

**Family**  
**Brassicaceae**

# Garlic Mustard



*Alliaria petiolata* (Bieb.) Cavara & Grande

## Alternate Names

Sauce-alone, jack-in-the-hedge, poor man's garlic

## Synonyms

*Alliaria alliaria* (L.) Britt.,  
*Alliaria officinalis* Andrzej.  
 ex. Bieb., *Erysimum*  
*alliaria* L., *Sisymbrium alliaria* (L.) Scop.

## Description

Garlic mustard is a taprooted, herbaceous biennial plant with an erect stem that is unbranched below the inflorescence. It can grow to over 3 feet tall but is generally between 12 and 18 inches tall. First year plants are rosettes of dark green, kidney-shaped leaves up to 4 inches in diameter with distinct leaf veins and scalloped edges. Second year plants have basal leaves that are kidney-shaped and slender-stalked; the stem leaves are 2 1/2 to 4 inches wide, heart-shaped, and alternate and gradually decrease in size. Second year plants have few- to several-branched stems, which are sparsely hairy below. Garlic mustard has short racemes of white, 4-petaled flowers, 1/2 of an inch in diameter. Plants flower in April-June with siliques produced in June-August. This species gives off a strong garlic odor when crushed and is tolerant of cool temperatures.



USDA Forest Service photo by Tom Heutte

### **Similar Species**

There are a number of white-flowered mustards in Alaska, but no others have large, well-developed, and toothed stem leaves or are garlic-scented. Large-leafed avens (*Geum macrophyllum* Willd.) is a native species that is commonly mistaken for garlic mustard rosettes. Avens can be distinguished by their highly dissected leaves divided all the way to the petiole base.



USDA Forest Service photo by Tom Heutte

### **Ecological Impact**

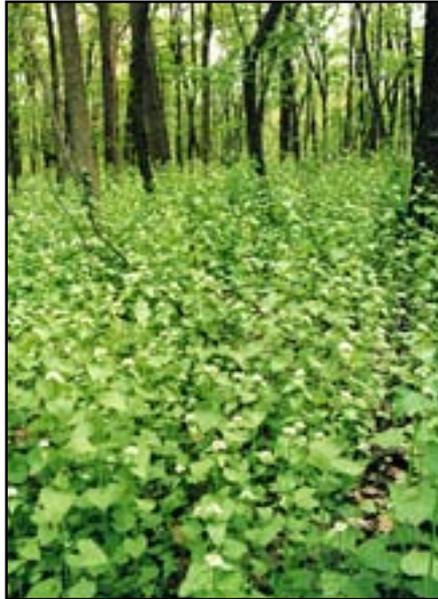
Garlic mustard dominates the understory of forested areas and out-competes native species for light, moisture, nutrients, and space. It readily spreads into undisturbed forests and species-rich sites in the midwestern and northeastern United States, where many impacted species are threatened or endangered. Garlic mustard appears to alter habitat suitability for native birds, mammals, and amphibians, and may affect populations of these species (Nuzzo 2000). For example, it reduces foraging sites for deer and other large herbivores. Garlic mustard also produces allelopathic chemicals that may interfere with the growth of native species. Garlic mustard is regarded as one of the worst invasive plants in many states because of its ability to colonize natural areas.

### **Biology and Invasive Potential**

Garlic mustard flowers readily self-fertilize in the absence of insect visitation, but can also be cross-pollinated by a variety of insects. Its seeds are shiny-black and cylindrical with 8 to 10 per pod; an individual plant can produce up to 8,000 seeds. Seeds may remain viable for 4 to 5 years in the soil (Nuzzo 2000, Byers and Quinn 1998). Continued disturbance promotes greater seed production, which in turn promotes larger populations. In the absence of disturbance, garlic mustard gradually declines to a low,

stable level, although it can rapidly become more abundant with renewed disturbance (Blossey 2003, Nuzzo 2000). It can resprout after removal of the aboveground material (WDNR 2004b). Wind dispersal is limited, and seeds do not float well, although they readily attach to moist surfaces. Garlic mustard may be dispersed by rodents, birds, and deer (Nuzzo 2000). The small seeds are also transported by boots and clothing, as well as by roadside mowing, automobiles, and trains (Rowe and Swearingen 2003).

Garlic mustard is adapted to sand, loam, and clay soil textures, and it frequently grows in well-fertilized sites with pH levels ranging from 5.0 to 7.2. It is successful in many habitat types, however it is usually associated with calcareous soils and does not tolerate high acidity. Garlic mustard prefers moist shaded soil, but can do well in open areas. A cold-stratification period is required for germination. Garlic mustard is listed as a noxious weed in Alabama, Minnesota, Vermont, and Washington and is considered to be “ecologically invasive” in Wisconsin.



