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A FLORA OF NEVADA. NO. 32.

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ONAGRACEAE OF NEVADA

by

Philip A. Munz

November 1, 1941

Issued by

The Division of Plant Exploration and Introduction,
Bureau of Plant Industry,
U. S. Department of Agriculture,
Washington, D. C.

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Work Projects Administration of Nevada,
Projects, O. P. 65-2-04-13, W. P. 658;
O. P. 165-2-04-21, W. P. 752.

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Collaborator

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Address all queries concerning this publication to the Division of Plant Exploration and Introduction, Bureau of Plant Industry, U. S. Department of Agriculture, Washington, D. C.

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ONAGRACEAE OF NEVADA

By Philip A. Munz*

Herbs or rarely shrubs, with simple alternate or opposite leaves; stipules none; flowers perfect, axillary or in terminal racemes, the parts mostly in 2's or in 4's; hypanthium adnate to ovary and usually prolonged beyond; sepals 4 (sometimes 2 or 5); petals 4 (sometimes 2 or 5), inserted at summit of hypanthium; stamens as many or twice as many as petals, borne at summit of hypanthium; ovary inferior, 4- (sometimes 2- or 5-) celled; style 1; stigma 4-lobed, or capitate, or discoid; fruit a capsule, rarely nut-like.

About 20 genera and perhaps 400 species of wide distribution, particularly well represented in western North America, including a number of plants of great use as ornamentals: Evening-primroses, Godetias, Fuchsias, etc.

KEY TO GENERA

Flowers 2-merous; fruit indehiscent, obovoid, usually with hooked hairs . . . . . .9. Circaea.

Flowers 4-merous.

Seeds with tuft of hairs (coma) at one end.

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* Professor of Botany, Pomona College, Claremont, California.

Hypanthium 2-3 cm. long and funnelform, with row of 8 scales within at about one-half its length; flowers scarlet.

1. Zauschneria.

Hypanthium less than 1 cm. long or lacking, without scales within; flowers not scarlet . . . . . .2. Epilobium.

Seeds without coma.

Fruit indehiscent, nut-like . . . . . .8. Gaura.

Fruit a dehiscent capsule.

Ovary 2-celled; hypanthium not prolonged beyond the ovary; flowers minute; stems with capillary branches . . . . . .7. Gayophytum.

Ovary 4-celled; hypanthium prolonged beyond the ovary.

Anthers usually versatile, attached near the middle (difficult to determine in minute flowers); petals yellow or white, rarely red except on aging . . . . . .6. Oenothera.

Anthers innate, attached near the base, erect; petals white or pink.

Sepals erect; petals small or wanting; pollen in tetrads . . . . . .3. Boisduvalia.

Sepals reflexed or the tips remaining united and turned to one side in anthesis; pollen not in tetrads.

Petals distinctly clawed, the claw at least one-fourth as long as the blade.

4. Clarkia.

Petals not at all or scarcely clawed, the claw not more than one-tenth as long as the blade. . . . . 5. Godetia.

1. ZAUSCHNERIA Presl.

ZAUSCHNERIA Presl, Rel. Haenk. 2: 28, pl. 52. 1831.

Erect or decumbent perennials, somewhat woody and with shredding bark at the base. Leaves sessile or nearly so, opposite or alternate, more or less fascicled. Inflorescence spicate, the flowers large, horizontal, fuchsia-like. Hypanthium scarlet, globose at base, then narrowed into a long tube bearing within the narrow part a transverse row of 8 lobe-like appendages, 4 erect and 4 deflexed. Sepals 4. Petals 4. Stamens 8, the alternate ones shorter; anthers versatile. Ovary 4-celled; stigma 4-lobed, peltate to capitate. Capsule imperfectly 4-celled, many-seeded. Seeds oblong, narrowed at base, comose at apex. (Named for Dr. M. Zauschner, a Professor of Natural History at the University of Prague).

Five species, one in Nevada.

1. ZAUSCHNERIA LATIFOLIA (Hook.) Greene, Pittonia 1: 25. 1887.

Z. californica var. latifolia Hook., Bot. Mag., pl. 4493. 1850.

Z. californica subsp. latifolia (Hook.) Keck, Carnegie Inst. Pub. 520: 220. 1940.

Z. argentea A. Nels., Proc. Biol. Soc. Wash. 28: 173. 1905.

Stems 1-6 dm. high; plant green to grayish-green, villous to tomentose, often silky, often somewhat glandular; leaves mostly opposite, ovate to lance-ovate, tapering at both ends or rounded at base, 8-17 mm. wide, more or less denticulate with evident lateral veins; hypanthium scarlet, 2-3 cm. long; sepals erect, lanceolate, 8-10 mm. long; petals 2-cleft, 8-15 mm. long; capsule sessile or nearly so, linear, 4-angled, 8-nerved, with short beak, often curved, 1.5-2 cm. long, many-seeded; seeds broad, 1.5 mm. long.

Dry slopes in the Sierra Nevada of California. Apparently rare in Washoe County, Nevada.

2. EPILOBIUM L.

EPILOBIUM L. Sp. Pl. 347. 1753.

Usually herbaceous, sometimes suffruticose; annual, or more often perennial and wintering by rosettes, turions, etc. Leaves opposite or alternate, sessile or short-petioled, denticulate or entire. Flowers axillary or in terminal racemes or panicles, perfect. Hypanthium short or not prolonged beyond the ovary. Sepals 4. Petals 4, usually notched, purplish, pink, white or yellow. Stamens 8, the alternate ones shorter. Stigma oblong or 4-lobed. Capsule elongate, subcylindric to fusiform, or clavate, 4-celled, loculicidal. Seeds with tuft of silky hairs (coma) at upper end. (Greek, upon a pod; the flowers and capsule appearing together).

Over 100 species, cosmopolitan, except in the tropics.

KEY TO SPECIES

1. Hypanthium not prolonged above the ovary; flowers large, the petals 1-2 cm. long, entire, spreading.

(Subgenus Chamaenerion).

2. Style pilose at base, exceeding stamens; leaves 5-20 cm. long, membranaceous, reticulate-veiny beneath, with lateral veins confluent in marginal loops; racemes many-flowered, elongate, not leafy; seeds oblong, 1-1.3 mm. long.

1. E. angustifolium.

2. Style glabrous, shorter than stamens; leaves 2-6 cm. long, thick and fleshy, glaucous, not veiny; racemes few-flowered, short, leafy; seeds fusiform, 2 mm. long. .2. E. latifolium.

1. Hypanthium prolonged above the ovary; flowers usually smaller, the petals ascending. . . . . .(Subgenus Euepilobium).

3. Flowers large, the petals 14-20 mm. long; stigma evidently lobed; leaves 1-2 cm. long, subsessile, rounded at base.

3. E. obcordatum.

3. Flowers smaller, the petals 2-12 mm. long; stigma usually oblong.

4. Plant suffruticose, with several stems from a woody caudex, 1-3 dm. high; axils with fascicles of bract-like leaves.

4. E. nevadense.

4. Plant not suffruticose, or if slightly so, not with axillary fascicles.

5. Annuals; stems with exfoliating epidermis. Plants of dry situations.

6. Stems 3-9 dm. tall, glabrous except in upper parts; leaves usually alternate, with fascicles in axils; hypanthium 1-3 mm. long. . . . . .5. E. paniculatum.

6. Stems less than 3 dm. tall, puberulent throughout; leaves mostly opposite, without fascicles; hypanthium scarcely 1 mm. long. . . . . .6. E. minutum.

5. Perennials; epidermis not exfoliating. Mostly in moist situations.

7. Rootstocks bearing turions (globose or ovoid winter buds with fleshy overlapping scales) which may be rather loose in E. exaltatum.

8. Petals 5-9 mm. long; hypanthium about 3 mm. high, equally wide at summit; stems divaricately branched above. . . . . .7. E. exaltatum.

8. Petals shorter; hypanthium shorter, narrower.

9. Stems glabrous to pubescent, but not with decurrent lines of hair from leaf-bases; stems mostly simple. . . . . 8. E. brevistylum.

9. Stems with decurrent lines of hair from the leaf-bases.

10. Leaves linear to lance-linear, often with decurrent bases, not crowded, the margins often irregularly dentate. . . . . .9. E. Halleanum.

10. Leaves, at least the basal, ovate with rounded

bases, often crowded, the leaf-margins mostly entire. . . . . 10. *E. saximontanum*.

7. Rootstocks not turioniferous, although sometimes with rather fleshy rosettes.

11. Plant pallid, glaucous and glabrous almost throughout. 11. *E. glaberrimum*.

11. Plant not glaucous, but green to canescent.

12. Stems mostly 1-2 dm. tall, simple above, with a few pairs of opposite leaves.

13. Leaves sessile, oblong or linear, suberect; stem slender. . . . . .12. *E. oregonense*.

13. Leaves more or less distinctly petioled and spreading.

14. Plant densely caespitose, stoloniferous; stems sigmoidally bent, mostly less than 1 dm. tall; petals purplish to rose, 4-6 mm. long; leaves 1-2 cm. long.

15. Capsule linear, slender, 1 mm. or less thick, 2-4 cm. long; seeds smooth, 1 mm. long; buds nodding. . . . . 13. *E. alpinum*.

15. Capsule subclavate, stouter, 1.5-2 mm. thick, 2-2.5 cm. long; seeds papillose, 1.5-2 mm. long; buds erect. . . 14. *E. clavatum*.

14. Plant not so densely caespitose; stems erect, 1-3 dm. tall; leaves 1.5-5 cm. long.

16. Petals purplish, 5-10 mm. long; seeds papil-

lose, 1 mm. long. . . . 15. E. Hornemannii.

16. Petals white or with pink tips, ca. 3 mm. long; seeds smooth, 1 mm. long.

16. E. lactiflorum.

12. Stems mostly 3-10 dm. tall, usually freely branched, especially above; innovation by rosettes.

17. Inflorescence glandular-pubescent with spreading hairs. Common. . . . . .17. E. adenocaulon.

17. Inflorescence not glandular or only slightly so. Not common.

18. Floral branchlets, buds, sepals not usually white-pubescent; hairs usually spreading.

17a. E. adenocaulon var. perplexans.

18. Floral branchlets, etc. white-pubescent with incurved hairs. . . . . 18. E. californicum.

1. EPILOBIUM ANGUSTIFOLIUM L. Sp. Pl. 347. 1753.

Chamaenerion angustifolium Scop. Fl. Carn. ed. 2, 1: 271. 1772.

Epilobium spicatum Lam. Fl. Fr. 3: 482. 1778.

Perennial, with erect, mostly simple and few stems, 0.3-2.5 m. tall, glabrous below, commonly puberulent above; leaves alternate, lanceolate to linear-lanceolate, acute, nearly entire, sessile or nearly so, 5-15 (20) cm. long; flowers numerous in long terminal racemes, with small almost linear bracts; pedicels 5-12 mm. long; sepals lance-linear, 8-12 mm. long, commonly canescent-puberulent throughout, tinged lavender; petals li-

lac-purple, rose or even white, clawed, obovate, 8-18 mm. long; filaments dilated near base; stigma-lobes slender and elongate; capsule 5-7 cm. long; seeds oblong, 1-1.4 mm. long, with long dingy coma.

In fairly moist places, Transition to Hudsonian Zones. Widely and generally distributed. North America, Eurasia. Specimens seen from Ormsby, Storey, Douglas, Nye, Humboldt, Elko and Clark Counties, Nevada.

2. EPILOBIUM LATIFOLIUM L. Sp. Pl. 347. 1753.

Chamaenerion latifolium Sweet, Hort. Brit. ed. 2, 198. 1830.

Stems several from a caespitose rootstock, depressed or arched-ascending, 1-6 dm. tall, glabrous below, puberulent above; leaves elliptic-ovate to lanceolate, subopposite, fleshy, glaucous on both surfaces, entire, not veiny, acute, quite sessile, 2-6 cm. long; racemes short, few-flowered, leafy-bracted; pedicels 5-10 mm. long; sepals lanceolate, purplish, 13 mm. long; petals purple to rose to white, purple-veined, rhombic-ovate, 1.5-2.5 cm. long; style glabrous, shorter than stamens; stigma-lobes oblong; capsule canescent, 5-8 cm. long; seeds fusiform, 2 mm. long.

Wet places along streams, Arctic-Alpine Zone, North America and Eurasia. Seen from altitude of 10,000 feet, East Humboldt Mts., Elko Co., Nevada.

3. EPILOBIUM OBCORDATUM A. Gray, Proc. Amer. Acad. 6: 532. 1865.

Stems several from caespitose suffrutescent base, decumbent, 5-15 cm. tall, simple, glabrous below, usually puberulent above,

leafy; leaves opposite, usually crowded, glabrous and glaucous, ovate, almost entire, 1-2 cm. long, obtuse, sessile or nearly so; flowers 1 to few, born singly in uppermost axils; pedicels 2-20 mm. long, slender; hypanthium funnelform, 2-4 mm. long; sepals lanceolate, 9-12 mm. long; petals rose-purple, broadly obcordate, 12-20 mm. long; longer stamens two-thirds the petals; style equalling petals, glabrous, purplish; stigma-lobes short; capsule cylindric-clavate, 2.5-3.5 cm. long; seeds 1.5 mm. long, finely papillose.

