

*Luina hypoleuca* Benth. in Hook. Ic. Pl. 12: 36. 1873. (Lyall, Lake Chilukweyuk, Cascade Mts. of Wash.)

Perennial from a stout, branched, woody caudex, which sometimes apparently surmounts a taproot; stems several or many, 1.5-4 dm. tall, white-tomentose throughout, equably leafy, the leaves all (except the reduced lowermost ones) reasonably similar in size and shape, sessile, entire or nearly so, elliptic or ovate (often broadly so), commonly 2-6 cm. long and 7-35 mm. wide, 1.5-3.5 times as long as wide, white-tomentose on the lower surface, green and thinly tomentose or glabrate on the upper; basal leaves wanting; heads dull yellowish, slender-pedunculate in a short, corymbiform or subumbelliform inflorescence, smallish, the thinly tomentose involucre mostly 5-7 (8) mm. high, commonly 10- to 17-flowered.

Cliff crevices, talus slopes, and similar rocky places; c. B. C. and Wash. (from the Cascades westward), s. less commonly in the coast ranges to c. Calif. June-Oct.

LUINA NARDOSMIA (Gray) Cronq. hoc loc.

*Cacalia nardosmia* Gray, Proc. Am. Acad. 7: 361. 1868. *Adenostyles nardosmia* Gray, Proc. Am. Acad. 8: 631. 1873. *Cacaliopsis nardosmia* Gray, Proc. Am. Acad. 19: 50. 1883. (Bolander, near the Geysers in Sonoma Co., Calif.; lectotype by Rydberg)

LUINA NARDOSMIA var. GLABRATA (Piper) Cronq. hoc loc. *Cacaliopsis nardosmia* var. *glabrata* Piper, Bull. Torrey Club 29: 222. 1902. *C. nardosmia* ssp. *glabrata* Piper, Contr. U. S. Nat. Herb. 11: 594. 1906. *C. glabrata* Rydb. N. Am. Fl. 34: 316. 1927. (Suksdorf, Klickitat Co., Wash., in 1883)

Perennial from a woody rhizome, 4-10 dm. tall, leafy chiefly toward the base, the middle and upper cauline leaves strongly reduced; principal leaves long-petiolate, with broad, palmately cleft blade up to 2 dm. long and 2.5 dm. wide, the segments again coarsely toothed or lobed; leaves green above, rather thinly tomentose beneath, often glabrate in age; heads several in a racemiform or narrowly corymbiform inflorescence, rather large, the involucre 10-17 mm. high, the disk 12-30 mm. wide.

Meadows and open woods along the summit and the e. side of the Cascades in Wash. and immediately s. of the Columbia R. in Oreg.; perhaps irregularly southward in the Cascades; Klamath area (and adj. s. Willamette Valley) of s. w. Oreg. and adj. Calif., and s. in the Coast Range area to Sonoma Co., Calif. May-July. The var. *nardosmia*, occurring in Calif. and s. w. Oreg., differs from our plants, as described above, in its somewhat less robust habit, and smaller leaves, which are at first tomentose above as well as beneath, and in its slightly larger heads. Our plants may be distinguished as var. *glabrata* (Piper) Cronq. Both varieties occur in the Klamath area.

Basal leaves of *Petasites frigidus* var. *palmatus* closely resemble those of *Luina nardosmia*, but may be distinguished by the slender, divergent, small callous teeth, which are wanting from *L. nardosmia*.

- LUINA SERPENTINA Cronquist, hoc loc. (Cronquist 7620, steep serpentine slopes along Fields Creek, 17 miles s. e. of Dayville, Grant Co., Oreg., Twp. 14 S., R. 28 E., S. 1, elev. 3300 feet; holotype at the N. Y. Bot. Gard.)

