References:
Iltis, H. H. 1954. Studies in the Capparidaceae I. *Polanisia dodecandra* (L.) DC., the correct name for *Polanisia graveolens* Rafinesque. Rhodora 56: 65–70.
——— 1958. Studies in the Capparidaceae–IV. *Polanisia* Raf. Brittonia 10: 33–58.
——— 1966. Studies in the Capparidaceae VIII. *Polanisia dodecandra* (L.) DC.: Further notes on its typification. Rhodora 68: 41–47.

1. **Polanisia dodecandra** (L.) DC.

Cleome dodecandra L., Sp. Pl. 2: 672. 1753. *Polanisia dodecandra* (L.) DC., Prodr. 1: 242. 1824. *Jacksonia dodecandra* (L.) MacMill., Metasp. Minnesota Valley 270. 1892. ("Habitat in Indiis"; lectotype: Amer. material grown in Hortus Upsaliensis by Linnaeus; Herb. Linn.: No. 850.12, by H. H. Iltis, Rhodora 56: 66. 1954, at LINN; further elucidated in Rhodora 68: 45. 1966; see Iltis 1954 and 1966, for discussion.) = var. *dodecandra.*

P. graveolens Raf., Amer. J. Sci. 1: 379. 1818. *Cleome graveolens* (Raf.) Schult. & Schult. f., Syst. Veg. 7(1): 45. 1829. (Not typified, but said by Rafinesque to be "the *Cleome dodecandra* of Michaux and Pursh." Rafinesque took Linnaeus' geographic citation for *Cleome dodecandra* at face value, and considered that species was not American.) = var. *dodecandra.*

P. trachysperma Torr. & A. Gray, Fl. N. Amer. 1: 669. 1840. *Jacksonia trachysperma* (Torr. & A. Gray) Greene, Pittonia 2: 175. 1891. *Cleome trachysperma* (Torr. & A. Gray) Pax & K. Hoffm. in Engl. & Prantl, Nat. Pflanzenfam., ed. 2. 17b: 215. 1936. *P. dodecandra* var. *trachysperma* (Torr. & A. Gray) H. H. Iltis, Brittonia 10: 44. 1958. *P. dodecandra* subsp. *trachysperma* (Torr. & A. Gray) H. H. Iltis, Rhodora 68: 47. 1966. (*T. Drummond 6*, San Felipe de Austin, Texas, in 1835; holotype: GH!; isotypes: BM!, K!) = var. *trachysperma.*

Clammyweed, red-whisker clammyweed.

Simple to sparingly or rather freely branched, taprooted annual, 1–8 dm tall; *herbage* copiously stipitate-glandular; *leaves* 3-foliolate, the leaflets mostly 1–6 cm long and 5–25 mm wide, elliptic to obovate, entire; *flowers* in elongating terminal racemes, subtended by simple (or the lower by 3-foliolate) bracts; *sepals* distinct, 2.5–4 mm long, narrowly lanceolate, glandular like the herbage; *petals* white to pinkish, the longest ones (of ours) mostly 8–13 mm long, spatulate to obcordate, gradually narrowed to a long slender claw, the broad blade distally emarginate or more deeply lobed; *nectary* solid, obliquely truncate to shallowly concave at the tip, 1–2 mm high, bright orange or orange-red at the tip; *stamens* mostly (8) 12–27, exserted, the longest ones 12–30 mm long; *style* slender, soon withering and deciduous in fruit; *fruiting pedicels* widely ascending, 10–25 mm long; *fruiting stipes* short, curved, often ill-defined, 1–5 mm long; *silique* erect, 2–6 cm long, 5–8 mm wide, oblong to linear-fusiform, turgidly inflated but somewhat flattened, opening less than halfway to the base; *seeds* 2–3 mm long, dull, scruffy, shaken from the dry silique by wind; $2n = 20$.

