

**Pocket Guide to the  
FLORA  
OF THE  
JORNADA PLAIN**

Eighth Edition

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Photos by Russ Kleinman, used with permission.  
Front Cover: *Pectis angustifolia* Torrey  
Back Cover: *Bryum lanatum* (P. Beauvois) Bridel

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## INTRODUCTION

This field guide is intended as an aid in the identification of the plants of the Jornada Plain. This region lies at the southern end of the Jornada del Muerto (Journey of the Dead One) in Doña Ana County. The area is bounded on the west by the Rio Grande and on the east by the San Andres Mountains. The manual includes the entire Chihuahuan Desert Rangeland Research Center (formerly the College Ranch) of New Mexico State University (63,000 acres / 25,500 ha), and the plains area of the USDA Jornada Experimental Range (152,000 acres / 61,500 ha), but not the foothills of the San Andres Mountains. Elevations range from 3,990 feet (1216 m) at the Rio Grande to 5,835 feet (1779 m) at the peak of Summerford Mountain. Annual precipitation averages approximately 8-9 inches (200-230 mm), with about half falling in July, August, and September. Average temperatures vary from 80°F (27°C) in June to 40°F (4°C) in January.

The vegetation of the Jornada Plain is characterized by honey mesquite (*Prosopis glandulosa*), snakeweeds (*Gutierrezia* species), and soaptree yucca (*Yucca elata*) on sandy soils, creosote-bush (*Larrea tridentata*) on gravelly hills and uplands, and tarbush (*Flourensia cernua*), tobosa (*Pleuraphis mutica*), and burrograss (*Scleropogon brevifolius*) on the clay flats. On the uplands and hills of the Doña Ana Mountains, the steep, rocky terrain is dominated by sotol (*Dasyilirion wheeleri*), ocotillo (*Fouquieria splendens*), and mariola (*Parthenium incanum*).

Statistical Summary of the Flora			
	Families	Genera	Species
Spore Plants	8	20	28
Seed Plants	75	305	523
Total	83	325	551

The predominant plant families are the Asteraceae with 99 species, the Poaceae with 88 species, and the Fabaceae with 40 species.

Thirty-six exotic species (marked with \*) are present in the flora. Only one endemic species (marked with +) is known from the area, a little moss of gypsum sinkholes, *Fissidens littlei*. This is its only known occurrence in the world.

Edition 1 (1988) was printed as Bulletin 739 of the Agricultural Experiment Station, New Mexico State University. All subsequent editions have been issued from the Range Science Herbarium: edition 2 in 1997, edition 3 in 2000, edition 4 in 2003, edition 5 in 2005, edition 6 in 2009, a reformatted, pocket-sized 7<sup>th</sup> edition in 2011, and now edition 8 in 2014.

Nomenclature and classification have been updated in this edition in accordance with “Flora Neomexicana I : Annotated Checklist” (Allred 2012).

Many of the plants of this area are illustrated in “Flora Neomexicana III: An Illustrated Identification Manual” by Allred & Ivey (2012). Many forbs may be found in "A Field Guide to Southwestern and Texas Wildflowers" by Niehaus, Ripper, and Savage (1984), and in “National Audubon Society Field Guide to North American Wildflowers, Western Region” by Richard Spellenberg (2001). All of the grasses are figured in "A Field Guide to the Grasses of New Mexico” by Allred (2005). The mosses of the area are poorly known and this enumeration comes mainly from Little's (1937) "Bryophytes of the Jornada Experimental Range, New Mexico." Illustrations and descriptions of mosses may be found in Conard and Redfean's “How to Know the Mosses and Liverworts” (1979).

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### **How to Use This Guide**

Confronted with an unknown plant, the user of this field guide should follow the following procedure to assure a correct identification.

- 1) Study the population of the plant you are trying to identify. Note variation in height, hairiness, flower color, etc. Take the time to examine a few plants in detail, noting such things as the arrangement, vein pattern, angle, or color of the leaves; the shape, color patterns, and arrangement of the flowers; the development and opening of fruits. Are the plants annual or perennial? Do they spread by rhizomes or stolons, or are they tufted? What type of habitat do they seem to prefer?
- 2) Determine to which of the major identification groups (p. 5) your plant belongs: ferns and allies, cacti, woody plants, grasses and grass-like plants, or forbs. These are readily recognized groups of plants for most persons, and the brief description for each group will help you recall them.
- 3) Turn to the correct group and work through the identification keys to the families. The keys will present you with alternative statements about the plants, i.e., leaves alternate or leaves opposite. Choose the statement that best fits your plant, keeping in mind variation in the population. This will lead you to

another pair of contrasting statements, and so on until you reach a family name.

- 4) Now find the family treatment. The families are arranged alphabetically following the family identification keys for each major identification group. Usually there will be a key to the genera, which are arranged alphabetically within each family, and then a key to the species for each genus. As you work through the keys to the species you will eventually arrive at a final determination of the plant you are attempting to identify. The full **scientific name (bold)** will be followed by a COMMON NAME (UPPER CASE), a brief description of the species, an indication of preferred habitats, and flowering times. Synonyms, in *italics*, will be placed [within brackets]. At the end are specialized species codes used by ecologists and range scientists in recording field data.

#### **Abbreviations Used in the Keys and Text**

\* = exotic

+ = endemic

± = more-or-less, somewhat

LTERR = taxon code used by Long Term Ecological  
Research personnel

USDA = taxon code used by United States Department of  
Agriculture personnel



## IDENTIFICATION GROUPS

Determine to which of the following groups your plant belongs. A brief description of each group is given. Then turn to the page for that group and begin using the family identification key.

### SPORE PLANTS

#### **FERNS, HORSETAILS, SPIKE-MOSSES and TRUE**

**MOSSES** (p. 8)

These herbaceous plants reproduce by spores borne either on the underside of the leaf (ferns), in cones at the tips of the stems (horsetails), in axils of the leaves (spike-mosses), or on capsules raised above the leaves (true mosses). None of these plants produce flowers or seeds. Ferns produce often broad, dissected or compound leaves that unroll like a fiddle-neck. Horsetails have stiff, erect, hollow stems that are markedly ribbed and the leaves are reduced to small whorls of brownish scales. Spike-mosses and true mosses are low, mat-like plants with tiny scale-like leaves, often found on rocky cliffs and crevices and as cushion-like mats on the soil under creosote and tarbush.

### SEED PLANTS

#### **CACTI** (p. 68)

These are spine-covered plants with succulent stems. Green leaves are usually absent. Spines are borne in obvious patches on the stems. The flowers are showy and have numerous waxy petals and inferior ovaries. Family Cactaceae.

(continued next page)

**WOODY PLANTS** (p. 18)

Trees, shrubs, and sub-shrubs with obvious woody stems that persist year after year. These plants reproduce by seeds, but a few species do not have true flowers.

**GRASSES AND GRASS-LIKE PLANTS** (p. 23)

These herbaceous (non-woody) plants lack noticeable flowers. The leaves are ribbon-like with parallel veins, and are often tightly rolled. Flowers are lacking sepals and petals, and are hidden within small clusters of chaffy bracts.

**FORBS** (p. 24)

These herbaceous (non-woody) plants produce usually noticeable flowers, often with both sepals and petals. The leaves are often broad with netted veins, but they may also be narrow and veinless. The flowers usually develop sepals or petals and are generally not hidden.

## SPORE PLANTS

### FERNS, HORSETAILS, SPIKE-MOSSES, and TRUE MOSSES

#### Key to the Major Plant Groups

- 1 Plants ± moss-like, with tiny leaves and growing in mats or cushions, mostly less than 5 cm tall
  - 2 Leaves without hairs on the edge (use a lens); spores produced from capsules terminating the stems; plants in very dense cushions ..... TRUE MOSSES (p. 8)
  - 2 Leaves with hairs on the edge; spores produced from capsules in the axils of the leaves; plants in loose mats ..... SPIKE-MOSSES (p. 14)
- 1 Plants not moss-like, mostly greater than 10 cm tall
  - 3 Aerial stems conspicuously ridged, jointed, hollow; leaves present as papery, brownish scales less than 1 cm long, whorled; spores borne in obvious cones at the stem tips ..... HORSETAILS (p. 15)
  - 3 Aerial stems either absent or not as above; leaves large, 10-45 cm long, lobed or divided into leaflets, arising from underground stems; spores borne on the undersides of the leaves.....FERNS (p. 16)

# TRUE MOSSES (Bryophyta)

## Key to the families

- 1 Leaves attached on the stem in 2 conspicuous rows (distichous) ..... FISSIDENTACEAE
- 1 Leaves attached on the stem spirally, in 3 or more rows
  - 2 Leaf blades with 2-4 tiny plates or flaps (lamellae) arising from the midnerve (*Pterygoneuron*) ..... POTTIACEAE
  - 2 Leaf blades lacking tiny plates or flaps
    - 3 Capsules produced laterally from the stems; plants mostly prostrate and freely branching ..... FABRONIACEAE
    - 3 Capsules produced at the end of a stem or main branch; plants mostly erect in loose tufts and with few branches
      - 4 Leaf cells with nipple-shaped protuberances (high magnification necessary) ..... POTTIACEAE
      - 4 Leaf cells smooth, without nipple-shaped protuberances
        - 5 Plants dark green to blackish (*Grimmia*) ..... GRIMMIACEAE
        - 5 Plants silvery green
          - 6 Leaves half green and half clear ..... BRYACEAE
          - 6 Leaves nearly all green or colored, only the hair points clear (*Jaffueliobryum*) ..... GRIMMIACEAE

## BRYACEAE

Mosses with erect, 5-angled stems. Leaves with single nerve.  
Capsules pear-shaped, nodding.

### Bryum

1 Leaves with a noticeable hair point from the excurrent costa; plants hoary white ..... **B. lanatum**

1 Leaves acute to acuminate, but the costa failing before the apex; plants silvery or silvery green ..... **B. argenteum**

***Bryum argenteum*** Hedw. SILVER SIDEWALK MOSS. Plants small, silvery to frosty green. Leaves ovate-acuminate. Setae to 1 cm long. Capsules pear-shaped and nodding. A cosmopolitan weed on soil, rocks, cement walls, roofs, bark, etc.

***Bryum lanatum*** (P. Beauv.) Brid. Similar to the above, but usually a bit larger, the leaves with abrupt hair points, and the stems brittle and breaking off, leaving a cup at the tip. Weedy places with *B. argenteum*, but also moist, shaded spots in natural areas, under bushes and crevices of boulders.

## FABRONIACEAE

Mosses with creeping, branched, fragile stems. Leaves with single nerve. Capsules cylindrical, erect.

### Fabronia

*Fabronia ciliaris* (Brid.) Brid. var. *wrightii* (Sull. ex Sull. & Lesq.) Buck Plants very small, in soft, silky-green mats. Leaves less than 1 mm long, mostly lanceolate, long acuminate, denticulate, mostly awnless. Setae 1-5 mm long. Capsules ovoid, about 1 mm long. On shaded gravelly soil and tree trunks. [*Fabronia wrightii* Sull. ex Sull. & Lesq.]

## FISSIDENTACEAE

Mosses with erect, mostly unbranched stems. Leaves arranged edgewise to the stem in 2 rows (distichous), each appearing to be split at base into 2 sheathing blades.

### Fissidens

+*Fissidens littlei* (Williams) Grout Known in the world only from the Jornada Plain, on shaded walls of small gypsum sinkholes, 1.5 miles north of Middle Well at Antelope Tank. [*Moenkemeyera littlei* Williams]

## GRIMMIACEAE

Mosses with mostly erect stems in dense, often dark mats or cushions on rock. Leaves 1-nerved, mostly ending in a hyaline hair point. Capsules symmetric.

- 1 Leaves keeled; capsules exceeding leaves, the setae 2-5 mm..... **Grimmia**  
1 Leaves concave; capsules immersed in leaves, the setae less than 1 mm..... **Jaffueliobryum**

### Grimmia

*Grimmia pulvinata* (Hedw.) Sm. ex Sm. & Sowerb. Plants to about 12 mm tall in small grayish/whitish cushions. Leaves 1-2 mm long, oblong-lanceolate, with hair points equally as long. Setae erect and twisted when dry, arcuate when moist, 2-5 mm long. Capsules to 1 mm long, ovoid, ribbed. In rock crevices.

### Jaffueliobryum

*Jaffueliobryum wrightii* (Sull.) Ther. Plants gray-green, hoary mounds 1.5 cm dia. Leaves spatula-shaped, with hair points longer than the blades on the upper leaves. Setae very short. Capsules to 1

mm long, oblong, truncate at base, not extending past leaves. On rock and in rock crevices. [*Grimmia wrightii* (Sull.) Aust.]

### POTTIACEAE

Mosses with erect stems. Leaves mostly crowded at stem tips, 1-nerved, with nipple-like projections on the surface. Capsules symmetric.

- 1 Leaf blades with tiny plates (lamellae) or thread-like filaments on the upper surface of the midnerve
  - 2 Blades with 2-4 tiny plates on the midnerve ..... **Pterygoneurum**
  - 2 Blades with tiny filaments on the midnerve
    - 3 Leaf margins broadly inrolled (and mostly obscuring the filaments) ..... **Aloina**
    - 3 Leaf margins reflexed to revolute (rolled downwards) ..... **Crossidium**
- 1 Leaf blades lacking tiny plates or filaments
  - 4 Leaf margins flat to strongly involute (rolled upwards)
    - 5 Leaf margins strongly involute ..... **Weissia**
    - 5 Leaf margins flat ..... **Tortula**
  - 4 Leaf margins revolute (rolled downwards)
    - 6 Leaves awnless, without hair points (but may be acute to acuminate)
      - 7 Leaves widest at the middle or above ..... **Barbula**
      - 7 Leaves widest towards the base
        - 8 Leaves strongly spirally twisted when dry ..... **Pseudocrossidium**
        - 8 Leaves not or only slightly twisted when dry ..... **Didymodon**
    - 6 Leaves awned with hair points
      - 9 Leaf margins flat or rolled upwards ..... **Tortula**
      - 9 Leaf margins rolled downwards
        - 10 Leaves mostly broadest below the middle and gradually tapering to the awn ..... **Pseudocrossidium**
        - 10 Leaves mostly broadest near the middle or above ..... **Syntrichia**

#### **Aloina**

*Aloina rigida* (Hedw.) Limpr. Plants in low cushions. Leaves to 2.5 mm, the margins inrolled nearly to the costa, awned. Capsule 1-3 mm, cylindrical, reddish. On calcareous soil.

## **Barbula**

*Barbula unguiculata* Hedwig Plants in low, yellowish-green cushions. Leaves 1-2.5 mm long, the margins revolute at least in the lower half, without hair points but shortly mucronate. Capsule 1-2.5 mm. On moist soil and soil-filled rock crevices.

## **Crossidium**

1 The mass of filaments scarcely covering the midnerve **C. aberrans**

1 The mass of filaments large and noticeable, obviously exceeding in width the midnerve ..... **C. crassinervium**

*Crossidium aberrans* Holzinger & Bartram Plants 2-3 mm high, mostly in single clumps. Leaves scarcely longer than 1 mm, with a hair-like awn, the margins revolute. On soil and rock on protected bluffs and outcrops; as yet known only from Antelope Well.

*Crossidium crassinervium* (De Notaris) Juratzka Plants 2-4 mm high, mostly in single clumps. Leaves about 1 mm long or less, with a hair-like awn, the margins revolute. On soil and rock on protected bluffs and outcrops; as yet known only from Antelope Well.

## **Didymodon**

1 Leaves ovate, mostly less than 1 mm long, the midnerve bulging in the middle or above ..... **D. nevadensis**

1 Leaves long-lanceolate, mostly more than 1 mm long, the midnerve about the same thickness from base to apex ..... **D. rigidulus**

*Didymodon nevadensis* Zander Plants in loose but definite patches, 2-6 mm high. Leaves ovate, mostly less than 1 mm long, the margins revolute, awnless. Dry soil and gypsum outcrops.

*Didymodon rigidulus* Hedw. Plants in dark green or blackish tufts 10-15 mm tall. Leaves lanceolate, 1-2 mm, the margins revolute, awnless. Setae 10-15 mm. Capsules 1-2 mm, cylindric. On soil and rock.

## **Pseudocrossidium**

1 Leaves with awns ..... **P. crinitum**

1 Leaves without awns ..... **P. replicatum**

*Pseudocrossidium crinitum* (Schultz) Zander Plants mostly single or in sparse, loose colonies, 2-6 mm high. Leaves strongly spirally twisted when dry, ending in a short awn. On dry soil and rocks, including gypsum. [*Pseudocrossidium aureum* (Bartram) Zander]

*Pseudocrossidium replicatum* (Taylor) Zander Plants mostly in single clumps 2-6 mm high. Leaves strongly spirally twisted when

dry, ending in a sharp point, but not awned. On dry soil and rocks, including gypsum.

### **Pterygoneurum**

*Pterygoneurum ovatum* (Hedw.) Dix. Plants in dense brownish tufts 3-5 mm tall. Leaves ovate, about 1 mm long, with an equally long awn. Setae 2-4 mm long, brown. Capsules 1-1.5 mm long, dark brown, wrinkled. On dry soil. [*Pterygoneurum cavifolium* (Ehrh.) Jur.]

### **Syntrichia**

1 Leaves 1-2 mm, the margins flat ..... **T. bartramii**

1 Leaves 1-3.5 mm, the margins revolute..... **T. ruralis**

*Syntrichia bartramii* (Steere) Zander Plants 2-10 mm tall in dense brown tufts. Leaves 1-2 mm, awned, spreading when moist but not recurved, the margins flat. Capsules rarely found. Gravelly soil in rock crevices. [*Tortula bartramii* Steere].

*Syntrichia ruralis* (Hedwig) Weber & Mohr Plants 5-15 mm tall in dense, darkish to blackish cushions. Leaves 1.5-3.5 mm, awned, recurved when moist, the margins revolute. Capsules rarely found. Dry to moist soil and rock. [*Tortula ruralis* (Hedw.) Gaertn.].

### **Tortula**

1 Costa thickened and club-shaped at the end of the blade .....  
..... **T. atrovirens**

1 Costa not conspicuously thickened at the end of the blade

2 Blades of upper leaves about 1.5 mm long ..... **T. guepinii**

2 Blades of upper leaves 2-2.5 mm long ..... **T. plinthobia**

*Tortula atrovirens* (J.E. Smith) Lindberg Plants in low green cushions. Leaves 1-2 mm, awned. Setae 6-12 mm, reddish, twisted. Capsules 0.9-1.5 mm, cylindric, reddish to brownish. On exposed soil and rock, gypsum outcrops. [*Desmatodon convolutus* (Brid.) Grout]

*Tortula guepinii* (Bruch & Schimper) Brotherus Plants in small green cushions. Leaves less than 2 mm, awned. Setae 7-8 mm, yellowish, twisted. Capsules 1-1.5 mm, cylindric, yellow-brown. On dry soil. [*Desmatodon guepinii* Bruch & Schimp.]

*Tortula plinthobia* (Sullivant & Lesquereux) Austin Plants in dense cushions. Leaves 2-2.5 mm, awned. Setae 6-12 mm. Capsules contracted below the mouth, 2-3 mm. On soil and in shaded rock crevices. [*Desmatodon plinthobius* Sull. & Lesq.]



**Weissia**

*Weissia controversa* Hedw. Plants about 2 mm tall. Leaves 1.5-2.5 mm, narrowly lanceolate, with a tiny awn-tip. Setae 4-6 mm, yellow-brown, twisted. Capsules about 1.5 mm, ovoid, yellow to reddish brown. On soil pockets in shaded rock crevices. [*Weissia condensa* of numerous authors, *Weissia viridula* (L.) Hedw.]. As presently constituted, *Weissia controversa* includes all previous reports of *Weissia condensa* in North America.

## **SPIKE-MOSSES (Lycopodiophyta)**

### **SELAGINELLACEAE SPIKEMOSS FAMILY**

Moss-like, mat-forming plants. Leaves scale-like, less than 4 mm long, covering the stems. Flowers absent, reproducing by spores borne in the axils of the leaves.

#### **Selaginella**

*Selaginella rupicola* Underw. SPIKEMOSS. Leaves narrow, lance-shaped, 1.5-2.5 mm long, glabrous, with hairs on the edge. Rock cliffs and ledges. Plants greening up after rains. Earlier reports of *S. underwoodii* Hieron. were in error.

## **HORSETAILS (Equisetophyta)**

### **EQUISETACEAE HORSETAIL FAMILY**

Rhizomatous forbs with ridged, green, hollow stems. Leaves reduced to tiny, whorled, brownish scales. Spores borne in terminal fleshy cones. Flowers and seeds absent.

#### **Equisetum**

*Equisetum hyemale* L. subsp. *affine* (Engelm.) Calder & R.L. Taylor SCOURING-RUSH. Perennial with strong rhizomes, 30-90 cm tall, unbranched. Along the Rio Grande. Jul-Oct.

## FERNS (Pteridophyta)

### PTERIDACEAE BRAKE-FERN FAMILY

Small fern-like plants with rhizomes. Stalks of leaves thin, wiry, mostly dark-colored. Leaves twice-compound or more. True indusia absent, the sporangia protected by the inrolled blade margin in some, naked in others.

- 1 Blades glabrous above, leathery and not leaf-like in texture; leaflets with entire margins ..... **Pellaea**
- 1 Blades hairy, scaly, or mealy to some degree, leaf-like in texture; leaflets with lobed margins
  - 2 Edges of blade segments whitish, scarious, curled under to form a false indusium that covers the sporangia; ultimate segments of leaflets bead-like ..... **Cheilanthes**
  - 2 Edges of blade segments herbaceous, not whitish, not or scarcely curled under; ultimate segments of leaflets not bead-like
    - 3 Blades densely yellowish mealy on one surface.... **Notholaena**
    - 3 Blades not at all yellowish mealy on any surface.... **Astrolepis**

#### **Astrolepis**

*Astrolepis sinuata* (Lag. ex Sw.) D.M. Benham & Windham WAVY CLOAK-FERN. Perennial with rhizomes, 10-45 cm tall. Blades whitish-scaly above, reddish-brown scaly below. Rock crevices & among boulders, often limestone. [*Notholaena sinuata* (Lag. ex Swartz) Kaulf.] NOSI.

#### **Cheilanthes**

- 1 Rhizomes long-creeping, the fronds scattered; blades glabrous on the upper surface (but with hairs protruding from between the segments) ..... **C. lindheimeri**
- 1 Rhizomes short, the fronds tufted; blades shaggy hairy on the upper surface ..... **C. tomentosa**  
*Cheilanthes lindheimeri* Hook. FAIRY SWORDS. Perennial with creeping rhizomes, to 35 cm tall. Leaf stalks dark reddish brown to blackish. Blades 3-pinnate, to 15 cm, scaly and hairy on the lower surface. Among dry, shaded boulders and ledges of igneous rocks, talus slopes.  
*Cheilanthes tomentosa* Link WOOLY LIP-FERN. Perennial with short rhizomes, to 60 cm tall. Leaf stalks purplish black. Blades 3-pinnate, to 34 cm, hairy above, scaly and hairy below. Crevices and ledges of various boulders and ledges. CHTO.

**Notholaena**

*Notholaena standleyi* Maxon STANDLEY'S CLOAK-FERN. Perennial with rhizomes, 6-30 cm tall. Stalks reddish brown, scaly. Blades curled upward to reveal the yellowish-mealy covering. Rocky crevices and among boulders. NOST.

**Pellaea**

*Pellaea truncata* Good. SPINY CLIFF-BRAKE. Perennial with rhizomes. Stalks shiny, reddish brown. Blades 2- or 3-pinnate, the segments oblong with a bristle at the tip, stiff, leathery. Crevices and among boulders of often igneous rocks. [*Pellaea longimucronata* of various works]. PELO.

## SEED PLANTS (Magnoliophyta)

The families are arranged alphabetically beyond this point.

### WOODY PLANTS

#### Key to the families

- 1 Leaves borne in dense rosettes at the stem or branch tips, mostly more than 30 cm, mostly spiny at the tips or margins
- 2 Leaves without hooked prickles along the margins, but may be sharply serrulate
  - 3 Leaves cord-like, about equal thickness all around, serrulate on the margins (which are not exfoliating) (*Nolina*) .....  
..... NOLINACEAE
  - 3 Leaves ribbon-like or very stiff and sword-like, much wider than thick, entire on the margins (which come off in strips) (*Yucca*) ..... AGAVACEAE
- 2 Leaves with hooked prickles along the margins
  - 4 Leaves narrow and ribbon-like, 0.6-1 m long or more and 2-4 cm wide, with numerous stout hooked prickles all along the margins; ovary superior (*Dasylyrion*) ..... NOLINACEAE
  - 4 Leaves shorter and wider, often thick and semi-succulent, with more widely spaced spines or hooks; ovary inferior (*Agave*) ..... AGAVACEAE
- 1 Leaves not as above
  - 5 Leaves absent ..... KEY A
  - 5 Leaves present
    - 6 Leaves scale- or wedge-like, 1-5 mm, mostly overlapping and covering the twigs (except Ephedraceae) ..... KEY B
    - 6 Leaves not as above
      - 7 Sunflower Family: Flowers individually small but clustered on a common receptacle into dense heads and subtended by modified leaves (phyllaries) that often resemble sepals, the head sometimes resembling a single large flower; sepals represented by the pappus, this of bristles, awns, scales, or absent, borne at the tip of each "seed" (ovary); petal united into a tube (disk flower) or strap-shape (ray flower); remains of the head, mostly the phyllaries, often present long after the flowers are withered and gone; leaves without stipules .....  
..... ASTERACEAE
      - 7 Flowers not as above

- 8 Leaves alternate
  - 9 Leaves simple, may be divided or lobed but without definite leaflets ..... KEY C
  - 9 Leaves compound, with definite leaflets ..... KEY D
- 8 Leaves opposite
  - 10 Leaves simple, may be divided or lobed but without definite leaflets ..... KEY E
  - 10 Leaves compound, with definite leaflets ..... KEY F

**Key A (Leaves absent)**

- 1 Stems grayish, with glandular dots (*Psorothamnus*).... FABACEAE
- 1 Stems greenish or blackish, lacking glandular dots
  - 2 Nodes bearing a whorl of small, papery scales (leaves) separated by long internodes; stems not thorny or spiny, except occasionally for pointed stem tips ..... EPHEDRACEAE
  - 2 Nodes without papery scales; stems prominently thorny or spiny
    - 3 Stems blackish, wand-like, unbranched for much of their length, covered with stout spines developed from this petiole of the leaves; flowers brilliant red..... FOUQUIERIACEAE
    - 3 Stems greenish, intricately branched, ending in rigid thorns; flowers greenish to yellowish..... KOEBERLINIACEAE

**Key B (Leaves small and scale-like)**

- 1 Small shrubs 0.5-2 m; leaves represented by papery scales whorled at the nodes and separated by long, green internodes ..... EPHEDRACEAE
- 1 Large shrubs or trees mostly more than 2 m; leaves present as small greenish or reddish scales closely placed and mostly overlapping, the internodes very short
  - 2 Weedy plants of riverbanks, irrigation ditches, low swales, and other moist areas; leaves and some branchlets deciduous; flowers pinkish, in showy clusters..... TAMARICACEAE
  - 2 Native plants of dry, upland, rocky slopes; leaves mostly persistent; flowers absent ..... CUPRESSACEAE

**Key C (Leaves alternate, simple)**

- 1 Leaves entire, not toothed, notched, or lobed
  - 2 Plants ± spiny or thorny
    - 3 Shrubs with several, spiny, wand-like branches; spines formed by the hardening of the leaf stalk; flowers brilliant red, in showy clusters at the stem tips... FOUQUIERIACEAE
    - 3 Plants not as above
      - 4 Trees with a single main trunk (*Maclura*) .... MORACEAE

- 4 Shrubs, mostly with several main trunks
  - 5 Low shrubs less than 60 cm tall; fruits bur-like with barbs..... KRAMERIACEAE
  - 5 Large shrubs more than 50 cm tall; fruits berry-like
    - 6 Leaves minutely velvety-hairy, persistent thru the winter; young stems dark brown, rough (*Condalia*) .  
..... RHAMNACEAE
    - 6 Leaves mostly glabrous or nearly so, deciduous; young stems light-colored, smooth
      - 7 Young stems with a bluish, waxy bloom; flowers saucer-shaped (*Ziziphus*) ..... RHAMNACEAE
      - 7 Young stems light tan-colored, without a bluish bloom; flowers tubular, trumpet-shaped (*Lycium*)  
..... SOLANACEAE
- 2 Plants not spiny or thorny
  - 8 Leaves, including the leaf-stalk, mostly more than 8 cm; flowers tubular, 2-lipped, about 3 cm (*Chilopsis*).....  
..... BIGNONIACEAE
  - 8 Leaves less than 8 cm; flowers not tubular
    - 9 Leaves with flattened scales (scurfy); fruit with 4 broad wings (*Atriplex*).....CHENOPODIACEAE
    - 9 Leaves glabrous to hairy, but not scurfy
      - 10 Leaves succulent, ± round in x-section (*Suaeda*).....  
.....CHENOPODIACEAE
      - 10 Leaves not succulent nor round
        - 11 Flowers yellow
          - 12 Stamens 2-3; corolla bowl-shaped; fruit a bilobed capsule, each half pea-shaped .....  
.....OLEACEAE
          - 12 Stamens 5; corolla trumpet-shaped; fruit a bullet-shaped follicle (*Haplophyton*) .....  
..... APOCYNACEAE
        - 11 Flowers not yellow
          - 13 Leaves ovate to elliptic, at least some to 8 mm wide (*Tiquilia*) ..... BORAGINACEAE
          - 13 Leaves narrowly elliptic to linear, few as wide as 5 mm
            - 14 Leaves and stems with glandular dots (*Psorothamnus*).....FABACEAE
            - 14 Leaves and without glandular dots
              - 15 Flowers and young stems densely woolly-hairy (*Ceratoides*).....  
.....CHENOPODIACEAE



- 15 Flowers and young stems ± glabrous
  - 16 Plants less than 60 cm tall .....  
..... KRAMERIACEAE
  - 16 Plants mostly 2 m tall .....  
..... ULMACEAE
- 1 Leaves toothed, notched, or lobed
  - 17 Plants large trees 15-20 m; leaves triangle-shaped (*Populus*)....  
..... SALICACEAE
  - 17 Plants shrubs or small trees to 12 m; leaves not triangle-shaped
    - 18 Leaves deeply lobed with narrow segments 1-2 mm wide ..  
..... ROSACEAE
    - 18 Leaves toothed to shallowly lobed
      - 19 Leaves with spiny teeth ..... FAGACEAE
      - 19 Leaves not spiny-toothed
        - 20 Leaves linear to narrowly lance-shaped (*Salix*).....  
..... SALICACEAE
        - 20 Leaves roughly egg-shaped
          - 21 Sap milky or cloudy during the growing  
season; fruit a cluster of fleshy drupes  
(*Morus*)..... MORACEAE
          - 21 Sap clear; fruit a single, hardened, marble-  
sized drupe ..... ULMACEAE

**Key D (Leaves alternate, compound)**

- 1 Leaves with 3 leaflets
  - 2 Leaves and stems with glandular dots (*Psoralea*) .....  
..... FABACEAE
  - 2 Leaves and stems without glandular dots
    - 3 Leaflets entire or finely toothed..... RUTACEAE
    - 3 Leaflets coarsely toothed or lobed ..... ANACARDIACEAE
- 1 Leaves with 5 to many leaflets
  - 4 Leaves twice-compound..... FABACEAE
  - 4 Leaves one-compound
    - 5 Leaflets with prominent spiny margins .... BERBERIDACEAE
    - 5 Leaflets with entire or only toothed margins, never spiny
      - 6 Leaves less than 5 cm
        - 7 Leaflets with glandular dots (*Dalea*) ..... FABACEAE
        - 7 Leaflets without glandular dots..... ANACARDIACEAE
      - 6 Leaves more than 5 cm
        - 8 Large trees with thorny trunks (*Gleditsia*).... FABACEAE
        - 8 Shrubs or small trees without thorny trunks .....  
..... SAPINDACEAE

**Key E (Leaves opposite, simple)**

- 1 Plants parasitic and growing attached to other plants.....  
.....SANTALACEAE
- 1 Plants not parasitic, rooted in the soil
  - 2 Leaves toothed (*Aloysia*)..... VERBENACEAE
  - 2 Leaves entire
    - 3 Plants viny, twining, bushy..... MALPIGHIACEAE
    - 3 Plants erect shrubs
      - 4 Leaves filiform to linear
        - 5 Flowers pink to white (*Penstemon*) .....  
..... PLANTAGINACEAE
        - 5 Flowers purple .....ACANTHACEAE
      - 4 Leaves elliptic to spatulate
        - 6 Leaves mostly more than 3 cm, the tip pointed.....  
..... GARRYACEAE
        - 6 Leaves mostly less than 2 cm, the tip mostly blunt  
(*Ceanothus*)..... RHAMNACEAE

**Key F (Leaves opposite, compound)**

- 1 Plants vine-like, the stems trailing (*Clematis*)RANUNCULACEAE
- 1 Plants shrubby, the stems erect
  - 2 Leaves leathery, less than 2 cm (*Larrea*) .ZYGOPHYLLACEAE
  - 2 Leaves thin, herbaceous, 4-8 cm (*Tecoma*).....BIGNONIACEAE

## GRASSES AND GRASS-LIKE PLANTS

The families are arranged alphabetically beyond this point.

### Key to the families

- 1 Stems 3-angled, especially below the infl .....CYPERACEAE
- 1 Stems mostly rounded, occasionally flattened, but not 3-angled
  - 2 Reed-like plants 1-3 m tall; blades absent, the leaves reduced to bladeless sheaths; nodes inconspicuous; floodplains along the Rio Grande (*Schoenoplectus*).....CYPERACEAE
  - 2 Plants other than above; blades almost always present.....  
..... POACEAE

## FORBS

The families are arranged alphabetically beyond this point.

### Key to the families

- 1 Plants parasitic, often without chlorophyll and then whitish or yellow-brown, or if green then clearly growing on and attached to a host plant..... KEY A
- 1 Plants green, rooted in the soil
  - 2 **Monocotyledonous Plants:** Leaves simple, basal or alternate, mostly sheathing the stem, with parallel veins; flower parts in 3's; without stipules ..... KEY B
  - 2 **Dicotyledonous Plants:** Leaves simple or compound, basal, alternate, or opposite, mostly not sheathing the stem, with netted veins; flower parts in 4's or 5's; with or without stipules
    - 3 Plants with whitish milky juice or orange-yellow sap.. KEY C
    - 3 Plants without milky juice or orange sap
      - 4 Sunflower Family: Flowers individually small but clustered on a common receptacle into dense heads and subtended by modified leaves (phyllaries) that resemble sepals, the head sometimes resembling a single flower; sepals represented by the pappus, this of bristles, awns, scales, or absent, borne at the tip of each "seed" (inferior ovary); petals united into a tube (disk flower) or strap-shaped (ray flower) ..... ASTERACEAE
    - 4 Flowers not as above
      - 5 Sepals or petals or both absent ..... KEY D
      - 5 Both sepals and petals present
        - 6 Ovary inferior, the sepals, petals, and stamens arising from the tip of the ovary ..... KEY E
        - 6 Ovary superior, the sepals, petals, and stamens arising from below the ovary
          - 7 Leaves prevailing opposite or whorled ..... KEY F
          - 7 Leaves alternate or basal
            - 8 Petals separate, not united ..... KEY G
            - 8 Petals united, at least below ..... KEY H

### Key A (Plants parasitic)

- 1 Plants less than 1 cm tall, bud-like, parasitic on *Dalea formosa*.....  
..... RAFFLESIAEAE
- 1 Plants more than more than 1 cm tall, parasitic on other hosts

- 2 Plants greenish, parasitic on oak, juniper, or cottonwood..... SANTALACEAE
- 2 Plants not greenish, without chlorophyll, parasitic on other hosts, often appearing rooted in the soil
  - 3 Corolla purplish, 2-lipped; plants erect, root-parasites growing out of the soil ..... OROBANCHACEAE
  - 3 Corolla whitish, radiate; plants twining parasites on various herbaceous hosts ..... CUSCUTACEAE

**Key B (Monocotyledonous Plants)**

- 1 Flowers blue; sepals and petals clearly different in color and texture..... COMMELINACEAE
- 1 Flowers other than blue; sepals and petals similar in color and texture
  - 2 Ovary inf; flowers single (rarely 2) per plant ..... AMARYLLIDACEAE
  - 2 Ovary superior; flowers numerous per plant
    - 3 Flowers borne in umbels at the tip of the stems . ALLIACEAE
    - 3 Flowers borne in the axils of the leaves.... ASPARAGACEAE

**Key C (Dicotyledonous Plants with milky juice or orange sap)**

- 1 Flowers without true petals, but whitish, flap-like glands less than 3 mm often present and resembling pet; flowers borne in a cup-like structure (cyathium) with the stamens and especially pistil hanging out of the cup ..... EUPHORBIACEAE
- 1 Flowers with obvious petals, not borne in a cup-like structure
  - 2 Plants spiny-prickly (*Argemone*) ..... PAPAVERACEAE
  - 2 Plants not spiny-prickly
    - 3 Stems glabrous ..... ASCLEPIADACEAE
    - 3 Stems tomentose with crinkly hairs (*Amsonia*) ..... APOCYNACEAE

**Key D (Dicotyledonous Plants without sepals or petals or both)**

- 1 Leaves opposite or whorled
  - 2 Leaves compound (*Clematis*) ..... RANUNCULACEAE
  - 2 Leaves simple
    - 3 Perianth (sepals and petals) scale-like, scarious, not petal-like ..... AMARANTHACEAE
    - 3 Perianth petal-like
      - 4 Leaves whorled ..... MOLLUGINACEAE
      - 4 Leaves opposite

- 5 Ovary appearing inferior, a constriction mostly present at the tip of the ovary before the flaring of the perianth ..... NYCTAGINACEAE
- 5 Ovary obviously superior, the perianth attached and flaring at the base of the ovary (*Eriogonum*)..... POLYGONACEAE
- 1 Leaves alternate or basal
  - 6 Flowering head with a cluster of white bracts at the base, mimicking petals of a single flower but with the true flowers arising above in a cone-shaped head; marshy ground..... SAURURACEAE
  - 6 Flowers and the flowering head not as above
    - 7 Ovary inferior ..... SANTALACEAE
    - 7 Ovary superior
      - 8 Ovary and fruit 3-celled ..... EUPHORBIACEAE
      - 8 Ovary and fruit 1-celled
        - 9 Stipules united into a sheath around the stem..... POLYGONACEAE
        - 9 Stipules not so united or absent
          - 10 Flowers borne in a cup-like structure (*Eriogonum*).. ..... POLYGONACEAE
          - 10 Flowers not borne in a cup-like structure
            - 11 Perianth scarious, chaffy; staminal filaments united below into a short crown ..... AMARANTHACEAE
            - 11 Perianth membranous; staminal filaments separate from each other..... CHENOPODIACEAE

**Key E (Dicotyledonous Plants; ovary inferior)**

- 1 Leaves obviously succulent ..... PORTULACACEAE
- 1 Leaves herbaceous, not succulent
  - 2 Leaves opposite or whorled
    - 3 Flowers with 5 petals ..... NYCTAGINACEAE
    - 3 Flowers with 4 petals ..... RUBIACEAE
  - 2 Leaves alternate or basal
    - 4 Plants vine-like, trailing..... CUCURBITACEAE
    - 4 Plants not vine-like
      - 5 Leaves covered with barbed (and hence clinging) or stinging hairs ..... LOASACEAE
      - 5 Leaves glabrous or hairy, but without barbed or stinging hairs
        - 6 Leaves deeply divided into narrow segments ..... PAPAVERACEAE

6 Leaves toothed to shallowly lobed.....ONAGRACEAE

**Key F (Dicotyledonous Plants; ovary superior; leaves opposite or whorled)**

- 1 Corolla zygomorphic (bilaterally symmetrical)
  - 2 Ovary 4-lobed; fruit of 4 nutlets
    - 3 Style 2-cleft; plants mostly with mint-like odor; corolla strongly zygomorphic .....LAMIACEAE
    - 3 Style not or only slightly 2-cleft; plants without mint-like odor; corolla mostly only slightly zygomorphic.....  
.....VERBENACEAE
  - 2 Ovary not 4-lobed; fruit a capsule
    - 4 Leaves 3-12 cm or more wide .....PEDALIACEAE
    - 4 Leaves less than 2 cm wide
      - 5 Flowers reddish or pinkish without a spur (*Penstemon*), or bluish with a spur (*Nuttallanthus*).. PLANTAGINACEAE
      - 5 Flowers purplish or greenish, lacking a spur
        - 6 Corolla purple..... ACANTHACEAE
        - 6 Corolla greenish ..... VIOLACEAE
  - 1 Corolla actinomorphic (radially symmetrical)
    - 7 Stamens attached to the corolla (*Linanthus*)POLEMONIACEAE
    - 7 Stamens not attached to the corolla
      - 8 Leaves obviously succulent.....PORTULACACEAE
      - 8 Leaves not succulent
        - 9 Stipules united and sheathing the stem (*Eriogonum*).....  
.....POLYGONACEAE
        - 9 Stipules not so united
          - 10 Leaves compound with leaflets, or deeply divided or lobed
            - 11 Leaves with definite leaflets; petals 3-12 mm.....  
..... ZYGOPHYLLACEAE
            - 11 Leaves deeply divided into numerous narrow segments, but without definite leaflets; petals 15-30 mm (*Eschscholtzia*).....PAPAVERACEAE
          - 10 Leaves entire or toothed, but not lobed or divided
            - 12 Flowers borne w/in a cup-like or sepal-like involucre or whorl of bracts
              - 13 Stamens 6-9 in number; styles 3; involucre cup-like (*Eriogonum*) .....POLYGONACEAE
              - 13 Stamens 1-5 in number; style 1; involucre a sepal-like whorl of bracts.....  
..... NYCTAGINACEAE
            - 12 Flowers not so arranged

- 14 Flowers yellow; fruit a bilobed capsule, each lobe pea-shaped .....OLEACEAE
- 14 Flowers white; fruit not as above
  - 15 Plants annual; leaves nearly circular, 6-14 mm ..... CARYOPHYLLACEAE
  - 15 Plants perennial; leaves lanceolate to filiform, 40-60 mm..... APOCYNACEAE

**Key G (Dicotyledonous Plants: ovary superior; leaves alternate; petals separate)**

- 1 Flowers zygomorphic (bilaterally symmetrical)
  - 2 Flowers with a definite spur (*Delphinium*) RANUNCULACEAE
  - 2 Flowers without a spur
    - 3 Sepals united; fruit a legume .....FABACEAE
    - 3 Sepals separate; fruit not a legume
      - 4 Flowers golden-yellow ..... FUMARIACEAE
      - 4 Flowers white or reddish
        - 5 Leaves compound, with 3 leaflets... CAPPARIDACEAE
        - 5 Leaves simple, entire
          - 6 Flowers numerous in elongate spikes, small, greenish ..... RESEDACEAE
          - 6 Flowers solitary in the axils, larger, reddish or purplish ..... KRAMERIACEAE
  - 1 Flowers actinomorphic (radially symmetrical)
    - 7 Sepals deeply divided into linear lobes; petals white to cream-colored; stamens 9-10 in number (*Peganum*) ..... ZYGOPHYLLACEAE
    - 7 Sepals not deeply lobed; petals and stamens various
      - 8 Leaves markedly succulent .....PORTULACACEAE
      - 8 Leaves not succulent
        - 9 Leaves (5)15-30 cm, tongue-shaped, simple; stipules united and sheathing the stem (*Rumex*) ..... POLYGONACEAE
        - 9 Leaves and/or stipules not as above
          - 10 Sepals united, at least at the base
            - 11 Leaves compound; ovary of 1 carpel; fruit a legume ..... FABACEAE
            - 11 Leaves simple, but may be deeply lobed; ovary of 2 or more carpels; fruit not a legume
              - 12 Leaves deeply palmately lobed, the segments coarsely toothed (*Jatropha*) ..... EUPHORBIACEAE



- 12 Leaves not as above
  - 13 Hairs simple; fruit a bilobed capsule, each half pea-shaped and opening by a terminal cap .....OLEACEAE
  - 13 Hairs branched and star-shaped; fruit not as above
    - 14 Petals broad and pet-like only at the upper portion, thread-like at the base; fruit with 2-5 segments ..... STERCULIACEAE
    - 14 Petals broad and pet-like for most of its length; fruits with 5 or more segments..... MALVACEAE
- 10 Sepals separate
  - 15 Stamens 20 or more in number
    - 16 Leaves deeply divided into numerous narrow segments.....PAPAVERACEAE
    - 16 Leaves entire to lobed but never with numerous narrow segments ... MALVACEAE
  - 15 Stamens less than 20 in number
    - 17 Styles, locules, and carpels 3 ..... EUPHORBIACEAE
    - 17 Styles, locules, and carpels other than 3
      - 18 Stamens on long, red filaments, most of them abt twice as long as the pet; leaves compound with 3 leaflets; plants sticky .. CAPPARIDACEAE
      - 18 Combination of features otherwise
        - 19 Petals and sepals 4 BRASSICACEAE
        - 19 Petals and sepals 5
          - 20 Petals reddish-purplish ..... GERANIACEAE
          - 20 Petals yellowish..... LINACEAE

**Key H (Dicotyledonous Plants; ovary superior; leaves alternate; petals united)**

- 1 Flowers zygomorphic (bilaterally symmetrical)
  - 2 Leaves compound or deeply divided nearly to midrib
    - 3 Flowers with a rounded spur ..... FUMARIACEAE
    - 3 Flowers without a spur ..... FABACEAE
  - 2 Leaves simple, may be lobed but not deeply divided nearly to midrib
    - 4 Plants densely sticky-hairy ..... PEDALIACEAE

- 4 Plants ± glabrous, not sticky..... PLANTAGINACEAE
- 1 Flowers actinomorphic (radially symmetrical)
  - 5 Leaves compound, with definite leaflets .....FABACEAE
  - 5 Leaves simple, may be deeply lobed but lacking definite leaflets
  - 6 Leaves all basal, lanceolate, silky-hairy; corolla scarious;
    - flowers in dense terminal spikes; plants annual (*Plantago*) ...
    - ..... PLANTAGINACEAE
  - 6 Leaves mostly borne on the st; combination of features otherwise
    - 7 Styles 3-cleft; ovary 3-celled; fruit a 3-valved capsule.....
    - ..... POLEMONIACEAE
    - 7 Styles, ovary, or fruit otherwise
      - 8 Plants with star-shaped or branched hairs
        - 9 Petals broad only on the upper portion, the lower half thread-like; fruits with 2-3 segments.....
        - ..... STERCULIACEAE
        - 9 Petals broad and pet-like for most of their length; fruits with more than 4 segments .....MALVACEAE
      - 8 Plants glabrous to hairy but the hairs not star-shaped or branched
        - 10 Stamens 2-3; fruit a bilobed capsule, each half pea-shaped.....OLEACEAE
        - 10 Stamens 5; fruit otherwise
          - 11 Ovary 4-lobed, 4-celled; fruit of 4 nutlets.....
          - ..... BORAGINACEAE
          - 11 Ovary not 4-lobed, 1- to 2-celled; fruit otherwise
            - 12 Sepals united into a tube or cup, except at the tips, which appear as teeth or lobes; style 1 and entire ..... SOLANACEAE
            - 12 Sepals separate or united only at the base, the separate portion at least as long as the united portion; styles more than 1, or if single, then cleft or branched
              - 13 Plants trailing, twining, or nearly prostrate, often vine-like, rarely erect; petals plaited in the bud; flowers never in coiled, 1-sided spikes.....
              - ..... CONVOLVULACEAE

13 Plants erect or spreading, not twining  
and rarely trailing; petals not plaited in  
the bud; flowers often in coiled, 1-  
sided spikes like a scorpion-tail.....  
.....HYDROPHYLLACEAE

## ACANTHACEAE ACANTHUS FAMILY

Leaves opposite. Flowers bilateral. Stamens 2-4. Ovary superior, 2-celled.

