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PART I

NORTH AMERICAN FLORA

CHENOPODIALES

CHENOPODIACEAE

PAUL CARPENTER STANDLEY



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ANNOUNCEMENT

NORTH AMERICAN FLORA is designed to present in one work descriptions of all plants growing, independent of cultivation, in North America, here taken to include Greenland, Central America, the Republic of Panama, and the West Indies, except Trinidad, Tobago, and Curaçao and other islands off the north coast of Venezuela, whose flora is essentially South American.

The work will be published in parts at irregular intervals, by the New York Botanical Garden, through the aid of the income of the David Lydig Fund bequeathed by Charles P. Daly.

It is planned to issue parts as rapidly as they can be prepared, the extent of the work making it possible to commence publication at any number of points. The completed work will form a series of volumes with the following sequence:

Volume 1. Myxomycetes, Schizophyta, Diatomaceae.

Volumes 2 to 10. Fungi.

Volumes 11 to 13. Algae.

Volumes 14 and 15. Bryophyta.

Volume 16. Pteridophyta and Gymnospermae.

Volumes 17 to 19. Monocotyledones.

Volumes 20 to 34. Dicotyledones.

The preparation of the work has been referred by the Scientific Directors of the Garden to a committee consisting of Dr. N. L. Britton, Dr. W. A. Merrill, and Dr. J. H. Barnhart.

Professor George F. Atkinson, of Cornell University; Professor John M. Coulter, of the University of Chicago; Mr. Frederick V. Coville, of the United States Department of Agriculture; Professor Byron D. Halsted, of Rutgers College; and Professor William Trelease, of the University of Illinois, have consented to act as an advisory committee.

Each author will be wholly responsible for his own contributions, being restricted only by the general style adopted for the work, which must vary somewhat in the treatment of diverse groups.

The subscription price is fixed at \$1.50 for each part; it is expected that four or five parts will be required for each volume. A limited number of separate parts will be sold at \$2.00 each. Address:

THE NEW YORK BOTANICAL GARDEN

BRONX PARK

NEW YORK CITY

Order CHENOPODIALES*

BY PAUL CARPENTER STANDLEY

Herbs, shrubs, or trees, sometimes with scandent stems, or the stems composed of short fleshy joints, with green or highly colored foliage. Leaves alternate or opposite, rarely verticillate, stipulate or estipulate, scattered or crowded, sometimes all basal, often succulent and fleshy, the blades broad and flat or terete, rarely reduced to scales, frequently asymmetric, simple or pinnatifid, entire or toothed. Flowers regular or nearly so, perfect or unisexual and monoecious or dioecious, often much reduced, variously arranged, rarely in axillary cones or sunken in depressions in the stems, often bracteate, the bracts occasionally united to form a calyx-like involucre. Calyx usually present, membranous, hyaline, scarious, coriaceous, or herbaceous, sometimes brightly colored and corolla-like, composed of 1 to numerous, distinct or united, valvate or imbricate segments, these often persistent and accrescent or variously modified in fruit. Corolla present or wanting, small and inconspicuous or large and showy, the segments distinct, imbricate, sometimes unguiculate, entire or toothed or lobed. Androecium of 1 to many stamens, these usually as many as the calyx-segments and opposite or alternate with them, hypogynous or perigynous, the filaments distinct or united, equal or unequal, often with intervening or adjacent staminodia or pseudostaminodia, or the outer filaments sometimes modified to petal-like pseudostaminodia; anthers introrse, 2-4-celled, opening by longitudinal valves. Gynoecium of a single carpel or of few or numerous united carpels; ovary 1- to many-celled, sometimes 1-celled by suppression, superior or rarely inferior, sessile or stipitate; styles distinct or united; stigmas various, slender and elongate or stout and short, often capitate, rarely dissected. Ovules 1 to many, anatropous, amphitropous, or campylotropous. Fruit a utricle, achene, berry, capsule, or anthocarp, or aggregate, rarely nutlike, indehiscent, irregularly dehiscent, or circumscissile, or opening by apical or longitudinal valves. Seeds sometimes arillate; embryo curved, annular, or spirally coiled, rarely straight; endosperm usually present, mealy or fleshy.

Fruit a utricle, achene, or berry, sometimes an anthocarp, indehiscent or circumscissile, never a horned nut; corolla none.

Fruit a utricle or an anthocarp.

Stipules none; stamens not inserted on a hypanthium.

Fruit a utricle; perianth never corolla-like.

Bracts herbaceous or none; filaments usually free.

Fam. 1. CHENOPODIACEAE.

Bracts dry, never herbaceous; filaments united, at least at the base.

Fam. 2. AMARANTHACEAE.

Fruit an anthocarp, the achene surrounded by the adnate persistent base of the perianth; perianth usually corolla-like.

Fam. 3. ALLIONIACEAE.

Stipules present, or, if wanting, the stamens inserted on the margin of a hypanthium.

Fam. 9. CORRIGIOLACEAE.

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- Fruit baccate or an achene, or aggregate, never a utricle or an anthocarp.
- Flowers in axillary cones; fruit aggregate; endosperm none. Fam. 4. **BATIDACEAE.**
 Flowers never in axillary cones; fruit baccate or an achene or aggregate; endosperm present. Fam. 5. **PETIVERIACEAE.**
- Fruit a capsule, dehiscent by apical or longitudinal valves, or, if otherwise, a corolla present in the flowers; or the fruit rarely a 4-6-horned nut.
- Ovary 2-several-celled, or by abortion rarely 1-celled; corolla none, or of numerous petals. Fam. 6. **TETRAGONIACEAE.**
- Ovary 1-celled; corolla usually present, of usually 5, rarely 6-16 petals.
- Sepals fewer than the petals, usually 2; leaves alternate or opposite, usually succulent, fleshy. Fam. 7. **PORTULACACEAE.**
 Plants never with twining stems; ovules 2 to many. Fam. 8. **BASELLACEAE.**
 Plants with twining stems; ovule 1.
- Sepals of the same number as the petals, or the petals rarely wanting; leaves opposite, only rarely succulent.
- Sepals distinct; ovary sessile; petals not unguiculate. Fam. 10. **ALSINACEAE.**
 Sepals united; ovary stipitate; petals unguiculate. Fam. 11. **CARYOPHYLLACEAE.**

Family 1. CHENOPODIACEAE*

BY PAUL CARPENTER STANDLEY

Herbs or shrubs, or rarely small trees, often succulent, glabrous or pubescent, the pubescence often of inflated hairs, the stems often articulate. Leaves opposite or alternate, estipulate, sessile or petiolate, the blades plane and broad or often succulent and cylindric or semiterete, sometimes reduced to scales, usually entire, sometimes irregularly dentate or lobed, never regularly serrate. Flowers perfect, polygamous, monoecious, or dioecious, usually regular, small, green or greenish, usually solitary in small cymose glomerules, these spicate, axillary, paniculate, or cymose, or the flowers solitary and axillary, sometimes arranged in strobiles or sunken in depressions in the stems, each flower bracteate, bracteate and bibracteolate, or naked, the bracts and bractlets usually herbaceous. Perianth simple, sometimes wanting in the pistillate flowers, herbaceous or membranaceous, of 2-5 segments or rarely 1, these more or less united below, persistent after anthesis and unchanged, or variously modified, often accrescent and developing wings or spines or corniculate appendages or becoming fleshy or indurate, imbricate in bud. Stamens equaling or fewer than the perianth-segments and opposite them, hypogynous or adnate to a disk or to the base of the perianth, rarely alternating with pseudo-staminodia; filaments linear, subulate, or filiform; anthers dorsifixed, didymous, oblong, or sagittate, 4-celled, introrse, dehiscent by ventral or lateral fissures, the connective narrow, rarely produced into an erect, plane, cucullate, or vesiculose appendage; pollen-grains globose, usually with numerous pores. Ovary superior, free or rarely adnate to the base of the perianth, 1-celled, usually narrowed at the apex to the style, rarely truncate; style terminal, short or elongate, the stigma capitate, or the styles 2-3 and elongate, introrsely papillose, or the stigmas 2-5, sessile, and often filiform; ovule solitary, campylotropous, erect on a short basal funicle or suspended from the apex of an elongate funicle. Fruit a utricle, membranaceous, coriaceous, or fleshy, usually included in the perianth and often deciduous with it, indehiscent or rarely circumscissile, the pericarp free or adherent to the seed. Seed erect, inverted, or horizontal, lenticular, subglobose, reniform, or ovoid; testa crustaceous, coriaceous, fleshy, or membranaceous, smooth or granulate; endosperm farinaceous, fleshy, or wanting; embryo annular or hippocrepiform and enclosing the endosperm, or sometimes dorsal and conduplicate, or plane or conic-spiral; cotyledons usually narrow, planoconvex, the radicle elongate.

Embryo annular, hippocrepiform, conduplicate, or semiannular, partly or wholly surrounding the endosperm.

Perianth-segments strongly imbricate, nearly distinct.

I. POLYCNEMEAE.

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- Perianth-segments slightly if at all imbricate.
 Fruit opening after ripening or at germination by a lid; flowers perfect.
 Fruit indehiscent.
 Leaves well developed; stems not jointed; flowers usually glomerate, or solitary in the axils.
 Fruit when ripe, or even later, enclosed by the perianth or by bracts.
 Pubescence of inflated, stellate, or glandular hairs, or sometimes wanting.
 Flowers mostly perfect, ebracteolate.
 Flowers usually unisexual, the pistillate ones bracteolate.
 Pubescence sericeous; flowers usually perfect, mostly ebracteolate.
 Fruit naked when ripe; flowers perfect, spicate, ebracteolate.
 Leaves reduced, scale-like; stems jointed; flowers in fleshy spikes or sunken in joints of the stems, perfect, ebracteolate.
 Embryo spirally coiled; endosperm wanting or divided by the embryo into two parts.
 Flowers ebracteolate, monoecious, the staminate ones consisting of stamens arranged beneath a peltate scale, in ament-like spikes.
 Flowers bracteolate, mostly perfect, never in ament-like spikes.
 Bractlets small, scale-like, shorter than the perianth; embryo plane-spiral.
 Bractlets equaling or longer than the perianth; embryo usually conic-spiral.
- II. BETEAE.

III. CHENOPODIEAE.
IV. ATRIPLICEAE.
V. KOCHIEAE.
VI. CORISPERMEAE.
VII. SALICORNIEAE.
VIII. SARCOBATIDEAE.
IX. DONDIEAE.
X. SALSOLEAE.

I. POLYCNEMEAE. Small herbs, sometimes suffrutescent at the base. Leaves opposite or alternate, the blades narrow. Flowers perfect, solitary, subtended by 2 bractlets and 2 foliaceous bracts; perianth-segments nearly free, erect, strongly imbricate. Fruit membranaceous, indehiscent, included in the unchanged perianth.

1. NITROPHILA S. Wats. Bot. King's Expl. 297. 1871.

Perennial herbs from horizontal rootstocks, much branched, the branches subarticulate. Leaves opposite, the blades linear or oblong, entire, fleshy. Flowers perfect, 2-bracteolate, small, axillary, solitary or in 3's; perianth chartaceous-membranaceous, 5-parted, the segments erect, concave, 1-nerved, unequal, unchanged in fruit. Stamens 5, perigynous; filaments filiform, distinct; anthers subglobose. Style filiform, the 2 stigmas subulate; ovule pendulous from an erect funicle. Utricle shorter than the perianth, ovoid, the pericarp membranaceous, free from the seed. Seed vertical, lenticular; embryo annular, nearly surrounding the copious endosperm; radicle inferior.

Type species, *Banalia occidentalis* (Nutt.) Moq.

1. Nitrophila occidentalis (Nutt.) S. Wats. Bot. King's Expl. 297. 1871.

Banalia occidentalis Moq. in DC. Prodr. 13²: 279. 1849.
Halimocnemis occidentalis Nutt.; Moq. in DC. Prodr. 13²: 279, as synonym. 1849.
Glaux acutifolia A. Heller, Muhlenbergia 2: 109. 1906.

Plants glabrous; rootstocks stout, elongate; stems erect or decumbent, 1-3 dm. long, much branched, the branches slender or stout, obtusely angled; leaves sessile, the lowest blades oblong, clasping, the upper ones linear, 0.5-2.5 cm. long, semiterete, acute or acuminate, mucronate; bracts similar to the leaves but shorter, usually 2-3 times as long as the calyx; flowers sessile or the lateral ones short-pedicelated; calyx-lobes broadly oblong to ovate, obtuse, stramineous or whitish; stamens included; fruit brown; seed 1 mm. broad, smooth, black and shining, the margin rounded.

TYPE LOCALITY: Oregon.

DISTRIBUTION: In alkaline soil, Oregon, Nevada, and California.

ILLUSTRATION: E. & P. Nat. Pfl. 3^{1a}: f. 21, K-M.

II. BETEAE. Annual or perennial herbs. Leaves alternate, glabrous. Flowers perfect, spicate or cymose; perianth-segments 5 or 3, herbaceous or

membranaceous, nearly free. Stamens 5 or fewer, united at the base. Fruit enclosed in the perianth or subtended by it, vertically compressed, opening by a lid either when ripe or at germination. Seed horizontal; embryo annular or semiannular.

Perianth-segments indurate at the base in age; stamens 5.
Perianth-segments unchanged in age; stamen 1.

2. BETA.
3. APHANISMA.

2. BETA L. Sp. Pl. 222. 1753.

Glabrous or pubescent, annual, biennial, or perennial herbs, with fleshy, often much thickened roots. Leaves alternate, the basal ones rosulate, usually petiolate, the blades entire or sinuate. Flowers perfect, bracteate and bibracteolate, small, in glomerules of 3 or more, or rarely solitary, the glomerules sessile in the axils or in terminal, simple or paniculate spikes; perianth urceolate, 5-lobed, adherent to the base of the ovary and to the others of the same glomerule, in fruit closed and indurate, the lobes erect or inflexed, costate. Stamens 5, perigynous; filaments subulate; anthers oblong. Stigmas 2-5, short, connate at the base. Pericarp attached to the perianth below, above fleshy or indurated, free from the seed. Seed horizontal, orbicular or reniform, smooth; embryo annular or nearly so, surrounding the copious endosperm.

Type species, *Beta vulgaris* L.

1. *Beta vulgaris* L. Sp. Pl. 222. 1753.

Beta vulgaris Cicla L. Sp. Pl. 222. 1753.

Beta hortensis Mill. Gard. Dict. ed. 8. Beta no. 2. 1768.

Beta Cicla Pers. Syn. Pl. 1: 295. 1805.

Erect annual or biennial, 6-12 dm. high, usually glabrous throughout, the roots often much thickened, the stems 1 or several from each root, paniculately branched above, often red; petioles of the lower leaves often equaling the blades, the uppermost leaves sometimes sessile; blades of the basal leaves oval or ovate-oblong, rounded or obtuse at the apex, subcordate and abruptly decurrent at the base, entire or subsinuate, often undulate, fleshy, green or dark-red, the blades of the upper leaves broadly ovate to lanceolate, acute or acuminate; glomerules of flowers at first in dense spikes, these in age much elongate and interrupted, leafy below, naked above; calyx-lobes oblong, becoming linear, obtuse, strongly carinate; stigmas 2 or rarely 3; seed 1.5-2 mm. broad.

TYPE LOCALITY: Seacoast of Europe.

DISTRIBUTION: Europe, Asia, and northern Africa, and widely cultivated; escaped from cultivation in southern California and Mexico, and fugitive in the eastern United States.

ILLUSTRATIONS: Reichenb. Ic. Fl. Germ. 24: pl. 233-235; E. & P. Nat. Pfl. 3^{1a}: f. 24; Schkuhr, Handb. pl. 56; Pratt, Fl. Pl. Great Brit. pl. 175, f. 2; Müll. & Pilling, Deuts. Fl. pl. 176; Hegi, Ill. Fl. f. 539; Fiori & Paol. Ic. Fl. Ital. f. 1004.

3. APHANISMA Nutt.; Moq. in DC. Prodr. 13²: 54. 1849.

Cryptanthus Nutt.; Moq. in DC. Prodr. 13²: 54, as synonym. 1849. Not *Cryptanthus* Otto & Dietr. 1836.

Glabrous succulent annual herbs. Leaves alternate, sessile or petiolate, the blades entire. Flowers perfect, green, solitary or in clusters of 3-5, axillary, sessile; perianth 3-cleft, rarely 4- or 5-cleft, the lobes subequal, obovate-oblong, obtuse, 1-nerved, unchanged in fruit. Stamen 1, hypogynous; filaments filiform; anthers ellipsoid-globose. Style short, the 3 stigmas very short, recurved. Utricle globose, exceeding the perianth, finely 5-costate, finally circumscissile; pericarp crustaceous, green, free from the seed. Seed horizontal, lenticular, the surface finely rugulose, shining; embryo imperfectly annular, surrounding the copious endosperm.

Type species, *Aphanisma blitoides* Nutt.

1. *Aphanisma blitoides* Nutt.; Moq. in DC. Prodr. 13²: 54. 1849.

Cryptanthus blitoides Nutt.; Moq. in DC. Prodr. 13²: 54, as synonym. 1849.

Plants much branched from the base, the branches simple or sparsely branched, 1-6 dm. long, prostrate, decumbent, or ascending, stout or slender, succulent, subterete; blades

of the lower leaves spatulate, oblanceolate, or oblong, 2–5 cm. long, obtuse or acutish, tapering at the base to a short petiole, thin, bright-green, the blades of the upper leaves shorter, ovate-oblong to cordate-ovate, acute or acuminate, sessile by a clasping base; fruit 1.2–2 mm. broad; seed 1–1.5 mm. in diameter, the margin rounded.

TYPE LOCALITY: Near San Diego, California.

DISTRIBUTION: Coast of southern California and Lower California, and on the adjacent islands.

ILLUSTRATION: E. & P. Nat. Pfl. 3^{1a}: f. 23.

III. CHENOPODIEAE. Herbs or rarely shrubs, the pubescence usually of inflated or glandular hairs, or wanting. Leaves mostly alternate. Flowers usually glomerate, sometimes solitary, commonly paniculate or cymose; perianth-segments 3–5, sometimes 1 or 6–8, united at the base or nearly to the apex, unchanged or fleshy in age or sometimes winged horizontally in fruit. Stamens 1–5, free, or united at the base. Fruit compressed vertically or laterally. Seed vertical or horizontal; embryo annular or hippocrepiform.

Stamen 1; perianth-segments 1, or 6–8.

Perianth-segment 1; plants not glandular-pubescent.

Perianth-segments 6–8; plants glandular-pubescent.

Stamens usually 3–5; perianth-segments 3–5.

Perianth horizontally winged in fruit.

Perianth not winged.

Perianth reticulate-veined, shallowly dentate at the apex.

Perianth not veined, usually deeply lobed.

Flowers not in spheric, spicate heads; perianth slightly if at all fleshy, never baccate; seed horizontal or vertical.

Flowers in spheric, spicate heads; perianth fleshy, baccate, and bright-red at maturity; seed vertical.

4. MONOLEPIS.

5. MEIOMERIA.

6. CYCLOLOMA.

7. ROUBIEVA.

8. CHENOPODIUM.

9. BLITUM.

4. MONOLEPIS Schrad. Ind. Sem. Hort. Goetting. 1830: 4.

1830.—Linnaea 6: Lit.-Ber. 73. 1831.

Branched annual herbs. Leaves petiolate or sessile, the blades entire or hastate. Flowers polygamous, ebracteate, densely clustered in axillary glomerules, or sometimes solitary. Perianth-segment 1, rarely wanting, persistent, unchanged in fruit. Stamen 1 or wanting. Stigmas 2, subulate, connate at the base. Utricle ovoid, compressed, the cells of the pericarp conspicuous, the pericarp slightly adherent to the seed. Seed erect, compressed; embryo annular, surrounding the endosperm; radicle inferior.

Type species, *Chenopodium trifidum* Trev.

Leaf-blades hastately lobed; sepals acute.

1. *M. Nuttalliana*.

Leaf-blades entire; sepals obtuse.

Flower-clusters 10–20-flowered; leaf-blades narrowly spatulate, 5–15 mm. long.

2. *M. spathulata*.

Flower-clusters 1–5-flowered; leaf-blades oblong to obovate, 2–8 mm. long.

3. *M. pusilla*.

1. Monolepis Nuttalliana (Schultes) Greene, Fl. Franc. 168. 1891.

Blitum chenopodioides Nutt. Gen. 1: 4. 1818. Not *B. chenopodioides* Lam. 1783.

Blitum Nuttallianum Schultes, in R. & S. Syst. Veg. Mant. 1: 65. 1822.

Chenopodium trifidum Trev. Ind. Sem. Vratisl. 1829.—Moq. Chenop. Enum. 45, as synonym. 1840.

Monolepis trifida Schrad. Ind. Sem. Hort. Gotting. 1830: 4. 1830.—Linnaea 6: Litt.-Ber. 73. 1831.

Blitum Nuttallianum minus Moq. Chenop. Enum. 45. 1840.

Monolepis chenopodioides Moq. in DC. Prodr. 13²: 85. 1849.

Monolepis chenopodioides trifida Moq. in DC. Prodr. 13²: 86. 1849.

Chenopodium arcticum Moq. in DC. Prodr. 13²: 86, as synonym. 1849.

Monolepis asiatica Moq. in DC. Prodr. 13²: 86. 1849.

Stems stout, succulent, ascending, much branched, 8–30 cm. high, somewhat farinose when young, glabrate in age; petioles 0.5–5 cm. long, or the upper leaves sessile; leaf-blades triangular to lanceolate or narrowly oblong, 1–6.5 cm. long, hastately lobed at the base, the lateral lobes divergent, the terminal lobe entire or coarsely and remotely dentate, obtuse or acutish, succulent, narrowed at the base and decurrent, sparsely farinose when young, the uppermost blades sometimes entire; flower-clusters sessile, densely many-flowered, often

reddish in age; sepal spatulate to obovate, acute or acutish; pericarp minutely pitted; seed 1 mm. in diameter, dark-brown or black, the margin acute.

TYPE LOCALITY: On arid soils near the banks of the Missouri [River].

DISTRIBUTION: In alkaline or dry soil, Manitoba to Alberta, California, Sonora, Texas, and Missouri; on ballast in Maine; Siberia; Patagonia.

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 1377; ed. 2. f. 1696; E. & P. Nat. Pfl. 3^{1a}: f. 28, A.

2. *Monolepis spathulata* A. Gray, Proc. Am. Acad. 7: 389. 1868.

Plants much branched from the base, the branches decumbent or ascending, 3–15 cm. long, glabrous, or the younger parts slightly farinose; leaf-blades narrowly spatulate, or the lower ones obovate, 5–15 mm. long, 1.5–5 mm. wide, rounded to acute at the apex, narrowed at the base into a short petiole, entire; flower-clusters sessile, 10–20-flowered; sepal spatulate, obtuse; pericarp minutely papillose, free from the seed; seed about 0.4 mm. in diameter, brown, shining.

TYPE LOCALITY: Sierra Nevada, at Mono Pass, California.

DISTRIBUTION: Oregon and Idaho to northern Lower California.

3. *Monolepis pusilla* Torr.; S. Wats. Bot. King's Expl. 289. 1871.

Plants 4–20 cm. high, farinose when young but becoming glabrate, erect, dichotomously much branched, the branches very slender, spreading; leaves short-petiolate, the blades entire, 4–12 mm. long, oblong to oblong-elliptic, obtuse, acute at the base; flower-clusters sessile, 2–5-flowered, or the flowers often solitary; sepal obtuse; pericarp minutely tuberculate, adherent to the seed; seed 0.5 mm. in diameter, dull, the margin obtuse or acutish.

TYPE LOCALITY: Alkaline valleys of western Nevada, at 1200–1500 meters elevation.

DISTRIBUTION: In alkaline soil, Wyoming and Colorado to Washington and California.

5. MEIOMERIA Standley, gen. nov.

Sparsely glandular-pubescent, branched, annual herbs. Leaves alternate, sessile, the blades linear, entire. Flowers perfect, ebracteate, glomerate, the glomerules sessile or short-pedunculate in the axils of the leaves, solitary or fasciculate; perianth 6–8-parted, the segments scarcely concave, linear, acute, in age developing a vertical crest, this much higher than the breadth of the sepals, broadest near the apex or at the middle, usually denticulate in age. Stamen 1, hypogynous, the filament linear, exceeding the perianth; anther oblong. Ovary ovoid; style nearly obsolete; stigmas 2, filiform, elongate. Utricle enclosed by the perianth, puberulent, adherent, membranaceous. Seed erect, minute, subglobose; embryo incompletely annular, surrounding the copious endosperm.

Type species, *Chenopodium stellatum* S. Wats.

1. *Meiomeria stellata* (S. Wats.) Standley.

Chenopodium stellatum S. Wats. Proc. Am. Acad. 18: 146. 1883.

Plants 6–10 cm. high, sparsely branched, the branches ascending or suberect, sparsely glandular-puberulent or short-villous; leaf-blades 4–18 mm. long, 1–1.5 mm. wide, rounded at the apex, narrowed at the base, glandular-puberulent; glomerules present in nearly all the axils, few-flowered, much shorter than the leaves; perianth 1 mm wide, the lobes acuminate or attenuate, closed in fruit; seed 0.3–0.4 mm. in diameter, reddish-brown, dull.

TYPE LOCALITY: In the mountains northeast of Monclova, Coahuila.

DISTRIBUTION: Known only from the type locality.

6. CYCLOLOMA Moq. Chenop. Enum. 17. 1840.

Cyclolepis Moq. Ann. Sci. Nat. II. 1: 203. 1834. Not *Cyclolepis* Gillies, 1832.

Petermannia Reichenb. Nom. Ind. 153. 1841.

Morea Delile, Cat. Hort. Monsp. 1844.—Moq. in DC. Prodr. 13²: 60, as synonym. 1849.

Moreuxia Moq. in DC. Prodr. 13²: 60, as synonym. 1849. Not *Moreuxia* Moc. & Sessé, 1825.

Erect or spreading, much branched, annual herbs. Leaves alternate, petiolate. Flowers small, polygamo-monoecious, bracteate, sessile, solitary or glomerate. Perianth 5-lobed, the lobes triangular-ovate, obtuse, inflexed, carinate, the tube hemispheric, developing in age a broad dentate membranaceous wing. Stamens 5, hypogynous; filaments subulate; anthers oblong. Ovary depressed-globose, tomentulose; stigmas 3, short, free, or united at

the base; ovule sessile. Utricle depressed-globose; pericarp membranaceous, free from the seed. Seed horizontal, smooth; embryo annular, enclosing the farinaceous endosperm; radicle centrifugal.

Type species, *Salsola platyphylla* Michx.

1. *Cycloloma atriplicifolium* (Spreng.) Coult. Mem.
Torrey Club 5: 143. 1894.

- Salsola atriplicifolia* Spreng. Bot. Gart. Hal. Nachtr. 1: 35. 1801.
Kochia atriplicifolia Roth, Neue Beitr. 1: 177. 1802.
Salsola radiata Desf. Ann. Mus. Paris 2: 28. 1803.
Salsola platyphylla Michx. Fl. Bor. Am. 1: 174. 1803.
Kochia dentata Willd. Hort. Berol. pl. 28. 1803.
Salsola atriplicis Schultes, Obs. Bot. 52. 1809.
Chenopodium radiatum Schrad. Neues Jour. Bot. Schrad. 3³: 85. 1809.
Salsola chenopodioides Dum.-Cours. Bot. Cult. ed. 2. 2: 463, as synonym. 1811.
Kochia platyphylla Schultes, in R. & S. Syst. Veg. 6: 274. 1820.
Cyclolepis platyphylla Moq. Ann. Sci. Nat. II. 1: 204. 1834.
Cycloloma platyphyllum Moq. Chenop. Enum. 18. 1840.
Cycloloma platyphyllum latifolium Moq. Chenop. Enum. 19. 1840.
Amorea platyphylla Delile, Cat. Hort. Monsp. 1844.—Moq. in DC. Prodr. 13²: 60, as synonym. 1849.
Amoreuxia platyphylla Moq. in DC. Prodr. 13²: 60, as synonym. 1849.
Cycloloma platyphyllum angustifolium Moq. in DC. Prodr. 13²: 60. 1849.
Chenopodium atriplicifolium A. Ludw.; Asch. & Graebn. Syn. Mittel-Eur. Fl. 5: 18. 1913.

Plants densely branched, 1.5–8 dm. high and of as great diameter, the branches slender, obtusely angled, striate, villous-tomentose with white hairs when young, becoming glabrate; leaves numerous but deciduous in age; petioles 2–15 mm. long; leaf-blades oblong or narrowly oblong in outline, 2–8 cm. long, 6–15 mm. wide, the uppermost smaller, acute, coarsely and irregularly sinuate-dentate, the teeth acute, mucronulate, white-tomentose when young, becoming glabrate; inflorescence broadly paniculate; calyx 3–4 mm. broad, more or less villous, becoming red or purple in age; ovary densely tomentulose; seed 1.5 mm. in diameter, black.

TYPE LOCALITY: North America.

DISTRIBUTION: Sandy fields, Manitoba to Indiana, and southward to Arizona and Texas; occasionally adventive in the eastern United States and Europe.

ILLUSTRATIONS: Ann. Mus. Paris 2: pl. 34; Ann. Sci. Nat. II. 1: pl. 9, A; Willd. Hort. Berol. pl. 28; E. & P. Nat. Pfl. 3^{1a}: f. 28, B–G; Britt. & Brown, Ill. Fl. f. 1376; ed. 2. f. 1694; Rob. & Fern. Man. f. 718; Clements, Rocky Mt. Fl. pl. 10, f. 16; Iowa Geol. Surv. Bull. 4: f. 57; Bull. Mich. Exp. Sta. 267: f. 55; Fiori & Paol. Ic. Fl. Ital. f. 1020.

7. ROUBIEVA Moq. Ann. Sci. Nat. II. 1: 292. 1834.

Pubescent, strong-scented, much branched, prostrate, perennial herbs. Leaves alternate, the blades sinuate-dentate or pinnatifid. Flowers small, perfect, or by abortion pistillate, ebracteate, solitary or clustered in the axils of the leaves. Perianth urceolate, shallowly 5-lobed, the lobes rounded, accrescent and coriaceous in age, reticulate. Stamens 5, the filaments stout. Stigmas 2–5, connate at the base. Utricle enclosed by the perianth, compressed-globose, the pericarp thinly membranaceous, loosely adherent to the seed. Seed erect, orbicular, smooth; embryo annular, surrounding the copious endosperm; radicle inferior.

Type species, *Chenopodium multifidum* L.

1. *Roubieva multifida* (L.) Moq. Ann. Sci. Nat. II. 1: 293. 1834.

- Chenopodium multifidum* L. Sp. Pl. 220. 1753.
Atriplex multifida Crantz, Inst. 1: 207. 1766.
Orthosporum multifidum Kostel. Allg. Med.-Pharm. Fl. 1434. 1835.
Ambrina pinnatisecta Spach, Hist. Vég. 5: 296. 1836.

Plants usually much branched, very leafy, the branches prostrate or ascending, 1.5–7 dm. long, striate, white-villous when young, sometimes glabrate in age; leaves oblong in outline, 1–4.5 cm. long, 3–20 mm. wide, or the upper smaller, bright-green, sparsely villous and glandular, deeply pinnatifid, or the lowest merely coarsely lobed, the segments oblong, acute or obtuse, entire or dentate; flowers sessile; calyx 2 mm. long in fruit, obovoid, reticulate-nerved, puberulent; seed 1 mm. in diameter, black and shining.

TYPE LOCALITY: Argentina.

DISTRIBUTION: Brazil to Argentina and Chile; adventive in waste ground, southern New York to North Carolina, and in Alabama and California; adventive also in southern Europe.

ILLUSTRATIONS: Dill. Hort. Elth. pl. 66, f. 77; Ann. Sci. Nat. II. 1: pl. 10, B; Mart. Fl. Bras. 5¹: pl. 48; Britt. & Brown, Ill. Fl. f. 1374; ed. 2. f. 1692; E. & P. Nat. Pfl. 3^{1a}: f. 27, A–C; G. T. Stevens, Ill. Guide pl. 36, f. 2; Fiori & Paol. Ic. Fl. Ital. f. 1019.

8. CHENOPODIUM L. Sp. Pl. 218. 1753.

- Anserina* Dumort. Fl. Belg. 21. 1827.
Teloxys Moq. Ann. Sci. Nat. II. 1: 289. 1834.
Agathophytum Moq. Ann. Sci. Nat. II. 1: 291. 1834.
Oligandra Less. Linnaea 9: 199. 1834. Not *Oligandra* Less. 1832.
Orthosporum T. Nees, Gen. Fl. Germ. Dicot. 1: pl. 57. 1835.
Ambrina Spach, Hist. Vég. 5: 295. 1836.
Botrydium Spach, Hist. Vég. 5: 298. 1836.
Lipandra Moq. Chenop. Enum. 19. 1840.
Gandriloa Steud. Nom. Bot. ed. 2. 1: 662. 1840.
Oliganthera Endl. Gen. 1377. 1841.
Oxybasis Kar. & Kir. Bull. Soc. Nat. Mosc. 1841: 738. 1841.
Orthospermum Opiz, Seznam 70. 1852.
Vulvaria Bubani, Fl. Pyren. 1: 174. 1897.
Botrys Nieuwl. Am. Midl. Nat. 3: 274. 1914.

Annual or perennial herbs, rarely suffrutescent, often strongly scented, usually either glandular or covered with a farinose pubescence of small white inflated hairs. Leaves alternate, usually petiolate, the blades entire, dentate, or pinnatifid. Flowers perfect or rarely unisexual, ebracteate, small, usually glomerate, the glomerules variously arranged; perianth usually 5-parted, rarely 3- or 4-parted or lobed, the segments concave, often carinate or corniculate-appendaged, herbaceous. Stamens 5 or fewer, hypogynous or subperigynous; filaments sometimes connate at the base; anthers didymous or oblong. Style usually wanting; stigmas 2-5, subulate or filiform. Utricle ovoid and erect or depressed and globose, shorter or longer than the calyx, the pericarp membranaceous or fleshy, free from or adherent to the seed. Seed horizontal or vertical; embryo annular or incompletely annular, surrounding the copious farinaceous endosperm; radicle inferior or centrifugal.

Type species, *Chenopodium rubrum* L.

Seeds all or chiefly horizontal.

Embryo completely encircling the endosperm; plants never with glands on leaves and inflorescence, usually farinose.

Leaf-blades lustrous on the upper surface, rhombic or broadly rhombic.

Leaf-blades dull on the upper surface.

Plants glabrous throughout, flowering from the top to the base; leaf-blades entire.

Plants farinose, at least on the younger parts, usually flowering at the top.

Leaf-blades cordate or subcordate at the base, bright-green, nearly glabrous.

Leaf-blades rounded or truncate to attenuate at the base.

Pericarp free from the seed, or, if adherent, the blades of the lower leaves linear or entire or 3-lobed, when 3-lobed the terminal lobe entire or subentire.

Leaf-blades linear, narrowly lanceolate, or narrowly oblong, entire, or subhastate at the base, short-petiolate.

Calyx-lobes carinate, closely investing the fruit or erect; pericarp green or greenish.

Calyx-lobes not carinate, spreading and slightly accrescent in fruit; pericarp red.

Leaf-blades lance-ovate, broadly oblong, oval, or broader, long-petiolate.

Plants not ill-scented.

Leaf-blades much longer than broad, entire, or obscurely lobed at the base, or the lowest ones sinuate-dentate.

Leaf-blades about as broad as long, conspicuously 3-lobed.

Plants very ill-scented, densely farinose; pericarp adherent.

Pericarp adherent to the seed; at least the lower leaf-blades conspicuously sinuate-dentate.

Embryo not completely encircling the endosperm; leaves and inflorescence with numerous glands, except in one species.

Leaf-blades linear, entire; plants without glands.

Leaf-blades broader than linear, all or most of them dentate or pinnatifid; plants with glands on the leaves and inflorescence.

Pericarp not gland-dotted; inflorescence loosely dichotomous, some of the flowers pediceled.

Calyx-lobes corniculate-appendaged.

Calyx-lobes not corniculate-appendaged.

I. URBICA.

II. POLYSPERMA.

III. HYBRIDA.

IV. LEPTOPHYLLA.

V. CYCLOIDIA.

VI. BOSCIANA.

VII. FREMONTIANA.

VIII. VULVARIÆ.

IX. ALBA.

X. ARISTATA.

XI. INCISA.

XII. BOTRYES.

Pericarp gland-dotted; inflorescence spicate or paniculate.
Seeds all or nearly all vertical.

Pubescence of glandular hairs.

Pubescence of inflated hairs or wanting, never glandular.

Leaf-blades densely white-farinose beneath, at least when young.

Leaf-blades very sparsely or not at all farinose.

Annuals, glabrous; stigmas very short.

Perennials, sparsely farinose on the young parts; stigmas slender, elongate.

XIII. AMBROSIODIA.

XIV. CARINATA.

XV. GLAUCA.

XVI. RUBRA.

XVII. CALIFORNICA.

I. URBICA

Leaf-blades densely farinose beneath; inflorescence a naked terminal panicle; margins of the seeds acute.

Leaf-blades glabrate.

Inflorescence of axillary spikes; margins of the seeds obtuse.

Inflorescence of axillary cymes; margins of the seeds acute.

1. *C. mexicanum*.

2. *C. urbicum*.

3. *C. murale*.

II. POLYSPERMA

A single species.

4. *C. polyspermum*.

III. HYBRIDA

A single species.

5. *C. hybridum*.

IV. LEPTOPHYLLA

Pericarp free from the seed.

Leaf-blades linear, entire, 1-nerved, or the lowest lance-linear, obscurely lobed at the base, and 3-nerved.

Plants glabrate, bright-green; branches ascending or spreading; seed 1.5 mm. broad.

Plants densely farinose; branches erect or strongly ascending; seed 1 mm. broad.

Leaf-blades narrowly lanceolate or oblong, 3-nerved.

Plants tall, erect; leaf-blades narrowly lanceolate, the lower ones hastately lobed.

Plants low, usually diffusely branched; leaf-blades oblong, entire.

6. *C. subglabrum*.

7. *C. leptophyllum*.

8. *C. pratericola*.

9. *C. desiccatum*.

Pericarp adherent to the seed.

Leaf-blades linear; calyx closed in fruit; plants not ill-scented.

Plants nearly glabrous; seed 1.5 mm. broad.

Plants densely farinose; seed 0.8 mm. broad.

Leaf-blades oblong or narrowly oblong; calyx open in fruit; plants ill-scented.

10. *C. pallescens*.

11. *C. inamoenum*.

12. *C. hians*.

V. CYCLOIDIA

A single species.

13. *C. cycloides*.

VI. BOSCIANA

Pericarp adherent to the seed.

Leaf-blades 0.4–0.8 cm. long; inflorescence densely leafy, the glomerules shorter than the leaves; seed 1 mm. broad.

Leaf-blades 1.2–2 cm. long; inflorescence nearly naked, open; seed 0.5–0.6 mm. broad.

Pericarp free from the seed.

Plants copiously farinose.

Plants bright-green, glabrate.

Leaf-blades thick, the upper ones usually obtuse, the lower not sinuate-dentate; plants stout, the inflorescence dense.

Leaf-blades thin, the upper ones acute, the lower sinuate-dentate; plants very slender, the inflorescence lax.

14. *C. carnosulum*.

15. *C. nevadense*.

16. *C. albescens*.

17. *C. atrovirens*.

18. *C. Boscianum*.

VII. FREMONTIANA

Pericarp free from the seed.

Plants very stout, low, the inflorescence dense; leaf-blades thick, densely farinose, at least beneath, small.

Plants slender, tall, the inflorescence slender, lax; leaf-blades thin, usually glabrate.

Leaf-blades coarsely sinuate-dentate.

Leaf-blades entire except for the hastate, usually spreading lobes at the base.

19. *C. incanum*.

20. *C. Pringlei*.

21. *C. Fremonti*.

22. *C. neomexicanum*.

23. *C. flabellifolium*.

Pericarp adherent to the seed.

Seed 1.3–1.5 mm. broad.

Seed 0.7–1 mm. broad.

Leaf-blades broader than long, usually shorter than the petioles.

Leaf-blades as long as broad or slightly longer, longer than the petioles.

Leaf-blades mostly rounded at the apex, 1.5–2.5 cm. long; seed 0.7–0.8 mm. broad; branches strongly ascending.

Leaf-blades usually acute, 0.7–1.6 cm. long; seed 1 mm. broad; branches ascending from a usually spreading base.

24. *C. Palmeri*.

25. *C. arizonicum*.

VIII. VULVARIÆ

- Leaf-blades entire, as broad as long. 26. *C. Vulvaria*.
 Leaf-blades more or less lobed, usually longer than broad. 27. *C. Watsoni*.
 Leaf-blades large, 1-4 cm. long, obscurely lobed at the base. 28. *C. Parryi*.
 Leaf-blades small, 0.5 cm. long or less, the lower ones deeply trilobate.

IX. ALBA

- Blades of the lower leaves about as broad as long.
 Young leaves and inflorescence bright-red; plants 1-3 meters high, stout. 29. *C. amaranticolor*.
 Plants bluish-green, never red, 3-10 dm. high, usually slender. 30. *C. viride*.
 Blades of all the leaves conspicuously longer than broad, often twice as long or longer.
 Calyx open, exposing the fruit. 31. *C. ferulatum*.
 Calyx closely enclosing the fruit.
 Plants coarsely and loosely farinose, yellowish; seed coarsely punctate. 32. *C. dacoticum*.
 Plants very finely and closely farinose; seed finely punctulate or smooth.
 Seed dull; blades of the upper leaves conspicuously hastate. 33. *C. petiolare*.
 Seed shining.
 Leaf-blades, all except the lowest, entire, lanceolate or oblong-lanceolate, bright-green. 34. *C. lanceolatum*.
 Leaf-blades nearly all dentate or lobed, broader than lanceolate.
 Seed 1.3-2 mm. broad; plants not ill-scented.
 Plants bright-green; inflorescence usually loose and open. 35. *C. paganum*.
 Plants copiously farinose; inflorescence usually dense. 36. *C. album*.
 Seed 0.8-1 mm. broad; plants usually ill-scented.
 Leaf-blades conspicuously 3-lobed, the upper hastate; plants stout, yellowish. 37. *C. hircinum*.
 Leaf-blades dentate, never 3-lobed; plants slender, never yellowish. 38. *C. Berlandieri*.

X. ARISTATA

- A single species. 39. *C. aristatum*.

XI. INCISA

- A single species in North America. 40. *C. incisum*.

XII. BOTRYES

- Leaf-blades pinnatifid nearly to the midrib into linear segments. 41. *C. dissectum*.
 Leaf-blades sinuate-pinnatifid half way to the midrib or less into broad rounded lobes. 42. *C. Botrys*.

XIII. AMBROSIOIDIA

- Stems white-villous; upper leaf-blades dentate or sinuate-pinnatifid. 43. *C. vagans*.
 Stems puberulent or glabrate; upper leaf-blades mostly entire, or obscurely dentate. 44. *C. ambrosioides*.

XIV. CARINATA

- A single species in North America. 45. *C. carinatum*.

XV. GLAUCA

- Leaf-blades 1-4 cm. wide, glabrate in age. 46. *C. farinosum*.
 Leaf-blades 0.3-1.5 cm. wide, farinose beneath in age.
 Flowers mostly in loose elongate interrupted spikes; inflorescence not villous; seed smooth. 47. *C. glaucum*.
 Flowers in dense short axillary spikes; inflorescence sparsely villous; seed finely tuberculate. 48. *C. salinum*.

XVI. RUBRA

- Stems erect, 3-10 dm. high; leaf-blades sinuate-dentate; glomerules of flowers in dense elongate spikes; seed 0.8-1 mm. broad. 49. *C. rubrum*.
 Stems prostrate or ascending, 2 dm. long or less; leaf-blades usually hastately lobed, otherwise entire; glomerules of flowers solitary or subspicate; seed 0.5-0.6 mm. broad. 50. *C. humile*.

XVII. CALIFORNICA

- Leaf-blades entire or subsinuate. 51. *C. Bonus-Henricus*.
 Leaf-blades deeply dentate. 52. *C. californicum*.

I. *Urbica*. Pubescence sparse or abundant, of inflated whitish hairs. Leaf-blades rhombic or deltoid, sinuate-dentate, succulent, lustrous on the upper surface. Glomerules

of flowers in cymes or spikes; calyx-lobes carinate or rounded on the back, imperfectly enclosing the fruit. Pericarp adherent to the seed, green. Seed horizontal, dull or lustrous.

1. **Chenopodium mexicanum** Moq. in DC. Prodr. 13²: 70. 1849.

Erect or ascending annual, 2–5 dm. high, branched throughout, the branches very stout, spreading or ascending, sparsely farinose when young, becoming glabrate; petioles stout, half as long as the blades or shorter; leaf-blades triangular or triangular-rhombic, 3–8 cm. long, 2.5–5 cm. wide, obtuse at the apex, truncate or shortly and abruptly cuneate at the base, coarsely and irregularly sinuate-dentate, bright-green on the upper surface and sparsely farinose or glabrate, lustrous, densely white-farinose beneath; flowers sessile in small glomerules, these arranged in slender interrupted paniculate spikes, the whole inflorescence consisting of a naked terminal pyramidal panicle 4–10 cm. long; calyx glabrous, green, deeply cleft, the lobes oblong or oval, rounded or obtuse at the apex, rounded on the back, imperfectly enclosing the fruit; stamens usually 5; style-branches short; pericarp green, slightly adherent; seed horizontal, 1 mm. broad, punctulate, shining, the margin acute.

TYPE LOCALITY: Near the City of Mexico, Mexico.

DISTRIBUTION: Vicinity of the type locality.

2. **Chenopodium urbicum** L. Sp. Pl. 218. 1753.

Atriplex urbica Crantz, Inst. 1: 206. 1766.

Chenopodium deltoideum Lam. Fl. Fr. 3: 249. 1778.

Chenopodium rhombifolium Muhl.; Willd. Enum. 288. 1809.

Chenopodium intermedium Mert. & Koch, Deuts. Fl. 2: 297. 1826.

Chenopodium urbicum intermedium Koch, Syn. Fl. Germ. 605. 1837.

Chenopodium urbicum rhombifolium Moq. Chenop. Enum. 32. 1840.

Vulvaria deltoidea Bubani, Fl. Pyren. 1: 176. 1897.

