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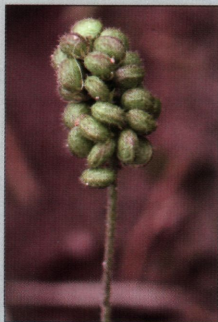
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An IPM Pocket Guide for Weed Identification in Nurseries and Landscapes
Michigan State University Extension Service
Steven A. Gower, Robert J. Richardson
February 2007
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An IPM Pocket Guide for Weed Identification in Nurseries and Landscapes



Steven A. Gower
Robert J. Richardson

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An IPM Pocket Guide for Weed Identification in Nurseries and Landscapes

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Suggested reading:

Common Weed Seedlings of the North Central States. A.J. Chomas, J.J. Kells and J.B. Carey. 2001. North Central Regional Extension Publication NCR 607. East Lansing, Mich.: Michigan State University Extension.

Management Practices for Michigan Wholesale Nurseries. R.T. Fernandez, (ed.). 2004. Instructional Media Center, East Lansing, Mich.: Michigan State University.

Weeds of the Northeast. R.H. Uva, J.C. Neal and J.M. DiTomaso. 1997. Comstock Publication Associates, Cornell University. Ithaca, N.Y. Bulletin E-2666. East Lansing, Mich.: Michigan State University Extension.

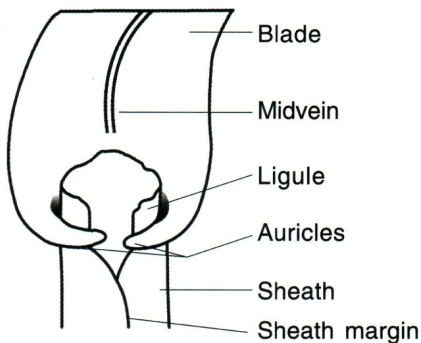
Introduction

Growers of ornamental plants face a myriad of pest and plant health problems that are best managed within a comprehensive integrated pest management (IPM) program. Scouting for plant pests is the foundation of an IPM program. Therefore, weed identification is a critical first step to creating an integrated weed management program. This IPM scouting guide for identifying weeds was designed for field use. It will help with proper weed identification so that appropriate IPM practices such as prevention, and sanitation, judicious herbicide use and selection and site-specific management can be effective.

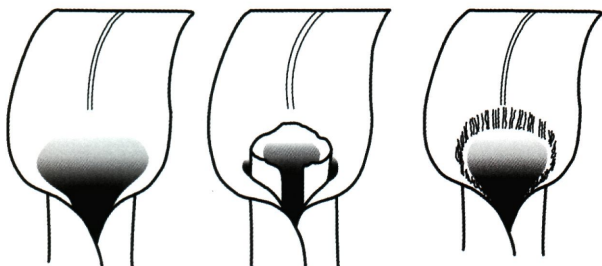
Specific pesticides are not listed in this guide. Recommendations can change frequently as new products become available and older ones are removed from the market. If you need assistance, we suggest contacting your local Extension office. See our suggested reading section for more comprehensive resources to supplement the information in this guide.

Grass characteristics

Grass morphology



Ligule types



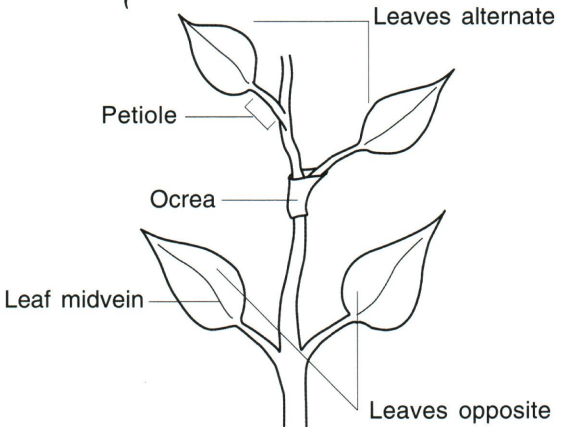
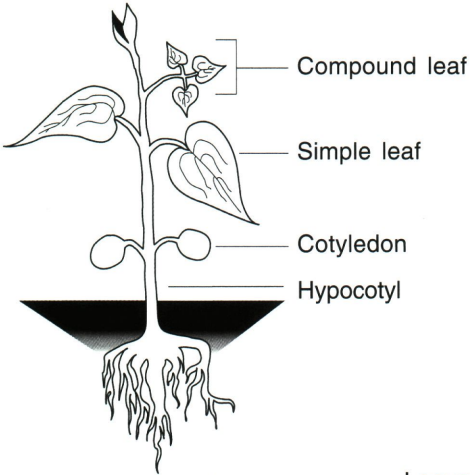
Absent

Membranous

Hairy

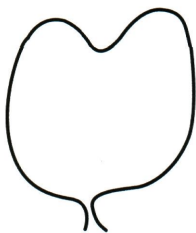
Broadleaf characteristics

Broadleaf morphology



Broadleaf characteristics

Cotyledon shapes



Kidney



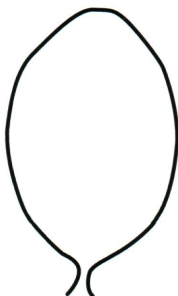
Linear



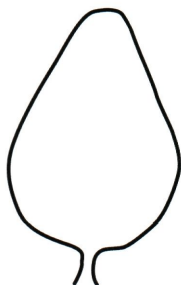
Lance-shaped



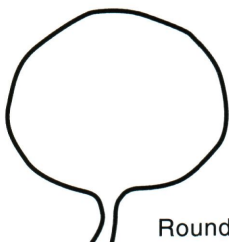
Oblong



Oval



Egg-shaped



Round



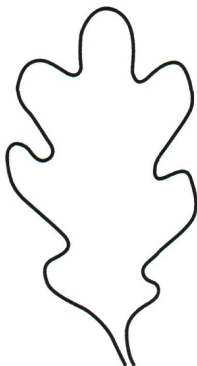
Spatula-shaped

Broadleaf characteristics

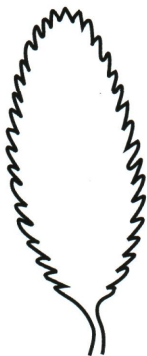
Leaf margins



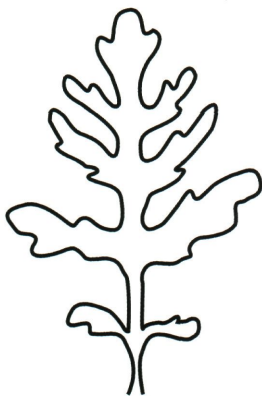
Smooth



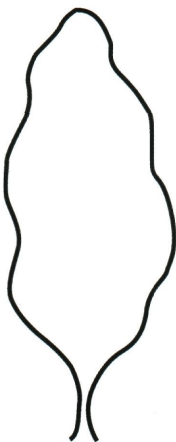
Lobed



Serrated or
toothed



Dissected or
divided



Wavy

Liverworts

Life cycle

Mat-forming, annual spore-producing plants.

General description

Prostrate and spreading plants that often grow together to form thick mats on the surface of excessively moist soils. The foliage is not obviously differentiated into true leaves, stems or roots. Plants have rootlike rhizoids, which are not true roots but have similar functions. Small, round to crescent-shaped cups are formed on the foliage. These cups produce budlike structures that are dispersed by water to form new plants. Reproduction also occurs by spores released from palm-treelike structures. No true flowers or fruit are produced.



Liverwort on a soil surface.

Liverworts *continued*

Foliage

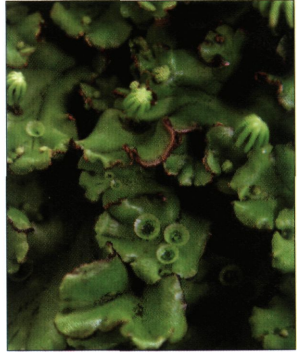
Thick, dull green, ribbonlike foliage with lobed to forked margins.

Reproduction

Vegetatively and by spores.



Liverwort spore stalks.



Liverwort foliage with cups.



Liverwort foliage.

Mosses

Life cycle

Mat-forming, mostly perennial spore-producing plants.

General description

Low-growing plants with very small foliage that form dense clumps in shady, moist places. Clumps range from dime-sized to several feet across. Some upright growth is possible, but plants usually reach only 0.25 to 1 inch in height. Plants have rootlike rhizoids, which are not true roots but have similar functions. New plants form by vegetative reproduction and by spores released from capsules at the ends of leafless stalks. No true flowers or fruit are produced.



Moss on a soil surface.

Mosses *continued*

Leaves

Densely and spirally arranged leaves are very small, 1/16 to 1/8 inch long and awl-shaped. They lack petioles.

Stems

Slender, hairlike and highly branching.

Reproduction

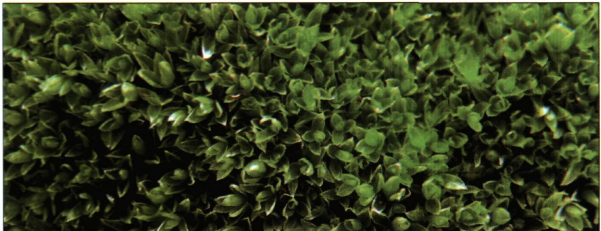
Vegetatively and by spores.



Moss capsules.



Close-up of moss capsules.



Close-up of moss foliage.

Field horsetail

Equisetum arvense L.

Life cycle

Perennial spore-producing plant.

Leaves

Not present.

Stems

Vegetative stems are green and branch in whorls. Stems may have a bottle-brush appearance and should not exceed 2 feet in height. Stems die back to the ground in winter.

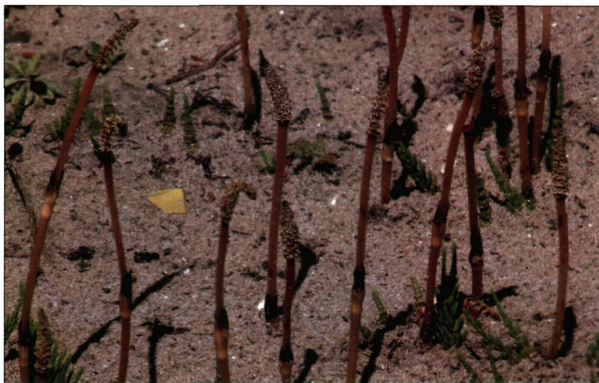
Flowers and fruit

Erect, unbranched, white to brown fruiting stalks (stems) bear terminal spore-releasing cones.

Flowers are not produced.

Reproduction

Spores and prolific rhizomes.



Patch of field horsetail fruiting and vegetative stems.

Field horsetail *continued*



Field horsetail fruiting stalk.



Close-up of vegetative stem of field horsetail.



Field horsetail vegetative stems.



Similar weeds

Scouringrush (*E. hyemale* L.)

Differs by having larger evergreen stems with little or no branching. Grows only in wet areas.

Asiatic (common) dayflower

Commelina communis L.

Life cycle

Erect to spreading summer annual.

Leaves

Leaves are alternate, oblong to lance-shaped, 2 to 4 inches long, gradually tapering to a point with parallel veins and smooth leaf margins.

Leaves clasp the stem, forming conspicuous basal sheaths.

Stems

Erect to prostrate, spreading stems are numerous branched and root at the nodes. Stems are thick, fleshy and swollen at the nodes.

Flowers and fruit

Unique and attractive flowers, consisting of two large, bright blue petals at the top and a single small, white petal below, are enclosed in a green, leaflike bract. Flowers occur at the ends of long



Asiatic dayflower plant.

