

Easter Egg Hunt #2 for Plant Taxonomy Lab September 3, 2020

Mangas about 17.2 miles N of Silver City on Hwy 180, on McMillen Road.

Drive North on Hwy 180 out of Silver about 17.2 miles. McMillen Road will be a paved road that is on the south side of Hwy 180 in Mangas. It is a paved frontage road that joins Hwy 180 at two places. We are starting on the SE end, the end of McMillen Rd. that is closest to Silver City.

Be careful and watch traffic!!!

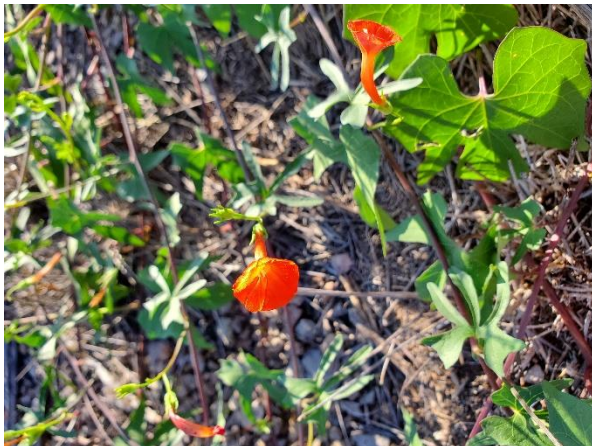
Site #1. NAD83 12S 0733437 3635972 el 4693 ft

The first site is right at the stop sign and street sign for McMillen Road just as you leave Hwy 180.

This is a disturbed roadside near a riparian area at the edge of cultivated farmland.

Site 1 **Plant 1:**

Right at the base of the street sign for McMillen Road. You will find a **prostrate** (lying flat to the ground) vine with **salverform** (flared at the end), **sympetalous** (connate/fused petals) scarlet red tubular flowers that are about 2cm long and quite pretty if you get to the site in the morning before they begin to wilt. This annual plant is in the **Convolvulaceae** (Morning Glory) family, same family as the *Convolvulus equitans* that we collected and keyed out last week. The leaves are 5-10 cm across, deeply lobed and sparsely pubescent. The genus is ***Ipomoea***. Please just collect a portion of the vine with a flower or two and a few leaves. Do not pull up the whole plant or attempt to get the roots on this annual or your classmates won't be able to collect it also. Just be sure to note in your field book that it's an annual.





	vine, per	no	purple-pink	yes/no	yes/no
<i>hederacea</i>	vine, ann	no	pale blue	yes	no
<i>leptophylla</i>	bush, per	no	blue-purple-pink	no	yes
<i>lindheimeri</i>	vine, per	no	pale pink	no	yes
<i>plummerae</i>	erect/vine, per	yes/no	pale blue-pale purple	no	no
<i>pubescens</i>	vine, per	no	pale pink-pink	yes	yes
<i>purpurea</i>	vine, ann	no	bluish-purple-pinkish	no	no
<i>tenuiloba</i>	vine, per	no	purple-red	no	yes
<i>ternifolia</i>	vine, ann	yes	white-pale pink	yes	no
			purple	no	yes/no

- 1 Leaf blades linear and entire, never lobed or cordate, at least 6 times longer than wide; plants rounded-bushy *I. leptophylla*
- 1 Leaf blades not linear and entire, often lobed or cordate, usually 1-2 times longer than wide; plants erect to prostrate, often climbing to trailing vines
- 2 Leaf blades broadly elliptic to wedge-shaped in outline, prominently palmately veined, the bases attenuate, the apices lacinate-lobed, like 4 fingers of a hand, entire along the sides; Grant County (var. *cuneifolia*)..... *I. plummerae*
- 2 Leaves not as above; widespread, including Grant County
- 3 Leaves deeply cleft into ± filiform segments 1-3 mm wide
- 4 Pedicels and peduncles pubescent, and sometimes also the sepals; sepals smooth, not warty; rare in Hidalgo County *I. ternifolia*
- 4 Pedicels, peduncles, and sepals glabrous, lacking hairs; sepals warty; various counties, including Hidalgo
- 5 Corolla prominently salverform, white, 3.5-10 cm long..... *I. tenuiloba*
- 5 Corolla funnelliform to narrowly campanulate, purplish to pinkish, 0.8-4 cm long
- 6 Plants annual from a slender taproot; corolla 0.8-1.5 cm long..... *I. costellata*
- 6 Plants perennial from a woody, tuberous root; corolla 2-4 cm long
- 7 Mature plants erect, never twining; leaves sessile; leaf segments mostly up to 1 mm wide; sepals 5-6 mm long; peduncle plus pedicel about 5-10 mm long; tuber elongate *I. capillacea*
- 7 Mature plants prostrate, twining; leaves petiolate, the pedicel 1-5 mm long; leaf segments mostly 1-3 mm wide; sepals 7-9 mm long; peduncle plus pedicel about 14-18 mm long or more; tuber globose to subglobose (var. *plummerae*)..... *I. plummerae*
- 3 Leaves entire to deeply cleft, if cleft the segments not filiform but usually broadest at the middle (≥ 4 mm) and narrower at each end of the segment
- 8 Corolla prominently salverform, scarlet..... *I. cristulata*
- 8 Corolla funnelliform to campanulate, of various colors, only rarely white or scarlet
- 9 Sepals glabrous, lacking hairs, the surfaces smooth or warty, the distal portion ± erect/appressed
- 10 Corollas bluish; leaf blades cordate in outline and shape, the basal shoulders rounded but usually not lobed, the central distal portion not enlarged nor much attenuate *I. cardiophylla*
- 10 Corollas reddish-pinkish-purplish; leaf blades cordate in outline, but more hastate in shape, the basal portion with rounded or angled lobes, the central distal portion commonly enlarged or attenuate
- 11 Sepals scarious-margined, warty, 4-5 mm long; corollas 1-1.5 cm long; plants annual *I. dumetorum*
- 11 Sepals membranous-margined, smooth, about 10 mm long; corollas 1.5-3.5 cm long; plants perennial..... *I. cordatotriloba*
- 9 Sepals obviously hairy, the distal portion spreading outward from the corolla
- 12 Plants annual; corollas 2-5 cm long
- 13 Peduncles, pedicels, and stems glabrous, the surface usually with scattered warts; corolla 1.5-2.5 cm long..... *I. barbatisepala*
- 13 Peduncles, pedicels, and stems softly pubescent with reflexed hairs, the surface lacking warts; corolla 2-5 cm long
- 14 Sepals acute at the apices, any obviously narrowed terminal portion about equal to the body *I. purpurea*
- 14 Sepals long acuminate at the apices, the obviously narrowed terminal portion usually much longer than the body.. *I. hederacea*
- 12 Plants perennial from deep-seated tubers; corollas 4-10 cm long
- 15 Body of outer sepals cordate-ovate, 6-10 mm wide at the widest point, the apices abruptly acuminate, softly and sometimes densely sericeous, the surface sometimes obscured..... *I. pubescens*
- 15 Body of outer sepals typically lanceolate, 4-6 mm wide at the widest point, the apices acute to gradually acuminate, scattered hirsute-sericeous or sparingly appressed pilose, the surface not obscured
- 16 Sepals 11-16 mm long, broadly lanceolate to ovate, the apices acute; stamens attached about 2 cm above the base of the corolla tube, slightly exerted..... *I. gilana*
- 16 Sepals 15-32 mm long, lanceolate, the apices attenuate; stamens attached about 1 cm above the base of the corolla, included *I. lindheimeri*

Ipomoea barbatisepala Gray [with hairy sepals] CANYON MORNING-GLORY. Annual herbs, climbing but not particularly twining, the herbage ± glabrous; leaves orbicular-ovate in outline, 3-8 cm long, to about as wide, deeply 5-7-lobed or cleft, the basal lobes lobed themselves, the bases cordate, the petioles 1-6 cm long; sepals subequal, lanceolate, 10-12 mm long, to 2 mm wide, hispid-pilose, drawn out to a long-acuminate tip; corollas funnelliform, 1.5-



Site 1 Plant 2:

Same place, but just along edge of asphalt on McMillen Road, just a few feet from plant #1. Don't pull up this perennial so that all can collect some-- just mention in your field book that it is a perennial. There are dense terminal spikes of small white **papilionaceous** flowers with **exserted** (sticking out) stamens. The leaves are **pinnately compound**. It is in the **Fabaceae**, the genus ***Dalea***.