Erect annual, 3–10 dm. high, simple or sparsely branched, the branches ascending, stout, glabrous; leaves numerous, the petioles equaling or shorter than the blades; leaf-blades triangular to rhombic-ovate, 2.5–5.5 cm. long, the upper smaller, acute or obtuse, bright-green, lustrous on the upper surface, more or less farinose when young but soon glabrate, the uppermost blades usually entire; flowers sessile in small glomerules, these sessile in slender, elongate, interrupted, simple or paniculate, nearly naked spikes; calyx deeply cleft, the lobes obovate, rounded or emarginate at the apex, green, imperfectly enclosing the fruit, rounded on the back; pericarp green, slightly adherent; seed horizontal, 0.7–1 mm. broad, brownish-black, smooth, shining, the margin obtuse.

TYPE LOCALITY: Northern Europe.

DISTRIBUTION: Europe and northern Asia; sparsely adventive from Nova Scotia to Ontario, Missouri, and Maryland.

ILLUSTRATIONS: Sturm, Deuts. Fl. 75: pl. 3, 4; Fl. Dan. pl. 1148; Britt. & Brown, Ill. Fl. f. 1366; ed. 2. f. 1685; Sv. Bot. pl. 459; Engl. Bot. pl. 717; Reichenb. Ic. Fl. Germ. 24: pl. 246, pl. 247, f. 1–3; Moss, Cambr. Brit. Fl. pl. 163, 164; Hegi, Ill. Fl. f. 544, g–l; Benth. Ill. Handb. f. 840; Fiori & Paol. Ic. Fl. Ital. f. 1012; Pratt, Fl. Pl. Great Brit. pl. 176, f. 1; Bull. Mich. Exp. Sta. 267: f. 54.

3. **Chenopodium murale** L. Sp. Pl. 219. 1753.

Atriplex muralis Crantz, Inst. 1: 206. 1766.

Chenopodium guineense Jacq. Coll. 2: 346. 1788.

Chenopodium carthagenense Zuccagni, in Roem. Coll. 133. 1806.

Chenopodium murale albescens Moq. Chenop. Enum. 32. 1840.

Chenopodium murale carthagenense Moq. in DC. Prodr. 13²: 69. 1849.

Vulvaria trachiosperma Bubani, Fl. Pyren. 1: 177. 1897.

Chenopodium murale spissidentatum Murr, Magyar Bot. Lap. 2: 11. 1903.

Erect or ascending annual, 2–6 dm. high, simple or usually much branched from the base, the branches stout, ascending, glabrous or sparsely farinose; petioles slender, equaling or shorter than the blades; leaf-blades ovate or ovate-rhombic, 3–8 cm. long, 2.5–5 cm. wide, acute or obtuse, subtruncate to cuneate at the base, irregularly sinuate-dentate to lacinate-serrate, with obtuse or acute teeth, glabrate or often copiously farinose, at least beneath, lustrous on the upper surface; flowers sessile, more or less farinose, the small glomerules arranged in lax or dense, axillary and terminal, mostly leafless cymes or panicles; calyx deeply cleft, the lobes oblong, obtuse, herbaceous, green, obscurely carinate, incompletely enclosing

the fruit; stamens exserted; styles short; pericarp green, adherent; seed horizontal, 1.2–1.5 mm. broad, dull, finely punctulate, the margin acute.

TYPE LOCALITY: Europe.

DISTRIBUTION: Europe, Asia, and Africa; adventive and established nearly throughout North America from southern Canada to Guatemala and the West Indies.

ILLUSTRATIONS: Jacq. Ic. Pl. Rar. *pl.* 345; Fl. Dan. *pl.* 2048; E. & P. Nat. Pfl. 3^{1a}: *f.* 27, *D*; Britt. & Brown, Ill. Fl. *f.* 1367; ed. 2. *f.* 1686; Engl. Bot. *pl.* 1722; Sturm, Deuts. Fl. 75: *pl.* 5; Reichenb. Ic. Fl. Germ. 24: *pl.* 245, *f.* 1–5; Magyar Bot. Lap. 2: *pl.* 8, *f.* 32; Iowa Geol. Surv. Bull. 4: *f.* 269, *C*; Moss, Cambr. Brit. Fl. *pl.* 162; G. T. Stevens, Ill. Guide *pl.* 35, *f.* 10; Hegi, Ill. Fl. *f.* 544, *a–e*; Benth. Ill. Handb. *f.* 841; Fiori & Paol. Ic. Fl. Ital. *f.* 1011; Pratt, Fl. Pl. Great Brit. *pl.* 176, *f.* 2; Bull. Mich. Exp. Sta. 267: *f.* 52.

II. *Polysperma*. Plants glabrous throughout. Leaf-blades entire. Glomerules of flowers spicate or racemose, present in the axils of even the lowest leaves. Perianth spreading in age. Pericarp free, green. Seed horizontal, shining.

4. *Chenopodium polyspermum* L. Sp. Pl. 220. 1753.

Atriplex polysperma Crantz, Inst. 1: 207. 1766.
Chenopodium marginatum Spreng.; Hornem. Hort. Hafn. 1: 256. 1813.
Chenopodium acutifolium Smith, Comp. Fl. Brit. 42. 1816.
Chenopodium polyspermum obtusifolium Gaud. Fl. Helv. 2: 258. 1828.
Chenopodium polyspermum acutifolium Gaud. Fl. Helv. 2: 259. 1828.
Oligandra atriplicoides Less. Linnaea 9: 199. 1834.
Lipandra atriplicoides Moq. Chenop. Enum. 19. 1840.
Gandriola atriplicoides Steud. Nom. Bot. ed. 2. 1: 662. 1840.
Vulvaria polysperma Bubani, Fl. Pyren. 1: 175. 1897.

Glabrous, erect or ascending annual, 3–9 dm. high, much branched, the lower branches often decumbent, the others ascending, stout; petioles slender, half as long as the blades or shorter; leaf-blades ovate to oval or elongate-oval, 3–8 cm. long, obtuse to rounded at the apex or rarely acute, rounded to cuneate at the base, entire, rather thin, bright-green, the upper blades smaller, narrower, often acute; flowers in dense spikes or in loose cymes, these terminal and present in the axils of most of the leaves; calyx deeply cleft, the lobes oblong to lance-oblong, obtuse or acute, green, spreading in age; pericarp thick, free; seed horizontal, about 1 mm. broad, slightly flattened, nearly smooth, black, shining, the margin rounded.

TYPE LOCALITY: Europe.

DISTRIBUTION: Europe and northern Asia; sparsely adventive in the United States from Maine to New Jersey and Tennessee, and in Oregon.

ILLUSTRATIONS: Sturm, Deuts. Fl. 75: *pl.* 12; Engl. Bot. *pl.* 1481; Fl. Dan. *pl.* 1153; Lobel, Ic. 1: 256, *f.* 1; Britt. & Brown, Ill. Fl. *f.* 1362; ed. 2. *f.* 1682; Leighton, Fl. Shropsh. *pl.* 5; Reichenb. Ic. Fl. Germ. 24: *pl.* 236; Moss, Cambr. Brit. Fl. *pl.* 156; Hegi, Ill. Fl. *f.* 543, *k–o*; Pratt, Fl. Pl. Great Brit. *pl.* 175, *f.* 4; Benth. Ill. Handb. *f.* 836; Fiori & Paol. Ic. Fl. Ital. *f.* 1008; G. T. Stevens, Ill. Guide *pl.* 35, *f.* 4; Bull. Mich. Exp. Sta. 267: *f.* 53.

III. *Hybrida*. Plants tall, glabrous except on the younger parts, these sparsely farinose with inflated whitish trichomes. Leaf-blades, at least the lower ones, cordate or subcordate at the base, bright-green. Glomerules of flowers spicate or cymose. Calyx-lobes rounded on the back, imperfectly enclosing the fruit. Pericarp adherent to the seed. Seed horizontal.

5. *Chenopodium hybridum* L. Sp. Pl. 219. 1753.

Atriplex hybrida Crantz, Inst. 1: 207. 1766.
Chenopodium angulosum Lam. Fl. Fr. 3: 249. 1778.
Chenopodium stramonifolium Chev. Fl. Paris 2: 383. 1827.
Chenopodium hybridum cymigerum Neilr. Fl. Wien 190. 1846.
Vulvaria stramonifolia Bubani, Fl. Pyren. 1: 177. 1897.
Botrys hybrida Nieuwl. Am. Midl. Nat. 3: 275. 1914.

Erect, bright-green annual, 3–14 dm. high, glabrous except about the inflorescence, usually much branched, the branches slender, ascending or spreading; petioles slender, half as long as the blades or shorter; leaf-blades broadly ovate to triangular-ovate, 7–22 cm. long, long-acuminate, rounded or usually subcordate at the base, sinuate-angled, with usually 2–4 large triangular acute teeth on each side, the upper blades narrower and often entire; flowers sessile, in small glomerules, these arranged in dense slender naked paniculate spikes or in loose dichotomous cymes, the branches more or less farinose; calyx green or rarely purplish, farinose, deeply cleft, the lobes oblong or oval, obtuse or emarginate, rounded on the back,

of flowers in cymes or spikes; calyx-lobes carinate or rounded on the back, imperfectly enclosing the fruit. Pericarp adherent to the seed, green. Seed horizontal, dull or lustrous.

1. *Chenopodium mexicanum* Moq. in DC. Prodr. 13²: 70. 1849.

Erect or ascending annual, 2–5 dm. high, branched throughout, the branches very stout, spreading or ascending, sparsely farinose when young, becoming glabrate; petioles stout, half as long as the blades or shorter; leaf-blades triangular or triangular-rhombic, 3–8 cm. long, 2.5–5 cm. wide, obtuse at the apex, truncate or shortly and abruptly cuneate at the base, coarsely and irregularly sinuate-dentate, bright-green on the upper surface and sparsely farinose or glabrate, lustrous, densely white-farinose beneath; flowers sessile in small glomerules, these arranged in slender interrupted paniculate spikes, the whole inflorescence consisting of a naked terminal pyramidal panicle 4–10 cm. long; calyx glabrous, green, deeply cleft, the lobes oblong or oval, rounded or obtuse at the apex, rounded on the back, imperfectly enclosing the fruit; stamens usually 5; style-branches short; pericarp green, slightly adherent; seed horizontal, 1 mm. broad, punctulate, shining, the margin acute.

TYPE LOCALITY: Near the City of Mexico, Mexico.

DISTRIBUTION: Vicinity of the type locality.

2. *Chenopodium urbicum* L. Sp. Pl. 218. 1753.

Atriplex urbica Crantz, Inst. 1: 206. 1766.

Chenopodium deltoideum Lam. Fl. Fr. 3: 249. 1778.

Chenopodium rhombifolium Muhl.; Willd. Enum. 288. 1809.

Chenopodium intermedium Mert. & Koch, Deuts. Fl. 2: 297. 1826.

Chenopodium urbicum intermedium Koch, Syn. Fl. Germ. 605. 1837.

Chenopodium urbicum rhombifolium Moq. Chenop. Enum. 32. 1840.

Vulvaria deltoidea Bubani, Fl. Pyren. 1: 176. 1897.

Erect annual, 3–10 dm. high, simple or sparsely branched, the branches ascending, stout, glabrous; leaves numerous, the petioles equaling or shorter than the blades; leaf-blades triangular to rhombic-ovate, 2.5–5.5 cm. long, the upper smaller, acute or obtuse, bright-green, lustrous on the upper surface, more or less farinose when young but soon glabrate, the uppermost blades usually entire; flowers sessile in small glomerules, these sessile in slender, elongate, interrupted, simple or paniculate, nearly naked spikes; calyx deeply cleft, the lobes obovate, rounded or emarginate at the apex, green, imperfectly enclosing the fruit, rounded on the back; pericarp green, slightly adherent; seed horizontal, 0.7–1 mm. broad, brownish-black, smooth, shining, the margin obtuse.

TYPE LOCALITY: Northern Europe.

DISTRIBUTION: Europe and northern Asia; sparsely adventive from Nova Scotia to Ontario, Missouri, and Maryland.

ILLUSTRATIONS: Sturm, Deuts. Fl. 75: pl. 3, 4; Fl. Dan. pl. 1148; Britt. & Brown, Ill. Fl. f. 1366; ed. 2. f. 1685; Sv. Bot. pl. 459; Engl. Bot. pl. 717; Reichenb. Ic. Fl. Germ. 24: pl. 246, pl. 247, f. 1–3; Moss, Cambr. Brit. Fl. pl. 163, 164; Hegi, Ill. Fl. f. 544, g–l; Benth. Ill. Handb. f. 840; Fiori & Paol. Ic. Fl. Ital. f. 1012; Pratt, Fl. Pl. Great Brit. pl. 176, f. 1; Bull. Mich. Exp. Sta. 267: f. 54.

3. *Chenopodium murale* L. Sp. Pl. 219. 1753.

Atriplex muralis Crantz, Inst. 1: 206. 1766.

Chenopodium guineense Jacq. Coll. 2: 346. 1788.

Chenopodium carthagenense Zuccagni, in Roem. Coll. 133. 1806.

Chenopodium murale albescens Moq. Chenop. Enum. 32. 1840.

Chenopodium murale carthagenense Moq. in DC. Prodr. 13²: 69. 1849.

Vulvaria trachiosperma Bubani, Fl. Pyren. 1: 177. 1897.

Chenopodium murale spissidentatum Murr, Magyar Bot. Lap. 2: 11. 1903.

Erect or ascending annual, 2–6 dm. high, simple or usually much branched from the base, the branches stout, ascending, glabrous or sparsely farinose; petioles slender, equaling or shorter than the blades; leaf-blades ovate or ovate-rhombic, 3–8 cm. long, 2.5–5 cm. wide, acute or obtuse, subtruncate to cuneate at the base, irregularly sinuate-dentate to lacinate-serrate, with obtuse or acute teeth, glabrate or often copiously farinose, at least beneath, lustrous on the upper surface; flowers sessile, more or less farinose, the small glomerules arranged in lax or dense, axillary and terminal, mostly leafless cymes or panicles; calyx deeply cleft, the lobes oblong, obtuse, herbaceous, green, obscurely carinate, incompletely enclosing

the fruit; stamens exserted; styles short; pericarp green, adherent; seed horizontal, 1.2–1.5 mm. broad, dull, finely punctulate, the margin acute.

TYPE LOCALITY: Europe.

DISTRIBUTION: Europe, Asia, and Africa; adventive and established nearly throughout North America from southern Canada to Guatemala and the West Indies.

ILLUSTRATIONS: Jacq. Ic. Pl. Rar. *pl.* 345; Fl. Dan. *pl.* 2048; E. & P. Nat. Pfl. 3^{1a}: *f.* 27, *D*; Britt. & Brown, Ill. Fl. *f.* 1367; ed. 2. *f.* 1686; Engl. Bot. *pl.* 1722; Sturm, Deuts. Fl. 75: *pl.* 5; Reichenb. Ic. Fl. Germ. 24: *pl.* 245, *f.* 1–5; Magyar Bot. Lap. 2: *pl.* 8, *f.* 32; Iowa Geol. Surv. Bull. 4: *f.* 269, *C*; Moss, Cambr. Brit. Fl. *pl.* 162; G. T. Stevens, Ill. Guide *pl.* 35, *f.* 10; Hegi, Ill. Fl. *f.* 544, *a–e*; Benth. Ill. Handb. *f.* 841; Fiori & Paol. Ic. Fl. Ital. *f.* 1011; Pratt, Fl. Pl. Great Brit. *pl.* 176, *f.* 2; Bull. Mich. Exp. Sta. 267: *f.* 52.

II. *Polysperma*. Plants glabrous throughout. Leaf-blades entire. Glomerules of flowers spicate or racemose, present in the axils of even the lowest leaves. Perianth spreading in age. Pericarp free, green. Seed horizontal, shining.

4. *Chenopodium polyspermum* L. Sp. Pl. 220. 1753.

Atriplex polysperma Crantz, Inst. 1: 207. 1766.
Chenopodium marginatum Spreng.; Hornem. Hort. Hafn. 1: 256. 1813.
Chenopodium acutifolium Smith, Comp. Fl. Brit. 42. 1816.
Chenopodium polyspermum obtusifolium Gaud. Fl. Helv. 2: 258. 1828.
Chenopodium polyspermum acutifolium Gaud. Fl. Helv. 2: 259. 1828.
Oligandra atriplicoides Less. Linnaea 9: 199. 1834.
Lipandra atriplicoides Moq. Chenop. Enum. 19. 1840.
Gandriloa atriplicoides Steud. Nom. Bot. ed. 2. 1: 662. 1840.
Vulvaria polysperma Bubani, Fl. Pyren. 1: 175. 1897.

Glabrous, erect or ascending annual, 3–9 dm. high, much branched, the lower branches often decumbent, the others ascending, stout; petioles slender, half as long as the blades or shorter; leaf-blades ovate to oval or elongate-oval, 3–8 cm. long, obtuse to rounded at the apex or rarely acute, rounded to cuneate at the base, entire, rather thin, bright-green, the upper blades smaller, narrower, often acute; flowers in dense spikes or in loose cymes, these terminal and present in the axils of most of the leaves; calyx deeply cleft, the lobes oblong to lance-oblong, obtuse or acute, green, spreading in age; pericarp thick, free; seed horizontal, about 1 mm. broad, slightly flattened, nearly smooth, black, shining, the margin rounded.

TYPE LOCALITY: Europe.

DISTRIBUTION: Europe and northern Asia; sparsely adventive in the United States from Maine to New Jersey and Tennessee, and in Oregon.

ILLUSTRATIONS: Sturm, Deuts. Fl. 75: *pl.* 12; Engl. Bot. *pl.* 1481; Fl. Dan. *pl.* 1153; Lobel, Ic. 1: 256, *f.* 1; Britt. & Brown, Ill. Fl. *f.* 1362; ed. 2. *f.* 1682; Leighton, Fl. Shropsh. *pl.* 5; Reichenb. Ic. Fl. Germ. 24: *pl.* 236; Moss, Cambr. Brit. Fl. *pl.* 156; Hegi, Ill. Fl. *f.* 543, *k–o*; Pratt, Fl. Pl. Great Brit. *pl.* 175, *f.* 4; Benth. Ill. Handb. *f.* 836; Fiori & Paol. Ic. Fl. Ital. *f.* 1008; G. T. Stevens, Ill. Guide *pl.* 35, *f.* 4; Bull. Mich. Exp. Sta. 267: *f.* 53.

III. *Hybrida*. Plants tall, glabrous except on the younger parts, these sparsely farinose with inflated whitish trichomes. Leaf-blades, at least the lower ones, cordate or subcordate at the base, bright-green. Glomerules of flowers spicate or cymose. Calyx-lobes rounded on the back, imperfectly enclosing the fruit. Pericarp adherent to the seed. Seed horizontal.

5. *Chenopodium hybridum* L. Sp. Pl. 219. 1753.

Atriplex hybrida Crantz, Inst. 1: 207. 1766.
Chenopodium angulosum Lam. Fl. Fr. 3: 249. 1778.
Chenopodium stramonifolium Chev. Fl. Paris 2: 383. 1827.
Chenopodium hybridum cymigerum Neill. Fl. Wien 190. 1846.
Vulvaria stramonifolia Bubani, Fl. Pyren. 1: 177. 1897.
Botrys hybrida Nieuwl. Am. Midl. Nat. 3: 275. 1914.

Erect, bright-green annual, 3–14 dm. high, glabrous except about the inflorescence, usually much branched, the branches slender, ascending or spreading; petioles slender, half as long as the blades or shorter; leaf-blades broadly ovate to triangular-ovate, 7–22 cm. long, long-acuminate, rounded or usually subcordate at the base, sinuate-angled, with usually 2–4 large triangular acute teeth on each side, the upper blades narrower and often entire; flowers sessile, in small glomerules, these arranged in dense slender naked paniculate spikes or in loose dichotomous cymes, the branches more or less farinose; calyx green or rarely purplish, farinose, deeply cleft, the lobes oblong or oval, obtuse or emarginate, rounded on the back,

imperfectly enclosing the fruit; pericarp adherent; seed horizontal, 1.5–2 mm. broad, brownish-black, punctulate, the margin obtuse.

TYPE LOCALITY: Europe.

DISTRIBUTION: Quebec to Virginia, Texas, California, and British Columbia, apparently adventive eastward; Europe, Asia, northern Africa, and the Hawaiian Islands.

ILLUSTRATIONS: Vaill. Bot. Paris. *pl.* 7, *f.* 2; Fl. Dan. *pl.* 2049; Britt. & Brown, Ill. Fl. *f.* 1368; ed. 2. *f.* 1687; Engl. Bot. *pl.* 1919; Baxter, Brit. Bot. *pl.* 352; Sturm, Deuts. Fl. 75: *pl.* 2; Reichenb. Ic. Fl. Germ. 24: *pl.* 243, *pl.* 244, *f.* 1; Iowa Geol. Surv. Bull. 4: *f.* 60, *f.* 269, *B.*; Moss, Cambr. Brit. Fl. *pl.* 165; Hegi, Ill. Fl. *f.* 543, *p-t.*; Pratt, Fl. Pl. Great Brit. *pl.* 176, *f.* 3; Fiori & Paol. Ic. Fl. Ital. *f.* 1010; Benth. Ill. Handb. *f.* 842; G. T. Stevens, Ill. Guide *pl.* 35, *f.* 11; Bull. Mich. Exp. Sta. 267: *f.* 51.

IV. *Leptophylla*. Tall or low, usually much branched, erect plants, usually copiously farinose with inflated white trichomes. Leaves short-petiolate, the blades linear to linear-lanceolate or narrowly oblong, entire or subhastate. Glomerules of flowers spicate or cymose. Calyx-lobes carinate, closely enclosing the fruit at maturity or erect. Pericarp free or adherent to the seed, green. Seed horizontal.

6. *Chenopodium subglabrum* (S. Wats.) A. Nelson, Bot. Gaz. 34: 362. 1902.

Chenopodium leptophyllum subglabrum S. Wats. Proc. Am. Acad. 9: 95. 1874.
Botrys subglabra Lunell, Am. Midl. Nat. 4: 306. 1916.

Slender erect annual, 2–6 dm. high, simple below or usually much branched throughout, the branches ascending or spreading, stout, often flexuous, green, glabrous; petioles one sixth to one third as long as the blades; leaf-blades linear or nearly so, 1-nerved, 2–3.5 cm. long, 4 mm. wide or less, acute or acuminate, pale-green, glabrous, or sparsely and finely farinose beneath, the upper blades shorter than the lower; flowers in small glomerules, these in slender interrupted flexuous spikes; calyx slightly farinose, the lobes orbicular-obovate, cucullate, carinate, obtuse or rounded at the apex, green; pericarp free; seed horizontal, 1.5 mm. broad, strongly compressed, dark reddish-brown, smooth, shining, the margin obtuse or acutish.

TYPE LOCALITY: Sandhills of the Platte River.

DISTRIBUTION: On sandhills, eastern Washington and Oregon to Montana and central Nebraska.

7. *Chenopodium leptophyllum* Nutt.; (Moq. in DC. Prodr. 13²: 71, as synonym. 1849) S. Wats. Proc. Am. Acad. 9: 94. 1874.

Chenopodium album leptophyllum Moq. in DC. Prodr. 13²: 71. 1849.
Botrys leptophylla Nieuwl. Am. Midl. Nat. 3: 275. 1914.

Erect annual, 2–8 dm. high, simple or branched below, usually much branched above, the branches stout or slender, ascending or suberect, copiously farinose or becoming glabrate; petioles short, less than one fourth as long as the blades, commonly only 3–4 mm. long; leaf-blades linear or lance-linear, 1.5–4.5 cm. long, usually 2–3 mm., rarely 6 mm. wide, obtuse or rounded to acutish at the apex, attenuate or cuneate at the base, entire, or occasionally with 2 small basal lobes, thick, densely white-farinose, or glabrate on the upper surface, the upper blades little reduced; flowers in small or large, dense glomerules, these in dense or interrupted, slender or stout, paniculate spikes; calyx densely farinose, the lobes obovate or oval, obtuse, carinate, completely enclosing the fruit; pericarp free; seed horizontal, 1 mm. broad, nearly black, smooth, shining, the margin obtuse.

TYPE LOCALITY: California.

DISTRIBUTION: In dry soil, Manitoba, Alberta, and southward to Sonora, Chihuahua, and California, and occasionally adventive eastward; on sandy beaches, Maine to New Jersey; adventive in Europe.

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. *f.* 1361; ed. 2. *f.* 1680; G. T. Stevens, Ill. Guide *pl.* 35, *f.* 5.

8. *Chenopodium pratericola* Rydb. Bull. Torrey Club 39: 310. 1912.

Chenopodium leptophyllum S. Wats. Proc. Am. Acad. 9: 94. in part. 1874. Not *C. leptophyllum* Nutt. 1874.

Chenopodium petiolare leptophylloides Murr, Bull. Herb. Boiss. II. 4: 994. 1904.
Botrys pratericola Lunell, Am. Midl. Nat. 4: 306. 1916.

Erect annual, 2–8 dm. high, much branched throughout or simple below, the branches ascending or suberect, stout, glabrate, or rarely densely farinose; petioles half as long as the blades or shorter; leaf-blades lanceolate to oblong-elliptic or rarely ovate-lanceolate, 2–6 cm. long, 4–18 mm. wide, obtuse or acute, cuneate at the base, 3-nerved, entire, or the larger ones commonly with a short rounded tooth on each side near the base, thick, densely farinose beneath, usually glabrate and bright-green on the upper surface, the upper blades reduced; flowers in dense, large or small, glomerules arranged in usually dense, paniculate spikes; calyx densely farinose, the lobes obtuse, white-margined, carinate, completely enclosing the fruit; pericarp free; seed horizontal, 1 mm. broad, smooth, black and shining, the margin obtuse.

TYPE LOCALITY: Riley County, Kansas.

DISTRIBUTION: In dry soil or waste ground, Saskatchewan to Missouri, northern Mexico, California, and Washington; occasionally adventive in the eastern United States.

9. *Chenopodium desiccatum* A. Nelson, Bot. Gaz. 34: 362. 1902.

Chenopodium leptophyllum oblongifolium S. Wats. Proc. Am. Acad. 9: 95. 1874.

Chenopodium oblongifolium Rydb. Bull. Torrey Club 33: 137. 1906.

Erect annual, 1–4 dm. high, usually much branched throughout, the branches stout, ascending or spreading, copiously farinose or finally glabrate, often tinged with red; petioles half as long as the blades or shorter; leaf-blades oblong or narrowly oblong to ovate-oblong, 0.8–2 cm. long, rounded or obtuse at the apex, cuneate at the base, 3-nerved at the base, entire, densely and coarsely farinose, or becoming glabrate on the upper surface, the upper blades little reduced; flowers in rather large dense glomerules crowded to form short stout paniculate spikes; calyx densely and coarsely farinose, the lobes obovate, obtuse, carinate, completely enclosing the fruit; pericarp free; seed horizontal, 1 mm. broad, turgid, nearly smooth, dark reddish-brown, shining, the margin obtuse.

TYPE LOCALITY: Mill Creek, Wyoming.

DISTRIBUTION: In dry soil, Idaho to South Dakota, Kansas, New Mexico, and southeastern California.

10. *Chenopodium pallescens* Standley, sp. nov.

Erect annual, 3–6 dm. high, much branched throughout, the branches subdichotomous, stout, spreading or ascending, obtusely angled, striate, pale-green, glabrate or sparsely and finely farinose; petioles 2–5 mm. long; leaf-blades linear, 1.5–3.5 cm. long, 1.5–3 mm. wide, 1-nerved, obtuse or acutish, attenuate at the base, entire, thick, pale-green, glabrous or very sparsely and closely farinose, the upper blades shorter and narrower; flowers in rather large glomerules, these in short, interrupted, broadly paniculate or cymose-paniculate spikes, the inflorescence sparsely leafy; calyx slightly farinose, deeply cleft, the lobes rounded-ovate, fleshy, green, carinate, completely enclosing the fruit; pericarp adherent, finely tuberculate; seed horizontal, 1.5 mm. broad, nearly smooth, black, shining, the margin rounded.

Type collected near Roswell, New Mexico, altitude 1140 meters, in August, 1900, *F. S. and Esther S. Earle 326* (U. S. Nat. Herb. no. 382478).

DISTRIBUTION: Stony hillsides or sandy fields, Missouri to central Texas and southeastern New Mexico.

11. *Chenopodium inamoenum* Standley, sp. nov.

Erect annual, 1–8 dm. high, much branched, the branches mostly simple, ascending or suberect, slender or rather stout, obtusely angled, densely but finely farinose; petioles 2–7 mm. long; leaf-blades linear or oblong-linear, 1–3 cm. long, 1–5 mm. wide, obtuse, narrowly cuneate at the base, 1-nerved, entire, thick, densely farinose, or becoming glabrate on the upper surface, the uppermost blades reduced; flowers in rather large glomerules, these in stout, usually dense, mostly erect, axillary or terminal, simple or narrowly paniculate spikes, the inflorescence leafy or nearly naked; calyx densely farinose, cleft to the middle, the lobes ovate, obtuse or acutish, becoming erect, slightly carinate; pericarp adherent; seed horizontal, 0.8 mm. broad, nearly smooth, black and shining, the margin obtuse.

Type collected near White Water, Chihuahua, Mexico, September 11, 1893, *E. A. Mearns 2286* (U. S. Nat. Herb. no. 233970).

DISTRIBUTION: Wyoming to northern Chihuahua, Nevada, and eastern Oregon.

12. *Chenopodium hians* Standley, sp. nov.

Ill-scented erect annual, 4–8 dm. high, usually simple at the base, or with a few short slender weak branches, sparsely branched above, the branches stout, erect or nearly so, copiously and coarsely farinose, obscurely and obtusely angled; petioles stout, half as long as the blades or shorter; leaf-blades elliptic-oblong, oblong, or narrowly lance-oblong, 1.2–3 cm. long, 3–8 mm. wide, rounded or obtuse at the apex, very shortly apiculate, cuneate at the base, green and glabrate on the upper surface, densely and rather coarsely white-farinose beneath, thick, the upper blades sometimes linear; glomerules large, in very stout, dense, erect, axillary or narrowly paniculate spikes; calyx densely farinose, cleft nearly to the base, the lobes rounded-oblong or ovate, obtusely carinate, yellowish, tinged with green, erect at maturity and exposing the fruit; pericarp closely adherent; seed horizontal, 0.8–1 mm. broad, black, shining, nearly smooth, the margin obtuse.

TYPE COLLECTED near Dulce, New Mexico, altitude 2150 meters, August 19, 1911, *Paul C. Standley 8129* (U. S. Nat. Herb. no. 687056).

DISTRIBUTION: Dry hillsides, southwestern Wyoming and northern New Mexico.

V. *Cycloidia*. Plants farinose with whitish inflated trichomes. Leaves short-petiolate, the blades linear, entire. Calyx-lobes rounded on the back, slightly accrescent and rotate in fruit. Pericarp adherent to the seed, red. Seed horizontal.

13. *Chenopodium cycloides* A. Nelson, Bot. Gaz. 34: 363. 1902.

Erect annual, 3–4 dm. high, much branched, the branches slender, ascending, usually from a spreading base, mostly simple, glabrous or very sparsely and finely farinose, usually reddish; petioles 3 mm. long or less; leaf-blades linear, 1–1.5 cm. long, 1–1.5 mm. wide, 1-nerved, obtuse or acutish, thick, bright-green, glabrous on the upper surface, minutely and sparsely farinose beneath; flowers in rather large glomerules, these in slender or stout, short, dense or interrupted, narrowly paniculate spikes, the inflorescence nearly naked; calyx sparsely farinose, shallowly lobed, the lobes broadly rounded at the apex, rounded on the back, the margins scarious, the whole calyx broadly spreading and slightly accrescent in fruit; pericarp adherent, bright-red, minutely tuberculate; seed horizontal, strongly compressed, 1.3 mm. broad, nearly smooth, black, shining, the margin acutish.

TYPE LOCALITY: Grant County, Kansas.

DISTRIBUTION: On sandhills, southwestern Kansas and southern New Mexico.

VI. *Bosciana*. Plants bright-green and glabrate or copiously farinose with whitish inflated trichomes. Leaves long-petiolate, the blades broadly oblong to rhombic, or the uppermost narrower, entire or subhastate, the lowest sometimes sinuate-dentate. Glomerules of flowers spicate or cymose. Calyx-lobes carinate, usually completely enclosing the fruit. Pericarp free from or adherent to the seed. Seed horizontal.

14. *Chenopodium carnosulum* Moq. in DC. Prodr. 13²: 64. 1849.

Erect or ascending annual, much branched, the branches slender, spreading, striate, 1–3 dm. long, sparsely farinose when young, glabrate in age; petioles 1–2 mm. long; leaf-blades rhombic-deltoid to ovate-oblong or elliptic, 4–8 mm. long, 2–4 mm. wide, obtuse or acutish, cuneate to rounded at the base, thick and succulent, sparsely farinose when young but soon glabrate, entire or near the base very shallowly lobed, the lobes broadly rounded, the lateral veins obsolete; flowers in small axillary glomerules shorter than the leaves; calyx 5-lobed, the lobes rounded, farinose, succulent, subcarinate, imperfectly enclosing the fruit; pericarp adherent, thin, green; seed horizontal, 1 mm. broad, nearly black, the margin obtuse.

TYPE LOCALITY: Given as California, but this probably incorrect; possibly the type really came from Patagonia.

DISTRIBUTION: On Mt. Orizaba, Mexico; also in southern Argentina.

15. *Chenopodium nevadense* Standley, sp. nov.

Erect annual, 2.5–3 dm. high, much branched, the branches subdichotomous, ascending, stout below, slender and flexuous above, bright-green, slightly striate; petioles rather stout,

half as long as the blades or sometimes longer; leaf-blades rhombic-ovate to ovate-oblong, 1.2–2 cm. long, obtuse or rounded at the apex, not cuspidate, narrowly or broadly cuneate at the base, entire or obscurely hastate, the lobes spreading, thick and fleshy, bright-green, very obscurely farinose, even when young, the upper blades little reduced but narrower, mostly oblong; glomerules of flowers very small, loosely cymose-paniculate, the branches dichotomous or subgeniculate; calyx rather copiously and closely farinose, the lobes oval or ovate, acute or obtuse, slightly carinate, completely enclosing the fruit; pericarp closely adherent; seed 0.5–0.6 mm. broad, the margin obtuse.

Type collected at Winnemucca Lake, Washoe County, Nevada, altitude 1200 meters, June 3, 1913, *P. B. Kennedy 1993* (U. S. Nat. Herb. no. 692766).

DISTRIBUTION: Western Nevada.

16. *Chenopodium albescens* Small, Fl. SE. U. S. 385. 1903.

Erect annual, 4–10 dm. high, much branched, the branches stout, obtusely angled, strongly ascending, pale-green, striate, copiously and finely farinose; petioles slender, half as long as the blades or sometimes equaling them; leaf-blades broadly rhombic-ovate to oval, 2–4.5 cm. long, 1.3–2.5 cm. wide, mostly obtuse or rounded at the apex, usually short-cuspidate or apiculate, obtuse to cuneate at the base, irregularly and shallowly sinuate-dentate or sinuate, often with only 2 shallow rounded lobes at the base, thick, pale-green and glabrate on the upper surface, densely and finely farinose beneath, the blades of the inflorescence smaller, ovate-oblong to lanceolate or elliptic, acute or acuminate; flowers in small glomerules, these in short stout dense paniculate spikes, the inflorescence usually copiously leafy; calyx densely farinose, deeply cleft, the lobes rounded-ovate, slightly carinate, completely enclosing the fruit; pericarp free; seed horizontal, 1 mm. long, nearly smooth, black, shining, the margin obtuse.

TYPE LOCALITY: About Kerrville, Kerr County, Texas.

DISTRIBUTION: In dry soil, western Kansas to western Texas.

17. *Chenopodium atrovirens* Rydb. Mem. N. Y. Bot. Gard. 1: 131. 1900.

Chenopodium Wolffii Rydb. Bull. Torrey Club 30: 248. 1903. Not *C. Wolffii* Simonkai, 1879.
Chenopodium aridum A. Nelson, Bull. Torrey Club 31: 240. 1904.

Erect annual, 1–5 dm. high, usually much branched, rarely nearly simple, the branches slender or stout, ascending, green, striate, glabrate; petioles slender, one third to two thirds as long as the blades; leaf-blades broadly oblong to triangular-oblong, oval, or ovate, 1.5–3 cm. long, 5–18 mm. wide, obtuse or rounded at the apex, rounded to cuneate at the base, entire or rarely with 2 small rounded lobes at the base, usually thick, thinly farinose beneath when young but soon glabrate; inflorescence sparsely farinose, the glomerules large, dense, arranged in interrupted paniculate spikes, or the spikes often simple, naked or nearly so; calyx deeply cleft, the lobes obovate, rounded or emarginate, white-margined, sharply carinate, completely enclosing the fruit; pericarp free; seed horizontal, 1 mm. broad, dark reddish-brown, shining, faintly rugulose, the margin obtuse.

TYPE LOCALITY: Foothills of Electric Peak, Montana.

DISTRIBUTION: Montana to eastern Oregon, Colorado, and California.

18. *Chenopodium Boscianum* Moq. Chenop. Enum. 21. 1840.

Chenopodium polyspermum spicatum A. Gray, Man. ed. 2. 363. 1856. Not *C. polyspermum spicatum* Moq. 1840.

Chenopodium album Boscianum A. Gray, Man. ed. 5. 407. 1867.

Botrys Bosciana Nieuwl. Am. Midl. Nat. 3: 275. 1914.

Slender erect annual, 3–10 dm. high, simple below, sparsely branched above, the branches very slender, bright-green, divergent; petioles slender, about half as long as the blades; leaf-blades very thin, those of the lower leaves broadly triangular-oblong, 3.5–6 cm. long, obtuse, broadly cuneate at the base, sinuate-dentate, those of the upper leaves smaller, lanceolate to oblong or ovate, obtuse or usually acute, entire, bright-green on the upper surface, slightly paler beneath and very finely and sparsely farinose; flowers solitary or in small clusters arranged in very slender, interrupted, very elongate spikes; calyx very sparsely farinose, the

lobes obovate-orbicular, bright-green, white-margined, slightly carinate; pericarp free; seed horizontal, 1.3 mm. broad, black, smooth and shining, the margin obtuse.

TYPE LOCALITY: Carolina.

DISTRIBUTION: In woods or waste ground, Maine to Nebraska, and southward to Georgia and Texas.

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 1363; ed. 2. f. 1683; G. T. Stevens, Ill. Guide pl. 35, f. 1.

VII. *Fremontiana*. Plants slender and tall or rarely low and stout, glabrate, or copiously farinose with whitish inflated trichomes. Leaf-blades usually as broad as long, the lower ones conspicuously hastate or 3-lobed, otherwise usually entire. Glomerules of flowers loosely or densely spicate or rarely cymose. Calyx-lobes carinate, closely investing the fruit or rarely erect. Pericarp free or adherent. Seed horizontal.

19. *Chenopodium incanum* (S. Wats.) A. Heller,
Pl. World 1: 23. 1897.

Chenopodium Fremonti incanum S. Wats. Proc. Am. Acad. 9: 94. 1874.

Erect annual, 1–5 dm. high, much branched throughout, the branches very stout, spreading or ascending, angled and striate, densely farinose; petioles stout, two thirds as long as the blades or shorter; leaf-blades triangular-rhombic to rhombic-orbicular, 1–3 cm. long and often fully as wide, obtuse or rounded and apiculate at the apex, rounded to broadly cuneate at the base, hastately lobed, with rounded or obtuse lobes, very thick, densely white-farinose, or often glabrate on the upper surface; flowers in large dense glomerules arranged in dense stout crowded paniculate spikes, the inflorescence leafy or naked, the leaves often oblong and entire; calyx densely farinose, the lobes carinate; stamens often exerted; pericarp free; seed horizontal, 0.8–1 mm. broad, smooth, black, shining, the margin obtuse.

TYPE LOCALITY: Near Santa Fe, New Mexico.

DISTRIBUTION: Dry plains and hillsides, Nebraska to Utah and northern Mexico; adventive in Missouri and Maine.

ILLUSTRATION: Britt. & Brown, Ill. Fl. ed. 2. f. 1678.

20. *Chenopodium Pringlei* Standley, sp. nov.

Erect annual, 4–6 dm. high, simple below, branched above, the main axis stout, the branches slender, ascending, sparsely farinose; petioles slender, half as long as the blades or longer, often equaling them; leaf-blades broadly triangular, 3–4.5 cm. long, the upper ones shorter, acute or acutish, truncate or broadly cuneate at the base, coarsely and irregularly sinuate-dentate or shallowly repand-dentate, the basal ones often larger, making the blades subhastate, thin, yellowish-green, very finely and sparsely farinose, the blades of the upper leaves sometimes subentire or acutely hastate, often acuminate; flowers in small glomerules, these in short, interrupted, more or less flexuous, paniculate spikes; calyx copiously farinose, the lobes oval-ovate to oblong, obtuse or rounded, almost completely enclosing the fruit; pericarp free; seed horizontal, 1 mm. broad.

Type collected on hills near Dublán, Hidalgo, Mexico, altitude 2040 meters, September 21, 1901, C. G. Pringle 9283 (U. S. Nat. Herb. no. 396403).

DISTRIBUTION: Hillsides, Hidalgo.

21. *Chenopodium Fremonti* S. Wats. Bot. King's Expl. 287. 1871.

Botrys Fremonti Lunell, Am. Midl. Nat. 4: 305. 1916.

Erect or ascending annual, 3–10 dm. high, usually much branched throughout, the branches very slender, ascending, often flexuous, sparsely farinose or glabrous; petioles slender, half as long as the blades or longer, often exceeding them; leaf-blades broadly triangular-hastate, 1.5–6 cm. long and of about the same breadth, rounded at the apex or rarely acute, truncate to broadly cuneate at the base, with usually broadly rounded, rarely acutish basal lobes, very thin, bright-green, glabrous or nearly so on the upper surface, slightly paler beneath with a very fine sparse farinose pubescence, the blades of the inflorescence smaller and often entire; flowers in small glomerules, these in slender or stout, dense or interrupted, usually flexuous, paniculate spikes; calyx usually rather sparsely farinose, deeply cleft, the lobes oval to rounded-

obovate, completely enclosing the fruit; stigmas short; pericarp free; seed horizontal, 1 mm. broad, smooth or slightly rugulose, black, shining, the margin obtuse.

TYPE LOCALITY: On the North Platte River [Wyoming].

DISTRIBUTION: North Dakota to western Texas, northern Mexico, Nevada, and British Columbia.

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 1364; ed. 2. f. 1684.

22. *Chenopodium neomexicanum* Standley, sp. nov.

Ill-scented erect annual, 6–7 dm. high, simple below, sparsely branched above, the branches slender, strongly ascending, sparsely and very finely farinose, nearly terete, often tinged with red; petioles slender, equaling or only half as long as the blades; leaf-blades deltoid to orbicular-ovate or rhombic-ovate, 1.5–2.8 cm. long, rounded at the apex and scarcely apiculate, truncate or rounded at the base, subhastate, with low, rounded or acutish lobes, very thin, green and glabrate on the upper surface, sparsely and very finely farinose beneath, the upper blades smaller, often ovate to oblong, entire, acute; flowers in rather large glomerules, these in dense, stout, narrowly paniculate spikes, the inflorescence nearly naked; calyx rather sparsely farinose, cleft to the middle or lower, the lobes rounded-obovate, green, slightly carinate, completely enclosing the fruit; pericarp adherent; seed horizontal, 1.3–1.5 mm. broad, nearly black, shining, punctulate, the margin obtuse.

Type collected along Mineral Creek, Sierra County, New Mexico, altitude 2250 meters, September 26, 1904, *O. B. Metcalfe 1413* (U. S. Nat. Herb. no. 498188).

DISTRIBUTION: Mountains of southwestern New Mexico and southeastern Arizona.

23. *Chenopodium flabellifolium* Standley, sp. nov.

Plants very slender, 3 dm. high, much branched from the base, the branches ascending, terete, stramineous, finely and rather sparsely farinose; petioles very slender, equaling or usually longer than the blades, sometimes twice as long; leaf-blades flabelliform to very broadly rhombic, 4–10 mm. long, 4–12 mm. broad, commonly broader than long, broadly cuneate to truncate at the base, broadly rounded at the apex, mucronulate, entire or very obscurely 3-lobed, the lateral lobes entire or with 2 broad obtuse teeth, the terminal lobe entire or rarely obscurely and remotely dentate, densely and finely puberulent on both surfaces when young, becoming glabrate in age, the uppermost blades smaller and narrower, sometimes acute; flowers in very small glomerules, these in slender, interrupted, simple or narrowly paniculate spikes, the inflorescence nearly naked; calyx deeply 5-cleft, loosely farinose, the lobes broad, rounded at the apex, obscurely carinate, enclosing the fruit; pericarp adherent; seed horizontal, 1 mm. broad, black, lustrous, smooth, the margin acutish.

Type collected on San Martín Island, Lower California, March 12, 1897, *T. S. Brandegee* (Herb. Univ. Calif. no. 116454).

24. *Chenopodium Palmeri* Standley, sp. nov.

Ill-scented erect annual, 6–8 dm. high, much branched above, the branches strongly ascending, slender, obtusely angled, pale-greenish, copiously but very finely farinose; petioles slender, equaling or two thirds as long as the blades; leaf-blades broadly rhombic-ovate, 1.5–2.5 cm. long, rounded or broadly obtuse at the apex, apiculate, rounded or broadly cuneate at the base, entire, or usually with 2 small rounded lobes at the base, very thin, green and glabrate on the upper surface, densely but very finely and closely farinose beneath, the upper blades smaller, entire, obtuse; flowers in small glomerules, these in slender, dense or interrupted, paniculate spikes, the inflorescence ample, open, with slender, nearly naked branches; calyx densely farinose, deeply cleft, the lobes oval or broadly oblong, incompletely enclosing the fruit; pericarp adherent; seed horizontal, 0.7–0.8 mm. broad, dark reddish-brown, shining, nearly smooth, the margin obtuse.

Type collected at Hacienda San Miguel, southwestern Chihuahua, Mexico, in 1885, *Edward Palmer 9* (U. S. Nat. Herb. no. 48302).

25. *Chenopodium arizonicum* Standley, sp. nov.