Perennial from a stout, branching, woody base, which may be wholly prostrate and rooting, or may have branches arising as much as 2 dm. from the ground, in any case forming colonies several m. across; stems of the season numerous, densely white-tomentose, 3-5 dm. tall, rather densely and equably leafy; leaves densely tomentose beneath, thinly so above, lanceolate or narrowly elliptic, entire, acute, the middle and lower ones tapering to an often ill-defined petiolar base 1-3 cm. long, the upper more or less sessile; leaves 5-11 times as long (petiole included) as wide, those near or shortly below the middle the largest, 7-13 cm. wide, the upper and lower gradually reduced; basal leaves wanting; heads several in a short, corymbiform inflorescence, rather bright yellow at first, later dull, the disk well surpassing the involucre in height, about 1 cm. wide; involucre white-tomentose, 8-10 mm. high, composed of 10-17 (avg. 13) bracts; flowers 15-29 (avg. about 21) in each head.

A *L. hypoleuca* differt foliis angustioribus usque ad 13 cm. longis 2 cm. latis, eis ma-

loribus plus minusve petiolatis, capitulis grandioribus, phyllareis ca. 13, floribus ca. 21.

Known only from the type station in Grant Co., Oreg., where many plants occur in a very limited area. July.

*Luina stricta* (Greene) Rob. Proc. Am. Acad. 49: 514. 1913.

*Prenanthes stricta* Greene, Pitt. 2: 21. 1889. *Psacalium strictum* Greene, Pitt. 2: 228.

1892. *Rainiera stricta* Greene, Pitt. 3: 291. 1898. (Greene, Mt. Rainier, Aug. 20, 1889)

*Luina piperi* Rob. Bot. Gaz. 16: 43. 1891. (*Piper*, Mt. Rainier, Aug., 1888)

Fibrous-rooted perennial from a short, stout rhizome or branched caudex, mostly 5-10 dm. tall, essentially glabrous except for the thinly tomentose-puberulent involucre and peduncles; basal and lowermost cauline leaves large and persistent, broadly oblanceolate or broader, commonly 1.5-3.5 dm. long (including the petioliform base) and 2-7 cm. wide; middle and upper cauline leaves progressively reduced and becoming sessile; inflorescence 1-4 dm. long, thyrsoid-racemiform, its bracts seldom conspicuous; involucre narrow, its bracts mostly about 5-6, 7-9 mm. long, the midvein thickened; flowers few, typically about 5.

Meadows and moist open slopes at high altitudes in the mts.; common in the vicinity of Mt. Rainier, southward at scattered stations in the Cascades to s. Lane Co., Oreg. July-Aug.

#### *Lygodesmia* D. Don Rush Pink; Skeletonweed

Flowers all ligulate and perfect, pink or purple, rarely white; involucre cylindrical, of 4-8 principal bracts, with a few more or less reduced outer ones; receptacle naked; achenes linear, subterete, prominently several-nerved or nerveless, glabrous, generally narrowed toward the summit and sometimes also toward the base; pappus of numerous capillary bristles; annual or perennial, more or less rushlike herbs with milky juice and alternate, mostly linear or subulate leaves (these sometimes reduced to mere scales, or the lowermost ones in some extralimital species more ample and oblong or spatulate.)

About half a dozen species, native chiefly to w. U. S. and adj. Mex., one species in Fla. and Ga. (Name from the Greek *lygos*, a pliant twig, and *desme*, bundle, from the habit of the plant.)

- 1 Branches spine-tipped, rigid, divaricate; stems several from a taproot and branching caudex, bearing tufts of pale or brownish wool at the base L. SPINOSA
- 1 Branches not spine-tipped; plants single-stemmed from a deep-seated creeping root, without wool L. JUNCEA

*Lygodesmia juncea* (Pursh) D. Don, Edinb. New Phil. Journ. 6: 311. 1829.

