

Invasive Plants and Exotic Weeds of Southeast Alaska

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Quarter mile-long knotweed patch on beach near Juneau



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Introduction:

Southeast Alaska remains one of the most pristine landscapes in Alaska, a state renowned and celebrated for its protected wildlands, lush forests, open tundra and vast expanses of wilderness. In the past, Alaska's wildlands, with their cool climates and remote locations, were considered relatively immune to invasion by nonnative plant species. Today, although there are relatively few invasive plants found in the lands where we live, work and play, we are starting to discover newly established exotic plants gaining a foothold across the state. Southeast Alaska residents and visitors alike have a unique opportunity to protect our wildlands from irreparable damage caused by invasive species.

Biologists throughout the world have become acutely aware of the threat posed by invasive species as they encroach upon natural areas. Invasive species blight landscapes, push rare species to the brink of extinction, and cause economic harm all over the world. Millions of acres of land in the lower 48 states and Hawaii have been irreparably harmed by invasive plants. The growing tourism industry in Alaska, as well as oil and gas development, international trade and a burgeoning human population all contribute to an increase in invasive plant introduction and spread. Native wildflowers, forested ecosystems, riparian systems, and wildlife are all threatened by invasions of exotic species entering the state.

This book is a cooperative effort between the Alaska Soil and Water Conservation District, The USDA Forest Service, and the US Fish and Wildlife Service. The purpose of this book is to educate as many people as possible around the state to look for and to identify invasive species in their own communities and throughout our Alaskan wildlands. The reader of this book can be part of an early warning network to alert scientists, land managers, and community organizations to the presence of invasive species as they are introduced, become established, and begin to spread.

Early detection and quick action are the best basis for a strategy for dealing with invasive plant threats in Alaska. Please use this book as a starting point in educating yourself about which plants are native to our area, which are common roadside weeds, and which pose serious threats to our landscape.

What makes a plant invasive?

Cousens and Mortimer (1995) ask what gives invasives the ability to reduce biodiversity in natural systems and interfere with other systems. Invasiveness can be defined as the ability of a species to move into an established biological community, successfully reproduce, and cause harm to native ecosystems and human economies. Plants depend on finite resources in order to grow and maintain a population. In a successfully expanding population of a species, reproduction leads to greater numbers of plants in each generation, which leads to competition between plants for space, light, water, and soil nutrients. Invasion occurs when a species colonizes and persists in an area which it previously had not inhabited (Shigesada and Kawasaki 1997). An invading species will

always interact with the resident species, sometimes in competition, and in extreme cases resulting in the extinction of the existing species.

Invasives can be described as opportunists with a broad ecological tolerance (Taylor 1990), with the ability to adapt to diverse and adverse circumstances. The first quality that makes a plant invasive is mobility. Vectors are factors that move seed around, and can include natural vectors such as wind, water, birds, and animals. Plant seeds can also “hitchhike” by sticking to clothing and vehicles. Studies conducted in England found hundreds of plant seeds on a single automobile, and the increased popularity of all-terrain vehicles has contributed to the introduction of weeds into remote areas. Weed seeds are often found in agricultural products such as hay and straw or nursery stock. Gardeners, especially those who like to experiment with new plants, should be careful not to introduce plants that may become a nuisance. Several of the plants listed in this handbook got their start as invasives by escaping from cultivation. Another factor that contributes to invasiveness is how successfully and by what means the plant can establish in a new territory. Dandelions produce many wind-dispersed seeds which can rapidly colonize disturbed ground, but may not flourish in places where they must compete with established vegetation. Plants that reproduce by vegetative means, such as roots and runners, often take over established plant communities. For example, Japanese knotweed spreads through underground stems (rhizomes) and forms a dense thicket of broad leaves that no other plant can penetrate. Orange hawkweed can move by roots and runners across a meadow until it completely excludes all other vegetation.

Invasive plants also cause economic harm. Thistles with their unpalatable spiny foliage can take over meadows used for cattle forage, causing loss of valuable rangeland for ranchers. Managed forest stands in the Pacific Northwest that have been taken over by scotch broom have drastically reduced regrowth of trees for timber. Farmers in New England have been forced to abandon good cropland to invasions of toadflax.

The third quality of an invasive plant is the ability to cause harm to plant communities, wildlife, or human beings. Invasive plants cause harm through a variety of means. In the south, kudzu damages buildings and powerlines by overgrowing them with its dense, choking vines. In the west, cheatgrass increases fire frequency, killing native shrub vegetation.

Why Alaska is not immune:

Many of our native habitats in Alaska have an inherent resistance to colonization by new species. They are composed of a close cohort of species occupying very narrow ecological niches and contributing to an intricate web of close relationships with the other species around them. The plant communities of southeast Alaska are not necessarily immune to the threat of invasive plants, but most *undisturbed* habitats remain relatively pristine.

Fortunately, Alaska’s historically low human population and geographic isolation have kept introductions of invasive species relatively low. As previously mentioned, increased commercial traffic and the development associated with population growth and expansion

create new vectors for exotic plant introduction. Recreation and tourism bring increasing numbers of vehicles into the state, and more air traffic to remote sites. Both forms of transportation have the potential to move invasives into the state and to distribute them to remote areas.

Four components of Southeast Alaska's landscape are particularly vulnerable to invasive species: ports, islands, waterways, and disturbed or reclaimed areas. Commercial ports, especially those in Southeast Alaska, are continually exposed to new species arriving on ships and cargo from around the world. Alaska's rivers, streams, lakes, and wetlands can support aquatic invaders, and spits, barrier beaches, floodplains and coastal marshes are especially vulnerable in southeast Alaska. Disturbed and reclamation areas associated with mining, trails, recreation sites, and roadways commonly harbor invasive plants. Invasive species are most commonly found on disturbed sites such as river and streambanks, trailheads, roadsides, building sites, trails, and campgrounds (Sheley and Petroff 1999).

Some of the weeds presented in this book are not yet present in the state of Alaska. However, their potential for invasion and the severe consequences of introduction and spread into the state warrants concern. When newly-established, potentially invasive weeds are discovered, they should be identified as quickly as possible. Information on their biology and life-cycle will help to determine what properties they may have that could cause future problems. Identifying weeds is important for early detection and eradication of new weed infestations, containment of existing infestations, prevention of weed spread, and implementation of responsible weed management and monitoring programs. To control a weed, correct species identification is critical, as is an understanding of its biology, in order to apply the best control methods.

How to approach the problem in Alaska:

The best method of managing invasives involves a combination of prevention, early detection, and rapid response. Alaska still enjoys a luxury not available to our colleagues in the lower 48 who have to deal with entrenched, established invasive plant infestations that are highly resistant to eradication. Where possible, eradication is the favored approach, and has a strong likelihood of being successful in Alaska, especially if populations are found and identified early. Both control, which reduces the presence of the invader, and containment, which limits further spread, require indefinite investments of time, tools, and money to keep an invader at bay (Zavaleta et al. 2001). Thus far, the results of eradication efforts in Alaska have been encouraging. There are many examples of complete eradication of small infestations of invasive species (Rejmanek and Pitcairn 2002). An increase in resources devoted to the prevention and early detection of invasive plants would be a profitable investment for Alaska.

Over the last several years Alaska has made big strides in the effort to combat invasive species, by initiating cooperative efforts for invasive species detection and management. The expertise and input of various federal, state, tribal, international, and

private organizations was combined to define management objectives for the prevention and management of both terrestrial and aquatic invasive species.

Public education and outreach will be key components in the on-going effort to stem the tide of invasive plants into Alaska, and to prevent the spread of existing infestations.

Weed management, herbicides and safety:

Note: Herbicide labels are legal documents which outline the approved use of an herbicide. Federal law requires that when you use a pesticide you must read, understand, and follow the directions on the label.

This book includes guidelines for control of each plant listed, including herbicide recommendations. The recommendations listed under “herbicide options” are meant for use by **professional State-licensed applicators**, and often call for the use of restricted use pesticides that are safe when applied according to label directions, but have the potential to cause harm to humans, wildlife or the environment when improperly used.

These guidelines are not meant to be a final recommendation, but as a starting point for research into possible options. Applicators are encouraged to consult with their local Cooperative Extension Office before applying herbicides. Many helpful publications for the professional applicator, including bulletins on the biology and management of specific weed species, are available through the UAS Cooperative Extension Service, and the Pacific Northwest Cooperative Extension Services. Another excellent source of information on IPM of invasive plants are the Element Stewardship Abstracts (ESAs) published by the Nature Conservancy, available on the internet at: <http://www.tncweeds.ucdavis.edu/esadocs.html>

Homeowners should contact their Cooperative Extension office before applying herbicides in order to avoid causing harm to children, pets and desirable vegetation. Groups working on eradicating an invasive plant should be aware of state laws and federal policy affecting public lands, especially if pesticide use is to be considered. Private landowners or managers of public lands must be part of the planning process for invasive plant management activities. Often they will welcome efforts on the part of individuals or groups who wish to assist them in managing invasive plants on lands they own or manage.

Persons who wish to manage weeds should educate themselves in the theory of integrated pest management (IPM). Rather than a simple prescription or a strict program, IPM is a set of guidelines for the management of pests. IPM is the process of bringing to bear a variety of forces to manage pest populations. Many weed problems can be managed without the use of chemicals by changing the environmental conditions that favor the pest.

"IPM is a sustainable approach to managing pests by combining biological, cultural, physical and chemical tools in a way that minimizes economic, health, and environmental risks."

An IPM management plan should include the following elements:

- Establish a tolerance threshold for the plant. This is a number or density of the plants that can be tolerated. Often an organism is only a problem when its numbers explode. Zero tolerance of a plant may not be a realistic strategy after the plant is established in an area.
- Monitor for the presence of the plant. By regularly searching for the weed, rather than waiting for its presence becoming obvious, we can attack the problem early, minimizing use of chemicals, and maximizing our chances of success.
- Use knowledge of the plant's ecology, phenology, and means of reproduction to determine a control strategy.
- Develop an adaptive management plan to refine strategies based on follow-up evaluations by going through a yearly cycle of: monitor, manage, evaluate, and refine strategy.
- When using chemicals, follow steps to avoid buildup of resistance to the chemical by the plant. To accomplish this, do not exceed or fall short of the effective dose of the chemical, do use combinations of products or alternate products with different chemistries, and do avoid repeated use of the same chemical through many generations of a weed .

Other considerations:

Minimize drift of herbicides to protect non-target plants. Dyes are available to add to herbicides to help target application. Consider using wick, paintbrush or roller application to minimize drift. When using spray equipment, make sure it is properly calibrated and uses a low pressure and large droplet size.

When to report an invasive plant infestation:

Many of the plants listed in this book are recent discoveries. Many new occurrences in Alaska are likely to be found through the help of concerned amateurs and field workers throughout the state. Some examples of when a finding should be reported:

- The plant is listed in this book, but is occurring in a location not noted under "where found."
- The plant is not in the book, but is a known invasive or noxious weed elsewhere in North America.
- The plant is not native to Alaska, is moving into new territory, and causing harm to ecosystems; is poisoning people, wildlife or livestock; or is causing economic harm.

How to report an invasive plant:

Readers of this book are encouraged to report significant findings of invasive plants to one of the offices listed below:

UAF Cooperative Extension Offices Juneau, Anchorage, Fairbanks, Sitka, Palmer, Delta
FS State and Private Forestry theutte@fs.fed.us (907) 586-8811 x283
Bob Piorkowski ADF&G bob_piorkowski@fishgame.state.ak.us (aquatics)

Glossary

Achene: A small dry hard single seeded fruit, similar in appearance to a seed.

Allelopathy: The ability of some plants to transport chemicals into the soil which inhibit the germination or growth of competing species.

Alternate: Placed singly at different levels on an axis, one leaf per **node**.

Annual: Plant that lives one year.

Apical: Situated at the apex, or tip.

Awn: A slender bristle.

Basal: Situated at, or pertaining to, the base

Biennial: A plant that lives for two growing seasons, normally producing a basal rosette the first year and flower and fruit the second.

Biological diversity (or biodiversity): The variability among living organisms and the environments to which they belong; including diversity at the genetic, species, population, and ecosystem levels.

Biological treatment: Control method involving a biological control agent that is a natural enemy of a target pest.

Bract: A reduced leaf subtending a flower.

Cauline: Occurring along the stem.

Chemical treatment: Control method that employs herbicides to control exotic plants.

Colonial: Forming colonies of plants through vegetative reproduction. Usually by roots, rhizomes or runners.

Disc floret: In the Asteraceae, the tubular flowers of the head as distinct from the ray florets.

Ecological sustainability: Development that takes full account of the environmental and ecological consequences of economic activity and is based on the use of resources that can be replaced or renewed and therefore are not depleted.

Ecosystem: A unit of biological organization that encompasses a community of organisms and their physical environment.

Exotic species: refers to species not indigenous to an area and includes plants that are termed noxious weeds, invasive, non-native, and alien.

Forb: A non-woody (herbaceous) plant that is not a grass or grass-like plant.

Herbicide: Pesticide that specifically targets vegetation.

Inflorescence: A cluster or group of flowers arranged in a defined pattern.

Inrolled: Curving inward from the center line of the leaf.

Invasive species: Plants that displace other, more desired species and have the ability to dominate, or a species that enters an ecosystem beyond its natural range and causes economic or environmental harm. Similar terms include alien species, aquatic nuisance species, exotic species, foreign species, injurious species, introduced species, nonindigenous species, nuisance species, or xenobiotic organisms.

Involucre: A whorl of bracts subtending a flower cluster.

IPM: Integrated Pest Management. IPM focuses on long-term prevention or suppression of pests. The integrated approach to weed management incorporates the best suited cultural, biological and chemical controls that have minimum impact on the environment and on people.

Ligule: membranous sheath clasping the stem of a grass where the leaf blade departs from the stem.

Manual treatment: Removal that involves the use of tools such as shovels, axes, rakes, grubbing hoes, and hand clippers to expose, cut, and remove flowers, fruits, stems, leaves, and/or roots from target plants.

Mechanical treatment: Removal that involves the use of motorized equipment such as mowers, “weed-whackers”, and tractor-mounted plows, disks, and sweepers. Burning is also categorized here.

Midrib: The central vein of a leaf.

Monoculture: The agricultural practice of only planting a single species or variety in a field. See also **Monospecific**.

Monospecific: Consisting of a single species only. When only one species grows in an area to the exclusion of all others, it is called a monospecific stand. See also **monoculture**.

Node: The point where a branch or petiole arises from a stem.

Noxious weed: Native or non-native plants, or plant products, that injure or cause damage to interests of agriculture, irrigation, navigation, natural resources, public health, or the environment. In Alaska, Title 11 Chapter 34 of the Alaska Administrative Code (AAC) defines noxious weeds as “...any species of plants, either annual, biennial, or perennial, reproduced by seed, root, underground stem, or bulblet, which when established is or may become destructive and difficult to control by ordinary means of cultivation or other farm practices”.

Opposite: Placed in pairs at different levels on an axis.

Ornamental: A plant cultivated for aesthetic purposes.

Panicle: Grass inflorescence.

