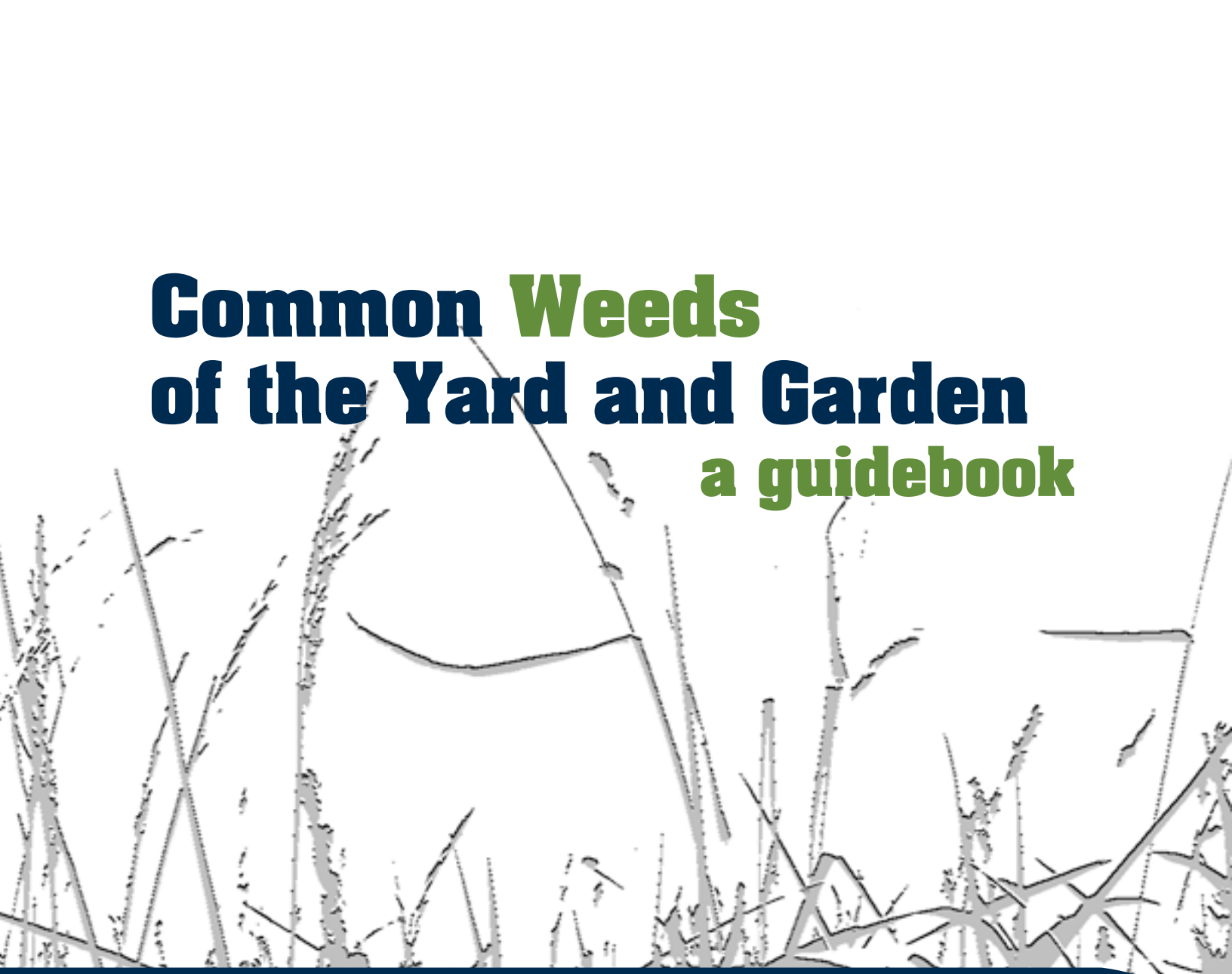
Common Weeds of the Yard and Garden

a guidebook



By Brenda Jarvis Lowry
Ralph E. Whitesides
Steven A. Dewey
Corey V. Ransom
Roger E. Banner

Utah State University
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Introduction

This guide is meant to serve as a means of identifying common weeds in the home landscape and supplying enough information for readers to make educated decisions about their properties. It is not an exhaustive guide to the 50 plants contained herein, nor is it a comprehensive summary of all weeds that may be present on readers' properties.

Some weeds are toxic, invasive and/or noxious. Some weeds are not aesthetically pleasing, but are otherwise benign. Once weeds are identified, decisions must be made as to what action, if any, should be taken regarding them. Readers must bear in mind that weeds are not respecters of property lines, and that individuals' properties are part of a wider ecological community. What happens on one property may affect land outside of it, and vice versa.

Using This Online Guide:

This website is meant as a companion online guide to the Utah State University Cooperative Extension publication, Common Weeds of the Yard and Garden; A Guidebook.

Although a common name appears at the top of each page, the 50 weeds mentioned on this website are listed in alphabetical order by scientific family names, and within families by scientific generic and specific names (both scientific and common names are those officially accepted by the Weed Science Society of America, as of September 2009). Along with photographs, the following information is given for each weed:

Location: The location in the landscape where the weed is commonly found.

Occurrence: The time of year when seed germination,

seedling emergence, flowering, and seed production may occur, if known.

Description: Mention of the weed's life cycle and a description of its physical appearance.

This book should be used with the companion online guide (extension.usu.edu/weedguides), which includes the following additional information about each weed:

Origin: The place of origin of the weed, if known.

Weedy Characteristics: Attributes of the plant that cause it to be undesirable.

Control: Mention of control tactics that generally do not change over time, namely preventative, cultural, or mechanical methods. Not all weed control tactics are noted or described. Because herbicide recommendations can change often and become quickly outdated, information on currently accepted chemical control can be obtained through consultation with county or other local weed control experts. Local experts can also provide information on any available biological controls.

General Facts: Interesting or important facts about the weed, such as properties that make it beneficial or detrimental to humans, animals, or other plants. Status of the weed as noxious or invasive in the United States and Canadian provinces is also mentioned.

Other Common Names: Other local names by which the weed might be known.

Redroot pigweed

Amaranthus retroflexus L.
Amaranthaceae (Pigweed family)

Location: gardens, waterways, roadsides, waste areas, orchards, and cropland

Occurrence: Redroot pigweed grows best in warm temperatures. Seed germination and seedling emergence begin in late spring and continue throughout the season, unless daytime temperatures exceed 95°F. Plants flower and produce seed from mid-summer until frost.

Description: An upright summer annual, generally growing between 1 and 6 feet in height. The common name 'redroot' refers to the pinkish-red color at the base of the stem (sometimes the whole stem) and the taproot. Vertical white veins are often visible down the length of the stem. The stem is often branched above, and the primary stem and branches are somewhat hairy, especially at the upper ends. Leaves are oval with a tapering point, have conspicuous veins and generally measure 1/3 inch - 3 inches long. Borne on stalks commonly as long as the leaves themselves, leaves are arranged alternately along the stem and branches and are occasionally tinted red. Small, light green flowers subtended by bristly bracts occur in dense, branching spikes in leaf axils and at the ends of branches. Flower spikes often have a pinkish tint. Each female flower produces a single tiny seed encased in a small bladder that splits open at maturity. The seed is round, flat, shiny and black.

Bristy flower spikes

Mature plant

Weed with conspicuous veins

Red root and stem

Weedy Characteristics: Pigweed reproduces by seed. Each plant can produce tens of thousands of seeds, which are small enough to be distributed by wind. Seeds can also be dispersed by machinery, through water, and by the movement of animals that consume them. Most seeds are able to germinate immediately at maturity, allowing the plant to produce several generations per season. Those seeds that do not germinate at once can remain viable in the soil up to 10 years or more. Pigweed will use any water available, but is drought tolerant and even thrives in hot temperatures. It colonizes and grows vigorously in bare, disturbed soil. There is also some evidence to suggest that the plant secretes chemicals that interefere with the growth of other nearby plants.

Control: Redroot pigweed seed germination is favored by warm temperatures and high light conditions, and the plant grows best when in full sun. However, soil seed populations can be reduced with soil solarization. Maintaining a vigorous, desirable plant population that can shade the soil and weed seedlings will discourage pigweed colonization. Mulching the soil will also provide necessary shade. Frequent mowing can prevent seed production, and frequent hand-pulling, hoeing, tilling, and digging can help control seedlings. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Native people have used redroot pigweed to treat a variety of medical conditions, and have commonly eaten the boiled young leaves as greens, and used the ground seeds in flour. Several types of wild birds also use redroot pigweed as a food source. However, pigweed accumulates toxic nitrates in its tissues, which are at their highest levels just before flowering

(especially when drought-stressed). Pigweed also contains toxins that can cause kidney failure in livestock, when consumed in large amounts. Pigweed often hosts insect pests and plant viruses that cause damage and disease in crops, such as alfalfa and some vegetables. Because of its aggressive competition, redroot pigweed presence in crops can greatly reduce crop production. It is a legally noxious weed in Minnesota and three Canadian provinces.

Other Common Names: careless weed, common amaranth, pigweed amaranth, redroot amaranth, rough pigweed, wild beet

Common yarrow

Achillea millefolium L. (western yarrow: Achillea millefolium L. var occidentalis DC, Achillea lanulosa Nutt., Achillea millefolium ssp. lanulosa (Nutt.) Piper)

Asteraceae (Sunflower family)

Origin: common yarrow is an introduced variety from Eurasia, although western yarrow—which is almost indistinguishable from common yarrow--is native to the American continent

Location: turfgrass, roadsides, waste areas, public parks, dry hillsides, overgrazed rangeland, open woodland, and grassland

Occurrence: Yarrow is dormant in the winter months, although leaves can remain green. Rhizomes resume growth in spring. Flower stalks develop by mid-summer, and flowers are generally produced from mid-summer through early fall, followed by mid-autumn seed maturation. Seeds can germinate immediately, especially if temperatures are between 65°F and 75° F. Flower stalks subsequently dry out and become brittle.

Description: A low-growing, spreading perennial with upright flower stalks that can reach 3 feet in height. Each plant produces one to several flower stalks, which are often branched and covered by fine hairs. Leaves are featherlike, with tiny, fine leaflets lining each side of the leaf stem. Leaves are arranged along the stem at even intervals. Leaves grow between 1 and 6 inches long and 1/4 - 1 inch wide. Flower heads are borne in flattened or umbrella-shaped clusters at stem tops. Each individual flower head consists usually of five, 1/8 inch long, white to pinkish-white ray flowers surrounding 10-20 pale yellow disk flowers.

Feather-like leaves

Flowering plant

Weedy Characteristics: Yarrow is tolerant of a wide range of conditions, including drought and poor soil.
The plant spreads mostly by the development of rhizomes, producing new plants from rhizome tips. When fragmented, rhizome parts will produce new plants, even from as deep as 12 inches within the soil. Its rhizomatous habit allows yarrow to tolerate frequent mowing. Yarrow also reproduces by seed, producing thousands of seeds per flowering stalk. The seeds are distributed by wind, and remain viable in the soil at least 9 years.

Control: A well-fertilized lawn with soil that does not remain dry for long periods will have a competitive edge over yarrow. Digging and hoeing small patches of yarrow can be effective, but rhizomes must be completely removed for thorough control, as broken rhizomes can grow independently and produce new plants. Yarrow does not tolerate shade well, and will not thrive in the shade of healthy garden plants. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Yarrow has been used for many medicinal purposes, including fever and pain relief, and wound poultices (thus the common names 'bloodwort' and 'soldier's woundwort'). It is a food source for some wildlife, and is attractive to insects. Although not often grazed by domestic cows or horses, yarrow contains substances which would be harmful if ingested in large amounts, and cows that graze it produce poor-tasting milk. The plant is used in flower arrangements, and thye crushed leaves and flowers have a pungent fragrance. Yarrow has been used in erosion control projects, because of its rhizomatous growth habit. Closely related western yarrow is a native to North America, and is almost indistinguishable from common yarrow, especially

because the two will hybridize with each other. Yarrow's seed is considered noxious in Alaska.

Other Common Names: bloodwort, carpenter's weed, milfoil, soldiers' woundwort, western yarrow, woolly yarrow

Umbrella-shaped flower clusters

Canada thistle

Cirsium arvense (L.) Scop.
Asteraceae (Sunflower family)

Origin: Eurasia

Location: gardens, waste areas, roadsides, cropland, pastures, rangeland, waterways, and native plant communities

Occurrence: Germination takes place mainly in the spring, but some germination also occurs in the autumn. Autumn seedlings form a rosette and overwinter in that stage. Spring seedlings start emerging when temperatures average 40°F. In late spring, rosettes produce a flowering stalk, and approximately 2 months after seedling emergence, flower buds develop. Flowering occurs from mid-to-late summer, and seeds mature 8-10 days after flowers open. Shoots are also produced from the roots throughout the season. Aboveground vegetation dies with hard frost.

Description: An upright creeping perennial. Mature leaves are strongly serrated or have deep, irregular lobes with stiff, spiny tips. Stems are occasionally sparsely hairy, grow 1 - 4 feet tall, are branched above, and bear leaves in an alternate arrangement. Leaves are 1 - 6 inches long, 1/4 - 2 inches wide, and clasp the stem with no stalk. Small, faded purple to pink (rarely white) flower heads, which are 1/2 - 3/4 inch in diameter, develop at branch tips, often in clusters of one to five flower heads. Flower heads give rise to seed heads that contain many 1/8 inch long, golden-brown, single-seeded fruits with fluffy, tan hairs loosely attached to the top of each fruit.

Flowering plant

Flower head

Rosette

Weedy Characteristics: Canada thistle spreads mainly by producing shoots from aggressive, creeping roots. The root system grows both horizontally and vertically, usually remaining in the top 2 feet of soil, but a portion may penetrate to 20 feet in depth. Horizontal growth can be 13- 20 feet in a single season. The plant can form dense colonies, and one plant might spread to cover a 115 foot diameter area. Canada thistle is quite adaptable and its extensive root system makes it possible for the plant to survive in almost any soil. The plant will tolerate saline soil and dry or wet (but not saturated) conditions. Plants can produce about 1500 seeds each, which are dispersed via wind, water, birds that consume them, in crop seed and hay, on machinery, and on human and animal feet. Seeds can remain viable in the soil for up to 20 years. Canada thistle may secrete chemicals that inhibit the growth of nearby plants.

Control: Canada thistle seeds and seedlings require light, open environments and readily establish on bare ground. Maintaining healthy, competitive desirable vegetation can help prevent Canada thistle colonization. Thick mulch will discourage germination of seeds. Digging or hoeing young seedlings within 2 weeks of emergence is highly effective, since plants do not develop perennial root characteristics until the third week. Mature plants are much more difficult to manage. Seed production can be prevented by hand-cutting or mowing tops at least three times in the season. However, one or two seasons after aboveground parts are destroyed, new shoots can still generate from the extensive root system. Any flower heads that have been open much more than 1 week are capable of setting seed, even after being cut from the parent plant. These should be removed completely. Digging, hoeing, and tilling mature plants fragments the extensive root system, stimulating new growth. Even very

small root fragments can produce new plants within about 2 weeks. Nevertheless, consistent use of these methods for at least 2 years can exhaust Canada thistle root reserves enough to achieve some control. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Young Canada thistle shoots and roots have been eaten by some native peoples, and the plant has been used for several traditional medicinal purposes, including as a mouthwash. Bees use Canada thistle as a source of nectar and pollen, and some wildlife will feed on it, but most domestic livestock will not eat it, and will not even graze near it for its spines. Its presence can cause crop yield loss and reduce recreational land use, it can interfere with harvesting operations, and its seed can contaminate small grain stocks. The plant can also serve as an alternate host for insects and other pests that cause crop disease. Canada thistle is considered noxious or invasive in every U.S. state, and also in six Canadian provinces.

Other Common Names: Californian thistle, creeping thistle, field thistle

Bull thistle

Cirsium vulgare (Savi) Tenore
Asteraceae (Sunflower family)

Origin: Eurasia, Northern Africa

Location: lawns, roadsides, waste areas, waterways, cropland, pastures, overgrazed rangeland, woodland, and grassland

Occurrence: The majority of bull thistle seeds germinate in late summer or early autumn, although occasionally seeds will germinate in spring. Seedlings form a rosette which often grows slowly throughout winter and develops a sturdy tap root. In the second year, a flowering stalk is produced by early summer. Flowering generally occurs from mid-to-late summer, followed closely by seed production. The plant then dies and turns brown and brittle.

Description: An upright biennial. Young seedling leaves are oblong in shape, but mature rosette leaves are saw-toothed and spiny with cottony hairs on the undersurface. Rosette leaves generally grow 2 - 12 inches long and 3/4 - 4 inches wide. Leaves are dark green and are arranged alternately along the rigid flower stalk, that grows 1 - 5 feet tall and can be highly branched. Stem leaves have distinctly pointed, spine-tipped lobes, with bases that clasp the stem to form spiny wings. Purplish/pink flower heads, 1 to 2 inches diameter, are borne on branch tips, and are subtended by an egg-shaped cluster of spiny bracts. Flower heads give rise to seed heads that contain many single-seeded fruits, each topped by a plume of feathery white hairs.

Bull thistle

Flowering plant

Rosette

Mature leaf

Weedy Characteristics: Bull thistle reproduces solely by seed. Each plant can produce between one and several hundred seed heads, and seed heads produce an average of 100 seeds each. Seeds are dispersed by wind and water, animals, vehicles or farm equipment, and as a contaminant in hay. Some seeds can remain viable in the soil for up to 5 years.

Control: Bull thistle is favored by open, disturbed ground, and heavily used areas. It does not tolerate shade or competition well. Maintaining healthy, vigorous, desirable vegetation—with little to no bare soil—will discourage bull thistle establishment. Preventing seed production is important, and tilling, hoeing, digging, or hand-pulling (with gloves) are effective methods of control, especially before a flower stalk is produced. When complete removal cannot be achieved, the root can be severed below the soil surface. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Bull thistle has formidable armor, but is nonetheless edible, once spines are removed. Roots, leaves and young stems can be cooked, and flower heads can be eaten fresh. The plant has also been used for various medicinal purposes. Many insects visit bull thistle flowers, and rodents and birds eat its seeds. However, bull thistle is known to host viral and fungal diseases that can affect crops and ornamentals. Its physical presence in crops can reduce crop yield and quality, and its seed can be a troublesome contaminant in pasture grass seed. Most grazing animals avoid bull thistles, and when present in significant numbers in pastures, it can displace desirable plants and cause animal weight loss. Bull thistle is legally noxious in nine

U.S. states, in Manitoba and Ontario, Canada, and is invasive in several other U.S. states.

Other Common Names: common thistle, spear thistle

Flower Head

Feathery seed head

Curlycup gumweed

Grindelia squarrosa (Pursh) Dunal
Asteraceae (Sunflower family)

Origin: North America

Location: waste areas, roadsides, overgrazed rangeland, and cropland

Occurrence: Most curlycup gumweed seeds germinate and begin growth in late spring, when daytime temperatures are between 62° and 77°F. Spring-germinating plants form a rosette the first year and remain in the rosette stage until the second year when stems and flowers are produced. Some seeds germinate in the fall, however, and behave like winter annuals, completing their life cycle the following season. Flowering takes place from mid-summer to early fall, and average length of bloom time is 41 days. Seed ripening takes place by mid-fall.

Description: An erect biennial or short-lived perennial with one to several green, reddish, or whitish branching stems. Stems grow 1-3 feet tall. Leaves are borne alternately along the stem, and typically clasp the stem, with no stalk. Leaves have an oval or linear shape with serrated margins, are 1/2 - 2 1/2 inches long, and are covered with glands that exude a sticky resin. Bright yellow flower heads are borne at the tip of each branch, held in bright green cups of tiny, resinous bracts that curl in hooks away from

Pre-flowering plant

Reddish stems

Flower Heads

the flowers. Flower heads grow up to 1 inch across and are sticky with resin. As the plant matures, flowers are replaced by tiny, ridged, four-sided, off-white seeds, to which two to three bristles are attached at the tip.

Weedy Characteristics: Curlycup gumweed reproduces by seed. Healthy plants are capable of producing 30,000 seeds, which are dispersed by the wind. Due to a deep taproot and an extensive shallow root system, gumweed is quite drought resistant. It is also tolerant of most soil types, including saline soils. It is able to colonize, and even thrive, in areas that other plants cannot tolerate. In fact, the plant can form dense stands in dry conditions with poor soils.

Control: Young plants and small infestations can be eliminated by hand-pulling, digging, or hoeing. In addition, frequent tilling of the soil can control older plants. Curlycup gumweed does best in open, high-light situations, and its vigor can be reduced when a healthy desirable plant population imposes shade and competition on the plant. Mowing curlycup gumweed can prevent seed production, but it may adapt to repeated mowing by forming a more prostrate habit. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Because of its long bloom time and aromatic scent, curlycup gumweed has been used as an ornamental. Its seeds are eaten by sage grouse. Gumweed has been used traditionally to treat a wide array of medical conditions, and extracts of gumweed are used today to treat ailments such as

asthma, whooping cough, and poison ivy rashes. The plant can absorb high levels of selenium in certain soils, which may cause chronic poisoning in livestock. However, the resins gumweed secretes cause it to have a bitter flavor, and many grazing animals avoid it. Due to this avoidance, curlycup gumweed increases in abundance on rangeland, and crowds out desirable plant species for livestock to graze. The plant is noxious in Minnesota and Manitoba, Canada.