In open places on various substrates, sometimes in disturbed sites, 760–2150 m; widespread in the U.S. (except the eastern parts), sw. Can., and n. Mex.; nearly throughout our range. Late May–early Oct.

Our plants, as here described, belong to var. *trachysperma* (Torr. & A. Gray) H. H. Iltis, which is widespread in western U.S. (but mainly e. of the Cascade-Sierran axis) and the Great Plains. In glaciated northeastern U.S., this gives way to var. *dodecandra,* with smaller flowers and fruits.

Clammyweed is a cheerful sight along roadsides and in dry washes in the Uinta Basin in mid-August after nearly all other plants have finished flowering for the season. The species gets its common name from the glandular leaves and stems, which feel cool or clammy to the touch. These glands are responsible for the characteristic foul smell of the plants.

2. CLEOME L. Spider-flower

Malodorous annuals (ours) or perennial herbs or woody shrubs (outside our range); *herbage* glabrous (viscid-glandular in *C. platycarpa*); *leaves* 3–5-foliolate, seldom simple, the leaflets entire, mucronate; *stipules* minute, scarious, bristle-like, occurring singly or in tufts of 2 or 3, or lacking in *C. platycarpa; flowers* borne in elongating terminal racemes with mostly simple bracts, handsome (in most species), more or less regular (ours); *sepals* 4, distinct or connate below; *petals* 4, overlapping in bud to form a closed corolla (the corolla basally fenestrate in late bud in *C. sparsifolia*), entire, in our species equal or nearly so and with short or no claw; *receptacle* in most species with a fleshy disk between the corolla and the androecium, the disk in ours typically produced adaxially into a prominent pointed to rounded appendage (obsolete in *C. platycarpa*); *stamens* 6 (ours), usually equal; *style* short and persistent on the replum after the valves have fallen, or wanting; *fruit* a usually long-stipitate silique or silicle (*C. platycarpa*), the valves reticulately veined, deciduous, the replum remaining attached to the plant; *seeds* 8–30 or more, free-falling.

A genus of 150–170 species, mainly of warm regions. (Name used by Theophrastus for some mustard-like plant.)

Our species are all sharply distinct.

Cleome hassleriana Chodat, native of southeastern South America, is the commonly cultivated spider-flower of gardens and borders, grown for its beautiful rose-purple to light pink or white flowers.

1 Stems glabrous or nearly so, not at all viscid-glandular; fruit a silique, linear or nearly so, several times as long as wide, glabrous; sepals distinct or connate below.
2 Siliques erect or strongly ascending; stamens about equaling or a little shorter than the petals; leaves 1- or 3-foliolate, the leaflets 3–11 (20) mm long; sepals distinct; petals bearing a nectary near their inside base ..... 1. *C. sparsifolia*
2 Siliques deflexed or pendent; stamens conspicuously longer than the petals, commonly about twice as long; leaves 3–5-foliolate, the leaflets mostly 10–60 mm long; sepals fused at the base to form a short tube; petals lacking a nectary. ..... 2. *C. serrulata*
1 Petals pink-purple, rarely white; leaflets 3 ..... 3. *C. lutea*
1 Petals bright yellow; leaflets mostly 5 .....

1 Stems spreading-hairy and viscid-glandular; fruit a silicle, ovate-oblong, strongly flattened, less than 3 times as long as wide, viscidly short-hairy; sepals distinct ..... 4. *C. platycarpa*

1. Cleome sparsifolia S. Watson

Cleome sparsifolia S. Watson, Botany [Fortieth Parallel] 32. 1871. *Carsonia sparsifolia* (S. Watson) Greene, Pittonia 4: 212. 1900. (*S. Watson 133*, Carson Desert, near Ragtown, 4000 ft, Churchill Co., Nev., July 1867; holotype: US!; isotypes: GH!, NY!)

Few-leaf beeplant, few-leaf spider-flower.