Perennial: Plants that live more than two years.

Pesticide: A chemical or biological agent intended to prevent, destroy, repel, or mitigate plant or animal life and any substance intended for use as a plant regulator, defoliant, or desiccant, including insecticides, fungicides, rodenticides, herbicides, nematocides, and biocides.

Pathway: Mode by which a species establishes and continues to exist in a new environment.

Petiole: A leaf stalk.

Prohibited weed: A specific legal term applied to a plant or plant part that may not be brought into a state.

Raceme: An unbranched elongated inflorescence.

Ray floret: The flat marginal flowers of the Asteraceae.

Restricted weed: A specific legal term applied to a plant or plant part that may only be brought into a state in limited quantities.

Rhizome: A horizontal stem growing beneath the ground that can develop roots or sprouts at the joints.

Rosette: A crowded cluster of leaves, appearing to rise from the ground.

Runner: A slender aerial branch, rooting at the end to form a new plant.

Scabrous: Rough-surfaced due to the presence of dense, short, stiff hairs.

Sepal: The petal like structures that subtend the petals of most flowers.

Silique: A narrow, many seeded fruit.

Taproot: The primary descending root along the vertical axis of the plant that is larger than the branching roots.

Tiller: A shoot that sprouts from the base of a grass, forming a new plant.

Vector: see **pathway**.

How to use this guide:

Plants are grouped by family. At the beginning of each section is an explanation of some of the defining characters that are helpful in identifying these plants.

Common Name: Common names can vary. Cloudberry, for example, can mean a completely different plant depending on what part of Alaska you are in.

Scientific Name: Scientific names are from the Natural Resources Conservation Service PLANTS Database web site.

Related Species: These are species in the same genus or very closely related genera that occur in our area.

Similar Species: These are species that may be mistaken for the described plant.

Description: Descriptions are distilled from a variety of sources. Characteristics in **boldface** are especially helpful in identification. More complete descriptions may be obtained from books listed in the bibliography.

Life History: Information about the reproduction and habitat of the plant.

Where Found: Information is based on a variety of sources, including published guidebooks, and the work of agencies monitoring invasive plants in Alaska.

Impacts: Negative effects known to be caused by the plant in the state or potential harm based on experience in other regions.

Control Options: Steps to manage populations of the plant employing IPM principals.

Herbicide Options: Aimed at **professional applicators** who comply with all applicable State and Federal laws as well as proper state permitting, or the Federal NEPA process.

Photos: Photographs and illustrations are meant to convey the plants invasive effects in natural settings as well as point out defining characteristics that are helpful in identification. **Line drawings often have a scale indication (e.g. 1/2, 3/4) from the original text. The illustrations have been resized to fit, so do not use these scales.**

Common Name: Brass buttons

Scientific Name: *Cotula coronopifolia* L.

Family: Sunflower family (Asteraceae)

Similar Species: Common tansy (*Tanacetum vulgare* L) and pineapple weed (*Matricaria discoidea* DC) have similar flower heads but *Cotula* is smaller and found in brackish habitats.

Description: Plants to 12 inches tall. Flower heads yellow, hemispherical, **of disc florets only**. Leaves alternate, lance shaped, stalk less with sheathing base, toothed, forked, or toothless.

Life History: Perennial.

Where Found: Gambier Bay on Admiralty Island. Duncan Canal and Petersburg Lake on Kupreanof Island, Prince of Wales Island, common south of POW to California.

Habitat: Brackish beaches, mud, moist banks, salt and freshwater marshes along the coast. Will only grow in full sunlight. Reported to not tolerate significant frost.

Impacts: Introduced from South Africa, brass buttons have caused serious damage to coastal wetland ecosystems in southern California.

Fun Facts: A brassy gold dye is obtained from the whole plant. *Cotula* is from the Greek **kotule** meaning "a small cup" and referring to a hollow at the base of the leaves.

Control Options: Manual



Photo: William & Wilma Follette. USDA-NRCS PLANTS Database 1992.

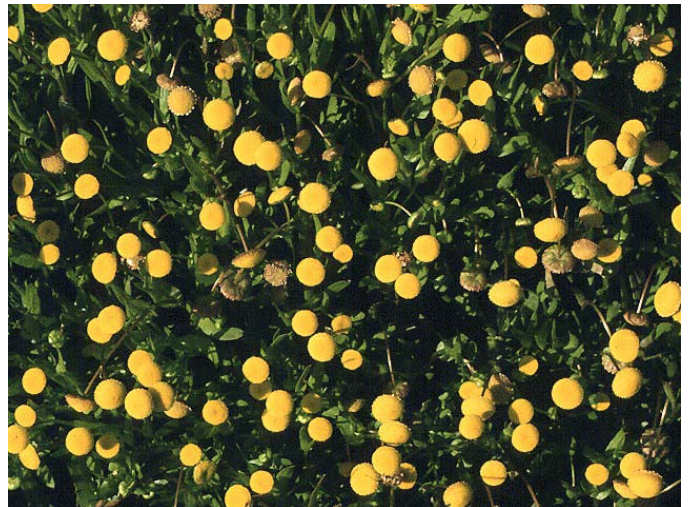


Photo: Brother Alfred Brousseau NRCS PLANTS Database

Common Name: Pineapple weed, disc mayweed

Scientific Name: *Matricaria discoidea* DC

Family: Sunflower family (Asteraceae)

Similar Species: Tansy (*Tanacetum vulgare* L.), Brass buttons, (*Cotula coronopifolia* L.)

Related Species: Stinking chamomile, (*Anthemis cotula* L.) has both ray and disc florets.

Description: Small, annual herb. **Pineapple-scented.** Leaves divided one to three times. Flower heads consist of disc florets only. Flower heads cone- or egg-shaped with papery margins.

Life History: Annual. It is in flower from June to July, and the seeds ripen from July to August. Will not grow in the shade.

Where Found: Communities throughout Alaska. Often found on disturbed ground with poor gravelly soils. Can withstand severe trampling such as vehicle traffic on unpaved roads.

Habitat: Disturbed ground, roadsides, waste places, old mining sites, urban areas.

Impacts: An introduced weed that appears to be restricted to disturbed sites. Not thought to pose a threat to native plant communities. Report findings of this plant if found in undisturbed habitats or remote locations.

Fun Facts: Plant used as decoction for graying hair; as infusion against spasms,

disorders of the stomach, and for external use as an antiseptic and vulnerary. From the Latin *matrix*, "the womb," the plant once having been used as a cure for female disorders.



Illustration:USDA NRCS Plants Database



Common Name: Oxeye daisy

Scientific Name: *Leucanthemum vulgare* Lam.

Family: Sunflower family (Asteraceae)

Similar/Related Species: Arctic daisy, *Dendranthema arcticum* (L.) Tzvelev ssp. *arcticum*. Found among rocks along the seashore from southeast Alaska through the Aleutian chain to western Alaska. Arctic daisy has wedge-shaped leaves, while oxeye daisy leaves are spoon shaped. See Hulten (1968) or Pojar and MacKinnon (1994) for a more complete description.

Shasta daisy (*Chrysanthemum maximum* L.) is a commonly cultivated garden flower which can only be distinguished from oxeye daisy by microscopic characteristics.

Description: Heads solitary at the ends of branches consisting of **ray and disc florets**. Ray florets white 0.5 to 1 inch long. *Discs* yellow 0.5-1 inch across. Achenes lack a pappus. Leaves spoon-shaped, hairless to sparsely hairy, alternate along the stem, becoming progressively smaller towards the top. Upper leaves toothed, lacking a petiole.

Life History: Short-lived perennial. Spreads vegetatively by rhizomes or from seeds.

Where Found: Populated areas throughout southeast Alaska. Common on roadsides and landscaped areas.

Impacts: Seemingly an innocuous wildflower, the oxeye daisy is invasive in natural habitats in many locations around Alaska. Often included in

wildflower seed mixes, oxeye daisy is widely planted and easily escapes cultivation. It is an invasive exotic that can outcompete and displace native species. It is difficult to control or eradicate because of its large seedbank, long viability of seed, and ability to resprout if not completely removed.

Habitat: Fields, waste places, and roadsides.

Fun Facts: Taxonomists have placed this species in the genus *Leucanthemum* and *Chrysanthemum* at different times. Most ox-eye daisy seeds remain viable for twenty years in the soil, and can remain viable after passing through digestive tracts of animals

Control Options: Hand pull or dig before seed production. Use care to remove the woody rhizomes. Root systems tend to be shallow.

Herbicide Options: 2,4-D, and Glyphosate.

Photo: Brother Alfred Brousseau, NRCS PLANTS database



Common Name: Russian knapweed, hardheads

Scientific Name: *Acroptilon repens* (L.) DC.

Family: Sunflower family (Asteraceae)

Similar Species: Spotted knapweed (*Centaurea biebersteinii* DC.), Canada thistle (*Cirsium arvense*).



Photo: © John M. Randall, The Nature Conservancy

Description: Plants to three feet tall. Stems erect, stiff, branched. Flower heads urn-shaped, composed of disc florets only. The new leaves and stems are covered with gray hairs (knap). Flowers pink-purple turning straw colored at maturity. Leaves alternate, lower stem leaves are lobed, upper leaves oblong and toothed becoming progressively smaller up the stem. Distinguished from other knapweeds by the **pointed papery tips (rounded or acute papery margins)** of the involucrel

bracts. Unlike Canada thistle for which it can be mistaken, Russian knapweed has no spines or prickles.

Life History: Perennial. Primary means of spreading is by adventitious buds on roots but also reproduces by seeds. Roots may reach 21 feet below the soil surface, growing up to 21 feet per year.

Where Found: Not yet reported in Alaska.

Habitat: Primarily disturbed areas including grazed land, cultivated fields, waste places, roadsides, riverbanks, and irrigation ditches, often forming dense stands or monocultures.

Impacts: Forms dense stands on disturbed ground. Capable of invading riparian forests. Produces allelopathic chemicals to out compete other plant species. Knapweed is poisonous to horses. Listed as a prohibited noxious weed in Alaska.

Fun Facts: Stands of knapweed have been reported to survive for 100 years. Knapweed originated in central Asia and was introduced as a contaminant of crop seed around 1898, probably in alfalfa seed from Turkestan. It is now found on all continents except Antarctica.

Control Options: The best management for Russian knapweed is to maintain healthy native plant communities. Knapweed is mainly invasive on disturbed sites.

Herbicide Options: 2,4-D, clopyralid and glyphosate are moderately effective. Use clopyralid cautiously as it is active in the soil and can be absorbed by the roots of desirable vegetation. Herbicides are most effective when applied prior to seed set. Count on a multi-year treatment program and have a revegetation plan in place. One recommended strategy would be planting a perennial grass and using 2,4-D, or clopyralid because these chemicals, unlike glyphosate, will not kill grass.



Photo: © John M. Randall, The Nature Conservancy

Photo: Western Society of Weed Science

Common Name: Spotted knapweed

Scientific Name: *Centaurea biebersteinii* DC. (Synonym: *Centaurea maculosa*)

Family: Sunflower family (Asteraceae)

Similar Species: Russian knapweed *Acroptilon repens* (L.) DC. (Hardheads)
Smaller flowers, lacks black tips on flower bracts.

Description: Plants to three feet tall from a stout taproot. Flower heads solitary at the ends of branches. Involucral bracts stiff and topped with dark comb-like fringe giving a spotted appearance. Flower heads pink-purple, consisting of ray florets only, solitary at the end of stem branches.

Life History: Biennial or short lived perennial. Plants spread only by seeds. Individual plants can produce up to 140,000 seeds. Adapted to well-drained, light- to coarse-textured soils. Spotted knapweed plants in North America generally live 3 to 7 years but can live up to nine years or longer. Plants regrow from buds on the root crown. Reproduction is by seed, and plants are capable of producing 500- 4,000 seeds per square foot per year. About 90% of the seeds are viable at the time of dispersal, and they can remain viable in the soil for 5-8 years. Most seeds are dispersed near the parent plant but can be transported by people, wildlife, livestock, vehicles, and in soil, crop seed, and contaminated hay. Gravel pits, soil stockpiles, powerlines, grain elevators, railroad and equipment yards are important seed distribution points.



Jim Stasz @ USDA-NRCS PLANTS Database

Where Found: Prince of Wales, Skagway, Valdez, roadside between Anchorage and Girdwood on Turnagain Arm.

Habitat: In temperate regions, spotted knapweed is found at elevations up to and over 10,000 feet and in precipitation zones receiving 8 to 80 inches of rain annually. Spotted knapweed prefers well-drained, light-textured soils that receive summer rainfall. In the Rocky Mountains habitats include open forests dominated by ponderosa pine and Douglas fir, and prairie habitats dominated by Idaho fescue, bluebunch wheatgrass, and needle-and-thread grass. Disturbance allows for rapid establishment and spread; however, spotted knapweed is capable of invading well managed rangelands. Spotted knapweed does not compete well with vigorously growing grass in moist areas. In seasonally dry areas, spotted knapweed's taproot allows it to access water from deep in the soil, beyond the reach of more shallowly rooted species.

Impacts: Highly competitive weed that invades disturbed areas then spreads into adjacent undisturbed habitats. Can cause

skin irritation. Exposed skin should be washed with soap and water following contact. Knapweeds are among the worst weeds of agricultural lands in the western US. Spotted knapweed infests a variety of natural and semi-natural habitats including barrens, fields, forests, prairies, meadows, pastures, and rangelands. It outcompetes native plant species, reduces native plant and animal biodiversity, and decreases forage production for livestock and wildlife. Spotted knapweed may degrade soil and water resources by increasing erosion, surface runoff, and stream sedimentation. It has increased at an estimated rate of 27% per year since 1920 and has the potential to invade about half of all the rangeland (35 million acres) in Montana alone.

Fun Facts: Some evidence exists that knapweeds are *allelopathic*, producing chemicals from their roots that inhibit the growth of other plants. Spotted knapweed was introduced to North America from Eurasia as a contaminant in alfalfa and possibly clover seed, and through discarded soil used as ship ballast. It was first recorded in Victoria, British Columbia in 1883 and spread further in domestic alfalfa seeds and hay before it was recognized as a serious problem.

Control Options: Seeds remain dormant in soil for a period of over eight years. Plants will resprout from roots left in soil after pulling.

Herbicide Options: 2,4-D, clopyralid and glyphosate are moderately effective. Herbicides are most effective when applied prior to seed set. Use clopyralid cautiously as it is active in the soil and can be absorbed by the roots of desirable

vegetation. Count on a multi-year treatment program and have a revegetation plan in place. One recommended strategy would be planting a perennial grass and using 2,4-D, or clopyralid because these chemicals, unlike glyphosate, will not kill grass.



Illustration: NRCS Plants Database

Photo: Michael Shephard USDA Forest Service



Common Name: Canada thistle

Scientific Name: *Cirsium arvense* L.

Family: Sunflower family (Asteraceae)

Similar/Related Species: Bull thistle (*Cirsium vulgare*). *Cirsium edule*, the edible thistle, is a native thistle found at the southern tip of the panhandle.