Other Common Names: curlytop gumweed, gumplant, gumweed, rosinweed, sticky heads, tarweed

Sticky resinous bracts

Prickly lettuce

Lactuca serriola L. (Lactuca scariola L.)
Asteraceae (Sunflower family)

Origin: Northern Africa and Eurasia

Location: roadsides, waste areas, gardens, orchards, cropland, overgrazed pastures, and nurseries

Occurrence: Most prickly lettuce seedlings emerge in the fall, developing a rosette with a long taproot. The rosette overwinters and is visible as soon as snow melts (a small percentage of seedlings do not overwinter, but emerge in early spring). A flower stalk develops from the rosette, and flowering occurs from mid-summer to late fall. Plants die following flowering.

Description: An upright winter annual or biennial with a stalk that grows 1- 5 1/2 feet tall, the lower third of which occasionally is covered in small spines. In the rosette stage, leaves are light-green, oval-shaped, with slightly wavy margins (quite similar to dandelion leaves). Leaves on the stalk have no stem, are twisted at the base and are 2-10 inches long and 1/2 - 3 inches wide. The leaves are arranged alternately, being generally deeply lobed with prickly edges, although lower leaves are sometimes not lobed. A row of spines runs along the underside of the leaf midrib. Many 1/2 to 3/4 inch diameter yellow flower heads are borne on branching stems at the top of the stalk. Each flower head

Mature plant

Rosette

produces approximately 20 flattened, tan seeds that are each attached to a silky parachute, enabling the seed to travel by wind.

Weedy Characteristics: Seed production ranges from several hundred to tens of thousands per plant. Seeds are able to germinate immediately. Prickly lettuce is drought tolerant, but will compete aggressively with other plants for available water.

Control: Prickly lettuce reproduces solely by seed, and seeds are only viable in the soil up to 3 years. Removal of plants before flowering/setting seed will reduce the soil seedbank, as will soil solarization. Small patches of prickly lettuce can be hand pulled, provided the soil is moist and hands are protected. Hoeing or tilling can also be effective, especially in spring and fall. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Its Latin name Lactuca, meaning milk, refers to the milky juice the plant exudes when damaged. Prickly lettuce will hybridize with closely related cultivated lettuce (Lactuca sativa). It is known to have been used for medicinal purposes, and young leaves can be eaten raw or cooked, but older leaves become bitter and unpalatable. When consumed in large amounts, fresh prickly lettuce can cause respiratory disease in cattle. Dry plants, however, are harmless. Prickly lettuce presence in grains can reduce crop value and cause trouble in harvesting equipment, and is a known host of crop disease. The plant is legally noxious in Manitoba, Canada, and is invasive in several U.S. states.

Other Common Names: China lettuce, compass plant, horse thistle, milk thistle, wild lettuce, wild opium

Seed head

Flower head

Spiny leaf midrib

Pineappleweed

Matricaria discoidea DC (Chamomilla suaveolens Pursh Rydb., Matricaria matricarioides (Less.) Porter)
Asteraceae (Sunflower family)

Origin: Northwestern North America

Location: lawns, gardens, walkways, pavement cracks, roadsides, waste areas, waterways, and
cropland

Occurrence: Pineappleweed seeds begin germinating in early spring and continue germination throughout the growing season. Flowering occurs all season as well, beginning in late spring.

Description: A summer annual that grows 3-16 inches tall, but is most commonly shorter than 6 inches. Seedlings form a feathery rosette and become bushy and highly branched with maturity. Branches are 1/2 - 4 inches long. Finely dissected leaves, growing 3/8 - 2 1/2 inches long and 1/16 - 3/4 inches wide, are arranged alternately on branches. At mature branch tips, many greenish-yellow flowers form dome- or cone-shaped heads, 3/16 - 3/8 inch in diameter, with no petals. Flower heads are cradled by a cup of bracts with dry, papery margins. Each flower in the head is replaced by a light-brown, single-seeded fruit.

Plant with flower buds

Flower head with papery bract margins

Weedy Characteristics: Pineappleweed thrives in areas most plants cannot tolerate. It is often found in poor, compacted soils and high traffic areas. It does well in drought conditions, and will adapt to mowing by producing shorter stems. Seeds can become sticky when wet and be dispersed by adhering to vehicle tires and animal or human feet. Seeds can also be distributed by water, and are able to remain viable in the soil for up to 20 years.

Control: As an annual, pineappleweed reproduc
es solely by seed, and therefore prevention of seed production is important. This can be done with hand-pulling, hoeing, tilling, and digging. However, single plants can regenerate from root fragments, so removing the entire plant is necessary for full control. Pineappleweed is not successful in shady environments, and also does not colonize undisturbed soil. A healthy, competitive garden, with little to no bare ground, and thick turf, with well-aerated soil are likely to exclude pineapple weed from establishing. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: The common name 'pineappleweed' refers to the sweet, pineapple-like scent the plant gives off when crushed. Pineappleweed leaves are edible before flowering occurs, at which time the leaves become bitter. The flower head has been eaten as a finger food, or used to make herbal tea. Pineappleweed has also been used medicinally to treat such things as digestive troubles. Additionally, it appears to possess some beneficial bactericidal properties. However, it

can harbor some plant viral diseases, and is considered invasive in several U.S. states.

Other Common Names: disc mayweed, rayless chamomile, rounded chamomile

Rosette

Common groundsel

Senecio vulgaris L.
Asteraceae (Sunflower family)

Origin: Eurasia

Location: lawns, gardens, roadsides, waste areas, plant nurseries, cropland, and pastures

Occurrence: The majority of common groundsel seeds germinate in early to mid-spring and in autumn, although germination can take place throughout the growing season. Flowering begins 5-6 weeks after seedling emergence. Seeds ripen within 5-11 days of flowering, and most are able to germinate immediately. It is possible for several generations of common groundsel to be produced in one season.

Description: An erect winter annual, occasionally biennial, that grows 6-18 inches tall. Stems are fleshy, ribbed, and hollow, with some cottony hairs. Stems are often purplish, especially at the lower end. Leaves are arranged alternately along the stem, lower leaves resting on a short stalk, upper leaves clasping the stem. Mature leaves, 3/4 - 4 inches long and 1/4 - 1 3/4 inches wide, are fleshy and deeply lobed with notched margins. Veins on the underside of leaves are usually cottony-hairy. Upper stems branch and terminate in flower heads, which each consist of a tight,
1/4 - 1/2 inch diameter cluster of many tiny tubular disk flowers. The tips of the flowers are just

Flowering plant

Flower heads and seed head

visible above a 1/4 - 1/3 inch long, green, cylindrical cup of bracts with black tips. At maturity, the cup peels back, revealing many single-seeded, 3/4 inch-long brown fruits with soft white hairs at the tip, which collectively form a dandelion-like globe.

Weedy Characteristics: Common groundsel reproduces solely by seed. Under poor conditions, the plant can produce seed when only a few inches tall. An average plant will produce 1,800 seeds, and some vigorous plants can produce many thousands more. Some seeds will continue to ripen after plants have been uprooted. Most seeds are dispersed by wind, although some are carried in water, by animals, or birds. Common groundsel's early germination allows it to quickly establish in freshly disturbed soil, and its rapid growth and short life cycle allow it to outcompete more desirable plants that establish later.

Control: Maintaining a healthy plant population that is competitive early in the growing season, with as little bare ground as possible, will discourage common groundsel establishment. Germination can be inhibited by thick mulch, on condition that its surface is not perpetually moist. Soil solarization is also effective at reducing groundsel seed population in the soil. Comon groundsel is a prolific seed producer, but most of its seeds do not remain viable past one year. To prevent seed production, seedlings can be destroyed in spring and fall by tilling, hoeing, and hand-pulling. Large infestations can be closely mowed prior to flowering. If it is flowering or producing seed, the entire plant must be removed completely. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Although many medicinal uses for common groundsel have been recorded, it is associated with poisoning of grazing animals, causing permanent liver damage, and even death. Its presence in hay fields can cause contamination problems, and it can serve as a host to nematodes and viruses that threaten a variety of crops. Common groundsel is noxious in Washington State and in Manitoba, Canada, and is considered invasive in Hawaii.

Other Common Names: old-man-in-the-spring, ragwort

Annual sowthistle

Sonchus oleraceus L.
Asteraceae (Sunflower family)

Origin: Eurasia, Northern Africa

Location: gardens, roadsides, cropland, waste areas, waterways, and native plant communities

Occurrence: Annual sowthistle seeds germinate from spring to autumn, but mostly in late spring. As early as 6 weeks after germination, seedlings form a rosette. In spring, flower stalks follow soon after rosette formation, and by 9 weeks after germination flowering can take place. Flower heads can bloom between mid-summer and mid-fall. Flowers open for 2 consecutive days, and seeds are produced 1 week after flowering.

Description: An erect summer annual that grows from 1-4 feet, usually with a single, hollow, sometimes purplish stem, branching near the top. Leaves are dark green to bluish green, with toothed, slightly prickly margins, and are alternately arranged along the stem. Lower leaves have one to three pointed lobes on either side of the mid vein and clasp the stem with a pair of pointed lobes. Upper leaves are smaller and also clasp the stem, but are not as deeply lobed as lower leaves. Leaves are 1 1/2 - 8 inches long, and 1/4- 4 inches wide. Yellow, flat-topped flower heads occur in clusters at branch tips. Each

Flower head

Mature plant

Seed head

Lower leaf

Rosette

flower head is 1/4 - 3/4 inch in diameter and is held in a 1/2 inch-tall cup of green bracts. Each fruit is 1/8 inch long and golden brown with white feathery hairs at the tip. Seed heads collectively form a dandelion-like globe.

Weedy Characteristics: Annual sowthistle reproduces solely by seed, generating several thousand seeds per plant. Seeds are largely dispersed by wind, but are also carried by water, animals, and birds. Given enough moisture, seeds germinate rapidly, and the plant can quickly establish a colony. The plant can progress through its lifecycle within 100 days, and will occasionally produce more than one generation per year. Annual sowthistle is adaptable to a variety of soil types, including saturated and saline soils.

Control: Annual sowthistle seeds need light to germinate, and do not generally germinate from deeper than within ½ inch of the soil surface. Soil solarization can help reduce sowthistle seed population in the soil, and thick mulch can help prevent seed germination. Where possible, maintenance of vigorous perennial plant populations will make it more difficult for sowthistle to establish itself. Frequent tilling, hoeing, or hand-pulling throughout the spring and again from late summer until frost will destroy seedlings. In other situations, mowing closely can prevent seed set and regrowth of plants. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Annual sowthistle stems and leaf veins exude a milky latex when damaged, and although its leaves and stems are

edible—both raw and cooked— the latex gives them a bitter flavor. The plant has been known to be used as a medicinal remedy for such things as varied as bowel trouble and teething pain. All the same, it can be a source of contamination in grass seed and can serve as a host of serious plant disease-causing viruses, fungi, and insect pests. Annual sowthistle is noxious in six Canadian provinces, and is considered invasive in several U.S. states. Spiny sowthistle (Sonchus asper) and perennial sowthistle (Sonchus arvensis) are very closely related to annual sowthistle, and the plants are often confused with each other. However, perennial sowthistle has larger flower heads and a creeping root system, and as its common name implies, spiny sow thistle leaves are stiffly spiny, while annual thistle leaf margins are only slightly prickly. Spiny sowthistle leaves are also less deeply lobed, and the basal lobes clasping the stem are rounded.

Other Common Names: common sowthistle, hare's lettuce, spiny milk thistle

Dandelion

Taraxacum officinale G.H. Weber ex Wiggers (Taraxacum vulgare Lam.)
Asteraceae (Sunflower family)

Origin: Eurasia

Location: lawns, gardens, roadsides, waste areas, parks, cropland, orchards, overgrazed rangeland, pastures, and woodland

Occurrence: Seedlings emerge throughout the growing season. In the first year of growth dandelions generally form a rosette, but the plant does not flower. Flowers are produced in all subsequent years. Flowering begins in mid-spring and continues throughout the growing season, with most occurring at temperatures between 60° and 70°F. Flower heads bloom for 3-4 days, and are open in sunny, warm conditions and close up in rainy or cold conditions. Seed heads develop within 2 weeks of flowering. Seeds are able to germinate immediately.

Description: A simple herbaceous perennial, which generally grows between 1 inch and 2 feet tall. Leaves are arranged in a low-growing rosette, and are 2-12 inches long and 1/2 - 4 inches wide. Leaf shape varies, from having wavy or toothed margins to having deep, pointed lobes. The rosette produces one or more hollow flower stalks that grow 2 - 24 inches tall, depending on conditions. A single, bright-yellow flower head develops at the apex of each stalk, and is 3/4 - 2 inches in diameter. The seed

Rosette

Flowering plant in typical setting

Flower Head

Seed head

head is composed of many 1/8 inch-long rough, brown, oblong fruits with white hairs attached at the tip, collectively forming a globe shape.

Weedy Characteristics: Dandelion can tolerate a wide range of conditions and can live more than 10 years. The plant reproduces largely by seed, and seeds do not require pollination. Each seed head can produce hundreds of seeds, and in optimal conditions each plant can produce dozens of seed heads annually. The seeds are widely dispersed by the wind, but are also carried by water and grazing animals. Although it thrives best in moist, sunny environments, dandelion can tolerate dry or partially shady sites. Its long taproot extends more deeply into the soil than grass roots, allowing it to absorb water and nutrients to its advantage. When cut, the taproot can regenerate within 2 weeks. Dandelion's low-growing rosette enables it to survive frequent mowing and grazing. It also secretes chemicals that interfere with nearby plant growth and contribute to its competitiveness.

Control: Prevention of seed production is not an effective means of control, since plants produce seeds all year, and continue to produce seeds perennially. Dandelion populations can be reduced by digging, hoeing and tilling, although the plant is likely to regenerate if the taproot is not removed entirely. Such control measures are most productive in the fall, by which time most seedlings have emerged. In turf, encourage competitiveness with dandelion by maintaining a healthy lawn with adequate moisture, nutrients and light, and mowing at higher settings. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Dandelion exudes a milky juice when damaged. The plant is high in protein, beta carotene and minerals, and all parts of the plant are edible, fresh or cooked. Dandelion has been used in salads or soups, made into wine or tea, or used as a coffee substitute, among other things. It also has been used to treat a wide variety of medical conditions, and is a diuretic. Dandelion can serve as an important food source for various wildlife and domestic animals, including bear, deer, birds, rodents, insects, sheep and cattle. It secretes chemicals that can interfere with the growth of other plants, but can beneficially inhibit the activity of some disease-causing organisms, as well. On the other hand, dandelion can serve as a host of detrimental viruses, bacteria, and insect pests. The plant can be a serious problem in some crops and cause reduced crop yields. The plant is noxious in Alaska and four Canadian provinces, and is considered invasive in several U.S. states.

Other Common Names: blowball, faceclock, lion's tooth, yellow gown, priest's crown, wet-a-bed

Western salsify

Tragopogon dubius Scop. (Tragopogon major Jacq.)
Asteraceae (Sunflower family)

Origin: Europe and Western Asia

Location: gardens, roadsides, waste areas, cropland, field edges, rangeland, open woodland, and natural plant communities

Occurrence: In the first year of growth, seedlings form a rosette which looks like a tuft of grass that dies back to the root with frost. The following spring a flowering stalk forms, which can produce blooms from mid-spring through early fall. Flower heads are open on sunny mornings and close up in the afternoon.

Description: An upright biennial. Sometimes bluish-green, the linear leaves grow between 2 and 12 inches long, and not more than 1/4 inch wide. Young rosette leaves are often somewhat woolly. The flowering stalk grows 1-3 feet tall, is hollow, and sometimes branched, with smooth leaves arranged alternately on the stem. Each stem has one flower head at the top—made up of many yellow ray flowers—that is 1 - 2 1/2 inches in diameter. Stems are enlarged immediately below the flower head, and 8-13 linear bracts extend outward beyond the flowers. Each flower produces a 3/4 inch-long tan seedpod. The seed pod has a narrow, elongated tip with hairy off-white bristles that form a parachute shape. The collective seed pods form a globed-shaped seed head that can be up to 4 inches in diameter.

Plant with closed seed heads and flower heads

Seed head

Rosette

Weedy Characteristics: Western salsify is able to tolerate drought and nutrient-poor soils. Its seeds can be dispersed long distances by the wind. The plant has a long root and breaks easily when pulled, making it difficult to successfully remove by hand.

Control: Western salsify reproduces solely by seed, and its seeds do not remain viable in the soil longer than 2 years. Therefore, if seed production can be prevented, control can be achieved. Plants should be mown prior to flowering, or as soon as the plant flowers. If only a small number of salsify is present, digging before flowering is effective. Where possible, tilling can also be done. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Western salsify was originally introduced as a garden plant. The common name "oysterplant" refers to the flavor of the roots when eaten raw or cooked. The leaves and stems of young plants can also be eaten. All parts of the plant produce a sticky, milky, bitter juice, which is not palatable to most grazing animals. Western salsify is listed as noxious in Ontario, Canada, and is considered invasive in several U.S. states. Another similar salsify, Tragopogon porrifolius , that is an escaped cultivated plant, is distinguished from western salsify by its purple flowerheads.

Other Common Names: common salsify, Western goat's beard, wild oysterplant, yellow goat's beard, yellow salsify

Flower head

Houndstongue

Cynoglossum officinale L.
Boraginaceae (Borage family)

Origin: Western Asia/ Eastern Europe

Location: gardens, roadsides, waste areas, rangeland, pastures, cropland, and public lands

Occurrence: Houndstongue seeds germinate from early to late spring. In the first year of growth seedlings form a rosette. The rosette dies back with hard winter frost, but new leaves are regenerated the following spring from the root. A flowering stalk is then produced and flowers appear from early to mid-summer. Flowers are succeeded by seeds encased in burs. The plant dies and turns brown after producing seed.

Description: An upright biennial. Flower stalks grow between 8 inches and 4 feet tall, with leaves arranged alternately up the stem. Leaves are rough and hairy, and lower leaves are borne on short stalks and grow up to 12 inches long and 3 inches wide. Upper leaves are smaller, narrower, and stalkless. The entire plant is covered with short soft hairs. Flowers are dark red and bell-shaped, with five petals. Borne on 3/16- 3/8 inch-long stalks, flowers grow along the ends of nodding stems that branch off from the upper leaf axils on the primary stalk and elongate as flowers are produced. Flowers measure approximately 3/8 inch across and are subtended by five sepals. Each flower produces

Rosette

Flowers

Desiccated plant

Burs with short barbs

four flattened, tear drop-shaped burs, arranged in a pyramidal pattern. Burs are single-seeded, 1/4 inch long and have a hard casing covered with short barbs.

Weedy Characteristics: Houndstongue reproduces by seed, and can produce 50-2,000 seeds per plant. Some burs drop to the ground, but most burs remain on the parent plant until passing animals or humans brush against them. The tiny bristles enable the burs to cling easily to fur, feathers or clothing, allowing for wide dispersal. Those seeds that persist on the plant can remain viable for up to 3 years. Houndstongue leaf residues secrete chemicals that inhibit the germination of some other plant seeds. Partly due to this fact, the plant can quickly colonize areas with partially bare, disturbed soil, prevent the establishment of desirable plants, and form dense stands. Other factors that contribute to its competitiveness are its shade tolerance and a large, woody taproot that allows houndstongue to survive harsh conditions, including drought.

Control: Young houndstongue does not thrive among more aggressive plants, or in an undisturbed setting. Therefore, maintaining a healthy, competitive garden, with little to no bare soil, is very effective. It is important to take action before flowering and seed production occur. Digging or hand-pulling the entire plant is preferable, but removing plant tops by cutting at least ½ inch below the soil surface can also be productive. If flowers or burs are present, the plant should be thrown out after removal. Tilling can bring good results, as well. Rosettes will often survive mowing, but plants with a flowering stalk will be weakened or destroyed by mowing. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Although it is toxic to humans, historically, houndstongue roots and leaves have been used medicinally to treat a wide variety of physical ailments, including insomnia, coughs, diarrhea, and ulcers. Most animals find the green plant to have a disagreeable odor, and avoid it, and houndstongue plant parts have been used to deter rodents and other pests in gardens and food storage. However, when grazing animals have limited choices, they will ingest houndstongue, which contains alkaloids that can cause liver damage and sometimes death, even when dry. Furthermore, when caught in sheep's wool, the houndstongue burs reduce market value of the animals. The plant is a noxious weed in 6 U.S. states and in Alberta and British Columbia, Canada, and is considered invasive in several other U.S. states.

Other Common Names: beggar's lice, dog bur, dog's tongue, gypsy-flower, rats-and-mice, sheep's lice

Shepherd's-purse

Capsella bursa-pastoris (L.) Medik.
Brassicaceae (Mustard family)

Origin: Europe

Location: gardens, lawns, pastures, cropland, roadsides, and waste areas

Occurrence: Seeds may germinate throughout the growing season, although most germinate in spring or autumn, between 41°F and 86°F. Flowering begins in mid-spring and takes place all season. Spring seedlings produce seeds within the same growing season, but later plants overwinter as rosettes and produce seeds the following year. Mature seeds are often dormant, and remain so at least until the following spring.

Description: A summer or winter annual with erect stems 4 - 20 inches tall. Rosette leaves are 1-6 inches long and 1/4 -1 inch wide, are borne on short stalks, and are usually deeply lobed. Leaves on the stem are narrow—no more than 4 inches long and 1/2 inch wide—with toothed margins. Stem leaves occur infrequently, are arranged alternately on the stem, and clasp the stem with a pair of pointed lobes at the base. Sparse hairs cover stems and leaves. Flowers are produced at stem tips and are borne on stalks attached to the central stem. Flowers are white, four-petaled and measure 3/8 inch across. Flowers are initially clustered, but as flowers mature stalks elongate, and seedpods develop with generous space between them. Each seedpod is a 3/8 inch long flattened, heart-shaped

Rosette

Mature plant

Heart-shaped seed pods

bladder with a purplish tinge, containing about 20 minute, orange-brown, oblong seeds.