### Carlowrightia

*Carlowrightia linearifolia* (Torrey) Gray HEATH WRIGHTWORT. Half-shrubs to 1.2 m tall. Leaves linear. Flowers purplish. Gravelly soil among rocks and boulders on slopes and washes. Aug-Sep. LTER-CALI, USDA-CALI2.

## AGAVACEAE AGAVE FAMILY

Plants shrubby, yucca-like. Leaves thick, dagger-like, in basal rosettes or whorled on the stems. Flowers showy, white to cream, 3-merous. Ovary inferior. Fruit a capsule or berry-like.

- 1 Leaves without spiny margins ..... **Yucca**
- 1 Leaves with spiny, hooked margins
  - 2 Leaves about 100 cm or more long, 2-4 cm wide.....  
..... see *Dasyllirion*, NOLINACEAE
  - 2 Leaves 45 cm or less long, 5-12 cm wide..... **Agave**

### Agave

*Agave parryi* Engelmann var. *neomexicana* (Wooton & Standley) B. Ullrich MESCAL, NEW MEXICO AGAVE. Plants without trunks except for the 3-4 m high flowering stem. Leaves broad and stiff, with spiny margins. Flowers yellow. Fruit a woody capsule splitting open when mature. Rocky bajadas and hillsides. May-Jul. [*Agave neomexicana* Wooton & Standley] LTER-AGPA, USDA-AGPA4.

### Yucca

- 1 Mature plants acaulescent, aerial stems absent or short to 1.5 m tall ..... **Y. baccata**
- 1 Mature plants tree-like with well-developed stems 1-5 m tall
  - 2 Leaf blades thin and flexible; inflorescence raised well above the leaves on an elongate stalk ..... **Y. elata**
  - 2 Leaf blades thick, stout and rigid; inflorescence at least partially nestled among the upper leaves ..... **Y. treculeana**

*Yucca baccata* (Engelm.) Trel. DATIL, BANANA YUCCA.

Plants mostly without trunks, clumped at ground level. Flowers white to cream-colored. Fruits fleshy and not splitting open when mature, falling from the panicle. Rocky slopes at higher elevations than the preceding. Our plants belong to var. *baccata*. LTER-YUBA, USDA-YUBA.

*Yucca elata* Engelm. PALMILLA, SOAP-TREE YUCCA. Plants with well-developed trunks except when young. Flowers white to cream-colored. Fruit dry and splitting open when mature, persisting on the panicle. Sandy hills and plains. May-Jul. LTER-YUEL, USDA-YUEL.

*Yucca treculeana* Carrière TORREY'S YUCCA. Plants with well-developed trunk. Flowers white to cream-colored. Fruit fleshy and not splitting open when mature. A single plant known from sandy ground in the northern region of the plains. Feb-Apr. [*Yucca torreyi* Shafer] LTER-YUTO, USDA-YUTO.

### ALLIACEAE ONION FAMILY

Bulbous herbs with garlic or onion scent. Leaves basal, simple, mostly terete or angular, with parallel veins. Inflorescence umbel-like on a long scape. Flowers actinomorphic (ours), 6-merous. Stamens 6. Ovary superior. Fruit a capsule.

#### Allium

*Allium macropetalum* Rydb. ARIZONA ONION. Perennial from bulbs, 5-25 cm tall, with distinct onion odor. Leaves mostly only 2, basal. Flowers white to pale pink. Fruit a capsule. Flats and rocky slopes. Mar-May. LTER-ALMA, USDA-ALMA4.

### AMARANTHACEAE AMARANTH FAMILY

Leaves simple. Flowers small, unisexual or perfect, in dense, bristly heads or spikes. Ovary superior.

- 1 Leaves opposite
  - 2 Plants 40-130 cm tall; stems sparsely branched..... **Froelichia**
  - 2 Plants 2-15 cm tall; stems repeatedly branched
    - 3 Plants 10-15 cm tall; stems and leaves with branched, mostly stellate (star-shaped) hairs ..... **Tidestromia**
    - 3 Plants 2-4 cm tall; stems and leaves woolly-hairy, the hairs not branched ..... **Guilleminea**
- 1 Leaves alternate
  - 3 Flower bracts enlarged and heart-shaped in fruit; sepals and petals mostly absent ..... **Acanthochiton**
  - 3 Flower bracts not enlarged nor heart-shaped; sepals present but petals absent ..... **Amaranthus**

#### Acanthochiton

*Acanthochiton wrightii* Torrey GREENSTRIPE. Annual 15-80 cm tall. Leaves linear to lance-shaped. Sandy hills. Jul-Oct. [*Amaranthus acanthochiton* Sauer]. LTER-ACWR, USDA-AMAC.

**Amaranthus**

1 Plants dioecious, either staminate or pistillate, only one sex present on a single plant ..... **A. palmeri**

1 Plants monoecious, both sexes present on a single plant

2 Sepals with a narrow stalk at the base, fringed on the edge; upper flower glomerules aggregated into a dense terminal spike ..... **A. fimbriatus**

2 Sepals without a stalk and not fringed; all flowers in axillary glomerules, none of them spike-like

3 Axes of glomerules thickened and indurate; flower bracts rounded, not spinose ..... **A. crassipes**

3 Axes of glomerules thin, not indurate; flower bracts pointed, spinose

4 Stems lying flat on the ground; plants mostly glabrous; sepals 4-5 in number ..... **A. blitoides**

4 Stems mostly erect or semi-erect; plants mostly sticky-hairy; sepals 3 in number ..... **A. albus**

*Amaranthus albus* L. var. *pubescens* (Uline & Bray) Fernald  
TUMBLEWEED AMARANTH. Annual 10-20 cm tall. Leaves circular to egg-shaped, tending to be dark green, very wavy, with a spiny tip. Sandy and alkaline plains. Jul-Sep. [*Amaranthus pubescens* (Uline & Bray) Rydb.]. LTER-AMPU, USDA-AMAL.

\**Amaranthus blitoides* S. Wats. PROSTRATE PIGWEED.  
Annual 3-6 cm tall. Leaves egg- to spatulate-shaped, light green. Roadsides and waste ground. Jul-Oct. [*Amaranthus graecizans* of various authors not L.] LTER-AMBL, USDA-AMBL.

*Amaranthus crassipes* Schlect. var. *warnockii* (I.M. Johnston) Henrickson BONY PIGWEED. Annual 20-60 cm tall, the stems erect to prostrate. Leaves spatula-shaped, rounded at the tip. Flower bracts not spinose. Fruit flattened, with rough projections on the upper third. Disturbed ground around playas, waste places. Jul-Oct. LTER-AMCR, USDA-AMCR.

*Amaranthus fimbriatus* (Torrey) Wats. FRINGED PIGWEED. Annual 30-60 cm tall. Leaves linear. Flower bracts spinose. Sepals fringed. Sandy plains and hills. Sep-Oct. LTER-AMFI, USDA-AMFI.

*Amaranthus palmeri* Wats. PALMER'S PIGWEED. Annual 30-100 cm tall, mostly dioecious. Leaves triangular to lance-shaped, light green. Flower bracts spinose. Moist, weedy ground. May-Oct. LTER-AMPA, USDA-AMPA.

**Froelichia**

1 Plants perennial; flowers mostly 4-5.5 mm long ..... **F. arizonica**

1 Plants annual; flowers 2.4-3.8 mm long.....**F. gracilis**  
***Froelichia arizonica*** Thornb. ARIZONA SNAKECOTTON.  
Perennial 40-120 cm tall. Leaves lance-shaped, opposite. Flowers in  
cottony clusters. Dry rocky hillsides. Sep-Oct. LTER-FRAR,  
USDA-FRAR2.

***Froelichia gracilis*** (Hooker) Moquin-Tandon SLENDER  
COTTONWEED. Annual or short-lived perennial. Leaves ±  
lanceolate, opposite. Flowers in cottony clusters. Sandy soil, mostly  
in disturbed areas. May-Nov. LTER-FLGR, USDA-FLGR3. Our  
plants have been misidentified as *Froelichia floridana* in previous  
editions.

### **Guilleminea**

***Guilleminea densa*** (Willd.) Moq. var. ***aggregata*** Uline & Bray  
SMALL MATWEED. Prostrate mat-forming perennial, 2-4 cm tall.  
Leaves opposite, egg-shaped, woolly-hairy beneath, unequal in size.  
Flowers in dense clusters in the axils. Disturbed clay flats. Apr-Oct.  
LTER-GUDE, USDA-GUDE.

### **Tidestromia**

***Tidestromia lanuginosa*** (Nutt.) Standl. ESPANTA VAQUERO,  
WOOLY HONEYSWEET. Low wooly annual, 8-20 cm tall. Leaves  
whitish, egg-shaped. Flowers inconspicuous. Sandy disturbed  
ground. Mar-Oct. LTER-TILA, USDA-TILA2.

## **AMARYLLIDACEAE AMARYLLIS FAMILY**

Bulbous herbs. Leaves basal, simple, flat, entire, with parallel  
veins. Flowers actinomorphic (ours), 6-merous. Stamens 6.  
Ovary inferior. Fruit a capsule.

### **Zephyranthes**

***Zephyranthes longifolia*** Hemsl. ZEPHYR-LILY. Perennial 10-20  
cm from deep bulbs. Flowers yellow, single. Blooms 1-4 days after  
early summer rains. Sandy slopes and plains. Jun-Jul. Earlier reports  
of *Zephyranthes chlorosolen* were in error; that species is not yet  
known from New Mexico. LTER-ZELO, USDA-ZELO.

## **ANACARDIACEAE CASHEW FAMILY**

Plants woody. Leaves alternate, mostly compound. Flowers 5-  
merous. Styles 3. Ovary superior. Fruit berry-like.

### **Rhus**

1 Leaves with pinnately arranged leaflets ..... **R. microphylla**  
1 Leaves with palmately arranged leaflets..... **R. trilobata**

*Rhus microphylla* Engelm. LITTLELEAF SUMAC. Shrub, 1-3 m. Flowers yellowish. Sandy or gravelly washes, clay flats. Apr-May. LTER-RHMI, USDA-RHM3.

*Rhus trilobata* Nutt. SKUNKBUSH SUMAC. Shrub, 1-3 m. Flowers yellow. Thickets along streams, rocky canyons, arroyos. Apr-May. [*Rhus aromatica* Ait. var. *trilobata* (Nutt.) Gray]. LTER-RHTR, USDA-RHTR.

### APIACEAE (UMBELLIFERAE) CARROT FAMILY

Annual or perennial herbs. Leaves mostly compound and sheathing the stem. Inflorescence an umbel. Flowers small, 5-merous. Styles 2. Ovary inferior. Fruit splitting into 2 segments.

- 1 Bristles of ovary and fruit barbed ..... **Daucus**  
1 Bristles of ovary and fruit hooked ..... **Yabea**

#### Daucus

*Daucus pusillus* Michx. SOUTHWESTERN WILD CARROT. Plants biennial. Stems hispidulous, 15-60 cm tall. Leaves highly dissected. Fruit w/longitudinal ribs that bear bristles barbed at the tip. Sandy plains, waste ground. Apr-May. LTER-DAPS, USDA-DAPU3.

#### Yabea

*Yabea microcarpa* (Hook. & Arn.) Koso-Polj. FALSE CARROT. Plants annual. Stems hispidulous, to 40 cm tall. Leaves highly dissected. Fruit with longitudinal ribs that bear hooked bristles. Canyons, bajadas, sandy plains. Apr-Jun. [*Caucalis microcarpa* Hook. & Arn.] LTER-YAMI, USDA-YAMI.

### APOCYNACEAE DOGBANE FAMILY

Perennial herbs mostly with milky juice. Leaves simple, entire, alternate or opposite. Flowers 5-merous, regular. Petals united. Ovaries 2, superior, the stigmas united. Fruit a pair of follicles. Seeds mostly with a tuft of hair.

- 1 Flowers pale bluish; plants herbaceous; seeds glabrous .... **Amsonia**  
1 Flowers bright yellow; plants woody; seeds with a tuft of hair at one end..... **Haplophyton**

#### Amsonia

*Amsonia tomentosa* Torr. & Frem. var. *stenophylla* Kearney & Peebles WOOLY BLUESTAR. Plants with stolons, 20-50 cm tall, wooly with crinkly hairs. Leaves sessile, opposite, sometimes nearly whorled. Sandy plains and hills. Apr-May. [*Amsonia arenaria* Standl.] LTER-AMAR, USDA-AMTO2.



## Haplophyton

*Haplophyton crooksii* (L. Benson) L. Benson COCKROACH PLANT. Low shrub to 70 cm tall. Stems and branches green. Leaves occasionally opposite, lance-shaped. Flowers yellow, trumpet-shaped. Rocky slopes of Summerford Mountain. Sep-Oct. [*Haplophyton cimicidum* DC. var. *crooksii* L. Benson]. LTER-HACR, USDA-HACR3.

## ASCLEPIADACEAE MILKWEED FAMILY

Plants with milky juice. Leaves simple, mostly opposite. Flowers in umbel-like clusters, with specialized structures, 5-merous. Ovaries 2, superior. Fruit a pair of follicles. Seeds with tuft of hair.

- 1 Stems erect, not twining ..... **Asclepias**
- 1 Stems twining, vine-like ..... **Sarcostemma**

## Asclepias

- 1 Flower clusters whitish or yellowish
  - 2 Leaves 1-4 mm wide ..... **A. subverticillata**
  - 2 Leaves 15-60 mm wide ..... **A. nyctaginifolia**
- 1 Flower clusters purplish to violet
  - 3 Petals cup-shaped, curving upward; flower clusters at the tips of the stems ..... **A. asperula**
  - 3 Petals bent downward; flower clusters borne in the leaf axils ..... **A. brachystephana**

*Asclepias asperula* (Dcne.) Woods. SPIDER MILKWEED. Perennial 10-60 cm tall. Leaves opposite or alternate. Flowers reddish. Long purple hoods spreading out and upward, contrasting with greenish petals. Sandy hillsides, plains, and flats. Mar-Aug. LTER-ASAS, USDA-ASAS.

*Asclepias brachystephana* Torrey SHORTCROWN MILKWEED. Perennial 10-40 cm tall, with short shaggy hairs. Leaves opposite. Flowers dark reddish. Hoods sac-like. Sandy and rocky plains and flats. May-Sep. LTER-ASBR, USDA-ASBR.

*Asclepias nyctaginifolia* Gray MOJAVE MILKWEED. Perennial 10-20 cm tall. Leaves opposite. Flowers whitish or cream. Petals bent downwards, 12-14 mm long. Hoods stalked, 7-10 mm long. Sandy to gravelly arroyos, roadsides, disturbed ground. Jun-Sep. Our material may belong to *Asclepias oenotheroides* Chamisso & Schlectendal, which is distinguishable from *A. nyctaginifolia* with difficulty. LTER-ASNY, USDA-ASNY.

*Asclepias subverticillata* (Gray) Vail HORSETAIL MILKWEED. Perennial 20-100 cm tall. Leaves whorled. Flowers

whitish. Pests bent downward. Hoods stalked and elevated above the cor. Sandy and rocky plains and flats. May-Sep. LTER-ASSU, USDA-ASSU2.

### **Sarcostemma**

*Sarcostemma cynanchoides* Dcne. CLIMBING MILKWEED.

Stems twining around other vegetation or fences, to 1.5 m long.

Sandy plains and hills. Apr-Aug. We have two subspecies:

a Flowers greenish white; leaves arrowhead-shaped...subsp.

*cynanchoides* [*Funastrum cynanchoides* (Decne.) Schltr. ssp. *cynanchoides*]. LTER-SACY, USDA-FUCYC.

a Flowers purplish or pinkish; leaves linear to narrowly lance-shaped...subsp.

*hartwegii* (Vail) R. Holm. [*Funastrum cynanchoides* (Decne.) Schltr. ssp. *heterophyllum* (Engelm. ex Torr.) Kartesz]. LTER-SAHA, USDA-FUCYH.

### **ASPARAGACEAE ASPARAGUS FAMILY**

Rhizomatous herbs (ours), the stems sometimes forming leaf-like

branches. Leaves alternate, simple, entire, usually scale-like.

Flowers bisexual (ours), actinomorphic, 6-merous. Stamens 6.

Ovary superior. Fruit a berry.

### **Asparagus**

*Asparagus officinalis* L. ASPARAGUS. Perennial to 3 m. Stems thin and much-branched. Leaves scale- or needle-like. Flowers greenish yellow, small. Fruit a reddish berry. Sandy, moist floodplains. May-Jul. LTER-ASOF, USDA-ASOF.

### **ASTERACEAE (COMPOSITAE) SUNFLOWER FAMILY**

Leaves alternate, opposite, or whorled. Inflorescence a head or

cluster of flowers. Flowers strap-shaped (ray) or tubular (disk).

Sepals modified into pappus of awns, bristles, scales, or absent.

Ovary inferior. Fruit an achene.

1 Corolla all ray-like; plants mostly with milky juice.....Key I

1 Corolla not all ray-like, some or all of them tubular; juice seldom milky

2 Corolla all tubular, no ray flowers present, or the rays vestigial and minute..... Key II

2 Corolla not all tubular, ray flowers present

3 Pappus of capillary bristles, at least in part ..... Key III

3 Pappus of awns or scales, or absent.....Key IV

#### **Key I (Corolla all ray-like; juice mostly milky)**

1 Flowers reddish, pinkish, to white

- 2 Upper stems and heads with tack-like, stalked glands ..... **Calycoseris**
- 2 Upper stems and heads without glands
  - 3 Flowers 2-lipped, 1 lip ray-like and 3-toothed, 1 lip deeply cleft into 2 teeth ..... **Acourtia**
  - 3 Flowers not 2-lipped, but all petals of each flower united into a single ray
    - 4 Receptacle with chaffy scales ..... **Pinaropappus**
    - 4 Receptacle without scales
      - 5 Fruit with a beak at the tip; involucre 15-25 mm high ...  
..... **Rafinesquia**
      - 5 Fruit without a beak; involucre 5-10 mm high .....  
..... **Stephanomeria**
- 1 Flowers yellow
  - 6 Leaves prickly..... **Sonchus**
  - 6 Leaves not prickly
    - 7 Plants shrubby..... **Trixis**
    - 7 Plants herbaceous
      - 8 Some well-developed leaves on the st
        - 9 Flower heads 1-2 cm; leaves with linear lobes; pappus of bristles, but not plumose ..... **Pyrhopappus**
        - 9 Flower heads 3-4 cm; leaves entire; pappus of plumose bristles..... **Tragopogon**
      - 8 Nearly all well-developed leaves basal, the stem leaves much reduced and bract-like
        - 10 Leaves dandelion-like, with wide triangular lobes; pappus of slender bristles..... **Malacothrix**
        - 10 Leaves nearly linear with narrow linear lobes; pappus of 5 linear scales ..... **Uropappus**

### Key II (Corolla all tubular)

- 1 Leaves spiny..... **Cirsium**
- 1 Leaves not spiny
  - 2 Bracts of the flower heads fringed with straw-colored lobes .....  
..... **Centaurea**
  - 2 Bracts of the flower heads not fringed
    - 3 Fruiting heads bur-like, with spines or hooks
      - 4 Burs with hooks; leaves with shallow teeth or lobes .....  
..... **Xanthium**
      - 4 Burs with stiff spines; leaves deeply lobed or cleft .....  
..... **Ambrosia**
    - 3 Fruiting heads not bur-like, spines or hooks absent (though the achenes may have hooks)

- 5 Flowers reddish, purplish, or pinkish
  - 6 Plants shrubby perennial; leaves silky hairy .....**Pluchea**
  - 6 Plants herbaceous annual; leaves glabrous
    - 7 Leaves lance-shaped, 3-20 mm wide..... **Palafoxia**
    - 7 Leaves thread-like, 1-2 mm wide ..... **Thelesperma**
- 5 Flowers yellowish, whitish, or non-descript in color
  - 8 Flower heads with translucent, yellow or orange dots (glands) ..... **Porophyllum**
  - 8 Flower heads without such dots
    - 9 Plants shrubby, or at least woody below
      - 10 Leaves silky-wooly, less than 1 mm wide ..... **Artemisia**
      - 10 Leaves glabrous to variously hairy but not silky-wooly, more than 1 mm wide
        - 11 Leaves entire
          - 12 Leaves 6-12 mm wide, egg-shaped, resinous; pappus of 2 awns . **Flourensia**
          - 12 Leaves mostly 1-3 mm wide (rarely wider), not resinous; pappus of bristles
            - 13 Phyllaries with longitudinal lines; pappus bristles plumose.. **Brickellia**
            - 13 Phyllaries without longitudinal lines; pappus bristles not plumose.. **Ericameria**
        - 11 Leaves toothed to lobed
          - 14 Phyllaries with longitudinal lines; heads bisexual ..... **Brickellia**
          - 14 Phyllaries without longitudinal lines; heads unisexual ..... **Baccharis**
    - 9 Plants herbaceous
      - 15 Pappus of slender bristles
        - 16 Leaves opposite, at least below, and borne on the stem..... **Brickellia**
        - 16 Leaves all alternate or basal
          - 17 Plants wooly; phyllaries translucent..... **Pseudognaphalium**
          - 17 Plants glabrous to hairy, but not wooly; phyllaries herbaceous, at least in the center
            - 18 Plants perennial; heads 8-12 mm high ..... **Brickellia**
            - 18 Plants annual; heads 3-5 mm high

- 19 Leaves clasping the st; mature plants 20-80 cm tall ..... **Laennecia**
- 19 Leaves not at all clasping the st; mature plants mostly 1-2 m tall ..... **Conyza**
- 15 Pappus of scales or awns or absent
  - 20 Heads gummy-sticky ..... **Grindelia**
  - 20 Heads not sticky
    - 21 Heads more than 7 mm high
      - 22 Pappus of 4 scales, each abt 4 mm; stems glandular below the heads .... **Chaenactis**
      - 22 Pappus of 18-20 scales, each less than 2 mm; stems not glandular below the heads .... **Hymenopappus**
    - 21 Heads less than 6 mm high
      - 23 Receptacle not chaffy; pappus a low crown ..... **Artemisia**
      - 23 Receptacle chaffy, with scales borne at the base of the fruit
        - 24 Leaves at midstem opposite
          - 25 Leaves divided into narrow segments; achenes tipped by two hooked awns ..... **Bidens**
          - 25 Leaves simple, broadly ovate; achenes without hooks or awns ..... **Cyclachaena**
  - 24 Leaves alternate
    - 26 Plants perennial; leaves wooly-hairy ..... **Leuciva**
    - 26 Plants annual; leaves hairy but not wooly .... **Hedosyne**

**Key III (Ray flowers present; pappus of capillary bristles)**

- 1 Rays white, pink, or purplish, never yellow
  - 2 Phyllaries in a single series or whorl
    - 3 Ray petals more than 3 mm long, evident ..... **Erigeron**
    - 3 Ray petals at most 1 mm long, mostly absent
      - 4 Leaves clasping the stem; mature plants 20-80 cm tall ..... **Laennecia**

- 4 Leaves not at all clasping the stem; mature plants mostly 1-2 m tall ..... **Conyza**
- 2 Phyllaries in 2 or more overlapping series or whorls
  - 5 Plants armed with thorns ..... **Chloracantha**
  - 5 Plants unarmed
    - 6 Phyllaries reflexed at the tips; rays bluish or whitish
      - 7 Leaves entire or with a few teeth, not bristle-tipped ..... **Dietaria**
      - 7 Leaves bipinnately parted, bristle-tipped ..... **Machaeranthera**
    - 6 Phyllaries straight or curving but not reflexed; rays white
      - 8 Plants perennial with cord-like rhizomes. **Chaetopappa**
      - 8 Plants annual
        - 9 Tall plants to 1 m or more, with numerous small heads at the ends of panicle branches ..... **Symphyotrichum**
        - 9 Small plants to 25 cm, with 1-2 large heads at ground level ..... **Townsendia**
- 1 Rays yellow
  - 10 Leaves with bristle-tipped teeth and lobes ..... **Xanthisma**
  - 10 Leaves without bristle-tipped teeth and lobes
    - 11 Leaves dissected into thread-like or linear segments ..... **Senecio**
    - 11 Leaves entire
      - 12 Leaves densely hairy ..... **Heterotheca**
      - 12 Leaves glabrous or nearly so
        - 13 Leaves resinous-aromatic, 1-2 cm ..... **Ericameria**
        - 13 Leaves not resinous-aromatic, 2-7 cm ..... **Isocoma**

**Key IV (Ray flowers present; pappus of awns, scales, or absent)**

- 1 Rays whitish or cream-colored, not yellow nor red
  - 2 Leaves opposite
    - 3 Leaves mostly less than 1.5 cm, glandular-dotted; stems whitish ..... **Zinnia**
    - 3 Leaves more than 1.5 cm, not glandular; stems reddish ..... **Melampodium**
  - 2 Leaves alternate
    - 4 Plants woody, at least the lower parts ..... **Parthenium**
    - 4 Plants herbaceous
      - 5 Leaves entire or shallowly lobed ..... **Aphanostephus**
      - 5 Leaves dissected with deep lobes
        - 6 Rays persisting and drying on the fruit; leaves densely hairy ..... **Parthenium**

- 6 Rays withering and falling from the plant; leaves glabrous or nearly so ..... **Hymenothrix**
- 1 Rays yellow or red
  - 7 Leaves opposite, at least below
    - 8 Plants with rhizomes, forming thick stands ..... **Helianthus**
    - 8 Plants tap-rooted, without rhizomes
      - 9 Phyllaries and leaves with glandular dots
        - 10 Leaves with spiny white bristles about 1 mm long at the base of the leaf stalk; phyllaries separate (coherent in *P. cylindrica* and *P. prostrata*) ..... **Pectis**
        - 10 Leaves without spiny white bristles at the base; phyllaries united or separate
          - 11 Plants woody-based subshrubs; leaves entire, simple (*T. acerosa*) ..... **Thymophylla**
          - 11 Plants ± herbaceous, sometimes slightly woody at the base; leaves dissected into narrow segments
            - 12 Flower heads on elongate stalks elevated well above the leaves; leaves palmately parted or appearing so (*T. pentachaeta*) . **Thymophylla**
            - 12 Flower heads sessile or on short stalks and sitting among the leaves; leaves pinnately parted ..... **Dyssodia**
      - 9 Phyllaries and leaves without glandular dots
        - 13 Leaves dissected or divided into segments
          - 14 Plants perennial (*B. absinthifolia*) ..... **Bahia**
          - 14 Plants annual
            - 15 Leaves mostly opposite; achenes with hooked awns ..... **Bidens**
            - 15 Leaves mostly alternate; achenes without awns ..... **Bahia**
        - 13 Leaves entire to toothed, but not divided into segments
          - 16 Leaves linear to thread-like
            - 17 Plants low shrublets; leaves 3-nerved for at least 1/2 their length ..... **Zinnia**
            - 17 Plants herbaceous, fleshy; leaves 1-nerved
              - 18 Leaves opposite through-out; rays 5-9, persistent ..... **Sartwellia**
              - 18 Leaves opposite below, alternate above; rays about 12, falling at maturity ..... **Helimeris**
  - 16 Leaves egg-shaped to lance-shaped
    - 19 Receptacle without chaffy bracts attached at the base of the fruits (*B. absinthifolia*) .....

- ..... **Bahia**
- 19 Receptacle with chaffy bracts attached at the base of the fruits
- 20 Rays persistent on the fruit; fruit warty.....
- ..... **Sanvitalia**
- 20 Rays deciduous; fruit not warty
- 21 Mature fruit with 2 evident wings; plants annual..... **Verbesina**
- 21 Mature fruit without wings; plants annual or perennial ..... **Viquiera**
- 7 Leaves alternate
- 22 Plants wooly-hairy
- 23 Rays more than 24 in number ..... **Baileya**
- 23 Rays 3-5 in number..... **Psilostrophe**
- 22 Plants glabrous to variously hairy but not wooly
- 24 Receptacle markedly columnar or globular..... **Ratibida**
- 24 Receptacle flat, convex, or only slightly conical
- 25 Heads 1 cm or more wide
- 26 Leaves lance-shaped to triangular or egg-shaped, entire to toothed ..... **Helianthus**
- 26 Leaves pinnately lobed to dissected, at least below
- 27 Receptacle with bristle-like scales between the fruits, giving mature heads a soft-bristly appearance..... **Gaillardia**
- 27 Receptacle without bristle-like scales ..... **Berlandiera**
- 25 Heads less than 1 cm wide
- 28 Plants shrubby ..... **Gutierrezia**
- 28 Plants herbaceous
- 29 Flowers red..... **Palafoxia**
- 29 Flowers yellow
- 30 Leaves divided into thread-like segments ca 1 mm wide.. **Hymenoxys**
- 30 Leaves not divided into segments, but lance-shaped or linear, 2-3 mm wide .. **Gutierrezia**

**Acourtia**

- 1 Leaves with stiff, spiny teeth, nearly circular ..... **A. nana**
- 1 Leaves entire to toothed but not spiny, lance-shaped ..... **A. wrightii**
- Acourtia nana** (Gray) Reveal & King DESERT HOLLY. Rhiz perennial, 3-20 cm tall, with wooly underground buds and large



tubers. Heads solitary at the stem tips. Flowers 2-lipped, lavender-pink. Sandy, gravelly, or clayey plains, slopes, and washes. Apr-Dec. [*Perezia nana* Gray]. LTER-PENA, USDA-ACNA2.

*Acourtia wrightii* (Gray) Reveal & King FLUFF-ROOT. Tufted perennial 60-130 cm tall, with wooly underground buds. Heads several at the branch tips. Flowers 2-lipped, pinkish. Rocky slopes and canyons. Jun-Nov. [*Perezia wrightii* Gray]. LTER-PEWR, USDA-ACWR5.

### Ambrosia

1 Lower stems and leaves with pustule-based, stiff, multicellular hairs; burs with spines in more than one series, the spines 2-5 mm long; staminate involucre wide open, becoming rotate, evidently lobed, with 1 or more thickened ridges on the back .....

..... **A. acanthicarpa**

1 Lower stems and leaves lacking pustule-based hairs as above; burs with spines in a single series, the spines to 1 mm long; staminate involucre cup-shaped, only shallowly or scarcely lobed, without thickened darkened ridges .....

..... **A. artemisiifolia**

*Ambrosia acanthicarpa* Hook. BUR RAGWEED. Annual, 10-85 cm tall, mostly branching from the base. Leaves mostly alternate. Sandy plains. Aug-Oct. [*Franseria acanthicarpa* (Hook.) Cov.]. This species and the next may hybridize, producing intermediate plants. LTER-AMAC, USDA-AMAC2.

*Ambrosia artemisiifolia* L. var. *elatior* (L.) Descourtils ANNUAL RAGWEED. Annual, 30-100 cm tall, branching from above the middle. Leaves alternate or the lower opposite. Plains and hills. Aug-Oct. LTER-AMAR, USDA-AMAR2

### Aphanostephus

*Aphanostephus ramosissimus* DC. var. *humilis* (Benth.) Turner & Birdsong LOW FAINTCROWN. Annual, 5-45 cm tall. Ray flowers white to purplish. Pappus a very low crown about 0.2 mm long. Sandy hills and plains. Mar-Aug. LTER-APRA, USDA-APRA.

### Artemisia

1 Plants shrubby, woody .....

..... **A. filifolia**

1 Plants herbaceous, though may be twiggy

2 Leaves highly dissected into linear segments.....**A. campestris**

2 Leaves entire to shallowly lobed, the segments not linear

3 Leaves green above and beneath .....

.....**A. dracunculoides**

3 Leaves white-hairy, at least beneath .....

..... **A. ludoviciana**

*Artemisia campestris* L. subsp. *caudata* H. & C. FIELD WORMWOOD. Perennial 20-70 cm tall, silky-wooly or glabrous. Dunes and sandy sites. Aug-Oct. LTER-ARCA, USDA-ARCA12.

*Artemisia dracunculus* L. TARRAGON. Perennial with rhizomes, 45-130 cm tall. Leaves mostly entire, glabrous. Sandy, mostly moist ground. Jul-Oct. [*Artemisia dracunculoides* Pursh, *Artemisia glauca* Pallas ex Willdenow]. LTER-ARGA, USDA-ARDR4.

*Artemisia filifolia* Torrey SAND SAGE. Shrub to 2 m. Leaves thread-like. Deep sand. Apr-May, Sep-Oct. Reportedly toxic to horses. LTER-ARFI, USDA-ARFI2.

*Artemisia ludoviciana* Nutt. subsp. *albula* (Woot.) Keck NEW MEXICO WORMWOOD. Perennial with rhizomes, 20-100 cm tall. Leaves mostly white-hairy on both sides, with shallow lobing. Rocky slopes and hills. Aug-Oct. LTER-ARLU, USDA-ARLU.

### Baccharis

1 Leaves mostly 1 cm long ..... **B. pteronioides**

1 Leaves mostly 2-12 cm long

2 Leaves willow-like, 6-12 times longer than wide; toothed shallow, less than 1 mm deep; involucre small, less than 5 mm; heads in rounded clusters terminating the stems.... **B. salicifolia**

2 Leaves only somewhat willow-like, 5-6 times longer than wide; toothed lobe-like, more than 1 mm deep; involucre larger, more than 5 mm; heads in elongate panicles, terminal or axillary..... **B. salicina**

*Baccharis salicina* Torrey & Gray SEEP-WILLOW. Shrubs, 1-3 m. Leaves 1-2 cm wide, entire to coarsely toothed or lobed. Along watercourses and where water accumulates. Jul-Oct. LTER-BASA, USDA-BASA.

*Baccharis salicifolia* (Ruiz & Pavon) Persoon WILLOW BACCHARIS. Shrubs, 1-3 m. Leaves 0.8-1.5 cm wide, entire to toothed. Along watercourses and where water accumulates. Jul-Oct. [*Baccharis glutinosa* Persoon, *B. viminea* DC.] LTER-BAGL, USDA-BASA4.

*Baccharis pteronioides* DC. YERBA DE PASMO. Shrubs, 0.5-1.5 m. Leaves 5-10 mm wide, toothed. Washes and flats. Apr-Jun. Toxic to cattle and sheep. LTER-BAPT, USDA-BAPT.

### Bahia

1 Leaves opposite, at least on the lower 1/2, only those on the upper branches alternate; plants perennial ..... **B. absinthifolia**

- 1 Leaves mostly alternate thru-out, opposite only near the base;  
plants annual  
2 Pappus scales with a bristle-tip; leaf lobes 1-3 mm wide.....  
..... **B. biternata**  
2 Pappus scales without a bristle-tip; leaf lobes 2-5 mm wide .....  
..... **B. pedata**

***Bahia absinthifolia*** Benth. var. *dealbata* Gray HAIRY-SEED BAHIA. Perennial with sub-rhiz, 10-40 cm tall. Leaves entire to deeply divided, gray-hairy. Ray flowers yellow. Slopes and plains in loose soil. Apr-Oct. LTER-BAAB, USDA-BAAB.

***Bahia biternata*** Gray SLIM-LOBE BAHIA. Annual, 40-70 cm tall. Leaves divided into linear to oblong segments. Ray flowers yellow. Sandy or gravelly hills and plains. May-Oct. LTER-BABI, USDA-BABI3.

***Bahia pedata*** Gray BLUNT-SCALE BAHIA. Annual, 30-100 cm tall. Leaves divided into oblong to obovate segments. Ray flowers yellow. Rocky hills and slopes. Jun-Oct. LTER-BAPE, USDA-BAPE.

### **Baileya**

***Baileya multiradiata*** Harv. & Gray ex Gray DESERT MARIGOLD. Annual, biennial, or short-lived perennial 8-50 cm tall. Plants densely wooly. Ray flowers yellow. Sandy and rocky slopes. Mar-Nov. Toxic to sheep and goats. Earlier editions erroneously included var. *pleniradiata*, which does not occur in New Mexico. LTER-BAMU, USDA-BAMU.

### **Berlandiera**

***Berlandiera lyrata*** Benth. CHOCOLATE FLOWER, LYRE-LEAF GREEN-EYES. Perennial 10-80 cm tall. Leaves ± basal, irregularly lobed. Heads on long stalks. Rays yellow, with red veins beneath. Rocky limestone soils. Apr-Oct. LTER-BELY, USDA-BELY.

### **Bidens**

***Bidens heterosperma*** A. Gray ROCKY MOUNTAIN BEGGARTICKS. Annuals to 60 or more cm tall. Leaves opposite, divided into narrow segments mostly less than 1.5 mm wide. Ray flowers 0-2, yellow; disk flowers 5-10. Achenes with a conspicuous pair of hooks awns (sometimes absent). Sep-Oct. LTER-BIHE, USDA-BIHE.

**Brickellia**

1 Leaves linear to lance-shaped, entire ..... **B. eupatorioides**

1 Leaves oblong to deltoid, toothed or lobed

2 Leaves 4-12 cm ..... **B. floribunda**

2 Leaves 1-5 cm

3 Leaf stalk 1/3 to 1/2 the length of the blade; leaves egg-shaped; twigs tan ..... **B. californica**

3 Leaf stalk less than 1/5 the length of the blade; leaves oblong; twigs whitish ..... **B. laciniata**

**Brickellia californica** (T. & G.) Gray CALIFORNIA

BRICKELLBUSH. Shrubs or subshrubs mostly less than 80 cm tall. Flowers yellowish, the heads may be tinged with red. Rocky slopes. Jul-Oct. LTER-BRCA, USDA-BRCA3.

**Brickellia eupatorioides** (L.) Shinnery var. **chlorolepis** (Woot. & Standl.) B. Turner PRAIRIE BONESET. Perennial half-shrub, 32-100 cm tall, mostly bushy-branched. Leaves mostly entire, linear to lance-shaped, 2-7 cm long. Rays absent. Disk flowers yellowish. Shallow soils of plains and uplands. Aug-Oct. [*Brickellia rosmarinifolia* (Ventenat) Weber subsp. *chlorolepis* (Woot. & Standl.) Weber, *Kuhnia chlorolepis* Woot. & Standl.] LTER-KUCH, USDA-BREU.

**Brickellia floribunda** Gray CHIHUAHUAN BRICKELBUSH.

Half-shrubs to about 1.2 m. Stems glandular. Leaves triangular. Flowers yellowish to greenish white. Rocky canyons and washes. Sep-Oct. LTER-BRFL, USDA-BRFL.

**Brickellia laciniata** Gray CUTLEAF BRICKELLBUSH. Shrubs,

1-2 m. Flowers yellowish to greenish. Gravelly washes and slopes. Aug-Nov. LTER-BRLA, USDA-BRLA.

**Calycoseris**

**Calycoseris wrightii** Gray WRIGHT'S TACKSTEM. Annual, 5-30 cm tall. Stems with stalked glands. Leaves dissected with linear lobes. Flower heads white, the rays toothed. Sandy and gravelly plains. Mar-May. LTER-CAWR, USDA-CAWR.

**Centaurea**

**Centaurea americana** Nutt. AMERICAN BASKETFLOWER.

Annual, 30-100 or more cm tall. Leaves lance-shaped, entire. Flower heads broadly bowl-shaped, 2-6 cm wide, the phyllaries fringed with straw-colored lobes. Outer flowers purple to pink. Open fields and plains, slightly disturbed sites. Aug-Oct. LTER-CEAM, USDA-CEAM2.

### **Chaenactis**

*Chaenactis stevioides* H. & A. DESERT PINCUSHION. Annual, 5-25 cm tall. Leaves gray-hairy and divided into numerous thick segments. Flowers whitish, no rays. Sandy plains and flats. Feb-Mar. LTER-CHST, USDA-CHST.