Malodorous, freely or diffusely branching, taprooted annual, 1–6 (10) dm tall; *herbage* glabrous throughout, or inconspicuously granular-scabrous in part (especially along the margins of the young leaves); *leaves* 1- or 3-foliolate, the leaflets 0.3–1.1 (2) cm long, 1–3 (7) mm wide, oblanceolate to rather narrowly elliptic or elliptic-oblong, mucronate, early deciduous so that older plants are often naked except for the upper leaves and bracts; *petioles* 0.6–2.5 (3.5) cm long; *stipules* minute, setaceous; *flowers* solitary in the upper axils, mostly not elevated above the herbage, only seldom forming more obvious few-flowered terminal racemes; *sepals* distinct, 1.5–2.5 mm long, ovate, pointed, often with irregular or ragged margins; *petals* rather dull lemon-yellow or greenish-yellow, (7) 11–13 mm long, 2–4 mm wide, tapering below but not clawed, bearing a nectary scale on the inside base; *disk* 0.5 mm long, contracted below, expanded above into a 4-lobed, glabrous plate 1.5 mm across, the largest barely projecting adaxially; *stamens* 6, about equaling or more often a little shorter than the petals; *fruiting pedicels* ascending to arcuately spreading, 5–10 mm long; *fruiting stipes* 2.5–6 mm long; *silique* erect or strongly ascending, glabrous, 2–4 cm long, 1.5–3 mm wide, linear, slightly compressed; *seeds* 2–4 mm long, obovoid, strongly flattened, light gray, mottled with black, minutely papillate, the claws fused; $2n = 32$.

Dunes and very sandy soil, tolerant to some degree of alkali, 650–1725 m; c. and w. Nev. (as far n. as s. Humboldt Co., and as far e. as ne. Nye Co.) and adjacent Calif. (Inyo and Mono Cos.). May–Oct.

The eight species of *Cleome* sect. *Thylacophora* Franch. [J. Bot. (Morot) 1: 37–41. 1887], native to the deserts of the Near East, are characterized by petal glands very similar to those of *C. sparsifolia*, probably a case of convergent evolution (Iltis 1955).

2. Cleome serrulata Pursh

Cleome serrulata Pursh, Fl. Amer. Sept. 2: 441. 1814. *Atalanta serrulata* (Pursh) Nutt., Gen. N. Amer. Pl. 2: 73. 1818, perhaps to be considered a provisional name; ex Raf., Sylva Tellur. 113. 1838. *Peritoma serrulatum* (Pursh) DC., Prodr. 1: 237. 1824. (*M. Lewis 43*, along the Missouri River near Vermillion, Clay Co., S.D., 25 Aug 1804; lectotype by J. L. Reveal, G. E. Moulton & A. E. Schuyler, Proc. Acad. Nat. Sci. Philadelphia 149: 16. 1999, at PH!)

Peritoma integrifolia Nutt., J. Acad. Nat. Sci. Philadelphia 7: 14. 1834. *C. integrifolia* (Nutt.) Torr. & A. Gray, Fl. N. Amer. 1: 122. 1838. (*N. J. Wyeth s.n.*, "Towards the southern sources of the Missouri," in 1833; holotype: BM!; isotype: NY!)

C. integrifolia var. *angusta* M. E. Jones, Proc. Calif. Acad. Sci. II. 5: 625. 1895. *Peritoma angustum* (M. E. Jones) Rydb., Fl. Rocky Mts. 371, 1062. 1917 [1918]. *C. serrulata* subsp. *angusta* (M. E. Jones) Tidestr., Contr. U.S. Natl. Herb. 25: 249. 1925. (*M. E. Jones 6057a*, Fredonia, 4500 ft, Coconino Co., Ariz., 21 Sept 1894; holotype: POM!; isotype: US!)

