1 Calyx-teeth triangular-lanceolate, not over 2.5 mm long; racemes short and dense, usually ovoid to subglobose at anthesis, the axis less than 2 cm long; plants 4–15 dm tall; w. Great Basin and Mojave Desert, se. just into Washington Co., Utah (Beaver Dam Mts.) ..... var. *polydenius*

1 Calyx-teeth lance-attenuate, ± 3.5–5 mm long; racemes longer and looser, becoming oblong at full anthesis, the axis mostly 2–3 cm long; dwarfer plants than the preceding, at most 2–3.5 dm tall; known only from cobblestone bluffs s. of Green River, Emery Co., Utah ..... var. *jonesii* Barneby

4. Psorothamnus thompsoniae (Vail) Welsh & Atwood

Parosela thompsonae Vail, Bull. Torrey Bot. Club 24: 18. 1897. *Dalea thompsonae* L. O. Williams, Ann. Missouri Bot. Gard. 23: 451. 1936. *Psorothamnus thompsonae* Welsh & Atwood, Great Basin Naturalist 35: 354. 1975. (*Ellen P. Thompson s.n.*, said to be from "Northern Arizona" but probably collected in the Canyonlands of se. Utah; holotype at US!)

Dalea whitingi Kearney & Peebles, J. Wash. Acad. Sci. 29: 484. 1939. *Psorothamnus thompsonae* var. *whitingi* Barneby, Mem. New York Bot. Gard. 27: 54. 1977. (*Whiting & Jones 916/3277*, Wupatki Natl. Monument, Coconino Co., Ariz.; holotype at US!)

Thompson's dalea.

Bushy, intricately branched, microphyllous shrublets 4–9 (15) dm diameter, the young stems densely retrorse-pilosulous and charged with convex, orange glands, the lateral branchlets immediately preceding the abundant terminal racemes of vivid purple flowers transformed into stiff, divaricate thorns persisting on old wood, the foliage greenish-cinereous, heavily aromatic when bruised; stipules minute, caducous; leaves 1–3 cm long, the 7–17 (19) thick-textured leaflets obovate, oblanceolate, or linear, obtuse or emarginate, 2–7 mm long; pedicels 0.6–1.5 mm long, charged distally with a pair of orange glands; calyx ± 4–5 mm long, either glabrous or pubescent externally, the shallowly pleated tube 2.5–3 mm long, charged near and above middle with large, protuberant glands, the ovate, internally silky teeth unequal, the ventral pair much the broadest and the sinus between them shallower than the rest; petals glabrous, marcescent, the banner 6–8.5 mm long, the keel ± 1 mm longer; pod 4–4.5 mm long, obliquely obovoid, compressed laterally, the prominent sutures confluent into a subulate beak ± 1 mm long, the valves pilosulous and pustulate-glandular.

Dunes, sand-talus under cliffs, clay banks, and sandy or gravelly canyon-washes, 1070–1600 m; locally abundant in the Canyonlands of the Colorado, lower San Juan, and Little Colorado rivers in se. Utah and nc. Ariz. May–Aug.

An ornamental prickly bush, occurring in extensive colonies on dunes and stabilized sands, accompanied by *Ephedra* and shinnery oak, in the eastern foothills of the Henry Mountains, becoming rare and scattered southward. Two weakly differentiated varieties are recognizable:

1 Leaflets obovate to oblanceolate, ± 1.5–4 times as long as wide; calyx usually glabrous externally, rarely strigulose with subappressed hairs up to 0.2 mm long; drainages of Muddy, Fremont, and White rivers in sw. Emery, c. Wayne, e. Garfield, and w. San Juan cos., Utah ..... var. *thompsoniae*

1 Leaflets linear or linear-oblanceolate, 4–7 times as long as wide; calyx loosely pilosulous with spreading hairs up to 0.3–0.5 mm long; known only from the Monument Valley region in sw. San Juan Co., Utah (Copper Canyon) and, distantly disjunct, from Wupatki Natl. Monument in Coconino Co., Ariz. ..... var. *whitingii* (Kearney & Peebles) Barneby

5. Psorothamnus kingii (S. Wats.) Barneby

Dalea kingii S. Wats. in King, Rep. Geol. Explor. 40th Parallel 5: 64. 1871. *Parosela kingii* A. A. Heller, Cat. N. Amer. Pl. ed. 2. 6. 1900. *Psorodendron kingii* Rydb. N. Amer. Fl. 24(1): 42. 1919. *Psorothamnus kingii* Barneby, Mem. New York Bot. Gard. 27: 27. 1977. (*W. W. Bailey* [*Watson 252*], Hot Spring Mts. [Churchill Co.], Nev., Aug 1867; holotype at GH!; isotype at NY!)

King's dalea.