Ill-scented erect annual, 3–6 dm. high, simple at the base, branched above, the branches usually slender, obtusely angled, ascending, sometimes from a spreading base, very sparsely

and finely farinose or glabrate, tinged with red, at least below; petioles slender, one half to two thirds as long as the blades; leaf-blades triangular to rhombic-ovate, 0.7–1.6 cm. long, acute or obtuse at the apex, apiculate, broadly cuneate to rounded at the base, thin, green and glabrate on the upper surface, very finely and usually densely farinose beneath, the upper blades ovate to lanceolate or elliptic, acute or acuminate to a cuspidate tip; flowers in very small glomerules, these in slender, dense or interrupted, paniculate spikes, the branches of the inflorescence usually slender and flexuous, nearly naked; calyx sparsely farinose, deeply cleft, the lobes broadly oblong or ovate, obtusely carinate, incompletely enclosing the fruit; pericarp adherent; seed horizontal, 1 mm. broad, black and shining, punctulate, the margin obtuse.

Type collected in the Santa Rita Forest Reserve, Arizona, in 1903, *David Griffiths 5982* (U. S. Nat. Herb. no. 497569).

DISTRIBUTION: Southeastern Arizona.

VIII. *Vulvariae*. Plants stout, strongly ill-scented, densely farinose with inflated whitish trichomes. Leaves long-petiolate, the blades usually as broad as long or broader, entire or subhastate or 3-lobed. Glomerules of flowers spicate. Calyx-lobes rounded on the back or carinate, closely investing the fruit. Pericarp adherent. Seed horizontal.

26. *Chenopodium Vulvaria* L. Sp. Pl. 220. 1753.

Atriplex Vulvaria Crantz, Inst. 1: 207. 1766.

Chenopodium foetidum Lam. Fl. Fr. 3: 244. 1778.

Chenopodium olidum Curt. Fl. Lond. 5: pl. 20. 1788.

Chenopodium album Vulvaria Kuntze, Taschen-Fl. Leipz. 218. 1867.

Vulvaria vulgaris Bubani, Fl. Pyren. 1: 175. 1897.

Ill-scented annual, much branched from the base and often throughout, the branches ascending, 1.5–4 dm. long, slender or stout, copiously farinose; petioles half as long as the blades or longer, often equaling them; leaf-blades rhombic-ovate to ovate-orbicular, 1–3.5 cm. long and as wide, rounded to acutish at the apex, mostly rounded at the base, entire, thick, copiously farinose beneath, often glabrate on the upper surface; flowers in small glomerules, these in slender or stout, usually dense, paniculate spikes, the inflorescence little branched, usually leafy; calyx densely farinose, the lobes obtuse, rounded on the back, completely enclosing the fruit; pericarp adherent; seed horizontal, depressed-globose, dull, slightly punctulate, black, 1 mm. broad, the margin rounded.

TYPE LOCALITY: Europe.

DISTRIBUTION: Europe, western Asia, and northern Africa; sparsely adventive from Quebec and Ontario to Maryland and Wisconsin, and in Florida.

ILLUSTRATIONS: Curt. Fl. Lond. 5: pl. 20; Engl. Bot. pl. 1034; Fl. Dan. pl. 1152; Dodoens, Pempt. 605; Blackw. Herb. pl. 100; Woodv. Med. Bot. pl. 145; Sturm, Deuts. Fl. 75: pl. 14; Britt. & Brown, Ill. Fl. ed. 2. f. 1681; Reichenb. Ic. Fl. Germ. 24: pl. 237; Moss, Cambr. Brit. Fl. pl. 157; Hegi, Ill. Fl. pl. 95, f. 3; Pratt, Fl. Pl. Great Brit. pl. 175, f. 3; Benth. Ill. Handb. f. 835; Fiori & Paol. Ic. Fl. Ital. f. 1009.

27. *Chenopodium Watsoni* A. Nelson, Bot. Gaz. 34: 362. 1902.

Chenopodium olidum S. Wats. Proc. Am. Acad. 9: 95. 1874. Not *C. olidum* Curt. 1788.

Ill-scented annual, much branched from the base and throughout, the branches spreading or ascending, often decumbent, 2–8 dm. long, very stout, obtusely angled and striate, densely and coarsely farinose; petioles stout, half as long as the blades or longer, often nearly equaling them; leaf-blades broadly rounded-deltoid or rounded-rhombic, 1.5–4 cm. long and of about the same breadth, rounded or obtuse at the apex, very shortly apiculate, rounded or subtruncate at the base, entire, or the lower with 1 or 2 low rounded teeth on each side at the base, thick, densely and rather coarsely farinose on both surfaces, the upper blades smaller, entire, rounded-ovate or rhombic-ovate, sometimes acute, broadly cuneate at the base; flowers in rather large glomerules, these in short, stout, dense, axillary or sparsely paniculate spikes, the inflorescence very leafy; calyx very densely farinose, deeply cleft, the lobes broadly ovate or oblong, obtuse, enclosing the fruit; stamens exerted; pericarp adherent; seed horizontal, 1 mm. broad, the margin obtuse.

TYPE LOCALITY: Arizona.

DISTRIBUTION: In dry soil, Montana to New Mexico and Arizona.

28. *Chenopodium Parryi* Standley, sp. nov.

Chenopodium Berlandieri S. Wats. Proc. Am. Acad. 18: 146, in part. 1883. Not *C. Berlandieri* Moq. 1840.

Ill-scented annual, much branched from the base, the branches stout, ascending, 1.5 dm. long, obtusely angled, striate, densely and rather coarsely farinose; petioles stout, about half as long as the blades; leaf-blades triangular or triangular-rhombic in outline, 3–5 mm. long, 3–4 mm. broad, 3-lobed, the lobes obtuse or the terminal one acute, entire or nearly so, rounded at the base, thick, densely farinose on both surfaces, the upper blades rhombic-ovate or oblong, entire, acute; flowers in small glomerules, these mostly in axillary spikes equaling or shorter than the leaves; calyx densely farinose, deeply cleft, the lobes broadly oblong, obtuse, obtusely carinate, enclosing the fruit; stamens exerted; pericarp adherent; seed horizontal, 1 mm. broad, the margin obtuse.

Type collected in the region of San Luis Potosí, Mexico, in 1878, *C. C. Parry & E. Palmer* 780 (U. S. Nat. Herb. no. 48299).

IX. Alba. Plants usually tall, sometimes ill-scented, bright-green and glabrate or densely farinose with whitish inflated hairs. Leaves long-petiolate, the blades lanceolate to broadly rhombic, all or only the lower ones sinuate-dentate. Glomerules of flowers spicate or cymose. Calyx-lobes carinate. Pericarp adherent. Seed horizontal.

29. *Chenopodium amaranticolor* Coste & Reynier; Reynier,
Bull. Soc. Bot. Fr. 54: 181. 1907.

Chenopodium album amaranticolor Coste & Reynier; Reynier, Bull. Herb. Boiss. II. 5: 979. 1905.

Erect annual, 1–3 meters high, much branched, the branches stout, ascending or erect from a spreading base, sharply angled, bright-green striped with red, sparsely and finely farinose; petioles slender, equaling or shorter than the blades; leaf-blades broadly rhombic, 6–14 cm. long and the lower ones fully as broad, obtuse or rounded at the apex, not apiculate, broadly cuneate to subtruncate at the base, usually shallowly 3-lobed, rather finely and irregularly sinuate-dentate, often doubly dentate with obtuse or acutish teeth, rather thick, bright deep-green on the upper surface, finely farinose beneath when young but soon glabrate, the upper blades smaller, rhombic-ovate to oblong or elliptic, usually dentate, rarely entire, bright-red, at least when young; flowers in small glomerules in dense, stout, broadly paniculate spikes; calyx copiously farinose, usually reddish, the lobes slightly carinate.

TYPE LOCALITY: Marseilles, France.

DISTRIBUTION: Adventive in southern Georgia and northern Florida; Cuba; also in France; native region not known, the plant common in cultivation.

30. *Chenopodium viride* L. Sp. Pl. 219. 1753.

Atriplex viridis Crantz, Inst. 1: 207. 1766.

Chenopodium erosum Bastard, Jour. de Bot. Desv. II. 3: 20. 1814.

Chenopodium opulifolium Schrad.; Koch & Ziz, Cat. Pl. Palat. 6. 1814.

Chenopodium album opulifolium G. Meyer, Chlor. Hanov. 465. 1836.

Vulvaria opulifolia Bubani, Fl. Pyren. 1: 176. 1897.

Erect or ascending annual, 3–10 dm. high, much branched, the branches slender or stout, ascending from a widely spreading base, the lower usually elongate, obtusely angled, dark-green, sparsely farinose or glabrate; petioles slender, equaling or often exceeding the blades; leaf-blades very broadly ovate-rhombic, 2–4 cm. long and usually as broad, rounded at the apex or obtuse, broadly cuneate to subtruncate at the base, often shallowly 3-lobed, coarsely and shallowly sinuate or sinuate-dentate with obtuse or rarely acutish teeth, thin, bluish-green, glabrate on the upper surface, sparsely and very finely farinose beneath, the upper blades smaller, rhombic-ovate, often entire; flowers in rather small glomerules, these in usually stout, dense, paniculate spikes, the inflorescence commonly narrow and copiously leafy; calyx densely farinose, the lobes rounded-ovate, carinate, completely enclosing the fruit; pericarp adherent; seed horizontal, 1 mm. broad, nearly smooth, black and shining, the margin rounded.

TYPE LOCALITY: Paris, France.

DISTRIBUTION: Europe, northern Asia, and northern Africa; adventive in Rhode Island, Maryland, Illinois, Missouri, and Texas.

ILLUSTRATIONS: Vaill. Bot. Paris. pl. 7, f. 1; Sturm, Deuts. Fl. 75: pl. 9; Reichenb. Ic. Fl. Germ. 24: pl. 239; Moss, Cambr. Brit. Fl. pl. 160; Hegi, Ill. Fl. f. 544, m–q.

31. *Chenopodium ferulatum* Lunell, Am. Midl. Nat. 3: Contents 4.
1914.

Chenopodium virgatum, Lunell, Am. Midl. Nat. 3: 345. 1914. Not *C. virgatum* Thunb. 1815.

Chenopodium virgatum junceum Lunell, Am. Midl. Nat. 3: 345. 1914.

Chenopodium ferulatum junceum Lunell, Am. Midl. Nat. 3: Contents 4. 1914.

Botrys ferulata Lunell, Am. Midl. Nat. 4: 306. 1916.

Erect annual, 4–12 dm. high, simple below, sparsely branched above, the branches stout, strongly ascending, obtusely angled, striate, pale-green, glabrous or sparsely farinose; petioles slender, one half to two thirds as long as the blades; leaf-blades oblong-rhombic to ovate-rhombic, 2.3–4 cm. long, obtuse or acutish, cuneate or broadly cuneate at the base, usually shallowly 3-lobed, rather finely sinuate-serrate, thin, yellowish-green above and glabrate, densely and finely farinose beneath when young, glabrate in age, the blades of the inflorescence smaller, lanceolate to linear, long-acuminate, mucronulate, usually entire; flowers in rather large glomerules, these in very dense, stout, mostly erect, axillary and racemose or paniculate spikes, the inflorescence narrow, dense, sparsely leafy; calyx rather sparsely farinose, deeply cleft, the lobes rounded-ovate or broadly ovate, greenish-white or yellowish, thin, carinate, erect or spreading in age and exposing the fruit; pericarp adherent; seed horizontal, 1.3 mm. wide, punctulate, black, shining, the margin obtuse.

TYPE LOCALITY: On the banks of the Missouri River, near Bismarck, Burleigh County, North Dakota.

DISTRIBUTION: Southern North Dakota and western South Dakota.

32. *Chenopodium dacoticum* Standley, sp. nov.

Ill-scented erect annual, 1.5–6 dm. high, branched throughout, the branches ascending, stout, subterete, striate, densely and coarsely farinose when young, often glabrate in age; petioles rather stout, one half to two thirds as long as the blades; leaf-blades broadly rhombic to ovate-orbicular, 1.5–4 cm. long, broadly rounded at the apex, apiculate, broadly cuneate to rounded at the base, shallowly sinuate-dentate or sinuate, thick, pale yellowish-green, densely and very coarsely farinose on both surfaces, sometimes glabrate above, the blades of the inflorescence smaller, ovate to oval or oblong, acute, cuspidate; flowers in rather large glomerules, these in stout, dense, short, loosely paniculate or cymose spikes; calyx densely farinose, deeply cleft, the lobes rounded-ovate, completely enclosing the fruit; pericarp adherent; seed horizontal, very coarsely punctate, dull, nearly black, the margin rounded.

Type collected in badlands at Cedar Pass, Stanley County, South Dakota, July 24, 1913, *W. H. Over* 6175 (U. S. Nat. Herb. no. 693399).

DISTRIBUTION: In dry soil, western South Dakota.

33. *Chenopodium petiolare* H. B. K. Nov. Gen. & Sp. 2: 191.
1817.

Chenopodium petiolare sinuatum Murr, Bull. Herb. Boiss. II. 4: 994. 1904.

Erect annual, 4–10 dm. high, sparsely branched, the branches stout, ascending or somewhat spreading, obtusely angled or subterete, striate, pale-green or yellowish, glabrous or nearly so; petioles slender, usually equaling or even exceeding the blades; leaf-blades rhombic or ovate-rhombic, 2.5–7 cm. long, conspicuously longer than broad, obtuse or rounded at the apex, apiculate, broadly cuneate to rounded at the base, usually shallowly 3-lobed, irregularly and coarsely sinuate, sinuate-dentate, or sinuate-serrate, with commonly obtuse teeth, pale yellowish-green, glabrate on the upper surface, sparsely or densely and finely farinose beneath, the upper blades smaller, ovate to oblong, usually conspicuously hastate, the lobes acute or acutish, the uppermost blades often entire; flowers in small glomerules, these in dense, slender or stout, paniculate spikes, the inflorescence narrow, yellowish, sparsely leafy; calyx densely farinose, deeply cleft, the lobes carinate, completely enclosing the fruit; pericarp adherent; seed horizontal, 1 mm. broad, finely punctulate, nearly black, dull, the margin rounded.

TYPE LOCALITY: Peru.

DISTRIBUTION: In dry soil, western Kansas to California and northern Mexico; also in Chile and Peru; adventive in Europe.

34. *Chenopodium lanceolatum* Muhl.; Willd. Enum. 291. 1809.

Chenopodium viride L. Sp. Pl. 219, in part. 1753.

Chenopodium album integerrimum S. F. Gray, Nat. Arr. Brit. Pl. 2: 285. 1821.

Chenopodium album lanceolatum Coss. & Germ. Fl. Paris 451. 1845.

Erect annual, 4–15 dm. high, much branched, often simple below, the branches usually slender, ascending, obtusely angled, green, striate, glabrous or nearly so; petioles slender, one third to two thirds as long as the blades; leaf-blades lanceolate, lance-oblong, elliptic, or rarely ovate, 2–5 cm. long, 5–10 or rarely 20 mm. wide, obtuse or acutish at the apex, mucronulate, cuneate at the base, sometimes broadly so, the upper ones entire, the lower occasionally with a few low rounded teeth, rather thick; bright deep-green, glabrous or nearly so on the upper surface, sparsely and finely farinose beneath, the blades of the inflorescence little if at all reduced, narrowly elliptic or lanceolate; flowers in small glomerules, these in usually slender, interrupted, loose spikes or cymes; calyx sparsely farinose, at least in age, deeply cleft, the lobes green, white-margined, obtusely carinate, completely enclosing the fruit; pericarp adherent; seed horizontal, 1–1.2 mm. broad, nearly smooth, black, shining, the margin rounded.

TYPE LOCALITY: Pennsylvania.

DISTRIBUTION: Usually in waste or cultivated ground, Quebec to British Columbia and southward to Florida and Oklahoma; also in Europe and Asia.

ILLUSTRATIONS: Engl. Bot. *pl.* 1189 (as *C. album viride*); Moss, Cambr. Brit. Fl. *pl.* 159; Sturm, Deuts. Fl. 75: *pl.* 7; Pammel, Man. Pois. Pl. *f.* 203 (as *C. album*).

35. *Chenopodium paganum* Reichenb. Fl. Germ. Exc. 579. 1832.

Chenopodium viride Vahl, Fl. Dan. 20: 4. 1797. Not *C. viride* L. 1753.

Chenopodium album viridescens St.-Amans, Fl. Agen. 105. 1821.

Chenopodium album cymigerum Koch, Syn. Fl. Germ. 606. 1837.

Chenopodium album rhombeum Peterm. Fl. Lips. 201. 1838.

Chenopodium album paganum Syme, Engl. Bot. ed. 3. 8: 14. 1868.

Botrys pagana Lunell, Am. Midl. Nat. 4: 305. 1916.

Erect annual, 4–15 dm. high, much branched, the branches ascending, stout or slender, obtusely angled, striate, bright-green, often striped with red, glabrous or nearly so; petioles slender or stout, equaling the blades or often only half as long; leaf-blades ovate-rhombic, rhombic, or rarely ovate-oblong, 4–8 cm. long, obtuse or rounded at the apex, broadly cuneate to rounded at the base, coarsely and irregularly sinuate-dentate or sinuate-serrate, sometimes shallowly 3-lobed, or rarely subentire, thick, bright-green, glabrous, or very sparsely and minutely farinose beneath, the upper blades smaller, ovate to lanceolate, acute or acuminate, often cuspidate, usually entire; flowers in large glomerules, these in slender, much interrupted, loosely paniculate or cymose spikes, the inflorescence usually broad, lax, sparsely leafy; calyx sparsely farinose, deeply cleft, the lobes rounded-ovate, green, white-margined, sharply carinate, completely enclosing the fruit; pericarp adherent; seed horizontal, 1.3–2 mm. broad, nearly smooth, black, shining, the margin obtuse.

TYPE LOCALITY: Germany.

DISTRIBUTION: Europe, Asia, and northern Africa; adventive in North America from Alaska and British Columbia southward and eastward throughout the United States.

ILLUSTRATIONS: Fl. Dan. *pl.* 1150 (as *C. viride*); Engl. Bot. ed. 3. *pl.* 1190; Moss, Cambr. Brit. Fl. *pl.* 158 (as *C. album virescens*); Reichenb. Ic. Fl. Germ. 24: *pl.* 242 (as *C. album viride*).

36. *Chenopodium album* L. Sp. Pl. 219. 1753.

Atriplex alba Crantz, Inst. 1: 206. 1766.

Chenopodium candicans Lam. Fl. Fr. 3: 248. 1778.

Chenopodium album spicatum Koch, Syn. Fl. Germ. 606. 1837.

Vulvaria albescens Bubani, Fl. Pyren. 1: 176. 1897.

Chenopodium album Collinsii Murr, Bull. Herb. Boiss. II. 4: 990. 1904.

Botrys alba Nieuwl. Am. Midl. Nat. 3: 277. 1914.

Botrys alba pauper Lunell, Am. Midl. Nat. 4: 305. 1916.

Erect annual, 3–20 dm. high, usually much branched, the branches stout or slender, ascending, sometimes from a spreading base, obtusely angled, striate, pale-green, mostly glabrate; petioles slender, one half to one third as long as the blades or rarely equaling them; leaf-blades oval-rhombic, rarely ovate or lanceolate, 2.5–8 cm. long, usually conspicuously

longer than broad, obtuse or rounded at the apex, apiculate, often shallowly 3-lobed, irregularly sinuate-dentate, sinuate, or sinuate-serrate, rarely subentire, mostly thick, pale-green and glabrate above, very finely and commonly densely farinose beneath, the upper blades reduced, ovate to lanceolate, usually entire, acute, mucronate, not hastate; flowers in large glomerules, these in dense, stout, erect or ascending, paniculate spikes, the inflorescence usually narrow and compact, rarely lax, grayish-green, sparsely leafy; calyx copiously and finely farinose, deeply lobed, the lobes green, white-margined, acutely carinate, completely enclosing the fruit; pericarp adherent; seed horizontal, 1.3–1.5 mm. broad, nearly smooth, black and shining, the margin obtuse.

TYPE LOCALITY: Europe.

DISTRIBUTION: Europe, Asia, and northern Africa; naturalized in North America from the Yukon and southern Canada southward throughout the United States and northern Mexico; or perhaps, in part, native.

ILLUSTRATIONS: Engl. Bot. *pl.* 1723; T. Nees, Gen. Fl. Germ. Dicot. 1: *pl.* 56, *f.* 1–13; Schnizl. Ic. *pl.* 101; Britt. & Brown, Ill. Fl. *f.* 1359; ed. 2. *f.* 1677; Reichenb. Ic. Fl. Germ. 24: *pl.* 240, 241; Iowa Geol. Surv. Bull. 4: *f.* 61, *f.* 269, A; Fiori & Paol. Ic. Fl. Ital. *f.* 1015; Benth. Ill. Handb. *f.* 837; G. T. Stevens, Ill. Guide *pl.* 35, *f.* 3; Hegi, Ill. Fl. *pl.* 95, *f.* 5; Bull. Mich. Exp. Sta. 267: *f.* 47; Long & Perc. Common Weeds *f.* 34; Clark & Fletcher, Farm Weeds Can. *pl.* 40.

37. *Chenopodium hircinum* Schrad. Ind. Sem. Hort. Gotting. 1833: 2.
1833.—Linnaea 10: Litt.-Ber. 70. 1836.

Chenopodium Duererianum Murr, Deuts. Bot. Monats. 19: 53. 1901.

Ill-scented erect annual, 2–20 dm. high, much branched, the branches stout, ascending, often from a spreading base, obtusely angled, striate, glabrous or sparsely and coarsely farinose; petioles stout, half as long as the blades or shorter; leaf-blades rhombic-ovate, 2.5–5 cm. long, most of them deeply 3-lobed, the lobes usually 2-lobed, the terminal lobe sinuate-dentate, obtuse, apiculate, the blades broadly cuneate or rounded at the base, thick, prominently veined, yellowish-green, sparsely and coarsely farinose beneath, the upper blades smaller, ovate to lanceolate, acutely subhastate or serrate; flowers in large glomerules, these in very dense, stout, narrowly paniculate spikes, the branches of the inflorescence stout, erect or strongly ascending, sparsely leafy, the whole inflorescence yellowish; calyx densely and coarsely farinose; cleft to the middle, the lobes rounded-ovate, slightly carinate, completely enclosing the fruit; pericarp adherent; seed horizontal, 1 mm. broad, black and shining, punctulate, the margin obtuse.

TYPE LOCALITY: Brazil.

DISTRIBUTION: Eastern South America; apparently adventive in southern New Mexico; also adventive in Europe.

ILLUSTRATIONS: Mart. Fl. Bras. 5¹: *pl.* 45; Reichenb. Ic. Fl. Germ. 24: *pl.* 245, *f.* 6.

38. *Chenopodium Berlandieri* Moq. Chenop. Enum. 23. 1840.

Chenopodium platyphyllum Issler, Allg. Bot. Zeits. 8: 193. 1902.

Chenopodium album Berlandieri Mackenzie & Bush, Fl. Jackson Co. 80. 1902.

Chenopodium texanum Murr, Magyar Bot. Lap. 2: 8. 1903.

Chenopodium opulifolium platyphyllum G. Beck, in Reichenb. Ic. Fl. Germ. 24: 102. 1907.

Chenopodium Berlandieri typicum A. Ludw.; Asch. & Graebn. Syn. Mittel-Eur. Fl. 5: 82. 1913.

Chenopodium Berlandieri farinosum A. Ludw.; Asch. & Graebn. Syn. Mittel-Eur. Fl. 5: 82. 1913.

Chenopodium Berlandieri foetens A. Ludw.; Asch. & Graebn. Syn. Mittel-Eur. Fl. 5: 83. 1913.

Chenopodium Berlandieri platyphyllum A. Ludw.; Asch. & Graebn. Syn. Mittel-Eur. Fl. 5: 83. 1913.

Botrys Berlandieri Nieuwl. Am. Midl. Nat. 3: 276. 1914.

Erect annual, 4–15 dm. high, usually ill-scented, much branched, often simple at the base, the branches ascending, often from a spreading base, slender or stout, obtusely angled, striate, pale- or deep-green, glabrate; petioles slender, equaling the blades or often only half as long; leaf-blades rhombic-ovate to ovate, oval, or oblong, 1.2–3 cm., or rarely 4 cm. long, 0.6–1.3 cm., or rarely 2 cm. wide, acute or obtuse, mucronulate, irregularly sinuate-serrate or sinuate-dentate, the teeth obtuse or acute, the blades usually not at all 3-lobed, broadly cuneate to rounded at the base, thick or rarely thin, often densely farinose when young, becoming glabrate in age, the blades of the inflorescence reduced, ovate to linear-lanceolate, acuminate, often entire; flowers in small glomerules, these in slender or stout, dense or interrupted, paniculate spikes, the branches of the inflorescence usually slender, sometimes spreading, sparsely leafy; calyx densely farinose, deeply cleft, the lobes broadly ovate, obtuse or acute, sharply carinate,

completely enclosing the fruit; pericarp adherent; seed horizontal, 0.8–1 mm. broad, punctulate or nearly smooth, black, shining, the margin obtuse or rounded.

TYPE LOCALITY: Mexico.

DISTRIBUTION: North Carolina to Florida, Texas, and Mexico; sparsely adventive in the northeastern United States, and in Europe.

ILLUSTRATION: Britt. & Brown, Ill. Fl. f. 1365.

X. *Aristata*. Plants low, glabrous. Leaves sessile, the blades linear, entire. Flowers solitary, sessile or pedicellate, in loose dichotomous cymes, the lateral flowers abortive, their pedicels spinose. Calyx-lobes subcarinate. Seed horizontal.

39. *Chenopodium aristatum* L. Sp. Pl. 221. 1753.

Chenopodium virginicum L. Sp. Pl. 222. 1753.

Atriplex aristata Crantz, Inst. 1: 208. 1766.

Lecanocarpus aristatus Zucc.; Schrank & Mart. Hort. Monac. 56. 1829.

Teloxys aristata Moq. Ann. Sci. Nat. II. 1: 290. 1834.

Teloxys aristata nana Moq. in DC. Prodr. 13²: 60. 1849.

Erect annual, 0.5–3 dm. high, glabrous, usually much branched, the branches slender; leaves sessile, the blades linear, lance-linear, or linear-oblong, 1.5–8 cm. long, 2–9 mm. wide, acutish or obtuse at the apex, narrowed at the base, the margins rarely sinuate; inflorescence terminal and axillary, loosely dichotomous, naked, the flowers sessile or pedicellate, the lateral flowers usually abortive, their pedicels slender and sharply spinose; calyx 0.4 mm. long, the lobes obovate or ovate-elliptic, obtuse, subcarinate; seed horizontal, 0.5 mm. broad, black, the margin acute.

TYPE LOCALITY: Siberia.

DISTRIBUTION: Northeastern Asia; reported from Alaska and Mexico.

ILLUSTRATIONS: Gmel. Fl. Sib. 3: pl. 15; Ann. Sci. Nat. II. 1: pl. 10, A; E. & P. Nat. Pfl. 3^{1a}: f. 25, C–G; Fiori & Paol. Ic. Fl. Ital. f. 1018; Reichenb. Ic. Fl. Germ. 24: pl. 252, f. 1–7.

XI. *Incisa*. Plants low, the leaves and inflorescence furnished with numerous yellow glands. Leaf-blades pinnatifid or deeply dentate. Flowers mostly solitary, in loose dichotomous cymes, sessile or pedicellate, the lateral flowers commonly abortive, their pedicels spinose. Calyx-lobes corniculate-appendaged at the apex. Pericarp glabrous, adherent. Seed horizontal.

40. *Chenopodium incisum* Poir. in Lam. Encyc. Suppl. 1: 392. 1811.

?*Chenopodium graveolens* Lag. & Rodr. Anal. Ci. Nat. 5: 70. 1802.

Ambrina incisum Moq. Chenop. Enum. 36. 1840.

Chenopodium foetidum Moq. in DC. Prodr. 13²: 76, in part. 1849. Not *C. foetidum* Schrad. 1808.

Chenopodium effusum Mart. & Gal. Bull. Acad. Brux 10¹: 346. 1843.

Teloxys cornuta Torr. Pacif. R. R. Rep. 4: 129. 1857.

Chenopodium cornutum Benth. & Hook.; S. Wats. Bot. Calif. 2: 482. 1880.

Strong-scented erect annual, 2–6 dm. high, simple or branched at the base, the branches ascending, paniculately branched, sparsely puberulent or glabrate, often tinged with red; petioles slender, 2–25 mm. long; leaf-blades deltoid-ovate or oblong to narrowly oblong in outline, 2–6.5 cm. long, 1.5–3 cm. wide, obtuse to acuminate at the apex, truncate or narrowed and cuneate at the base, sinuate-pinnatifid or lacinate-pinnatifid, the lobes oblong or deltoid, obtuse to long-acuminate, entire or sinuate-dentate, bright-green, glabrous or minutely viscid-villous on the upper surface, covered beneath with yellow glands; inflorescence of numerous loosely few-flowered, axillary cymes, these finally forming narrow elongate naked panicles; flowers sessile in the forks of the branches and solitary at the ends of the slender lateral branches, the pedicellate flowers usually abortive, their pedicels spinose; calyx deeply cleft, the lobes oval or oblong, acute or obtuse, corniculate-appendaged, covered with yellow glands, incompletely enclosing the fruit; seed horizontal, 0.5–0.8 mm. broad, depressed-globose, dark-brown, the pericarp adherent.

TYPE LOCALITY: Not known.

DISTRIBUTION: Western Texas, southern Colorado, and Arizona to Costa Rica; adventive in Massachusetts and Maine; also in South America and Africa.

XII. *Botryes*. Low, glandular-pubescent annuals. Leaf-blades pinnatifid to dentate. Flowers in loosely dichotomous cymes, sessile or pedicellate. Calyx-lobes carinate. Pericarp glabrous, adherent. Seed horizontal.

41. *Chenopodium dissectum* (Moq.) Standley.

Ambrina dissecta Moq. *Chenop. Enum.* 38. 1840.

Chenopodium bipinnatifidum Moric.; Moq. in DC. *Prodr.* 13²: 76. 1849.

Sweet-scented erect annual, 1–3 dm. high, simple at the base, much branched above, the branches stout, ascending or spreading, densely and very shortly glandular-villous; petioles half as long as the blades or shorter; leaf-blades 1.5–3.5 cm. long, about 1 cm. wide, pinnatifid nearly to the midrib into linear segments, these entire, subpinnatifid, or dentate, about 1 mm. broad, obtuse or acutish, densely glandular-scaberulous; flowers sessile or pedicellate, solitary, in dense, terminal and axillary, few-flowered cymes, these naked or nearly so; calyx 1 mm. broad, deeply 5-cleft, the lobes carinate, acute, densely glandular, enclosing the fruit; pericarp subadherent; seed horizontal, 0.6 mm. broad, nearly black, dull, granulate, the margin obtuse.

TYPE LOCALITY: Mountains near the City of Mexico.

DISTRIBUTION: Coahuila to central Mexico.

42. *Chenopodium Botrys* L. Sp. Pl. 219. 1753.

Atriplex Botrys Crantz, *Inst.* 1: 207. 1766.

Botrydium aromaticum Spach, *Hist. Vég.* 5: 299. 1836.

Ambrina Botrys Moq. *Chenop. Enum.* 37. 1840.

Chenopodium botryoides Raf.; Moq. in DC. *Prodr.* 13²: 75, as synonym. 1849.

Chenopodium botryoides gracile Raf.; Moq. in DC. *Prodr.* 13²: 75, as synonym. 1849.

Chenopodium Botrys gracile Moq. in DC. *Prodr.* 13²: 75. 1849.

Roubieva Botrys Fuss, *Fl. Transsylv.* 552. 1866.

Chenopodium botrydium St.-Lag. *Ann. Soc. Bot. Lyon* 7: 122. 1880.

Vulvaria Botrys Bubani, *Fl. Pyren.* 1: 177. 1897.

Botrys aromatica Nieuwl. *Am. Midl. Nat.* 3: 275. 1914.

Sweet-scented erect annual, 2–6 dm. high, densely glandular-viscid throughout, much branched, the branches ascending; petioles one fourth to one half as long as the blades; leaf-blades oblong or oval in outline, 1–5 cm. long, sinuate-pinnatifid, the lobes obtuse or rounded, entire or sinuately lobed, truncate to cuneate at the base, the blades of the inflorescence reduced, spatulate to lanceolate, often entire; inflorescence of numerous densely many-flowered cymes, the whole finally forming a narrow, elongate, nearly naked panicle; flowers subsessile, 1 mm. long; calyx cleft nearly to the base, the lobes oval or oblong, acute or acuminate, densely glandular-pubescent, imperfectly enclosing the fruit at maturity; pericarp thin, whitish, firmly attached to the seed; seed subglobose, 0.6 mm. in diameter, dark-brown, dull, vertical or horizontal.

TYPE LOCALITY: Southern Europe.

DISTRIBUTION: Europe, Asia, and Africa; naturalized as a weed or escaped from cultivation in nearly all parts of the United States and southern Canada, and in South America.

ILLUSTRATIONS: Blackw. *Herb. pl.* 314; Sibth. *Fl. Graeca pl.* 253; Guimp. & Schl. *Abb. Fl. Boruss. pl.* 270; Sturm, *Deuts. Fl.* 75: *pl.* 15, 16; T. Nees, *Gen. Fl. Germ. Dicot.* 1: *pl.* 56, *f.* 14, 15; E. & P. *Nat. Pfl.* 3^{1a}: *f.* 25, *H, J*; Britt. & Brown, *Ill. Fl. f.* 1371; ed. 2. *f.* 1690; Karst. *Deuts. Fl. f.* 311, 7–11; Fiori & Paol. *ic. Fl. Ital. f.* 1017; Hegi, *Ill. Fl. f.* 543, *a–i*; Bull. Mich. Exp. Sta. 267: *f.* 49.

XIII. *Ambrosioidia*. Ill-scented annuals or perennials, copiously furnished with yellow glands, sometimes also villous. Leaf-blades dentate to pinnatifid. Flowers sessile, spicate. Calyx-lobes rounded on the back. Pericarp gland-dotted. Seed horizontal, or sometimes vertical.

43. *Chenopodium vagans* Standley.

Chenopodium chilense Schrad. *Ind. Sem. Hort. Gotting.* 1832: 2. 1832.—*Linnaea* 8: *Litt.-Ber.* 25. 1833. Not *C. chilense* Pers. 1805.

Ambrina chilensis Spach, *Hist. Vég.* 5: 297. 1836.

Erect or ascending, ill-scented perennial, 3–8 dm. high, much branched, at least above, the branches erect or ascending, loosely white-villous and viscid; leaf-blades oval, oblong, or broadly oblong, 2–6 cm. long, obtuse, tapering at the base to a slender petiole, irregularly and coarsely sinuate-dentate or incised-serrate, the teeth acute or obtuse, entire or dentate, bright-green, short-villous on both surfaces, copiously gland-dotted beneath, the blades of the inflorescence numerous, much reduced, entire, bract-like; flowers sessile in dense glomerules, forming slender, elongate, erect or ascending, very dense spikes 3–12 cm. long; calyx deeply cleft, the lobes obtuse or acutish, rounded on the back, glandular-villous, completely enclosing

the fruit; seed horizontal or sometimes vertical, 0.8 mm. broad, dark reddish-brown, the pericarp free.

TYPE LOCALITY: Chile.

DISTRIBUTION: Chile; adventive in northern California.

44. *Chenopodium ambrosioides* L. Sp. Pl. 219. 1753.

- Chenopodium anthelminticum* L. Sp. Pl. 220. 1753.
Atriplex ambrosioides Crantz, Inst. 1: 207. 1766.
Atriplex anthelmintica Crantz, Inst. 1: 207. 1766.
Chenopodium suffruticosum Willd. Enum. 290. 1809.
Chenopodium Sancta-Maria Vell. Fl. Flum. 126. 1825.
Orthosporum ambrosioides Kostel. Allg. Med.-Pharm. Fl. 1433. 1835.
Orthosporum suffruticosum Kostel. Allg. Med.-Pharm. Fl. 1433. 1835.
Ambrina ambrosioides Spach, Hist. Vég. 5: 297. 1836.
Ambrina anthelmintica Spach, Hist. Vég. 5: 298. 1836.
Ambrina retusa Moq. Chenop. Enum. 38. 1840.
Ambrina spathulata Moq. Chenop. Enum. 39. 1840.
Ambrina obovata Moq. Chenop. Enum. 40. 1840.
Roubieva anthelmintica H. & A. Bot. Beech. Voy. 387. 1840.
Chenopodium spathulatum Sieber; (Moq. Chenop. Enum. 39, as synonym. 1840) Moq. in DC. Prodr. 13²: 73. 1849.
Chenopodium retusum Juss.; Moq. in DC. Prodr. 13²: 73. 1849.
Chenopodium obovatum Moq. in DC. Prodr. 13²: 73. 1849.
Chenopodium ambrosioides anthelminticum A. Gray, Man. ed. 2. 364. 1856.
Blitum ambrosioides G. Beck, in Reichenb. Ic. Fl. Germ. 24: 118. 1908.
Botrys ambrosioides Nieuwl. Am. Midl. Nat. 3: 275. 1914.
Botrys anthelmintica Nieuwl. Am. Midl. Nat. 3: 275. 1914.

Ill-scented, erect or ascending annual or perennial, 3–10 dm. high, the branches stout, simple or paniculately branched, glabrous, or puberulent below, usually glandular-villous or tomentulose about the inflorescence but occasionally glabrous; lower leaves petiolate, the blades 2–12 cm. long, 1.5–5.5 cm. broad, oblong to ovate or lanceolate, coarsely and irregularly sinuate-dentate or sinuate-pinnatifid, the lobes acute or obtuse, entire or dentate, obtuse to attenuate at the apex, cuneate at the base, copiously gland-dotted or the glands rarely wanting, puberulent, short-villous, or glabrous; flowers solitary or usually densely glomerate in dense or interrupted, slender or stout, usually very elongate spikes, these leafy or naked, the blades much smaller than the lower ones, lanceolate, oblanceolate, spatulate, or linear, obtuse, acute, or attenuate; calyx about 1 mm. high, glabrous or short-villous, usually gland-dotted, the lobes rounded-ovate, obtuse, completely enclosing the fruit; stamens exerted; pericarp very thin; seed horizontal or vertical, 0.6–0.8 mm. broad, nearly black, the margin obtuse.

TYPE LOCALITY: Mexico.

DISTRIBUTION: In waste ground, Maine, Ontario, and California southward to Central America, native southward but adventive northward; West Indies and South America; naturalized in many parts of Europe, Asia, and Africa.

ILLUSTRATIONS: Vell. Fl. Flum. 3: pl. 104; W. Bart. Veg. Mat. Med. 2: pl. 44; Raf. Med. Fl. 1: pl. 21; Descourt. Fl. Ant. 1: pl. 57, 58; Dill. Hort. Elth. 1: pl. 66, f. 76; Mart. Fl. Bras. 5¹: pl. 46, 47; Morison, Hist. pl. 3, f. 81; E. & P. Nat. Pfl. 3^{1a}: f. 25, K–Q; Britt. & Brown. Ill. Fl. f. 1372, 1373; ed. 2. f. 1691; Sturm, Deuts. Fl. 75: pl. 11; Guimp. & Schl. Abb. Fl. Boruss. pl. 269; Wight, Ic. pl. 1786; Berg & Schmidt, Darstell. 1: pl. 2, C; Reichenb. Ic. Fl. Germ. 24: pl. 251, f. 1–10; Iowa Geol. Surv. Bull. 4: f. 59; Karst, Deuts. Fl. f. 311, 1–6; Darl. Am. Weeds f. 176; G. T. Stevens, Ill. Guide pl. 35, f. 6, 8; Hegi, Ill. Fl. f. 547, a–c; Fiori & Paol. Ic. Fl. Ital. f. 1016.

XIV. *Carinata*. Plants prostrate or decumbent, glandular-pubescent. Leaf-blades pinnatifid or dentate. Flowers sessile in small glomerules, these axillary or spicate. Calyx-lobes carinate. Pericarp thin, slightly adherent. Seed vertical.

45. *Chenopodium carinatum* R. Br. Prodr. 407.

1810.

- Salsola carinata* Spreng. Syst. 1: 923. 1825.
Ambrina carinata Moq. Chenop. Enum. 41. 1840.
Blitum carinatum Moq. in DC. Prodr. 13²: 81. 1849.

Annual, much branched from the base, the branches stout, 2–4 dm. long, prostrate or decumbent, glandular-villous throughout, often reddish; petioles slender, 5–14 mm. long;

leaf-blades oblong to ovate-oblong, 1–3 cm. long, those of the inflorescence somewhat reduced, coarsely sinuate-pinnatifid with obtuse lobes, or the uppermost coarsely crenate-lobed, obtuse at the apex, obtuse to cuneate at the base, yellowish-green, densely beset with yellow glands and short-villous on both surfaces; flowers sessile in dense many-flowered axillary clusters, or in short leafy axillary spikes 1 cm. long or less; calyx 0.6 mm. high, densely covered with yellow glands, the lobes oblong, acute, usually cucullate or carinate, only partially enclosing the fruit at maturity; pericarp very thin, slightly adherent; seed vertical, 0.5 mm. broad, dark reddish-brown, the margin obtuse.

TYPE LOCALITY: Tasmania.

DISTRIBUTION: Australia; naturalized in Massachusetts, Missouri, Texas, and northern California, and in Europe.

ILLUSTRATIONS: F. Muell. Ic. Austr. Sals. *pl.* 32; Reichenb. Ic. Fl. Germ. 24: *pl.* 252, *f.* 8–10.

XV. **Gluca.** Plants erect or prostrate, copiously farinose with whitish inflated hairs. Leaf-blades oblong to broadly rhombic, dentate. Glomerules of flowers axillary or in short spikes. Calyx-lobes rounded on the back, imperfectly enclosing the fruit, herbaceous. Seed vertical.

46. *Chenopodium farinosum* (S. Wats.) Standley, sp. nov.

Chenopodium murale farinosum S. Wats. Proc. Am. Acad. 9: 97. 1874.

Erect or ascending annual, much branched from the base, the branches very stout, succulent, 1–4 dm. long, angled and striate, glabrous; petioles half to two thirds as long as the blades; leaf-blades rhombic or deltoid-rhombic, 1.8–6 cm. long, 1–4 cm. wide, obtuse or rounded at the apex, broadly cuneate or rounded at the base, 3-nerved from the base, succulent, green and glabrate on the upper surface, densely farinose beneath when young, glabrate in age, irregularly repand-dentate or sinuate-dentate, the teeth usually low, acute or acutish; glomerules in dense spikes, these axillary and in very dense, leafy, narrow, terminal panicles, the leaves of the glabrous inflorescence reduced; calyx herbaceous, green, deeply cleft, the lobes 3–5, rounded, imperfectly enclosing the fruit; stamens 1–5; stigmas very short; pericarp green, free; seed usually vertical, dark reddish-brown, 1 mm. long, the margin obtuse.

TYPE LOCALITY: Near San Francisco, California.

DISTRIBUTION: In wet soil and on beaches, along the coast of California from San Francisco to Los Angeles County; also in western South America.

47. *Chenopodium glaucum* L. Sp. Pl. 220. 1753.

Atriplex glauca Crantz, Inst. 1: 207. 1766.

Chenopodium ambiguum R. Br. Prodr. 407. 1810.

Blitum glaucum Koch, Syn. Fl. Germ. 608. 1837.

Orthospermum glaucum Opiz, Seznam 71. 1852.

Agathophytum glaucum Fuss, Fl. Transsylv. 553. 1866.

Botrys glauca Nieuwl. Am. Midl. Nat. 3: 275. 1914.

Erect or prostrate annual, branched throughout, the branches stout, 1–4.5 cm. long, glabrous, often reddish; petioles slender, equaling or shorter than the blades; leaf-blades oblong to ovate-oblong, 1–5 cm. long, 0.5–1.5 cm. wide, obtuse, narrowly or broadly cuneate at the base, sinuate-angled or sinuate-dentate, the teeth obtuse or acute, pale-green and glabrous on the upper surface, densely farinose beneath; flowers sessile in dense glomerules, these arranged in slender, interrupted, axillary and terminal, simple or paniculate, naked spikes 1.5–4 cm. long, the inflorescence glabrous; calyx herbaceous, deeply cleft, the lobes 5 or rarely 3 or 4, obovate-oblong, obtuse, imperfectly enclosing the fruit; stamens 5, or 1–3 in the lateral flowers; stigmas short; pericarp green, free; seed vertical or horizontal, 0.6 mm. broad, dark reddish-brown, nearly smooth, the margin acutish.

TYPE LOCALITY: Europe.

DISTRIBUTION: Europe, Asia, Africa, and Australia; Greenland; adventive from New Brunswick to Virginia and Nebraska.

ILLUSTRATIONS: Sturm, Deuts. Fl. 75: *pl.* 1; Fl. Dan. *pl.* 1151; Engl. Bot. *pl.* 1454; Britt. & Brown, Ill. Fl. *f.* 1360; ed. 2. *f.* 1679; Reichenb. Ic. Fl. Germ. 24: *pl.* 248; Moss, Cambr. Brit. Fl. *pl.* 170; G. T. Stevens, Ill. Guide *pl.* 35, *f.* 9; Hegi, Ill. Fl. *f.* 545, *f.-o.*; Benth. Ill. Handb. *f.* 838; Fiori. & Paol. Ic. Fl. Ital. *f.* 1014; Pratt, Fl. Pl. Great Brit. *pl.* 177, *f.* 2; Bull. Mich. Exp. Sta. 267: *f.* 50.

48. *Chenopodium salinum* Standley, sp. nov.

Erect, prostrate, or ascending annual, usually much branched, the branches stout, 1–4 dm. long, glabrous; leaves numerous, the slender petioles equaling or shorter than the blades; leaf-blades broadly triangular-ovate or oblong-ovate, rarely oblong or lanceolate, 1.5–3 cm. long, 0.3–1.5 cm. wide, those of the inflorescence little reduced, obtuse at the apex, narrowly or broadly cuneate at the base, coarsely sinuate-dentate, the lobes acute or obtuse, pale-green and sparsely farinose on the upper surface or glabrate, densely farinose beneath; flowers sessile in dense glomerules, these sessile in the axils or forming stout, very dense, leafy spikes 1.5 cm. long or shorter; branches of the inflorescence bearing few or numerous villous white hairs, the hairs often present also on the young leaves; calyx herbaceous, deeply cleft, the lobes obovate, rounded at the apex, imperfectly enclosing the fruit; stamens 5, or rarely fewer; stigmas short; pericarp green, free; seed vertical or horizontal, 0.8–1 mm. broad, dark reddish-brown, finely tuberculate, shining, the margin obtuse.