*Prenanthes juncea* Pursh, Fl. Am. Sept. 498. 1814. (On the banks of the Missouri)

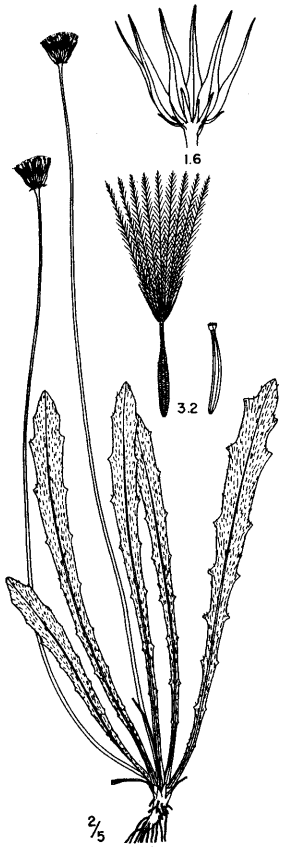
Glabrous perennial from a deep-seated creeping root, the stem much branched, 1.5-6 dm. tall, grooved-striate; leaves linear, seldom as much as 4 cm. long and 3 mm. wide, the upper reduced to mere subulate scales; heads terminating the branches, 4- to 10 (mostly 5)-flowered, the flowers pink or rarely white; involucre 9-16 mm. high, or slightly larger in fruit, with 4-8 (chiefly 5) principal bracts and several much reduced outer ones; achenes several-nerved, about 6-7 mm. long.

Dry, open places, often in sandy soil; a characteristic plains species, extending westward occasionally as far as e. Wash.; Minn. to Ark., w. to s. B. C., e. Wash. and Ariz. June-Sept.

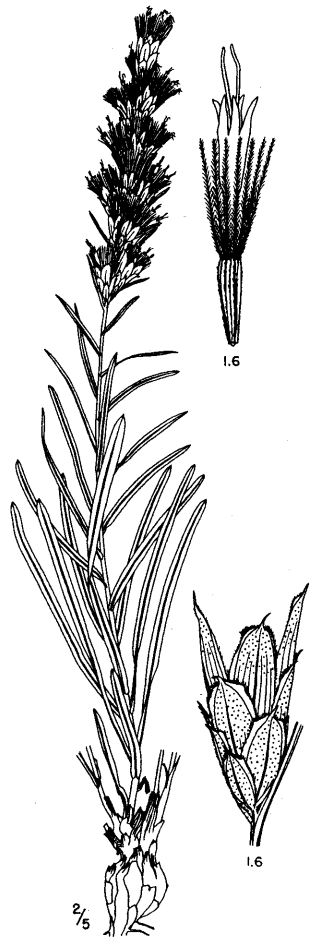
The more southern *L. grandiflora* (Nutt.) T. & G., a related but wholly distinct species, approaches our range on the upper Snake R. plains in Ida. It differs from *L. juncea* in its larger leaves (the better developed ones commonly 4-10 cm. long) and larger heads (involucre usually 18-22 mm. high, achenes mostly 12-16 mm. long).

*Lygodesmia spinosa* Nutt. Trans. Am. Phil. Soc. II. 7: 444. 1841.

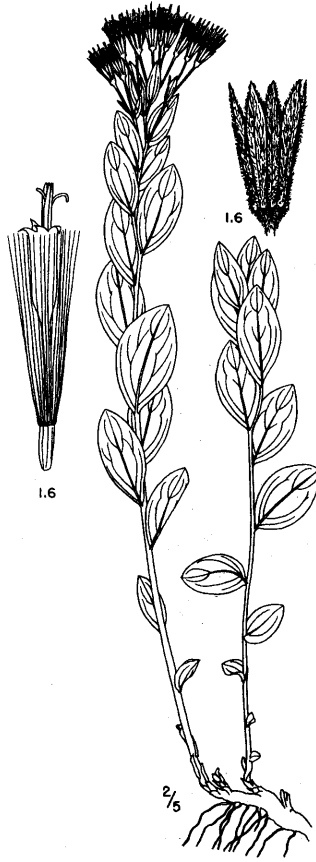
*Pleiocanthus spinosus* Rydb. Fl. Rocky Mts. 1023. 1917. (*Nuttall*, in the Rocky Mt. plains toward Calif.)



