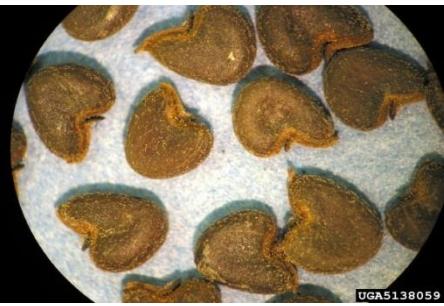


1. *Abutilon theophrasti* – velvetleaf (*Malvaceae*)

- Branched annual herb
- **Cotyledons:** rounded and cordate, velvety pubescent surface
- **Stems:** Smooth, sparingly branched, velvety pubescence
- **Leaves:** Alternate, cordate, slightly toothed, long petiole, **leaf surfaces velvety pubescent**
- **Flower:** Orangish-yellow, 4-5 petals
- **Fruits:** Cup-shaped, united in a ring (1.5- 3 cm diameter) around a central axis with a ring of beaks
- **Seed:** Greyish- brown to black, kidney shaped



2. *Acalypha ostryifolia* – hophornbeam copperleaf (Euphorbiaceae)

- Annual herb
- **Seedlings:** Cotyledon pubescent, First leaf toothed
- **Stems:** Pubescent, trichomes sparse to dense
- **Leaves:** Alternate, wide, **margins serrated**, sparsely pubescent, red dot at the junction of leaf and petiole, petiole 2.0- 7.0 cm long
- **Inflorescences:** Monoecious, male florets on axillary spikes, crowded and female spike terminal
- **Seeds:** Ovoid, silvery gray, tuberculate



3. *Acalypha virginica* – Virginia copperleaf (Euphorbiaceae)

- A summer annual
- **Seedlings:** round, smooth cotyledons, **first true leaves are opposite, while all subsequent leaves are alternate**
- **Leaves:** Alternate, leaves are lanceolate in outline, 3/4 to 3 inches long, and occur on petioles, youngest leaves develop a distinct copper coloration, **margins serrated but not as sharp as hophornbeam**
- **Inflorescences:** Many inconspicuous green flowers occur in clusters in the areas between the stem and leaf petioles



4. *Aegilops cylindrica* – jointed goatgrass (Poaceae)

- Winter annual weed and very similar to winter wheat
- **Seedlings:** evenly spaced hairs at 90-degree angles to the leaf margins and culms
- **Stem:** glabrous, distinctive rounded, bent at lower nodes
- **Leaves:** blade pubescent on upper surface and often on lower surface, sheaths pubescent at margin
- **Inflorescence:** awned
- **Ligule and auricle:** Ligule membranous, short auricle at the mouth or absent
- **Fruits:** Caryopsis, usually 2 or more, falling as a joint of spike or spikelet



5. *Alliaria petiolata* – garlic mustard (*Brassicaceae*)

- Cool season biennial herb
- **Seedlings:** Cotyledons are oblong to oblong-ovate, first year plants are low-growing rosettes with rounded, kidney-shaped leaves, scalloped on the edges
- **Stem:** glabrous, each plant usually produces one flowering stem. If a plant is cut or stepped on, many stems will form
- **Leaves:** **Upper leaves on mature plants are more triangular, becoming smaller toward the top of the plant, coarsely toothed, Plants often smell like garlic, especially when leaves are crushed**
- **Inflorescence:** Small, white 4-petaled flowers appear in early spring and are in clusters at the top of the stem
- **Seed:** Cylindric (2.5 to 3.5 mm long, 1 mm wide), black, **transversely ridged**



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6. *Amaranthus blitoides* – prostrate pigweed (Amaranthaceae)

- Summer annual herb, creeping amaranth
- **Seedlings:** cotyledons long, narrow; **lower surface and stem deep red in color**, upper surface shiny and glabrous, **first leaf indented at tip**
- **Stem:** long, fleshy, nearly smooth, reddish and branched at the base
- **Leaves:** Alternate, crowded, 1.0- 4.0 cm long, shiny, **broadest at tip, margin entire and usually whitish, petiole shorter**
- **Inflorescence:** dense axillary clusters, not terminal
- **Seed:** nearly circular, 1.5 mm diameter, **flattened to convex on both sides, shiny, black, notched at narrow end**
- **prostrate pigweed vs common purslane:** PP is not as fleshy and succulent as CP. Leaves of CP are succulent than PP. Seeds of CP is more smaller and rough surface than PP.



7. *Amaranthus palmeri* - Palmer amaranth (Amaranthaceae)

- Cotyledons are narrow and green to reddish in color.
- First true leaves are alternate, ovate in shape, and slightly notched at the tip of the leaf.
- Mature leaves are alternate, without hairs, and lance-shaped or egg-shaped in outline.
- Leaves are 2 to 8 inches long and 1/2 to 2-1/2 inches wide and occur on **petioles that are usually longer than the leaves**.
- Stems are without hairs and thick.
- Seedheads are terminal panicles that reach 1/2 to 1-1/2 feet in length. Smaller lateral inflorescences also occur between the stem and the leaf petioles.



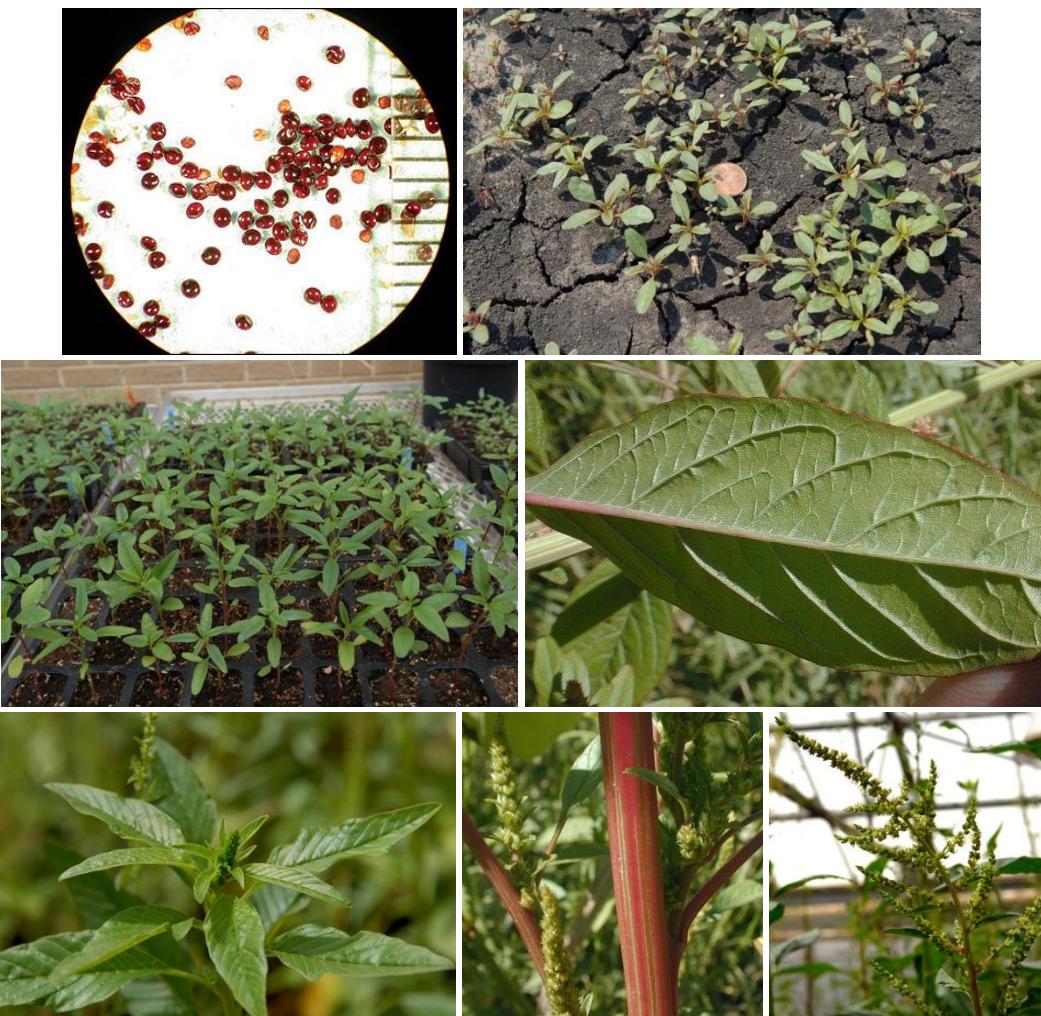
8. *Amaranthus retroflexus* - redroot pigweed (Amaranthaceae)

- Seeds are small, round and shiny black.
- Cotyledons are linear with a prominent midvein and reddish undersides.
- Leaves are alternate, ovate and usually have a small notch at the tip.
- Leaf surfaces are rough with hairs on the underside, most notably on the veins.
- Leaf margins are entire to wavy.
- Petioles are up to $\frac{1}{2}$ inch long
- Stem: erect, often with red markings, especially near the base. Stems are usually thick, multi-branched and have short hairs, mostly on the upper parts of the plant.
- Inflorescence: small, greenish flowers grow in dense terminal and axillary clusters. Clusters are thick, prickly spikes up to 8 inches long. Flowers have bracts about twice as long as sepals.

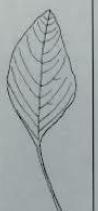
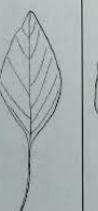
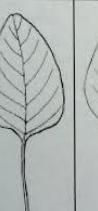


9. *Amaranthus rufus* - common waterhemp (*Amaranthaceae*)

- First true leaves are lance-shaped with a slight notch at the tip.
- Seedlings are very smooth and the plants remain smooth.
- Leaves: the hairless alternate leaves are up to 6" long and 1½" across. They are lanceolate, ovate-lanceolate, or oblong, with smooth margins and a somewhat shiny upper surface.
- The petioles are long and narrow, sometimes as long as the leaves, but usually shorter.
- Larger plants branch frequently and are broader at the base than at the top.
- The hairless stems are either round or ridged, and green or pinkish red.
- The flowers are arranged in spikes, or narrow panicles of spikes, up to 1' long.
- These spikes may develop directly from the upper branches, or they may appear from the axils of the upper leaves. The flower bracts vary in color from green to reddish pink. The flowers and bracts are arranged along the spikes more or less densely, sometimes occurring along the spikes in loose bunches.