### **Chaetopappa**

*Chaetopappa ericoides* (Torrey) Nesom SAND ASTER. Perennial with rhizomes, mostly 10-15 cm tall. Leaves lance-shaped, 3-14 mm, grayish with silky hairs. Rays white. Dry, often sandy plains. Apr-Oct. [*Leucelene ericoides* (Torrey) Greene]. LTER-LEER, USDA-CHER2.

### **Chloracantha**

*Chloracantha spinosa* (Benth.) Nesom MEXICAN DEVILWEED. Stiff bush-like perennial with rhizomes, mostly 0.6-1.6 m. Stems with stout thorns. Leaves few and small. Ray flowers white. Ditchbanks and floodplains. Jul-Oct. [*Aster spinosus* Benth.]. LTER-ASSP, USDA-CHSP11.

### **Chrysactinia**

*Chrysactinia mexicana* Gray DAMIANITA. Low shrub, 20-35 cm tall. First pair of leaves of a branchlet opposite, the rest alternate, linear, about 1 cm. Heads solitary on stalks 3-8 cm. Rays yellow, 3-toothed. Limestone hills. Apr-Sep. LTER-CHME, USDA-CHME3.

### **Cirsium**

*Cirsium ochrocentrum* Gray YELLOWSPINE THISTLE. Biennial, 30-110 cm tall. Leaves woolly below, dissected with broad, spiny lobes. Flowers purplish, pinkish, rarely whitish. Low, moist ground. Jun-Sep. LTER-CIOC, USDA-CIOC2.

### **Conyza**

*Conyza canadensis* (L.) Cronq. HORSEWEED. Annual. Flowers white, the rays very small. Moist disturbed ground. Aug-Nov. Toxic to livestock. For *Conyza couleri*, see *Laennecia*. LTER-COCA, USDA-COCA5.

### **Cyclachaena**

*Cyclachaena xanthiifolia* (Nutt.) Fresenius CARELESS-WEED, BUR-LEAF SUMPWEED. Robust annual, 0.4-2 m. Leaves 3-nerved, heart-shaped. Flowers inconspicuous. Sandy washes. Aug-Nov. [*Iva xanthiifolia* Nutt.] LTER-CYXA, USDA-CYXA.

**Dietaria**

*Dietaria canescens* (Pursh) Nuttall SMOOTH SAND-DAISY. Annual, 30-110 cm tall. Leaves linear to lance-shaped, ± glabrous. Rays mostly whitish, or bluish. Sandy, moist ground. Aug-Oct. [*Machaeranthera canescens* (Pursh) Gray var. *glabra* Gray, *Machaeranthera linearis* Greene]. LTER-MALI, USDA-DICA18.

**Dyssodia**

*Dyssodia papposa* (Vent.) Hitchc. PRAIRIE DOGWEED, FETID MARIGOLD. Annual, 10-60 cm tall. Leaves and heads with glandular dots. Leaves mostly opposite, once or twice pinnately parted. Rays yellow, 1.5-2.5 mm long. Pappus of numerous scales or bristles. Slopes and hills in loose soil. Aug-Oct. Similar to *Pectis papposa* Harv. & Gray, which has simple leaves. See *Thymophylla* for other species formerly included in *Dyssodia*. LTER-DYPA, USDA-DYPA.

**Ericameria**

1 Leaves linear; ray flowers absent, corolla all tubular.. **E. pulchellus**

1 Leaves broadened, lanceolate to oblong; ray flowers present, both ray and disk flowers present..... **E. laricifolia**

*Ericameria laricifolia* (Gray) Shinnery TURPENTINE BUSH. Shrub mostly 40-100 cm tall. Leaves resinous-aromatic, 1-2 cm. Flowers yellow. Rocky slopes and canyons. Oct-Nov. [*Haplopappus laricifolius* Gray]. LTER-ERLA, USDA-ERLA12.

*Ericameria pulchella* (Gray) L.C. Anderson SOUTHWESTERN RABBITBRUSH. Shrubs, 0.5-1.5 m. Leaves linear. Flowers yellow. Fruit very sparsely hairy and glandular. Deep sandy areas. Sep-Oct. [*Chrysothamnus pulchellus* (Gray) Greene]. LTER-CHPU, USDA-ERPU19.

**Erigeron**

1 Plants producing herbaceous, leafy runners or stolons, especially late in the season ..... **E. tracyi**

1 Plants lacking runners or stolons

2 Leaves pinnately lobed or parted..... **E. divergens**

2 Leaves entire or toothed, but not lobed or parted, sometimes with a basal pair of shallow teeth

3 Plants annual ..... **E. bellidiastrum**

3 Plants perennial, sometimes flowering the first season ..... **E. modestus**

***Erigeron bellidiastrum*** Nutt. WESTERN FLEABANE DAISY. Annuals mostly 4-35 cm tall, without stolons. Rays pink or white. Pappus double, with an outer low bony crown (use a lens) and an inner ring of 15-18 bristles. Sandy loam to occasionally heavier soils or plains and flats. May-Aug. LTER-ERBE, USDA-ERBE2.

***Erigeron divergens*** Torrey & Gray SPREADING FLEABANE DAISY. Annual or short-lived perennial 10-70 cm tall, without stolons. Lower leaves early deciduous. Rays bluish (common), pink, or white. Pappus double, the outer of scales, the inner of 6-10 bristles. Loose soil of rocky slopes and hills, also playas. May-Oct. LTER-ERDV, USDA-ERDI4.

***Erigeron modestus*** Gray PLAINS FLEABANE DAISY. Perennial, 10-40 cm tall, without stolons. Rays white or pinkish. Pappus double, the outer of short and stiff, the inner longer and capillary. Gravelly plains. Jul-Sep. LTER-ERMO, USDA-ERMO5.

***Erigeron tracyi*** Greene COLORADO FLEABANE DAISY. Annual to perennial, 3-20 cm tall, with conspicuous stolons late in the season, these often persist and can be found the next spring. Rays bluish (common), pink, or white. Pappus double, the outer short and stiff, the inner longer and capillary. Gravelly washes and plains. May-Oct. [*Erigeron colomexicanus* A. Nels., *Erigeron divergens* T. & G. var. *cinereus* (Gray) Gray]. LTER-ERMO, USDA-ERCO28.

## **Flourensia**

***Flourensia cernua*** DC. TARBUSH. Shrub, 1-2 m. Older stems blackish. Leaves resinous-aromatic, entire. Heads yellow, often nodding, sticky, without rays. Slopes and flats. Sep-Dec. Flowers are toxic to livestock. LTER-FLCE, USDA-FLCE.

## **Gaillardia**

1 Plants perennial; rays yellow, shallowly notched .....**G. pinnatifida**

1 Plants annual; rays mostly reddish brown, with yellow tips, deeply notched ..... **G. pulchella**

***Gaillardia pinnatifida*** Torrey RED-DOME BLANKET-FLOWER. Perennial 10-40 cm tall. Disk flowers reddish. Upper leaves shallowly lobed. Plains. Apr-Nov. LTER-GAPI, USDA-GAPI.

***Gaillardia pulchella*** Foug. FIREWHEEL. Annual, 20-50 cm tall. Disk flowers reddish. Upper leaves arrowhead-shaped. Sandy plains. Mar-Sep. LTER-GAPU, USDA-GAPU.

## **Grindelia**

***Grindelia squarrosa*** (Pursh) Dun. CURLY-CUP GUMWEED. Annual, 10-40 cm tall. Leaves clasping the stem, with outward-pointing teeth. Phyllaries reflexed, sticky. Rays yellow. Plains and bajadas. Jun-Oct. Toxic to livestock. LTER-GRSQ, USDA-GRSQ.

## **Gutierrezia**

1 Plants herbaceous annuals, single-stemmed at the base, much-branched in the upper half ..... **G. sphaerocephala**

1 Plants ± woody perennials, mostly many-stemmed at the base

2 Each head with 3-7 ray flowers and 2-6 disk flowers; involucre vase-shaped, the sides bulging and not parallel ..... **G. sarothrae**

2 Each head with 1-3 ray flowers and 1-3 disk flowers; involucre linear with nearly parallel sides ..... **G. microcephala**

***Gutierrezia microcephala*** (DC.) Gray THREAD-LEAF

SNAKEWEED. Perennial, 20-100 cm tall. Leaves linear, resinous. Heads narrowly cylindrical. Flowers yellow. Pappus a low crown. Plains, slopes, washes, disturbed ground. Jul-Nov. [*Xanthocephalum microcephalum* (DC.) Shinners]. Toxic to livestock. LTER-XAMI, USDA-GUMI.

***Gutierrezia sarothrae*** (Pursh) Britt. & Rusby BROOM

SNAKEWEED. Perennial, 15-100 cm tall. Leaves linear, resinous. Heads turban-shaped. Flowers yellow. Pappus a low crown. Plains, slopes, washes, and disturbed ground. Jul-Nov. [*Xanthocephalum sarothrae* (Pursh) Shinners]. Toxic to livestock. LTER-XASA, USDA-GUSA.

***Gutierrezia sphaerocephala*** Gray ANNUAL BROOMWEED.

Annual, 4-60 cm tall. Leaves narrowly lance-shaped. Heads bowl-shaped. Rays 10-20 in number, yellow. Pappus of several short scales. Plains and gravelly slopes. Jun-Oct. [*Xanthocephalum sphaerocephalum* (Gray) Shinners.] LTER-XASP, USDA-GUSP.

## **Hedosyne**

***Hedosyne ambrosiifolia*** (A. Gray) Strother RAGGED MARSH-

ELDER, RAGLEAF SUMPWEED. Perennial 30-80 cm tall.

Flowers inconspicuous. Plains and flats. Aug-Nov. [*Iva ambrosiifolia* (Gray) Gray] LTER-IVAM, USDA-HEAM11.

## **Helianthus**

1 Plants perennial, with rhizomes; leaves all opposite..... **H. ciliaris**

1 Plants annual; most leaves alternate

2 Phyllaries broadly egg-shaped, abruptly narrowed to an acuminate tip ..... **H. annuus**



- 2 Phyllaries lance-shaped, gradually tapering to the tip..... **H. petiolaris**  
 .....  
***Helianthus annuus*** L. COMMON SUNFLOWER. Annual, 0.5-2.5 m. Pappus of two scales. Roadsides, washes, moist flats and disturbed areas. Jul-Nov. LTER-HEAN, USDA-HEAN3.  
***Helianthus ciliaris*** DC. TEXAS BLUEWEED. Perennial 45-70 cm tall, with a bluish cast. Pappus of a few scales. Moist flats, roadsides, and disturbed ground. Jun-Oct. LTER-HECI, USDA-HECI.  
***Helianthus petiolaris*** Nutt. PLAINS SUNFLOWER. Annual, 0.4-2 m. Pappus of two scales. Sandy plains and slopes. Jul-Nov. LTER-HEPE, USDA-HEPE.

**Heliomeris**

***H. longifolia*** (Robins. & Greenm.) Cockerell ANNUAL GOLDEN-EYE. Annual to 70 cm tall. Leaves opposite below, alternate above, linear, 3-7 cm. Rays yellow, about 12 in number. Pappus absent. Disturbed grounds, plains and uplands. Aug-Oct. [*Viguiera annua* (M.E. Jones) Blake, *Viguiera longifolia* (Robinson & Greenman) Blake var. ***annua*** (M.E. Jones) Welsh]. LTER-VIAN, USDA-HELOA2.

**Heterotheca**

- 1 Herbage very densely hairy but without stalked glands, grayish ..... **H. canescens**  
 .....  
 1 Herbage moderately hairy but mostly with stalked glands, greenish ..... **H. fulcrata**  
 .....  
***Heterotheca canescens*** (DC.) Shinnery GRAY  
 CAMPHORWEED. Perennial 15-35 cm tall. Rays yellow. Pappus in two series, 1 of bristles, 1 of short inconspicuous scales. Disturbed areas, washes, and slopes. Jul-Oct. [*Chrysopsis canescens* (DC.) Torrey & Gray]. LTER-HECA, USDA-HECA8.  
***Heterotheca fulcrata*** (Greene) Shinnery GREEN  
 CAMPHORWEED. Perennial 10-30 cm tall. Rays yellow. Pappus in two series, 1 of bristles, 1 of short but conspicuous scales. Disturbed areas with loose soil, bajadas. Mar-Oct. [*Chrysopsis fulcrata* Greene]. LTER-HEFU, USDA-HEFU3.

**Hymenopappus**

***Hymenopappus flavescens*** Gray var. ***canotomentosus*** Gray WOOLY-WHITE. Woolly perennial 30-90 cm tall. Leaves dissected into thread-like segments 1-2 mm wide. Rays absent. Disk flowers

yellow, glandular. Sandy plains. Apr-Aug. [*Hymenopappus robustus* Greene]. LTER-HYFL, USDA-HYFL.

### **Hymenothrix**

*Hymenothrix wislizeni* Gray TRANS-PECOS THIMBLEHEAD. Annual, 25-65 cm tall. Lower leaves dissected. Rays white to yellowish. Pappus of numerous scales with a conspicuous midnerve. Plains. Aug-Nov. LTER-HYWI, USDA-HYWI.

### **Hymenoxys**

*Hymenoxys odorata* DC. POISON RUBBERWEED, BITTERWEED. Annual, 7-50 cm tall, mostly much branched. Leaves aromatic, divided into thread-like segments. Heads bowl-shaped. Flowers yellow. Moist roadsides, low flats and plains. Feb-Jun. Toxic to sheep. LTER-HYOD, USDA-HYOD.

### **Isocoma**

*Isocoma pluriflora* (Torrey & Gray) Greene SOUTHERN JIMMYWEED. Glabrous half-shrubs, 25-45 cm tall. Stems whitish. Leaves entire. Flowers yellow. Pappus of numerous bristles of unequal size. Floodplains. Jul-Sep. [*Haplopappus heterophyllus* (Gray) Blake, *Isocoma wrightii* (Gray) Rydb.]. Toxic to livestock. LTER-ISPL, USDA-ISPL.

**Iva** : Our species have been reclassified in the following genera:

- 1 Leaves at midstem opposite, toothed or shallowly lobed..... see *Cyclachaena*
- 1 Leaves alternate, pinnately cleft or divided
  - 2 Plants perennial; leaves woolly-hairy.....see *Leuciva*
  - 2 Plants annual; leaves hairy but not woolly ..... see *Hedosyne*

### **Laennecia**

*Laennecia coulteri* (Gray) Nesom COULTER'S WOOLWORT. Annual. Leaves densely glandular-sticky, especially when young. Flowers white, the rays very small. Moist disturbed ground. Jun-Sep. [*Conyza coulteri* Gray]. Toxic to livestock. LTER-COCO, USDA-LACO13.

### **Leuciva**

*Leuciva dealbata* (A. Gray) Rydb. WOOLY MARSH-ELDER. Perennial 30-70 cm tall. Leaves alternate, deeply and coarsely dissected. Flowers inconspicuous. Limestone soils of plains and

slopes, tarbush flats. Aug-Nov. [*Iva dealbata* Gray]. LTER-IVDE, USDA-LEDE23.

### **Machaeranthera**

1 Rays yellow..... see *Xanthisma*

1 Rays bluish or whitish

3 Leaves entire or with a few teeth, not bristle-tipped . see *Dietaria*

3 Leaves binpinnately parted, bristly-tipped..... **M. tanacetifolia**

***Machaeranthera tanacetifolia*** (H.B.K.) Nees TAHOKA DAISY. Annual, 10-45 cm tall. Leaves resembling those of *Machaeranthera pinnatifida*, with stalked glands. Rays mostly bluish, or whitish. Sandy plains. Jun-Oct. LTER-MATA, USDA-MATA2.

### **Malacothrix**

***Malacothrix fendleri*** Gray FENDLER'S DESERT DANDELION. Annual, 10-20 cm tall. Leaves mostly basal with pinnate, triangular lobes. Rays yellow. Disk flowers absent. Sandy plains and slopes. Mar-May. LTER-MAFE, USDA-MAFE.

### **Melampodium**

***Melampodium leucanthum*** Torrey & Gray PLAINS BLACKFOOT DAISY. Perennial 10-30 cm tall. Leaves linear, opposite. Rays white, notched. Gravelly and sandy plains and slopes. Jun-Nov. LTER-MELE, USDA-MELE2.

### **Palafoxia**

***Palafoxia sphacelata*** (Torrey) Cory ROTTING PALAFOX. Annual, 30-60 cm tall, branching in the lower 1/2. Phyllaries and peduncle mostly glandular. Rays pink to reddish, 3-toothed. Pappus of several scales. Sandy plains and dunes. May-Oct. LTER-PASP, USDA-PASP.

### **Parthenium**

1 Plants herbaceous..... **P. confertum**

1 Plants woody..... **P. incanum**

***Parthenium confertum*** Gray var. ***lyratum*** (Gray) Rollins GRAY'S FEVERFEW. Perennial 20-70 cm tall. Leaves pinnately dissected, densely hirsute. Rays white, 5 in number. Plains and canyons. Jun-Oct. [*Parthenium lyratum* (Gray) Gray]. LTER-PACO, USDA-PACO11.

***Parthenium incanum*** H.B.K. MARIOLA. Perennial 40-100 cm tall. Leaves oblong with rounded lobes, gray-wooly. Rays white, 5 in

number. Rocky slopes and hills. Jul-Nov. LTER-PAIN, USDA-PAIN2.

### **Pectis**

1 Plants low, mostly less than 6 cm tall; leaves 2-4 mm wide .....

..... **P. prostrata**

1 Plants taller, mostly more than 6 cm tall; leaves 1-2 mm wide

2 Peduncles (of heads) short, about 3 mm long; pappus of disk flowers of 4-5 scales .....

..... **P. angustifolia**

2 Peduncles (of heads) longer, about 7-10 mm long; pappus of disk flowers of 12-18 plumose bristles .....

..... **P. papposa**

**Pectis angustifolia** Torrey LIMONCILLO. Annual 10-20 cm tall, much-branched. Leaves opposite, simple, linear, lemon-scented. Flower heads nearly sessile. Rays yellow. Sandy plains and roadsides. Jul-Oct. LTER-PEAN, USDA-PEAN.

**Pectis papposa** Harv. & Gray LEMONWEED. Annual 10-30 cm tall, much-branched. Leaves opposite, simple, linear, lemon-scented. Flower heads nearly sessile. Rays yellow. Sandy plains and roadsides. Jul-Oct. Similar to *Dyssodia papposa*, which has pinnately parted leaves. LTER-PEPA, USDA-PEPA2.

**Pectis prostrata** Cav. DWARF CHINCHWEED. Annual 2-6 cm tall, less branched than other species. Leaves opposite, simple, broadly lance-shaped to strap-shaped, faintly lemon-scented. Flower heads nearly sessile. Rays yellow. Clay flats and thin-soiled rocky uplands. Jul-Oct. LTER-PEPR, USDA-PEPR.

### **Pinaropappus**

**Pinaropappus parvus** Blake SMALL ROCK-LETTUCE. Mat-forming perennial, 1-3 cm tall, with a woody base. Leaves lance-shaped to linear. Flowers white to pink. Limestone ledges. Jun-Jul. LTER-PIPA, USDA-PIPA.

### **Pluchea**

**Pluchea sericea** (Nutt.) Cav. ARROW-WEED. Bushy shrubs 1-2 m, with straight, willow-like branches. Leaves linear to elliptic, entire, silky-hairy. Rays absent. Disk flowers purplish. Streambanks and floodplains. Aug-Nov. [*Tessaria sericea* (Nutt.) Shinners]. LTER-TESE, USDA-PLSE.

### **Porophyllum**

**Porophyllum scoparium** Gray TRANS-PECOS PORELEAF. Low shrubs 20-65 cm tall. Leaves mostly alternate, thread-like,

glandular-dotted. Rays absent. Disks yellow. Limestone hills and washes. Mostly Jul-Oct. LTER-POSC, USDA-POSC6.

### **Pseudognaphalium**

*Pseudognaphalium stramineum* (Kunth) W.A. Weber  
COTTON-BATTING-PLANT, WESTERN CUDWEED. Annual or biennial, 30-60 cm tall. Leaves covered with wooly gray hairs. Heads rounded, papery, with yellow centers. Rocky slopes and foothills. May-Oct. [*Gnaphalium chilense* Spreng.] LTER-GNCH, USDA-PSST7.

### **Psilostrophe**

*Psilostrophe tagetina* (Nutt.) Rydb. WOOLY PAPERFLOWER. Wooly perennial 10-50 cm tall. Leaves mostly lobed. Rays yellow, 3-toothed, persistent. Pappus of several scales. Open slopes, plains, and washes, in loose soil. Mar-Nov. Toxic to sheep. LTER-PSTA, USDA-PSTA.

### **Pyrrhopappus**

*Pyrrhopappus pauciflorus* (D. Don) DC. TEXAS FALSE-DANDELION. Annual with milky sap, 20-80 cm tall. Stem leaves with 2-3 pairs of deep linear lobes, glabrous. Heads with an outer (lower) series of short, linear phyllaries. Disk flowers none. Moist flats. Mar-May. [*Pyrrhopappus multicaulis* DC.]. LTER-PYMU, USDA-PYPA4.

### **Rafinesquia**

*Rafinesquia neomexicana* Gray DESERT CHICORY. Annual 15-50 cm tall. Basal leaves pinnately divided into linear lobes. Outer phyllaries curled back. All flowers ray-like, white, toothed. Sandy or gravelly slopes and flats. Mar-May. LTER-RANE, USDA-RANE.

### **Ratibida**

1 Heads 8-15 mm long, more globular than columnar ..... **R. tagetes**

1 Heads 10-55 mm long, more columnar than globular .....

..... **R. columnifera**

*Ratibida columnifera* (Nutt.) Woot. & Standl. MEXICAN-HAT, PRAIRIE CONEFLOWER. Perennial 25-85 cm tall. Leaves alternate, pinnately cleft to midrib into narrow segments. Receptacle columnar. Ray flowers yellow or reddish brown. Disk flowers dark brown. Clay flats. Aug-Oct. [*Ratibida columnaris* (Sims) D. Don]. Found only once in our area. LTER-RACO, USDA-RACO3.

***Ratibida tagetes*** (James) Barnh. GREEN MEXICAN-HAT.

Perennial 14-45 cm tall, ± bushy. Leaves pinnately cleft to midrib into narrow segments. Receptacle globular. Ray flowers yellow or reddish brown. Disk flowers dark brown. Clay flats. Aug-Oct. Found only once in our area. LTER-RATA, USDA-RATA.

**Sanvitalia**

***Sanvitalia abertii*** Gray ABERT'S DOME. Annual 10-25 cm tall.

Leaves opposite, linear to lance-shaped, entire, w longitudinal grooves. Rays bright yellow, small and rounded. Disk flowers greenish. Foothills. Jul-Sep. LTER-SAAB, USDA-SAAB.

**Sartwellia**

***Sartwellia flaveriae*** Gray THREADLEAF GLOW-WORT.

Perennial (annual?) 10-30 cm tall. Leaves opposite, linear, fleshy. Flowers clustered at the stem tip, yellow. Gypsum flats and hills. Aug-Oct. LTER-SAFL, USDA-SAFL5.

**Senecio**

1 Plants woolly-hairy, grayish ..... **S. flaccidus**

1 Plants glabrous, bright green ..... **S. riddellii**

***Senecio flaccidus*** Less. THREADLEAF GROUNDSEL.

Subshrubby perennial 30-100 cm tall. Leaves similar to *S. riddellii* but woolly. Flowers bright yellow. Loose soil of flats, hills, and roadsides. Jan-Nov. [*Senecio douglasii* DC. var. *longilobus* (Benth.) Benson, *Senecio longilobus* Benth.]. Toxic to cattle. Our plants belong to var. *flaccidus*. LTER-SELO, USDA-SEFL3.

***Senecio riddellii*** Torrey & Gray RIDDELL'S GROUNDSEL.

Subshrubby perennial 35-120 cm tall. Leaves divided into thread-like segments. Flowers bright yellow. Loose, sandy soil. Sep-Nov. [*Senecio spartioides* Torr. & Gray var. *fremontii* (Torr. & Gray) Greenm.] Toxic to cattle. LTER-SEFR, USDA-SERI2.

**Sonchus**

**\**Sonchus asper*** (L.) Hill SPINY-LEAF SOW-THISTLE. Annual

with milky juice, 25-100 cm tall. Leaves with spiny teeth, the base rounded and clasping the stem. All flowers ray-like, pale yellow. Pappus fluffy-white, sessile on the achene. Mostly moist disturbed ground. May-Oct. LTER-SOAS, USDA-SOAS.

**Stephanomeria**

1 Plants annual; involucre 5-7 mm long ..... **S. exigua**

1 Plants perennial; involucre 8-11 mm long ..... **S. pauciflora**

***Stephanomeria exigua*** Nutt. TWIGGY WIRE-LETTUCE. Annual 30-80 cm tall, diffusely branched and bushy, with milky juice. Leaves coarsely toothed or lobed. All flowers ray-like, whitish. Pappus tan or white, the bristles plumose on the distal 50-85%. Plains and hillsides. Apr-Sep. LTER-STEX, USDA-STEX.

***Stephanomeria pauciflora*** (Torrey) A. Nels. FEW-FLOWERED WIRE-LETTUCE. Perennial 30-50 cm tall, bushy-branched, with milky juice. Leaves lobed to entire. All flowers ray-like, whitish. Pappus tan (rarely white), the bristle plumose on the distal 80%. Plains and hills. Apr-Oct. [*Stephanomeria neomexicana* (Greene) Cory]. LTER-STPA, USDA-STPA4.

### **Symphotrichum**

***Symphotrichum subulatum*** (Michaux) Nesom SEASIDE ASTER. Annual to 100 cm or more tall. Leaves lance-shaped, obscurely toothed. Rays whitish, inconspicuous. Pappus of numerous whitish bristles. Moist floodplain along the Rio Grande. Jul-Nov. [*Aster subulatus* Michaux]. LTER-ASSB, USDA-SYSU5.

### **Thelesperma**

***Thelesperma megapotamicum*** (Spreng.) Kuntze NAVAJO-TEA. Perennial 25-60 cm tall. Leaves opposite, thread-like, the basal ones compound, the upper ones simple. Flower heads on long peduncles. Phyllaries fused in lower half, cup-shaped. Rays absent. Disk flowers yellow with reddish veins. Sandy plains. Not common. Apr-Oct. LTER-THME, USDA-THME.

### **Thymophylla**

1 Plants low subshrubs; leaves entire ..... **T. acerosa**

1 Plants ± herbaceous; leaves dissected into narrow segments .....  
..... **T. pentachaeta**

***Thymophylla acerosa*** (DC.) Strother PRICKLE-LEAF DOGWEEED. Shrubby perennial 10-25 cm tall. Leaves and heads with glandular dots. Leaves opposite, linear, stiff. Flower heads nearly sessile. Rays yellow. Loose limestone soils. Jun-Oct. [*Dyssodia acerosa* DC.]. LTER-DYAC, USDA-THAC.

***Thymophylla pentachaeta*** (DC.) Small var. ***belenidium*** (A.P. de Candolle) Strother PARRALEÑA. Short-lived perennial 10-30 cm tall. Leaves and heads with glandular dots. Leaves opposite. Leaf segments stiff, prickly. Flower heads raised on slender stalks. Rays yellow. Slopes and hills in loose soil. Apr-Nov. [*Dyssodia pentachaeta* (DC.) Robins.]. LTER-DYPE, USDA-THPE4.

## **Townsendia**

*Townsendia annua* Beaman ANNUAL TOWNSEND-DAISY. Annual 2-25 cm tall. Leaves sparsely appressed-hairy, spatulate, entire. Rays white to pinkish. Pappus of barbellate bristles. Dry slopes and washes, gypsum. Apr-Sep. LTER-TOAN, USDA-TOAN.

## **Tragopogon**

\**Tragopogon dubius* Scop. GOAT'S BEARD, YELLOW SALSIFY. Biennial 30-60 cm tall with milky juice. Leaves alternate, grass-like, 10-25 cm. Flower heads single on naked peduncles, forming large, dandelion-like balls 8-12 cm dia in fruit. All flowers with yellow rays. Pappus of numerous plumose bristles. Disturbed weedy ground. May-Jul. LTER-TRDU, USDA-TRDU.

## **Trixis**

*Trixis californica* Kellogg CALIFORNIA THREEFOLD. Leafy shrubs 30-90 cm tall. Leaves lance-shaped, mostly entire, pale green. Flowers 2-lipped, the outer lip with 3 lobes. Rocky slopes and canyons. Feb-Oct. LTER-TRCL, USDA-TRCA8.

## **Uropappus**

*Uropappus lindleyi* (A.P. de Candolle) Nuttall SILVERPUFFS, STARPOINT. Annual, 10-30 cm tall. Leaves mostly basal, linear to partly linear with short, pointed lobes. Heads about 2 cm high, with yellow rays only. Pappus of 5 linear scales. Plains and foothills. Mar-May. [*Microseris linearifolia* (DC.) Schulz-Bip.] LTER-MILI, USDA-URLI5.

## **Verbesina**

*Verbesina encelioides* (Cav.) Benth. & Hook. GOLDEN CROWNBEARD, COWPEN DAISY. Annual 30-150 cm tall, grayish green. Leaves mostly opposite, toothed, triangular. Heads sunflower-like, with yellow toothed rays. Fruits winged. Roadsides, washes, moist pastures. Jun-Sep. LTER-VEEN, USDA-VEEN.

## **Viguiera**

1 Plants annual; leaves linear; pappus absent.....go to **Heliomeris**

1 Plants perennial; leaves egg-shaped; pappus present.....**V. dentata**

*Viguiera dentata* (Cav.) Spreng. TOOTHED GOLDEN-EYE. Perennial mostly 1-2 m. Leaves opposite below, alternate above, egg-shaped, entire, acuminate, with long petioles. Rays yellow, 10-12 in number. Pappus of awns and scales. Dry slopes and canyons. Jun-Sep. LTER-VIDE, USDA-VIDE3.



## **Xanthisma**

1 Plants annual..... **X. gracile**

1 Plants perennial..... **X. spinulosum**

***Xanthisma gracile*** (Nuttall) Morgan & Hartman SLENDER SPINE-ASTER. Annual, 12-35 cm tall. Leaves linear, bristle-tipped, mostly entire or few toothed. Pappus bristles whitish to brownish. Dry plains and hills. May-Nov. [*Haplopappus gracilis* (Nutt.) Gray, *Machaeranthera gracilis* (Nutt.) Shinners]. LTER-HAGR, USDA-MAGR10.

***Xanthisma spinulosum*** (Pursh) Morgan & Hartman LACY SPINE-ASTER. Perennial 10-60 cm tall. Leaves linear, bristle-toothed to pinnately parted. Pappus bristles brownish. Mar-Oct. [*Haplopappus spinulosus* (Pursh) DC., *Machaeranthera pinnatifida* (Hook.) Shinners, *Machaeranthera spinulosa* (Pursh) Shinners.]. Our plants belong to var. *pinnatifida*. LTER-MAPI, USDA-MAPI.

## **Xanthium**

***Xanthium strumarium*** L. ROUGH COCKLEBUR. Coarse annual 20-90 cm tall. Leaves broadly triangular, toothed to shallowly lobed. Flowers in hooked burs. Wet, disturbed ground, ditches, around water tanks. Jun-Nov. Seedlings toxic to cattle until about 15 cm tall. LTER-XAST, USDA-XAST.

a Bur brownish, 2-3.5 cm long, the lower part ± hairy...var.

***canadense*** (P. Mill) Torrey & Gray

a Bur pale, less than 2 cm long, the lower part ± glabrous...var.

***glabratum*** (DC.) Cronq.

## **Zinnia**

1 Flowers bright yellow to orange; leaves 3-veined .... **Z. grandiflora**

1 Flowers white; leaves 1-veined ..... **Z. acerosa**

***Zinnia acerosa*** (DC.) Gray DESERT ZINNIA. Low shrublets 6-25 cm tall. Leaves opposite, linear to spiny, 1-veined. Rays nearly round, notched at the tip, 4-6 in number. Sandy or gravelly slopes. Apr-Oct. LTER-ZIAC, USDA-ZIAC.

***Zinnia grandiflora*** Nutt. PLAINS ZINNIA. Low shrublets 8-22 cm tall. Leaves opposite, linear, 3-veined, mostly ± twisted. Rays nearly round, 3-6 in number. Sandy or gravelly plains and slopes. May-Oct. LTER-ZIGR, USDA-ZIGR.

## **BERBERIDACEAE BARBERRY FAMILY**

Herbs, shrubs, or small trees. Leaves alternate (rarely opposite), deciduous or evergreen, simple or pinnately compound. Flowers small, actinomorphic, perfect; perianth of 6-9 members, distinct;

stamens mostly 6, the anthers opening by pores rather than slits;  
pistil superior, of 2-3 united carpels. Fruit a berry.

### **Berberis**

*Berberis haematocarpa* Wooton ALGERITA. Shrub to about 2 m. Leaves with 5-7 leaflets (rarely 3). Leaflets, thick, firm, glaucous, the terminal one longer than the others, the margins with 4-8 stout spiny teeth 3-5 mm long. Flowers yellow, with about 9 sepal-like members. Stamens 3. Fruits reddish, marble-sized berries. Lower slopes of the surrounding foothills and bajadas, rocky ground. Mar-May. [*Mahonia haematocarpa* (Wooton) Fedde]. LTER-BEHA, USDA-MAHA4.

### **BIGNONIACEAE CATALPA FAMILY**

Trees or shrubs. Leaves opposite or alternate. Flowers large and showy, ± 2-lipped. Stamens 4. Ovary superior. Fruit a long, 2-valved capsule. Seeds hairy at the ends.

- 1 Flowers purplish to whitish; leaves simple, entire ..... **Chilopsis**  
1 Flowers bright yellow; leaves pinnately compound, toothed .....  
..... **Tecoma**

### **Chilopsis**

*Chilopsis linearis* (Cav.) Sweet DESERT WILLOW. Shrub or small tree to 8 m. Leaves linear, ± alternate, willow-like. Flowers tubular, 2-3.5 cm long. Fruits slender pods to 30 cm. Washes and flats. Apr-Sep. LTER-CHLI, USDA-CHLI2.

a Leaves ± straight, mostly 5-9 cm...var. *linearis*

a Leaves falcate-arcuate, mostly 10-18 cm...var. *arcuata* Fosberg

### **Tecoma**

*Tecoma stans* (L.) Juss. var. *angustata* Rehd. YELLOW TRUMPET-BUSH. Shrub to 2 m. Leaves opposite. Leaflets lance-shaped, 4-3 cm, green, glabrous. Flowers tubular, 4-6 cm. Fruits 6-8 cm. Rocky slopes and canyons among boulders. Apr-Nov. LTER-TEST, USDA-TEST.

### **BORAGINACEAE FORGET-ME-NOT FAMILY**

Herbs, mostly rough-hairy. Leaves simple, mostly alternate, entire. Flowers 5-merous, regular, mostly in 1-sided, scorpion-like racemes. Ovary superior. Fruit of 4 nutlets.

- 1 Fruit (nutlets) with hooked prickles..... **Lappula**  
1 Fruit without hooked prickles  
2 Plants low half-shrubs, woody below, about 10 cm tall. **Tequila**  
2 Plants herbaceous, annual or perennial, short or tall

- 3 Flowers dark yellow, trumpet-shaped with a narrow tube, 1.5-3.5 cm, the petal lobes crinkled ..... **Lithospermum**
- 3 Flowers not as above
  - 4 Ovary when in flower deeply 4-lobed, the style attached at the base; plants mostly bristly-hairy ..... **Cryptantha**
  - 4 Ovary when in flower entire or only shallowly lobed, the style attached at the tip; plants glabrous to hairy but mostly not bristly..... see Heliotropaceae

**Cryptantha**

- 1 Plants perennial (but short-lived); leaves 2-15 cm ..... **C. cinerea**
- 1 Plants annual; leaves 0.3-6 cm
  - 2 Root and base of plant with a reddish or purplish dye ..... **C. micrantha**
  - 2 Root and base of plant without a reddish or purplish dye
    - 3 Margin of mature nutlets conspicuously winged ..... **C. pterocarya**
    - 3 Margin of nutlets not winged
      - 4 Nutlets decidedly heteromorphic, 1 larger and/or differently ornamented than the others
        - 5 Odd nutlet < 1.5 mm long; nutlet margins angled; style surpassing odd nutlet; midrib of fruiting calyx lobes moderately thickened but not noticeably expanded and hard ..... **C. angustifolia**
        - 5 Odd nutlet 2-3 mm long; nutlet margins rounded; style subequal to odd nutlet; midrib of fruiting calyx lobes conspicuously thickened and bony ..... **C. crassisepala**
      - 4 Nutlets all alike in size and surface ornamentation
        - 6 Style surpassing the mature nutlets; racemes ebracteate. .... **C. pusilla**
        - 6 Style subequal to the mature nutlets tips; racemes distinctly bracteate ..... **C. barbiger**

***Cryptantha angustifolia*** (Torrey) Greene NARROW-LEAF CAT'S-EYE. Annual 5-25 cm tall. Leaves linear. Sepals midribs only slightly thickened. Corolla white. Dry, sandy or gravelly washes. Mar-Jun. LTER-CRAN, USDA-CRAN4.

***Cryptantha barbiger*** (A. Gray) Greene BEARDED CAT'S-EYE. Annual 10-40 cm tall. Leaves oblong to lance-linear, obviously pustulate. Corolla inconspicuous, 1-2 mm wide, white. Style nearly equal to the mature nutlets. Sandy and rocky ground in desert scrub. Mar-May. LTER-CRBA, USDA-CRBA5.

***Cryptantha cinerea*** (Torrey) Cronq. var. ***jamesii*** Cronq. JAMES'S POPCORN. Perennial 10-30 cm tall. Petals lobes 5-8 mm

broad, white. Mostly loose soil or plains and hills. Apr-Oct.  
[*Cryptantha jamesii* (Torr.) Payson]. LTER-CRJA, USDA-CRCB.

***Cryptantha crassisejala*** (Torrey & Gray) Greene THICK-  
SEPAL CAT'S-EYE. Annual 5-20 cm tall. Sepals in fruit with hard  
and thickened midrib. Corolla white. Dry, sandy ridges and washes.  
Mar-Jul. LTER-CRCR, USDA-CRCR3.

***Cryptantha micrantha*** (Torrey) I.M. Johnst. RED-ROOT CAT'S-  
EYE. Annual 5-15 cm tall. Stems repeatedly branched. Flowers 0.5-3  
mm wide, the corolla white. Dry sandy slopes and plains. Mar-Jun.  
LTER-CRMI, USDA-CRMI.

***Cryptantha pterocarya*** (Torrey) Greene var. ***cycloptera*** (Greene)  
Macbr. WINGED CAT'S-EYE. Annual 10-40 cm tall. Flowers 0.5-  
1.5 mm wide, the corolla white. Dry washes and bajadas. Mar-Jun.  
LTER-CRPT, USDA-CRPT.

***Cryptantha pusilla*** (Torr. & Gray) Greene LOW CAT'S-EYE.  
Annual 3-15 cm tall. Leaves linear-spatulate, pustulate. Corolla  
minute, less than 1 mm wide, white. Style surpassing the nutlets.  
Desert scrub and rocky slopes. Mar-May. LTER-CRPU, USDA-  
CRPU.

## Lappula

***Lappula occidentalis*** (S. Watson) Greene STICKSEED. Annual  
(or short-lived perennial?) 10-60 cm tall. Leaves spatula-shaped,  
hirsute. Flowers white to blue, 1-2 mm wide. Nutlets with hooked  
spines. Dry, disturbed places. Mar-Jul. [*Lappula redowskii*  
(Hornem.) Greene]. Our plants belong to var. *occidentalis*. LTER-  
LARE, USDA-LAOC3.

## Lithospermum

***Lithospermum incisum*** Lehm. PUCCOON, FRINGED  
GROMWELL. Perennial 10-30 cm tall. Leaves dark green, lance-  
shaped. Flowers bright yellow, 1-4 cm, 1-2 cm wide, the petals  
ruffled. Nutlets light gray and shiny. Sandy or gravelly plains and  
bajadas. Mar-Aug. LTER-LIIN, USDA-LIIN2

## Tiquilia

***Tiquilia canescens*** (DC.) A. Richardson WOOLY  
CRINKLEMAT. Perennial forming low mats, 1-20 cm tall. Leaves  
gray, oval, soft-hairy. Flowers lavender to pinkish. Rocky limestone  
slopes. Mar-Sep. [*Coldenia canescens* DC.]. LTER-TICA, USDA-  
TICA3.

## BRASSICACEAE (CRUCIFERAE) MUSTARD FAMILY

Herbs. Leaves alternate. Flowers 4-merous. Stamens 6. Ovary superior. Fruit pod-like, splitting into 2 halves.

- 1 Flowers yellow to orange-red
  - 2 Leaves  $\pm$  entire or shallowly toothed
    - 3 Fruit globose; flowers yellow ..... **Physaria**
    - 3 Fruit linear; flowers yellow or orange..... **Erysimum**
  - 2 Leaves mostly deeply dissected
    - 4 Plants nearly stemless; fruits broadly oblong to nearly circular ..... **Selenia**
    - 4 Plants with well-developed stems; fruits linear
      - 5 Fruits flattened..... **Streptanthus**
      - 5 Fruits round or angled in cross-section
        - 6 Plants with branched or star-shaped hairs .. **Descurainia**
        - 6 Plants glabrous or with simple hairs
          - 7 Lower flowers with conspicuous bracts . **Erucastrum**
          - 7 Lower flowers without bracts
            - 8 Lower leaves manifestly hairy-hirsute; sepals purplish tinged; fruit with a long beak ... **Brassica**
            - 8 Lower leaves glabrous; sepals greenish-yellow; fruit with a short beak ..... **Sisymbrium**
  - 1 Flowers white to bluish
    - 9 Petals deeply lobed ..... **Dryopetalon**
    - 9 Petals not lobed
      - 10 Fruits about as long as wide
        - 11 Fruits spectacle (eyeglass) -shaped, with a shallow constriction between the two halves... **Dimorphocarpa**
        - 11 Fruits circular, notched at the tip but not at all spectacle-shaped ..... **Lepidium**
      - 10 Fruits much longer than wide
        - 12 Leaves mostly basal; plants annual..... **Draba**
        - 12 Leaves borne along the stem; plants perennial
          - 13 Plants hairy ..... **Nerisyrenia**
          - 13 Plants glabrous
            - 14 Petals 10-20 mm..... **Schoenocrambe**
            - 14 Petals less than 8 mm ..... **Thelypodium**

### **Brassica**

\**Brassica tournefortii* Gouan ASIAN MUSTARD. Annual 20-50 cm tall. Leaves highly dissected, mostly basal or near the base, hirsute. Flowering stems branched and bushy when mature. Sepals with a purple tinge, the petals yellowish. Disturbed ground. Only

recently found on the plain, but expected to spread. Feb-Apr. LTER-BRTO, USDA-BRTO.

### **Descurainia**

*Descurainia pinnata* (Walt.) Britt. WESTERN TANSY MUSTARD. Annual 3-80 cm tall. Leaves finely dissected, grayish-hairy. Flowers yellow, small. Pods slightly club-shaped, tilted upward. Sandy soils and disturbed ground. Feb-Jun. LTER-DEPI, USDA-DEPI.

### **Dimorphocarpa**

*Dimorphocarpa wislizeni* (Engelm.) Rollins SPECTACLE-POD. Short-lived perennial 10-60 cm tall. Leaves roughly lance-shaped with scattered teeth or lobes, gray-hairy. Flowers white. Fruits flattened, spectacle-shaped, held erect. Sandy soils. Feb-May. [*Dithyrea wislizeni* Engelm.]. LTER-DIWI, USDA-DIWI2.

### **Draba**

*Draba cuneifolia* Torrey & Gray WEDGELEAF WHITLOW-GRASS. Annual 3-20 cm tall. Leaves wedge-shaped, mostly basal. Flowers white, small. Fruits flat, banana-shaped. Sandy or gravelly washes and slopes. Feb-May. LTER-DRCU, USDA-DRCA5.

