

Family
Fabaceae

White Sweetclover



Melilotus alba Medik.

Alternate Names

White melilot, honey clover, honey-lotus, tree clover, white millet

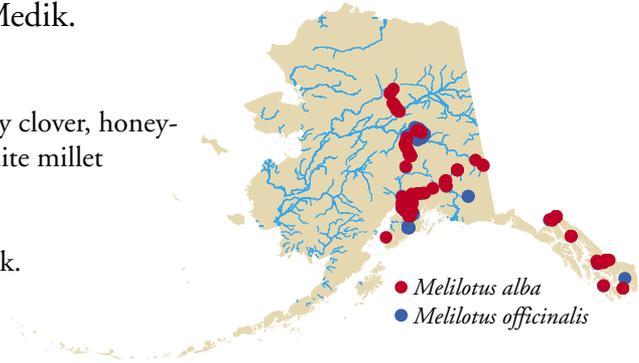
Synonyms

Melilotus albus Medik.

Related Species

Yellow Sweetclover

Melilotus officinalis (L.) Lam.



Description

White sweetclover is a biennial plant that can reach 2 to 5 feet tall and is often branched. Leaves are trifoliate, alternate in arrangement, and 1/2 to 2 inches long. The fragrant white flowers are 1/8 to 1/4 of an inch long and arranged in many-flowered terminal and axillary racemes. Plants generally flower and die during the second year of growth. Flowering occurs from June to October. Seed pods are black to dark grey and single-seeded, and seeds are yellow and ovate to kidney-shaped.



UAF Cooperative Extension Service photo by Jamie Snyder

Similar Species

White sweetclover is erect, tall, and branching, separating it from all other trifoliate legumes in Alaska except yellow sweetclover. White sweetclover is distinguished from yellow sweetclover by the presence of white rather than yellow flowers, but otherwise they share most botanical characteristics. The information that follows for white sweetclover should also apply to yellow sweetclover.

Ecological Impact

Outside of Alaska, white sweetclover degrades natural

grassland communities by overtopping and shading native species. If the plant is harvested for hay and is not cured properly, it can contain coumarin, a substance toxic to animals (CUPPID 2003). White sweetclover is visited by introduced honeybees, native solitary bees, wasps, and flies (Eckardt 1987) and associated with 28 plant viruses (Royer and Dickinson 1999). This species alters soil conditions due to nitrogen fixation and also has the potential to alter sedimentation rates of river ecosystems (M. Shephard, pers. comm. 2004). White sweetclover has formed large mono-specific stands along rivers in southeast, southcentral, and interior Alaska.



USDA Forest Service photo by Michael Shephard

A white sweetclover infestation along Alaska's Stikine River.

Biology and Invasive Potential

Each white sweetclover plant is capable of producing up to 350,000 seeds that can remain viable in the soil for up to 81 years (Klemow and Raynal 1981, Royer and Dickinson 1999). Large seed banks are common, and it can self-pollinate as well as outcross (Eckardt 1987). White sweetclover readily invades open areas. Natural or human-caused fires produce excellent growing conditions by scarifying seeds and stimulating germination. Clearings in forested land

Family: Fabaceae

White Sweetclover

are easily colonized. White sweetclover establishes extensively along early successional river bars in Alaska, while yellow sweetclover may not be as capable of doing so. White sweetclover resprouts readily when cut or grazed and seeds may be dispersed by water (Eckardt 1987). It is used extensively as a forage crop, soil builder, and nectar source for honeybees (Eckardt 1987, WDNR 2003b). It is a common contaminant of cereal grains and can also be dispersed by vehicle tires (Densmore et al. 2001, Royer and Dickinson 1999). White sweetclover has high seed germination rates, and most germination and development occurs in spring. Temperatures of less than 59°F are optimal for germination, with germination being inhibited at temperatures above 59°F. Sweetclover is adapted to all soil textures and pH levels ranging from 5.0 to 8.0, and it is moderately salt-tolerant. It is shade-intolerant and does not require cold-stratification for germination. It withstands temperatures to -60°F in Alaska and requires 120 frost-free days for reproduction. White sweetclover is listed as an “exotic pest” in Tennessee, “ecologically invasive” in Wisconsin, and a “weed” in Kentucky and Quebec.



XID Services photo by Richard Old



National Park Service photo by Jeff Heys

Yellow sweetclover, *Melilotus officinalis*.