Type collected at Ojo Caliente, New Mexico, July 28, 1904, *E. O. Wootton* 2772 (U. S. Nat. Herb. no. 736330).

DISTRIBUTION: In alkaline soil, Manitoba and Alberta to New Mexico and Arizona; adventive in Missouri.

XVI. *Rubra*. Erect or decumbent, glabrous annuals. Leaf-blades broadly rhombic to ovate or obovate, sinuate-dentate to entire. Glomerules of flowers axillary or spicate. Calyxlobes rounded on the back, succulent in fruit. Stigmas short. Seeds mostly vertical.

49. *Chenopodium rubrum* L. Sp. Pl. 218. 1753.

Atriplex rubra Crantz, Inst. 1: 206. 1766.

Blitum maritimum Nutt. Gen. Add. 12. 1818.

Blitum rubrum Reichenb. Fl. Germ. Excurs. 582. 1832.

Orthosporum rubrum T. Nees, Gen. Fl. Germ. Dicot. 1: pl. 57. 1835.

Oxybasis minutiflora Kar. & Kir. Bull. Soc. Nat. Mosc. 1841: 738. 1841.

Blitum rubrum acuminatum Koch, Syn. Fl. Germ. ed. 2. 699. 1844.

Orthospermum rubrum Opiz, Seznam 70. 1852.

Blitum acuminatum Schur, Enum. Pl. Transsylv. 571. 1866.

Blitum polymorphum rubrum G. Beck, Fl. Nied. Oesterr. 333. 1890.

Chenopodium succosum A. Nelson, Bot. Gaz. 34: 361. 1902.

Botrys succosa Lunell, Am. Midl. Nat. 4: 306. 1916.

Botrys rubra Lunell, Am. Midl. Nat. 4: 306. 1916.

Erect glabrous annual, 2–8 dm. high, simple or usually branched, either at the base or above, the branches stout, ascending, often reddish; petioles slender, equaling or usually shorter than the blades; leaf-blades deltoid-ovate or rhombic-ovate, 4–15 cm. long, often shallowly hastate, the lobes ascending, obtuse or acutish at the apex, broadly or narrowly cuneate at the base, coarsely and irregularly sinuate-dentate with obtuse teeth, or occasionally subentire, the blades of the inflorescence smaller, lanceolate to linear-oblong, entire or hastate, pale-green, shining, often tinged with red; inflorescence paniculately branched, the flowers sessile in dense glomerules, these arranged in short or elongate, dense, leafy spikes; calyx cleft nearly to the base or only to the middle, 3–5-lobed, the lobes ovate or obovate, obtuse, herbaceous, usually red in age; stamens 5 in the central flowers, 1 or 2 in the outer ones; stigmas short; fruit equaling or exceeding the calyx, the pericarp green; seed usually vertical, strongly compressed, dark-brown, shining, 0.8–1 mm. broad, the margin obtuse.

TYPE LOCALITY: Europe.

DISTRIBUTION: Salt marshes, Newfoundland to New Jersey, and in saline soil, Saskatchewan to Washington, and southward to northern New Mexico and Arizona; adventive on ballast about Philadelphia, Pennsylvania; Europe and northern and central Asia.

ILLUSTRATIONS: Reichenb. Ic. Fl. Germ. 24: pl. 255, 256; T. Nees, Gen. Fl. Germ. Dicot. 1: pl. 57, f. 1–10 (as *Orthosporum rubrum crassifolium*); E. & P. Nat. Pfl. 3^{ra}: f. 27, F–H; Britt. & Brown, Ill. Fl. f. 1369; ed. 2. f. 1688; Gaertn. Fruct. pl. 75; Lam. Tab. Encyc. pl. 181; Fl. Dan. pl. 1149; Engl. Bot. pl. 1721; Moss, Cambr. Brit. Fl. pl. 166; Sturm, Deuts. Fl. 74: pl. 14–16; G. T. Stevens, Ill. Guide pl. 35, f. 2; Hegi, Ill. Fl. f. 546, a–g; Benth. Ill. Handb. f. 839; Fiori & Paol. Ic. Fl. Ital. f. 1013; Pratt, Fl. Pl. Great Brit. pl. 177, f. 3.

50. *Chenopodium humile* Hook. Fl. Bor. Am. 2: 127. 1838.

Blitum polymorphum humile Moq. Chenop. Enum. 46. 1840.

Blitum rubrum humile Moq. in DC. Prodr. 13²: 84. 1849.

Chenopodium rubrum humile S. Wats. Bot. Calif. 2: 48. 1880.

Botrys humilis Lunell, Am. Midl. Nat. 4: 306. 1916.

Glabrous annual, much branched from the base, the branches stout, 5–20 cm. long, prostrate or ascending, simple or branched; petioles shorter than the blades; leaf-blades rhombic-ovate, orbicular-ovate, or obovate, 0.7–2.5 cm. long, rounded to acute at the apex, broadly or narrowly cuneate at the base, entire or obscurely sinuate-dentate, rarely hastate, bright-green, thick and fleshy, the upper ones little reduced; flowers sessile in dense sessile axillary glomerules; calyx herbaceous, shallowly or deeply cleft, the 3–5 lobes obovate, oval, or ovate, rounded or obtuse, shorter than the fruit; stamens 1–5; styles short; pericarp green; seed vertical, 0.5–0.6 mm. broad, strongly compressed, dark reddish-brown.

TYPE LOCALITY: Marshes of the Saskatchewan, Canada.

DISTRIBUTION: Alkaline soil, Manitoba to British Columbia, California, and Colorado, and on the coast of Maine; on ballast at Camden, New Jersey; also in Europe.

ILLUSTRATION: Hegi, Ill. Fl. f. 544, f.

XVII. **Californica.** Perennials, glabrous except on the young parts, these sparsely farinose with inflated trichomes. Leaves long-petiolate, the blades deltoid, entire or dentate. Glomerules of flowers spicate or paniculate. Calyx-lobes rounded on the back, herbaceous, equaling or shorter than the fruit. Stigmas slender, elongate. Seed vertical.

51. *Chenopodium Bonus-Henricus* L. Sp. Pl. 218. 1753.

Atriplex Bonus-Henricus Crantz, Inst. 1: 206. 1766.

Anserina Bonus-Henricus Dumort. Fl. Belg. 21. 1827.

Blitum Bonus-Henricus Reichenb. Fl. Germ. Excurs. 582. 1832.

Agathophytum Bonus-Henricus Moq. Ann. Sci. Nat. II. 1: 291. 1834.

Orthosporum Bonus-Henricus T. Nees, Gen. Fl. Germ. Dicot. 1: pl. 57. 1835.

Orthospermum Bonus-Henricus Schur, Verh. Siebenb. Ver. Nat. 4: Anhang 63. 1853.

Erect or ascending perennial from a thick fleshy root, sparsely farinose, becoming glabrate; stems 1.5–6 dm. high, mostly simple; petioles slender, usually equaling or exceeding the blades; leaf-blades broadly deltoid-hastate, 5–12 cm. long, 4.5–9 cm. wide, acute or obtuse, entire or subsinuate, bright-green; flowers sessile in dense glomerules, these arranged in mostly naked paniculate spikes; calyx deeply cleft, the lobes obovate or oblong, rounded or emarginate at the apex, often mucronulate, herbaceous, equaling or shorter than the fruit; stamens 5; styles elongate; pericarp thick, green, more or less adherent; seed vertical, compressed-globose, 1.5 mm. broad.

TYPE LOCALITY: Europe.

DISTRIBUTION: Europe and Siberia; sparingly adventive from Nova Scotia and Quebec to Delaware and Iowa.

ILLUSTRATIONS: Sturm, Deuts. Fl. 74: pl. 13; Berg, Charakt. f. 223; Reichenb. Ic. Fl. Germ. 24: pl. 257; Fl. Dan. pl. 579; E. & P. Nat. Pfl. 3^{1a}: f. 27, K-O; Britt. & Brown, Ill. Fl. f. 1370; ed. 2. f. 1689; Schkuhr, Handb. pl. 56; Lam. Tab. Encyc. pl. 181; Engl. Bot. pl. 1033; Moss, Cambr. Brit. Fl. pl. 155; Ann. Sci. Nat. II. 1: pl. 10, C; Pratt, Fl. Pl. Great Brit. pl. 177, f. 4; Briosi, Atl. Bot. f. 312; Benth. Ill. Handb. f. 843; G. T. Stevens, Ill. Guide pl. 35, f. 7; Pammel, Man. Pois. Pl. f. 204; Schleyer, Eur. Bek. Pfl. pl. 28; Hegi, Ill. Fl. pl. 95, f. 2; Müll. & Pilling, Deuts. Fl. pl. 174; Fiori & Paol. Ic. Fl. Ital. f. 1007.

52. *Chenopodium californicum* S. Wats. Bot. Calif. 2: 48. 1880.

Chenopodium anthelminticum hastatum Moq. in DC. Prodr. 13²: 74. 1849.

Blitum Bonus-Henricus erosum Moq. in DC. Prodr. 13²: 85. 1849.

Blitum californicum S. Wats. Proc. Am. Acad. 9: 101. 1874.

Erect or ascending perennial from a thick elongate fleshy root, sparsely farinose on the younger parts, glabrate in age; stems stout, 2–8 dm. high, several from each root, mostly simple; petioles slender, those of the lower leaves equaling or exceeding the blades, the uppermost leaves subsessile; leaf-blades triangular, 5–11 cm. long and nearly as broad, acute or obtuse, hastately lobed at the base, coarsely, deeply, and irregularly laciniate-dentate or sinuate-dentate throughout, bright-green, the upper blades much reduced; flowers in few or many-flowered glomerules arranged in dense, nearly naked, terminal spikes 6–18 cm. long, the lower glomerules often pedunculate and their flowers long-pedicellate; calyx green, herbaceous, cleft to about the middle, the lobes broadly oblong, rounded, truncate, or emarginate, shorter than the fruit; stamens 5; styles elongate; pericarp adherent; seed vertical, compressed-globose, 2 mm. in diameter.

TYPE LOCALITY: California.

DISTRIBUTION: Central and southern California.

HYBRIDS

In Europe in recent years there have been described numerous hybrids between various species of *Chenopodium*, and in several cases hybrids between a species and a hybrid, or even between two hybrids. Most of them are known only from cultivated plants. For a collective account of these see Ascherson & Graebner's Synopsis der Mitteleuropäischen Flora.¹ So far, no hybrids have been worked out in North America. The following are some of the better known hybrids between species that occur in North America: *Chenopodium album* × *opulifolium* (= *C. viride*) Murr, Deuts. Bot. Monats. 19: 38. 1901; *C. Berlandieri* × *hircinum* A. Ludw.; Asch. & Graebn. Syn. Mittel-Eur. Fl. 5: 87. 1913; *C. album* × *Berlandieri* Murr, Allg. Bot. Zeits. 19: 13. 1913; *C. album* × *hircinum* A. Ludw.; Asch. & Graebn. Syn. Mittel-Eur. Fl. 5: 88. 1913; *C. glaucum* × *rubrum* M. Schulze; Murr, Allg. Bot. Zeits. 12: 111. 1906.

DOUBTFUL SPECIES

CHENOPODIUM BOLIVIANUM Murr, Magyar Bot. Lap. 1: 359. 1902. The type was collected in Bolivia, but the author cites a second specimen collected near Fort Colville, Washington. The plant from Washington is probably a form of *C. Fremonti*.

9. *BLITUM* L. Sp. Pl. 4. 1753.

Morocarpus Adans. Fam. Pl. 2: 261. 1763.

Glabrous annual herbs. Leaves alternate, petiolate, the blades usually hastate, entire or dentate. Flowers usually perfect, ebracteate, small, in dense globose axillary heads; perianth 3-5-lobed, the segments concave, the calyx fleshy, baccate, and red at maturity, enclosing the fruit. Stamens 3-5, hypogynous, distinct, the anthers oblong. Style none; stigmas very short, stout; ovule subsessile. Utricle ovoid. Seed vertical; embryo hippocrepiform, surrounding the copious farinaceous endosperm.

Type species, *Blitum capitatum* L.

Leaf-blades hastate, entire; glomerules of flowers 3-6 mm. in diameter.

1. *B. hastatum*.

Leaf-blades hastate and dentate; glomerules 5-10 mm. in diameter.

Inflorescence naked above; margin of the seed acute or acutish; plants branched from the base, the branches usually simple.

2. *B. capitatum*.

Inflorescence leafy throughout; margin of the seed rounded; plants branched throughout.

3. *B. virgatum*.

1. *Blitum hastatum* Rydb. Bull. Torrey Club 28: 273. 1901.

Slender, bright-green, glabrous, erect or ascending annual, 1-4 dm. high, usually branched from the base, the branches simple or again branched; petioles of the lower leaves equaling or exceeding the blades, the upper leaves short-petiolate; leaf-blades ovate to lance-ovate in outline, entire, hastately lobed at the base, the lobes spreading or ascending, or the blades often not lobed, acute to acuminate at the apex, usually cuneate at the base, 3-7 cm. long, thin, bright-green, the uppermost blades reduced, elliptic or oblanceolate, tapering at the base, not hastate; flowers sessile in globose glomerules in the upper axils and in slender elongate interrupted terminal spikes, the spikes naked above, the glomerules 3-6 mm. in diameter; calyx deeply cleft, the lobes oval, obtuse, shorter than the fruit, becoming red and fleshy in age; stamens 5; styles short; seed slightly compressed, 0.8-1 mm. long, smooth, dark-brown.

TYPE LOCALITY: Buffalo, Wyoming.

DISTRIBUTION: Moist soil in the mountains, Wyoming to Oregon, Nevada, and New Mexico.

2. *Blitum capitatum* L. Sp. Pl. 4. 1753.

Blitum tataricum Mill. Gard. Dict. ed. 8. Blitum no. 3. 1768.

Morocarpus capitatus Scop. Fl. Carn. ed. 2. 1: 6. 1772.

Blitum chenopodioides Lam. Encyc. 1: 431. 1785.

Blitum virgatum capitatum Coss. Germ. & Wedd. Introd. Fl. Paris 108. 1842.

Chenopodium capitatum Asch. Fl. Brand. 1: 572. 1864.

Glabrous, erect or ascending, bright-green annual, 1-6 dm. high, branched at the base the branches stout, usually simple; petioles of the lower leaves equaling or exceeding the blades

¹ 5: 17-106. 1913.

those of the upper leaves shorter; leaf-blades triangular, 4–12 cm. long, 2.5–9 cm. wide, acute or rarely obtuse, usually hastately lobed at the base, the lobes spreading or reflexed, all except the upper blades coarsely and irregularly sinuate-dentate or laciniate-dentate, rather firm, the upper blades reduced, often lanceolate and entire; flowers sessile in dense globose glomerules 5–10 mm. in diameter, these sessile or short-pedunculate in the upper axils and forming stout interrupted naked spikes; calyx deeply cleft, 3–5-lobed, the lobes obovate or oblong, obtuse or acute, shorter than the fruit, becoming fleshy and red in age; stamens 4 or 5, or in the outer flowers 1; stigmas short; pericarp green or red; seed oval or oblong, 0.8 mm. long, the margin acutish.

TYPE LOCALITY: Tyrol, Austria.

DISTRIBUTION: Quebec to southeastern Alaska, and southward to New Jersey, Minnesota, New Mexico, and Oregon; also in Europe.

ILLUSTRATIONS: Morison, Hist., *pl.* 32, *f.* 9; Reichenb. Ic. Fl. Germ. 24: *pl.* 254; Britt. & Brown, Ill. Fl. *f.* 1375; ed. 2. *f.* 1693; Gaertn. Fruct. *pl.* 126; Sturm, Deuts. Fl. 74: *pl.* 11; T. Nees, Gen. Fl. Germ. Dicot. 1: *pl.* 58; Clements, Rocky Mt. Fl. *pl.* 8, *f.* 3; Karst. Deuts. Fl. *f.* 312; G. T. Stevens, Ill. Guide *pl.* 36, *f.* 1; Hegi, Ill. Fl. *f.* 546, *h-n*; Fiori & Paol. Ic. Fl. Ital. *f.* 1006.

3. *Blitum virgatum* L. Sp. Pl. 4. 1753.

Morocarpus foliosus Moench, Meth. 342. 1794.

Chenopodium foliosum Asch. Fl. Brand. 1: 572. 1864.

Chenopodium virgatum Jessen, Deuts. Exc.-Fl. 300. 1879. Not *C. virgatum* Thunb. 1815.

Glabrous, bright-green, erect annual, 1.5–8 dm. high, usually much branched, the branches stout, ascending, subterete, green or tinged with red; leaf-blades triangular to rhombic-oblong, 2–9 cm. long, acute at the apex, subtruncate or cuneate at the base, coarsely laciniate-dentate or sinuate-dentate, often subhastate at the base, thin, often tinged with red in age, the upper blades smaller, sharply hastate or with a few deep teeth; glomerules of flowers 5–10 mm. in diameter, all subtended by leaves, forming interrupted or dense, simple spikes; calyx-lobes 3–5, rounded, becoming red and fleshy in fruit; stamen usually 1; styles 2; seed usually vertical, 1–1.5 mm. broad, dark-brown, dull or slightly lustrous, the margin rounded.

TYPE LOCALITY: Russia.

DISTRIBUTION: Europe, Asia, and northern Africa; adventive in Massachusetts, New York, Idaho, Oregon, and Washington.

ILLUSTRATIONS: E. & P. Nat. Pfl. 3^{1a}: *f.* 27, *R-U* (as *Chenopodium capitatum*); Reichenb. Ic. Fl. Germ. 24: *pl.* 253; Hegi, Ill. Fl. *pl.* 95, *f.* 4; Sturm, Deuts. Fl. 74: *pl.* 12; Schkuhr, Handb. *pl.* 1.

IV. **ATRIPLICEAE.** Herbs or shrubs. Leaves opposite or alternate, glabrous, or usually pubescent with inflated or stellate hairs. Flowers mostly unisexual, monoecious or dioecious, perfect flowers sometimes intermixed with the unisexual ones, usually glomerate, the glomerules axillary, spicate, or paniculate. Stamens 1–5. Fruit compressed or obcompressed, included in the bracts, these often united and accrescent in age. Seed erect or horizontal; embryo annular.

Pubescence of inflated hairs, or wanting; seed vertical or horizontal.

Bracts of the pistillate flowers usually compressed, never strongly obcompressed.

Stigmas 4 or 5; leaves and stems glabrous; bracts united to the apex.

Stigmas 2 or 3; leaves and stems with inflated hairs, at least when young.

Perianth none in the pistillate flowers, or rarely the pistillate flowers of 2 kinds, some of them with a regular herbaceous calyx.

Bracts free, at least at the apex; seeds vertical, except in one group, in this the seeds horizontal and vertical on the same plant.

Bracts united to the depressed apex; seeds always horizontal.

Perianth present in the pistillate flowers, of few hyaline scales.

Bracts of the pistillate flowers strongly obcompressed, carinate dorsally.

Pubescence of branched hairs; seed vertical.

Perianth none in the pistillate flowers; bracts united to the middle or higher.

Bracts carinate dorsally, winged in fruit; pericarp glabrous.

Bracts not carinate, spinose at the apex; pericarp densely pubescent.

Perianth present in the pistillate flowers; bracts free.

10. SPINACIA.

11. ATRIPLEX.

12. ZUCKIA.

13. ENDOLEPIS.

14. SUCKLEYA.

15. GRAYIA.

16. EUROZIA.

17. AXYRIS.

10. *Spinacia* L. Sp. Pl. 1027. 1753.

Glabrous erect annual herbs. Leaves alternate, petiolate, the blades triangular-ovate or hastate, entire or sinuate-dentate. Flowers unisexual, dioecious, rarely perfect, in sub-

globose glomerules, or the pistillate flowers usually axillary, the staminate glomerules arranged in interrupted terminal spikes. Staminate flowers with a 4- or 5-parted perianth, the segments oblong, obtuse; stamens 4 or 5, inserted at the base of the perianth; anthers exerted. Pistillate flowers without a perianth, subtended by 2 bracts, these united except at the apex, accrescent, closed in fruit and enclosing the utricle, unappendaged or developing 2 elongate opposite spines near the base; ovary subglobose; stigmas 4 or 5, capillary, connate at the base, long-exserted; ovule sessile. Utricle included in the cartilaginous or indurate bract-tube; pericarp membranaceous, adherent to the seed. Seed erect, slightly compressed; embryo annular, surrounding the farinaceous endosperm; radicle inferior.

Type species, *Spinacia oleracea* L.

1. *Spinacia oleracea* L. Sp. Pl. 1027. 1753.

Spinacia glabra Mill. Gard. Dict. ed. 8. Spinacia no. 2. 1768.

Stems erect, 3–4.5 dm. high, simple or branched; leaves long-petiolate, the petioles 1–4 cm. long, the blades triangular-ovate or oval, hastate or subhastate, 4–10 cm. long, acutish, entire or sinuate-dentate, the upper blades narrower than the lower ones, cuneate at the base; fruiting bracts 2–4 mm. long, sessile, green, usually with 2 stout sharp divaricate spines; seed rounded, acute at the base, fuscous, dull.

TYPE LOCALITY: Not stated.

DISTRIBUTION: Often cultivated in the United States and frequently escaping; widely cultivated in Europe and Asia, the native habitat not known.

ILLUSTRATIONS: E. & P. Nat. Pfl. 3^{1a}: f. 29, A–G; Reichenb. Ic. Fl. Germ. 24: pl. 258.

11. *ATRIPLEX* L. Sp. Pl. 1052. 1753.

Obione Gaertn. Fruct. 2: 198. 1791.

Halimus Wallr. Sched. Crit. 117. 1822.

Pterochiton Torr. in Frém. Rep. Calif. 318. 1845.

Schizotheca C. Meyer; Lindl. Veg. Kingd. 513, hyponym. 1846. Not *Schizotheca* Ehrenb. 1832.

Phyllothea Nutt.; Moq. in DC. Prodr. 13²: 98, as synonym. 1849.

Lophocarya Nutt.; Moq. in DC. Prodr. 13²: 106, as synonym. 1849.

Pterocarya Nutt.; Moq. in DC. Prodr. 13²: 106, as synonym. 1849. Not *Pterocarya* Kunth, 1824.

Phyllocarpa Nutt.; Moq. in DC. Prodr. 13²: 108, as synonym. 1849. Not *Phyllocarpus* Riedel, 1842.

Theleophyton Moq. in DC. Prodr. 13²: 115. 1849.

Armola Kirschl.; Montand. Syn. Fl. Jura Sept. 261. 1856.

Teutliopsis Celak. Oesterr. Bot. Zeits. 22: 168. 1872.

Shrubs or annual or perennial herbs, more or less furfuraceous, farinose, or canescent with inflated hairs. Leaves alternate or opposite, sessile or petiolate. Flowers monoecious or dioecious, solitary or usually glomerate, the glomerules axillary or terminal, sessile, or in simple or paniculate spikes, the staminate and pistillate flowers in the same or in separate glomerules. Staminate flowers ebracteate; perianth 3–5-parted, the segments obovate or oblong, obtuse; stamens 3–5, inserted at the base of the perianth, the filaments free or connate at the base. Pistillate flowers each 2-bracteolate, the bractlets accrescent, free or usually united, at least at the base, and enclosing the fruit; perianth none, or rarely some of the flowers ebracteolate and enclosed by a 3–5-lobed calyx; stigmas 2, subulate or filiform, connate at the base; ovule oblique or erect on a short funicle, or inverted and suspended from the elongate funicle. Utricle with a membranaceous pericarp, this usually free from the seed. Seed erect or inverted, rarely horizontal; embryo annular, surrounding the endosperm, the radicle inferior, ascending, or superior.

Type species, *Atriplex hortensis* L.

Radicle inferior, or if superior (in one species) the plants bright-green annuals with entire, unappendaged bracts.

Pistillate flowers of 2 kinds: some of them with a regular 3–5-lobed herbaceous calyx, the others without a perianth but enclosed in a pair of bracts.

Pistillate flowers all alike, without a calyx.

Bracts not inflated or spongy; annuals.

Leaves, at least the lower ones, opposite, the blades usually hastate or subhastate, only the lowest, if any, dentate, sometimes linear; plants usually bright-green and glabrate.

I. HORTENSES.

II. HASTATAE.

- Leaves all alternate, the blades all or most of them dentate, never linear; plants densely furfuraceous.
 Bracts inflated, loosely spongy; perennials.
 Radicle superior; plants never bright-green annuals with entire, unappendaged bracts.
 Flowers monoecious; plants never fruticose, rarely suffrutescent at the base.
 Bracts free, entire, unappendaged; perennials.
 Bracts united, at least at the base.
 Bracts 10–16 mm. long, the green entire margins 2–4 times as wide as the body of the bract.
 Bracts less than 10 mm. long, the margins usually little if at all wider than the body of the bract.
 Fruiting bracts not orbicular, or, if so, never radiately dentate to the base nor strongly compressed.
 Bracts broadest near or above the middle, usually rounded or truncate at the apex, or if not so, the leaves dentate; leaves usually large and petiolate.
 Leaf-blades, at least most of them, deltoid to deltoid-ovate or broadly ovate, broadest at or near the base, usually entire.
 Leaf-blades cordate at the base; fruiting bracts of 2 kinds on each plant.
 Leaf-blades never cordate at the base; fruiting bracts all similar on the same plant.
 Bracts panduriform; leaf-blades conspicuously 3-nerved.
 Bracts never panduriform; leaf-blades not conspicuously 3-nerved.
 Bracts dentate only at the truncate apex, small.
 Bracts dentate well below the apex, often to the base, large.
 Leaf-blades never deltoid nor ovate, usually broadest at or above the middle, in a few species the leaves broadest at the base and conspicuously dentate.
 Leaf-blades linear, concolorous; bracts truncate at the apex.
 Leaf-blades usually broad, or if, linear, the lower surface much paler than the upper and the bracts not truncate.
 Bracts red and succulent at maturity; perennials.
 Bracts never succulent at maturity, usually herbaceous.
 Annuals, or one species perennial and with unappendaged bracts.
 Perennials; sides of the bracts tuberculate.
 Bracts ovate or hastate-ovate, broadest at or near the base, usually about twice as long as broad, small, sparsely dentate or tuberculate, or entire or smooth, acute; leaves small, sessile, the blades entire, ovate to linear.
 Fruiting bracts orbicular, finely and regularly radiate-dentate to the base, strongly compressed.
 Flowers dioecious, or a few pistillate flowers rarely present on the staminate plants, or, if the flowers monoecious, the plants fruticose nearly throughout.
 Bracts never longitudinally 4-winged, the sides smooth or variously appendaged.
 Leaves all or nearly all opposite.
 Leaves alternate, or only the lowest opposite.
 Leaf-blades dentate.
 Bracts entire, unappendaged.
 Bracts dentate or appendaged, or both.
 Fruiting bracts 7–15 mm. long, usually long-pedicellate, the sides with numerous long flattened appendages.
 Fruiting bracts 2–3 mm. long, sessile, the sides smooth or short-tuberculate.
 Leaf-blades entire or merely undulate.
 Plants annual or perennial, usually less than 6 dm. high, or the branches, if longer, procumbent or prostrate, usually fruticose only at the base, the branches never spinose.
 Leaf-blades never sagittate.
- III. ROSEAE.
 IV. LINDLEYANAE.
 V. CALIFORNICAE.
 VI. GRACILIFLORAE.
 VII. SACCARIAE.
 IX. POWELLIANAE.
 X. TRUNCATAE.
 VIII. ARGENTEAЕ.
 XI. WOLFIANAE.
 XIII. SEMIBACCATAE.
 XIV. ARENARIAE.
 XVI. LEUCOPHYLLAE.
 XII. PUSILLAE.
 XV. ELEGANTES.
 XVII. WATSONIANAE.
 XIX. HYMENELYTRAE.
 XXIII. ACANTHOCARPAE.
 XVIII. BARCLAYANAE.

- Bracts 2-3 mm. long, or, if slightly longer, the plants herbaceous. XVIII. BARCLAYANAE.
 Bracts 4-10 mm. long; plants usually fruticose. XXV. CORRUGATAE.
 Bracts panduriform, the sides appendaged; densely white-furfuraceous shrubs.
 Bracts never panduriform. XXIV. OBOVATAE.
 Shrubs, copiously furfuraceous. XXVI. NUTTALLIANAE.
 Bracts broader than long.
 Bracts as long as broad or longer. XXVII. PHYLLOSTEGIAE.
 Annual herbs, bright-green and glabrate. XXI. JULACEAE.
 Leaf-blades sagittate and clasping.
 Plants tall shrubs, fruticose nearly throughout, usually 6-40 dm. high, or, if lower, the branches spinose.
 Bracts orbicular, or laciniate-dentate, 2-4 mm. long.
 Margins of the bracts deeply laciniate-dentate, the sides usually muricate; leaf-blades small, narrow. XXII. POLYCARPAE.
 Margins of the bracts entire or crenulate; leaf-blades large, broad. XX. LENTIFORMES.
 Bracts much longer than broad, 5-12 mm. long, entire or sparsely dentate. XXVIII. CONFERTIFOLIAE.
 Bracts 4-winged longitudinally. XXIX. CANESCENTES.

I. HORTENSES

- Leaf-blades green, glabrous, dull on the upper surface. 1. *A. hortensis*.
 Leaf-blades densely white-furfuraceous beneath, lustrous on the upper surface. 2. *A. nitens*.

II. HASTATAE

- Leaves sessile. 3. *A. drymarioides*.
 Leaves, at least the lower ones, petiolate.
 Bracts foliaceous only at the apex, the margins entire, the sides smooth or nearly so.
 Leaf-blades linear; bracts linear, 8-12 mm. long. 4. *A. zosteræfolia*.
 Leaf-blades lanceolate or broader; bracts rhombic-oval to rounded-deltoid, never linear.
 Plants coarsely furfuraceous; bracts 6-20 mm. long, spongy and much thickened at the base; radicle superior. 5. *A. alaskensis*.
 Plants finely farinose; bracts 3-12 mm. long, little if at all thickened at the base; radicle inferior.
 Bracts 4-12 mm. long; leaf-blades oblong to lance-oblong, mostly entire. 6. *A. Gmelini*.
 Bracts about 3 mm. long; leaf-blades deltoid to rhombic-ovate, usually dentate. 7. *A. joaquiniana*.
 Bracts with broad dentate foliaceous margins, the sides usually tuberculate or muricate.
 Leaf-blades linear; plants erect. 8. *A. littoralis*.
 Leaf-blades lanceolate to rounded-deltoid; plants usually decumbent.
 Bracts rhombic-oval, cuneate or rounded at the base; lower leaf-blades rhombic-lanceolate to lanceolate or oblong, the upper ones usually entire. 9. *A. patula*.
 Bracts rounded-deltoid or ovate-deltoid, truncate or broadly rounded at the base; lower leaf-blades triangular-hastate or rounded-deltoid, the upper ones usually hastate. 10. *A. hastata*.

III. ROSEAE

- Leaf-blades usually hastate or subhastate, sinuate-dentate, green and glabrate on the upper surface. 11. *A. tatarica*.
 Leaf-blades ovate or rhombic-ovate, repand-dentate, densely furfuraceous on both surfaces.
 Fruiting-bracts rhombic or cuneate-orbicular, the margins dentate; seed lustrous, not apiculate. 12. *A. rosea*.
 Fruiting-bracts rhombic-hastate, dentate only near the base; seed dull, apiculate. 13. *A. sabulosa*.

IV. LINDLEYANAE

- A single adventive species in North America. 14. *A. Lindleyi*.

V. CALIFORNICAE

- A single species. 15. *A. californica*.

VI. GRACILIFLORAE

- A single species. 16. *A. graciliflora*.

- VII. SACCARIAE
- A single species. 17. *A. saccaria*.
- VIII. ARGENTEAЕ
- Leaf-blades closely repand-dentate. 18. *A. trinervata*.
 Leaf-blades entire or remotely and irregularly dentate.
 Leaf-blades never subhastate or angled at the base, mostly oblong or oblong-ovate. 19. *A. coronata*.
 Leaf-blades, at least some of them, subhastate or angled at the base.
 Bracts compressed, the sides smooth or with few short obtuse tubercles, the margins usually shallowly dentate. 20. *A. argentea*.
 Upper leaves short-petiolate, the lowest opposite.
 Upper leaves sessile, the lowest alternate. 21. *A. sordida*.
 Branches terete; plants coarsely and loosely furfuraceous; seed 1.5 mm. long.
 Branches angled; plants finely and very closely furfuraceous; seed 2 mm. long.
 Bracts usually pedicellate, 5-7 mm. long, the margins obtusely dentate, the sides usually tuberculate or cristate. 22. *A. expansa*.
 Bracts sessile, 3-5 mm. long, the margins acutely dentate, the sides usually unappendaged. 23. *A. mohavensis*.
 Bracts not compressed, the sides densely covered with long, acute, foliaceous appendages, the margins deeply lacinate.
 Staminate flowers in separate glomerules, these arranged in elongate, interrupted, nearly naked, terminal spikes. 24. *A. Rydbergii*.
 Staminate flowers usually mixed with the pistillate ones, or, if in separate glomerules, the glomerules axillary.
 Bracts mostly long-pedicellate. 25. *A. Caput-Medusae*.
 Bracts sessile. 26. *A. Hillmani*.
- IX. POWELLIANAE
- A single species. 27. *A. Powellii*.
- X. TRUNCATAE
- Plants erect; bracts 3-dentate at the apex. 28. *A. truncata*.
 Plants procumbent; bracts several-dentate at the apex. 29. *A. subdecumbens*.
- XI. WOLFIANAE
- A single species. 30. *A. Wolfii*.
- XII. PUSILLAE
- Leaves, at least the lower ones, opposite.
 Plants erect; only the lowest leaves opposite; bracts dentate above the middle, 3-3.5 mm. long. 31. *A. tularensis*.
 Plants prostrate; leaves all opposite; bracts hastate-ovate, entire, 2 mm. long. 32. *A. depressa*.
 Leaves all alternate.
 Leaf-blades cordate at the base. 33. *A. cordulata*.
 Leaf-blades rounded to acute at the base.
 Branches copiously villous, at least about the inflorescence. 34. *A. Parishii*.
 Branches merely furfuraceous.
 Sides of the bracts tuberculate.
 Leaf-blades linear, 7-17 mm. long; bracts ovate-oblong or oblong, tuberculate at or above the middle. 35. *A. Greenei*.
 Leaf-blades ovate to oblong, 2-7 mm. long; bracts ovate or triangular-ovate, tuberculate below the middle. 36. *A. tenuissima*.
 Sides of the bracts smooth.
 Bracts 2-3 mm. long, subhastate, denticulate or crenulate. 37. *A. minuscula*.
 Bracts 1-2 mm. long, ovate, entire. 38. *A. pusilla*.
- XIII. SEMIBACCATAE
- A single species. 39. *A. semibaccata*.
- XIV. ARENARIAE
- Leaf-blades dentate.
 Staminate glomerules in elongate, usually paniculate spikes.
 Leaf-blades, at least the upper ones, linear. 43. *A. linifolia*.
 Leaf-blades broader than linear.
 Bracts 4-6 mm. long.
 Leaf-blades sinuate-dentate, the lower often hastate; bracts 6 mm. long. 40. *A. Lampa*.
 Leaf-blades repand-dentate, never hastate; bracts 4-5 mm. long. 51. *A. Aldamae*.
 Bracts 2-3 mm. long.

- Leaves of about the same color on both surfaces; sides of the bracts nearly always conspicuously tuberculate.
 Leaves white beneath, green on the upper surface; sides of the bracts usually unappendaged.
- Staminate glomerules axillary, or in very short, simple spikes.
 Sides of the bracts tuberculate, muricate, or cristate.
 Bracts 1.5–2 mm. long.
 Bracts 3 mm. long.
 Sides of the bracts not appendaged.
 Leaf-blades white, at least beneath.
 Bracts 3–4 mm. long.
 Bracts 2 mm. long.
 Leaves white beneath, green on the upper surface; bracts nearly orbicular, the margins with numerous teeth.
 Leaves equally white on both surfaces; bracts cuneate-orbicular, 5-dentate at the apex.
 Leaf-blades green on both surfaces.
- Leaf-blades entire.
 Sides of at least some of the bracts conspicuously tuberculate or cristate.
 Leaf-blades concolorous.
 Staminate glomerules terminal, or in terminal or axillary spikes; seed about 2 mm. long; leaf-blades 5–15 mm. wide.
 Staminate glomerules axillary; seed 1.5 mm. long; leaf-blades 3 mm. wide or less.
 Leaf-blades white beneath, green on the upper surface, mostly linear.
 Sides of the bracts typically smooth, sometimes inconspicuously tuberculate.
 Bracts 4–5 mm. long.
 Bracts 1.5–3 mm. long.
 Staminate glomerules all axillary.
 Staminate glomerules chiefly in terminal spikes.
 Perennial, loosely furfuraceous; branches terete; bracts not compressed.
 Annuals, closely furfuraceous; branches angled; bracts compressed.
 Bracts 2–2.5 mm. long, longer than broad.
 Bracts 2.5–3 mm. long, usually broader than long.
 Sides of the bracts 3-nerved, the margins deeply dentate; staminate spikes short; leaf-blades 7–15 mm. long, short-petiolate.
 Sides of the bracts not 3-nerved, the margins shallowly dentate; staminate spikes elongate; leaf-blades 10–25 mm. long, sessile.
- XV. ELEGANTES
- Sides of the bracts muricate.
 Sides of the bracts smooth.
 Leaf-blades, at least some of them, dentate; bracts deeply dentate.
 Terminal tooth of the bract much larger and broader than the lateral ones; bracts sessile, 3–4 mm. long.
 Terminal tooth of the bract similar to the lateral ones; bracts pedicellate, 3 mm. long.
 Leaf-blades entire; bracts shallowly denticulate.
- XVI. LEUCOPHYLLAE
- Plants procumbent or decumbent; leaf-blades rounded or obtuse at the apex.
 Plants erect; leaf-blades acute.
- XVII. WATSONIANAE
- Bracts 4–6 mm. long, acute; leaf-blades 3–8 mm. wide.
 Bracts 2 mm. long, rounded at the apex; leaf-blades 1–1.5 mm. wide.
- XVIII. BARCLAYANAE
- Leaf-blades, at least some of them, dentate.
 Leaf-blades entire.
 Bracts conspicuously broader than long.
 Plants loosely farinose; bracts 5–6 mm. broad, the sides smooth or inconspicuously tuberculate.
 Plants closely furfuraceous; bracts 6–8 mm. broad, the sides sharply muricate.
 Bracts as long as broad, often much longer.
 Bracts strongly compressed, nearly free, the sides slightly tuberculate or smooth.
 Branches herbaceous; leaves on petioles one-third as long as the blades or shorter.
41. *A. Serenana*.
 42. *A. Wrightii*.
 44. *A. muricata*.
 45. *A. pentandra*.
 46. *A. confinis*.
 47. *A. glomerata*.
 48. *A. domingensis*.
 57. *A. Davidsonii*.
 49. *A. arenaria*.
 50. *A. texana*.
 43. *A. linifolia*.
 51. *A. Aldamae*.
 55. *A. pacifica*.
 56. *A. Coulteri*.
 52. *A. Wardii*.
 53. *A. pueblensis*.
 54. *A. tampicensis*.
 58. *A. Thornberi*.
 59. *A. cyclostegia*.
 60. *A. elegans*.
 61. *A. fasciculata*.
 62. *A. leucophylla*.
 63. *A. fruticulosa*.
 64. *A. Watsoni*.
 65. *A. malamorensis*.
 66. *A. lurida*.
 67. *A. dilatata*.
 68. *A. Rosei*.

- Free portion of the bracts suborbicular, emarginate, dentate nearly to the base.
 Free portion of the bracts rhombic-hastate, acute, 3-dentate.
 Branches fruticose; leaves short-petiolate or sessile.
 Bracts spongy, not compressed, united to the middle or higher.
 Bracts united nearly to the apex, dentate only at the apex, the teeth few, the sides slightly tuberculate or often smooth.
 Bracts united only to the middle, the margins green, deeply lacinate-dentate, the sides sharply muricate.
69. *A. Palmeri*.
 70. *A. Magdalenae*.
 71. *A. insularis*.
 72. *A. Barclayana*.
 73. *A. Sonorae*.
- XIX. HYMENELYTRAE
- A single species.
74. *A. hymenelytra*.
- XX. LENTIFORMES
- Flowers monoecious; bracts entire.
 Flowers dioecious.
 Branches conspicuously angled, spinose; bracts obscurely denticulate, not appendaged.
 Bracts 3-4 mm. wide; upper leaves petiolate.
 Bracts 5-6 mm. wide; upper leaves sessile.
 Branches terete or nearly so.
 Upper leaf-blades rounded or cuneate at the base, short-petiolate or sessile; tall shrubs, 6-25 dm. high.
 Bracts entire, convex.
 Bracts crenulate, strongly compressed.
 Upper leaf-blades cordate or subcordate at the base, clasping; low shrub, 2-4 dm. high; bracts entire.
75. *A. orbicularis*.
 76. *A. Torreyi*.
 77. *A. Griffithsii*.
 78. *A. Breweri*.
 79. *A. lentiformis*.
 80. *A. Parryi*.
- XXI. JULACEAE
- A single species.
81. *A. julacea*.
- XXII. POLYCARPAE
- A single species.
82. *A. polycarpa*.
- XXIII. ACANTHOCARPAE
- A single species.
83. *A. acanthocarpa*.
- XXIV. OBOVATAE
- Sides of the bracts usually smooth.
 Sides of the bracts tuberculate or cristate near the base.
84. *A. Jonesii*.
 85. *A. obovata*.
- XXV. CORRUGATAE
- A single species.
86. *A. corrugata*.
- XXVI. NUTTALLIANAE
- Sides of the bracts smooth, the bracts never fusiform.
 Leaf-blades obovate or oblanceolate-oblong; bracts broadest above the middle, 3-dentate at the apex.
 Leaf-blades oblong-linear or linear-oblong; bracts broadest at or below the middle, with usually more than 3 teeth at the apex.
 Sides of the bracts tuberculate or muricate, or, if smooth, the bracts fusiform.
 Leaf-blades oval or rounded-ovate, on petioles half as long as the blades or shorter.
 Bracts 5 mm. long, the free portion triangular-subulate, shorter than the united portion.
 Bracts 7-8 mm. long, the free portion orbicular-rhombic or rhombic-ovate, broader and longer than the united portion.
 Leaf-blades oblong-linear to broadly oblong or obovate, usually sessile or subsessile.
 Plants very densely white-furfuraceous throughout, the whole plant appearing white or whitish.
 Bracts 8-10 mm. long, short-pedicellate.
 Bracts 5-7 mm. long, sessile.
 Plants rather sparsely furfuraceous, appearing green or grayish-green.
 Bracts fusiform, some or all of them pedicellate; leaf-blades oblong-linear, 2-6 mm. wide.
 Bracts never fusiform, usually ovoid, sessile or nearly so; leaf-blades oblanceolate-oblong to oblong.
 Plants erect; leaf-blades cuneate at the base, usually short-petiolate, 2-4 cm. long.
 Plants ascending or decumbent; leaf-blades obtuse at the base, sessile, 1.5-2 cm. long.
87. *A. Gardneri*.
 88. *A. tridentata*.
 89. *A. cuneata*.
 90. *A. neomexicana*.
 91. *A. Pringlei*.
 92. *A. oblanceolata*.
 93. *A. falcata*.
 94. *A. Nuttallii*.
 95. *A. buxifolia*.
- XXVII. PHYLLOSTEGIAE
- A single species.
96. *A. phyllostegia*.

XXVIII. CONFERTIFOLIAE

Bracts entire.

Bracts dentate or denticulate, at least near the base.

97. *A. confertifolia*.98. *A. collina*.

XXIX. CANESCENTES

Leaf-blades oval, broadest at the middle; low shrub, about 3 dm. high.

99. *A. Garretti*.

Leaf-blades linear to spatulate, when broader than linear, widest above the middle.

Low shrub, 1-4 dm. high, branched chiefly from the base; bracts 4-5 mm. long, the wings thick, lacinate-dentate.

100. *A. aptera*.

Tall shrubs, 6-25 dm. high, freely branched throughout; wings of the bracts thin.

Bracts 7-25 mm. long, the free portion equaling or usually shorter than the wings.

101. *A. canescens*.

Bracts 4-10 mm. long, the free portion much longer than the wings.

Pedicels of the bracts 2 mm. long or less; bracts 4-6 mm. long.

102. *A. linearis*.

Pedicels of the bracts 4-7 mm. long; bracts 6-10 mm. long.

103. *A. macropoda*.

I. *Hortenses*. Erect annuals, bright-green and glabrate or furfuraceous. Lower leaves opposite, the upper alternate, petiolate, the blades broad, often hastate, sinuate-dentate or entire. Flowers monoecious, spicate; pistillate flowers of 2 kinds, some of them with a regular herbaceous 3-5-lobed calyx and a horizontal seed, most of them without a calyx, the vertical stipitate fruit subtended by 2 bracts. Fruiting bracts oval or ovate, large, compressed, nearly free, entire or denticulate.

1. *Atriplex hortensis* L. Sp. Pl. 1053. 1753.*Atriplex hortensis microsperma* Moq. Chenop. Enum. 52. 1840.*Atriplex hortensis obtusifolia* Moq. in DC. Prodr. 13²: 91. 1849.*Atriplex microtheca* Moq. in DC. Prodr. 13²: 91. 1849.*Atriplex heterantha* Wight, Ic. 5²: 5. 1852.*Atriplex hortensis sativa* Asch. Fl. Brand. 1: 576. 1864.*Atriplex hortensis microtheca* Loret & Barr. Fl. Montp. 559. 1876.

Erect annual, 5-25 dm. high, sparsely branched, the branches slender or stout, ascending, obtusely angled, striped with dark- and pale-green, sparsely furfuraceous when young, soon glabrate; lower leaves opposite, the upper alternate, slender-petioled, the blades broadly triangular to triangular-ovate or lance-oblong, 4-12 or even 20 cm. long, often hastately lobed, acute or obtuse at the apex, rounded, truncate, or subcordate at the base, sinuate-dentate to entire or undulate, thin, bright-green, farinose when young, unusually glabrous in age; flowers monoecious, in slender, interrupted, mostly naked, terminal or axillary, paniculate spikes; pistillate flowers of 2 kinds, mostly without a perianth and enclosed by 2 large bracts, sometimes consisting of a 3-5-lobed green calyx enclosing a horizontal fruit; fruiting bracts short-pedicellate, rounded-oval or ovate, 5-18 mm. long, compressed, united only at the base, herbaceous, rounded to acute at the apex, entire or denticulate, glabrate; utricle (when enclosed by bracts) stipitate, the seed about 2 mm. long, nearly black, the radicle inferior.