Ridges and slopes of Hudsonian and Arctic-Alpine Zones; central Oregon and Sierra Nevada of California, Nevada, and Idaho. Nevada collections seen from Washoe and Elko Counties.

4. EPILOBIUM NEVADENSE Munz, Bull. Torrey Bot. Club 56: 166. 1929.

Low, suffruticose, caespitose, from branched caudex, the branches prostrate, brown, with exfoliating bark, giving rise to stems 1-3 dm. long, leafy throughout; leaves subglabrous, denticulate, green or purplish, on short pubescent petioles; lower leaf-blades oblong, obtuse, opposite, 8-15 mm. long; principal cauline ones alternate, more narrow and more acute, with fascicles of bract-like leaves in axils; flowers few to several on each stem, in loose racemes, sessile or on short glandular pedicel-like stems; hypanthium glandular, 2-3 mm. long, tubular; sepals 3-5 mm. long; petals violet-purple, obcordate, 6-7 mm. long; capsules subfusiform, glandular-pubescent, 8-12 mm. long, 1.5-2 mm. thick; seeds smooth, brown, 1.5

mm. long.

Talus slopes, Upper Sonoran and Transition Zones, Charleston Mts., Clark Co., Nevada.

5. EPILOBIUM PANICULATUM Nutt. ex Torr. & Gray, Fl. No. Amer. 1: 490. 1840.

Annual, erect, the stem simple and with shreddy epidermis below, paniculately branched above, 3-9 (15) dm. tall, glabrous almost throughout; leaves linear-lanceolate to linear, 2-3 (5) cm. long, usually alternate, with fascicles of smaller ones in axils, short petioled, remotely denticulate; flowers in lax racemes on filiform branches; bracts subulate; pedicels 0.5-1.5 cm. long; glabrous; ovary glandular-puberulent; hypanthium 2-3 (4) mm. long; petals rose to lilac, 5-6 mm. long; style about $\frac{1}{2}$ the petals; capsule 2 cm. long, 4-angled, linear-clavate, beaked; seeds obovoid, flattened, 2 mm. long, with tawny coma.

A species of the western United States and British Columbia, growing on rather dry slopes and benches of the Upper Sonoran and Transition Zones. Known from Nevada in the following forms:

forma ADENOCLADON Haussknecht. Hypanthium 2-3 mm. long; pedicels and ovaries glandular-puberulent; petals colored. Material seen from Washoe, Humboldt, Lander, Nye, Eureka and Elko Counties.

forma SUBULATUM Haussknecht. Hypanthium 2-3 mm. long; pedicels glabrous; ovaries glabrous; petals colored. Nevada material seen from Washoe, Lander and Humboldt Counties.

forma TRACYI (Rydb.) St. John. Hypanthium 1-2 mm. long; pedicels and ovaries glabrous; petals white. Seen from Washoe Co.
forma LAEVICAULE (Rydb.) St. John. Hypanthium 4-5 mm. long; pedicels glabrous; ovaries glandular; petals rose. Seen from Elko Co.

6. EPILOBIUM MINUTUM Lindl. ex Hook. Fl. Bor. Am. 1: 207. 1834.

Annual, 5-30 cm. tall, usually diffusely branched, puberulent throughout; leaves mostly opposite, oblong-lanceolate to oblanceolate or lanceolate, entire or nearly so, 1-2 cm. long, on a much shorter petiole; flowers in axils of somewhat reduced upper leaves; pedicels 3-10 mm. long; hypanthium less than 1 mm. long; sepals about 1.5 mm. long; petals rose-lavender to white, emarginate, 2-4 mm. long; capsule subclavate, arcuate, 1.5-2.5 cm. long, beaked; seeds broadly obovoid, smooth, barely 1 mm. long.

British Columbia to central California, Montana and Arizona. To be expected from Nevada.

7. EPILOBIUM EXALTATUM Drew, Bull. Torrey Bot. Club 16: 151. 1889.

Perennial, with large turions; stems 3-9 dm. tall, rather slender, more or less pubescent, freely branched above with very slender branches; leaves lance-ovate, serrulate, nearly or quite sessile, 5-12 cm. long, the uppermost much reduced; flowers near ends of glandular-pubescent branches; pedicels 5-10 mm. long in fruit; hypanthium 2-3 mm. long, almost as

wide; sepals suberect, 3-4 mm. long; petals pink to rose-purple, 5-10 mm. long; capsules 3-5 cm. long; seeds beaked, rugose, 1 mm. long, coma white.

Wet places, Transition Zone, California to Washington and Idaho. Nevada material seen from Washoe, Ormsby, Esmeralda and Elko Counties.

8. EPILOBIUM BREVISTYLUM Barbey in Brewer & Watson, Bot. Calif. 1: 220. 1876.

Perennial, with compact turions, the dried scales of which persist at the base of the stem during the succeeding year; stems erect, simple or subsimple, slender, 2-6 dm. tall, glabrous below, crisp-pubescent or somewhat glandular about the inflorescence; leaves mostly opposite, ovate to elliptic-lanceolate or even linear-lanceolate, denticulate, with rounded sessile base, 2-4 cm. long, not crowded; flowers several; fruiting pedicels 5-15 mm. long; sepals 2-3 mm. long; petals purplish or paler, emarginate, 3-5 mm. long; capsules 4-6 cm. long; seeds about 1.5 mm. long, papillate.

Wet places, Transition to Hudsonian Zones, Washington to southern California, Montana and Colorado. Nevada material seen from Washoe, Ormsby, Lyon, Esmeralda, Humboldt and Elko Counties.

var. URSINUM (Parish) Jepson, Man. Fl. Pls. Calif., 670. 1925.

E. ursinum Parish ex Trelease, Ann. Rep. Mo. Bot. Garden 2: 100. 1891.

Lower stem and leaves pilose with spreading hairs. Range of the species. Nevada material seen from Washoe Co.

var. TENUE (Trel.) Jepson, l.c.

E. delicatum var. tenue Trelease, Ann. Rep. Mo. Bot. Gard. 2: 99. 1891.

Low, glabrous, 1-1.5 dm. tall; leaves oblong-linear, remote, subentire, erect, obtuse. Uncommon, with general range of the species. Nevada material seen from White Pine County.

9. EPILOBIUM HALLEANUM Hausskn., Mon. Epilobium. 261. 1884.

E. Drummondii Hausskn. l. c. 271.

Perennial with small turions; stems erect, simple, or nearly so, 1-4 dm. high, subglabrous below, with lines of hair from the decurrent bases of the leaves, glandular-puberulent in upper parts; leaves lance-linear, erect, some with clasping base, 1.5-4 cm. long, serrulate to entire, acute; flowers small; hypanthium 1-1.5 mm. long; sepals 2-3 mm. long; petals 2-4 mm. long, white to purplish; fruiting pedicels 3-5 mm. long; capsules 2-5 cm. long; seeds 1-1.5 mm. long, beaked.

Wet places in Transition Zone, British Columbia to California, Montana, Colorado. Collected by Watson in Diamond Vale, Elko Co.

10. EPILOBIUM SAXIMONTANUM Hausskn. Oesterr. Bot. Zeitschr. 29: 119. 1879.

E. ovatifolium Rydb. Bull. Torrey Bot. Club 31: 567. 1904.

Perennial, turioniferous; stems simple or branched, often clustered, 1-4 dm. high, with decurrent lines of hair from leaf-bases; leaves opposite or upper ones alternate, the lower ones ovate, with rounded bases, upper may be elliptical or with subacute bases; leaves sessile or with petioles up to 2 mm. long, serrulate to entire, acute, 2-3 (5) cm. long, 1.2-1.5 cm. wide; petals white, pink or purplish, 3-5 mm. long; capsules 4-6 cm. long, crisp-hairy; seeds about 1 mm. long, brownish.

Wet places, Transition to Hudsonian Zones, Alberta to Colorado and Arizona. Material seen from Washoe, Elko and Clark Counties, Nevada.

11. EPILOBIUM GLABERRIMUM Barbey ex Brewer & Watson, Bot. Calif. 1: 220. 1876.

Perennial, with several stems from branching scaly rootstocks; stems simple or nearly so, slender, erect from somewhat decumbent base, glabrous and glaucous, sometimes slightly glandular-puberulent above, often purplish, 3-6 dm. tall; leaves pallid, glabrous, glaucous, ascending, oblong-lanceolate, obtuse, entire or nearly so, sessile, 2-5 cm. long, gradually reduced up the stem; flowers usually erect; sepals 1-2 mm. long; petals 4-7 mm. long, purplish to almost white; fruiting pedicels 1-2 cm. long; capsules 4-7 cm. long; seeds papillate, 1 mm. long.

Stream banks and wet places, Upper Transition to Hudsonian Zones, Washington to southern California, Idaho and Nevada. Seen from Washoe, Douglas, Ormsby and Storey Counties, Nevada.

var. FASTIGIATUM (Nutt.) Trel. Ann. Rep. Mo. Bot. Garden 2: 105. 1891.

E. affine var. fastigiatum Nutt. ex Torr. & Gray, Fl. No. Amer. 1: 480. 1840.

E. platyphyllum Rydb., Bull. Torrey Bot. Club 40: 63. 1913.

Lower, 1-3 dm. tall; leaves broader, shorter, ovate, more crowded, 1.5-2.5 cm. long.

In similar situations to the species; British Columbia to Utah and California. Nevada material seen from Washoe and Elko Counties.

12. EPILOBIUM OREGONENSE Hausskn. Mon. Epilobium. 276. 1884.

Perennial, stoloniferous; stems simple, slender, erect, 1-3 dm. high, glabrous except for some sparse glandular pubescence in the inflorescence; leaves somewhat crowded on lower portion of stem, reduced and remote above, glabrous, oblong-linear to -ovate, entire to remotely denticulate, suberect, obtuse, sessile, 1-2.5 cm. long; flowers 1-few; fruiting pedicels 1-3.5 cm. long; sepals often purplish, 1-2 mm. long; petals cream to purplish, 4-7 mm. long, deeply emarginate; capsules erect, 2-5 cm. long, slender, often purplish; seeds smooth, blunt, scarcely 1 mm. long.

Boggy places, Upper Transition to Hudsonian Zones, British Columbia to southern California, Idaho and Nevada. Nevada material seen from Washoe and Esmeralda Counties.

13. EPILOBIUM ALPINUM L. Sp. Pl. 348. 1753.

E. anagallidifolium Lam. Dict. 2: 376. 1786.

Densely caespitose perennial, stoloniferous, with numerous simple, erect, slender, sigmoidally bent stems scarcely 1 dm. long and nodding at apex, glabrous or with pubescent lines; leaves divergent, rather uniformly distributed, oblong-ovate to -lanceolate, obtuse, entire or nearly so, 1-2 cm. long, on short petioles; inflorescence purplish, 1- to few-flowered, somewhat crisp-pubescent or even glandular; fruiting pedicels 5-15 mm. long; sepals 2 mm. long; petals lilac to purple, 4-5 mm. long; capsule slender, linear, 1 mm. thick, 2-4 cm. long; seeds smooth, 1 mm. long, with dingy coma.

Moist rockslides and stony places, Arctic-Alpine Zone, Alaska to central California, Colorado and Labrador. Eurasia. Seen from Washoe and Elko Counties, Nevada.

14. EPILOBIUM CLAVATUM Trel. Rep. Mo. Bot. Gard. 2: 111. pl. 46. 1891.

Habit much as in the preceding species, but stems 5-15 cm. tall, subglabrous to glandular-pubescent; leaves broadly ovate, obtuse, 1-2 cm. long; fruiting pedicels 1-2 cm. long; sepals 3-4 mm. long; petals purplish to rose-colored, 5-6 mm. long; capsule purplish, subclavate, 2-2.5 cm. long, stout, 1.5-2 mm. thick, frequently arcuate; seeds fusiform, papillose, 1.5-2 mm. long, with dingy coma.

Talus and slides, Arctic-Alpine Zone, British Columbia to Oregon, Montana and Colorado. Material seen from Elko Co., Nevada.

15. EPILOBIUM HORNEMANNII Reichenb. Ic. Crit. 2: 73. 1824.

Perennial with subterranean scaly branches; stems slender, erect, except at very base, simple, 1-3 dm. tall, glabrous except for the crisp pubescence on the decurrent lines, slightly glandular above; leaves ovate to elliptic-ovate, 1.5-4 cm. long, mostly obtuse, subentire to remotely denticulate, short-petioled; flowers erect; fruiting pedicels 1-2 cm. long; sepals 3-4 mm. long; petals rose or violet, 5-8 mm. long; capsules erect, linear, slender, less than 1 mm. thick, 4-5 cm. long; seeds 1 mm. long, papillose, with dingy coma.