Pigweed and waterhemp identification table

	Common Waterhemp	Redroot Pigweed	Smooth Pigweed	Powell Amaranth	Palmer Amaranth
Seedling shape		 sl	 sl	 sl	 sl
Stem hairs					
Leaf shapes					
Separate male and female plants	Yes	No	No	No	Yes
Seedhead shape	smooth, long, slender	prickly, short, stout	slightly prickly, long, slender	prickly, very long, thick	very prickly, very long, thick

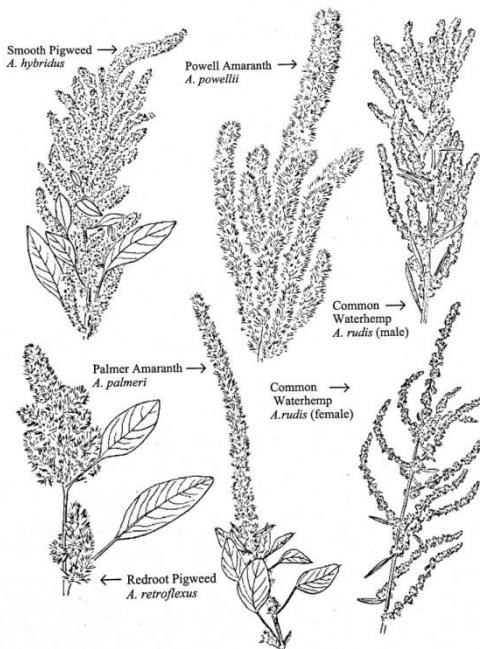
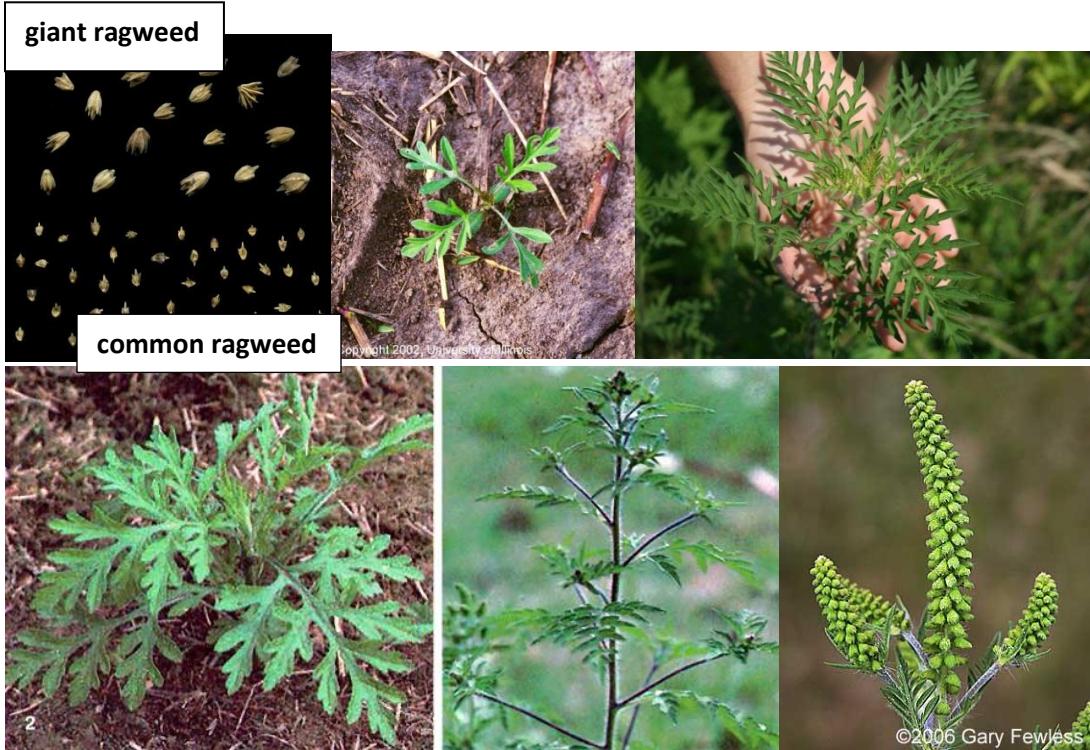


Figure 1. Seedhead shapes with male common waterhemp for comparison.

10. *Ambrosia artemisiifolia* - common ragweed (Asteraceae)

- Seedling stem (hypocotyl) and seed leaves (cotyledons) of common ragweed are green and often splotched with purple.
- Seed leaves are about $\frac{1}{4}$ inch (6 mm) long, spoon-shaped or nearly round, somewhat thickened, and have no visible veins.
- Leaf stalks (petioles) are nearly as long as the seed leaves.
- First pair of true leaves: These leaves have one or two deep clefts in each margin, forming lobes that are rounded or slightly pointed at the tips. Short, whitish hairs cover the leaves and stem.
- Hairs are most dense on the lower leaf surfaces.
- Fernlike mature leaves
- Mature leaves are 6 to 12 inches long and 4 to 6 inches wide and are deeply indented. On the second and subsequent leaf pairs, the veins are visible as depressions on the upper surface and as ridges on the lower surface.

- Stems are usually covered with velvety hairs
- Flowers are small, green, inconspicuous, and found on terminal branches.
- Fruits have several longitudinal ridges ending in short spines (similar to a crown).



11. *Ambrosia trifida* - giant ragweed (Asteraceae)

- Seedling: can be identified by their spatulate (spoon-shaped) cotyledons, which are fairly large, ranging from 3/8 to 5/8 inch wide, 1 to 1 3/4 inches long, and up to 1/16 inch thick.
- Cotyledons unfold from a hairless hypocotyl and have an indentation at the base of the cotyledons.
- The first true leaves are entire and ovate with deep lobes.
- Leaves occur on petioles and most often have three prominent lanceolate-shaped lobes, may have five lobes. The lobes originate from the same point (palmate). These large, three-lobed leaves make giant ragweed a very distinctive plant.
- Leaf margins are serrated.
- Stems can be reddish. Erect, branching above, rough and sometimes hairy.
- Green flower spikes 3-6" in length can be found on the top of the plant "blooming" in late summer and early fall.



12. *Apocynum cannabinum* - hemp dogbane (Apocynaceae)

- The brown seeds are thin, flat, and have a tuft of silky hairs at one end.
- Young leaves appear yellowish green with a powdery bloom beneath.
- Leaves are 2 to 6 inches long, opposite (2 leaves per node), and smooth-edged. Leaf shape resembles a slightly flattened egg. Leaves attach to stems by way of short leaf stalks (petioles). The underside of leaves may be finely hairy but the upper surface is usually smooth and pale or bluish green.
- Stems are erect, slender, woody at the base, and marked with discontinuous purple lines. Stems are covered with a fibrous bark and exude a milky sap if cut or crushed. Stems are undivided at the base but they become much-branched in the upper half of the plant.



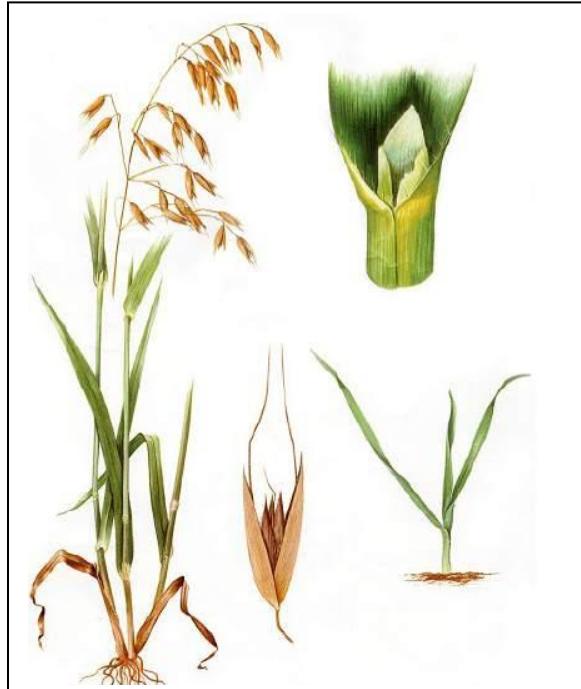
13. *Asclepias syriaca* – common milkweed (Asclepiadaceae)

- perennial plant (produces rhizomes)
- leaves: **opposite** or sometimes whorled, broad ovate-lanceolate, up to 25 cm long and 12 cm broad, reddish veins, short petioles and **velvety undersides, somewhat “fleshy”**.
- all parts of the plant produce white latex when broken



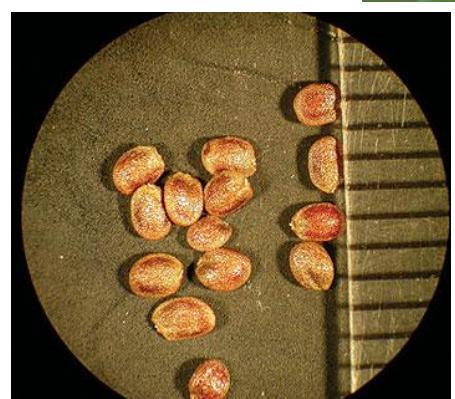
14. *Avena fatua* – wild oat (Poaceae)

- annual plant with erect hollow stems
- sheaths open, ligules membranous
- **seedling leaves twist counterclockwise**
- seeds are yellow to black, narrowly oval, $\frac{1}{4}$ to $\frac{1}{2}$ inch long



15. *Barbarea vulgaris* – yellow rocket (*Brassicaceae*)

- biennial plant
- **stem is ribbed** and hairless, branched at base
- basal leaves have a **large terminal lobe** and **smaller lower lobes**
- Cauline leaves are smaller, ovate, toothed or lobed



16. *Bromus japonicus* – Japanese brome (*Poaceae*)

- annual or winter annual, 14 to 30 inches tall
- stems, leaf blades, and sheaths are covered in hair at all growth stages
- stems are bent at base and nodes are swollen
- spikelets are $\frac{1}{4}$ inch wide and $\frac{1}{2}$ inch long and the awns are long and bent



17. *Bromus secalinus* – cheat (Poaceae)