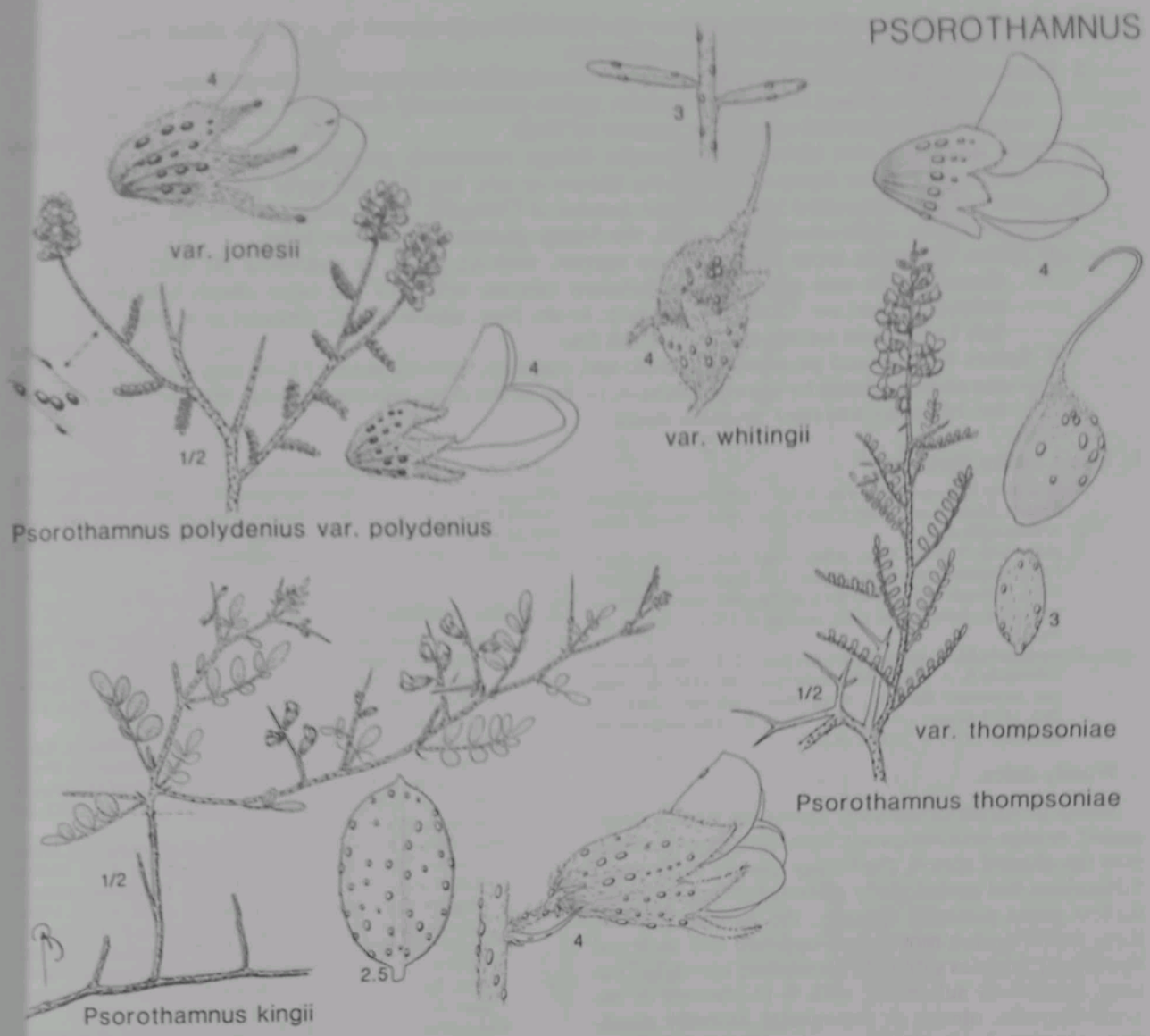
Stems herbaceous, 1–3.5 dm long, arising singly from reddish, cordlike, horizontal rhizomes 1–2 mm diameter, diffusely branched from emergence and abruptly zigzag, yellow-green and remotely pustulate, the distal branchlets and axis of the loosely 1–5-flowered racemes modified into yellow-pointed spines 1–3 cm long, the relatively ample early leaves yellow-green, the later ones densely strigulose above, greenish and punctate beneath; upper stipules linear-subulate, 1–5 mm long, the lowest broader, sometimes dentate; leaves 1–4.5 cm long, the 5–9 leaflets ovate to rhombic- or oblong-elliptic, (3) 5–15 mm long, sharply yellow-mucronate, the subrevolute margin entire or remotely dentate; pedicels 1–2.3 mm long, bibracteolate at apex; calyx 6.5–8 mm long, thinly pilosulous externally, the weakly 10-ribbed, glandular-pustulate tube 3.5–4 mm long, the 2 ventral teeth ovate, acute, nearly twice as wide as the other 3 but not united behind the banner; petals blue, the gland-tipped banner 7–9 mm long, the keel ± 1 mm longer; pod obliquely compressed-obovoid, 4–5.5 mm long, sprinkled with yellow glands, 1- or 2-seeded.