### **Dryopetalon**

*Dryopetalon runcinatum* Gray ROCK-MUSTARD. Short-lived perennial 20-60 cm tall. Leaves deeply pinnatifid. Petals pale yellow. Weedy roadsides. Apr-Sep. LTER-DRRU, USDA-DRRU2.

### **Erysimum**

*Erysimum capitatum* (Dougl.) Greene PLAINS WALLFLOWER. Coarse perennial (sometimes biennial) 40-100 cm tall. Leaves lance-shaped with scattered teeth. Petals yellow to orange-red. Fruits nearly parallel to the stem. Common along drainages, as well as on tarbush flats, also rocky, moist slopes. Apr-Jul. Extremely variable. LTER-ERCA, USDA-ERCA14.

### **Lepidium**

- 1 Plants perennial, woody at the base ..... **L. alyssoides**
- 1 Plants annual
  - 2 Plants markedly stiff-hairy; fruits hairy ..... **L. lasiocarpum**
  - 2 Plants mostly glabrous or nearly so; fruits glabrous .....  
..... **L. virginicum**

*Lepidium alyssoides* Gray MESA PEPPERWEED. Glabrous perennial 20-70 cm tall. Stem leaves mostly linear and entire. Flowers white. Loose soils of slopes, plains, and washes. [*Lepidium montanum* Nutt.]. LTER-LEMO, USDA-LEALA.

*Lepidium lasiocarpum* Nutt. var. *wrightii* (Gray) C.L. Hitchcock WRIGHT'S PEPPERWEED. Annual 2-25 cm tall. Stem leaves toothed. Flowers small, white. Slopes and plains in loose soil. Mar-May. LTER-LELA, USDA-LELA.

*Lepidium virginicum* L. var. *medium* (Greene) C.L. Hitchc. POORMAN'S PEPPERWEED. Annual 10-60 cm tall. Stem leaves lobed to toothed. Petals white, longer than the sepals. Dry plains and hills. Apr-Aug. LTER-LEVI, USDA-LEVI3.

*Lesquerella* : see **Physaria**

### **Nerisyrenia**

1 Leaves broadly spatula-shaped, toothed, flat..... **N. camporum**

1 Leaves narrowly linear, entire, fleshy, nearly round in cross-section  
..... **N. linearifolia**

*Nerisyrenia camporum* (Gray) Greene BICOLORED FAN-MUSTARD. Perennial 20-60 cm tall. Petals white to pale lavender. Limestone hills, sandy plains, and washes. Feb-Aug. LTER-NECA, USDA-NECA3.

*Nerisyrenia linearifolia* (Wats.) Greene WHITE SANDS FAN-MUSTARD. Perennial 10-30 cm tall. Petals white. Gypsum flats and bluffs. Apr-Aug. LTER-NELI, USDA-NELI.

### **Physaria**

We find here all former species of *Lesquerella*.

1 Stems erect; basal leaves entire or toothed; trichomes with numerous unforked rays; plants perennial ..... **P. fendleri**

1 Stems mostly prostrate; basal leaves mostly lobed; trichomes with 4-7 forked rays; plants annual or perennial..... **P. gordonii**

*Physaria fendleri* (Gray) O'Kane & Al-Shehbaz FENDLER'S BLADDERPOD. Perennial 10-30 cm tall. Corolla yellow. Fruits pea-shaped. Sandy or rocky slopes. Feb-Apr. [*Lesquerella fendleri* (Gray) Wats.]. LTER-LEFE, USDA-LEFE.

*Physaria gordonii* (A. Gray) O'Kane & Al-Shehbaz GORDON'S BLADDERPOD. Annual or perennial 5-20 cm tall. Corolla yellow. Fruits pea-shaped. Sandy or gravelly slopes. Feb-Jun. [*Lesquerella gordonii* (Gray) Wats.]. LTER-LEGO, USDA-LEGO.

## Schoenocrambe

*Schoenocrambe linearifolia* (Gray) Rollins PINK WINDMILLS, SLIM-LEAF PLAINS-MUSTARD. Glabrous perennial 30-90 cm tall. Petals lavender, 12-18 mm long. Rocky crevices, ledges, and among boulders. Apr-Oct. [*Sisymbrium linearifolium* (Gray) Payson]. LTER-SILN, USDA-SCLI2.

## Selenia

*Selenia dissecta* Torrey & Gray TEXAS SELENIA. Annual 4-20 cm tall. Leaves pinnately dissected, basal. Petals yellow, showy. Low seeps and playas. Feb-Jun. LTER-SEDS, USDA-SEDI2.

## Sisymbrium

\**Sisymbrium irio* L. LONDON ROCKET. Nearly glabrous annual 10-60 cm tall. Petals yellow, 2-4 mm long. Disturbed areas. Dec-May. See also *Schoenocrambe*. LTER-SIIR, USDA-SIIR.

## Streptanthus

*Streptanthus carinatus* Gray subsp. *arizonicus* (Wats.) Kruck., Rodm., & Worth. ARIZONA JEWEL-FLOWER. Annual 20-60 cm tall. Leaves pinnately lobed with 2 rounded basal lobes, clasping the stem. Flowers yellowish, occasionally purplish. Sandy or gravelly washes and slopes. Jan-Apr. [*Streptanthus validus* (Greene) Cory, *Streptanthus arizonicus* Wats.]. LTER-STAR, USDA-STCA5.

## Thelypodium

*Thelypodium wrightii* Gray WRIGHT'S THELYPODY. Biennial 0.3-1 m or more tall. Basal leaves pinnately lobed, cauline leaves entire to slightly toothed. Flowers white. Among rocks and boulders on the upper bajadas. Jun-Oct. LTER-THWR, USDA-THWR.

## CACTACEAE CACTUS FAMILY

Stem-succulents. Fleshy leaves mostly absent and represented by spines, these borne in clusters. Flowers with numerous sepals, petals, and stam. Ovary inferior, often spiny.

- 1 Stems jointed; glochids (minute barbed bristles in addition to the spines) present; new growth with a fleshy leaf below each spine cluster
- 2 Joints of the stem cylindrical and elongate or club-shaped, not flattened; young spines covered by a thin papery deciduous sheath ..... **Cylindropuntia**
- 2 Joints of the stem flat; spines not covered by a thin papery sheath ..... **Opuntia**



- 1 Stems not jointed; glochids absent; new growth without a fleshy leaf below each spine cluster
  - 3 Stems 0.5-2 m tall, not more than 15 mm in diameter, 4- to 6-angled; flowers white ..... **Peniocereus**
  - 3 Stems mostly shorter and wider than above, if angled (ribbed) then usually with more than 6 ribs; flowers mostly other than white
    - 4 Spines, at least some, hooked at the ends like a fish-hook
      - 5 Stems 20 cm or more wide, large and barrel-like..... **Ferocactus**
      - 5 Stems less than 10 cm wide, not barrel-like (but perhaps barrel-shaped)..... **Mammillaria**
    - 4 Spines straight to curving, but not fish-hooked
      - 6 Stems with separate nipple-like projections (tubercles)
        - 7 Juice milky; flowers borne on sides of stem and in the axil at the base of the tubercle and not connected with it (*Mammillaria heyderi*) ..... **Mammillaria**
        - 7 Juice not milky; flowers borne at apex of stem and near the tip of the tubercle and connected to it ..... **Coryphantha**
      - 6 Stems with continuous longitudinal ribs, sometimes slightly nipped
        - 8 Spines 1-2 mm wide, with cross-ribs..... **Echinocactus**
        - 8 Spines less than 1 mm wide, without cross-ribs
          - 9 Flowers and fruits borne at the top of the stem ..... **Echinomastus**
          - 9 Flowers and fruits borne on the sides of the stem ..... **Echinocereus**

**Cylindropuntia**

- 1 Larger terminal joints 3-5 mm in diameter.....**C. leptocaulis**
  - 1 Larger terminal joints 12-38 mm in diameter
    - 2 Tubercles (longitudinal bumps or ridges) 9-15 mm; spines 6-15 mm, the sheaths soon deciduous ..... **C. spinosior**
    - 2 Tubercles 20-35 mm; spines 12-30 mm, the sheaths persisting about 1 year..... **C. imbricata**
- Cylindropuntia imbricata*** (Haw.) Knuth TREE CHOLLA. Shrub 1-2 m. Flowers dark red. Fruits yellow. Plains and flats. Jun-Aug. [*Opuntia imbricata* (Haw.) DC.]. LTER-OPIM, USDA-CYIM2.
- Cylindropuntia leptocaulis*** (DC.) Knuth DESERT CHRISTMAS CHOLLA. Shrubby perennial 50-100 cm tall. Flowers yellow-green, sometimes slightly reddish. Fruits bright red and persisting thru the

winter. Plains and hills. May-Jun. [*Opuntia leptocaulis* DC.].  
LTER-OPLE, USDA-CYLE8.

***Cylindropuntia spinosior*** (Engelm.) Knuth CANE CHOLLA.  
Shrub 1-2 m. Flowers purplish. Fruits yellow. Plains and flats. Jun-  
Aug. [*Opuntia spinosior* (Engelm.) Toumey]. LTER-OPSP, USDA-  
CYSP8.

**Coryphantha** (including *Escobaria*)

1 Longer spines 1-2 cm ..... **C. vivipara**

1 Longer spines 2-5 cm

2 Groove on the tubercle (nipple-like protuberance) only half as  
long as the tubercle; flowers reddish; central spines 4-6 per  
areole ..... **C. macromeris**

2 Groove on the tubercle as long as the tubercle, at least on mature  
stems; flowers yellowish to orange; central spines 1-4 perennial  
areole ..... **C. robustispina**

***Coryphantha macromeris*** (Engelm.) Britt. & Rose BIG  
NEEDLE CACTUS, NIPPLE BEEHIVE-CACTUS. Perennial 5-25  
cm tall. Flowers reddish, borne at the top of the stem. Gravelly hills.  
Jul-Sep. [*Mammillaria macromeris* Engelm.]. LTER-COMA,  
USDA-COMA14.

***Coryphantha robustispina*** (Schott ex Engelm.) Britton &  
Rose PINEAPPLE CACTUS. Perennial 10-17 cm tall. Flowers  
yellowish to orange, borne at the top of the stem. Sandy to gravelly  
bajadas and flats. Jun-Sep. [*Coryphantha scheeri* (Muehlenpfordt)  
Lemaire, *Coryphantha scheeri* (Muehlenpfordt) Lemaire var. *valida*  
(Engelm.) L. Benson, *Mammillaria scheeri* Muehlenpfordt var.  
*valida* Engelm.]. LTER-COSC, USDA-COROS.

***Coryphantha vivipara*** (Nutt.) Britt. SPINYSTAR. Perennial 10-  
20 cm tall. Flowers red, pink, or yellow. Gravelly slopes, hills, and  
canyons. May-Jul. [*Escobaria vivipara* (Nutt.) F. Buxb.  
*Mammillaria vivipara* Nutt.]. LTER-COVI, USDA-ESVI2.

**Echinocactus**

***Echinocactus horizionthalonius*** Lem. EAGLE CLAW CACTUS,  
BLUEBARREL. Perennial 5-25 cm tall. Stems ribbed, wider than  
long. Flowers pink with reddish centers. Gravelly, limestone hills.  
Jul-Aug. LTER-ECHO, USDA-ECHO.

**Echinocereus**

1 Stems in large clumps of 20 or more (up to 500)

2 Plants straw-colored because of the yellowish spines; central  
spines mostly 5-9 cm long ..... **E. stramineus**

- 2 Plants darker, the spines grayish to dark-colored; central spines 2-6 cm long ..... **E. coccineus**
- 1 Stems in clumps of 1-10
  - 3 Stems rainbow-like, with alternating row of pinkish, reddish, and grayish spine clusters; spines less than 1 cm long ..... **E. pectinatus**
  - 3 Stems without rainbow-like colors; spines 2-6 cm long
    - 4 Stems with 12-14 ribs ..... **E. coccineus**
    - 4 Stems with 8-10 ribs ..... **E. fendleri**

***Echinocereus coccineus*** Engelm. SCARLET HEDGEHOG-CACTUS. Few to many ribbed stems clumped together in often large mounds. Spines 2-6 cm. Flowers red. [*Echinocereus triglochidiatus* Engelm. var. *gurneyi* misapplied by various authors, *Echinocereus triglochidiatus* Engelm. var. *melanacanthus* (Engelm.) Benson]. Our plants belong to var. *coccineus*. Forms with few stems represent hybrid plants. LTER-ECTR, USDA-ECCO5.

***Echinocereus fendleri*** Engelm. FENDLER'S HEDGEHOG-CACTUS. Perennial 10-30 cm tall, the stems ribbed. Spines 2-4 cm. Flowers dark reddish purple. Rocky slopes, tobosa flats. Apr-Jun. LTER-ECFE, USDA-ECFE.

***Echinocereus pectinatus*** (Scheidw.) Engelm. RAINBOW HEDGEHOG-CACTUS. Perennial 10-30 cm tall, spirally ribbed. Flowers funnel-like, yellow, orange, pink, or red. Bajadas. Mar-May. LTER-ECPE, USDA-ECPE.

***Echinocereus stramineus*** (Engelmann) F. Seitz STRAWBERRY HEDGEHOG-CACTUS. Perennial, usually in large mounds of 50 or more stems (sometimes fewer). Flowers magenta to dark red. Rocky slopes and upper bajadas. Mar-May. [*Echinocereus enneacanthus* Engelm. var. *stramineus* (Engelmann) L. Benson]. LTER-ECST, USDA-ECST2.

### **Echinomastus**

***Echinomastus intertextus*** (Engelmann) Britton & Rose EARLY BLOOMER, PINEAPPLE CACTUS. Perennial 2-20 cm tall, with spiral ribs. Flowers salmon to whitish. Dry, gravelly hills. Feb-Apr. [*Echinocactus intertextus* Engelm. *Neolloydia intertexta* (Engelm.) Benson]. LTER-NEIN, USDA-ECIN2.

### **Ferocactus**

***Ferocactus wislizeni*** (Engelm.) Britt. & Rose FISH-HOOK BARREL-CACTUS. Perennial 30-200 cm tall, strongly ribbed and fluted. Main spine flattened and cross-ribbed, curved like a fish-hook. Flowers yellow to reddish. Rocky slopes and upper bajadas.

Jul-Sep. [*Echinocactus wislizeni* Engelm.]. LTER-FEWI, USDA-FEWI.

### **Mammillaria**

1 Spines straight; juice milky ..... **M. heyderi**

1 Spines fish-hooked; juice not milky

2 Each spine cluster with mostly 1 hooked spine; petals 9-14 mm.  
..... **M. grahamii**

2 Each spine cluster with mostly 2 (1-7) hooked spines; petals 25-30 mm ..... **M. wrightii**

**Mammillaria grahamii** Engelm. GRAHAM'S NIPPLE-CACTUS. Perennial 2-6 cm tall. Hook 2-3 mm across. Flowers deep pink. Fruits red. Rocky slopes. May-Jul. [*Mamillaria microcarpa* Engelm.] LTER-MAGR, USDA-MAGR9.

**Mammillaria heyderi** Mühlenpfordt PANCAKE CACTUS, LITTLE NIPPLE-CACTUS. Perennial 1-8 cm tall. Stems flat on top. Flowers white, cream, yellow, or pale pink. Gravelly hills and slopes. Mar-May. [*Mammillaria gummifera* Engelm.]. LTER-MAGU, USDA-MAHE2.

**Mammillaria wrightii** Engelm. WRIGHT'S NIPPLE-CACTUS. Perennial 2-10 cm tall. Hook 1.5 mm across. Flowers bright red-purple. Fruits green to purplish. Rocky slopes, tobosa flats. Jul-Aug. LTER-MAWR, USDA-MAWR2.

### **Opuntia**

1 Stems round in cross-section, cane-like (chollas).....  
..... see *Cylindropuntia*

1 Stems (pads) flattened, pancake-like (prickly pears)

2 Pads usually purplish, at least on the edges and sometimes entirely so, relatively thin ..... **O. macrocentra**

2 Pads usually greenish or bluish-green, relatively thick  
3 Spines round at the base, at least most of them .....  
..... **O. phaeacantha**

3 Spines flat at the base, more or less all of them  
4 Spines pure canary yellow; spine clusters close together,  
only 1-2.5 cm apart; pads circular ..... **O. chlorotica**

4 Spines chalky white in age, brownish when young; spine  
clusters distant, 2.5-5 cm apart; pads usually ovate .....  
..... **O. engelmannii**

**Opuntia chlorotica** Engelm. & Bigelow CLOCK-FACE PRICKLY-PEAR. Shrubby, mostly with a trunk, 1-2 m. Pad usually greenish or bluish green, relatively thick. Spines markedly yellow and more delicate than the other species, numerous. Flowers light

yellow, sometimes with red centers. Apr-Jun. LTER-OPCH, USDA-OPCH.

***Opuntia engelmannii*** Salm-Dyck ex Engelm. ENGELMANN'S PRICKLY-PEAR. Shrubby, mostly with a trunk, 1-2 m. Spines whitish, strongly flattened. Flowers yellow (rarely reddish). Rocky hills and slopes. Apr-Jun. [*Opuntia phaeacantha* var. *discata* (Griffiths) Benson & Walkington]. LTER-OPDI, USDA-OPEN3.

***Opuntia macrocentra*** Engelm. PURPLE PRICKLY-PEAR. Perennial 40-150 cm tall. Pads thin, purplish. Spines few on the edges of pads, 5-12 cm long, dark, many (most) of them flattened. Flowers yellow with red centers. Plains, flats, and hills. Mar-May. [*Opuntia violacea* Engelm., *Opuntia violacea* Engelm. var. *macrocentra* (Engelm.) Benson]. Earlier editions reported *O. santarita* (Griffiths & Hare) Rose from the area, based on plants with purplish pads; these plants are referred to *O. macrocentra*. LTER-OPVI, USDA-OPMA8.

***Opuntia phaeacantha*** Engelm. PLAINS PRICKLY-PEAR. Perennial 20-130 cm tall. Pads thick, mostly greenish. Spines mostly round, 2-5 cm. Flowers yellow-orange, sometimes with reddish center. Rocky hills and slopes. Mar-May. Extremely variable, including numerous named forms. LTER-OPPH, USDA-OPPH.

### **Peniocereus**

***Peniocereus greggii*** (Engelmann) Britton & Rose NIGHT-BLOOMING CEREUS. Shrubby-looking plants 20-60 cm tall, usually growing in the protection of other shrubs, with angular stems. Spines inconspicuous, about 1 mm long. Flowers strictly nocturnal, white, fragrant, about 5-8 cm in diameter and up to 16 or so cm long, open only a single night. Gravelly slopes and bajadas. Apr-Jun. [*Cereus greggii* Engelmann]. Our plants belong to var. *greggii*. LTER-CEGR, USDA-PEGRG.

### **CANNABACEAE HEMP FAMILY**

Trees, shrubs, herbs, or vines, some producing strong stem fibers. Leaves opposite or alternate (ours), pinnate, palmately lobed, or compound, usually with 3 main veins at the base. Flowers small, actinomorphic, unisexual (monoecious or dioecious), wind-pollinated, 4- to 5-merous. Petals none. Ovary superior. Fruit an achene or drupe. Woody members of this family (*Celtis*) were formerly classed in the Ulmaceae, but morphologic and molecular analyses place them firmly within the Cannabaceae.

## Celtis

*Celtis reticulata* Torrey WESTERN HACKBERRY. Shrub to small tree 2-6 m. Bark grayish, smooth. Leaves ovate, rough-hairy, entire to toothed. Fruit hard and berry-like, 8-9 mm dia. Canyons, rocky ravines, and washes. Apr-May. [*Celtis laevigata* Willd. var. *reticulata* (Torrey) Benson]. Similar to *Morus microphylla* (Moraceae), which has milky sap and clusters of drupelets for fruits. LTER-CERE, USDA-CELAR

## CAPPARIDACEAE CAPER FAMILY

Herbs. Leaves alternate, palmately compound, the leaflets entire. Flowers with 4 sepals and 4 pet. Stamens numerous, conspicuous. Ovary superior. Fruit borne on a stalk, pod-like.

## Polanisia

1 Stamens about 20-30 in number, the longer ones up to 50 mm long; petals 10-30 mm long; plants perennial ..... **P. uniglandulosa**

1 Stamens about 10-20 in number, the longer ones up to 30 mm long; petals 8-15 mm long; plants usually annual ... **P. dodecandra**  
**Polanisia dodecandra** (Linnaeus) A.P. de Candolle subsp.

**trachysperma** (Torrey & Gray) Iltis RED WHISKER CLAMMY-WEED. Mostly annual, 10-60 cm tall. Leaflets often oblanceolate, sparsely glandular. Flowers with purplish sepals and white petals. Capsules 4-7 cm long, glandular. Jul-Oct. LTER-POTR, USDA-PODO3.

**Polanisia uniglandulosa** (Cavanilles) A.P de Candolle MEXICAN CLAMMY-WEED. Perennial, 40-80 cm tall. Leaflets elliptic, sparsely glandular. Flowers with purplish sepals and white petals. Capsules 6-10 cm long, glandular. Mar-Oct. LTER-POUN, USDA-POUN3.

## CARYOPHYLLACEAE PINK FAMILY

Annual or perennial herbs. Leaves mostly opposite, simple, entire. Flowers 4- or 5-merous. Stamens 5-10. Ovary superior. Fruit a dry capsule.

1 Leaves nearly orbicular, clustered with the flowers at the ends of slender radiating naked stems; plants low, prostrate to ascending; internodes lacking sticky bands ..... **Drymaria**

1 Leaves linear-lanceolate, arranged all along the stem in opposite pairs; plants stiffly erect; upper internodes w/sticky dark bands.....  
..... **Silene**

## Drymaria

*Drymaria pachyphylla* Woot. & Standl. THICKLEAF  
DRYMARY. Glabrous, semi-succulent annual 3-8 cm tall. Leaves opposite or whorled, elliptic to nearly circular. Petals 5 in number, white, cleft about 1/2 their length, 2-3 mm long. Sandy and silty plains. Jan-Oct. Toxic to sheep and cattle. LTER-DRPA, USDA-DRPA3.

## Silene

*Silene antirrhina* Linnaeus SLEEPY CATCHFLY. Glabrous annual to 35 cm tall, with dark sticky bands in at least the upper internodes, on which one finds the skeletons of trapped insects. Leaves opposite, mostly linear. Sepals united, strongly veined, becoming bladderly. Petals 5 in number, cleft, reddish, 2-5 mm long. Gravelly bajadas and rocky slopes. Mar-Apr. LTER-SIAN, USDA-SIAN2.

## CHENOPODIACEAE GOOSEFOOT FAMILY

Herbs or shrubs, often with mealy scales. Leaves mostly alternate, simple, without stipules. Flowers small, greenish. Sepals 5. Petals none. Stamens 5. Ovary superior, the styles 2-3.

- 1 Plants shrubs, woody at least at the base
  - 2 Leaves round, succulent..... **Suaeda**
  - 2 Leaves flattened, not succulent
    - 3 Plants densely white-wooly, especially the inflorescence.....  
..... **Krascheninnikovia**
    - 3 Plants glabrous to scaly ..... **Atriplex**
- 1 Plants herbaceous
  - 4 Herbage densely white-mealy ..... **Chenopodium**
  - 4 Herbage glabrous to variously hairy, not not mealy
    - 5 Leaves 4-15 mm wide, lance- to egg-shaped
      - 6 Leaves toothed ..... **Cycloloma**
      - 6 Leaves entire ..... **Kochia**
    - 5 Leaves 1-2 mm wide, linear to thread-like
      - 7 Fruit naked, not enclosed by the sepals or bracts.....  
..... **Corispermum**
      - 7 Fruit enclosed by prominently winged sepals ..... **Salsola**

## Atriplex

- 1 Plants large woody shrubs ..... **A. canescens**
- 1 Plants small herbaceous annuals ..... **A. rosea**

*Atriplex canescens* (Pursh) Nutt. FOUR-WING SALTBUUSH.  
Shrub to 2.5 m. Leaves linear to oblong, mealy. Flowers unisexual,

mostly on separate plants. Fruit with 4 conspicuous wings. Plains, flats, and gentle slopes. Apr-Oct. LTER-ATCA, USDA-ATCA2.

\**Atriplex rosea* Linnaeus TUMBLING ORACHE. Annual, growing as rounded bushes when mature. Leaves alternate, glabrous or finely mealy, ovate, coarsely toothed. Moist disturbed sites along the floodplain. Jul-Nov. LTER-ATRO, USDA-ATRO.

### **Chenopodium**

Earlier reports of *Chenopodium atrovirens* from the plains area were in error; that is a species of middle- to upper elevations in the mountains.

- 1 Main leaves toothed to sinuate-dentate above any basal lobes, at least those of the main st
- 2 Glomerules large, (3)4-7 mm in diameter; pericarp honeycomb-pitted; style base persistent on the fruit ..... **C. berlandieri**
- 2 Glomerules smaller, 1.5-4 mm in diameter; pericarp not honeycomb-pitted; style base deciduous from the fruit .....  
.....**C. album**
- 1 Main leaves entire above the base, which may have 1-2 lobes
- 3 Leaves linear, 1-2 mm wide, 1-nerved ..... **C. leptophyllum**
- 3 Leaves broader than linear, mostly more than 4 mm wide, 3-nerved
- 4 Leaves ovate or broadly elliptic, 2-5 times longer than broad .  
..... **C. desiccatum**
- 4 Leaves triangular to diamond-shaped with noticeable angles, 1-2 times longer than broad.....**C. incanum**

\**Chenopodium album* L. LAMB'S QUARTER. Annual mostly 40-80 cm tall, sometimes shorter. Leaves pale green and hardly mealy above. Moist, disturbed areas. Apr-Sep. LTER-CHAL, USDA-CHAL7.

\**Chenopodium berlandieri* Moquin-Tandon PITTED GOOSEFOOT. Annual 30-70 cm tall. Leaves mostly toothed, but sometimes hardly so or only those on the main stem. Pericarp honeycomb-pitted, seen with a hand lens. Seasonally moist, disturbed ground. May-Sep. Very similar to *Ch. album*. LTER-CHBE, USDA-CHBE4.

*Chenopodium desiccatum* A. Nels. THICKLEAF GOOSEFOOT. Annual 10-50 cm tall. Dry flats and plains. Jul-Sep. LTER-CHDE, USDA-CHDE.

*Chenopodium incanum* (Wats.) Heller MEALY GOOSEFOOT. Annual 10-50 cm tall. Leaves densely white-mealy above. Loose soils of hills and plains. May-Aug. LTER-CHIN, USDA-CHIN2.



***Chenopodium leptophyllum*** Wats. NARROWLEAF  
GOOSEFOOT. Annual 20-80 cm tall. Sandy or gravelly slopes and  
canyons. Jun-Sep. LTER-CHLE, USDA-CHLE4.

### **Corispermum**

\****Corispermum americanum*** (Nutt.) Nutt. var. ***rydbergii***  
Mosyakin RYDBERG'S BUGSEED. Annual 20-50 cm tall. Leaves  
linear, 1-6 cm, 1-2 mm wide. Sandy fields and plains, mostly in  
disturbed ground. Jul-Oct. [*Corispermum nitidum* of various works].  
LTER-CONI, USDA-COAMB.

### **Cycloloma**

***Cycloloma atriplicifolium*** (Sprengel) Coulter WINGED  
PIGWEEED. Bushy annual 15-80 cm tall and about as wide. Leaves  
lance-shaped to ovate, 2-8 cm, 6-15 mm wide. Weedy in disturbed  
ground. Jun-Nov. LTER-CYAT, USDA-CYAT.

### **Kochia**

\****Kochia scoparia*** (L.) Roth MEXICAN FIREWEED, SUMMER  
CYPRESS. Bushy annual to 2 m tall. Leaves alternate, 2-7 cm,  
lance- to spatula-shaped, 3-veined, woolly when young, ± hairless at  
maturity. Flowers in spikes, winged in fruit. Disturbed ground. Jul-  
Oct. LTER-KOSC, USDA-KOSC.

### **Krascheninnikovia**

***Krascheninnikovia lanata*** (Pursh) A. Meeuse & A. Smit  
WINTERFAT. Low half-shrub 20-80 cm tall. Stems and leaves  
white-wooly. Leaf margins rolled under. Flowers unisexual, on the  
same plant. Plains and flats. Apr-Sep. [*Ceratoides lanata* (Pursh)  
J.T. Howell, *Eurotia lanata* (Pursh) Moq.]. LTER-CELA, USDA-  
KRLA2.

### **Salsola**

\****Salsola tragus*** L. RUSSIAN THISTLE. Bushy annual to 1.5 m  
tall and sometimes nearly as wide. Leaves of seedlings soft and  
thread-like, those of mature plants stiff and spiny. Common weed of  
disturbed sites. Jul-Oct. [*Salsola australis* R. Br. *Salsola iberica*  
Sennen and Pau, *Salsola kali* L. var. *tenuifolia* Tausch, *Salsola*  
*pestifer* A. Nels.]. Earlier editions reported *Salsola paulsenii* Litv. in  
error. LTER-SAKA, USDA-SATR12.

## Suaeda

*Suaeda nigra* (Rafinesque) Macbride SHRUBBY SEEPWEED. Shrubs 50-100 cm tall. Leaves round, succulent, somewhat wooly. Floodplains. Apr-Oct. [*Suaeda suffrutescens* Watson]. LTER-SUNI, USDA-SUNI.

## COMMELINACEAE SPIDERWORT FAMILY

Annual or perennial herbs. Leaves sheathing, alternate, entire.

Flowers 3-merous. Sepals green. Petals colored. Stamens 6.

Fruit a capsule.

- 1 Flowers borne in a boat-shaped bract ..... **Commelina**
- 1 Flowers not borne in a boat-shaped bract, but subtended by narrow leaves ..... **Tradescantia**

## Commelina

*Commelina erecta* L. var. *angustifolia* (Michx.) Fernald WHITEMOUTH DAYFLOWER. Perennial 20-65 cm long, the stems mostly spreading to decumbent. Leaves clasping the stem, lance-shaped. Flowers with 2 blue petals and 1 white pet. Stamens filaments hairless. Rocky slopes. May-Oct. LTER-COER, USDA-COER.

## Tradescantia

*Tradescantia occidentalis* (Britt.) Smyth WESTERN SPIDERWORT. Perennial 10-60 cm tall. Leaves clasping the stem, linear to lance-shaped. Flowers with 3 blue pet. Stamens filaments hairy. Moist plains. Mar-Sep. LTER-TROC, USDA-TROC.

## CONVOLVULACEAE MORNING-GLORY FAMILY

Annual or perennial herbs, often vine-like. Leaves simple,

alternate, entire or lobed, without stipules. Flowers 5-merous.

Petals united, trumpet-shaped. Ovary superior. Fruit a capsule.

- 1 Stems erect to decumbent, not viny or twining; leaves linear to lance-shaped or elliptic
  - 2 Flowers funnel-shaped, white, the corolla tube cleft about halfway ..... **Cressa**
  - 2 Flrs flat-topped, bluish to whitish, the corolla tube hardly lobed at all ..... **Evolvulus**
- 1 Stems viny or twining; leaves ovate, triangular, to heart-shaped, sometimes lobed
  - 3 Flowers white to pink ..... **Convolvulus**
  - 3 Flowers orange-red to scarlet ..... **Ipomoea**

## Convolvulus

*Convolvulus equitans* Bentham TEXAS BINDWEED. Annual, the stems prostrate to twining, to 2 m. Leaves highly variable in shape, ovate to linear with basal lobes. Flowers funnel-shaped, white to pink, 1.5-2 cm. Rocky or sandy, disturbed ground. Apr-Oct. [*Convolvulus incanus* of various works]. LTER-COEQ, USDA-COEQ.

## Cressa

*Cressa truxillensis* Humboldt, Bonpland, & Kunth ALKALI-WEED. Perennial from spreading underground root-stocks, forming large growths. Leaves alternate, elliptic to lanceolate, hairy. Flowers white, with spreading lobes. Alkali playas, floodplains. Jul-Nov. LTER-CRDE, USDA-CRTR5.

## Evolvulus

1 Stems mostly more than 25 cm long; upper leaves greatly reduced in size; flowers 1-few on peduncles clearly longer than the subtending leaves..... **E. alsinoides**

1 Stems rarely more than 15 cm long; upper leaves only slightly reduced in size; flowers mostly solitary, on peduncles or pedicels much shorter than the subtending leaves

2 Leaves densely sericeous-pilose on the upper surface, 1- 5-veined (all but the central vein obscured by the hairs); corollas lavender to purplish..... **E. nuttallianus**

2 Leaves glabrous to sparsely sericeous on the upper surface, 3-veined (easily seen from above); corollas whitish .... **E. sericeus**

*Evolvulus alsinoides* L. SLENDER MORNING-GLORY. Bushy perennial with wiry tangled stems. Flowers on long stalks in the axils of the leaves. Corolla bluish. Rocky uplands. Aug-Oct. LTER-EVAL, USDA-EVAL.

*Evolvulus nuttallianus* Schultes SHAGGY MORNING-GLORY. Perennial 5-30 cm tall, densely silvery hairy, the stems  $\pm$  erect. Corolla lavender to whitish. Rocky or sandy plains and hills. Apr-Jul. [*Evolvulus pilosus* Nutt.]. LTER-EVNU, USDA-EVNU.

*Evolvulus sericeus* Sw. SILVERY MORNING-GLORY. Perennial 10-15 cm tall, densely hairy, the stems ascending to spreading. Corolla bluish to whitish. Sandy to gravelly plains and slopes. May-Sep. LTER-EVSE, USDA-EVSE.

## Ipomoea

1 Leaves deeply cleft into  $\pm$  filiform segments 1-3 mm wide; corolla 1-1.5 cm long, pale bluish or pinkish ..... **I. costellata**

1 Leaves entire to deeply cleft, but the segments broadest at the middle (>3 mm) and tapering at both ends; corolla 2-4 cm long, deep reddish or orange-red..... **I. cristulata**

***Ipomoea costellata*** Torr. CRESTED MORNING-GLORY.

Annual, glabrous vines. Leaves deeply lobed, the segments 7-25 mm long. Corolla pale bluish or pinkish, 1-1.5 cm long. Sandy flats and slopes. Aug-Oct. LTER-IPCO, USDA-IPCO2.

***Ipomoea cristulata*** Hallierf. SCARLET CREEPER. Annual, glabrous vines. Leaves deeply lobed, the segments 30-50 mm long. Corolla deep reddish or orange-red, trumpet-shaped, 2-4 cm long. Rocky slopes and bajadas. Aug-Oct. LTER-IPCR, USDA-IPCR.

**CUCURBITACEAE GOURD FAMILY**

Annual or perennial herbs. Stems trailing or climbing, viny, typically with tendrils. Leaves alternate, mostly simple, entire to lobed. Flowers unisexual, the sexes mostly borne on the same plant, 5-merous. Ovary inferior. Fruit a gourd or berry-like.

1 Leaves arrow-shaped, toothed but not lobed, foul-smelling ..... **Cucurbita**

1 Leaves egg-shaped to deeply dissected, lobed to deeply dissected  
2 Leaves deeply dissected into narrow segments ..... **Ibervillea**

2 Leaves lobed with broad segments ..... **Apodanthera**

**Apodanthera**

***Apodanthera undulata*** Gray MELON-LOCO. Sprawling vines. Flowers yellow, star-shaped with separate pet. Fruit football-shaped, green, with raised longitudinal ridges. Sandy or gravelly flats and bajadas. May-Sep. LTER-APUN, USDA-APUN.

**Cucurbita**

***Cucurbita foetidissima*** H.B.K. BUFFALO-GOURD. Coarse, foul-smelling vines, the stems to 6 m or more. Flowers yellow, bell-shaped. Fruit baseball-shaped, with green and white stripes. Sandy ground. May-Aug. LTER-CUFO, USDA-CUFO.

**Ibervillea**

***Ibervillea tenuisecta*** (Gray) Small DEER-APPLES. Slender, glabrous vines. Flowers greenish-yellow to whitish. Fruit red, fleshy, about 15 mm in diameter. Rocky hills and draws. Jun-Aug. LTER-IBTE, USDA-IBTE2.

## CUPRESSACEAE CYPRESS FAMILY

Trees or shrubs. Leaves evergreen, scale-like, opposite or whorled. Male cones small, inconspicuous. Female cones fleshy, berry-like.

### Juniperus

- 1 Leaves mostly with a white exudate from the dorsal gland; cones rose to pinkish beneath a glaucous bloom ..... **J. arizonica**  
1 Leaves mostly without a white exudate from the dorsal gland; cones reddish blue to brownish blue..... *J. monosperma*

***Juniperus arizonica*** (R.P. Adams) R.P. Adams ARIZONA JUNIPER, ROSEBERRY JUNIPER. Large shrubs to about 6 m. Bark shreddy in long strips. Leaves scale-like, 2-3 mm, mostly slightly yellowish-green, with a small gland on the back, this releasing a whitish exudate at least on young growth. Cones borne on separate plants, rose to pinkish beneath a glaucous bloom. Dry, steep, rocky slopes. [*Juniperus coahuilensis* (Martinez) Gaussen ex R.P. Adams var. *arizonica* R.P. Adams, *Juniperus erythrocarpa* Cory var. *coahuilensis* Martinez]. Very similar to the next species. *Juniperus deppeana* Steudel will be found in the foothills of the San Andres Mountains, to the east of our area. LTER-JUAR, USDA-JUAR3.

*Juniperus monosperma* (Engelm.) Sarg. ONE-SEED JUNIPER. Large shrubs to about 8 m. Bark shreddy in long strips. Leaves scale-like, 1-3 mm, mostly darker green than roseberry juniper, most of the leaves lacking a white exudate from the dorsal gland. Cones borne on separate plants, reddish blue to brownish blue beneath a glaucous bloom. Rocky slopes in the foothills at higher elevations than the preceding. Not known definitely from the plains area, but very similar to *Juniperus coahuilensis* var. *arizonica* and included for comparison. LTER-JUMO, USDA-JUMO.

## CUSCUTACEAE DODDER FAMILY

Parasitic, mostly annual herbs without chlorophyll and without roots, the plants mostly orange-colored. Stems twining on and affixed to other herbaceous plants. Leaves alternate, reduced to minute scales or absent. Flowers 4- or 5-merous, white to yellowish. Petals united. Ovary superior. Fruit a capsule.

### Cuscuta

- 1 Fruit splitting open horizontally near the base ..... **C. umbellata**  
1 Fruit not splitting open..... **C. salina**

*Cuscuta salina* Engelm. GOLDEN-THREAD. Parasitic on various hosts, but especially members of the Chenopodiaceae. Jul-Sep. LTER-CUSA, USDA-CUSA.

*Cuscuta umbellata* H.B.K. DODDER. Parasitic upon various hosts, including *Euphorbia*, *Portulaca*, *Tidestromia*, *Tribulus*, and other herbaceous plants. Jul-Sep. LTER-CUUM, USDA-CUUM.

### CYPERACEAE SEDGE FAMILY

Grass-like herbs. Stems triangular or round. Leaves mostly basal, 3-ranked, glossy. Flowers hidden in chaffy bracts (spikelets). Sepals and petals highly modified. Ovary superior. Fruit 1-seeded.

- 1 Stems round..... **Schoenoplectus**
- 1 Stems 3-angled
  - 2 Scales of the spikelets spirally arranged, the spikelets rounded ...  
..... **Schoenoplectus**
  - 2 Scales of the spikelets two-ranked, the spikelets compressed .....  
..... **Cyperus**

### Cyperus

- 1 Plants with rhizomes ..... **C. esculentus**
- 1 Plants tufted, without rhizomes ..... **C. retroflexus**

*Cyperus esculentus* L. CHUFA, YELLOW NUT-SEDGE.

Perennial 15-50 cm tall. Leaves glossy, grass-like, basal. Low, wet ground. Jun-Oct. LTER-CYES, USDA-CYES.

*Cyperus retroflexus* Buckley FLAT-SEDGE. Perennial 8-30 cm tall. Generally similar to the preceding. Floodplains, moist sandy prairies. Mar-Oct. [*Cyperus uniflorus* Torrey & Hooker]. LTER-CYUN, USDA-CYRE14.

### Schoenoplectus

- 1 Stems round, usually 1 m or more tall ..... **S. acutus**
- 1 Stems angled, usually less than 1 m tall ..... **S. pungens**

*Schoenoplectus acutus* (Muhlenberg ex Bigelow) A. & D. Löve var. *occidentalis* (S. Watson) Smith HARDSTEM BULRUSH.

Plants from rhizomes, 1-3 m tall, the stems rounded and not angled. Leaves borne on the lower portion and reduced to bladeless sheaths. Inflorescence subtended by a bract that simulates a continuation of the stem. Floodplains along the Rio Grande. [*Scirpus occidentalis* (S. Watson) Chase]. LTER-SCAC, USDA-SCPU10

*Schoenoplectus pungens* var. *longispicatus* (Britton) S.G. Smith THREE-SQUARE BULRUSH. Plants from rhizomes, 0.3-1 m tall, the stems 3-angled. Leaves borne on the lower portion of the stem, the lower ones bladeless, the upper ones with blades. Inflorescence

subtended by a leaf-like bract. Floodplains along the Rio Grande. [*Scirpus americanus* of NM authors, not Persoon]. LTER-SCLO, USDA-SCPU10.

### EPHEDRACEAE JOINT-FIR FAMILY

Shrubs. Stems green. Leaves papery or scale-like, reduced, opposite or whorled. Male and female cones borne on separate plants.

#### Ephedra

- 1 Leaves (scales at nodes) 5 mm or more long; stem tips pointed, nearly spine-like; plants greenish to yellow-green; female cones pedicelled.....**E. trifurca**
- 1 Leaves 2-5 mm long; stem tips blunt; plants mostly with a bluish cast; all cones sessile ..... **E. torreyana**  
***Ephedra torreyana*** Wats. TORREY'S EPHEDRA. Shrub 30-100 cm tall. Stems pale, blue-green, not thorny. Dry, rocky or sandy hills and slopes, also gypsum bluffs. LTER-EPTO, USDA-EPTO.  
***Ephedra trifurca*** Torrey CAÑUTILLO, LONGLEAF EPHEDRA. Shrub 1-2 m. Stems green, thorny-tipped. Sandy or gravelly hills, slopes, plains, and washes. LTER-EPTR, USDA-EPTR.

### EUPHORBIACEAE SPURGE FAMILY

Annual or perennial herbs or shrubs, the juice milky or watery. Leaves alternate or opposite, simple. Flowers unisexual. Sepals and petals 4-6 or lacking. Stamens 1-many. Ovary superior, 3-celled. Fruit a capsule.

- 1 Leaves palmately 3-5-lobed ..... **Jatropha**
- 1 Leaves entire or toothed but not palmately lobed
  - 2 Leaves densely grayish or silvery hairy with wooly stellate hairs ..... **Croton**
  - 2 Leaves green, glabrous to hairy but without stellate hairs
    - 3 Plants with milky juice; flowers borne in cup-shaped structures (cyathia), mostly with pet-like glands or lobes on the edge of the cup; mature fruit 3-lobed and hanging out of the cup; leaves opposite or alternate
      - 4 Larger leaves 1-3 cm long ..... **Chamaesyce**
      - 4 Larger leaves 3-7 cm long ..... **Euphorbia**
    - 3 Plants without milky juice; flowers and fruits not arranged as above; leaves alternate
      - 5 Leaves entire ..... **Reverchonnia**
      - 5 Leaves toothed
        - 6 Plants annual, without stinging hairs..... **Acalypha**

6 Plants perennial, with stinging hairs ..... **Tragia**

**Acalypha**

***Acalypha neomexicana*** Muell. Arg. NEW MEXICO  
MERCURY. Annual, erect, 10-35 cm tall. Leaves lance- to egg-  
shaped, alternate above, opposite below. Bajadas. Jul-Oct. LTER-  
ACNM, USDA-ACNE.