Damp banks and meadows, Canadian and Hudsonian Zones, Alaska to central California, Colorado, New Hampshire, Greenland; Eurasia. Nevada material seen from Washoe, Ormsby, Elko and White Pine Cos.

16. EPILOBIUM LACTIFLORUM Hausskn. Oesterr. Bot. Zeitschr. 29: 89. 1879.

E. alpinum of American authors, not L.

Size and habit of the preceding species, but more glabrous on the decurrent lines as well as in the inflorescence; leaves delicate, elliptic or oblong-ovate, pale green, subentire or obscurely denticulate, obtuse, 2-5 cm. long; flowers few; petals 3 mm. long, white or rose-tipped; capsules slender, erect, linear, less than 1 mm. thick, 4-5 cm. long; seeds smooth, 1 mm. long with dingy coma.

Moist slopes and banks. Canadian to Arctic-Alpine Zones from Alaska to southern California, Colorado and New Hampshire; Eurasia. Seen from Washoe and Elko Cos., Nevada.

17. EPILOBIUM ADENOCAULON Hausskn. Oesterr. Bot. Zeitschr. 29: 119. 1879.

E. glandulosum var. adenocaulon Fernald, Rhodora 20: 35. 1918.

Perennial; stem erect, 3-10 dm. tall, glabrous below, glandular-pubescent and with few or no incurved hairs in inflorescence, simple or weakly branched below, freely branched above; innovations by rosettes; leaves glabrous or nearly so, ovate-to elliptic-lanceolate, 3-6 cm. long, obtuse to acute, serrulate, rounded into very short winged petioles, upper leaves gradually reduced and somewhat pubescent; sepals 2 mm. long; petals white to pale red, 4 mm. long; fruiting pedicels 3-8 mm. long; capsules slender, 4-6 cm. long, glabrate in age; seeds obovoid, 1 mm. long, abruptly short-beaked, with whitish coma.

Common in moist places, largely of the Transition Zone, British Columbia to southern California and Atlantic states. Seen from Washoe, Humboldt, Ormsby, Douglas, Storey, Lyon, Mineral, Nye, Churchill, Lander, Elko, White Pine and Clark Counties, Nevada.

var. OCCIDENTALE Trel. Ann. Rep. Mo. Bot. Gard. 2: 95. 1891.

E. occidentale Rydb., Mem. N.Y. Bot. Gard. 1: 275. 1900.

Leaves narrowly lanceolate, narrower than in the species; flowers purple or rose, the petals 5-6 mm. long.

British Columbia to central California and Utah. Seen from Esmeralda and Ormsby Cos., Nevada.

var. PERPLEXANS Trel. l.c. 96.

Usually less than 3 dm. tall, slender, rather simple, scarcely or not glandular; leaves thin, tapering at base to slender petiole; flowers whitish; petals 4 mm. long.

Transition Zone, eastern Washington and eastern California to Rocky Mts. Material from Nevada: Esmeralda, Lyon, Washoe, Mineral, Eureka and Elko Cos.

18. EPILOBIUM CALIFORNICUM Hausskn. Mon. Epilob. 260. 1884.

E. Palmeri Rydb. Bull. Torrey Bot. Club 31: 569. 1904.

With habit and stature of E. adenocaulon, but the upper parts strongly pubescent with white incurved non-glandular hairs; flowers tending to be smaller, less than 6 mm. long; petals white or pink, 2-4 mm. long.

Wet places of Upper Sonoran and Transition Zones, western Washington to California, mostly west of the Sierra Nevada, but apparently in Clark Co., Nevada.

3. BOISDUVALIA Spach

BOISDUVALIA Spach, Hist. Nat. Veg. Phan. 4: 383. 1835.

Caulescent, erect or spreading annuals; leaves alternate, simple, sessile; flowers small or minute in ours, in leafy spikes or axillary to foliage leaves; hypanthium produced above the ovary, short, funnelform; sepals 4, erect; petals 4, sessile, obovate, 2-lobed, purple to white; stamens 8, those opposite the petals shorter; anthers basifixed, all perfect; pollen in tetrads; stigma with 4 cuneate lobes; capsule 4-celled, 4-valved, sessile; seeds smooth,

without a coma. (Named for J. A. Boisduval, French naturalist and physician.)

Ten species, 3 in Nevada.

KEY TO SPECIES

1. Capsule septifragal, the septa wholly adherent to the placental axis, making the latter 4-winged; capsule not conspicuously beaked; floral bracts proportionally wider than cauline leaves. . . . . .1. B. densiflora.

1. Capsule loculicidal, the septa adhering to the valves at dehiscence; capsule beaked.

2. Fruit straight, 5-8 mm. long; floral bracts ovate to oblong; petals 2-4 mm. long. . . . . 2. B. glabella.

2. Fruit curved, 6-12 mm. long, the tip turned away from the stem; floral bracts linear; petals 1.5-2 mm. long. 3. B. stricta.

1. BOISDUVALIA DENSIFLORA (Lindl.) S. Wats. Bot. Calif. 1: 233. 1876.

Oenothera densiflora Lindl. Bot. Reg. 19: pl. 1593. 1833.

Simple or branched, particularly above, usually 3-10 dm. tall, villous, green to canescent, leafy throughout; lower leaves lanceolate to lance-linear, acute, entire, or denticulate, 2-5 cm. long, floral ones ovate, acute, 0.5-1.2 cm. long; inflorescence dense, long-spicate in fruit; sepals 2-4 mm. long; petals usually rose-purple, bilobed, 6-12 mm. long; capsule stout, straight, 8-10 mm. long, septifragal; seeds few,

angled, brown, paler at ends, concave on inner face, 1.5 mm. long.

In places that are moist in the early season, Upper Sonoran and Transition Zones, British Columbia to Lower California, Idaho and Nevada, from which state material has been seen from Washoe, Eureka and Elko Cos.

var. IMBRICATA Greene, Fl. Francisc., 225. 1891.

Floral bracts orbicular-ovate, so densely imbricated as quite to conceal the capsules.

With much the same range as the species. Nevada material seen from Storey Co.

var. SALICINA (Rydb.) Munz, Leaflets W. Bot. 3: 53. 1941.

B. salicina Rydb., Bull. Torrey Bot. Club 40: 62. 1913.

Plant canescent-strigose throughout, the pubescence short and not gland-tipped; petals mostly pale, rather short, 2.5-5 mm. long.

Ranging from Wash. to Calif., Idaho and Nevada. Nevada material seen from Washoe and Ormsby Cos.

2. BOISDUVALIA GLABELLA (Nutt.) Walp. Rep. 2: 89. 1843.

Oenothera glabella Nutt. ex Torr. & Gray, Fl. No. Amer. 1: 505. 1840.

Boisduvalia diffusa Greene, Proc. Acad. Philad. 1895: 547. 1896.

Simple or more frequently freely and decumbently branched

from base, 1-3 dm. tall, glabrous to pubescent, uniformly leafy; leaves sessile, lance-ovate to lance-oblong, acute, serrulate, bright green, 1-1.5 cm. long; flowers axillary, even in lowest axils; sepals 2 mm. long; petals purplish, 2-5 mm. long; capsule 6-8 mm. long, straight, pointed at tip; seeds numerous, grayish brown, narrowly subfusiform, angled, 1 mm. long.

Dry mud flats and vernal pools, Upper Sonoran Zone at scattered stations from British Columbia to southern California, Utah, North Dakota, Saskatchewan; Argentina. Nevada material seen from Washoe and Ormsby Cos.

3. BOISDUVALIA STRICTA (Gray) Greene, Fl. Francisc. 225. 1891.

Gayophytum strictum Gray, Proc. Amer. Acad. 7: 340. 1867.

Stems 1-4.5 dm. tall, simple or few-branched, pilose and quite canescent throughout; leaves linear to lanceolate, 1-4 cm. long, 2-3 mm. wide, acute, entire to sharply denticulate, nearly or quite sessile, the upper ones narrower than the lower ones; flowers axillary, often beginning near the base of the plant; sepals 1 mm. long; petals rose-purple to pale pink, 1.5-2 mm. long; capsule 8-10 mm. long, membranous, slender, usually curved outwards and attenuate, tardily loculicidal; seeds ovoid, brown, 1 mm. long, 6-8 in each cell.

In stream beds or other moist places which dry later in the season, Upper Sonoran and Transition Zones, Washington and Idaho to central California and Nevada. Seen from Humboldt and Elko Cos., Nevada.

4. CLARKIA Pursh

CLARKIA Pursh, Fl. Amer. Sept. 1: 260, pl. 11. 1814.

Annuals, simple or branched above, with spicate inflorescence and nodding or reflexed heads; hypanthium short or elongated; sepals 4, distinct or united in anthesis, petals unguiculate, the claws at least one-sixth the blades; blades simple or lobed, pink to purplish; stamens 4, alternate with the petals, or 8, with the epipetalous short and sometimes not functional; anthers basifixed; stigma 4-lobed; capsule linear or attenuate above, 4-celled; seeds in one row in each cell, cellular-pubescent and with reduced crest, or not pubescent and with minute transverse corrugations and conspicuous crest. (Named for Capt. William Clark of Lewis and Clark Expedition.)

Seven species, one in Nevada.

1. CLARKIA RHOMBOIDEA Dougl., in Hook. Fl. Bor. Am. 1: 214. 1834.

Godetia latifolia Nels. & Kennedy, Proc. Biol. Soc. Wash. 19: 156. 1906.

Two to 11 dm. tall, finely pubescent; leaves few, subopposite, lance-ovate to ovate-oblong or elliptic, the blades 2-7 cm. long, acute, entire, or remotely denticulate, subglabrous to finely pubescent; petioles 1-3 cm. long; hypanthium 1-3 mm. long, with scales and white hairs at summit; sepals green, usually distinct at anthesis; petals 5-10 mm. long, rose-purple, sometimes dotted, rhomboidal, with blade 2-4 times

as long as claw; stamens unequal, each with a scale at base; stigma-lobes rounded, 0.5 mm. long; capsules 1-3 cm. long, 2-4 mm. thick, 4-angled when dry; pedicels 1-4 mm. long; seeds brown, densely cellular-pubescent, 1 mm. long, with thickened ridge at summit and almost no cresting.

Rather dry slopes, Upper Sonoran and Transition Zones, Washington to Lower California, Arizona and South Dakota. Material seen from Washoe, Douglas, Ormsby and Humboldt Counties, Nevada.

5. GODETIA Spach

GODETIA Spach, Hist. Nat. Veg. Phan. 4: 386. 1835.

Annuals, mostly erect, with exfoliating epidermis on lower stems; leaves linear to spatulate, lower ones usually deciduous, upper ones reduced in size, secondary ones born in fascicles; inflorescence a spike or small panicle; flowers showy, white to rose to purple; hypanthium obconic to narrow-funnelform, with an inner ring of hair; sepals 4, distinct and reflexed in anthesis or wholly united and turned to one side; petals cuneate to obovate, entire to lobed, clawless or with short claw; stamens in 2 series, the opposite ones shorter; filaments filiform to flattened; anthers usually all fertile; capsule 4-sulcate, terete and 8-nerved, or heavily 8-ribbed, linear to ovoid, sessile to long pedicelled, beakless to long-beaked; seeds brown, sometimes cellular-puberulent, with fimbriate upper margin. (Named for C. H. Godet, 1797-1879, author of Flora de Jura.)

Genus of about 15 species, one in Nevada.

1. GODETIA AMOENA (Lehm.) G. Don in Sweet, Hort. Brit. ed. III, 237. 1839.

Oenothera amoena Lehm., Ind. Sem. Hort. Hamb. 8. 1821.

Erect, simple to diffusely branched, 1.5-10 dm. tall; leaf-blades lanceolate, 2-6 cm. long, 2-10 mm. wide, petioles 5-15 mm. long; buds erect or slightly drooped; hypanthium 4-10 mm. long, with inner ring of hairs one-third to one-half way from base; sepals 8-25 mm. long, generally united in anthesis; petals pink to purple, often with darker spot in center, cuneate to obovate, 1-4 cm. long; stigma lobes linear, yellow; capsule 1.5-4 cm. long, 2 mm. or more thick, linear, not enlarged above center, with or without short beak, usually pedicelled, deeply 4-sulcate when immature, terete and plainly nerved when mature or dry; seeds 1.5 mm. long, brown, with inconspicuous cresting.

Dry slopes, at edge of woods. Upper Sonoran and Transition Zones, British Columbia to central California and Nevada. Rare in Nevada; seen from Washoe and Ormsby Counties.

6. OENOTHERA L.

OENOTHERA L. Sp. Pl. 346. 1753.