C. albiflora Cockerell, Proc. Acad. Nat. Sci. Philadelphia 48: 34. 1896, a misprint for *C. serrulata* f. *albiflora* according to Cockerell, Torreya 2: 42. 1902. *Peritoma serrulatum* f. *albiflorum* (Cockerell) Cockerell, Torreya 2: 42. 1902. (No specimens cited; possibly *T. D. A. Cockerell s.n.*, Watrous, Mora Co., N.M.)

Rocky Mountain beeplant, stinking clover, stinkweed.

Malodorous, simple to freely branched, taprooted annual, (1) 3–15 (20) dm tall; *herbage* somewhat glaucous, essentially glabrous, or sometimes inconspicuously villous-puberulent when young; *leaves* 3-foliolate, the leaflets 3, mostly 2–6 cm long, 5–17 mm wide, lanceolate to elliptic; *petioles* 0.5–4.5 cm long; *stipules* minute, setaceous; *flowers* densely crowded in elongating racemes, individually subtended by simple bracts much smaller than the foliage leaves; *calyx* 1.5–3.5 mm long, persistent, the well-developed tube from a little shorter to a little longer than the relatively broad but pointed, often serrulate-dentate lobes; *petals* bright pink-purple, rarely white, 7–11 mm long, with a fairly broad blade, sessile or with a definite basal claw 1–2 mm long; *disk* pubescent, with a flat and pointed, erose-dentate or 3-toothed adaxial appendage about 1.5–4 mm long; *stamens* 6, conspicuously exserted, commonly 2 or 3 times as long as the petals; *fruiting pedicels* ascending, mostly 10–15 (20) mm long; *fruiting stipes* more spreading than the pedicels, mostly 11–23 mm long; *silique* loosely more or less pendulous, glabrous, mostly 2–8 cm long, 3–9 mm wide, broadly linear; *seeds* 3–4 mm long, ovoid, brownish-black or mottled with light gray, irregularly warty-pustulose, the claws fused, the internal cavity very narrow; $2n = 32, 34$.

On a wide variety of substrates in open, often disturbed habitats, 700–2750 m; widespread in w. N. Amer.; adventive as far e. as Que., Ohio, Maine, Mass., and N.Y.; throughout much of our range. Late May–early Oct.

This species is frequently visited by bees and has for many years been cultivated as a source of nectar, hence the vernacular name, Rocky Mountain beeplant. The leaves, when boiled as a vegetable, are reported to be a good source of calcium and vitamin A and an important food source for the Navajo, reputedly having saved them from starvation several times. To make black paint for decorating baskets and pottery, the Hopi and other Pueblo Indians prepare a concentrate from boiled leafy stems (guaco) of the beeplant in early summer when the leaves have a high iron content. To dye wool greenish-yellow to mustard, the Navajo boil young plants with alum.

Cleome serrulata and *C. lutea* sometimes grow together, but there is no evidence of hybridization between the two.