- 4 Calyces glabrous with lobes to 1.2 mm long, much shorter than the tube *D. versicolor*
- 4 Calyces pubescent with plumose lobes 2-8 mm long *D. pulchra*
- 5 Flowers generally 12-16 mm long; calyx lobes 5-8 mm long, conspicuously plumose with hairs 1-2 mm long; nearly throughout the state *D. frutescens*
- 5 Flowers generally 9-11 mm long; calyx lobes 2-4 mm long, plumose with hairs 1-1.5 mm long; Hidalgo County *D. formosa*

KEY B: All species

- 1 Plants annual
 - 2 Leaflets definitely mucronate-tipped *D. exigua*
 - 2 Leaflets rounded or emarginate at the tip
 - 3 Calyx tube glabrous from the base upwards, pubescent at the apex around the orifice and on the teeth *D. urceolata*
 - 4 Floral bracts early deciduous; leaflets in 5-14 pairs *D. polygonoides*
 - 4 Floral bracts persistent; leaflets in 2-4 pairs *D. leporina*
 - 3 Calyx tube pubescent from the base upwards *D. filiformis*
 - 5 Most leaves with 6-20 pairs of leaflets *D. brachystachya*
 - 5 All leaves with 1-5 pairs of leaflets *D. polygonoides*
 - 6 Leaflets filiform, thread-like, of uniform width, less than 1 mm wide *D. leporina*
 - 6 Leaflets oblong-ob lanceolate, wider toward the apex, usually 1.5 mm or more wide
 - 7 Calyx teeth extending well beyond the floral bracts, easily visible; flowers yellow when fresh, fading pale bluish or brownish *D. filiformis*
 - 7 Calyx teeth scarcely extending beyond the floral bracts, obscured; flowers pale purplish *D. brachystachya*
- 1 Plants perennial, herbaceous to woody
 - 8 Leaves both appressed sericeous and lacking glands; flowers yellowish when fresh, fading to brownish or pale purplish *D. polygonoides*
 - 9 Leaves trifoliate *D. jamesii*
 - 9 Leaves 5- to 7-foliolate
 - 10 Leaflets acute; calyx lobes about twice as long as the tube *D. jamesii*
 - 10 Leaflets obtuse; calyx lobes about as long as the tube or slightly longer *D. wrightii*
 - 11 Spikes relatively loose, at least in age; bracts mostly broadly ovate to elliptic-acuminate, mostly 1-2 times as long as wide; substrates mostly non-calcareous or sandy (rarely not) *D. nana*
 - 11 Spikes densely congested and cone-like; bracts lanceolate to ovate-lanceolate, mostly 3-5 times as long as wide; substrates calcareous, not sandy (rarely not) *D. rubescens*
 - 8 Leaves glabrous and/or glandular; flowers white, yellow, rose, bluish, or purplish
 - 12 Flowers white
 - 13 Leaves silky-pubescent, with 8-20 pairs of leaflets *D. albiflora*
 - 13 Leaves glabrous, with 2-6 pairs of leaflets
 - 14 Inflorescence loosely flowered, the flowers separated by distinct intervals; calyx teeth 3-7 mm long *D. enneandra*
 - 14 Inflorescence dense, compact and cylindrical, the flowers tightly packed together; calyx teeth 1-2.5 mm long
 - 15 Calyx densely hairy, the spike appearing hairy; inflorescence bracts pilose *D. cylindriceps*
 - 15 Calyx glabrous to shortly pilose, the spike not appearing very hairy; inflorescence bracts glabrous *D. occidentalis*
 - 12 Flowers yellow, rose, bluish, or purplish, sometimes mixed with white
 - 16 Calyx tube glabrous externally *D. frutescens*
 - 17 Plants woody shrubs or sub-shrubs, the stems erect or divergent *D. frutescens*
 - 17 Plants herbaceous, sometimes somewhat woody at the base, the stems ± prostrate or sprawling
 - 18 Stamens 5 in number; inflorescence bracts early deciduous; banner petal 7-8 mm long *D. scariosa*
 - 18 Stamens 10 in number; inflorescence bracts persistent; banner petal 2.5-4.5 mm long *D. lanata*
 - 16 Calyx tube variously pubescent externally
 - 19 Leaves and stems glabrous below the inflorescence *D. formosa*
 - 20 Stems woody throughout; plants shrubby *D. grayi*
 - 20 Stems herbaceous throughout or only woody at the base; plants mostly herbaceous
 - 21 Leaflets 15 or more in number; flowers white to pinkish *D. pogonathera*
 - 21 Leaflets 3-13 in number; flowers rose to purplish
 - 22 Calyx teeth (2.5)3-7 mm long, subulate-tipped; inflorescence looser than below *D. pogonathera*
 - 22 Calyx teeth 1-2.5 mm long, triangular; inflorescence very dense and compact *D. cylindriceps*
 - 23 Leaflets in 2-4 pairs (4-9 in number); flowers white to pink *D. cylindriceps*
 - 23 Leaflets in 1-2 pairs (2-5 in number); flowers purplish
 - 24 Spike becoming loose, the flowers separated and the rachis visible; calyx teeth as long as or longer than the calyx tube *D. tenuifolia*
 - 24 Spike permanently very dense, the rachis never visible; calyx teeth shorter than the calyx tube *D. tenuifolia*
 - 25 Calyces generally 5-6 mm long, the tube 3-4 mm long, the teeth hairy only on the margins and in vertical lines running to sinuses between the teeth; spikes 10-15 mm wide; extremely rare, if present at all in the state *D. compacta*

Site 1 Plant 3:

This is a 2-3 foot tall annual plant. Rather than pulling up the entire plant, just take one branch since I only see 3 plants at this site. It is in the **Euphorbiaceae**. This plant is **dioecious**, and all three I see here are **carpellate**. There must be a **staminate** plant in the vicinity because they are going to fruit. The grayish green leaves are simple, entire, and covered in **stellate pubescence** especially on the abaxial (bottom) surface. The fruit is three lobed with styles remaining attached to the top of the capsule (**obsolete**). This plant is in the genus **Croton**.





Dicotyledonous Plants - Euphorbiaceae

(Euphorbiaceae) Bot. J. Linnean Soc. 121:41-57.

1 Leaves toothed, with a whitish gland on each side of the midvein on the lower surface; plants annual..... *C. glandulosus*

1 Leaves entire, lacking glands as above; plants annual or perennial
2 Plants well-developed shrubs, woody well above the base..... *C. fruticosus*

2 Plants ± herbaceous above, annuals or woody or semi-woody only at the base

3 Key in the field:

4 Plants annual

5 Leaves tending to be evenly distributed along the stem; herbage greenish, the lower stems nearly glabrous..... *C. texensis*

5 Leaves tending to fall from the lower stem and to be present in clusters at the stem tips; herbage more grayish, the lower stems sparsely to moderately stellate pubescent

6 Most leaf blades 1-2 cm long *C. monanthogynus*

6 Many leaf blades 2-8 cm long *C. lindheimerianus*

4 Plants perennial (flowering first year in *C. dioicus*)

7 Petioles of mid-stem leaves 1/2 to 1 1/2 times as long as the blades; styles exerted from the pistillate flowers, with 6 obvious segments, 1.5-3 mm long *C. pottsii*

7 Petioles of mid-stem leaves 2/5 or less as long as the blades; styles not exerted from the pistillate flowers, with 10 or more inconspicuous segments, 0.5-1.5 mm long..... *C. dioicus*

3 Key with dissection and magnification:

8 Styles only once-bifid, giving 4-6 ultimate segments; petals present in the staminate flowers, absent in the pistillate flowers

9 Plants perennial; mature calyx about half or less as long as the fruit..... *C. pottsii*

9 Plants annual; mature calyx half or more as long as the fruit

10 Styles 2, giving 4 ultimate segments; capsules 1-seeded..... *C. monanthogynus*

10 Styles 3, giving 6 ultimate segments; capsules 3-seeded..... *C. lindheimerianus*

8 Styles 2-3 times bifid, giving 10 or more ultimate segments; petals absent in both staminate and pistillate flowers

11 Plants annual; lower portions of the stems green, nearly glabrous..... *C. texensis*

11 Plants perennial (but flowering first year); lower portions of the stems grayish, moderately to densely covered with stellate hairs and scales *C. dioicus*

Croton dioicus Cavanilles [dioecious] [*Croton neomexicanus* Müller Argoviensis]. Perennial dioecious herb much branched from the base; leaves alternate, linear-lanceolate to narrowly elliptic-ovate, stellate-lepidote above, more densely so below, margins entire; petioles 2/5 or less as long as the blade; inflorescences terminal racemes; staminate 2-8 cm long, 4-16 flowered; pistillate 0.5-1 cm long, 2-5 flowered; staminate calyces 5-lobed, stellate-lepidote outside, petals absent; pistillate calyces 5-lobed, petals absent; ovary densely whitish lepidote, styles 3, 2-3 times bifid, with 10 or more segments; capsules 5-6 mm long, lepidote. •Arroyos, dry plains and rocky slopes, lower canyons, limestone soils; southern counties.