**Chamaesyce** [Note: The species of *Chamaesyce* have all previously been  
classified in the genus *Euphorbia*, and the trend now is to place them again in  
that genus. Though I retain *Chamaesyce* here, all the synonyms for *Euphorbia*  
are provided, should one wish to use those names.]

- 1 Leaves toothed at least near the tip
  - 2 Herbage hairy..... **C. serrula**
  - 2 Herbage glabrous or nearly so
    - 3 Stems erect to strongly ascending..... **C. serpyllifolia**
    - 3 Stems prostrate
      - 4 Leaves mostly broadest below the middle; seeds strongly  
ribbed, the ribs cutting through the raised angles of the  
seed..... **C. glyptosperma**
      - 4 Leaves mostly broadest above the middle when fresh;  
seeds weakly ribbed and not cutting through the raised  
angles of the seed..... **C. serpyllifolia**
- 1 Leaves entire
  - 5 Stems erect
    - 6 Leaves with margins rolled-under; fruit less than 1.5 mm in  
diameter ..... **C. revoluta**
    - 6 Leaves with margins flat; fruit 2-2.5 mm in dia ..... **C. parryi**
  - 5 Stems prostrate
    - 7 Stems and leaves pubescent, at least finely so
      - 8 Plants annual, shaggy-hairy; petal-like appendages divided  
into 3-5 attenuate lobes..... **C. setiloba**
      - 8 Plants perennial, puberulent; petal-like appendages  
undivided..... **C. lata**
    - 7 Stems and leaves glabrous
      - 9 Plants perennial with rhizomes..... **C. albomarginata**
      - 9 Plants annual with taproots ..... **C. micromera**

***Chamaesyce albomarginata*** (Torrey & Gray) Small

RATTLEWEED SPURGE. Perennial 1-2 cm tall. Stems prostrate.  
Leaves mostly with white margins. Sandy flats, plains, hills, and  
washes. Apr-Nov. [*Euphorbia albomarginata* Torrey & Gray].  
LTER-EUAL, USDA-CHAL11.

***Chamaesyce glyptosperma*** (Engelm.) Small RIB-SEED  
SPURGE. Annual 1-5 cm tall. Stems prostrate. Seeds strongly



transversely ribbed or wrinkled. Sandy ground. May-Sep. [*Euphorbia glyptosperma* Engelm.]. LTER-EUGL, USDA-CHGL13.

***Chamaesyce lata*** (Engelmann) Small HOARY SPURGE. Perennial 3-10 cm tall. Stems prostrate or reclining. Leaves lanceolate, finely pubescent, the margins revolute. Dry plains, known from Pearson Tank. [*Euphorbia lata* Engelmann]. LTER-EULA USDA-CHLA10.

***Chamaesyce micromera*** (Boiss.) Woot. & Standl. DESERT SPURGE. Annual 1-2 cm tall. Stems prostrate. Leaves with green margins. Dry plains and slopes. Jun-Oct. [*Euphorbia micromera* Boiss.]. LTER-EUMI, USDA-CHMI7.

***Chamaesyce parryi*** (Engelm.) Rydberg PARRY'S SPURGE. Annual 25-50 cm tall. Seeds smooth. Dry hills and plains. May-Sep. [*Euphorbia parryi* Engelm.]. LTER-EUPA, USDA-CHPA28.

***Chamaesyce revoluta*** (Engelm.) Small CURL-LEAF SPURGE. Annual mostly 15-20 cm tall. Seeds ridged. Sandy or gravelly hills. Aug-Oct. [*Euphorbia revoluta* Engelm.]. LTER-EURE, USDA-CHRE4.

***Chamaesyce serpyllifolia*** (Pers.) Small THYMELEAF SPURGE. Annual 3-15 cm tall. Stems prostrate to ascending. Seeds weakly ribbed or pitted. Sandy plains and hills. Jun-Oct. [*Chamaesyce neomexicana* (Greene) Standley, *Euphorbia serpyllifolia* Pers.]. Erect plants have been referred to *C. neomexicana*. LTER-EUSR, USDA-CHSE6.

***Chamaesyce serrula*** (Engelm.) Woot. & Standl. SAWTOOTH SPURGE. Annual 2-5 cm tall. Dry plains and hills. Aug-Oct. [*Euphorbia serrula* Engelm.]. LTER-EUSE, USDA-CHSE7.

***Chamaesyce setiloba*** (Engelm.) Millsp. SHAGGY SPURGE. Prostrate annual. Stems and leaves shaggy hairy. Gravelly and sandy slopes. Aug-Sep. [*Euphorbia setiloba* Engelm.]. LTER-EUST, USDA-CHSE8.

## **Croton**

1 Plants shrubs ..... **C. fruticosus**

1 Plants herbaceous or slightly woody at the base. .... **C. pottsii**

***Croton fruticosus*** Torrey BUSH CROTON. Shrubs 0.3-2 m. Leaves ovate to lance-shaped, 2-8 cm. Rocky hills and canyons. Apr-May. LTER-CRFR, USDA-CRFR.

***Croton pottsii*** (Klotzsch) Muell.-Arg. LEATHERWEED. Perennial 20-60 cm tall. Leaves oblong to nearly circular, 2-4 cm. Rocky or sandy slopes and plains. May-Sep. [*Croton corymbulosus* Engelm.]. LTER-CRPO, USDA-CRPO5.

**Euphorbia** Note: Numerous species formerly treated in *Euphorbia* are now found in *Chamaesyce*, q.v.

***Euphorbia davidii*** Subils DAVID'S POINSETTIA. Annual 10-50 cm tall. Leaves lance-shaped, toothed, with whitish base, the larger ones 3-7 cm. Seeds minutely roughened. Occasional on gravelly to clayey plains. Jul-Oct. [*Euphorbia dentata* of numerous authors]. LTER-EUDE, USDA-EUDA5.

### **Jatropha**

***J. macrorhiza*** Bentham RAGGED NETTLE-SPURGE. Perennial herb to 50 cm tall, from a large tuber-like root. Leaves palmately deeply lobed, the lobes coarsely toothed. Flowers with 5 conspicuous pinkish petals. Fruit a large-3-lobed capsule. Seeds very toxic, the herbage less so. LTER-JAMA, USDA-JAMA.

### **Reverchonia**

***Reverchonia arenaria*** Gray SANDYMAT. Annual 15-50 cm tall. Stems much branched. Leaves alternate, linear-elliptic. Flowers purplish. Fruit pea-like. Sand dunes. Jun-Oct. LTER-REAR, USDA-REAR

**Tragia** (Caution: stinging hairs on the stems and leaves!)

1 Stems with appressed hairs..... **T. nepetaefolia**

1 Stems with spreading hairs..... **T. ramosa**

***Tragia nepetaefolia*** Cav. CAT-NIP NOSEBURN. Perennial 10-40 cm tall. Leaves alternate, lance-shaped to ovate, toothed. Flowers unisexual in bracteate racemes. Dry plains and slopes. Apr-Oct. Both this and the next species may be confused with *Ayenia pilosa* (Sterculiaceae), but that species lacks the long stinging hairs on the leaves and stems. LTER-TRNE, USDA-TRNE.

***Tragia ramosa*** Torrey BRANCHED NOSEBURN. Perennial 10-40 cm tall. Leaves and flowers similar to the preceding. Rocky slopes. May-Sep. [*Tragia stylaris* Muell.-Arg.]. LTER-TRRA, USDA-TRRA5.

## **FABACEAE (LEGUMINOSAE) PEA FAMILY**

Herbs, shrubs, or trees, sometimes with spines. Leaves alternate, mostly pinnately compound, with stipules. Flowers 5-merous. Stamens mostly 10-numerous. Ovary superior. Fruit a legume. Including the Mimosaceae and the Caesalpinaceae.

1 Plants woody, trees or shrubs

2 Leaves twice or more compound

3 Leaflets 1-3 mm

- 4 Stems with straight spines at the nodes (rarely spineless)...  
..... **Vachellia**
- 4 Stems with hooked prickles at the nodes or along the stem  
..... **Mimosa**
- 3 Leaflets 7-50 mm
  - 5 Large trees with thorny trunks; leaflets more than 5 mm wide..... **Gleditsia**
  - 5 Shrubs to small trees without thorny trunks; leaflets less than 5 mm wide..... **Prosopis**
- 2 Leaves once compound or simple
  - 6 Leaves simple or once compound, often absent; stems blue-gray and with glandular dots..... **Psorothamnus**
  - 6 Leaves once compound; stems not as above
    - 7 Plants large trees w/thorny trunks; leaves not glandular-dotted..... **Gleditsia**
    - 7 Plants shrubs without thorny trunks; leaves glandular-dotted (look closely)
      - 8 Leaflets  $\leq$  5 mm; low shrubs to 1 m ..... **Dalea**
      - 8 Leaflets more than 10 mm; taller shrubs 1-3 m .....  
..... **Amorpha**
- 1 Plants herbaceous, not woody
  - 9 End of leaf rachis modified into a twining tendril ..... **Vicia**
  - 9 End of leaf rachis not modified into a tendril
    - 10 Leaflets palmately arranged or nearly so, or with only 3 leaflets
      - 11 Flowers yellowish ..... **Lotus**
      - 11 Flowers bluish or reddish
        - 12 Leaves with mostly 5 or more leaflets ..... **Lupinus**
        - 12 Leaves with only 3 leaflets
          - 13 Flowers 3-4 mm long; keel of the corolla not coiled or twisted; fruits strongly constricted between the seeds; plants annual (ours).....  
..... **Desmodium**
          - 13 Flowers 5-10 mm long; keel of the corolla coiled or twisted in some fashion; fruits not constricted between the seeds; plants annual or perennial ..... **Phaseolus**
    - 10 Leaflets pinnately arranged
      - 14 Stems and leaf rachis armed with prickles..... **Mimosa**
      - 14 Stems and leaf rachis without prickles
        - 15 Leaves twice compound
          - 16 Leaflets with black or orange glandular dots ....  
..... **Pomaria**

- 16 Leaflets without glandular dots
  - 17 Crater-like gland present near the base of the leaf stalk between the lowermost pair of lateral leaf divisions ..... **Desmanthus**
  - 17 Crater-like glands absent on leaf stalk
    - 18 Leaves odd-bipinnate; flowers in a terminal raceme, yellow-orange .....  
..... **Hoffmannseggia**
    - 18 Leaves even-bipinnate; flowers in a dense axillary head, whitish to pinkish .....  
..... **Calliandra**
- 15 Leaves once compound
  - 19 Leaflets with small glandular dots, these sometimes hidden beneath a mat of hairs
    - 20 Fruit a prickly pod; axis of leaf 6-15 cm .....  
..... **Glycyrrhiza**
    - 20 Fruit not prickly; axis of leaf 0.5-6 cm .....  
..... **Dalea**
  - 19 Leaflets without small glandular dots
    - 21 All stamens separate from each other .....  
..... **Sophora**
    - 21 Nine stamens united by their filaments, 1 free
      - 22 Flowers nearly radially symmetrical .....  
..... **Senna**
      - 22 Flowers strongly bilaterally symmetrical
        - 23 Corolla brick-red when fresh; stamens filaments filiform, narrow, not dilated below the anther; pods on short stalks .....  
..... **Sphaerophysa**
        - 23 Corolla yellowish, bluish, to purplish, if reddish then only partly so and the stamens filaments broad and flat or dilated below the anther; pods sessile
        - 24 Corolla yellow or tinged with reddish-orange ..... **Lotus**
        - 24 Corolla cream-colored, bluish, purplish, or pinkish .....  
..... **Astragalus**

*Acacia* : see **Vachellia**.

### **Amorpha**

***Amorpha fruticosa*** Linnaeus FALSE INDIGO-BUSH. Large shrubs. Leaves pinnately 1-compound, the leaflets ovate, with a tiny bristle at the tip, faintly gland-dotted. Flowers in dense spikes, purplish. Floodplain along the Rio Grande. LTER-AMFR, USDA-AMFR.

### **Astragalus**

1 Plants perennial

2 Pods with very thick, spongy walls; flowers white to purplish ....  
..... **A. crassicaarpus**

2 Pods with thin, non-spongy walls; flowers yellow to purplish,  
rarely white

3 Herbage villous-tomentose, the hairs curling or twisted hairs.  
..... **A. mollissimus**

3 Herbage densely pilose, but the hairs straight .... **A. tephrodes**

1 Plants annual

4 Pods linear-lanceolate, bean-like, not bladderly-inflated; leaves  
mostly silky hairy ..... **A. nuttallianus**

4 Pods bladderly inflated; leaves mostly glabrous ..... **A. allochrous**

***Astragalus allochrous*** Gray Annual or biennial to 50 cm tall, ± bushy. Leaves glabrous to sparsely hairy. Corolla whitish to purplish or bluish. Slopes, plains, and valleys. Mar-Jul. Toxic to livestock.

a Fruit asymmetrical with 1 straight side and 1 curved side...var.  
***allochrous*** HALFMOON LOCOWEED. LTER-ASAL,  
USDA-ASAL6.

a Fruit symmetrical with both the upper and lower side  
curved...var. ***playanus*** (M.E. Jones) Isely WOOTON'S  
LOCOWEED. [*Astragalus wootonii* Sheldon]. LTER-ASWO,  
USDA-ASAL6.

***Astragalus crassicaarpus*** Nutt. GROUND PLUM. Perennial 10-25 cm tall. Leaves glabrous to lightly hairy. Keel petals purple- or pink-tipped. Fruits glabrous, plump, becoming reddish, 1.5-4 cm. Sandy plains. Apr-May. Not known to be toxic. LTER-ASCR, USDA-ASCR2.

***Astragalus mollissimus*** Torrey var. ***bigelovii*** (Gray) Barneby BIGELOW'S WOOLY LOCOWEED. Perennial 10-25 cm tall, with or without a well-developed stem. Fruit 14-22 mm long, densely hairy. Open plains and slopes. Mar-Jul. [*Astragalus bigelovii* Gray]. Toxic to livestock. LTER-ASMO, USDA-ASMO7.

*Astragalus nuttallianus* DC. NUTTALL'S MILKVETCH. Annual 10-15 cm tall, the stems reclining. Leaves silvery-strigose. Corolla white or pale purplish. Fruit 13-25 mm long. Dry plains and slopes. Mar-May. These plants contain low amounts of the alkaloid swainsonine, but supposedly are not toxic. LTER-ASNU, USDA-ASNU4.

*Astragalus tephrodes* Gray SILVERLINE LOCOWEED. Perennial 10-20 cm tall. Leaflets loosely folded, shiny along the margin. Fruit 10-20 mm, sparsely hairy. Rocky slopes to sandy plains. Apr-Jun. Toxic to livestock. LTER-ASTE, USDA-ASTE8.

### **Calliandra**

*Calliandra humilis* (Schlecht.) L. Benson DWARF FAIRYDUSTER. Perennial 10-20 cm tall. Leaves with 2-4 pairs of divisions. Flowers pinkish, the stamens conspicuous. Fruit with thickened margins of the two halves. Dry slopes. Jun-Aug. LTER-CAHU, USDA-CAHU.

### **Dalea**

1 Plants woody shrubs

2 Stems grayish, glandular dotted .....see *Psorothamnus scoparius*

2 Stems blackish or dark, not glandular dotted ..... **D. formosa**

1 Plants herbaceous, or only slightly woody at the base

3 Corolla white to yellowish

4 Stems 5-20 cm; leaflets 5-15 mm; flowers in axillary spikes...  
..... **D. nana**

4 Stems 40-80 cm; leaflets 15-25 mm; flowers in terminal  
spikes ..... **D. cylindriceps**

3 Corolla reddish purple

5 Leaves glabrous ..... **D. pogonathera**

5 Leaves densely hairy..... **D. lanata**

*Dalea cylindriceps* Barneby ANDEAN PRAIRIE-CLOVER.

Perennial 40-80 cm tall. Leaves once-pinnate, glandular dotted. Flowers white to yellowish, in dense spikes. Sandy plains. Jun-Jul. [*Dalea compacta* and *Petalostemum compactum* of earlier editions, incorrectly applied; *Petalostemon macrostachyus* Torrey]. LTER-PECO, USDA-DACY.

*Dalea formosa* Torrey FEATHER-PLUME. Shrubs 30-100 cm tall. Leaflets gland-dotted. Flowers rose-purplish. Rocky hills. Apr-Sep. LTER-DAFO, USDA-DAFO.

*Dalea lanata* Sprengel var. *terminalis* (Jones) Barneby WOOLY PRAIRIE-CLOVER. Perennial with low spreading stems 30-60 cm tall. Leaves gland-dotted beneath the hairs. Fruit finely villous. Deep

sandy areas. May-Sep. [*Dalea terminalis* Jones]. LTER-DATE, USDA-DALA3

***Dalea nana*** Torrey DWARF PRAIRIE-CLOVER. Perennial 5-20 cm tall. Leaves silky hairy, obscurely gland-dotted beneath. Fruit villous. Plains and slopes. May-Sep. LTER-DANA, USDA-DANA.

***Dalea pogonathera*** Gray BEARDED PRAIRIE-CLOVER. Perennial to 30 cm tall, slightly woody at the base. Leaves gland-dotted. Fruit villous. Plains and hills. Apr-Sep. LTER-DAPO, USDA-DAPO.

### **Desmanthus**

***Desmanthus cooleyi*** (Eaton) Trel. COOLEY'S BUNDLE-FLOWER. Perennial 20-50 cm tall, ± bushy. Leaves with a crater-like gland on the stalk between the lowermost leaf divisions. Flowers in dense globes, whitish, the stamens conspicuous. Plains. May-Sep. LTER-DECO, USDA-DECO2.

### **Desmodium**

***D. rosei*** Schubert TICK-TREFOIL. Erect annual 10-45 cm tall, not twining. Leaflets 3, linear to lanceolate, 7-10 times longer than wide. Flowers pink-purple, small. Fruits nearly glabrous, with 2-4 segments. Gravelly soil on the uplands of Summerford Mountain. Aug-Oct. LTER-DERO, USDA-DERO2.

### **Gleditsia**

\****Gleditsia triacanthos*** L. HONEY-LOCUST. Thorny trees. Leaves once- or twice-compound. An ornamental persisting around old dwellings. May. LTER-GLTR, USDA-GLTR.

### **Glycyrrhiza**

***Glycyrrhiza lepidota*** Pursh AMERICAN LICORICE. Perennial 60-90 cm tall, with sweet roots. Herbage glandular-sticky. Flowers whitish, in axillary racemes. Fruit with numerous hooked prickles. Alluvial and sandy soils of streambeds and ditches. Mar-Jun. LTER-GLLE, USDA-GLLE3.

### **Hoffmannseggia**

1 Leaves with glandular dots.....see *Pomaria*

1 Leaves without glandular dots

2 Flowers and flower stalks densely glandular..... **H. glauca**

2 Flowers and flower stalks not glandular .....**H. drepanocarpa**

***Hoffmannseggia drepanocarpa*** Gray SICKLEPOD HOG-POTATO. Perennial 10-20 cm from thick taproots. Leaves without

glandular dots. Flowers yellowish. Dry slopes and plains. May-Sep. [*Caesalpinia drepanocarpa* (Gray) Fisher. LTER-HODR, USDA-HODR.

***Hoffmannseggia glauca*** (Ort.) Eifert WAXY RUSH-PEA. Perennial 10-30 cm from creeping rootstalks, with underground potato-like tubers. Leaves without glandular dots. Flowers yellow to orange-yellow, with red spots. Plains and valleys. Apr-Aug. [*Hoffmannseggia densiflora* Benth.]. LTER-HOGL., USDA-HOGL2.

## Lotus

1 Axis of leaves evident, the leaflets pinnately arranged ... **L. plebeius**

1 Axis of leaves very short, the leaflets appearing digitate or palmate

2 Stems prostrate; flowers on long stalks exceeding the leaves.....

..... **L. greenei**

2 Stems ascending to erect; flowers sessile or on very short stalks shorter than the leaves .....

..... **L. wrightii**

***Lotus greenei*** (Woot. & Standl.) Ottley GREENE'S LOTUS.

Perennial to 15 cm tall. Herbage densely covered with gray hairs.

Flowers yellow, the banner petals reddish on the back. Rocky hillsides. Mar-May. LTER-LOGR, USDA-LOGR4.

***Lotus plebeius*** (Brandege) Barneby NEW MEXICO LOTUS.

Perennial to 20 cm tall. Flowers yellowish. Hills & plains. May-Jun.

[*Lotus neomexicanus* Greene, *Lotus oroboides* of various works].

LTER-LONE, USDA-LOPL2.

***Lotus wrightii*** (Gray) Greene WRIGHT'S LOTUS. Perennial 20-

40 cm tall. Herbage sparsely short-hairy. Flowers yellow-orange.

Open wooded slopes. May-Sep. LTER-LOWR, USDA-LOWR.

## Lupinus

1 Leaves densely hairy on both surfaces..... **L. concinnus**

1 Leaves glabrous above, hairy below

2 Flowers 5-7 mm on stalks less than 1 mm ..... **L. brevicaulis**

2 Flowers 8-12 mm on stalks more than 1 mm ..... **L. pusillus**

***Lupinus brevicaulis*** Wats. SHORT-STEM LUPINE. Annual 4-11

cm tall. Flowers blue-purple to whitish, the banner petals with a yellow spot. Ovules 2-3. Open sandy slopes. Apr-Jul. LTER-LUBR, USDA-LUBR2.

***Lupinus concinnus*** Agardh ANNUAL LUPINE. Annual 5-20 cm

with stalked cotyledons. Stems often prostrate. Flower clusters nearly

hidden among the leaves. Flowers lilac, edged with red-purple, the

banner petals with a yellow center. Ovules 4-6. Gravelly hills and

slopes. Mar-May. LTER-LUCO, USDA-LUCO.



*Lupinus pusillus* Pursh RUSTY LUPINE. Annual 3-24 cm tall. Flowers bluish, pink, or whitish, the banner petals with a yellow spot. Ovules 2-3. Sandy plains. Apr-Jun. LTER-LUPU, USDA-LUPU.

### Mimosa

1 Plants shrubs, the stems stiff and woody.....**M. aculeaticarpa**

1 Plants herbaceous, the stems sprawling .....**M. quadrivalvis**

*Mimosa aculeaticarpa* Ortega var. *biuncifera* (Bentham)

Barneby WAIT-A-MINUTE BUSH. Shrub to 2 m, with hooked prickles on the stems. Leaves twice-compound, the leaflets 1-4 mm, hairy or glabrous. Flowers pale pink or white, in globes. Fruit mostly with prickles. Gravelly slopes. May-Aug. [*Mimosa biuncifera* Bentham]. LTER-MIBI, USDA-MIAC3

*Mimosa quadrivalvis* L. var. *occidentalis* (Woot. & Standl.)

Barneby WESTERN SENSITIVE BRIAR. Perennial to 20 cm tall. Stems weak and sprawling, armed with hooked prickles. Leaves folding when touched, twice-compound. Flowers in pink globes. Pod 6-12 cm, with prickles. Sandy plains. Apr-Jul. [*Schrankia occidentalis* (Woot. & Standl.) Standl.]. LTER-SCOC, USDA-MIQU2.

### Phaseolus

1 Leaflets linear to ovate, 2-10 times longer than wide, not lobed; fruits 4-7 cm long ..... **P. acutifolius**

1 Leaflets broadly triangular, 1-1.5 times longer than wide, generally lobed; fruits 1.5-3 cm long

2 Plants annual from a slender taproot or fibrous root system; stipules commonly ascending, 1-2.5 mm long; inflorescences 1-16 cm long, with 2-6 nodes; mature fruits 4-5 mm wide; seeds reticulate-rugose, 2-4 mm in diameter ..... **P. filiformis**

2 Plants perennial from somewhat woody thick caudices; stipules commonly reflexed, 3-6 mm long; inflorescences up to 30 cm long, with 3-14 nodes; mature fruits 5-8 mm wide; seeds nearly smooth, 3-7 in diameter .....*P. pedicellatus*

*Phaseolus acutifolius* Gray TEPARY BEAN. Annual. Moist places in the foothills and valley floors, among boulders. [*Phaseolus tenuifolius* (Gray) Wooton & Standley]. LTER-PHAC, USDA-PHAC.

*Phaseolus filiformis* Bentham SLIMJIM BEAN. Annual or (rarely) short-lived perennial. Leaves similar to *P. pedicellatus grayanus*, but plants differing in the key features. Moist places in the

foothills and valley floors, among boulders. [*Phaseolus wrightii* Gray]. LTER-PHWR, USDA-PHF13.

*Phaseolus pedicellatus* Benth. var. *grayanus* (Woot. & Standl.) Delgado ex Isely SONORAN BEAN. Perennial. Leaves similar to *P. filiformis*, but plants differing in the key features. Not definitely known from the Jornada Plain, but expected in rocky uplands and foothills and included here for comparison.

### **Pomaria**

1 Leaves without glandular dots ..... see *Hoffmannseggia*

1 Leaves with glandular dots ..... **P. jamesii**

***Pomaria jamesii*** (Torr. & Gray) Walp. JAMES'S HOG-POTATO. Perennial from a slightly woody base and a thick taproot. Leaflets with glandular dots on the lower surface. Flowers yellow. Fruit with glandular dots, halfmoon-shaped. Sandy or alluvial slopes and plains. May-Sep. [*Caesalpinia jamesii* (Torrey & Gray) Fisher, *Hoffmannseggia jamesii* Torrey & Gray]. LTER-CAJA, USDA-POJA5.

### **Prosopis**

1 Pods straight, not coiled; leaflets 15-50 mm ..... **P. glandulosa**

1 Pod coiled; leaflets 5-10 mm ..... **P. pubescens**

***Prosopis glandulosa*** Torrey HONEY MESQUITE. Spiny shrubs or small trees to 4 m. Leaves twice compound with mostly 1 pair of pinnae. Flowers in yellow spikes. Plains and washes. May-Aug. LTER-PRGL, USDA-PRGL2.

a Leaflets mostly 30-45 mm, with 6-13 pairs per pinna...var.

#### ***glandulosa***

a Leaflets 15-25 mm, with 10-15 pairs per pinna...var. ***torreyana*** (Benson) M.C. Johnst.

***Prosopis pubescens*** Benth. SCREWBEAN MESQUITE, TORNILLO. Spiny shrubs or small trees to 6 m. Flowers in yellow spikes. Along streams and floodplains. May-Jun. LTER-PRPU, USDA-PRPU.

### **Psoralethamnus**

***Psoralethamnus scoparius*** (Gray) Rydb. BROOM DALEA. Bushy shrubs 0.5-2 m. Stems and leaves grayish and glandular dotted. Leaves simple or once compound with 3 leaflets, entire, early deciduous. Flowers bluish. Sandy hills and plains. Jun-Sep. [*Dalea scoparia* Gray]. LTER-DASC, USDA-PSSC6.

### **Senna**

1 Leaflets in a single pair..... **S. bauhinioides**

1 Leaflets in 5-8 pairs ..... **S. lindheimeriana**  
***Senna bauhinioides*** (Gray) Irwin & Barneby TWO-LEAF  
SENNA. Perennial herb or subshrub 10-40 cm tall. Leaflets 2,  
oblong-ovate. Flowers on long stalks, yellow. Fruit sickle-shaped, 2-  
4 cm. Rocky slopes. Apr-Aug. [*Cassia bauhinioides* Gray] LTER-  
CABA, USDA-SEBA3.

***Senna lindheimeriana*** (Scheele) Irwin & Barneby  
LINDHEIMER'S SENNA. Perennial 50-100 cm tall. Leaflets  
numerous, oblong-elliptic. Flowers in axillary racemes, golden-  
yellow. Fruit linear, straight or curved. Rocky hills. Jun-Sep. [*Cassia*  
*lindheimeriana* Scheele] LTER-CALN, USDA-SELI4.

### **Sophora**

1 Flowers white to cream ..... **S. nuttalliana**  
1 Flowers blue-purple..... **S. stenophylla**

***Sophora nuttalliana*** B.L. Turner SILKY SOPHORA. Perennial  
12-30 cm tall. Leaves once-compound, silvery hairy beneath, the  
hairs attached at their ends. Flowers white to cream, in terminal  
racemes. Pods constricted between the seeds. Sandy plains, playas,  
and foothills. May-Jun. [*Sophora sericea* Nutt.]. Vegetatively  
similar to *Sphaerophysa salsula*, but that species has reddish  
flowers, inflated pods on short stalks, and shorter hairs attached to  
the leaf surface near the middle of the hair. LTER-SONU, USDA-  
SONU.

***Sophora stenophylla*** Gray SILVERY SOPHORA. Perennial 20-  
60 cm tall. Leaves once-compound, silvery hairy. Flowers blue-  
purple, in terminal racemes. Sandy foothills. May-Jun. Fruits toxic to  
livestock and humans. LTER-SOST, USDA-SOST4.

### **Sphaerophysa**

**\**Sphaerophysa salsula*** (Pall.) DC. RED BLADDER-VETCH.  
Perennial with rhizomes. Leaves once-compound, with hairs  
attached near the middle. Flowers brick-red, large. Stamens separate.  
Pods bladderly, with stalks 5-7 mm long. Disturbed ground. May-Jul.  
Vegetatively similar to *Sophora nuttalliana*, but that species has  
whitish flowers, bean-like pods constricted between the seeds, and  
longer hairs attached to the leaf surface at their ends. LTER-SPSA,  
USDA-SPSA3.

### **Vachellia**

1 Pinnae in 4-6 pairs; leafstalks 2-3.5 cm long ..... **V. constricta**  
1 Pinnae in 1-2(3) pairs; leafstalks 0.3-1.5 cm long..... **V. vernicosa**

***Vachellia constricta*** (Benth) Seigler & Ebinger WESTERN WHITETHORN. Spiny shrubs 1-3 m, often tree-like. Flowers in yellow globes. Leaf divisions in 4-7 pairs and not glandular viscid. Washes and gravelly slopes. May-Sep. [*Acacia constricta* Benth]. Spineless forms have been called *Acacia constricta* var. *paucispina* Woot. & Standl. [the combination has not yet been made in *Vachellia*]. LTER-ACCO, USDA-ACCO2.

***Vachellia vernicosa*** (Britton & Rose) Seigler & Ebinger EASTERN WHITETHORN. Spiny shrubs 1-2 m. Flowers in yellow globes. Leaf divisions in 1-2 pairs and glandular viscid. Gravelly limestone hills. May-Sep. [*Acacia constricta* Benth. var. *vernicosa* (Standl.) Benson, *Acacia neovernicosa* Isely, *Acacia vernicosa* Standley, not Fitzgerald]. LTER-ACNE, USDA-ACNE4.

### **Vicia**

***Vicia ludoviciana*** Nutt. SLIM VETCH. Annual 30-60 cm tall. Leaves with terminal tendrils. Flowers white or purplish. Pods oblong, 2-3 cm. Canyons and slopes. Apr-Jun. [*Vicia exigua* Nutt.]. LTER-VILU, USDA-VILU.

## **FAGACEAE BEECH FAMILY**

Trees or shrubs. Leaves alternate, simple, entire to lobed. Flowers unisexual, both sexes on the same plant. Petals absent. Ovary inferior. Fruit a nut (acorn).

### **Quercus**

***Quercus turbinella*** Greene DESERT SCRUB OAK. Shrub or small tree to 4 m. Leaves leathery, oblong to ovate, with spiny edges. Rocky slopes and canyons. Apr-May. LTER-QUTU, USDA-QUTU2.

## **FOUQUIERIACEAE OCOTILLO FAMILY**

Spiny shrubs with erect wand-like stems. Primary leaves soon deciduous, the stalks developing into stout spines, later leaves from the axils of these spines. Flowers showy, 5-merous, tubular. Ovary superior. Fruit a capsule. Seeds winged.

### **Fouquieria**

***Fouquieria splendens*** Engelm. OCOTILLO. Spiny shrubs 2-9 m. Leaves shed during dry spells. Flowers red, at the tips of the branches. Rocky slopes. mostly Apr-May. LTER-FOSP, USDA-FOSP2.

## FUMARIACEAE BLEEDING HEART FAMILY

Annual to perennial herbs. Leaves alternate or basal, divided. Sepals 2. Petals 4, spurred. Stamens 6, in 2 sets of 3. Ovary superior, 1-celled. Fruit a capsule.

### Corydalis

*Corydalis aurea* Willd. GOLDEN-SMOKE. Annual 5-50 cm tall. Leaves highly dissected, waxy, blue-green. Flowers yellow, with a rounded spur. Sandy, disturbed ground. Feb-Sep. LTER-COAU, USDA-COAU2.

## GARRYACEAE SILKTASSLE FAMILY

Evergreen shrubs or small trees. Leaves opposite, simple, leathery. Flowers unisexual, the sexes on different plants, without pet. Stamens 4. Ovary inferior. Fruit a 2-seeded berry.

### Garrya

*Garrya wrightii* Torrey WRIGHT'S SILKTASSLE. Shrub to 4 m. Leaves opposite, ovate, entire, stiff-tipped, blue-green. Flowers inconspicuous. Rocky hills and canyons. May-Aug. LTER-GAWR, USDA-GAWR3.

## GERANIACEAE GERANIUM FAMILY

Annual or perennial herbs. Leaves opposite or alternate, with stipules. Inflorescence umbel-like. Flowers 5-merous. Stamens 5 or 10. Ovary superior. Fruit splitting and coiling longitudinally into 5 segments.

### Erodium

1 Blades highly divided into toothed leaflets ..... **E. cicutarium**  
1 Blades simple, 3-lobed..... **E. texanum**

\**Erodium cicutarium* (L.) L'Her. REDSTEM FILAREE. Annual with mostly prostrate red stems. Leaves opposite. Flowers reddish, less than 1 cm across. Disturbed ground. Feb-Jul. Mostly good forage, but may accumulate toxic levels of nitrates. LTER-ERCC, USDA-ERIC6.

*Erodium texanum* Gray TEXAS FILAREE. Annual with prostrate to ascending stems. Leaves opposite. Flowers purplish red, 1-3 cm across. Plains, gravelly slopes. Feb-Apr. LTER-ERTE, USDA-ERTE13.

## HELIOTROPACEAE HELIOTROPE FAMILY

Leaves simple, alternate, lacking stipules. Flowers perfect, 5-merous. Petals united. Ovary superior, of 2 carpels. Fruit of four

1-seeded nutlets, or two 2-seeded nutlets. The single genus, *Heliotropium*, is traditionally treated in the Boraginaceae (s.l.).

### **Heliotropium**

1 Plants very succulent and glabrous..... **H. curassavicum**

1 Plants not succulent, hairy, never glabrous

2 Plants perennial, with rhizomes ..... **H. greggii**

2 Plants annual, without rhizomes ..... **H. convolvulaceum**

***Heliotropium convolvulaceum*** (Nutt.) Gray TRUMPET

HELIOTROPE. Annual 10-40 cm tall. Flowers white, showy, 15-30 mm wide. Sandy plains and dunes. Jun-Dec. LTER-HECO, USDA-HECO5.

***Heliotropium curassavicum*** L. SEASIDE HELIOTROPE.

Annual or short-lived perennial, the stems mostly prostrate, 10-50 cm tall. Leaves lance-shaped. Flowers white to pale blue. Alkaline plains. All year. LTER-HECU, USDA-HECU3.

***Heliotropium greggii*** Torrey FRAGRANT HELIOTROPE.

Perennial 5-20 cm tall. Flowers white to yellowish, 6-12 mm wide. Roadsides, ditches, and other areas where water collects. Apr-Sep. LTER-HEGR, USDA-HEGR6.

### **HYDROPHYLLACEAE WATERLEAF FAMILY**

Annual to perennial herbs. Leaves mostly alternate or basal, simple, entire to lobed. Flowers 5-merous. Petals united. Ovary superior, 1- or 2-celled. Syles or stigmas 2. Fruit a capsule.

1 Leaves entire..... **Nama**

1 Leaves toothed or lobed

2 Flowers in tight, scorpion-like clusters ..... **Phacelia**

2 Flowers in loose, open clusters..... **Eucrypta**

### **Eucrypta**

***Eucrypta micrantha*** (Torrey) Heller DAINY HIDESEED.

Sticky annual 10-25 cm tall. Flowers white or purplish blue, with a yellow tube, 2-4 mm across. Damp, sheltered places. Feb-May. LTER-EUMC, USDA-EUMI2.

### **Nama**

***Nama hispidum*** Gray PURPLE ROLL-LEAF. Annual 10-50 cm tall, often forming ball-like tufts. Leaves simple, entire, the edges rolled under. Flowers pink-purple. Sandy and gravelly plains. Feb-Jul. LTER-NAHI, USDA-NAHI.

### **Phacelia**

1 Stamens not conspicuously exerted beyond the corolla .....

- .....**P. caerulea**
- 1 Stamens conspicuously exerted beyond the corolla
- 2 Leaves shallowly toothed..... **P. integrifolia**
- 2 Leaves compound or deeply lobed
- 3 Leaves simple but deeply lobed.....**P. caerulea**
- 3 At least some leaves compound with lobed leaflets
- 4 Leaflets finely divided, the segments less than 4 mm wide.  
.....**P. popei**
- 4 Leaflets coarsely divided, the segments more than 4 mm wide..... **P. congesta**

**Phacelia caerulea** Greene BLUE SCORPION-WEED. Sticky annual. Leaves shallowly cleft to pinnatifid. Flowers blue or white. Rocky slopes. Mar-May. [*Phacelia intermedia* Woot.] LTER-PHCO, USDA-PHCO.

**Phacelia congesta** Hook. CATERPILLARS. Sticky annual 10-80 cm tall. Flowers blue. Sandy or rocky flats and outcrops. Feb-Sep. LTER-PHCN, USDA-PHCO2.

**Phacelia integrifolia** Torrey GYPSUM SCORPION-WEED. Sticky annual 15-60 cm tall. Flowers purplish. Sandy hills and flats, rocky slopes. Mar-Sep. LTER-PHIT, USDA-PHIN.

**Phacelia popei** Torrey & Gray POPE'S SCORPION-WEED. Sticky annual 8-25 cm tall. Flowers blue to purple. Sandy roadsides. Feb-May. PHPO.

#### **KOEBERLINIACEAE CRUCIFIXION THORN FAMILY**

Highly branched thorny shrubs with green bark. Leaves alternate, tiny, early deciduous. Inflorescence umbel-like. Flowers 4-merous. Stamens 8. Ovary superior. Fruit a berry.

#### **Koeberlinia**

**Koeberlinia spinosa** Zucc. CRUCIFIXION THORN. Shrubs 1-2 m with stout, yellow-green thorns. Leaves ephemeral. Flowers yellowish white. Sandy or gravelly mesas and plains. Jun-Aug. LTER-KOSP, USDA-KOSP.

#### **KRAMERIACEAE RATANY FAMILY**

Shrubs with spreading branches. Leaves alternate, simple, entire, grayish hairy. Flowers irregular, orchid-like. Sepals 4-5. Petals 5. Stamens 4. Ovary superior, 1-celled. Fruit prickly.

#### **Krameria**

- 1 Plants herbaceous..... **K. lanceolata**
- 1 Plants low shrubs
- 2 Fruit without glands, the spines barbed only at the tip .....

..... **K. grayi**  
2 Fruit with glands, the spines barbed most of their length.....

..... **K. erecta**

***Krameria erecta*** Willd. ex Schultes RANGE RATANY. Shrubs 20-40 cm tall. Leaves linear-lanceolate, to 12 mm, silky hairy. Flowers reddish purple, often glandular. Fruit bur-like, with barbs running most of the length of the spines. Rocky slopes and gravelly plains. Jun-Sep. [*Krameria glandulosa* Rose & Painter, *Krameria parvifolia* Benth. var. *glandulosa* (Rose & Painter) Macbr.]. LTER-KRPA, USDA-KRER.

***Krameria grayi*** Rose & Painter WHITE RATANY. This species may also be in our area. It is distinguished from *Krameria erecta* by the absence of glands on the flower and by the spines on the fruit, which are barbed only at the tip. LTER-KRGR, USDA-KRGR.

***Krameria lanceolata*** Torrey THREE-FANS, WHITE RATANY. Perennial to 15 cm tall, the stems prostrate or trailing. Leaves lance-shaped. Flowers dark wine-red. Fruit globose, wooly, the spines without barbs. Plains. Mar-Sep. Parasitic on the roots of *Prosopis glandulosa*, *Bouteloua eriopoda*, and *Tetraclea coulteri*. LTER-KRLA, USDA-KRLA.

#### LAMIACEAE (LABIATAE) MINT FAMILY

Annual to perennial herbs or shrubs, often aromatic. Stems squarish. Leaves opposite, simple. Flowers 2-lipped, 5-merous. Stamens 2 or 4. Ovary superior. Fruit of 4 nutlets.

1 Leaves coarsely toothed..... **Salvia**

1 Leaves entire

2 Calyx greenish; corolla bluish; leaves lacking glandular pits.....

..... **Hedeoma**

2 Calyx and corolla rose-colored; leaves with tiny glandular pits ...

..... **Agastache**

#### Agastache

***Agastache cana*** (Hook.) Woot. & Standl. MOSQUITO-PLANT. Perennial to 60 cm tall. Leaves with small glandular pits. Flowers in whorls at the stem tips. Crevices of ledges and cliffs. Jul-Oct. LTER-AGCA, USDA-AGCA.

#### Hedeoma

***Hedeoma nana*** (Torrey) Briq. FALSE PENNYROYAL. Annual or perennial 10-30 cm tall. Leaves entire, ovate. Flowers whorled at the upper nodes. Limestone outcrops. Apr-Jul. [sometimes misspelled *Hedeoma nanum*]. LTER-HENA, USDA-HENA.



## Salvia

*Salvia subincisa* Benth. SAWTOOTH SAGE. Annual to 30 cm tall. Corollas blue-purple, in widely spaced pairs at the ends of the stems, the lower lip much longer than the upper and with whitish splotches. Grassy plains and scrublands, gravelly bajadas. Jul-Sep.

## LILIACEAE LILY FAMILY

All of our species of the Liliaceae have been transferred to other families, as below:

- 1 Ovary inf; flowers single (rarely 2) per plant (*Zephyranthes*).....  
..... see Amaryllidaceae
- 1 Ovary superior; flowers numerous per plant
  - 2 Flowers borne in umbels at the tip of the stems (*Allium*).....  
..... see Alliaceae
  - 2 Flowers borne in the axils of the leaves (*Asparagus*).....  
..... see Asparagaceae

## LINACEAE FLAX FAMILY

Annual or perennial herbs. Leaves alternate, simple, entire. Flowers regular, 5-merous. Petals deciduous as a unit. Ovary superior. Styles or stigmas 5. Fruit a capsule.

## Linum

- 1 Flowers blue..... **L. pratense**
- 1 Flowers yellow to orange
  - 2 Petals 5-10 mm; style 2-4 mm; stigmas light-colored **L. australe**
  - 2 Petals 10-15 mm; style 4-8 mm; stigmas blackish..... **L. vernale**

***Linum australe*** Heller SOUTHERN FLAX. Glabrous annual to 45 cm tall. Leaves linear. Flowers bowl-shaped, salmon-colored. Petals 5-10 mm long. Style 2-4 mm long. Stigmas light-colored. Dry plains and foothills. [*Linum aristatum* Engelm. var. *australe* (Heller) Kearney & Peebles]. LTER-LIAU, USDA-LIAU4.

***Linum pratense*** (Norton) Small MEADOW FLAX. Glabrous perennial to 50 cm or more tall. Leaves linear. Flowers bowl-shaped, blue. Petals 5-10 mm long. Style 2-3 mm long. Sandy open areas. Mar-Jul. LTER-LIPR, USDA-LIPR.