Description: Plants to five feet tall with ridged, branching stems. Leaves curled, wavy, oblong, alternate on stem with wooly hairs on underside. Leaves arise directly from the stem without a distinct leaf stalk. Flowers purple-pink. Male and female flowers found on separate plants. Flower heads $\frac{3}{4}$ to 1 inch across.

Involucral bracts lack spines.

Life History: Perennial, forms colonies by a deep rhizome system that can eventually cover acre size areas. Can also spread by wind blown seeds.

Where Found: Canada thistle has shown up in many towns in southeast Alaska, where it appears to have stowed away in root balls of ornamental plants or hitchhiked on muddy construction sites.

Habitat: Grows in cultivated fields, pastures, rangelands, forests, and along roadsides, ditches, and river banks. Does best in disturbed upland areas but also invades wet areas with fluctuating water levels including streambank sedge meadows and wet praries.

Impacts: Reported in 1952 to infest more acreage than any other noxious weed in the states of Idaho, Montana, Oregon, and Washington. Reduces recreational value of parks and sports fields. In heavy concentrations it reduces

a pasture's potential to support livestock by preventing grazing, and it is also highly competitive with crops.

Photo: Weed Science Society of America



Gary A. Monroe @ USDA-NRCS PLANTS Database





Photo: Weed Science Society of America

Control Options: One of our most difficult-to-control weeds. Activities like hand pulling and tillage that disturb the soil break up the root systems causing further spread of the plant. Mowing is only effective if repeated monthly for several years. Any Canada thistle management program needs to include a revegetation strategy and continued monitoring over a period of several years. There can be great diversity in the morphology, phenology, and response to herbicides of the plants, even within the same field.

Herbicide Options: Herbicides are effective for Canada thistle only if applied at the proper stage of growth. Applications are most effective when the plant is translocating photosynthetic products from leaf to root in late summer, but are ineffective if the plant is in flower or seed-set stage. Mowing the plants after flowering forces them back into a more juvenile growth stage making them more susceptible to herbicide treatment. Mow plants mid to late summer, then spray two to four weeks post application. Glyphosate, clopyralid, 2,4-D, MCPA and metsulfuron methyl are all effective if applied properly. Use clopyralid cautiously as it is active in the soil and can be absorbed by the roots of desirable vegetation.

Illustrations: NRCS PLANTS Database



Common Name: Bull Thistle

Scientific Name: *Cirsium vulgare* (Savi) Ten.

Family: Sunflower family (Asteraceae)

Similar Species: *Cirsium arvense*, and the native *Cirsium edule*.

Description: Stem 2 to 5 feet tall with many spreading branches. Leaves in first year form a rosette. Leaves hairy and prickly on upper side, cottony underneath. Stems have irregular spiny “wings”. Flower heads 1.5-2 inches. Urn shaped, pinkish purple ray florets.

Invulcral bracts fleshy and tipped with spines.

Life History: Biennial from a short fleshy taproot.

Where Found: Prince of Wales Island, Ketchikan, Haines, Gustavus, Juneau.

Illustration: NRCS PLANTS Database



Photo: Michael Shephard USDA Forest Service



Habitat: Grows on a wide variety of soil types and under various moisture conditions and can tolerate a salt content of 2%. Does best in deep fertile, well-aerated soil that does not become too hot, and is less common in light, dry soil types. Abundant wherever the soil crust has been disturbed, e.g. along roads, river banks, dam margins and fences, or on severely overgrazed and trampled grazing land. Does not do well on regularly cultivated lands.

Impacts: Reported growing in clear cuts in British Columbia

Photo: Michael Shephard USDA Forest Service

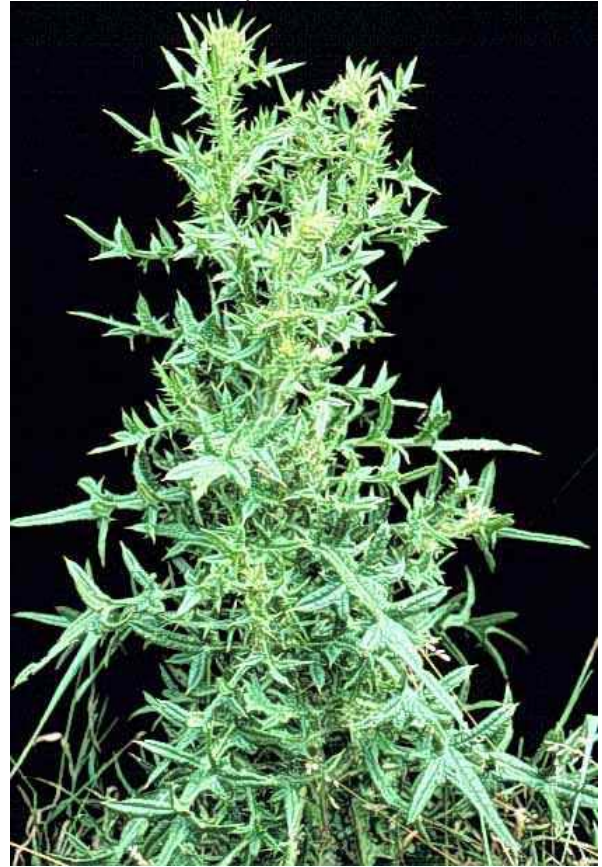


Photo: Weed Science Society of America

Fun Facts: Horses will eat the flower heads (carefully avoiding ingesting the spines) attracted by the sugary nectar found at the base of each floret.

Control Options: Cutting top growth before seed-set will prevent seed production. *Urophora stylata* (seed head fly) has reduced seed production up to 80% in tests conducted in British Columbia.

Herbicide Options: Glyphosate and 2,4-D are effective. Apply in rosette stage or force into rosette stage by mowing several weeks before application



Common Name: Smooth hawksbeard

Scientific Name: *Crepis capillaris* (L.) Wallr.

Family: Sunflower family (Asteraceae),
Dandelion tribe (Lactuceae)

Related Species: Elegant hawksbeard (*C. elegans*), and dwarf hawksbeard (*C. nana*).

C. elegans is a **native perennial** found **on gravelly or sandy river bars** along a mainland rivers of southeast Alaska; *C. nana* is a, rare **native**, perennial, dwarf, densely tufted **alpine** species uncommon in Southeast Alaska. Narrowleaf hawksbeard (*Crepis tectorum*) is another invasive species. Risk of confusion at seedling stage with chicory (*Cichorium intybus*).

Description: Stems smooth, extensively branched, with numerous heads of bright yellow ray florets. Leaves toothed to pinnately divided into long linear segments. Leaves lack bristles. Lower leaves are stalked, upper leaves stalkless with sharp basal ear-like lobes that wrap around the stem. **A combination of white wooly hairs and sticky black hairs cover the involucre bracts.** Conspicuous leaves that clasp the stem.

Life History: Smooth hawksbeard is a annual plant that reproduces from seed. Has also been reported as biennial or perennial.

Where Found: Interior Alaska.

Habitat: Primarily found in pastures, lawns, waste places, hay fields, and roadsides.

Photo: Leo Michels <http://www.iwoe.de>



Illustration: NRCS PLANTS Database



Common Name: Annual hawksbeard, yellow hawksbeard

Scientific Name: *Crepis tectorum* L.
Family: Sunflower family (Asteraceae),
Dandelion tribe (Lactuceae)

Related Species: Elegant hawksbeard (*C. elegans*), and Dwarf Hawksbeard (*C. nana*).

C. elegans is a **native perennial** found **on gravelly or sandy river bars** along a mainland rivers of southeast Alaska, *C. nana* is an uncommon **native, perennial, dwarf, densely tufted alpine** species. Smooth hawksbeard (*Crepis capillaris*) is another invasive species.

Description: Plants to 3 feet tall. Basal leaves are stalked, lance-shaped with margins varying from numerous backward-pointing teeth to deeply lobed. Stem leaves **clasp** the stem. Leaf margins are often curled back towards the midrib. **Involucral bracts are smooth, lacking hairs or fuzz**
Life History: Annual hawksbeard is an annual or winter annual species that reproduces from seed. Seeds exhibit little or no dormancy, losing their ability to germinate after about five years.

Where Found: Interior Alaska, Kenai Peninsula, Wrangell.

Habitat: Often found on light, disturbed soil; waste places, roadsides. Thrives in dry, coarse soil.

Impacts: Narrowleaf hawksbeard is a serious weed of perennial forages. The winter annual form competes with established forages; the annual form competes with seedling forages, special crops, cereals and oilseeds. The most

serious infestations of this weed occur in weak crop stands.

Fun Facts: Each annual hawksbeard plant is capable of producing 49,000 seeds. *Crepis* is from the Greek *krepsis*, "a sandal," and is an ancient plant name. The *tectorum* part means "of roofs."



Illustration: NRCS PLANTS Database
Photo: Marta Mueller UAF Cooperative Extension



Common Name: Orange hawkweed

Scientific Name *Hieracium aurantiacum* L.

Family: Sunflower family (Asteraceae), Dandelion tribe (Lactuceae)

Related Species:

Hieracium umbellatum L. Narrow leafed hawkweed native to continent, exotic in Alaska

Hieracium caespitosum Dumort. Meadow hawkweed

Hieracium triste Willd. Woolly hawkweed, alpine **native**

Hieracium gracile Hook. Yukon hawkweed, alpine **native**

Hieracium canadense Michx. Canadian hawkweed, **native**

Hieracium albiflorum Hook. (white hawkweed) mainland **native**

Related members of the genus all have yellow or white flowers.

Description: Deeply colorful orange-red flowers about one inch in diameter. Flower heads are **dark red** on the edges and orange in the center. Flowers consist of ray florets only with notched upper margins. Leaves are 2-6 inches long, clustered in a basal rosette. A few to short leaves on the 6-8 inch long stems or often none at all. Leaves are covered with soft white hairs. Stems are covered with shorter dark colored hairs. Leaves are darker green on the upper surface than the lower surface. Stems 2 to 12 inches, occasionally to two feet. Milky juice produced by leaves and stems. One plant can produce 5-35 flower heads. Can spread by stolons or seed.

Life History A perennial like the dandelion, in Alaska hawkweed produces flowers from mid July through

October. When flowers are absent, it can be very inconspicuous. Look for clumps of serrated leaves covered with downy white hairs. Reproduces vegetatively by runners in a manner similar to strawberries or by rhizomes. Flowering stems can produce hundreds of seeds. Seeds may be dispersed by wind, animals and hay. Seeds may also stick to clothing. Seeds can germinate immediately or stay dormant in the soil for up to seven years.

Photo: Tom Heutte USDA Forest Service



Where Found: Communities throughout southeast Alaska and Kenai Peninsula. One alarming instance is on Camp Island in the Kodiak National Wildlife Refuge, where orange hawkweed is rapidly expanding with in a native forb/fern meadow on a large scale. Orange hawkweed is native to alpine and hillside meadows in Europe.

Habitat: Prefers well-drained soil, roadside slopes and railway cuttings. Grows in permanent meadows, grasslands, rangelands, and pastures.

Impacts: Invasive on undisturbed sites! Capable of forming dense mats of vegetation completely excluding all other plant species. Considered one of the worst nuisance species in landscapes and agriculture. Very tolerant of poor site conditions. Hawkweeds are very competitive with desirable plants. Once introduced into an area, they can quickly form dense patches. If they are not controlled, these patches can expand into large areas and displace desired native and forage species. Hawkweeds are commonly found in lawns and gardens. Because of its ability to outcompete native grasses it is widely suspected of being allelopathic.

Control Options: As patches expand in size, they become more difficult to control. Because hawkweeds can establish in remote mountain meadows and forest habitats, new populations sometimes go unnoticed. No single management practice can be implemented just once to manage the hawkweeds. Ultimately, the management of hawkweeds will depend on a program that integrates multiple management procedures such as fertilizers, herbicides and other techniques that increase the competitive ability of desired species.

Similar in its habits to dandelions except it lacks the fleshy taproot. Like with dandelions, intensive hand removal on lawns is more effective if used in conjunction with fertilization, which can help the grass to outgrow the hawkweed. Mowing is ineffective because rosettes

are so close to the ground. For homeowners, a “weed and feed” type fertilizer is a less labor-intensive option. Follow all directions on the label. These fertilizer-herbicide mixes may kill desirable plants if not used according to instructions. Hand removal can be effective if care is taken to remove as much of the root as possible.

Herbicide Options: Hawkweed can be controlled with growth-regulator herbicides like 2,4-D. Surfactants increase the adherence of these herbicides to the hairy leaf and stem surfaces of hawkweeds. The herbicide 2,4-D is most effective when applied at 1.5 to 2.0 pounds of active ingredient per acre. Plants should be treated when they are in the rosette stage.

Fun Facts: There are two hundred and fifty species of the genus *Hieracium* in Europe. It has been long hated by farmers and gardeners who gave it such fanciful names as “King Devil”, “Devil’s Paintbrush” and “Grim the Collier.”

©Norman Melvin. [USDA, NRCS](#)



Photo: © Carl Farmer, Skye Flora



Common Name: Narrowleaf hawkweed, Yellow hawkweed

Scientific Name: *Hieracium umbellatum* L.

Family: Sunflower family (Asteraceae), Dandelion tribe (Lactuceae)

Related Species:

Hieracium aurantiacum L. Orange hawkweed.

Hieracium caespitosum Dumort. Meadow hawkweed

Hieracium triste Willd. Woolly hawkweed, alpine **native**

Hieracium gracile Hook. Yukon hawkweed, alpine **native**

Hieracium canadense Michx. Canadian hawkweed, **native**

Hieracium albiflorum Hook. (white hawkweed) mainland **native**

Description: Herbs 2-4 feet high, from a short woody rhizome. Stems solitary or few, hairless below with star-shaped hairs above. Basal leaves few, deciduous, lower stem leaves small, deciduous, upper stem leaves reduced in size, middle leaves lance-shaped, stalkless, entire or somewhat toothed with short **star-like hairs**. Stems branch only at the tips to produce an umbrella-like, flat-topped cluster of flower heads. Flower heads yellow, consisting only of ray florets. Involucral bracts black, hairless, or nearly so.

Life History: Perennial, reproduces from seed.

Where Found: Wrangell, Petersburg, Hoonah.

Habitat: Grows on roadsides, waste ground; low, sandy spots or in open sandy woodland, and in woods.

Photo: Tom Heutte USDA Forest Service



Fun Facts: Several yellow-flowered hawkweeds are found in our range. Some are native; so consult with an expert before attempting to eradicate this plant. Orange hawkweed is very easy to identify due to its unique bright orange flower heads. The generic name was derived from the Greek *hierax*, "a hawk".



Common Name: Spotted Catsear, Hairy Catsear, False Dandelion

Scientific Name: *Hypochaeris radicata* L.

Family: Sunflower family (Asteraceae), Dandelion tribe (Lactuceae)

Similar Species: Other dandelion tribe members, including common dandelion (*Taraxacum officinale*) and fall hawkbit (*Leontodon autumnalis*).

Description: Basal rosette of dandelion-shaped leaves. Similar in appearance to dandelion except the catsear is taller (to two feet) and has leaves that are **densely hairy on both sides**. No leaves on stems. Several simple or branched stems 15-60 cm tall. Yellow flower heads, often several heads per stem.