Asiatic (common) dayflower *continued*

flower stalks. Each flower is open for one day only. Fruit are two-celled capsules that yield brown to reddish, wrinkled seeds.

Reproduction

Primarily by seeds, although vegetative reproduction occurs during the summer.



Asiatic dayflower flower.



Asiatic dayflower leaves.



Conspicuous basal sheath of Asiatic dayflower.

Yellow nutsedge

Cyperus esculentus L.

Life cycle

Rhizomatous perennial sedge.

Leaves

Yellowish green, shiny, grasslike leaves are long and narrow and distinctly ridged along the midvein, and they narrow to a long, sharp point. Leaves are mostly basal and alternate, and they point outward from the stem in three directions.

Stems

Erect, solid, up to 3-foot-tall stems are triangular in cross-section. Plants spread by wiry, scaly rhizomes and nutlike tubers produced at the rhizome tips.



Patch of yellow nutsedge.



Triangular stem of yellow nutsedge.

Yellow nutsedge *continued*

Flowers and fruit

The seedhead consists of numerous yellowish brown spikelets, which occur in a terminal, umbrellalike cluster. Under each seedhead is a whorl of several long, leaflike bracts. The seed is enclosed in a single-seeded, three-angled, yellowish brown fruit with a blunt end.

Reproduction

Tubers, rhizomes and, very rarely, seeds.



Yellow nutsedge seedling.



Yellow nutsedge seedhead.

Large crabgrass

Digitaria sanguinalis (L.) Scop.

Life cycle

Prostrate to ascending summer annual.

Leaves

Both leaf surfaces and sheath are densely hairy. Leaves are rolled in the bud and more numerous at the base. Leaves are generally shorter, wider and more tapered than those of most other grasses.

Ligule

Jagged, membranous ligule.



Large crabgrass seedling.

Large crabgrass *continued*

Stems

Prostrate to ascending stems may reach 3 feet tall, capable of rooting at the nodes. Mature stems are often compressed in cross-section.



Large crabgrass collar region.

Flowers and fruit

The seedhead is a terminal panicle that consists of a few to several slender, fingerlike branches arranged in a whorl. Each plant is capable of producing thousands of yellowish brown, narrow oval to lance-shaped seeds.

Reproduction

Seeds.



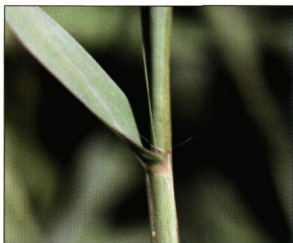
Large crabgrass seedhead.

Large crabgrass *continued*

Similar weeds

Smooth crabgrass [*Digitaria ischaemum* (Schreb.) Schreb. ex Muhl.]

Differs by having a smaller stature, hairless to sparsely hairy leaves and sheath, a tuft of long hairs at the collar region and stems that do not root at the nodes.



Smooth crabgrass collar region.



Smooth crabgrass plant.

Barnyardgrass

Echinochloa crus-galli (L.) Beauv.

Life cycle

Erect summer annual.

Leaves

Hairless leaves, occasionally with a few hairs near the base, are rolled in the bud and up to 20 inches long. Leaves have a distinct midvein and are rough to the touch on both surfaces.

Ligule

Absent.

Stems

Erect, thick, hairless, up to 5-foot-tall stems are round to flattened in cross-section and are often bent, branched and purple-tinted at the base.

Flowers and fruit

The seedhead consists of several coarse, thick branches that occur in an upright to nodding terminal panicle. The green, purple to brown panicle yields tan to brown, shiny, oval seeds.

Reproduction

Seeds.



Barnyardgrass collar region.



Barnyardgrass seedhead.

Quackgrass

Elymus repens (L.) Gould

Life cycle

Erect, rhizomatous perennial.

Leaves

Leaves are rolled in the bud, hairless to sparsely hairy above and up to 8 inches long. Leaf sheaths are hairless except those near the base, which may be sparsely hairy. Clasping, clawlike auricles are present at the collar region.

Ligule

Very short, membranous ligule.

Stems

Erect and clump-forming, up to 4 feet tall. Plants spread by thin, yellowish to white, sharp-tipped rhizomes.



Patch of quackgrass.

Quackgrass *continued*

Flowers and fruit

The seedhead is a 2- to 10-inch-long, slender, unbranched spike made up of several alternating spikelets arranged edgewise on the stem. Each spikelet contains up to eight straw-colored, lance-shaped seeds. Each seed has a short to prominent awn.

Reproduction

Seeds and rhizomes.



Quackgrass collar region.



Quackgrass seedhead.



Sharp-tipped rhizome of quackgrass.

Annual bluegrass

Poa annua L.

Life cycle

Clump-forming winter or summer annual.

Leaves

Hairless, soft, light green leaves are folded in the bud and lack auricles. Leaves have linear margins (sides parallel) and distinctive boat-shaped tips.

Ligule

Slightly pointed membranous ligule.

Stems

Upright, bending, up to 1-foot-tall stems are clump-forming, enlarge by tillering and may root at the lower nodes.



Annual bluegrass clump.

Annual bluegrass *continued*



Annual bluegrass
seedhead.



Boat-shaped leaf tip of annual bluegrass.

Green foxtail

Setaria viridis (L.) Beauv.

Life cycle

Erect summer annual.

Leaves

Leaves are hairless, rough, rolled in the bud and up to 12 inches long. Leaf sheaths are hairless except for short hairs along the margin.

Ligule

Hairy.

Stems

Erect, mostly 3-foot-tall stems are branched and clump-forming at the base. Stems are usually round but are occasionally flattened in cross-section.



Green foxtail collar region.

Green foxtail *continued*

Flowers and fruit

The seedhead is a dense, cylinder-shaped, foxtail-like panicle with green to purple bristles. Usually erect to slightly nodding seedheads are capable of producing prolific amounts of oval to egg-shaped, yellowish brown seeds.



Green foxtail seedhead.

Reproduction

Seeds.

Similar weeds

Giant foxtail (*S. faberi* Herrm.)

Differs by having a larger, up to 7-foot-tall stature, leaves with numerous short hairs on the upper surface, and longer, highly nodding panicles.

Yellow foxtail [*S. glauca* (L.) Beauv.]

Differs by having long, wispy hairs on the upper leaf surface near the stem, a panicle with yellowish brown bristles, and a yellow to light brown seedhead at maturity.

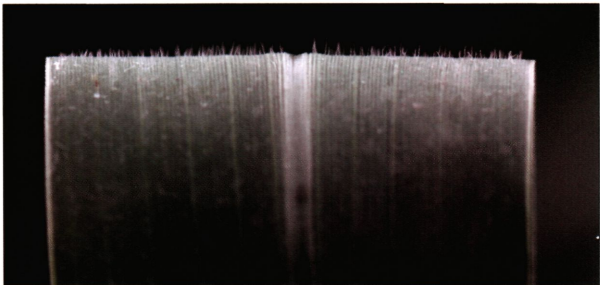
Green foxtail *continued*



Giant foxtail collar region.



Giant foxtail seedhead.



Giant foxtail upper leaf surface.

Green foxtail *continued*



Yellow foxtail seedling.



Yellow foxtail collar region.



Yellow foxtail seedhead.

Tumble pigweed

Amaranthus albus L.

Life cycle

Bushy-branched summer annual.

Leaves

Alternate, oval- to spatula-shaped, light green leaves have wavy margins and notched leaf tips.

Stems

Mostly erect and usually hairless, pale green to whitish stems with multiple branches create a bushy appearance. Stems, up to 4 feet tall, break off at the soil surface when mature and tumble with the wind.



Tumble pigweed seedling.



Tumble pigweed foliage and flowers.

Tumble pigweed *continued*

Flowers and fruit

Small, greenish flowers are found in dense clusters in the leaf axils. Flowers have long bracts two to four times the length of the sepals and yield small, round, shiny black seeds.

Reproduction

Seeds.

Tumble pigweed
leaf.



Whitish stems of tumble pigweed.



Tumble pigweed flowers.

Prostrate pigweed

Amaranthus blitoides S. Wats.

Life cycle

Prostrate, mat-forming summer annual.

Leaves

Alternate and pale green to shiny, dark green leaves are oblong, oval to egg-shaped with pointed, rounded to slightly indented leaf tips.

Leaf margins are smooth and usually whitish. Leaves are numerous at the stem ends.

Stems

Prostrate and nearly smooth, light green to reddish stems form thick, circular mats. Stems may be 1 to 3 feet long and mostly erect at the tip.



Prostrate pigweed seedling.



Prostrate stem and shiny green foliage of prostrate pigweed.

Prostrate pigweed *continued*

Flowers and fruit

Small, greenish flowers are found in dense clusters in the leaf axils. Flowers have bracts as long as the sepals and yield small, round, shiny black seeds.

Reproduction

Seeds.



Prostrate pigweed foliage and flower clusters.

Redroot pigweed

Amaranthus retroflexus L.

Life cycle

Erect summer annual.

Leaves

Cotyledons are linear with a prominent midvein and reddish tinted undersides. Leaves are alternate, dull green, egg- to diamond-shaped with a small notch at the tip, smooth to wavy margins and long petioles. Leaves are hairy beneath, at least on the whitish veins.



Powell amaranth seedling.



Redroot pigweed seedling.



Smooth pigweed seedling.

Redroot pigweed *continued*

Stems

Erect, up to 6-foot-tall herbaceous stems are pale green to reddish and usually nearly red at the base. Lower stems are usually thick, stout and smooth; upper stems are covered with many short, fine hairs.

Flowers and fruit

Small, greenish flowers are found in dense terminal and axillary clusters of short, thick and prickly spikes. Flowers have bracts two to three times the length of the sepals and yield small, round, shiny black seeds.

Reproduction

Seeds.



Redroot pigweed leaf.



Smooth pigweed leaf.



Powell amaranth leaf.

Redroot pigweed *continued*



Redroot pigweed seedhead.



Powell amaranth seedhead.



Smooth pigweed seedhead.

Redroot pigweed *continued*

Similar weeds

Powell amaranth (*A. powellii* S. Wats.)

Differs by having dark green, diamond-shaped, mostly hairless and somewhat glossy leaves; stems with few to no hairs; and seedheads with fewer, very prickly, erect and elongated spikes.

Smooth pigweed (*A. hybridus* L.)

Differs by having hairless leaves, hairless to slightly hairy upper stems, and seedheads with narrower, less dense and less prickly spikes.



Redroot pigweed stem.



Powell amaranth stem.

Poison ivy

Toxicodendron radicans (L.) Ktze.

Life cycle

Perennial woody vine.

Leaves

Alternate, compound with three shiny leaflets. Leaflet margins may be smooth, toothed or lobed. The side leaflets occur on very short stalks; the middle leaflet occurs on a much longer stalk. Leaves may turn bright red in the fall. Contact with any part of this plant can cause a reaction in sensitive people.

Stems

Shrubby or climbing, woody vines are supported by aerial roots.



Poison ivy foliage.

Poison ivy *continued*

Flowers and fruit

Small, inconspicuous, yellow to green flowers have five petals. Fruit are gray to white berries (drupes).

Reproduction

Seeds, creeping roots and stems, which may root if in contact with the ground.



Compound leaf of poison ivy.



Poison ivy aerial roots.



Poison ivy flower.

English ivy

Hedera helix L.

Life cycle

Climbing, evergreen perennial vine.

Leaves

Alternate, evergreen leaves are dark green, leathery and waxy with white veins. Leaves may be unlobed to three- to five-lobed, depending on the maturity of the plant.