Croton fruticosus Engelm ex Torrey [shrubby and dwarf]. Perennial monoecious shrub; leaves alternate, ovate to ovate-lanceolate, puberulent to stellate-pubescent above, stellate-pubescent below, margins entire but minutely glandular-serrulate; petioles 1/5 to 1/2 as long as blades; inflorescences in androgynous bisexual racemes 3-12 cm long; staminate flowers 10-20, sepals 5, united basally, tomentose outside, petals 5, oblanceolate, with fimbriate margins; pistillate flowers 2-5, sepals 5, stellate-pubescent outside, petals absent; ovary stellate-tomentose, styles 3, bifid to the base; capsules 5-6 mm long, stellate pubescent. •Basalt or limestone hills across the southern tier of counties. §



Croton glandulosus Linnaeus [very glandular, with many glands]. Annual monoecious herb (subshrub); leaves alternate, oblong to oblong-lanceolate (or ovate-oblong), surfaces stellate pubescent to glabrate, base with a pair of glands on the abaxial side, margins serrate; inflorescences in bisexual androgynous racemes, 1-3 cm long; staminate flowers 10-20, sepals 5, stellate-pubescent, petals 5; pistillate flowers 1-4, sepals 5, stellate pubescent, petals absent or 5 rudimentary; ovary pilose or stellate pubescent, styles 3, glabrous, bifid nearly to base; capsules, 4.5-5.5 mm long, stellate pubescent. •Roadsides, waste places, disturbed areas, sandy areas; Eddy and Lea counties. ♦Ours are var. *lindheimeri* Müller Argoviensis. [for Ferdinand Jakob Lindheimer (1801-1879), first resident botanist of Texas].



Croton lindheimerianus Scheele [for Ferdinand Jakob Lindheimer (1801-1879), German botanist and first resident botanist of Texas]. Annual monoecious herb, much branched, densely stellate-tomentose; leaves alternate (appearing whorled at base of inflorescence), lanceolate to nearly orbicular, 2-8 cm long, surfaces densely stellate-tomentose, margins entire; inflorescences in terminal bisexual androgynous racemes 1-2 cm long; staminate flowers 3-8, sepals usually 5, nearly distinct, petals 5; pistillate flowers 1-3, sepals 5(6), nearly distinct, accrescent in fruit to almost the length of the capsule; petals absent; ovary, styles 3, bifid to the base; capsules, 4-5 mm long, tomentose as above. •Rocky arroyos, limestone slopes and outcrops, fields, playas; occasional, southern. ♦Ours are var. *lindheimerianus* characterized by its suborbicular leaves mostly less than two times as long as wide and by having some fruiting pedicels curved, fruit drooping at maturity.



Croton monanthogynus Michaux [with a single female flower]. Annual monoecious herb, widely dichotomously branched, stellate-pubescent, the central disk of the trichomes often brown; leaves alternate, ovate-oblong to suborbicular or narrowly elliptic, 10-25 mm long, densely stellate, margins entire; inflorescences in congested, axial or terminal bisexual androgynous racemes; staminate flowers 3-10, sepals 4(5), nearly distinct, petals 4(5); pistillate flowers 1-2(-5), sepals 5, basally connate, accrescent in fruit to half or two-thirds the length of the capsule; petals absent; ovary two-celled, with one cell large with one ovule, and the other small with the ovule early aborted, styles 2, bifid nearly to base; capsules prolonged apically, pubescent as above, 3.5-4.5 mm long, with one large fertile locule and a small abortive one. •Calcareous soils of prairies, woodlands, roadsides, known only from two counties.



Croton pottsii (Klotzsch) Müller Argoviensis [for Ferdinand Jakob Lindheimer (1801-1879), first resident botanist of Texas]. Annual monoecious herb, much branched, densely stellate-pubescent; leaves alternate, ovate-oblong to suborbicular or narrowly elliptic, 10-25 mm long, densely stellate, margins entire; inflorescences in congested, axial or terminal bisexual androgynous racemes; staminate flowers 3-10, sepals 4(5), nearly distinct, petals 4(5); pistillate flowers 1-2(-5), sepals 5, basally connate, accrescent in fruit to half or two-thirds the length of the capsule; petals absent; ovary two-celled, with one cell large with one ovule, and the other small with the ovule early aborted, styles 2, bifid nearly to base; capsules prolonged apically, pubescent as above, 3.5-4.5 mm long, with one large fertile locule and a small abortive one. •Calcareous soils of prairies, woodlands, roadsides, known only from two counties.

Croton corymbulosus Engelm ex Torrey [shrubby and dwarf]. Perennial monoecious shrub; leaves alternate, ovate to ovate-lanceolate, puberulent to stellate-pubescent above, stellate-pubescent below, margins entire but minutely glandular-serrulate; petioles 1/5 to 1/2 as long as blades; inflorescences in androgynous bisexual racemes 3-12 cm long; staminate flowers 10-20, sepals 5, united basally, tomentose outside, petals 5, oblanceolate, with fimbriate margins; pistillate flowers 2-5, sepals 5, stellate-pubescent outside, petals absent; ovary stellate-tomentose, styles 3, bifid to the base; capsules 5-6 mm long, stellate pubescent. •Basalt or limestone hills across the southern tier of counties. §

Croton dioicus Cavanilles [dioecious] [*Croton neomexicanus* Müller Argoviensis]. Perennial dioecious herb much branched from the base; leaves alternate, linear-lanceolate to narrowly elliptic-ovate, stellate-lepidote above, more densely so below, margins entire; petioles 2/5 or less as long as the blade; inflorescences terminal racemes; staminate 2-8 cm long, 4-16 flowered; pistillate 0.5-1 cm long, 2-5 flowered; staminate calyces 5-lobed, stellate-lepidote outside, petals absent; pistillate calyces 5-lobed, petals absent; ovary densely whitish lepidote, styles 3, 2-3 times bifid, with 10 or more segments; capsules 5-6 mm long, lepidote. •Arroyos, dry plains and rocky slopes, lower canyons, limestone soils; southern counties.

Croton fruticosus Engelm ex Torrey [shrubby and dwarf]. Perennial monoecious shrub; leaves alternate, ovate to ovate-lanceolate, puberulent to stellate-pubescent above, stellate-pubescent below, margins entire but minutely glandular-serrulate; petioles 1/5 to 1/2 as long as blades; inflorescences in androgynous bisexual racemes 3-12 cm long; staminate flowers 10-20, sepals 5, united basally, tomentose outside, petals 5, oblanceolate, with fimbriate margins; pistillate flowers 2-5, sepals 5, stellate-pubescent outside, petals absent; ovary stellate-tomentose, styles 3, bifid to the base; capsules 5-6 mm long, stellate pubescent. •Basalt or limestone hills across the southern tier of counties. §

Croton glandulosus Linnaeus [very glandular, with many glands]. Annual monoecious herb (subshrub); leaves alternate, oblong to oblong-lanceolate (or ovate-oblong), surfaces stellate pubescent to glabrate, base with a pair of glands on the abaxial side, margins serrate; inflorescences in bisexual androgynous racemes, 1-3 cm long; staminate flowers 10-20, sepals 5, stellate-pubescent, petals 5; pistillate flowers 1-4, sepals 5, stellate pubescent, petals absent or 5 rudimentary; ovary pilose or stellate pubescent, styles 3, glabrous, bifid nearly to base; capsules, 4.5-5.5 mm long, stellate pubescent. •Roadsides, waste places, disturbed areas, sandy areas; Eddy and Lea counties. ♦Ours are var. *lindheimeri* Müller Argoviensis. [for Ferdinand Jakob Lindheimer (1801-1879), first resident botanist of Texas].

Site 1 Plant 4:

About 20 feet north of the McMillen Road sign there is a green post with 5 orange reflectors on it. Five and 10 feet north of this post are mats of a prostrate *Euphorbia*, but not the same species that you collected for last week's Easter egg hunt. You'll remember that last week's was an annual. This one is a perennial. Again, don't try to collect the roots, just collect a good branch and call it a perennial in your field book. Note the 4 red **glands** and white **petaloid appendages** on the **cyathia**. Confirm for yourself with a hand lens that the leaves are simple and entire. Also note that the leaves have a thin white rim. This plant is in the **Euphorbiaceae**.