Sand-flats and hollows in mobile dunes, 1300–1400 m; forming populous colonies but extremely localized in the lower Humboldt River valley and Carson Sink in nw. Nev.; between Winnemucca and Paradise Valley, Humboldt Co.; foothills of Hot Spring and Blow Sand mts., Churchill Co. June–Aug.

A singular plant, remarkable for the indefinitely elongating rhizomes creeping at depths of 1–6 cm through the sand, for the fan-shaped branching pattern of the stems, and for the modification of upper branchlets and all raceme-axes into sharp yellow-pointed thorns. Although so different in growth-habit, *Ps. kingii* is related to the smoke tree [*Ps. spinosus* (A. Gray) Barneby] of the Mojave and Colorado deserts, the only other species of tribe Amorpheae in which more than one seed reaches maturity in any pod.

9. DALEA Lucanus emend. Barneby

Xeromorphic shrubs, few arborescent, and herbs, some monocarpic but ours all perennial, glandular-punctate throughout or almost so, the foliage aromatic or strong-scented when bruised; pubescence of spiral, often rufescent hairs; stipules small, free; leaves imparipinnate, seldom 3-foliolate, the leaflets gland-stipellate; inflorescence determinate, the flowers racemose or spicate, the spike sometimes condensed into a cone; bracteoles glandiform or spicular; calyx campanulate or turbinate, 10-ribbed, with 5 ribs produced into apex of a tooth, commonly excurrent, the alternate ones forked below a sinus, the tube usually charged with blister-glands; petals concolorous or the banner heterochrome and discolored after fertilization of the flower, the clawed banner inserted on the hypanthium rim, the inner pairs, termed epistemonous, perched at various levels on the staminal tube, the keel-blades in ours distinct from one another and exposing the 5–10-merous, monadelphous androecium; style filiform or distally dilated, the stigma minute or capitate; ovules 2, collateral, one early abortive;



pod small, obovate or deltate in profile, nearly always gland-sprinkled, indehiscent or tardily dehiscent ventrally; $x = 7, 8$.

A genus of 165 species, widespread over N. Amer. e. of the Cascade–Sierra axis, from sw. Can. throughout Mex., where most diverse and numerous, and C. Amer., thence s. along the Andes, in decreasing number, to nw. Argentina and n. Chile, one endemic to Galapagos Islands, few circum-Carib. (Named for Samuel Dale, 1659–1739, English physician, pharmacologist, antiquary, friend of John Ray, whose historically important herbarium is preserved at the British Museum.)

Dalea is an exemplary genus of Madro-Tertiary origin that has radiated north- and southward from a focus on the Mexican highlands into seasonally dry habitats in both hemispheres. The few species entering our area are the only native legumes in which the keel and wing petals are inserted in sockets on the staminal column, not directly on the hypanthium rim. The pentandrous, perennial daleas with high-perched epistemonous petals native to the North Temperate Zone have traditionally been referred to a segregate genus *Petalostemon*, but a reduced androecium is not confined to this group, which is linked in Mexico by intermediate forms to the core of frutescent, decandrous, subtropical *Dalea* and is no longer taxonomically defensible. The daleas with dense conelike flower-spikes superficially resemble primitive helenioid Asteraceae.

References:
Barneby, R. C. 1977. *Dalea*. Mem. New York Bot. Gard. 27: 135–592, 650–877.
Rydberg, P. A. 1919–20. *Parosela, Thornbera, Petalostemon,* and *Kuhnistera*. N. Amer. Fl. 24(1, 2): 48–136.
Wemple, D. K. 1970. Revision of the genus *Petalostemon* (Leguminosae). Iowa State Coll. J. Sci. 45: 1–102.

1 Androecium 8–10-merous; epistemonous petals (magenta-purple) perched on the androecial column well below separation of the filaments; blade of banner peltate; most flower-spikes leaf-opposed ..... 1. *D. lanata*

1 Androecium 5-merous; epistemonous petals perched at level of separation of the filaments, appearing to alternate with them in a whorl; blade of banner scoop-shaped; flower-spikes terminal to the central stem or lateral branchlets.