English ivy leaf.

Stems

High climbing, woody vines are supported by aerial roots. Stems may be extremely long and reach up to 1 foot in diameter on old plants.



New growth and aerial roots of English ivy.

English ivy *continued*

Flowers and fruit

White to green flowers are small and inconspicuous. Berrylike fruit are black and contain few seeds. The flowers and fruit are rarely seen.

Reproduction

Seeds and root sprouts.



English ivy climbing a tree.



English ivy creeping stem.

Mugwort

Artemisia vulgaris L.

Life cycle

Clump-forming, rhizomatous perennial.

Leaves

Alternate, deeply lobed and divided leaves are dark green above and silvery white below.

Leaves emit a strong, sagelike odor.

Stems

Erect, clump-forming, smooth to slightly hairy stems have lengthwise ridges and become semiwoody with age. They are up to 6 feet tall.

Flowers and fruit

Inconspicuous flowers are produced in elongated, spikelike clusters on the upper stems.

The seed is enclosed in a single-seeded, brown, oblong fruit.

Reproduction

Persistent, prolific rhizomes and, rarely, seeds.



Young mugwort plant.

Mugwort *continued*



Upper and lower leaf surfaces of mugwort.



Mugwort flowering stem.

Bull thistle

Cirsium vulgare (Savi) Tenore

Life cycle

Erect, spiny biennial.

Leaves

First-year leaves originate from a basal rosette, followed by an erect, branched, flowering stem in the second year. Seedlings have egg- to spatula-shaped cotyledons and oval, oblong to spatula-shaped leaves with bumpy surfaces and marginal spines. Mature leaves are alternate, lance-shaped, deeply cut or lobed, with long, stiff spines. Leaves have coarse hairs above and soft, cottony hairs below.

Stems

Spiny-winged, hairy stems elongate during the second year, often branched up to 7 feet tall.



Bull thistle flower head.

Bull thistle *continued*

Flowers and fruit

Red to purple, usually solitary flower heads consisting of only disk flowers are 1 to 2 inches wide and encircled by spine-tipped bracts. The seed is enclosed in a single-seeded, chili-pepper-shaped, wind-disseminated fruit.

Reproduction

Seeds.



Bull thistle seedling.



Bull thistle rosette.

Bull thistle *continued*



Coarse hairs on the upper leaf surface of bull thistle.

Similar weeds

Canada thistle [*C. arvensis* (L.) Scop.]

Differs by having a prolific, patch-forming perennial nature with a deep, creeping root system; leaves with smooth, dark green upper leaf surfaces and irregularly lobed to crinkled, spiny margins; and smaller (less than 1-inch-wide) pink to purple flower heads with spineless bracts.

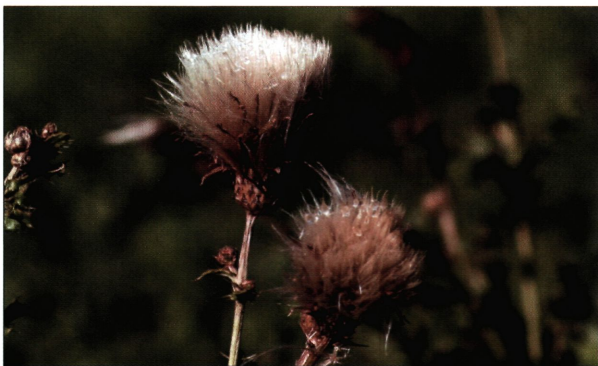


Canada thistle plant.

Bull thistle *continued*



Canada thistle flower head.



Canada thistle mature flower heads.

Horseweed (marestail)

Conyza canadensis (L.) Cronq.

Life cycle

Erect winter or summer annual.

Leaves

Cotyledons are egg- to spatula-shaped and hairless. Seedling leaves initially develop from a basal rosette; mature leaves are alternate and numerous, and crowded along an erect central



Erect central stem of horseweed.



Horseweed rosette.

Horseweed *continued*

stem. Leaves are hairy and linear to lance-shaped with smooth to toothed margins, gradually becoming smaller toward the top of the plant.

Stems

Erect, hairy central stem arises from a basal rosette, then branches to flower, reaching up to 7 feet tall. Flowering branches resemble a horse's tail.

Flowers and fruit

Numerous clusters of small, white flower heads are found on many short branches near the top. Each seedhead is capable of producing thousands of small seeds; each seed is enclosed in a single-seeded, wind-disseminated fruit.

Reproduction

Seeds.

Horseweed flowers.



Horseweed seedhead.

Hairy galinsoga

Galinsoga quadriradiata Cav.

Life cycle

Prolific, seed-producing summer annual.

Leaves

Opposite, egg-shaped to triangular leaves with coarsely toothed margins, sharp tips and densely hairy upper leaf surfaces.

Stems

Erect with multiple, opposite branching stems. They are up to 2 feet tall and covered with coarse hairs.

Flowers and fruit

Numerous small flower heads are formed in terminal and axillary clusters. Each head has four to five white, three-toothed ray flowers and centers with numerous yellow disk flowers. The



Young hairy galinsoga plant.

Hairy galinsoga *continued*

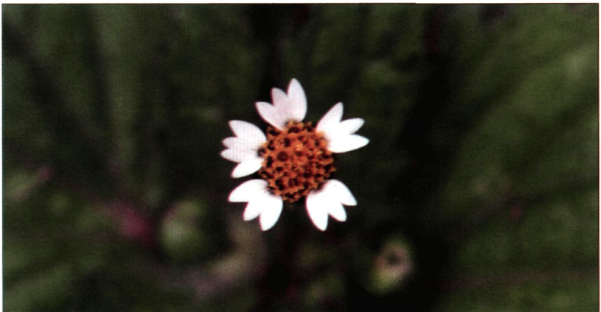
seed is enclosed in a single-seeded, brown to black, wedge-shaped, wind-disseminated fruit.

Reproduction

Seeds.



Hairy galinsoga leaf.



Hairy galinsoga flower.

British elecampane

Inula britannica L.

Life cycle

Aggressive, invasive perennial.

Leaves

Alternate, lance-shaped leaves initially develop from a basal rosette. Leaves have pointed tips, arrowhead- to earlobe-shaped bases and finely toothed margins. Leaf bases are stalkless to clasping the stem. The lower leaf surface is densely covered with coarse, white hairs; the upper surface is only slightly hairy.

Stems

Erect stems with coarse, white hairs arise from a basal rosette to flower, up to 30 inches tall.



British elecampane rosette.

British elecampane *continued*

Flowers and fruit

Numerous yellow, 0.75- to 1.5-inch-wide flower heads form on a single plant, each head looking like a small sunflower. The area just below each flower head is encircled by several small, green bracts. The seed is enclosed in a single-seeded, small, light brown, wind-disseminated fruit.

Reproduction

Seeds and creeping roots.



British elecampane flower.



British elecampane flowering plant. British elecampane stem.

Pineapple weed

Matricaria discoidea DC.

Life cycle

Pineapple-scented, fernlike winter or summer annual.

Leaves

Alternate, very finely dissected, feathery or fernlike leaves are hairless and 0.5 to 2 inches long. Leaves initially develop from a dense basal rosette. Damaged leaves emit a sweet pineapple odor.

Stems

Short, hairless, erect or spreading stems with multiple branching from the base, up to 16 inches in height.

Flowers and fruit

Numerous greenish yellow flowers in a globe- to cone-shaped head are formed on the ends of branches. Light green bracts surround the base of the flower head. Damaged flowers emit a



Pineapple weed seedling.

Pineapple weed *continued*

sweet pineapple odor. The seed is enclosed in a single-seeded, oblong and ribbed, light brown fruit.

Reproduction

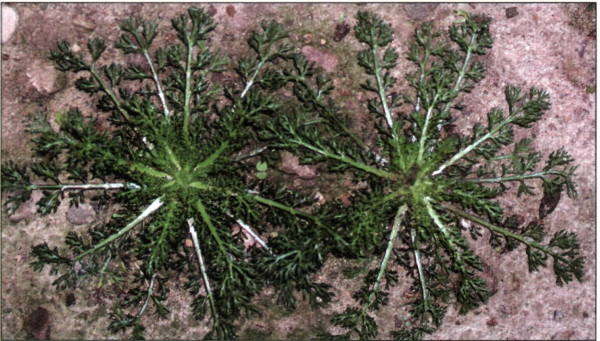
Seeds.



Pineapple weed flowers.



Pineapple weed leaf.



Pineapple weed rosettes.

Common groundsel

Senecio vulgaris L.

Life cycle

Summer or winter annual capable of multiple generations per year.

Leaves

Alternate, sparsely hairy to smooth with variable leaf shape. Young leaf margins



Common groundsel seedling.

may be smooth to slightly wavy; older leaves have deep, irregular lobes and coarsely toothed margins. Lower leaves have short stalks; upper leaves are stalkless.

Stems

Smooth, erect and multiple-branched. Usually no taller than 12 inches.

Flowers and fruit

Numerous yellow, cylinder- to cone-shaped flower heads are produced in clusters at the stem ends. The seed is enclosed in a single-seeded, wind-disseminated fruit that forms in a white, approximately 0.5-inch-wide puffball collection.

Reproduction

Seeds.

Common groundsel *continued*



Common groundsel plant.



Common groundsel flower head.



Mature seedhead of common groundsel.

Canada goldenrod

Solidago canadensis L. var. *scabra* Torr. & Gray

Life cycle

Clump-forming, rhizomatous perennial.

Leaves

Leaves initially develop from a basal rosette. Leaves are alternate, lance-shaped, tapering at both ends, stalkless, usually with toothed margins. Leaves are numerous and crowded along the stem, with soft hairs below and smooth above.



Canada goldenrod flowers.



Canada goldenrod rosette.

Canada goldenrod leaf.



Canada goldenrod *continued*

Stems

Erect, up to 7 feet tall with little to no branching. Dense hairs present.

Flowers and fruit

Golden-yellow flowers are found in dense, pyramid-shaped, panicle-like clusters. The seed is enclosed in a single-seeded, wind-disseminated fruit.

Reproduction

Seeds and extensive creeping rhizomes.



Canada goldenrod clump.

Perennial sowthistle

Sonchus arvensis L.

Life cycle

Erect, patch-forming perennial.

Leaves

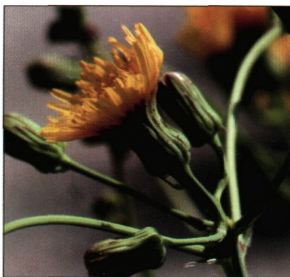
Seedling leaves initially develop from a basal rosette from a deep taproot. Lower leaves are alternate, blue-green, 4 to 12 inches long with two to five lobes with prickly teeth on each side, gradually becoming smaller toward the top with a clasping base. Leaves have a thickened midvein and exude a milky sap when damaged. Leaf midvein is not prickly underneath.



Perennial sowthistle plant.



Milky sap of perennial sowthistle.



Perennial sowthistle flower.

Perennial sowthistle *continued*

Stems

Erect, herbaceous stem up to 5 feet tall that branches only near the flowers.

Stems are hollow and smooth with ridges and exude a milky sap when damaged.

Upper stems may have gland-tipped hairs.



Clasping leaf base of perennial sowthistle.

Flowers and fruit

Bright yellow ray flowers are 1 to 2 inches wide and found

in clustered heads.

The seed is enclosed in a single-seeded, narrow, oval, reddish brown, ribbed, wind-disseminated fruit.

Reproduction

Seeds and extensive creeping roots.

Lower leaf of perennial sowthistle.