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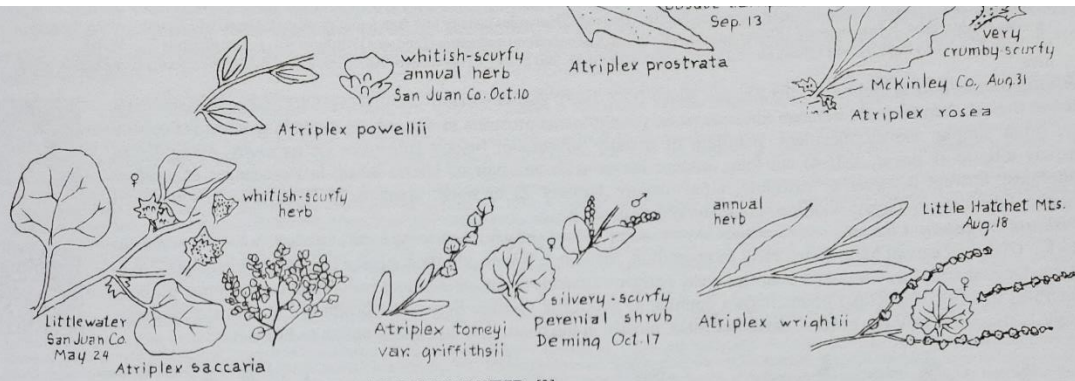
- 1 Plants shrubby; stems leafless..... *E. antisiphilitica*
- 1 Plants herbaceous; stems leafy (though sometimes very small)
- 2 Stems usually prostrate, sometimes erect or ascending; leaves opposite, blades asymmetric at the base, stipules present and interpetiolar (species previously placed in *Chamaesyce*)
- 3 Plants perennial
- 4 Plants pubescent or glandular
- 5 Herbage and capsules glandular *E. arizonica*
- 5 Herbage and capsules pubescent, not glandular (capsules glabrous in *E. villifera*)
- 6 Cyathia borne in dense glomerules (a few also solitary) *E. capitellata*
- 6 Cyathia solitary
- 7 Capsules glabrous *E. villifera*
- 7 Capsules pubescent
- 8 Blades finely (almost minutely) puberulent above and below, the margins decidedly revolute (rolled downwards), the herbage with a pale purplish cast; capsules greater than 2.8 mm long..... *E. lata*
- 8 Blades finely puberulent below, ± glabrous above, the margins flat or slightly involute (rolled upwards), the herbage with a grayish cast; capsules less than 2.5 mm long *E. acuta*
- 4 Plants glabrous
- 9 Adjacent stipules united to form a whitish or pinkish scale, this entire to lacerate..... *E. albomarginata*
- 9 Adjacent stipules distinct, bristle- or awl-like, not united
- 10 Blades broadly ovate to nearly orbicular *E. fendleri*
- 10 Blades lanceolate to oblong-lanceolate, but decidedly narrower than ovate... *E. chaetocalyx*
- 3 Plants annual
- 11 Largest leaves more than 1.5 cm long
- 12 Stems conspicuously pubescent, at least toward the tips, often densely so, easily visible without a lens
- 13 Ovary and capsule hairy; hairs of the stems stiff, yellowish, broadest at the base and tapering to the tip *E. hirta*
- 13 Ovary and capsule glabrous; hairs of stems crisp to pilose, whitish, thread-like and not tapering *E. nutans*
- 12 Stems glabrous or only sparsely pubescent, not at all conspicuous, when pubescent then hardly visible without a lens
- 14 Leaves toothed
- 15 Cyathia in capitate glomerules; capsules 1.3-1.4 mm long..... *E. hypericifolia*
- 15 Cyathia solitary or in small cymose clusters; capsules 1.5-1.6 mm long *E. hyssopifolia*
- 14 Leaves entire
- 16 Plants usually erect; leaves linear, 2-5 times longer than wide; capsules 2-2.5 mm long..... *E. missurica*
- 16 Plants prostrate; leaves ± ovate, at most 2 times longer than wide; capsules 4.5-6.5 mm long *E. carunculata*
- 11 Largest leaves less than 1.5 cm long
- 17 Herbage (stems and/or leaves) pubescent
- 18 Leaves entire
- 19 Capsules and cyathia pubescent; petal-like appendages divided into 3-5 attenuate very r
- 19 Capsules and cyathia glabrous; petal-like appendages undivided, not very notice
- 18 Leaves toothed, at least toward the apex
- 20 Capsules glabrous
- 21 Stems puberulent, the hairs very short, only about 0.1-0.2 mm long
- 21 Stems pubescent to pilose, though sometimes sparsely, the hairs a
- 22 Capsules 2-2.6 mm long, 3-3.6 mm in diameter; plants prostr
- 22 Capsules 1.4-1.8 mm long, 1.7-2.1 mm in diameter; plants pr
- 20 Capsules puberulent or pubescent



Site 1 Plant 5:

Look on the southwest side of McMillen Road now, the side of the road towards the farmland fields. There is large population of an annual, two foot tall herbaceous plant, the larger of which have reddish stems. This reddish color arises from pigments known as “**betalains**”. It is the same type of pigments that makes beets red. Notice that the small, inconspicuous flowers are grouped together among bracts at the ends of stems and in the leaf axils. The leaves are small, **entire** and **pubescent**. Do you remember *Guilleminia* from last week, with a similar description? This genus, ***Bassia***, is in the same family—**Amaranthaceae**.





Bassia [for Fernando Bassi (1710-1774), Italian botanist] SMOTHERWEED [3].

Annual herbs or subshrubs; leaves alternate, linear to narrowly lanceolate or oblanceolate, flat, entire, sessile, with Kranz anatomy; inflorescences solitary or glomerate in leaf axils or in short axillary spikes; flowers perfect or some pistillate or staminate; tepals 5 fused into a calyx and completely enclosing the fruit, with a curved or hooded spine on the back of each lobe or the lobes each with a flat, transverse wing. ♦Plants in this genus utilize the C₄ photosynthetic pathway. Included here are two species previously included in the genus *Kochia* (Fuentes-Bazan et al. 2012).

■Collins, S.L. & W.H. Blackwell, Jr. 1979. *Bassia* (Chenopodiaceae) in North America. *Sida* 8(1):57-64. ■Fuentes-Bazan, S., P. Uotila & T. Borsch. 2012. A novel phylogeny-based generic classification for *Chenopodium* sensu lato, and a tribal rearrangement for *Chenopodioideae* (Chenopodiaceae). *Willdenowia* 42:5-24. ■Holmgren, N.H. & P.K. Holmgren. 2012. *Bassia*, pp. 538-540. IN: *Intermountain Flora*, vol. 2, part A. New York Botanical Garden Press, New York. ■Mosyakin S. 2003. *Bassia*, pp. 309-310. IN: *Flora of North America*, vol. 4, pt. 1. Oxford University Press, New York.

- 1 Fruiting calyx lobes with hooked spines ***B. hyssopifolia***
- 1 Fruiting calyx lobes with horizontal wings ***B. scoparia***
- 2 Plants annual herbs ***B. prostrata***
- 2 Plants perennial subshrubs ***B. prostrata***

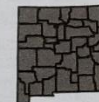
****Bassia hyssopifolia*** (Pallas) Kuntze [with leaves like the genus *Hyssopus* (Lamiaceae)] [*Kochia hyssopifolia* (Pallas) Schrader, *Suaeda hyssopifolia* Pallas]. Annual herb, ± tomentose; stems erect, branched; leaves linear to narrowly oblanceolate, 1-4 cm long; bisexual and pistillate flowers often intermixed; each calyx lobe with an uncinat spine, developing as the fruit matures. ♦Disturbed ground, roadsides, fields, along irrigation canals; widespread; native to Asia and Eastern Europe. §



****Bassia prostrata*** (Linnaeus) Beck [prostrate] [*Kochia prostrata* (Linnaeus) Schrader, *Salsola prostrata* Linnaeus]. Perennial subshrub, herbage pubescent; stems erect or ascending, short-villous; leaves all cauline, blades filiform to linear, 0.7-2.5 cm long, with smaller leaves in axillary fascicles; inflorescences of 2- to 3-flowered glomerules in spikes; each calyx lobe develops a dorsal transverse appendage, often flat and wing-like. ♦Established in reseeding programs for mine reclamation in the Four Corners region; also reported for Los Alamos County; native to Eurasia.