Life History: Perennial herb. Reproduces by seed. The only weed of this genus in the United States. The 10-ribbed seeds are carried by the wind, floating by a hairy plume, or parachute, attached to the seed by a long, slender beak.

Where Found: Hulten (1968) reports *Hypochaeris* in Juneau. Pojar and MacKinnon (1994) report it in the upper Lynn Canal and Queen Charlotte Islands. Found on northern Zarembo Island on the Wrangell Ranger District along logging roads.

Habitat: Grows in lawns, pastures, meadows, and waste places.

Impacts: Class "B" noxious weed in Washington State. Reported to cause the disease "stringhalt" in horses. Widespread in coastal grasslands and wetlands in CA. Reported in OR, WA,

and BC. The thick basal rosettes can smother native grasses.

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Common Name: Perennial sowthistle, field sowthistle

Scientific Name: *Sonchus arvensis* L.
ssp. *Arvensis*

Family: Sunflower family (Asteraceae),
Lactucaae/dandelion tribe

Related Species: *Sonchus oleraceus* L.
Common sowthistle
Sonchus asper (L.) Hill Spiny sowthistle

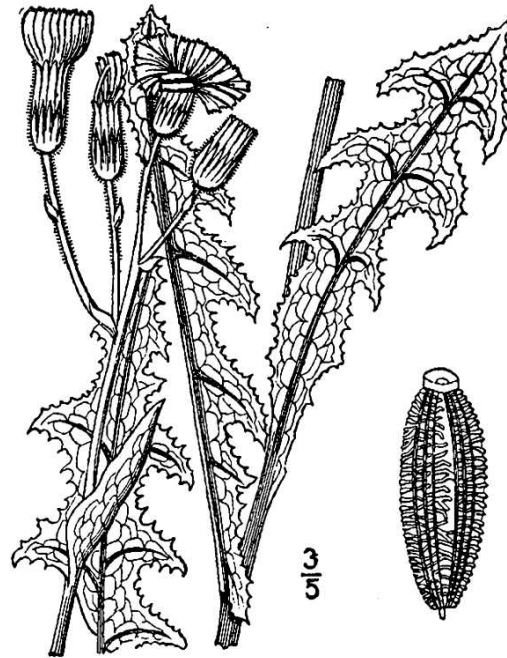
Similar Species: Other dandelion tribe members.

Description: Despite the common name, sowthistles resemble dandelions more than they do the true thistles. Perennial with flowers and leaves similar to the dandelion. **Plants to four or five feet tall.** Flower heads are 1-2 inches across. Long stems arise from a basal rosette of dandelion like leaves. Stems are branched only at the top. Basal and stem leaves have prickly margins. Leaves on the stem are less numerous, more pointed at the tips and clasp the stems at the base. Plants exude a milky sap when broken. Involucral bracts have numerous gland tipped hairs. Seeds are deeply grooved with a soft bristly pappus.

Life History: Perennial herb, reproduces from seed and by spreading rhizomes. Seeds are dispersed by wind but small hooks on the pappus also allow seeds to readily attach to clothing and animal hair. Early in the season, a basal rosette that could be mistaken for dandelion may be seen. Plants overwinter as roots and rhizomes, with new buds arising from the rhizomes in the spring, around the same time that sowthistle seeds germinate. Seeds are relatively short-lived with viability decreased by half

after two years. Seed dispersal mainly by wind but some birds feed on and spread the seeds.

Illustration: NRCS PLANTS database



Where Found: Juneau, likely to occur in other communities in southeast Alaska.

Found on northern Zarembo Island on closed logging roads.



Photo: Dean Swan, Washington State University

Habitat: Prefers low, fine-textured soils, especially loams. Does better under alkaline or neutral conditions than under acidic conditions. Commonly found in cultivated fields (both grain and row crops), waste areas, meadows, sloughs, woods, lawns, roadsides, beaches, ditches, and river and lake shores.

Impacts: Can form dense monospecific stands by spread of rhizomes. Annual and Perennial sowthistle are listed as provincial noxious weeds in BC, and in several states in the US. A problem in several crops, where it causes economic losses due to reduced crop yields, increased cultivation and herbicide expenses, and land depreciation.

Control Options: Tillage may increase numbers by breaking up the rhizomes

into separate pieces that can grow into new plants. When hand pulling, use a shovel and take care to get as much of the root as possible. Tillage that buries all root fragments more than 30 cm deep is reported to be effective.

Herbicide Options: 2,4-D, and clopyralid, are effective after rosettes emerge, before the bud stage. Use clopyralid cautiously as it is active in the soil and can be absorbed by the roots of desirable vegetation. Glyphosate effective for spot treatments. Perennials are usually best treated late in the growing season before a frost when sugars are being translocated to the root zone.

Fun Facts: Sowthistle is a relative of chicory, and its roots have been used to make a coffee-like beverage. Because of the high hydrocarbon content of its milky sap, sowthistle has been investigated as a source of oil for manufacture of plastics and pharmaceuticals.

Photo: Tom Heutte, USDA Forest Service



Common Name: Prickly lettuce, wild lettuce.

Scientific Name: *Lactuca serriola* L.
Family: Sunflower family (Asteraceae)

Related Species: Wall lettuce (*Mycelis muralis* (L.) Dumort.)

Similar Species: Resembles two native wild lettuce species, including blue lettuce (*L. tatarica* (L.) C.A. Mey) and tall blue lettuce (*L. biennis* (Moench) Fern.), and other dandelion tribe members, including sowthistles (*Sonchus* spp.) Blue lettuce is on the State Noxious Weeds list.

Photo: *Lactuca Serriola*, NRCS PLANTS database



Description: Pappus of simple bristles only. Stem leaves lack a clasping base. Heads few to several. Achenes beaked. Plants 2-4 feet tall from a large taproot. Stems branch only in the flowering portion, with numerous yellow flower heads. Prickles cover the leaf teeth, the back side of the midvein and the lower half of the stem. Leaves are twisted at the base to lie in a vertical plane,

clasping the stem with two ear-like lobes.

Blue lettuce and tall blue lettuce have bluish to white flowers. Consult Pojar and MacKinnon's Plants of the Pacific Northwest Coast (1994) or Hulten's Flora of Alaska (1968) for a more complete description of this group.

Life History: Biennial. Reproduces by seed only.

Where Found: Prickly lettuce not yet reported in AK. Pojar and MacKinnon (1994) reports the closely related wall lettuce *Mycelis muralis* (L.) Dumort in Juneau. Prickly lettuce is most commonly a weed of nurseries, orchards, roadsides, and agronomic crops and is found throughout most of the United States.

Photo: *Lactuca Serriola*, NRCS PLANTS database



Habitat: Common in cropland, roadsides and waste places in much of the US and BC.

Impacts: Invades croplands. Cattle feeding exclusively on fresh, young prickly lettuce plants have been reported

to develop pulmonary emphysema, but mature plants and dried younger plants appear to be non-toxic. Has been declared a noxious weed in Manitoba, but not in any other province.

Fun Fact: Cultivated lettuce is another member of this genus.

Control Options: Dig up isolated individuals if identified correctly.

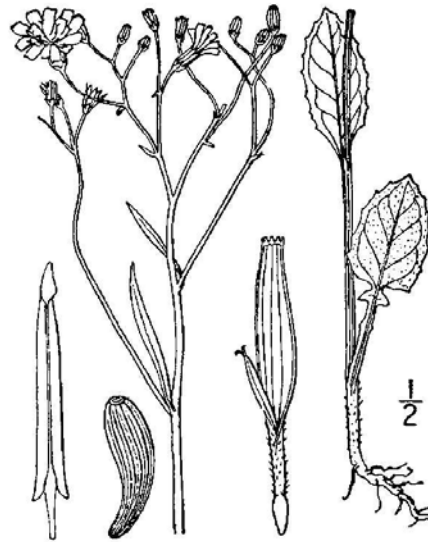
Common Name: Nipplewort

Scientific Name: *Lapsana communis* L.

Family: Sunflower family (Asteraceae)

Similar Species: wild lettuce species (*Lactuca* spp.).

Description: Branched leafy stems. Leaves alternate, stalked, broadly egg shaped with toothed to lobed margins. Upper leaves lack leaf stalks. Sparsely hairy to hairless. Milky sap. Flowers yellow, ray florets only. Achenes sausage-shaped, curved, hairless 3-5 mm. long, **no pappus**.



Where Found: Hulten (1968) reports nipplewort occurring in Juneau and Ketchikan.

Habitat: Fairly tolerant plant that succeeds in most soils, so long as they are not too acid, and dislikes heavy shade.

Life History: Annual, spreads by seeds.

Habitat: Common in woods, disturbed ground, and other waste sites.

Impacts: According to Taylor (1990), it can invade open forests.

Fun Facts: Was at one time cultivated as a vegetable.

Control Options: Hand pull. Easy to pull when young.

Illustration: NRCS PLANTS database
Photos: Forrest & Kim Starr



Common Name: Hawkbit, autumn dandelion

Scientific Name: *Leontodon autumnalis* L.; other *Leontodon* spp.

Family: Sunflower family (Asteraceae)

Similar Species: The two most likely candidates for a misidentification are hairy catsear (*Hypochaeris radicata*) and common dandelion (*Taraxacum officinale*). Difference from dandelion is that the flower stem is tough and not hollow. The flower stalks of catsear are also branched and have small scale-like bracts, but the leaves are heavily hairy, not smooth and shiny.

Description: Very dandelion-like with deeply lobed leaves arising from a basal rosette. Flowers yellow with reddish streaks on underside of outer florets. Pappus with a single row of leathery hairs. To distinguish hawkbit from dandelion, look for small **scale-like leaves on the flowering stem**, which dandelions lack.

Life History: A late-summer or autumn flowering perennial.

Where Found: Pojar and MacKinnon (1994) report *L. autumnalis* in the Queen Charlotte Islands. Hulten (1968) reports it in Fairbanks. Found in Seward.

Habitat: Common in grasslands including hills and upper levels of saltmarshes. Found in vacant lots, roadsides, fields, and other disturbed habitats.



Illustration: NRCS PLANTS database
Photo: © Carl Farmer, Skye flora



Control Options: Hand pull taking care to remove the roots.

Common Name: Tansy ragwort,
Common ragwort, Staggerwort.

Scientific Name: *Senecio jacobaea* L.
Family: Sunflower family (Asteraceae)

Similar Species: common tansy
(*Tanacetum vulgare*) has **disc florets only**.

Related Species: Hulten (1968) lists 19 species of the genus *Senecio* in Alaska, most of them native, with the exception of common groundsel (*S. vulgaris*) and desert ragwort (*S. eremophilus*).

Description: One to several stems 1-4 feet tall arise from a taproot. Leaves deeply cut. Basal leaves stalked 2-8 in long. Leaves become smaller and petioles become shorter moving up the stem. Flower heads borne in terminal clusters, heads consist of **both ray and disc florets**. Ray and disc florets yellow, ray florets number 10-13, ¼ to ½ inch long.

Life History: Biennial or short-lived perennial. Forms a low-growing rosette in the first year. One plant may produce 150,000 seeds. Reproduces by seed or regrowth from the root crown. Seeds dispersed by wind, water, and animals.

Where Found: Ketchikan, Juneau.

Habitat: Rangelands, pastures, and forest clearings. Waste places and roadsides.

Impacts: Widespread in CA, OR, WA and BC, infesting millions of acres of range and pasture land. Tansy ragwort is poisonous to livestock. In the 1970s it was estimated that Oregon lost 4 million

dollars a year to livestock poisoning by tansy ragwort.

Photo: Tom Barbouletos, USDA Forest Service

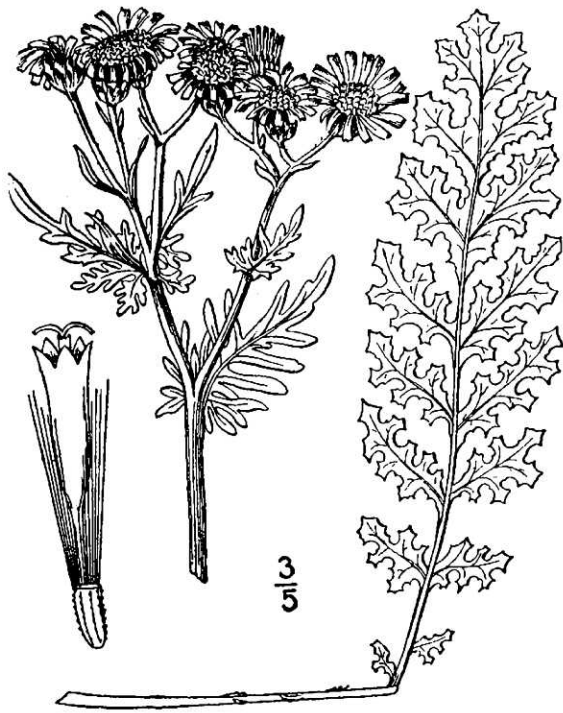


Fun Facts: Seed banks can remain viable for over 20 years. Ingestion of this plant causes cattle to stagger hence the common name “staggerwort”

Control Options: Hand pull before seed set. Treat large infestations with herbicide. Seed disturbed areas with perennial grasses to prevent reestablishment. Several insects are being used as biocontrol agents for this plant in very large infestations in the Lower 48 and Canada that are too large to control with herbicides.

Herbicide Options: Spring or autumn application of 2,4-D to manage young seedlings and rosettes. Dicamba, alone or in combination with 2,4-D is effective for adult plants. Use dicamba cautiously as it is active in the soil and can be absorbed by the roots of desirable vegetation.

Illustration: NRCS PLANTS database



Tansy Ragwort in a logged area in the Cascade Range Photo: Tom Barbouletos, USDA FS



Common Name: Common tansy

Scientific Name: *Tanacetum vulgare* L.

Family: Sunflower family (Asteraceae)

Similar Species: Tansy ragwort (*Senecio jacobaea*) has disc and ray florets.

Related Species: Dune tansy (*Tanacetum bipinnatum*) is found in coastal BC to Queen Charlotte Islands.

Description: Numerous composite flower heads (20-200 per plant) in flat-topped clusters. Heads of **disc florets only**. Leaves pinnately compound. Leaflets also divided giving a feathery appearance. Plants to five feet tall. Strong odor reminiscent of creosote.

Life History: Perennial, spreads by short rhizomes forming dense clumps. Disturbed habitats in full sun. Roadsides, stream banks, and pastures

Where Found: Communities in southeast Alaska.

Habitat: A garden plant introduced from Europe and now escaped from cultivation, occurring as a weed along roadsides and fencerows.

Impacts: Poisonous to livestock. Becomes a problem in pastures.

Fun Facts: Tansy has been used for a wide variety of medicinal uses and as an insect repellent. Toxic to humans and livestock when consumed in large quantities. Before the introduction of embalming, tansy was used to line coffins before burying the dead because of its ability to repel vermin. This has been borne out by chemical analysis

showing tansy to contain compounds which can repel insects and inhibit growth of bacteria and fungi.