- annual up to 30 inches tall
- presence of hair is variable
- sheaths are round and may be smooth but are sometimes hairy
- blades may be smooth or hairy and have a **twisted appearance**
- auricles are absent
- **ligule is a prominent, ragged membrane**
- spikelets are smooth with shortened awns



18. *Bromus tectorum* – downy brome (*Poaceae*)

- annual, 4 to 30 inches tall
- leaf sheaths and blades are densely covered in short soft hair
- awns are usually purplish at maturity
- inflorescence is dense, slender, and drooping
- ligule is papery thin with a ragged edge



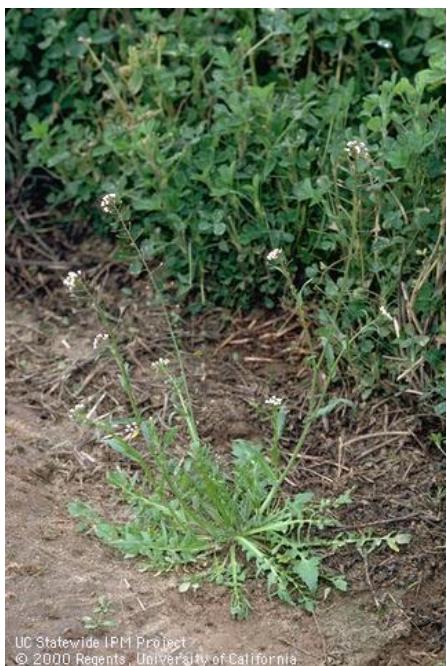
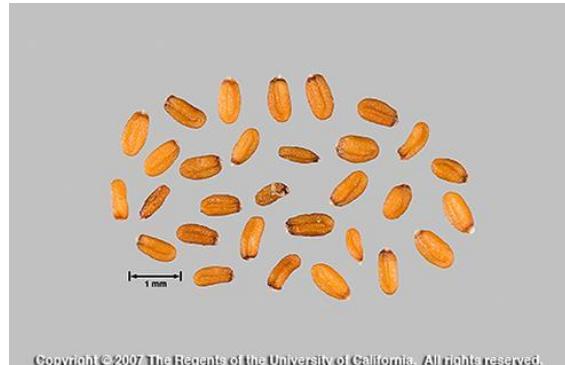
19. *Capsella bursa-pastoris* - shepherd's-purse (Brassicaceae)

Summary: Winter annual broadleaf weed fairly easy to identify. Similar to dandelion, but has leaves that are usually deeply lobed!

Seedling: Cotyledons are narrowly football shaped with a rounded tip with tiny granules on the surface. The first and next few leaves are narrowly football shaped to egg shaped, with rounded tips, and smooth to toothed edges. Later leaves are typically toothed to deeply lobed. True leaves are covered with star-shaped hairs that distinguish shepherd's-purse from most other weed seedlings.

Mature plant: Leaves shapes range from nearly smooth to deeply lobed, are lightly covered with both simple and forked hairs, and are alternate to one another. Flower stalks grow erect or slightly horizontally. The four white flower petals are sometimes tinged pale pink, and narrow toward the base (clawed). Fruits consist of flat, heart or triangular-shaped pods making this species easy to recognize when mature and distinguishes it from other plants in the mustard family.

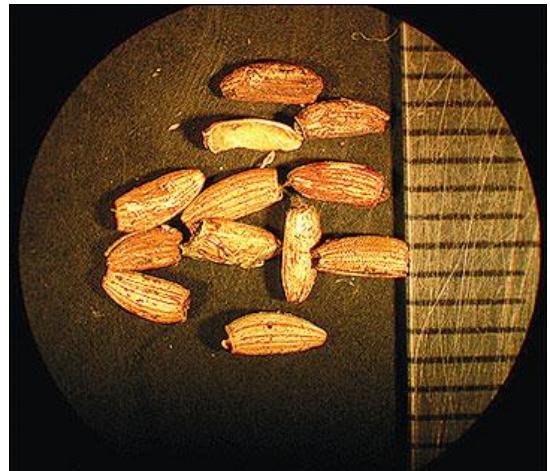
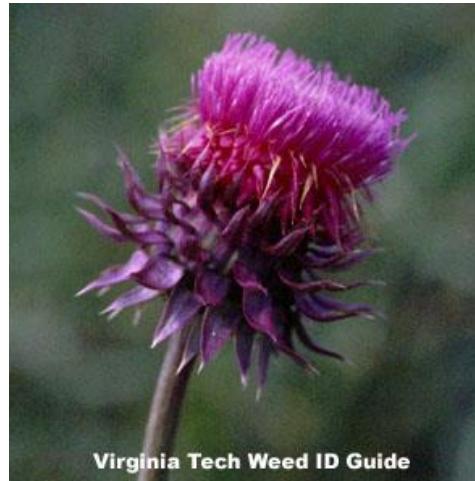
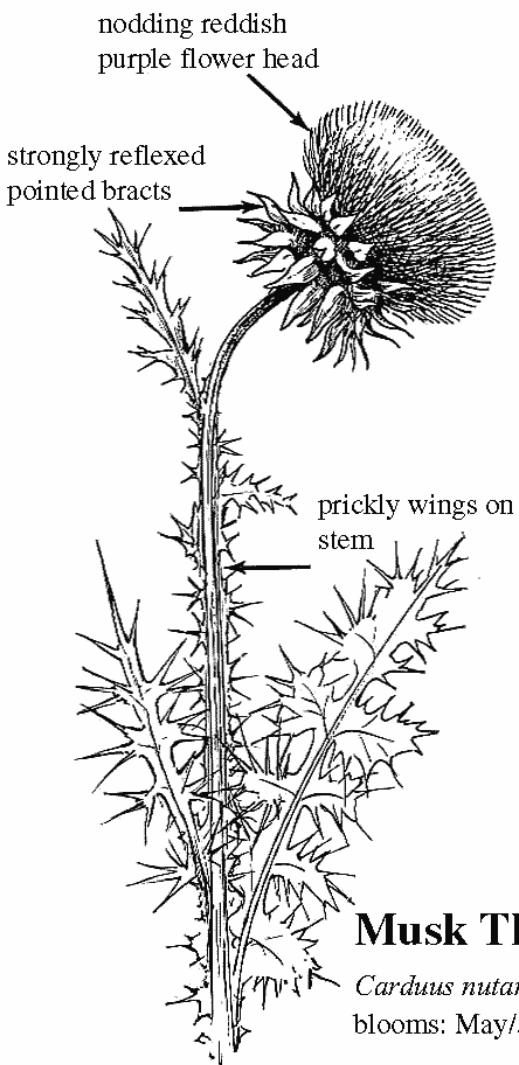
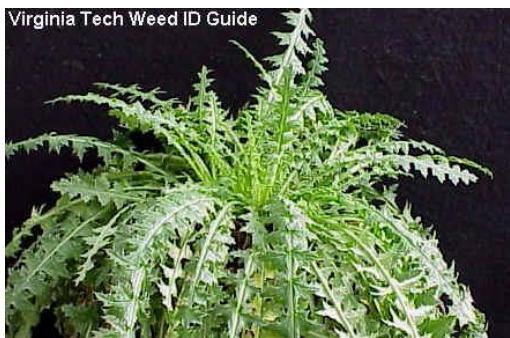
Seed: Oblong, slightly flattened, dull, reddish to yellowish brown, and tiny—about 1/25 of an inch (1 mm) long.



20. *Carduus nutans* - musk thistle (Asteraceae)

Summary: Biennial forb easy to distinguish from other species due to thorns. Similar to bull thistle just without hair!

Description: Leaves are waxy, dark green with a light green midrib and mostly white margins generally with little or no pubescence (bull thistle has hairs) and deeply lobed with small but sharp spines. Seedlings grow into rosettes and overwinter in that stage. Stems of musk thistle have wings that do not extend completely up and down the stem which is smooth elsewhere. Seeds are 0.15 to 0.2 inches long, glossy, light brown with stripes and a light apical rim.



21. *Cenchrus longispinus* - longspine sandbur (*Poaceae*)

Summary: Summer annual grass. Similar to barnyardgrass, but has small ligule with fringe of hairs, stems are reddish and their base is flat. Leaves can be easily separated from stem.

Seedling: closely resembles those of barnyardgrass. The cotyledon (seed leaf) is flattened and has a purplish tinge at the bottom. The most distinctive characteristic for seedling identification is a spiny bur (see “Mature plant” section), from which the young plant emerged. It may be found by digging carefully around the roots.

Mature plant: Usually prostrate growth habit (in greenhouse might be different). **Stems are flattened in cross-section**, often bend abruptly toward the base, and have loose spikes of spiny burs at maturity. Leaves are flat, sometimes folded, with a hairless upper surface. Leaves have no auricles, ligule is a fringe of hairs approximately 1 mm long. Sheaths are open, usually hairless, and their margins are membranous and sometimes lined with a few hairs. Seedheads consist of many round, spiny burs.



22. *Chenopodium album* - common lambsquarters (*Chenopodiaceae*)

Summary: Easy to identify due to white coating on the leaves. Cotyledons are elliptic, dull green on upper surface and maroon on the underside.

Seedling: The cotyledons and early true leaves are dull bluish green above and often purplish red below. Cotyledons are narrow, elliptic to linear in outline, and stalks that are often purple tinged. The first leaves appear to be opposite to one another along the stem and are almost equal, or somewhat larger than the cotyledons.

Mature plant: Leaves are oblong egg shaped to triangular egg shaped and often fold upward along the midvein resting on thin stalks that are about half as long as the leaf blade. Leaf surfaces, especially on new growth, are covered with a fine white powdery coating. Stems are single or may have a few rigid, angled branches and are sometimes striated purplish red. Flowers are tiny, green, stalkless and are packed in dense clusters at the tips of the main stem and branches. The tiny flowers lack petals, and like the leaves, are also covered in a white powdery coating. Seeds are tiny and plants produce two types—smaller black seeds and larger brown ones.