****Bassia scoparia*** (Linnaeus) A.J. Scott [broom-like] [*Bassia sieversiana* (Pallas) W.A. Weber, *Chenopodium scoparium* Linnaeus, *Kochia scoparia* (Linnaeus) Schrader, *Kochia sieversiana* (Pallas) C.A. Mayer]. Annual herb, often red in autumn, herbage pilose to villous; stems erect, much branched; leaves linear to narrowly lanceolate or oblanceolate, 1-4 cm long, pilose to glabrous; inflorescences of solitary flowers or few-flowered glomerules in leaf axils or in terminal spikes; fruiting calyx glabrous dorsally, ciliate; calyx lobes transversely keeled, tuberculate or winged. ♦Disturbed ground, roadsides, fields, throughout the state, rivaling *Salsola tragus* in ubiquity; native to Eurasia. ♦Young plants are easily identified by their densely villous, 3-veined leaves. A narrow-leaved form [forma *trichophylla* (A. Voss) Stapf ex Schinz & Thellung] is sold as 'summer cypress' in the nursery trade. §



Blitum [old name for the strawberry blight] BLITUM [3].

Nonaromatic annual or perennial herbs, glabrous or with stipitate, bladder-like hairs; stems several from the base, erect, ascending, or prostrate, simple or sparsely branched; leaves alternate, petiolate, triangular, triangular-hastate, or triangular-lanceolate; inflorescences of axillary spicate glomerules; flowers bisexual or pistillate; tepals single or 3-5, free to below the middle, often succulent or hardened in fruit; seeds vertical. ♦Recent studies by Fuentes-Bazan et al. (2012) have resulted in the transfer of three of our species from the genera *Chenopodium* and *Monolepis* into the genus *Blitum*.

■Fuentes-Bazan, S., P. Uotila & T. Borsch. 2012. A novel phylogeny-based generic classification for *Chenopodium* sensu lato, and a tribal rearrangement for *Chenopodioideae*

Site 1 Plant 6:

All throughout the berm between McMillen Road and Hwy 180 for many dozens of yards you'll find this plant. It has yellow flowers that don't seem to be open for the most part when I'm here in the AM. The fruit is a capsule, most of which are green and will later turn brown. Notice that the capsules have fairly distinct longitudinal ridges and the seeds are winged. The leaves are sinuately **lobed** and **pubescent** with harpoon-like hairs of two types. There is a lesson to be learned from this plant—there are probably 30 or more specimens of this plant in the herbarium. When I first collected this plant, I just called it the same as everyone else had—*Mentzelia multiflora*. Problem is, everybody followed the leader—the first person to collect it called it that, and everyone after just did the same thing. However, it has been pointed out to us that we were all wrong! It is a ***Mentzelia***, but not that species as you will see!







100 μ m



1 Sepals shorter than petals

Cevallia [for Don Pedro Cevallos Guerra (1759-1839), Spanish naturalist]
♦A genus of one species.

Cevallia sinuata Lagasca [wavy]. Subshrubs, to 6 dm; leaves ca. 60 mm long and 20 mm wide, pinnately lobed about halfway to midrib; flowers with 5 linear or lanceolate sepals longer than petals; sepals ca. 8 mm; petals strap-like, similar to sepals, yellowish inner surface, densely covered by long, pointed hairs; stamens 5, filaments dorsiventrally flattened and shorter than anthers; gynoeceia uniloculate with 1 ovule, stigma covered densely by pointed hairs; cypselas with persistent perianth. •Gypsum and limestone hills and gravelly flats of open grassland scrub vegetation. §



Mentzelia [for Christian Mentzel (1622-1701), German botanist and physician] BLAZINGSTAR, STICKLEAF [23].

Annual, biennial, or perennial herbs or subshrubs; stems woody to herbaceous, turning white, gray, or tan and often exfoliating with age; leaves petiolate or sessile, stinging hairs absent; inflorescences dichasial cymes or solitary flowers; sepals basally connate, shorter than petals; petals alternate to sepal lobes; stamens 10 or more, inserted on hypanthium, all fertile or some infertile (petal-like) staminodes, filaments all dorsiventrally flattened when staminodial; carpels 3 or 5 (6, 7); ovules 1-many, oriented perpendicular (horizontal) or parallel (vertical) to long axis of ovary; nectary disc on dome of ovary; fruits capsules that dehisce by apical valves, straight or curved, perianth absent in fruits, prominent costal ridges running lengthwise (in *M. rusbyi*) or without; seeds 1-many. ♦An American genus of about 95 species. Christie's 1998 report of *M. lindheimeri* in New Mexico lacks specimen validation.

■Atwood, N.D. & S.L. Welsh. 2005. New species of *Mentzelia* (Loasaceae) and *Phacelia* (Hydrophyllaceae) from New Mexico [*Mentzelia todiltoensis*]. Western North American Naturalist 65(3):365-370. ■Christy, C.M. 1998. A new flora for Arizona in preparation: Loasaceae - stickleaf or blazingstar family [*Mentzelia montana*]. Journal of the Arizona-Nevada Academy of Science 30(2):96-111. ■Christy, C.M. 2013. *Mentzelia*, pp. 637-642. In: Flora of the Four Corners Region. Missouri Botanical Garden Press, St. Louis. ■Darlington, J. 1934. A monograph of the genus *Mentzelia*. Ann. Missouri Bot. Gard. 21:103-225. ■Holmgren, N.H., P.K. Holmgren, & A. Cronquist. 2005. Loasaceae, p. 81-118. In: Holmgren, N.H., P.K. Holmgren, & A. Cronquist. Intermountain Flora, vol. 2, pt. B. ■Schenk, J.J. & L. Hufford. 2010. Taxonomic novelties from western North America in *Mentzelia* Section *Barionia* (Loasaceae) [*Mentzelia filifolia*, *M. longiloba*, *M. sivinski*]. Madroño 57(4): 246-260. ■Schenk, J.J. and L. Hufford. 2016. *Mentzelia* sect. *Barionia*, pp. 498-524 [*Mentzelia holmgreniorum*]. IN: Flora of North America. Vol. 12. Oxford University Press, New York. ■Sivinski, R.C. 1998. Review and resurrection of *Mentzelia springeri* (Loasaceae). New Mexico Naturalist's Notes 1(2):43-45. ■Spellenberg, R. & T. Wootten. 1999. Vascular plants on a gypsum outcrop in southern New Mexico: A listing, a new variety and taxonomic realignments in the *Amblocaulis leisosolems* complex (Nictaginaceae), and a new variety of *Mentzelia humilis* (Loasaceae). Sida 18(4):987-999. ■Thompson, H.J. & A.M. Powell. 1981. Loasaceae of the Chihuahuan Desert region. Phytologia 49(1):16-32. ■Thompson, H.J. & J.R. Zavortink. 1970. Loasaceae, pp. 1082-1087. IN: Manual of the Vascular Plants of Texas. Renner, Texas. ■Todsén, T.K. 1999. A new endemic species of *Mentzelia* sect. *Barionia* (Loasaceae) from New Mexico [*Mentzelia conspicua*]. Sida 18(3):819-822.

1 Outermost stamens opposite sepals petal-like (with or without anthers); seeds with a peripheral wing

2 Petals white

3 Anther epidermis papillate..... *M. humilis*

3 Anther epidermis smooth

4 Petals 13 mm wide or greater; androecia white to yellow *M. decapetala*

4 Petals less than 11 mm wide; androecia white

5 Petals 22.6-49 × 3.6-10.3 mm; bracts adnate to or subtending ovary pinnate *M. nuda*

5 Petals 14.7-22(-24.4) × 1.9-4.4 mm; bracts adnate to or subtending ovary entire to slightly toothed *M. strictissima*

2 Petals light to golden yellow

6 Capsules with prominent longitudinal costal ridges *M. rusbyi*

6 Capsules without prominent longitudinal costal ridges

7 Petals with pubescent abaxial surfaces..... *M. cronquistii*

7 Petals with glabrous abaxial surfaces

8 Anther epidermis papillate

9 Flowers with more than 5 staminodes, the five outermost stamens opposite sepal lobes and the second whorl of stamens without anthers..... *M. perennis*

9 Flowers with 5 staminodes, the five outermost stamens opposite sepal lobes lacking anthers and the second whorl fertile

..... *M. todiltoensis*

8 Anther epidermis smooth

10 Plants with multiple branches that arise from a subterranean branching caudex..... *M. springeri*

10 Plants with a single primary branch, or multiple branches that arise from ground-level caudex

11 Leaves of primary axis pinnatisect (sometimes becoming pinnate in *M. laciniata*)

Site 2 Plant 1

For this next site, I moved about 200 yards further along on McMullen Road. This is at a junction where a dirt road takes off to the left and there is a cattle guard a few feet up that dirt road. At the edge of the 8' wire fence here, where the group mailbox is, you'll find a 3 foot tall herbaceous plant with a somewhat woody base. The flowers are 1-2 cm across, and orange-ish. The corolla is 5-merous and take special note of the **monadelphous** stamens! The stamens are **connate** (fused) by their filaments and form a tube through which the styles pass. The leaves are +/- three lobed and have stellate, grayish pubescence. The fruit is a **schizocarp** (the pie sections fall apart before the seeds are released) and can be seen on some of the stems. This plant is in the **Malvaceae**, in the genus ***Sphaeralcea***.