Annual to perennial, caulescent or acaulescent herbs, with alternate or basal leaves; flowers in ours yellow to white, often aging red or purplish; hypanthium prolonged beyond the ovary, quite deciduous; sepals 4, reflexed in anthesis; petals 4; stamens 8,

equal, or if unequal, those opposite the petals shorter; anthers mostly versatile; stigma varying from 4 linear lobes to discoid or capitate; capsule membranous to woody, straight to curved or coiled, 4-celled, 4-valved, dehiscent; seeds many, naked. (Greek, wine-scenting, an ancient name given to some now unknown plant.)

Genus of perhaps 200 species, mostly of the temperate regions of the New World; 34 species in Nevada.

KEY TO SPECIES

1. Stigma with 4 linear lobes; flowers vespertine.
   2. Capsule broadly winged its entire length; seeds in 1 row in each cell, with corky tubercles; petals 4-5 cm. long. (Subgenus Megapterium). . . . . .12. Oe. brachycarpa.
   2. Capsule not as above; seeds in 2 rows in each cell (except in Anogra), not with corky tubercles.
      3. Capsule appearing obpyramidal because of the winged angles in the upper part; seeds with wing-like margin at the summit; petals 1-2 cm. long. (Subgenus Lavauxia.) 11. Oe. flava.
      3. Capsule cylindric to lance-ovoid, not winged; seeds not winged.
         4. Plants tufted or almost acaulescent; seeds with deep furrow along the raphe; capsule cylindric or lance-ovoid, thick-walled, usually ridged, often tubercled. (Subgenus Pachylophis.)
            5. Flowers white.

6. Petals 2.5-5 cm. long; hypanthium 5-8 cm. long; perennial. . . . . 7. Oe. caespitosa.

6. Petals 0.8-1.2 cm. long; hypanthium 2.5-4 cm. long; annual. . . . . 8. Oe. cavernae.

5. Flowers yellow.

7. Capsule 3.5-6 cm. long; plant with dense short soft pubescence; leaves with large terminal lobe and few small lateral ones. Transition Zone. 10. Oe. xylocarpa.

7. Capsule 2-3.5 cm. long; plant villous or pilose; leaves rather deeply and regularly pinnatifid. Lower Sonoran Zone. . . . . 9. Oe. primiveris.

4. Plants definitely caulescent; seeds not with deep raphal furrow.

8. Seeds sharply angled, horizontal; flowers yellow; capsule gradually tapering upward. (Subgenus Euoenothera.)

9. Petals 1-2 cm. long; sepals 1-1.5 cm. long; hypanthium 3-4 cm. long. . . . . .1. Oe. Rydbergii.

9. Petals 2.5-4 cm. long; sepals 2.5-5 cm. long.

10. Free tube of hypanthium 3-5 cm. long; leaves usually distinctly denticulate. . 2. Oe. Hookeri.

10. Free tube of hypanthium 8-12 cm. long; leaves often almost entire. . . . . 3. Oe. longissima.

8. Seeds not sharply angled, ascending; flowers white;

capsule subcylindric; seeds in 1 row in each cell (Subgenus Anogra.)

11. Spring or winter annuals, coarse; basal leaves rhombic, the blades 2-8 cm. long; capsules woody with exfoliating epidermis and 2-7 cm. long. 4. Oe. deltoides.

11. Perennials; basal leaves smaller and more narrow; capsules not woody.

12. Plants essentially glabrous; capsules frequently contorted, seeds linear-obovoid. .5. Oe. pallida.

12. Plants canescent to hoary or villous; capsules spreading, usually not contorted; seeds plump and obovoid. . . . . 6. Oe. californica.

1. Stigma capitate, discoid, or 4-toothed; flowers mostly diurnal; seeds in one row in each cell.

13. Ovary with a long narrow upper sterile part grading into the enlarged basal fertile part; plants quite acaulescent; flowers yellow. (Subgenus Taraxia.)

14. Annuals; capsules broadly and truncately 4-winged, not over 1 cm. long; petals 2.5-3 mm. long. . . . 14. Oe. Palmeri.

14. Perennials; capsules somewhat cylindrical, at most angled, not winged, usually more than 1 cm. long; petals 8-15 mm. long.

15. Leaves entire or with few teeth; capsule glabrous. 15. Oe. heterantha.

15. Leaves deeply pinnatifid; capsule densely pubescent. 16. Oe. tanacetifolia.

13. Ovary not with long upper sterile part.

16. Stigma discoid, somewhat shallowly 4-lobed; hypanthium 2.5-5 cm. long (Subgenus Salpingia.). 13. Oe. lavandulaefolia.

16. Stigma capitate; hypanthium much shorter.

17. Capsule cylindric or tapering toward the tip, sometimes contorted, sessile or nearly so. (Subgenus Sphaerostigma.)

18. Flowers white (sometimes yellowish in minor and decorticans), often drying pinkish, born in terminal spikes.

19. Capsules cylindrical, terete, linear, not thickened in lower portion, scarcely if at all coiled, not noticeably attenuate at tip.

20. Petals 5-7 mm. long, suborbicular; style exceeding corolla; hypanthium 4-6 mm. long; capsule refracted or spreading. . . . . .17. Oe. refracta.

20. Petals 3 mm. long, spatulate; style shorter than corolla; hypanthium 2.5-3 mm. long; capsules divaricately spreading. . . 18. Oe. chamaenerioides.

19. Capsules not strictly cylindrical, but somewhat enlarged at the base and attenuate at tip.

21. Mature capsules usually distincly contorted and coiled, not merely bent and curved, quite slender, not subfusiform in shape (see also Oe. decorticans var. desertorum.)

22. Flowers minute; petals 1-2 mm. long; style 1.5-3 mm. long; hypanthium 1-2 mm. long.

19. Oe. minor.

22. Flowers larger; petals 3.5-5 mm. long; style 6-12 mm. long; hypanthium 3-8 mm. long.

23. Flowers and leaves arranged in spicate tufts at ends of naked prostrate branches or on short central stalk; capsule 10-12 mm. long, conspicuously 4-angled. . . .20. Oe. nevadensis.

23. Flowers and leaves continuous from base of stems, not in terminal tufts; capsules 14-23 mm. long, not conspicuously 4-angled. 21. Oe. alyssoides.

21. Mature capsule merely curved or bent, not distincly contorted nor coiled, subfusiform in shape.

24. Leaves largely near the base, subglabrous, lance-ovate to oblanceolate; stems glabrous or nearly so, promptly exfoliating; capsules 15-25 mm. long; seeds ash-colored, linear-obovoid. 22. Oe. decorticans.

24. Leaves well distributed, glandual-pubescent to glandular-villous, ovate to oblong-ovate; stems glandular-pubescent to glandular-villous; epidermis exfoliating tardily if at all; capsule 10-15 mm. long; seeds brownish, rhomboid-prismatic. . . . . 23. Oe. Boothii.

18. Flowers yellow, born in axils of foliage leaves.

25. Plants with several naked, fine, often capillary stems, each with leafy inflorescence at tip; capsule

subfusiform almost straight, 5-8 mm. long.

24. Oe. andina.

25. Plants with stems leafy from the base; capsules terete, straight or coiled, 15-40 mm. long.

26. Flowers small; petals 2.5-3.5 mm. long; sepals 1.5-3.5 mm. long. . . . . 25. Oe. contorta.

26. Flowers larger; petals 5-15 mm. long; sepals 3-12 mm. long. . . . . .26. Oe. dentata.

17. Capsule cylindric or clavate, distincly pedicelled. (Subgenus Chylismia.)

27. Seeds oblong and with an incurving wing; plants small, slender-stemmed, glandular-pubescent above; flowers pinkish-white, axillary, 4-5 mm. wide.

27. Oe. pterosperma.

27. Seeds obovoid, not winged; flowers not axillary, but in terminal racemes or panicles.

28. Capsules linear, elongate, usually over 2 cm. long.

29. Stems coarse, commonly branched only at base; pedicels short, usually 3-15 mm. long; capsules linear, widely spreading, commonly 3-9 cm. long; anthers hairy.

30. Stems spreading-villous, usually in lower portion; sepals commonly pilose as well as glandular; capsules 2-3 mm. thick. . . . 28. Oe. brevipes.

30. Stems subglabrous to finely canescent; sepals glandular-pubescent to canescent; capsules 1-1.5 mm. thick. . . . . 29. Oe. pallidula.

29. Stems slender, commonly freely branched above; pedicels capillary, 10-25 mm. long; capsules linear, 1.5-3.5 cm. long; anthers often glabrous.

30. Oe. multijuga.

28. Capsules somewhat clavate, usually less than 2 cm. long.

31. Branches in well developed plants few to several and arising at bases of plant only, not capillary; capsules 1-2.5 cm. long; anthers scatteringly hairy; style exceeding petals.

32. Stems slender; flowers few, not congested; leaves ovate, subentire; petals less than 4 mm. long.

31. Oe. scapoidea.

32. Stems fairly coarse; flowers crowded in close terminal cluster; leaves frequently with supplementary pinnules on petioles; petals 4-7 mm. long. . . . . 32. Oe. clavaeformis.

31. Branches in well developed plants capillary and arising freely throughout the plant; anthers glabrous; style not exceeding petals.

33. Capsules 8-12 mm. long; flowers pink; anthers oblong; style pubescent at base.

33. Oe. heterochroma.

33. Capsules 3-9 mm. long; flowers yellow; anthers narrower; style glabrous. . . . 34. Oe. Parryi.

1. OENOTHERA RYDBERGII House, N. Y. State Mus. Bul. 233-234: 61. 1921.

Onagra strigosa Rydb. Mem. N.Y. Bot. Gard. 1: 278. 1900.

Oenothera strigosa Mack. & Bush, Fl. Jackson Co. Mo., 139. 1902, not of Willd. in 1825.

Biennal, grayish-strigose throughout, erect, rather simple, 3-10 dm. tall, strigose and hirsute, sometimes with reddish tinge; lowest leaves spatulate, obtuse, 3-10 cm. long, 1-2 cm. wide, with petioles 1-3 cm. long; cauline leaves lanceolate, acute, repand-denticulate, shorter petioled; inflorescence with leafy lanceolate, subsessile bracts 1-5 cm. long; hypanthium 3-4 cm. long, pubescent within, often hirsute without; sepals strigose and hirsute, 10-15 mm. long, with free tips 2 mm. long; petals yellow, 1.2-2 cm. long; stamens about as long as petals, subequal; stigma-lobes 5-6 mm. long; capsule 2.5-3.5 cm. long; seeds reddish brown, obtusely angled, irregular, 1-1.5 mm. long.

Moist places, Upper Sonoran and Transition Zones, Washington and Oregon to Minnesota. Specimen seen from Eureka Co., Nevada.

2. OENOTHERA HOOKERI T. & G. var. ANGUSTIFOLIA Gates, Mut. Factor in Evolution, 10, 30. 1915.

Biennial or possibly short-lived perennial, the stems 3-9 dm. high, reddish, somewhat muricate and hirsute, as well as strigose-canescent, simple or few-branched mostly from the base; leaves plane, green, the lower ones oblanceolate to spatulate, the blades 5-18 cm. long, on petioles half as long;

cauline leaves lanceolate, on shorter petioles, sinuate-denticulate, gradually reduced up the stem to the leafy bracts of the inflorescence; inflorescence elongate; hypanthium 2-4 cm. long, pubescent within, reddish and with long and short hairs without; sepals red, mostly 3-5 cm. long, with long spreading hairs and short gland-tipped ones; sepal-tips 2-4 mm. long; petals 23-35 mm. long, yellow, reddish in age; capsule obtusely quadrangular, 2-5 cm. long; seeds reddish brown, sharply angled, 1.5 mm. long.

Moist places, Upper Sonoran and Transition Zones, eastern Washington and California to Colorado and New Mexico. Nevada plants seen from Washoe, Storey, Nye, Esmeralda, Mineral, Ormsby, White Pine, Churchill, Lander, Elko and Clark Counties.

3. OENOTHERA LONGISSIMA Rydb., Bull. Torrey Bot. Club 40: 65. 1913.

Stems 1-2 m. tall, simple or freely branched, erect, canescent, more or less hirsute, sometimes muricate; cauline leaves 8-15 cm. long, 8-15 mm. wide; bracts linear; hypanthium 8-12 cm. long; sepals 35-45 mm. long, the tips 3-6 mm. long; petals yellow, 35-45 mm. long, somewhat red in age; capsule about 4 cm. long, canescent; seeds reddish brown, 1.5-2 mm. long.

Wet places, Upper Sonoran Zone, southern Nevada and eastern California to Utah and Arizona. Nevada specimens seen from Clark Co.

4. OENOTHERA DELTOIDES Torr. & Frem. var. DECUMBENS (Wats.) Munz, Amer. Journ. Bot. 19: 778. 1932.

Oe. albicaulis Nutt. var. decumbens S. Wats. in Parry, Amer. Nat. 9: 270. 1875.

Oe. deltoides var. ambigua Munz, Amer. Journ. Bot. 18: 315. 1931.