Weedy Characteristics: Shepherd's-purse reproduces solely by seed, and plants can produce between 500 and 90,000 seeds, depending on conditions. Seeds are sticky when wet, and will colonize open, disturbed soil. Seeds are dispersed by wind, rain, by birds and animals that consume them, on vehicle and equipment tires, on human and animal feet, and as a contaminant in hay. Dormant seeds can remain viable in the soil for more than 20 years. Mature plants consistently display a tolerance of dry environmental conditions.

Control: Maintenance of vigorous perennial plant populations, including dense turf, can help prevent shepherd's-purse establishment. Also, soil solarization can help reduce shepherd's-purse soil seed populations. Thick mulch can repress seed germination, as seeds require light and cannot germinate well when buried deeply. In turf situations, seed production can be preempted by mowing, though low-growing rosettes are often unaffected. Rosettes and more mature plants can be removed by hand-pulling, hoeing, or tilling. Tilling is especially important in the fall, to eliminate seedlings that will mature the following spring. However, tilling can also be quite beneficial when done repeatedly throughout the season, since tilling brings shepherd's-purse seeds to the soil surface, where they germinate, and can be removed. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Traditional people have eaten shepherd's-purse seeds and leaves, and have also used the plant for several

medicinal purposes, most notably as a gastrointestinal aid. Insects and grazing animals use shepherd's-purse as a food source. Animal studies show the plant to have some promising beneficial medicinal properties, and other studies have found it to be helpful in monitoring pollution and heavy metals in the environment. On the other hand, shepherd's-purse can be a contaminant in crop seed, it can serve as alternate host for a variety of disease-causing organisms. Shepherd's-purse in noxious in Alberta and Manitoba, Canada, and is considered invasive in seven U.S. states.

Other Common Names: case weed, mother's heart, pepper plant, shepherd's-bag, shovel-weed, witches'-pouches

Hoary cress

Cardaria draba (L.) Desv.
Brassicaceae (Mustard family)

Origin: Southwestern Asia

Location: gardens, roadsides, waste areas, waterways, cropland, and rangeland

Occurrence: Hoary cress begins growth in early spring as a rosette. A flower stalk follows, which produces flowers by late spring. Seeds mature by mid-summer. Plants can bloom and produce seed a second time in late summer. As long as adequate moisture is available, plants can continue to grow vigorously until frost.

Description: A rhizomatous, creeping perennial that grows up to 2 feet tall. The slightly hairy stem is usually erect, but can fall prostrate as it matures. Leaves are oblong to lance-shaped, have a bluish-green cast, and grow up to 4 inches long and 1 1/2 inches wide. Leaves on the stalk have no stem. Flowers are white, 1/4 inch in diameter, and borne in dense clusters at the tops of stems. The seedpod is an inflated, upside-down, heart-shaped bladder up to 1/8 inch long and 1/4 inch wide, divided into two chambers. Each seedpod chamber contains one or two brown, oblong seeds that are approximately 1/16 inch long.

Flowers

Inflated seed pods

Weedy Characteristics: Hoary cress produces a deep, thick taproot, from which rhizomes develop. It spreads mainly by its horizontal rhizomes, which grow up to 12 feet per year, and send up dozens of shoots, each of which are capable of producing flowers and seeds. Hoary cress roots secrete chemicals thought to inhibit the growth of other nearby plants. Each plant can produce hundreds to thousands of seeds twice in a season. The seeds are distributed by wind, water, contaminated crop seed or soil, machinery, and by the movement of animals that consume them. Hoary cress can quickly form dense, homogeneous monocultures.

Control: Prevent hoary cress establishment by maintaining a healthy, competitive garden, with little to no bare soil. Hoary cress requires moist conditions to thrive. Limiting soil moisture, when possible, can reduce seed germination and hoary cress plant vigor. Dig, till, or hoe existing plants and as much of the rhizomes as feasible. This process must be repeated every few weeks up to 4 years, as broken rhizomes can grow independently and produce new plants. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Ground up hoary cress seeds have been used as a substitute for pepper, and hoary cress flowers serve as a source of nectar for honeybees. However, hoary cress is associated with reduced crop value and yield and displacement of native plants. The plant contains mild toxins which affect the digestive tracts of grazing animals, and therefore hoary cress displacement of acceptable forage is also an important issue. It is legally noxious in 16 U.S. states and three Canadian provinces, and invasive in several other US states. Two other weeds that are closely related to hoary cress are lens-podded whitetop (Cardaria chalapen

sis) and hairy whitetop (Cardaria pubescens). Both plants have a strong resemblance to hoary cress before maturity, although hairy whitetop is densely hairy, whereas hoary cress and lens-podded whitetop are usually only sparsely hairy. The most noticeable difference between the three is in the seedpod: hairy whitetop's seedpod is spherical and hairy, lens-podded whitetop's is round and flattened, and hoary cress's is heart-shaped.

Other Common Names: heart-podded hoarycress, peppergrass, small whitetop, whitetop, whiteweed

Flowering plant

Blue mustard

Chorispora tenella (Pallas) DC.
Brassicaceae (Mustard family)

Origin: Asia, Eastern Europe

Location: roadsides, waste areas, fields, pastures, dry meadows, and hillsides

Occurrence: Most blue mustard seeds germinate in late summer and autumn, but some will also germinate in early spring. Fall germinating plants overwinter as rosettes, which produce stems in early spring. Flowering occurs shortly thereafter, succeeded by seed development as early as 10 days after flowering. Flowering and seed production continue until early summer, and the plant dies back by mid-summer.

Description: A winter annual that grows 4-18 inches tall, with one to several stems. Most plant parts are covered with tiny gland-tipped hairs. Apart from those of the rosette, leaves are arranged alternately up the stem, are oblong or lance-shaped, and are 3/4 -
3 1/2 inches long and 1/8 - 1 inch wide. Leaves have slightly toothed, to wavy, to deeply lobed margins. Lower leaves are borne on a short stalk, while upper leaves are generally smaller and stalkless. Flowers are borne singly on short stalks along the stem. Flowers have four 1/2 inch long, light purple petals which emerge from a 1/4 inch long purple tube and form the shape of a cross. The fruit is a long, upward-curving cylindrical pod

Flowers

Glands on seed pod

that grows 1- 1 3/4 inches long and tapers to a point. At maturity, the pod splits apart transversely into two-seeded segments that retain the seeds. Seeds are rounded, reddish-brown and about 1/16 inch in diameter.

Weedy Characteristics: As an annual, blue mustard's sole form of reproduction is by seed. Seed production occurs very early in the growing season. Each plant yields an average of 40 mature seeds, and the seeds can remain viable in the soil for years. Blue mustard tolerates a wide range of conditions and typically forms dense stands.

Control: Blue mustard can be easily hand-pulled, due to its shallow taproot. Small infestations should be hand-pulled before flowering takes place. Seed production can be reduced by mowing the plant during the early flowering stage. Mowing later, however, can promote seed dispersal. When possible, tilling in the late fall or early spring is an effective control. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Blue mustard emits a strong, musky smell (thus the common name, "musk-mustard"), which some consider to be unpleasant. Others pick and eat the raw leaves in salad. Dairy cows that feed on the plant produce milk with a disagreeable flavor. Its presence in some crops can cause yield reduction and seed contamination. Blue mustard is noxious in California, and is considered invasive in four other U.S. states. Blue mustard can be confused with the somewhat less common, but closely related African stock (Malcolmia africana). However, African stock gives off no musk odor, its leaf hairs are forked or 3-rayed, rather than

gland-tipped, its pods have no distinctly prolonged tip, and its pods open longitudinally.

Other Common Names: bead-podded mustard, chorispora, crossflower, musk-mustard, purple mustard, tenella mustard

Mature plant

Common chickweed

Stellaria media (L) Vill.
Caryophyllaceae (Pink family)

Origin: Europe

Location: lawns, gardens, greenhouses, fields, and pastures

Occurrence: Most common chickweed germination takes place during the fall and early spring, although in shady, moist conditions chickweed can germinate and grow throughout the season. The plant does best in temperatures between 53° and 68°F. Seeds will often germinate immediately following maturation, and seedlings grow vigorously, flowering and setting seed within 5 weeks of emergence.

Description: A summer or winter annual. Stems are highly branched, slender, 4-20 inches long and typically prostrate, with ascending tips. A single line of hairs runs along the stem, alternating sides between stem joints. Roots often form at stem joints, and each joint bears two opposite, fleshy leaves that have an elliptical shape with a pointed tip and a hairy base. Leaves are 3/16 -1 1/4 inches long and half as wide. White, star-shaped flowers are produced singly or in clusters on fine, hairy stalks that develop in leaf axils or at stem tips. Flowers are 1/4 inch across and have five deeply cleft petals, with a whorl of five hairy, lance-shaped sepals visible be tween the petals. Flowers are replaced by straw-colored oval capsules that are 3/16 inch long. Capsules break into five sections when mature, revealing tiny warty, reddish-brown seeds that are flattened and circular.

Common chickweed

Flowering plant

Hairy line on stem

Star-shaped flower

Joseph M. DiTomaso, University of California - Davis, bugwood.org

Weedy Characteristics: Common chickweed reproduces by seed, but can also spread and form mats by rooting at stem joints. An individual plant can produce several hundred to tens of thousands of seeds in one season. Seeds cling to fur, feathers and clothing, and are also dispersed by water, animals that eat them, maintenance equipment, and in contaminated soil. Seeds can remain viable in the soil for 10 years or more. Common chickweed grows especially well in soils with high nitrogen availability, but is highly adaptable. It has the rare advantage of prospering in the shade. Immature seeds can ripen after the plant has been pulled, and it will re-root in moist conditions. At night the plant protects its tender new growth by folding its leaves over the tips. Its early growth allows establishment before the milder temperatures arrive that favor most other plants.

Control: Healthy, vigorous plant populations— especially those that do well in shade—can outcompete chickweed. The plant prefers moist, cool conditions, so increasing drainage by aerating or tilling, or allowing the soil to dry out between waterings, can help discourage its growth. Seed germination can be prevented with soil solarization, organic mulch at least 2 inches thick, or with synthetic mulch that effectively blocks light from penetrating the soil. Seed production can be prevented by removing young plants before bloom. Older plants root at the stem joints, and it can be difficult to remove the entire plant. In addition, plants are capable of re-rooting, and must be thrown away after being pulled. Tilling, hoeing, and hand-pulling must be done repeatedly to achieve success. Mowing common chickweed is not productive, because of its prostrate habit. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Common chickweed leaves and stems are often eaten, raw or cooked. Wild birds and some insects feed upon the plant, and it is often an ingredient in chicken or birdfeed (thus the name "chickweed"). Native people have used chickweed for many medicinal purposes, and it is an ingredient in some modern herbal remedies. On rare occasions, and when eaten in abundance, nitrate accumulation and the presence of oxalic acid in common chickweed tissues can cause poisoning. The plant is known as a host of several insect pests and disease-causing organisms, such as aphids, thrips, nematodes, and viruses. It can interfere with crop harvesting equipment, cause crop yield loss, and be a contaminant in crop seed. Common chickweed is noxious in several Canadian provinces, and is considered invasive in eight U.S. states. A very similar plant, mouseear chickweed (Cerastium vulgatum), is a perennial, and is much more densely hairy than common chickweed.

Other Common Names: common starwort, nodding chickweed, satin-flower

Common lambsquarters

Chenopodium album L.
Chenopodiaceae (Goosefoot family)

Origin: Eurasia, North America (ambiguous)

Location: gardens, lawns, roadsides, waste areas, cropland, and pastures

Occurrence: The majority of common lambsquarters seeds germinate in late spring to early summer, although germination can take place throughout the growing season. Plants grow vigorously, and flowering occurs from late summer to early fall, followed by seed production. Mature seeds fall to the ground or stay on the mother plant, and a small percentage of those that fall germinate immediately. The plant dies with frost.

Description: An upright, branched, summer annual that grows 4 inches to 6 feet tall. Branches generally arch upward, and stems are grooved, often purplish or with red stripes. Leaves are arranged alternately along branches, and are covered with tiny, white, granular scales. Leaf undersides and margins are sometimes purplish. Lower leaves are borne on stalks, have coarsely toothed margins or shallow lobes, and often resemble a goose's foot. Upper leaves do not have stalks and are narrow and linear. Leaves are 1/2 - 3 inches long and up to 1 1/4 inches wide. Tiny, petal-less, gray-green flowers occur in tightly clustered spikes at the ends of branches. Flowers are globular and are enveloped almost entirely by a cup of five green sepals. Flowers produce minute, smooth, circular black or brown seeds, covered with a thin, papery casing.

Pre-flowering plant

Seedling

Flower spikes

Weedy Characteristics: Lambsquarters reproduces solely by seed. The plant is a prolific seed producer, with an average of 72,000 seeds from a single plant. Seeds typically remain near the parenat plant, but can be dispersed on mud that clings to vehicles and farm equipment, and are transported by birds and livestock that eat them. It is also distributed as a contaminant in crop and grass seed. Seeds can remain viable in the soil for over 20 years, and sometimes decades longer. Common lambsquarters is adaptable to most environmental conditions and can grow on almost any type of soil, but it does best in open areas with well-drained soil. It is fairly tolerant of drought, although drought can cause early, lower seed production in the plant. Common lambsquarters competes aggressively with other plants and there is some evidence to suggest that the presence of lambsquarters residue may slow the growth of other plants.

Control: Maintaining a healthy perennial plant population or early establishment of annual plants can go along way toward preventing common lambsquarters colonization. Soil solarization can be effective in reducing lambsquarters seed population in the soil. Tilling, hoeing, or hand-pulling must be done repeatedly throughout the season to control the continual emergence of seedlings. To avoid compaction and give lawns a competitive edge over lambsquarters, traffic should be minimized and the soil aerated. Consistent mowing of lawns—preferably before lambsquarters seed production—can give highly effective control. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Common lambsquarters is abundant around the world, and the plant is widely eaten. Young leaves and stems are eaten fresh, boiled or fried, and the seeds are ground for mush, or used as flour for bread. The plant accumulates large amounts of ascorbic acid in its tissues, making it a valuable tool for fighting

scurvy. It has been used for a myriad of medicinal uses, as well, such as for treating burns, painful limbs, and intestinal problems. Grazing animals will eat common lambsquarters when young, but as it matures it becomes woody and disagreeable. Under certain conditions, it can also accumulate nitrate, sulfate, and oxalates in its tissues and cause poisoning of livestock if eaten in large quantities. The plant can serve as a host of fungus and many different viruses that affect a wide variety of crops. Furthermore, its presence in crops can interfere with harvesting equipment and significantly reduce yields. Common lambsquarters is noxious in Minnesota and in Manitoba and Quebec, Canada. Netseed lambsquarters (Chenopodium berlandieri) is a very closely related species that is extremely difficult to distinguish from common lambsquarters without a microscope. They differ in that netseed lambsquarters' seeds are pitted, not smooth, whereas common lambsquarters' seeds are smooth. Common lambsquarters is more often found in gardens and agricultural settings, but netseed lambsquarters is more likely to be found in disturbed settings outside of agriculture.

Other Common Names: fat-hen, lambsquarters goosefoot, pigweed, white goosefoot

Annual kochia

Kochia scoparia (L.) Schrad.
Chenopodiaceae (Goosefoot family)

Origin: Eurasia

Location: gardens, roadsides, waste areas, waterways, fence rows, cropland, pastures, and rangeland

Occurrence: Seeds can germinate at any temperature above 40°F, and do so throughout the growing season. Kochia seedlings first appear in early spring, grow rapidly and mature by mid-summer. Plants flower and produce seed from mid-summer until the first hard frost.

Description: A summer annual that grows between 1 and 6 feet tall. Plants are highly branched and typically form a pyramidal shape. Stems may be green or reddish, sometimes striped, and young stems may be hairy. Leaves are linear, 1/2 to 2 inches long, pointed at the tip, and have three to five highly visible veins. Leaves are arranged alternately on stems, and leaf undersides and margins are occasionally hairy. Minute, petal-less, yellow or greenish-yellow flowers occur in spikes of varying lengths, which are covered with soft hairs. Small, linear bracts—about 1/2 inch long—protrude outward from the flower spikes, giving them a prickly appearance. Flower spikes are found at the tips of the stems and in leaf axils. Each flower produces a flattened bladder that contains a single seed. Seeds are teardrop shaped, rough, brown, flat and 1/16 inch long. Much of the plant turns red in autumn.

Mature plant

Minute flowers and red stem

Weedy Characteristics: Each kochia plant can produce an average of 15,000 seeds. Rapid, long-distance dispersal takes place when dead plant stems break at the base and wind carries the plant as a tumbleweed. Seeds generally germinate within 1 year, or not at all. Kochia is highly competitive for a variety of other reasons, as well: mild frost tolerance, salt tolerance, drought tolerance, resistance to disease and insects, a deep tap root, and the secretion of substances that inhibit nearby plant growth.

Control: Kochia reproduces solely by seed. Since seeds don't generally stay viable past 1 year, prevention of seed production is highly effective. Remove seedlings in the spring by tilling, or mow prior to flowering. Kochia is also not likely to thrive in a healthy, competitive garden. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Kochia has been planted to reclaim land with poor soils, and to stabilize eroding soils. It is also considered a good forage crop in some situations. It has high levels of protein when young, and is more productive in a low water setting than alfalfa (thus the "poor man's alfalfa" name). However, kochia plants also accumulate varying levels of several different toxins, which can negatively affect grazing animals if ingested in large amounts, over long periods, or when animals graze solely on kochia. It is also a problem in crops that mature later in the growing season, crowding out the desirable plants and reducing crop yield. The plant serves as a host for disease-causing agents of potatoes and other crops. Kochia is considered noxious in three U.S. states and in British Columbia and Manitoba, Canada.

Other Common Names: (Mexican) burning bush, common kochia, (Mexican) fireweed, mock cypress, poor man's alfalfa, summer-cypress

Seedling

Tumbleweed

Russian thistle

Salsola tragus L. (Salsola iberica (Sennen & Pau) Botch. ex Czerepanov, Salsola kali ssp. ruthenica (Iljin) Soo, Salsola kali ssp. tenuifolia Moq., Salsola pestifer A. Nels.)
Chenopodiaceae (Goosefoot family)

Origin: Eurasia

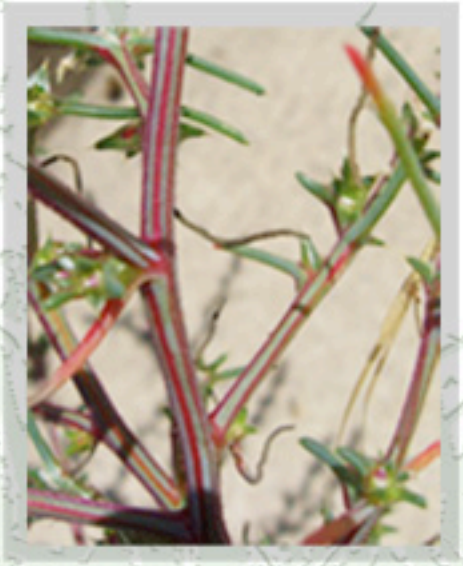
Location: open, abandoned gardens, waste areas, roadsides, fence rows, rangeland, cropland, and waterways

Occurrence: Seeds germinate from mid-spring through summer, generally within a temperature range of 52°-90°F. Flowering takes place from early to late summer. Flowers produce seeds which are mature by late fall. When frost kills the plant, the brittle upper portion breaks off at the base and tumbles in the wind.

Description: An upright summer annual that grows between 4 inches and 3 feet tall, and usually not as wide. The plant is highly branched from the base upward and forms a rounded to pyramidal shape. Most branches arch upward. Stems are round and rigid with vertical, reddish-purple stripes, turning grayish-brown at death. Young leaves are succulent, linear and 1 inch long. Mature leaves are arranged alternately on the stem, are stiff, short and wider at the base, with a spiny tip. Inconspicuous pink to greenish-white flowers are borne singly in leaf axils, sitting in a cavity created by the leaf and two small, spiny bracts. Flowers measure 3/16 - 1/2 inch in diameter. As they mature, the flower parts dry to produce papery wings surrounding a conical fruit. The fruit houses one brown, coiled seed.

Flowering plant

Inconspicuous flowers



Striped stems

Weedy Characteristics: A large Russian thistle plant can produce over 200,000 seeds, which are widely dispersed in the wind by the tumbling process, but also by transport on animal fur and on soil clinging to shoes and wheels. Its tap root can grow 3 feet deep, with many vigorous lateral roots, and its seed is known to germinate within a few hours after a small amount of rain. These traits allow it to thrive in drought conditions. Russian thistle will grow in poor, salty soils (hence the scientific name, Salsola, which means 'salty'), which are inhospitable to most plants. It is also suspected to produce substances that interfere with the growth of other nearby plants.