UTM NAD83 12S 0733336 3636079 el 4702 ft.





Dicotyledonous Plants - Malvaceae

■Kearney, T.H. 1935 The North American species of *Sphaeralcea*, subgenus *Eusphaeralcea*. Univ. Calif. Publ. Bot. 19:1-128. ■LaDuke, J.C. 1985 A new species of *Sphaeralcea* from New Mexico [*Sphaeralcea polychroma*]. Southw. Naturalist 30:433-436. ■LaDuke, J.C. 2015 *Sphaeralcea*, pp. 357-369. IN: Flora of North America, vol. 6. Oxford University Press, New York. ■LaDuke, J.C. & D.K. Northington 1978 The systematics of *Sphaeralcea coccinea* (Nuttall) Rydberg (Malvaceae). Southw. Natural 23:651-660. ■Shinners, L.H. 1964 Three new varietal names in *Sphaeralcea* (Malvaceae). Sida 1(6):384-385.

- 1 Herbage conspicuously silvery-lepidote, with radiating hairs united basally 1/4 or more their length; upper blades simple and filiform, lower blades deeply parted into filiform segments *S. leptophylla*
- 1 Herbage stellate-pubescent, the branched or radiating hairs scarcely united basally if at all; blades various
- 2 Blades of at least the mid-stem leaves (sometimes also the lower or the upper) deeply palmately or pedately 3-5-parted completely or almost to the petiole
 - 3 Leaf blades appearing strictly palmate or digitate, the divisions not or scarcely lobed themselves (sometimes the central segment lobed); anthers purple *S. digitata*
 - 3 Leaf blades not so palmate-appearing, the divisions usually lobed themselves; anthers yellow or purple
 - 4 Upper non-reticulate dehiscent part of mericarp only 10-35% of the total; involucrel bractlets deciduous *S. coccinea*
 - 4 Upper non-reticulate dehiscent part of mericarp 55-80% of the total; involucrel bractlets persistent, green, tan, to red-brown
 - 5 Blades lanceolate to narrowly ovate in outline, most longer than wide; plants 10-40 cm tall *S. pumila*
 - 5 Blades broadly ovate to orbicular in outline, most about as wide as long; plants 30-200 cm tall
 - 6 Plants 90-200 cm or more tall; upper flowering portion of the plants eventually widely branched and diffuse (but the individual flowering branches narrow), the tips leafy (in spring forms, the branching will short and not yet flowering) *S. polychroma*
 - 6 Plants 20-100 cm tall; upper flowering portion of the plants narrow, the tips not leafy
 - 7 Stems greenish; petals red-orange; mericarps 2-4 mm long; northern counties *S. grossularifolia*
 - 7 Stems whitish; petals red-orange, pink, to lavender; mericarps 4-7 mm long; southern counties *S. wrightii*
- 2 Blades of mid-stem and usually other leaves unlobed to deeply lobed, but mostly not in a palmate manner nor nearly to the petiole
- 8 Mid- and lower leaf blades obviously moderately to deeply 3-7-lobed, parted, or divided, the divisions sometimes with lobes themselves
 - 9 Stems mostly 10-40 cm tall/long; blades 1-2 cm long; inflorescence racemose, narrow, the flowers crowded *S. hastulata*
 - 9 Stems mostly 40-200 cm or more tall/long; blades and/or inflorescences other than above
 - 10 Inflorescences open, long-branched, few-flowered, the flowers widely spaced, the distal portions not leafy; involucellar bractlets red-purple (the *laxa* phase) *S. laxa*
 - 10 Inflorescences crowded, many-flowered, the flowers crowded or clustered, the distal portions leafy or not; involucellar bractlets green to tan
 - 11 Plants 40-100 cm tall; leaves usually greenish-grayish, rarely yellowish; distal flowering portions of the plants little branched, leafy or not; petals red-orange *S. fendleri*
 - 11 Plants mostly 80-300 cm tall; leaves commonly yellowish-whitish, rarely green without a yellowish cast; distal flowering portions of mature plants much branched, leafy; petals white, pink, lavender, purple, red-orange, or red *S. polychroma*
 - 8 Mid- and lower leaf blades unlobed to weakly lobed or with basal bulges or shoulders
 - 12 Stems yellow to yellow-green, rubbery when fresh; blades ovate-triangular, yellowish with dense very fine hairs *S. incana*
 - 12 Stems greenish, grayish, to whitish, usually brittle and not rubbery; blades ovate to ovate-lanceolate, greenish to grayish green or whitish, not yellowish, the hairs more coarse
 - 13 Leaf blades narrowly lanceolate, 3-8 (or more) times longer than wide, mostly unlobed but sometimes with shallow hastate to sharply angular lobes at the base; inflorescences with well-developed leaves nearly to the tip; plants stout, mostly 60-200 cm tall *S. angustifolia*
 - 13 Leaf blades mostly 1-2 times longer than wide, variously shaped, but often weakly lobed in some fashion; inflorescences leafy or not; plant stature various
 - 14 Lower blades ovate, cordate-ovate, orbicular, or reniform, nearly as wide as long or wider, the petioles equaling or longer than the blade lengths
 - 15 Inflorescences open, long-branched, few-flowered, the flowers widely spaced; involucellar bractlets red-purple (the *ribifolia* phase) *S. laxa*
 - 15 Inflorescences crowded, many-flowered, the flowers usually crowded or clustered; involucellar bractlets usually green to tan, sometimes red-purple *S. parvifolia*
 - 14 Lower blades lanceolate to ovate in outline, longer than wide, the petioles equaling or shorter than the blade lengths
 - 16 Stems 40-200 cm tall/long, typically erect; inflorescences mostly with 3 or more flowers per node, generally 20-60 or more overall *S. lobata*
 - 16 Stems 10-40 cm tall/long, typically curving-decumbent-based; inflorescences mostly with 1-3 flowers per node, generally less than 12 flowers overall *S. hastulata*

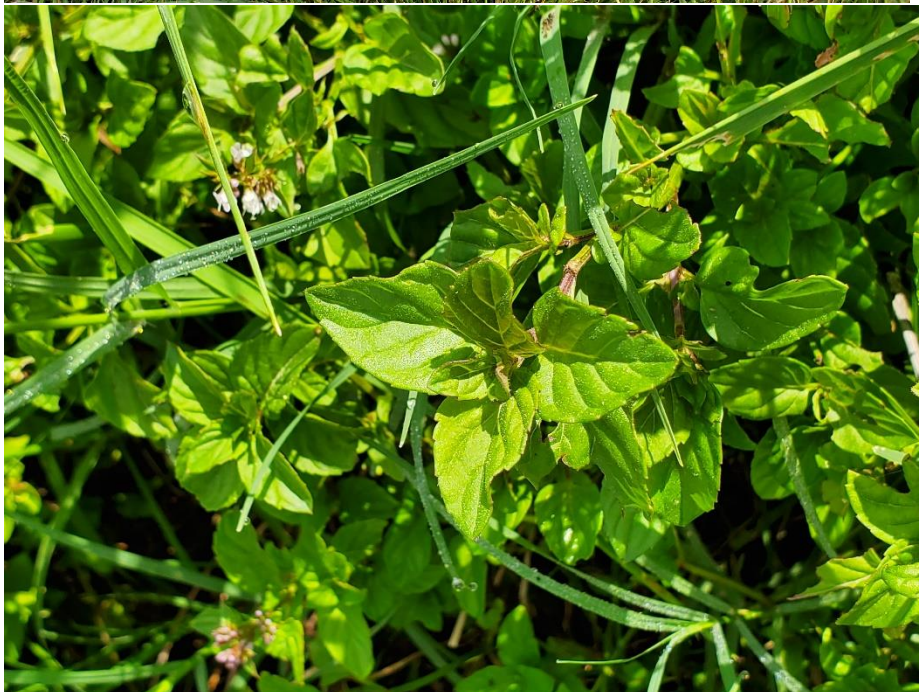
Sphaeralcea angustifolia (Cavanilles) G. Don [narrow-leaved] [*Malva angustifolia* Cavanilles, *Sphaeralcea angustifolia* (Cavanilles) G. Don var. *cuspidata* Gray, *Sphaeralcea cuspidata* (Gray) Britton]. Perennial herbs or shrubs, 50-150 cm or more tall, the stems erect; blades 4-11 cm long, mostly 4-10 times longer than wide, narrowly lanceolate to angular-ovate, unlobed to hastately lobed, slightly discolorous, the bases cuneate; inflorescence a narrow racemose panicle, the flowers in axillary clusters, distally leafy; sepals 5-9 mm long; petals red, red-orange, lavender, pink, white, 8-15 mm long; anthers yellow or purple; mericarps 9-15 in number, 3-7 mm long, the upper dehiscent non-reticulate part 65-85% of the total; seeds pubescent. ♦Very common and found throughout the state in arid or semi-arid habitats, open fields, wide canyons, hills, and plains; flowering spring-fall. ♦Plants with broadly lanceolate-oblong to angular-ovate blades (1-2 times longer than broad), with broad basal lobes, formerly referred to *S. angustifolia* var. *oblongifolia*, are found in *S. lobata* Wootton herein. §