Control Options: Hand pulling without a shovel can be difficult due to the extensive rhizomes. Mowing is effective if repeated several times a year.

Herbicide treatment: Glyphosate is most effective when applied between the early flower bud and full bloom stage.

Photo: Brother Alfred Brousseau NRCS PLANTS database



Common Name: Garlic mustard

Scientific Name: *Alliaria petiolata*
(Bieb.) Cavara & Grande

Family: Mustard Family (Brassicaceae)

Similar Species: Large-leaved avens (*Geum macrophyllum*) is commonly mistaken for garlic mustard rosettes. Avens have highly dissected leaves divided all the way to the petiole base.

Description: Strong garlic odor when crushed. First year plants are rosettes of dark green kidney shaped leaves arising from a common base with distinct leaf veins and scalloped edges to four inches in diameter. Second year plants with few to several-branched stems to 3 feet tall. Second year plants have triangular leaves alternate on the stem gradually decreasing in size. Flowers white, ¼ in. diameter, with four petals. Plants flower in April-June with siliques produced June-August. Seeds 8-10/pod, shiny-black, cylindrical.

Life History: Biennial. Plants overwinter as rosettes. Very tolerant of cool temperatures and low light. One plant may produce several hundred seeds. Seed bank viability is at least 5 years.

Where Found: Only known locations in Alaska are in Juneau, on the hill below the Governor's residence, and Auke Village Recreation Site.

Habitat: Moist, shaded soil of river floodplains, forests, roadsides, edges of woods and trails edges and forest openings. Disturbed areas are most susceptible to rapid invasion and dominance. Though invasive under a wide range of light and soil conditions,

garlic mustard is associated with calcareous soils and does not tolerate high acidity. Growing season inundation may limit invasion of garlic mustard to some extent.

Illustration: NRCS PLANTS database



Impacts: Potential ecosystem impacts in Alaska are unknown, but in deciduous forests of the eastern and Midwestern US, garlic mustard forms dense monospecific stands, outcompeting spring wildflowers that complete their life cycle between spring thaw and trees leafing out. Many impacted species are threatened or endangered. Garlic mustard is regarded as one of the worst invasive plants in much of the lower 48 because of its record of colonizing natural areas.

Fun Facts: Juneau residents are fighting an uphill battle (literally) to eradicate this species from Alaska. Garlic

mustard is edible and was often used in soups and salads. It was introduced from Europe, most likely intentionally. Other common names include sauce-alone, jack-in-the-hedge, and poor man's garlic.

Tom Heutte, USDA Forest Service



Control Options: Hand pulling is effective because the entire root can be removed if carefully pulled. If the upper half of the root remains in the soil, plants will resprout. Hand pulling is best done in the early spring before other plants overgrow the site making access difficult. Extreme care should be taken to prevent seeds of this plant from being moved from the site, for instance through mud stuck to shoes.



Photo: Glenn Nice, Purdue University

Herbicide Options: Glyphosate applied at a 1% rate on dormant rosettes reduced adult plant populations by 95% in one study. Glyphosate is non selective and will harm native species. Damage can be reduced by applying in the early spring when few actively green plants besides garlic mustard can be found in the area. Triclopyr amine (Garlon 3A) applied at 1% killed 95% of rosettes in another test.

Common Name: Turnip, turnip greens, field mustard, birdsrape mustard.

Scientific Name: *Brassica rapa* L.

Family: Mustard family (Brassicaceae)

Similar Species: *Brassica napus*

Canola, or rapeseed has yellowish-green leaves and flowering stem does not lengthen during flowering.

Description: Stems to four feet tall from taproot. Stems and foliage smooth. Upper leaves have a broadly clasping base. Lower leaves deeply lobed, clasping the stem, undivided, upper leaves lack stalks. Flowers yellow, seed pods 1 to 4 inches long. Seeds 1 to 1.5 mm in diameter and blackish, reddish-brown or mottled yellow.

Illustration: NRCS PLANTS database



Life History: Biennial rootcrop that functions as an annual in cultivation.

Where Found: Communities and remote beach sites in Southeast Alaska.

Habitat: Cool-climate cultivated crop.

Impacts: A common agricultural weed widespread in North America. Not thought to pose a threat to native plant

communities. Report findings of this plant if found in undisturbed habitats or remote locations.

Fun Facts: Turnip has been cultivated in Europe for over 4000 years, this plant was probably native to central and southern Europe, and has now spread throughout world, including most parts of the tropics.

Control Options: Manual pulling.

Photos: Tom Heutte USDA Forest Service



Common Name: Sweetrocket, Dames rocket

Scientific Name: *Hesperis matronalis* L.

Family: Mustard family (Brassicaceae)

Similar Species: Resembles a **native fireweed**, *Epilobium luteum*. Often mistaken for garden phloxes which have five petals instead of four.

Description: Branched stems to three feet tall from fibrous roots. Leaves oval-lance shaped, slightly toothed. Leaves decrease in size as they ascend the stem. Flowers showy, four-petaled purple to pink to white. Seeds borne in long, narrow siliques.

Life History: Biennial to perennial that reproduces by seed.

Where Found: Very common in downtown Juneau and Sitka.

Photos: Tom Heutte USDA Forest Service



Illustration: NRCS PLANTS database

Habitat: Prefers well-drained soil, will grow in part shade to sun. Grows in moist, open woodlands.



Impacts: An introduced weed that appears to be restricted to disturbed sites. Not thought to pose a threat to native plant communities. Report findings of this plant if found in undisturbed habitats or remote locations. Often a component of “wildflower” mixes. This plant can be readily ordered as a garden flower on websites and from various seed nurseries in the lower 48.

Fun Facts: This plant is reputed to be more fragrant at night.

Common Name: Scotch broom

Scientific Name: *Cytisus scoparius* (L.)

Link

Family: Pea family (Fabaceae)

Similar Species: Gorse, *Ulex europaeus* L. another invasive shrub with yellow pea-like flowers has **dense sharp spines**. Reported in Queen Charlotte Islands Spanish broom, *Spartium junceum* can be distinguished by its fragrant flowers and rounded bright green stems. Common in Washington State.

Description: Perennial shrub to ten feet tall from a forked taproot. Stems strongly angled. Leaves clover-like, deciduous. Flowers numerous, bright yellow, arising from the leaf bases along the stem, similar in appearance to garden peas. Fruits pea like, flattened, brownish-black.

Life History: Perennial. Reproduces vegetatively and from seed. Seeds remain viable up to eighty years.

Where Found: Private yards in Sitka, Hoonah, and Petersburg. Common in Ketchikan. Widespread and very invasive in southern Vancouver Island.

Habitat: Forest edges, clearings, meadows, heath



Photo: © John M. Randall, The Nature Conservancy

Impacts: Forms dense impenetrable thickets. Associated with widespread decline of distinctive rain shadow flora of Vancouver Island. Serious pest of logged areas replanted with seedlings. In Australia, New Zealand and the USA it has overrun large areas of land used for recreation, forestry, pastures, orchards and invaded natural habitats, displacing indigenous species in the process, and is still spreading.



Gorse (*Ulex europaeus*)

© John M. Randall, The Nature Conservancy

Control Options: Hand pull before seed set with the aid of a mattock to remove roots. Root pieces that inevitably remain in the soil will resprout to form new plants, so follow up monitoring is essential. Work from the outside into the center of the infestation, focusing on isolated plants outside of the clumps first. Use of a brush chipper may be desirable to dispose of cut or pulled plants.

Herbicide Options: 2,4-D is most effective after seed set in late summer. Glyphosate effective on actively growing plants in spring, but also kills grasses and other plants needed to compete with new seedlings.

Common Name: White Sweetclover and yellow sweetclover

Scientific Name: *Melilotus alba* Medikus (white); *Melilotus officinalis* (L.) Lam. (yellow)

Family: Pea family (Fabaceae)

Related Species: Black medic (*Medicago lupulina* L.).

Description: White and yellow sweetclover are very similar, differing primarily in flower color. Plants to six feet tall, from a taproot, sweet-scented, stems many-branched. Leaves toothed, oblong-lance shaped, palmately compound with three leaflets. Flowers small, white in tapering spike-shaped clusters at the end of branches. Fruits small, black, papery, netted pods about ¼ long. Yellow sweetclover has yellow flowers and broader leaves.

White sweetclover

Photo: © John M. Randall, The Nature Conservancy



Life History: Annual, winter annual, or biennial. In the first season of growth they produce vegetative shoots which may reach 12 inches.. During the second season flowering shoots emerge and rapidly elongate, and plants may attain a height of 6 feet. Adapted to a wide range of soils, but not acidic soils. Tolerant of alkaline and saline soils. Rapid growth rate but slower rate after defoliation. Upright growth habit. Intolerant of shade.

Where Found: Extensive infestations along the Stikine, Tanana, and Matanuska Rivers. Found outside of Seward on roadsides from DOT seed mixtures. Also in scattered locations throughout the state.

Habitat: The two species have spread from cultivation and thrive in waste places, roadsides, pastures, and prairies. Adapted to a wide range of soils, but not acidic soils. Tolerant of alkaline and saline soils. Rapid growth rate but slower rate after defoliation. Upright growth habit. Intolerant of shade.

Impacts: White sweetclover appears to be invading gravel bars along several of our major river systems at a rapid rate. The plants easily invade open areas outcompeting and displacing desirable native species.

Fun Facts: Has been considered a valuable honey plant. This plant has long been cultivated for animal forage, and promoted for soil stabilization.

Common Name: White Clover, red clover

Scientific Name: *Trifolium repens* L. (white), *Trifolium pratense* L. (red)
Family: Pea family (Fabaceae)

Similar Species: alsike clover (*Trifolium hybridum*)

Related Species: Hulten (1968) describes ten species of *Trifolium* in Alaska, most of them introduced or suspected to be so.

Description: Red clover: large three-parted leaves with distinctive “chevrons”, large reddish flower heads. White clover: Stems spread over the ground and root at the nodes, round leaflets in groups of three (or four in rare cases) about ½ inch across. Showy white to pinkish flowers in dense drooping heads. Small appendages (stipules) found at the base of the leaf.

Life History: Creeping perennial.

Where Found: Disturbed sites, roadsides throughout Alaska.

Habitat: Cultivated. An important pasture plant. Often cultivated to enrich the soil. Grows well in sunny locations with well-drained soils.

Impacts: An introduced weed that appears to be restricted to disturbed sites. Frequently establishes in mountain meadows in the Pacific Northwest. Report findings of this plant if found in undisturbed habitats or remote locations.



Photos: Tom Heutte USDA Forest Service



Common Name: Orchard grass

Scientific Name: *Dactylis glomerata* L.

Family: Grass family (Poaceae)

Similar Species: Reed canarygrass (*Phalaris arundinacea*) has wider leaves and a more narrow pointed inflorescence and grows in wetter habitats than orchard grass.

Description: Grass with erect tall hairless stems to three feet tall from short rhizomes. Leaves grayish green 1/4-3/8 inch wide, flat or folded with a prominent scabrous midrib and scabrous margins. Inflorescence: 3-20 cm panicle, lower 2-3 branches elongate, upper branches short and appressed. Spikelets **tufted panicles of one-sided clusters at the ends of long stiff rough branches.**

Life History: Grows in dense clumps or tufts or rarely with short rhizomes, reproduces from seeds and tillers.

Where Found: Throughout southeast Alaska in and around populated areas.

Habitat: Flourishes in moist sites. Found in pastures and along trails and roadsides.

Impacts: Widespread throughout North America. An aggressive weed of farms and orchards. Invasive in wetlands. Often cultivated for forage.

Fun Facts: The scientific name of this plant is improbably featured as an album name for the British metal band Candlemass, released in the UK in 1998

Photo: © John M Randall, The Nature Conservancy



Common Name: Foxtail barley

Scientific Name: *Hordeum jubatum* L.

Family: Grass family (Poaceae)

Similar Species: Other *Hordeum* spp., including meadow barley (*Hordeum brachyantherum*). May be mistaken for quackgrass (*Agropyron repens*) before the seedheads are present..

Description: Grass with pale green to reddish spikes on inflorescence with numerous bristle-like awns. Tufted perennial 2-8 dm tall; culms erect or decumbent at the base. Leaf blades usually flat, 1-5 mm wide, glabrous; sheaths glabrous, the ligule scarious, truncate, less than 1 mm long. Inflorescence a terminal spike, erect to nodding, 3-10 cm long, bristly due to the long, slender, spreading awns of glumes and lemmas; awns (1.5)2.5-7 cm long.

Life History: Annual or biennial. Reproduces from seeds or tillers

Where Found: Eagle River Estuary near Juneau.



Photos: Weed Science Society of America

Habitat: Wet meadows, ditches, shores, shallow marshes, seepage areas and other wet or moist places, often where alkaline or saline, also common as a weed of drier disturbed sites; common, often abundant

Impacts: While native to North America, foxtail barley is not currently well established in southeast Alaska. It is regarded as a noxious weed elsewhere in Alaska. The sharp pointed awns lodge in the mouth and throat of animals that graze on them, causing infection.

Fun Facts: Could be indicative of Hudson Bay store activity in an area in the past, or Northern Store activity in the present, as freighter canoes built in Quebec near Montreal are packed with straw for shipping and foxtail barley seed may be present in that straw

Common Name: Reed canarygrass

Scientific Name: *Phalaris arundinacea*
L.

Family: Grass family (Poaceae)

Similar Species: Orchard grass
(*Dactylis glomerata*)

Description: Stout reed-like perennial from stout rhizomes, stems hollow, 2-6 feet tall with bluish-green waxy coating. Leaf blades flat, ¼ to 3/4 inch wide.

claspig ligules Leaves rough, sheaths open. Inflorescence a panicle 6-18 cm. long with spikelets occurring in clusters on short scabrous branches, reddish to purplish at base, becoming straw colored, compact at first then opening at maturity.

Photo: Weed Science Society of America



Life History: Highly variable species. Perennial, prefers moist to flooded sites. Does not tolerate saltwater. Tolerant of freezing temperatures, begins growing early in the season. Spreads within sites by creeping rhizomes, effectively excluding all other vegetation. Colonizes new sites by seeds.

Where Found: Roadsides, ditches, logging sites throughout southeast Alaska.

Habitat: Typically occurs in soils that are saturated or nearly saturated for most of the growing season, but where standing water does not persist for extended periods. Established stands can tolerate extended periods of inundation. Ideal conditions typically occur in roadside ditches, rights-of-way, river dikes and levees, shallow marshes, and meadows.

Impacts: Forms dense monospecific matted stands. Invades into wetlands and riparian areas. Growth of reed canary grass may slow stream flow, eliminating the scouring action needed for maintaining gravelly river bottoms essential for salmon reproduction. It was widely debated whether reed canarygrass is native to North America or not. It has been bred as a hay crop, and hay cultivars have probably interbred with wild or naturalized populations. It is frequently used in southeast Alaska to stabilize soil along roadsides and other disturbed sites. It may be a threat to wetland plant species due to its aggressive colonial habit. The species grows so vigorously that it is able to inhibit and eliminate competing species

Photo: Weed Science Society of America



Photo: © Barry Rice, The Nature Conservancy



Control Options: Small populations may be removed by digging but will have to be repeated over a period of several years. Reed canarygrass is very sensitive to tillage such as disking. Fire has been used effectively in wetlands to control reed canarygrass. Shading by emerging forests will eventually eliminate reed canarygrass.