Distribution and Abundance

White sweetclover was brought to North America as early as 1664 as a forage crop. Since then, it has spread from cultivation and thrives in waste places and roadsides. White sweetclover is found in every state in the United States and all but 2 Canadian provinces (Royer and Dickinson 1999). It establishes in aspen woodlands and prairies in Canada and the lower 48 states (Butterfield et al. 1996) and riparian communities in Alaska. Extensive infestations of white sweetclover have been found on the Stikine, Nenana, and Matanuska Rivers, and it and yellow sweetclover are increasingly common and spreading in communities and along roadsides throughout the state, especially in areas of recent construction and road maintenance. White sweetclover is native to the Mediterranean and throughout central Eurasia east to Tibet. It has been introduced into South Africa, North and South America, New Zealand, Australia, and Tasmania.

Management

White sweetclover can be managed using mechanical controls such as pulling and cutting, but several treatments will be necessary each year until the seedbank is exhausted. Preliminary results from interior Alaska suggest that cutting second-year (flowering) plants at 1 inch or less in height and pulling first-year plants along with several inches of belowground material would provide effective control (J. Conn, pers. comm. 2005). If first-year plants are cut, they will resprout in the same year and could be cut again at a later time. Burning has been used in the midwestern states to stimulate germination, followed by a second burn to eliminate seedlings, but attempts to recreate this effect in Alaska have been unsuccessful (J. Conn, pers. comm. 2005).



Photo by Wendy Van Dyk Evans

Leaves and flowers of yellow sweetclover, *M. officinalis*.

Family: Fabaceae

White Sweetclover

Biological control options have not been investigated because the plant is valued as a forage crop. Due to the long viability of seeds, sites must be monitored for many years following control actions (Eckardt 1987).

Notes

White and yellow sweetclover are considered valuable honey plants. They are frequently cultivated for animal forage, and their roots fix nitrogen in the soil.



UAF Cooperative Extension Service photo by Jamie Snyder

*Mature white sweetclover plant, **Melilotus alba**.*

Bird Vetch



Vicia cracca L.

Related Species

Hairy vetch

Vicia villosa Roth

Alternate Names

Tufted vetch

Description

Bird vetch is a climbing perennial plant with weak stems that climb and cling to structures with coiling tendrils at the end of each leaf. Leaves have 8 to 10 pairs of narrow leaflets. The bluish-violet flowers are borne on a one-sided, many-flowered raceme. Fruiting pods are narrow and lanceolate.

Hairy vetch is an annual or biennial vine. Its stems are climbing and weak, growing up to 6 feet long, and covered in long-spreading hairs. The leaves have 10 to 20 leaflets, which are linear to narrowly lance-shaped and 3/4 to 1 inch long. Tendrils are well developed. There are 20 to 60 flowers per inflorescence, generally restricted to one side of the stalk. Flowers are purplish-red and 3/4 to 1 inch long. The fruit is a pod with several seeds.



Bird vetch, *Vicia cracca*.

UAF Cooperative Extension Service photo
by Michael Rasy

Similar Species

There are a number of other climbing, blue-flowered legumes in Alaska. Bird vetch is identifiable by lacking a winged stem, as in *Lathyrus* species, or a stem covered in long-spreading hairs, as in hairy vetch, and by the presence of entire stipules and a many-flowered, one-sided inflorescence. Hairy vetch can be separated from other Alaskan climbing legumes by its long-spreading hairs and

Family: Fabaceae

Bird Vetch

its obliquely attached calyx. Common vetch (*Vicia sativa* L. ssp. *nigra* (L.) Ehrh.) is another exotic plant in Alaska, and it can be distinguished from the other two by the presence of pairs of flowers on short stalks.

Ecological Impact

Both species can overgrow herbaceous vegetation and climb over shrubs like alder and willow (Hultén 1968). They have symbiotic relationships with certain soil bacteria that can alter soil conditions due to the fixation of atmospheric nitrogen (GRIN 2004). They are highly palatable to grazing and browsing animals, although hairy vetch is slightly toxic. Hairy vetch flowers are visited by native bees and may alter pollination ecology in the surrounding area (Aarssen et al. 1986). Removal of dense mats of bird vetch from limbs of conifers has revealed chlorotic needles and limb dieback.



UAA Alaska Natural Heritage Program photo by Irina Lapina

Bird vetch, Vicia cracca.