***Linum vernale*** (Woot.) Small CHIHUAHUAN FLAX. Glabrous annual 10-50 cm tall. Leaves linear. Flowers bowl-shaped, salmon-colored. Petals 10-15 mm long. Style 4-8 mm long. Stigmas blackish. Limestone hills. Mar-Sep. LTER-LIVE, USDA-LIVE2.

## LOASACEAE STICKLEAF FAMILY

Annual, perennial, or shrubby plants with barbed or sometimes stinging hairs. Leaves opposite or alternate, simple, entire to

lobed. Flowers regular. Sepals and petals mostly 4-5. Stamens 5-  
numerous. Ovary inferior. Fruit a capsule.

- 1 Flowers aggregated into a dense head; leaves with stinging hairs ....  
..... **Cevallia**  
1 Flowers single or in loose clusters; leaves without stinging hairs.....  
..... **Mentzelia**

**Cevallia** (Caution: this genus possesses stinging hairs!)

***Cevallia sinuata*** Lag. STINGING SERPENT. Bushy perennial  
10-60 cm tall. Leaves wavy-lobed, with stinging hairs along the  
edges. Flowers dark yellow. Gravelly slopes & roadsides. Jun-Oct.  
LTER-CESI, USDA-CESI.

### **Mentzelia**

- 1 Petals small, 3-5 mm ..... **M. albicaulis**  
1 Petals large, 10 mm or more ..... **M. multiflora**

***Mentzelia albicaulis*** (Hook.) Torrey & Gray WHITESTEM  
STICKLEAF. Annual 10-40 cm with shiny white stems. Leaves  
pinnately lobed. Flowers yellow, with 5 petals. Gravelly slopes and  
roadsides. Apr-May. LTER-MEAL, USDA-MEAL6.

***Mentzelia multiflora*** (Nuttall) Gray BULLET STICKLEAF.  
Biennial 20-80 cm tall. Leaves with narrow pinnate lobes. Flowers  
yellow, with numerous petals. Dry streambeds and gravelly places.  
Feb-Oct. [*Mentzelia pumila* Nuttall ex Torrey & Gray var.  
*multiflora* (Nuttall) Urban & Gilg]. LTER-MEPU, USDA-MEPU3.

## **MALPIGHIACEAE MALPIGHIA FAMILY**

Shrubby plants with hairs affixed in the middle. Leaves opposite,  
simple, entire. Flowers 5-merous. Sepals with a gland at the  
base. Petals with an elongated base. Ovary superior, 3-lobed.  
Fruit a capsule.

### **Cottsia**

***Cottsia gracilis*** (Gray) Anderson & Davis PROPELLER-PLANT.  
Wiry, somewhat viny shrubs. Leaves opposite, linear-lanceolate,  
entire. Flowers yellow-orange, the sepals with a warty gland on the  
back. Fruit of 2-3 winged samaras. Rocky slopes among boulders.  
Apr-Sep. LTER-JAGR, USDA-JAGR. [*Janusia gracilis* Gray]

## **MALVACEAE MALLOW FAMILY**

Annual or perennial herbs or shrubs mostly with star-shaped  
hairs. Leaves alternate, simple, mostly palmately veined.  
Flowers regular, 5-merous. Stamens numerous, the filaments  
united to form a column. Ovary superior. Fruit a capsule or  
splitting into numerous segments.

- 1 Petals white to yellow
  - 2 Herbage covered with tiny, circular, fringed scales .....**Malvella**
  - 2 Herbage variously hairy to glabrous, the hairs often branched to star-shaped, but not circular and scale-like
    - 3 Calyx much enlarged in fruit, becoming papery-bladdery and surrounding the fruit ..... **Rhynchosida**
    - 3 Calyx not enlarging in fruit, not papery-bladdery and not surrounding the fruit (though fruit becoming bladdery in *Herissantia*)
      - 4 Pedicels 1 cm or less .....**Abutilon**
      - 4 Pedicels 2-3 cm
        - 5 Fruit bladdery when mature; leaf blades ovate, 2-7 cm ..  
..... **Herissantia**
        - 5 Fruit not bladdery; leaf blades 1-2 cm
          - 6 Pedicels and stems with very short, stellate hairs less than 0.5 mm.....**Abutilon**
          - 6 Pedicels and stems with conspicuous, scattered, straight hairs 1-2 mm..... **Sida**
- 1 Petals orange, pink, reddish, lavender, or bluish (rarely white in *Hibiscus*)
  - 7 Calyx not subtended by small bractlets
    - 8 Leaf blades 4-8 cm long, long-attenuate at the apex .... **Anoda**
    - 8 Leaf blades 1-2 cm long, acute at the apex but not long attenuate.....**Abutilon**
  - 7 Calyx subtended by small bractlets (may be inconspicuous)
    - 9 Petals pale blue with a reddish purple center, 10-30 mm; leaves ovate to oval ..... **Hibiscus**
    - 9 Petals orange, pink, or reddish, if bluish then the petals 7-12 mm and the leaves lance-shaped.....**Sphaeralcea**

**Abutilon**

- 1 Flowers yellow; leaves 5-10 cm ..... **A. malacum**
- 1 Flowers pink to brick-red to orange; leaves 1-2 cm .... **A. parvulum**  
*Abutilon malacum* Wats. YELLOW INDIAN-MALLOW.  
Perennial 25-100 cm tall, the stems erect. Leaves cordate, large, 5-10 cm tall. Dry hills. Jun-Sep. LTER-ABMA, USDA-ABMA3.  
*Abutilon parvulum* Gray DWARF INDIAN-MALLOW.  
Perennial 15-45 cm tall, the stems sprawling. Leaves triangular-ovate, 1-2(3) cm tall. Dry plains and hills. May-Oct. LTER-ABPA, USDA-ABPA3.

## **Anoda**

*Anoda cristata* (Linnaeus) Schlectendal SPURRED ANODA. Annual 40-80 cm tall, mostly erect. Leaves long-triangular-shaped, often lobed at the base. Weedy places that stay moist, known from Summerford Mountain, but expected elsewhere along roadsides, etc. Jul-Nov. LTER-ANCR, USDA-ANCR2.

## **Herissantia**

*Herissantia crispa* (L.) Briz. BLADDER-MALLOW. Perennial with viny stems 30-80 cm long. Leaves cordate-ovate, 2-6 cm long. Flowers white to yellow. Fruit bladdery, thin-walled. Rocky slopes. Apr-Oct. [*Bogenhardia crispa* (L.) Kearney]. LTER-HECR, USDA-HECR3.

## **Hibiscus**

*Hibiscus denudatus* Bentham PALEFACES. Perennial 20-60 cm tall. Herbage pale yellowish ash-colored. Leaves ovate, widely spaced. Petals pale bluish with a reddish or purplish center. Rocky slopes. Jan-Oct. LTER-HIDE, USDA-HIDE.

## **Malvella**

1 Leaves triangular-ovate, 1-2 cm wide.....**M. lepidota**  
1 Leaves lanceolate-sagittate, 0.5-1 cm wide ..... **M. sagittifolia**

*Malvella lepidota* (Gray) Fryxell SCURFY MALLOW. Perennial 10-20 cm tall. Leaves triangular-ovate, 1-2 cm wide, the margins nearly entire. Petals white to yellowish, sometimes with a purplish center. Plains, rocky slopes. Apr-Oct. [*Sida lepidota* Gray, *Sida leprosa* (Ortega) K. Schum. var. *depauperata* (Gray) I. Clem.]. LTER-SILE, USDA-MALE2.

*Malvella sagittifolia* (Gray) Fryxell ARROW-LEAF MALLOW. Perennial 10-30 cm tall. Leaves lanceolate-sagittate, 0.5-1 cm wide, the margins toothed. Petals white to yellowish, sometimes with a purplish center. Plains, clay flats. Apr-Oct. [*Sida lepidota* Gray var. *sagittifolia* Gray, *Sida leprosa* (Ortega) K. Schum. var. *sagittifolia* (Gray) I. Clem.]. LTER-SILE, USDA-MASA3.

## **Rhynchosida**

*Rhynchosida physocalyx* (Gray) Fryxell BUFF-PETAL. Perennial 10-40 cm with often prostate stems. Leaves ovate, the margins serrate. Calyx inflated and ridged around the fruit. Petals yellowish. Washes, plains, and disturbed areas. Mar-Oct. [*Sida physocalyx* Gray]. LTER-SIPH, USDA-RHPH2.

## Sida

\**Sida abutifolia* Mill. SPREADING SIDA. Perennial 10-100 cm with sprawling to erect stems. Leaves lanceolate. Calyx not inflated. Petals orange-yellow. Rocky hills and open ground. Mar-Sep. [*Sida filicaulis* Torrey & Gray]. See also *Malvella* and *Rhynchosida*.  
LTER-SIFI, USDA-SIAB.

## Sphaeralcea

- 1 Leaves deeply cleft with several narrow lobes
  - 2 Leaves multi-divided, the leaflets divided or cleft again and somewhat resembling a pinnate arrangement; plains areas ..... **S. coccinea**
  - 2 Leaves nearly only once-divided, palmate-like; rocky hilly areas ..... **S. digitata**
- 1 Leaves toothed to shallowly lobed
  - 3 Leaves ovate in outline
    - 4 Herbage grayish or whitish; leaves shallowly to deeply lobed. .... **S. fendleri**
    - 4 Herbage yellowish; leaves shallowly lobed ..... **S. incana**
  - 3 Leaves lanceolate in outline, sometimes with basal lobes
    - 5 Leaf blades narrowly lanceolate, 4-6 (or more) times longer than wide, with shallow lobes at the base; flowers numerous in each leaf axil of the infl ..... **S. angustifolia**
    - 5 Leaf blades 1-2 times longer than wide; flowers 1-2 in each leaf axil of the infl..... **S. hastulata**

***Sphaeralcea angustifolia*** (Cav.) D. Don COPPER  
GLOBEMALLOW. Perennial 50-120 cm tall, the stems erect. Petals orange-red to pink. Sandy or rocky soil, waste places, also on gypsum. Flowering nearly throughout the year. LTER-SPAN, USDA-SPAN3.

***Sphaeralcea coccinea*** (Pursh) Rydb. SCARLET  
GLOBEMALLOW. Perennial 10-40 cm tall. Flowers scarlet to red-orange. Similar to *Sphaeralcea digitata*, but the leaflets cleft again and almost somewhat pinnate-like. Open plains. May-Oct. LTER-SPCC, USDA-CPCO.

***Sphaeralcea digitata*** (Greene) Rydberg JUNIPER  
GLOBEMALLOW. Perennial 20-45 cm tall, the stems erect. Flowers red-orange to orange. Rocky places in the hills and upper bajadas. Similar to *Sphaeralcea coccinea*, but with more nearly palmately arranged leaflets. Apr-Oct. LTER-SPDI, USDA-SPDI3.

***Sphaeralcea fendleri*** Gray FENDLER'S GLOBEMALLOW.  
Perennial 35-100. Petals deep red to pink, 8-13 mm long. Fruit walls

nearly smooth beneath the hairs. Gravelly hills among boulders. Apr-Nov. LTER-SPFE, USDA-SPFE.

***Sphaeralcea hastulata*** Gray WRINKLED GLOBEMALLOW. Perennial 10-35 cm tall, the stems erect to ascending. Petals deep red to pinkish. Fruit walls prominently ridged and wrinkled on the lower half, beneath the hairs. Sandy or gravelly slopes, along roads. Mar-Oct. [*Sphaeralcea subhastata* Coulter]. LTER-SPSU, USDA-SPHA.

***Sphaeralcea incana*** Torrey SOFT GLOBEMALLOW. Perennial 40-150 cm tall. Petals deep red to pink, 10-17 mm long. Rocky slopes, sandy plains, and clay flats. Jun-Oct. LTER-SPIN, USDA-SPIN2.

### MOLLUGINACEAE CARPETWEED FAMILY

Annual, somewhat succulent. Leaves opposite or whorled, simple. Flowers inconspicuous. Petals absent. Ovary superior. Fruit a capsule. [Formerly included in the Aizoaceae.]

#### Mollugo

1 Stems ± erect; leaves 1 mm wide and glaucous.....**M. cerviana**

1 Stems prostrate; leaves 1-8 mm wide, not glaucous. **M. verticillata**

\****Mollugo cerviana*** (L.) Ser. THREADSTEM CARPETWEED.

Annual forming low mounds, 10-20 cm tall. Leaves whorled, linear. Flowers without petals. Disturbed ground. Aug-Sep. LTER-MOCE, USDA-MOCE.

***Mollugo verticillata*** L. GREEN CARPETWEED. Annual forming low mats, 5-15 cm tall. Leaves whorled, oblanceolate. Flowers without petals. Disturbed ground. Aug-Sep. LTER-MOVE, USDA-MOVE.

### MORACEAE MULBERRY FAMILY

Deciduous trees or shrubs with milky or cloudy juice. Leaves alternate, simple, entire to lobed. Flowers unisexual, 4-merous. Ovary superior, styles and stigmas 2. Fruit an achene or drupe.

1 Leaves entire.....**Maclura**

1 Leaves toothed.....**Morus**

#### Maclura

\****Maclura pomifera*** (Raf.) Schneid. OSAGE-ORANGE. Trees to 20 m with stout spines and cloudy sap. Leaves ovate-lanceolate, 1-nerved, glossy. Fruit a softball-sized aggregation of fleshy drupes, yellow-green. Persisting around old dwellings. LTER-MAPO, USDA-MAPO.

## Morus

*Morus microphylla* Buck. TEXAS MULBERRY. Shrubs or scraggly trees to 4 m with cloudy sap. Leaves ovate, sometimes lobed, often sandpapery. Fruits clusters of marble-sized drupelets, red to black. Rocky slopes and canyons. Apr-May. Leaves similar to *Celtis reticulata* (Ulmaceae), which has clear sap and a single hardened drupe for a fruit. LTER-MOMI, USDA-MOMI.

## NOLINACEAE BEARGRASS FAMILY

Leaves in dense terminal rosettes, the blades linear with spoon-like bases, serrulate or with prominent prickles. Flowers 3-merous, small and not showy. Ovary superior. Fruit a 3-winged capsule. These plants were formerly treated in the Agavaceae family.

- 1 Leaf margins with numerous hooked stout prickles; inflorescence on a long stalk raised high above the leaves ..... **Dasyllirion**
- 1 Leaf margins entire to serrulate, but lacking hooked prickles; inflorescence on a short stalk and immersed among the leaves ..... **Nolina**

## Dasyllirion

*Dasyllirion wheeleri* Wats. SOTOL. Trunks to 1 m, with a dense rosette of leaves, the flowering stem 3-5 m high. Leaves ribbon-like with hooked margins. Flowers unisexual, the sexes borne on separate plants. Rocky upper bajadas and hillsides. May-Jul. LTER-DAWH, USDA-DAWH2.

## Nolina

*Nolina texana* S. Wats. SACAUISTA. Plants to about 1 m tall, with a dense rosette of leaves, the flowering inflorescence immersed among the leaves. Leaves cord-like, entire to serrulate, but lacking hooks as in *Dasyllirion*. Flowers unisexual, the sexes borne on separate plants. Rocky bajadas and hillsides. May-Jun. LTER-NOTE, USDA-NOTE. ??

## NYCTAGINACEAE FOUR O'CLOCK FAMILY

Annual or perennial herbs. Stems often swollen at the nodes. Leaves opposite, simple, entire. Flowers without petals, the sepals pet-like, subtended by sep-like bracts. Ovary superior (appearing inf). Fruit nut-like, sometimes winged.

- 1 Flowers 3-6 cm long
  - 2 Fruits ribbed, but not winged ..... **Mirabilis**
  - 2 Fruits conspicuously winged ..... **Acleisanthes**
- 1 Flowers less than 2.5 cm long

- 3 Flowers 1-2 mm long
  - 4 Flowers yellow to yellow-green ..... **Commicarpus**
  - 4 Flowers white, pink, red, to purple ..... **Boerhavia**
- 3 Flowers 3-25 mm long
  - 5 Flowers numerous in dense head-like clusters ..... **Abronia**
  - 5 Flowers solitary or in loose clusters
    - 6 Leaves mostly linear, less than 6 mm wide ..... **Mirabilis**
    - 6 Leaves broadly lanceolate to ovate, more than 6 mm wide
      - 7 Stems prostrate to trailing ..... **Allionia**
      - 7 Stems ascending to erect
        - 8 Upper internodes with a broad sticky band around the stem ..... **Cyphomeris**
        - 8 Upper internodes without a sticky band ..... **Acleisanthes**

### **Abronia**

- 1 Plants annual; flowers purplish red ..... **A. angustifolia**
  - 1 Plants perennial; flowers white to pinkish ..... **A. fragrans**
- Abronia angustifolia*** Greene NARROWLEAF SAND-VERBENA. Annual 10-30 cm tall, the stems mostly prostrate. Leaves lanceolate to ovate. Sandy ground. May-Jul. LTER-ABAN, USDA-ABAN.

***Abronia fragrans*** Nutt. SNOWBALL SAND-VERBENA. Perennial 20-90 cm tall, the stems mostly erect. Leaves ovate to heart-shaped. Sandy ground. May-Aug. LTER-ABFR, USDA-ABFR32.

### **Acleisanthes**

- 1 Flowers 0.7-1 cm, purplish red ..... **A. chenopodioides**
- 1 Flowers 3-4 cm, greenish white ..... **A. diffusa**

***Acleisanthes chenopodioides*** (A. Gray) R.A. Levin GOOSEFOOT MOONPOD. Perennial to 40 cm tall. Leaves ovate, entire to sinuate. Flowers 7-10 mm, purplish red. Fruit with 4 or 5 translucent wings. Dry hills and plains. May-Sep. [*Ammocodon chenopodioides* (Gray) Standl.] LTER-AMCH, USDA-AMCH3.

***Acleisanthes diffusa*** (A. Gray) R.A. Levin MOONPOD. Perennial 10-30 cm tall. Leaves lance- to egg-shaped, 1-3 cm tall. Flowers greenish white, 3-4 cm. Fruit winged. Sandy to gravelly slopes and plains. Jun-Sep. [*Selinocarpus diffusus* Gray] LTER-SEDI, USDA-SEDI.

### **Allionia**

- 1 Plants annual; perianth less than 4 mm long; fruit glandular .....



..... **A. choisyi**  
1 Plants perennial; perianth more than 5 mm long; fruit not glandular

..... **A. incarnata**

*Allionia choisyi* Standl. ANNUAL WINDMILLS. Sometimes glandular annual with trailing stems, 8-20 cm tall. Leaves ovate, 1-4 cm long. Flowers in 3's, appearing as one flower, pink, less than 4 mm long. Fruit toothed on one side, glandular. Sandy ground. May-Oct. LTER-ALCH, USDA-ALCH.

*Allionia incarnata* L. TRAILING WINDMILLS. Glandular perennial with trailing stems, 10-20 cm tall. Leaves ovate, 1-3 cm long. Flowers in 3's, appearing as 1 flower, pink, more than 5 mm long. Fruit toothed on one side, not glandular. Dry rocky slopes. May-Oct. LTER-ALIN, USDA-ALIN.

### **Boerhavia**

1 Plants annual, the main stems mostly erect; fruit glabrous

2 Flowers borne in umbels at the ends of long stalks.....  
..... **B. intermedia**

2 Flowers borne in racemes

3 Fruit 4-angled, broadly obovoid; branches of inflorescence mostly densely glandular villous, without sticky internodal bands..... **B. wrightii**

3 Fruit 5-angled, broadly to narrowly obovoid; branches of inflorescence glabrous to puberulent but not glandular, mostly with sticky internodal bands

4 Fruits broadly obovoid, usually overlapping in the inflorescence; groove and adjacent ribs of the fruit slightly rugose; stems usually glandular and spreading-pilose at the base ..... **B. spicata**

4 Fruits narrowly obovoid or obpyramidal, overlapping or remote in the inflorescence; groove and adjacent ribs slightly rugose to smooth; stems puberulent or sparsely pilose, but only rarely glandular at the base

5 Epidermal surface of the grooves papillose; grooves 0.5-1 times as wide as the base of the ribs; sides of ribs strongly rugose..... **B. torreyana**

5 Epidermal surface of the grooves smooth; grooves 0.1-0.3 times as wide as the base of the ribs; sides of ribs smooth or slightly rugose..... **B. coulteri**

1 Plants perennial, the main stems mostly spreading; fruits pubescent to glabrous

6 Herbage glandular-hairy ..... **B. coccinea**

6 Herbage not glandular, glabrous to sparsely hairy .. **B. gracillima**

***Boerhavia coccinea*** Mill. SCARLET SPIDERLING. Perennial 20-60 cm tall, the stems erect to prostrate. Leaves ovate to orbicular, mostly glandular-hairy but sometimes glabrous above. Flowers scarlet, about 2 mm long. Fruit 5-ribbed, glandular. Plains and rocky slopes. Jun-Oct. LTER-BOCO, USDA-BOCO.

***Boerhavia coulteri*** (Hooker f.) S. Watson COULTER'S SPIDERLING. Annual 20-40 cm tall, the stems ascending to procumbent. Leaves ovate to lanceolate, mostly glabrous. Flowers pink, 1-2 mm long. Sandy plains and washes. Aug-Oct. LTER-BOCC, USDA-BOCO2.

a Inflorescence with fruits mostly overlapping 50-100% of their length, mostly  $\pm$  fasciculate in groups of 2-4, each fruit 2.5-3.6 mm long, truncate to round at the apex...var. ***coulteri***

a Inflorescence with fruits remote or some overlapping 1-50% of their length, infrequently 2-3 in a cluster, each fruit 2-2.4 mm long (occasionally longer), mostly rounded at the apex...var.

***palmeri*** (S. Watson) Spellenberg PALMER'S SPIDERLING.

***Boerhavia gracillima*** Heimerl. BUSH SPIDERLING. Bushy perennial to 70 cm tall. Leaves elliptic to orbicular, mostly glabrous. Flowers purplish red. Fruit 5-ribbed, hairy to glabrous but not glandular. Dry plains and rocky slopes. May-Sep. LTER-BOGL, USDA-BOGR.

***Boerhavia intermedia*** M.E.Jones FIVE-WING SPIDERLING. Annual 20-40 cm tall. Leaves glabrous, oblong to lanceolate. Flowers pink, 1-2 mm long. Fruit 5-angled, glabrous. Dry slopes. Jul-Oct. LTER-BOIN, USDA-BOIN.

***Boerhavia spicata*** Choisy SPIKE SPIDERLING. Annual 20-50 cm tall, the stems erect or procumbent. Leaves ovate to lanceolate, glandular-hairy or glabrous. Flowers pink, 1-2 mm long. Sandy plains and washes. Aug-Oct. LTER-BOSP, USDA-BOSP.

***Boerhavia torreyana*** (S. Watson) Standley TORREY'S SPIDERLING. Annual, very similar to *Boerhavia spicata* but differing in the key features. Sandy plains and washes. Aug-Oct. LTER-BOTR, USDA-BOTO2.

***Boerhavia wrightii*** Gray WRIGHT'S SPIDERLING. Annual 20-60 cm tall. Leaves hairy-glandular, the lower surface with glandular dots, lanceolate to narrowly ovate. Flowers pink, 1-2 mm long. Dry plains and washes. Aug-Sep. LTER-BOWR, USDA-BOWR.

## **Commicarpus**

***Commicarpus scandens*** (L.) Standl. WARTCLUB. Viny,  $\pm$  woody perennial. Stems weak, trailing. Leaves ovate to circular, glabrous. Flowers yellow-green. Fruits club-shaped, with scattered

glands. Canyons and rocky hillsides. May-Oct. [*Boerhavia scandens* L.]. LTER-COSA, USDA-COSC.

### **Cyphomeris**

*Cyphomeris gypsophiloides* (Mart. & Gal.) Standl. DELICATE DARLING. Perennial 40-80 cm tall. Stems with broad glandular bands around the internodes. Leaves ovate to lanceolate, glabrous. Flowers bright red. Fruit with a sac-like base on one side, 10-ribbed. Rocky canyons and hills. Jun-Sep. LTER-CYGY, USDA-CYGY.

### **Mirabilis**

1 Leaves ovate to heart-shaped, more than 20 mm wide.....  
..... **M. multiflora**

1 Leaves linear, less than 15 mm wide..... **M. linearis**

*Mirabilis linearis* (Pursh) Heimerl. RIBBON FOUR O'CLOCK. Perennial 30-100 cm tall. Flowers reddish purple, about 1 cm. Fruit 5-ribbed, hairy. Plains and hills. Jul-Sep. [*Oxybaphus linearis* (Pursh) Robins.]. LTER-MILN, USDA-MILB.

*Mirabilis multiflora* (Torrey) Gray COLORADO FOUR O'CLOCK. Bushy perennial to 1 m tall. Flowers pink to purplish red, 3-6 cm. Fruit 10-ribbed, glabrous. Dry slopes and plains, rocky or sandy soil. Jun-Oct. LTER-MIMU, USDA-MIMU.

## **OLEACEAE OLIVE FAMILY**

Trees or shrubs. Leaves opposite, simple to compound. Flowers 4-merous. Stamens 2. Ovary superior, 2-celled.

1 Plants well-developed shrubs; leaves opposite throughout.....  
..... **Forestiera**

1 Plants low sub-shrubs; leaves alternate above, opposite below.....  
..... **Menodora**

### **Forestiera**

*Forestiera pubescens* Nuttall NEW MEXICO DESERT-OLIVE. Sprawling shrubs to 2 m or more tall. Leaves opposite, simple, mostly clustered on short spur-shoots, entire to serrulate. Flowers lacking petals. Fruit a bluish drupe. Apr-May. Along the Rio Grande. LTER-FOPU, USDA-FOPU2.

### **Menodora**

*Menodora scabra* Gray MENODORA. Low bushes 30-80 cm tall. Leaves narrowly lanceolate, entire, green. Corolla yellow, funnel-shaped. Fruit a bilobed capsule, each half pea-shaped,

opening by a horizontal cap. Rocky hills, tarbush flats. Feb-Oct.  
LTER-MESC, USDA-MESC.

a Plants glabrous, smooth to the touch...var. *laevis* (Woot. & Standl.) Steyerl.

a Plants scaberulous, rough to the touch...var. *scabra*

### ONAGRACEAE EVENING PRIMROSE FAMILY

Annual or perennial herbs. Leaves alternate, opposite, or basal.

Flowers regular, 4-merous. Ovary inferior. Fruit a capsule, nut, or berry.

1 Flowers 2-4 cm across ..... **Oenothera**

1 Flowers 0.6-2.5 cm across

3 Flowers bilaterally symmetrical; stigmas 4-lobed ..... **Oenothera**

3 Flowers radially symmetrical; stigmas entire ..... **Eremothera**

### Eremothera

*Eremothera chamaenerioides* (A. Gray) W.L. Wagner & Hoch  
FIREWEED SUNCUP. Slender, much-branched annual 8-45 cm tall.  
Stems glandular. Leaves narrowly elliptic to spatulate-shaped, entire,  
purple-spotted. Flowers white, the petals 2-3 mm long. Sandy flats  
and slopes. Mar-Apr. [*Camissonia chamaenerioides* (Gray) Raven]  
LTER-CACH, USDA-CACH12.

*Gaura* : see **Oenothera**

### Oenothera [including *Gaura*]

1 Stigmas entire, disc-shaped ..... **O. hartwegii**

1 Stigmas deeply 4-lobed

2 Petals yellow when fresh ..... **O. primiveris**

2 Petals white or pinkish when fresh

3 Fruit indehiscent, nut-like (*Gaura*)

4 Plants annual; petals 1.5-3 mm ..... **O. curtifolia**

4 Plants perennial; petals 3-9 mm ..... **O. suffrutescens**

3 Fruit dehiscent, capsule-like

5 Plants annual; stem leaves narrowly lanceolate with  
regular pinnate lobes ..... **O. albicaulis**

5 Plants perennial; stem leaves coarsely sawtoothed or  
absent

6 Stems well-developed; plants 30-60 cm ..... **O. pallida**

6 Stems absent or nearly so; plants 1-20 cm

..... **O. caespitosa**

*Oenothera albicaulis* Pursh WHITE-STEM EVENING

PRIMROSE. Annual 10-40 cm tall. Basal leaves spatulate, mostly

entire. Sandy flats and plains. Mar-Jun. LTER-OEAL, USDA-OEAL.

***Oenothera cespitosa*** Nutt. TUFTED EVENING PRIMROSE. Perennial 1-20 cm tall. Leaves mostly basal, irregularly toothed to lobed. Fruit sharply angled. Rocky slopes. Apr-Aug. LTER-OECA, USDA-OECA10.

***Oenothera curtiflora*** W.L. Wagner & Hoch LIZARD-TAIL, VELVET-WEED. Annual 30-200 cm tall, densely glandular. Leaves elliptic to ovate. Petals rose-pink. Fruit spindle-shaped. Rocky to sandy plains, roadsides, waste areas. May-Oct. [*Gaura mollis* James *Gaura parviflora* Dougl. ex Hooker,]. LTER-GAPA, USDA-GAMO5.

***Oenothera hartwegii*** Benth. HARTWEG'S SUNDROPS. Perennial 5-40 cm tall. Leaves linear to lanceolate, mostly entire. Flowers yellow, opening in the afternoon. Plains and rocky hills. Mar-Oct. [*Calylophus hartwegii* (Benth.) Raven] LTER-CAHA, USDA-OEHA3.

***Oenothera pallida*** Lindl. subsp. *runcinata* (Engelm.) Munz & Klein PALE EVENING PRIMROSE. Perennial 30-60 cm tall. Stem leaves coarsely sawtoothed. Fruit round or gently angled. Dry plains and sandy areas. May-Sep. [*Oenothera runcinata* (Engelm.) Munz]. LTER-OERU, USDA-OEPAR.

***Oenothera primiveris*** Gray EARLY EVENING PRIMROSE. Annual 3-10 cm tall. Leaves basal, pinnately lobed, densely hairy. Flowers 5 cm across, fading orange-red. Fruit bottle-shaped with a narrow neck, without wings. Flats and plains. Mar-May. LTER-OEPR, USDA-OEPR.

***Oenothera suffrutescens*** (Seringe) W.L. Wagner & Hoch SCARLET BEE-BLOSSOM. Perennial 20-50 cm tall, densely hairy. Leaves linear to elliptic. Petals white, facing to reddish. Fruit spindle-shaped. dry plains and roadsides. Apr-Sep. [*Gaura coccinea* Pursh]. LTER-GACO, USDA-GACO5.

## OROBANCHACEAE BROOMRAPE FAMILY

Perennial herbs, lacking chlorophyll, parasitic on roots of other plants. Leaves reduced and scale-like, alternate. Flowers tubular, 4- or 5-merous. Petals 5. Stamens 4. Ovary superior. Fruit a capsule. The Orobanchaceae has been expanded to include several genera which were formerly in the Scrophulariaceae (but none are present in our flora).

### Orobanche

***Orobanche ludoviciana*** Nuttall LOUISIANA BROOMRAPE. Fleshy parasites. Stems 10-50 cm tall, viscid-hairy, with lance-ovate

scale leaves. Flowers pale purple to yellow, 2-4 cm. Parasitic on members of the sunflower family in sandy areas. Mar-Sep. [*Orobanche multiflora* Nutt.] LTER-ORLU, USDA-ORLU.

### PAPAVERACEAE POPPY FAMILY

Annual or perennial herbs, mostly with milky or orange juice. Leaves alternate or basal, entire to divided. Flowers showy. Sepals 2-3. Petals 4-many. Stamens few to numerous. Ovary superior. Fruit a capsule.

- 1 Petals orange to yellow; stems smooth ..... **Eschscholtzia**
- 1 Petals white; stems prickly ..... **Argemone**

#### Argemone

*Argemone pleiacantha* Greene SOUTHWESTERN PRICKLY POPPY. Spiny perennial 50-100 cm tall, with yellow-orange sap. Leaves deeply pinnately parted, spiny. Petals white, 4-6 in number, large. Stamens numerous. Gravelly slopes and plains. Apr-Jun. LTER-ARPL, USDA-ARPL3.

#### Eschscholtzia

*Eschscholtzia californica* Cham. subsp. *mexicana* (Greene) C. Clark MEXICAN POPPY. Annual 10-30 cm tall. Leaves highly dissected. Flowers orange to yellowish with a darker spot at the base of each pet. Sandy to gravelly slopes and plains. Feb-May. [*Eschscholtzia mexicana* Greene]. LTER-ESME, USDA-ESCA2.

### PEDALIACEAE DEVIL'S CLAW FAMILY

Sticky-glandular, annual or perennial herbs. Leaves alternate or opposite. Corolla 2-lipped. Stamens 4. Ovary superior. Fruit a horned capsule, splitting into 2 "claws." [Includes Martyniaceae].

#### Proboscidea

- 1 Plants perennial, arising from a tuberous root; corolla light-yellow to bronze; fruit crested on two sides..... **P. althaeifolia**
- 1 Plants annual, arising from a slender taproot; corolla purplish, reddish, pinkish, cream-yellow, or whitish; fruit crested on a single side
  - 2 Corolla lacking any spots or blotches internally, or if present, these restricted to the lower half of the corolla tube; flowers reddish to pinkish ..... **P. parviflora**
  - 2 Corolla with conspicuous spots or blotches internally; flowers cream-colored to yellowish, but with reddish tinges.....  
..... **P. louisianica**

***Proboscidea althaeifolia*** Dcne. HOLLYHOCK DEVIL'S CLAW. Perennial 30-60 cm tall. Leaves shallowly to deeply lobed. Flowers yellow to bronze. Sandy ground. Jun-Sep. LTER-PRAL, USDA-PRAL4.

***Proboscidea louisianica*** (Mill.) Thell. RAM'S-HORN DEVIL'S CLAW. Annual 30-60 cm tall. Leaves large, broadly heart-shaped, shallowly lobed. Flowers yellowish, 3.5-4 cm long. Sandy ground. Jun-Sep. LTER-PRLO, USDA-PRLO.

***Proboscidea parviflora*** (Woot.) Woot. & Standl. WOOTON'S DEVIL'S CLAW. Annual 30-50 cm tall. Leaves large, broadly heart-shaped, shallowly lobed. Flowers reddish, 2.5-3.5 cm long. Sandy areas. Apr-Oct. LTER-PRPA, USDA-PRPA2.

**PLANTAGINACEAE PLANTAIN FAMILY**

Annual or perennial herbs. Leaves mostly basal. Inflorescence a spike, raceme, or panicle. Flowers small to large and showy, 4- to 5-merous, nearly actinomorphic to strongly zygomorphic. Petals united, at least basally. Ovary superior. Fruit a capsule. The Plantaginaceae and Scrophulariaceae have been rearranged to reflect a more accurate relationship of genera, with the expansion of the Plantaginaceae and the reduction of the Scrophulariaceae.

- 1 Leaves all basal, hairy; inflorescence spike-like, on a naked peduncle ..... **Plantago**
- 1 Leaves borne on the stem; inflorescence not as above
  - 2 Plants vine-like or twining..... **Maurandya**
  - 2 Plants erect, not vine-like
    - 3 Leaves alternate on the erect flowering stems, opposite on the basal sterile stems ..... **Nuttallanthus**
    - 3 Leaves opposite throughout..... **Penstemon**

**Maurandya**

- 1 Leaves 15-25 mm; corolla throat with a yellowish patch ..... **M. antirrhiniflora**
- 1 Leaves 30-50 mm; corolla throat without a yellowish patch ..... **M. wislizenii**

***Maurandya antirrhiniflora*** Humbl. & Bonpl. ex Willd. LITTLE SNAPDRAGON VINE, ROVING SAILOR. Twining perennial. Leaves arrowhead-shaped. Corolla blue-violet to reddish-lavender, 2-2.5 cm. Gravelly slopes, often among boulders. Jun-Sep. [*Maurandella antirrhiniflora* (Humbl. & Bonpl. ex Willd.) Rothm.]. LTER-MAAN, USDA-MAAN9.

***Maurandya wislizeni*** Engelm. ex Gray NET-CUP SNAPDRAGON VINE. Twining perennial. Leaves arrowhead-

shaped. Corolla pale blue, 2.5-3 cm. Sepals enlarging as the fruit matures, becoming cup-like around the fruit. Sandy flats, dunes, and floodplains. Apr-Jul. [*Epixiphium wislizenii* (Engelm. ex Gray) Munz]. LTER-MAWI, USDA-MAWI2.

### **Nuttallanthus**

*Nuttallanthus texanus* (Scheel) D.A. Sutton TEXAS TOADFLAX. Plants annual, with erect stems. Leaves linear, alternate on the main stem above, but opposite on slender branches produced from the base. Flowers bluish, spurred at the base. Rocky hills and slopes in the Dona Ana Mts, around Summerford Mountain, and on the western slopes of the San Andres Mts. Feb-Apr. [*Linaria texana* Scheele]. LTER-LITE, USDA-NUTE.

### **Plantago**

*Plantago patagonica* Jacq. WOOLY PLANTAIN. Annual 2-12 cm tall. Leaves basal, lanceolate to linear, hairy. Rocky slopes. Mar-Jun. [*Plantago purshii* R. & S.]. LTER-PLPA, USDA-PLPA2.

### **Penstemon**

1 Flowers red ..... **P. barbatus**

1 Flowers pink, blue, to white

2 Leaves linear, less than 2 mm wide ..... **P. ambiguus**

2 Leaves mostly ovate, more than 10 mm wide ..... **P. fendleri**

*Penstemon ambiguus* Torrey MOTH PENSTEMON. Shrubby perennial 50-100 cm tall. Leaves filiform, opposite. Corolla tube curved. Sandy plains and dunes. May-Aug. LTER-PEAM, USDA-PEAM.

*Penstemon barbatus* (Cav.) Roth. SOUTHWESTERN PENSTEMON. Perennial 30-70 cm tall. Leaves lanceolate to spatulate, opposite. Corolla tube straight. Rocky hills. Jun-Oct. LTER-PEBA, USDA-PEBA2.

*Penstemon fendleri* Torrey & Gray FENDLER'S PENSTEMON. Perennial 30-40 cm tall. Leaves opposite, ovate, glaucous. Flowers 14-20 mm, lavender-colored. Corolla tube curved on the upper surface. Rocky or sandy plains and bajadas. Apr-Aug. LTER-PEFE, USDA-PEFE.

### **POACEAE (GRAMINEAE) GRASS FAMILY**

Annual or perennial herbs. Stems mostly round, hollow or pithy. Leaves alternate, 2-ranked. Flowers hidden w/in chaffy bracts (spikelets) composed of glumes, lemmas, and paleas. Sepals and petals absent. Fruit a grain.

1 Spikelets hidden in sharp, spiny burs ..... **Cenchrus**



- 1 Spikelets not in spiny burs
  - 2 Glumes covered with rows of hooked prickles ..... **Tragus**
  - 2 Glumes without any hooked prickles
    - 3 Spikelets subtended by 1 to several bristles (do not confuse these with awns, which are attached to the spikelets) **Setaria**
    - 3 Spikelets not subtended by bristles
      - 4 Inflorescence a spike, without any pedicels or branches ..... Key I
      - 4 Inflorescence a raceme or panicle, with pedicels and/or branches
        - 5 Disarticulation below the glumes ..... Key II
        - 5 Disarticulation above the glumes, which remain on the plant
          - 6 Spikelets with a single floret (lemma, palea, and flower) only ..... Key III
          - 6 Spikelets with more than 1 floret, some may be reduced in some way ..... Key IV

**Key I (Inflorescence a spike)**

- 1 Plants 1-12 cm tall, tufted or with stolons
  - 2 Plants tufted ..... **Schismus**
  - 2 Plants with stolons
    - 3 Blades mostly flat; glumes less than florets ..... **Munroa**
    - 3 Blades rolled; glumes more than florets ..... **Dasyochloa**
- 1 Plants mostly 15-80 cm tall, tufted or with rhizomes
  - 4 Plants annual, with bristly seedheads, spring-flowering ..... **Hordeum**
  - 4 Plants perennial, the seedheads bristly or not, mostly fall-flowering
    - 5 First glume 2-awned; plants tufted ..... **Lycurus**
    - 5 First glume awnless or 1-awned; plants with rhizomes
      - 6 Spikelets single at the rachis nodes, the florets falling, but the glumes staying on the rachis; blades bluish ..... **Elymus**
      - 6 Spikelets in clusters on the rachis nodes, the cluster of spikelets quickly falling from the persistent rachis at maturity; blades not bluish ..... **Pleuraphis**

**Key II (Disarticulation below the glumes)**

- 1 Spikelets subtended by a tiny cup; plants annual ..... **Eriochloa**
- 1 Spikelets without a tiny cup at the base; plants annual or perennial
  - 2 Ligules absent; plants annual ..... **Echinochloa**
  - 2 Ligules present; plants annual or perennial
    - 3 Spikelets awned or awn-tipped

- 4 Awns 5-10 cm
  - 5 Blades 1-2 mm wide, 2-8 cm long; awns in threes; plants with stolons ..... **Scleropogon**
  - 5 Blades 4-6 mm wide, 6-20 cm long; awns single; plants tufted ..... **Heteropogon**
- 4 Awns less than 4 cm
  - 6 Panicle open and pyramid-shaped at maturity, mostly at least 10 cm wide ..... **Sorghum**
  - 6 Panicle narrow, mostly much less than 10 cm wide
    - 7 Panicle densely silvery-hairy (though sometimes the spikelets reddish) ..... **Bothriochloa**
    - 7 Panicle not silvery-hairy
      - 8 Panicle with numerous flag-like branches ..... **Bouteloua**
      - 8 Panicle spike-like, without flag-like branches ..... **Lycurus**
- 3 Spikelets awnless
  - 9 Blades strongly and sharply serrate; sprawling perennial along the Rio Grande ..... **Leersia**
  - 9 Blades smooth or serrulate, not sharp; habitat various
    - 10 First glume absent or very short, less than 0.5 mm
      - 11 Spikelets on long, divergent pedicels ..... **Digitaria**
      - 11 Spikelets sessile or on short pedicels
        - 12 Panicle densely silvery-hairy ..... **Digitaria**
        - 12 Panicle green, glabrous to short-hairy ..... **Paspalum**
    - 10 First glume well-developed, evident, 1 mm or longer
      - 13 Plants perennial
        - 14 Plants with wiry stolons from hard, knotty bases; glumes and lemma rounded ..... **Hopia**
        - 14 Plants without stolons; glumes or lemma pointed ..... **Panicum**
      - 13 Plants annual
        - 15 Fertile floret (hardened seedcase) smooth and shiny ..... **Panicum**
        - 15 Fertile floret with wrinkles and ridges ..... **Urochloa**

**Key III (Spikelets with a single floret)**

- 1 Glumes more than 5 mm
  - 2 Floret with 3 awns, sometimes 2 of the awns reduced and evident only as short stubs ..... **Aristida**
  - 2 Floret with a single awn ..... **Achnatherum**

- 1 Glumes 1-3 mm
  - 3 Panicle branches digitate (windmill-like) at the stem tip..... **Cynodon**
  - 3 Panicle branches not as above
    - 4 Ligule hairy; spikelets awnless..... **Sporobolus**
    - 4 Ligule a membrane; spikelets awned or awnless
      - 5 Plants annual; panicle dense, furry-looking, like a rabbit foot ..... **Polypogon**
      - 5 Plants perennial; panicle loose and not as above ..... **Muhlenbergia**

**Key IV (Spikelets with more than 1 floret)**

- 1 Plants with vigorous rhizomes
  - 2 Plants 1-3 m tall, with plumose panicles ..... **Phragmites**
  - 2 Plants less than 0.5 m tall, the seed heads not at all plumose ..... **Distichlis**
- 1 Plants tufted or with stolons, but without rhizomes
  - 3 Plants with 2 kinds of spikelets: male plants with awnless spikelets; female plants with very long-awned spikelets; stoloniferous perennial ..... **Scleropogon**
  - 3 Plants w all spikelets the same; not both stoloniferous and perennial
    - 4 Panicle branches digitate (windmill-like) at the stem tip ..... **Chloris**
    - 4 Panicle branches otherwise
      - 5 Glumes 2-3 cm, mostly enclosing the spikelets; plants annual..... **Avena**
      - 5 Glumes much shorter, less than 1 cm, not enclosing the spikelets; plants annual or perennial
        - 6 Lemma with 3 nerves
          - 7 Spikelets in dense clusters nestled among the leaves
            - 8 Blades flat; glumes less than florets..... **Munroa**
            - 8 Blades rolled; glumes more than florets..... **Dasyochloa**
          - 7 Spikelets not in dense clusters or elevated well above the leaves
            - 9 Inflorescence a panicle of unbranched primary branches
              - 10 Panicle branches less than 5 cm; spikelets with 1-3 reduced florets above a single fertile floret ..... **Bouteloua**

- 10 Panicle branches more than 5 cm; spikelets  
with several well-developed florets ..... **Leptochloa**
- 9 Inflorescence a raceme or a panicle of rebranched  
primary branches
  - 11 Lemma nerves glabrous ..... **Eragrostis**
  - 11 Lemma nerves hairy
    - 12 Blades with white margins... **Erioneuron**
    - 12 Blades without white margins..... **Tridens**
- 6 Lemma with 5-7 nerves
  - 13 Lemma with 9 plumose awns ..... **Enneapogon**
  - 13 Lemma with less than 9 awns or awnless
    - 14 Spikelets more than 18 mm ..... **Bromus**
    - 14 Spikelets less than 12 mm
      - 15 Glumes more than most of the florets ..... **Schismus**
      - 15 Glumes less than most of the florets
        - 16 Florets awned ..... **Vulpia**
        - 16 Florets awnless ..... **Poa**

**Achnatherum**

- 1 Awns 3-6 cm ..... **A. eminens**
- 1 Awns absent or less than 1 cm ..... **A. hymenoides**

*Achnatherum eminens* (Cavanilles) Barkworth

SOUTHWESTERN NEEDLEGRASS. Tufted perennial 60-100 cm tall, mostly growing up thru low shrubbery. Panicle loose, lanceolate. Florets sparsely hairy, the awn persistent, 3-6 cm. Rocky slopes. Jul-Sep. [*Stipa eminens* Cavanilles] LTER-ACEM, USDA-ACEM4.