*Photo by Elizabeth Csarapata, Invasive Plants of the Upper Midwest, University of Wisconsin Press.*

### **Distribution and Abundance**

Garlic mustard was introduced to the United States for food and medicinal purposes and later escaped from cultivation. Currently, it is distributed from Maine to South Carolina and west through the midwestern states to Washington and Oregon. Garlic mustard is a plant of roadsides, yards and gardens, abandoned fields, river floodplains, forests, forest openings, and wet meadows. As of early 2005, it has only been found in 2 locations in Alaska, both in Juneau. Garlic mustard is native to Europe and has also been introduced to North Africa, India, and New Zealand.

## Management

Hand-pulling, cutting, burning, and herbicide treatments can be successful in controlling or eliminating garlic mustard. During control events, extreme care should be taken to prevent seeds from being moved from the site. Hand-pulling is effective if the entire root is removed through careful pulling; if the upper half of the root remains in the soil, plants will resprout. Hand-pulling is best done in early spring before other plants overgrow a site and make access difficult. Exercise care when using non-selective herbicides that will harm native species. Damage can be reduced by applying herbicides early in the growing season before other plants have sprouted. In southeast Alaska, garlic mustard remains alive and green through the winter, growing immediately after snowmelt. Or use a sponge or wick applicator rather than broadcast spraying. It is essential that an area be monitored for at least 5 years after initial control efforts due to recruitment from the seed bank. Studies are underway to determine effective biological control agents, which may include weevils or flea beetles. If approved by the USDA, these biological control agents may become an option by 2007 (Blossey et al. 2002).

## Notes

Juneau residents are fighting an uphill battle (literally) to eradicate garlic mustard from Alaska. There are several more infestations near the governor's mansion in Juneau that have been hand-pulled several times a year, for the last three years. The plant is edible and was traditionally used in soups and salads.



USDA Forest Service photo by Michael Shephard

# Birdsrape Mustard

*Brassica rapa* L.

## Alternate Names

Turnip, turnip greens, field mustard, Chinese cabbage, seventop, shogun, turnip rape

## Synonyms

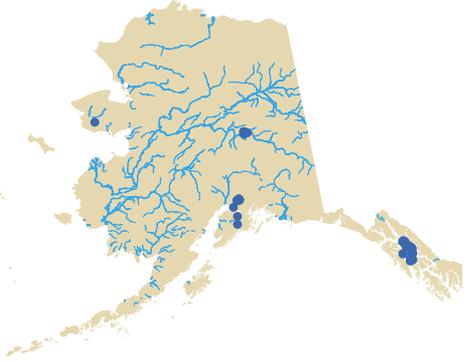
*Brassica campestris* L.

## Description

Birdsrape mustard is a biennial rootcrop (turnip) that functions as an annual plant when cultivated. This species has stems up to 4 feet tall growing from a taproot. The stems and foliage are smooth. Upper and lower leaves clasp the stem and lack stalks, and the lower leaves are deeply lobed and undivided. Each flower has 4 yellow petals. Seed pods are 1 to 4 inches long, and the seeds are 1/32 to 1/16 of an inch in diameter and can be blackish, reddish-brown, or mottled yellow.

## Similar Species

Canola (*Brassica napus* L.) is another cultivated plant that has yellowish-green rather than green leaves and flowering stems that do not lengthen during flowering, unlike birdsrape mustard, which can also be distinguished by its nearly hairless stems and clasping stem leaves.



KULAK photo by Paul Busselen



KULAK photo by Paul Busselen

## Management

Birdsrape mustard can be controlled by hand-pulling.

**Family: Brassicaceae**

**Birdsrape Mustard**

**Notes**

Birdsrape mustard has been found growing in large and dense patches along beach fringes in southeast Alaska (AKEPIC Database 2004). It has been cultivated in Europe for over 4,000 years and is probably native to central and southern Europe; it now occurs throughout the world.



*KULAK photo by Paul Busselen*

# Shepherd's Purse

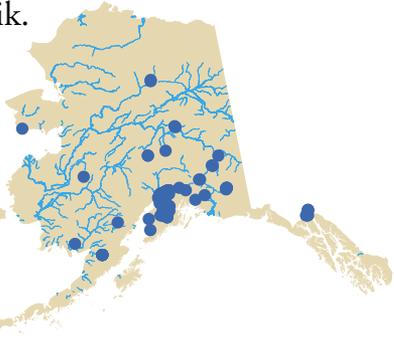
*Capsella bursa-pastoris* (L.) Medik.