Similar weeds

Annual sowthistle (*S. oleraceus* L.)

Differs by having an annual life cycle and short taproot, less prickly leaf margins, and pale yellow, 0.5- to 1-inch-wide flower heads. Leaf midvein is not prickly underneath.

Prickly lettuce (*Lactuca serriola* L.)

Differs by having an annual or biennial life cycle; fine prickles on leaf margins and sharp prickles on the underside of the leaf midvein; and a many branched, spreading panicle with numerous pale yellow flower heads less than 0.5 inch wide.

Spiny sowthistle [*S. asper* (L.) Hill]

Differs by having an annual life cycle and short taproot, leaf margins with many sharp prickles, earlike lobes where the leaf attaches to the stem, and flower heads 0.5 to 1 inch wide. Leaf midvein is not prickly underneath.



Sharp prickles on the underside of the leaf midvein of prickly lettuce.

Perennial sowthistle *continued*



Prickly lettuce rosette.



Spiny sowthistle leaf.

Dandelion

Taraxacum officinale Weber in Wiggers

Life cycle

Rosette-forming simple perennial.

Leaves

All leaves originate from a basal rosette. Leaves are oblong to spatula-shaped, ranging from 2 to 10 inches long with deep, backward-pointing lobes. Leaves remain green year round and exude a milky sap when damaged.

Stems

Vegetative stems are not visible aboveground. Forms a deep, thick taproot.



Dandelion plant.

Dandelion *continued*

Flowers and fruit

Bright yellow, solitary flower heads consisting of only ray flowers are 1 to 2 inches wide and found at the ends of unbranched, hollow, leafless flowering stalks. The seed is enclosed in a single-seeded, wind-disseminated fruit that forms in a globe-shaped collection.

Reproduction

Seeds and new shoots from a taproot.



Dandelion seedling.



Yellow flower head of dandelion.



Mature dandelion seed head.

Yellow rocket

Barbarea vulgaris R. Br.

Life cycle

Erect winter annual or biennial.

Leaves

Seedlings have round to egg-shaped cotyledons on long stalks with smooth, shiny, dark green leaves that initially develop from a basal rosette. Lower leaves are 2 to 8 inches long with a large, rounded terminal lobe and up to four oppositely arranged smaller lobes along the stalk. Upper leaves are alternate, more coarsely toothed than lobed, and they often distinctly clasp the stem, gradually becoming smaller toward the top.



Yellow rocket flowers.



Yellow rocket seedling.

Yellow rocket *continued*

Stems

Erect, hairless and up to 3 feet tall. Stems bolt from a basal rosette to flower and are highly branched at the top.

Flowers and fruit

Bright yellow flowers with four petals are found in terminal clusters. Fruit are slender, slightly curved, approximately 1-inch-long capsules with a slender beak at the tip; fruit are nearly square in cross-section.

Reproduction

Seeds.



Yellow rocket lower leaf.

Yellow rocket rosette.



Shepherd's purse

Capsella bursa-pastoris (L.) Medicus

Life cycle

Erect winter or summer annual.

Leaves

Leaves initially develop from a basal rosette. Basal leaves are stalked and highly variable in shape; young leaves are first rounded and elongated, becoming variously lobed, toothed to wavy. Smaller stem leaves are alternate with smooth to toothed margins and clasping bases.



Shepherd's purse rosette.

Shepherd's purse *continued*

Stems

Erect, slender, hairy, up to 2-foot-tall stems bolt from a basal rosette to flower. Flower stems are usually unbranched with few to no leaves.

Flowers and fruit

White flowers with four small petals are found in terminal clusters. Fruit are distinctly heart-shaped to triangular pods found on elongated, unbranched stems.

Reproduction

Seeds.



Shepherd's purse fruit.



Shepherd's purse flowering cluster.

Hairy bittercress

Cardamine hirsuta L.

Life cycle

Rapidly growing winter or summer annual.

Leaves

Round cotyledons on long petioles are followed by heart- to kidney-shaped first two true leaves. Subsequent leaves are compound with two to eight alternately arranged leaflets and larger terminal leaflet. Leaflet margins are shallowly toothed to lobed. Mostly hairy leaves initially develop from a basal rosette, followed by a few smaller, narrow stem leaves. Basal leaves are persistent through maturity.

Stems

Mostly erect, smooth, angled stems branch mainly at the base. Stems are less than 12 inches tall.

Flowers and fruit

Very small, white flowers with four petals are arranged in terminal clusters. Fruit are very



Hairy bittercress seedling.

Hairy bittercress *continued*

narrow, about 1-inch-long, flattened, upward-pointing capsules that explosively eject numerous small seeds.

Reproduction

Seeds. Multiple generations may be produced in a single year.



Hairy bittercress rosette.



Hairy bittercress leaf.

Hairy bittercress *continued*



Hairy bittercress flowering stem.



Hairy bittercress flower.



Hairy bittercress fruit.

Similar weeds

Smallflowered bittercress

(*Cardamine parviflora* L.)

Differs by having up to six leaflet pairs and basal leaves that are not present at maturity.

Marsh yellowcress

Rorippa palustris L. (Bess)

Life cycle

Taprooted annual or biennial. Occasionally, a weak perennial.

Leaves

Alternate, variably shaped leaves initially develop from a basal rosette. Leaves are deeply lobed with a large terminal lobe and three to seven other lobes. The upper stem leaves are smaller with lobed to toothed margins and, occasionally, winged petioles with earlobe-shaped bases.

Stems

Branched or unbranched stems arise from a basal rosette to flower, usually less than 2 feet in height.



Marsh yellowcress rosette.

Marsh yellowcress *continued*

Flowers and fruit

Small, light yellow flowers with four petals are found in terminal clusters. Fruit are small, globe- to short cylinder-shaped capsules with a slight upward curve. Each capsule contains numerous, tiny, yellowish brown seeds.



Marsh yellowcress flower.

Reproduction

Seeds.



Marsh yellowcress plant.

Marsh yellowcress *continued*

Similar weeds

Yellow fieldcress

[*Rorippa sylvestris* (L.) Bess.]

Differs by having a perennial nature with prolific, aggressive creeping roots and more deeply lobed leaves. Flowers are more conspicuous and brightly colored. Capsules are smaller and usually do not contain seeds.



Yellow fieldcress rosette.



Yellow fieldcress leaf.



Yellow fieldcress flower.

Wild mustard

Sinapis arvensis L.

Life cycle

Erect winter or summer annual.

Leaves

Seedlings have smooth, kidney-shaped cotyledons and prominently veined, bristly hairy leaves that initially develop from a basal rosette.

Lower leaves are irregularly lobed and toothed with petioles; upper leaves are alternate, stalkless to short-stalked with coarsely toothed margins and pointed tips, gradually becoming smaller toward the top.



Wild mustard
lower leaf.

Stems

Erect, up to 3-foot-tall stems bolt from a basal rosette to flower. Stems are bristly hairy at the base, often branched and nearly hairless at the top.



Wild mustard
rosette.

Wild mustard *continued*

Flowers and fruit

Bright yellow flowers with four petals are found in terminal clusters. Fruit are 1- to 2-inch-long, cylinder-shaped capsules with a four-angled beak at the tip that contain round, black to purple seeds.

Reproduction

Seeds.



Kidney-shaped cotyledons of wild mustard.



Wild mustard flower.



Wild mustard stem base.



Wild mustard fruit.

Field pennycress

Thlaspi arvense L.

Life cycle

Erect winter or summer annual.

Leaves

Leaves initially develop from a basal rosette. Lower leaves are oval to spatula-shaped with wavy to slightly toothed margins, rounded tips and distinct petioles. Upper leaves are alternate with toothed to smooth margins and clasping bases. Basal leaves fall off before maturity.

Stems

Erect, mostly 2-foot-tall stems with varied branching bolt from a basal rosette to flower.



Field pennycress rosette.

Field pennycress *continued*

Flowers and fruit

White flowers with four small petals are found in terminal clusters. Fruit are flat, round to oval, distinctly winged, 1/2-inch-wide pods with a prominent notch at the tip.

Reproduction

Seeds.



Field pennycress upper leaf.



Field pennycress flowering cluster.



Field pennycress fruit.

Mouseear chickweed

Cerastium fontanum ssp. *vulgare* (Hartman)

Greuter & Burdet

Life cycle

Patch-forming perennial.

Leaves

Opposite, dark green, oval to spatula-shaped leaves with pointed tips and smooth margins are densely hairy and stalkless.

Stems

Prostrate, spreading stems are capable of rooting at the nodes to form dense patches. Stems are slender and very finely hairy with swollen nodes.

Flowers and fruit

Small, white flowers have five petals. Each petal is notched deeply to resemble a pair of petals. Green, hairy sepals surround petals.



Mouseear chickweed seedling.

Mouseear chickweed *continued*

Fruit are slightly curved, cylinder-shaped capsules that contain many tiny, brown seeds.

Reproduction

Seeds and creeping stems.



Mouseear chickweed plant.



Mouseear chickweed flowers.



Mouseear chickweed flowering stem.

Mouseear chickweed *continued*

Similar weeds

Common chickweed

[*Stellaria media* (L.) Vill.]

Differs by having an annual habit with hairless leaves and light green foliage.



Common chickweed plant.

Mouseear chickweed *continued*



Common chickweed flower.



Common chickweed foliage and flowers.

Knawel

Scleranthus annuus L.

Life cycle

Prostrate, mat-forming summer or winter annual.

Leaves

Opposite, very narrow and linear, grayish green leaves with sharp points resemble pine needles or grass leaves. Leaves are joined at the nodes by a translucent membrane.

Stems

Grayish green, prostrate and spreading stems with numerous branches can form dense mats.



Knawel plant.

Knawel *continued*

Flowers and fruit

Spiny, green or rarely whitish flowers are formed in clusters in the leaf axils. Flowers are generally not distinguishable. Egg-shaped, capsulelike fruit contain one seed.

Reproduction

Seeds.

Similar weeds

Birdseye pearlwort

(*Sagina procumbens* L.)

Differs by having a perennial nature with spreading stolons; bright green foliage; more distinguishable, small white flowers; and fruit that are persistent capsules with many seeds.



Birdseye pearlwort flowers.



Birdseye pearlwort plants.

Common lambsquarters

Chenopodium album L.

Life cycle

Erect summer annual.

Leaves

Cotyledons are oblong, narrow and linear with no midvein and a dull green to gray cast. The first one or two leaf pairs are opposite; all remaining leaves are alternate. Mature leaves are highly variable, being triangle-, diamond- or lance-shaped and light green above with gray, mealy undersides. Lower leaves have a petiole and irregular wavy to shallowly toothed margins. Young or newly emerged leaves often have a gray, mealy coating on both surfaces.

Common lambsquarters seedling.



Common lambsquarters cotyledons do not have midveins.



Common lambsquarters leaf.

Common lambsquarters *continued*

Stems

Erect, moderately branched central stem up to 6 feet in height. Mature stems are vertically grooved with red, purple or light green stripes.



Common lambsquarters plant.

Flowers and fruit

Green, inconspicuous flowers are found in dense, granular clusters at the stem ends. Round to oval, somewhat flattened, black to brown, shiny seeds are enclosed by a star-shaped, papery covering.

Reproduction

Seeds.



Mature seedhead of common lambsquarters.

Field bindweed

Convolvulus arvensis L.

Life cycle

Twining, creeping perennial vine.

Leaves

Cotyledons are square to kidney-shaped. Leaves are alternate, arrowhead- to spade-shaped with nearly parallel leaf margins and generally rounded tips. Leaf bases are pointed or rounded.