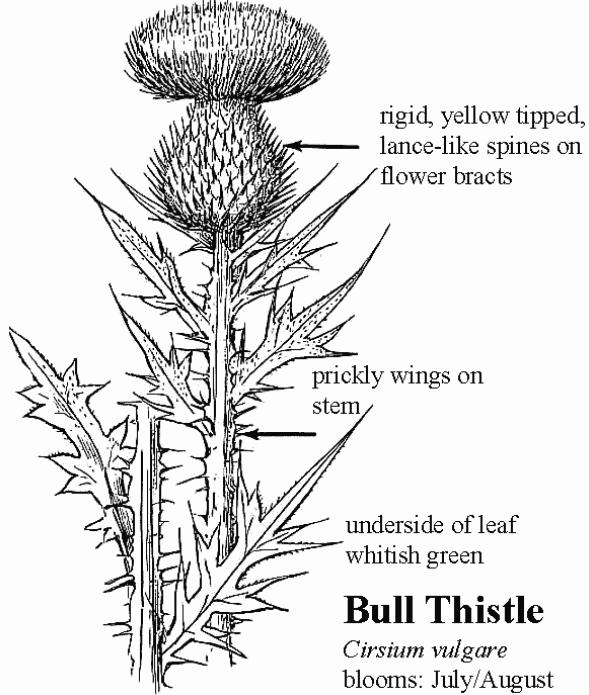


23. *Cirsium vulgare* - bull thistle (Asteraceae)

Summary: Similar to musk thistle, just with many hairs!

Seedling: Cotyledons egg-shaped, young leaves develop as a rosette. Leaves are oblong with small spines along the margins. Second true leaf and subsequent young leaves contain many hairs on the upper surface.

Mature plant is similar to musk thistle: spiny-winged stems and leaves with rough hairs on the upper surface and softer whitish hairs below.



24. *Conium maculatum* - poison-hemlock (*Apiaceae*)

Easy to identify. Purple-spotted stems with leaves and flowers that resemble Wild Carrot (*Daucus carota*).

Seedling: Cotyledons are narrow, lanceolate, and on long petioles. First true leaves have two or more leaflets along an axis (pinnately compound), and are without hair (glabrous).

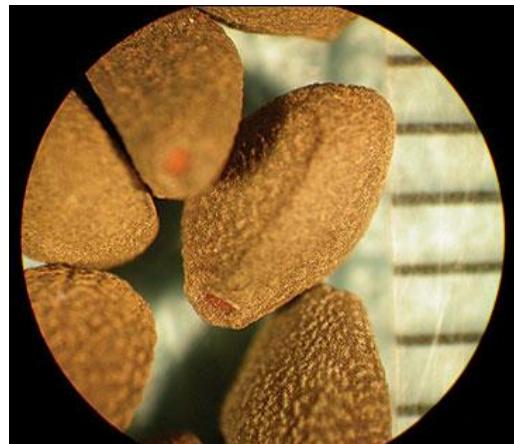
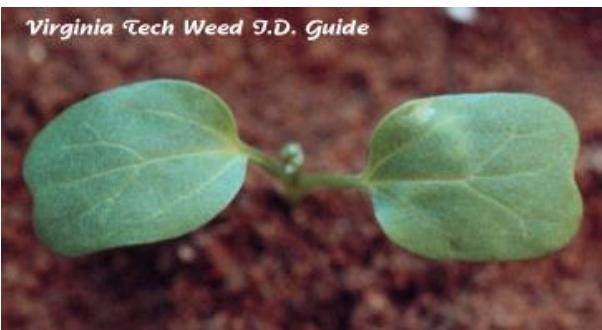
Mature plant: Stems are erect, branching, without hairs, ridged, hollow except at the nodes, and distinctly purple-spotted. Leaves are alternate, triangular in outline, petioled, and often dark glossy green in color. Leaves are 3-4 times pinnately compound, and the individual leaflets are lanceolate in outline. Flowers are large, white flowers (compound umbels) are each composed of a cluster of smaller flowers in which the stalks of the individual flowers arise from a common point. Seeds are grayish brown, egg shaped to nearly round, with longitudinal ribs and about 1/8 of an inch (0.13 cm) long and less than that in width.



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25. *Convolvulus arvensis* – field bindweed (*Convolvulaceae*)

- Perennial species
- Cotyledons: butterfly shaped lobes
- Leaves: simple, alternate arrangement, arrowhead shape
- stems: twining. **NO OCREA.**



26. *Conyza canadensis* – horseweed (Asteraceae)

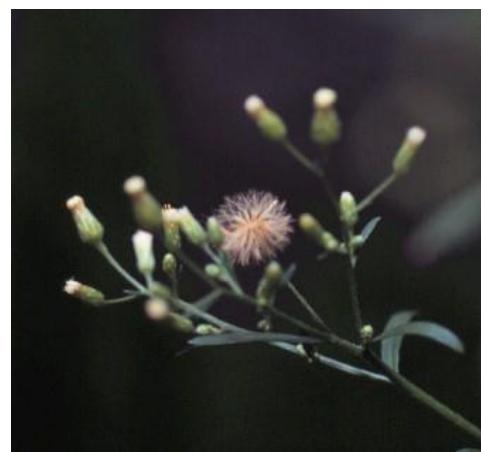
- Winter annual species
- **Cotyledons:** round to ovate – very tiny plant when at seedling stage.
- Seedling leaves initially develop from a basal rosette; mature leaves are alternate and numerous, and crowded along an erect central stem.
- **Stems:** erect, hairy central stem arises from a basal rosette, then branches to flower.
- **Leaves:** simple, hairy and linear to lance-shaped with smooth to toothed margins, gradually becoming smaller toward the top of the plant.
- **Seeds:** very tiny; wind dispersed.



Virginia Tech Weed ID Guide



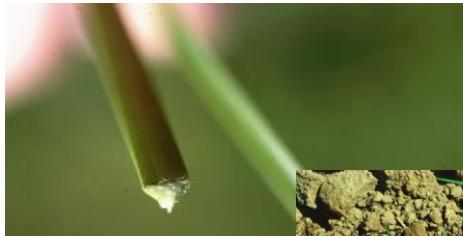
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27. *Cyperus esculentus* – yellow nutsedge (*Cyperaceae*)



- Perennial species
- **Stem:** triangle shape solid and nodeless; appear waxy.
- **Leaves:** most basal; **3-ranked**; crowded; green and without hair.
- Reproduces through hard tubers or nutlets.



28. *Datura stramonium* – jimsonweed (*Solanaceae*)

- Summer annual species
- **Cotyledons:** long and narrow. Lanceolate shape.
- Leaves: simple, petiolate attachment, margins toothed, unevenly sinuate-dentate. Hairless surface. Emit an unpleasant odor.
- Stem: erect; green to purple in color; hollow.



29. *Descurainia sophia* – flixweed (Brassicaceae)

- Winter annual species
- **Cotyledons:** hairless, lance to football shaped, and small.
- **Leaves:** the first leaves are stalked, have three lobes, and are covered with tiny, branched hairs. Later leaves are one or two lobed and are alternate to one another along the stem.
- Grows as a rosette first until the flower stem develops.

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30. *Digitaria sanguinalis* – large crabgrass (Poaceae)

- Summer annual species
- Membranous ligule; flat at the top. Auricles are absent.
- The first leaf is short and wide.
- Both sides of the leaves have silky, shiny hairs.
- Very hairy leaves and sheaths.



31. *Echinochloa crus-galli* – barnyardgrass (*Poaceae*)

Seedlings

- Leaf blades and sheath glabrous, ligule absent

Mature

-Roots

- Fibrous

-Stems

- Erect, 1.5 – 2 m tall, often bent and branched at lower nodes, glabrous

-Leaves

- 10 – 50 cm long and 5 – 30 mm wide, compressed, blade glabrous but rough on both surfaces
- Sheaths glabrous
- Ligules absent

-Inflorescence

- Terminal, nodding panicle 10 – 40 cm long with numerous spreading branches, the lower, larger ones rebranching
- Spikelets sub-sessile or short-pedicled
- First glume 1/3 to ½ as long as spikelet, second glume equaling spikelet
- Lemma awned or awnless, hardened, apex obtuse or broadly acute
- Palea large, well developed

-Fruits

- Caryopsis, hulled or spikelet attached

Special Identifying Features

- No ligule
- Crowded, rebranched spikelets
- May be awned or awnless



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32. *Elymus canadensis* - Canada wildrye (*Poaceae*)

Mature

-Roots

- Grows from a small rhizome
- Shallow, fine root network
- Facultative mycotroph

-Stems

- Hollow stems, tough at maturity

-Leaves

- Rough, flat leaves reaching 20 – 30 cm in length
- Clasping auricles

-Inflorescence

- Nodding spike up to 25 cm long
- 5 to 20 spikelets
- Curling awns may exceed 3 cm long

Unique Identifying Features

- Perennial bunch grass



33. *Elymus repens* – quackgrass (*Poaceae*)

Seedlings

- Auricles present, sheaths pubescent to glabrous
- Blade pubescent to glabrous on upper surface, glabrous on lower surface
- Ligule membranous

Mature

-Roots

- Fibrous, rhizomes present

-Stems

- Erect, often bent out and upward at base

-Leaves

- 4 – 30 cm long and 3 – 8 mm wide, upper surface pubescent to glabrous, lower surface glabrous
- Sheaths glabrous or pilose
- Ligule very short, membranous and truncate

-Inflorescence

- Spike of many several-flowered spikelets
- Spikelets 4-8 flowered

-Fruits

- Caryopsis, lemma and palea attached

Special Identifying Features

- Rhizomes present
- Auricles present
- Inflorescence a spike of many several-flowered spikelets



34. *Equisetum arvense* – field horsetail (Equisetaceae)

Mature

-Roots

- Fibrous, from creeping rhizomes bearing tubers

-Stems

- Jointed
- 2 forms

- Sterile stems

- Erect to decumbent, 10 – 80 cm tall, branching in whorls, spreading to ascending, vertically ribbed, central cavity $\frac{1}{4}$ stem diameter, stomata in two broad bands
- Whorled, scale-like sheaths flat or slightly flared, green to blackish
- Teeth persistent, brown to blackish, deltoid to lanceolate, pointed

- Fertile stems

- Erect, 10 – 32 cm tall, short-lived, unbranched, without chlorophyll, tan to brown, sheaths flaring, pale tan to brownish, teeth dark with narrow thin margin, lanceolate

-Leaves

- Reduced to scales, whorled

-Sporangia

- Cone-like structure at tip of stems

-Spores

- Numerous, microscopic

Special Identifying Features

- Perennial from rhizomes
- Green, sterile, aerial branching stems
- Pale, fertile stem emerging annually, with long peduncle, jointed, spore-bearing cones at tips of stems