Low stout annuals, simple or more frequently with central erect stems 5-25 cm. high and a few to several decumbent basal branches, these naked at base and with exfoliating epidermis; lower leaves rhombic-obovate to oblanceolate, subentire, the blades 2-7 cm. long, on equally long petioles; upper leaves coarsely sinuate-dentate; upper parts of plant with closely appressed hair; flowers solitary in upper axils; buds drooping; hypanthium slender, 2-4 cm. long, strigulose; sepals strigulose, 1.5-2 cm. long, with free tips 1-2 mm. long; petals white, aging red, 20-30 mm. long; buds 4-angled toward tip; capsules spreading, woody, with exfoliating epidermis, prismatic-cylindric to cylindric, tapering gradually from base to apex, 3-5 cm. long, 3-5 mm. thick at base; seeds narrowly obovoid, 1.5-2 mm. long, usually with purple spots.

Open deserts of Lower Sonoran Zone, southwestern Utah and southern Nevada to adjacent Arizona. Abundant in Clark County, Nevada.

var. PIPERI Munz, Amer. Journ. Bot. 18: 314. 1931.

Hair of upper parts of plant (hypanthia, sepals, etc.) spreading; petals usually less than 2 cm. long; capsule 1.5-3 cm. long.

Dry open places, Upper Sonoran Zone, eastern Oregon to western Nevada. Nevada plants seen from Washoe, Humboldt, Ormsby, Esmeralda and Elko Counties. (An almost glabrous form from Washoe and Ormsby Cos. has been described as forma GLABRATA Munz, l. c.).

5. OENOTHERA PALLIDA Lindl. Bot. Reg. 14: pl. 1142. 1828.

Strongly rooted perennial, with creeping rootstocks, the main stem erect, 2-5 dm. tall, branches several, spreading or ascending with white epidermis, glabrous or with few hairs in upper parts, epidermis exfoliating; leaves lanceolate to lance-linear, subentire to remotely denticulate or sinuate-dentate, usually with undulate margin, blades 2-6 cm. long, sessile or nearly so; buds acuminate, nodding; hypanthium very slender, 2-3.5 cm. long; sepals 12-18 mm. long; petals white, reddish in age, 1-3 cm. long; stamens subequal; capsule usually curved, subglabrous, 1.5-4 cm. long, subcylindric; seeds 1.5-2 mm. long, brown with dark spots or quite dark.

Sandy places and dry plains, Upper Sonoran Zone, eastern Washington to Utah and New Mexico. Nevada material seen from Lander, Elko, White Pine and Lincoln Counties.

6. OENOTHERA CALIFORNICA S. Wats. Bot. Calif. 1: 223. 1876.

Perennial from underground rootstocks, rather coarse-stemmed, usually branched, 1-4 dm. tall, frequently decumbent or ascending, ashy with short appressed hairs throughout and with some longer spreading ones especially in upper parts, epidermis exfoliating; leaves variable, blades of lower ones oblanceolate to spatulate in outline, of cauline ones oblong to lanceolate, from subentire to deeply and regularly sinuate-dentate, 1-6 cm. long, sessile or nearly so; flowers several, buds nodding; hypanthium slender, 2-4 cm. long, strigulose and villous; sepals lance-linear, 1.5-2 cm. long, with free tips nearly or quite wanting; petals 2-3 cm. long; stamens subequal; capsule terete, usually divaricate and somewhat curved upward, 2-5 cm. long; seeds 1.5 mm. long, brown with dark spots.

Dry plains of Upper Sonoran and Lower Transition Zones, eastern and southern California, adjacent Nevada, Lower California. Nevada plants seen from Esmeralda, Lander, Nye and Clark Counties.

7. OENOTHERA CAESPITOSA Nutt. var. MARGINATA (Nutt.) Munz, Amer. Journ. Bot. 18: 753. 1931.

Oe. marginata Nutt. ex H. & A. Bot. Beechey, 342. 1838.

Caespitose perennial, acaulescent, or more usually caulescent, villous-hirsute throughout; leaves oblanceolate, usually

sinuate-pinnatifid, the blades 3-10 cm. long, on winged petioles nearly as long; flowers fragrant, vespertine, white, aging red; hypanthium 5-8 cm. long, often tinged red; sepals 2.5-3.5 cm. long, hairy, scarcely free-tipped; petals broadly obcordate, 2.5-4 cm. long; stamens subequal, glabrous; stigma-lobes 5-8 mm. long; capsule pedicelled, linear-cylindric, straight, 3-4 cm. long, scarcely ridged, with low tubercles; seeds dark brown, 3 mm. long, obovoid, minutely cellular-roughened, conspicuously furrowed along the raphe.

Dry slopes, Upper Sonoran and Transition Zones, eastern Washington and California to Montana and New Mexico. Practically throughout Nevada at elevations between 3000 and 9000 feet.

var. MONTANA (Nutt.) Durand, Bot. Basin of Great Salt Lake of Utah, 164. 1859.

Oe. montana Nutt. ex Torr. & Gray, Fl. No. Amer. 1: 500. 1840.

Plant acaulescent; leaves usually shorter and wider than in preceding, canescent-pubescent on margins and often on veins of lower surface, otherwise quite glabrous; capsule sessile, ovoid, not tubercled, ca. 2 cm. long.

Dry slopes, Upper Sonoran Zone, eastern Oregon and California to Colorado and Nebraska. Nevada material seen from Humboldt and Elko Counties.

var. PURPUREA (Wats.) Munz, Amer. Jour. Bot. 18: 730. 1931.

Oe. marginata var. purpurea S. Wats., Bot. King Exped. 108. 1871.

Pachylophus canescens Piper, Contr. U. S. Nat. Herb. 11: 409. 1906.

Acaulescent, densely canescent throughout with a fine appressed pubescence; capsule 1-2 cm. long, with low rounded tubercles on angles.

Dry slopes, Upper Sonoran and Transition Zones, eastern Washington and California to Montana and Wyoming. Nevada material seen from Lander, Elko and White Pine Counties.

var. LONGIFLORA (Heller) Munz, Amer. Jour. Bot. 18: 734. 1931.

Anogra longiflora Heller, Muhlenbergia 2: 224. 1906.

Habit of var. marginata, but subglabrous except for a few hairs along the margins of the leaves, about the ovaries and sepals which latter may also be finely glandular-puberulent.

Inyo County, California and Esmeralda Co., Nevada.

var. CRINITA (Rydb.) Munz, Amer. Jour. Bot. 18: 731. 1931.

Pachylophus crinitus Rydb. Fl. Rocky Mts. & Adj. Plains, 598 & 1064. 1917.

Caespitose from a woody caudex; stems 3-8 cm. high; leaves densely hirsute or even pilose, crowded, the blades lanceolate, obtuse, sinuate, 1-1.5 cm. long, 3-5 mm. wide; hypanthium 2-4

cm. long, hirsute; capsules 1-1.4 cm. long, 3-5 mm. thick.

At high altitudes, southern Utah and Nevada, from which latter state material has been seen from White Pine, Nye and Clark Counties.

8. OENOTHERA CAVERNAE Munz. Leaflets West. Bot. 3: 50. 1941.

Acaulescent, caespitose, winter annual; leaves in a rosette, regularly lyrate-pinnatifid into simple lobes or these somewhat crenate-dentate, leaf-blades oblanceolate in outline, glandular-puberulent, pilose especially on margins and veins, 2.5-10 cm. long, 0.6-2.0 cm. wide; petioles one-third as long; hypanthium slender, whitish, pilose and glandular-puberulent, 2.5-4 cm. long; sepals 5-9 mm. long; petals white, scarcely red in age, 8-12 mm. long; style and stamens slightly more than half the petals; capsule sessile, woody, lance-ovoid, 1.5-3 cm. long, 0.6-1.0 cm. thick, somewhat pilose, with 8 longitudinally tuberculate ridges; seeds brown, 2 mm. long, with furrowed raphe.

On limestone, from 3 localities in Clark Co., Nevada: Gypsum Cave, foothills of Spring Mts. above Arden, and Sheep Mt. above Jean.

9. OENOTHERA PRIMIVERIS Gray, Pl. Wright. 2: 56. 1853.

Lavauxia lobata A. Nels., Bot. Gaz. 47: 429. 1909.

Annual or winter annual, with long tap-root, caespitose, acaulescent or nearly so, villous or pilose throughout;

leaf-blades oblanceolate in cutline, 1-12 cm. long, usually deeply and regularly pinnatifid into lanceolate or ovate lobes which are in turn lobed or toothed; petioles shorter than blades; flowers vespertine, yellow, aging orange-red; hypanthium 2-6 cm. long; sepals lance-linear, 15-28 mm. long, without free tips; petals cuneate-obovate, usually 2-3 cm. long, with terminal sinus; stamens subequal; stigma lobes 6-8 mm. long; capsule pilose, quadrangular, with heavy rib down middle of each face, reticulate, not winged nor tuberculate, gradually tapering to attenuate apex, 2-3.5 cm. long, 6-8 mm. thick at base; seeds brown, somewhat roughened-tuberculate, 2.5-3 mm. long, with narrow raphal groove.

Dry plains, Lower Sonoran Zone, deserts from California to Utah, and Texas. Seen from Nye and Clark Counties, Nevada.

10. OENOTHERA XYLOCARPA Coville, Contr. U. S. Nat. Herb. 4: 105. pl. 8. 1893.

Acaulescent perennial, with thick caudex and crown of leaves; leaf-blades pinnately parted, often spotted red, 2-7 cm. long, broadly oblanceolate to obovate in outline, with dense soft sometimes grayish pubescence, the terminal lobe much the largest; petioles about as long as blades; hypanthium slender, villous, 2.5-4.5 cm. long; sepals 2-3 cm. long; petals bright yellow, aging salmon-red, 2.5-3 cm. long; stamens subequal; stigma-lobes 4-5 mm. long; capsules somewhat woody, 3.5-6 cm. long, the body proper 7-8 mm. thick at base and winged,

tapering gradually into a long slender wingless upper portion, capsule 4-faced, with median nerve on each face; seeds brown, 2-2.5 mm. long, narrowly obovoid, angled, roughened and minutely tuberculate, with a broad flat raphe.

Dry benches among pines, Transition Zone, east central California and Washoe County, Nevada.

11. OENOTHERA FLAVA (A. Nels.) Garrett, Spring Flora of Wasatch region, 4th edition, 106. 1927.

Lavauxia flava A. Nels. Bull. Torrey Bot. Club 31: 243. 1904.

Perennial, with thick taproot, acaulescent or nearly so, subglabrous to finely glandular or pubescent especially about the flowers; leaf-blades oblong-linear to oblanceolate in outline, 3-20 cm. long, 1-2 cm. wide, deeply and irregularly runcinate-pinnatifid, with a broadly winged rachis; petiole shorter; hypanthium slender, 2-12 cm. long; sepals 10-18 mm. long; petals yellow, 1-2 cm. long; stamens subequal; stigma-lobes 3-4 mm. long; capsule indurate, ovoid, 1-2 cm. long, 4-winged, each wing reticulate-veined, 2-5 mm. wide especially above; seeds numerous, dark brown, 2 mm. long, slightly concave with carinate ridge on ventral side and wing-like margin around obtuse summit.

About desiccating depressions, high Upper Sonoran and Transition Zones, northern California and eastern Washington

to Rocky Mts. Nevada material seen from Washoe, Douglas, Ormsby, Lyon, Elko and White Pine Counties.

12. OENOTHERA BRACHYCARPA Gray var. WRIGHTII (Gray) Lévl. Mon. Onoth. 40. 1902.

Oe. Wrightii Gray, Pl. Wright. 2: 57. 1853.

Lavauxia Howardi (Jones) Nelson, Bot. Gaz. 34: 368. 1902.

Subacaulescent perennial, with heavy caudex, closely cinereous-strigulose or even hoary throughout; leaves tufted, thick in texture, lanceolate to lance-ovate in outline, greenish or hoary, entire to sinuate-pinnatifid or even with a few lateral lobes, the blades 4-15 cm. long, 1-3 cm. wide; petioles about as long; hypanthium 5-15 cm. long; sepals 3-5 cm. long, with free tips 1-4 mm. long; petals yellow, drying reddish, 3-5 cm. long; stigma-lobes 5-10 mm. long; capsules 2.5-3 cm. long, 6-8 mm. thick, ovoid to cylindric-ovoid, winged from only near the summit to almost the entire length, the wings 1.5-4.5 mm. wide; seeds dark brown, more or less corky tubercled, the summit with denticulate corky wing.

Dry places, apparently often on limestone, Sonoran and Transition Zones, Idaho to Colorado, Arizona and Mexico. Nevada material seen from Lincoln and Clark Counties.