Stems

Climbing, trailing, herbaceous vines up to 6 feet or more in length.

Flowers and fruit

White to pink petals fused into a funnel shape with two leafy, small bracts approximately 1



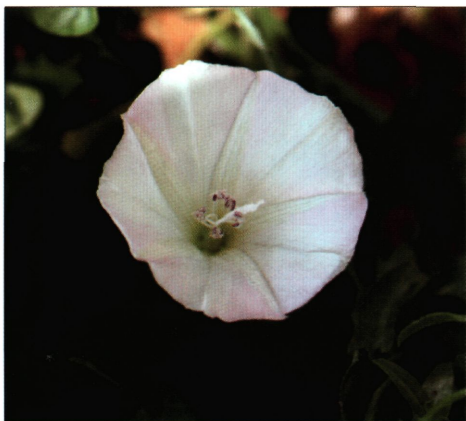
Field bindweed seedling.

Field bindweed *continued*

inch below the flower base. Fruit are egg-shaped capsules containing dull gray, brown or black seeds with one round and two flattened surfaces.

Reproduction

Seeds, creeping roots and rhizomes.



Field
bindweed
flower.

Similar weeds

Hedge bindweed

[*Calystegia sepium* (L.) R. Br.]

Differs by having larger, triangle-shaped leaves with square lobes extending behind and perpendicular to the petiole. Leaf is squarely notched at the petiole. Flower base has two large bracts.

Field bindweed *continued*



Leaves of hedge bindweed (left) and field bindweed (right).



Hedge bindweed flower base with two large bracts.

Ivyleaf morningglory

Ipomoea hederacea (L.) Jacq.

Life cycle

Twining summer annual vine.

Leaves

Cotyledons are butterfly-shaped and usually narrower at the base. Leaves are alternate with erect hairs on both surfaces. The first leaf may be unlobed; all other leaves are three-lobed and ivy-shaped.



Ivyleaf morningglory seedling.



Ivyleaf morningglory leaf.



Ivyleaf morningglory flowers.

Ivyleaf morningglory *continued*

Stems

Densely hairy, climbing or trailing, twining vines up to 6 feet or more in length.

Flowers and fruit

Blue to purple or white petals fused into a funnel shape. Fruit are egg-shaped capsules containing dull gray, brown or black seeds

with one round and two flattened surfaces.



Erect hairs of ivyleaf and entireleaf morningglory.

Reproduction

Seeds.

Similar weeds

Entireleaf morningglory

(*I. hederacea* var. *integriuscula* Gray)

Differs only from ivyleaf morningglory by having heart-shaped leaves. Leaf hairs are erect on both surfaces.

Pitted morningglory (*I. lacunosa* L.)

Differs by having V-shaped cotyledons and heart-shaped leaves with no to few hairs.

Tall morningglory [*I. purpurea* (L.) Roth]

Differs by having butterfly-shaped cotyledons with tip and base similar in width and heart-shaped leaves with dense hairs that lie flat.

Ivyleaf morningglory *continued*



Entireleaf morningglory leaf.



Pitted morningglory leaf.



Entireleaf morningglory seedling.



Pitted morningglory seedling.

Prostrate spurge

Chamaesyce humistrata (Engelm. ex Gray) Small

Life cycle

Prostrate summer annual.

Leaves

Cotyledons are oval with maroon undersides and short petioles. Opposite, pale green, egg-shaped leaves with rounded tips have small, irregular teeth along the margins and short petioles. The upper leaf surface often has a maroon watermark.

Stems

Prostrate, densely hairy stems are highly branched from the base, forming circular mats up to 16 inches in diameter. Stems may root at the lower nodes and exude a milky sap when damaged.

Flowers and fruit

Inconspicuous flowers are formed in the leaf axils. Fruit are hairy, three-lobed capsules that contain three wrinkled, three-sided, pale brown seeds.

Reproduction

Seeds.



Prostrate spurge seedling.

Prostrate spurge *continued*



Prostrate spurge plant.



Milky sap of prostrate spurge.



Prostrate spurge fruit.

Similar weeds

Spotted spurge

[*Chamaesyce maculata* (L.) Small]

Differs by having stems that do not root at the nodes, narrow oval to oblong leaves, and ridged, not wrinkled, seeds.

Birdsfoot trefoil

Lotus corniculatus L.

Life cycle

Mat-forming perennial.

Leaves

Alternate, compound with five generally oval and smooth-margined leaflets. Each compound leaf has three terminal leaflets and two reduced leaflets near the stem.

Stems

Prostrate and spreading to semierect stems are herbaceous, branched from a tough crown and up to 3 feet long. Plants form mats by stolons and rhizomes.



Birdsfoot trefoil plant.

Birdsfoot trefoil *continued*

Flowers and fruit

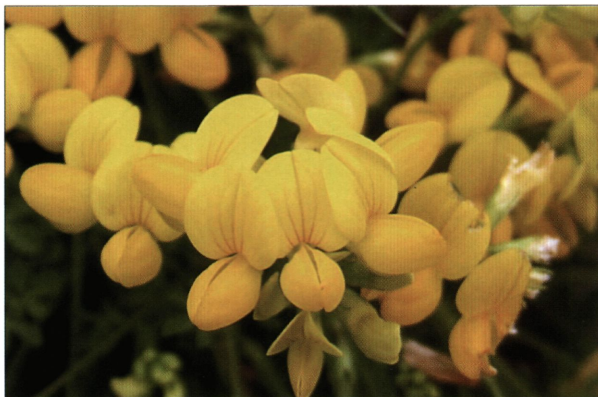
Bright yellow, pealike flowers, sometimes streaked with red, are found in flat-topped clusters at the ends of long stalks. Fruit are several linear, cylinder-shaped pods formed in the shape of a bird's foot. Each capsule contains several roundish, shiny, olive to black seeds.



Birdsfoot trefoil leaf.

Reproduction

Seeds, stolons and rhizomes.



Birdsfoot trefoil flowers.

Black medic

Medicago lupulina L.

Life cycle

Prostrate, trailing summer annual.

Leaves

Alternate, compound – with three oval to egg-shaped leaflets – hairless to sparsely hairy, shallowly toothed along the upper half and tipped with a small point. The central leaflet is found on a definite stalk; the two lateral leaflets are nearly stalkless. A pair of stipules is present at the base of each petiole.

Stems

Prostrate, trailing to ascending stems are wiry, usually hairy, multibranching from the base and up to 2 feet long.

Flowers and fruit

Numerous, very small, yellow flowers are formed in dense, mostly globe-shaped, cloverlike clusters. Fruit are clusters of black, coiled, kidney- to bean-shaped, one-seeded pods.



Black medic plant.

Black medic *continued*

Reproduction Seeds.



Black medic stipule.



Black medic leaf.



Black medic flower.



Black medic fruit.

White clover

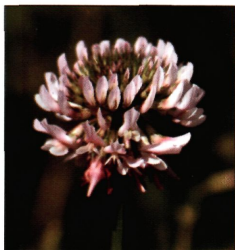
Trifolium repens L.

Life cycle

Mat-forming perennial.

Leaves

Alternate, compound with three stalkless, egg-shaped leaflets. Leaflets are smooth with small teeth along the margins, a slight notch at the tip and usually a whitish V-shaped watermark. Trifoliolate leaves are found on long petioles that arise perpendicular to the prostrate stems.



White clover flower head.

Stems

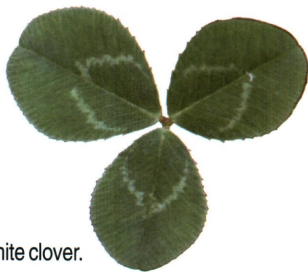
Plants spread by prostrate, creeping stolons that root at the nodes and are generally smooth.

Flowers and fruit

White or pinkish white, globe-shaped flower heads occur at the ends of long flower stalks. Each head may contain up to 85 individual flowers. Fruit are small, three- to six-seeded pods.

Reproduction

Seeds and stolons.



Trifoliolate leaf of white clover.

White clover *continued*



White clover stolon.

Similar weeds

Red clover (*T. pratense* L.)

Differs by having a more robust size and upright growth, red to purple flower heads, and larger, usually hairy trifoliolate leaves.



Red clover flower head.



Trifoliolate leaf of red clover.

Vetches

Vicia spp.

Life cycle

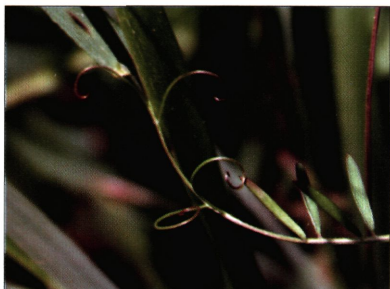
Climbing or trailing annual, biennial or perennial vines.

Leaves

Alternate, pinnately compound with several pairs of opposite, narrowly oblong leaflets. The terminal leaflet is modified into a branched, twining tendril used to climb.

Stems

Ascending, climbing or trailing stems are herbaceous but may become woody with age.



Twining tendril of vetch.



Pinnately compound leaf of vetch.

Vetches *continued*

Flowers and fruit

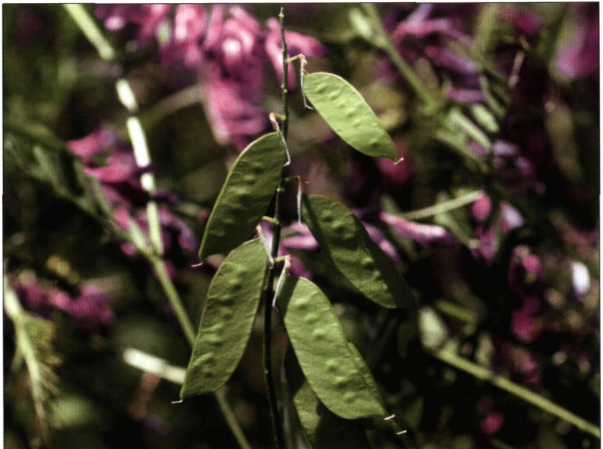
Blue, purple or reddish pealike flowers are borne on short stalks in the upper leaf axils or found crowded along one side of long, bare stalks. Fruit are variously sized pealike pods.

Reproduction

Seeds or rhizomes.



Vetch flowers.



Pealike pods of vetch.

Redstem filaree

Erodium cicutarium (L.) L'Hér. ex Ait.

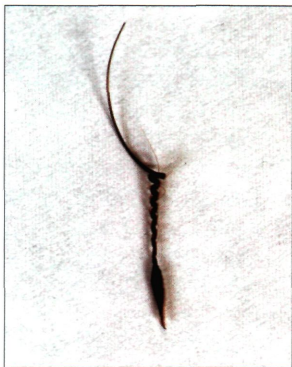
Life cycle

Prostrate, fernlike winter annual or biennial.

Leaves

Leaves are hairy and compound with deeply cut leaflets that give a featherlike or fernlike appearance. Leaves initially develop from a dense basal rosette and stem leaves are opposite and sparse.

Leaves usually have a grayish tinge.



One-seeded fruit section of redstem filaree.



Redstem filaree rosette.

Redstem filaree *continued*

Stems

Hairy, semierect stems arise from a prostrate, basal rosette.

Flowers and fruit

Pink or purple flowers with five petals are found clustered at the ends of long stalks. Fruit are long, beaklike capsules with five sections; each section contains a seed with a spirally twisted, corkscrew tail at maturity.

Reproduction

Seeds.



Redstem filaree flowers and fruit.

Ground ivy (creeping Charlie)

Glechoma hederacea L.

Life cycle

Prostrate, creeping perennial.