35. *Eriochloa villosa* - woolly cupgrass (*Poaceae*)

Seedlings

- Leaves flat, thin, finely pubescent
- Ligule small, minutely ciliate

Mature

-Roots

- Fibrous, sometimes rooting at lower nodes

-Stems

- Erect or decumbent
- 0.3 – 1.0 m tall
- Finely pubescent

-Leaves

- Linear, 2.0-20.0 cm long and 2.0-12.0 cm wide
- Pubescent
- Margin crinkled on one side
- Sheath somewhat inflated, minutely pubescent
- Ligule minute, ciliate membrane

-Inflorescence

- Narrow panicle, 2 – 9 ascending branches, 2 – 16 cm long
- Spikelets elliptic-ovate, 2-flowered, pedicels 4 – 5.3 mm long
- First glumes reduced to short ring or cup

-Fruits

- Caryopsis, lacking longitudinal grooves, falls as entire spikelet

Special Identifying Features

- Erect annual, covered with dense, short pubescence
- Ligule short, ciliate
- Distinct ring or cup below spikelet
- Leaf margin crinkled on one edge



36. *Galinsoga quadriradiata* - hairy galinsoga (Asteraceae)

Seedling

- Hypocotyl very short
- Cotyledons smooth, broadly club-shaped with slightly indented tips

Mature

-Roots

- Fibrous from taproot

-Stems

- Erect, 0.2 – 0.6 m tall, freely branching
- Green, often maroon-tinged, densely pubescent

-Leaves

- Opposite, 2 – 7 cm long and 0.5 – 5 cm wide
- Simple, oval to elliptic-ovate, tapering to sharp tip
- Base rounded to cuneate, margins coarsely toothed
- Upper surface densely pubescent, lower surface with most trichomes located on veins

-Inflorescence

- Ray florets - 5, white, 3-toothed apex
- Disk florets - yellow, receptacle chaffy, chaff separating when fruits mature

-Fruits

- Achene, 1 – 1.5 mm long, brown to black, tapered from base to apex
- Pappus awned, white

Special Identifying Features

- Erect and freely branching
- Stems and leaves densely pubescent
- Ray florets – 5, white, toothed at apex



37. *Helianthus annuus* - common sunflower (Asteraceae)



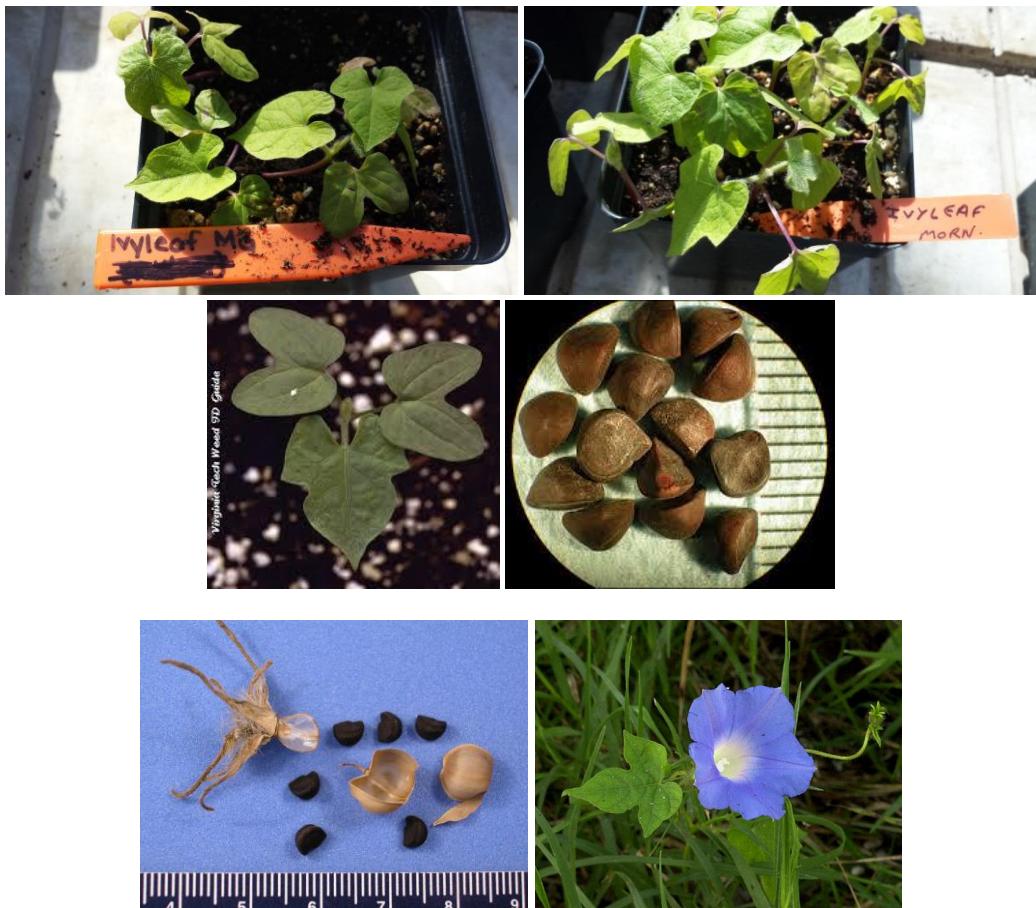
Inflorescence: Heads 2-12 cm wide, terminal, outer bracts hairy to nearly hairless

Flower: Yellow ray florets, red to purple disk florets

Leaves: alternate, blades simple, cordate below, margins toothed to nearly entire

Stems: erect, coarse, branched above

38. *Ipomoea hederacea* - ivyleaf morningglory (Convolvulaceae)



Stems: twining, climbing, pubescent

Cotyledons: butterfly shaped

Leaves: Alternate, simple 3 (sometimes 5) lobes ovate, lobes distinct and pointed, Pubescent

Flower: Large light blue, funnel shaped

Roots: Fibrous with a shallow taproot

39. *Ipomoea lacunosa* - pitted morningglory (*Convolvulaceae*)



Flowers: Funnel-shaped, white in color, approximately 3/4 inches long.

Stem: Twining, climbing, Pubescent

Cotyledons: Deeply pitted lobes

Leaf: Entire, cordate

40. *Ipomoea purpurea* - tall morningglory (Convolvulaceae)



Inflorescence: Cyme or rarely solitary flowers.

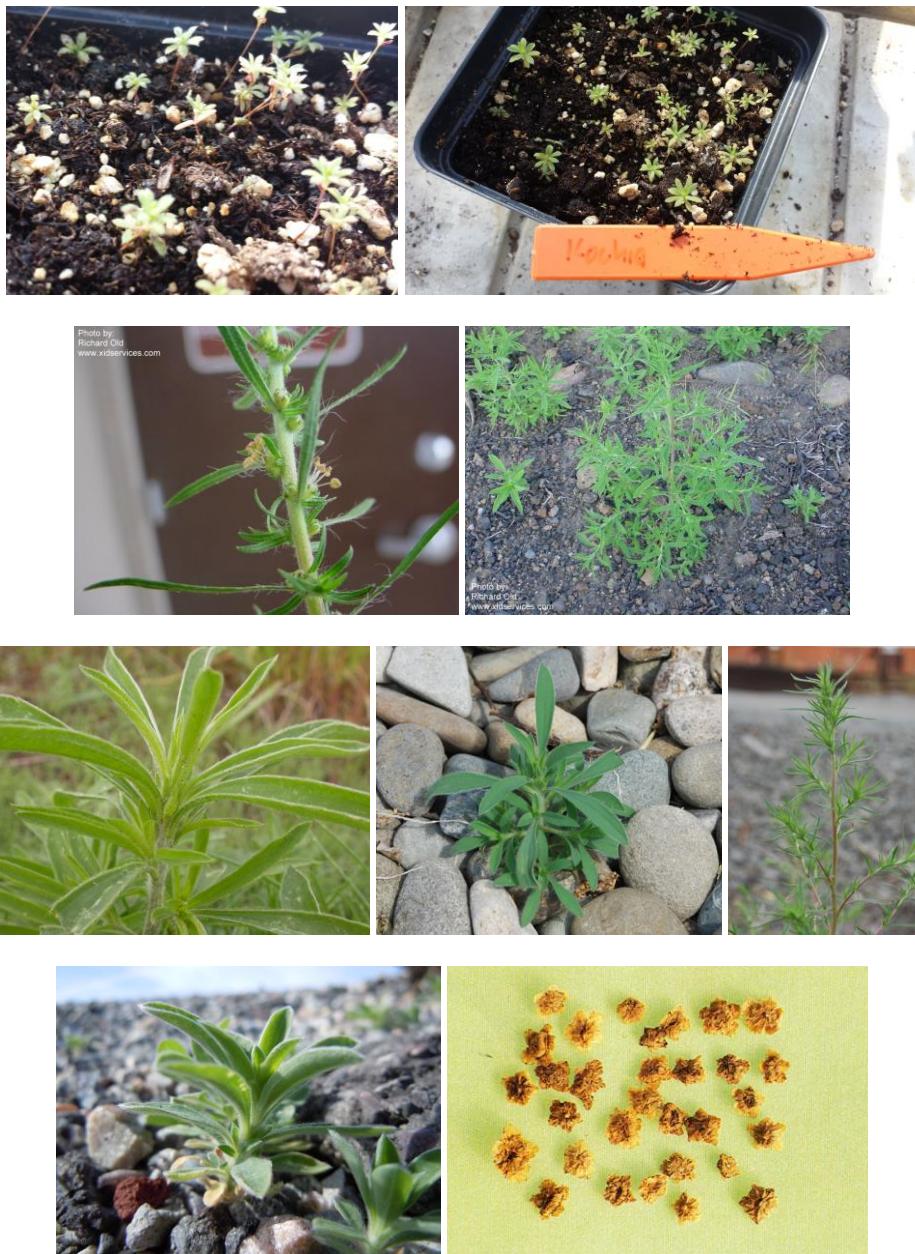
Flowers: Funnel shaped, petals fused

Seeds: 3 to 4- angled, brownish black, granular, minutely pubescent.

Leaves: Alternate, blades simple, tips pointed, margins entirely or rarely lobed, surfaces without hairs to sparsely pubescent

Stems: Vine, twining, climbing, branched or simple

41. *Kochia scoparia* - kochia (*Chenopodiaceae*)



Inflorescence: Spike, axillary, and terminal

Seed: oval, concave, brown to black.