13. OENOTHERA LAVANDULAEFOLIA T. & G. var. GLANDULOSA Munz, Amer. Journ. Bot. 16: 705. 1929.

Low caespitose, suffrutescent perennials from woody caudex, 5-20 cm. tall; stems and foliage grayish-strigose throughout; leaves linear to narrowly oblanceolate, 5-15 (25) mm. long, 1-3 mm. wide, sessile or nearly so, crowded on stems, not reduced up the stem; flowers few, solitary in upper axils; hypanthium 2.5-5 cm. long, glandular-pubescent; sepals 8-12 mm. long, glandular-pubescent; petals yellow, reddish in age, rhomboidal, 13-22 mm. long; stamens subequal, two-thirds the petals; stigma discoid, squarish, 2-4 mm. wide; capsule cylindrical, often somewhat fusiform or clavate, 8-20 mm. long, 2-3 mm. thick; seeds brownish, obovoid, angled, 1 mm. or more long.

Dry slopes and ridges, apparently usually in limestone areas, Transition Zone, Nevada to Colorado and Texas. Nevada plants seen from White Pine, Lincoln and Clark Counties.

14. OENOTHERA PALMERI S. Wats. Proc. Amer. Acad. 12: 251. 1877.

Taraxia Palmeri Small, Bull. Torrey Bot. Club 23: 184. 1896.

Dwarf caespitose annual, with slender taproot, finely strigose throughout, forming small caulescent tufts 2-6 cm. tall, or with several short horizontal branches 2-4 cm. long; stems pubescent; leaves linear-lanceolate to -oblanceolate, subentire, 2-6 cm. long; sterile portion of upper part of ovary filiform, 8-18 mm. long; hypanthium proper (above sterile portion of ovary) 1-2 mm. long; sepals 2-3 mm. long; petals yellow, 3-5 mm. long; capsules crowded, ovoid, 5-7 mm. long,

coriaceous and tough, 4-angled below, each angle growing into an obliquely truncate wing along the upper edge of which is the line of dehiscence; seeds smooth, brownish, 1.5 mm. long.

Open places, deserts of Sonoran Zones, eastern Oregon to California and Arizona. Nevada material seen from Ormsby Co.

15. OENOTHERA HETERANTHA Nutt. ex T. & G. Fl. No. Amer. 1: 507. 1840.

Oe. heterantha var. taraxacifolia S. Wats., Proc. Amer. Acad. 8: 589. 1873.

Oe. subacaulis Garrett, Spring Fl. Wasatch Reg. 64. 1911.

Acaulescent perennial, essentially glabrous, except for some pubescence on leaf-margins; leaf-blades lanceolate to ovate-lanceolate, entire to sinuate, 3-15 cm. long, 1-5 cm. wide, narrowed into equally long petioles; ovary with an upper sterile slender portion 3-10 cm. long; sepals 5-8 mm. long; petals yellow, 8-10 mm. long; stigma discoid, 1.5-2 mm. wide; capsule oblong-ovoid, relatively smooth, coriaceous, persistent, somewhat 4-angled, 12-15 mm. long; seeds oblong, straw-colored, 3 mm. long.

Moist grassy places, Upper Sonoran and Transition Zones, eastern Washington to California and Rocky Mts. Nevada material seen from Washoe, Humboldt, Douglas, Lander, Elko and White Pine Cos.

16. OENOTHERA TANACETIFOLIA Torr. & Gray, Pac. R.R.Rep. 2: 121. pl. 4. 1854.

Taraxia tanacetifolia Piper, Contr. U.S. Nat. Herb. 11: 405. 1906.

Perennial, with thick root and simple or branched crown, subglabrous to densely and finely pubescent; leaves lanceolate in outline, deeply sinuate-pinnatifid, the blades 3-10 cm. long, the numerous segments unequal, acute, entire or toothed, the petioles about as long as the blades; sterile portion of the ovary pubescent, slender, 2-10 cm. long; hypanthium proper 3 mm. long; sepals 7-9 mm. long; petals yellow, aging red, 10-15 mm. long; stamens unequal; stigma globular; capsule rather rarely developed, pubescent, narrowly ovoid, quadrangular, torulose, 17-20 mm. long, 5-6 mm. thick, relatively straight; seeds numerous, brown, carunculate, 2 mm. long.

Damp grassy places, Upper Sonoran and Transition Zones, eastern Washington to Mono Co., California, Idaho and Nevada. Nevada material seen from Washoe, Ormsby, Douglas and Elko Counties.

17. OENOTHERA REFRACTA S. Wats. Proc. Amer. Acad. 17: 373. 1882.

Sphaerostigma refractum Small, Bull. Torrey Bot. Club 23: 192. 1896.

Annual, 5-40 cm. tall, erect, with few to several divaricately spreading branches, usually glandular-puberulent and

somewhat strigulose throughout, the stems slender, commonly reddish, with exfoliating epidermis; leaves largest near base of plant, but well distributed to lowest flowers, oblanceolate to lanceolate to oblong-linear, entire to denticulate, 2-5 cm. long, short-petioled to sessile; inflorescence racemose to paniculate, 5-15 cm. long; hypanthium 5-6 mm. long; sepals 5-6 mm. long; petals white, suborbicular, 4-7 mm. long; stigma globose; capsule linear, commonly refracted or spreading, 3-5 cm. long, straight to somewhat coiled; seeds pale, linear, 1 mm. long.

Open places, deserts of Lower Sonoran Zone, California to Utah and Arizona. Nevada material seen from Nye and Clark Counties.

18. OENOTHERA CHAMENERIOIDES Gray, Pl. Wright. 2: 58. 1853.

Sphaerostigma chamaenerioides Small, Bull. Torrey Bot. Club 23: 189. 1896.

Erect annual, 1-5 dm. tall, usually branching near the base, stems slender, often reddish, lower portions glandular-puberulent, upper strigulose and glandular-puberulent; leaf-blades thin, 4-8 cm. long, ovate-lanceolate to lanceolate, entire, with petioles 1-3 cm. long; inflorescence a corymbose raceme, elongating in fruit to nearly 2 dm; hypanthium 2.5-3 mm. long; sepals 2.5 mm. long; petals white, often reddish in age, 3 mm. long; capsule terete, linear, divaricately spreading,

scarcely if at all beaked, 25-50 mm. long; seeds linear, 1 mm. long.

Open places, deserts of Lower Sonoran Zone, California to Utah, Texas, and Mexico. For Nevada, seen from Nye, Lincoln and Clark Counties, and possibly Washoe and Ormsby Counties.

19. OENOTHERA MINOR (A. Nels.) Munz, Bot. Gaz. 85: 238. 1928.

Sphaerostigma minus A. Nelson, Bull. Torrey Bot. Club 26: 130. 1899.

S. tortum A. Nels. Bot. Gaz. 40: 60. 1905.

Annual, more or less canescent-strigulose throughout, scarcely if at all glandular; stems simple and erect, or usually with several subequal ascending stems, 5-20 cm. high; basal leaves largest, blades spatulate to oblanceolate to elliptic-ovate, subentire, 5-25 mm. long, 2-15 mm. wide, narrowed gradually into petioles 5-20 mm. long; upper leaves narrower and smaller; flowers borne singly in axils of almost all leaves, the upper in a spicate inflorescence; hypanthium 2 mm. long; sepals and petals 2 mm. long; capsules 18-25 mm. long, more or less contorted, often beaked; seeds narrowly obovoid, 1 mm. long.

Dry slopes, Upper Sonoran Zone, Idaho to Wyoming and Nevada. Nevada material seen from Pershing, Lander, Eureka, Elko and White Pine Counties.

20. OENOTHERA NEVADENSIS Kellogg, Proc. Calif. Acad. 2: 224. fig. 70. 1863.

Sphaerostigma nevadense Heller, Muhlenbergia 6: 51. 1910.

S. tortuosum A. Nels. Proc. Biol. Soc. Wash. 17: 95. 1904.

Annual, subglabrous, forming a simple erect tuft, 2-5 cm. tall, or with several naked prostrate branches 3-10 cm. long with terminal tufts of leaves and flowers (these tufts may elongate in fruit); leaves narrowly oblanceolate, 1-3.5 cm. long, on petioles of about same length; flowers white; petals 3-5 mm. long; capsules 10-12 mm. long, 1.5-2 mm. thick, quadrangular with ridge along middle of each face, swollen at base, narrowed toward slender beak, coiled and twisted, usually crowded; seeds pale gray, 1 mm. long.

Depressions, Upper Sonoran Zone, Washoe, Ormsby, and Storey Counties, Nevada.

21. OENOTHERA ALYSSOIDES H. & A. var. VILLOSA S. Wats. Proc. Amer. Acad. 8: 591. 1873.

Sphaerostigma macrophyllum Rydb. Bull. Torrey Bot. Club 40: 66. 1913.

S. utahense Small, Bull. Torrey Bot. Club 23: 191. 1896.

Annual, usually branching from base, central stem erect, others ascending and curved at tip, grayish-canescent or grayish-villous, 5-35 cm. tall; leaves grayish, oblanceolate to ovate-lanceolate, 15-40 mm. long, entire or nearly so, the lowermost petioled, upper subsessile; hypanthium 4-8 mm. long; sepals 4-5 mm. long; petals white, aging reddish, sometimes drying yellowish, 4-5 mm. long; capsules 15-25 mm. long,

thickened at base, gradually attenuate toward beaklike tip, much contorted or only curved; seeds pale, linear-obovoid.

Dry plains and washes, Upper Sonoran Zone, Utah to eastern California and Arizona. In Nevada growing almost throughout the state at elevations of 4000 to 7000 feet.

22. OENOTHERA DECORTICANS (H. & A.) Greene var. CONDENSATA Munz, Bot. Gaz. 85: 247. 1928.

Annual, erect, simple or branching below, the branches ascending or spreading, nearly glabrous except in the finely pubescent and sometimes glandular inflorescence, stems thick, 1-2 dm. tall, the pure white epidermis exfoliating; leaves in the lower part, subentire, 2-6 cm. long, with equally long petioles, lanceolate to oblanceolate, uppermost reduced; inflorescence a compact spike; hypanthium 4-6 mm. long; sepals 4-5 mm. long; petals white, aging reddish, suborbicular, 4-5 mm. long; capsules woody, much thickened, about 3 mm. at base, 15-25 mm. long, beaked, simply curved, so that the beak points away from the stem; seeds ash-colored, linear-obovoid, 1 mm. long.

The persistent dead stalks and cone-like fruiting spikes of woody capsules are a prominent feature of the open deserts of California and adjacent regions, ranging to so. Utah and Arizona. Nevada material seen from Nye and Clark Counties.

var. DESERTORUM Munz, Bot. Gaz. 85: 246. 1928.

More slender-stemmed; petals longer than wide; capsules 1-1.5 mm. thick.

Lower Sonoran Zone of California deserts; collected at Rhyolite, Nye Co., Nevada.

23. OENOTHERA BOOTHII Dougl. ex Hook. Fl. Bor. Amer. 1: 213. 1834.

Sphaerostigma Boothii Walp. Rep. 2: 77. 1843.

S. senex A. Nels. Proc. Biol. Soc. Wash. 18: 173. 1905.

Annual, glandular-pubescent to glandular-villous throughout, erect, 1-4 dm. tall, usually with central stem more prominent than the spreading branches; leaves ovate to oblong-ovate, well distributed, subentire, 2-5 cm. long, with petioles 1-3 cm. long; inflorescence racemose-spicate, often quite congested, elongating in fruit; hypanthium 4-8 mm. long; sepals 3-7 mm. long; petals white, pinkish in age, obovate, clawed, 4-9 mm. long; stamens subequal; capsule 10-15 mm. long, usually ascending in lower half and with terminal portion spreading but not contorted, thickest near base, 1.5-2 mm. thick; seeds brown, rhomboid-prismatic, 1 mm. long.

Dry plains and slopes, especially in gravelly and disturbed places, Upper Sonoran Zone, eastern Washington and California to Utah and Arizona. Nevada material seen from Washoe, Ormsby, Churchill, Lander, Mineral, Esmeralda, and Nye Counties.

24. OENOTHERA ANDINA Nutt. ex Torr. & Gray, Fl. No. Amer. 1: 512. 1840.

Sphaerostigma andinum Walp. Rep. 2: 79. 1843.

Low, erect, very slender-stemmed annuals, with spreading branches from near the base or above, finely canescent throughout, 2-15 cm. tall and about as broad, lower stem and branches in all except the smallest plants rather free of leaves; leaves alternate, linear to narrowly oblanceolate, entire, with short indistinct petioles, blades 1-3 cm. long; flowers axillary in a rather crowded corymb which becomes racemose in fruit; hypanthium 1 mm. long; sepals 1.5 mm. long; petals yellow, 1.5 mm. long; capsule 5-6 mm. long, fusiform, somewhat quadrangular; seeds fusiform, smooth, brown, 0.7 mm. long.

Dried depressions, plains, Upper Sonoran Zone, eastern Washington to northeastern California, Assiniboia and Utah. Nevada material seen from Humboldt, Eureka and Elko Counties.

25. OENOTHERA CONTORTA Dougl. ex Hook. Fl. Bor. Amer. 1: 214. 1834.

Sphaerostigma contortum Walp. Rep. 2: 78. 1843.