3. Cleome lutea Hook.

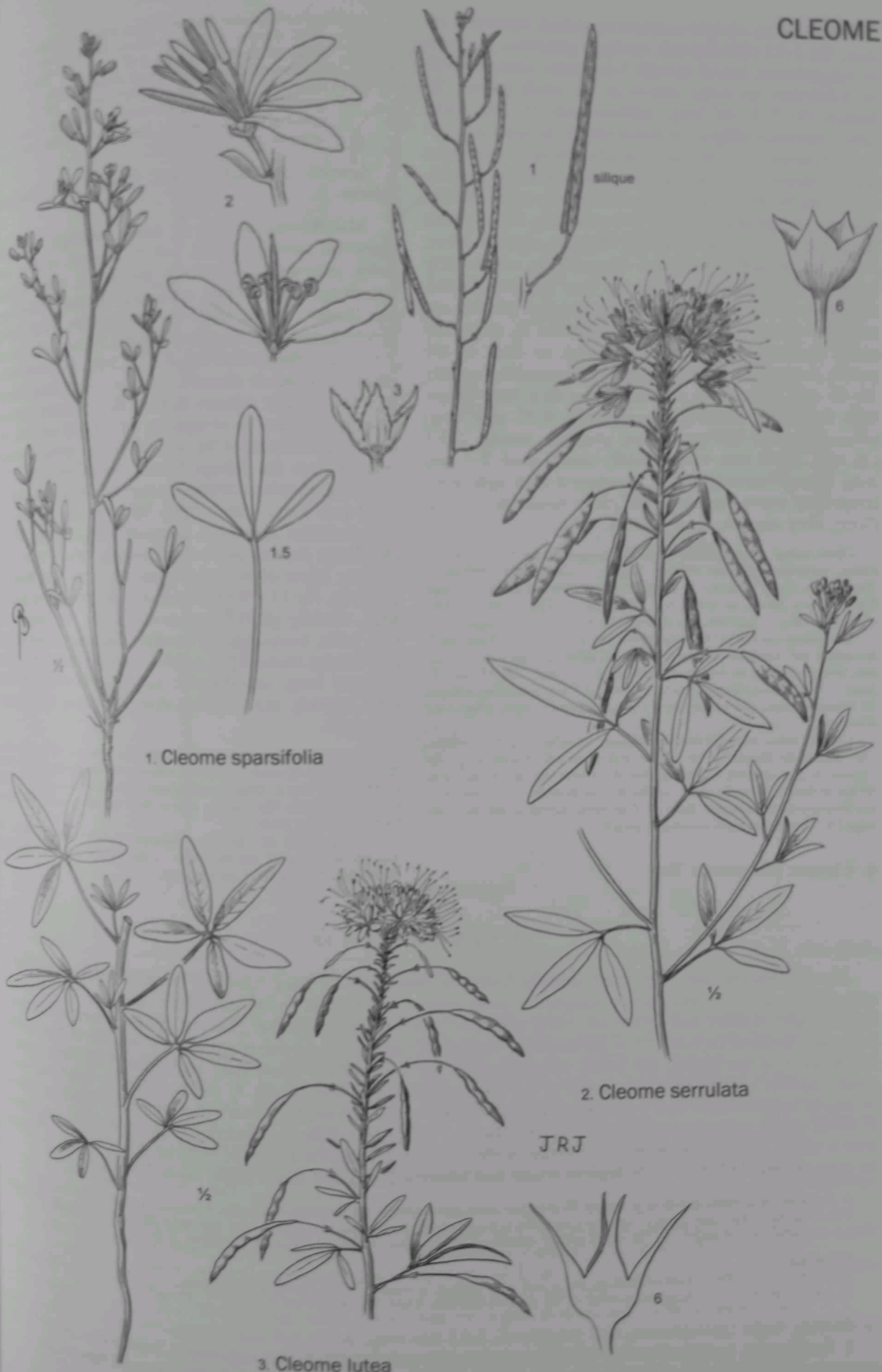
Cleome lutea Hook., Fl. Bor.-Amer. 1: 70. 1830. *Peritoma luteum* (Hook.) Raf., Sylva Tellur. 112. 1838. (*D. Douglas s.n.*, "Common in North-West America; on the banks of the Columbia; and in the vallies of the Blue Mountains, sparingly; and as far as to the Rocky Mountains"; holotype: K!)

Peritoma aurea Nutt., J. Acad. Nat. Sci. Philadelphia 7: 15. 1834. *C. aurea* (Nutt.) Nutt. ex Torr. & A. Gray, Fl. N. Amer. 1: 122. 1838. *Isexina aurea* (Nutt.) Raf., Sylva Tellur. 112. 1838. (*N. J. Wyeth s.n.*, "Towards the southern sources of the Missouri," in 1833; isotype: NY!)