TYPE LOCALITY: Siberia.

DISTRIBUTION: Central Asia; naturalized in central and southern Europe; adventive or escaped from cultivation in Illinois, Colorado, and Montana.

ILLUSTRATIONS: Schkuhr, Handb. pl. 349; Sturm, Deuts. Fl. 79: pl. 1; T. Nees, Gen. Fl. Germ. Dicot. 1: pl. 63, f. 18-21; Wight, Ic. 1787; Reichenb. Ic. Fl. Germ. 24: pl. 260; Bull. U. S. Dep. Agr. Bot. 27: pl. 8, f. 1, 2; Benth. Ill. Handb. f. 847; Fiori & Paol. Ic. Fl. Ital. f. 997; Hegi, Ill. Fl. f. 550, h-n; Karst. Deuts. Fl. f. 308; Schleyer, Eur. Bek. Pfl. pl. 28.

2. *Atriplex nitens* Schkuhr, Handb. 3: 541. 1803.*Atriplex acuminata* Waldst. & Kit. Pl. Rar. Hung. 2: 107. 1805.

Erect annual, 6-25 dm. high, simple or branched, the branches ascending or spreading, obtusely angled, furfuraceous or glabrate; leaves alternate, the petioles half as long as the blades or shorter, the blades deltoid-oval or deltoid, 4-10 cm. long, acute to acuminate at the apex, subcordate, truncate, or broadly cuneate at the base, often subhastate, sinuate-dentate to entire, the upper blades ovate or lanceolate, often entire, all densely whitish-furfuraceous beneath, green and lustrous on the upper surface; flowers monoecious, in slender, naked, interrupted, terminal or axillary, simple or paniculate spikes; staminate calyx furfuraceous; pistillate flowers of 2 kinds, some with a regular 5-lobed herbaceous calyx and horizontal fruit, the

others without a calyx, subtended by 2 bracts; bracts oval-rhombic, 5–17 mm. long, obtuse or acutish, entire, unappendaged, free nearly to the base green; seed erect, 3–3.5 mm. long, and yellowish, or sometimes horizontal, 1.5 mm. broad, and black.

TYPE LOCALITY: Germany.

DISTRIBUTION: Southeastern Europe and Asia; adventive in New York, New Jersey, South Dakota, and Oregon.

ILLUSTRATIONS: Reichenb. Ic. Fl. Germ. 24: *pl.* 259; Waldst. & Kit. Pl. Rar. Hung. *pl.* 103.

II. *Hastatae*. Green and glabrate or furfuraceous or farinose, erect to procumbent annuals. Lower leaves opposite, the upper alternate, all usually petiolate, the blades deltoid to linear, often hastate, entire or dentate. Flowers monoecious, in axillary or spicate glomerules. Fruiting bracts sessile or pedicellate, linear to broadly deltoid, usually united only near the base, entire or dentate, the sides smooth or appendaged. Radicle inferior, or in one species superior.

3. *Atriplex drymarioides* Standley, sp. nov.

Sparsely branched, erect or spreading annual, 6–10 cm. high, the branches very slender, obtusely angled, sparsely farinose; lower leaves opposite, the upper alternate, sessile, the blades cuneate-obovate to oblong, 9–17 mm. long, 4–8 mm. wide, rounded or obtuse at the apex, cuneate at the base, entire, thin, pale-green, sparsely and finely farinose; flowers monoecious, in few-flowered axillary glomerules; calyx 4-cleft; fruiting bracts usually on long slender pedicels, elliptic-oblong or oblanceolate, 4–6 mm. long, obtuse or acutish, nearly free at the narrowed base, herbaceous, entire, not appendaged, usually narrower at the base than the utricle and exposing it; seed 1 mm. broad, the radicle inferior or subascending.

Type collected at Halibut Cove, Cook Inlet, Alaska, July 21, 1899, *F. V. Coville & T. H. Kearney 2451* (U. S. Nat. Herb. no. 373861).

4. *Atriplex zosteræfolia* (Hook.) S. Wats. Proc. Am. Acad. 9: 109. 1874.

Chenopodium ? zosteræfolium Hook. Fl. Bor. Am. 2: 127. 1838.
Atriplex Gmelini zosteræfolia Moq. in DC. Prodr. 13²: 97. 1849.

Annual, 3 dm. high or less, diffusely branched, the branches slender, ascending or decumbent, sparsely furfuraceous when young, glabrate in age; leaves mostly opposite, the blades linear, 2.5–10 cm. long, 1–3 mm. wide, entire, succulent, sparsely furfuraceous or glabrate; flowers monoecious, in short axillary spikes and in axillary glomerules; calyx deeply 5-cleft; fruiting bracts sessile, linear, somewhat unequal, 8–12 mm. long, united only at the base, fleshy, entire, the sides not appendaged; seed 1 mm. long, the radicle inferior or subascending.

TYPE LOCALITY: Straits of Juan de Fuca [Washington?].

DISTRIBUTION: Vicinity of the type locality.

5. *Atriplex alaskensis* S. Wats. Proc. Am. Acad. 9: 108. 1874.

Erect or ascending annual, 3–8 dm. high, sparsely branched, the branches very stout, obtusely angled, sparsely furfuraceous when young but soon glabrate; lowest leaves opposite, the others alternate, all with stout petioles 1–2 cm. long, the blades ovate, ovate-oblong, oblong, or deltoid-oblong, 3.5–9 cm. long, obtuse or acute, entire or repand-denticulate, rounded to cuneate at the base, all the blades thin, bright-green, sparsely furfuraceous when young, glabrate in age, the upper blades lanceolate, often subhastate, usually entire; flowers monoecious, in short, dense, usually leafy, axillary or terminal spikes, and in axillary glomerules; calyx 4-cleft; fruiting bracts sessile, oblong to ovate-orbicular, 6–20 mm. long, sometimes broader than long, acute or acutish or sometimes rounded at the apex, united only at the rounded base, coriaceous or subspongious below, entire, not appendaged on the sides, only the apex foliaceous; seed dark-brown, 2–3 mm. broad, the radicle superior or nearly so.

TYPE LOCALITY: Barlow's Cove, Alaska.

DISTRIBUTION: Along the coast of Alaska from the Shumagin Islands to southeastern Alaska.

6. *Atriplex Gmelini* C. Meyer, Mém. Acad. St.-Pétersb. VI.
4²: 160. 1838.

Atriplex angustifolia obtusa Cham. Linnaea 6: 569. 1831.

Erect or decumbent annual, 1–5 dm. high, sparsely or copiously branched, the branches slender or stout, succulent, obtusely angled, finely farinose when young, soon glabrate; lower leaves opposite, the upper alternate, the petioles 1 cm. long or shorter, the blades oblong, narrowly oblong, lance-oblong, or the uppermost linear, 1.2–5.5 cm. long, the lower obtuse, the upper acute or acuminate, cuneate at the base, usually entire, sometimes with a few inconspicuous teeth near the base or rarely hastate, thin, green, finely farinose when young, usually glabrate in age; flowers monoecious, in dense or interrupted, nearly naked, usually simple, terminal and axillary spikes, and in axillary glomerules; calyx deeply 5-cleft; fruiting bracts sessile, ovate-rhombic to ovate-oblong, 3–12 mm. long, obtuse or acute, united at the rounded base, coriaceous or subspongious below, entire or rarely subhastate, foliaceous only at the apex, the sides unappendaged, sparsely farinose; seed 1–2.5 mm. broad, dark-brown or black, the radicle inferior.

TYPE LOCALITY: Kamchatka.

DISTRIBUTION: Sea beaches, northern California to Kotzebue Sound, Alaska; also in Siberia.

7. *Atriplex joaquiniana* A. Nelson, Proc. Biol. Soc. Wash. 17: 99.
1904.

Atriplex spicata S. Wats. Proc. Am. Acad. 9: 108. 1874. Not *A. spicata* Stokes, 1812.

? *Atriplex spicata Lagunita* Jepson, Fl. W. Middle Calif. 179. 1901.

Erect annual, 3–10 dm. high, sparsely branched, or simple below, the branches stout, ascending, obtusely angled, terete below, finely farinose when young, glabrate in age; lowest leaves opposite, the others alternate, the slender petioles half as long as the blades or shorter, the blades deltoid to ovate-rhombic, 3–7 cm. long and often nearly as broad, sometimes subhastate, obtuse or acute at the apex, rounded, truncate, or broadly cuneate at the base, irregularly sinuate-dentate or repand-dentate, the upper blades often somewhat narrower and entire except for the basal lobes, thin, usually green, copiously and finely farinose when young, glabrate in age; flowers monoecious or subdioecious, in stout, dense or interrupted, naked, simple or usually paniculate spikes; calyx 4-parted; fruiting bracts sessile, ovate-oblong or rounded-deltoid, 3 mm. long, united only at the rounded or truncate base, obtuse or acutish, herbaceous, not margined or appendaged, or rarely slightly tuberculate; seed dark-brown or black, 0.8–1.5 mm. long, the radicle inferior.

TYPE LOCALITY: San Joaquin Valley, California, east of Mt. Diablo.

DISTRIBUTION: In alkaline soil, British Columbia to central California.

8. *Atriplex littoralis* L. Sp. Pl. 1054. 1753.

Atriplex serrata Huds. Fl. Angl. 377. 1762.

Atriplex marina L. Mant. 300. 1771.

Atriplex maritima Pall. Reise 2: 289. 1772.

Atriplex littoralis marina Smith, Engl. Bot. pl. 708. 1800.

Atriplex littoralis serrata Smith, Fl. Brit. 1094. 1804.

Chenopodium littorale Thunb. Nova Acta Soc. Sci. Upsal. 7: 142. 1815.

Atriplex patula littoralis A. Gray, Man. ed. 5. 409, in part. 1867.

Atriplex hastata littoralis Pons, Nuovo Giorn. Bot. Ital. II. 9: 419. 1902.

Erect annual, 3–6 dm. high, much branched or nearly simple, the branches slender, ascending or mostly erect, sparsely furfuraceous when young, glabrate in age, obtusely angled; lowest leaves opposite, the others alternate, all very shortly petiolate, the blades linear or lance-linear, 2.5–7.5 cm. long, 2–6 mm. wide, obtuse or acute at the apex, attenuate or narrowly cuneate at the base, entire or acutely repand-dentate, 1-nerved, thin, green, sparsely furfuraceous when young, glabrate in age; flowers monoecious or subdioecious, in stout, dense or interrupted, naked, paniculate spikes, the spikes usually erect, glomerules of flowers present also in the upper axils; calyx 4-cleft; fruiting bracts sessile, rhombic-oval, 3–4 mm. long or sometimes longer, united at the rounded base, acute, herbaceous or fleshy when young, dry

and leathery in age, the free margins sharply denticulate, the sides tuberculate, densely furfuraceous; seed black, 1.5–2 mm. long, the radicle inferior.

TYPE LOCALITY: Seashores of northern Europe.

DISTRIBUTION: Sandy beaches, Maine; adventive in southeastern Pennsylvania and adjacent New Jersey; also in Europe and Asia.

ILLUSTRATIONS: Sturm, Deuts. Fl. 79: *pl.* 12; 80: *pl.* 1; Fl. Dan. *pl.* 1287; Engl. Bot. *pl.* 708; T. Nees, Gen. Fl. Germ. Dicot. 1: *pl.* 63, *f.* 2–8; Reichenb. Ic. Fl. Germ. 24: *pl.* 266; Moss, Cambr. Brit. Fl. *pl.* 173; Hegi, Ill. Fl. *f.* 552, *a–d*; Fiori & Paol. Ic. Fl. Ital. *f.* 998*; Pratt, Fl. Pl. Great Brit. *pl.* 179, *f.* 4.

9. *Atriplex patula* L. Sp. Pl. 1053. 1753.

Atriplex erecta Huds. Fl. Angl. 376. 1762.

Atriplex angustifolia Smith, Fl. Brit. 1092. 1805.

Atriplex patula littoralis A. Gray, Man. ed. 5. 409, in part. 1867. Not *A. littoralis* L. 1753.

Teutliopsis patula Celak. Oesterr. Bot. Zeits. 22: 168. 1872.

Atriplex hastata patula Pons, Nuovo Giorn. Bot. Ital. II. 9: 417. 1902.

Erect or usually decumbent or procumbent annual, 3–9 dm. high, much branched, the branches slender, obtusely angled or striate, green, glabrate; lowest leaves opposite, the others alternate, all short-petiolate, the blades rhombic-lanceolate to lanceolate, oblong, or narrowly lance-oblong, 2.5–8 cm. long, acute at the apex, broadly or narrowly cuneate at the base, the lower ones hastate and sinuate-dentate or usually entire, the lobes ascending, the upper blades entire, not lobed, all bright-green, thin, glabrate, or thinly furfuraceous beneath; flowers monoecious or subdioecious, in slender, naked, interrupted, simple or paniculate spikes and in axillary fascicles; calyx 4-parted; fruiting bracts rhombic-oval, 2–6 mm. long, often subhastate, acute or acutish, united only at the rounded or broadly cuneate base, herbaceous, the margins usually denticulate, the sides shortly and obtusely or acutely tuberculate, glabrate; seed 1.5–2.5 mm. broad, yellowish or black, the radicle inferior.

TYPE LOCALITY: Europe.

DISTRIBUTION: In salt marshes, central California to British Columbia; New Brunswick and Quebec to Connecticut; adventive from New York to Maryland, North Dakota, and Illinois, and in North Carolina, Florida, and Alabama; also in Europe, Asia, and northern Africa.

ILLUSTRATIONS: Engl. Bot. *pl.* 936, 2223; Sturm, Deuts. Fl. 79: *pl.* 6; Fl. Dan. *pl.* 1285, 2226; Britt. & Brown, Ill. Fl. *f.* 1378; Gaertn. Fruct. *pl.* 75; Schkuhr, Handb. *pl.* 347; T. Nees, Gen. Fl. Germ. Dicot. 1: *pl.* 63, *f.* 1; Reichenb. Ic. Fl. Germ. 24: *pl.* 265; Bull. U. S. Dep. Agr. Bot. 27: *pl.* 7, *f.* 3; Moss, Cambr. Brit. Fl. *pl.* 175, 176; Hegi, Ill. Fl. *pl.* 96, *f.* 2, *f.* 552, *i*; Bull. Mich. Exp. Sta. 267: *f.* 44; G. T. Stevens, Ill. Guide *pl.* 36, *f.* 6.

10. *Atriplex hastata* L. Sp. Pl. 1053. 1753.

Atriplex Halimus Pursh, Fl. Am. Sept. 199. 1814. Not *A. Halimus* L. 1753.

Atriplex laciniata Pursh, Fl. Am. Sept. 199. 1814. Not *A. laciniata* L. 1753.

Atriplex halimoides Raf. Am. Mo. Mag. 2: 176. 1818.

Atriplex mucronata Raf. Am. Mo. Mag. 2: 176. 1818.

Atriplex dioica Raf. Am. Mo. Mag. 2: 176. 1818.

Chenopodium subspicatum Nutt. Gen. 1: 199. 1818.

Atriplex laciniata americana Torr. Fl. U. S. 1: 293. 1824.

Atriplex Purshiana Moq. Chenop. Enum. 55. 1840.

Atriplex tetrandra Torr.; Moq. in DC. Prodr. 13²: 93, as synonym. 1849.

Atriplex gracilis Moq. in DC. Prodr. 13²: 95, as synonym. 1849.

Chenopodium hastatum Dumort. Bull. Soc. Bot. Belg. 4: 339. 1865.

Atriplex patula hastata A. Gray, Man. ed. 5. 409. 1867.

Teutliopsis hastata Celak. Oesterr. Bot. Zeits. 22: 168. 1872.

Atriplex patula subspicata S. Wats. Proc. Am. Acad. 9: 107. 1874.

Atriplex lapathifolia Rydb. Mem. N. Y. Bot. Gard. 1: 133. 1900.

Atriplex carnososa A. Nelson, Bot. Gaz. 34: 361. 1902.

Atriplex subspicata Rydb. Bull. Torrey Club 33: 137. 1906.

Erect, decumbent, or procumbent annual, 3–9 dm. high, usually much branched, the branches slender or stout, ascending or spreading, obtusely angled, sparsely or densely furfuraceous when young, often glabrate, green or stramineous; lowest leaves usually opposite, the others alternate, the lower with slender petioles half as long as the blades or shorter, the upper short-petioled; lower leaf-blades triangular-hastate to rounded-deltoid, 2.5–7 cm. long and often nearly as broad, acute or obtuse at the apex, truncate at the base or with a rounded sinus, entire or usually sinuate-dentate or shallowly repand-dentate, the basal lobes acute, spreading or reflexed, the upper blades hastate-oblong, hastate-lanceolate, oblong, or lanceolate, smaller, mostly entire, acute at the apex, truncate or broadly cuneate at the base, all the blades thin or succulent, bright-green or densely furfuraceous; flowers monoecious or

subdioecious, in slender or stout, dense or interrupted, naked, simple or broadly paniculate spikes, usually also in axillary fascicles; calyx usually 4-cleft; fruiting bracts sessile, rounded-deltoid or ovate-deltoid, 3–7 mm. long, herbaceous, united only at the truncate or rounded base, often reddish in age, acute or acutish, the margins denticulate or rarely entire, the sides usually short-tuberculate, densely furfuraceous or glabrate; seed 1.5–2.5 mm. long, nearly black, the radicle inferior.

TYPE LOCALITY: Europe.

DISTRIBUTION: Saline soil, or in salt marshes, Newfoundland to North Carolina and westward to Oregon and California; also in Europe, Asia, and northern Africa.

ILLUSTRATIONS: Schkuhr, Handb. *pl.* 348; Rep. N. J. State Mus. 1910: *pl.* 57, *f.* 1; Britt. & Brown, Ill. Fl. *f.* 1379; ed. 2. *f.* 1697; Mutel, Fl. Fr. *f.* 424; Fl. Dan. *pl.* 1286; Sv. Bot. *pl.* 627; Reichenb. Ic. Fl. Germ. 1: *pl.* 16; 24: *pl.* 261; Bull. U. S. Dep. Agr. Bot. 27: *pl.* 7, *f.* 4; Moss, Cambr. Brit. Fl. *pl.* 177–180; Benth. Ill. Handb. *f.* 848 (as *A. patula*); Briosi, Atl. Bot. *f.* 313 (as *A. patula*); Pratt, Fl. Pl. Great Brit. *pl.* 179, *f.* 1 (as *A. patula*); G. T. Stevens, Ill. Guide *pl.* 36, *f.* 5; Bull. Mich. Exp. Sta. 267: *f.* 45; Blatchley, Ind. Weed Book *f.* 38 (as *A. patula*); Fiori & Paol. Ic. Fl. Ital. *f.* 998; Hegi, Ill. Fl. *pl.* 96, *f.* 3; Baxter, Brit. Bot. *pl.* 356 (as *A. patula*).

III. *Roseae*. Erect or decumbent annuals, usually densely furfuraceous. Leaves alternate, sessile or petiolate, the blades broad, often hastate, dentate, sometimes glabrate on the upper surface. Flowers monoecious, the staminate mostly in simple or paniculate spikes. Fruiting bracts sessile or subsessile, broad, united usually to the middle, dentate, the sides usually tuberculate. Radicle inferior or ascending.

11. *Atriplex tatarica* L. Sp. Pl. 1053. 1753.

Atriplex laciniata L. Sp. Pl. 1053, in part. 1753.

Teuiliopsis tatarica Celak. Oesterr. Bot. Zeit. 22: 169. 1872.

Schizotheca tatarica Celak. Arch. Naturw. Landesd. Boehm. 2: 149. 1873.

Atriplex tatarica discolor Graebn. in Asch. & Graebn. Syn. Mittel-Eur. Fl. 5: 146. 1913.

Erect or spreading annual, sparsely or densely branched, the branches erect, ascending, or rarely procumbent, 3–15 dm. long, slender or stout, obtusely angled, furfuraceous when young, glabrate in age; leaves alternate, slender-petiolate, the lower petioles half as long as the blades, the blades triangular-rhombic or deltoid, usually hastate or subhastate, 2–7 cm. long, obtuse or acute at the apex, cuneate, broadly cuneate, or subtruncate at the base, deeply or shallowly sinuate-dentate or rarely undulate, thin, densely whitish-furfuraceous beneath, usually green and glabrate on the upper surface, the uppermost blades usually narrow, oblong to lanceolate or linear, entire or hastate; flowers monoecious, the staminate glomerules in slender or stout, dense or interrupted, naked, elongate, paniculate spikes, the pistillate flowers fascicled in the axils; calyx 5-cleft; fruiting bracts subsessile, rhombic, 3–7 mm. or the lower 15 mm. long, acute, united to the middle, not compressed, the foliaceous apex usually acutely 3-lobed and often denticulate, the sides commonly tuberculate or sometimes smooth; seed 1.5–2 mm. long, brownish, the radicle ascending.

TYPE LOCALITY: Siberia.

DISTRIBUTION: Europe, Asia, East Indies, and northern Africa; adventive from Connecticut to eastern Pennsylvania.

ILLUSTRATIONS: Reichenb. Ic. Fl. Germ. 24: *pl.* 269; Hegi, Ill. Fl. *f.* 553, *l–q*; Fiori & Paol. Ic. Fl. Ital. *f.* 999 (as *A. laciniata*).

12. *Atriplex rosea* L. Sp. Pl. ed. 2. 1493. 1763.

Atriplex alba Scop. Delic. Insub. 2: 16. 1787. Not *A. alba* Crantz, 1766.

Teuiliopsis rosea Celak. Oesterr. Bot. Zeits. 22: 169. 1872.

Atriplex spatiosa A. Nelson, Bot. Gaz. 34: 360. 1902.

Erect annual, 2–10 dm. high, much branched, or sometimes simple at the base, the branches stout or slender, ascending or rarely spreading, terete, stramineous or whitish, rather coarsely furfuraceous or glabrate; leaves numerous, alternate, the petioles one third as long as the blades or shorter, the uppermost leaves sessile; leaf-blades ovate, rhombic-ovate, or oval, 2–8 cm. long, 1–5 cm. wide, obtuse or acute, mucronulate, broadly cuneate or rounded at the base, sinuate-dentate or repand-dentate above the base with acute or obtuse teeth, thin, sparsely or densely furfuraceous, green or grayish, the uppermost blades reduced, often entire or subhastate; flowers monoecious, in large or few-flowered axillary glomerules and usually also in interrupted naked terminal spikes; calyx deeply 5-cleft; fruiting bracts sessile, rhombic to cuneate-orbicular, 4–5 mm. or rarely 12 mm. long, united at the base, acute, the margins

dentate, the sides usually short-tuberculate; seed dark-brown, dull, orbicular, 1.5–2 mm. broad, the radicle inferior.

TYPE LOCALITY: Southern Europe.

DISTRIBUTION: Alkaline soil, often in cultivated fields or waste ground, from Wyoming to southern Washington, and southward to southern California and northern Chihuahua, appearing as if native, and adventive from New York to Florida; also in Europe, western Asia, northern Africa, and Australia.

ILLUSTRATIONS: Fl. Dan. *pl.* 1284; Reichenb. Ic. Fl. Germ. 24: *pl.* 267; Scop. Delic. Insub. 2: *pl.* 8; E. & P. Nat. Pfl. 3^{ia}: *f.* 29, S–X; Britt. & Brown, Ill. Fl. *f.* 1380; ed. 2. *f.* 1698; Schkuhr, Handb. *pl.* 350; Engl. Bot. *pl.* 2880; Sturm, Deuts. Fl. 80: *pl.* 3; Fiori & Paol. Ic. Fl. Ital. *f.* 999*; Pratt, Fl. Pl. Great Brit. *pl.* 178, *f.* 4; G. T. Stevens, Ill. Guide *pl.* 36, *f.* 4; Hegi, Ill. Fl. *f.* 553, *f–k*; Benth. Ill. Handb. *f.* 849.

13. *Atriplex sabulosa* Rouy, Bull. Soc. Bot. Fr. 37: xx. 1890.

Atriplex laciniata L. Sp. Pl. 1053, in part. 1753.

Atriplex arenaria Woods, (Phytologist 3: 593; hyponym. 1849) Tour. Fl. 317. 1850. Not *A. arenaria* Nutt. 1818.

Atriplex maritima Hallier, Bot. Zeit. 21: Beil. 10. 1863. Not *A. maritima* Crantz, 1766.

Prostrate or ascending annual, much branched, the branches stout, 2–6 dm. long, striate, furfuraceous or glabrate; leaves alternate, the petioles 2–5 mm. long, the blades rhombic-ovate, 1.5–3 cm. long, 1–2 cm. wide, broadly cuneate at the base, obtuse or acute at the apex, thin, sparsely or densely furfuraceous, irregularly repand-dentate, the teeth obtuse or acutish, the uppermost blades reduced, often entire; flowers monoecious, in large or few-flowered axillary spikes and usually also in short interrupted naked terminal spikes; calyx 5-cleft; fruiting bracts sessile or subsessile, rhombic-hastate, 6–9 mm. long, 6–9 mm. wide, broadly cuneate at the base, sparsely dentate at the angles, the sides 3-nerved, usually not appendaged, rarely obscurely tuberculate near the base; seed yellowish-brown, dull, 3–4 mm. broad, apiculate by the prominent radicle.

TYPE LOCALITY: England.

DISTRIBUTION: On beaches, New Brunswick and Quebec; also in western Europe.

ILLUSTRATIONS: Engl. Bot. *pl.* 165; Fl. Dan. *pl.* 1284 (as *A. marina*); Reichenb. Ic. Fl. Germ. 24: *pl.* 268, *f.* 1–4; Moss, Camb. Brit. Fl. *pl.* 185, 186; Rhodora 17: 85. *f.* 1, 2.

IV. *Lindleyanae*. Erect or decumbent perennials, suffrutescent at the base. Leaves alternate, petiolate, the blades broad, repand-dentate, densely furfuraceous. Flowers monoecious, the staminate glomerules terminal or in short spikes. Fruiting bracts sessile, inflated and loosely spongy, united except at the apex, unappendaged. Radicle inferior.

14. *Atriplex Lindleyi* Moq. in DC. Prodr. 13²: 100. 1849.

Atriplex halimoides Lindl. in T. L. Mitchell, Three Exped. East. Austral. 1: 282. 1838. Not *A. halimoides* Tineo, 1790.

Atriplex inflata F. Muell. Trans. Phil. Inst. Vict. 2: 75. 1858.

Erect or ascending perennial, suffrutescent at the base, much branched, the branches terete, rather stout, 1.5–4 dm. long, finely white-furfuraceous, or glabrate in age; leaves alternate, the lower with petioles two thirds as long as the blades, the upper subsessile; leaf-blades mostly ovate-rhombic or ovate, 1–1.5 cm. long, acute or obtuse, abruptly cuneate or attenuate at the base, remotely repand-dentate, thick, densely white-furfuraceous, the uppermost blades mostly entire, oblanceolate or elliptic; flowers monoecious, the staminate glomerules sessile in the upper axils, terminal, or in short terminal spikes, the pistillate flowers axillary, solitary or fascicled; calyx 5-cleft; fruiting bracts sessile, broadly turbinate or hemispheric, 8–12 mm. in diameter, united, loosely spongy and inflated in fruit, the summit usually flattened, bordered by a narrow horizontal wing or an acute angle, the small central orifice closed by small, entire or 3-toothed, erect valves; seed dark reddish-brown, 1.5 mm. in diameter, the radicle inferior.

TYPE LOCALITY: Along the Darling River, eastern Australia.

DISTRIBUTION: Eastern Australia; adventive or escaped from cultivation in San Diego County, California.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Bot. 27: *pl.* 1, *f.* 2; F. Muell. Ic. Austr. Sals. *pl.* 19.

V. *Californicae*. Prostrate perennials from fleshy roots, the branches herbaceous, loosely furfuraceous. Leaves alternate, sessile, the blades entire. Flowers monoecious, the glomerules axillary. Fruiting bracts sessile, ovate, free, entire, unappendaged. Radicle lateral or superior.

15. *Atriplex californica* Moq. in DC. Prodr. 13²: 98. 1849.

Phyllothea parvifolia Nutt.; Moq. in DC. Prodr. 13²: 98, as synonym. 1849.

Perennial from a fleshy fusiform root, much branched, the branches slender, prostrate or sometimes ascending, 1.5–5 dm. long, terete, furfuraceous-canescens; leaves numerous, often crowded, alternate, or the lower opposite, the blades elliptic to lanceolate or oblanceolate, 0.6–2 cm. long, 5 mm. wide or less, acute at each end, sessile, entire, furfuraceous-canescens; flowers monoecious, in dense axillary clusters, forming stout, dense, leafy or nearly naked spikes; calyx deeply 4-cleft; fruiting bracts sessile, ovate or broadly ovate, 3 mm. long, free, thin, acute, entire, green; seed 1 mm. long, black, the radicle lateral.

TYPE LOCALITY: California.

DISTRIBUTION: Seacoast, from San Francisco, California, southward to Lower California, and on the adjacent islands.

VI. *Graciliflorae*. Erect annuals, loosely farinose or glabrate. Leaves alternate, short-petiolate, the blades broad, often subcordate at the base, entire. Flowers monoecious, the staminate glomerules paniculate. Fruiting bracts pedicellate, suborbicular, very large, united, entire or nearly so. Radicle superior.

16. *Atriplex graciliflora* M. E. Jones, Proc. Calif. Acad.

II. 5: 717. 1895.

Erect annual, 1.5–3 dm. high, much branched, the branches stout or slender, ascending or decumbent, terete, whitish, sparsely farinose when young, glabrate in age; leaves numerous, alternate, the petioles 2–4 mm. long, the blades rounded-deltoid, suborbicular, or ovate-orbicular, or the uppermost oblong-ovate, 8–20 mm. long, rounded to acutish at the apex, truncate or subcordate at the base, entire, rather thin, loosely farinose when young, glabrate in age; flowers monoecious, the staminate glomerules in loose naked terminal panicles, the pistillate flowers solitary or fascicled in the axils; calyx 5-cleft, farinose; fruiting bracts on slender pedicels 2–6 mm. long, suborbicular, 10–16 mm. long, united, the green margins 2–4 times as wide as the body of the fruit, entire or undulate, sparsely farinose; seed 3 mm. long, the radicle superior.

TYPE LOCALITY: Blue Valley, near the Henry Mountains, Utah.

DISTRIBUTION: In alkaline soil, vicinity of the type locality.

VII. *Saccariae*. Erect annuals, densely farinose. Leaves alternate, petiolate, the blades mostly cordate-ovate, entire. Flowers monoecious, the staminate usually in short terminal spikes. Fruiting bracts of 2 kinds, some large, pedicellate, and densely muricate, the others small, cuneate, unappendaged. Radicle superior.

17. *Atriplex saccaria* S. Wats. Proc. Am. Acad. 9: 112. 1874.

Atriplex cornuta M. E. Jones, Proc. Calif. Acad. II. 5: 718. 1895.

Atriplex truncata saccaria M. E. Jones, Contr. West. Bot. 11: 20. 1903.

Atriplex expansa cornuta M. E. Jones, Contr. West. Bot. 11: 21. 1903.

Erect annual, 1–3 dm. high, densely farinose throughout, much branched, the branches slender, terete, ascending or spreading; leaves numerous, alternate, the petioles 2–5 mm. long, the uppermost leaves subsessile; leaf-blades broadly cordate-ovate, subreniform, or rounded-deltoid, rarely subhastate, 0.8–2.5 cm. long, rounded to acutish at the apex, rounded, truncate, or cordate at the base, entire, thin; flowers monoecious, the staminate glomerules in the upper axils or in short naked terminal spikes, the pistillate flowers mostly in fascicles of 1–3 in the lower axils; calyx 5-cleft; fruiting bracts of 2 kinds, the larger ones on pedicels 4–6 mm. long, united at the base, rounded-triangular or suborbicular, 4–6 mm. long, irregularly and coarsely dentate, the sides very irregularly and densely crested and dentate over the whole surface, the smaller fruiting bracts in the same axils as the large ones, oblong or cuneate, 3 mm. long, truncate or emarginate at the apex, usually not appendaged on the sides; seed brown, 1.5–2.2 mm. long, the radicle superior.

TYPE LOCALITY: On the desert plains of southern Wyoming or northern Utah.

DISTRIBUTION: Dry plains and hillsides, southwestern Wyoming and eastern Utah to north-eastern Arizona and northwestern New Mexico.

VIII. *Argenteae*. Erect or decumbent annuals, usually densely furfuraceous. Leaves alternate, or the lowest opposite, petiolate or sessile, the blades broad, all or most of them broadest at or near the base, entire or dentate, often hastate. Flowers monoecious, the staminate glomerules axillary or paniculate. Fruiting bracts sessile or pedicellate, usually broadest at or above the middle, united usually at least to the middle, dentate, the sides smooth or appendaged. Radicle superior.

18. *Atriplex trinervata* Jepson, *Pittonia* 2: 305. 1895.

Erect annual, 3–10 dm. high, much branched, sometimes simple at the base, the branches stout, obtusely or sharply angled, ascending or spreading, whitish-furfuraceous or glabrate; leaves alternate, the petioles stout, 2 cm. long or less, the upper leaves sessile; leaf-blades broadly ovate, rhombic-ovate, or deltoid-ovate, 2–7.5 cm. long, the upper ones reduced, obtuse or acute at the apex, truncate, subcordate, or rounded at the base, shallowly and obtusely sinuate-dentate or repand-dentate, 3-nerved, furfuraceous, more densely so beneath; flowers monoecious, the small glomerules or fascicles axillary or in interrupted naked terminal spikes, the staminate flowers in distinct glomerules or mixed with the pistillate; calyx 5-cleft; fruiting bracts sessile or an occasional one pedicellate, orbicular or cuneate-orbicular, 4–6 mm. long, usually broader than long, compressed, united at the base, rounded at the apex, the green margins obtusely or acutely dentate above the base, the sides 3-nerved, smooth or tuberculate; seed brown, 1.5–2 mm. long, the radicle superior.

TYPE LOCALITY: Near the Araquipa Hills, Solano County, California.

DISTRIBUTION: In alkaline soil, northern and central California.

19. *Atriplex coronata* S. Wats. *Proc. Am. Acad.* 9: 114. 1874.

Atriplex verna Jepson, *Pittonia* 2: 305. 1892.

Atriplex coronata verna Jepson, *Fl. W. Middle Calif.* 179. 1901.

Atriplex elegans coronata M. E. Jones, *Contr. West. Bot.* 12: 76. 1908.

Atriplex coronata notatior Jepson, *Fl. Calif.* 437. 1914.

Annual, 0.8–6 dm. high, much branched, the branches stout, terete, ascending or decumbent, furfuraceous when young, glabrate in age; leaves numerous, alternate, sessile or subsessile, the blades ovate, oval, ovate-oblong, or lanceolate, 1–2.5 cm. long, 3–10 mm. wide, acute or acuminate at the apex, cuneate or rounded at the base, entire, thin, loosely furfuraceous, often glabrate on the upper surface; flowers monoecious, both kinds in the same small axillary clusters; calyx 5-cleft; fruiting bracts sessile, rhombic-orbicular or flabellate, 4–5 mm. long, not compressed, united to above the middle, the margins laciniate-dentate, the sides copiously or only slightly tuberculate; seed 1.5 mm. long, brown, the radicle superior.

TYPE LOCALITY: San Joaquin Valley, California.

DISTRIBUTION: In alkaline flats, central and southern California.

20. *Atriplex argentea* Nutt. *Gen.* 1: 198. 1818.

Obione argentea Moq. *Chenop. Enum.* 76. 1840.

Atriplex nodosa Greene, *Pittonia* 1: 40. 1887.

Atriplex volutans A. Nelson, *Bull. Torrey Club* 25: 203. 1898.

Atriplex spatiosa A. Nelson, *Bot. Gaz.* 34: 360, in part. 1902.

Annual, 1.5–6 dm. high, much branched throughout, the branches stout or slender, angled, erect, ascending, divaricate, or decumbent, whitish-furfuraceous; lowest leaves opposite, the others alternate, the lower with petioles exceeding or shorter than the blades, the upper short-petiolate or subsessile; leaf-blades triangular-ovate, rhombic, or rounded-ovate, often subhastate, 2–6 cm. long, rounded to acute at the apex, truncate, rounded, or broadly cuneate at the base, entire or sparsely dentate or undulate, thin, densely grayish-furfuraceous, the upper leaves little reduced; flowers monoecious, the glomerules axillary or in short terminal spikes; calyx deeply 5-cleft; fruiting bracts sessile or a few short-pedicellate, usually compressed, united nearly to the apex, 5–10 mm. long, the green free margins extending nearly to the base, dentate, the sides smooth or sparsely tuberculate or cristate; seed brown, 1.5 mm. long, the radicle superior.

TYPE LOCALITY: On sterile and saline places near the Missouri River.

DISTRIBUTION: Alkaline plains and valleys, western North Dakota to California and New Mexico.

ILLUSTRATIONS: Britt. & Brown, *Ill. Fl. f.* 1381; ed. 2. *f.* 1699; *Bull. U. S. Dep. Agr. Bot.* 27: *pl.* 7, *f.* 1.

21. *Atriplex sordida* Standley, sp. nov.

Erect or decumbent annual, 3–5 dm. high, much branched, the branches stout, terete, coarsely and loosely furfuraceous; leaves alternate, sessile, often crowded, the blades ovate-deltoid to ovate-orbicular, 1–2.5 cm. long, obtuse or acute and mucronate at the apex, rounded, truncate, or subcordate at the base, entire, or angulate near the base, thin, densely and coarsely whitish-furfuraceous; flowers monoecious, in dense axillary glomerules, sometimes also forming stout dense naked spikes 1 cm. thick; calyx 5-cleft; fruiting bracts sessile, cuneate-orbicular, 3.5–6 mm. long, united to the middle, the herbaceous margins coarsely dentate, the sides coarsely tuberculate or bearing several herbaceous appendages, rarely unappendaged, coarsely furfuraceous; seed brown, 1.5 mm. long, the radicle superior.

Type collected in the San Jacinto Valley, California, in 1880, *G. R. Vasey 549* (U. S. Nat. Herb. no. 48312).

DISTRIBUTION: Riverside and Los Angeles counties, southern California.

22. *Atriplex expansa* S. Wats. Proc. Am. Acad. 9: 116. 1874.

Obione argentea Torr. Bot. Mex. Bound. Surv. 182. 1859. Not *O. argentea* Moq. 1840.

Annual or perennial, 3–6 dm. high and forming clumps 3–10 dm. broad, intricately branched, the branches slender or stout, sharply angled, sparsely furfuraceous when young, glabrate and stramineous in age; leaves alternate, distant, the lower short-petiolate, the upper sessile; leaf-blades deltoid, narrowly deltoid, rounded-deltoid, or rounded-ovate, often subhastate, 1.5–4.5 cm. long, narrowed to an obtuse apex or broadly rounded, truncate at the base or subcordate and clasping, entire or undulate, thin, sparsely and very closely furfuraceous or glabrate; flowers monoecious, in small axillary glomerules, or the glomerules in short naked terminal spikes; calyx 5-cleft; fruiting bracts subsessile or usually pedicellate, cuneate-orbicular, 5–7 mm. long, compressed, united nearly to the apex, the free margins obtusely dentate, the sides tuberculate or bearing dentate green crests, or unappendaged; seed brown, 2 mm. long, the radicle superior.

TYPE LOCALITY: Bottoms of the Rio Grande, western Texas.

DISTRIBUTION: Alkaline valleys, western Texas, southern New Mexico, and northern Chihuahua.

ILLUSTRATION: Britt. & Brown, Ill. Fl. f. 1382.

23. *Atriplex mohavensis* (M. E. Jones) Standley, sp. nov.

Atriplex expansa S. Wats. Proc. Am. Acad. 9: 116, in part. 1874.

Atriplex expansa mohavensis M. E. Jones, Contr. West. Bot. 11: 20. 1903.

Erect or spreading annual, 2–5 dm. high, much branched, the branches slender or stout, obtusely angled, furfuraceous; leaves alternate, the lower ones short-petiolate, the upper sessile; leaf-blades rounded-deltoid, triangular-ovate, or broadly ovate, 1–7 cm. long, rounded to acute at the apex and mucronulate, truncate or subcordate at the base, the uppermost smaller and often clasping, entire or somewhat sinuate-dentate or undulate, thin, sparsely furfuraceous or rarely densely so, usually glabrate in age; flowers monoecious, the staminate glomerules axillary or in slender, naked, simple or paniculate, terminal spikes, the pistillate flowers in axillary fascicles; calyx 5-cleft; fruiting bracts sessile, cuneate-orbicular, 3–5 mm. long, united to above the middle, compressed, the free margins green, acutely dentate, the sides usually unappendaged, sometimes tuberculate or bicristate, the crests dentate; seed brown, 2 mm. long, the radicle superior.

TYPE LOCALITY: Mojave Desert, California.

DISTRIBUTION: On alkaline plains and sandy beaches, central and southern California.

ILLUSTRATION: Bull. U. S. Dep. Agr. Bot. 27: pl. 5, f. 4 (as *A. expansa*).

24. *Atriplex Rydbergii* Standley, sp. nov.

Erect annual, simple or branched at the base, much branched above, the branches ascending, slender, subangulate, densely and coarsely furfuraceous; leaves alternate, the lower ones with petioles 3–7 mm. long, the upper very shortly petiolate or subsessile; leaf-blades ovate or broadly rhombic-ovate to elliptic or oblong, 1.5–3.5 cm. long, 0.6–1.8 cm. wide, obtuse to acute at the apex, cuneate or acute at the base, thin, entire, grayish-furfuraceous, paler beneath;

flowers monoecious, the pistillate solitary or in small glomerules in the axils, usually mixed with the staminate ones, the staminate glomerules 3–3.5 mm. in diameter, axillary and also forming slender interrupted simple terminal spikes, these sometimes 8 cm. long; fruiting bracts short-pedicellate or sessile, flabelliform, united nearly to the middle, the free portion green, deeply and coarsely dentate, the sides smooth or sparsely muricate; radicle superior.

Type collected along the road between Moab and Monticello, Utah, July 22, 1911, *P. A. Rydberg* & *A. O. Garrett* 9110 (herb. N. Y. Bot. Gard.).

DISTRIBUTION: Dry mesas, vicinity of the type locality.

25. *Atriplex Caput-Medusae* Eastw. Proc. Calif. Acad. II. 6: 316.
1896.

Erect annual, 1–5 dm. high, much branched, the branches ascending, stout, obtusely angled, densely furfuraceous, or glabrate and stramineous in age; lowest leaves opposite, the others alternate, the petioles half as long as the blades or shorter, the uppermost leaves very shortly petiolate; leaf-blades deltoid-ovate to deltoid-oblong, deltoid, or the lowest often suborbicular, 1–3 cm. long, rounded to acute at the apex and apiculate, truncate to broadly cuneate at the base, entire or sinuate, rather thin, densely grayish-furfuraceous, the uppermost blades shorter and narrower than the lower ones; flowers monoecious, in few-flowered axillary glomerules; calyx 5-cleft, densely furfuraceous; fruiting bracts ovoid, 5–7 mm. long, on pedicels 3–5 mm. long, united nearly to the apex, not compressed, indurate, the margins deeply lacinate, the sides densely covered with narrow flat acute herbaceous processes; seed about 1.5 mm. long, reddish-brown, the radicle superior.

TYPE LOCALITY: Near Recapture Creek, along the banks of the San Juan River, Utah.

DISTRIBUTION: Dry alkaline soil, southwestern Colorado, southeastern Utah, northwestern New Mexico, and northeastern Arizona.

ILLUSTRATION: Proc. Calif. Acad. II. 6: pl. 46.

26. *Atriplex Hillmani* (M. E. Jones) Standley, sp. nov.

Atriplex argentea Hillmani M. E. Jones, Contr. West. Bot. 11: 21. 1903.

Erect or decumbent annual, 1–2 or rarely 3 dm. high, densely branched, the branches spreading or ascending, slender, obtusely angled; lowest leaves opposite, the others alternate, the petioles half as long as the blades or usually shorter, the uppermost blades very shortly petiolate; leaf-blades ovate-oval, oval-deltoid, oval, or broadly oblong, or the lowest rhombic-orbicular, 0.8–1.5 or rarely 3 cm. long, obtuse to acuminate at the apex, acute to subtruncate at the base, entire, rather thin, densely and finely grayish-furfuraceous; flowers monoecious, in small axillary glomerules; calyx 5-cleft, densely furfuraceous, broad, sometimes tinged with red; fruiting bracts sessile, ovoid or obovoid, about 4 mm. long, indurate, not compressed, the margins deeply and acutely dentate, the sides covered with numerous rather short, stout flat, acute appendages; seed about 1.5 mm. long, the radicle superior.

TYPE LOCALITY: Reno, Nevada.

DISTRIBUTION: In dry soil, Nevada and southeastern Oregon.

IX. *Powellianae*. Erect annuals, densely furfuraceous. Leaves alternate, petiolate, or the uppermost sessile, the blades broad, entire, conspicuously 3-nerved. Flowers monoecious, in axillary glomerules. Fruiting bracts sessile, panduriform, truncate at the apex, the sides coarsely cristate. Radicle superior.

27. *Atriplex Powellii* S. Wats. Proc. Am. Acad. 9: 114. 1874.

Atriplex philonitra A. Nelson, Bot. Gaz. 34: 358. 1902.

Atriplex Nelsoni M. E. Jones, Contr. West. Bot. 11: 21. 1903.

Erect annual, 1.2–6 dm. high, simple or branched at the base, much branched above, the branches slender or stout, obtusely angled, ascending, whitish-furfuraceous; leaves numerous, alternate, the petioles of the lower leaves nearly equaling the blades, the uppermost leaves sessile or subsessile; leaf-blades broadly rhombic-ovate to ovate, the lowest suborbicular, 1–4 cm. long, obtuse or acute at the apex, obtuse, cuneate, or abruptly cuneate at the base, entire, rather thick, densely white-furfuraceous beneath, greener above, prominently 3-nerved; flowers

monoecious, in axillary glomerules; calyx 5-cleft; fruiting bracts panduriform, 3–4 mm. long, united below, not compressed, the terminal lobe green, entire, usually truncate, the margins irregularly and coarsely dentate, the sides bearing 2 or more irregular, obtusely dentate crests; seed 1.5 mm. long, the radicle superior.