Leaves: Alternate, blades simple, linear to narrowly ovate, fringed with hairs, surfaces nearly without hairs to pubescent, short petiolated.

42. *Lactuca serriola* - prickly lettuce (Asteraceae)



Identifying characteristics

Inflorescence: heads cylindrical, with 2-3 series of bracts

Flower: yellow ray florets with a dark blue stripe on the lower side.

Leaves: alternate, basal and lower stem leaves sessile and contains a white latex. **Spines on midvein underneath leaf.**

Stems: Erect, branching above, contain a white latex.

43.*Lamium amplexicaule* - henbit (*Lamiaceae*)

- Erect or decumbent winter annual,
- Cotyledons are oval,
- Leaves are opposite, triangular to circular with rounded teeth, only lower leaves have petioles,
- Stem is square shaped,
- Flowers are reddish purple and without pedicels.



(source: Bruce Ackley, The Ohio State University, <http://www.forestryimages.org/browse/detail.cfm?imgnum=5437355>
(Photo credit: Nigel Cattlin/Visuals Unlimited, Inc)

44. *Malva neglecta* - common mallow (*Malvaceae*)

- Cotyledons: heart-shaped,
- Leaves: Alternate, kidney shaped, prominent veins radiating from center, toothed around edges,
- Fruits: Disk shaped, consisting of 10-20 rounded flattened sections, each section contains 1 seed,
- Seeds: Nearly round, brown to black.
- **Red dot on leaf base**



(Source: <http://www.minnesotawildflowers.info/flower/common-mallow>)

(Source: <http://www.oardc.ohio-state.edu/weedguide/singlerecord.asp?id=470>)

(Source: <http://the3foragers.blogspot.com/2010/06/foraging-report-05312010.html>)

45. *Oenothera albicaulis* - prairie evening-primrose (*Onagraceae*)

- Stem : Erect, single, short-dense hairs present, white epidermis
- Leaves: Lower leaves egg-shaped or spoon shaped
- Inflorescence : Single flowers present in axils of upper leaves
- Flowers : Slender floral tube, petals heart shaped
- Fruits : Capsule, sessile and cylindrical



(Source:<http://www.swcoloradowildflowers.com/White%20Enlarged%20Photo%20Pages/oenothera%20white.htm>)

(Source: http://fieldguide.mt.gov/detail_PDONA0C010.aspx

46 . *Panicum dichotomiflorum* - fall panicum (*Poaceae*)

- Ligule-fringed, pubescent
- Auricle-absent
- Stems-erect, bent at nodes and branched
- Leaf sheaths and blades glabrous
- Inflorescence-panicle

Special Identifying Features: thick, compressed sheath; bent stems; and distinctive spikelet.



(Source: <http://fenix.vn.ua/ifls/small-image/130206-122554-1115.jpg>

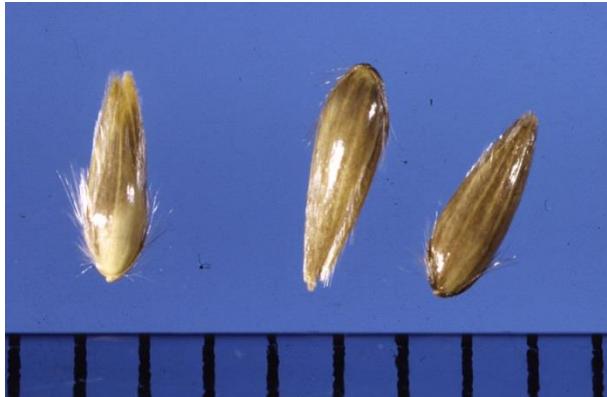
(Source: <http://www.forestryimages.org/images/768x512/1558132.jpg>)

(Source:http://upload.wikimedia.org/wikipedia/commons/2/29/Panicum_bisulcatum_-_20091013.jpg)

(Source: <http://www.omafra.gov.on.ca/IPM/english/strawberries/weeds/barnyard-grass.html>)

47 . *Phalaris arundinacea* - reed canarygrass (*Poaceae*)

- Ligule-membranous, smooth or sandpaperly
- Stem-tall, erect, smooth
- Leaves-flat
- Creeping rhizomes



(Source: <http://www.oardc.ohio-state.edu/weedguide/singlerecord.asp?id=50>)

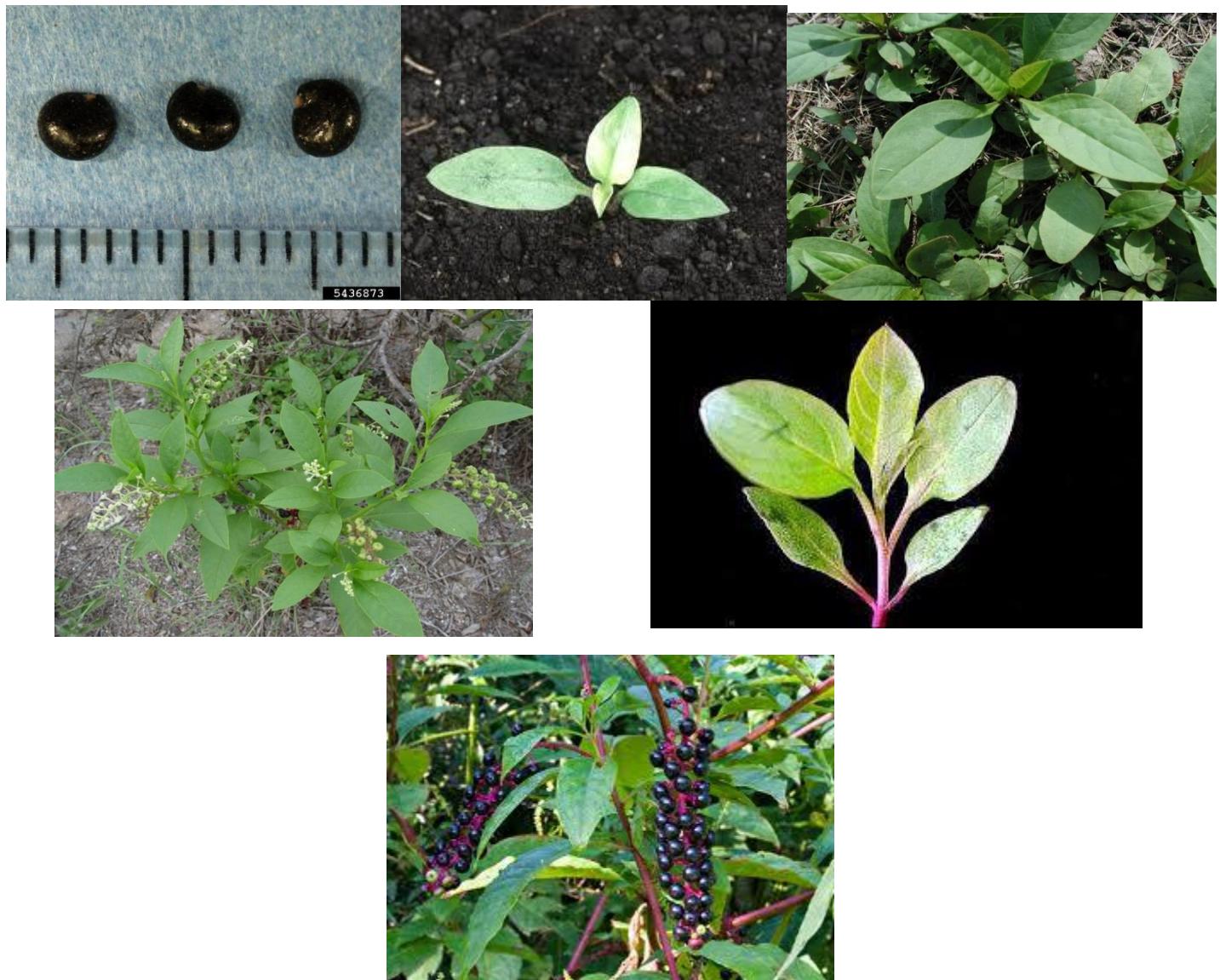
(Source: <http://www.oardc.ohio-state.edu/weedguide/singlerecord.asp?id=50>)

(Source: <http://www.oardc.ohio-state.edu/weedguide/singlerecord.asp?id=50>)

48. *Phytolacca americana* - common pokeweed (*Phytolaccaceae*)

- Cotyledons : Unequal
- Leaves : Alternate and broadly lanceolate or oval, petiole
- Inflorescences : Stalked racemes
- Fruits : Berry
- Seeds : Lens-shaped, black, glossy

Special Identifying Features: erect, freely branched perennial; huge taproot; leaf margins magents, continuous down stem; mature berries dark purple to black.



(Source: http://soilcropandmore.info/crops/Weeds/common_pokeweed.htm)

(Source: http://www.bio.utexas.edu/courses/bio406d/images/pics/phy/phytolacca_americana.htm)

(PC-Bruce Ackley, The Ohio State University, <http://www.forestryimages.org/browse/detail.cfm?imgnum=5436873>)

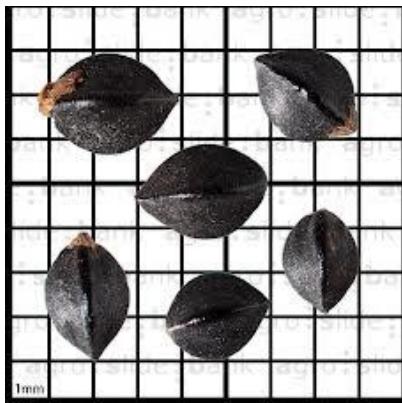
49. *Plantago lanceolata* - buckhorn plantain (*Plantaginaceae*)

- Cotyledons: Very long, almost threadlike, entire leaf margins, unstalked, smooth surface, length approximately 20-30 mm.
- Leaves: True leaves are lancet-shaped with entire leaf margins, unstalked, smooth, approximately 20-60 mm in length. Mature leaves are joined in a basal rosette.
- Inflorescence: Flowers are joined in a spike-like perianths on 10-40 cm high, erect stalks.
- Flowers: Diameter is less than 1mm. There are approximately 1,500 seeds per plant.
- Seeds: Almond-shaped, one side is domed, the other shaped like a trough with a small rise at the bottom, slightly granular surface.
- Dispersal/Propagation: Seeds and tap roots.