2 Bracts of the flower-spike subtended on each side by a linear-spiculiform bracteole; spikes without petals or androecia 6–8 (10) mm diameter; petals white; se. quarter of Utah ..... 2. *D. candida*

2 Bracts of the flower-spike ebracteolate or the bracteoles represented by a sessile gland; spikes without petals or androecia 8–16 mm diameter.
3 Petals white (fading ochroleucous); foliage commonly pilosulous (exceptionally glabrous); calyx-tube deeply recessed behind the banner; spikes permanently dense and conelike, the axis concealed by crowded calyces; se. quarter of Utah ..... 3. *D. flavescens*
3 Petals (except of rare albinos) pink-purple; foliage commonly glabrous (pilosulous in Nev. only); calyx either recessed behind the banner or not, but if so the spike loose in age, the axis not fully concealed by calyces; sw. quarter of Utah, nw. Ariz., thence n. and nw., where approaching *D. flavescens* in s. Utah, the foliage glabrous and spikes loose.
4 Spikes becoming loose and relatively narrow, without petals or androecia (8) 9–11 mm diameter, the axis partly visible between calyces; orifice of the calyx deeply recessed behind banner; sw. Utah and nw. Ariz. to wc. Nev. and se. Calif.; disjunct at w. edge of Salt Lake Basin astride the Nev.–Utah line ..... 4. *D. searlsiae*
4 Spikes broader and permanently dense and conelike, without petals 13–16 mm diameter, the axis concealed by crowded calyces; orifice of the calyx subsymmetrical; nw. Nev. and sw. Idaho n. into the Columbia Basin ..... 5. *D. ornata*

1. Dalea lanata Sprengel

Dalea lanata Sprengel, Syst. Veg. 3: 327. 1826. *Parosela lanata* Britton, Mem. Torrey Bot. Club 5: 196. 1894. (*Nuttall*, from Arkansas River.)
D. glaberrima S. Wats. Proc. Amer. Acad. Arts 22: 470. 1887. *Parosela glaberrima* Rose, Contr. U.S. Natl. Herb. 10: 103. 1906. (*Pringle 720*, 30–40 mi s. of Paso del Norte, Chihuahua, Mex.; holotype at GH!; isotype at US!) = var. *terminalis*.
D. terminalis M. E. Jones, Contr. W. Bot. 12: 8. 1908. *Parosela terminalis* A. A. Heller, Muhlenbergia 6: 96. 1910. *D. lanata* var. *terminalis* Barneby, Mem. New York Bot. Gard. 27: 283. 1977. (*Jones s.n.*, El Paso, Texas, in 1884; lectotype by Barneby, 1977, p. 283, at POM!)

Woolly dalea.

Stems prostrate or diffusely ascending from a deep-seated, orange-yellow taproot, branching at wide angles into fan-shaped sprays, the foliage usually softly gray-villosulous but occasionally glabrous throughout, the leaflets gland-punctate dorsally, the narrow, amentiform flower-spikes mostly leaf-opposed and incurved to vertical; stipules subulate, deciduous; leaves 1–3 cm long, commonly subsessile, with 9–15 obovate or cuneate-obovate, obtuse or emarginate, dorsally gland-tipped leaflets 3–12 mm long; spikes (1) 1.5–7.5 (9) cm long, without androecia 5.5–8 mm diameter; bracts herbaceous, persistent, rhombic-ovate or -obovate, apiculate, ± 2–3 mm long, charged dorsally with at least 1 large transparent blister-gland; calyx sessile, ± 3.5–4.5 mm long, the pallid, bluntly angulate tube as long or little longer than the lanceolate, ovate or deltate, herbaceous teeth; petals (caducous) magenta-violet, the slender-clawed, peltate banner ± 3–4 mm long, the wing and keel-petals all free, perched on the 8–10-merous androecium about halfway between hypanthium and anthers, their obovate-suborbicular blades ± 2–4 mm long, displayed below the exserted yellow anthers; pod semi-obovate in profile, the ventral suture shallowly concave, the dorsal one convex, the submembranous valves villosulous or rarely glabrous, gland-speckled.

Dunes and deep porous sands of plains and valley floors, locally abundant, near sea level up to 1900 m; se. Colo. to the Gulf Coastal Plain in Texas, w. to c. Coahuila, n. Chihuahua, the Rio Grande valley in N.M. and thence nw. through the Four Corners into the Canyonlands of San Juan and Kane cos., Utah, the Little Colorado valley in ne. Ariz., and reappearing disjunctly in the Virgin valley in Washington Co., Utah and adj. Nev. and Ariz. June–Oct.

Our plant is var. *terminalis* (M. E. Jones) Barneby, which represents the species northwestward from Trans-Pecos Texas and is weakly differentiated from var. *lanata* by the relatively short- and broad-toothed calyx glabrous and lustrous below the teeth. A visually striking variant, glabrous throughout, has been segregated as *D. glaberrima*, but it occurs sporadically in northern Mexico, New Mexico, and with us in San Juan valley, sometimes in company with the ordinary gray-villous form, and seems taxonomically insignificant.