Leaves

Opposite, kidney-shaped to rounded leaves are approximately 1 inch wide with scalloped margins, palmate veins and long leaf stalks.

Damaged leaves emit a mintlike odor.

Stems

Prostrate, creeping stolons are square in cross-section and root at the nodes to form thick patches.

Flowers and fruit

Purplish blue, funnel-shaped flowers with two lips are found in clusters in the upper leaf axils.

The upper lip has two lobes; the lower lip has three lobes. Fruit are small, brown, egg-shaped nutlets.

Reproduction

Creeping stems and seeds.



Ground ivy in a lawn.

Ground ivy *continued*



Ground ivy plant with creeping stolons.



Ground ivy foliage and flower.



Ground ivy leaf.

Henbit

Lamium amplexicaule L.

Life cycle

Square-stemmed winter annual.

Leaves

Cotyledons are oval in outline and notched at the base where the hairy petioles attach.

Opposite, circular to heart-shaped, hairy leaves have rounded teeth along the margins. Prominent, palmately veined leaves give a crinkled leaf surface. Lower leaves are attached by long petioles; upper leaves lack petioles and encircle the stem.

Stems

Square, hairy, spreading stems with many ascending branches from the base can root at the lower nodes. Stems are up to 16 inches tall.



Henbit seedling.

Henbit *continued*

Flowers and fruit

Pink to purple flowers in a two-lipped tube form in whorls in the upper leaf axils. Each flower produces four egg-shaped, one-seeded, grayish brown and speckled nutlets.

Reproduction

Seeds.



Henbit leaf.

Henbit *continued*



Henbit flowers.



Close-up of henbit flower.

Similar weeds

Purple deadnettle (*Lamium purpureum* L.)

Differs by having more triangle-shaped leaves, upper leaves with petioles and red to purple coloration.



Purple foliage and flowers of purple deadnettle.

Healall

Prunella vulgaris L.

Life cycle

Stoloniferous perennial.

Leaves

Opposite, egg- to lance-shaped, 0.75 to 4 inches long with smooth to slightly toothed margins. Leaves are sparsely hairy to smooth with crinkled upper surfaces.

Stems

Prostrate, stoloniferous stems are square in cross-section and capable of rooting at the nodes to form dense patches. Flowering stems may reach up to 2 feet in height.



Healall plant.

Healall *continued*

Flowers and fruit

Flowers have blue-violet to purple petals fused into a two-lipped tube and formed in dense spikes atop erect stems. Large, green to purple bracts are present at each flower. Four brown nutlets are formed at each flower.



Square stem of healall.

Reproduction

Seeds and creeping stems.



Healall flowering spikes.

Velvetleaf

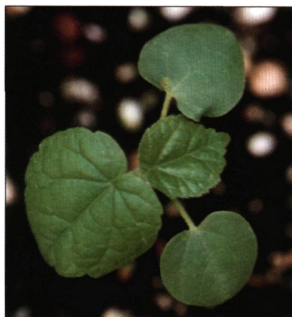
Abutilon theophrasti Medicus

Life cycle

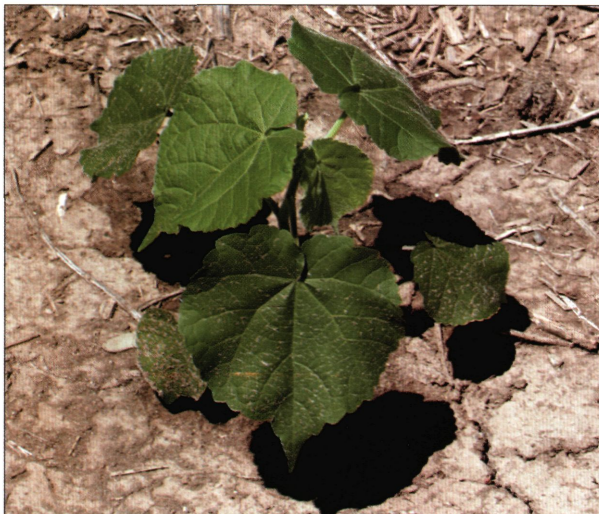
Erect summer annual.

Leaves

Seedlings have one heart-shaped cotyledon and one nearly round cotyledon with short hairs on both surfaces. Leaves are alternate, broadly heart-shaped, 3 to 8 inches long and



Velvetleaf seedling.



Velvetleaf plant.

Velvetleaf *continued*

nearly as wide with narrow, pointed tips and long, slender petioles. Leaves have round-toothed margins and softly hairy surfaces that feel velvety.

Stems

Erect, up to 7-foot-tall stems with little branching are covered with short, velvety hairs and may persist through the winter.

Flowers and fruit

Yellow to yellow-orange five-petaled flowers form solitarily on short stalks in the upper leaf axils. Fruit are approximately 1-inch-wide, bowl-shaped, green capsules that turn dark brown at maturity. Each capsule has nine to 15 compartments, each containing three to nine grayish brown, somewhat flattened and notched seeds.

Reproduction

Seeds.



Velvetleaf fruit and flower.

Common mallow

Malva neglecta Wallr.

Life cycle

Spreading annual or biennial.

Leaves

Cotyledons are heart-shaped with three main veins. Leaves are alternate, rounded with a heart-shaped base, palmately veined, hairy and found on long, slender, hairy petioles. Margins are round-toothed and obscurely lobed.

Stems

Spreading and partly erect stems are branched from the base and up to 1 foot tall.

Flowers and fruit

Flowers have five white and purple-tinged petals; flowers are formed on stalks in the leaf axils. Fruit are capsules that resemble a button or cheese wheel. Each capsule contains 12 to 15



Common mallow seedling.

Common mallow *continued*

compartments; each compartment has one reddish brown to black, flattened, rounded seed with a notch.

Reproduction

Seeds and stem fragments.



Common mallow flower.

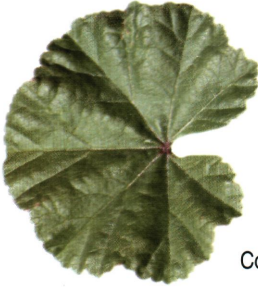


Common mallow fruit.



Common mallow plant.

Common mallow *continued*



Common mallow leaf.

Similar weeds

Venice mallow (*Hibiscus trionum* L.)

Differs by having leaves with three distinct, coarsely toothed lobes that may be further divided into as many as seven lobes; and pale yellow flowers with a purple base.



Venice mallow seedling.

Common mallow *continued*



Venice mallow flower.



Venice mallow leaf.



Venice mallow plant.

Carpetweed

Mollugo verticillata L.

Life cycle

Prostrate, mat-forming summer annual.

Leaves

Whorled, smooth, light green leaves (up to eight per node) are spatula-shaped to oblong with a rounded tip and tapered to the base.

Stems

Smooth, prostrate stems with prolific branches form light green, circular mats.

Flowers and fruit

Small, white to greenish white flowers on slender stalks occur in clusters of up to five in the leaf axils. Fruit are small, three-parted, egg-shaped capsules that contain orange-red to orange-brown, glossy, kidney-shaped seeds.

Reproduction

Seeds.



Carpetweed seedling.

Carpetweed *continued*



Carpetweed flowers and fruit.



Carpetweed flower.



Carpetweed plant.

Northern willowherb

Epilobium ciliatum Raf.

Life cycle

Erect summer annual.

Leaves

Opposite, lance-shaped to narrow oval leaves with pointed tips and shallowly toothed margins initially form leafy basal rosettes. Leaves are hairy with sunken veins and often have purple shading along the margins. Lower leaves have short stalks; upper leaves may have short stalks or are stalkless.

Stems

Hairy, rounded and erect.



Northern willowherb plant.

Northern willowherb *continued*

Flowers and fruit

White to pink or purple flowers with four notched petals are found at the ends of long, slender capsules in the upper leaf axils. Fruit are long, slender, hairy capsules that split at maturity, releasing numerous tiny seeds. Each seed has a tuft of white hair.

Reproduction

Seeds.



Northern willowherb flowering stem. Northern willowherb flower.



Mature capsule and seeds of northern willowherb.

Common eveningprimrose

Oenothera biennis L.

Life cycle

Usually an erect biennial or winter annual.
Occasionally a summer annual.

Leaves

Alternate, narrow oval-shaped, smooth to slightly wavy leaf margins, with distinctive pink to white midveins. Leaves initially develop from a basal rosette.

Stems

Erect, semiwoody, approaching 5 feet in height. Stem usually branches only at the top and may be visible through the winter.

Flowers and fruit

Flowers are yellow, attached to fused sepals forming a tube and found in terminal spikes. Seed capsules are woody, cylinder-shaped and thickest near the bottom.

Reproduction

Seeds.



Common eveningprimrose rosette.



Common eveningprimrose plant.

Common eveningprimrose *continued*

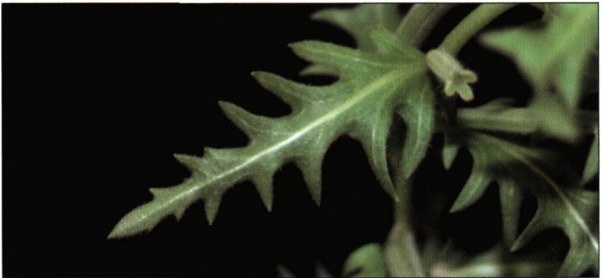


Common eveningprimrose flowering stem.

Similar weeds

Cutleaf eveningprimrose (*O. laciniata* Hill)

Differs by having a prostrate to moderately erect, branching stem; wavy and coarsely toothed leaves; yellow to reddish flowers in the upper and middle leaf axils; and linear, cylinder-shaped seed capsules.



Cutleaf eveningprimrose leaf is coarsely toothed.

Yellow woodsorrel

Oxalis stricta L.

Life cycle

Low-growing annual or simple perennial.

Leaves

Cotyledons are rounded to oblong. Gray-green leaves are alternate, compound and cloverlike, with three heart-shaped leaflets that attach at the pointed ends. Long-stalked leaves have smooth surfaces, but they are fringed with hair along the margins.

Stems

Low-growing, prostrate to erect stems with minimal branching at the base, up to 20 inches tall. Plants spread by long, slender rhizomes.

Flowers and fruit

Yellow flowers with five petals are found in long-stalked clusters. Fruit are ridged, hairy, cylinder-shaped capsules with pointed tips that



Yellow woodsorrel plant.

Yellow woodsorrel *continued*

range from 0.5 to 1 inch in length. The capsules explosively eject small seeds with a sticky coating up to several feet away. Seeds are mostly brown, ridged, oval and flattened.

Reproduction

Seeds and rhizomes.



Yellow woodsorrel leaf.



Yellow woodsorrel fruit.

Similar weeds

Creeping woodsorrel (*Oxalis corniculata* L.)

Differs by having a more prostrate growth, lack of rhizomes, presence of aggressive stolons and foliage often more purplish green.

Buckhorn plantain

Plantago lanceolata L.

Life cycle

Rosette-forming simple perennial.

Leaves

All leaves originate from a basal rosette. Cotyledons are very narrow and grasslike. Leaves are narrow, linear and elongated with parallel veins and generally smooth leaf margins. Long hairs may be present at the leaf base.

Stems

No visible aboveground stem. Semiwoody taproot present.



Buckhorn plantain seedling.