50. *Polygonum convolvulus* - wild buckwheat (Polygonaceae)

- Cotyledons: Oblong to lancet-shaped with entire leaf margins, unstalked, smooth surface, approximately 10-20 mm in length.
- Leaves: True leaves are heart to arrow shaped with almost entire leaf margins, stalked, smooth surface, approximately 20-30 mm in length.
- Stems: Stems are trailing on the ground or will twine around stems, straws, and leaves of other plants.
- Flowers: Flower diameter is approximately 2 mm and can produce around 200 seeds.
- Seeds: Almost triangular with three-sided cross section, where the sides are somewhat concave. The surface is smooth to slightly rough, often covered with remnants of the perianth, shelled seeds are frequent though.
- Dispersal/Propagation: Through seed only.



51. *Polygonum cuspidatum* – Japanese knotweed (Polygonaceae)

- Lifecycle: Perennial
- Cotyledons: Oblong to lancet-shaped with entire leaf margins, smooth surface.
- Stems: Hallow, bamboo-like, joints on the stems surrounded by an ocrea.
- Leaves: Alternate, 6 inches long and, 3-4 inches wide and broadly-ovate.
- Flowers: Occurs in late summer, flowers are small, greenish-white and develop in long panicles in the axils of the leaves.
- Seeds: 1/8 inch long, brown, shiny, triangular achenes.

Dispersal/Propagation: Seeds and rhizomes



52. *Polygonum pensylvanicum* - Pennsylvania smartweed (*Polygonaceae*)

- Lifecycle: Summer Annual
- Stems: Branched, green or reddish, swollen and jointed at the node with an ocrea. The ocrea does not have a fringe of hairs across the top. Nodes may appear red in color.
- Leaves: Alternate and lanceolate to elliptical in shape, purple blotch in the center of the leaf.
- Flowers: Pink flowers blossom in mid spring through late fall and appear in dense clusters. Occasionally they can be white or bright pink in color.
- Seeds: Seeds are dark brown or black and is usually in a two edged achene.
- Dispersal/Propagation: Seed only



53. *Poa annua* - annual bluegrass (*Poaceae*)

- Lifecycle: Annual
- Habit: Light green clump-like to creeping plant
- Stems: Flattened and glabrous, entire plant glabrous. Leaf sheath folded and glabrous.
- Leaves: Hairless, ligule membranous with serrated edge, leaf blades soft and crinkled during elongation. Canoe-shaped tip, prominent square groove at mid-rib.
- Inflorescence: Pyramidal shaped panicle with 6 to 12 spiklets
- Seed Heads: Low (< 15cm) and nestled among leaves



54. *Polygonum aviculare* - prostrate knotweed (*Polygonaceae*)

Lifecycle:

Summer Annual

Growth Habit:

Low to the ground

Cotyledons:

Long and slender with entire leaf margins, unstalked, surface may be hairy but mostly smooth, length is approximately 10-15 mm.

Stems:

Slender and wiry, low growing, trailing stems, approximately 20-60 cm long. Ocrea encircles the stems at each node.

Leaves:

True leaves are lancet-shaped with entire leaf margins, unstalked, surface sometimes hairy but mostly smooth, often red in color, and approximately 20-30 mm in length.

Flowers:

Diameter is approximately 2 mm and around 200 seeds per plant are produced.

Seeds:

Almost triangular with a slender, slightly curved top, triangular cross section, slightly granular surface, surrounded by perianth remnant.

Dispersal/Propagation: Only by seed.



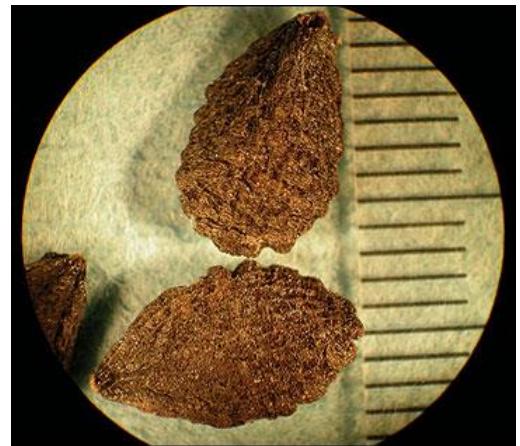
55. *Portulaca oleracea* - common purslane
(*Portulacaceae*)

- ❖ Summer annual broadleaf
- ❖ Seedlings have cotyledons that are oblong, succulent and without hairs.
- ❖ Mature plants have leaves that are alternate or opposite, $\frac{1}{4}$ to $1 \frac{1}{4}$ inches long, round at the apex and narrowed to the base.
- ❖ Leaves are thick, succulent and fleshy with smooth margins.



56. *Proboscidea louisianica* - devil's-claw
(Martyniaceae)

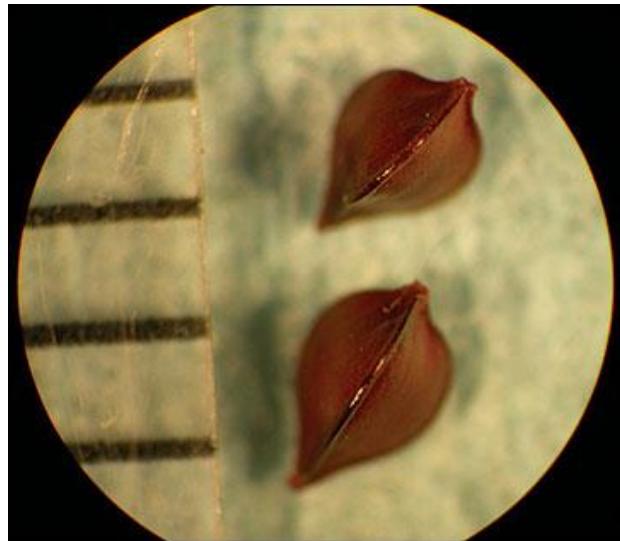
- ❖ Summer Annual Broadleaf
- ❖ Herb with spreading stems
- ❖ Oppositely arranged leaves
- ❖ The herbage is coated in glandular hairs carrying tiny oil droplets, making the plant feel oily to the touch and giving it a strong scent (**STICKY LEAVES**)



57. *Rumex crispus* - curly dock

(*Polygonaceae*)

- ❖ Perennial broadleaf
- ❖ Emerges in the fall, persists throughout the winter as a basal rosette then bolts and produces seed on the end of unbranched stems in early summer
- ❖ Rosette leaves occur on long petioles , are without hairs, and are dark green with conspicuously wavy margins
- ❖ Stems leaves are arranged alternately along the stem, have a membranous sheath (ocrea) that encircles the stem



**58. *Salsola tragus* - Russian-thistle
(Chenopodiaceae)**

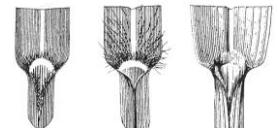
- ❖ Annual Broadleaf
- ❖ Seedling stems are slender and flexible and often have reddish purple streaks. The cotyledons and first true leaves are long and thin like pine needles. Later leaves are soft and fleshy with a weak spine at the tip.
- ❖ Leaves are alternate to one another along the stem, but may appear opposite to one another because of the short length between stem joints.



Photo Courtesy of www.invasive.org. UGA1363367

59. *Setaria faberi* - giant foxtail (Poaceae)

- ❖ Summer annual grass
- ❖ Leaves may reach 16 inches in length and 15 to 25 mm in width and are generally covered with many small hairs on the upper leaf surface, except near the leaf base
- ❖ Auricles are absent and the ligule is a fringe of hairs reaching 3 mm in length
- ❖ Giant foxtail is generally larger and has nodding seedhead, unlike green or yellow foxtail.



Green foxtail
collar region
Ciba-Geigy Corporation

Yellow foxtail
collar region
Ciba-Geigy Corporation

Giant foxtail
collar region
Ciba-Geigy Corporation



© Peter Smith



60. *Setaria pumila* - yellow foxtail
(Poaceae)

- ❖ Summer annual grass
- ❖ Seedlings have leaf sheaths that are mostly without hairs, but with a few long silky hairs on the upper surface near the leaf base only.
- ❖ Mature plants have stems that are erect flattened, hairless, reaching 3 feet in height.
- ❖ Leaves may reach 12 inches in length and 7 to 12 mm in width, and have long silky hairs at the leaf bases.
- ❖ Auricles are absent and the ligule is a fringe of hairs reaching 2 mm in length.



61. *Setaria verticillata* - **bristly foxtail** (*Poaceae*)



Life cycle: summer annual

Leaf arrangement: medium green foliage that is usually hairless, but may have hairs on margins of leaf or sheath.

Propagation: Seeds

Growth habit: generally occurs in temperate to tropical climates, altitudes 0-2200 m, and agricultural or other disturbed locations. It has been reported to prefer shady damp sites, but is rarely found in wetlands generally

Ligule: fringe of hairs (0.5-2.2 mm long), from a membranous base.

Culm: Ascending often geniculate below, branching below, without hair; rarely rooting at the nodes.

* Can distinguish from other foxtail by the adherence of the bristles skin upon touching.

62. *Setaria viridis* - green foxtail (*Poaceae*)



Photo property of the Government of Manitoba

Life cycle: Summer annual

Growth Habit: Bunch type

Propagation: Seed

Ligule: Hairy, fused

Auricles: Absent

Vernation: Rolled

Collar: Narrow, hairy

Root Type: Fibrous

Seedhead Color: Greenish

63. *Sinapis arvensis* - wild mustard (Brassicaceae)



Life cycle: annual (or winter annual).

Reproduction: seeds.

Leaf arrangement: alternate, blades simple, obovate, lower blades coarsely dentate and sometimes lobed; upper blades progressively smaller, rhomboid or oblong to ovate, tips sharply pointed, margins coarsely toothed.

Stems: erect, branching above, lower stems surfaces coarsely hairy.

Seed: globose (1-1.5 mm in diameter), back to purplish-brown, smooth.