2. Dalea candida Michx. ex Willd.

Dalea candida Michx. ex Willd. Sp. Pl. 3: 1337. 1802. *Petalostemon candidum* Michx. Fl. Boreali-Amer. 2: 49. 1803. *Psoralea candida* Poiret in Lam. Encycl. Méth. Bot. 5: 694. 1804. *Kuhniastera candida* Kuntze, Revisio Gen. Pl. 1: 192. 1891. (*Michaux*, Tenn. and Ill.; isotype at P!)
Petalostemon virgatum Nees & Schwein. in Wied-Neuw. Beitr. Nord-Amer. 2: 432. 1841. (*Prince Maximilian zu Wied-Neuwied s.n.*, between Fort Peck and mouth of Musselshell River, in Valley or Garfield cos., Mont., 25 July 1833; isotype at W!) = var. *oligophylla*.
Petalostemon gracile β *oligophyllum* Torr. in Emory, Not. Milit. Reconn. 139. 1848. *Kuhnistera oligophylla* A. A. Heller, Bull. Torrey Bot. Club 23: 122. 1896. *Petalostemon oligophyllum* Rydb. Mem. New York Bot. Gard. 1: 237. 1900. *Petalostemum candidum* var. *oligophyllum* F. J. Herm. J. Wash. Acad. Sci. 38: 237. 1948. *D. oligophylla* Shinners, Field & Lab. 17: 82. 1949. *D. candida* var. *oligophylla* Shinners, Spring Fl. Dallas-Ft. Worth 211, 409. 1958. (*Emory*, near Albuquerque, N.M., in 1846; holotype at NY!)
Kuhnistera occidentalis A. A. Heller ex Britton & Kearney, Trans. New York Acad. Sci. 14: 33. 1895. *Petalostemon candidus* var. *occidentalis* A. Gray ex Britton & Kearney, Trans. New York Acad. Sci. 14: 33. 1895, in synonymy. *Kuhnistera candida* var. *occidentalis* Rydb. Contr. U.S. Natl. Herb. 3: 154. 1895. *Petalostemon occidentale* Fern. Rhodora 39: 28. 1937. (*Pringle 1216*, near Guerrero, Chihuahua, Mex.; lectotype by Barneby, 1977, p. 249, at NY!; isolectotypes at F!, GH!) = var. *oligophylla*.

White prairie-clover.

Stems arising from root-crown or short caudex near soil-level, erect or with us commonly diffuse and branched, sometimes virgately ascending, 2.5–7 (10) dm long, glabrous up to the inflorescence, the foliage rich green or pallid, the leaflets smooth above, punctate beneath; stipules lance-subulate, 1.5–5 mm long; primary cauline leaves 1.5–6 cm long, the 5 or 7, rarely 9 leaflets obovate, emarginate to lance-oblong-elliptic, obtuse or mucronate, the odd one longest, up to (6) 9–25 (35) mm long; distal leaves reduced to bracts, the flower-spikes therefore appearing pedunculate; spikes ovoid or cylindric, dense conelike or (with us) looser, amentiform, without petals, 6–8 (10) mm diameter, the axis becoming (1) 1.5–6 (7.5) cm long; bracts ob-ovate-apiculate or caudate, the lowest firm, persistent, the rest deciduous; bracteoles 0.5–1.6 mm long; calyx 3–4 (4.5) mm long, either glabrous except for ciliolate

orifice or thinly pilosulous below the teeth, the subsymmetrically campanulate, basally pleated tube ± 2–2.5 mm long, charged above middle with few transparent glands, the lanceolate dorsal tooth 1–1.8 mm long, the ventral teeth a little shorter and broader; petals white, glandless, the banner 4–5.5 mm long, its blade cordate, the epistemonous petals 3–5 mm long, their oblong-elliptic, short-clawed blade 1.3–2 mm wide; androecium 5–7.5 mm long, the 5 filaments free for 2.5–4.5 mm, the anthers yellow; pod obliquely semi-obovoid, ± 2.7–4 mm long, glabrous or puberulent above middle.

Prairies and dry sunny places, in our area on gravelly hills, knolls, and rock-ledges in desert or pinyon-juniper woodland below 1800 m; widely dispersed over midw. and sw. U.S. and adj. Can. and Mex., from the lowlands of the Mississippi valley to the e. piedmont of the Rocky Mts., se. Utah, c. Ariz., ne. Sonora, and Durango; in our area common locally in the Canyonlands of the Colorado Plateau, from San Rafael Swell in Emery Co., Utah, southward. May–Sept.

Our form of the white prairie-clover is var. *oligophylla* (Torr.) Shinners, dispersed over the short-grass prairies from Alberta to Oklahoma, Trans-Pecos Texas, and westward, where it ascends from the desert floor into yellow pine forest up to 2400 m. It differs from the eastern var. *candida* in its usually more diffuse habit, smaller and paler leaflets, commonly but not consistently puberulent calyx, and especially in the looser catkinlike spikes, rather than densely compacted cones, of calyces.

