped flower that appears to be a single petal, but is actually a complete flower.

rhizomatous – Having rhizomes.

rhizome – An underground stem that can develop nodes or buds at the joints.

rosette – Cluster of leaves radiating out in a circle from the base of the plant.

sepal – Leaf-like structures that enclose a flower bud; they form outermost whorl at the base of an open flower. Typically green.

sheath – A tubular covering; in grasses the leaf sheath surrounds and encloses the stem.

spikelet – A small, spike-shaped or elongated inflorescence bearing unstalked flowers in the grass and sedge families.

stamen – Pollen-bearing male part of the flower.

stolon – A horizontally spreading, above-ground runner.

taproot – Primary descending root along a plant's vertical axis that is larger than the branching roots.

umbel – A flower cluster with flower stalks ascending from the same point at the tip of a stem or branch.



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(406) 751-2240

Southwestern Land Office
1401 27th Ave.
Missoula, MT, 59804
(406) 542-4200

Montana Department of Transportation
Roadside Maintenance
2701 Prospect Ave.
PO Box 201001, Helena, MT 59620-1001
(406) 444-6991

www.mdt.mt.gov

Montana Invasive Species Council
PO Box 201601, Helena, MT 59620-1601
(406) 444-0547
scriswell@mt.gov
<https://invasivespecies.mt.gov/misc>

Montana Natural Heritage Program
1515 East Sixth Ave., Helena, MT 59620-1800
406-444-5363
mtnhp.org

Montana Noxious Weed Education Campaign
15 North Woodard
PO Box 401, Absarokee, MT 59901
www.weedawareness.org

Montana State University Extension
1108 South Main St. Suite 4, Kalispell, MT 59901
(406) 758-5553
msuextension@montana.edu
www.msuextension.org

The Nature Conservancy
26 Meltwater Road
Choteau, MT, 59422
(406) 466-5526
www.nature.org

Ravalli County Weed District
329 Airport Rd.
Stevensville, MT 59870
(406) 777-5842
www.ravalli.us/223/Weed-District

Teton County Extension
101 Main Ave. South
PO Box 130, Choteau, MT 59422
(406) 466-2491
<https://teton.msuextension.org/>

U.S. Fish & Wildlife Service
922 Bootlegger Trail
Great Falls, MT 59404
(406) 727-7400
www.fws.gov

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