Peritoma breviflorum Wooton & Standl., Contr. U.S. Natl. Herb. 16: 128. 1913. *C. breviflora* (Wooton & Standl.) Pax & K. Hoffm. in Engl. & Prantl, Nat. Pflanzenfam., ed. 2. 17b: 215. 1936. (*P. C. Standley 7282*, dry, stony hills about Shiprock, San Juan Co., N.M., 25 July 1911; holotype: US!)

Yellow beeplant, yellow spider-flower.

CLEOME



1. Cleome sparsifolia

2. Cleome serrulata

3. Cleome lutea

Malodorous, simple to freely branched, taprooted annual, (1) 3–15 (20) dm tall; *herbage* glaucous, glabrous or subglabrous; *leaves* mostly 5-foliolate, sometimes 3- or 4-foliolate on some leaves or on small plants, the leaflets (1) 2–5 cm long, seldom over 10 mm wide, rather narrowly elliptic or lance-elliptic to narrowly oblong; *petioles* 1–5 cm long; *stipules* minute, setaceous; *flowers* densely crowded in elongating racemes, individually subtended by simple bracts abruptly much smaller than the foliage leaves; *calyx* 2–3 mm long, with a rather short basal tube and tapering, distally slender lobes; *petals* bright golden-yellow, 5–10 mm long, with a fairly broad blade tapering to a narrow base but not clawed; *disk* with a flat and 3-toothed or pointed adaxial appendage about 1–2.5 mm long; *stamens* 6, conspicuously exserted, nearly or fully twice as long as the petals; *fruiting pedicels* ascending to spreading, mostly 10–15 mm long, from a little shorter to a little longer than the stipes; *fruiting stipes* mostly 4–15 mm long; *silique* more or less pendulous, glabrous, mostly 2–3.5 cm long, 2.5–4 mm wide, broadly linear; *seeds* 2–3 mm long, ovoid, brownish-black or mottled with light gray, irregularly warty-pustulose, the claws fused, the internal cavity very narrow; $2n = 32, 34$.

Open, sunny, often sparsely vegetated places, on various, often disturbed substrates, tolerant to some degree of alkali, 640–2400 m; e. Wash. to s. Calif. (mainly e. of the Cascade-Sierran axis) and Baja Calif., e. to s. Mont., w. and s. Wyo., w. Nebr., w. Colo., and nw. N.M. (San Juan Co.); found virtually throughout our range. Apr–Sept.

Our plants belong to the widespread var. *lutea*. South of our range in central and southern Arizona, southern California, and Baja California, this gives way to the much showier var. *jonesii* J. F. Macbr. [*C. jonesii* (J. F. Macbr.) Tidestr.], which grows at lower elevations and can be separated from our variety by its longer siliques, stipes, petals, and filaments.

Cleome lutea and *Cleomella hillmanii* sometimes grow together. The *Cleomella* flowers a bit earlier and is in full flower when the *Cleome* is just starting to flower, but the plants are about the same height at this stage and can be confused. The flowers of *Cleome lutea* are lemon-yellow, whereas those of *Cleomella hillmanii* are more orange (A. Tiehm, personal communication).

4. Cleome platycarpa Torr.

Cleome platycarpa Torr. in Wilkes, U.S. Expl. Exped. 17: 230. 1874. *Celome platycarpa* (Torr.) Greene, Pittonia 4: 232. 1900. (*W. D. Brackenridge & W. Rich 1370*, "Klamet River, Northern California," Klamath River, Siskiyou Co., Calif., early Oct 1841; holotype: NY!; isotype: US!) A. Heller (Muhlenbergia 2: 50. 1905) suggested that the type was collected at the north end of Shasta Valley, a few miles north of Montague, Siskiyou Co.

Golden beeplant, golden spider-flower, broadpod cleome.