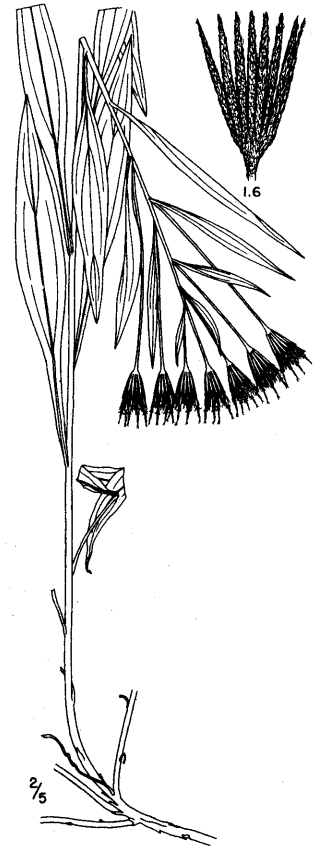
*Leontodon nudicaulis*



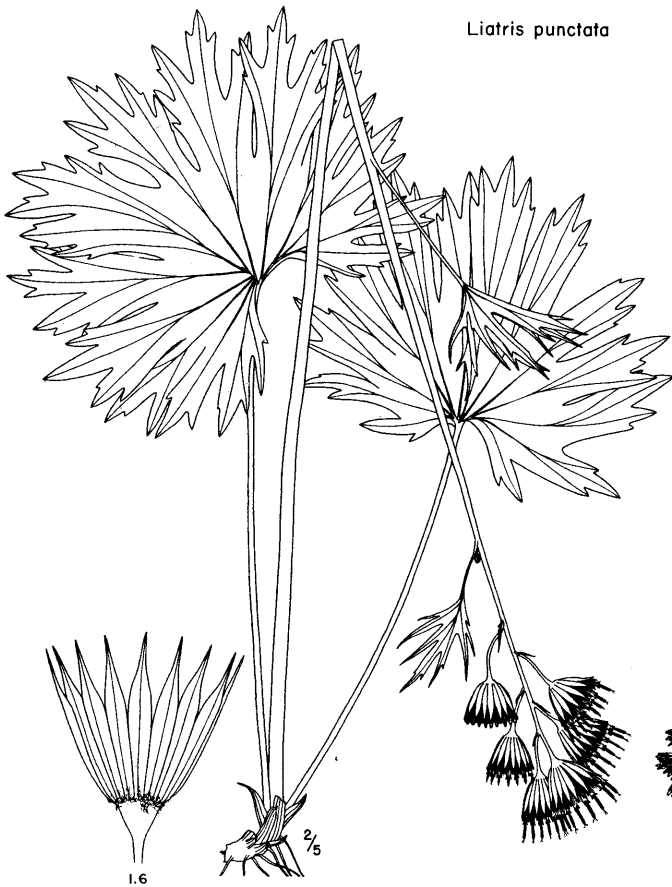
*Liatris punctata*



*Luina hypoleuca*



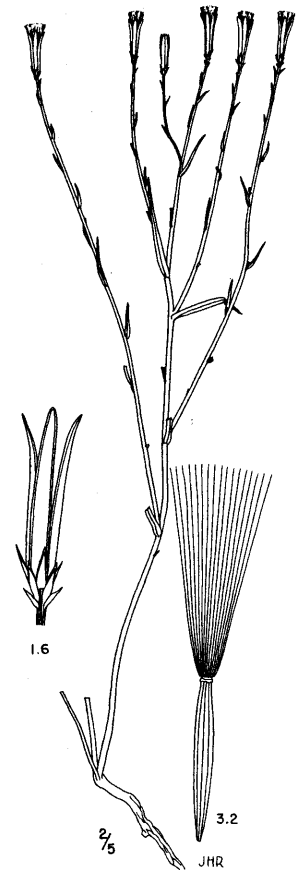
*L. serpentina*



*L. nardosmia* var. *glabrata*



*L. stricta*



*Lygodesmia juncea*