3. Dalea flavescens (S. Wats.) Welsh

Petalostemon flavescens S. Wats. Amer. Naturalist 7: 299. 1873. *Kuhniastera flavescens* Kuntze, Revisio Gen. Pl. 1: 192. 1891. *Dalea flavescens* Welsh, Great Basin Naturalist 31: 90. 1971. (*Ellen P. Thompson s.n.*, supposedly from Kanab, Utah, but probably from further e.; holotype at GH!)

D. epica Welsh, Great Basin Naturalist 31: 90. 1971. (*Welsh 5205*, ca 10 mi e. of Halls Crossing, San Juan Co., Utah; holotype at BRY!; isotype at NY!)

Canyonlands prairie-clover.

Stems either erect or diffusely ascending in clumps from a tough taproot and shallowly buried caudex, 2.5–4.5 dm tall, leafy in the lower half or third, monocephalous or exceptionally few-branched, ± livid-tuberculate and either softly pilosulous or (less commonly) glabrous, the foliage likewise either gray-silky-pilosulous or glabrous and pallid-glaucescent, the dense ovoid-oblong or cylindric flower-spikes always pilosulous; stipules linear-lanceolate, 1–4.5 mm long; primary cau-

line leaves 2–4.5 cm long, the (3) 5 or 7 narrowly oblanceolate, oblong-obovate or -elliptic, usually folded leaflets up to 7–18 (23) mm long, the odd one usually longest; spikes without androecia or petals 8.5–12 (13) mm diameter, the axis concealed by calyces, becoming 1.5–10 (14) cm long; bracts obovate-oblanceolate, green or brownish, contracted distally into a livid tip, 2.5–6 mm long; calyx (3) 3.5–5 (5.5) mm long, softly pilosulous, the tube 2–3 mm long, deeply recessed behind the banner, obscurely glandular, the teeth 1–3 mm long, of subequal length but the dorsal one lanceolate, the rest broader; petals white, sometimes fading ochroleucous, the banner 5–8 mm long, the oblong-oblanceolate, epistemonous ones perched at separation of the filaments, including the short claw ± 4–6 mm long; androecium 6–11 (13) mm long, the filaments free for 3.5–8.5 mm, the yellow anthers either exserted or not beyond the petals; pod very obliquely obovoid, ± 3–4 mm long, the short ventral suture concave, the dorsal one strongly convex, the thinly papery valves pilosulous, gland-sprinkled.

Canyon-benches, pockets in rimrock, talus under cliffs, and dunes, on red or white sandstone, in desert and pinyon-juniper woodland, 1000–1720 m; locally plentiful in the Canyonlands of se. Utah and immediately adj. Ariz., from the Price River in se. Carbon Co. and Arches Natl. Monument in Grand Co. s. to Monument Valley and e. Kane Co. May–July.

Dalea flavescens and the two species next following form a replacement series extending from Monument Valley west into the Mojave Desert and northwest into the Columbia Basin. They have a common facies and differ principally in density of the spikes, depth of the calyx-sinus behind the banner, and color of the petals. A dense cone of white flowers distinguishes *D. flavescens* from its neighbor to the west, *D. searlsiae*, which has loosely spicate purple flowers; but these are alike in the deeply recessed dorsal sinus of the calyx. The northwestern *D. ornata* combines the purple coloring of *D. searlsiae* and the conelike spike of *D. flavescens* with a symmetrical and thinner-textured calyx. Each is variable in pubescence: *D. flavescens* usually pilose throughout but sometimes glabrous below the spikes; *D. searlsiae* usually glabrous in leaf and stem but sometimes pilosulous like *D. flavescens*; and *D. ornata* normally glabrate up to the spikes and exceptionally throughout. No taxonomic recognition is accorded to these random, even though visually arresting, variants.

In canyons leading down to Lake Powell *D. flavescens* has given rise to other minor mutations. A variant from dunes near Hole-in-the-Rock, which has an exceptionally long calyx contributing to an abnormally fat flower-spike, has been described as *D. epica*, but seems to represent the extreme of a series rather than a genetically detached entity. Another large-flowered plant, with glabrous, pallidly glaucous stems and foliage and prominently verruculose calyx-teeth, was collected once in Rainbow Canyon below the lake's present level. Other populations of this should be sought.

4. **Dalea searlsiae** (A. Gray) Barneby

Petalostemon searlsiae A. Gray, Proc. Amer. Acad. Arts 8: 380. 1872. *Kuhniastera searlsiae* Kuntze, Revisio Gen. Pl. 1: 192. 1891. *Dalea searlsiae* Barneby, Mem. New York Bot. Gard. 27: 234. 1977. (*Miss Searls s.n.*, from the Pahranagat Mines in Lincoln Co., Nev., in 1871; holotype at GH!; isotype at K!)

Searls's prairie-clover.