Control: Russian thistle seeds need loose soil to germinate, and seedlings do best in an open, dry environment. Desirable plants that become established early in the season will create shade that Russian thistle seedlings cannot tolerate. Maintaining a vigorous garden, with little to no bare soil will greatly discourage Russian thistle colonization. As an annual, Russian thistle reproduces solely by seed. Seeds generally do not remain viable past one year. Repeated hoeing, tilling, or mowing of young plants will prevent seed production. Hand-pulling (with gloves) can also be effective for small infestations. Mowing or tilling mature plants will likely help spread seeds. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Native people have been known to eat the young plants and the roasted seeds of Russian thistle, and to use the plant for several different medicinal purposes. Small animals and birds rely on Russian thistle for protective cover, and grazing animals often eat its early growth. It is, in fact, quite high in protein, but in some circumstances it can also accumulate

levels of toxic substances that can be harmful to some livestock. Some people are allergic to Russian thistle pollen, and sensitive skin can be irritated when handling the plant. When dry, Russian thistle spines can damage animal mouths, as well. Russian thistle often serves as a host to insect pests that cause viral disease in vegetable crops. Dry tumbleweeds can be an extreme fire hazard, especially when they collect along fence lines, or other such areas. Travelling tumbleweeds also compromise road safety, and interfere with crop harvesting operations. Russian thistle is sometimes confused with--and will hybridize with--a closely related plant, barbwire Russian thistle (S. paulsenii), which is rounder, stiffer, and more spiny. Russian thistle is noxious in four U.S. states and five Canadian provinces, and it is considered invasive in 10 other U.S. states.

Other Common Names: prickly Russian thistle, prickly saltwort, Russian cactus, tartor thistle, tumbleweed, windwitch

Field bindweed

Convolvulus arvensis L.
Convolvulaceae (Morningglory family)

Origin: Eurasia, Northern Africa

Location: gardens, lawns, roadsides, waste areas, cropland, pastures, fence rows, and waterways

Occurrence: Though most field bindweed seeds germinate by early summer, seeds can germinate anytime between early spring and late fall. Seedlings appear and vigorous growth of field bindweed begins when daytime temperatures reach 57°F. Flowers last only 1 day, and are produced throughout the summer. Freezing temperatures in autumn cause shoots to die back, although most roots remain intact.

Description: A creeping perennial vine. When unimpeded, wiry stems often grow more than 3 feet long and intertwine to form prostrate web-like mats or climb any nearby plant or structure. Leaves are most commonly arrow-shaped, 1/2 - 1 1/4 inches long, and are arranged alternately along the stem. Funnel-shaped, white or pinkish flowers, approximately 1 inch in diameter, are borne on stalks that grow in leaf axils. Several pink stripes are sometimes present on the underside of the flower, extending from the base of the flower to the tip of the petal. The flower stalk also bears two tiny bracts 1 inch below the flower. Each flower gives rise to a teardrop-shaped, light brown fruit capsule, 3/8 inch in diameter, that contains one to four rough, dark brown, three-sided seeds.

Immature plant

Flower

Teardrop-shaped fruit

Plant climbing fence

Weedy Characteristics: Field bindweed produces a tap root which can penetrate up to 10 feet in depth. Many spreading roots grow laterally from the tap root, sometimes extending 30 feet. The extensive root system allows the plant to compete successfully with other plants and survive harsh conditions, such as drought and intense cold. Chemicals secreted by the roots are thought to interfere with the germination of some crop seed. Buds develop on the lateral roots, producing underground rhizomes and aboveground shoots. Field bindweed rhizomes and stems break easily, and when fragmented, underground plant parts will produce new plants. One plant can produce as many as 14 shoots in 1 year, each of which grows 1 ½ – 4 ½ feet in the first season. Those shoots shaded by other plants will adopt a climbing habit to reach light. Each plant is capable of producing 25-300 seeds, which generally fall near the parent plant. However, seeds can also be carried by water, in mud stuck to vehicles or shoes, and by birds or other animals that consume them. Due to an extremely hard seed coat, some seeds can remain viable in the soil for more than 50 years.

Control: High light conditions are optimal for field bindweed. It thrives in areas with bare soil or sparse plantings. Mulch can help prevent bindweed growth by blocking light. Desirable plants that produce early, vigorous growth can create a shady environment for the prostrate-growing field bindweed and put it at a competitive disadvantage. Young seedlings can be destroyed when cut several inches below the soil. Hoeing, digging, or tilling more mature field bindweed every 1-2 weeks for several seasons can reduce plant vigor, and eventually allow for some control to be achieved. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Many insects visit field bindweed for pollination. The plant has been used as a remedy for spider bites and for female problems, among other things. Its stems have been used for cordage, and its leaves and stems have properties that can destroy mosquito larvae. Although some grazing animals will consume field bindweed, it produces poisonous alkaloids and can accumulate toxic levels of nitrates. The plant can serve as a host for several viruses that affect potatoes, tomatoes and other crops. Its presence in crops can also interfere with harvest and significantly reduce yields. Field bindweed is noxious in 35 U.S. states and five Canadian provinces, and is considered invasive in several other U.S. states.

Other Common Names: creeping jenny, European bindweed, morning glory, perennial morning glory, small-flowered morning glory, wild morning glory

Russian-olive

Elaeagnus angustifolia L.
Elaeagnaceae (Oleaster family)

Origin: Eurasia

Location: gardens, roadsides, pastures, waterways, cropland, meadows, and seasonally moist open areas

Occurrence: Russian-olive plants can flower and fruit as early as 3 years following germination. Flowering occurs from late spring to mid-summer, and fruits mature from late summer to mid-fall. Russian-olive seed germination takes place 2-3 months after maturation, from fall to spring.

Description: A perennial deciduous tree or shrub that grows 15-35 feet tall and 10-20 feet wide, with an open, irregular growth habit. Young branches are covered with scales and appear silvery, while older branches are red-brown, and mature bark is ridged and dusty brown. Stems and branches bear 1 - 2 inch thorns. Narrow, oval or lance-shaped leaves are borne on short stalks and are arranged alternately along the branches. Leaf undersides appear silvery-gray, due to the dense scales that cover them. Upper leaf surfaces have fewer scales and are faded green. Leaves are 3/4 - 3 1/2 inches long and 3/16 - 1 1/2 inches wide. Small fragrant flowers on short stalks develop in clusters in the leaf axils of young branches. Flowers are funnel-shaped when open, with four lobes, their outer surfaces scaly silver, their inner surfaces yellow. Each flower produces a 1/2-inch long, egg-shaped fruit, that is silvery when immature, and brown with age. Each fruit contains a single, hard brown seed, about 3/8 inch long.

Egg-shaped fruit

Mature tree

Seedling

Thorny branch

Weedy Characteristics: Russian-olive spreads almost entirely by seed, but is thought to regenerate from stem and root fragments, as well. It produces abundant numbers of seeds, which are dispersed by water, birds and other wildlife. Seeds remain viable for approximately 3 years. Seedlings are quite vigorous in sun or shade, and quickly colonize disturbed and undisturbed areas, sometimes replacing native vegetation. The plant forms associations with soil fungi, which allow it to take up nutrients like nitrogen very efficiently, and thus be aggressively competitive, even on poor soils. Russian-olive can thrive in a wide variety of conditions, and tolerates flooding, fairly high salinity, and drought, although it prefers moist habitats. In favorable conditions, it can grow up to 6 feet per year, sometimes developing thickets that exclude all other vegetation, and use large amounts of water, when available. When cut or damaged, the plant resprouts readily, from below the injured portion or from the root crown.

Control: Russian-olive seedlings can be hand-pulled in moist soil. When possible, tilling young plants two or more times can provide effective control, especially if they are replaced with desirable vegetation. Frequent mowing of plants up to 1 inch in diameter with a brush cutter can be helpful, but must be done for several consecutive years. Larger plants are much more difficult to manage, due to the woodiness of the trunk, an extensive root system, and the resprouting capability of Russian-olive. They must be cut or girdled at or below ground level before fruit production, and any resprouts should be removed repeatedly for several years. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Russian-olive has been planted as an ornamental since the late 19th century, and has been commonly used as a windbreak, in erosion control, and as a resource for wildlife. The fully mature fruit has been known to be eaten, raw or cooked, and it serves as a food source for many types of birds and some mammals. In addition, the plant provides good cover for a wide variety of birds and small animals, and bees often visit its highly aromatic flowers. The foliage is eaten, but not preferred, by grazing animals, and the thorns act as a deterrent to some. Folk medicine remedies use Russian-olive for treatment of insomnia, bronchial infections and fevers, and to improve heart function. Recent research also shows Russian-olive seed extract has muscle relaxant properties. The plant's profuse seed production allows it to escape easily from cultivation, and dense stands can limit livestock movement. It is a mild allergen in spring and summer. Russian-olive is noxious in Colorado, New Mexico, and in some areas of Utah, and is considered invasive in 31 U.S. states.

Other Common Names: oleaster, silverberry, trebizond-date

Spotted spurge

Chamaesyce maculata (L.) Small (Chamaesyce supina (Raf.) Moldenke, Euphorbia maculata L., Euphorbia supina Raf. ex Boiss.)
Euphorbiaceae (Spurge family)

Origin: Eastern U.S.

Location: gardens, pavement cracks, driveways, roadsides, turf, cropland, nurseries, and waste areas

Occurrence: Spotted spurge seed germination occurs within a temperature range of 60°-100°F, but is favored by temperatures between 75°F and 85°F. Seedlings emerge from early summer to early fall, with most occurring from mid to late summer. Spotted spurge grows very quickly in warm temperatures. Plants can flower and produce seeds within 5 weeks of germination, and are thus able to produce two to three generations per season. Blooming occurs mid-summer to autumn, followed by seed production, which occurs until frost kills the plant.

Description: A warm season, typically prostrate annual. Many slender, pinkish-red stems radiate out from a central tap root, and plants may reach 2 feet in diameter, although most are smaller. Leaves grow on almost imperceptible stalks, attached opposite each other along the stem, and commonly bear a central, irregular purple spot. Leaves are elliptical, 1/8 - 1/2 inch long and about 1/8 inch wide and have smooth or slightly toothed margins. Stems and leaves are covered with short, soft hairs. Inconspicuous, pinkish-white, cuplike flowers are found in small clusters at branch tips and in leaf axils. Flowers produce hairy, three-seeded fruit capsules, which are approximately

Prostrate plant

Fruit capsules and hairy stem

Inconspicuous flowers

inch long. Seeds are golden brown, wrinkled and about inch long.

Weedy Characteristics: Spotted spurge reproduces solely by seed, and plants are capable of producing several thousand seeds each. Because they become sticky when wet, seeds easily adhere to animal feet, bird feathers, human feet and vehicles, and are thus distributed widely. Seeds are also dispersed by birds that consume them. Spotted spurge develops a tap root that can reach 2 feet in depth, which enables it to tolerate dry environments. It readily colonizes hot, open areas, low-nutrient soils, and closely mown, sparse or moisture-stressed turf. Plants form dense, prostrate mats.

Control: Spotted spurge is often found growing alongside nursery stock in containers. Planting weed-free stock is an important way to avoid introducing spurge into landscapes. Spotted spurge requires fairly warm temperatures to germinate, and open, sunny environments to reach its full potential. It will not thrive in situations where dense, competitive plants are already well-established before it emerges. Mulch more than ½ inch thick will also impede spurge germination, by blocking light and keeping the soil cool. In a turf setting, maintaining a consistent watering schedule and mowing at high settings will help give the turf an advantage over spurge. Soil solarization can be useful in reducing spurge seed populations in the soil. To prevent seed production, existing spotted spurge can be destroyed by tilling, hoeing, or hand-pulling. This should be done ideally when the soil is moist, as the plants break easily otherwise, and will regenerate from the remnants. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Spotted spurge is visited by a variety of insects, and several different types of birds feed on its seeds. It has also been used medicinally by traditional peoples for both internal and external ailments. Spurges exude a milky sap when damaged, which contains substances that can cause irritation and blistering of the eyes, mouth, and skin. Most grazing animals avoid eating spotted spurge, but when animals do feed on it, they can experience a variety of intestinal problems, which can sometimes result in death. Spotted spurge can serve as a host of insect pests and an alternate host of fungi that attack crops. Spotted spurge is considered invasive in California, North Dakota and New York State. Spotted spurge is one of several prostrate spurges. Two common prostrate spurges, prostrate spurge (Chamaesyce prostrata) and ridgeseed spurge (Chamaesyce glyptosperma) are similar to spotted spurge. However, ridgeseed spurge stems and leaves are hairless, while those of spotted spurge and prostrate spurge are covered with soft hairs. Ridgeseed spurge seeds—as the common name implies—bear deep ridges, and ridgeseed spurge leaves do not have toothed margins. The principal difference between
spotted and prostrate spurge is the presence of an irregular purple spot in the middle of most spotted spurge leaves, and the absence of any such spot on prostrate spurge leaves.

Other Common Names: milk purslane, prostrate spurge, spotted sandmat, spotted spurge

Myrtle spurge

Euphorbia myrsinites L.
Euphorbiaceae (Spurge family)

Origin: Western Asia, Southern Europe

Location: gardens, dry natural hillsides, waste areas, and public lands

Occurrence: Myrtle spurge seeds germinate in waves throughout the growing season. New stems are produced each year from a woody taproot in early spring. Flower and fruit production begins in the second year, and occurs from early to late spring each year thereafter. Stems die back to the root crown with hard frost.

Description: A short-lived perennial, with 8-inch tall fleshy stems. The stems are sometimes upright, sometimes trailing, and form a clump with a spread up to 18 inches in diameter. Thick, waxy, grayish-blue leaves are arranged in tight spirals around the stem. Leaves are oval to wedge-shaped with pointed tips and are 5/8 -1 1/4 inch long and 1/4 -1 inch wide. Multiple flowers are borne in umbrella-like clusters at stem tips. Each tiny yellow-green flower is cupped inside petal-like yellow bracts that form a bell shape around the flower, but spread open as the fruit matures. Each flower produces one bluish-green seed capsule containing three 1/8-inch long seeds. Seeds have a texture resembling that of a peach pit, are dusty brown, and often have a fleshy appendage attached to the tip.

Flowering plant

Clump-forming plant

Waxy leaves

Weedy Characteristics: Myrtle spurge reproduces by seed, but can also regenerate from root fragments. The plant produces an abundance of seeds that are forcefully discharged up to 15 feet from the parent plant when the seed capsules open. It is estimated that some seeds remain viable in the soil for as long as 8 years. Myrtle spurge is drought tolerant and grows vigorously in nutrient poor, sandy, and rocky soils, sometimes displacing native plants that grow under the same conditions. It also tolerates some shade, although it prefers full sun.

Control: Myrtle spurge is dealt with most effectively by digging or hand-pulling before flower production takes place in the second year. Seedlings are easily hand-pulled (use gloves, eye and skin protection!), but when digging more mature plants, the entire root must be removed or root pieces might produce new growth. Several years of digging/hand-pulling are often required to eliminate the plant. If myrtle spurge is blooming at the time of removal it should be discarded in the trash. Tilling or hoeing before flower development gives some temporary control, though this must be done repeatedly to deal with root regeneration. Mowing is not an acceptable form of control, since it promotes seed dispersal. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Myrtle spurge is sold and grown as an ornamental, but can escape and aggressively compete with native plants. All plant parts exude a toxic milky juice when cut or broken. Externally, the juice can cause severe eye irritation and delayed dermatitis, with blisters, redness and burning. When ingested, the plant can cause nausea, vomiting and diarrhea. Cattle generally avoid myrtle spurge, but can also be poisoned by the plant, especially when it displaces acceptable forage. It is

legally noxious in Colorado, Oregon and Washington, and some areas of Utah.

Other Common Names: blue spurge, creeping spurge, donkey-tail spurge, myrtle euphorbia

Black medic

Medicago lupulina L.
Fabaceae (Pea family)

Origin: Eurasia, Northern Africa

Location: lawns, gardens, waste areas, roadsides, pastures, and cropland

Occurrence: Black medic seeds generally germinate at temperatures between 50 and 75°F, both in spring and fall. Flowering can occur within 6 weeks after seedlings emerge in the spring, and along with seed production, continues throughout the growing season. Seedlings that emerge later than mid-summer may overwinter, but may not survive harsh conditions.

Description: A low-growing, spreading annual or short-lived perennial, with stems that grow between 4 inches and 2 feet long. Stems often have four angles and branch outward from the base, which arises from a central taproot. Leaves are arranged alternately on stems, and are each made up of three round to oval leaflets, one central and two lateral. The central leaflet arises from a short stalk. Leaflets are up to 5/8 inch long and 1/2 inch wide. Leaflet margins are finely serrated at the top. Bright yellow, 1/8 inch long flowers develop in globe-shaped clusters on the tips of stalks borne in leaf axils. Flower head clusters are 1/2 - 3/4 inch in diameter and consist of as many as 50 flowers. Seed pods in 1 inch-long clusters replace flower heads. Each seed pod is 1/8 inch long and contains one seed. Seed pods are kidney-shaped,

In typical turf setting

Globe-shaped flower head

Mature seed pods

slightly coiled, prominently veined and turn black at maturity. Leaves, stems and seedpods are often covered with inconspicuous, very fine, soft hairs.

Weedy Characteristics: Black medic reproduces by seed. Each plant is capable of producing a few thousand seeds, which can survive in the soil for several years. The plant grows well in dry soil, soil low in nitrogen, compacted soil, and in sparse lawns. Its prostrate habit allows black medic to tolerate frequent, close mowing.

Control: Preventing black medic seed production is important in its control. Remove small patches of black medic—ideally before seed production—by hand-pulling when soil is moist, hoeing, tilling or digging. In turf, creating an environment that favors a thick, healthy lawn and discourages black medic is vital. To achieve this, ensure adequate moisture and nutrition for turf, and relieve any soil compaction by aerating. Black medic does not thrive in the shade, so mowing at higher settings will give turf an advantage, especially during hot weather. In the garden, thick mulches can help prevent black medic germination. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Black medic produces nitrogen through an association with soil bacteria, and has consequently been grown to improve agricultural soils. Due to its nitrogen production, it has high protein content, and has been grown as a source of forage for livestock. However, it can cause bloating in some cattle. Black medic is attractive to a variety of insects. The plant can serve as a host for several viral and fungal diseases, which can affect soybeans and tomatoes, among other plants. The seed is

often a contaminant in clover and alfalfa seed, and is considered noxious in Alaska, and invasive in several other U.S. states.

Other Common Names: black medick, hop clover, hop medic, nonesuch, yellow trefoil

White clover

Trifolium repens L.
Fabaceae (Pea family)

Origin: Eurasia

Location: lawns, waste areas, public parks, waterways, pastures, orchards, meadows, and woodland

Occurrence: White clover seeds germinate in the spring when soil temperatures reach 50°F. Existing plants begin producing new growth in early spring, and flowers develop by mid-spring. The plant grows most vigorously at temperatures between 64°F and 86°F. Flowers can be produced throughout the growing season, but during hot, dry periods, plant growth is slowed and flower production is commonly suspended until conditions are favorable. Flowers turn brown and droop downward when finished blooming. Seeds ripen and drop to the ground 3-4 weeks following flowering. In humid conditions, seeds can germinate immediately, though in dry conditions, seeds remain dormant.

Description: A cool season perennial with creeping stems 3-14 inches long. Stems branch out from a slender taproot, and produce roots at the joints. Leaf and flower stalks grow from the trailing stems, with a single leaf forming at each joint. Two membranous, leaf-like appendages, no more than ½ inch long, are found at the base of each leaf stalk. Leaf stalks grow ¾-9½ inches tall, are usually erect and bear three hairless leaflets at the tip. The leaflets are round to oval, with inconspicuously serrated margins, and usually exhibit a white v-shaped mark on the upper surface. Each leaflet is ¼-¾ inches long. Globe-shaped

Flowering plant

Globe-shaped flower head

V-Shaped mark on leaflets

flower heads are borne at the tip of the flower stalk that arises from the leaf axil and grows above the leaves. Flower heads consist of 20-40 white to pinkish white flowers. Flowers are narrow, irregular, 3/16 inches long, each on its own short stalk, and held by a green or pinkish, tube-shaped cup of sharply toothed sepals. Flower heads are approximately ¾ inch in diameter. Each flower is replaced by a ¼-inch long seedpod. Seedpods are covered by the brown and papery dried flower, and contain one to four tiny seeds. Seeds are smooth, yellow to brown and heart-shaped.

Weedy Characteristics: White clover reproduces by seed and also by producing roots from creeping aboveground stems. Most roots remain in the top few inches of soil, but some roots can grow several feet deep. Each flower head produces 100-200 seeds. Seeds are distributed by water, birds, grazing animals, insects, and to a small degree by wind. Seeds can remain viable after passing through animal digestive tracts, and a small percentage of seeds remain viable in the soil longer than 20 years. White clover is hardy to -39°F, and tolerates a range of conditions, but does not thrive in drought, heat, saline soils, or standing water. It has the advantage of providing its own nitrogen, can withstand foot traffic, and form dense mats in nutrient-poor soil.

Control: During the cool spring when white clover grows most vigorously, mowing will favor its growth, by keeping grasses low and thereby ensuring optimal light for the clover. Mowing at higher settings can help offset this somewhat. On the other hand, midsummer mowing at low settings puts the already semi-dormant white clover at a disadvantage, since it allows more light and heat to reach the stressed plant. The presence of white clover

is often an indication of nitrogen-poor soils. Fertilizing turfgrass with nitrogen will encourage its growth and allow it to compete successfully with the clover. Digging or hand-pulling the weed will give only partial control, since broken stems can regenerate. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: The leaves, flowers, and seedpods of white clover are all edible, whether raw, dried, cooked, or used in a tea. The plant is high in protein and minerals, and is a source of food for livestock and a variety of wildlife. It is commonly visited by bees for pollen and nectar, and is an important source for commercial honey production. White clover produces its own nitrogen through an association with soil bacteria, and is intentionally grown as a cover crop, or is mixed with grass seed to provide nitrogen in lawns, pasture or forage. White clover is also used to rehabilitate contaminated soils and revegetate disturbed areas. Native people have used the plant medicinally for such things as fever, liver troubles, asthma, cough and colds. A diet rich in white clover can cause bloat in livestock, and the plant is associated with cyanide poisoning when it is drought-stressed. In addition, white clover can serve as a host for plant disease-causing insects, viruses and nematodes. The plant is considered invasive in seven U.S. states.