Annual, slender-stemmed, 5-10, or more cm. tall, subglabrous to finely pubescent, usually with several to few suberect branches from near the base; leaves well distributed, linear to lance-linear, not more than 2 mm. wide, 5-25 mm. long, subsessile, upper ones reduced to leafy bracts and subtending the flowers; hypanthium 1-2 mm. long; sepals 1.5-2.5 mm. long; petals bright yellow, aging red, narrowly obovate to obcordate, 2.5-3 mm. long; capsules linear, cylindrical, often torulose, sessile, curved or straight, 25-35 mm.

long, ending in a definite beak; seeds brown, obovoid, less than 1 mm. long.

Dry loose slopes, recently disturbed places, sandy areas, etc. of Upper Sonoran Zone, eastern British Columbia to eastern California, and Nevada. Nevada plants seen from Washoe, Ormsby and Nye Counties.

var. FLEXUOSA (A. Nels.) Munz, Bot. Gaz. 85: 253. 1928.

Sphaerostigma flexuosum A. Nels. ex Rydb. Fl. Rocky Mts. 601. 1917.

Stems and leaves as in the species; capsules more slender, distinctly pedicelled, not beaked, 17-25 mm. long, frequently curved into a half circle.

Ranging with the species but extending further south and east. Nevada material seen from Washoe, Humboldt, Mineral, Esmeralda and Elko Counties.

var. PUBENS (S. Wats.) Coville, Contr. U. S. Nat. Herb. 4: 104. 1893.

Oe. strigulosa var. pubens S. Wats. Proc. Amer. Acad. 8: 594. 1873.

Sphaerostigma orthocarpum Nels. & Kennedy, Proc. Biol. Soc. Wash. 19: 155. 1906.

Coarse-stemmed plants with abundant spreading pubescence; leaves commonly over 2 mm. wide; capsules 1 mm. or more in diameter, 25-36 mm. long, sessile or subsessile, not beaked.

Eastern middle California and western Nevada. Material

seen from Washoe, Storey, Ormsby, Douglas, Lander, Mineral, and Nye Counties, Nevada.

26. OENOTHERA DENTATA Cav. var. JOHNSTONII Munz, Bot. Gaz. 85: 259. 1928.

Annual, usually branched from base, stems subdecumbent to ascending, subglabrous to glandular-pubescent, slender, 5-25 cm. tall, with light colored epidermis inclined to exfoliate; leaves mostly lance-linear, subsessile, 1-3 cm. long; flowers few, solitary in upper axils; inflorescence glandular-pubescent; sepals 5-12 mm. long; petals yellow, 10-16 mm. long; capsules linear, terete, somewhat torulose, straight to somewhat contorted, 3-4 cm. long, 1 mm. thick, not conspicuously beaked; seeds 1 mm. long.

Lower Sonoran Zone, California deserts. Known in Nevada from a single collection at Nipton, Clark County. [This locality is really in California, but is given on M. E. Jones labels as Nevada. Where the plants were actually collected is not known.]

27. OENOTHERA PTEROSPERMA S. Wats. Bot. King, 118. pl. 14. 1871. Chylismia pterosperma Small, Bull. Torrey Bot. Club 23: 193. 1896.

Annual, low, 5-12 cm. tall, erect, simple or with few open branches; stems slender, finely pilose below, finely glandular above; leaves oblong- to ovate-lanceolate, entire, sessile or nearly so, 5-20 mm. long; flowers axillary, pinkish white;

pedicels 5-8 mm. long, capillary; hypanthium 1.2 mm. long; sepals 1.5-2.5 mm. long; petals obcordate, 1.5-2.5 mm. long; stamens unequal; capsules cylindric-clavate, slightly curved, erect, 10-16 mm. long, attenuate at base; seeds oblong, 1.5 mm. long, brownish, flattened, bordered with a revolute, wing-like margin which is covered with cellular processes.

Uncommon, in dry places, Upper Sonoran Zone, eastern Oregon to California and Utah. Nevada plants seen from Washoe, Pershing, Esmeralda, Elko and Clark Counties.

28. OENOTHERA BREVIPES Gray, Pac. R. R. Rep. 4: 87. 1857.

Chylismia brevipes Small, Bull. Torrey Bot. Club 23: 194, 1896.

Annual, frequently rather coarse, usually 1- to few-stemmed from base, not much branched above, spreading-villous, 1-4 dm. tall, erect with nodding stem-tips; leaves largely in basal rosette, petioled, subglabrous to villous, ovate to oblong-cordate, subentire to pinnatifid, 3-8 cm. long, on petioles equally long, uppermost leaves few and much reduced; inflorescence racemose; pedicels 3-15 mm. long; hypanthium 3-7 mm. long with pubescent papillate structure on each rib within; sepals 6-10 mm. long; petals bright yellow, diurnal, 7-15 mm. long; capsule linear, spreading-divaricate, 5-9 cm. long, 2-3 mm. thick; seeds straw-colored, obovoid, 1-1.5 mm. long.

Common in washes, open deserts of Lower Sonoran Zone from California to Nevada and Arizona. Nevada plants seen from Clark Co.

29. OENOTHERA PALLIDULA Munz, Leaflets West. Bot. 2: 88. 1938.

Oe. brevipes var. pallidula Munz, Amer. Jour. Bot. 15: 229. 1928.

With habit of the preceding species, but stems ashy-strigose, not spreading-villous; flowers paler yellow; hypanthium lacking a swollen structure within on each rib at upper end of the internal pubescence; sepals strigulose to subglabrous, not pilose; petals 8-12 mm. long; capsules 2-5 cm. long, 1-2 mm. thick.

Lower Sonoran Zone from Death Valley region of California to southwestern Utah, Arizona. Nevada plants seen from Nye and Clark Counties.

30. OENOTHERA MULTIJUGA S. Wats. Amer. Nat. 7: 300. 1873.

Chylismia multijuga Small, Bull. Torrey Bot. Club 23: 193. 1896.

C. venosa Nels. & Kennedy, Muhlenbergia 3: 140. 1908.

C. hirta A. Nels. Bot. Gaz. 47: 428. 1909.

Annual to biennial, subglabrous to pubescent to villous, slender, one-stemmed and erect, or branching freely from the base, freely branched above, 2-8 dm. tall; leaves mostly in a basal rosette, 10-25 cm. long, usually much pinnate, with 6-20 pairs of major pinnae and smaller ones often in between, terminal pinna often conspicuously larger; petioles 2-6 cm. long; inflorescence of several naked racemes in a loose open panicle 1-6 dm. long; pedicels capillary, 1-2.5 cm. long;

hypanthium funnelform; sepals 6-7 mm. long, with or without free tips; petals yellow, 7-9 mm. long; pedicels capillary, 7-15 mm. long; capsules slender, linear, 15-35 mm. long, 1-1.5 mm. thick; seeds light brown, obovoid, 1 mm. long.

Nevada to Utah and Arizona, growing in washes and disturbed places of the Lower Sonoran Zone. Nevada plants seen from Clark County.

var. PARVIFLORA (S. Wats.) Munz, Amer. Journ. Bot. 15: 231. 1928.

Oe. brevipes var. parviflora S. Wats. ex Parry, Amer. Nat. 9: 271. 1875.

Leaflets often fewer; flowers smaller; sepals 3-4 mm. long; petals 3-5 mm. long.

Lower Sonoran deserts, eastern California to Utah. Nevada plants seen from Esmeralda, Nye, Clark, Lincoln and Elko Counties.

31. OENOTHERA SCAPOIDEA Nutt. ex Torr. & Gray, Fl. No. Amer. 1: 506. 1840.

Chylismia scapoidea Small, Bull. Torrey Bot. Club 23: 193. 1896.

Annual, simple or branching from base, erect or spreading, glabrous, the stems slender, simple or nearly so, 1-4.5 dm. high; leaves mostly basal, mostly simple, ovate to oblong-ovate, subentire to dentate, the blades 1-4 cm. long, petioles 2-7 cm. long; inflorescence mostly racemose; pedicels capillary,

5-15 mm. long; hypanthium 1.5-3 mm. long; sepals 2-3 mm. long; petals yellowish, often red-dotted at base, 2-4 mm. long; capsules erect, clavate, slightly curved, 1-2.5 cm. long, 2-2.5 mm. thick; seeds brownish, obovoid, 1.5-2 mm. long.

Dry slopes and exposed places, Upper Sonoran Zone, Nevada to Wyoming and Utah. Nevada material seen from Humboldt and Elko Counties.

32. OENOTHERA CLAVAEFORMIS Torr. & Frém. in Frém. Rep. 314. 1845.

Chylismia clavaeformis Heller, Muhlenbergia 2: 105. 1906.

Annual, simple or with few unbranched stems from the base, 1-4 dm. tall, subglabrous to finely pubescent below, subglabrous to glandular in the inflorescence; leaves mostly in a basal rosette, simple and irregularly dentate, with ovate blades 2-5 cm. long and petioles of same length, rarely pinnatifid; upper leaves much reduced; inflorescence racemose, somewhat peduncled, the flowers quite crowded at anthesis; pedicels 8-25 mm. long; sepals 5 mm. long; petals white, often drying reddish, 4-6 mm. long; capsule clavate, commonly 2 mm. thick, 12-20 mm. long, generally curved and ascending; seeds light brown, obovoid, 1.2 mm. long.

Dry plains, deserts of Upper and Lower Sonoran Zones, California to Nevada. Seen from following Nevada Counties: Washoe, Humboldt, Storey, Pershing, Churchill, Lander, Eureka, Elko, Lyon, Mineral, Esmeralda and Nye.

var. AURANTIACA (S. Wats.) Munz, Amer. Journ. Bot. 15: 237. 1928.

Oe. scapoidea var. aurantiaca S. Wats. Proc. Amer. Acad. 8: 595. 1873.

Hypanthium and sepals strigulose; flowers sometimes more yellowish, even with orange in hypanthium.

Lower Sonoran Zone, deserts of California to Utah and Arizona. Nevada material seen from Nye and Clark Counties.

var. PURPURASCENS (S. Wats.) Munz, Leaflets West. Bot. 3: 53. 1941.

Oe. scapoidea var. purpurascens S. Wats. Proc. Amer. Acad. 8: 595. 1873.

Oe. clavaeformis var. cruciformis (Kell.) Munz, Amer. Journ. Bot. 15: 235. 1928.

Stems puberulent; leaves scarcely or not pinnatifid; flowers yellow, sometimes with reddish spots.

Loose dry slopes and disturbed areas, Upper Sonoran Zone, eastern Oregon to eastern California and adjacent Nevada, for which it has been seen from the following Counties: Washoe, Storey, Ormsby, Pershing and Churchill.

33. OENOTHERA HETEROCHROMA S. Wats. Proc. Amer. Acad. 17: 373. 1882.

Chylismia heterochroma Small, Bull. Torrey Bot. Club 23: 193. 1896.

Annual, simple or branched at base, branched above, gland-

ular-pubescent throughout, 2-5 dm. tall; leaves in lower portion only, but not actually in basal rosette, ovate, irregularly serrate, villous, 2-6 cm. long, on petioles almost as long; upper leaves reduced; pedicels capillary, 2-5 mm. long; hypanthium 2.5 mm. long; sepals 2.5 mm. long; petals purplish, 3-5 mm. long; stamens unequal; capsules 8-13 mm. long, 2 mm. thick, clavate; seeds brown, obovoid, 1 mm. long.

Uncommon, dry places, Upper Sonoran Zone, eastern California to Nevada. Nevada localities in Lander, Mineral, Esmeralda and Lincoln Counties.

var. MEGALANTHA Munz, Leaflets West. Bot. 3: 52. 1941.

Hypanthium 7 mm. long; petals 1 cm. long.

Known from a single collection: Train 2358 from 50 miles southeast of Beatty, Skull Mts., Nye Co., Nevada.

34. OENOTHERA PARRYI S. Wats. Amer. Nat. 9: 19 & 270. 1875.

Chylismia Parryi Small, Bull. Torrey Bot. Club 23: 193. 1896.

Oenothera tenuissima M. E. Jones, Proc. Calif. Acad., ser. 2, 5: 682. 1895.

Annual, 1-8 dm. high, erect, mostly branched, lower portion villous with spreading hairs; lower leaves crowded or well distributed, lanceolate to oblong-ovate, villous beneath, subglabrous above, 1-2.5 cm. long, subentire to subsinuately toothed, the petioles 1-3.5 cm. long; uppermost leaves reduced

to ovate bracts; inflorescence paniculate, with numerous fine, glandular-pubescent branches; pedicels capillary, recurved, 5-16 mm. long; hypanthium 1-2 mm. long; sepals 2-4 mm. long; petals yellow, sometimes with red spots, suborbicular, 3-7 mm. long; capsules clavate, 3-9 mm. long, 1.5 mm. thick; seeds light brown, obovoid, 0.7-1.0 mm. long.

Reported from bare clay hills about St. George, Utah and to the east and south; to be expected in adjacent Nevada.