Buckhorn plantain *continued*

Flowers and fruit

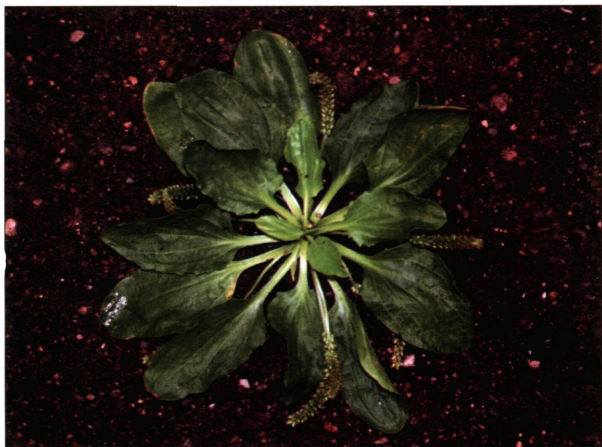
Long, leafless stalks bear dense, cylinder-shaped flowering spikes and fruit. Single flowers are inconspicuous. Fruiting capsules yield two narrowly oval, brown to black, shiny seeds indented on one side.

Reproduction

Seeds and basal shoots.



Buckhorn plantain flowering spike.



Buckhorn plantain rosette.

Broadleaf plantain

Plantago major L.

Life cycle

Rosette-forming simple perennial.

Leaves

All leaves originate from a basal rosette. Cotyledons are long and spatula-shaped. Leaves are generally smooth and broadly to narrowly oval, with parallel veins and smooth to slightly wavy leaf margins. Leaf base tapers to a distinct petiole. Petioles are usually green but occasionally pale pink.



Broadleaf plantain flowering spikes.

Stems

No visible aboveground stem. Short taproot present.



Broadleaf plantain seedling.

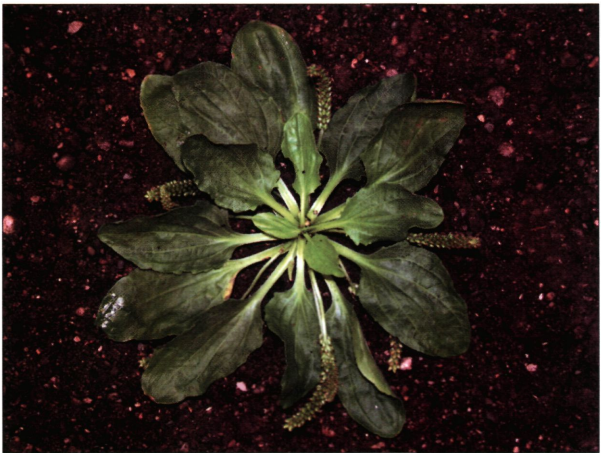
Broadleaf plantain *continued*

Flowers and fruit

Leafless stalks bear long, dense, cylinder-shaped flowering spikes and fruit resembling a rat tail. Single flowers are inconspicuous. Fruiting capsules yield many narrowly oval, usually glossy brown seeds.

Reproduction

Seeds.



Broadleaf plantain rosette.

Similar weeds

Blackseed plantain (*P. rugelii* Dcne.)

Differs by often having dark red to purple petioles, usually wavy leaf margins and dull dark brown to black seeds.

Prostrate knotweed

Polygonum aviculare L.

Life cycle

Prostrate, mat-forming summer annual.

Leaves

Alternate, narrow oval to oblong leaves with pointed tips, smooth margins and short petioles.

Stems

Prostrate, tough, wiry stems with distinct nodes are highly branched and mat-forming. Plants perform well in compacted areas. A membranous sheath (ocrea) surrounds the stem at the base of each petiole.



Prostrate knotweed seedling.

Prostrate knotweed *continued*

Flowers and fruit

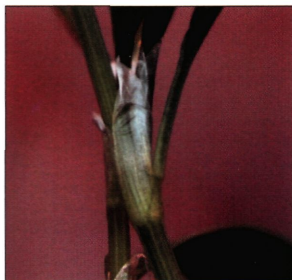
Small, inconspicuous flowers are white to pinkish and clustered in the leaf axils. The seed is enclosed in a single-seeded, dark reddish brown, three-sided fruit.

Reproduction

Seeds.



Prostrate knotweed leaf and flower.



Prostrate knotweed ocrea.



Prostrate knotweed plant.

Wild buckwheat

Polygonum convolvulus L.

Life cycle

Twining summer annual vine.

Leaves

Cotyledons are oblong-oval to linear. Leaves are alternate, hairless and heart- to triangle-shaped with a pointed tip and smooth margins.

Wild buckwheat seedling.



Fruit of wild buckwheat.



Wild buckwheat plant.

Wild buckwheat *continued*

Stems

Twining, herbaceous, smooth vines branch at the base and are less than 3 feet long. A membranous sheath (ocrea) surrounds the stem at the base of each petiole.

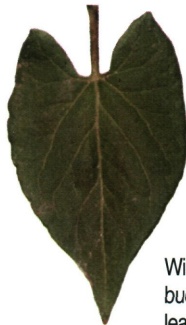
Flowers and fruit

Flowers are inconspicuous and green to white or pink. The seed is enclosed in a single-seeded, dull black, three-sided fruit.

Reproduction

Seeds.

Wild buckwheat flowers.



Wild
buckwheat
leaf.

Similar weeds

Mile-a-minute (*P. perfoliatum* L.)

Differs by having downward-pointing prickles on the stems, petioles and leaf veins.

Tartary buckwheat

[*Fagopyrum tataricum* (L.) Gaertn.]

Differs by having a more erect habit, arrow-shaped leaves and a grooved, hollow stem.

Pennsylvania smartweed

Polygonum pensylvanicum L.

Life cycle

Erect summer annual.

Leaves

Cotyledons are narrow oval to lance-shaped with rounded tips. Leaves are alternate, lance-shaped with pointed tips and smooth margins, usually hairless and occasionally with a purple watermark.

Stems

Branched, erect up to 4 feet tall and jointed with swollen nodes. A smooth, membranous sheath (ocrea) surrounds the stem at the base of each petiole.

Flowers and fruit

Small, pink to white flowers form in dense, spikelike clusters at the tips of stems. The seed is enclosed in a single-seeded, flat, glossy black, round to oval fruit with a pointed tip.

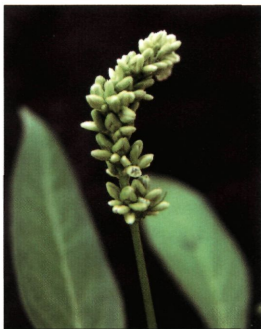
Reproduction

Seeds.



Pennsylvania smartweed leaf.

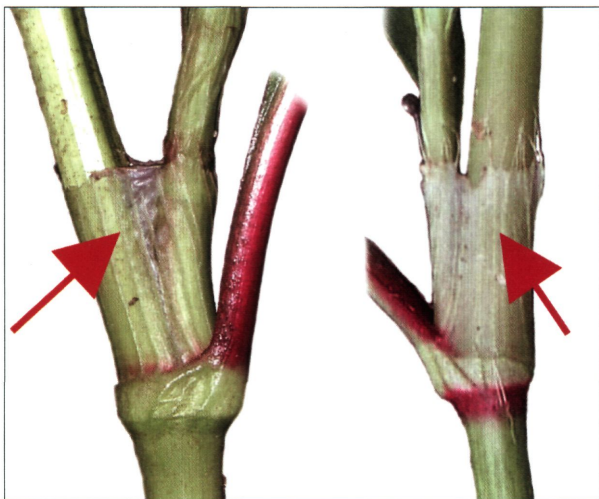
Pennsylvania smartweed *continued*



Pennsylvania smartweed immature flower cluster.



Pennsylvania smartweed seedling.



Left: Pennsylvania smartweed ocrea. Right: Ladysthumb ocrea.

Similar weeds

Ladysthumb (*P. persicaria* L.)

Differs by having a fringe of bristly hairs at the top of the ocrea. Usually has a purple watermark on leaf.

Pale smartweed (*P. lapathifolium* L.)

Differs by having young leaf undersides with whitish hair, older leaf undersides with yellow glands and a nodding inflorescence.

Swamp smartweed

(*P. amphibium* var. *emersum* Michx.)

Differs by having perennial, creeping, woody rhizomes and usually hairy foliage; found in wetter environment.



Hairy foliage of swamp smartweed.

Curly dock

Rumex crispus L.

Life cycle

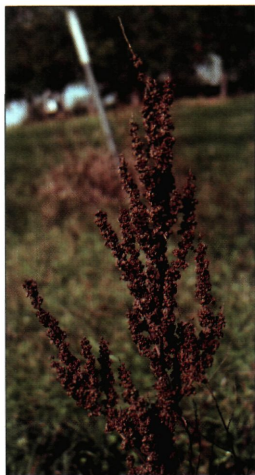
Erect, taprooted simple perennial.

Leaves

Alternate, long and narrow with round to pointed tips and wavy margins. Leaves are shaped like bacon strips.

Stems

Forms a basal rosette that bolts prior to flowering, unbranched, reaching 3 to 4 feet in height. A membranous sheath (ocrea) surrounds the stem at the base of each petiole.



Curly dock mature seedhead.



Curly dock rosette.

Curly dock *continued*

Flowers and fruit

Flowers are small, usually greenish and found in clusters on the upper stems, becoming reddish brown at maturity. The seed is enclosed in a single-seeded, shiny, reddish brown, three-sided fruit.

Reproduction

Seeds and fleshy taproot.



Curly dock flower cluster.



Curly dock seedling.

Curly dock *continued*

Similar weeds

Broadleaf dock (*R. obtusifolius* L.)

Differs by having much wider, broader leaves and usually heart-shaped leaf bases.



Broadleaf dock rosette.



Broadleaf dock leaf.

Common purslane

Portulaca oleracea L.

Life cycle

Prostrate, mat-forming summer annual.

Leaves

Cotyledons are oblong, hairless and succulent. Cotyledons and young leaves are maroon-tinted on the undersides. Thick, fleshy, succulent leaves are hairless, spatula-shaped and about 1 inch long or less. Leaves are alternate but appear opposite and are often crowded near the stem tips.

Stems

Prostrate, purplish red or green stems have multiple branches that form circular mats. Stems are thick, fleshy, succulent and hairless and up to 20 inches long.



Common purslane seedling.

Common purslane *continued*

Flowers and fruit

Small, yellow, star-shaped flowers with five petals are produced in the leaf axils, opening only on sunny mornings. Fruit are egg-shaped capsules that split around the middle, scattering many tiny, black, shiny seeds.

Reproduction

Seeds.



Common purslane fruit.



Common purslane plant.

Brambles

(blackberries, dewberries, raspberries, etc.)

Rubus spp.

Life cycle

Woody perennials.

Leaves

Alternate, typically compound with three to seven leaflets with toothed margins. Undersides of leaves are white to green.

Stems

Arching/trailing stems that root when in contact with the ground to form thickets. Stems have fine bristles or stiff prickles.



Raspberry foliage and fruit.

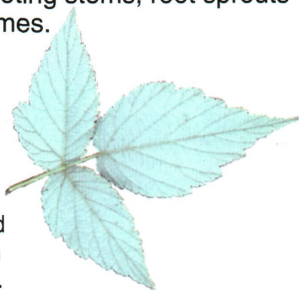
Brambles *continued*

Flowers and fruit

Flowers have five usually white petals; may be solitary or in clusters. Fruit are red or black berries with numerous seeds.

Reproduction

Seeds, rooting stems, root sprouts and rhizomes.



Raspberry leaf underside (left) and
bramble stem with
stiff prickles (right).



Raspberry leaf.

Common cottonwood

Populus deltoides Marshall

Life cycle

Fast-growing, weedy tree.