Closely resembling *D. flavescens* in habit and foliage, but the stems and leaves more often glabrous than pilosulous, the foliage often glaucescent; stems with peduncle up to 6 dm tall; primary cauline leaves 2–5.5 cm long, the 5 or 7, rarely 9 leaflets varying from narrowly oblanceolate to linear or obovate; spikes moderately dense, not conelike, without petals (8) 9–11 mm diameter, the mature axis not fully concealed by calyces, becoming (1.5) 2–12 (14) cm long; flowers of *D. flavescens*, except for magenta or rose-purple petals; androecium ± 5.5–9 mm long, the 5 filaments free for 3–5.5 mm.

Sandy or gravelly flats and slopes in pinyon-juniper woodland, shadscale- or cowania-brush, or sagebrush, sometimes on barren valley knolls with *Encelia*opsis or on alkaline clay lake-terraces, (1150) 1300–2100 (2300) m; widespread and common over Nev. s. and se. from the Paradise Range in Churchill Co., sw. to Death Valley and e. Mojave Desert in Calif., e. across n. Mohave Co., Ariz. to the Painted Desert in sw. Coconino Co. and in Utah through Iron and Washington cos. to the Aquarius Plateau in w. Garfield Co.; apparently somewhat isolated around the w. edge of Salt Lake Basin in e. Elko Co., Nev. and adj. Box Elder Co., Utah. Early May–July.

Variable in pubescence, sometimes in one population, and also in width of leaflets, but this not correlated with dispersal. Where *D. searlsiae* approaches the range of *D. flavescens* in Utah and northern Arizona its stems and leaves are consistently glabrous.

5. **Dalea ornata** (Douglas ex Hook.) Eaton & J. Wright

Petalostemon ornatum Douglas ex Hook. Fl. Boreali-Amer. 1: 138. 1831. *Dalea ornata* Eaton & J. Wright, N. Amer. Bot. 219. 1840. *Kuhniastera ornata* Kuntze, Revisio Gen. Pl. 1: 192. 1891. (*Douglas*, from near the mouth of Snake River in se. Wash.; holotype at K!)

Petalostemon lagopus Rydb. N. Amer. Fl. 24(2): 134. 1920. (*P. B. Kennedy 1316*, from Truckee Pass, Washoe Co., Nev.; holotype at NY!; isotypes at RENO!, UC!, US!)

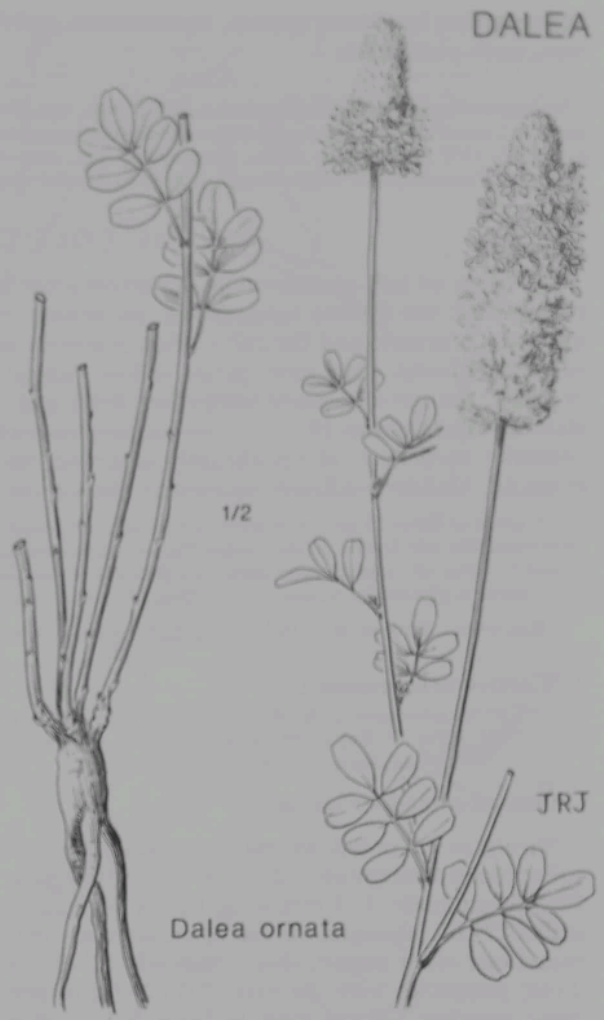
Handsome prairie-clover.

Closely resembling *D. searlsiae* in habit of growth, but the foliage always glabrous and the thick-textured, subglaucescent leaflets of broad outline, obovate or elliptic-oblanceolate; flower-spikes ovoid, early becoming cylindric, without petals or androecia 13–16 mm diameter, the axis permanently concealed by crowded calyces, that of principal spikes 2–9 cm long, of some lateral ones often shorter; calyx 4–6.5 mm long, pilose from the base or exceptionally only on the teeth with fine lustrous spiral hairs ± 1–2 mm long, the pallid tube ± 2.5–3.5 mm long, the firm green or livid teeth of equal length, the 2 dorsal ones a trifle broader but not separated behind the banner by a recessed sinus; corolla of *D. searlsiae*, the petals rose-purple or lilac-pink, exceptionally (in Wash.) albino.