Biology and Invasive Potential

Bird vetch reproduces from copious amounts of seed and by spreading rhizomes. Seeds are viable for many years and large seed banks are common. It establishes in disturbed grassy areas and along roadsides. Seeds are large and not easily dispersed, but they may be carried in the tangled

vegetation that clings to maintenance equipment or introduced with topsoil. Bird vetch is adapted to all soil textures and pH levels ranging from 4.9 to 7.0. It is highly tolerant of fire, drought, and calcium carbonate. It has intermediate shade-tolerance and no cold-stratification is required. Bird vetch withstands the winter temperatures of interior Alaska and requires 110 frost-free days for successful reproduction (GRIN 2004). It is listed as a restricted noxious weed in Alaska (Alaska Administrative Code 1987).



UAF Cooperative Extension Service photo
by Michael Rasy

*Hairy vetch, **Vicia villosa**.*

Hairy vetch reproduces entirely by abundant seed. Total seed production likely exceeds 1,000 seeds per square meter for large plants (GRIN 2004). This species persists in cultivated fields but has not been detected in undisturbed sites in Alaska. Seeds are large and not easily dispersed. Hairy vetch is a forage plant that sometimes escapes from cultivation (Welsh 1974) and is also a common contaminant in crop seed. Seeds have a hard dormancy period. This species is adapted to all soil textures and soil pH levels ranging from 6.0 to 7.5. It is moderately tolerant of drought and calcium carbonate but shade-intolerant. No cold-stratification is required. Hairy vetch withstands temperatures as low as -30°F and requires 100 frost-free days for successful reproduction (GRIN 2004).

Distribution and Abundance

Bird vetch was first planted in Alaska at the Rampart Experiment Station in 1909. It was later planted in Fairbanks and Palmer around 1955 as potential forage crop, and subsequently spread to other areas of the state. It is found in waste places, in old fields, and along roadsides. Originally native to Europe, it now ranges from Alaska and British Columbia east across Canada to Newfoundland and south to Georgia and Alabama.

Hairy vetch has escaped cultivation outside of Alaska and spread along roadsides, fallow fields, and other disturbed

areas (Whitson et al. 2000). It is rare in Alaska and was only recently reported from roadsides along Westchester Lagoon in Anchorage (M. Carlson, pers. comm. 2004). It is native to northern Africa, temperate Asia, and Europe (GRIN 2004), was brought to North America to be used as a rotation crop, and now occurs in every state in the United States.

Management

Bird and hairy vetch are difficult to eradicate once established. Hand-pulling can be effective for small infestations, but retreatment will be needed several times per year over the course of several years in order to prevent reproduction and exhaust the seedbank. This also applies to mowing, which would be much more cost-effective for large infestations. Herbicide application is reported to be effective for control of bird vetch and probably is for hairy vetch as well.

Notes

In its native Europe, bird vetch is one of the most common flowers of hedgerows, heaths, scrub, and coarse grass, where it is known as tufted vetch due to the large number of flowers.



UAF Cooperative Extension Service photo by Jamie Snyder

Bird vetch monopolizes sunlight by climbing and smothering other vegetation.

Bigleaf Lupine

Lupinus polyphyllus Lindl.

Alternate Names

Marsh lupine

Description

Bigleaf lupine is a perennial plant that grows 1 to 3 feet high. Stems are erect or ascending, with few to several growing from the woody base of an otherwise herbaceous stem. Leaves have long stalks and 10 to 18 oblanceolate to elliptic, acute leaflets. Leaflets are 1½ to 5 inches long and ¼ to 1 inch broad. Racemes are 2½ to 10 inches long. Flowers are blue to purple to deep pink to pale and ½ to ¾ of an inch long. Pods are 1½ to 2 inches long and distinctly hairy with 6 to 10 seeds each.

Similar Species

Bigleaf lupine is distinguishable from native Alaskan lupines by the presence of 10 or more leaflets per leaf.

Management

This species can be eradicated when populations are small by digging up rhizomes, but several weedings may be necessary to eliminate plants resprouting from rhizomes and from the seedbank (Densmore et al. 2001).

Notes

Bigleaf lupine is native to the western United States but not to Alaska (Hitchcock and Cronquist 1973, Hultén 1968).

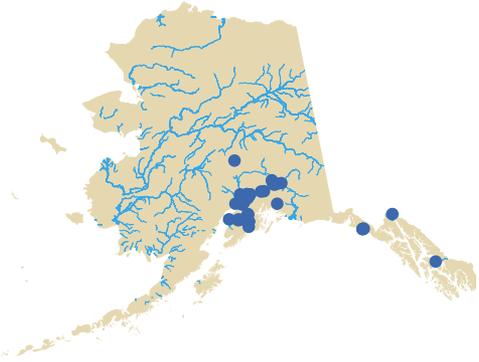


Photo by Markku Savola

Family: Fabaceae

Bigleaf Lupine



US Geological Survey photo by Chris McKee

Black Medick

Medicago lupulina L.