Photo: ©John M Randall, The Nature Conservancy

Herbicide Options: Due to its affiliation with wetlands, due care

should be taken before treating with herbicides. Rodeo (a glyphosate formulation approved for use in wetlands) is most effective when applied in early spring or in September before first hard frost.

Illustration: NRCS PLANTS database



Common Name: Smooth cordgrass
Spartina alterniflora Loisel.

Similar Species: Denseflower cordgrass (*Spartina densiflora* Brongn.), English cordgrass (*Spartina anglica* C.E. Hubbard), and saltmeadow cordgrass (*Spartina patens* (Ait.) Muhl.)

Related Species: There are no native *Spartina* species in Alaska.

Description: Erect, rhizomatous, salt tolerant grasses. Plants one to four feet tall. **Ligules consist of a copious fringe of fine hairs.** Leaf blades generally inrolled. Leaves lack auricles. Round hollow stems.

Smooth cordgrass: Plants two to four feet tall. The stems are hairless. The leaf blades are 1/4 to 3/5 inches wide. The flowers are inconspicuous and are borne in greatly congested spikes, two to three inches long. Plants deciduous, stems die back at the end of each growing season. Leaf blades 8-24 in long, tough, green-gray in color, 1/4 to 5/8 in. wide becoming folded at the tip. Stems 2-8 ft long with dense colorless flowers. Panicle of many spikes closely appressed and overlapping. Inflorescence to 16 in. long having 5-20 spike-like branches to 5 in. long. Flowers occur only on branch undersides. Grows between mean higher high water and mean lower low water.

Dense-flowered cordgrass: Plants 1-5 ft. in height. Leaf blades narrow long and **inrolled**, tough, grayish-green color and 1/4-1/3 inch in width. Inflorescence 2-12 in. long with dense compact colorless flowers. Grows in upper intertidal zone near mean high water, among glasswort (*Salicornia* spp.) or just below on open mud.

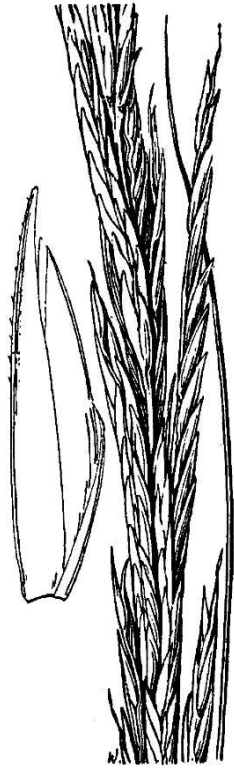
Saltmeadow cordgrass: Plants 1 to 4 feet tall. The hairless leaf blades are 4 to 20 inches long and 1/3 to 1 1/2 inches wide at the base. When fresh, leaf blades are generally **inrolled** and have ridges on the upper surface. Flowers occur in two to several *spikes* that are appressed to somewhat spreading forming dense turf or sod with fine matted decumbent stems. Leaf blades strongly inrolled, green, 1/4-3/4 in. in width. Stems 6-30 in long. Inflorescence 2-9 in. long with 1-4 (2-13) spikes. Spikes 3/8-3 in. long and ascend or diverge from the stem. Flowers are colorless. Mid to upper salt marsh zones, dunes, swales, sand flats, coastal scrublands.

S. alternifolia Photo: NRCS PLANTS database



English cordgrass: Hybrid species with highly variable morphology. Stiff plants 1-4 ft. tall, with stout stems 3/16 inch or more in diameter. **Leaves protrude at angles more or less perpendicular to stem.** The leaf blades flat or inrolled, persistent or falling, green or gray-green, 3/16 to 1/2 inch wide. Flowers in numerous, erect, contracted panicles, consisting of closely overlapping spikelets in two rows on one side of the rachis. Inflorescence 4-16 in. long with 2-12 spikes. Spikes 6-8 in. long. Panicles erect and dense with spike

slightly spreading. Flowers are colorless. Inhabits low to high marsh zones.



S. alternifolia Illustration: NRCS PLANTS database

Life History: All *Spartina* species are perennials, spreading by seeds or rhizomes, growing in ring-shaped clones, which coalesce into extensive monospecific stands.

Where Found: *Smooth cordgrass:* Native to the east coast of the US. Commonly found in marshes of San Francisco Bay CA, Willapa Bay, Puget Sound, Straits of Juan de Fuca WA, Suislaw Estuary, OR.

English cordgrass: Marin County, San Francisco Bay CA, Skagit, Island, Snohomish, San Juan, Kitsap, Jefferson, and King counties WA. Recently found in BC.

Dense-flowered cordgrass: Native to South America. Found in Humboldt Bay, San Francisco Bay, Marin County CA, and Grays Harbor WA.

Saltmeadow cordgrass: Native to upper reaches of salt marshes in eastern US coast. Found in BC, WA, OR, CA, China and the Mediterranean.

Habitat: All four species are saltwater-loving grass that colonize tidal marshes. In its native range, *Spartina alterniflora* exhibits varying growth forms in different salt marsh zones. A tall form occurs along creek banks and drainage channels. Landward of the tall form, an intermediate form occurs, which grades into a stunted form at the marsh interior.

Impacts: Invasion of mudflats and channels and conversion to marsh. Loss of mudflat and channel may impact foraging for numerous shorebirds and waterfowl. Increased rates of sedimentation leading to clogging of sloughs, raising them to overall elevation of the marsh plain. Out competes glasswort (*Salicornia virginica*) which provides habitat for a number of bird and animal species. May displace sea grass (*Zostera marina*) Arrow-grass (*Triglochin maritimum*) Studies indicate populations of invertebrates in *S. alterniflora* clones are smaller than populations in intertidal mudflats. Juvenile chum salmon may lose important food resources and other important attributes of mudflat nurseries.

Fun Facts: The roots are a favorite food of snow geese.

Common Name: Timothy

Scientific Name: *Phleum pratense* L.

Family: Grass family, (Poaceae)

Related Species: Alpine timothy (*Phleum alpinum* L.) is a native grass in Alaska. This species tends to be smaller than timothy, with shorter flower panicles, and the leaf sheaths of upper cauline leaves are inflated, although this is often difficult to observe in the field. Alpine timothy is the only native *Phleum* species in North America.

Description: Grass with flowers borne in compact, cylindrical panicles that are spike-like, dense, cylindrical and several times longer than wide. Horned spikelets very distinct. Stems to 3 feet tall, bulbous at the base, with fibrous roots.

Life History: Cool-season, short-lived perennial bunchgrass.

Where Found: Throughout Southeast Alaska, very common in Anchorage, and found around Seward. A native Eurasian plant, it is now widely distributed throughout the temperate regions of the world.

Impacts: An introduced weed that appears to be restricted to disturbed sites. Not thought to pose a threat to native plant communities. Report

findings of this plant if found in undisturbed habitats or remote locations.

Fun Facts: Timothy was introduced to the United States by agronomist Timothy Hanson. Timothy is considered by many to be the finest grass for producing hay.

Photo: James R. Johnson, NRCS PLANTS database



Common Name: Foxglove

Scientific Name: *Digitalis purpurea* L.

Family: Figwort family
(Scrophulariaceae)

Similar Species: First year growth has been mistaken for comfrey (*Symphytum officinale*) with fatal results.

Description: Biennial, 2-4 feet tall, unbranched. Leaves soft, hairy, toothed and lance- to egg-shaped. Basal leaves to 12 inches long. Flowers bell-shaped, very showy, purple with purple mottling on the inside, borne on a spike, arranged on one side of spike.

Life History: Biennial.

Where Found: Widely planted as a garden ornamental, it has escaped cultivation and commonly seen along ditches in most of the towns in Southeast Alaska. Very abundant in Sitka.

Photos: Tom Heutte USDA Forest Service



Habitat: Native to Europe, this plant is widely cultivated. It is a common garden escape and is naturalized in the U.S. Pacific Northwest. Does best in siliceous or loam soil, but needs very little soil to survive. It is often found in the crevices of granite walls, dry hilly pastures, roadsides, logged-off areas, and rocky places.

Impacts: An introduced weed that appears to be restricted to disturbed sites. Not thought to pose a threat to native plant communities. Report findings of this plant if found in undisturbed habitats or remote locations.

Fun Facts: This plant is source of the cardiac drug digitalin, which makes the plant highly poisonous. The earliest known name for this plant is the Anglo-Saxon "foxes glofa" (the glove of the fox). It derives its name from the flowers which resemble the fingers of a glove and possibly from a northern legend that bad fairies gave the blossoms to the fox to put on his toes, so that he might soften his tread while he hunted for prey.

Common Name: Yellow Toadflax or butter-and-eggs, Dalmatian toadflax

Scientific Name: *Linaria vulgaris* P. Mill. (yellow toadflax); *Linaria dalmatica* (L.) P. Mill. (dalmation toadflax)

Family: Figwort family (Scrophulariaceae)

Related Species: Indian paintbrushes (*Castilleja* spp.), yellow rattle (*Rhinanthus minor*).

Description: Yellow toadflax: 1-25 stems per plant; woody, smooth, erect, leafy, often in clumps to 2 ½ feet tall. Numerous pale green leaves to 3 inches long, alternate, narrow and pointed at both ends. Flowers borne at the end of each stem in spike-like clusters, yellow, with **central bearded orange patch**, one inch long, similar to snapdragons with a spur extending below the lower lip of the corolla.

Dalmatian toadflax: Plants to five feet tall. Leaves are broad 1-2 inches long, oval to lance-shaped, crowded and clasping on the stems. Flowers similar to yellow toadflax. Dalmatian toadflax is a larger plant with broader leaves than yellow toadflax.

Life History: An aggressive perennial that can reproduce by seeds or rhizomes. Persistent colony-forming perennial. Toadflaxes require disturbance to establish on a site. Taproots may penetrate the soil to three feet deep and extend ten feet away from the parent plant. Roots have buds that can break off into independent plants. Seeds remain dormant in the soil up to ten years.

Where Found: Commonly found throughout Southcentral Alaska, particularly near settlements or developed features. Also found in the interior. One occurrence found in Juneau in 2003. Pojar and MacKinnon (1994) and Hulten (1968) report yellow toadflax in Skagway.

Habitat: Common in roadsides, fields, waste areas, railroad yards, pastures, and edges of forests, occasionally in mountain meadows.

Impacts: Toadflaxes are on the noxious weed lists of nine western states. Toadflaxes infest 70,000 acres in Colorado.

Yellow Toadflax Photo: Brother Alfred Brousseau



Fun Facts: Both species were introduced into North America by gardeners. Farmers in New England have abandoned fields taken over by yellow toadflax. A mature Dalmatian toadflax can produce 500,000 seeds in a year. Because it was easy to grow and hardy, it was often chosen to brighten the yards of mining towns. Most of these towns are long abandoned, but the butter-and-eggs live on.

Dalmatian toadflax

Photo: Percy Zahl



Control Options: Difficult to control. Management is best done in early summer after flower bud formation but before flowering. Pulling, mowing and tillage alone are effective only if repeated for several years, but will prevent the production of seeds. Any method requires follow-up monitoring

for ten years, the time it takes to exhaust the seed bank.

Herbicide Options: Chemical methods are effective when used as a follow-up to other methods such as pulling or mowing. Dicamba is effective when applied in early spring. Chlorsulfuron is effective in the bud-bloom stage. Glyphosate and dicamba are considered effective. Use dicamba cautiously as it is active in the soil and can be absorbed by the roots of desirable vegetation. Yellow toadflax is much more resistant to chemical control. 2,4-D, MCPA, MCPB, and mecoprop do not control toadflax. Repeated applications may be necessary for some chemical combinations.

Common Name: Brittlestem hempnettle

Scientific Name: *Galeopsis tetrahit* L.

Family: Mint family (Lamiaceae)

Similar Species: Other hempnettles (*Galeopsis bifida* Boenn.), and deadnettle (*Lamium album* L.). Yellow hempnettle (*G. speciosa*) is more robust.

Description: Flowers purple, pink, white or pale yellow with dark variegated markings; in dense clusters at base of leaf stalks. Stems branched, **bristly-haired, square** in cross section, **swollen beneath the leaf stalks**. Leaves opposite on stalks, egg-shaped to lance-shaped with large rounded teeth and pointed tips. Leaves prominently veined and covered with bristly hairs.

Life History: Annual, reproduces from seed. One plant can produce several hundred plants. Seeds remain viable in soil for several years.

Photos: Tom Heutte USDA Forest Service



Where Found: Widespread in the Seward area, Juneau, Sitka. It has also been found at Murder Cove on the south tip of Admiralty Island and various locations in Southcentral Alaska.

Habitat: Waste areas, disturbed sites, low woods, railroads

Impacts: The plant is an aggressive weed that will spread to form monocultures in areas of establishment. There is high potential for this plant to invade native woodlands.

Fun Facts: The genus name *Galeopsis* means "looks like a weasel" as early botanists thought that is what the corolla resembled, and the species epithet means "four-parted," probably for the ovary of the plant.

Control Options: Hand pull, using care to remove taproot.

Herbicide Option: Resistant to 2,4-D other herbicides are registered for control of hemp-nettle.



Illustration: NRCS PLANTS database



Common Name: Common St. Johnswort, Klamath weed.

Scientific Name: *Hypericum perforatum* L.

Family: St. Johnswort family (Clusiaceae)

Related Species: At least eighteen species of Saint Johnswort are found in the United States.

Description: Numerous erect stems from a stout taproot. Leaves opposite, up to one inch long, lacking a leaf stalk. **Tiny transparent dots** visible when leaves held up to a bright light. Flowers with five bright yellow petals ½ inch long with **deep purple dots** along petal margins and showy yellow stamens with purple tips.

Life History: Perennial reproduces from seed and vegetatively from roots. Root buds may separate from the parent to form new plants. One plant may produce 15,000-20,000 seeds.

Where Found: Hoonah, Sitka.

Photo: © John M. Randall, The Nature Conservancy



Habitat: Rangeland areas and pastures (especially when poorly managed), fields, roadsides, forest clearings in temperate regions with cool, moist winters and dry summers. Grows best in open, disturbed sites and on slightly acidic to neutral soils. Does not tolerate saturated soils.

Impacts: One of the most aggressive weeds in the Pacific Northwest. Invades prairie meadows in CA, OR, WA

Fun Facts: Employed to alleviate nervous disorders, but also contains a phototoxin which causes sensitive persons to become susceptible to skin burns, especially after exposure to sunlight. St. Johnswort was introduced to the United States in the 17th Century by the Rosicrucians.

Control Options: Tillage may be employed to eliminate St. Johnswort. Biocontrol by beetles of the genus *Chrysolina* has been successfully used to control St. Johnswort.

Herbicide Options: combinations of 2,4-D before blossoms open, preferably on new seedlings just after germination.