Other Common Names: Dutch clover, Dutch white clover, ladino clover

Redstem filaree

Erodium cicutarium (L.) L'Hér. ex Ait.
Geraniaceae (Geranium family)

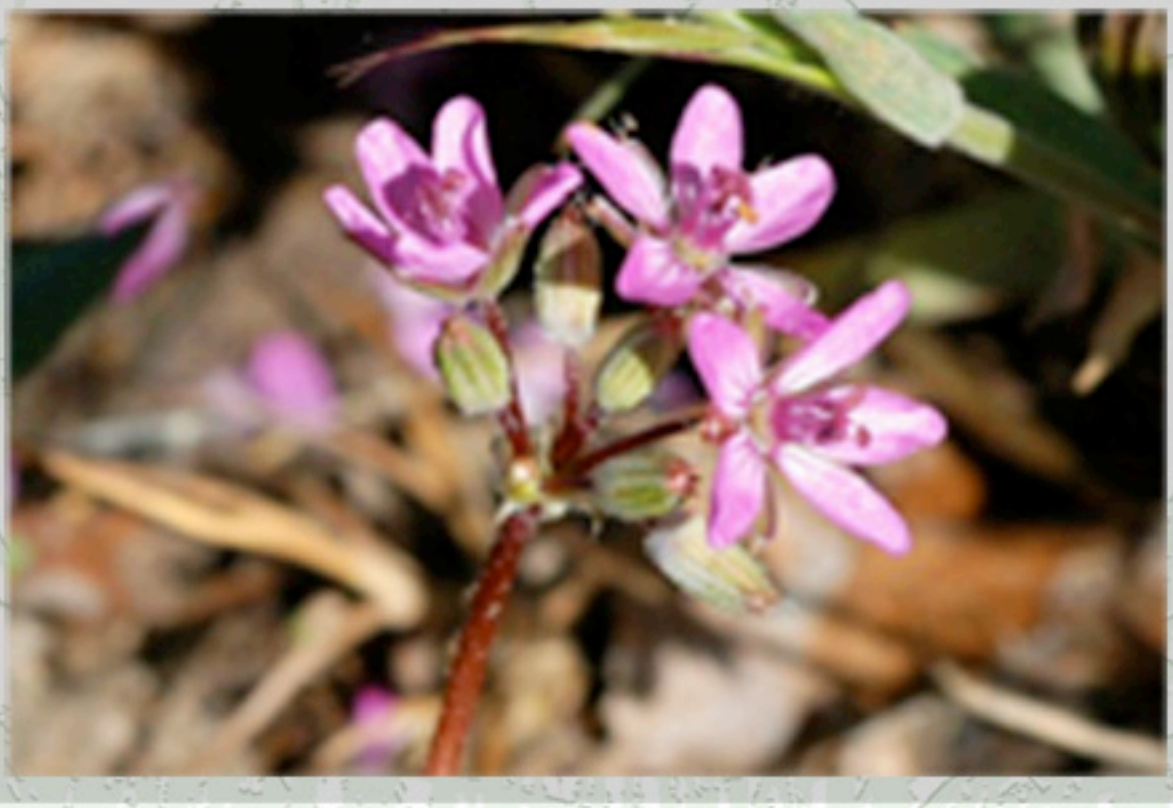
Origin: Mediterranean Europe, Northern Africa and Asia

Location: gardens, lawns, roadsides, fields, and open woodland

Occurrence: Germination of redstem filaree seeds occurs in moist soil at temperatures between 40°F and 70° F from spring to fall. Following germination, seedlings emerge, form a rosette and subsequently produce flowering stalks. Seedlings that emerge late in the year remain as dormant rosettes during winter months. Growth resumes in early spring, flowering stalks develop and plants generally flower from mid-spring to mid-summer, followed by seed production.

Description: A winter annual or biennial. Young plants commonly form a rosette that is often prostrate, but can also have a more upright habit. The entire plant is covered with fine hairs. Leaves have reddish stems, that grow between 1 inch and 2 feet long. Each leaf is made up of three to nine individual fernlike leaflets, that sit opposite each other along the stem. Two to 12 pinkish-purple flowers are produced on 4 inch stalks. The flowers are five-petalled and are approximately ½ inch in diameter. Each flower is succeeded by a fruit with a long, beak-like projection, to which the common names 'cranesbill', 'heronsbill' and 'storksbill' refer. When mature, the fruit splits open to reveal five seeds, each of which has a 1-1½ inch long tail that coils into a spiral upon drying.

Flowering plant



Flowers

Weedy Characteristics: Redstem filaree is an adaptable plant. It can grow in a wide variety of climatic and soil conditions, and by storing moisture in its leaves, it is able to tolerate some drought and compete with other plants. It is also able to tolerate mowing and grazing by adopting a more prostrate growth habit. Each redstem filaree plant can produce between 2,000-10,000 seeds. The seeds are forcibly ejected from the plant when mature, and are dispersed most commonly by driving themselves into the ground, burying themselves into animal fur or bird feathers, or being carried by water. Although intense drought will kill the plant, seeds are able to survive harsh conditions, and can remain viable in the soil for years.

Control: Redstem filaree reproduces by seed. An application of several inches of mulch discourages seed germination, and soil solarization may help to reduce soil seed populations. Hand-pulling, hoeing, tilling, or digging—before or when plants are flowering— allows for prevention of seed production. Redstem filaree does not grow well in shade, and will not compete well with a taller, well-established, desirable plant population. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Redstem filaree is known to have been used in folk medicine and by native peoples. Young leaves and stems of the plant are edible, either raw or cooked. It serves as forage for grazing animals, and its seeds are eaten by birds and small mammals. However, it can serve as a host of diseases that infect such crops as beets and grapes. This plant is legally noxious in Colorado and Alberta and Manitoba, Canada, and invasive in several other U.S. states.

Other Common Names: alfilaria, cranesbill, cutleaf filaree, heronsbill, pinclover, storksbill

Beak-like fruit

Henbit

Lamium amplexicaule L.
Lamiaceae (Mint family)

Origin: Northern Africa and Eurasia

Location: gardens, lawns, roadsides, cropland, waterways, and waste areas

Occurrence: Henbit seeds generally germinate in the fall, although a minority of seeds will germinate in early spring. Seedlings appear in early spring, and flowers are produced from mid-spring to early summer and also may occur in fall. Henbit dies with the onset of hot summer temperatures.

Description: A winter annual that grows between 4 and 12 inches tall. The plant is covered sparsely with fine hairs. Stems are square, often purplish, and branch at the base. Leaves are arranged in opposite pairs. Lower-leaf pairs are farther apart from each other than upper-leaf pairs. Leaves are round or heart-shaped, are 3/8 - 3/4 inch long, and leaf margins have rounded teeth. Veins of the upper leaf surface are recessed, giving it a somewhat un-ironed look. Lower leaves grow on short stalks, and upper leaves clasp the stem (thus the Latin name, amplexicaule, which means 'clasp' or 'encircle'). Tiny, dark pink flowers occur in rings in the upper leaf axils. Open flowers appear orchid-like, with a white face and dark red spots. Each flower produces a four-seeded fruit. Seeds are triangular and brown with white speckles.

Pre-flowering plant

Square stem

Orchid-like flowers

Weedy Characteristics: Henbit's early establishment allows it to interfere with desirable plant growth. It is also thought to possess chemical qualities that inhibit the growth of some other plants. As an annual, henbit reproduces solely by seed, and each henbit plant is able to produce 2,000 or more seeds. Henbit also spreads by producing roots on lower stems that touch the ground.

Control: Thick mulch or soil solarization can help prevent henbit establishment. Seed production can be prevented by digging, hand-pulling, hoeing, tilling, or mowing in the fall or spring. Henbit grows best in moist, fertile soil, in newly-seeded or sparse lawns, and in other open areas. Following a watering regime that allows the soil to dry out a little between waterings will be less favorable to henbit. Thick, healthy turf or other plants can be competitive with henbit, especially if they are vigorous in the spring and fall. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Henbit has been used fresh and cooked as an edible herb, and has been used in teas for medicinal purposes. Henbit seeds are eaten by some birds. The 'deadnettle' common name refers to the fact that, unlike other, related plants in the mint family, this plant has no stinging parts. The plant is a serious problem in many crops, most notably causing yield losses in small grains. It is also a known host of disease-causing fungi and nematodes that affect soybeans and other crops. Henbit is legally noxious in Alberta and Manitoba, Canada, and considered invasive in several U.S. states.

Other Common Names: alfilaria, cranesbill, cutleaf filaree, heronsbill, pinclover, storksbill

Clasping upper leaves

Purple deadnettle

Lamium purpureum L.
Lamiaceae (Mint family)

Origin: Northern Africa, Western Asia, Europe

Location: lawns, gardens, cropland, pastures, and waterways

Occurrence: Purple deadnettle seeds generally germinate in the fall, although a small minority will germinate in the spring. Plants complete their life cycle in the spring before temperatures rise significantly. Seeds have the ability to germinate immediately following maturation, although they will not germinate under hot summer conditions.

Description: A winter annual that grows between 4 and 16 inches tall. Characteristic of the Mint family, purple deadnettle stems are square. Stems are branched at the base and may have a purple tinge. Leaves are arrow-shaped and are arranged opposite each other on the stem, each with a short stalk. Leaf margins are toothed, and the veins of the upper leaf surface are recessed. Leaves can grow up to 1 inch long, but are progressively smaller toward the top. Most leaves are clustered at the top of the stem, and the uppermost leaves are reddish-purple. The arrangement of the leaves causes the stalks to look like hooded figures standing in a group. Small, purple, orchid-like flowers occur in rings in the upper leaf axils. The flower interior is white with purple speck les. Both flowers and leaves are covered by tiny hairs. Each flower produces a four-seeded, light-brown fruit. Seeds are triangular and light brown with white speckles.

Clustered purplish leaves and square stems

Weedy Characteristics: Purple deadnettle reproduces solely by seed. Each plant can produce nearly 30,000 seeds, allowing purple deadnettle to form dense stands, and making it very competitive. Purple deadnettle is able to tolerate some shade and various soil types. It prefers moist soil, but can also grow in drier environments.

Control: Purple deadnettle soil seed populations can be reduced with soil solarization. Seed production can be prevented by hand-pulling, hoeing, or tilling seedlings in the fall and, if necessary, again in the spring. Purple deadnettle will colonize sparse lawns. Therefore, in turf settings, encourage thick, healthy growth by providing adequate nutrition and sunlight. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Purple deadnettle is often found growing near its cousin, henbit (see henbit page in this guide). It has a mild, minty scent, and its flowers and leaves are edible, raw or cooked. The plant has also been used for various medicinal purposes. The name "deadnettle" refers to the fact that unlike other related nettles, stinging glands are absent on this plant. Purple deadnettle serves as a host of some harmful disease-causing organisms, including alfalfa weevil and soybean cyst nematode. It is considered invasive in several U.S. states.

Other Common Names: purple archangel, red archangel, red deadnettle, red henbit

Orchid-like flowers

Catnip

Nepeta cataria L.
Lamiaceae (Mint family)

Origin: Eurasia

Location: gardens, waste areas, roadsides, waterways, pastures, woodland, and natural hillsides

Occurrence: Catnip seeds begin germinating in late spring. The plant's most vigorous growth occurs soon after germination, between 45° and 66°F. With higher temperatures, vegetative growth slows and plants bloom and set seed from mid-summer to mid-fall. The foliage dies back to the roots in winter.

Description: An upright perennial with branched stems that grow 1-3 feet high. Stems are pale green and square. Leaves are heart-shaped or arrow-shaped with serrated margins, and are 1 - 2 1/2 inches long and 1/2 - 2 inches wide. Borne on long stalks, 1/2 - 11/2 inches long, leaves are arranged opposite each other along the stem. Leaves and stems are covered with soft, white hairs that are especially dense on the leaf underside. The hairs give the plant a grayish appearance. Flowers occur in short, dense clusters near the tips of branches. Flowers are orchid-like, 1/3- 1/2 inch long, and white or pinkish with dark purple spots. Each flower is subtended by a hairy, toothed, 1/8 inch-long, tube-like cup of sepals. Each flower gives rise to a four-seeded capsule inside the flower cup. Seeds are tiny, oval and reddish-brown, with two highly visible white spots near the base.

Mature plant

Square stem

Arrow-shaped leaves

Weedy Characteristics: Catnip reproduces by seed and also spreads underground by short rhizomes. Seeds are often dispersed by birds, and may remain viable in the soil up to 5 years. It is quite adaptable, and can grow in a wide variety of locations. Under favorable circumstances, catnip can grow quickly and quite aggressively. It tolerates moderately dry conditions, and does well in the shade. When broken or cut, catnip can regenerate from the rhizomes.

Control: Catnip does not compete vigorously with other plants. Therefore, maintaining a healthy, dense plant population will help prevent catnip establishment. More than half of a catnip plant's rootstock dies when the plant produces seed, so if it has already gone to seed, autumn is a good time to remove the weakened plant. It is preferable, however, to prevent seed production altogether, by tilling, hoeing, or digging in spring or early summer. Cutting the foliage can stimulate root growth, but good control can be achieved with repeated mowing throughout the season. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Catnip is grown as an ornamental and for commercial use, but escapes readily. Catnip is used in teas and as a flavoring in food. The plant gives off a mint-like odor when damaged, and contains compounds that attract cats and modify cat behavior. It is often used in housecat toys and for trapping wild cats. Other compounds produced by catnip have been found to have insect repellant, fungicidal, and antiseptic properties. Grazing animals generally do not eat the plant, but it is attractive to bees and other insects. It has been used medicinally to treat a wide-ranging assortment of ailments, including toothaches, fever, insomnia, menstrual problems and muscle cramps, colds, and

intestinal troubles. Catnip is considered invasive in Maryland.

Other Common Names: catmint, cat's-heal-all, catrup, catwort, field balm

Orchid-like flowers

Star of Bethlehem

Ornithogalum umbellatum L.
Liliaceae (Lily family)

Origin: Northern Africa, Eurasia

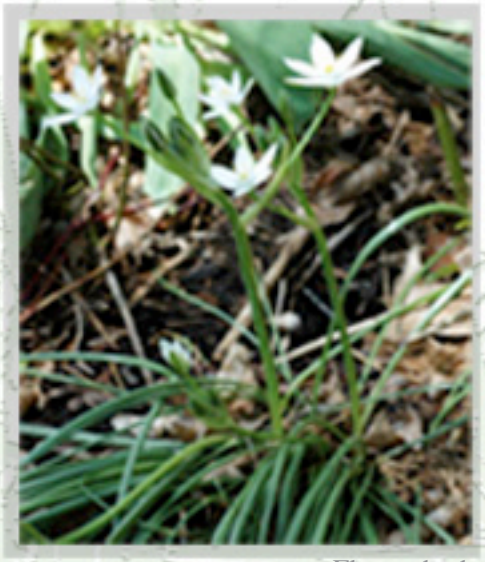
Location: moist gardens, lawns, cropland, pastures, and waterways

Occurrence: Small clumps of leaves appear mid-spring, and continue to elongate into late spring when flowers are produced. The blooming period lasts about 2 weeks, with flowers opening late on sunny mornings and closing by sunset. Flowering is followed by seed set, and subsequently, stems and leaves die back to the bulb by mid-summer.

Description: A perennial, that grows from a fleshy, egg-shaped, 1/2 - 1 1/2 inch-long bulb. Leaves appear as a tuft of shiny, thick grass, initially growing erect, but falling to the ground as they elongate. Leaves are hollow and dark green with a white midvein and grow up to 1 foot long and 1/5 inch wide. Flowering stalks are usually 6-9 inches tall, and arise singly from the center of the leaves. Leafless, smooth and erect, flowering stalks branch above, and one flower is produced at each branch tip, creating a spreading cluster of 4-20 flowers. Flowers are star-shaped, with six white petals and a yellow-green center, and measure 1 inch across. Petals are oval, with a pointed tip, and petal undersides display a wide green stripe down the middle. Each flower produces a three-celled, oblong seed capsule that contains several black seeds.

Flowering plant

Fleshy bulbs and bulblets



Flower bud

Weedy Characteristics: Star of Bethlehem does reproduce by seed, but its principal method of reproduction is by the formation of numerous bulblets (small bulbs) at the base of the parent bulb. When detached from the parent bulb, individual bulblets each produce a new plant. Star of Bethlehem requires moist conditions while growing, but can tolerate dry soil after dieback. It can withstand light shade, and is very aggressive during its short growing period, easily outcompeting other plants.

Control: Prevent Star of Bethlehem proliferation by not planting the bulb as an ornamental. In order to effectively control the plant, bulbs must be entirely removed. Digging and discarding star of Bethlehem bulbs and bulblets prior to dieback is paramount, since they are difficult, if not impossible to locate thereafter. Mowing can prevent flowering and seed production, but will not eliminate the bulb. Hoeing and tilling are likely to facilitate dispersal of bulblets, as is transport of soil from infested locations. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Star of Bethlehem is often planted as an ornamental, and has escaped cultivation, due to its aggressive growth habit. Before flowering occurs, star of Bethlehem appears similar to wild onion or garlic, but the distinctive odor of these plants is absent. In fact, when in bloom, star of Bethlehem flowers emit a pleasant scent. The plant produces compounds toxic to humans and livestock, which are concentrated in the flowers and bulbs. Ingestion of star of Bethlehem can cause irritation of the lips, throat, and tongue, severe intestinal trouble, arrhythmia of the heart, and even heart failure. It is noxious in Alabama, and is considered invasive in 10 other U.S. states.

Other Common Names: dove's dung, sleepydick, nap-at-noon, Pyrenees star of Bethlehem

Star-shaped flower

Common mallow

Malva neglecta Wallr. (Malva rotundifolia auct. non L.)
Malvaceae (Mallow family)

Origin: Eurasia, Northern Africa

Location: lawns, gardens, roadsides, waste areas, and cropland

Occurrence: Common mallow seeds will germinate throughout the growing season, and seedlings emerge from mid-spring to early autumn when adequate moisture is available. Flower and fruit production can take place from early summer to mid-fall. Mature plants are very hardy and often remain green throughout the winter.

Description: A low-growing, spreading annual, biennial or perennial, depending on conditions. Plants grow 4 - 24 inches tall on slightly hairy stems. The leaves are 1/2 -1 1/2 inches across, somewhat hairy, and are borne at the end of long stalks that are arranged alternately along the stems. Mature leaves are circular with wavy margins and five to seven shallow lobes and have a crinkled appearance. Flowers form singly or in clusters in leaf axils. The five-petalled flowers are pale pink or purple to white, funnel-shaped, and are 1/2 -1 inch wide when fully open. Flowers are subtended by five sepals, which are inconspicuously covered in soft hairs. Common names 'cheeseweed' and 'cheeseplant' refer to the round, flattened fruits which appear following flow ering. Each fruit contains 10-12 wedge-shaped seeds and are enveloped by the sepals. Seeds break apart at maturity.

Funnel-shaped flower

Round, flattened fruits

Weedy Characteristics: Common mallow develops a deep, thick taproot, which allows it to survive harsh conditions—including frigid temperatures and dry soil— and regenerate when necessary. It reproduces by seed, and though mallow seeds have a low germination rate, they can remain viable in the soil for decades.

Control: Common mallow is not competitive with dense, vigorous turf. Maintaining healthy turf will help prevent mallow from becoming a problem. Thick organic mulch can be effective in preventing common mallow emergence. Hand pull, till, or hoe when young, before the tap root becomes very large. In larger plants, the tap root becomes woody and difficult to remove, and should be cut below the root crown, preferably prior to seed production. Common mallow will respond to cutting by adopting a prostrate habit, and therefore mowing is an ineffective control. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: The leaves, stems and immature seeds of common mallow can be eaten raw or cooked, and are quite high in vitamins and minerals. Common mallow is attractive as a food source to bees, flies and caterpillars. When growing in nitrogen-rich soil, however, nitrates can accumulate in the plant's tissues, making it toxic to some animals. Native people have used common mallow for various medicinal reasons, including as an astringent, an anti-inflammatory agent, and an emetic. Yet common mallow can also serve as a host for insect pests and viruses that cause diseases in crops. If present in large numbers, the plant can decrease crop yields, or interfere with harvesting machinery. It is considered invasive in Nevada and Tennessee.

Other Common Names: buttonweed, cheeseplant, cheeses, cheeseweed, dwarf mallow, round-leaved mallow

Immature plaant

Creeping woodsorrel

Oxalis corniculata L. (Oxalis repens Thunb.)
Oxalidaceae (Woodsorrel family)

Origin: Europe

Location: lawns, gardens, greenhouses, and waste areas

Occurrence: Seeds germinate at the soil surface whenever temperatures are between 60° and 80°F. Seedlings grow vigorously, and plants can flower and produce immediately viable seed throughout the growing season.