64. *Solanum nigrum* - black nightshade (*Solanaceae*)



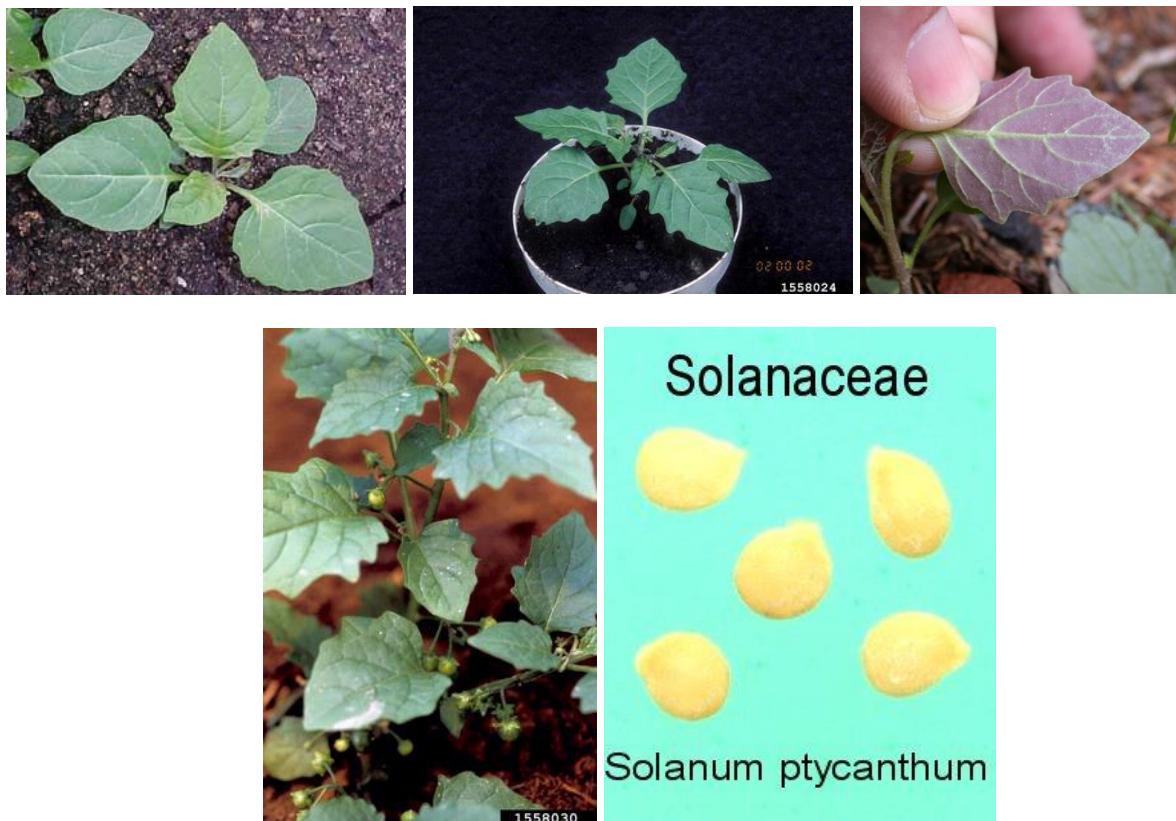
Life cycle: annual.

Leaf arrangement: Leaves up to 8 cm long and 5 cm broad, elliptic to ovate, green, acute, often truncate at base, surfaces slightly pubescent.

Seeds: 2 mm long and 1.5 mm wide, minutely reticulate pitted, bone colored.

Growth habit: forb.

65. Solanum ptychanthum - **eastern black nightshade** (*Solanaceae*).



Life cycle: annual.

Leaf arrangement: alternate, highly variable; blades simple, ovate to triangular or lanceolate (5-16 cm long), tips pointed to rounded or blunt, margins entire to sinuate-dentate, surfaces without hair to sparingly pubescent; petiolate (1-10 cm long), petiole usually winged (at least above).

Stems: erect, divergently branching, surfaces without hair to appressed hairy.

Seed: ovate to oblong or reniform (1.5-2 mm long), flattened, minutely pitted, yellow to brown.

Growth habit: forb.

66. *Solanum rostratum* - **buffalobur** (*Solanaceae*)



Life cycle: annual.

Leaf arrangement: alternate; blades simple, ovate to broadly elliptic (2-13 cm long, 1-9 cm wide), deeply pinnatifid to bipinnatifid, lobes rounded, surfaces spiny and pubescent with sessile stellate trichomes; petiolate (2-6 cm long).

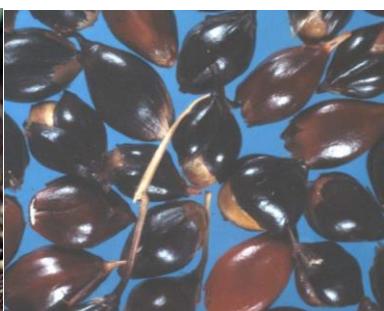
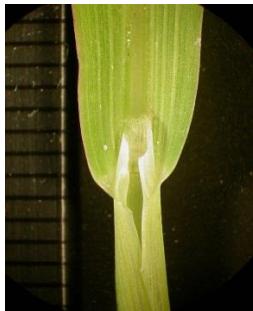
Stems: Erect, branches ascending, armed with yellow spines, surfaces covered with stalked or sessile pubescence.

Seed: Ovate to reniform (2-2.25 mm long), flattened, brown to black, wrinkled.

Growth form: forb.

67. *Sorghum bicolor* – shattercane (Poaceae)

- summer annual plant
- sheath: round, often with reddish or purplish splotches, sometimes pubescent
- blade: linear-lanceolate, flat, sometime with reddish or purplish blotches
- ligule: membranous, ciliate, rounded
- auricle: absent



- Seeds: "Shatter" from seedhead at top of stem when mature, vary in color from shiny black to deep-purplish red

68. *Sorghum halepense* – johnsongrass (Poaceae)



- summer annual weed
- leaf sheath: round to slightly keeled, open
- leaf blades: linear, flat, midrib prominent (lighter color normally white), usually without hairs
- ligule: membranous, truncate, erose (irregularly notched at the tip or margin; appearing gnawed or eroded)
- rhizomes: creeping and thick

69. *Stellaria media* – common chickweed (*Caryophyllaceae*)



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- summer or winter annual weed
- cotyledons: lance shaped, hairless, prominent midveins, taper to a point at the tip, four times as long as they are wide. They have short stalks with sparse hairs. The first few leaf pairs are oval with small points at their tips and have short stalks with a line of hairs down either side
- mature plant: erect to prostrate and sometimes matlike. Stems are forked and have a line of hairs down either side. Leaves are broadly egg shaped, pointy tipped, mostly hairless (sometimes hairy margins at the base) Leaves are spaced evenly and opposite
- seeds: tiny seed 1 mm in diameter, pale tan to pale reddish brown
- reproduction: mostly from seed, but sometimes reproduces by creeping stems that root from stolons

70. *Taraxacum officinale* – dandelion (Asteraceae)



- perennial weed
- cotyledons: somewhat club-shaped, small
- leaves: simple, arranged in a basal rosette, oblanceolate shape, variously lobed margins with terminal lobe the largest, lightly hairy surface, especially lower surface and midvein
- stem – hollow, one to few in number, glabrous or slightly hairy, contains milky juice

71. *Thlaspi arvense* – field pennycress (*Brassicaceae*)



- summer or winter annual weed
- cotyledons: oblong, petiolate
- leaves: simple, petiolate attachment below, sessile and clasping attachment above; alternate arrangement, lower blades in rosette; lower blades spatulate with rounded tip, upper blades oblong-elliptic with pointed tip; lower blades entire to coarsely toothed margins, upper blades coarsely toothed; glabrous surface
- stem – erect, branched or simple, smooth
- seeds: seed pod is circular, relatively flat and distinctly winged along outer margins. Each seed pod divides in half and can contain as many as 16 seeds. Each dark brown seed is oval-shaped, but well-rounded on one end and tapering to a point on the other. Across its surface there are curved concentric ridges that resemble the patterns of a fingerprint.

72. *Tribulus terrestris* – puncturevine (Zygophyllaceae)



- summer annual weed
- cotyledons: entire margins, elongated, notched at tip
- leaves: even-pinnately compound, petiolate attachment below, opposite arrangement, ovate to oblong shape, entire margins, sparsely hairy surface
- stem – prostrate, branched from base, mat forming, pubescent early then becomes glaborate
- seeds: bur that breaks into 5 parts, each with two or more spines

73. *Typha latifolia* – common cattail (Typhaceae)

- wetland species
- perennial plant (produces rhizomes)
- leaves: linear, up to 7½' long and 1" across, green, hairless, flat and “**fleshy**”.
- the plant is best characterized by its large, cylindrical, brown spike of female flowers. Immediately above this large, thick structure, protrudes a smaller, pointed, light-yellow spike of male flowers



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www.ellenmichaelsphotos.com



- Seeds: nutlike achenes up to 1.5 mm long; long slender hairs at the base allow for wind and water transport of the seeds

74. *Urochloa platyphylla* – broadleaf signalgrass (Poaceae)



- summer annual weed
- leaf sheath: green to reddish and hairy
- leaf blades: broad (1/4-1/2" wide) and not really long (1.5-6"); rolled in the bud and often have one side of the leaf blade "crinkled" and the other "smooth" (check picture above – this is also a common feature of woolly cupgrass)
- leaves may be hairless or have hairs along edge of leaf (margins)
- ligule: very short, fringed membrane-like structure
- **nodes on the stems are maroon and pronounced**

75. *Xanthium strumarium* – common cocklebur (Asteraceae)



- summer annual weed
- cotyledons: linear to oblong in outline, waxy, smooth, fleshy, thick, approximately 3/4 to 1 3/4 inches long and usually no more than 1/2 inch wide (different from sunflowers, which have rounded cotyledons)
- stem: below the cotyledons is purple at the base and often green in the upper portion; erect, branched, stout and covered with short stiff ascending hairs; stems are green with maroon spots; may reach up to 6 1/2 feet in height.
- leaves: triangular to ovate in outline, have stiff hairs, and are approximately 2 to 6 inches long; are irregularly lobed with margins that have relatively inconspicuous teeth; occur on long petioles and also have three prominent veins on the upper surface of the leaf that arise from the same point. The first true leaves are opposite, while all subsequent leaves are alternate; are very "rough" when touched.
- Fruit: elliptic to egg-shaped two-chambered bur covered with hooked prickles. Each bur contains two seeds.