*Achnatherum hymenoides* (Roemer & J.A. Schultes) Barkworth

INDIAN RICEGRASS. Tufted perennial 25-60 cm tall. Glds rolled. Panicle diffuse, branching at right angles. Florets densely hairy, with a deciduous awn less than 1 cm. Deep sand. Jun-Aug. [*Oryzopsis hymenoides* (Roemer & J.A. Schultes) Ricker] LTER-ACHY, USDA-ACHY.

**Aristida**

- 1 Well-developed awns 1, the 2 lateral awns reduced to short stubs 1-3 mm
  - 2 Awn bent at maturity; 1st glume 2-4 mm more than the second..  
..... **A. schiedeana**
  - 2 Awn straight or curved; glumes about equal .....  
..... **A. ternipes** var. **ternipes**
- 1 Well-developed awns 3, all more than 3 mm

- 3 Plants annual, mostly branching at several upper nodes ..... **A. adscensionis**
- 3 Plants perennial, mostly branching only basally
  - 4 Panicle branches without axillary swellings, the branches appressed at their bases (but may droop outward from the tips)..... **A. purpurea**
  - 4 Panicle branches with axillary swellings that cause the branches to spread stiffly outward from the base
    - 5 Glumes strongly unequal in length, one ½ to ¾ as long as the other; awns mostly 2-3 cm long..... **A. purpurea var. perplexa**
    - 5 Glumes nearly equal in length; awns mostly 1-2.5 cm long
      - 6 Plants mostly forming low hemispheric mounds, less than 25 cm tall; anthers less than 1 mm ..... **A. havardii**
      - 6 Plants loosely tufted, not forming low mounds, more than 25 cm tall; anthers more than 1 mm
        - 7 Blades mostly flat or loosely folded; base of blade with long (ca 1-3 mm) scattered hairs above the ligule..... **A. ternipes var. gentilis**
        - 7 Blades mostly tightly rolled or folded; base of blade glabrous above the ligule (do not confuse with hairs at edge of sheath)..... **A. pansa**

*Aristida adscensionis* L. SIXWEEKS THREEAWN. Annual 2-50 cm tall, the stature and habit variable. Panicle mostly narrow, with erect branches. Awns 1-2 cm. Slopes, plains, washes, and roadsides. May-Oct. LTER-ARAD, USDA-ARAD.

*Aristida havardii* Vasey HAVARD'S THREEAWN. Perennial 15-40 cm tall. Blades without scattered long hairs above the ligule. Panicle branchlets and spikelets divaricately spreading. Awns about equal length. Plains and dry hills. May-Sep. [*Aristida barbata* Fourn.]. LTER-ARHV, USDA-ARHA3.

*Aristida pansa* Woot. & Standl. WOOTON'S THREEAWN. Perennial 25-50 cm tall. Leaves with tufts of cobwebby hairs at the collars. Glumes brownish, equal in length. Awns 1.5-2 cm. Rocky to sandy slopes and plains. Jul-Sep. Sometimes confused with *Aristida purpurea* var. *perplexa*. We have two intermingling forms:

- a Branchlets and spikelets appressed to the primary branch, which is spreading...forma **pansa** LTER-ARPA, USDA-ARPA9.
- a Branchlets and spikelets spreading from the primary branch, which is also spreading...forma **dissita** (I.M.Johnst.) Allred & Valdes-R. LTER-ARDI, USDA-ARPA9.

*Aristida purpurea* Nutt. PURPLE THREEAWN. Perennial 25-65 cm tall. Glumes unequal, the first mostly much shorter than the

second. Awns 2-10 cm. Rocky slopes, hills, and roadsides. May-Oct. We have several varieties, distinguished by the following key:

- a Awns 4-10 cm
  - b 2nd glume mostly less than 16 mm; awns delicate, 2-6 cm long...var. *purpurea* PURPLE THREEAWN. LTER-ARPU, USDA-ARPU9.
  - b 2nd glume more than 16 mm; awns stout, 4-10 cm long...var. *longiseta* (Steud.) Vasey RED THREEAWN [*Aristida longiseta* Steudel]. LTER-ARLO, USDA-ARPU9
- a Awns 1-4 cm
  - c Panicle branches spreading stiffly outward at the base from axillary swellings...var. *perplexa* Allred & Valdes-R. JORNADA THREEAWN. Base of blade glabrous above the ligule. LTER-ARPE, USDA-ARPU9.
  - c Panicle branches erect to drooping from the tips, but without axillary swellings
    - d Panicle branches drooping at the tips; awns purplish...var. *purpurea* LTER-ARPU, USDA-ARPU9.
    - d Panicle branches stiffly erect; awns mostly brownish
      - e Panicle straw-colored; lemma apices and awns very thin and delicate...var. *nealleyi* (Vasey) Allred NEALLY'S THREEAWN. Leaves mostly clustered at the base, the blades mostly involute, mostly less than 12 cm long. [*Aristida glauca* (Nees) Walp.]. LTER-ARNE, USDA-ARPU9.
      - e Panicle dark brown or olive-colored; lemma apices and awns thicker and more stout
        - f Panicle less than 15 cm; blades less than 10 cm...var. *fendleriana* (Steud.) Vasey FENDLER'S THREEAWN. Leaves mostly clustered at the base, the blades mostly involute. [*Aristida fendleriana* Steudel]. LTER-ARFE, USDA-ARPU9.
        - f Panicle more than 14 cm; blades more than 10 cm...var. *wrightii* (Nash) Allred WRIGHT'S THREEAWN. Leaves usually distributed upwards along the stem, the blades involute or flat. [*Aristida wrightii* Nash]. LTER-ARWR, USDA-ARPU9.

*Aristida schiedeana* Trin. & Rupr. var. *orcuttiana* (Vasey) Allred & Valdes-R. SINGLE THREEAWN, BEGGER-TICK GRASS. Perennial 40-100 cm tall. Panicle open, the branches stiffly spreading to drooping. Awns single. Rocky hills. Jul-Sep. [*Aristida orcuttiana* Vasey]. LTER-AROR, USDA-ARSC3.

*Aristida ternipes* Cav. Perennial 40-120 cm tall. Blades with scattered long hairs above the ligule. Panicle open, the branches stiffly spreading. Hills, plains, roadsides. Jul-Sep. We have two varieties:

a Awns essentially single, the lateral awns 0-2 mm...var. *ternipes*  
SPIDERGRASS. LTER-ARTE, USDA-ARTE3.

a Awns in threes, the lateral awns (2)5-12 mm...var. *gentilis*  
(Henr.) Allred  
HOOK THREEAWN. [*Aristida hamulosa* Henr., *Aristida ternipes* Cav. var. *hamulosa* (Henr.) Trent]. LTER-ARHA, USDA-ARTE3.

### **Avena**

\**Avena fatua* L. WILD OATS. Annual 40-75 cm tall. Blades flat. Inflorescence an open panicle. Spikelets with 2-3 florets, each with a prominent dark awn. Glumes 2-3 cm, papery. Occasional waif of disturbed ground. Apr-Jun. LTER-AVFA, USDA-AVFA.

### **Bothriochloa**

1 Panicle reddish hairy, the branches spreading outward from axillary swellings ..... **B. ischaemum**

1 Panicle silvery hairy, the branches erect-appressed

2 Awns less than 18 mm; sessile spikelets 3-4.5 mm .....  
..... **B. laguroides**

2 Awns more than 18 mm; sessile spikelets 4.5-6 mm

3 Panicle axis less than 5 cm long, with 2-8 branches; nodes bright white-hairy ..... **B. springfieldii**

3 Panicle axis 5-15 cm long, with more than 8 branches; nodes with tan or off-white hairs ..... **B. barbinodis**

*Bothriochloa barbinodis* (Lag.) Herter CANE BLUESTEM.

Perennial 60-150 cm tall. Leaves green or glaucous. Dry slopes, plains, and disturbed ground. May-Oct. [*Andropogon barbinoidis* Lag.] LTER-BOBR, USDA-BOBA3.

\**Bothriochloa ischaemum* (L.) Keng YELLOW BLUESTEM.

Perennial 45-70 cm tall. Leaves greenish. Nodes mostly glabrous. Panicle with 3-8 reddish-hairy branches ascending at about 45° angle. Spreading along main Jornada road. Jul-Oct. [*Andropogon ischaemum* L.] LTER-BOIS, USDA-BOIS.

*Bothriochloa laguroides* (DC.) Herter subsp. *torreyana* (Steud.)

Allred & Gould SILVER BLUESTEM. Perennial 50-120 cm tall. Leaves often glaucous. Ditchbanks, swales, plains. May-Sep.

[*Bothriochloa saccharoides* and *Andropogon saccharoides* of various works]. LTER-BOTO, USDA-BOLA2.

***Bothriochloa springfieldii*** (Gould) Parodi SPRINGFIELD'S BLUESTEM. Perennial 50-100 cm tall. Leaves green or glaucous. Disturbed ground, dry slopes and foothills. Jul-Oct. [*Andropogon springfieldii* Gould] LTER-BOSR, USDA-BOSP3.

**Bouteloua**

1 Internodes woolly-hairy ..... **B. eriopoda**

1 Internodes glabrous

2 Plants annual

3 Panicle branches falling as a unit from the main axis, leaving small stubs..... **B. aristidoides**

3 Panicle branches remaining on the main axis, the spikelets disarticulating above the glumes

4 Axis of panicle branch and glumes densely hairy **B. parryi**

4 Axis of panicle branches and glumes glabrous or nearly so ..... **B. barbata**

2 Plants perennial

5 Panicle branches more than 20 in number, each falling as a unit and leaving small stubs on the axis ..... **B. curtipendula**

5 Panicle branches less than 5 in number, persistent on the main axis

6 Axis of panicle branch extending beyond the last spklt as a stiff bristle 5-8 mm ..... **B. hirsuta**

6 Axis of panicle branch not extending beyond the last spklt as a bristle ..... **B. gracilis**

***Bouteloua aristidoides*** (Kunth) Griseb. NEEDLE GRAMA.

Annual 10-30 cm tall. Panicle branches 1-2 cm, sharp-pointed at the base when breaking away. Sandy plains and hills. Jun-Oct. LTER-BOAR, USDA-BOAR.

***Bouteloua barbata*** Lag. SIXWEEKS GRAMA. Annual 10-25 cm tall, the stems often prostrate. Anthers yellow. Sandy places. Jun-Oct. Our plants belong to var. *barbata*. LTER-BOBA, USDA-BOBA2.

***Bouteloua curtipendula*** (Michx.) Torrey SIDEOATS GRAMA. Perennial 40-85 cm tall. Panicle elongate, with short "flags." Rocky slopes and plains. Jul-Oct. LTER-BOCU, USDA-BOCU. Two weak varieties:

a Plants with short rhizomes...var. **curtipendula**

a Plants tufted...var. **caespitosa** Gould & Kapadia.

***Bouteloua eriopoda*** (Torrey) Torrey BLACK GRAMA.

Perennial 20-45 cm tall, bent at the base and often rooting at the



nodes. Rocky or sandy slopes and flats. Jul-Oct. LTER-BOER, USDA-BOER4.

*Bouteloua gracilis* (Willd. ex Kunth) Lag. ex Griffiths BLUE GRAMA. Perennial 20-50 cm tall. Blades mostly glabrous. Hills and plains. Jul-Oct. LTER-BOGR, USDA-BOGR2.

*Bouteloua hirsuta* Lag. HAIRY GRAMA. Perennial 20-60 cm tall. Blades mostly with scattered straight hairs. Rocy hills. Jul-Oct. LTER-BOHI, USDA-BOHI2.

*Bouteloua parryi* (Fourn.) Griffiths PARRY'S GRAMA. Annual 25-40 cm tall. Anthers often orange or salmon-colored. Rocky hills and sandy plains. Jul-Oct. LTER-BOPA, USDA-BOPA2.

### **Bromus**

*Bromus catharticus* Vahl RESCUEGRASS. Annual or biennial flowering the 1st year, 5-70 cm tall. Spikelets strongly flattened, with several awn-tipped florets. Moist weedy places. Jan-May. [*Bromus unioloides* (Willd.) Kunth]. LTER-BRCT, USDA-BRCA6.

### **Cenchrus**

1 Bur with less than 40 spines, the bases of the larger spines mostly 1-1.5 mm wide; upper floret of the spikelets 3.4-5.8 mm.....  
..... **C. spinifex**

1 Bur c/ more than 45 spines, the bases of the larger spines mostly less than 1 mm wide; upper floret of the spikelets 5.8-7.6 mm .....  
..... **C. longispinus**

*Cenchrus longispinus* (Hack.) Fern. SANDBUR. Annual 20-50 cm tall. Spikelets concealed w/in spiny burs. Sandy disturbed places, floodplains, mostly lower elevations than the preceding. Jul-Oct (also spring?). [*Cenchrus pauciflorus* Benth. in part]. LTER-CELO, USDA-CELO3.

*Cenchrus spinifex* Cav. SANDBUR. Annual 20-50 cm tall. Spikelets concealed w/in spiny burs. Sandy disturbed places. Mar-Oct. [*Cenchrus incertus* M.A. Curtis *Cenchrus pauciflorus* Benth. in part]. LTER-CEIN, USDA-CESP4.

### **Chloris**

\**Chloris virgata* Sw. SHOWY WINDMILLGRASS. Annual 20-70 cm tall. Lower shoots flattened. Panicle branches digitate. Spikelets with copious hairs. Weedy roadsides and swales. Jul-Oct. LTER-CHVI, USDA-CHVI4.

**Cynodon**

\**Cynodon dactylon* (L.) Pers. BERMUDAGRASS. Perennial with stolons or rhizomes, 2-25 cm tall. Panicle branches digitate. Spikelets awnless. Floodplains, low swales. Mar-Oct. LTER-CYDA, USDA-CYDA.

**Dasyochloa**

*Dasyochloa pulchella* (Kunth) Steudel FLUFFGRASS. Perennial with stolons, 3-12 cm tall. Blades mostly rolled, stiff. Dry hills and flats. Jul-Oct. [*Erioneuron pulchellum* (Kunth) Tateoka, *Tridens pulchellus* (Kunth) Hitchc.]. LTER-DAPU, USDA-DAPU7.

**Digitaria**

1 Spikelets on short pedicels; panicle branches appressed ..... **D. californica**

1 Spikelets on long pedicels; panicle branches spreading outward ..... **D. pubiflora**

*Digitaria californica* (Benth.) Henr. ARIZONA COTTONTOP. Perennial, tufted, 35-110 cm tall. Panicle silvery hairy, narrow, awnless. Rocky slopes and washes. Mar-Oct. LTER-DICA, USDA-DICA8.

*Digitaria pubiflora* (Vasey ex L.H. Dewey) Wipff FALL WITCHGRASS. Perennial, tufted or with rhizomes, 25-70 cm tall. Panicle open, the spikelets on very long pedicels. Spikelets awnless. Sandy or rocky slopes and hills. May-Nov. [*Digitaria cognata* (Schult) Pilger subsp. *pubiflora* (Vasey ex L.H. Dewey) Wipff, *Leptoloma cognatum* (Schult.) Chase]. LTER-DIPU, USDA-DIPU9.

**Distichlis**

*Distichlis spicata* (L.) Greene var. *stricta* (Torrey) Beetle INLAND SALTGRASS. Perennial with vigorous rhizomes, 10-35 cm tall. Inflorescence a narrow raceme or panicle. Spikelets, unisexual, awnless with numerous florets. Floodplains, alkali flats. Jul-Oct. LTER-DISP, USDA-DISP.

**Echinochloa**

1 Hairs of the panicle branches and spikelets not bulbous-based; panicle branches simple, usually 2(3) cm or less long; spikelets awnless, 2.5-3 mm long, arranged in four rows on the branches..... **E. colona**

1 Hairs of the panicle branches and/or spikelets bulbous-based; panicle branches usually rebranched, the lower branches usually more than 2 cm long; spikelets awnless or awned, 2.8-4 mm long

(excluding the awns), mostly arranged in two rows on the panicle branch..... **E. crusgallii**  
**Echinochloa colona** (L.) Link JUNGLE-RICE. Annual 10-65 cm tall. Ligules absent. Spikelets awnless. Moist to wet disturbed ground. The specific epithet is often spelled *colonum*. LTER-ECCO, USDA-ECCO2.

**Echinochloa crusgallii** (L.) Beauv. BARNYARDGRASS. Annual 45-120 cm tall. Ligules absent. Spikelets awned or awnless, with stiff hairs. Wet, disturbed ground. Jul-Oct. LTER-ECCR, USDA-ECCR.

### **Elymus**

**Elymus smithii** (Rydberg) Gould WESTERN WHEATGRASS. Rhizomatous perennials with conspicuously bluish foliage. Spikelets essentially awnless. Clayish soil, known from along the Rio Grande. Jul-Oct. LTER-ELSM, USDA-ELSM3.

### **Enneapogon**

**Enneapogon desvauxii** Beauv. SPIKE PAPPUSGRASS. Perennial 15-45 cm tall. Panicle spike-like, olive-gray. Florets with 9 awns. Flats and hills. Jun-Oct. LTER-ENDE, USDA-ENDE.

### **Eragrostis**

- 1 Lateral pedicels 2 mm or less long
  - 2 Plants annual; spikelets mostly 2-4 mm wide..... **E. cilianensis**
  - 2 Plants perennial; spikelets mostly 1-1.5 mm wide
    - 3 Basal sheaths hairy on the back; blades 15-30 cm. **E. curvula**
    - 3 Basal sheaths glabrous on the back; blades mostly less than 10 cm ..... **E. lehmanniana**
- 1 Lateral pedicels more than 2 mm long
  - 4 Plants annual ..... **E. pectinacea**
  - 4 Plants perennial
    - 5 Axils of panicle branches glabrous; lemma 2-3 mm, with a golden tinge ..... **E. erosa**
    - 5 Axils of panicle branches hairy; lemma 1-2 mm, dull purplish ..... **E. intermedia**

\***Eragrostis cilianensis** (All.) Lut. ex Janchen STINKGRASS. Annual 5-45 cm tall. Panicle mostly congested, oblong-ovate. Lemma with small crater-like glands on the midnerves. Moist, disturbed ground. May-Oct. LTER-ERCI, USDA-ERCI.

\***Eragrostis curvula** (Schrad.) Nees Perennial 60-120 cm tall. Panicle oblong, condensed to open. Dry slopes and plains. Jul-Oct. LTER-ERCU, USDA-ERCU2.

a Panicle straw-colored...var. *conferta* Stapf.

BOER LOVEGRASS [*Eragrostis chloromelas* Steud.].

a Panicle olive-green colored...var. *curvula* WEEPING  
LOVEGRASS

*Eragrostis erosa* Scribn. CHIHUAHUA LOVEGRASS. Perennial  
50-90 cm tall. Panicle open. Rocky hills. Jul-Oct. LTER-ERER,  
USDA-ERER.

*Eragrostis intermedia* Hitchc. PLAINS LOVEGRASS. Perennial  
40-80 cm tall. Panicle open. Rocky slopes and hills. Jul-Oct. LTER-  
ERIN, USDA-ERIN.

\**Eragrostis lehmanniana* Nees LEHMANN LOVEGRASS.  
Perennial 40-60 cm tall, sometimes with stolons. Panicle oblong,  
open, the branches and pedicels divergent. Dry slopes and hills. Jul-  
Oct. LTER-ERLE, USDA-ERLE.

*Eragrostis pectinacea* (Michx.) Nees Annual 15-60 cm tall.  
Panicle open.

a Spikelets appressed to the branches...var. *pectinacea*  
CAROLINA LOVEGRASS LTER-ERPE, USDA-ERPE.

a Spikelets spreading from the branches...var. *miserima* (Fourn.)  
Reeder DESERT LOVEGRASS [*Eragrostis arida* Hitchc.,  
*Eragrostis tephrosanthos* Schult.]. LTER-ERMI, USDA-  
ERPE.

## Eriochloa

*Eriochloa acuminata* (Presl) Kunth TEXAS CUPGRASS.  
Annual 15-35 cm tall. Panicle of unbranched primary branches.  
Spikelets subtended by a blackish rim. Disturbed, moist ground. Jul-  
Oct. LTER-ERAC, USDA-ERAC4.

## Erioneuron

1 Spikelets clustered down among the leaves .....  
..... see *Dasyochloa pulchella*

1 Spikelets elevated above the leaves ..... **E. nealleyi**

*Erioneuron nealleyi* (Vasey) Tateoka NEALLEY'S TRIDENS.  
Tufted perennial 10-20 cm tall. Blades flat or folded. Limestone  
hills. Jul-Sep. [*Erioneuron avenaceum* (Kunth) Tateoka var. *nealleyi*  
(Vasey) Gould, *Tridens nealleyi* (Vasey) Woot. & Standl.]. LTER-  
ERNE, USDA-ERNE9.

## Heteropogon

*Heteropogon contortus* (L.) Beauv. ex Roem. & Schult.  
TANGLEHEAD. Tufted perennial 25-60 cm tall. Blades flat or  
folded. Inflorescence a spike, breaking apart when mature. Spikelets

awned, becoming tangled. Rocky hills. Jul-Oct. LTER-HECN, USDA-HECO10.

### **Hopia**

*Hopia obtusa* (Kunth) Zuloaga & Morrone VINE MESQUITE. Perennial with stolons, forming thick colonies, 20-60 cm tall. Panicle narrow, the few branches appressed. Spikelets 3-4 mm, blunt. Low clay areas where water settles. May-Oct. [*Panicum obtusum* Kunth]. LTER-PAOB, USDA-PAOB.

### **Hordeum**

*Hordeum murinum* Linnaeus subsp. *glaucom* (Steudel) Tsvelev MOUSE BARLEY. Glabrous annual 10-40 cm tall depending on moisture. Inflorescence a bristly spike, shattering apart at maturity, the spikelets falling in units of three. Weedy disturbed ground, often around buildings, roadsides, lawns. Jan-May. LTER-HOMU, USDA-HOMU.

### **Leersia**

*Leersia oryzoides* (Linnaeus) Swartz RICE CUTGRASS. Sprawling rhizomes perennial to 1.5 tall. Blades flat, w/sharply serrate margins capable of cutting flesh. Spikelets awnless, flattened. Banks of the Rio Grande. Jul-Sep. LTER-LEOR, USDA-LEOR.

### **Leptochloa**

1 Plants perennial; lemma blunt..... **L. dubia**

1 Plants annual; lemma acute to awned

2 Lemma sticky on the back; spikelets 3-5 mm long..... **L. viscida**

2 Lemma not sticky on the back; spikelets 6-10 mm long.... **L. fusca**

*Leptochloa dubia* (Kunth) Nees GREEN SPRANGLETOP. Perennial 40-100 cm tall. Panicle not sticky, with several spreading spike-like branches. Rocky slopes and canyons. Jul-Oct. LTER-LEDU, USDA-LEDU.

*Leptochloa fusca* (Linnaeus) Kunth subsp. *fascicularis* (Lamarck) N. Snow BEARDED SPRANGLETOP. Annual 30-80 cm tall. Panicle not sticky. Lemma mostly w/long awns. Low spots, swales, ditchbanks. Jul-Sep. Not known definitely from the Jornada Plain, but occurring nearby and to be expected in weedy sites. [*Leptochloa fascicularis* (Lam.) Gray]. LTER-LEFA, USDA-LEFA.

*Leptochloa viscida* (Scribn.) Beal GUM SPRANGLETOP. Annual 15-30 cm tall. Panicle sticky. Lemma mostly w/short awns. Heavy soils of swales, seeps, and ditchbanks. Aug-Sep. LTER-LEVS, USDA-LEVI5.

**Lycurus**

1 Blades without a bristle at the tip, or rarely short-pointed.....  
.....**L. phleoides**

1 Blades terminating in a slender, hair-like bristle as much as 10 mm  
long.....**L. setosus**

**Lycurus phleoides** Kunth COMMON WOLFTAIL. Perennial 20-  
60 cm tall. Blades without a bristle at the tip. Inflorescence spike-  
like. 1st glume 2-cleft. Rocky slopes. Jul-Oct. LTER-LYPH, USDA-  
LYPH.

**Lycurus setosus** (Nutt.) Reeder BRISTLY WOLFTAIL.  
Perennial 15-50 cm tall. Blades with a slender bristle at the tip.  
Inflorescence spike-like. 1st glume 2-cleft. Rocky slopes. Jul-Oct.  
[*Lycurus phleoides* Kunth var. *glaucofolius* Beal]. LTER-LYSE,  
USDA-LYSE3.

**Muhlenbergia**

1 Plants bushy, wiry, the stems stiff and much-branched.. **M. porteri**

1 Plants not as above

2 Plants in large tussocks, 0.5-1.5 m tall and up to 1 m wide; basal  
sheaths compressed-keeled..... **M. emersleyi**

2 Plants not as above, less than 0.5 m tall

3 Spikelets awnless or only awn-tipped

4 Ligules with pointed "ears" on erect auricles at the sides;  
blades with white margins..... **M. arenacea**

4 Ligules without pointed auricles; blades not white-  
margined..... **M. asperifolia**

3 Spikelets awned

5 Awns 10-25 mm..... **M. tenuifolia**

5 Awns 1-4 mm..... **M. arenicola**

**Muhlenbergia arenacea** (Buckl.) A.S. Hitchc. EAR MUHLY.  
Perennial with rhizomes, 10-30 cm tall. Panicle diffuse. Sandy or  
clayey flats. Jul-Oct. Sometimes confused with *Scleropogon*  
*brevifolius* in the vegetative state, but that species without white  
margins on the blades and lacking pointed "ears" on the edges of the  
ligule. LTER-MUAR, USDA-MUAR.

**Muhlenbergia arenicola** Buckl. SAND MUHLY. Tufted  
perennial or with rhizomes, 15-30 cm tall. Panicle open when  
mature. Sandy slopes and plains. Jul-Oct. LTER-MUAN, USDA-  
MUAR2.

**Muhlenbergia asperifolia** (Nees & Mey. ex Thurb.) Parodi  
SCRATCHGRASS. Perennial with rhizomes, 15-60 cm tall, mostly  
trailing or weakly ascending. Panicle diffuse. Moist alluvial plains

near ditches or water. Jul-Oct. [*Sporobolus asperifolius* (Nees & Mey. ex Trin.) Thurber] LTER-MUAS, USDA-MUAS.

***Muhlenbergia emersleyi*** Vasey BULLGRASS. Tufted perennial growing in large stout tussocks, 0.5-1.5 m tall. Panicle mostly open at maturity, purplish. Spikelets awnless or short-awned. Rocky slopes of the Doña Ana Mts among boulders. Jul-Oct. LTER-MUEM, USDA-MUEM.

***Muhlenbergia porteri*** Scribn. BUSH MUHLY. Perennial 25-80 cm tall, mostly growing up thru shrubs. Panicle delicate, diffuse. Spikelets awned. Alluvial slopes and plains. Jul-Oct. LTER-MUPO, USDA-MUP92.

***Muhlenbergia tenuifolia*** (Kunth) Trin. MESA MUHLY. Perennial 15-25 cm tall. Panicle spike-like, pale yellowish brown. Rocky cliffs and ledges. Jul-Oct. [*Muhlenbergia monticola* Buckl.]. LTER-MUTE, USDA-MUTE4.

## **Munroa**

***Munroa squarrosa*** (Nutt.) Torrey FALSE BUFFALOGRASS. Annual with stolons, 3-12 cm tall. Blades flat. Spikelets clustered among the leaves. Sandy plains. Jul-Oct. LTER-MUSQ, USDA-MUSQ.

## **Panicum**

Some species formerly in *Panicum* are now placed in *Hopia* and *Urochloa*, q.v.

1 Plants with wiry stolons from hard, knotty bases; glumes and lemma rounded .....see *Hopia*

1 Plants without stolons; glumes or lemma pointed

2 Plants annual

3 Panicle 1/2 or more the entire length of the plant. **P. capillare**

3 Panicle 1/3 or less the entire length of the plant ..**P. hirticaule**

2 Plants perennial

4 Mature plants more than 50 cm tall, much branched, ± woody; basal leaves not curling ..... **P. antidotale**

4 Mature plants less than 40 cm tall, hardly branched, not at all woody; basal leaves curling like woodshavings ..... **P. hallii**

***Panicum antidotale*** Retz. BLUE PANICUM. Tall perennial, much branched. Panicle open. Leaves ± glabrous. Spikelets 2.5-3 mm long. Planted for range restoration. Jul-Oct. LTER-PAAN, USDA-PAAN4.

***Panicum capillare*** L. var. ***brevifolium*** Rydb. WITCHGRASS. Annual 20-60 cm tall. Sheaths mostly densely stiff-hairy. Panicle

diffuse, the base often included in the sheath. Disturbed, moist ground. Jul-Oct. LTER-PABR, USDA-PACA6.

***Panicum hallii*** Vasey HALL'S PANICUM. Perennial 15-50 cm tall. Blades mostly basal, flat, curling in age. Panicle open. Rocky uplands and lower clay swales. Jul-Oct. LTER-PAHA, USDA-PAHA.

***Panicum hirticaule*** Presl MEXICAN WITCHGRASS. Annual 15-60 cm tall. Panicle open. Moist alluvial flats. Jul-Oct. LTER-PAHI, USDA-PAHI5.

*Panicum obtusum*: see *Hopia obtusa*

**Paspalum**

1 Plants of deep sandy area; panicle branches 2-5 cm apart..... **P. setaceum**

1 Plants of wet ground along the Rio Grande; panicle branches 0.5-1 cm apart ..... **P. distichum**

***Paspalum distichum*** L. KNOTGRASS. Perennial with stems trailing and rooting in muddy ground. Blades 2-8 mm wide. Panicle with 2 (rarely more) branches. Spikelets elongate-circular, awnless, borne on 1 side of the branch. Permanently muddy or wet ground along the Rio Grande. LTER-PADI, USDA-PADI6.

***Paspalum setaceum*** Michx. var. ***stramineum*** (Nash) Banks SAND PASPALUM. Perennial from knotty bases, 20-60 cm tall. Blades 3-10 mm wide. Panicle with 2-3 branches. Spikelets circular, awnless, borne on 1 side of the branch. Sand dunes. Rare or extirpated. May-Oct. LTER-PAST, USDA-PASE5.

**Phragmites**

***Phragmites australis*** (Cavanilles) Trinius ex Steudel COMMON REED. Rhiz perennial, forming dense thickets along the Rio Grande. Jul-Oct. LTER-PHAU, USDA-PHAU7.

**Pleuraphis**

1 Internodes glabrous; plants in thick tufts..... **P. mutica**

1 Internodes wooly; plants branched and ± bushy ..... **P. rigida**

***Pleuraphis mutica*** Buckley TOBOSA. Perennial with rhizomes, 30-60 cm tall. Sheaths wooly or glabrous at the tip. Clayey or sandy flats, gravelly slopes. Jul-Oct. [*Hilaria mutica* (Buckl.) Benth.]. LTER-PLMU, USDA-PLMU3.

***Pleuraphis rigida*** Thurber BIG GALLETA. Bushy perennial with rhizomes, 40-110 cm tall. Sheaths wooly at the tip. Jul-Sep. [*Hilaria rigida* (Thurb.) Benth. ex Scribn.]. Known only from one



enclosure on the College Ranch, where it was introduced. LTER-PLRI, USDA-PLRI3.

### **Poa**

1 Plants annual; base of floret with cobwebby hairs .....**P. bigelovii**

1 Plants perennial; base of floret with short stiff hairs .**P. fendleriana**

***Poa bigelovii*** Vasey & Scribn. BIGELOW'S BLUEGRASS.

Annual 12-30 cm tall. Blades flat. Panicle narrow. Spikelets awnless, with several florets. Moist crevices among rocks. Mar-May. LTER-POBI, USDA-POBI.

***Poa fendleriana*** (Steud.) Vasey FENDLER'S MUTTONGRASS.

Perennial 20-35 cm tall. Blades flat to folded, rolled when stressed. Panicle narrow. Spikelets awnless, with several florets. Bajadas and rocky slopes. Mar-May. LTER-POFE, USDA-POFE.

### **Polypogon**

\****Polypogon monspeliensis*** (Linnaeus) Desfontaines

RABBITFOOTGRASS. Annual. Panicles dense, furry-looking, with longish awns. Ditch banks, seeps, wet disturbed ground. LTER-POMO, USDA-POMO5.

### **Schismus**

\****Schismus barbatus*** (Loefl. ex L.) Thell. var. ***arabicus*** (Nees)

J.P. Smith ARABIAN MEDITERRANEANGRASS. Tufted annual 10-15 cm tall. Blades narrow, flat to rolled. Spikelets awnless, with several florets, the glumes longer than the florets. Sandy open disturbed ground. Dec-May. [*Schismus arabicus* Nees]. LTER-SCAR, USDA-SCAR.

### **Scleropogon**

***Scleropogon brevifolius*** Phil. BURROGRASS. Perennial with

stolons, mat-forming, 10-25 cm tall. Blades folded, 1.5-5 cm.

Spikelets with several florets, the female long-awned, the male

awnless. Flats and swales. May-Oct. Sometimes confused with

*Muhlenbergia arenacea* in the vegetative state, but that species has white margins on the blades and pointed "ears" on the edges of the ligule. LTER-SCBR, USDA-SCBR2.

### **Setaria**

1 Plants perennial.....**S. leucopila**

1 Plants annual

2 Sheath margins glabrous..... **S. pumila**

2 Sheath margins hairy ..... **S. viridis**

***Setaria leucopila*** (Scribn. & Mer.) K. Schum. PLAINS BRISTLEGRASS. Perennial to about 1m. Panicle spike-like. Spikelets subtended by 1-3 bristles. Plains, rocky slopes, and washes. Jul-Nov. LTER-SELE, USDA-SELE6.

\****Setaria pumila*** (Poir.) Roem. & Schult. YELLOW BRISTLEGRASS. Annual mostly 20-50 cm tall. Panicle spike-like. Spikelets subtended by 4-12 bristles. Moist waste places. Jun-Nov. [*Setaria glauca* (L.) Beauv., *Setaria lutescens* (Weigl.) F.T. Hubb.] LTER-SEPU, USDA-SEPU8.

\****Setaria viridis*** (L.) Beauv. GREEN BRISTLEGRASS. Annual 10-45 cm tall. Panicle spike-like. Spikelets subtended by 1-3 bristles. Moist slopes and washes. Jul-Sep. LTER-SEVI, USDA-SEVI4.

### Sorghum

\****Sorghum halepense*** (L.) Pers. JOHNSONGRASS. Perennial with vigorous rhizomes, to 1.8 m tall. Blades flat. Panicle pyramidal, open. Spikelets mostly awned, reddish. Moist open ground, ditchbanks, waste places. May-Oct. LTER-SOHA, USDA-SOHA.

### Sporobolus

1 Exserted panicle contracted, spike-like

2 Panicle 8-25 mm thick ..... **S. giganteus**

2 Panicle 4-7 mm thick ..... **S. contractus**

1 Exserted panicle mostly open, the branches spreading, not obviously spike-like

3 Mature panicle mostly more than 7 cm wide

4 Spikelets closely spaced and mostly touching ..... **S. wrightii**

4 Spikelets remotely spaced and rarely touching ..... **S. airoides**

3 Mature panicle mostly less than 7 cm wide

5 Panicle 3-8 cm long

6 Plants perennial with knotty bases; panicle narrow only when very immature, opening in flower and at maturity, the spikelets mostly spreading from the branchlets.....

..... **S. nealleyi**

6 Plants annual; panicle narrow when in flower and open at maturity, the spikelets appressed to the branchlets .....

..... **S. pyramidatus**

5 Panicle 12-30 cm long

7 Main panicle branches reflexed, curving, mostly tangled with other branches or other pan..... **S. flexuosus**

7 Main panicle branches ascending to spreading, straight, rarely entangled ..... **S. cryptandrus**

***Sporobolus airoides*** (Torrey) Torrey ALKALI SACATON. Densely bunched perennial 0.5-1.5 m. Blades 2-5 mm wide. Summit of sheath nearly glabrous. Panicle 15-40 cm, diffuse when mature. Alkali playas and flats, occasionally rocky slopes. Apr-Oct. LTER-SPAI, USDA-SPAI.

***Sporobolus contractus*** A.S. Hitchc. SPIKE DROPSEED. Perennial 35-115 cm tall, more slender than the preceding. Summit of sheath copiously hairy. Panicle 15-50 cm. Sandy ground. Aug-Oct, sometimes also in the spring. LTER-SPCO, USDA-SPCO4.

***Sporobolus cryptandrus*** (Torrey) Gray SAND DROPSEED. Tufted perennial 30-110 cm tall. Summit sheath copiously hairy. Panicle sometimes never emerging from the sheath. Common in sandy ground. Apr-Nov. LTER-SPCR, USDA-SPCR.

***Sporobolus flexuosus*** (Thurb. ex Vasey) Rydb. MESA DROPSEED. Tufted perennial 40-100 cm tall. Summit of sheath copiously hairy. Loose sandy plains and dunes. Aug-Nov. LTER-SPFL, USDA-SPFL2.

***Sporobolus giganteus*** Nash GIANT DROPSEED. Perennial 70-200 cm tall, robust. Summit of sheath copiously hairy. Panicle 20-65 cm. Deep sandy areas. Jul-Oct. LTER-SPGI, USDA-SPGI.

***Sporobolus nealleyi*** Vasey GYP DROPSEED. Slender perennial from knotty bases, 15-30 cm tall, the clumps often forming a circular "bird's nest." Summit of sheath densely hairy. Blades mostly stiffly spreading. Panicle 1-3 cm wide. Mostly gypsum flats and hills, occasionally sandy areas. Apr-Oct. LTER-SPNE, USDA-SPNE.

***Sporobolus pyramidatus*** (Lamarck) A.S. Hitchcock SIX-WEEKS DROPSEED, WHORLED DROPSEED. Annual 10-30 cm. Summit of sheath nearly glabrous. Blades 2-4 mm wide. Panicle narrow (1 cm wide) when young, the whorled branches spreading at maturity. Clay flats. Sep-Oct. [*Sporobolus pulvinatus* Swallen] LTER-SPPY, USDA-SPPY2.

***Sporobolus wrightii*** Scribn. GIANT SACATON. Robust perennial 1-2.5 m. Blades 3-10 mm wide. Summit of sheath nearly glabrous. Panicle 25-60 cm, elongate-pyramidal. Hard-packed clayey soil, floodplains, and ditches. Apr-Sep. LTER-SPWR, USDA-SPWR2.

*Stipa* : see **Achnatherum**

## **Tragus**

\****Tragus berteronianus*** Schult. SPIKE BURGRASS. Annual 10-30 cm tall. Blades flat, with stiff hairs on the margins. Spikelets

borne in "burs" with hooked glumes. Moist soil of plains and swales. LTER-TRBE, USDA-TRBE.

### Tridens

*Tridens muticus* (Torrey) Nash SLIM TRIDENS. Tufted perennial 15-40 cm tall. Panicle spike-like, 6-15 cm. Spikelets with several florets. Lemma hairy on the 3 nerves. Rocky hills and flats. Jul-Oct. LTER-TRMU, USDA-TRMU.

### Urochloa

1 Spikelets definitely puberulent, mostly 3-4 mm long, the base drawn out somewhat and attenuate; main panicle branches usually with dense, bulbous-based hairs; upper lemma with minute bumps but lacking obvious transverse furrows ..... **U. arizonica**

1 Spikelets glabrous or nearly so, mostly 2-3 mm long, the base  $\pm$  truncate; main panicle branches without bulbous-based hairs, or these only present near the spikelets; upper lemma with deep transverse furrows ..... **U. fusca**

*Urochloa arizonica* (Scribner & Merrill) Morrone & Zuloaga ARIZONA SIGNALGRASS. Annual 20-60 cm tall. Moist sandy places. Jul-Oct. [*Brachiaria arizonica* (Scribn. & Merr.) S.T. Blake, *Panicum arizonicum* Scribn. & Merr.]. LTER-BRAR, USDA-URAR.

*Urochloa fusca* (Swartz) Hansen & Wunderlin BROWNTOP SIGNALGRASS. Annual 25-100 cm . Moist open ground, weedy places, roadside ditches. Jul-Oct. [*Brachiaria fasciculata* (Sw.) S.T. Blake, *Panicum fasciculatum* Sw., *Urochloa fasciculata* (Swartz) R.D. Webster]. LTER-BRFA, USDA-URFA.

### Vulpia

*Vulpia octoflora* (Walt.) Rydb. SIXWEEKS FESCUE. Annual 3-30 cm tall. Leaves scant, linear. Panicle raceme-like. Spikelets with several florets. Lemma pointed to awned. Sandy plains, rocky slopes, open areas. Feb-May. [*Festuca octoflora* Walt.] LTER-VUOC, USDA-VUOC.

## POLEMONIACEAE PHLOX FAMILY

Herbs and shrubs. Leaves alternate or opposite, simple to compound. Flowers regular, mostly 5-merous. Petals united, bell- to trumpet-shaped. Stamens affixed to the cor. Ovary 3-celled with 3 stigmas. Fruit a capsule.

1 Leaves opposite, at least below..... **Linanthus**

1 Leaves alternate

2 Calyx lobes unequal, wooly with very fine hairs..... **Eriastrum**

- 2 Calyx equal, glabrous to hairy with thickish crinkled hairs
- 3 Corolla trumpet-shaped, more than 5 times longer than the width of the tube ..... **Ipomopsis**
- 3 Corolla funnel-shaped, less than 4 times longer than the width of the tube ..... **Gilia**

**Eriastrum**

*Eriastrum diffusum* (Gray) Mason MINIATURE WOOLY-STAR. Annual 3-15 cm tall. Leaves pinnately compound, the segments thread-like. Flowers 5-6 mm, pale blue to white. Dry slopes and sandy plains. Mar-Jun. LTER-ERDI, USDA-ERDI2.