Description: A creeping perennial that is typically about 4 inches tall, though stems can grow up to 20 inches long. The green or reddish stems are slender and hairy, and stems that trail on the ground will root at stem joints. Leaves are often purplish and are borne alternately along the stem at the end of long stalks (up to 4 inches). Leaves consist of three heart-shaped leaflets with hairy undersides. Leaflets are 3/16 inch long and 1/2 inch wide. Leaves will fold down around the stem at night or when the plant is stressed. One to five bright yellow, five-petalled flowers occur in clusters at the tips of 1 - 3 1/3 inch-long stalks. Flowers are 3/16 - 5/16 inch in diameter. Flowers produce elongated, lantern-shaped seedpods, which are 3/4 inch long, green, hairy and five-angled. Each seedpod holds 10-50 seeds. As seeds mature flower stalks turn downward, and at maturity, dry pods forcefully discharge the seeds. Seeds are 1/16 inch long, oval, reddish, sticky and ridged widthwise.

In typical turf setting

Bright yellow flowers and lantern-shaped seed pods

Weedy Characteristics: Although creeping woodsorrel has a long taproot and does spread by rooting from its stems, its primary form of reproduction is by seed. Each plant can produce 5,000 seeds, and when they are mature, dry seed pods burst open and the seeds are launched 10 feet or more from the parent plant. Some seeds then adhere to equipment or clothing, others are dispersed by water and birds. Creeping woodsorrel's slender stems and roots break easily and can regenerate from broken parts. It has an uncharacteristic tolerance for shade, but will also grow in full sun.

Control: Creeping woodsorrel is a common weed in nursery stock, so purchasing weed-free planting stock is an important way to prevent the appearance of creeping woodsorrel in the landscape. Mulch, 2 to 3 inches thick, can block the light necessary for creeping woodsorrel seeds to germinate. Frequent tilling or hoeing gives good control of woodsorrel. Hand-pulling young plants can be effective, but older plants that have already set seed should be removed completely after being uprooted. Mowing does not provide good control of creeping woodsorrel, since its prostrate habit allows it to produce seed even when mowed very closely. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Creeping woodsorrel has a sour, citrusy flavor, and native people have eaten creeping woodsorrel both raw and cooked. The boiled plant has also been used to make a yellow dye. In addition, creeping woodsorrel has been used to treat a variety of ailments, including hookworms, cancer, and topical sores. The sour taste of creeping woodsorrel can be attributed to an accumulation of oxalates in its tissues, which can cause potential kidney failure in livestock when eaten in large amounts. It is

also known to be an alternate host of disease-causing nematodes and curly top beet virus. Yellow woodsorrel (Oxalis stricta) is a close cousin of creeping woodsorrel, but is somewhat more upright in habit, does not root from its stems, and has no appendages at the base of the leaf stalk.

Other Common Names: creeping lady's-sorrel, creeping oxalis, creeping red sorrel, oxalis, yellow oxalis

Broadleaf plantain

Plantago major L.
Plantaginaceae (Plantain family)

Origin: Europe

Location: lawns, gardens, roadsides, cropland, waste areas, meadows, and pastures

Occurrence: Broadleaf plantain seeds will germinate one growing season after ripening. Germination begins when soil temperatures reach 50°F, and continues throughout the growing season. Flowering begins on new plants 8-15 weeks after germination. The roots of established plants generate a new rosette of leaves annually, and flowers and seeds are produced from late spring to early fall. Rosettes die back to the roots with frost.

Description: A low-growing, simple herbaceous perennial. Dark green, egg-shaped leaves form a rosette. Leaves are generally smooth, or slightly hairy, with wavy margins and three or more clearly-defined, tough and fibrous parallel veins. Leaves are 3-7 inches long and 1-2 inches wide and are borne on long leaf stalks. Inconspicuous greenish or yellowish flowers occur in dense, narrow cylindrical spikes on the upper end of thin, wiry, leafless stalks that are 4-15 inches long. Individual flowers are cupped by several bracts with papery margins. Flowers dry and turn brown with age, and a 1/4 inch-long, acorn-like capsule is produced below each flower. At maturity, the seed capsule opens transversely around the middle, revealing 6-30 tiny, ridged, black or brown seeds.

Mature plant

Conspicuous parallel veins

Acorn-like seed capsules

Weedy Characteristics: Broadleaf plantain reproduces almost entirely by seed, though sometimes plants regenerate from a broken or cut root crown. A healthy plant can produce 14,000 seeds per year, which are sticky when wet. Seeds adhere to and are dispersed by shoes, vehicles, animals and birds. Seeds can retain viability in the soil more than 60 years. Broadleaf plantain prefers full sun, but can tolerate some shade. Its own dense, low-growing rosette shades and excludes other plants. It grows best in moist soil, although it is tolerant of wet and dry soils. It is also tolerant of mildly saline conditions. Broadleaf plantain thrives in compacted soil with high traffic (thus the common names "cart-track plant" and "dooryard plantain"), and is hardy to -38°F.

Control: Reducing soil compaction with aeration can create a more hospitable environment for desirable plants. In addition, allowing the soil to dry out between waterings can help discourage broadleaf plantain. Broadleaf plantain needs light, open areas to establish itself. Maintaining a dense plant population that shades the soil will prevent its colonization. Three-inch thick organic mulch will also block the necessary light for seed germination. Continuous mowing can prevent flower and seed production, but due to the low-growing habit of the plant, the rosette is usually unharmed by mowing. Digging, hoeing, or tilling can result in good control, especially when done before seed set. If plants have already produced seed, it may take several years of physical removal to achieve success. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: The young leaves of broadleaf plantain can be eaten raw or cooked as greens. A variety of insects feed on the

plant, and birds enjoy its seeds. Grazing animals will also feed on plantain. It has been used in a myriad of ways, medicinally, including as an anti-histamine, an anti-inflammatory, and for treatment of intestinal problems, fever, and hemorrhoids. On the negative side, it is known as a host of plant viruses and other disease-causing organisms, and can be a contaminant in cropseed and topsoil. Broadleaf plantain is noxious in Quebec, Canada and in Alaska, Connecticut and Washington. It is considered invasive in eight other U.S. states. Buckhorn plantain (Plantago lanceolata), is a close cousin of broadleaf plantain, but buckhorn plantain is usually taller, with a shorter flower spike, it has a much narrower leaf, its seed capsules hold only one to two smooth seeds, and it is not able to withstand traffic as well as broadleaf plantain.

Other Common Names: cart-track plant, common plantain, dooryard plantain, greater plantain, rippleseed plantain, white-man's-footprint.

Creeping bentgrass

Agrostis stolonifera L. (Agrostis palustris Huds., Agrostis stolonifera var. palustris (Huds.) Farw.)
Poaceae (Grass family)

Origin: Eurasia, Northern Africa

Location: lawns, waterways, pastures, meadows, and natural plant communities

Occurrence: Creeping bentgrass starts growth in early spring and grows rapidly until early summer, when vegetative growth slows and flowering begins. Flowering continues until late summer and seed is produced by early fall. Seedlings can mature and set seed within the first growing season. With cool autumn temperatures, plants resume vigorous growth until freezing temperatures cause dormancy.

Description: A perennial, cool season grass with stems that can be 2 to over 36 inches long. Stems creep along the ground and root at the nodes, abruptly ascending to between 8 and 24 inches tall. Young leaves are rolled in a protective sheath. Leaves that have emerged from the sheath are 1 inch wide and 3/4 - 4 inches long, with pointed tips. Leaves have a smooth upper surface with a ridged underside. The ligule is membranous, tapered toward the top, and commonly has irregularly toothed margins. Flower spikes are borne at the ends of stems, are usually red-purplish or sometimes straw-colored, and are 11/2 - 8 inches long. Flower spikes remain closed on the stem until the plant blooms. Flowers give rise to many minute, golden-brown seeds.

Flowering plant

Mature seed heads

Joseph M. DiTomaso, University of California-Davis, bugwood.org

Weedy Characteristics: Creeping bentgrass reproduces mostly by creeping stolons, but also by seed. The seeds are ditspersed by water, on mud stuck to feet or vehicles, and as a grass seed contaminant. Seeds remain viable in the soil for about a year. The stolons spread aggressively, often growing over the top of other grasses, and forming dense, circular mats.
Creeping bentgrass is somewhat tolerant of dry conditions, but prefers moist soil, as its roots are shallow. It does quite well in poorly drained, periodically flooded, saline, and shady conditions. It can also withstand heavy grazing and close mowing. When present in turf, creeping bentgrass can produce large amounts of thatch, especially when overfertilized or mowed closely. Thatch can harbor harmful insects, encourage disease and block water absorption.

Control: Maintaining a healthy lawn can help prevent creeping bentgrass occurrence. Deep, infrequent irrigation, and mowing at least 2½-3 inches high can give the desirable grasses a competitive edge against bentgrass. Consistent mowing prevents seedhead production. Tilling encourages bentgrass spread, since it breaks the stolons into small pieces, each of which can form new plants. When digging, the entire plant should be removed for thorough control. Following removal of small patches by digging, bentgrass should be replaced with a desirable species. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Creeping bentgrass is widely used as a golf course turf, because of its dense growth and tolerance of close mowing. The plant is not highly productive, and is less palatable to animals after flowering, but it stays green throughout summer, and is considered good forage crop for livestock and wildlife. It

is grown for hay in some areas, as well. Furthermore, it provides cover for small mammals and some birds, and is planted to control soil erosion. Leaf blades of creeping bentgrass are much finer than those of most other turf species, and its presence in lawns causes a disruption of uniformity. The plant is susceptible to quite a few fungal diseases and some nematodes. It sheds large amounts of pollen as it flowers and can be a severe allergen. Creeping bentgrass is noxious in New Jersey and Virginia, and is considered invasive in eight other—mostly western—U.S. states.

Other Common Names: carpet bentgrass, redtop, redtop bent, seaside bentgrass

Downy brome

Bromus tectorum L.
Poaceae (Grass family)

Location: roadsides, waste areas, waterways, cropland, overgrazed pastures, and natural plant communities

Occurrence: The majority of downy brome seeds germinate in autumn, but germination can occur in early spring or whenever moisture is adequate. Seedlings are semi-dormant in the winter and develop an extensive root system in temperatures just above freezing. Plants grow quickly in early spring and produce flowers by mid-spring. Seeds are produced by late spring, and downy brome finishes its life cycle by early summer, when conditions start to get hot and dry. Seeds usually germinate within a year of maturity.

Description: An early summer or winter annual grass that grows upright from 2 to over 24 inches tall. Young leaves are rolled in a protective hairy sheath. When they emerge, leaves are hairy on both sides and are flat or have inward-rolling edges. Leaves are 2 - 6 inches long and up to 1/4 inch wide, with a membranous ragged ligule that is 1/8 inch long. Loose clusters of drooping flower/seed heads are borne at the ends of stems. Long, straight, bristle-like appendages extend 3/8 - 3/4 inch beyond the florets, giving the plant a soft, feather-like appearance. The plant changes from green to purple to light brown as it matures and as available moisture declines.

Drooping seed heads

Single plant

Soft, feather-like appearance

Weedy Characteristics: Downy brome reproduces solely by seed, and a good-sized plant can produce more than 300 seeds. The seeds are distributed by wind, on fur, feathers, clothing and shoes, and as a seed contaminant. Seeds may remain viable in the soil for 2-5 years. Seeds do not need soil for germination, but grow faster when covered by a small amount of soil or plant litter. The plant is very adaptable, and even when severely stunted by drought, a 1 or 2-inch plant can still produce some seeds. Downy brome does well in nutrient-poor soil, and uses any available nutrients very efficiently. It often exhausts the supply of soil water and nutrients before other plants have come out of winter dormancy, thus depriving them of necessary resources to germinate or grow.

Control: To discourage downy brome germination, any plant litter on the ground should be removed. Soil solarization can help reduce downy brome seed population in the soil. The plant does poorly in the shade and does not compete well with vigorous, established plants. Therefore, maintaining healthy perennial plant populations will make downy brome colonization difficult. Individual plants and small infestations can be hand-pulled or tilled, preferably before plants produce seed. Downy brome should then be replaced immediately by desirable vegetation. Consistently mowing every 3 weeks from spring to mid-summer can help control downy brome seed production. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Native people have eaten downy brome's low-quality seed in times of famine, have used the plant to create bedding cushions, and for ceremonial purposes. Birds and rodents visit downy brome for its seeds. It is also regarded as good forage for livestock and wildlife in early spring before seeds are produced, but the long, stiff bristles on mature seeds can do damage to animal mouths, eyes, and digestive systems. Downy brome is often found in

crop seed, hay and straw as a contaminant, and can serve as an alternate host of fungi that infect wheat and other grains. The plant is a significant problem in rangeland, where it replaces the native vegetation and becomes a dangerous fire hazard. Downy brome is legally noxious in Colorado and Connecticut and in three Canadian provinces. It is considered invasive in 16 other U.S. states.

Other Common Names: broncograss, cheatgrass, downy chess, drooping brome, junegrass, Mormon oats

Large crabgrass

Digitaria sanguinalis (L.) Scop.
Poaceae (Grass family)

Location: lawns, gardens, cropland, and waste areas

Occurrence: Large crabgrass seeds begin germinating when temperatures reach about 55° F consistently and continue to germinate throughout the growing season. Flower and seed production occurs from mid-summer until the first frost, when plants die.

Description: A clump-forming, warm season summer annual grass that grows prostrate when mowed and up to 2 feet high otherwise. Young leaves that are rolled inside a hairy, protective sheath unroll and flatten as they emerge. Leaf blades are coarse and hairy, and are 2 - 6 inches long and 1/8 - 1/2 inch wide. Leaves and sheaths are commonly tinged with purple, and the ligule is membranous, very short, and jagged. Elliptical flowers are borne in pairs on 2-16 spikes that are attached to the main flower stalk. The arrangement looks like fingers radiating from a hand. Each spike is 2 - 6 inches in length. Flowers are each approximately 1/8 long and 1/16 inch wide, and often have some purple coloring. Each flower is replaced by a straw-colored seed.

Weedy Characteristics: Large crabgrass reproduces by seed, and a single plant can produce up to 150,000 seeds. It can also spread during the season by developing roots on the stem joints that touch the ground. It will grow aggressively to fill in any gaps that exist in the vegetation, and has some tolerance to saline conditions. Large

Clump-forming plant

Mature plant

Finger-like flower spikes

crabgrass grows best in the heat of summer, which allows it to flourish when the cool season grasses that are commonly planted for turf are less vigorous.

Control: Large crabgrass seeds need light to germinate. Thick, healthy turfgrass that is mowed at a high setting can shade the ground and prevent crabgrass from establishing. Dense turf that is deeply but infrequently watered can also compete well with existing crabgrass. Established lawns should not be aerated nor should new lawns be put in when conditions are favorable for crabgrass germination, since it can easily take advantage of open space in the lawn. Likewise, applying fertilizer during the summer will only serve to promote crabgrass growth, making it more competitive with turfgrass. In a garden setting, mulch is effective in blocking light required for crabgrass seed germination, whether it is a 3-inch organic mulch or a synthetic mulch. Soil solarization can also be effective in reducing the seed population in the soil. Hand-pulling, tilling, and hoeing all provide good control against crabgrass, especially if done before seed is produced. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Large crabgrass was introduced as a forage plant for cattle in the late 19th century, and is still grown as such in some areas. It has also been grown intentionally for its edible seeds that can be used in porridge or ground for flour. Birds will visit the plant for its seeds, as well. Medicinally, it has been used in folk remedies for cataracts and skin lesions. Large crabgrass is a weed of many crops, including potatoes, and serves as a host for plant disease-causing viruses, fungi, nematodes and insects. Upon contact with the skin, the hairs of the plant can cause mild, temporary irritation. It is considered invasive in Arizona, Texas and Tennessee. Large crabgrass flowering spikes are sometimes confused with those of bermudagrass (Cynodon dactylon), a perennial creeping grass.

Bermudagrass flower spikes all arise from a single point at the top of the stem, whereas large crabgrass spikes typically form a candelabra-like shape, with several, separate points of origin. Smooth crabgrass (Digitaria ischaemum) is also very similar to large crabgrass, but is smaller, is not hairy and does not root at the stem joints.

Other Common Names: common crabgrass, hairy crabgrass, purple crabgrass, redhair crabgrass

Barnyardgrass

Echinochloa crus-galli (L.) Beauv.
Poaceae (Grass family)

Location: gardens, lawns, roadsides, waterways, waste areas, and cropland

Occurrence: Barnyardgrass seeds germinate primarily in late spring, but can germinate throughout the season between temperatures of 50°-104°F. New shoots and branches are produced continuously from 10 days following emergence until seed maturation. Flowering occurs from mid-summer to early fall, and seeds mature from early fall until the plant dies about mid-fall. Newly matured seeds remain dormant until at least the following spring.

Description: A highly variable, warm season annual grass with stems that grow from 1 to 5 feet tall. Barnyardgrass generally has an erect habit, but will sometimes grow low to the ground. Stems occasionally branch and root at the base, and stem bases are often purplish. Leaves measure 4 - 20 inches long and 1/8 -1 inch wide. Leaves are moderately rough and flat, with a conspicuous white midvein, a pointed tip, and a purplish base, with no ligule. Flower clusters are often purple, and are borne on 1-4 inch-long crowded branches at stem tips. Flowers typically have a bristly appearance, caused by whiskery hairs that grow from the flower tips. Each flower produces a tan, relatively large, oval grain, which is 1/8 inch long. Stems often nod from the weight of the seed heads.

Mature plant

Purplish stem base

Bristly flower clusters

Weedy Characteristics: As an annual, barnyardgrass reproduces solely by seed. By some estimates, a single plant can generate from 40,000 up to 1 million seeds. Seeds are dispersed through water, by birds and animals, on farm machinery, and as a seed contaminant. Seeds may remain viable in the soil for more than 10 years. Barnyardgrass prefers moist to wet soils and high temperatures. It can tolerate saline soils and poorly drained soils, and is very competitive for soil nutrients, especially nitrogen.

Control: In favorable circumstances, barnyardgrass seedlings that germinate in late spring and early summer can become very large, highly competitive, and produce seeds in abundance. Those seedlings that germinate later in the season do not normally achieve even one quarter of the growth the early plants do. Destruction of the early plants is therefore highly effective control. Individual plants can be hand-pulled. Early, repeated tilling or hoeing will bring seeds to the surface to germinate, and will eliminate existing and subsequent seedlings. Barnyardgrass grows poorly in shady environments. Early establishment of a healthy, competitive desirable plant population, with little to no bare soil will keep the soil shady and cool, make barnyardgrass seed germination difficult, and reduce seedling competitiveness. In lawn settings, mowing on a high setting will also provide adequate shade for this purpose. In addition, watering deeply and infrequently will encourage the turf and discourage water-loving barnyardgrass. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Barnyardgrass has been used in folk medicine as a preventative or tonic for several different ailments. It is grown for its seeds in some areas of Africa and Asia, and native people have traditionally eaten ground barnyardgrass seeds as a mush. Many different birds feed on barnyardgrass seeds, and livestock will eat the plant in its early stages, but the leaves become tough and disagreeable

as they mature. In fertile soils, barnyardgrass can accumulate nitrates at levels that are potentially toxic to grazing animals. It is a severe problem weed in rice, and can serve as a host of several crop viruses that affect rice, wheat, alfalfa, and others. Barnyardgrass is a common contaminant in birdseed and crop seed, its presence can severely reduce crop yields, and cause interference with harvesting machinery. Barnyardgrass is noxious in Arkansas, in Manitoba and Quebec, Canada, and is considered invasive in seven other U.S. states.

Other Common Names: cockspur, common barnyard grass, Japanese millet, watergrass

Quackgrass

Elymus repens (L.) Gould (Elytrigia repens (L.) Desv. ex B.D. Jackson, Agropyron repens (L.) Beauv.)
Poaceae (Grass family)

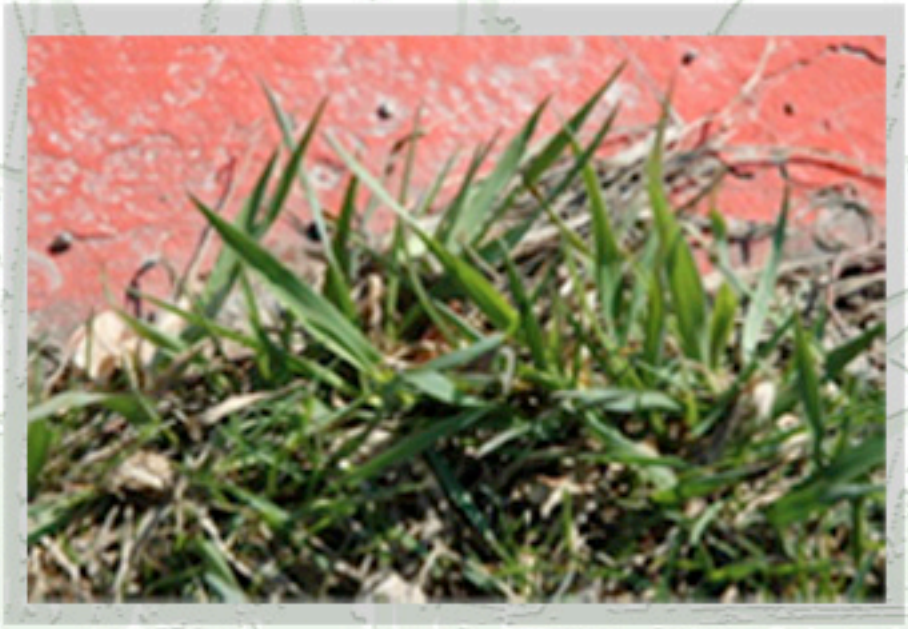
Location: gardens, lawns, cropland, rangeland, pastures, roadsides, and waterways

Occurrence: Germination of quackgrass seeds occurs in autumn and spring. Rhizome growth begins in mid-spring, slows in summer, and resumes in autumn, when daytime temperatures are between 68° and 77°F. Flowers and seeds are produced from early to late summer, and seeds can be produced more than once a year.