## Alternate Names

Pepper plant, shepherd's-pouch, pick pocket, mother's-heart, St. James weed, caseweed, pick-purse, witches'-pouches, toothwort, shovel-plant

## Description

Shepherd's purse is an annual plant that can grow 4 to 20 inches high. It has a rosette of basal leaves 1 to 8 inches long and a thin, branching taproot. Stem leaves are alternate and clasping. Flowers are white and small, with petals 1/16 to 3/16 of an inch long. Seedpods are 1/8 to 3/8 of an inch long and distinctively heart-shaped. The fruiting stem elongates as the fruit matures.



National Park Service photo by Jeff Heys

## Similar Species

A native mustard, lyrate rockcress (*Arabis lyrata* L.), has white flowers and is commonly found in dry, open areas. It can be distinguished from shepherd's purse by the shape of its fruit, which is narrow, 1/2 to 1 1/2 inches long and 1/32 to 1/16 of an inch wide.

## Management

Shepherd's purse is easily pulled up by hand, although several weedings may be necessary to eliminate those germinating from buried seeds (Densmore et al. 2001), which can remain viable for longer than 20 years (J. Conn, pers. comm. 2005).

**Family: Brassicaceae**

**Shepherd's Purse**

**Notes**

Shepherd's purse originated in Europe and is often one of the first plants to flower in the spring. It is the only mustard in North America with triangular fruit.



*National Park Service photo by Penny Bauder*

# Flixweed

*Descurainia sophia* (L.) Webb ex Prantl.

## Synonyms

*Sisymbrium sophia* L., *Sophia sophia* (L.) Britt.

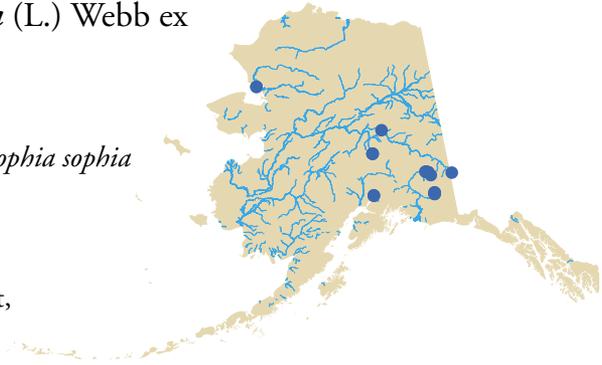
## Description

Flixweed grows to 3 feet, often branching above.

Stems and leaves have star-shaped hairs, giving the plant a grayish green color. Leaves are alternate, stalked, 1 to 4 inches long, and divided 2 to 3 times into narrow segments. The pale yellow flowers are borne in a terminal cluster. The fruit is a narrow pod, 1/2 to 1 1/4 inches long with a long stalk.

## Similar Species

Flixweed can be confused with a number of other pinnately leaved, yellow-flowered native mustards in Alaska. However, this species has star-shaped and not glandular hairs on the stem, which are visible under 5-10X magnification. Unlike flixweed, the native northern tansymustard (*Descurainia sopheroides* (Fisch. ex Hook.) O.E. Schulz) has long stalks and fruits that extend beyond the flower. Mountain tansymustard (*Descurainia incana* (Bernh. ex Fisch. & C.A. Mey.) Dorn ssp. *incana*) has short fruit stalks that are strongly ascending and 4 to 8 seeds in each fruit, rather than flixweed's longer, spreading stalks and 10 to 20 seeds per fruit. *Erysimum* and *Sisymbrium* species are superficially similar to flixweed, but members of *Erysimum* have closely appressed, straight, 2- to 3-pronged hairs, and those of *Sisymbrium* have unbranched hairs.



US Geological Survey photo by Chris McKee

**Management**

Flixweed does not normally persist without disturbance and so may not require direct control measures (Densmore et al. 2001), although it is easily controlled using herbicide.

**Notes**

This plant was introduced from Europe. The common name flixweed comes from its formerly supposed remedy for flux, another word for dysentery. In 1742, “flux” first appeared in print in the English language in the 4th edition of London and Country Brewer in the form of flux ale, rumored to cause dysentery, while a flixweed concoction was recommended to cure it.



*XID Services photo by Richard Old*

# Sweetrocket

*Hesperis matronalis* L.