TYPE LOCALITY: Arizona.

DISTRIBUTION: In alkaline soil, southwestern South Dakota and Montana to northwestern New Mexico, northern Arizona, and Utah.

X. Truncatae. Erect or procumbent annuals, densely furfuraceous. Leaves alternate, petiolate, or the uppermost sessile, the blades broadest at or near the base, entire or nearly so. Flowers monoecious, in axillary glomerules. Fruiting bracts sessile or short-pedicellate, 2–3 mm. long, broadly cuneate, dentate at the truncate apex, the sides usually smooth. Radicle superior.

28. *Atriplex truncata* (Torr.) A. Gray, Proc. Am. Acad. 8: 398.
1872.

Obione truncata Torr.; S. Wats. Bot. King's Expl. 291. 1871.

Atriplex truncata stricta A. Gray, Proc. Am. Acad. 8: 398. 1872.

Erect annual, 2–10 dm. high, simple or rather sparsely branched, the branches slender or stout, obtusely angled, ascending or spreading, furfuraceous above, glabrate below, often tinged with red; leaves alternate, the upper sessile, the lower with short petioles; lower leaf-blades rounded-deltoid, deltoid-ovate, or rhombic, often subhastate, 1.5–4 cm. long, obtuse or acute at the apex, mostly truncate or abruptly cuneate at the base, the blades of the upper leaves rounded-ovate to deltoid-oblong, acute to broadly rounded at the apex, often cordate and clasping, much smaller than the lower, all the blades entire or undulate, thin, grayish-furfuraceous, especially beneath; flowers monoecious, the glomerules axillary, the uppermost mostly staminate but staminate flowers present also in the lower axils; calyx 3–5-cleft; fruiting bracts sessile or short-pedicellate, broadly cuneate, 2–3 mm. long, not compressed, united to the truncate or broadly rounded summit, this obtusely and shallowly 3-dentate, or the teeth rarely more numerous, the sides smooth or very shortly and obscurely tuberculate; seed 1.5 mm. long, the radicle superior.

TYPE LOCALITY: On the Truckee River, Nevada.

DISTRIBUTION: In alkaline soil, Wyoming to British Columbia, and southward to California and northwestern New Mexico.

ILLUSTRATION: Bull. U. S. Dep. Agr. Bot. 27: pl. 5, f. 3.

29. *Atriplex subdecumbens* M. E. Jones, Proc. Calif. Acad. II. 5:
716. 1895.

Annual, much branched, the branches slender, 5–20 cm. long, procumbent, terete or nearly so, furfuraceous; leaves numerous, alternate, short-petiolate, the blades broadly oblong-ovate to ovate or oval, 0.7–1.5 cm. long, obtuse or acute at the apex, rounded or abruptly cuneate at the base, entire, thin, usually 3-nerved, copiously furfuraceous; flowers monoecious, both kinds in the same small axillary clusters, the glomerules present in nearly all the axils; fruiting bracts obovate or broadly cuneate, sessile, 2 mm. long, united to the apex, this green, obtusely denticulate, the teeth few, the sides smooth, nerved, furfuraceous; seed brown, 1 mm. long, the radicle superior.

TYPE LOCALITY: Fish Lake, Utah.

DISTRIBUTION: Known only from the type locality.

XI. Wolfianae. Low annuals, furfuraceous throughout. Leaves alternate, sessile, the blades linear, entire. Flowers monoecious, in axillary glomerules. Fruiting bracts small, sessile or subsessile, cuneate, truncate and 3-dentate at the apex, the sides usually short-tuberculate. Radicle superior.

30. *Atriplex Wolfii* S. Wats. Proc. Am. Acad. 9: 112. 1874.

Annual, 1–2 dm. high, much branched throughout, the branches slender, ascending or spreading, terete, furfuraceous, often reddish; leaves alternate, numerous, sessile, the blades linear, or the lowest oblong-linear, 6–14 mm. long, obtuse or acutish, entire, furfuraceous; flowers

monoecious, very small, both kinds in the same sessile axillary clusters; calyx 5-cleft, furfuraceous; fruiting bracts sessile or subsessile, cuneate-oblong or obovate, 1–1.5 mm. long, united nearly to the apex, the herbaceous apex truncate, with a small terminal tooth and 2 large lateral ones, the sides usually sparsely tuberculate; seed 1 mm. long, pale-brown, the radicle superior.

TYPE LOCALITY: On alkaline flats at Saguache, central Colorado.

DISTRIBUTION: Southern Wyoming, Colorado, and Utah.

XII. *Pusillae*. Low slender annuals, copiously furfuraceous and sometimes villous. Leaves opposite or alternate, sessile, entire, usually broadest near the base, small, ovate to linear. Flowers monoecious, axillary. Fruiting bracts small, usually ovate or hastate, broadest at or near the base, entire or denticulate, acute, the sides smooth or short-tuberculate. Radicle superior.

31. *Atriplex tularensis* Coville, Contr. U. S. Nat. Herb. 4: 182.
1893.

Atriplex cordulata tularensis Jepson, Fl. Calif. 436. 1914.

Erect annual, 1.5–4 dm. high, rather sparsely branched, the branches slender or stout, ascending, terete, densely furfuraceous, often tinged with red; leaves alternate, or the lowest opposite, sessile, spreading, the blades lanceolate or ovate, 0.6–2 cm. long, acute or acuminate at the apex, broadly cuneate or rounded at the base, entire, thick, densely furfuraceous; flowers monoecious, the staminate ones in small axillary glomerules, the pistillate ones solitary or fascicled in the axils, often mixed with the staminate ones; calyx 4-parted; fruiting bracts sessile, rhombic-ovate, 3–3.5 mm. long, acute or acuminate, united to the middle, with 1–3 teeth on each side above the middle, the sides not appendaged, white-furfuraceous; seed 1 mm. broad, the radicle superior.

TYPE LOCALITY: On the Tulare Plains of California, about 25 km. south of Bakersfield.

DISTRIBUTION: Kern and Tulare counties, California.

ILLUSTRATION: Contr. U. S. Nat. Herb. 4: *pl.* 19.

32. *Atriplex depressa* Jepson, Pittonia 2: 304. 1892.

Prostrate annual, much branched, the branches opposite, stout or slender, terete, densely furfuraceous, 3–12 cm. long; leaves numerous, opposite, spreading or ascending, sessile, the blades broadly ovate, 3–7 mm. long, acute, rounded at the base, entire, thick and rigid, densely furfuraceous; flowers monoecious, the pistillate solitary or in fascicles of 4 in the axils, the staminate flowers in small yellow axillary glomerules; calyx 4-cleft, white-furfuraceous; fruiting bracts ovate-hastate, with rounded lobes, 2 mm. long, united, compressed, entire or obscurely denticulate, acute, the sides smooth or obscurely tuberculate; seed reddish-brown, 1 mm. long, the radicle superior.

TYPE LOCALITY: In low saline spots, at the base of the Pelevo Hills, west of Vanden, Solano County, California.

DISTRIBUTION: Solano and Tulare counties, California.

33. *Atriplex cordulata* Jepson, Pittonia 2: 304. 1892.

Erect annual, 1.5–3.5 dm. high, much branched, the branches stout, spreading or ascending, stramineous, furfuraceous; leaves numerous, alternate, sessile, the blades broadly cordate-ovate, 5–10 mm. long, acute or obtuse, clasping, entire, firm, whitish-furfuraceous; flowers monoecious, both kinds mixed in small sessile axillary clusters; calyx 4-cleft, tomentose-furfuraceous; fruiting bracts sessile or subsessile, ovate-orbicular or suborbicular, 3 mm. long and 3–4 mm. wide, compressed, united to the middle, acute, the margins deeply and acutely dentate, the sides slightly tuberculate or sometimes smooth; seed 1.5 mm. long, reddish-brown, the radicle superior.

TYPE LOCALITY: Near Little Oak, Solano County, California.

DISTRIBUTION: In alkaline soil, west-central California.

ILLUSTRATION: Jepson, Fl. Calif. *f.* 82, *g.*

34. *Atriplex Parishii* S. Wats. Proc. Am. Acad. 17: 377. 1882.

Prostrate annual, much branched, the branches slender or stout, 5–25 cm. long, furfuraceous and copiously villous; leaves alternate, crowded and imbricate, sessile, the blades ovate or broadly ovate, 2–7 mm. long, acute at the apex, rounded at the base, densely white-furfuraceous; flowers monoecious, both kinds in the same small axillary clusters; calyx 4-parted; fruiting bracts sessile, triangular-hastate, 3 mm. long, rigid, the toothed lobes and acute apex herbaceous; seed black, 1 mm. long, the radicle superior.

TYPE LOCALITY: Costa Station, Los Angeles County, California.

DISTRIBUTION: In alkaline soil, southwestern California.

35. *Atriplex Greenei* A. Nelson, Bot. Gaz. 56: 65. 1913.

Erect or ascending annual, 1.5–4 dm. high, much branched throughout, the branches slender, strongly ascending, somewhat flexuous, terete, rather coarsely furfuraceous; leaves alternate, sessile, the blades linear, the upper ones slightly broadened at the base, 7–17 mm. long, 1.5 mm. wide or narrower, obtuse or acute, entire, firm, finely furfuraceous; flowers monoecious, in few-flowered axillary clusters; calyx 5-cleft; fruiting bracts sessile, ovate-oblong or oblong, 2 mm. long, 1 mm. wide, united to the acutish apex, entire, minutely tuberculate at or above the middle, the sides 3-nerved; seed pale-brown, 1 mm. long, the radicle superior.

TYPE LOCALITY: Rock Springs, Wyoming.

DISTRIBUTION: Known only from the type locality.

36. *Atriplex tenuissima* A. Nelson, Bot. Gaz. 34: 359. 1902.

Slender annual, much branched throughout, the branches slender, prostrate or decumbent, 2–3 dm. long, terete, densely white-furfuraceous, often tinged with red; leaves numerous, spreading or ascending, sessile, the blades ovate to lance-oblong or oblong, 2–7 mm. long, 1.5–3 mm. wide, acute or obtuse, broadest at the base and usually rounded, densely white-furfuraceous; flowers monoecious, sessile in small axillary glomerules; calyx 5-cleft, the lobes obtuse; fruiting bracts ovate or triangular-ovate, 2–2.5 mm. long, united, entire, or with 1 or 2 teeth near the base, sparsely tuberculate on the sides below the middle.

TYPE LOCALITY: Gunnison, Utah.

DISTRIBUTION: Known only from the type locality.

37. *Atriplex minuscula* Standley, sp. nov.

Annual, much branched throughout, the branches slender or stout, 0.7–2 dm. long, prostrate or spreading, terete, furfuraceous, often reddish; leaves numerous, imbricate, alternate, sessile, the blades ovate or broadly ovate, 4–10 mm. long, acute, rounded or subcordate at the base, entire, thick, densely furfuraceous; flowers monoecious, solitary or few in the axils; calyx 4-parted; fruiting bracts sessile, rounded-deltoid, 2–3 mm. long and as broad or broader, compressed, somewhat hastately lobed at the base and denticulate or crenulate, acute or acuminate at the apex, the sides smooth; seed 1 mm. long, brown, the radicle lateral.

Type collected between Tulare and Tulare Lake, California, in August, 1892, *Edward Palmer* 2728 (U. S. Nat. Herb. no. 278892).

DISTRIBUTION: East-central California.

38. *Atriplex pusilla* (Torr.) S. Wats. Proc. Am. Acad. 9: 110. 1874.

Obione pusilla Torr.; S. Wats. Bot. King's Expl. 291. 1871.

Annual, 5–25 cm. high, diffusely branched throughout, the branches slender, sparsely furfuraceous, often red; leaves numerous, imbricate near the ends of the branches, alternate, sessile, the blades broadly ovate to lance-oblong, 3–8 mm. long, acute or acuminate, rounded or obtuse at the base, entire, furfuraceous; flowers monoecious, solitary or in 2's in the axils; calyx 5-cleft; fruiting bracts sessile, ovate, 1–2 mm. long, entire, smooth, acute or acuminate, thin, compressed; seed yellowish-brown, 1 mm. long, the testa thin and transparent, the radicle superior.

TYPE LOCALITY: On the edge of a dried alkali flat near the head of Humboldt Valley, Nevada.

DISTRIBUTION: In alkaline soil, southeastern Oregon and northwestern Nevada.

XIII. **Semibaccatae.** Prostrate perennials, suffrutescent at the base. Leaves alternate, short-petiolate, the blades narrow, usually repand-dentate, densely white-furfuraceous beneath, green and glabrate on the upper surface. Flowers monoecious, in axillary or terminal glomerules. Fruiting bracts sessile, rhombic, fleshy and red in age, denticulate or entire, the sides not appendaged. Radicle lateral.

39. **Atriplex semibaccata** R. Br. Prodr. 406. 1810.

Atriplex denticulata Moq. in DC. Prodr. 13²: 97. 1849.

Atriplex flagellaris Wooton & Standley, Contr. U. S. Nat. Herb. 16: 119. 1913.

Prostrate perennial, suffrutescent at the base, much branched, the branches slender, terete, 3–10 dm. long, whitish, sparsely furfuraceous or glabrate; leaves numerous, alternate, short-petiolate, the blades oblong or obovate-oblong, 1–3.5 cm. long, 2–9 mm. wide, obtuse or acute, cuneate to attenuate at the base, irregularly and remotely repand-dentate, or the upper entire, thin, densely and finely white-furfuraceous beneath, usually glabrate and green on the upper surface; flowers monoecious, solitary or in small clusters in the axils, the staminate clusters usually in terminal glomerules; fruiting bracts sessile, rhombic, 4–5 mm. long, united at the base, compressed, the margins denticulate or entire, the sides nerved, not appendaged, the bracts becoming red and somewhat fleshy at maturity; seed 2 mm. long, dark-brown, the radicle lateral.

TYPE LOCALITY: Vicinity of Port Jackson, Australia.

DISTRIBUTION: Australia; naturalized in southern California, Arizona, and southern New Mexico.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Bot. 27: *pl.* 3, *f.* 3; F. Muell. Ic. Austr. Sals. *pl.* 8.

XIV. **Arenariae.** Erect or procumbent annuals or perennials, usually densely furfuraceous. Leaves alternate, short-petiolate or sessile, the blades usually narrow, broadest at or above the middle, entire or dentate, in one species subhastate and then deeply sinuate-dentate. Flowers monoecious, the staminate glomerules axillary or in simple or paniculate spikes. Fruiting bracts usually small, sessile or subsessile, broadest near or above the middle, usually compressed, dentate, the sides smooth or appendaged. Radicle superior.

40. **Atriplex Lampa** Gillies; (Moq. in DC. Prodr. 13²: 110, as synonym. 1849) Small, Fl. SE. U. S. ed. 2. 1333. 1913.

Obione Lampa Moq. in DC. Prodr. 13²: 110. 1849.

Annual (?), much branched, the stems prostrate or ascending, 3–8 dm. long, the branches divaricate or ascending, slender, terete, sparsely furfuraceous when young, glabrate in age; leaves alternate, short-petiolate, the blades oblong to rhombic in outline, at least the lower ones deeply hastate at the base, 1.5–4 cm. long, obtuse or acute at the apex, cuneate or attenuate at the base, deeply sinuate-dentate with acute or obtuse teeth, thin, densely furfuraceous beneath, glabrate on the upper surface, the uppermost blades usually entire, linear or oblong-linear; flowers monoecious, the staminate glomerules in slender, naked, mostly interrupted, simple or paniculate spikes, the pistillate flowers fascicled in the axils; calyx 5-cleft; fruiting bracts short-pedicellate, ovate-rhombic, 6 mm. long and of the same breadth, united to the middle, strongly compressed, obtuse, the margins sinuate-dentate, the sides not appendaged; seed brown, the radicle superior.

TYPE LOCALITY: Near Mendoza and San Luis, Argentina.

DISTRIBUTION: Argentina; adventive in western Florida and southern Alabama.

41. **Atriplex Serenana** A. Nelson, Proc. Biol. Soc. Wash. 17: 99. 1904.

Obione bracteosa Durand & Hilgard, Pacif. R. R. Rep. 5^a: 13. 1858.

Atriplex bracteosa S. Wats. Proc. Am. Acad. 9: 115. 1874. Not *A. bracteosa* Trautv. 1870.

Erect or decumbent annual, 3–10 dm. high, usually much branched, the branches stout, obtusely angled, furfuraceous when young, glabrate in age; leaves numerous, alternate, sessile or subsessile, the blades oblong, oval, or lance-oblong, 1.5–8.5 cm. long, 0.4–4 cm. wide, obtuse or acute at the apex, mucronate, cuneate at the base, acutely dentate, or the upper

blades mostly entire, thin, sparsely farinose, the leaves appearing green or grayish-green; flowers monoecious, the large staminate glomerules in dense or interrupted, narrowly paniculate or rarely simple, naked spikes; calyx deeply 5-cleft; pistillate flowers in few-flowered axillary clusters; fruiting bracts cuneate-orbicular, 2–3 mm. long, united below, the herbaceous margins deeply dentate, the terminal tooth usually longer than the lateral ones, the sides usually conspicuously tuberculate; seed 1–1.5 mm. long, brown, the radicle superior.

TYPE LOCALITY: Poso Creek, California.

DISTRIBUTION: In alkaline soil, central California and western Nevada to northern Lower California.

ILLUSTRATION: Pacif. R. R. Rep. 5³: pl. 14.

42. *Atriplex Wrightii* S. Wats. Proc. Am. Acad. 9: 113. 1874.

Obione elegans radiata Torr. Bot. Mex. Bound. Surv. 183, in part. 1859. Not *Obione radiata* Torr. 1859.

Atriplex radiata Coult. Contr. U. S. Nat. Herb. 2: 368. 1894.

Erect or ascending annual, 1.5–8 dm. high, sparsely branched, or simple at the base, the branches stout, obtusely angled, furfuraceous when young, usually glabrate in age; leaves numerous, alternate, sessile or short-petiolate, the blades linear to oblong, elliptic, or rarely obovate, 1.5–7.5 cm. long, 0.3–2.5 cm. wide, rounded to acute at the apex, mucronate, cuneate to long-attenuate at the base, coarsely sinuate-dentate or repand-dentate, or many of the blades entire, thin, densely and closely white-farinose beneath, usually green and glabrous on the upper surface, at least in age; flowers monoecious, the staminate glomerules small, in slender, usually dense, naked, narrowly paniculate spikes, the panicles 6–30 cm. long; calyx 5-cleft; pistillate flowers in few-flowered axillary clusters; fruiting bracts short-pedicellate, cuneate-orbicular or broadly cuneate, 2–2.5 mm. long, united below, compressed, the apex rounded, acutely 5-dentate, the sides 3-nerved, usually not appendaged, rarely obscurely tuberculate; seed 1 mm. long, pale-brown, the radicle superior.

TYPE LOCALITY: New Mexico.

DISTRIBUTION: In alkaline soil, southwestern New Mexico, Arizona, and northern Sonora.

43. *Atriplex linifolia* Humb. & Bonpl.; Willd. Sp. Pl. 4: 958. 1806.

Atriplex polygama Sessé; Lag. Gen. & Sp. Nov. 12. 1816.

Obione salicifolia Moq. Chenop. Enum. 74. 1840.

Obione linifolia Moq. Chenop. Enum. 74. 1840.

Chenopodium angustifolium Pavon; Moq. Chenop. Enum. 74, as synonym. 1840.

Obione polygama Moq. in DC. Prodr. 13²: 114. 1849.

Erect or decumbent annual or perennial (?), branched from the base, the stems simple or branched, 1.5–7 dm. long, stout or slender, obtusely angled, furfuraceous, glabrate in age, often tinged with red; leaves numerous, alternate, sessile, the blades linear, narrowly oblong, or linear-oblongate, 0.6–2.5 cm. long, 1–5 mm. broad, obtuse or acute, rather thin, entire, or the larger ones with a few spreading teeth, densely and closely white-furfuraceous beneath, grayish-green and glabrate on the upper surface; flowers monoecious or subdioecious, the staminate glomerules in slender, dense or interrupted, loosely paniculate, naked, terminal spikes, the pistillate flowers in small axillary fascicles, the leaves subtending them somewhat reduced; calyx 5-cleft; anthers often tinged with red; fruiting bracts sessile, orbicular or cuneate-orbicular, 2–2.5 mm. long, united to the middle, the herbaceous margins obtusely dentate, the sides irregularly tuberculate or with 2 dentate crests; seed pale-brown, 1.5 mm. long, the radicle superior.

TYPE LOCALITY: Mexico.

DISTRIBUTION: In alkaline soil, Durango to central Mexico.

44. *Atriplex muricata* Humb. & Bonpl.; Willd. Sp. Pl. 4: 959. 1806.

Atriplex parvifolia H. B. K. Nov. Gen. & Sp. 2: 192. 1817.

Obione Kunthiana Moq. Chenop. Enum. 72. 1840.

Obione parvifolia Moq. Chenop. Enum. 73. 1840.

Obione muricata Moq. in DC. Prodr. 13²: 109. 1849. Not *O. muricata* Gaertn. 1791.

Prostrate or procumbent annual, much branched, the branches stout, obtusely angled, 1–5 dm. long, furfuraceous, or glabrate in age, often tinged with red; leaves numerous, alter-

nate, short-petiolate or sessile, the blades cuneate-obovate, broadly oval, oblong, or oblanceolate, 0.5–2 cm. long, 2–10 mm. wide, rounded or obtuse at the apex, mucronulate, cuneate at the base, sometimes abruptly so, repand-dentate above the base, the teeth triangular, acute or obtuse, the uppermost blades sometimes entire, all thin, densely white-furfuraceous beneath, grayish-green on the upper surface; flowers monoecious, in small axillary glomerules or fascicles, or the staminate glomerules terminal; calyx 5-cleft; fruiting bracts very shortly pedicellate, suborbicular, 1.5–2 mm. long, united to the middle, compressed, not herbaceous, the free margins obtusely denticulate, the terminal tooth slightly largest, the sides shortly and sparsely tuberculate; seed brown, 1 mm. long, the radicle superior.

TYPE LOCALITY: Mexico.

DISTRIBUTION: Central Mexico.

45. *Atriplex pentandra* (Jacq.) Standley.

Axyris pentandra Jacq. Sel. Stirp. Am. 244. 1763.

Atriplex cristata Humb. & Bonpl.; Willd. Sp. Pl. 4: 959. 1806.

Obione cristata Moq. Chenop. Enum. 73. 1840.

Annual or perennial, often suffrutescent at the base, much branched, the branches stout or slender, obtusely angled, ascending or procumbent, 3–8 dm. long, finely furfuraceous when young, glabrate in age; leaves alternate, sessile or short-petiolate, the blades oblong, rhombic-ovate, broadly obovate, or narrowly oblong, 1–3 cm. long, 3–15 mm. broad, rounded to acute at the apex, mucronate, cuneate at the base, repand-dentate, sinuate-dentate, undulate, or the upper entire, thin, densely white-furfuraceous beneath, grayish-green and usually glabrate on the upper surface; flowers monoecious, the staminate flowers in short dense naked terminal spikes, the pistillate flowers fascicled in the axils; calyx 5-cleft, the lobes with green keels; fruiting bracts sessile, broadly cuneate-orbicular, 3 mm. long and usually broader, united only at the truncate or broadly cuneate base, compressed, much thickened at maturity, the margins deeply and acutely dentate, the sides with 2 dentate crests or covered with irregular conic acute corky tubercles; seed brown, 1.5 mm. long, the radicle superior.

TYPE LOCALITY: Seashores of Cuba.

DISTRIBUTION: Sandy seashores, southern Florida and the West Indies; also from Venezuela and Colombia to Peru.

ILLUSTRATION: Jacq. Sel. Stirp. Am. Pict. pl. 235.

46. *Atriplex confinis* Standley, sp. nov.

Erect perennial (?), suffrutescent below, the branches stout, obtusely angled, densely white-furfuraceous; leaves numerous, alternate, often with fascicles of smaller ones in the axils, short-petiolate or the uppermost sessile, the blades broadly oblong, oval, or ovate-rhombic, 1.2–3 cm. long, 4–15 mm. wide, rounded at the apex, broadly cuneate to attenuate at the base, coarsely and irregularly sinuate or sinuate-dentate, subcoriaceous, densely and closely white-furfuraceous on both surfaces; flowers monoecious, the staminate glomerules in short dense terminal spikes, the pistillate flowers in axillary fascicles; calyx 5-cleft, the lobes denticulate; fruiting bracts sessile or short-pedicellate, 3–4 mm. long and slightly broader, compressed, united to the middle, truncate at the apex, and ending in a triangular tooth, or 3–5-dentate, the teeth acute, the sides not appendaged; seed 1.5 mm. broad, brown, the radicle superior.

Type collected on Sombrero Island, West Indies, in 1864, A. A. Julien (U. S. Nat. Herb. no. 48300).

47. *Atriplex glomerata* S. Watson, sp. nov.

Decumbent annual, much branched, the branches stout, obtusely angled, furfuraceous, becoming glabrate; leaves numerous, alternate, the petioles half as long as the blades or usually shorter, the blades rhombic to oval or obovate, 5–14 mm. long, 2–8 mm. wide, rounded or obtuse at the apex, mucronulate, cuneate or attenuate at the base, usually abruptly so, repand-dentate nearly to the base, or the uppermost entire, thin, densely white-furfuraceous on the lower surface; flowers monoecious, in few-flowered axillary clusters; calyx deeply 5-cleft; fruiting bracts short-pedicellate, flabellate or rhombic, 2 mm. long, united to the middle,

compressed, the free margins herbaceous, acutely denticulate, the sides not appendaged, 3-nerved; seed 1 mm. long, the radicle superior.

Type collected at Parras, Coahuila, Mexico, in 1880, *Edward Palmer 1156* (U. S. Nat. Herb. no. 48301).

DISTRIBUTION: Coahuila and Nuevo León.

48. *Atriplex domingensis* Standley.

Obione crispa Moq. Chenop. Enum. 73. 1840. Not *Atriplex crispa* D. Dietr. 1852.

Decumbent annual, suffrutescent at the base, much branched, the branches slender or stout, subterete, spreading, furfuraceous; leaves alternate, subsessile, spreading, the blades deltoid or deltoid-oblong, 4–6 mm. long, 1–2 mm. wide, acute, denticulate or entire, thick, crispate, white-furfuraceous on both surfaces; flowers monoecious, the staminate glomerules in terminal spikes, the pistillate in axillary fascicles of 2–4 flowers; fruiting bracts sessile, cuneate, 2 mm. long, compressed, subcoriaceous, coarsely and acutely 5-dentate at the apex, the sides not appendaged; seed dark-brown, the radicle superior.

TYPE LOCALITY: Santo Domingo.

DISTRIBUTION: Bahamas; Santo Domingo.

49. *Atriplex arenaria* Nutt. Gen. 1: 198. 1818.

Obione arenaria Moq. Chenop. Enum. 71. 1840.

Atriplex cristata arenaria Kuntze, Rev. Gen. 546. 1891.

Erect, ascending, or procumbent annual, much branched, the branches 1–5 dm. long, stout, obtusely angled, furfuraceous when young, glabrate in age; leaves alternate, short-petiolate or sessile, the blades oblong, oval, broadly obovate, or narrowly oblong, 1.2–4 cm. long, 4–15 mm. wide, rounded to acute at the apex, mucronate, rounded to cuneate at the base, entire or undulate, rarely with 1 or 2 teeth, thin, densely whitish-furfuraceous beneath, grayish-green and glabrate on the upper surface; flowers monoecious, the staminate glomerules terminal or in dense or interrupted, terminal or axillary, naked spikes, the pistillate flowers fascicled in the axils; fruiting bracts subsessile, cuneate-orbicular, 3–5 mm. long and usually broader, compressed, united to the middle, the apex rounded, 3–5-dentate, the teeth subequal, the sides irregularly tuberculate or with 2 lateral dentate crests, rarely not appendaged; seed reddish-brown, 2 mm. long, the radicle superior.

TYPE LOCALITY: Seacoast of New Jersey.

DISTRIBUTION: Sandy seashores, Nova Scotia to Texas; Bermuda, Bahamas, and Cuba.

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 1383; ed. 2. f. 1700; G. T. Stevens, Ill. Guide pl. 36, f. 3.

50. *Atriplex texana* S. Wats. Proc. Am. Acad. 9: 113. 1874.

Obione elegans tuberculosa Torr. Bot. Mex. Bound. Surv. 183. 1859.

Atriplex tuberculata Coult. Contr. U. S. Nat. Herb. 2: 368. 1894.

Annual, prostrate or decumbent, much branched, the branches slender, terete, 1–4.5 dm. long, sparsely and finely furfuraceous; leaves numerous, alternate, short-petiolate or sessile, the blades oblanceolate or narrowly oblong, 0.6–2.5 cm. long, acute or obtuse at the apex, cuneate to attenuate at the base, entire, thin, very closely furfuraceous; flowers monoecious, in few-flowered axillary clusters, the staminate glomerules sessile in the uppermost axils; calyx 5-cleft; fruiting bracts sessile or subsessile, suborbicular or cuneate-orbicular, 3–4 mm. long, united at the base, the margins green, deeply or shallowly dentate, the sides each bearing two deeply dentate crests; seed 1.5 mm. long, reddish-brown, the radicle lateral.

TYPE LOCALITY: Western Texas.

DISTRIBUTION: Western Texas.

51. *Atriplex Aldamae* Griseb. Cat. Pl. Cub. 282. 1866.

Prostrate or procumbent annual (?), sparsely branched, the branches obtusely angled, slender, sparsely and finely furfuraceous; leaves alternate, sessile or subsessile, the blades oblong, 1–3 cm. long, 5–12 mm. wide, rounded or obtuse at the apex, mucronate, cuneate at the base, entire, undulate, or with an occasional repand tooth, thin, finely whitish-furfuraceous beneath, grayish-green and glabrate on the upper surface; flowers monoecious, the small

staminate glomerules in slender, dense or interrupted, terminal spikes 1–5 cm. long, the pistillate flowers in few-flowered axillary clusters; calyx 5-cleft, the lobes with green herbaceous keels; fruiting bracts sessile, suborbicular, united at the base, compressed, 4–5 mm. long, the free herbaceous margins deeply and acutely dentate, the terminal tooth oval or oblong, obtuse or acute, longer than the lateral ones, the sides not appendaged or obscurely and minutely tuberculate.

TYPE LOCALITY: Western Cuba.

DISTRIBUTION: Known only from the type locality.

52. *Atriplex Wardii* Standley, sp. nov.

Erect annual, 1.5–2 dm. high, much branched, the branches stout, obtusely angled, ascending, furfuraceous; leaves alternate, sessile or subsessile, the blades oblong, 1–2 cm. long, 2–5 mm. wide, obtuse or acutish at the apex, mucronate, cuneate at the base, entire, thin, densely white-furfuraceous beneath, glabrate on the upper surface; flowers monoecious, the staminate glomerules in short dense naked terminal spikes, the pistillate flowers densely fascicled in the axils; calyx 5-cleft; fruiting bracts sessile, broadly cuneate-obovate, 2–2.5 mm. long, 1.5–2 mm. broad, compressed, united to above the middle, thin, even in age, the apex acutish, the free margins obscurely denticulate, the sides reticulate-veined, not appendaged; seed brown, 1 mm. long, the radicle superior.

Type collected near Galveston, Texas, September 16, 1877, *L. F. Ward* (U. S. Nat. Herb. no. 148785).

53. *Atriplex pueblensis* Standley, sp. nov.

Procumbent annual, much branched, the branches slender, obtusely angled, furfuraceous, tinged with red; leaves numerous, alternate, short-petiolate or sessile, the blades oval to oblong or narrowly oblong, 7–15 mm. long, 2–6 mm. wide, rounded to acutish at the apex, mucronate, cuneate to attenuate at the base, entire, thin, white-furfuraceous, more densely so beneath; flowers monoecious, in axillary glomerules, or the staminate glomerules in short naked terminal spikes; calyx deeply 5-cleft; fruiting bracts flabellate-orbicular, 3 mm. long, usually broader than long, sessile, united to the middle, the herbaceous margins deeply and acutely dentate, the terminal tooth not longer than the others, the sides 3-nerved, not appendaged, or rarely with 1 or 2 obscure low tubercles; seed pale-brown, 1.5 mm. long, the radicle lateral.

Type collected near Tehuacán, Puebla, Mexico, altitude 1550 meters, August 6, 1901, *C. G. Pringle* 8577 (U. S. Nat. Herb. no. 396697).

54. *Atriplex tampicensis* Standley, sp. nov.

Erect (?) annual, much branched, the branches stout, obtusely angled, 4–5 dm. long, finely furfuraceous; leaves alternate, subsessile, the blades oblong, 1–2.5 cm. long, 3–10 mm. wide, obtuse or acute at the apex, mucronate, cuneate at the base, entire, thin, finely white-furfuraceous beneath, grayish-green and glabrate on the upper surface; flowers monoecious, the staminate glomerules in dense stout naked paniculate spikes, the pistillate flowers in dense axillary fascicles, the leaves much reduced above and the pistillate inflorescence nearly naked; calyx 5-cleft; fruiting bracts sessile, cuneate-orbicular, 2.5–3 mm. long and somewhat broader, united to the middle, compressed, the rounded apex with 3–7 shallow acutish teeth, the sides not appendaged; seed brown, 1 mm. long, the radicle superior.

Type collected in the vicinity of Tampico, Tamaulipas, Mexico, in April, 1910, *Edward Palmer* 332 (U. S. Nat. Herb. no. 463276).

55. *Atriplex pacifica* A. Nelson, Proc. Biol. Soc. Wash. 17: 99. 1904.

Obione microcarpa Benth. Bot. Voy. Sulph. 48. 1844.

Atriplex ramosissima Nutt.; Moq. in DC. Prodr. 13²: 111, as synonym. 1849.

Atriplex microcarpa D. Dietr. Syn. Pl. 5: 536. 1852. Not *A. microcarpa* Waldst. & Kit. 1812.

Prostrate annual, much branched, the branches slender, 1–4 dm. long, obtusely angled, furfuraceous when young, glabrate in age, sometimes tinged with red; leaves numerous, alternate, sessile or the lower short-petiolate, the blades oval, oblong, or obovate-oblong, 6–13

mm. long, acute or obtuse at the apex, often mucronulate, cuneate at the base, thin, closely furfuraceous; flowers monoecious, the staminate glomerules mostly in the upper axils, often large, the pistillate flowers in small clusters in the lower axils; calyx deeply 5-cleft; fruiting bracts suborbicular or obovate, 1–1.5 mm. long, sessile, united to above the middle, the apex green, minutely denticulate with 3–5 teeth, the sides smooth or rarely slightly tuberculate; seed 0.8–1 mm. long, the radicle superior.

TYPE LOCALITY: San Diego, California.

DISTRIBUTION: In saline soil near the coast, Los Angeles County, California, to northern Lower California, and on the adjacent islands.

56. *Atriplex Coulteri* (Moq.) D. Dietr. Syn. Pl. 5: 537. 1852.

Obione Coulteri Moq. in DC. Prodr. 13²: 113. 1849.

Annual or usually perennial, sometimes suffrutescent at the base, much branched, the branches slender or stout, 0.7–10 dm. long, terete, furfuraceous, often glabrate in age, frequently tinged with red; leaves numerous, alternate, sessile or short-petiolate, the blades obovate, oblong, oblanceolate, or elliptic, 7–15 mm. long, obtuse to acuminate at the apex, cuneate at the base, entire, thin, rather loosely furfuraceous; flowers monoecious, the staminate in rather large glomerules, these in the upper axils or in short naked terminal spikes, the pistillate flowers in small axillary clusters; fruiting bracts sessile, united to the middle, not compressed, 2–3 mm. long, the margins green, deeply and acutely dentate, the terminal tooth longest, the sides nerved, not appendaged; seed 1.5 mm. long, brown, the radicle superior.

TYPE LOCALITY: California.

DISTRIBUTION: Near the coast, Los Angeles County, California, to northern Lower California and on the adjacent islands.

57. *Atriplex Davidsonii* Standley, sp. nov.

Prostrate annual (?), much branched, the branches slender, terete, glabrate, stramineous, 1–4 dm. long; leaves numerous, alternate, sessile or subsessile, the blades oblong, oval, or lance-oblong, 7–13 mm. long, acute or acuminate at the apex, mucronate, remotely repand-denticulate or dentate, or the uppermost entire, obtuse or cuneate at the base, very finely and closely furfuraceous, green; flowers monoecious, the staminate in rather large glomerules, these sessile in the upper axils or in very short, naked, terminal spikes, the pistillate in few-flowered axillary clusters; calyx deeply 5-cleft; fruiting bracts sessile, suborbicular or rhombic-orbicular, 3 mm. long, united to the middle, compressed, the margins acutely dentate, the terminal tooth usually longest, the sides usually bearing 2 slender sharp tubercles, or sometimes smooth, 1-nerved; seed brown, 1.5 mm. long, the radicle superior.

Type collected at Balboa, California, in September, 1913, *A. Davidson 2951* (U. S. Nat. Herb. no. 692781).

DISTRIBUTION: Los Angeles and Orange counties, California.

XV. Elegantes. Erect or decumbent annuals or perennials, copiously furfuraceous. Leaves alternate, sessile or short-petiolate, the blades narrow, broadest at or above the middle, entire or dentate. Flowers monoecious, in axillary glomerules. Fruiting bracts small, orbicular, pedicellate or sessile, strongly compressed, radiately dentate to the base, the sides smooth or muricate. Radicle superior.

58. *Atriplex Thornberi* (M. E. Jones) Standley, sp. nov.

Atriplex elegans Thornberi M. E. Jones, Contr. West. Bot. 12: 76. 1908.

Annual or perennial (?), 2–5 dm. high, much branched, the branches slender or stout, obtusely angled, erect or ascending, coarsely furfuraceous, or glabrate in age; leaves numerous, alternate, sessile or subsessile, the blades oblong to narrowly oblong or lanceolate, 7–20 mm. long, 2.5–6 mm. wide, obtuse or acute at the apex, the upper ones mucronate, cuneate or attenuate at the base, the lower ones remotely repand-dentate, the upper entire, rather thin, whitish-furfuraceous beneath, furfuraceous or glabrate on the upper surface; flowers monoecious, intermixed in small axillary clusters; fruiting bracts short-pedicellate, orbicular, 3 mm.

long, the margins deeply laciniate-dentate nearly to the base, the sides each bearing 2 laciniate crests; seed 1 mm. long, pale-brown, the radicle superior.

TYPE LOCALITY: Tucson, Arizona.

DISTRIBUTION: Low plains, southern Arizona.

59. *Atriplex cyclostegia* Standley, sp. nov.

Procumbent annual, much branched, the branches stout, obtusely angled, 5 dm. long or less, sparsely furfuraceous; leaves numerous, alternate, short-petiolate or sessile, the blades cuneate-obovate to oblong or narrowly oblong, 1.5–3.5 cm. long, 3–13 mm. wide, rounded or obtuse at the apex, or the uppermost acute and mucronate, cuneate to attenuate at the base, remotely and coarsely repand-dentate, or the uppermost ones entire, thin, finely and densely white-furfuraceous beneath, grayish-green and sparsely furfuraceous on the upper surface; flowers monoecious, in few-flowered axillary glomerules; calyx deeply 5-cleft; fruiting bracts sessile, orbicular, 3–4 mm. long, coherent, the herbaceous margins laciniate-dentate to the base, the terminal tooth triangular to oblong, acute, much exceeding the lateral teeth, the sides not appendaged, 1-nerved, furfuraceous.

Type collected near Hermosillo, Sonora, Mexico, June 10, 1897, *F. S. Malby* 222 (U. S. Nat. Herb. no. 314967).

60. *Atriplex elegans* (Moq.) D. Dietr. Syn. Pl. 5: 537. 1852.

Obione elegans Moq. in DC. Prodr. 13²: 113. 1849.

Obione radiata Torr. Bot. Mex. Bound. Surv. 183. 1859.

Obione elegans radiata Torr. Bot. Mex. Bound. Surv. 183, in part. 1859.

Annual or sometimes perennial, much branched, the branches slender or stout, obtusely angled, 1.5–5 dm. long, ascending or procumbent, furfuraceous when young, usually glabrate in age; leaves numerous, alternate, sessile or short-petiolate, the blades oblong to oblanceolate or linear, 7–22 mm. long, 2–6 mm. wide, obtuse or acute at the apex, mucronulate, cuneate to attenuate at the base, remotely and irregularly repand-dentate, or the upper ones entire, thin, closely white-furfuraceous beneath, usually green and glabrate on the upper surface; flowers monoecious, in few-flowered axillary glomerules; calyx 5-parted; fruiting bracts short-pedicellate, 3 mm. long, orbicular, strongly compressed, coherent, the margins rather broad, green, deeply laciniate-dentate to the base, the sides carinate, furfuraceous, not appendaged; seed 1 mm. long, the radicle superior.

TYPE LOCALITY: Sonora.

DISTRIBUTION: In alkaline soil, western Texas to southern Arizona, Lower California, and Durango.

61. *Atriplex fasciculata* S. Wats. Proc. Am. Acad. 17: 377. 1882.

Atriplex elegans fasciculata M. E. Jones, Contr. West. Bot. 12: 76. 1908.

Atriplex saltonensis Parish, Muhlenbergia 9: 57. 1913.

Atriplex elegans Jepson, Fl. Calif. 437. 1914. Not *A. elegans* D. Dietr. 1852.

Annual, 5–15 cm. high, much branched throughout, the branches stout or slender, obtusely angled, erect or decumbent, densely furfuraceous; leaves very numerous, alternate, sessile or subsessile, the blades cuneate-obovate, oblong-obovate, or oblanceolate, 5–12 mm. long, rounded to acutish at the apex, cuneate at the base, entire, rather thin, densely furfuraceous; flowers monoecious, both kinds in the same small axillary clusters; calyx 5-cleft; fruiting bracts subsessile, orbicular, compressed, 2.5–3 mm. long, coherent, the margins very narrow, finely dentate, the teeth obtuse or acute, the sides not appendaged, 1-nerved; seed 1.5 mm. long, pale-brown, the radicle superior.

TYPE LOCALITY: Near Fish Ponds, Mohave Desert, California.

DISTRIBUTION: Southeastern California and southern Arizona.

XVI. *Leucophyllae*. Erect or prostrate perennials, suffrutescent at the base, densely furfuraceous. Leaves alternate, sessile, broad, subcoriaceous. Flowers monoecious, the staminate glomerules axillary or in short spikes. Fruiting bracts sessile, small, slightly or not at all compressed, united about to the middle, rounded-ovate, entire or dentate, the sides short-tuberculate. Radicle superior.

62. *Atriplex leucophylla* (Moq.) D. Dietr. Syn. Pl. 5: 536. 1852.

Obione leucophylla Moq. in DC. Prodr. 13²: 109. 1849.

Procumbent or decumbent perennial, fruticose only at the base, much branched, the stems 3–10 dm. long, terete, stout, densely and coarsely furfuraceous; leaves alternate, numerous, sessile, the blades orbicular to oval or oblong, 1.2–4 cm. long, 0.5–2 cm. wide, rounded or obtuse at the apex, or the uppermost acutish, broadly cuneate or rounded at the base, entire, subcoriaceous, densely yellowish- or brownish-furfuraceous; flowers monoecious, the staminate glomerules in dense, stout, terminal, mostly simple spikes, the pistillate in few-flowered axillary clusters; calyx 5-cleft; fruiting bracts sessile, spongy, not compressed, rounded-ovate, acutish, united to above the middle, entire or dentate, usually with numerous short, stout, often flattened appendages on the sides, densely and coarsely furfuraceous; seed 2–3 mm. long, the radicle superior.

TYPE LOCALITY: California.

DISTRIBUTION: Sea beaches of California, from San Francisco southward, and in northern Lower California.

ILLUSTRATION: Jepson, Fl. Calif. f. 82, d.

63. *Atriplex fruticulosa* Jepson, Pittonia 2: 306. 1892.

Erect perennial, fruticose at the base, 1.5–3 dm. high, with numerous stems, these stout, simple below, sparsely branched above, the branches ascending; leaves numerous, alternate, often with fascicles of smaller ones in the axils, sessile, the blades ovate to elliptic-oblong, 6–20 mm. long, 2–4 mm. wide, acute, broadly cuneate at the base, entire, subcoriaceous, densely yellowish-furfuraceous; flowers monoecious, the staminate in yellowish glomerules, these axillary or in stout simple interrupted terminal spikes, the pistillate flowers in small axillary clusters; fruiting bracts sessile, 3–4 dm. long and of the same breadth, slightly compressed, indurate, united nearly to the middle, coarsely dentate with triangular acute teeth, the sides sparsely short-tuberculate; seed 1.5 mm. long, reddish-brown, the radicle superior.

TYPE LOCALITY: Near Little Oak, Solano County, California.

DISTRIBUTION: Alkaline flats, central California.

ILLUSTRATION: Jepson, Fl. Calif. f. 82, b.

XVII. *Watsonianae*. Erect or prostrate perennials, fruticose at the base, densely and closely furfuraceous. Leaves nearly all opposite, sessile, the blades lance-oblong to oval, thick, entire. Flowers dioecious. Fruiting bracts small, sessile or short-pedicellate, compressed, united to above the middle, dentate, the sides smooth. Radicle superior.

64. *Atriplex Watsoni* A. Nelson, Proc. Biol. Soc. Wash.

17: 99. 1904.

Atriplex decumbens S. Wats. Proc. Am. Acad. 12: 275. 1877. Not *A. decumbens* R. & S. 1820.

Perennial, fruticose only at the base, much branched from the base, the stems 2–10 dm. long, prostrate or decumbent, slender or stout, densely furfuraceous; leaves very numerous, mostly opposite, sessile, the blades broadly ovate to ovate-oblong or oval, 0.8–1.5 cm. long, 3–8 mm. wide, acute or acutish at the apex, obtuse or rounded at the base, entire, subcoriaceous, densely furfuraceous with yellowish-white scales; flowers dioecious, the staminate in large glomerules arranged in slender or stout, short, interrupted, usually simple, naked, terminal spikes, the pistillate ones in small axillary clusters shorter than the leaves; calyx 5-cleft; fruiting bracts sessile or short-pedicellate, triangular or rhombic, 4–6 mm. long and of the same breadth, compressed, coriaceous, united to above the middle, acute, sparsely denticulate above or rarely entire, not at all herbaceous, not appendaged on the sides; seed 1.5 mm. long, brown.