Common Name: Purple loosestrife

Scientific Name: *Lythrum salicaria* L. and *L. virgatum* L.

Family: Loosestrife family (Lythraceae)

Similar Species: Fireweed (*Epilobium angustifolium*) has leaves alternate on the stem pink flowers borne in long terminal clusters composed of four pinkish-purple petals and four purplish to green sepals.



Photo: © Barry Rice, The Nature Conservancy

Description: Stems square in cross section, to six feet tall, branched, soft haired, from an extensive root system. Flowers borne in leafy stalks, 1-16 inches long. Flowers of 6 green sepals, 5-7 magenta or rarely pink or white petals about ½ inch long. Sepals and petals are fused to form a tube at the

base of the flower. Leaves opposite or whorled on the stem, lack stalks, and are lance-shaped, 1-4 inches long.

Life History: Perennial, reproduces from seed but also forms new stems from buds on the thick taproot.

Where Found: Purple loosestrife has not been reported growing wild in Alaska but is included here due to its tremendous destructive potential. A listed noxious weed in several states including Illinois, Minnesota, Ohio, Wisconsin, and Washington, but sold legally in Alaska.

Habitat: Favors moist, organic soils but tolerates a wide variety of habitats and can thrive on poor sites. Capable of invading many wetland types, including freshwater wet meadows, tidal and non-tidal marshes, river and stream banks, pond edges, reservoirs, and ditches.

Impacts: Escaped from cultivation, purple loosestrife has spread rapidly in wetland areas around much of the United States and Canada. It is most abundant in the Northeastern US, the Midwest and adjacent Canada, with scattered locations around the west. It forms dense monospecific stands that eliminate other native species. Purple loosestrife provides poor cover and little food or nesting space for birds and other wildlife. In the US, Purple loosestrife causes loss of up to 190,000 hectares of habitat each year. It tolerates a wide variety of soils and soil conditions.



Photo © John M. Randall, The Nature Conservancy

Control Options: Small populations may be hand pulled. Hand pulling should be done before the plants produce seeds in the late summer. Medium-sized infestations may be controlled with spot applications of glyphosate. Larger infestations have proved difficult to impossible to eradicate. Burning, mowing, flooding and cutting have proved largely ineffective. Several species of beetle are being released to control loosestrife with some success.

Herbicide Options: Glyphosate is effective in the late-flowering stage. Use the proper formulation of glyphosate in and near wetlands.

Common Name: Marsh Forget-me-not

Scientific Name: *Myosotis scorpioides* L. (synonym: *Myosotis palustris* (L.)Nath.)

Family:Borage family (Boraginaceae)

Related Species: The Alaska state flower is the forget-me-not (*Myosotis alpestris* F.W. Schmidt).

Description: Creeping plants, fibrous rooted, often forming adventitious roots where the stem meets the soil. Small blue, lobed, flowers, petals fused basally into a bright yellow tube.

Life History: Rhizomatous marginal aquatic perennial

Where Found: Grows across the United States, introduced from Europe.

Photos: Tom Heutte USDA Forest Service



Habitat: Frequent in marshy places or beside burns, wet places by streams and ponds. Can grow in heavy clay soil. Grows in acid, neutral and basic soils. Can grow in semi-shade (light woodland) or no shade. Requires moist or wet soil and can grow in water.

Impacts: An introduced weed that appears to be restricted to disturbed sites. Not thought to pose a threat to native plant communities. Report findings of this plant if found in undisturbed habitats or remote locations.

Fun Facts: Folklore has it that a concoction made of parts of the forget-me-not will harden steel.



Photo: Rober Mohlenbrock USDA NRCS



Common Name: Plantain

Scientific Name: *Plantago major* L. (common, or broadleaf plantain);
Plantago lanceolata L. (narrowleaf, or english plantain)

Family: Plantain family (Plantaginaceae)

Related Species: In Alaska, the seashore plantain (*P. macrocarpa* Cham. & Schlect), goosetongue (*P. maritima* L.), gray pubescent plantain (*P. canescens* Adams), and redwool plantain (*P. eriopoda* Torr.) are all native.

Description: Common plantain: Leaves all basal, stalked, and broadly elliptic to egg-shaped leaves with strong parallel veins. Edges of leaf stalks curve upward. Flowering stems eight inches tall with inconspicuous flowers borne in a spike-like inflorescence.

Narrowleaf plantain: Perennial from fibrous roots. Flowering stems several, grooved. Leaves all basal, strongly veined or ribbed lengthwise, lance shaped to narrowly elliptic. Flowers greenish, small, borne in a dense spike.

Photos: Weed Science Society of America



Plantago major

Life History: Perennial, reproduces by seed.

Where Found: All over in waste places, roadsides, near homes, and other developed sites in Southeast and Southcentral Alaska, and in the interior.

Habitat: Shores, stream banks, flats and ditches, also in disturbed places, lawns, cultivated fields, trails, roadsides and gardens; common. Introduced from Europe and established as a weed throughout the U.S., most of Canada, and elsewhere.

Impacts: Both are introduced weeds that appear to be restricted to disturbed sites. Not thought to pose a threat to native plant communities. Report findings of this plant if found in undisturbed habitats or remote locations.

Fun Facts: Dried leaves of this plant are used in anti-smoking herbal tonics. The rattlesnake plantain (*Goodyeara* sp.) is a native orchid.



Plantago lanceolata

Common Name: Japanese knotweed, japanese bamboo, mexican bamboo.

Scientific Name: *Polygonum cuspidatum* Sieb & Zucc.

Related Species: Giant knotweed
Polygonum sachalinense F. Schmidt ex Maxim (*Fallopia japonica*)
Family: Buckwheat family
(Polygonaceae)

Description: Forms **extremely dense stands** that can shade out all competing vegetation. Stems to ten feet tall, **hollow, bamboo-like** with thickened nodes where the leaf stalks meet the stem. Nodes surrounded by thin papery sheaths. Stems angled slightly at each node. Leaves broadly oval, satiny-textured, to six inches long with short petioles. Branched sprays of small white to greenish-white flowers in late summer. Giant knotweed is similar in appearance but has much larger leaves and stems.

Life History: Herbaceous perennial. Dies back, turning bright yellow before dropping leaves in the fall. Underground rhizomes overwinter. Reproduces from spread of rhizomes or broken-off pieces of stem. Plants are dioecious, having male and female plants. Knotweed does not reproduce by seed in our range due to the absence of male plants to pollinate the females. However, male plants of giant knotweed have been found in Oregon and Washington and could potentially be in Alaska. These plants are known to hybridize with the more common japanese knotweed and produce fertile offspring.

Photo: Bradley Kriekhaus USDA Forest Service



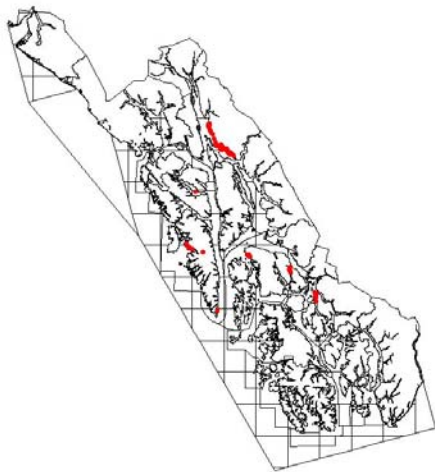
Where Found: Most communities in southeast Alaska, except Hoonah.

Habitat: An escaped ornamental often found in waste places, neglected gardens, roadsides, and along streambanks. As the name indicates, Japanese knotweed is a native of Japan that has become established in much of North America, where it is found from Newfoundland and many parts of the northeastern US, west to California, and the Pacific Northwest.

Impacts: Aggressive invader of riparian plant communities. In Oregon and Washington, Japanese knotweed has spread downriver from communities and completely taken over riverbanks and streambeds. If spread occurs in riparian

zones, **negative impact on aquatic species is deemed highly likely.** In southeast Alaska, knotweed has been observed to spread rapidly through the understory of alder, choking out the growth of native plants in older landslide-disturbed areas. Knotweed has caused expensive damage by cracking paved parking lots.

Fun Facts: Japanese knotweed requires human intervention or transport by water for its spread beyond a particular clump. Knotweed is a rapid colonizer of bare soil and has been used to stabilize soil on steep slopes. Knotweed has been spread around many of our communities by dumping soil and possibly cut brush along roadsides. Single plants may cover several acres. One clump along the beachfront south of Juneau is about ¼ mile long. Japanese knotweed grows, in its native range, high on the slopes of Mt. Fuji. Research at Leister



reproduction of salmon and other University in the UK has shown that all knotweed plants in Europe, North America and the UK are descended from a single female plant.

Control Options: Repeated cutting of knotweed is not effective at curbing its growth. Pulling knotweed can be difficult due to the extensive growth of its roots and rhizomes.

Herbicide Options: Spray glyphosate on foliage of actively growing plants late in the summer. Application with a wick applicator such as a paintbrush or roller can minimize damage to desirable vegetation. Stem injection devices are being marketed. These may be preferable to people who are averse to spray application, but is much more time consuming, as each stem must be treated separately.



Common Name: Creeping buttercup

Scientific Name: *Ranunculus repens* L.

Family: Buttercup family
(Ranunculaceae)

Related Species: Hulten (1968) lists 35 species of native buttercups (*Ranunculus* spp.) in Alaska.

Description: Creeping perennial. Basal leaves hairy, compound, three-parted, and toothed, with distinctive **pale spots**. Leaf stalks more than one foot long. Flowers deep yellow with waxy petals and, large, hairy sepals. Ingesting or chewing this plant has been reported to cause irritation to skin and burns.

Life History: As the name implies, reproduces vigorously by runners. Roots at lower nodes of stems.



Where Found: Along trails and in yards near Seward, in urban or settled areas in Southeast Alaska. Near abandoned home sites it can still be found underneath alder along the shore.

Habitat: Favors damp or wet grassy places. Abundant on roadsides, in grassland, woods, and as a garden weed.

Impacts: A common sight in Southeast Alaskan Lawns. In many cases, it *is* the lawn. An introduced weed that appears to be restricted to disturbed sites. Not thought to pose a threat to native plant communities. Report findings of this plant if found in undisturbed habitats or remote locations.

Control Options: Very resistant to herbicides such as 2,4-D and dicamba used in home-market “weed and feed” mixes.

Common Name: Common chickweed

Scientific Name: *Stellaria media* (L.) Vill.

Family: Pink family (Caryophyllaceae)

Related Species: There are several native species of *Stellaria* in Alaska, including northern starwort (*Stellaria calycantha* (Ledeb.) Bong.) and curled starwort (*Stellaria crispa* Cham. & Schlecht.). They are taxonomically difficult to separate.

Similar Species: mouseear chickweed (*Cerastium vulgatum*).

Description: Creeping stems root at the nodes on one side. Stems with a conspicuous line of hairs on one side. Leaves to 1-½ inches long, upper leaves without stalks, lower leaves hairy toward base. Flowers white ¼ inch across.

Photos: Mark Bierner, University of Texas



Life History: Annual, reproduces by seed or by stems rooting at internodes. Often hitchhikes in the root balls of nursery stock trees.

Where Found: Scattered in developed or disturbed areas around Southeast and Southcentral Alaska, including old and current mine sites, lawns, gardens.

Habitat: Moist woodlands, uplands. Now a common weed almost worldwide.

Impacts: An introduced weed that appears to be restricted to disturbed sites. Not thought to pose a threat to native plant communities. Report findings of this plant if found in undisturbed habitats or remote locations.

Fun Facts: Externally, relieves itching and inflammation and is generally soothing and moisturizing. Can be used for any minor skin infections or irritations, and is an ingredient in a number of commercial skin care products.



Common Name: Giant Hogweed

Scientific Name: *Heracleum mantegazzianum* Sommier & Levier

Family: Carrot family (Apiaceae)

Related Species: Cowparsnip (*Heracleum maximum* Bartr.) is native to and very common in Southeast Alaska.

Description: **Enormous** herbaceous plants to **15 feet tall**. Stems hollow. Leaves compound with three leaflets. Lower leaves to seven feet long. Flowers white, in an umbrella-like inflorescence up to two feet in diameter.

Life History: Perennial herb that dies back to the ground in winter. Reproduces from seed and buds formed from root systems. Seeds are spread by water movement in streams and drainage ditches.

Where Found: Native to the Caucasus Mountains of Asia. Not known in Alaska but common in Washington State and Vancouver Island.

Habitat: May colonize a wide variety of habitats but is most common along roadsides, other rights-of-way, vacant lots, streams and rivers.

Impacts: Exposure to sap causes skin to be sensitized to ultraviolet light, leading to **severe swelling, blisters, eruptions and burns** that are similar to but much more severe than those caused by exposure to native cowparsnip. Giant hogweed forms dense colonies, shading out and effectively excluding other vegetation.

Fun Facts: Giant hogweed is listed in *The Guinness Book of World Records* as the worlds largest weed. The dried fruits of giant hogweed are used as a spice in Iranian cooking known in Farsi as *golpar*. The song *Attack of the Giant*

Hogweed was on the album *Nursery Cryme* by the rock band Genesis.

Control Options: Always wear protective clothing when handling this plant, including: rubber gloves, disposable coveralls, chemical splash goggles. Cutting or mowing will not immediately kill the plant, but may be effective if repeated at regular intervals (3-4 times per season) on the resprouting plants to eventually exhaust nutrient reserves stored in the root system. Digging is effective if care is taken to remove as much of the root system as possible.

Herbicide Options: Selective herbicides such as 2,4-D and dicamba will kill back foliage but will not kill the roots. A systemic herbicide such as glyphosate is effective. Apply glyphosate in spring or early summer when plants are less than three feet tall if they can be distinguished from native cowparsnip. A follow-up spray in mid summer is recommended.



Common Name: Himalayan balsam, policeman's helmet, touch-me-not, Indian jewelweed, ornamental jewelweed.

Scientific Name: *Impatiens glandulifera*
Royle

Family: (Balsaminaceae)

Similar/Related Species: Jewelweed (*Impatiens noli-tangere*), a common native wildflower. Can be distinguished from *I. glandulifera* by its more coarsely serrated teeth and much smaller sized plants

Description: Herb with thick, many-branched, hexagonally angled stems to 10 feet tall. Stems smooth, multi-branched, reddish in color, but can also be green with large swollen nodes and glands at the nodes. Lower leaves opposite upper leaves whorled with three leaves to a node. Leaves lance-shaped to lance-ovate, six inches long, from a stout petiole. Leaf margins finely, sharply serrated. Irregular flowers one inch in length, pink-purple to white, with five petals, two fused together and five stamens with fused filaments. Flowers are supported from above by a curved pedicel.

Life History: Annual, reproduces from seeds only.

Where Found: Not yet found in Alaska. A noxious weed in British Columbia and Washington State. Has colonized many rivers on the European continent after introduction, and outcompetes native vegetation.

Habitat: Forests, and stream banks, roadside, wet meadows, yards and gardens. Prefers moist soils and tolerates low light. Thrives in riparian zones, seeds spread quickly downstream.

Impacts: Ability to reseed in very dense stands allows it to outcompete other vegetation. Competes with native plants for pollinators such as bumblebees.