Gravelly, shaley or sandy bluffs and river-terraces, lake shores, canyon-washes, and sandy plains; interruptedly widespread below 1300 m in the Snake and Columbia valleys in e. Wash., Oregon, and sw. Idaho, and over the nw. Great Basin; entering the Intermountain region along the Snake and its immediate tributaries from Elmore Co. downstream to Washington Co., Idaho, thence w. and up to 1350 m around lake basins of se. Oregon to Lake Abert in Lake Co., and disjunctly at 1350–1830 m around the margin of the Lahontan Basin in s. Washoe, Lyon, and Storey cos., Nev., and adj. Lassen Co., Calif. May–July.

10. PHASEOLUS L. Bean

Annual and perennial, weak-stemmed, often twining herbs with fibrous, woody or tuberous root; stems and foliage pubescent with short, plain hairs, transparent, uncinate hairs (best seen at 20× or more) and small, gland-tipped trichomes; stipules free, commonly deflexed; leaves pedately 3-foliolate, the leaflets stipellate, entire or lobed; flowers pseudoracemose, solitary or several at each node of inflorescence; bracteoles 2, persistent into anthesis; petals purple, white, stramineous, or red, irregularly graduated, the broad, strongly recurved banner and keel of about equal length, the wings longer, the keel-tip coiled through one or more revolutions; stamens



diadelphous (9 + 1), the anthers uniform; style coiled within the keel, the stigma lateral, flattened; pod oblong or linear, compressed, dehiscent from apex downward, the valves coiling; seeds diverse in size, shape, and coloring; $x = 11$.

A genus of about 50 species of warm temp. and trop. N. and S. Amer. (Classical Greek name for an edible bean.)

Species of *Phaseolus* cultivated by the pre-Columbian inhabitants of the Mexican Plateau and the Andean region in South America are now of worldwide importance as protein-rich vegetables. Among those commonly planted in private gardens and truck gardens of our area are: 1) the polymorphic *P. vulgaris* L., which yields when grown for edible immature pods French, haricot, snap, and string beans, and when grown for the variously shaped and colored ripe seeds navy, pea, and kidney beans; this is widely planted in our lowlands and may be an ephemeral weed in fallow land; 2) *P. lunatus* L., the lima bean, grown for its large edible seeds borne by threes and fives in wide spongy pods about 6–12 cm long and 1–1.5 cm wide; and 3) less common in our area because adapted to moist summers, *P. coccineus* L., the scarlet runner bean, grown for the edible immature pod that may reach lengths of 2–6 dm; it is seen sometimes trained on trellises for the handsome scarlet (white, particolored) flowers.

Reference: Lackey, J. A. 1983. A review of generic concepts in American Phaseolinae (Fabaceae, Faboideae). Iselya 2(2): 21–64.

1. **Phaseolus angustissimus** A. Gray

Phaseolus angustissimus A. Gray, Pl. Wright. (Smithsonian Contr. Knowl. 5, Art. 6) 2: 33. 1853. (*Wright 951*, crossing of the Rio Grande above Dona Ana, N.M.; isotype at NY!)

P. angustissimus var. *latus* M. E. Jones, Contr. W. Bot. 12: 14. 1908. (*Jones s.n.*, "on the Little Colorado, northern Arizona, below Winslow," 9 June 1890.)

P. dilatatus Wooton & Standley, Contr. U.S. Natl. Herb. 16: 139. 1913. (*Rusby s.n.*, "on the Mogollon Mountains [New Mexico]," 30 Aug 1881; holotype at US!)

Narrow-leaflet bean.

Ours diffuse herbs with weak branched stems (0.5) 1–3 dm tall, arising from subterranean root-crown, diffuse but not twining, minutely scabrous with transparent, hooked and clavate, orange trichomes, the leaflets dark green, sometimes purple-margined; stipules subherbaceous, ovate or lanceolate, 1.5–4 mm long, often reflexed; leaf-stalks 2–4 cm long, the terminal leaflet distant 4–10 mm from the pair; leaflets varying from rhombic-ovate to broadly lanceolate or incipiently hastate, at apex obtuse, mucronulate, 3-nerved dorsally; flowers few, solitary and paired, loosely but sometimes shortly pseudoracemose, the peduncle and raceme-axis together 4–25 cm long, the pedicels 1.5–6 mm long; bracteoles 0.6–1.5 mm long; calyx campanulate, 2.5–3 mm long, the teeth ± 1 mm long, the broad pair behind the banner united about halfway; banner and wings pale violet, the coiled keel pallid, the banner and keel 5–7 mm long, the erect wings 7.5–12 mm long; pod falcately oblanceolate, 20–25 × 4–5 mm, plano-compressed, becoming plump at maturity, the