TYPE LOCALITY: Near San Diego, California.

DISTRIBUTION: Sea beaches, from Los Angeles County, California, to northern Lower California, and on the adjacent islands.

65. *Atriplex matamorensis* A. Nelson, Proc. Biol. Soc. Wash. 17: 99.

1904.

Atriplex oppositifolia S. Wats. Proc. Am. Acad. 9: 118. 1874. Not *A. oppositifolia* Vill. 1779.

Erect or ascending perennial, 2–4 dm. high, woody at the base, branched below, the stems sparsely branched or simple, the branches slender, densely leafy, rather sparsely and closely

furfuraceous, terete; leaves nearly all opposite, sessile, the blades lance-oblong, 2–5 mm. long, obtuse or acutish, broadest at the base and rounded or truncate, entire, thick, densely grayish-furfuraceous; flowers dioecious, the pistillate ones solitary or in small axillary glomerules in stout leafy spikes; fruiting bracts sessile, suborbicular, 3 mm. long and of the same breadth, strongly compressed, united to above the middle, dentate nearly to the base, the teeth triangular, acute, the sides not appendaged, furfuraceous, 3-nerved; seed yellowish, 1 mm. broad, the radicle superior.

TYPE LOCALITY: Rio Grande Valley, near Matamoros, Tamaulipas.

DISTRIBUTION: In alkaline soil, southwestern Texas and Tamaulipas.

XVIII. *Barclayanae*. Erect or decumbent perennials, usually suffrutescent only at the base, densely furfuraceous or farinose. Leaves alternate or the lowest opposite, petiolate, the blades broad, entire or rarely dentate. Flowers dioecious. Fruiting bracts small, broad, sessile or pedicellate, usually compressed, dentate, the sides usually appendaged. Radicle superior.

66. *Atriplex lurida* Brand. Proc. Calif. Acad. II. 2: 200. 1889.

Erect perennial, 3–8 dm. high, suffrutescent below, much branched, the branches herbaceous, slender, terete, densely white-furfuraceous when young, glabrate in age; lower leaves opposite, the upper alternate, the blades broadly ovate-oval to rounded-oval or oval, 1.5–4.5 cm. long, rounded or acute at the apex, abruptly cuneate at the base and decurrent into a petiole one fourth as long as the blade or shorter, rather thin, entire or usually coarsely and irregularly dentate, the upper blades smaller, oval to lanceolate, sessile or subsessile, acute or acutish, finely dentate or entire, all densely white-furfuraceous; flowers dioecious, the staminate glomerules arranged in dense naked paniculate spikes, the pistillate in slender naked interrupted paniculate spikes and in axillary glomerules; calyx deeply 5-cleft; fruiting bracts flabellate or cuneate-orbicular, 2–3 mm. long, slightly broader than long, compressed, subsessile, cuneate at the base, united nearly to the middle, the free portion deeply and acutely dentate, green, the sides smooth or obscurely short-tuberculate; seed brown, 1 mm. long, the radicle superior.

TYPE LOCALITY: San Gregorio, Lower California.

DISTRIBUTION: Central Lower California.

67. *Atriplex dilatata* Greene, Pittonia 1: 264. 1899.

Erect or decumbent perennial, 3–10 dm. high, branched throughout, the branches stout, terete, sparsely furfuraceous; leaves mostly alternate, the blades broadly obovate to ovate-orbicular or oval, 1.5–3.5 cm. long, 0.7–2.5 cm. broad, rounded to acutish at the apex, mucronulate, abruptly cuneate at the base or decurrent into a petiole 1.5 cm. long or shorter, thin, densely white-farinose when young, becoming glabrate in age; flowers dioecious, the yellow staminate glomerules in dense naked terminal paniculate spikes, the pistillate flowers in dense axillary clusters, forming sparsely leafy or naked, dense or interrupted, simple or paniculate spikes; calyx 5-cleft; fruiting bracts sessile or short-pedicellate, 5–6 mm. broad and half as long or longer, compressed, 3-nerved, united at the base, irregularly dentate above the base with narrow acute green teeth, not appendaged on the sides, or sometimes with 2 short tubercles; seed 1.5 mm. long.

TYPE LOCALITY: San Benito Islands, Lower California.

DISTRIBUTION: Known only from the type locality.

68. *Atriplex Rosei* Standley, sp. nov.

Erect perennial, fruticose at the base, sparsely branched, the branches stout or slender, terete, whitish-furfuraceous; leaves mostly alternate, the blades broadly oval to obovate, 1.5–3.5 cm. long, 0.8–2 cm. broad, rounded or obtuse at the apex, cuneate or abruptly cuneate at the base and decurrent into a petiole one third as long as the blade or shorter, entire, thin, white-furfuraceous; flowers dioecious, the staminate glomerules in dense naked paniculate spikes, the pistillate flowers in few-flowered axillary clusters, forming interrupted, leafy, loosely paniculate spikes; calyx 5-cleft; fruiting bracts short-pedicellate, 6–8 mm. broad and about half as long, not compressed, rounded or truncate at the base, free above the base, deeply retuse at the

apex, the margins green, deeply and irregularly laciniate-dentate, sharply muricate on the sides, the tubercles often reflexed, indurate; seed 1.5–2 mm. long, reddish-brown, the radicle superior.

Type collected on Guadalupe Island, Lower California, March 2, 1911, *J. N. Rose 16022*, in part (U. S. Nat. Herb. no. 638110).

69. *Atriplex Palmeri* S. Wats. Proc. Am. Acad. 11: 146. 1876.

Erect perennial, 3–6 dm. high, fruticose at the base, sparsely branched, the branches stout or slender, terete, furfuraceous; leaves alternate, the blades broadly spatulate-obovate to oblanceolate, 1.5–4 cm. long, rounded to acutish at the apex, abruptly cuneate at the base or attenuate to a petiole one third as long as the blade or shorter, entire, grayish-furfuraceous; flowers dioecious, the staminate glomerules large, in dense or interrupted, naked, paniculate spikes, the pistillate flowers in few-flowered axillary clusters; calyx 5-cleft; fruiting bracts compressed, sessile, cuneate-orbicular, 3 mm. broad and of about the same length, free, the margins herbaceous and coarsely laciniate-dentate nearly to the base, the sides slightly tuberculate or smooth, 3-nerved; seed 1.5 mm. long, reddish-brown.

TYPE LOCALITY: Guadalupe Island, Lower California.

DISTRIBUTION: Guadalupe and Raza islands, Lower California.

70. *Atriplex Magdalenae* Brand. Proc. Calif. Acad. II. 2:

200. 1889.

Prostrate perennial, the stems herbaceous, 3–6 dm. long, stout, terete, subangulate, densely white-furfuraceous when young, glabrate in age; leaves alternate, numerous, the petioles 2–6 mm. long, the blades obovate-orbicular to obovate-oval or broadly oval, 1.2–3 cm. long, 0.7–2 cm. wide, abruptly acute or cuneate at the base and short-decurrent, broadly rounded at the apex, rather thin, entire, densely whitish-furfuraceous when young, less densely so in age, the uppermost leaves smaller, sometimes obtuse, apiculate; flowers dioecious, the pistillate in few-flowered axillary glomerules; fruiting bracts sessile or subsessile, rhombic, 3–4 mm. long and nearly as broad, compressed, united at the base and slightly indurate, the free portion hastately 3-lobed, the terminal lobe triangular, acute, green, the lateral lobes short, acute, divergent or ascending, the sides smooth, densely furfuraceous; seed 1.3 mm. broad, brown, the radicle superior.

TYPE LOCALITY: Magdalena Island, Lower California.

DISTRIBUTION: Known only from the type locality.

71. *Atriplex insularis* Rose, Contr. U. S. Nat. Herb. 1: 80. 1890.

Erect shrub, 15–20 dm. high, fruticose nearly throughout, much branched, the branches stout, ascending, terete, densely whitish-furfuraceous; leaves mostly alternate, often crowded, the blades obovate-orbicular, orbicular, or obovate, 1–1.5 cm. long, rounded at the apex, abruptly cuneate at the base and short-petiolate or subsessile, entire, thick, densely whitish-furfuraceous, the uppermost leaves smaller, oval or oblong, acutish; flowers dioecious, the staminate glomerules in dense, stout, naked, broadly paniculate spikes, the pistillate flowers in small axillary clusters, forming dense, nearly naked, narrowly paniculate spikes; calyx 5-cleft; fruiting bracts sessile, united at the base and indurate, 3 mm. long and of the same breadth, the margins green, coarsely and irregularly dentate, coarsely short-tuberculate on the sides.

TYPE LOCALITY: Raza Island, Lower California.

DISTRIBUTION: Islands off the western coast of Lower California.

72. *Atriplex Barclayana* (Benth.) D. Dietr. Syn. Pl. 5: 537. 1852.

Obione Barclayana Benth. Bot. Voy. Sulph. 48. 1844.

Perennial, fruticose only at the base, much branched, the branches ascending, decumbent, or sometimes prostrate, 1.5–5 dm. long, stout or slender, densely white-furfuraceous when young, often tinged with red; leaves alternate, or the lowest opposite, the petioles half as long as the blades or shorter, the blades orbicular-spatulate, rounded-obovate, or oval, 1–2.5 cm. long, broadly rounded at the apex, abruptly cuneate at the base, entire, subcoriaceous, densely

white-furfuraceous, often tinged with purplish-red, the uppermost blades smaller, oval to elliptic or oblanceolate, sessile or subsessile, acute or acutish, mucronulate; flowers dioecious, the staminate in large glomerules arranged in slender or stout, interrupted, terminal, simple or paniculate spikes, the pistillate flowers in small axillary glomerules forming leafy or naked, simple or paniculate spikes; fruiting bracts 2–3 mm. long, united except at the apex, subglobose or ovoid in age, very spongy, often tinged with red, with a few deep or shallow teeth at the apex, the sides slightly tuberculate or often not appendaged; seed 1 mm. broad, the radicle superior.

TYPE LOCALITY: Magdalena Bay, Lower California.

DISTRIBUTION: Seacoast of Lower California and Sonora, and on the adjacent islands.

73. *Atriplex Sonorae* Standley, sp. nov.

Perennial from a fruticose base, much branched, the branches erect or decumbent, 3–6 dm. long, stout or slender, terete, densely furfuraceous when young, glabrate in age; leaves mostly alternate, short-petiolate, the blades suborbicular to rounded-ovate, obovate, oval, or oblong-oblanceolate, 1–4 cm. long, rounded to acutish at the apex, mucronulate, cuneate or abruptly cuneate at the base, entire, thick and firm, white-furfuraceous; flowers dioecious, the staminate glomerules in slender, dense or interrupted, paniculate spikes, the pistillate flowers in few-flowered axillary clusters, forming dense or interrupted, nearly naked, narrowly paniculate spikes; calyx 5-cleft; fruiting bracts sessile, spongy, 3 mm. long and about as wide, united to the middle or lower, the margins green, deeply laciniate-dentate, usually sharply muricate on the sides; seed 1 mm. broad, filling the cavity.

Type collected in alkaline soil near Empalme, Sonora, Mexico, March 11, 1910, *Rose, Standley & Russell 12631* (U. S. Nat. Herb. no. 635444).

DISTRIBUTION: In alkaline soil, near the coast of Sonora and Sinaloa.

XIX. *Hymenelytrae*. Erect shrubs, densely white-furfuraceous. Leaves alternate, petiolate, the blades mostly orbicular, deeply dentate. Flowers dioecious. Fruiting bracts orbicular or nearly so, free, entire, unappendaged. Radicle superior.

74. *Atriplex hymenelytra* (Torr.) S. Wats. Proc. Am. Acad. 9: 119. 1874.

Obione hymenelytra Torr. Pacif. R. R. Rep. 4: 129. 1857.

Erect shrub, 3–10 dm. high, much branched, the branches stout, terete, erect or ascending, the young ones densely white-furfuraceous, the older ones dark-gray; petioles stout, half as long as the blades or shorter; leaf-blades orbicular to rhombic or rounded-ovate, 1.5–3.5 cm. long, often subhastate, truncate or rounded at the base and abruptly decurrent, very thick, densely white-furfuraceous, deeply and irregularly dentate, the teeth triangular, acutish; flowers dioecious; staminate flowers in dense glomerules, these axillary or in paniculate spikes; calyx deeply 5-parted, furfuraceous; pistillate flowers in short dense spikes; fruiting bracts 7–10 mm. long, orbicular to subreniform, short-stipitate, free, entire, thin, densely furfuraceous; seed 1.5–2 mm. broad, the radicle superior.

TYPE LOCALITY: Hilly and gravelly places, on Williams River, Arizona.

DISTRIBUTION: In alkaline soil, southeastern California, western Arizona, and Nevada.

ILLUSTRATIONS: Pacif. R. R. Rep. 4: *pl. 20*; Jepson, Fl. Calif. *f. 82, a*.

XX. *Lentiformes*. Tall or low shrubs, copiously furfuraceous, the branchlets often spinose. Leaves alternate, petiolate or sessile, the blades broad, entire or nearly so. Flowers dioecious. Fruiting bracts small, orbicular or nearly so, sessile or subsessile, entire, dentate, or crenulate, the sides smooth. Radicle superior.

75. *Atriplex orbicularis* S. Wats. Proc. Am. Acad. 17: 377. 1882.

Erect perennial, 9–15 dm. high, suffrutescent below, densely branched, the branches ascending or spreading, slender or stout, terete, finely grayish-furfuraceous; leaves alternate, short-petiolate, the blades deltoid-rhombic to ovate-oblong or oblong, 2–6.5 cm. long, obtuse or rounded at the apex, mucronate and often emarginate, rounded to cuneate at the base,

entire, thin, finely and closely furfuraceous; flowers monoecious, the glomerules in slender, dense or interrupted, nearly naked, terminal or axillary, broadly paniculate spikes, the branches of the panicle often drooping; calyx 5-cleft; fruiting bracts sessile, orbicular, 4–6 mm. long and often broader, strongly compressed, united only at the base, entire, not appendaged; styles included; seed 1 mm. broad, dark-brown, the radicle superior.

TYPE LOCALITY: Santa Monica, California.

DISTRIBUTION: Coast of California from Santa Barbara to Orange County.

76. *Atriplex Torreyi* S. Wats. Proc. Am. Acad. 9: 119. 1874.

Obione Torreyi S. Wats. Bot. King's Expl. 290. 1871.

Erect shrub, 6–20 dm. high, much branched, the branches stout, angled, spreading, the branchlets stout or slender, divergent, spinose, white-furfuraceous when young, becoming glabrate, the older bark light- or dark-gray; petioles 5 mm. long or less, the upper leaves subsessile; blades triangular to ovate, oblong, or triangular-oblong, often subhastate with rounded or acutish lobes, 1.5–3 cm. long, rounded to acute at the apex, rounded to cuneate at the base, thick, densely furfuraceous; flowers dioecious; staminate flowers in dense naked paniculate spikes; calyx 4- or 5-parted, furfuraceous; pistillate flowers in dense stout paniculate spikes; fruiting bracts orbicular to subreniform, 2–3 mm. long, free, strongly compressed, sessile, obscurely denticulate, densely furfuraceous; seed 1.2–1.5 mm. broad, pale-brown, the radicle superior.

TYPE LOCALITY: Humboldt County, Nevada.

DISTRIBUTION: Dry alkaline soil, southeastern California to Nevada, southwestern Utah, and northwestern Arizona.

77. *Atriplex Griffithsii* Standley, sp. nov.

Tall shrub with slender, angulate, densely and finely furfuraceous branches; leaves alternate, sessile or subsessile, the blades ovate-oval to oblong or narrowly oblong, 1.2–1.8 cm. long, 3–9 mm. wide, broadly rounded at the apex, acute at the base, entire, finely furfuraceous; flowers dioecious, the pistillate glomerules few-flowered, axillary or forming slender, more or less interrupted, naked, mostly simple, terminal spikes; fruiting bracts sessile, reniform-orbicular, 4–5 mm. long, 5–6 mm. wide, always broader than long, distinct, remotely denticulate or crenulate or entire, finely furfuraceous; seed 1.5 mm. in diameter, brown, the radicle superior.

Type collected at Wilcox, Arizona, October 12, 1900, *David Griffiths 1895* (herb. N. Y. Bot. Gard.).

78. *Atriplex Breweri* S. Wats. Proc. Am. Acad. 9: 119. 1874.

Erect shrub, 15–25 dm. high, much branched, the branches slender, terete or obtusely angled, unarmed, ascending or spreading, densely furfuraceous when young, becoming glabrate and pale-brown; leaf-blades deltoid-ovate to ovate or rhombic, 1.5–5 cm. long, obtuse or rounded at the apex, mucronulate, cuneate at the base or subtruncate or rounded and abruptly decurrent to the short stout petiole, rather thin, closely furfuraceous on both surfaces, pinnately veined, the lateral veins few, divergent or ascending; flowers dioecious, the staminate ones in dense glomerules 2–3 mm. in diameter, these in dense or interrupted, slender, paniculate spikes, the inflorescence leafy or nearly naked; pistillate flowers arranged in slender dense spikes, these forming a broad, nearly naked, much branched panicle, the branches slender, often drooping; calyx deeply 4- or 5-cleft, furfuraceous; fruiting bracts orbicular or ovate-orbicular, entire, 2–3 mm. long, strongly convex, slightly scurfy, pale-yellowish; seed 1.2–1.5 mm. long, compressed, reddish-brown, the radicle ascending.

TYPE LOCALITY: Sierra Santa Monica, California.

DISTRIBUTION: Along the coast of southern California and on the adjacent islands.

79. *Atriplex lentiformis* (Torr.) S. Wats. Proc. Am. Acad. 9: 118.
1874.

Obione lentiformis Torr. in Sitgreaves, Rep. Exp. 169. 1853.

Erect shrub, 6–40 dm. high, much branched, the branches slender, terete, spreading, densely furfuraceous, becoming whitish and glabrate in age; petioles 2–4 mm. long; leaf-blades

ovate to ovate-deltoid or oblong, 1.5–5 cm. long, often subhastate, obtuse to broadly rounded at the apex, rounded to cuneate at the base, rather thin, densely furfuraceous; flowers dioecious; staminate flowers in large glomerules arranged in slender, dense or interrupted, broadly paniculate spikes, the branches of the inflorescence usually naked, slender and often drooping; calyx 5-parted, furfuraceous; pistillate flowers in dense, slender or stout, nearly naked, elongate, broadly paniculate spikes; fruiting bracts strongly compressed, united to above the middle, suborbicular or orbicular-ovate, 2.5–4 mm. long, finely crenulate, thin, furfuraceous; seed 1–1.5 mm. broad, dark-brown, the radicle superior.

TYPE LOCALITY: On the Colorado River, Arizona.

DISTRIBUTION: In alkaline soil, southern California to northern Sonora and southwestern Utah.

ILLUSTRATIONS: Sitgreaves, Rep. Exp. *pl.* 14; Jepson, Fl. Calif. *f.* 84.

80. *Atriplex Parryi* S. Wats. Proc. Am. Acad. 17: 378. 1882.

Erect shrub, 2–4 dm. high, much branched, forming rounded clumps, the branches slender, erect, the branchlets divergent, very slender, sharply spinose, copiously furfuraceous when young, becoming glabrate, the bark of older stems light- or dark-gray; leaf-blades ovate-orbicular to rounded-ovate, or rarely subreniform, 5–10 mm. long, rounded at the apex, or those of the inflorescence acute, cordate or subcordate and usually clasping at the base, the blades of the pistillate inflorescence often only 2 mm. long, thick, densely furfuraceous; flowers dioecious, the staminate in clusters of 1–3 or in dense glomerules in the axils, forming stout paniculate leafy spikes; calyx deeply cleft, densely furfuraceous; pistillate flowers 1–4 in the axil, the spikes paniculately branched; fruiting bracts sessile, 3 mm. long and slightly broader, united below, thick and rigid, entire.

TYPE LOCALITY: Near Colton, California.

DISTRIBUTION: In dry alkaline soil, southern California and western Nevada.

ILLUSTRATIONS: Jepson, Fl. Calif. *f.* 82, *e*; Bull. U. S. Dep. Agr. Bot. 27: *pl.* 4, *f.* 3.

XXI. Julaceae. Procumbent perennials, fruticose near the base, densely furfuraceous. Leaves crowded and imbricate, sessile, the blades sagittate, entire, very small. Flowers dioecious. Fruiting bracts small, sessile, ovate, united to above the middle, entire, the sides coarsely tuberculate. Radicle superior.

81. *Atriplex julacea* S. Wats. Proc. Am. Acad. 20: 370. 1885.

Procumbent perennial, fruticose near the base, much branched, the branches 2–6 dm. long, slender or stout, the younger ones coarsely whitish-furfuraceous; leaves numerous, crowded and imbricate on the short lateral branches, sessile, the blades ovate-triangular, sagittate and clasping, 2–4 mm. long, obtuse, thick, the margins usually recurved, densely furfuraceous; flowers dioecious, both the staminate and pistillate solitary or in few-flowered axillary glomerules; fruiting bracts sessile, 4–5 mm. long, ovoid, not compressed, indurate, united to above the middle, entire or nearly so, the sides bearing numerous low, thick, usually flattened, irregular, corky appendages; seed 1 mm. broad, reddish-brown, incompletely filling the cavity, the radicle superior.

TYPE LOCALITY: Todos Santos Bay, Lower California.

DISTRIBUTION: Western coast of northern Lower California.

XXII. Polycarpae. Tall shrubs, furfuraceous. Leaves small, alternate, usually sessile, the blades narrow, entire. Flowers dioecious. Fruiting bracts nearly orbicular, sessile, small, strongly compressed, free, laciniate-dentate, usually muricate near the base. Radicle superior.

82. *Atriplex polycarpa* (Torr.) S. Wats. Proc. Am. Acad. 9: 117. 1874.

Obione polycarpa Torr. (in Emory, Notes Mil. Rec. 149, hyponym. 1848) Pacif. R. R. Rep. 4: 130. 1857.

Atriplex curvidens Brand. Proc. Calif. Acad. II. 2: 201. 1889.

Erect shrub, 6–20 dm. high, fruticose almost throughout, much branched, the branchlets usually slender and divaricate, terete, the bark on the older branches gray, exfoliating; leaves

numerous, often crowded, alternate, the blades spatulate, obovate, or oblong, usually sessile and 2–6 mm. long, but on young branches sometimes short-petiolate and rarely 20 mm. long, usually recurved at the base, spreading or ascending, rounded to acutish at the apex, cuneate to rounded at the base, entire, thick, densely furfuraceous; flowers dioecious, the small staminate glomerules in stout, dense or interrupted, simple or paniculate, naked spikes, the pistillate flowers in small axillary clusters, forming dense or interrupted, sparsely leafy, often diffusely paniculate spikes, the leaves much reduced; calyx deeply 5-cleft; fruiting bracts sessile, cuneate-orbicular, 2–3 mm. broad, usually much broader than long, strongly compressed, free, spongy, not herbaceous, deeply lacinate-dentate above the base, the teeth linear, usually with a few subulate appendages on the sides near the base, or these sometimes borne above the middle; styles short; seed 1 mm. broad, reddish-brown, the radicle superior.

TYPE LOCALITY: Valley of the Gila River, Arizona.

DISTRIBUTION: Alkaline soil, southern California, Nevada, Arizona, Sonora, and Lower California.

ILLUSTRATIONS: Jepson, Fl. Calif. f. 82, f.; Bull. U. S. Dep. Agr. Bot. 27: pl. 7, f. 2.

XXIII. Acanthocarpae. Erect perennials, fruticose below, densely furfuraceous. Leaves alternate, petiolate, the blades broad, usually sinuate-dentate. Flowers dioecious. Fruiting bracts long-pedicellate, united nearly to the apex, indurate, deeply lacinate, the sides covered with numerous long flattened appendages. Radicle superior.

83. *Atriplex acanthocarpa* (Torr.) S. Wats. Proc. Am. Acad. 9: 117.
1874.

Obione acanthocarpa Torr. Bot. Mex. Bound. Surv. 183. 1859.

Atriplex cuneata A. Nelson, Bot. Gaz. 34: 357, in part. 1902.

Erect perennial, 3–10 dm. high, fruticose at the base or nearly throughout, much branched, the branches erect or ascending, stout, terete, densely furfuraceous; leaves alternate, or the lowest opposite, the blades broadly obovate to ovate-oval, oblong, or elongate-oblong, often subhastate at the base, 1.5–5 cm. long, 0.5–2.5 cm. broad, obtuse or rounded at the apex, cuneate or abruptly cuneate at the base, tapering to a slender winged petiole half as long as the blade, or the blades subsessile, usually thick and firm, often undulate or crispate, coarsely and irregularly sinuate-dentate or sinuate, or rarely entire, densely white-furfuraceous; flowers dioecious, the staminate in large glomerules in stout, usually dense, sparsely leafy, paniculate spikes, the pistillate flowers solitary or in small clusters in the axils of the leaves; calyx 5-cleft, densely furfuraceous; bracts 7–15 mm. long, on slender or stout pedicels 4–20 mm. long, united except at the linear apex, becoming thick and spongy, the margins deeply lacinate, the sides bearing numerous long flattened appendages; seed 1.5–2 mm. long, brown, filling the cavity, the radicle superior.

TYPE LOCALITY: Plains between the Burro Mountains, New Mexico.

DISTRIBUTION: In alkaline soil, western Texas and southern New Mexico to Chihuahua and Nuevo León.

XXIV. Obovatae. Low perennials, fruticose below, densely furfuraceous. Leaves alternate or the lowest opposite, petiolate, the blades broad, entire. Flowers dioecious. Fruiting bracts sessile or pedicellate, broader than long, compressed, united below, denticulate, the sides smooth or tuberculate. Radicle superior.

84. *Atriplex Jonesii* Standley.

Atriplex cuneata A. Nelson, Bot. Gaz. 34: 357, in part. 1902.

Atriplex sabulosa M. E. Jones, Contr. West. Bot. 11: 21. 1903. Not *A. sabulosa* Rouy, 1890.

Perennial, 2–4 dm. high, forming broad clumps, fruticose at the base and much branched, the stems erect or decumbent, simple below, branched above, terete, densely furfuraceous; leaves numerous, mostly alternate, very shortly petiolate or sessile, the blades broadly oval, rounded-obovate, broadly oblong, or suborbicular, entire, 1.5–2.5 cm. long, 0.6–2 cm. wide, rounded at the apex, or the uppermost blades acute, cuneate to rounded at the base, thick, densely furfuraceous; flowers dioecious, the small yellow staminate glomerules in slender, leafy or naked, usually interrupted, simple or paniculate spikes, the pistillate clusters few-

flowered, axillary, forming elongate, simple or paniculate, leafy or nearly naked spikes; calyx 5-cleft; fruiting bracts cuneate-orbicular, sessile or pedicellate, 4–5 mm. long, 5–7 mm. wide, united to the middle, compressed, the margins herbaceous, irregularly denticulate, the sides smooth, or rarely slightly tuberculate; seed 1–1.5 mm. broad, reddish-brown, the radicle superior.

TYPE LOCALITY: Winslow, Arizona.

DISTRIBUTION: Dry plains and hillsides, northern Arizona and northwestern New Mexico.

85. *Atriplex obovata* Moq. *Chenop. Enum.* 61. 1840.

Atriplex acanthocarpa Torr. *Bot. Mex. Bound. Surv.* 183, in part. 1859.

Atriplex Greggii S. Wats. *Proc. Am. Acad.* 9: 118. 1874.

Erect perennial, 1.5–4 dm. high, fruticose at the base or sometimes nearly throughout, much branched below, the branches slender or stout, terete, furfuraceous; leaves numerous, alternate or the lowest opposite, short-petiolate or sessile, the blades oblong, broadly oval, or rounded-ovate, 1–2 cm. or rarely 3 cm. long, 6–13 mm. wide, rounded at the apex, obtuse to cuneate at the base, entire, usually thick, densely furfuraceous; flowers dioecious, the staminate glomerules in slender or stout, axillary and simple or terminal and paniculate, naked spikes, the pistillate clusters few-flowered, axillary, forming mostly naked, simple or paniculate spikes; calyx 5-cleft; fruiting bracts cuneate-orbicular, usually sessile, 4–8 mm. long and somewhat broader, united only at the base, the margins herbaceous, denticulate, the sides sparsely tuberculate or crested near the base, or rarely smooth; seed 1–1.5 mm. broad, reddish-brown, the radicle superior.

TYPE LOCALITY: San Luis Potosí.

DISTRIBUTION: Alkaline soil, western Texas and southern New Mexico to Chihuahua and Zacatecas.

XXV. *Corrugatae*. Low shrubs, densely white-furfuraceous, lowest leaves opposite, the upper alternate, sessile, the blades narrow, entire. Flowers dioecious. Fruiting bracts sessile or subsessile, panduriform, entire, united to above the middle, the sides coarsely tuberculate. Radicle superior.

86. *Atriplex corrugata* S. Wats. *Bot. Gaz.* 16: 345. 1891.

Atriplex Nuttallii corrugata A. Nelson; *Coult. & Nels. Man.* 168. 1909.

Much branched shrub, forming dense mats 3–12 dm. broad, the older branches spreading, the young ones erect, 1–2 dm. high, densely furfuraceous; leaves crowded, the lower opposite, the upper alternate, sessile, the blades oblong-linear to narrowly oblong, 6–15 mm. long, 1.5–3 mm. wide, obtuse at the apex, cuneate at the base, thick and firm, grayish-furfuraceous; flowers monoecious or dioecious, the staminate glomerules 4–8 mm. in diameter, in slender interrupted naked terminal spikes, the pistillate flowers in small axillary clusters arranged in stout, dense, leafy, usually simple spikes; calyx 5-cleft; fruiting bracts sessile or subsessile, panduriform, 6 mm. long, 4 mm. wide, broadly rounded at the apex or acutish, entire, united to above the middle, spongy, with numerous short stout flattened appendages on the sides or obscurely tuberculate, smooth near the apex; seed 2 mm. long, reddish-brown, the radicle superior.

TYPE LOCALITY: Grand Junction, Colorado.

DISTRIBUTION: Dry plains, western Colorado and eastern Utah.

XXVI. *Nuttallianae*. Low shrubs, densely furfuraceous. Leaves alternate, or the lowest opposite, sessile or petiolate, the blades narrow or broad, entire. Flowers dioecious. Fruiting bracts sessile or pedicellate, usually dentate, united to the middle or higher, little if at all compressed, the sides smooth or tuberculate. Radicle superior.

87. *Atriplex Gardneri* (Moq.) Standley.

Obione Gardneri Moq. in *DC. Prodr.* 13²: 114. 1849.

Atriplex Gordonii Hook. *Journ. Bot. & Kew Misc.* 5: 261. 1853.

Atriplex fruticulosa Osterhout, *Bull. Torrey Club* 25: 207. 1898. Not *A. fruticulosa* Jepson, 1892.

Atriplex eremicola Osterhout, *Bull. Torrey Club* 25: 284. 1898.

Atriplex pabularis eremicola A. Nelson; *Coult. & Nels. Man.* 168. 1909.

Erect shrub, 1.5–4 dm. high, fruticose at the base, much branched, the branches mostly simple, erect or decumbent, stout, densely whitish-furfuraceous; leaves alternate, sessile or short-petiolate, the blades entire, oblong, narrowly oblong, or oblanceolate-oblong, 1.5–4 cm. long, 4–10 mm. wide, obtuse or rounded at the apex, narrowly or broadly cuneate at the base, rather thin, copiously furfuraceous on both surfaces; flowers dioecious, or rarely monoecious, in sessile axillary glomerules, forming leafy spikes; fruiting bracts broadly cuneate or oblong, 4–6 mm. long, 3–3.5 mm. wide, united to the middle, usually 3-toothed at the apex, the terminal tooth largest, or the teeth sometimes more numerous, the sides not appendaged; seed 2 mm. broad, yellowish-brown, the radicle superior.

TYPE LOCALITY: Along the Platte River.

DISTRIBUTION: Alkaline plains, southern Wyoming and northern Colorado.

ILLUSTRATION: Bull. U. S. Dep. Agr. Bot. 27: *pl. 5, f. 2.*

88. *Atriplex tridentata* Kuntze, Rev. Gen. 546. 1891.

Atriplex pabularis A. Nelson, Bull. Torrey Club 25: 203. 1898.

Erect perennial, 2–5 dm. high, suffrutescent and much branched at the base, the stems stout, furfuraceous, terete, simple or with a few erect branches; leaves alternate, the blades oblong-linear, or the lowest linear-oblong, 2–5 cm. long, 2–7 mm. wide, obtuse or rounded at the apex, cuneate at the base, sessile or short-petiolate, often with fascicles of smaller leaves in the axils, rather thin, densely whitish-furfuraceous, the leaves grayish; flowers dioecious, the staminate in large yellow glomerules arranged in stout, dense, sparsely leafy, narrowly paniculate spikes, the pistillate in small axillary clusters, forming simple or paniculate, leafy or nearly naked spikes; calyx 5-cleft; fruiting bracts triangular-cuneate, compressed, 4–5 mm. long and about as broad, united below, the apex greenish, finely and irregularly dentate, the terminal tooth longest, the sides not appendaged; seed 1.5 mm. broad, pale-brown, the radicle superior.

TYPE LOCALITY: Near Corinne, Utah.

DISTRIBUTION: Alkaline plains, Wyoming, northern Colorado, and northeastern Utah.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Bot. 27: *pl. 5, f. 1*; Clements, Rocky Mt. Fl. *pl. 10, f. 5.*

89. *Atriplex cuneata* A. Nelson, Bot. Gaz. 34: 357. 1902.

Atriplex acanthocarpa cuneata M. E. Jones, Contr. West. Bot. 11: 20. 1903.

Erect shrub, 2–3 dm. high, fruticose below, much branched near the base, the branches erect, stout, densely grayish-furfuraceous; leaves alternate or the lowest opposite, the petioles half as long as the blades or shorter, the blades oval, rounded-ovate, or broadly oblong, 1.2–5.5 cm. long, 0.6–2.5 cm. wide, rounded or obtuse at the apex, abruptly cuneate at the base, entire or rarely obscurely denticulate, thick and firm, densely furfuraceous; flowers dioecious, the staminate glomerules in dense, stout, sparsely leafy, paniculate spikes, the pistillate in few-flowered axillary glomerules, forming simple spikes; calyx 5-cleft; fruiting bracts sessile or subsessile, 5 mm. long, longer than broad, indurate, free only at the apex, deeply and very irregularly dentate, covered on the back with numerous stout flattened appendages, densely furfuraceous, the apex triangular-subulate, shorter than the united portion; seed 2 mm. broad, brown, filling the cavity.

TYPE LOCALITY: Emery, Utah.

DISTRIBUTION: Dry plains and hillsides, southwestern Colorado, southern Utah, and northwestern New Mexico.

90. *Atriplex neomexicana* Standley, sp. nov.

Erect shrub, 3–5 dm. high, forming large clumps, fruticose and much branched near the base, the branches erect, stout, terete, densely grayish-furfuraceous; leaves alternate, the petioles stout, one third as long as the blades or shorter, the blades oval to broadly oblong or oblong-elliptic, 1.5–2.5 cm. long, 0.5–1.2 cm. wide, obtuse, rounded, or acutish at the apex, cuneate at the base, entire, thick and firm, densely grayish-furfuraceous; flowers dioecious, the pistillate in few-flowered axillary clusters, forming simple spikes, the blades of the inflorescence reduced; fruiting bracts subsessile or short-stipitate, 7–10 mm. long, the united portion in-

durate, the free portion orbicular-rhombic or broadly ovate-rhombic, longer and wider than the free portion, 5–8 mm. wide, green, coarsely dentate, the teeth acute or obtuse, the apex acute or obtuse, the sides sparsely muricate and often irregularly cristate, densely furfuraceous; seed 2 mm. broad, reddish-brown.

Type collected on dry hills near Farmington, New Mexico, altitude 1550–1650 meters, July 19, 1911, *Paul C. Standley 7066* (U. S. Nat. Herb. no. 686069).

91. *Atriplex Pringlei* Standley, sp. nov.

Perennial, suffrutescent at the base, much branched throughout, the branches stout, terete, densely white-furfuraceous, prostrate or ascending, 2–3 dm. long; lower leaves opposite, the upper alternate, sessile or mostly short-petiolate, the blades obovate to obovate-oblong, 1.5–3 cm. long, 5–8 mm. wide, entire, rounded at the apex, cuneate or attenuate at the base, firm, densely and coarsely white-furfuraceous; flowers dioecious, the staminate glomerules in stout, dense or interrupted, naked or sparsely leafy, paniculate or simple spikes, the pistillate flowers in few-flowered axillary glomerules; calyx 5-cleft, densely white-furfuraceous; fruiting bracts on stout pedicels 2 mm. long, rounded-ovate to nearly orbicular, 8–10 mm. long and nearly as broad, united to the apex, indurate, not compressed, the margins deeply and irregularly dentate or lacinate, the apical tooth oblong, acutish, the sides with few or numerous flat appendages or crests, these very irregular; seed filling the cavity, 2 mm. long, reddish-brown, the radicle superior.

Type collected on alkaline plains, Hacienda de Angostura, San Luis Potosí, Mexico, July 15, 1891, *C. G. Pringle 3775* (U. S. Nat. Herb. no. 48298).

92. *Atriplex oblanceolata* Rydb. Bull. Torrey Club 31: 403. 1904.

Perennial, 2–2.5 dm. high, suffrutescent at the base and much branched, the branches decumbent, stout, densely furfuraceous; leaves numerous, alternate, often with axillary fascicles of smaller ones, sessile or on petioles 8 mm. long or less, the blades oblong, oval, or spatulate-obovate, 2–4.5 cm. long, 7–15 mm. wide, obtuse or rounded at the apex, or the uppermost acute, cuneate at the base, rather thin, entire, densely whitish-furfuraceous; flowers dioecious, the staminate brown, in large glomerules, these in interrupted naked paniculate spikes, the pistillate flowers in small axillary clusters, forming simple or paniculate, leafy or nearly naked spikes; calyx 5-parted; fruiting bracts rounded-ovate, 5–7 mm. long and about as wide, united to the middle, sessile, thick, not compressed, coarsely dentate or denticulate, tuberculate and irregularly crested on the sides, densely furfuraceous; seed 1.5–2 mm. long, pale-brown, the radicle superior.

TYPE LOCALITY: Delta, Colorado.

DISTRIBUTION: Alkaline plains, southern Montana to northwestern Colorado.

93. *Atriplex falcata* (M. E. Jones) Standley sp. nov.

Atriplex Nuttallii falcata M. E. Jones, Contr. West. Bot. 11: 19. 1903.

Atriplex Nuttallii anomala M. E. Jones, Contr. West. Bot. 11: 19. 1903.

Erect perennial, 2–5 dm. high, suffrutescent at the base and much branched, the stems terete, stout, erect or decumbent, mostly simple below, sparsely branched above, the branches erect or strongly ascending, pale, furfuraceous; leaves numerous, alternate, sessile or subsessile, the blades narrowly oblong to linear, 1.5–5 cm. long, 2–7 mm. wide, rounded at the apex or the upper blades acutish, narrowly or broadly cuneate at the base, entire, rather thick and firm, grayish-green, closely furfuraceous; flowers dioecious, the small yellow staminate glomerules sessile in the axils of the upper leaves and also in stout, interrupted, naked, simple or paniculate, terminal spikes, the pistillate flowers in dense few-flowered axillary glomerules, or the glomerules forming naked interrupted paniculate spikes; calyx 5-cleft; fruiting bracts lanceolate, narrowly oblong, or ovate, 5–8 mm. long, sessile or some of them often on slender petioles 2–10 mm. long, united almost to the apex, the margins entire, or sparsely denticulate at the apex, the apex acuminate or attenuate, green, the sides copiously muricate or tuberculate below or smooth.

TYPE LOCALITY: Weiser, Idaho.

DISTRIBUTION: Plains and hillsides, southeastern Washington to northern Utah and central Nevada.

ILLUSTRATION: Bull. U. S. Dep. Agr. Bot. 27: pl. 6, f. 2 (lowest row; as *A. Nuttallii*).

94. *Atriplex Nuttallii* S. Wats. Proc. Am. Acad. 9: 116. 1874.

Atriplex canescens Nutt. Gen. 1: 197, as to description. 1818. Not *Calligonum canescens* Pursh, 1814.
Obione canescens Moq. Chenop. Enum. 74, as to description. 1840.
Atriplex Nuttallii utahensis M. E. Jones, Contr. West. Bot. 11: 19. 1903.

Perennial, 2–6 dm. high, suffrutescent at the base and much branched, the stems erect or decumbent, terete, stramineous or grayish, furfuraceous, simple below, often branched above, the branches ascending; leaves numerous, alternate, usually short-petiolate, the blades oblong to oblanceolate-oblong or obovate, 2–4 cm. long, 5–11 mm. wide, entire, rounded at the apex or the upper obtuse, cuneate at the base, rather thick, green or grayish-green, closely furfuraceous; flowers dioecious, the yellow staminate glomerules in mostly dense, stout, naked or sparsely leafy, paniculate or simple spikes, the pistillate in few-flowered glomerules, these mostly axillary but sometimes forming dense naked spikes; calyx 5-cleft, sparsely furfuraceous; fruiting bracts usually sessile, ovate to ovate-orbicular, 3–5 mm. long, indurate, united to above the middle, acute, irregularly dentate or laciniate-dentate, the terminal tooth not conspicuous, copiously muricate or tuberculate on the sides; seed reddish-brown, 2 mm. in diameter, the radicle superior.

TYPE LOCALITY: On the denuded saline hills of the Missouri River, about 15 miles below the confluence of White River, South Dakota.

DISTRIBUTION: Alkaline plains and hillsides, Manitoba and Saskatchewan to northern Utah, Colorado, and western Nebraska.

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 1384; ed. 2. f. 1701; Bull. U. S. Dep. Agr. Bot. 27: pl. 6, f. 2, in part (i. e. the upper 2 rows).

95. *Atriplex buxifolia* Rydb. Bull. Torrey Club 39: 311. 1912.

Erect or decumbent shrub, 1.5–4 dm. high, fruticose below, much branched from the base, the branches mostly simple, terete, rather slender, grayish-furfuraceous; leaves alternate, the blades sessile, oval or oblong, 1–2 cm. long, 5–8 mm. wide, often with fascicles of smaller leaves in the axils, rounded or obtuse at the apex, obtuse at the base, entire, thick and firm, closely furfuraceous but green; flowers dioecious, the staminate in large glomerules in mostly simple, axillary or terminal, interrupted, naked spikes, the pistillate flowers in small axillary glomerules, the leaves of the pistillate inflorescence not reduced; calyx deeply 5-cleft; fruiting bracts 4–5 mm. long, united to the middle, sessile or short-pedicellate, about as long as broad, becoming indurate, acutish, rather shallowly dentate, with few short, stout, often flattened appendages on the back, or these rarely wanting; seed filling the cavity.

TYPE LOCALITY: Dayton, Sheridan County, Wyoming.

DISTRIBUTION: Dry plains, eastern Wyoming.

XXVII. *Phyllostegiae*. Low, bright-green, glabrate annuals. Leaves alternate, petiolate, the blades broad, entire. Flowers monoecious, or the plants wholly pistillate. Fruit- ing bracts pedicellate, large, united nearly to the apex, entire or laciniate, the sides bearing numerous or few linear green appendages. Radicle superior.

96. *Atriplex phyllostegia* (Torr.) S. Wats. Proc. Am. Acad. 9: 108.
1874.

Obione phyllostegia Torr.; S. Wats. Bot. King's Expl. 291. 1871.
Atriplex Draconis M. E. Jones, Contr. West. Bot. 8: 40. 1898.
Endolepis phyllostegia Rydb. Bull. Torrey Club 39: 312. 1912.

Erect annual, 2–6 dm. high, much branched, the branches stout, terete, ascending or spreading, sparsely furfuraceous or glabrate; leaves alternate, the slender petioles equaling or shorter than the blades, the blades broadly ovate, rhombic-ovate, or deltoid-hastate, 1.5–5 cm. long, acute or acuminate, truncate or abruptly cuneate at the base, entire, thin, green, sparsely furfuraceous or glabrous; flowers monoecious, or the plants wholly pistillate, the staminate glomerules large, axillary, or in naked terminal spikes, the pistillate flowers fascicled in the axils or in terminal, sparsely leafy spikes; calyx 5-cleft; fruiting bracts on pedicels 3–16 mm. long, or subsessile, 5–20 mm. long, including the terminal lobe, united nearly to the apex, very irregular in outline, lanceolate or lance-oblong, entire or deeply laciniate, the apex oblong

to linear, green, entire, the sides of the bracts bearing numerous or few long linear appendages, or without appendages; seed 1.5 mm. long, the radicle superior.

TYPE LOCALITY: Between the Truckee and Humboldt rivers, western Nevada.

DISTRIBUTION: Sandy soil, western Utah to western Nevada.

XXVIII. Confertifoliae. Low, densely furfuraceous shrubs with spinose branches. Leaves alternate, short-petiolate, the blades broad, entire, thick. Flowers dioecious. Fruiting bracts large, united at the base, mostly oval, entire or remotely dentate, usually sessile, the sides smooth. Radicle superior.

97. *Atriplex confertifolia* (Torr.) S. Wats. Proc. Am. Acad.

9: 119. 1874.

Obione confertifolia Torr. in Frém. Rep. Calif. 318. 1845.

Obione spinosa Moq. in DC. Prodr. 13²: 108. 1849.

Atriplex spinosa D. Dietr. Syn. Pl. 5: 536. 1852.

Erect shrub, 3–12 dm. high, much branched, often forming broad rounded clumps, the branches stout, erect or ascending, dark-gray, the branchlets usually divaricate, stout or slender, sharply spinose, densely furfuraceous, often becoming glabrate; leaves alternate, the petioles 4 mm. long or less, or the leaves subsessile, the blades ovate to oval or suborbicular, 1–2 cm. long, rounded to acutish at the apex, cuneate to rounded at the base, thick, densely furfuraceous; flowers dioecious, in small dense axillary glomerules; calyx 5-cleft; fruiting bracts 6–12 mm. long, suborbicular to broadly oval, entire, united at the base, usually broadest near the base, short-stipitate or sessile, densely furfuraceous; seed 1.5–2 mm. broad, reddish-brown.

TYPE LOCALITY: Shores of Great Salt Lake, Utah.