Alternate Names

trefoil, black clover, none-such, hop medic, spotted burclover, blackseed

Description

Black medick is an annual, biennial, or short-lived perennial plant with hairy prostrate stems growing up to 32 inches long. Leaves are alternate, compound, and composed of 3 ovate, hairy leaflets that are 1/4 to 1 1/4 inches long. The terminal leaflet is stalked, while the lateral ones are nearly stalkless. Flowers are borne in globe-shaped clusters of 20 to 50 and are yellow, 1/8 to 3/16 of an inch long, and composed of 5 united sepals, 5 united petals, 10 stamens, and a single pistil. The fruit is a black, kidney-shaped pod, 1/16 to 1/8 of an inch long, that contains a single seed.



Photo by James C. Snyder

Flower and fruit of black medick, *Medicago lupulina*.



Photo by James C. Snyder

Black medick, *Medicago lupulina*.

Similar Species

Alfalfa (*M. sativa* L.) is a cultivated plant that can be distinguished from black medick by its blue or purple flowers and spirally-coiled pod containing several seeds.

Management

Hand-pulling provides effective control of black medick. Herbicides are effective when applied immediately after the emergence of leaves.



USDA Forest Service photo by Michael Shephard

Notes

Black medick is native to Eurasia and Africa. Its scientific name comes from “Media,” the country that alfalfa came from, and lupulina, Latin for “little hop plant.” Both the genus and species were named by Carolus Linnaeus in 1753.

Alfalfa, Medicago sativa.

Alsike Clover

Trifolium hybridum L.

Alternate Names

Ladino clover, Dutch clover

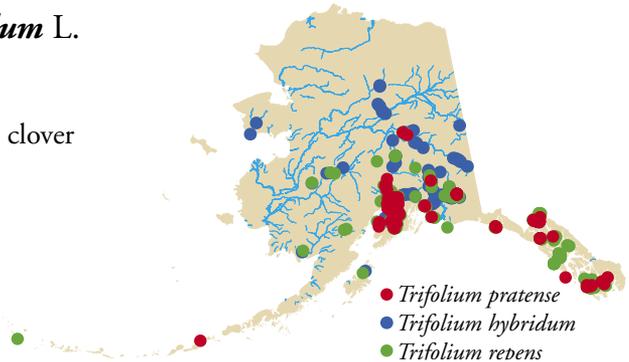
Related Species

White Clover

Trifolium repens L.

Red Clover

Trifolium pratense L.



Description

White clover is a prostrate perennial plant. The stems are up to 2 feet long, and they root at the nodes. Leaves are alternate and palmately trifoliate with ovate leaflets. Flowers are white to pinkish-white and appear in terminal globe-shaped clusters. Seeds are tiny and round. White clover is the only decumbent white to pink-flowered clover in Alaska.



Alsike clover, *Trifolium hybridum*.

USDA Forest Service photo by Tom Heutte

Alsike clover is a perennial plant that grows 6 to 20 inches high with stems that are ascending to erect and do not root at the nodes. Leaves are palmately trifoliate with obovate or ovate to elliptic leaflets. Flowerheads have many flowers that are pink to reddish or white. This is the only white to pink-flowered clover in Alaska that has erect stems and does not root at the nodes.



Red clover, *Trifolium pratense*.

XID Services photo by Richard Old

Red clover is a perennial plant that grows up to 3 feet high and has large, palmately trifoliate leaves with distinctive “chevrons” and large reddish flowerheads.

Similar species

Hultén (1968) describes a number of other introduced *Trifolium* species that occur at isolated locations in Alaska. One native species, *Trifolium wormskjoldii* Lehm., is reported from southern southeast Alaska that can be distinguished from red clover by the presence of a hairless calyx and umbrella-shaped rather than spherical to egg-shaped flowerheads.

Management

Clover populations are widespread and dense along roadsides in Alaska. It would be virtually impossible to eradicate these species. The priority should be to keep them from colonizing new sites and to report occurrences in undisturbed habitats or remote locations. Hand-pulling can be effective for controlling small infestations, although digging may also be required where plants are well established or for white clover. Several herbicides can be used to control clovers.

Notes

The species name *hybridum* for alsike clover refers to the fact that this species is a cross between white and red clover. All 3 of these species have an extensive list of medicinal uses, although the most common use is as pasture cover or in seed mixes for roadside revegetation.



White clover, *Trifolium repens*.