## Alternate Names

Dames rocket

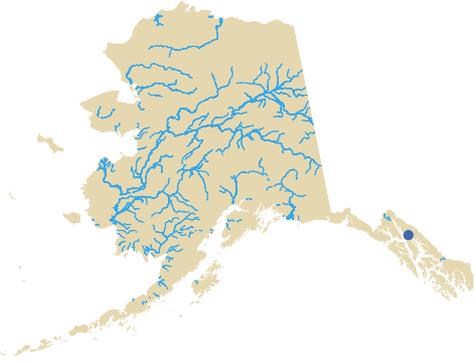
## Description

Sweetrocket is a biennial to perennial plant with branched stems growing up to 4 feet tall from fibrous roots.

Leaves are ovate-lanceolate shaped and slightly toothed. Leaves decrease in size as they ascend the stem. Flowers are showy, 4-petaled, and purple to pink or white in color. Seeds are borne in long, narrow siliques.

## Similar Species

Sweetrocket resembles a native fireweed (*Epilobium luteum* Pursh) but does not have clefted flower petals.



USDA Forest Service photo by Tom Heutte



USDA Forest Service photo by Tom Heutte

**Management**

Small populations can be pulled to prevent seed production. There has been no extensive documentation of control efforts for this species, but it is likely that larger populations would require a major effort over a span of 5 to 10 years or more in order to exhaust the seed bank (Invasive Plants of Wisconsin 2004).

**Notes**

Sweetrocket is grown by gardeners for its fragrance. It is often a component of wildflower or meadow seed mixes.

## Common Peppergrass

*Lepidium densiflorum* Schrad.

### Alternate Names

Peppergrass, poor man's pepper, prairie peppergrass, green-flowered peppergrass, wild tongue-grass

### Synonyms

*L. apetalum* W

### Description

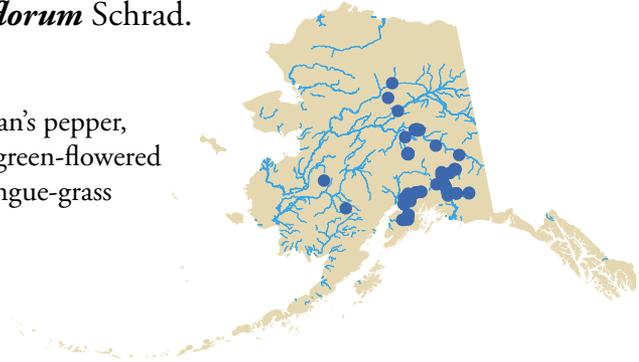
Common peppergrass is an annual plant with a basal rosette of toothed leaves that are 1 to 4 inches long and 3/4 to 1 1/4 inches wide, growing from a short taproot. The flowering stem usually has numerous branches and is 4 to 20 inches high with alternate leaves. The flowers are small and inconspicuous. Seed pods are 1/16 to 1/8 of an inch long, with 9 to 15 pods produced for every half-inch of flowering stem. The high density of pods gives the plant a distinctive appearance that facilitates field identification.



US Geological Survey photo by Chris McKee

### Similar Species

Common peppergrass can be distinguished from other *Lepidium* species in Alaska by having reduced or absent petals. Garden cress (*L. sativum* L.) is another exotic species that is closely related to common peppergrass, but the leaves of garden cress are dissected into narrow segments, its petals are reddish-white and twice as long as the sepals, and its pods are 3/16 to 5/16 inches long with a deep notch at the top.



**Management**

Common peppergrass plants are easily pulled up by hand, although several weedings may be necessary to eliminate plants germinating from buried seeds (Densmore et al. 2001). Multiple herbicide applications can also provide effective control.

**Notes**

The immature seedpods have a pungent, peppery taste, giving the plant its common name. The leaves have been chewed for the treatment of headaches. An infusion of common peppergrass has been used in the treatment of kidney problems.

## Austrian Yellowcress

*Rorippa austriaca* (Crantz) Bess.

### Alternate Names

Creeping fieldcress

### Synonyms

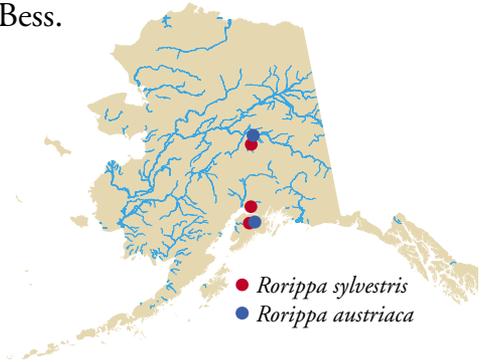
*Nasturtium austriacum* Crantz.

*Radicula sylvestris* (L.) Druce

### Related Species

Creeping yellowcress

*Rorippa sylvestris* (L.) Bess.