Leaves

Alternate, simple, broadly triangular, 3 to 5 inches long with coarse, incurved-toothed margins and a smooth base. Leaves are shiny green above and have two to five prominent, fingerlike glands where the long, flattened petiole attaches to the leaf. Margins are outlined by a colorless border.

Stems

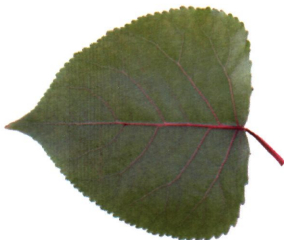
Up to 100 feet at maturity with a straight trunk and minimal branching. Bark is ash gray on mature trees and greenish yellow on young stems. Plants have the ability to form many vigorous, weedy sprouts.

Flowers and fruit

Male and female flowers are found on separate plants and are clustered in drooping, up to 4-inch-long spikes. Male flowers are reddish;



Common cottonwood seedling.



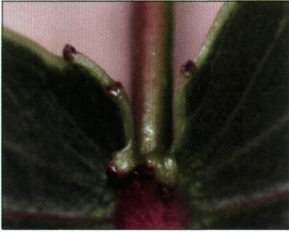
Common cottonwood leaf.

Common cottonwood *continued*

female flowers are greenish. Fruit are three- to four-valved capsules that release cottony, wind-disseminated seeds.

Reproduction

Seeds.



Glands on upper leaf surface of common cottonwood.



Mass of common cottonwood seeds.



Common cottonwood tree.

Corn speedwell

Veronica arvensis L.

Life cycle

Prostrate, spreading winter annual.

Leaves

Lower and middle leaves are opposite, broadly egg-shaped, hairy, short-stalked with rounded teeth along the margins. Small, narrow, bractlike upper leaves are alternate and without petioles.



Actual size of lower (left) and upper (right) leaves of corn speedwell.

Stems

Prostrate and mat-forming, with many branches that spread from the base.

Flowers and fruit

Light blue to violet, inconspicuous flowers are



Corn speedwell plants.

Corn speedwell *continued*

formed in the axils of the upper bractlike leaves on elongated flowering stems. Fruit are hairy, roundly heart-shaped capsules that contain many tiny, yellowish seeds.

Reproduction

Seeds.



Corn speedwell flowering stem.

Similar weeds

Purslane speedwell (*Veronica peregrina* L.)

Differs by having a more erect habit; hairless, oblong to linear leaves with smooth to slightly toothed margins; and tiny white flowers.



Purslane speedwell stem.

Corn speedwell *continued*



Purselane speedwell plant.



Purselane speedwell flowers.



Purselane speedwell capsules.

Corn speedwell *continued*

Slender speedwell

(*Veronica filiformis* Sm.)

Differs by having a perennial nature with stems that root at the nodes, round to kidney-shaped leaves and bluish white flowers on slender flower stalks.



Slender speedwell stem.



Slender speedwell foliage.

Horsenettle

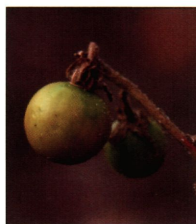
Solanum carolinense L.

Life cycle

Spreading to erect, patch-forming perennial.

Leaves

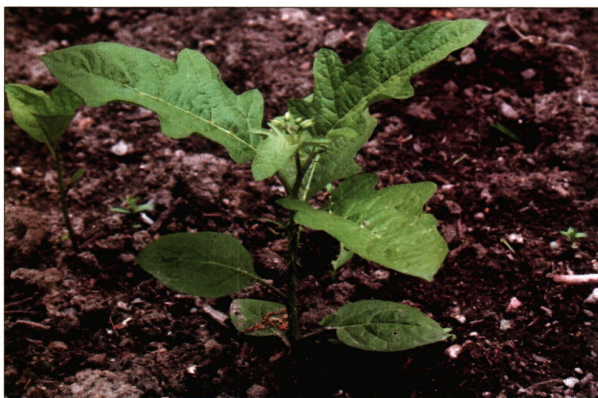
Alternate, egg-shaped, shallowly to deeply lobed, 2 to 5 inches long with sharp, prominent prickles on the leaf veins, midveins and petioles. Star-shaped hairs are present on both leaf surfaces.



Horsenettle mature berries.

Stems

Spreading to erect, herbaceous stems with multiple branching, up to 3 feet in height. Stems have sharp, prominent prickles and star-shaped hairs.



Horsenettle plant.

Flowers and fruit

Flowers are white to pale purple, star-shaped with five petals fused at the base and found in clusters on prickly flowering stalks. Flower centers consist of bright yellow, cone-shaped anthers. Berries are yellow at maturity, globe-shaped, wrinkled and approximately 0.5 inch across, and contain up to 170 seeds.

Reproduction

Seeds and deeply penetrating vertical to horizontal creeping roots.

Toxicity

All plant parts are toxic to animals.



Sharp, prominent prickles of horsenettle.



Horsenettle leaf.

Eastern black nightshade

Solanum ptycanthum Dun.

Life cycle

Erect, branching summer annual.

Leaves

Seedlings have small, egg-shaped cotyledons with a pointed tip and a purplish tinge underneath followed by alternate, petiolated, simple leaves. First leaves are generally smooth, egg-shaped with wavy margins and a purplish tinge underneath; later leaves are slightly hairy, egg- to diamond-shaped with smooth to irregularly toothed margins.

Stems

Erect and branching, up to 3-foot-tall stems with few hairs.

Flowers and fruit

Flowers are white to purple-tinged, star-shaped with five petals fused at the base surrounding five bright yellow anthers; found in downward facing clusters. Berries are glossy black at maturity and globe-shaped, and contain up to 110 seeds.



Eastern black nightshade seedling.



Eastern black nightshade mature berries.

Eastern black nightshade *continued*

Reproduction

Seeds.

Toxicity

All plant parts are toxic to animals.



Young eastern black nightshade plant.



Upper leaf surface of eastern black nightshade.



Purplish lower leaf surface of eastern black nightshade.

Stinging nettle

Urtica dioica L.

Life cycle

Erect, rhizomatous perennial.

Leaves

Opposite, egg- to lance-shaped with a rounded base and pointed tip. Petiolated leaves have coarsely toothed margins, smooth surfaces to a few hairs beneath and long, stinging hairs on the lower surface. Contact with stinging hairs can cause a skin irritation.



Stinging nettle seedling.

Stems

Four-angled, herbaceous stems are usually erect and unbranched, up to 6 feet tall and covered with stinging hairs. Contact with stinging hairs can cause a skin irritation.

Flowers and fruit

Inconspicuous, green to yellow flowers are formed in clusters in the upper leaf axils. The seed is enclosed in a single-seeded, tan, egg-shaped fruit.

Reproduction

Seeds and rhizomes that form extensive colonies.



Stinging nettle leaf.

Stinging nettle *continued*



Stinging nettle foliage and flower clusters.



Stinging nettle stem.



Close-up of stinging hairs on stem of stinging nettle.

Field violet

Viola arvensis Murr.

Life cycle

Prostrate to ascending winter annual.

Leaves

Young leaves that develop from a basal rosette are round to oval with a few shallow teeth on the margins, long petioles and small stipules. Mature leaves are longer and narrower with round-toothed margins, hairy veins on the leaf underside and large, deeply lobed stipules.



Field violet flower.

Stems

Prostrate to ascending, multibranched stems are less than 16 inches long.

Flowers and fruit

Flowers have five white to pale yellow petals sometimes tinged with purple. The lower petal is the largest, and the sepals are the same length as the petals or slightly longer. Fruit are single-celled capsules with three valves.



Field violet plant.

Field violet *continued*

Reproduction

Seeds.

Similar weeds

Common blue violet

(*V. papilionacea* Pursh)

Differs by having a perennial nature with rhizomes; basal, hairless, heart-shaped leaves with round-toothed margins; and blue to purple to occasionally white flowers.



Common blue violet flower.



Common blue violet foliage.

Virginia creeper

Parthenocissus quinquefolia (L.) Planch.

Life cycle

Perennial woody vine.

Leaves

Alternate, palmately compound, usually with five leaflets, although leaves may consist of three to seven leaflets.

Leaflets have toothed margins and turn deep red in the fall.



Virginia creeper tendril.

Tendrils

Branched three to eight times with adhesive disks at their tips that enable plants to grip and climb vertical surfaces.



Compound leaves of Virginia creeper.

Virginia creeper *continued*

Stems

Climbing woody vines with white pith. Young stems are red to green and turn brown with age.

Flowers and fruit

Flowers are small, inconspicuous and green to white. Fruit are small, blue to black, grapelike berries (drupes).

Reproduction

Seeds. Often dispersed by birds. Stems in contact with the ground may root.



Virginia creeper fruit.

Glossary of Terms

Aerial: Occurring above ground or water.

Auricles: Earlike structures found at the junction of the blade and sheath; extensions of the leaf blade around the stem.

Awn: A narrow, hairlike bristle.

Axil: The position between the stem and a leaf.

Axillary: Positioned in or arising in an axil.

Basal rosette: Cluster of leaves radiating from the base of the stem at ground level.

Bract: A reduced leaf or leaflike structure at the base of a flower or flower cluster.

Bristle: A short, stiff hair or hairlike structure.

Collar: The area on the outside of a grass leaf at the junction of the blade and the sheath.

Cotyledon: A primary leaf of the embryo; a seed leaf.

Creeping roots: Thickened roots that store carbohydrates, spread vertically and horizontally in the soil and contain adventitious buds that give rise to new plants.

Disk flower: The central flowers of a flower head in the Asteraceae (aster family).

Disseminate: To disperse throughout.

Herbaceous: A non-woody plant with stems and leaves that die back to the ground in the winter.

Glossary of Terms *continued*

Ligule: A membranous or hairy structure arising on the inside of the leaf at the junction of the blade and sheath.

Node: The position on the stem where leaves or branches originate.

Ocrea: A membranous, papery sheath around the stem at the nodes as in members of the Polygonaceae (smartweed family).

Palmate: Lobed, veined or divided from a common point, like the fingers of a hand.

Panicle: A flower cluster with a main axis and subdivided branches that is often pyramid-shaped.

Petiole: A leaf stalk.

Pinnate: The word used to describe a compound leaf with leaflets arranged on opposite sides of an elongated axis.

Prickle: A small, sharp outgrowth of the stem surface.

Ray flower: The straplike outer flowers of a flower head in the Asteraceae (aster family).

Rhizome: Belowground modified stem that gives rise to new plants.

Sepal: The outermost part of a flower; typically green and leaflike.

Spikelet: The individual flower clusters of grasses and sedges, consisting of one to many flowers subtended by two bracts (glumes).

Glossary of Terms *continued*

Stipules: A pair of leaflike structures found at the base of a leaf.

Stolon: Aboveground modified stem that gives rise to new plants.

Terminal: The tip or end of a stem or leaf.

Thorn: A stiff, woody, modified stem with a sharp point.

Trifoliolate: The word used to describe a compound leaf consisting of three leaflets.

Tuber: The thickened portion of a rhizome bearing nodes and buds; underground stem modified for food storage.

Whorl: Arrangement of three or more parts arising from a common point, as in a leaf arrangement with three or more leaves per node.

Modified from:

Plant Identification Terminology: An Illustrated Glossary. J.G. Harris and M.W. Harris. 1999. Spring Lake, Utah: Spring Lake Publishing.

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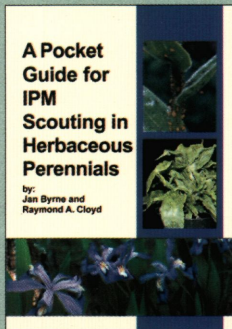
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