Description: A perennial, cool-season grass that can grow between 1 and 3 feet tall, but commonly grows low to the ground with stem tips ascending. Leaf blades are 1/4 - 1/2 inch wide, often with a constriction near the pointed tip. Leaf blades and protective sheaths at the lower part of the leaf are sometimes softly hairy. Small, clawlike appendages clasp the stem where the sheath meets the leaf blade, and the ligule is very short and membranous. Flowers are borne on slender, 1 1/2 -7 1/2 inch spikes, which consist of smaller, flattened spikelets, arranged alternately in two rows along the stem. Spikelets usually have four to six flowers each, and sometimes bear bristles up to 3/8 inch long. When mature, flower scales contain grains that are narrow, yellow-brown, and approximately 1/4 inch long. Rhizomes are yellowish-white with coarse, brown sheaths at the joints and pointed tips.

Rhizomes

Flattened spikelets



Creeping plant

Weedy Characteristics: Quackgrass reproduces mostly by aggressive rhizomes, which can spread laterally up to 10 feet per year, but remain mostly in the top 6 inches of soil. New stems and roots are produced at rhizome joints. The tough, sharp-tipped rhizomes often penetrate the roots of other plants as they grow. The plant also reproduces by seed, and seeds may remain viable in the soil for approximately 3 years. Secretions of chemicals that interfere with nearby plant growth also contribute to quackgrass competitiveness. In fact, it has been known to outcompete and replace native vegetation, sometimes forming dense stands. Quackgrass is somewhat salt tolerant, and although it prefers moist soils, it is also drought tolerant, once established.

Control: Maintaining a vigorous garden or healthy lawn can help discourage quackgrass occurrence, especially if quackgrass is densely shaded. Mowing at a low setting can prevent quackgrass seed production. Frequent digging, hoeing, tilling, and raking throughout the season can reduce quackgrass vigor by interrupting its growth and reducing its density. However, rhizomes must be completely removed for thorough control, as broken rhizomes can grow independently and produce new plants. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Quackgrass seeds, rhizomes, shoots and leaves are all edible by humans, in one form or another. Also, in modern herbal medicine, quackgrass has been used to treat urinary disorders and kidney stones. It has been crossed with other grasses to create better hybrids for grazing purposes and is considered good early forage for grazing animals, although it is susceptible to a fungus called ergot that can cause it to be toxic to livestock. Quackgrass is a weed in many crops, and its presence there can cause productivity losses. It is legally noxious in 26 U.S. states and in five Canadian provinces, and is invasive in 12 other U.S. states.

Other Common Names: couchgrass, creeping quackgrass, dog grass, twitch grass, wheat grass

Constricted tips

Mature Spikes

Stinkgrass

Eragrostis cilianensis (All.) Vign. ex Janchen (Eragrostis megastachya (Koel.) Link)
Poaceae (Grass family)

Location: lawns, gardens, roadsides, waste areas, and cropland

Occurrence: The majority of stinkgrass seeds germinate in late spring when temperatures remain consistently at 65°F or above for several weeks. Seedlings mature quickly and flowering and seed production occur from mid-summer to early fall. The plant dies with the onset of freezing temperatures.

Description: A warm season summer annual bunch grass that grows 6 - 24 inches tall. Stems are typically hollow and sometimes branch at the lower joints, and a ring of glands is often found below stem joints. Young leaves are rolled in a protective sheath. Leaf sheaths bear occasional glands and are hairy at the tip. Leaves that have emerged from the sheath are flat or rolled inward, and measure 1 - 6 inches long and up to 3/16 inch wide. Leaf blades are smooth below and rough on the upper surface, and also bear glands that are especially noticeable on the leaf margins. The ligule is a ring of stiff hairs. Flower clusters have a grayish hue, are borne at the ends of stems, and are usually dotted with glands. The clusters are made up of smaller, flattened, lance-shaped clusters arranged in a triangular shape that is 1/2 - 6 inches long and 1/2 - 2 inches wide. Flowers give rise to many minute, golden brown, rounded to egg-shaped seeds.

Mature Plants

Single clump

Weedy Characteristics: Like most annual plants, stinkgrass reproduces solely by seed, and an individual plant can produce tens of thousands of seeds. Seeds are likely distributed by wind, birds, and on feet and vehicles that travel across them. Stinkgrass is also adapted to a wide variety of soils and moisture conditions.

Control: Stinkgrass is not very competitive, and only establishes in open areas and new or poorly maintained lawns. A healthy population of perennial plants or turfgrass can easily prohibit stinkgrass from colonizing an area. The plant has shallow roots, and is easily hand-pulled. Hand-pulling of small infestations is best done before seed production takes place. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: The seeds of stinkgrass have been eaten by native people during times of famine, and the seeds are eaten by a few wild birds. An unpleasant odor is emitted by glands on fresh stinkgrass leaves and flower spikes, which is especially noticeable when the plant is damaged. Grazing animals will eat stinkgrass when few other options are available, but generally avoid it because of its disagreeable odor. Such behavior is advantageous, since the plant is toxic to grazing animals if ingested in large quantities. It is also known to host viruses that cause disease in wheat and corn crops, and can be a contaminant in crop seed and birdseed. Stinkgrass is considered invasive in South Dakota, Texas and California.

Other Common Names: candygrass, lovegrass, stinking lovegrass, strongscented lovegrass

Lance-shaped floral clusters

Annual Bluegrass

Poa annua L.
Poaceae (Grass family)

Location: gardens, lawns, walkways, pavement cracks, waterways, cropland, and pastures

Occurrence: Annual bluegrass seed germinates in late summer, early fall or early spring, when temperatures are below 70°F. Plants can flower within 8 weeks of germination, and continue flowering and producing seed until hot temperatures cause them to die or go dormant. Dormant plants regenerate from the roots with cooler fall temperatures.

Description: A tufted, cool-season winter annual or short-lived perennial grass. Annual types usually have an upright habit, whereas perennial types generally grow more prostrate. Stems are often flattened and can grow up to 1 foot tall. Roots sometimes form at the base of stems, especially in perennial types. Leaves arise from a protective sheath with a pointed, tissue-like ligule. When young leaves emerge from the sheath, they often look somewhat crinkled. Leaves are 1 - 4 inches long, 1/16 - 3/16 inch wide, with tips that resemble the bow of a boat. Leaves and stems are light green. Branching flowering stalks reach 1 - 4 inches in length, and small clusters of three to six whitish-green flowers occur at the end of each branch, collectively forming a triangular shape when fully open. Flowers give rise to orange-yellow grains that are 1/16 - 1/8 inch long.

Clump-forming plant

Boat-shaped leaf tip

Weedy Characteristics: Annual bluegrass reproduces by seed. Each plant is capable of producing several hundred seeds, and will do so even when closely mowed. Seeds can remain viable in the soil for many years. Annual bluegrass seeds are dispersed by wind, water, on muddy feet or machinery, by animals that consume them, and by birds that build nests with grass. The plant tolerates high traffic, compacted soil, and moderate shade. When vigorously growing, annual bluegrass is lighter green than Kentucky bluegrass, and during the heat of the summer, annual bluegrass leaves unwelcome brown spots in lawns.

Control: Several methods can be used to control annual bluegrass germination: frequent hoeing or tilling in spring and fall; mulching (prevents seed germination by blocking necessary light from reaching the soil); soil solarization (kills seeds within the top 2 inches of soil); and avoiding turfgrass fertilization during major annual bluegrass germination periods. Hand-pull existing single plants before seed production, and replace them with vigorous, desirable plants. Reduction of traffic and regular aeration can encourage the growth of more desirable plants. Annual bluegrass has a shallow root system that requires consistent moisture. When the soil is allowed to dry out between waterings, annual bluegrass will decline. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Annual bluegrass is known to be a host of various viruses, nematodes, fungi,and insects that are detrimental to some crops. It is a common contaminant in grass seed mixes. It is legally noxious in eight U.S. states, and is considered invasive in six other states.

Other Common Names: poa, walkgrass, winter bluegrass

Floral clusters

Green foxtail

Setaria viridis (L.) Beauv.
Poaceae (Grass family)

Location: lawns, gardens, roadsides, cropland, pastures, waterways, and waste areas

Occurrence: Most green foxtail seeds begin germinating following heavy spring rains, but can germinate anytime throughout the season when temperatures are between 59° and 95°F. Flowers occur from mid-summer through early fall. Grains mature 2 weeks following flowering, and can fall easily from the plant when mature. Seeds are generally able to germinate 2-4 months after maturing.

Description: A clump-forming, warm season summer annual grass that grows between 4 inches and 3 feet tall. Stems are mostly erect, often branch at the base of the plant, and are occasionally purplish at the base. Leaf buds are rolled lengthwise inside a protective sheath, with a short, fringed ligule. After emergence, leaves are flat and rough, occasionally with tiny hairs along the margins at the leaf base. Leaves usually grow 6 inches long, and up to 1/2 inch wide, tapering to a point at the tip. Cylindrical, 3/4 - 3 1/2 inch long flower heads form at stem tips. Flower heads are composed of many tiny, inconspicuous, densely clustered florets, each with one to three green or purple bristles at its base that project out at an upward angle. Full flower/seed heads often nod. Each floret matures into a 1/16 inch-long green to brown grain, which is oval and flattened on one side.

Mature plants

Bristly flower head

Single clump-forming plant

Weedy Characteristics: Green foxtail reproduces solely by seed. Once germination has taken place, the plant progresses rapidly through its life cycle and can produce seed within 40 days of emergence. It has been reported that the average plant produces 5,000-12,000 seeds, which can remain viable in the soil for 6 years or longer. Seeds can be distributed by birds and animals who consume them, on vehicles, or in harvested crops. Seeds can also be carried by water and wind. Green foxtail is fairly tolerant of dry conditions, and does well in high temperature environments, although it will tolerate a wide range of temperatures. It is also mildly tolerant of saline conditions.

Control: Green foxtail colonization can be discouraged by minimizing the available bare or newly disturbed soil in the landscape. Foxtail seed populations in the soil can be reduced with soil solarization. Vigorous, dense plant populations that are established before green foxtail emerges will out-compete the weed, by decreasing the amount of light and nutrients available to it. Green foxtail has shallow roots and is easily pulled by hand. Hand-pull, hoe, till, or mow repeatedly before seed production. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Green foxtail seeds are edible, and can be boiled, roasted, or ground into flour. The plant has also been used for various medicinal purposes. Although it is palatable to sheep, foxtail bristles can cause irritation and sores in the mouths of horses and cattle. It can serve as a host of several plant viral diseases, and is a frequent contaminant in small grains and hay. Green foxtail is noxious in five Canadian provinces and is considered invasive in five U.S. states. Yellow foxtail (Setaria glauca or Setaria pumila) and bristly foxtail (Setaria verticillata) are closely related to green foxtail, and the plants can be confused with each other. However, bristly

foxtail seed heads cling readily to clothing and animal fur, due to the orientation of minute barbs on its bristles, whereas green and yellow foxtail do not cling. The differences between green foxtail and yellow foxtail are more subtle. Yellow foxtail generally grows a little taller than green foxtail, its seeds are larger, and it has long, wispy hairs at the base of its leaves that are absent in green foxtail.

Other Common Names: bottle grass, green bristlegrass, green millet, pigeongrass, wild millet

Prostrate knotweed

Polygonum aviculare L.
Polygonaceae (Buckwheat family)

Location: gardens, cropland, waste areas, turfgrass, roadsides, walkways, parking lots, and pavement cracks

Occurrence: The majority of seeds germinate very early in the spring, although a small percentage will germinate throughout the season. Seedlings grow slowly. Flowering and seed production begin in mid-spring, and occur until hard frost, when the plant dies.

Description: A summer annual. Young seedlings grow upright, and appear at first glance to be grass seedlings because of their narrow leaves. With maturity, most plants grow prostrate, especially with traffic or mowing. Stems can grow up to 2 feet long. Stems are branched, wiry and thin, but the leaf base and joints are enlarged and knot-like (thus the common name, 'knotweed'), with a paper-like, membranous covering. The narrow, pointed leaves are arranged alternately on the stem. Leaves grow 1/4 - 1 1/2 inches long and 1/8 - 3/8 inch wide, and can have a bluish-green cast. Tiny, five-petalled flowers are borne in groups of one to five in leaf axils. Flowers have a green center with white or pink edges and are often partly closed. Light or dark brown, three-sided seeds are 3/16 inch long.

Weedy Characteristics: Prostrate knotweed will grow in moist, light soil, but also does well in salty, infertile, hard and compacted soils, which most other plants cannot tolerate. It is drought tolerant and also produces chemicals that inhibit nearby plant growth. It is very tough, and withstands heavy foot and vehicle traffic. Each plant can produce between 100 and 6,500 seeds, which are dispersed on

Prostrate habit

Grass-like young plant

the shoes and vehicles that travel across them, in the excrement of birds that consume them, and by floating in water. Some seeds can remain viable in the soil for more than 5 years.

Control: Prevention of prostrate knotweed's establishment might include: restricting heavy traffic in the area of concern; maintaining a healthy, aerated lawn; or keeping a vigorous garden with loose, fertile soil. Prostrate knotweed reproduces solely by seed. Seed production can be prevented by hoeing, rototilling, or hand-pulling (although soil compaction can make hand-pulling difficult), and soil solarization can reduce the soil seedbank. Prostrate knotweed does not germinate or grow well in the shade of other plants or thick mulch. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Prostrate knotweed is known to have been used for food and medicinal purposes by native peoples. Insects commonly visit the flowers and feed on the plant, and birds eat its seed. Nevertheless, prostrate knotweed can serve as a host of several diseases that can affect other plants, including powdery mildew. It has also been associated with liver disease in grazing animals. The plant is considered noxious in Quebec, Canada.

Other Common Names: birdgrass, doorweed, knotgrass, matgrass, stonegrass, wiregrass

Tiny flowers and paper-like sheaths at joints

Wild buckwheat

Polygonum convolvulus L.
Polygonaceae (Buckwheat family)

Location: gardens, fencerows, waste areas, and cropland

Occurrence: Wild buckwheat seeds are able to germinate at temperatures between 35° and 86°F. Seedlings emerge throughout the growing season, although most appear in late spring and early summer. Seedling growth is rapid, and blooming occurs from mid-to-late summer, and sometimes into fall. Wild buckwheat begins shedding its seeds in late summer. Mature seeds do not immediately germinate, but remain dormant at least until the following growing season.

Description: A summer annual with tough, slender, sometimes reddish stems that grow up to 8 1/2 feet long. Young seedlings grow upright, branching from the root crown. Stems soon develop a trailing, twining habit as they mature. Leaves are arrowhead-shaped, occur on stalks and are arranged alternately on the stem. Leaves measure between 1 and 2 1/2 inches long, and 1/2 - 1 inch wide. An inconspicuous, thin, papery sheath covers the base of the leaf stalk. Flowers are very small, at most 1/4 inch long, are greenish-white to pinkish, and have no petals. Clusters of flowers are borne on stalks in leaf axils and at stem tips. Each flower produces a single black, one-seeded fruit, which is enclosed in the outer portion of the flower. The fruit is hard, three-sided, oblong and 3/16 inch long.

Mature plant climbing fence

Reddish stem

Weedy Characteristics: Wild buckwheat reproduces solely by seed. Plants produce an average of 1,200 seeds, though plants growing in optimal conditions can produce thousands more. Seeds are dispersed by water, machinery, and birds and animals that consume them. Seeds can remain viable in the soil for up to 20 years, occasionally longer. Seeds can also germinate successfully even when buried quite deeply in the soil. Wild buckwheat is capable of growing on a variety of different soil types, tolerates low moisture settings and partial shade, and competes well with nearby plants, due to its climbing habit.

Control: Maintenance of high-density, vigorous desirable plant populations can discourage wild buckwheat colonization of garden beds. Young wild buckwheat plants are easily pulled, especially if the soil is moist. If done before plants produce seeds, repeatedly hand-pulling, hoeing and tilling throughout the growing season can give good control of the plant. More mature plants can wrap themselves tightly around other plants, fences or other structures, making removal difficult. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Wild buckwheat seeds serve as a food source for a variety of birds and rodents. All the same, wild buckwheat can cause crop yield loss by twining around grain plants and pulling them down. Its long, twining stems can cause trouble with harvesting machinery, as well. It is often found as a seed contaminant in grain, and its presence can change moisture content in harvested grain, causing storage problems. In addition, wild buckwheat is known to host several different plant disease-causing organisms. Wild buckwheat is noxious in Alaska, Minnesota and Oklahoma, and in four Canadian provinces, and is considered invasive in four other U.S. states. Field bindweed (Convolvulus arvensis) is another twining weed that is often confused with wild buckwheat. However,

field bindweed is a perennial plant, with deep, creeping roots, underground stems, and conspicuously large, funnel-shaped flowers.

Other Common Names: black bindweed, climbing buckwheat, climbing knotweed, cornbind, dullseed cornbind, knot bindweed

Three-sided fruits

Common purslane

Portulaca oleracea L.
Portulacaceae (Purslane family)

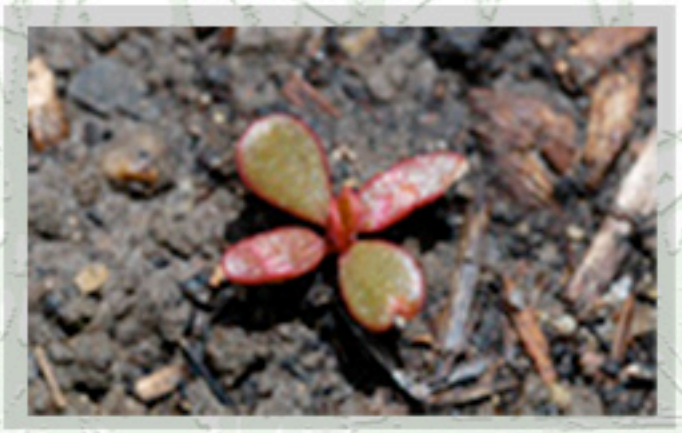
Location: gardens, ornamental beds, pavement cracks, waste areas, plant nurseries, and cropland

Occurrence: Purslane generally appears in late spring, when soil temperatures are about 60° F. Inconspicuous yellow flowers are produced on sunny days, several weeks after the plant appears, and mature seeds are produced within 3 weeks after flowering begins. Flowering and seed production takes place throughout the growing season, until frost.

Description: A succulent summer annual with a prostrate habit in sunny conditions, and a somewhat upright habit in shady conditions. Its shiny, fleshy leaves have red margins, and are teardrop or wedge-shaped. Leaves are between 1/4 inch and 1 inch long, and 1/16 - 1/2 inch wide. Leaves are attached to stems without a stalk, and at the lower ends of stems, leaves are arranged alternately, but are produced in clusters at stem tips. Stems are smooth, branched and often pinkish or reddish. Stems radiate up to 20 inches outward from a central root. Bright yellow flowers are produced in the axils of the leaves or at stem tips. Flowers are five-petalled, and are 3/16 - 3/8 inch in diameter. Flowers produce small green, egg or pear-shaped seed capsules with tops that split open to allow clusters of tiny black seeds to fall and disperse.

Prostrate plant

Seedling



Five-petalled flower

Weedy Characteristics: Each common purslane plant can produce many thousands of seeds throughout the growing season. Seeds are distributed by birds that eat them, by wind, water, and as a crop seed contaminant. The seeds germinate readily, but can remain viable in the soil for more than 15 years. The plant can be easily pulled, but can easily re-root given moist soil. Trailing stems that come in contact with the soil can also develop roots. Furthermore, purslane can continue to flower and set seed after being uprooted. If left unchecked, purslane can form dense, fleshy mats in well-watered gardens. Common purslane does well in the summer heat and is tolerant of saline conditions.

Control: Planting weed-free nursery stock can help prevent the introduction of purslane into the landscape. Mulches that screen out all light are beneficial in reducing seed germination. Soil solarization might also be effective in discouraging seed germination. Hand-pulling, tilling, or hoeing of small purslane seedlings are helpful tactics for keeping purslane under control, but larger purslane plants should be pulled and discarded in the trash, ideally before seed production. Purslane vigor can be reduced by letting garden soil dry out between waterings. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Purslane has been used to feed sheep and pigs, and is commonly eaten as a vegetable. It is quite high in iron, omego-3 fatty acids and antioxidants, but can accumulate toxic oxalates, and be harmful when eaten in large quantities. Oxalates can be removed by cooking. The plant has been used by native peoples for a wide variety of medicinal purposes. However, it can serve as a host of crop disease-causing organisms, including nematodes and viruses. Common purslane is a noxious weed in Arizona, and is considered invasive in six other U.S. states.