Sphaeralcea coccinea (Nuttall) Rydberg [scarlet] SCARLET GLOBEMALLOW [*Malva coccinea* Nuttall, *Malvastrum elatum* (Baker) A. Nelson, *Malvastrum coccineum* (Nuttall) Gray, *Malvastrum micranthum* Wootton & Standley, *Sphaeralcea coccinea* (Nuttall) Rydberg var. *dissecta* (Nuttall) Garrett, *Sphaeralcea coccinea* (Nuttall) Rydberg var. *elata* (Rydberg) Rydberg]. Perennial rhizomatous herbs, the stems



Site 2 Plant 2:

Now follow the intersecting dirt road and walk carefully over the cattle guard. Proceed about 30 yards down the dirt road and come to somewhat of an opening in the taller roadside shrubbery on your right (northwest). You can now see a smaller, lower herbaceous plant. The leaves are **opposite** and there are spikes of dense small light purple **bilaterally symmetrical** flowers. Again, don't get roots so that all can have a piece. Just take a good stem with some flowers and leaves. Be very careful as you collect this plant—2 or 3 years ago during class in the field as I was showing students this plant, a rattlesnake scared us off! This plant is not native—in the **Lamiaceae**, genus ***Mentha***.





leaves caulescent; petioles 3-5 mm long, the ... corollas 5 mm long, slightly exceeding the calyx.
 ♦Widespread and common in disturbed ground, waste areas, roadsides, parking lots, cattle pens, etc; expected in all countries; native to Eurasia. ♦The hooked sepals are diagnostic. Plants of this species have a long usage in folk-medicine, beverages, and pest control. §



Mentha [mint] MINT [4].
 Perennial rhizomatous herbs, the rhizomes sometimes emerging as stolons, the herbage heavily aromatic, glabrous to villous, the stems erect (ours) to prostrate; leaves cauline, petiolate to nearly sessile, smooth or rugose-crenate, the margins toothed; flowers in dense whorls, the whorls crowded and nearly continuous and forming spike-like inflorescences, each whorl subtended by ± reduced bracts mostly shorter than the whorl, to the whorls widely separated and interrupted, each whorl subtended by ± reduced bracts exceeding the whorl; calyces 10-nerved, regular to nearly bilabiate, 5-toothed; corollas ± actinomorphic, 4-lobed (rarely 5-lobed), one lobed formed by fusion of 2 petals and often larger and emarginate apically; stamens 4, equal, usually exerted; styles gynobasic; fruit of 4 ellipsoid, smooth nutlets. ♦About 18-20 species, 1 circumboreal, the rest Eurasian and Australian, these widely introduced throughout the world. More than 3000 names, from species to forma, have been published for about 20 species. Hybridization, polyploidy, vegetative reproductions, and intense breeding programs have resulted in numerous stable races scarcely different from each other. The genus is important for spices, culinary flavoring, folk and establishment medicine, and various flavor and scent industries. The following key includes species documented for the state, as well as commonly cultivated ones that escape in the United States and might be found in the wild or around old dwellings; the exotic species frequently hybridize.

■Srivastava, J., N.E. Elliott, K.L. Hertweck, E. Sproles, & L.A. Alice. 2004. Phylogenetics of *Mentha* (Lamiaceae): Evidence from chloroplast DNA sequences. *Syst. Bot.* 29(4): 959-964.
 ■Lawrence, B.M. (ed.) 2007. *Mint: The Genus Mentha*. CRC Press, New York. 527 pp. ■Poland, J. & E. Clement. 2009. The Vegetative Key to the British Flora. Botanical Society of the British Isles, London. 526 pp. ■Tucker, A.O., R.H. Harley, & D.E. Fairbrothers. 1980. The Linnaean types of *Mentha* (Lamiaceae). *Taxon* 29(2/3): 233-255. ■Tucker, A.O. 2018. Dec 24 Key to *Mentha*, Jepson eFlora. Retrieved from http://ucjeps.berkeley.edu/flora/eflora_display.php?tid=9461. ■Tucker, A.O. & R.F.C. Naczi. 2007. *Mentha*. An overview of its classification and relationships, p. 1-40. IN: Lawrence, B.M. (ed.). 2007. *Mint: The Genus Mentha*. CRC Press, New York. 527 pp.
 [Key adapted from Poland & Clement 2009, Tucker 2018]

- 1 Flowers in axillary, interrupted whorls subtended by ordinary foliage leaves
 - 2 Leaves gradually reduced distally in size, the blades generally lanceolate to lance-ovate; plants native.....*M. canadensis*
 - 2 All leaves ± equal in size, the blades generally ovate to orbicular; plants exotic, often cultivated and escaping to weedy sites around dwellings or residences *M. arvensis*
- 1 Flowers in terminal spikes, any subtending leaves distinctly different; plants exotic, often cultivated and escaping in weedy sites
 - 3 Petioles 4-15 mm long
 - 4 Plants often purplish, of wet to aquatic habitats; rhizomes often emerging as stolons; leaf blades generally ovate, with 5-15 teeth per side; inflorescence leafy, condensed and head-like..... *M. aquatica*
 - 4 Plants not purplish, of moist to wet habitats; rhizomes not emerging as stolons; leaf blades generally lanceolate to ovate, with 11-25 teeth per side; inflorescence not leafy, ± drawn-out and spike-like..... *M. ×piperita*
 - 3 Petioles 0-3 mm long
 - 5 Leaf blades rugose-crenate *M. spicata*
 - 6 Blades lanceolate to oblong, glabrous to hairy abaxially, generally not tomentose *M. suaveolens*
 - 6 Blades ovate to orbicular, tomentose abaxially.....
 - 5 Leaf blades not rugose-crenate *M. ×rotundifolia*
 - 7 Blades broadly oblong to ovate or orbiculate
 - 7 Blades lanceolate to lance-oblong
 - 8 Leaf blades widest near the base, commonly deeply serrate with acuminate teeth, with 6-12 teeth per side; plants generally spearmint-scented..... *M. spicata*
 - 8 Leaf blades widest near the middle, mostly serrate but not deeply so, with 10-20 teeth per side; plants generally musty-scented..... *M. longifolia*