**Gilia**

- 1 Stems near the base glabrous and glaucous; basal leaves usually glabrous; stem leaves clasping ..... **G. sinuata**
- 1 Stems near the base and basal leaf axils cobwebby-hairy; stem leaves not clasping
- 2 Calyx ribs purple-blotched, the lobes acuminate; leaf lobes more than 1 mm wide; corolla throat exserted from the calyx ..... **G. flavocincta**
- 2 Calyx ribs green, the lobes acute; leaf lobes less than 1 mm wide; corolla throat included w/in the cal ..... **G. mexicana**

*Gilia flavocincta* A. Nels. subsp. *australis* (A. & V. Grant) Day & V. Grant SOUTHERN GILIA. Annual 10-30 cm tall, slightly cottony-hairy at the base. Corolla blue to pinkish, with a yellow throat. Canyons and dry slopes. Apr-May. LTER-GIFL, USDA-GIFL.

*Gilia mexicana* A. & V. Grant EL PASO GILIA. Annual 10-30 cm tall, cottony-hairy at the base. Corolla blue with a yellowish throat. Plains and hills. Mar-Apr. LTER-GIME, USDA-GIME.

*Gilia sinuata* Dougl. ex Benth. ROSY GILIA. Annual 7-25 cm tall, glandular-hairy to glabrous at the base. Leaves cottony-hairy. Corolla white to purplish, with a yellow throat. Sandy hills and slopes. Apr-Jun. LTER-GISI, USDA-GISI.

**Ipomopsis**

- 1 Corolla long, 25-55 mm long ..... **I. longiflora**
- 1 Corolla short, 7-10 mm long ..... **I. pumila**

*Ipomopsis longiflora* (Torr.) V. Grant BLUE TRUMPETS. Plants annual. Stems 15-30 cm tall. Leaves highly dissected, the segments entire. Corolla trumpet-shaped, pale blue. Dry sandy plains. May-Oct. LTER-IPLO, USDA-IPLO2.

*Ipomopsis pumila* (Nuttall) V. Grant DWARF GILIA. Plants annual. Stems 3-20 cm tall. Leaves highly dissected, somewhat fleshy. Corolla trumpet-shaped, pale blue. Playas, sandy and gravelly slopes. This can be confused with *Eriastrum diffusum*, but that species has quite cobwebby hairs in the flowers, rather than the comparatively stiffer (though copious) hairs in this. Apr-June. LTER-IPPU, USDA-IPPU4.

**Linanthus**

*Linanthus bigelovii* (Gray) Greene BIGELOW'S DESERT TRUMPETS. Annual 6-40 cm tall. Leaves linear, entire or cleft. Flowers solitary, whitish to pale purplish. Gravelly plains. Mar-May. LTER-LIBI, USDA-LIBI2.

**POLYGONACEAE KNOTWEED FAMILY**

Herbs or shrubs. Leaves mostly alternate or opposite, simple, with stipules mostly united into a sheath above the node. Flowers small. Sepals petal-like, 3-6. Petals absent. Ovary superior. Fruit an achene.

- 1 Leaves hairy, at least on the lower surface ..... **Eriogonum**
- 1 Leaves glabrous ..... **Rumex**

**Eriogonum**

- 1 Plants perennial
  - 2 Perianth (not the involucre) glabrous; inflorescence raceme-like. .... **E. wrightii**
  - 2 Perianth hairy; inflorescence panicle-like ..... **E. jamesii**
- 1 Plants annual
  - 3 Stem leaves present, developed
    - 4 Stems and leaves with dense, wooly, tangled hairs ..... **E. annuum**
    - 4 Stems and leaves with straight, non-tangled hairs ..... **E. abertianum**
  - 3 Stem leaves highly reduced, absent to scale-like
    - 5 Flowers yellowish to greenish ..... **E. trichopes**
    - 5 Flowers white to reddish
      - 6 Stalks of involucre deflexed downward in age **E. cernuum**
      - 6 Stalks of involucre erect, rarely deflexed **E. rotundifolium**

*Eriogonum abertianum* Torrey ABERT'S BUCKWHEAT.

Annual 10-50 cm tall, hairy. Stem leaves lanceolate to linear. Flowers white, yellow, to pinkish. Dry sandy plains and hills. Mar-Oct. Extremely variable. LTER-ERAB, USDA-ERAB2.

*Eriogonum annuum* Nutt. ANNUAL BUCKWHEAT. Annual 30-70 cm tall, white-wooly. Leaves spatulate, 3-5 cm. Flowers white,

pinkish, or reddish. Dry sandy plains. Apr-Nov. LTER-ERAN, USDA-ERAN4.

*Eriogonum cernuum* Nutt. NODDING BUCKWHEAT. Annual 10-40 cm tall, diffusely branched. Leaves basal, ovate to circular, 1-2 cm. Alluvial plains. Jul-Oct. LTER-ERCE, USDA-ERCE2.

*Eriogonum jamesii* Benth. JAMES'S BUCKWHEAT. Perennial 10-35 cm tall. Leaves elliptic to nearly circular, 10-25 mm long. Flowers greenish white. Rocky slopes and plains. Jul-Oct. LTER-ERJA, USDA-ERJA

*Eriogonum rotundifolium* Benth. SAUCER-LEAF BUCKWHEAT. Annual 10-40 cm tall. Leaves basal, circular, 1-3 cm. Alluvial plains. Apr-Oct. LTER-ERRO, USDA-ERRO2.

*Eriogonum trichopes* Torrey THREAD-STEM BUCKWHEAT. Annual 10-40 cm tall, much-branched and bushy. Leaves basal, ovate to circular, glabrous to slightly hairy above. Sandy and gravelly plains. Apr-Aug. LTER-ERTR, USDA-ERTR8.

*Eriogonum wrightii* Torrey WRIGHT'S BUCKWHEAT. Perennial 15-40 cm tall. Leaves lanceolate to oblanceolate, 5-15 mm long. Flowers white. Rocky slopes. Jun-Sep. LTER-ERWR, USDA-ERWR.

## Rumex

1 Basal leaves mostly 15-30 cm; valves of fruit 10-15 mm ..... **R. hymenosepalus**

1 Basal leaves 5-12 cm; valves of fruit 2-3 mm ..... **R. mexicanus**

*Rumex hymenosepalus* Torrey CAÑAIGRE, WILD RHUBARB. Perennial from clusters of heavy tuberous roots, 50-100 cm when flowering. Flowers pinkish. Fruit clusters reddish brown. Deep sand. Apr-Jun. LTER-RUHY, USDA-RUHY.

*Rumex mexicanus* Meisner MEXICAN DOCK. Perennial 40-60 cm tall. Flowers greenish- to reddish-brown. Fruit clusters reddish brown. Dry plains and disturbed ground. Jun-Sep. [*Rumex salicifolius* Weinm. var. *mexicanus* (Meisn.) C.L. Hitchc.]. LTER-RUME, USDA-RUME2.

## PORTULACACEAE PURSLANE FAMILY

Succulent annual or perennial herbs. Leaves alternate or opposite, simple, entire. Flowers regular. Sepals 2. Petals mostly 5 (3-16). Stamens 1-many. Ovary superior or partly inferior, 1-celled. Fruit a capsule. The family has been split into several segregate families, based mostly on molecular evidence. I maintain here a more traditional approach for practical reasons.

1 Capsule splitting horizontally across the top and coming off like a cap; ovary at least partly inf..... **Portulaca**

1 Capsule splitting longitudinally from the top downward; ovary superior ..... **Talinum**

**Portulaca**

1 Plants perennial; stems erect to ascending and woody at the base....  
..... **P. suffrutescens**

1 Plants annual; stems erect to prostrate, not at all woody at the base  
2 Lower half of the capsule with a circular horizontal wing just below the rim ..... **P. umbraticola**

2 Capsule rim not winged  
3 Leaf axils glabrous or nearly so ..... **P. oleracea**

3 Leaf axils copiously hairy  
5 Petals less than 3 mm long, yellow to bronze; capsules 2 mm or less in diameter ..... **P. halimoides**

5 Petals 3-4 mm long, reddish-purple; capsules more than 2 mm in diameter ..... **P. pilosa**

**Portulaca halimoides** L. SILK-COTTON PURSLANE. Annual 5-10 cm tall. Leaves succulent, linear, 6-15 mm long. Capsule about 2 mm dia. Sandy plains and washes. Apr-Oct. [*Portulaca parvula* Gray]. LTER-POPA, USDA-POHA5.

\***Portulaca oleracea** L. GARDEN PURSLANE. Annual 4-20 cm tall. Leaves succulent, flat, spatulate, 6-30 mm long. Corolla yellowish. Sandy slopes, plains, and hills, mostly disturbed areas. Apr-Nov. [*Portulaca retusa* Engelm.] LTER-POOL, USDA-POOL.

**Portulaca pilosa** L. SHAGGY-LEAF, KISS-ME-QUICK. Annual 5-10 cm tall. Leaves succulent, linear, 8-15 mm long. Capsule about 3 mm dia. Open sandy plains. Jul-Sep. [*Portulaca mundula* I.M. Johnst.]. LTER-POMU, USDA-POPI3.

**Portulaca suffrutescens** Engelm. SHRUBBY PURSLANE. Perennial 15-30 cm tall. Leaves succulent, round, linear, 8-25 mm long. Corolla copper-colored. Sandy or gravelly slopes and washes. May-Sep. LTER-POSU, USDA-POSU3.

**Portulaca umbraticola** Kunth CHINESE HATS. Annual 5-25 cm tall. Leaves succulent, flat, oblong, 1-3 cm. Corolla yellow to orange. Sandy plains and flats. Mar-Nov. LTER-POUM, USDA-POUM. Our plants belong to subsp. *lanceolata* (Engelmann) Matthews.

**Talinum**

1 Petals yellow; leaves linear, ± of equal thickness; stems and branches stiff and straight; capsules globose, 4-5 mm in diameter .  
..... **T. polygaloides**



1 Petals orange to orange-scarlet (very rarely yellowish); leaves broadly linear to elliptic or obovate, widest at or near the middle; stems succulent, flexible and not stiff; capsules ovoid, 5-7 mm long or more ..... **T. aurantiacum**

***Talinum aurantiacum*** Engelm. ORANGE FAMEFLOWER.

Perennial 15-20 cm tall. Leaves succulent, broadly linear to elliptic or obovate, wider than the next. Corolla orange to orange-scarlet or reddish, rarely yellowish, 10-22 mm long. Capsule ovoid, 5-7 mm dia. Plains, arroyos, rocky slopes. May-Sep. LTER-TAAU, USDA-TAAU.

***Talinum polygaloides*** Gillies ex Arnott YELLOW FAMEFLOWER. Perennial 20-40 cm tall, ± woody at the base. Leaves succulent, linear. Corolla yellow. Capsule globose, 4-5 mm dia. Plains, arroyos, rocky slopes. May-Sep. [*Talinum angustissimum* (A. Gray) Wooton & Standley] LTER-TAAN, USDA-TAPO5.

#### RAFFLESIACEAE RAFFLESIA FAMILY

Parasitic herbs. Leaves none or scale-like. Flowers unisexual. Sepals 4-5. Petals none. Stamens numerous. Ovary inferior. Fruit a berry.

#### Pilostyles

***Pilostyles thurberi*** Gray STEM-SUCKER. Flowers reddish-purple, to 3 mm long, 2 mm wide. Parasitic on species of *Dalea*. Rocky slopes and sandy bajadas. Aug. LTER-PITH, USDA-PITH.

#### RANUNCULACEAE BUTTERCUP FAMILY

Annual or perennial herbs or vines. Leaves alternate, opposite, or basal. Sepals 3-many. Petals 0-many. Stamens many. Ovary superior, 1-many. Fruit an achene, follicle, or berry.

1 Stems climbing or viny; leaves opposite ..... **Clematis**

1 Stems erect, not climbing or viny; leaves alternate ..... **Delphinium**

#### Clematis

1 Leaves glabrous or slightly hairy ..... **C. ligusticifolia**

1 Leaves densely grayish hairy ..... **C. drummondii**

***Clematis drummondii*** Torrey & Gray DRUMMOND'S VIRGIN'S-BOWER. Viny perennial. Leaves pinnately compound with 3-7 leaflets. Sepals white. Petals absent. Styles 6-10 cm. Rocky slopes and canyons. May-Sep. LTER-CLDR, USDA-CLDR.

***Clematis ligusticifolia*** Nutt. TRAVELER'S JOY, WESTERN VIRGIN'S-BOWER. Viny perennial. Leaves pinnately compound with 3-7 leaflets. Sepals white. Petals absent. Styles 2.5-5 cm. Moist

slopes, floodplains, and canyons. May-Sep. LTER-CLLI, USDA-CLLI2.

### **Delphinium**

*Delphinium wootonii* Rydberg WOOTON'S LARKSPUR. Perennial 20-35 cm tall. Leaves mostly basal, highly dissected, curly-hairy. Flowers with a conspicuous spur, white to pale bluish. Rocky hills and canyons. May-June. [*Delphinium virescens* Nutt. var. *wootonii* (Rydberg.) Ewan]. LTER-DEVI, USDA-DEWO.

### **RESEDACEAE MIGNONETTE FAMILY**

Annual or perennial herbs. Leaves alternate, simple to divided with small gland-like stipules. Flowers greenish, small, irregular. Sepals 4-7. Petals 2-7, or 0. Stamens 3-10. Ovary superior. Fruit a capsule.

### **Oligomeris**

*Oligomeris linifolia* (Vahl) Macbr. WHITEPUFF. Somewhat succulent annual, 15-30 cm tall, glabrous. Leaves linear. Flowers asymmetrical, in spikes to 15 cm. Petals 2, white. Stamens 3. Fruit 4-beaked. Sandy or clayey flats. Apr-Jul. [*Dipetalia subulata* of various works]. LTER-OLLI, USDA-OLLI.

### **RHAMNACEAE BUCKTHORN FAMILY**

Shrubs or small trees. Leaves alternate or opposite, simple. Flowers regular, 4- to 5-merous, with a disk. Stamens opposite the pet. Ovary superior, 2- to 3-celled. Fruit a capsule or berry.

- 1 Leaves opposite ..... **Ceanothus**
- 1 Leaves alternate
  - 2 Leaves persistent thru the winter, mostly 4-6 mm; twigs rough, not glaucous..... **Condalia**
  - 2 Leaves winter deciduous, mostly 8-15 mm; twigs smooth, glaucous..... **Ziziphus**

### **Ceanothus**

*Ceanothus greggii* Gray DESERT BUCKBRUSH. Much-branched shrubs mostly 1-2 m. Leaves opposite, oblong, leathery, 8-20 mm long. Stipules persistent, scale-like. Flowers whitish. Rocky, brushy slopes. Apr-May. LTER-CEGR, USDA-CEDR.

### **Condalia**

*Condalia warnockii* M.C. Johnst. CRUCILLO. Much-branched thorny shrubs 1-2 m. Leaves often in fascicles on short spur branches, mostly 1-3 mm wide, minutely hairy. Fruit a pea-shaped,

blackish drupe. rocky to sandy hills, plains, and washes. Jul-Sep. [*Condalia spathulata* of various works]. LTER-COWA, USDA-COWA.

### **Ziziphus**

*Ziziphus obtusifolia* (Torrey & Gray) Gray LOTE BUSH. Much-branched thorny shrubs 1-2 m. Twigs glaucous. Leaves variable in shape, roughly oblong. Sandy to rocky slopes and plains. May-Sep. [*Condalia lycioides* (Gray) Weberb., *Ziziphus lycioides* Gray]. Our plants belong to var. *obtusifolia*. LTER-ZIOB, USDA-ZIOB.

## **ROSACEAE ROSE FAMILY**

Annual or perennial herbs or woody. Leaves mostly alternate or basal, simple to compound. Flowers 5-merous. Stamens 5-numerous. Ovaries superior, 1-numerous.

### **Fallugia**

*Fallugia paradoxa* (D. Don) Endl. APACHE-PLUME. Semi-evergreen shrubs 1-2.5 m. Leaves with 5-7 narrow lobes, coppery-hairy beneath. Petals 5, white. Stamens numerous. Washes, drainage-ways, and canyons. May-Dec. LTER-FAPA, USDA-FAPA.

## **RUBIACEAE MADDER FAMILY**

Herbs or sub-shrubs. Leaves opposite or whorled, simple, entire, with prominent stipules. Flowers regular. Corolla funnel-shaped. Stamens 3-5, affixed to the corolla tube. Ovary inferior.

- 1 Leaves whorled ..... **Galium**  
1 Leaves opposite ..... **Houstonia**

### **Galium**

*Galium microphyllum* Gray BEDSTRAW. Spreading, matted, glabrous perennial 10-20 cm tall. Leaves linear, 5-10 mm long. Flowers small, solitary, 4-merous, whitish. Rocky canyons and ravines. May-Oct. LTER-GAMI, USDA-GAMI.

### **Houstonia**

*Houstonia humifusa* (Gray) Gray BLUET. Annual 3-10 cm tall, much-branched. Leaves linear, 10-15 mm long. Corolla funnel-shaped, white to pink or sometimes pale purple. Cap bilobed, reflexed. Sandy plains and dunes. May-Sep. [*Hedyotis humifusa* Gray]. LTER-HEHU, USDA-HOHU.

## RUTACEAE CITRUS FAMILY

Shrubs or small trees. Leaves alternate, simple or compound, glandular-aromatic. Sepals and petals 3-5. Ovary superior. Fruit a capsule or samara (in ours)

### Ptelea

*Ptelea trifoliata* L. WAFER-ASH, HOPTREE. Deciduous shrubs to 2.5 m. Leaves pinnately compound with 3 leaflets, glandular-aromatic. Fruit a circular flattened samara. Rocky, upland slopes and canyons. Apr-Jul. Often divided into several varieties, but these seem meaningless. LTER-PTTR, USDA-PTTR.

## SALICACEAE WILLOW FAMILY

Shrubs or trees. Leaves alternate, simple, entire to toothed.

Flowers unisexual, the sexes on separate plants, borne in raceme-like catkins. Petals absent. Seeds with long white hairs.

1 Leaves triangular ..... **Populus**

1 Leaves lanceolate to linear ..... **Salix**

### Populus

*Populus deltoides* H. Marshall subsp. *wislizeni* (Wats.)

Eckenwalder RIO GRANDE COTTONWOOD. Large trees 15-20 m. Leaves triangular, coarsely toothed, with long stalks. Floodplains, bottomlands, around water holes. Mar-Jul. [*Populus fremontii* Wats. var. *wislizeni* Wats., *Populus wislizeni* (Wats.) Sarg.]. LTER-POWI, USDA-PODE3.

### Salix

1 Leaves lanceolate; plants tree-like, with large, thick trunks .....  
..... **S. gooddingii**

1 Leaves linear; plants shrubby, with numerous slender stems .....  
..... **S. exigua**

*Salix exigua* Nutt. COYOTE WILLOW. Many-stemmed shrubs 2-4 m. Leaves linear, finely and widely toothed. Along the Rio Grande. Mar-May. LTER-SAEX, USDA-SAEX.

*Salix gooddingii* Ball GOODDING'S WILLOW. Few-stemmed large shrubs or trees 3-8 m. Leaves lanceolate, finely and closely toothed. Along the Rio Grande. Mar-May. [*Salix nigra* Marsh var. *vallicola* Dudley]. LTER-SAGO, USDA-SAGO.

## SANTALACEAE SANDALWOOD FAMILY

Semi-shrubs (ours), green photosynthetic parasites attached to tree branches (mistletoes), or semiparasitic on the roots of host plants (toadflaxes). Leaves alternate, simple, entire, well-developed or scale-like (sometimes lacking). Flowers small,

white to greenish. Sepals and stamens 5. Petals absent. Ovary inferior. Fruit berry-like. The family has been expanded to include the Viscaceae.

- 1 Plants growing in the soil and parasitic on the roots of other plants ..... **Comandra**  
1 Plants parasitic on the branches of trees and shrubs, never growing in the soil ..... **Phoradendron**

### **Comandra**

*Comandra umbellata* (L.) Nutt. var. *pallida* (DC.) Piehl  
BASTARD TOADFLAX. Perennial with rhizomes, 18-30 cm tall. Leaves linear to lanceolate, about 2 cm. Flowers dull white or pink. Sandy or rocky hills and plains. Apr-Jun. A root parasite on various hosts. [*Comandra pallida* DC.]. LTER-COPA, USDA-COUMP.

### **Phoradendron**

1 Plants parasitic on cottonwood (*Populus*), mostly glabrous..... **P. macrophyllum**

1 Plants parasitic on oak (*Quercus*), mostly densely hairy **P. villosum**

*Phoradendron macrophyllum* (Engelm.) Cockerell  
COTTONWOOD MISTLETOE. Leaves opposite, obovate to circular, 2-5 cm. Dec-Mar. [*Phoradendron tomentosum* (DC.) Gray subsp. *macrophyllum* (Engelm.) Wiens, *Phoradendron flavescens* of various works]. LTER-PHMA, USDA-PHMA18.

*Phoradendron villosum* (Nutt.) Nutt. subsp. *coryae* (Trel.) Wiens  
FUZZY MISTLETOE, CORY'S MISTLETOE. Leaves opposite, elliptic to circular, 1-3 cm. Jul-Sep. [*Phoradendron coryae* Trelease] LTER-PHCR, USDA-PHV19.

## **SAPINDACEAE SOAPBERRY FAMILY**

Shrubs or trees. Leaves alternate, pinnately compound. Flowers irregular, 4- or 5-merous. Ovary superior, 3-celled. Fruit a capsule.

- 1 Leaflets entire..... **Sapindus**  
1 Leaflets toothed..... **Ungnadia**

### **Sapindus**

*Sapindus drummondii* Hook. & Arn. WESTERN SOAPBERRY.  
Shrubs or small trees 2-6 m. Fruit a hard, marble-sized, yellowish berry. Canyons and gravelly or sandy washes. Mar-Jul. [*Sapindus saponaria* L. var. *drummondii* (Hook. & Arn.) Benson] LTER-SADR, USDA-SADR5.

## Ungnadia

*Ungnadia speciosa* Endl. MEXICAN BUCKEYE. Shrubs or small trees 2-4 m. Leaves pinnately compound with 3-7 leaflets. Fruit a woody capsule with 3 cells. Canyons and rocky ravines. Mar-Jun. LTER-UGSP, USDA-UNSP.

### SAURURACEAE LIZARD-TAIL FAMILY

Perennial, rhizomatous herbs. Leaves alternate, simple. Inflorescence a dense terminal raceme or spike. Flowers small, surrounded by colored bracts simulating pet. Petals none. Fruit a capsule opening at the top.

## Anemopsis

*Anemopsis californica* (Nuttall) Hooker & Arnott YERBA-MANSA. The entire inflorescence mimics a single flower, the bracts simulating pet. The roots have been used for numerous medicinal and herbal purposes. Alkaline to saline marshlands or floodplains, along the Rio Grande. LTER-ANCA, USDA-ANCA10.

### SCROPHULARIACEAE SNAPDRAGON FAMILY

The Scrophulariaceae family has been reorganized to reflect more accurate genetic relationships of the genera, with nearly all of its members now found in the Plantaginaceae (which see, for our plants) or the Orobanchaceae.

### SOLANACEAE NIGHTSHADE FAMILY

Herbs or shrubs. Leaves alternate. Flowers regular, 5-merous. Petals united. Ovary superior, 2-celled. Fruit a berry or capsule.

- 1 Plants woody shrubs ..... **Lycium**
- 1 Plants herbaceous
  - 2 Corolla 12-20 cm; fruits a spiny capsule ..... **Datura**
  - 2 Corolla less than 4 cm
    - 3 Stems and at least part of the leaves prickly or spiny **Solanum**
    - 3 Stems and leaves not at all prickly or spiny
      - 4 Corolla trumpet-shaped ..... **Nicotiana**
      - 4 Corolla saucer- or bell-shaped, not elongate like a trumpet
        - 5 Calyx becoming much enlarged and bladderly in frt; corolla without wooly pads alternating with the stamens ..... **Physalis**
        - 5 Calyx not enlarged nor bladderly in frt; corolla with wooly pads alternating with the stamens ..... **Chamaesaracha**

## **Chamaesaracha**

1 Leaves linear-lanceolate, pinnately lobed, mostly with star-shaped hairs but not glandular.....**C. arida**

1 Leaves diamond-shaped, densely glandular-hairy.....**C. sordida**

***Chamaesaracha coronopus*** (Dunal) Gray GREEN-LEAF FIVE-EYES. Perennial forming mats mostly 10-20 cm tall. Corolla 6-12 mm across, yellowish. Sandy or gravelly plains and hills, often disturbed ground. May-Sep. [*Chamaesaracha arida* Henrickson]. LTER-CHCO, USDA-CHCO2.

***Chamaesaracha sordida*** (Dunal) Gray HAIRY FIVE-EYES. Perennial forming loose mats 10-30 cm tall. Corolla 8-10 mm across, yellowish. Sandy or gravelly hills and plains, often disturbed ground. Mar-Sep. LTER-CHSO, USDA-CHSO.

## **Datura**

1 Leaves entire or nearly so; spines on fruit less than 1 cm long; flowers 12-20 cm long.....**D. wrightii**

1 Leaves pinnately lobed; spines on fruit often more than 1 cm long; flowers less than 10 cm long.....**D. quercifolia**

**\**Datura quercifolia*** H.B.K. OAK-LEAF THORNAPPLE.

Annual, 40-130 cm tall, foul-smelling. Leaves ovate in outline but pinnately lobed; Corolla 4-7 cm, pale violet to purple. Fruit erect, ball-shaped, with long stout spines 1-2.5 cm long. Sandy roadsides, perhaps spreading into the plains. May-Oct. Very poisonous. LTER-DAQU, USDA-DAQU.

***Datura wrightii*** Regel SACRED THORNAPPLE. Mostly perennial, 30-120 cm tall, foul-smelling. Leaves ovate, to 15 cm. Corolla 12-20 cm, white to purplish. Fruit a nodding, ball-shaped, spiny capsule. Sandy or gravelly washes and plains, roadsides. May-Oct. [*Datura metaloides* of various works]. Very poisonous. LTER-DAWR, USDA-DAWR2.

## **Lycium**

1 Most leaves 1-3 mm wide.....**L. berlandieri**

1 Most or many leaves 5-15 mm wide

2 Leaves glaucous; corolla 15-20 mm long; calyx 5-8 mm long.....**L. pallidum**

2 Leaves not glaucous; corolla 10-15 mm long; calyx 2-4 mm long.....**L. torreyi**

***Lycium berlandieri*** Dunal SILVER WOLFBERRY. Slightly thorny shrubs 1-2.5 m. Leaves linear to spatulate. Corolla blue to pale lavender. Berry red, about 4 mm dia. Gravelly hills and plains, clay flats, and arroyos. Feb-Oct. LTER-LYBE, USDA-LYBE.

*Lycium pallidum* Miers. PALE WOLFBERRY. Thorny shrubs 1-2 m, the plants often clumped together. Leaves elliptic to spatulate. Corolla greenish with purple veins. Berry reddish, 8-10 mm dia. Moist canyons, drainages, and floodplains. Feb-Oct. LTER-LYPA, USDA-LYPA..

*Lycium torreyi* Gray TORRY'S WOLFBERRY. Much-branched thorny shrubs 1-3 m. Leaves broadly spatulate. Corolla lavender-purple. Berry reddish, 7-10 mm diameter. Bajadas and plains. Feb-Oct. LTER-LYTO, USDA-LYTO.

### Nicotiana

*Nicotiana trigonophylla* Dunal DESERT TOBACCO. Sticky-glandular perennial 25-85 cm tall. Leaves spatulate with clasping basal lobes. Flowers white to greenish. Rocky hills, ravins, gravelly slopes. Mar-Nov. LTER-NITR, USDA-NITR.

### Physalis

*Physalis hederifolia* Gray IVY-LEAF GROUNDCHERRY. Perennial 10-50 cm tall. Leaves ovate with wavy margins. Flowers nodding, yellowish. Petals reflexed, with a dark spot at the base of each pet. Plains and rocky hills. Apr-Sep. LTER-PHHE, USDA-PHHE4.

### Solanum

- 1 Leaves simple, entire to sinuate lobed; anthers all alike .....  
..... **S. elaeagnifolium**
- 1 Leaves highly pinnately or bipinnately dissected; anthers dissimilar, one purple, beaked, and much longer than the others
  - 2 Herbage densely covered with glandular hairs, these mixed to some degree with both simple and stellate hairs; corollas purplish.....**S. heterodoxum**
  - 2 Herbage densely covered with stellate hairs, glandular and simple hairs absent; corollas yellow .....**S. rostratum**

*Solanum elaeagnifolium* Cav. SILVERLEAF NIGHTSHADE.

Perennial with creeping rhizomes, 15-85 cm tall. Stems and undersides of leaves prickly. Corolla violet, occasionally white. Berry yellowish. disturbed places. Mar-Oct. Toxic. LTER-SOEL, USDA-SOEL.

*Solanum heterodoxum* Dunal MELON-LEAF NIGHTSHADE. Annual. Stems and fruits strongly spiny. Corolla purplish. Disturbed ground, hillsides, gravelly slopes. Apr-Oct. LTER-SOHE, USDA-SOHE.



***Solanum rostratum*** Dunal BUFFALO-BUR. Annual. Stems and fruits with thick, stout, painful spines. Corolla yellow. Disturbed places. Apr-Oct. LTER-SORO, USDA-SORO.

#### STERCULIACEAE STERCULIA FAMILY

Herbs or woody plants mostly with star-shaped hairs. Leaves alternate, simple. Flowers regular, 5-merous. Petals on long stalks and united at the tips over the stam. Ovary on a short stalk. Fruit a capsule.

#### **Ayenia**

***Ayenia pilosa*** Cristobal FALSE NOSEBURN. Woody-based, bushy perennial, 10-45 cm tall. Leaves linear to lanceolate, 8-18 mm, with star-shaped hairs. Flowers reddish to purplish, the petals with long, thread-like bases and the tips united to the staminal column. Fruit a roughened, globose capsule 4-6 mm dia. Rocky slopes and hills. May-Oct. [*Ayenia pusilla* of various works]. Easily confused with *Tragia* (Euphorbiaceae), but those species have long (1-2 mm) stinging hairs scattered on the leaves and stems. LTER-AYPI, USDA-AYPI.

#### TAMARICACEAE SALT-CEDAR FAMILY

Shrubs or small trees. Leaves alternate, entire, scale-like. Flowers regular, 4- to 5-merous, pinkish or reddish. Ovary superior. Fruit a capsule.

#### **Tamarix**

\****Tamarix chinensis*** Loureiro SALT-CEDAR. Large shrubs forming dense thickets, 2-6 m. Leaves scale-like, 2-3 mm long. Flowers small, in dense racemes, white to pink. Ditchbanks, floodplains, moist sandy ground. Mar-Oct. [*Tamarix pentandra* of various works, *Tamarix ramosissima* Ledeb.]. The leaves are scale-like and mimic those of *Juniperus*, but that shrub lacks true flowers and bears the seeds in fleshy, berry-like cones. LTER-TACH, USDA-TACH2.

#### ULMACEAE ELM FAMILY

Trees or shrubs. Leaves alternate, simple, mostly toothed. Flowers perfect or unisexual. Sepals 4-9. Petals absent. Stamens 4-6. Fruit a samara or drupe. *Celtis* has been transferred to the Cannabaceae, with which it shares numerous features and is closely related.

**Celtis** : see Cannabaceae

## VERBENACEAE VERBENA FAMILY

Herbs, shrubs, or trees. Leaves opposite or whorled. Flowers  $\pm$  irregular. Petals united basally. Stamens 4. Ovary mostly 4-celled. Fruit of 4 nutlets.

- 1 Woody shrubs..... **Aloysia**
- 1 Herbaceous plants
  - 2 Leaves deeply lobed or cleft
    - 3 Spikes generally slender and elongated after anthesis; calyx seldom as much as twice as long as the nutlets and not contorted above them; corolla relatively small and inconspicuous ..... **Verbena**
    - 3 Spikes generally broad and dense; calyx usually more than twice as long as the nutlets and constricted or contorted above them; corolla conspicuous and showy..... **Glandularia**
  - 2 Leaves entire or toothed but not lobed or cleft
    - 4 Stems erect, not rooting at the nodes ..... **Tetraclea**
    - 4 Stems prostrate and stoloniferous, rooting at the nodes. **Phyla**

### Aloysia

*Aloysia wrightii* (Gray) Heller OREGANILLO, WRIGHT'S BEEBUSH. Slender shrubs with opposite branches and leaves, the stems brittle. Leaves ovate, with rounded teeth, 2-18 mm long. Flowers small, white, in dense racemes. Rocky hills and ravines. Jun-Oct. LTER-ALWR, USDA-ALWR.

### Glandularia

*Glandularia bipinnatifida* (Nutt.) Nutt. DAKOTA VERVAIN. Annual 10-25 cm tall, much-branched at the base. Leaves opposite, deeply parted, Flowers in dense, broad spikes, pink to purple. Corolla slightly asymmetrical. Plains and hills. Mar-Oct. [*Verbena ambrosifolia* Rydb., *Verbena bipinnatifida* Nutt., *Verbena wrightii* of New Mexico works]. LTER-VEWR, USDA-GLBI2.

### Phyla

\**Phyla nodiflora* (L.) Greene TURKEY-TANGLE. Perennial with stoloniferous stems to 1 m long and mostly rooting at the nodes. Leaves opposite, wedge-shaped, coarsely toothed. Corolla whitish to red-tinged. Clay flats and swales. Aug-Oct. LTER-PHNO, USDA-PHNO2.

### Tetraclea

*Tetraclea coulteri* Gray COULTER'S WRINKLEFRUIT. Perennial 15-35 cm tall. Leaves opposite. Corolla cream-colored,

reddish-tinged. Plains and rocky hills. May-Sep. LTER-TECO, USDA-TECO. We have two varieties:

- a Leaves ovate to oblanceolate, mostly entire...var. *coulteri*
- a Leaves narrowly oblong, all toothed...var. *angustifolia* (Woot. & Standl.) Nelson & Macbride

### **Verbena**

*Verbena bracteata* Lagasca & Rodreguez CARPET VERVAIN.  
Annual to perennial herbs, diffusely branched, decumbent to ascending. Leaves pinnately parted to lobed, cuneate in outline. Spikes elongate when mature, with conspicuous bracts. Weedy, sandy, and clayey places. May-Sep. LTER-VEBR, USDA-VEBR.

### **VIOLACEAE VIOLET FAMILY**

Annual or perennial herbs. Leaves mostly alternate or basal, sometimes opposite. Flowers irregular, 5-merous, with a spur. Ovary superior. Fruit a capsul.

### **Hybanthus**

*Hybanthus verticillatus* (Ort.) Baill. BABY-SLIPPERS, GREEN VIOLET. Perennial 10-20 cm tall. Leaves linear to lanceolate, entire, opposite or whorled. Flowers greenish, the lower petals with basal pouch. Stamens united into a sheath. Fruit a 3-valved capsule. Low plains and flats. Mar-Jul. LTER-HYVE, USDA-HYVE.

### **ZYGOPHYLLACEAE CALTROP FAMILY**

Annual or perennial herbs or shrubs. Leaves opposite, pinnately compound, the leaflets entire. Flowers regular, 5-merous. Stamens 10. Ovary superior. Fruit splitting into several nutlets.

- 1 Plants woody shrubs..... **Larrea**
- 1 Plants herbaceous
  - 2 Sepals deeply lobed with narrow segments..... **Peganum**
  - 2 Sepals entire
    - 3 Fruit spiny; flowers yellow ..... **Tribulus**
    - 3 Fruit smooth or warty, but not spiny; flowers yellow or orange ..... **Kallstroemia**

### **Kallstroemia**

- 1 Flowers yellowish; fruit smooth, the beak (style) shorter than the basal ovary..... **K. hirsutissima**
  - 1 Flowers orangish; fruit warty, the beak (style) as long as the basal ovary..... **K. parviflora**
- Kallstroemia hirsutissima* Vail ex Small HAIRY CALTROP.

Low, spreading annual 10-35 cm tall. Leaves opposite, with 3-5 pairs

of leaflets. Petals 5, yellowish. Fruit vase-shaped, smooth, hairy. Plains and flats. Jun-Nov. LTER-KAHL, USDA-KAHL.

***Kallstroemia parviflora*** Norton WARTY CALTROP. Spreading annual 10-60 cm tall. Leaves opposite, with 3-6 pairs of leaflets. Petals 5, orangish to whitish, with a basal red spot. Fruit vase-shaped, warty. Plains and flats. Apr-Nov. LTER-KAPA, USDA-KAPA.

### **Larrea**

***Larrea tridentata*** (Sess. & Moc. ex DC.) Cov. CREOSOTE-BUSH. Evergreen shrubs to 2 m. Leaves resinous, opposite, with 2 asymmetrical leaflets. Petals 5, yellow. Fruit hairy. Alluvial plains. Mar-Oct. [*Larrea divaricata* Cov. subsp. *tridentata* (Sess. & Moc. ex DC.) Felger & Lowe]. LTER-LATR, USDA-LATR2.

### **Peganum**

**\**Peganum harmala*** L. AFRICAN RUE. Bushy perennial herbs to 60 cm tall. Leaves with linear segments, fleshy. Petals white to cream-colored. Stamens 8-10. Dry plains, roadsides. May-Oct. LTER-PEHA, USDA-PEHA.

### **Tribulus**

**\**Tribulus terrestris*** L. PUNCTURE-VINE. Prostrate annual 5-15 cm tall. Leaves opposite, with 3-7 pairs of leaflets. Petals 5, yellow. Fruit a spiny bur. Disturbed ground. Mar-Nov. LTER-TRTE, USDA-TRTE.

## LITERATURE CITED

- Allred, K.W. 2005. **A Field Guide to the Grasses of New Mexico**, 3<sup>rd</sup> ed. New Mex. St. Agr. Exp. Sta. Available from University Communications and Marketing Services, New Mexico State University.
- Allred, K.W. 2012. **Flora Neomexicana I : Annotated Checklist**. 2<sup>nd</sup> ed. Publ. by the author. 603 pp. Available online at lulu.com.
- Allred, K.W. & R.D. Ivey. 2012. **Flora Neomexicana III : An Illustrated Identification Manual**. Publ. by the authors. 715 pp. Available online at lulu.com.
- Conard, H.S. & P.L. Redfearn, Jr. 1979. **How to Know the Mosses and Liverworts** (Revised). Wm. C. Brown Company, Dubuque, Iowa.
- Ivey, R.D. 1998. **Flowering Plants of New Mexico**, 3rd ed., 4<sup>th</sup> printing. Publ. by the author, Albuquerque, New Mexico.
- Little, E.L., Jr. 1937. **Bryophytes of the Jornada Experimental Range, New Mexico**. Bryologist 40:81-83.
- Niehaus, T.F., L.L. Ripper, & V. Savage. 1984. **A Field Guide to Southwestern and Texas Wildflowers**. Houghton Mifflin Company, Boston.
- Spellenberg, R. 2001. **National Audubon Society Field Guide to North American Wildflowers, Western Region**. Alfred A. Knopf, New York.

## APPENDIX: Special Identifying Features

### Succulents:

- Portulacaceae (leaf succulents)
- Cactaceae (stem succulents)

### Milky Juice:

- Apocynaceae
- Asclepiadaceae
- Euphorbiaceae
- Moraceae
- Papaveraceae

### Parasitic Plants:

- Cuscutaceae
- Orobanchaceae
- Rafflesiaceae
- Santalaceae

### Conspicuously Spiny, Thorny, or Prickly Plants:

- Agavaceae
- Amaranthaceae (*Acanthochiton*, *Amaranthus*)
- Asteraceae (*Acourtia*, *Chloracantha*, *Cirsium*, *Sonchus*)
- Cactaceae
- Chenopodiaceae (*Salsola*)
- Fabaceae (*Acacia*, *Gleditsia*, *Prosopis*)
- Fouquieriaceae
- Koeberliniaceae
- Moraceae (*Machura*)
- Papaveraceae (*Argemone*)
- Poaceae (*Cenchrus*)
- Rhamnaceae
- Solanaceae (*Lycium*, *Solanum*)

### Vine-like, Twining, Trailing, or Climbing Plants:

- Asclepiadaceae (*Sarcostemma*)
- Convolvulaceae
- Cucurbitaceae
- Fabaceae (*Phaseolus*, *Vicia*)
- Malpighiaceae (*Janusia*)
- Malvaceae (*Herissantia*)
- Nyctaginaceae (*Allionia*, *Boerhavia scandens*)
- Ranunculaceae (*Clematis*)

Scrophulariaceae (*Maurandya*)

**Flowers with Four Petals:**

Brassicaceae  
Capparidaceae  
Onagraceae  
Papaveraceae  
Rubiaceae

**Leaves Opposite or Whorled:**

Acanthaceae  
Amaranthaceae (*Froelichia, Tidestromia*)  
Apocynaceae  
Asclepiadaceae  
Asteraceae (*Brickellia, Ambrosia, Bahia, Dyssodia, Iva, Helianthus, Melampodium, Pectis, Sanvitalia, Sartwellia, Thymophyllia, Verbesina, Viguiera, Zinnia*)  
Bignoniaceae  
Caryophyllaceae  
Cupressaceae  
Ephedraceae  
Euphorbiaceae (*Chamaesyce, Euphorbia*)  
Garryaceae  
Geraniaceae  
Lamiaceae  
Malpighiaceae  
Molluginaceae  
Nyctaginaceae  
Oleaceae  
Pedaliaceae  
Polemoniaceae (*Linanthus*)  
Portulacaceae  
Polygonaceae (*Eriogonum*)  
Ranunculaceae (*Clematis*)  
Rhamnaceae (*Ceanothus*)  
Rubiaceae  
Santalaceae  
Scrophulariaceae  
Verbenaceae  
Violaceae  
Zygophyllaceae

**Leaves with Glandular Dots:**

- Asteraceae (*Dyssodia, Ericameria, Pectis, Porophyllum, Thymophylla*)
- Fabaceae (*Dalea, Glycyrrhiza, Pomaria, Psorothamnus*)
- Lamiaceae (*Agastache*)
- Nyctaginaceae (*Boerhavia*)
- Rutaceae

**Herbage Sticky-Glandular:**

- Amaranthaceae (*Amaranthus*)
- Asteraceae (*Chaenactis, Flourensia, Grindelia*)
- Capparidaceae
- Fabaceae (*Acacia, Glycyrrhiza*)
- Hydrophyllaceae (*Eucrypta, Phacelia*)
- Nyctaginaceae (*Allionia, Boerhavia, Cyphomeris*)
- Onagraceae (*Camissonia, Gaura*)
- Pedaliaceae
- Poaceae (*Leptochloa*)
- Solanaceae (*Chamaesaracha, Nicotiana*)

**Leaves Compound:**

- Anacardiaceae
- Apiaceae
- Asteraceae (various spp.)
- Bignoniaceae (*Tecoma*)
- Capparidaceae
- Fabaceae
- Hydrophyllaceae (*Phacelia*)
- Polemoniaceae (various spp.)
- Ranunculaceae (*Clematis*)
- Rosaceae
- Rutaceae
- Sapindaceae
- Zygophyllaceae

**Leaves Palmately Compound (or appearing so):**

- Anacardiaceae (*Rhus trilobata*)
- Capparidaceae
- Fabaceae (*Lotus, Lupinus*)



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#### Changes in the 8<sup>th</sup> Edition

1. Addition of *Bidens heterosperma*, *Chamaesyce lata*, *Crossidium aberrans*, *Crossidium crassinervium*, *Desmodium rosei*, *Didymodon nevadensis*, *Nolina texana*, *Pseudocrossidium crinitum*, *Pseudocrossidium replicatum*, and *Salvia subincisa*.
2. Miscellaneous nomenclatural, classification, and formatting updates and corrections.