Other Common Names: duckweed, little hogweed, mother-of-millions, pusley, resurrection plant, wild portulaca

Open seed capsule

Bur buttercup

Ceratocephala testiculata (Crantz) Bess (Ranunculus testiculatus Crantz)
Ranunculaceae (Buttercup family)

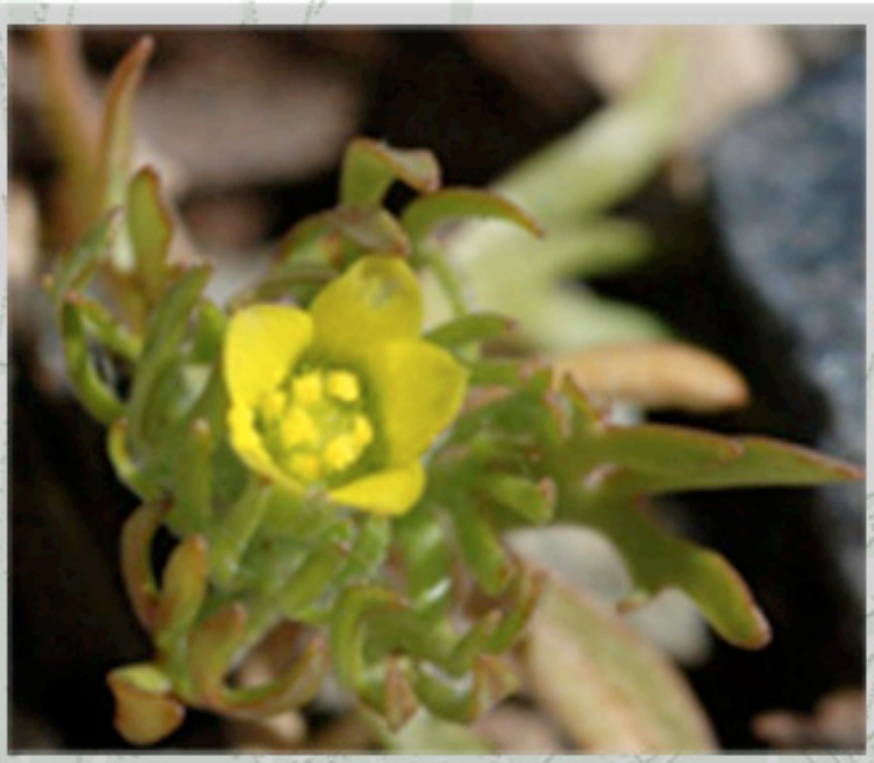
Location: lawns, gardens, roadsides, driveways, waste areas, pastures, cropland, and rangeland

Occurrence: Bur buttercup seeds germinate in early spring, when temperatures reach about 41°F, and seedlings emerge soon thereafter. The plant blooms within 3 weeks of emergence, and the flowers develop into spiny burs. By early summer, the entire plant dries out and turns brown and brittle.

Description: A low-growing summer annual, ranging from 1/2 inch to 5 inches in height. The light green leaves, which are covered with short, white hairs, grow 1-4 inches long. Leaves are all attached at the base of the plant, and many bear a resemblance to antlers, being parted into three distinct, narrow segments, which are themselves often two, three or four-lobed. Flowers are borne singly at the tips of leafless stalks, which extend above the leaves. The tiny, bright yellow, five-petalled flowers are cupped by five egg-shaped sepals. Flowers give rise to oval-shaped, spiny burs that are 1/2 - 3/4 inch long. Each bur contains 5-80 hard, dry seeds.

Weedy Characteristics: Bur buttercup reproduces from seed. The spiny burs that house the seeds readily cling to shoes, clothing and animal fur. The lightweight burs are also easily picked up and carried by water, and are widely distributed. The plant is very adaptable, and will tolerate moist to very dry conditions. In addition, bur buttercup often forms associations with soil fungi that enable it to take up nutrients very efficiently, allowing it to grow in poor quality soils. Without competition, the plant can form dense carpets.

Mature plant



Tiny, bright yellow flowet

Control: Early hoeing, digging, or tilling of bur buttercup before the plant has flowered is very effective. It grows poorly when competing with grasses or other aggressive plants, and therefore, maintaining a vigorous, desirable plant population will discourage its establishment. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Though generally avoided by most animals, live bur buttercup can be toxic to grazing animals, especially sheep. Affected animals develop diarrhea and muscle weakness, have difficulty breathing, and will often die. Juices from green plants can also cause irritation to human skin. When dry, the burs are stiff and prickly, and can be painful when stepped on, but are no longer toxic. Bur buttercup is considered invasive in South Dakota.

Other Common Names: curveseed butterwort, hornhead, little bur, testiculate buttercup

Spiny bur

Persian speedwell

Veronica persica Poir.
Scrophulariaceae (Figwort family)

Location: gardens, lawns, roadsides, waste areas, cropland, and nurseries

Occurrence: Persian speedwell seeds can germinate from early spring to fall, with most germination occurring in spring. Plants progress quickly through all growth stages. Early plants typically start producing seed by mid-spring, and two generations per year are possible. Seeds are able to germinate immediately upon maturity.

Description: A summer or winter annual with stems 4-16 inches long, mostly with a prostrate habit, with some ascending tips. Stems often branch apart at the base of the plant. Most of the plant is covered by tiny hairs. Leaves are up to 3/4 inch long and 1/2 inch wide, and rounded to oval with toothed margins. Lower leaves occur on short stalks and are arranged opposite each other. Upper leaves have no stalk and are arranged alternately along the stem, with a cluster of leaves at each stem tip. Flowers are borne singly on 3/8 - 1 inch stalks that occur in leaf axils. Flowers are between 1/4 and 1/2 inch in diameter, are four-petalled and blue with a white center and dark stripes that run the length of the petals. Flowers each rest on four bracts, which project out just beyond the petals. Each flower produces a flattened, heart-shaped, hairy fruit, cupped by the bracts. Fruit is no wider than 1/4 inch and 3/16 inch tall. The two sections of the fruit each house 5-11 tiny, creamy white seeds.

Prostrate plant

Four-petalled flower

Weedy Characteristics: Persian speedwell reproduces by seed, generating an average of 6,500 seeds per plant. Seeds generally drop to the ground close to the parent plant, and seedlings sometimes appear before the original plant has completed its lifecycle. A minority of seeds is carried farther afield by the wind, and others tumble in the wind still attached to the dry plant. The seeds can remain viable in the soil for 30 or more years. Persian speedwell plants are able to form roots at stem joints, and by so doing a single healthy plant can form a mat almost 2 square yards in area.

Control: Persian speedwell seeds germinate best when buried 1-2 inches below the soil surface, and organic mulch is not helpful for control, but will encourage the plant. Soil solarization can be effective in reducing the soil seed population. High density desirable plant populations that are vigorous early in the season will outcompete Persian speedwell for light and other resources, and severely curb its growth. Before seeds are produced, young Persian speedwell can be tilled, hoed or hand-pulled. Plants should be entirely removed after being uprooted, or may otherwise re-establish by forming new roots. Tilling mature, seed-bearing plants is not recommended, as tilling positions some seed in a more optimal environment for germination. Control should be achieved before any application of fertilizer, since the plant will take immediate advantage of available nitrogen and grow at accelerated rates. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Persian speedwell was most likely introduced as a low-growing ornamental which escaped cultivation. It can serve as a host of plant disease-causing nematodes, aphids, and viruses. Bilobed speedwell (Veronica biloba) is very similar to Persian speedwell, although it is less abundant in home landscapes. Bilobed speedwell has a more upright growth habit and its fruit capsule is much more deeply cleft than that of Persian speedwell.

Other Common Names: birdeye speedwell, birds-eye speedwell, creeping speedwell, winter speedwell

Heart-shaped fruit

Bittersweet nightshade

Solanum dulcamara L.
Solanaceae (Nightshade family)

Location: gardens, waste areas, waterways, and orchards

Occurrence: Seedlings begin appearing in early spring. Trailing stems produce flowers from late spring through early fall that are replaced asynchronously by berries from late summer to late fall. Stems die back to the woody base with hard frost.

Description: A trailing perennial vine, with stems that grow up to 10 feet per year from a woody base. Young stems are green or purple. Leaves are dark green, sometimes tinged purple, are lance-shaped or heart-shaped, with or without two small, opposite lobes or leaflets at the base. The leaves are alternately arranged on the stem, and grow between 2 and 4 1/2 inches long. Flowers are star-shaped, with five purple petals arching away from a bright yellow, upright, conical center. Flowers grow 1/2 - 3/4 inch in diameter. Flowers are succeeded by shiny, oval berries, which are 1/4 - 1/2 inch long. As berries mature, their color progresses from green to yellow to orange to vibrant red. Since berries do not all mature at the same time, it is common to see flowers and all stages of the berry represented simultaneously on the same plant. Each berry contains approximately 30 flat, round yellow seeds, which are 1/16 inch in diameter.

Berries at various maturity stages

Small lobes at leaf bases

Steven A. Dewey, Utah State University, bugwood.org

Weedy Characteristics: Although it prefers moist soil in full sun, bittersweet nightshade will tolerate dry to flooded conditions, and some shade. The seed is widely dispersed by birds. Rhizomes allow the plant to spread underground, and aboveground stems that are in contact with soil will readily take root. Stems and rhizomes are easily broken, and when detached from the mother plant, will grow independently. It is quite aggressive, can form dense thickets, and will climb on other shrubs or trees, hindering their growth.

Control: Tilling achieves good control of the plant. Small populations of bittersweet nightshade can be removed by digging or be hand-pulled in moist soil. Care must be taken to remove the entire plant, as stem fragments can regenerate. When removal is not possible, mowing several times in the growing season may keep the plant in check. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: The stems and leaves of this plant have an unpleasant odor when damaged. Bittersweet nightshade has been used in folk medicine for topical treatment of several ailments, and recent studies show some anti-cancer properties. Nevertheless, all parts of the plant are poisonous to humans, livestock and poultry, although the berries are edible to some wild birds. The plant can serve as a host of crop pests, and causes interference with fish movement in streams when growing in dense populations. Bittersweet nightshade is legally noxious in Michigan, and invasive in several other U.S. states.

Other Common Names: bittersweet, blue nightshade, climbing nightshade, fellenwood, poisonberry

Star-shaped flower

Hairy nightshade

Solanum physalifolium Rusby (Solanum sarrachoides auct. non Sendtner; Solanum villosum auct. non (L.) P. Mill.)
Solanaceae (Nightshade family)

Location: gardens, roadsides, cropland, and rangeland

Occurrence: Hairy nightshade seeds can germinate throughout the growing season, but most optimally at temperatures between 68° and 95°F. Seedlings first appear in late spring or early summer, and flower within 5-7 weeks thereafter. Plants will bloom and produce seed until hard frost.

Description: A branching, spreading summer annual, up to 2 feet tall. The entire plant is covered with short, soft, sticky hairs. Oval-shaped leaves are arranged alternately on the stem and have wavy or smooth margins. The leaves grow between 1 and 2 1/2 inches long, and are attached to the stem by a 1/2 inch stalk. Flowers occur in short-stemmed clusters on stalks that branch off the main stem. The five petals of each star-shaped, white flower are fused together, and each flower has a bright yellow center. Flowers grow up to 1/4 inch in diameter. As plants mature, round, green berries, approximately 1/4 inch in diameter, replace the flowers in a drooping cluster. The bottom half of the berry is covered by a cup of five sepals. Berries remain green or turn yellowish at maturity, and contain numerous flattened seeds.

Pre-flowering plant

Star-shaped flower cluster

Berries

Weedy Characteristics: Hairy nightshade reproduces solely by seed. Each plant can produce hundreds of thousands of seeds, which are dispersed by water, crop harvesting machinery, contaminated crop seed, and by birds and other wildlife that consume them. The seeds can remain viable in the soil for more than 10 years. Hairy nightshade is somewhat shade tolerant, and can withstand mild frost.

Control: Prevention of seed production by removal of plants prior to flowering is the most effective means of hairy nightshade control. This can be done with repeated tillage and hand-pulling throughout the season. Maintaining a healthy, competitive garden, with little to no bare soil, is also effective. Soil solarization is useful for the reduction of the seed population in the soil. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Native people have used the dried fruit of hairy nightshade to treat diarrhea, and portions of the plant have traditionally been used as a crop fertilizer. However, toxic alkaloids are found in all parts of hairy nightshade, especially in the young berries and green plant parts, and it is generally considered to be poisonous to humans and livestock. Hairy nightshade presence can contaminate hay, clog harvesting machines, and reduce crop values. It can also serve as a host for many serious disease, nematode, and insects pests of potato, tomato and pepper crops. It is considered noxious in Michigan, and invasive in California.

Other Common Names: ground-cherry nightshade, hoe nightshade

Seedling

Siberian elm

Ulmus pumila L.
Ulmaceae (Elm family)

Location: gardens, pavement cracks, roadsides, waste areas, waterways, pastures, and natural plant communities

Occurrence: Siberian elm flowers from early to mid-spring, usually before leaves appear on the tree. Fruit is produced shortly thereafter, and seeds are ripe by late spring. Seeds can germinate immediately following maturation, and seedlings sprout readily and grow vigorously throughout the season. Leaf color in the fall is yellow.

Description: A perennial deciduous tree with an open, rounded habit that typically grows 50-70 feet tall. Plants that are cut down will re-sprout with several main branches, and appear shrub-like. New branches are thin, gray, sometimes hairy and droop somewhat as they elongate. The mature bark of the trunk is gray and furrowed. Reddish-brown, egg-shaped buds sit directly on branches and produce tight clusters of 6-15 inconspicuous green, bell-shaped flowers with red tips, but no petals. Small, white, threadlike structures with dark purple pollen-bearing sacs at the tip extend outward from the flowers. Flowers are inch long. Each flower produces a single-seeded, flattened, circular fruit that is notched at the top. The fruit is ½ inch in diameter, and is green when new, but dries and is straw-colored when mature, with a translucent, papery wing around the seed. Dark green leaves are arranged alternately along branches, and are borne on short, 1/8 inch-long stalks, which are sometimes tinged dark red. Leaves are 1-2½ inches long and half as wide, and are elliptical in shape, with serrated margins and pointed tips. Leaves

Buds and flowers

Flattened fruits

Mature tree

Conspicuously grooved leaf

have conspicuous, grooved veins in a fishbone pattern, and are slightly hairy on the underside when young. Unlike some other elms, leaves are symmetrical at the base.

Weedy Characteristics: Siberian elm reproduces by seed, which it produces in abundance. The plant can also spread locally by sprouting from the roots. Seeds are dispersed by wind and water, and germinate readily, almost anywhere. Its early season seed production, seed germination, and seedling development gives Siberian elm an advantage over other, later-establishing plants. Siberian elm can grow more than 5 feet per year, displacing native plants and forming thick stands. The plant can grow in a wide variety of conditions and soil types. It will tolerate poor soil, drought, extreme cold, air pollution, and some salinity, and seedlings will tolerate semi-shade.

Control: Siberian elm seedlings can be hand-pulled, hoed, or tilled, and small trees can be removed with a grub hoe or a weed wrench. For larger trees, the most effective method of control is to girdle the tree between late spring and mid-summer, taking care just to remove the outer layer of bark. Girdling will deprive the tree of nutrients and it will slowly die within 1-2 years. Larger trees can also be cut down, but cutting through the entire trunk will often trigger resprouting below the cut, and the resprouts must be repeatedly removed for several years. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Siberian elm was introduced in the 1860s for windbreaks, shade, lumber, and erosion control, and is still intentionally planted. Plants parts have been used in a variety of ways: the leaves, inner bark and immature seeds for culinary and medicinal purposes, the wood for tools and boatmaking. Siberian elm is resistant to Dutch elm disease—which has been devastating to native American elms—and has been used to breed resistance to the disease

into the susceptible elms. However, it is itself susceptible to other diseases, such as bacterial wetwood disease, which causes "bleeding" and streaking of the bark with stains. Some birds nest in the tree, but it is not known to be a preferred source of food for animals.
Siberian elm wood is very brittle and breaks easily, creating constant litter. It is attractive to many insects, including elm leaf beetle, which often causes leaves to dry up and die. Due to the limb breakage, the "bleeding," and the damage of the leaf beetle, the plant is considered by many to be shabby looking. Siberian elm is legally noxious in New Mexico, and considered invasive in 24 other U.S. states.

Other Common Names: Asiatic elm, Chinese elm, dwarf elm, littleleaf elm

Seedling

Puncturevine

Tribulus terrestris L.
Zygophyllaceae (Caltrop family)

Location: roadsides, walkways, gardens, playgrounds, cropland, pastures, and waste areas

Occurrence: The majority of puncturevine seeds germinate in late spring, although seeds can germinate throughout the growing season. Young plants emerge in late spring to early summer and produce flowers within 3-4 weeks, with seed following within 2 more weeks. Flowers are open only in the morning. Flowering and seed production continue until frost. Mature seeds remain dormant at least until the following growing season.

Description: A mat-forming summer annual, with 1 1/2-5 foot long stems radiating out in all directions from the root crown. Stems are green to orange-brown, with leaves arranged opposite each other on the stem. Each leaf consists of four to eight pairs of oval-shaped leaflets, also arranged opposite each other on the leaf stalk. Leaflets typically measure 1/2 inch long and 3/16 inch wide. Stems and leaves are covered with tiny hairs. Single, bright yellow flowers are borne on short stalks in leaf axils. Flowers have five petals and are 1/3 - 1/2 inch in diameter. Each flower produces a green, spiny five-rayed fruit that turns brown and woody with maturity, splitting into five separate, wedge-shaped seedpods. Each seedpod contains two to five seeds, and has two prominent, sharp spines about 1/3 inch long, which protrude outward at wide angles from each other.

Prostrate plant

Bright yellow flower

Spiny, five-rayed fruit

Weedy Characteristics: Puncturevine reproduces solely by seed. Plants often produce 200-5000 fruits, each holding at least 10 seeds. Seedpods are distributed by embedding themselves in tires, shoes, and animal fur or feet. Seeds can remain dormant and viable in the soil for several years. Punturevine seedlings grow quickly and develop a deep, sturdy taproot very soon after emergence. The taproot enables the plant to use water in the soil unavailable to other plants, and makes puncturevine capable of withstanding very dry conditions. Its roots can also develop associations with soil bacteria that provide nitrogen to the plant and allow it to grow in nutrient-poor soil. The plant grows best in sandy or gravelly soil, but can tolerate heavier, compacted soils. Some evidence suggests that puncturevine secretes chemical compounds that inhibit the growth of some other nearby plants, giving it a competitive edge.

Control: Vigorous perennial plants or annual plants that establish early can impede puncturevine colonization. In addition, mulches that do not allow light to reach the soil can prevent seedlings from emerging, although seeds may still be able to colonize on the upper surface of the mulch. Young puncturevine plants can be controlled by digging, hoeing, tilling, and hand-pulling every few weeks throughout the season. This should be done before fruit develops. When seedpods are present, plants and fallen seedpods should be removed completely (wear gloves), as seeds can continue to mature after plants are uprooted. For current chemical or biological methods, consult your local state or county weed specialist.

General Facts: Punturevine has been used traditionally for various medicinal purposes, and is still touted as an aphrodisiac. Benefits aside, it can penetrate skin, bicycle tires, and thin vehicle tires, and cause external and internal injury to grazing animals. The presence of puncturevine fruit can cause crop damage, contaminate crop seed, hay and straw, and make some land unsuitable for recreation.

Puncturevine foliage can also be toxic to livestock—especially sheep—when eaten in sufficient quantities, causing liver damage and dermatitis. Punturevine is noxious in 11 U.S. states and in British Columbia, Canada. It is considered invasive in three other U.S. states.

Other Common Names: caltrop, devil's thorn, goathead, Mexican sandbur, tackweed, Texas sandbur

Glossary

Annual—life cycle completed in 1 year or less (seed to seed), reproduce by seed only.

Winter annuals: germinate in fall or winter, finish in spring or summer.

Summer annuals: germinate in spring, mature and die by summer or autumn.

Biennial—a plant that lives longer than one season but fewer than 2 years. A rosette is produced the first year. Following a cold period there is floral initiation, fruit set and death.

Bract— a modified leaf that occurs beneath a flower.

Compact soil— soil that is compressed by foot or vehicle traffic, causing a restriction of the movement of water, air, and plant roots.

Cool season grasses—actively grow during the cool weather of spring and autumn, and are dormant when moisture is inadequate and temperatures are high.

Crown— point at which the base of the plant and the top of the root come together, usually at soil level.

Dormancy—temporary lack of growth or development.

Germination—the emergence of a seedling from a seed.

Herbaceous—pertaining to a plant that dies back to the ground each year.

Leaf axil—the upper angle formed between the leaf and the stem

where they join together.

Leaflet—one of two or more similar segments of a compound leaf.

Ligule—membranous or hairy projection at the point where the grass leaf blade grows out of the sheath.

Lobe—a segment of a plant part, such as a leaf.

Margin— the edge of a leaf.

Perennials—plants that live for more than 2 years, and renew growth year to year from the same root system.

Simple Herbaceous Perennials— reproduce by seed, usually not vegetative parts. However, a cut piece can regenerate.

Creeping Herbaceous Perennials—reproduce by seed and by vegetative parts: roots, stolons, rhizomes.

Rhizome—an underground stem.

Rosette—a circular cluster of leaves, usually at soil level.

Sepal— a segment of the outermost, leaf-like whorl of the flower; serves as protection for the flower in the bud.

Taproot—the large, central, primary root of a plant that grows vertically downward, into the soil.

Toothed—saw-like.

Warm season grasses—actively grow during the hot, dryperiods of the year and go dormant with freezing temperatures.

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Jerry R.Caldwell, Weed Supervisor, Tooele County, Utah

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Steven A. Dewey, Utah State University, Cooperative Extension

Joseph M. DiTomaso, University of California - Davis, bugwood.org

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Donald K. Jarvis

Brenda Jarvis Lowry

Michelle Oldham

Maggie Wolf, Utah State University Cooperative Extension

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