Malodorous, simple or rather sparingly branched, taprooted annual, mostly 1–4 (6) dm tall; *herbage* viscidly pubescent, especially the stems, with slender, spreading, single-celled, eglandular-crispate, white hairs and longer, coarse, stiff, spreading, often gland-tipped, greenish, purplish, or yellow hairs 0.5–1 mm long; leaves 3-foliolate, the leaflets 0.5–3.5 cm long, 5–15 mm wide, elliptic to ovate or obovate; *petioles* 1–5 cm long, longer than the leaflets; *stipules* lacking; *flowers* sweet scented, densely crowded in elongating (to 30 cm) racemes, individually subtended by simple bracts abruptly much smaller than the foliage leaves; *sepals* distinct, 3.5–7 mm long, slender, attenuate; *petals* bright golden-yellow, 7–12 mm long, with a fairly broad blade, not clawed; *disk* obsolete; *stamens* 6, conspicuously exserted, 10–17 mm long; *fruiting pedicels* ascending, 10–17 mm long; *fruiting stipes* often more spreading or arching than the pedicels, (6) 11–19 mm long; *silicle* nodding to pendulous, viscidly short-hairy, mostly 1–2.8 cm long, 5–12 mm wide, ovate-oblong, strongly flattened, often only a few silicles maturing in a given inflorescence; *seeds* 2.5–3.3 mm long, suborbicular, brownish-black when mature, smooth, shiny, with a distinct oblong cleft cavity; $2n = 40$.

Open, sparsely vegetated, sunny habitats, often on barren clay soils, but sometimes in sandy soil or on volcanic tuff or diatomite, 600–1800 (2000) m; n. and e. Oregon and adjacent Idaho, s. to n. Calif. (mainly e. of the Cascade Mts.) and n. and w. Nev. (as far e. as sw. Elko Co.) (Mar) Apr–Aug (Oct).

Young plants of *Cleome platycarpa* closely resemble those of *Cleomella hillmanii*, but the stems of the former are viscid-glandular while those of the latter are glabrous.

3. CLEOMELLA DC.

Usually malodorous, taprooted annuals (ours) or perennials (2 Mex. species); *herbage* glabrous (except *C. obtusifolia*); *leaves* 3-foliolate or sometimes some simple, the leaflets entire, mucronate, apiculate, or tipped by a hair; *stipules* slender and setaceous, often cleft into 3–8 hair-like segments; *flowers* regular, borne in elongating, bracteate, terminal racemes, or in permanently condensed racemes or racemose glomerules, or some of them solitary in the axils of the leaves, the bracts usually simple but some of the lower ones sometimes 3-foliolate; *sepals* 4, small, distinct or very shortly connate at the base, persisting in fruit; *petals* 4, yellow, entire or nearly so, sessile or nearly so, convolute and overlapping in bud to form a closed corolla; *nectary disk* minute or obsolete; *stamens* 6, about equal; *style* persistent on the replum after the valves have fallen, sometimes as much as 4 mm long, setose; *fruit* a silicle, about as wide as or somewhat wider than long, borne on a short to elongate stipe, the valves cupulate to cone-shaped, deciduous, the replum round and remaining attached to the plant; *seeds* few, 1–10 (12).

A genus of 10 species, native to c. and w. N. Amer., s. to s. Mex. (Name a diminutive of *Cleome*.)

The decrease in fruit size from *Cleome* to *Cleomella* is accompanied by a minor decrease in seed size and a marked decrease in seed number. This is compensated for largely by the much greater number of flowers that mature into fruits in *Cleomella* (Iltis 1957).

References:
Holmgren, P. K. 2004. Lectotypifications and a new combination in western North American Cleomaceae. Brittonia 56: 103–106.
Payson, E. B. 1922. A synoptical revision of the genus *Cleomella*. Univ. Wyoming Publ. Sci., Bot. 1: 29–46.

1 Fruiting stipes (gynophores) well developed, 2–15 mm long; petals 3–8 mm long.
2 Herbage (at least the leaves) evidently spreading-hispidulous; style 2–4 mm long in fruit; plants often with widely spreading, mat-forming stems and branches; barely entering our range in Inyo Co.,