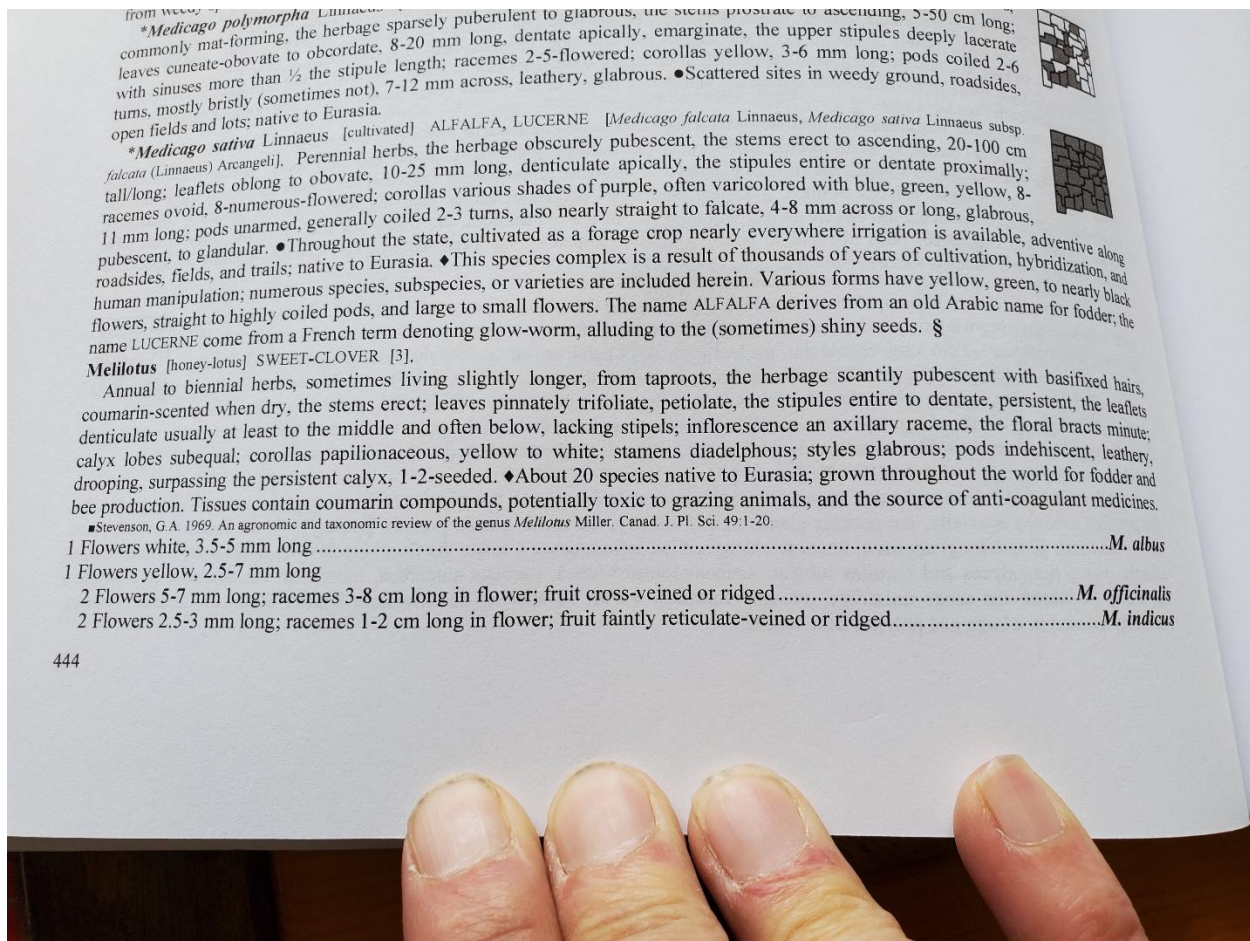
**Mentha aquatica* Linnaeus [of water] [*Mentha citrata* Erhart]. Stems 30-140 cm tall, glabrous to hairy; petioles 3-20 mm long; leaf blades generally ovate, 2-8 cm long, not rugose-crenate; inflorescences head-like, clustered at distal 3-5 nodes; calyces 2-4 mm long, the tube glabrous, the teeth ciliate; corollas 4-6 mm long, white, pink, violet. ♦Not known in the wild in New Mexico; grown in gardens; native to Europe. ♦Glabrous plants have been called *Mentha citrata*.

**Mentha arvensis* Linnaeus [of fields]. Stems 20-60 cm tall; petioles 3-8 mm long; leaf blades generally ovate to suborbicular, 2-6 cm long, not reduced upwards, crenate to serrate, not rugose-crenate; inflorescence of axillary whorls, subtended by ± regular foliage

Site 2 Plant 3:

At the same place you collect the *Mentha*, there is a taller plant on the roadside with **trifoliolate** leaves that are either sessile or on short petioles. There are long racemes of small white **papilionaceous** flowers. This annual plant is also exotic, and is in the **Fabaceae**. In fact, the state of New Mexico considers this plant a noxious weed so go ahead and pull one or two up for your collection! The genus of this plant is ***Melilotus***.





Site 3 Plant 1 (only one from this last site, but an important one!)

To get to site 3, go back across the cattle guard to the paved McMillen Road. The go another couple of hundred yards further down (north) along McMillen Road. There are cottonwoods now on the right side, but stop a few feet before the large cottonwood on the left side of the road. There is a 4 foot tall barbed wire fence here on the left. Partially hidden by taller grasses, you will find this plant growing in a rhizomatous colony between the pavement and a stand of cattails that are several yards off from the road. This plant has rather thick, somewhat fleshy 4-8cm long oblong to obovate leaves that appear gland-dotted with a hand lens. The flowers are gone, but what remains are brown conical spikes with bracts that hide small capsules now. Some of the stems are bright red. Make sure that you collect a plant that has one of the brown spikes still on it. A piece of rhizome would be especially nice! This plant is nifty because it is probably the only plant we will collect this year that belongs to an important clade called the **Magnoliids**. The best synapomorphy for the Magnoliids (other than molecular) is the presence of notable **secondary chemistry**—chemicals produced by the plant outside of main biochemical pathways necessary for life. Secondary chemistry includes things like nectar, poison compounds to ward off insects, and aromas to attract them. We'll have to ask Monica to tell us more about how this plant is used—it has been used by ethnobotanists for a long time! This plant is in the **Saururaceae** and the genus **Anemopsis**.



SAURURACEAE LIZARD-TAIL FAMILY [1/1/1]

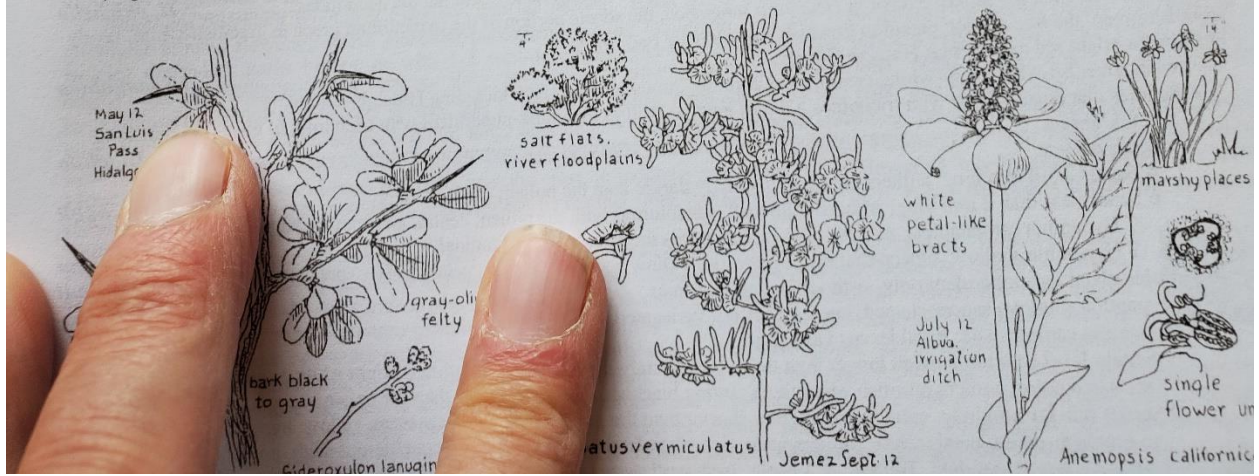
Perennial, rhizomatous herbs, aromatic; leaves alternate, simple; stipules adnate to the petiole; inflorescence a dense terminal raceme or spike; flowers small, perfect, surrounded by colored bracts simulating a perianth; perianth none; stamens 3, 6, or 8, the anthers opening by longitudinal slits; pistil 1, of 3-5 carpels, superior or inferior; fruit a capsule opening at the top, or of schizocarps. ♦5 genera and 7 species, North and Central America, Asia.

■Buddell, G.F., II, & J.W. Thieret. 1997. Saururaceae, pp. 37-38. IN: Flora of North America, vol. 3. Oxford University Press.

Anemopsis [resembling *Anemone*] YERBA-MANSA [1].

Plants sub-scapose; leaves mostly basal, strongly petiolate; inflorescence a compact spike, subtended by petal-like bracts, with up to 150 or more flowers; ovary inferior; fruit a capsule. ♦A single species in North America.

■Soule, J.A. 2011. Father Kino's Herbs: Growing and Using Them Today. Tierra del Sol Press, Tucson, AZ.
Anemopsis californica (Nuttall) Hooker & Arnott [of California] [*Anemia californica* Nuttall]. Plants 10-80 cm tall, densely pubescent to nearly glabrous, stoloniferous; petioles of basal leaves 2-40 cm long; blades of basal leaves elliptic-oblong, 1-25 cm long; spikes fragrant, 1-4 cm long; floral bracts white, orbiculate, 3-6 mm long, clawed. ♦Alkaline to saline marshlands or floodplains. ♦The entire inflorescence mimics a single flower, the bracts simulating petals. The common name, *yerba-mansa*, appears to be a combination of Spanish and indigenous languages (Soule 2011). §



Just like last week, somewhere near one of these groups of plants in plain site you will find a birdseed block. Take a pic of that birdseed block and I'll give you five extra credit points!