Fun Facts: Mature seed pods of *Impatiens* spp. will explode when touched, ejecting the seeds up to twenty feet. Unfortunately, *I. glandulifera* is still popular with gardeners.

Control Options: Pulling, mowing or cutting is effective. Treat before seed set. Seed bank viability is two years.

Herbicide Options: 2,4-D or Glyphosate. Treat before flowering if possible.

Photos: King County Washington



Policeman's helmet towering over weed specialist

Common Name: Spurge laurel

Scientific Name: *Daphne laureola* L.

Family: Mezerium family
(Thymeliaceae)

Similar Species: Plants and foliage are similar to common rhododendron but fruits and flowers differ.

Related Species:

Description: Evergreen shrub to 3 feet. Leaves crowded around the twigs oblong-lance shaped 1 ¼ to 5 inches long, ½ to 1 ¼ inches wide, dark glossy green above, lighter beneath, narrow at base. Flowers yellowish-green ¼ to 1/3 inch long in dense axillary cluster in early spring. Fruit oval, black.

Life History: Perennial

Where Found: Not reported in Alaska. An aggressive invasive escaped from cultivation in Washington State and British Columbia.

Impacts: Threatens endangered plant species in garry oak meadows in BC

Ironic Fact: This plant is listed as threatened with extinction in its native range in Eastern Europe



Photos: © D. R. Allan



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<http://www.cnipm.org/>

Guide to Poisonous Plants Website, http://www.vth.colostate.edu/poisonous_plants.

The Nature Conservancy Wildland Invasive Species Team website,
<http://tncweeds.ucdavis.edu/>.

King County, Washington Invasive Plants
<http://www.dnr.metrokc.gov/wlr/lands/weed>

Plant Conservation Alliance, Bureau of Land Management, 1849 C Street NW, LSB-204, Washington, DC 20240, Phone: (202) 452-0392, plant@plantconservation.org,
<http://www.nps.gov/plants/alien/>

USDA NRCS PLANTS National Database , <http://plants.usda.gov/>.

Weed Science Society of America Virtual Herbarium
<http://www.wssa.net/subpages/weed/herbarium0.html>

Appendix 1: Scientific Names, Synonyms, Common Names, NRCS Codes

Scientific Name	Family	Other names used	Common Name	PLANTS code
<i>Acroptilon repens</i> (L.) DC	Asteraceae	<i>Centaurea picris</i> Pallas ex Willd., <i>Centaurea repens</i> L.	Russian knapweed, hardheads	ACRE3
<i>Alliaria petiolata</i> (Bieb.) Cavara & Grande	Brassicaceae	<i>Alliaria alliaria</i> (L.) Britt., <i>Alliaria officinalis</i> Andr. ex Bieb., <i>Erysimum alliaria</i> L., <i>Sisymbrium alliaria</i> (L.) Scop.	garlic mustard	ALPE4
<i>Brassica rapa</i> var. <i>rapa</i> L.	Brassicaceae	<i>Brassica rapa</i> L. var. <i>rapa</i> , <i>Brassica campestris</i> L., <i>Brassica campestris</i> L. var. <i>rapa</i> (L.) Hartman, <i>Brassica campestris</i> L. ssp. <i>rapifera</i> (Metzger) Sinsk., <i>Brassica rapa</i> L. ssp. <i>campestris</i> (L.) Clapham, <i>Brassica rapa</i> L. var. <i>campestris</i> (L.) W.D.J. Koch, <i>Brassica rapa</i> L. ssp. <i>olifera</i> DC., <i>Brassica rapa</i> L. ssp. <i>sylvestris</i> Janchen, <i>Caulanthus sulfureus</i> Payson	field mustard	BRRAR
<i>Centaurea biebersteinii</i> DC.	Asteraceae	<i>Acosta maculosa</i> auct. non Holub, <i>Centaurea maculosa</i> auct. non Lam.	spotted knapweed	CEBI2
<i>Cirsium arvense</i> (L.) Scop.	Asteraceae	<i>Carduus arvensis</i> (L.) Robson, <i>Cirsium arvense</i> (L.) Scop. var. <i>argenteum</i> (Vest) Fiori, <i>Cirsium arvense</i> (L.) Scop. var. <i>horridum</i> Wimmer & Grab., <i>Cirsium arvense</i> (L.) Scop. var. <i>integrifolium</i> Wimmer & Grab., <i>Cirsium arvense</i> (L.) Scop. var. <i>mite</i> Wimmer & Grab., <i>Cirsium arvense</i> (L.) Scop. var. <i>vestitum</i> Wimmer & Grab., <i>Cirsium incanum</i> (Gmel.) Fisch., <i>Cirsium setosum</i> (Willd.) Bess. ex Bieb., <i>Serratula arvensis</i> L.	Canada thistle	CIAR4
<i>Cirsium vulgare</i> (Savi) Ten.	Asteraceae	<i>Carduus lanceolatus</i> L., <i>Carduus vulgaris</i> Savi, <i>Cirsium lanceolatum</i> (L.) Scop., non Hill, <i>Cirsium</i>	bull thistle	CIVU

		<i>lanceolatum</i> (L.) Scop. var. <i>hypoleucum</i> DC.		
<i>Cotula coronopifolia</i> L.	Asteraceae		common brassbuttons	COCO7
<i>Crepis capillaris</i> (L.) Wallr.	Asteraceae		smooth hawksbeard	CRCA3
<i>Crepis tectorum</i> L.	Asteraceae		narrowleaf hawksbeard	CRTE3
<i>Cytisus scoparius</i> (L.) Link	Fabaceae	<i>Sarothamnus scoparius</i> (L.) Wimmer ex Koch	scotchbroom	CYSC4
<i>Dactylis glomerata</i> L.	Poaceae		orchardgrass	DAGL
<i>Digitalis purpurea</i> L.	Scrophulariaceae		purple foxglove	DIPU
<i>Galeopsis tetrahit</i> L.	Lamiaceae		brittlestem hempnettle	GATE2
<i>Heracleum mantegazzianum</i> Sommier & Levier	Apiaceae		giant hogweed	HEMA17
<i>Hesperis matronalis</i> L.	Brassicaceae		dames rocket	HEMA3
<i>Hieracium aurantiacum</i> L.	Asteraceae		orange hawkweed	HIAU
<i>Hieracium umbellatum</i> L.	Asteraceae	<i>Hieracium scabriusculum</i> Schwein., <i>Hieracium scabriusculum</i> Schwein. var. <i>perhirsutum</i> Lepage, <i>Hieracium scabriusculum</i> Schwein. var. <i>saximontanum</i> Lepage, <i>Hieracium scabriusculum</i> Schwein. var. <i>scabrum</i> (Schwein.) Lepage	narrowleaf hawkweed	HIUM
<i>Hordeum jubatum</i> L.	Poaceae		foxtail barley	HOJU
<i>Hypericum perforatum</i> L.	Clusiaceae		common St. Johnswort	HYPE
<i>Hypochaeris radicata</i> L.	Asteraceae		hairy catsear	HYRA3
<i>Impatiens glandulifera</i> Royle	Balsaminaceae	<i>Impatiens roylei</i> Walp.	ornamental jewelweed	IMGL
<i>Lactuca serriola</i> L.	Asteraceae	<i>Lactuca scariola</i> L.	prickly lettuce	LASE
<i>Lapsana communis</i> L.	Asteraceae		common nipplewort	LACO3
<i>Leontodon autumnalis</i> L.	Asteraceae		fall dandelion	LEAU2
<i>Leucanthemum vulgare</i> Lam.	Asteraceae	<i>Chrysanthemum leucanthemum</i> L., <i>Chrysanthemum leucanthemum</i> L. var. <i>boecheri</i> Boivin, <i>Chrysanthemum leucanthemum</i> L. var. <i>pinnatifidum</i> Lecoq &	oxeye daisy	LEVU

		Lamotte, <i>Leucanthemum leucanthemum</i> (L.) Rydb., <i>Leucanthemum vulgare</i> Lam. var. <i>pinnatifidum</i> (Lecoq & Lamotte) Moldenke		
<i>Linaria vulgaris</i> P. Mill.	Scrophulariaceae	<i>Linaria linaria</i> (L.) Karst.	butter and eggs	LIVU2
<i>Lythrum salicaria</i> L.	Lythraceae	<i>Lythrum salicaria</i> L. var. <i>gracilior</i> Turcz., <i>Lythrum salicaria</i> L. var. <i>tomentosum</i> (P. Mill.) DC., <i>Lythrum salicaria</i> L. var. <i>vulgare</i> DC.	purple loosestrife	LYSA2
<i>Matricaria discoidea</i> DC.	Asteraceae	<i>Artemisia matricarioides</i> auct. non Less., <i>Chamomilla suaveolens</i> (Pursh) Rydb., <i>Lepidanthus suaveolens</i> (Pursh) Nutt., <i>Lepidotheca suaveolens</i> (Pursh) Nutt., <i>Matricaria matricarioides</i> auct. non (Less.) Porter, <i>Matricaria suaveolens</i> (Pursh) Buch., non L., <i>Santolina suaveolens</i> Pursh, <i>Tanacetum suaveolens</i> (Pursh) Hook.	disc mayweed	MADI6
<i>Melilotus alba</i> Medikus	Fabaceae		white sweetclover	MEAL12
<i>Myosotis scorpioides</i> L.	Boraginaceae	<i>Myosotis palustris</i> (L.) Hill	true forget-me-not	MYSC
<i>Phalaris arundinacea</i> L.	Poaceae	<i>Phalaroides arundinacea</i> (L.) Raeusch., <i>Phalaris arundinacea</i> L. var. <i>picta</i> L., <i>Phalaroides arundinacea</i> (L.) Raeusch. var. <i>picta</i> (L.) Tzvelev	reed canarygrass	PHAR3
<i>Phleum pratense</i> L.	Poaceae	<i>Phleum nodosum</i> L., <i>Phleum pratense</i> L. var. <i>nodosum</i> (L.) Huds., <i>Phleum pratense</i> L. ssp. <i>nodosum</i> (L.) Arcang.	timothy	PHPR3
<i>Plantago lanceolata</i> L.	Plantaginaceae	<i>Plantago altissima</i> auct. non L., <i>Plantago lanceolata</i> L. var. <i>sphaerostachya</i> Mert. & Koch	narrowleaf plantain	PLLA

<i>Plantago major</i> L.	Plantaginaceae	<i>Plantago asiatica</i> auct. non L., <i>Plantago halophila</i> Bickn., <i>Plantago major</i> L. var. <i>asiatica</i> auct. non (L.) Dcne., <i>Plantago major</i> L. var. <i>intermedia</i> (DC.) Pilger, <i>Plantago major</i> L. ssp. <i>intermedia</i> (DC.) Arcang., <i>Plantago major</i> L. var. <i>pachyphylla</i> Pilger, <i>Plantago major</i> L. var. <i>pilgeri</i> Domin, <i>Plantago major</i> L. var. <i>scopulorum</i> Fries & Broberg	common plantain	PLMA2
<i>Polygonum cuspidatum</i> Sieb. & Zucc.	Polygonaceae	<i>Fallopia japonica</i> (Houtt.) Dcne., <i>Pleuropterus cuspidatus</i> (Sieb. & Zucc.) Moldenke, <i>Pleuropterus zuccarinii</i> (Small) Small, <i>Polygonum cuspidatum</i> Sieb. & Zucc. var. <i>compactum</i> (Hook f.) Bailey, <i>Polygonum zuccarinii</i> Small, <i>Reynoutria japonica</i> Houtt.	Japanese knotweed	POCU6
<i>Ranunculus repens</i> L.	Ranunculaceae	<i>Ranunculus repens</i> L. var. <i>degeneratus</i> Schur, <i>Ranunculus repens</i> L. var. <i>erectus</i> DC., <i>Ranunculus repens</i> L. var. <i>glabratus</i> DC., <i>Ranunculus repens</i> L. var. <i>linearilobus</i> DC., <i>Ranunculus repens</i> L. var. <i>pleniflorus</i> Fern., <i>Ranunculus repens</i> L. var. <i>typicus</i> G. Beck, <i>Ranunculus repens</i> L. var. <i>villosus</i> Lamotte	creeping buttercup	RARE3
<i>Senecio jacobaea</i> L.	Asteraceae		stinking willie	SEJA
<i>Sonchus arvensis</i> L. ssp. <i>arvensis</i>	Asteraceae	<i>Sonchus arvensis</i> L. var. <i>shumovichii</i> Boivin	field sowthistle	SOARA2
<i>Spartina alterniflora</i> Loisel.	Poaceae	<i>Spartina alterniflora</i> Loisel. var. <i>glabra</i> (Muhl. ex Bigelow) Fern., <i>Spartina alterniflora</i> Loisel. var. <i>pilosa</i> (Merr.) Fern.	smooth cordgrass	SPAL
<i>Stellaria media</i> (L.) Vill.	Caryophyllaceae		common chickweed	STME2

<i>Tanacetum vulgare</i> L.	Asteraceae	<i>Chrysanthemum uliginosum</i> Pers., <i>Chrysanthemum vulgare</i> (L.) Bernh., <i>Tanacetum vulgare</i> L. var. <i>crispum</i> DC.	common tansy	TAVU
<i>Trifolium pratense</i> L.	Fabaceae	<i>Trifolium pratense</i> L. var. <i>frigidum</i> auct. non Gaudin, <i>Trifolium pratense</i> L. var. <i>sativum</i> (P. Mill.) Schreb.	red clover	TRPR2
<i>Trifolium repens</i> L.	Fabaceae		white clover	TRRE3

Appendix 2: Noxious Weeds as Listed Under the Alaska Administrative Code (11 AAC 34.020)

(A) The following are prohibited noxious weeds:

Bindweed, field (*Convolvulus arvensis*)
Fieldcress, Austrian (*Rorippa austriaca*)
Galensoga (*Galensoga parviflora*)
Hempnettle (*Galeopsis tetrahit*)
Horsenettle (*Solanum carolinense*)
Knapweed, Russian (*Centaurea repens*)
Lettuce, blue-flowering (*Lactuca puichella*)
Quackgrass (*Agropyron repens*)
Sowthistle, perennial (*Sonchus arvensis*)
Spurge, leafy (*Euphorbia esula*)
Thistle, Canada (*Cirsium arvense*)
Whitetops and its varieties (*Cardaria drabe*, *C. pubescens*, *Lepidium latifolium*)

(B) The following are restricted noxious weeds, with their maximum allowable tolerances:

Annual bluegrass (*Poa annua*), 90 seeds per pound;
Blue burr (*Lappula echinata*), 18 seeds per pound;
Mustard (*Brassica juncea*, *Sinapis arvensis*), 36 seeds per pound;
Oats, wild (*Avena fatua*), seven seeds per pound;
Plantain, buckhorn (*Plantago* sp.), 90 seeds per pound;
Radish (*Raphanus raphanistrum*), 27 seeds per pound;
Toadflax, yellow (*Linaria vulgaris*), one seed per pound;
Vetch, tufted (*Vicia cracca*), two seeds per pound; and