7. GAYOPHYTUM A. Juss.

GAYOPHYTUM A. Juss. Ann. Sci. Nat. I, 25: 18. pl. 4. 1832.

Slender caulescent annuals; leaves alternate, entire, linear and subsessile, or lowest may be opposite and linear-oblanceolate and short-petioled; flowers in upper axils; hypanthium not prolonged beyond the ovary; sepals 4, usually reflexed in anthesis; petals 4, small, rhomboid-spatulate to -obovate, white, frequently drying pink or red; stamens 8, the alternate set much reduced and usually sterile; stigma capitate; capsule 2-celled, 4-valved, linear or clavate; seeds many, in a single row in each cell, not comose. (Gay, author of Flora of Chile, and Greek word for plant).

A genus of 9 species of the temperate regions of western North America and southern South America; 8 occurring in Nevada.

KEY TO SPECIES

1. Capsule torulose, pedicelled; plants freely branched from the base, repeatedly dichotomous; the upper leaves bract-like.

2. Seeds glabrous.

3. Petals 0.5-1.5 mm. long.

4. The petals 0.5 mm. long; capsule 2-5 mm. long, shorter than the deflexed pedicel; plants quite glabrous.

1. G. ramosissimum.

4. The petals 1-1.5 mm. long; capsule 5-12 mm. long, exceeding the pedicel. . . . . 2. G. Nuttallii.

3. Petals 2-4 mm. long. . . . . 3. G. diffusum.

2. Seeds appressed-canescent.

5. Petals 1-2 mm. long. . . . . 4. G. lasiospermum.

5. Petals 3-4 mm. long. . . . . 5. G. eriospermum.

1. Capsule not torulose, subsessile; plants branched mostly at the base, not so much above; upper leaves quite well developed.

6. Seeds vertically placed in a very narrow capsule.

7. The seeds glabrous. . . . . 6. G. racemosum.

7. The seeds appressed-canescent. . . . . .7. G. Helleri.

6. Seeds obliquely placed in a slightly broader capsule.

8. G. humile.

1. GAYOPHYTUM RAMOSISSIMUM Torr. & Gray, Fl. No. Amer. 1: 513. 1840.

G. ramosissimum var. deflexum Hook. London Journ. Bot. 6: 224. 1847.

Diffusely branched, mostly above the base, with the ultimate branches filiform, quite glabrous sometimes slightly strigulose about the flowers; plant 2-5 dm. tall; leaves lance-linear, 1-3 cm. long, short-petioled, gradually reduced

up the stem; pedicels capillary, 3-5 mm. long, mostly spreading-deflexed; flowers minute; sepals erect, 0.5 mm. long; petals 0.5 mm. long; stigma globose; capsules plump, 2-5 mm. long; seeds glabrous, 0.6 mm. long.

Dry slopes and ridges, Upper Sonoran and Transition Zones, eastern Washington and Oregon to northeastern California, Arizona and Rocky Mts. For Nevada, seen from Washoe, Humboldt, Ormsby, Douglas, Lander, Eureka, Esmeralda, Nye, Elko and White Pine Counties.

2. GAYOPHYTUM NUTTALLII Torr. & Gray, Fl. No. Amer. 1: 514. 1840.

G. ramosissimum var. strictipes Hook. London Journ. Bot. 6: 224. 1847.

With habit and stature of the preceding species, usually more obviously strigulose in the upper parts; pedicels 1-4 mm. long, erect; sepals 1-1.5 mm. long; petals reddish, at least in age, 1-1.5 mm. long; capsules 5-12 mm. long, erect, usually exceeding the pedicels; seeds glabrous, 1-1.5 mm. long.

Dry slopes and ridges, Upper Sonoran and Transition Zones, Washington to Baja California, Dakota, and New Mexico; South America. Nevada plants seen from Washoe, Ormsby, Douglas, Mineral, Esmeralda, Clark, Lander, Elko and White Pine Counties.

var. INTERMEDIUM (Rydb.) Munz, Amer. Journ. Bot. 19: 772. 1932.

G. intermedium Rydb., Bull. Torrey Bot. Club 31: 569. 1904.

Puberulence appressed; pedicels and fruit spreading or deflexed.

Transition Zone, eastern Washington and Oregon to Rocky Mts. For Nevada seen from Washoe, Humboldt, Clark, Elko and Lincoln Counties.

var. ABRAMSII Munz, Amer. Journ. Bot. 19: 772. 1932.

Puberulence short and spreading; pedicels and capsules mostly erect.

Transition Zone, eastern Washington to California and Montana. Nevada plants seen from Washoe County.

3. GAYOPHYTUM DIFFUSUM Torr. & Gray, Fl. No. Amer. 1: 513. 1840.

With general habit and stature of G. Nuttallii, appressed-puberulent in upper parts; pedicels 2-8 mm. long, erect or divaricate; sepals 2-3 mm. long; petals white to pink, 2-4 mm. long; stigma clavate, capitate; capsules 5-12 mm. long, divaricate; seeds glabrous, 1-1.25 mm. long.

Occasional on dry slopes and benches, Transition Zone, Washington to southern California, Montana and Wyoming. Nevada plants seen from Washoe, Douglas and Ormsby Counties.

4. GAYOPHYTUM LASIOSPERMUM Greene, Pittonia 2: 164. 1891.

Plant 2-5 dm. high, branching freely above, with appressed

puberulence in upper parts; leaves linear to lance-linear, 1-3 cm. long, entire; pedicels 3-6 mm. long, divaricate to spreading; sepals 1 mm. long; petals white, turning to rose, 1-2 mm. long; stigma capitate; capsule 4-8 mm. long, torulose; seeds strigose-canescent, 1 mm. long.

Dry places, Transition Zone, Washington to California and Montana. Nevada plants seen from Ormsby, Mineral, Nye, Clark, Lander, and Elko Counties.

5. GAYOPHYTUM ERIOSPERMUM Coville, Contr. U. S. Nat. Herb. 4: 103. 1893.

Like G. lasiospermum in stature, habit, and pubescence of seeds; pedicels 4-8 mm. long; sepals 3 mm. long; petals 3-5 mm. long.

Rare, dry places, Transition Zone, Oregon to California and Idaho. Nevada plants seen from Elko County.

6. GAYOPHYTUM RACEMOSUM Torr. & Gray, Fl. No. Amer. 1: 514. 1840.

Plants low, 1-2 dm. high, subsimple to repeatedly branched from the base, the ultimate branches leafy and relatively simple, strigulose or subglabrous; leaves linear to linear-oblanceolate, 1-3 cm. long; pedicels from almost none to 2 mm. long, erect; sepals 0.5 mm. long; petals white, turning red, scarcely 1 mm. long; capsule subterete, narrowly linear, not torulose, erect, 6-14 mm. long; seeds erect, glabrous, 1 mm. long.

Dry slopes and flats, Transition Zone, and above; Washington to southern California, Arizona and Rocky Mts. Nevada material seen from Washoe, Humboldt, Eureka, and Elko Counties.

var. CAESIUM (Torr. & Gray) Munz, Amer. Journ. Bot. 19: 776. 1932.

G. caesium Torr. & Gray, Fl. No. Amer. 1: 514. 1840.

Whole plant, or only the upper portion, with minute short spreading hairs.

Not common, Transition Zone, Washington to central California and Nevada, from which state material has been seen for Washoe, Ormsby, Humboldt, Elko and White Pine Counties.

7. GAYOPHYTUM HELLERI Rydb. Bull. Torrey Bot. Club 40: 65. 1913.

With habit, size and aspect of G. racemosum, the puberulence of short spreading hairs; seeds appressed-canescent.

Occasional in dry places, Transition Zone, Washington to southern California and Idaho. Nevada plants seen from Washoe and Ormsby Counties.

var. GLABRUM Munz, Amer. Journ. Bot. 19: 777. 1932.

Plant quite glabrous.

Washington to central California and Colorado. Seen from Washoe and Elko Counties, Nevada.

8. GAYOPHYTUM HUMILE Juss. var. HIRTELLA Munz, Amer. Journ. Bot. 19: 778. 1932.

Low, 5-15 cm. tall, branched from base, puberulent with short spreading hairs; the branches relatively simple; leaves linear to lance-linear, 1-3 cm. long, entire, on short petioles, upper leaves somewhat reduced, but quite well developed; sepals 1 mm. long; petals white, 1 mm. long; capsule flattened, non-torulose, erect, 10-15 mm. long; seeds obliquely placed in capsules, 0.6 mm. long.

Rare and local, Transition Zone, eastern Central California, eastern Oregon and adjacent Nevada, where it has been reported from Washoe and Ormsby Counties.

8. GAURA L.

GAURA L. Sp. Pl. 347. 1753.

Caulescent herbs, annual to perennial; leaves alternate; flowers white or pink, irregular, in terminal racemes or spikes; hypanthium narrow and short; sepals 4, deciduous; petals 4, clawed; stamens usually 8, with or without scale-like appendage at base of each filament; ovary 4-celled, with single ovule in each cell; stigma 4-lobed, with cup-like border at base, or discoid and entire; capsule nut-like, obovoid, nearly or quite indehiscent, 1- to 4-seeded. (Greek, proud, some species being showy).

A genus of 16 species of North and South America, 2 occurring in Nevada.

KEY TO SPECIES

1. Plants 5-20 dm. tall, biennial; leaves 1-3 cm. wide, 5-10 cm. long; anthers oval, attached near the middle. 1. G. parviflora.

1. Plants 1-4 dm. tall, perennial; leaves 0.3-1 cm. wide, 1-4 cm. long; anthers linear, attached near the base. . 2. G. coccinea.

1. GAURA PARVIFLORA Dougl. ex Hook. Fl. Bor. Amer. 1: 208. 1834.

Biennial or winter annual, erect, 5-20 dm. tall, simple or with few branches, silky-pilose, with long spreading hairs on stems, veins and leaf-margins, and also with minute glandular pubescence; leaves ovate-lanceolate, almost sessile, repand-dentate to subentire, 3-10 cm. long, 1-3 cm. wide, finely pubescent on general surface; inflorescence spicate, 1-3 dm. long; flowers numerous; hypanthium puberulent, 2-3 mm. long; sepals glabrous to puberulent, 2-3 mm. long; petals 2-4 mm. long, reddish; fruit sessile, 6-10 mm. long, somewhat fusiform, glabrous; seeds 1-2, brown.

Disturbed and waste places, Upper Sonoran and Transition Zones; eastern Washington to Mississippi Valley and Mexico. Reported from Battle Mountain, Lander Co., Nevada.

2. GAURA COCCINEA NUTT. in Fraser's Cat., 1813 as nomen nudum; ex Pursh, Fl. Sept. Amer. 2: 733. 1816.

Perennial herb; stems several to many, simple or branched, ascending, canescent-strigose, mostly 1-3 dm. high; leaves numerous, sessile, oblong-lanceolate to linear, entire to

repand-denticulate, 1-3 cm. long, 3-10 mm. wide; spikes short, 1-2 dm. long; hypanthium 6-10 mm. long; sepals 6-9 mm. long; petals pink or red, turning scarlet, 5-8 mm. long; stamens almost as long as petals; fruits canescent, 5-7 mm. long, 2.5-3 mm. thick, the body proper 4-angled, abruptly constricted into a stout base.

Dry slopes, Upper Sonoran Zone, Alberta and Manitoba to southeastern California, Arizona and Texas. Fairly common in Clark County, Nevada.

var. GLABRA (Lehm.) Torr. & Gray, Fl. No. Amer. 1: 518. 1840.

Plant nearly or quite glabrous; leaves more wavy; hypanthium strigulose.

With much the range of the species. Clark Co., Nevada.

9. CIRCAEA L.

CIRCAEA L. Sp. Pl. 9. 1753.

Low slender perennial herbs with subterranean rootstocks with tuber-like enlargements; leaves opposite, thin, petioled; flowers small, in racemes paniculately disposed; hypanthium short, deciduous and with a ring-like disk within; sepals 2, reflexed; petals 2, white, notched; stamens 2, alternate with the petals; ovary 1- or 2-celled, each cell 1-ovuled; fruit nut-like, 1- or 2-seeded, obovoid, indehiscent, usually with hooked hairs. (Named for Circe, the enchantress).

Several species, from cooler places in the northern hemisphere; one occurring in Nevada.

1. CIRCAEA PACIFICA Aschers. & Magnus. Bot. Zeit. 29: 392. 1871.

Erect, 2-4 dm. tall; leaf-blades ovate, usually rounded at the base, entire or minutely denticulate, 2-6 cm. long, on petioles 2-3 cm. long; pedicels 3-4 mm. long, reflexed in fruit; calyx and corolla about 1 mm. long; capsule narrowly obovoid, 1-celled, 2 mm. long, covered with soft, hooked hairs.

Cold moist woods of the Transition Zone, British Columbia to southern California and the Rocky Mts. Nevada collections seen from Washoe, Douglas, and Elko Counties.

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