### Description

Austrian yellowcress is a perennial plant with aggressive, creeping roots and persistent stems that grow to 3 feet tall from a deep, fleshy taproot. Stems are ascending to nearly erect and branched near the top. Leaves are dull bluish-green, hairless, narrowly oblong to oblanceolate, 1 to 4 inches long, and entire to irregularly toothed. Upper stem leaves narrow to a stalk-like base that clasps the stem. Rosette leaves are covered with short unicellular hairs. Flowers are yellow and 4-petaled in short terminal and axillary racemes. Fruits are ovoid siliques, 1/8 of an inch long, with lower stalks 1/4 to 5/8 of an inch long.

Creeping yellowcress is a rhizomatous perennial plant with erect, branched stems growing up to 20 inches long. Leaves are 2 to 4 inches long and pinnately divided into narrow, sharply toothed lobes. Flowers are yellow with 4 petals that are 1/8 to 3/16 of an inch long. Fruits are linear and 5/16 to 7/16 of an inch long with a short beak. Fruits spread at ascending angles to the stem.



USDA Forest Service photo by Elizabeth Bella

### Similar Species

This is a large genus that has been revised many times by many authorities. Austrian yellowcress is much larger, more weedy-looking, and generally coarser than the *Rorippa* species native to Alaska, and its nearly spherical fruits make identification straightforward. It has a tall, straight growth habit and doesn't creep or have weak stems. Creeping yellowcress looks more like the native species. It could be mistaken for curvepod yellowcress (*R. curvisiliqua* (Hook.) Bess. ex Britt.) but not bog yellowcress (*R. palustris* (L.) Bess.), because it is smaller than the latter. Curvepod yellowcress has narrow, curved fruits and occurs only rarely in southeast Alaska to the Pacific Northwest and California, whereas creeping yellowcress has been found only in south-central and interior Alaska.

### Management

Improving drainage of wet soils on agricultural sites will discourage survival of both species. Some herbicides are effective. (CDFA 2005). The effectiveness of hand-pulling is uncertain.

### Notes

Austrian yellowcress is a prohibited noxious weed in Alaska (Alaska Administrative Code 1987). The seed is very difficult to clean out of alfalfa seed, which led to the rare situation of this species being listed as a noxious weed in some states prior to its arrival in those states. Creeping yellowcress has become a serious invasive species problem in New Zealand.



USDA Forest Service photo by Elizabeth Bella

## Field Pennycress

*Thlaspi arvense* L.

### Alternate Names

Pennycress, stinkweed, frenchweed, fanweed, bastardweed, bastard cress, dish mustard, mithridate mustard

### Synonyms

*Crucifera thlaspi*  
Krause, *Thlaspi col-  
linum* M. Bieb., *Thlaspidea arvensis* Opiz

### Description

Field pennycress is an annual plant with a strong odor that grows 6 to 18 inches high and is hairless and yellowish-green. The stem is mostly simple. Basal leaves are lanceolate, simple, and entire to lobed. Stem leaves have arrowhead-shaped bases. Flowers have 4 white petals and are clustered in racemes at the ends of branches. The fruit is a pod, 3/8 to 3/4 of an inch long, with a circular outline and a deep notch at the top. Each fruit produces 4 to 16 seeds and has a broad, papery membrane around its edge.



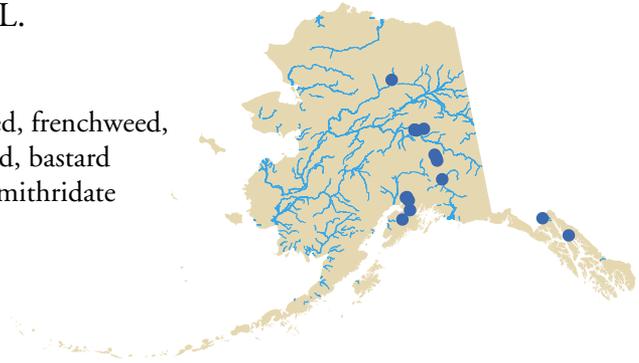
XID Services photo by Richard Old

### Similar Species

Shepherd's purse (*Capsella bursa-pastoris* (L.) Medik., included in this book) is occasionally confused with field pennycress but can be distinguished by its triangular fruit and lack of odor.

### Management

Hand-pulling should provide effective control for field pennycress if undertaken prior to seed production and



## Family: Brassicaceae

## Field Pennycress

repeated until the seedbank is exhausted, due to its annual habit. Application of herbicide can also be effective.

### Notes

This foul-smelling plant was once grown as an oil crop. The odor of field pennycress is the best character for identification even in the seedling stage. It is also known as “fan-weed,” with both common names referring to the disk-shaped seed pods.



*National Park Service photo by Penny Bauer*