DISTRIBUTION: Dry plains and hillsides, North Dakota to Chihuahua, California, and eastern Oregon.

ILLUSTRATIONS: Jepson, Fl. Calif. f. 83; Bull. U. S. Dep. Agr. Bot. 27: pl. 4, f. 2; Clements, Rocky Mt. Fl. pl. 10, f. 4.

98. *Atriplex collina* Wootton & Standley, Contr. U. S. Nat. Herb. 16:

119. 1913.

Erect shrub, 2–3 dm. high, much branched, forming broad rounded clumps, the branches stout, ascending or spreading, the older ones dark-gray, the branchlets spinose, densely furfuraceous; leaves subsessile, the blades oval-oblong to obovate or rarely suborbicular, 0.8–2.5 cm. long, obtuse or rounded at the apex, rounded to cuneate at the base, thick, densely furfuraceous; flowers dioecious, the staminate plants not seen; pistillate flowers 1 or more in each axil, forming stout, densely leafy spikes; fruiting bracts ovate-orbicular, 5–8 mm. long, sessile, acute or acutish, thin, united only at the base, coarsely dentate or denticulate, at least near the base, densely furfuraceous; seed 1.5 mm. broad, reddish-brown, the radicle superior.

TYPE LOCALITY: Dry hills near the north end of the Carrizo Mountains, Arizona.

DISTRIBUTION: Dry hillsides, southwestern Colorado, southeastern Utah, northwestern New Mexico, and northeastern Arizona.

XXIX. Canescentes. Tall or rarely low shrubs, usually densely furfuraceous. Leaves alternate, sessile or nearly so, the blades usually narrow, entire. Flowers dioecious. Fruiting bracts large, sessile or pedicellate, united nearly to the apex, the sides broadly 4-winged, the wings entire or dentate or lacinate. Radicle superior.

99. *Atriplex Garretti* Rydb. Bull. Torrey Club 39: 312. 1912.

Shrub, 3 dm. high, much branched, the branches erect or ascending, terete, stramineous, furfuraceous; leaves alternate, short-petiolate, the blades oval to orbicular-obovate, 1.2–3.5 cm. long, broadly rounded to acute at the apex, often apiculate, acute at the base, entire, densely furfuraceous; flowers dioecious, in axillary and terminal clusters, the staminate glomerules small, fuscous, in axillary or terminal, simple or narrowly paniculate spikes, the pistillate in broad, crowded or interrupted spikes; fruiting bracts 6–12 mm. long and of about the same breadth, 4-winged on the back, the wings coarsely and irregularly dentate, with a broad open sinus at the apex, the free portion 1–2 mm. long, usually exceeding the wings; radicle superior.

TYPE LOCALITY: Vicinity of Moab, Utah.

DISTRIBUTION: Western Colorado and eastern Utah.

100. *Atriplex aptera* A. Nelson, Bot. Gaz. 34: 356. 1902.

Atriplex odontoptera Rydb. Bull. Torrey Club 31: 404. 1904.

Perennial, 1–4 dm. high, suffrutescent and much branched at the base, the stems erect or decumbent, terete, furfuraceous, simple below, often branched above, the branches ascending; leaves sessile, the blades narrowly oblong to oblanceolate-oblong, 1.5–4 cm. long, 4–8 mm. wide, rounded or obtuse at the apex, cuneate or attenuate at the base, firm, furfuraceous, entire; flowers dioecious, the pistillate in axillary glomerules or in nearly naked, dense, terminal spikes; fruiting bracts on short stout pedicels, 4–5 mm. long, united nearly to the apex, indurate, 4-winged on the back, the wings thick, densely furfuraceous, deeply and irregularly dentate, or some of them sometimes subentire, the free portion of the bracts about equaling the wings, often 3-dentate, the body of the bracts sometimes tuberculate; seed reddish-brown, 1.5–2 mm. long, the radicle superior.

TYPE LOCALITY: Laramie, Wyoming.

DISTRIBUTION: In alkaline flats, southern Alberta to northern Colorado.

101. *Atriplex canescens* (Pursh) Nutt. Gen. 1: 197. 1818

Calligonum canescens Pursh, Fl. Am. Sept. 370. 1814.

Atriplex Berlandieri Moq. Chenop. Enum. 65. 1840.

Obione canescens Moq. Chenop. Enum. 74. 1840.

Obione tetraptera Benth. Bot. Voy. Sulph. 48. 1844.

Pterochiton occidentale Torr. in Frém. Rep. Calif. 318. 1845.

Pterochiton canescens Nutt. Jour. Acad. Phila. II. 1: 184. 1847.

Obione occidentalis Moq. in DC. Prodr. 13²: 112. 1849.

Lophocarya spinosa, Nutt.; Moq. in DC. Prodr. 13²: 112, as synonym. 1849.

Pterocarya spinosa Nutt.; Moq. in DC. Prodr. 13²: 112, as synonym. 1849.

Obione Berlandieri Moq. in DC. Prodr. 13²: 114. 1849.

Atriplex occidentalis D. Dietr. Syn. Pl. 5: 537. 1852.

Obione occidentalis angustifolia Torr. Bot. Mex. Bound. Surv. 184. 1859.

Atriplex canescens angustifolia S. Wats. Proc. Am. Acad. 9: 121. 1874.

Atriplex angustior Cockerell, Proc. Davenp. Acad. 9: 7. 1902.

Atriplex tetraptera Rydb. Bull. Torrey Club 39: 311. 1912.

Atriplex canescens macilenta Jepson, Fl. Calif. 442. 1914.

Erect shrub, 6–15 dm. high, much branched throughout, the branches ascending or sometimes spreading, stout, terete, whitish-furfuraceous, the bark on the older branches exfoliating; leaves numerous, sessile or subsessile, alternate, the blades linear to spatulate or narrowly oblong, broadest above the middle, 1–5 cm. long, 1.5–6 or rarely 10 mm. broad, flat or revolute, entire, rounded at the apex or the upper ones acute, narrowly cuneate to attenuate at the base, thick and firm, furfuraceous; flowers dioecious or rarely monoecious, the yellow staminate glomerules in slender or stout, dense or interrupted, simple or paniculate spikes, the pistillate flowers in few- or many-flowered axillary glomerules, or in dense, nearly naked spikes; calyx 5-cleft, densely furfuraceous, sometimes tinged with red; fruiting bracts united nearly to the apex, on slender or stout pedicels 2–15 mm. long, these often recurved, the body of the bract ovoid or oval, 7–13 mm. long, indurate, bearing on each side 2 longitudinal wings, these 3–13 mm. broad, 7–25 mm. long, usually much surpassing the triangular free portion of the bracts, rather thin, conspicuously veined, densely furfuraceous or glabrate and green, the margins undulate to sharply dentate, the teeth often with rigid subulate tips; seed 1.5–2 mm. long, the radicle superior.

TYPE LOCALITY: In the plains of the Missouri River, near the Big-bend [South Dakota].

DISTRIBUTION: Plains and hillsides, South Dakota to Oregon, Lower California, and Zacatecas.

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 1385; ed. 2. f. 1702; Jepson, Fl. Calif. f. 85; Bull. U.S. Dep. Agr. Bot. 27: pl. 6, f. 1; Clements, Rocky Mt. Fl. pl. 10, f. 1, 2; Pammel, Man. Pois. Pl. f. 202.

102. *Atriplex linearis* S. Wats. Proc. Am. Acad. 24: 72. 1889.

Erect shrub, 3–25 dm. high, much branched, the branches slender, terete, spreading or ascending, densely white-furfuraceous, the older branches with dark-gray or black bark; leaves sessile, the blades linear, 1–5 cm. long, 1.5–2.5 mm. wide, revolute, obtuse, firm, densely white-furfuraceous; flowers dioecious, the staminate in small glomerules arranged in slender, interrupted or dense, simple or paniculate spikes, the pistillate in few-flowered axillary glomerules or in dense naked terminal spikes; calyx 5-cleft, densely furfuraceous; fruiting bracts

sessile or very shortly pedicellate, lanceolate or ovate, 4–6 mm. long, indurate, bearing 4 wings, these 3 mm. wide or less, irregularly dentate or lacinate, densely furfuraceous, the free tips of the bracts much exceeding the wings, green, the body of the bracts sometimes tuberculate; seed brown, 1.5–2 mm. long, the radicle superior.

TYPE LOCALITY: Alkaline soil about Guaymas, Sonora.

DISTRIBUTION: Alkaline plains or hillsides, southern Arizona and southeastern California to Sonora and Lower California.

103. *Atriplex macropoda* Rose & Standley, sp. nov.

Erect shrub, much branched, the branches slender, spreading or ascending, angled, densely whitish-furfuraceous; leaves numerous, sessile, the blades linear, 0.8–1.8 cm. long, 1.5 mm. wide, obtuse, revolute, densely white-furfuraceous; flowers dioecious, the staminate glomerules in stout, dense or interrupted, naked, simple or paniculate spikes, the pistillate flowers solitary or in few-flowered clusters, axillary or in terminal naked spikes; calyx 5-cleft, densely furfuraceous; fruiting bracts on slender pedicels 4–7 mm. long, ovoid, united nearly to the apex, indurate, 6–10 mm. long, 4-winged on the back, the wings 2–4 mm. wide, deeply lacinate, the teeth attenuate to a usually subulate tip, the free portion of the bracts 2–4 mm. long, oblong to triangular, acute or obtuse, much exceeding the wings; seed reddish-brown, 1.5 mm. long, the radicle superior.

Type collected on Pichilique Island, Lower California, March 27, 1911, *J. N. Rose 16518* (U. S. Nat. Herb. no. 638567).

12. ZUCKIA Standley, Jour. Wash. Acad. Sci. 5: 58. 1915.

Low erect shrubs, with a copious covering of whitish inflated trichomes. Leaves numerous, alternate, petiolate, the blades flat, entire. Flowers dioecious, the pistillate ones sessile, solitary or in small glomerules forming short interrupted naked paniculate spikes, each flower bibracteolate, the bractlets accrescent in age, united except for a small aperture at the depressed apex, slightly inflated, thin, depressed vertically, 6-carinate vertically, 2 of the keels broader than the others and winglike; perianth none. Ovary depressed-globose; stigmas 2, filiform, exserted, connate at the base. Utricle included in the bracts, the pericarp membranaceous. Seed horizontal, the testa membranaceous; embryo annular, surrounding the copious endosperm; radicle centrifugal.

Type species, *Zuckia arizonica* Standley.

1. *Zuckia arizonica* Standley, Jour. Wash. Acad. Sci. 5: 58. 1915.

Plants 1.5–4 dm. high, fruticose nearly throughout, copiously branched, the branches slender, erect, striate, the older ones gray or brown, the younger ones stramineous and densely furfuraceous; leaf-blades oblong-ob lanceolate or spatulate-ob lanceolate, or the uppermost linear-ob lanceolate, 1–2 cm. long, 1.5–7 mm. wide, obtuse to acutish at the apex, attenuate at the base to a short stout petiole, thick and somewhat coriaceous, grayish-furfuraceous; pistillate spikes much interrupted, divaricate, forming nearly naked panicles 5–12 cm. long and 2–6 cm. wide; fruiting bractlets 4–5 mm. broad, densely furfuraceous, the 6 keels acute, two of them usually 1–1.5 mm. wide and winglike; utricle furfuraceous; seed orbicular, compressed, 2 mm. in diameter, yellowish-brown, dull.

TYPE LOCALITY: Chalcedony Park (the Petrified Forest), eighteen miles southeast of Holbrook, Arizona.

DISTRIBUTION: Vicinity of the type locality.

13. ENDOLEPIS Torr.; A. Gray, Pacif. R. R. Rep. 12²: 47. 1860.

Annual herbs with much branched stems, the herbage and branches densely or sparsely furfuraceous or farinose. Leaves alternate, sessile or petiolate, succulent, the blades entire or dentate, or hastate. Flowers polygamous or dioecious, glomerate or solitary in the axils or in terminal spikes, the staminate near the ends of the branches. Staminate flowers ebracteate and ebracteolate, the calyx 5-cleft, the lobes obtuse or acute, smooth or cristate on the back; stamens 5, the filaments slender, subulate. Pistillate flowers with a calyx of 3 or 4 entire or

lobed, acute or obtuse, hyaline sepals, enclosed in a pair of membranaceous, herbaceous, or indurate bracts, these entire, not appendaged, united to the middle or to the apex; stigmas 2, subulate. Utricle enclosed in the bracts, the pericarp membranaceous, free. Seed compressed; embryo subannular, surrounding the copious endosperm; radicle ascending or superior.

Type species, *Endolepis Suckleyi* Torr.

Leaf-blades ovate to lanceolate, entire or repand-denticulate, not hastate; fruiting bracts ovate, not lobed.

Staminate inflorescence arachnoid-pubescent, the calyx-lobes cristate; leaf-blades lanceolate, entire.

Staminate inflorescence merely farinose, the calyx-lobes not cristate; leaf-blades ovate-oval, usually repand-denticulate.

Leaf-blades, except the lowest, hastate; fruiting bracts 8–12 mm. long, with rounded lobes at the base.

1. *E. dioica*.
2. *E. monilifera*.
3. *E. Covillei*.

1. *Endolepis dioica* (Nutt.) Standley.

Kochia dioica Nutt. Gen. 1: 200. 1818.

Salsola dioica Spreng. Syst. Veg. 1: 923. 1825.

Endolepis Suckleyi Torr.; A. Gray, Pacif. R. R. Rep. 12²: 47. 1860.

Atriplex Endolepis S. Wats. Proc. Am. Acad. 9: 110. 1874.

Atriplex Suckleyana Rydb. Mem. N. Y. Bot. Gard. 1: 134. 1900.

Endolepis ovata Rydb. Bull. Torrey Club 30: 248. 1903.

Plants erect or spreading, 8–30 cm. high, much branched, or rarely simple below, the branches slender, ascending or divaricate, terete, often tinged with red, sparsely farinose or glabrous; leaves numerous, spreading or appressed and imbricate, sessile, the blades ovate to lanceolate or elliptic, 0.7–3.5 cm. long, 2–11 mm. wide, the upper ones reduced, acute or acuminate at the apex, rounded to acute at the base, entire, thick and succulent, glaucous, sparsely farinose when young; staminate flowers in small glomerules, these in the upper axils or in short, dense or interrupted, mostly simple, terminal spikes, the pistillate flowers solitary in the lower axils, sessile; staminate calyx cleft to the middle, the lobes triangular, acute, each with a low fleshy crest on the back; pistillate calyx of 3 or 4 entire or lobed, distinct, obtuse, hyaline sepals; fruiting bracts ovate, 2 mm. long, acute, farinose, united to the apex; seed 1.5 mm. broad, the radicle superior.

TYPE LOCALITY: Near Fort Mandan, North Dakota.

DISTRIBUTION: In alkaline soil, western North and South Dakota, Montana, and Wyoming.

ILLUSTRATION: Pacif. R. R. Rep. 12²: pl. 3.

2. *Endolepis monilifera* (S. Wats.) Standley.

Atriplex monilifera S. Wats. Proc. Am. Acad. 9: 111. 1874.

Annual, branched from the base, the branches stout, 8–15 cm. long, decumbent or ascending, terete, simple or sparsely branched, densely and finely white-furfuraceous, or glabrate in age; leaves alternate, sessile, the blades ovate-oval, 6–12 mm. long, rounded or subcordate at the base, acute or obtuse at the apex, densely and finely whitish-furfuraceous, entire or usually acutely repand-dentate; flowers dioecious, the staminate glomerules globose, in dense or interrupted spikes, these 0.7–2.5 cm. long, usually forming a terminal panicle, the pistillate flowers solitary in the axils of the leaves; staminate calyx 5-cleft to the middle, the lobes thin, densely furfuraceous; bracts minute, ovate, acute, entire, enclosing 2 shorter sepals; styles exerted.

TYPE LOCALITY: Dried bed of a lake in Bolson de Mapimi, Chihuahua.

DISTRIBUTION: Known only from the type locality.

3. *Endolepis Covillei* Standley, sp. nov.

Atriplex phyllostegia S. Wats. Proc. Am. Acad. 9: 108, in part. 1874. Not *Obione phyllostegia* Torr. 1871.

Endolepis phyllostegia Rydb. Bull. Torrey Club 39: 312, in part. 1912.

Plants much branched throughout, the branches erect, spreading, or decumbent, 1–4 dm. long, slender or stout, terete, sparsely furfuraceous when young, soon glabrate; leaves numerous, spreading, the petioles stout, half as long as the blades or shorter, the uppermost leaves subsessile; leaf-blades triangular-hastate, usually narrowly so, the lobes acute or obtuse, spreading

or ascending, the lower blades often entire, ovate to lanceolate, 2–5 cm. long, acute to attenuate at the apex, abruptly acute to narrowly cuneate at the base, firm, green, sparsely furfuraceous when young, soon glabrate; staminate glomerules sessile in the upper axils, often mixed with the pistillate flowers; staminate calyx deeply 5-cleft, the lobes obtuse, not appendaged; pistillate calyx of usually 3 hyaline sepals; fruiting bracts mostly triangular, usually with 2 rounded lobes at the base, 6–12 mm. long, 5 mm. wide or narrower, sessile or pedicellate, often subcordate at the base, united to above the middle; seed dark reddish-brown, 1–1.5 mm. long, the radicle ascending.

Type collected near Keeler, Inyo County, California, altitude 1,200 meters, May 16, 1891, Coville & Funston 875 (U. S. Nat. Herb. no. 48313).

DISTRIBUTION: Alkaline plains, western Nevada and central and southeastern California.

14. SUCKLEYA A. Gray, Proc. Am. Acad. 11: 103. 1876.

Sparsely furfuraceous, succulent, annual herbs. Leaves alternate, petiolate, the blades broad, repand-dentate. Flowers small, monoecious, in axillary glomerules; staminate flowers without bracts or bractlets, the calyx subglobose, membranaceous, 3- or 4-parted, 2 of the segments larger than the others, spatulate, not appendaged; stamens 3 or 4, the filaments short, broad, flattened; pistillate flowers bibracteate, the bracts conduplicate, obcompressed, carinate, connate below the middle, in fruit narrowly winged dorsally, the wings crenulate; stigmas 2, short, filiform. Utricle enclosed by the bracts, compressed, the pericarp thinly membranaceous, free. Seed compressed, orbicular; embryo hippocrepiform or subannular, surrounding the copious endosperm; radicle superior.

Type species, *Obione Suckleyana* Torr.

1. *Suckleya Suckleyana* (Torr.) Rydb. Mem. N. Y. Bot. Gard. 1: 133. 1900.

Obione Suckleyana Torr.; A. Gray, Pacif. R. R. Rep. 12²: 47. 1860.

Atriplex Suckleyana S. Wats. Proc. Am. Acad. 9: 111. 1874.

Suckleya petiolaris A. Gray, Proc. Am. Acad. 11: 103. 1876.

Stems stout, terete, much branched, 2–3 dm. long, prostrate or ascending, sparsely furfuraceous or glabrate; leaves numerous, the petioles equaling or exceeding the blades, the blades suborbicular to rhombic or rhombic-ovate, 1–2.5 cm. long, rounded at the apex, abruptly short-cuneate at the base, repand-dentate with short, triangular, acute or obtuse teeth, green, sparsely furfuraceous when young, soon glabrate; flowers in dense clusters in the axils of nearly all the leaves, the staminate in the upper axils; fruiting bracts ovate-rhombic, often subhastate, 5–6 mm. long, bidentate at the apex, glabrous or nearly so, green; seed filling the cavity, ovate, 3 mm. long, reddish-brown.

TYPE LOCALITY: In the Milk River Valley, northern Montana.

DISTRIBUTION: In valleys, Montana to Colorado.

ILLUSTRATION: Pacif. R. R. Rep. 12²: pl. 4.

15. GRAYIA H. & A. Bot. Beech. Voy. 387. 1840.

Eremosemium Greene, Pittonia 4: 225. 1900.

Erect, much branched shrubs, the smaller branches usually spinose, more or less pubescent with stellate hairs. Leaves alternate, sessile, the blades entire, somewhat fleshy. Flowers dioecious or rarely monoecious. Staminate flowers small, pedicellate, glomerate, ebracteate; perianth 4- or 5-parted, the segments membranaceous, obovate, not appendaged, not nerved; stamens 4 or 5, inserted on a depressed disk, the filaments subulate, the anthers included, didymous. Pistillate flowers racemose, bibracteolate, the bractlets conduplicate, obcompressed, carinate, in fruit broadly winged dorsally; perianth none; stigmas 2, filiform; ovule erect, subsessile. Utricle orbicular, compressed, included in the 2 accrescent bracts, these thin, veined; pericarp free from the seed. Seed erect, orbicular, the testa thinly coriaceous, brown; embryo annular, surrounding the endosperm; radicle elongate, inferior.

Type species, *Chenopodium ? spinosum* Hook.

Fruiting bracts finely pubescent; branches not spinose.
Fruiting bracts glabrous; branches spinose.

1. *G. Brandegei*.
2. *G. spinosa*.

1. *Grayia Brandegei* A. Gray, Proc. Am. Acad. 11: 101. 1876.

Eremosemium Brandegei Greene, Pittonia 4: 225. 1900.

Erect shrub, 1.5–4.5 dm. high, much branched below, the branches slender, erect or ascending, densely and finely pubescent, never spinose; leaf-blades linear, 1.5–4.5 cm. long, 5 mm. wide or less, broadest near the obtuse or rounded apex, attenuate to the base, densely pubescent on both surfaces; glomerules of staminate flowers in slender, flexuous, interrupted, axillary or terminal, simple or paniculate spikes, the calyx sparsely pubescent; staminate flowers in slender interrupted paniculate spikes; fruiting bracts obovate-orbicular or orbicular, 5–6 mm. long, emarginate, finely pubescent.

TYPE LOCALITY: Hillsides, among fragments of cretaceous sandstone, on the San Juan River, near the boundary between Colorado and Utah.

DISTRIBUTION: Dry plains and hillsides, southwestern Colorado and southeastern Utah.

2. *Grayia spinosa* (Hook.) Moq. in DC. Prodr. 13²: 119. 1849.

Chenopodium ? spinosum Hook. Fl. Bor. Am. 2: 127. 1838.

Grayia polygaloides H. & A. Bot. Beech. Voy. 388. 1840.

Eremosemium spinosum Greene, Pittonia 4: 225. 1900.

Erect shrub, 3–10 dm. high, much branched, the branches ascending or spreading, the older ones covered with dark-gray bark, the branchlets stout, often spinose, sparsely or densely pubescent when young, often glabrate in age; leaves spatulate-oblong to oblong, 0.4–4.3 cm. long, 2–13 mm. wide, rounded at the apex, attenuate to the base, pubescent on both surfaces when young but usually glabrate in age; staminate flowers in dense short terminal spikes, the calyx glabrous or slightly pubescent; pistillate flowers in dense crowded terminal spikes 2–7 cm. long or shorter; fruiting bracts obovate-orbicular to orbicular, 4–15 mm. long, glabrous, often tinged with red; seed 1.5–2 mm. broad.

TYPE LOCALITY: Interior of North California.

DISTRIBUTION: In alkaline soil, Wyoming to Washington, northwestern Colorado, and California.

ILLUSTRATIONS: Hook. Ic. pl. 271; E. & P. Nat. Pfl. 3^{1a}: f. 30, E–K; Jepson, Fl. Calif. f. 86; Clements, Rocky Mt. Fl. pl. 10, f. 12.

16. *EUROTIA* Adans. Fam. Pl. 2: 260. 1763.

Krascheninnikovia Gueldenst. Novi Comm. Acad. Petrop. 16: 548. 1772.

Gueldenstaedtia Neck. Elem. 2: 204. 1790.

Diotis Schreb. Gen. 2: 633. 1791.

Ceratosperrum Pers. Syn. Pl. 2: 551. 1807.

Kranikofa Raf. Princ. Somiol. 30. 1814.

Perennial herbs or low shrubs, covered with stellate pubescence. Leaves alternate or fasciculate, the blades entire, narrow. Flowers dioecious or polygamous, the staminate ones ebracteate, in dense clusters arranged in spikes and subtended by leaves, the pistillate ones bibracteate, solitary or clustered in the axils; calyx of the staminate flower 4-parted, membranaceous, the segments obovate, concave, obtuse, nerveless, pubescent outside; stamens 4, the anthers exerted; perianth wanting in the pistillate flower, the bracts conduplicate, obcompressed, connate below, pilose. Stigmas 2, filiform, connate at the base. Utricle enclosed in the bracts, these forming a long-pilose 2-horned coat, this finally longitudinally 4-valvate, the utricle ellipsoid, compressed; pericarp membranaceous, free from the seed. Seed compressed, vertical; embryo nearly annular; radicle inferior.

Type species, *Axyris ceratoides* L.

Pubescence of the stems and leaves wholly of short stellate hairs; flowers dioecious; stems woody nearly throughout, the branches spreading or ascending.

1. *E. subspinosa*.

Pubescence of short stellate hairs with numerous long hairs intermixed; plants staminate and pistillate but flowers of the other sex usually also present; stems woody only at the base, the branches erect.

2. *E. lanata*.

1. *Eurotia subspinosa* Rydb. Bull. Torrey Club 39: 312. 1912.

Dioecious shrub, 4–10 dm. high; branches slender, ascending or spreading, becoming more or less spinescent in age, densely and finely stellate-pubescent with whitish hairs; leaf-

blades linear to linear-oblong, 0.5–3 cm. long, 1–4 mm. wide, obtuse, finely stellate-pubescent, the margins revolute; fruiting bracts 6 mm. long, the horns about 2 mm. long.

TYPE LOCALITY: Rocky summits, St. George, Utah.

DISTRIBUTION: Stony hillsides, Utah and Nevada to southern California, northern Mexico, and western Texas.

2. *Eurotia lanata* (Pursh) Moq. *Chenop. Enum.* 81. 1840.

Diotis lanata Pursh, *Fl. Am. Sept.* 602. 1814.

Diotis revoluta Nutt.; Moq. in DC. *Prodr.* 13²: 121, as synonym. 1849.

Eurotia ceratoides lanata Kuntze, *Rev. Gen.* 549. 1891.

Plants woody only at the base, 3–10 dm. high; branches stout, erect, densely and coarsely stellate-pubescent, long slender hairs intermixed with the stellate pubescence; leaf-blades linear to lanceolate, 1.5–5 cm. long, 2–8 mm. wide, short-petiolate or the upper sessile, obtuse, pubescent like the stems, the margins revolute; flowers usually polygamous but the plants prevailingly either staminate or pistillate and only a few flowers of the other sex present.

TYPE LOCALITY: Banks of the Missouri River, in open prairies.

DISTRIBUTION: Plains and hillsides, Saskatchewan to Washington, western Kansas, and California.

ILLUSTRATIONS: Britt. & Brown, *Ill. Fl. f.* 1386; ed. 2. *f.* 1703; Jepson, *Fl. Calif. f.* 87.

17. *AXYRIS* L. *Sp. Pl.* 979. 1753.

Annual herbs, pubescent or glabrate. Leaves alternate, short-petiolate, the blades entire. Flowers monoecious, minute, the staminate mostly in terminal glomerules or spikes, rarely solitary, the pistillate solitary in the axils or mixed with the staminate ones. Staminate perianth hyaline, 3–5-parted, the lobes obovate or elliptic; stamens 2–5, the filaments linear, the anthers exerted. Pistillate perianth 3- or 4-parted, the segments unequal, the anterior and posterior usually larger, unchanged or but slightly accrescent in fruit; stigmas 2, filiform, usually elongate, connate at the base; ovary sessile. Utricle enclosed in the perianth, cuneate-obovoid, compressed, or spheric, short-winged or cristate at the apex; pericarp membranaceous, adherent to the seed. Seed erect, obovoid, compressed; embryo hippocrepiform, surrounding the copious endosperm; radicle inferior.

Type species, *Axyris amaranthoides* L.

1. *Axyris amaranthoides* L. *Sp. Pl.* 979. 1753.

Atriplex amaranthoides Gmel.; Moq. in DC. *Prodr.* 13²: 116, as synonym. 1849.

Stems stout, erect, 3–7 dm. high, simple below, racemosely branched above, the branches slender, ascending or erect, striate, greenish, shortly stellate-pilose; petioles 5–15 mm. long; leaf-blades narrowly ovate to lanceolate or elliptic, 3–8 cm. long, 1–2.5 cm. wide, or the uppermost smaller, acuminate at the apex, mucronulate, cuneate at the base, thin, green, finely stellate-pubescent, especially beneath; leaves of the flowering branches reduced to ovate or elliptic bracts 4–6 mm. long; staminate spikes slender, elongate, naked; fruit 3 mm. long, glabrous, winged at the apex, the thin wing retuse; seed 2.5 mm. long, dark-brown or nearly black.

TYPE LOCALITY: Dauria, Siberia.

DISTRIBUTION: Russia and Siberia; naturalized in Manitoba and North Dakota.

ILLUSTRATIONS: Gmel. *Fl. Sib. pl.* 2, *f.* 2, *pl.* 3; E. & P. *Nat. Pfl.* 3^{1a}: *f.* 30, *Q–T*; Britt. & Brown, *Ill. Fl.* ed. 2. *f.* 1704; Bull. Mich. Exp. Sta. 267: *f.* 46; Clark & Fletcher, *Farm Weeds Can. pl.* 41.

V. **KOCHIEAE.** Herbs or shrubs, usually sericeous-pubescent. Leaves opposite or alternate, the blades usually linear to subterete. Flowers perfect, often with unisexual ones intermixed, cymose or spicate, sometimes solitary; perianth-segments membranaceous, often indurate or otherwise modified in fruit. Stamens 4 or 5, rarely fewer. Embryo annular.

Perianth-segments horizontally winged in fruit.

18. **KOCHIA.**

Perianth-segments all or some of them produced into an elongate spine in fruit.

19. **ECHINOPSILON.**

18. **KOCHIA** Roth, Jour. Bot. Schrad. 1800¹: 307. 1801.

Sclerochlamys F. Muell. Trans. Phil. Inst. Vict. 2: 76. 1858.

Pubescent or rarely glabrous, annual or perennial herbs or low shrubs. Leaves narrow, often terete, entire. Flowers small, perfect or pistillate, sessile, solitary or glomerate in the axils of the leaves. Perianth subglobose, 5-lobed, the lobes incurved, mostly coriaceous in age, horizontal wings developing in age upon the calyx-lobes or the tube, these membranaceous or scarious, distinct or confluent. Stamens 5, exerted, the filaments compressed. Ovary subsessile; stigmas 2 or rarely 3. Utricle depressed-globose, the pericarp free from the seed. Seed horizontal; embryo annular, surrounding the scanty endosperm.

Type species, *Salsola arenaria* Maerklin.

- | | |
|---|----------------------------|
| Annual; leaves petiolate, the blades lance-linear, thin; calyx-wings minute. | 1. <i>K. Scoparia</i> . |
| Perennials; leaves sessile, the blades terete or linear-oblong, succulent; calyx-wings large and conspicuous. | |
| Leaf-blades linear-oblong, flat; stems paniculately branched. | 2. <i>K. californica</i> . |
| Leaf-blades terete or nearly so; stems usually branched only from the base. | |
| Stems and leaves densely and permanently sericeous-pilose; fruit densely hairy. | 3. <i>K. vestita</i> . |
| Stems and leaves soon glabrate; fruit nearly glabrous. | 4. <i>K. americana</i> . |

1. **Kochia Scoparia** (L.) Schrad. Neues Jour. Bot. Schrad. 3³: 85. 1809.

Chenopodium Scoparia L. Sp. Pl. 221. 1753.

Atriplex Scoparia Crantz, Inst. 1: 208. 1766.

Salsola Scoparia Bieb. Mém. Soc. Nat. Mosc. 1: 144. 1811.

Erect annual, 3–15 dm. high, much branched, the branches slender, ascending or erect, very leafy, glabrous or short-pilose, often tinged with red; leaf-blades lance-linear or linear, 2–7 cm. long, 3–8 mm. wide, those of the inflorescence smaller, all acuminate, tapering at the base to a slender petiole, thin, usually ciliate, often pilose-sericeous; flowers sessile, clustered in the axils of the leaves, forming short dense leafy spikes, pilose, or glabrate in age; calyx 1.5–2 mm. broad, the wings triangular, obtuse, 0.6 mm. long or less, not nerved; seed 1.5 mm. in diameter.

TYPE LOCALITY: Greece.

DISTRIBUTION: Asia and southern Europe; escaped from cultivation in many parts of the United States.

ILLUSTRATIONS: Dod. Pempt. 101; Britt. & Brown, Ill. Fl. f. 1387; ed. 2. f. 1695; E. & P. Nat. Pfl. 3^{1a}: f. 32, Q, R; Fiori & Paol. Ic. Fl. Ital. f. 1021; Hegi, Ill. Fl. f. 554, k–u.

2. **Kochia californica** S. Wats. Proc. Am. Acad. 9: 93. 1874.

Kochia americana californica M. E. Jones, Contr. West. Bot. 11: 19. 1903.

Perennial; stems few or many from a woody root, 1.5–5 dm. high, erect, stout, obtusely angled and striate, simple at the base, paniculately branched above, the branches ascending or spreading, densely silky-tomentose or pilose with grayish hairs; leaves rather remote, sessile, the blades narrowly oblong or oblong-linear, 5–17 mm. long, 1.5–3 mm. wide, spreading, obtuse or acutish, flat, densely sericeous; flowers solitary or in clusters of 2–5, densely tomentulose; calyx in fruit 2 mm. in diameter, the wings flabellate, 2 mm. long, distinct, irregularly crenulate, scarious, finely nerved; seed 2 mm. in diameter.

TYPE LOCALITY: Near Colton, California.

DISTRIBUTION: Southern California and western Nevada.

3. **Kochia vestita** (S. Wats.) Rydb. Fl. Colo. 119. 1906.

Kochia americana vestita S. Wats. Proc. Am. Acad. 9: 93. 1874.

Erect perennial from a woody base; stems numerous, 1–4 dm. high, mostly simple, sometimes with a few erect branches above, densely villous-tomentose; leaves erect or ascending, sessile, the blades terete, fleshy, 7–25 mm. long, densely sericeous; flowers solitary or in 2's or 3's, densely tomentose; calyx in fruit 2 mm. in diameter, the wings distinct, broadly flabellate, 1.5 mm. long, crenulate; utricule densely tomentose; seed 1.5 mm. in diameter.

TYPE LOCALITY: Shores of Great Salt Lake, Utah.

DISTRIBUTION: Alkaline plains and marshes, Wyoming and Colorado to Oregon and northern California.

4. *Kochia americana* S. Wats. Proc. Am. Acad. 9: 93. 1874.

Perennial from a woody base; stems numerous, erect, 1.5–5 dm. high, branched at the base, simple above or occasionally with a few erect branches, usually more or less villous-tomentose when young but soon glabrate; leaves numerous, often fascicled, sessile, the blades 6–25 mm. long, terete, fleshy, acutish, erect or ascending, sparsely sericeous or glabrous; flowers solitary or in 2's or 3's, white-tomentose; calyx in fruit 2 mm. broad, the wings flabellate, 2 mm. long, distinct, membranous, crenulate, finely nerved; utricle glabrate; seed 2 mm. in diameter.

TYPE LOCALITY: Western Nevada.

DISTRIBUTION: Alkaline plains and marshes, Wyoming and Colorado to northwestern New Mexico and California.

19. *ECHINOPSILON* Moq. Ann. Sci. Nat. II. 2: 127. 1834.

Bassia All. Misc. Taur. (3: 177, hyponym. 1766); 5: 93. 1776. Not *Bassia* L. 1771.

Willemetia Moq. Ann. Sci. Nat. II. 1: 206. 1834. Not *Willemetia* Maerklin, 1800.

Londesia Fisch. & Mey. Ind. Sem. Hort. Petrop. 2: 40. 1836.

Kentropsis Moq. Chenop. Enum. 83. 1840.

Maireana Moq. Chenop. Enum. 95. 1840.

Pubescent herbs or shrubs with terete or angulate branches. Leaves alternate, sessile, the blades linear, lanceolate, or terete, often succulent, entire. Flowers perfect or with pistillate ones intermixed, bracteolate, ebracteate, small, sessile, solitary or glomerate in the axils of the leaves; perianth globose or turbinate, 5-dentate or 5-lobed at the apex, the teeth or lobes erect or incurved, glabrous or pubescent, in age produced into long, erect or spreading spines. Stamens 5, hypogynous; anthers oblong, exerted. Ovary ovoid, attenuate to a short or elongate style; stigmas 2 or 3, capillary; ovule subsessile. Utricle enclosed in the perianth, membranaceous, or indurate at the apex, indehiscent, free from the seed. Seed horizontal or nearly vertical; embryo annular, enclosing the scanty endosperm; radicle centrifugal.

Type species, *Kochia sedoides* Schrad.

1. *Echinopsilon hirsutum* (L.) Moq. Ann. Sci. Nat. II. 2: 127.
1834.

Chenopodium hirsutum L. Sp. Pl. 221. 1753.

Salsola hirsuta L. Sp. Pl. ed. 2. 323. 1762.

Suaeda albida Pall. Ill. Pl. 53. 1803.

Kochia hirsuta Nolte, Novit. Fl. Holsat. 24. 1826.

Suaeda hirsuta Reichenb. Fl. Germ. Exc. 580. 1832.

Willemetia hirsuta Moq. Ann. Sci. Nat. II. 1: 210. 1834.

Bassia hirsuta Asch. in Schweinf. Beitr. Fl. Aeth. 187. 1867.

Chenolea hirsuta Arcang. Comp. Fl. It. 595. 1882.

Annual, 2–4 dm. high, usually much branched throughout, the branches stout or slender, decumbent or ascending, striate, copiously pilose or glabrate; leaf-blades linear, 4–10 mm. long, semiterete, fleshy, spreading, obtuse, or the upper ones acute, short-pilose when young but commonly glabrate in age, the blades of the inflorescence usually lance-linear, broader; flowers axillary, solitary, the branches of the inflorescence very tortuous, usually spirally curved, short-pilose; perianth 2–2.5 mm. broad, densely or sparsely pilose, the lobes triangular, in fruit coalescent and each developing on the back a short conic tubercle or spine; seed 1–1.2 mm. broad, ovoid, dull-greenish, the margin rounded.

TYPE LOCALITY: Seacoast at Montpellier, France.

DISTRIBUTION: Adventive on sandy seashores, New Jersey, and at Boston, Massachusetts; Europe and Siberia.

ILLUSTRATIONS: Reichenb. Ic. Fl. Germ. 24: pl. 281; Pall. Ill. Pl. pl. 45; Hegi, Ill. Fl. f. 554, a–e.

VI. *CORISPERMEAE*. Annual herbs, glabrous, or pubescent with branched hairs. Leaves alternate, the blades narrow. Flowers perfect, ebracteolate; perianth-segments free or united, unchanged in fruit. Stamens 1–5. Fruit compressed, much exceeding the perianth. Seed vertical; embryo annular.

A single genus in North America.

20. *CORISPERMUM*.

20. CORISPERMUM L. Sp. Pl. 4. 1753.

Branched, glabrous or pubescent, annual herbs, the pubescence of stellate hairs. Leaves sessile, the blades narrow, entire, those of the inflorescence reduced to shorter but broader, scarious-margined bracts. Flowers perfect, solitary or glomerate in the axils of the bracts, arranged in dense or lax spikes. Perianth-segments 1-3, minute, unequal, the posterior one largest, erect, 1-nerved, scarious, unchanged in fruit. Stamens 1-5, hypogynous, exerted; filaments unequal, compressed. Ovary exerted; stigmas 2, recurved, connate at the base. Utricle elliptic to orbicular, plano-convex, indurate, the margin winged or merely acute, the pericarp membranaceous, adherent to the seed. Seed erect; embryo annular, surrounding the copious endosperm; radicle inferior.

Type species, *Corispermum hyssopifolium* L.

Fruit distinctly wing-margined, the wing 0.5 mm. wide or more.

Fruit 2-3 mm. long; lower bracts much narrower than the fruit; spikes laxly flowered, slender.

Fruit 3.5-4.5 mm. long; lower bracts usually equaling or broader than the fruit; spikes dense, stout.

Fruit not wing-margined.

Plants glabrous; spikes slender, about 5 mm. in diameter; bracts 4-7 mm. long.

Plants pubescent; spikes stout, 5-10 mm. in diameter; bracts 4-15 mm. long.

1. *C. nitidum*.

2. *C. hyssopifolium*.

3. *C. emarginatum*.

4. *C. villosum*.

1. **Corispermum nitidum** Kit.; Schultes, Oesterr. Fl. ed. 2. 1: 7.
1814.

Corispermum tenue Link, Jahrb. Gewächsk. 1³: 29. 1820.

Corispermum microspermum Host, Fl. Austr. 1: 319. 1827.

Corispermum hyssopifolium microcarpum S. Wats. Proc. Am. Acad. 9: 123. 1874.

Plants much branched, 2-5 dm. high, the branches slender, spreading, smooth or striate, often tinged with red, glabrous or sparsely stellate-villous; leaf-blades narrowly linear, 1.5-6 cm. long, 1-2 mm. wide, cuspidate, glabrous or sparsely stellate-pubescent, ascending or spreading; spikes slender, usually laxly flowered, 3-4 mm. in diameter, the bracts commonly but little or not at all imbricate; upper bracts ovate or broadly ovate, 2-8 mm. long, acute or acuminate, cuspidate, scarious-margined, erect or spreading, as broad as the fruit, the lower bracts linear or linear-lanceolate, 8-20 mm. long, narrower than the fruit; fruit 2-3 mm. long, narrowly but conspicuously winged.

TYPE LOCALITY: Hungary.

DISTRIBUTION: Sandy fields, Illinois to North Dakota and Idaho, and southward to Texas and Arizona; also in Europe.

ILLUSTRATIONS: Sturm, Deuts. Fl. 67: pl. 3; T. Nees, Gen. Fl. Germ. Dicot. 1: pl. 75; Hegi, Ill. Fl. f. 555, h-m.

2. **Corispermum hyssopifolium** L. Sp. Pl. 4. 1753.

Corispermum hyssopifolium americanum Nutt. Gen. 1: 4. 1818.

Corispermum americanum Nutt. Trans. Am. Phil. Soc. II. 5: 165. 1837.

Corispermum marginale Rydb. Bull. Torrey Club 30: 247. 1903.

Corispermum imbricatum A. Nelson; Coult. & Nels. Man. 164. 1909.

Corispermum simplicissimum Lunell, Am. Midl. Nat. 1: 207. 1910.

Stems slender, much branched, 1.5-6 dm. high, the branches spreading, striate, glabrous or stellate-villous, often tinged with red, sparsely leafy; leaf-blades linear, 1-7 cm. long, 1-3 mm. wide, cuspidate, glabrous or stellate-pubescent; spikes loosely or densely flowered, 4-8 mm. thick, the bracts often imbricate; bracts ovate or lanceolate, usually erect, 4-10 mm. long, acute or acuminate, stellate-pubescent or glabrate, the lowest longer and narrower, all except the lowest as broad as or broader than the fruit, these rarely narrower; fruit 3.5-4.5 mm. long, conspicuously winged.

TYPE LOCALITY: Along the Volga River, Russia.

DISTRIBUTION: Sandy fields or beaches, Ontario to Washington, and southward to Missouri and Chihuahua; adventive in New York; also in Europe and Asia.

ILLUSTRATIONS: Pall. Fl. Ross pl. 98; Gaertn. Fruct. pl. 75; Lam. Tab. Encyc. pl. 5; Sibth. Fl. Graeca pl. 1; E. & P. Nat. Pfl. 3^{1a}: f. 34, A-E; Britt. & Brown, Ill. Fl. f. 1388; ed. 2. f. 1705; Rob. & Fern. Man. f. 719; Clements, Rocky Mt. Fl. pl. 10, f. 13; Fiori & Paol. Ic. Fl. Ital. f. 1027; Hegi, Ill. Fl. f. 555, a-g.

3. *Corispermum emarginatum* Rydb. Bull. Torrey Club 31: 404.
1904.

Plants glabrous throughout, or with a few short scattered hairs on the bracts, slender, much branched, 3–5 dm. high; leaf-blades linear, 1–4 cm. long, 1–2 mm. wide, cuspidate; bracts ovate to broadly ovate, 4–7 mm. long, or the lower longer and narrower, acute to acuminate, erect, thick and firm, the scarious margins very narrow, much broader than the fruit; spikes densely flowered, about 5 mm. thick, the bracts somewhat imbricate; fruit 2.5–3 mm. long, about 2 mm. wide, the margins acute or very obscurely winged.

TYPE LOCALITY: Laramie, Wyoming.

DISTRIBUTION: Alberta to Colorado and Nevada; adventive in western Missouri.

4. *Corispermum villosum* Rydb. Bull. Torrey Club 24: 191. 1897.

Stems very stout, much branched, 2–6 dm. high, the branches spreading or divergent, copiously villous-stellate when young, glabrate in age; leaf-blades linear, 2–4 cm. long, 1–4 mm. wide, thick and succulent, stellate-villous when young, glabrate in age, acuminate or cuspidate; spikes densely flowered, 5–10 mm. in diameter, the bracts much imbricate; upper bracts ovate-oblong to broadly ovate, 4–10 mm. long, cuspidate or acute, the lower ones oblong to linear-lanceolate, 5–15 mm. long, all much broader than the fruit, broadly scarious-margined, abundantly stellate-pubescent when young, often glabrate in age; fruit 2–3 mm. long and 2 mm. wide, the margins acute or very obscurely winged.

TYPE LOCALITY: Manhattan, Montana.

DISTRIBUTION: Sandy fields, Saskatchewan to Washington and northern New Mexico.

DOUBTFUL SPECIES

CORISPERMUM PILOSUM Raf. New Fl. 4: 46. 1838. Described from specimens collected in Florida by Kin [or Kinn]. No species of the genus has been collected along the southern Atlantic coast in recent years. The plant may be *C. hyssopifolium* L., if it was correctly referred to this genus.

VII. **SALICORNIEAE.** Succulent glabrous herbs or shrubs with articulate branches. Leaves scale-like, opposite or alternate. Flowers mostly perfect, usually in glomerules of 3 in the axils of bracts, often sunken in the stems; perianth-segments 3 or 4, united nearly to the apex, herbaceous or membranaceous. Stamens 1 or 2. Seed erect; embryo annular or conduplicate.

Bracts subtending the flowers alternate, arranged spirally.

21. ALLENROLFEA.

Bracts opposite.

Bracts free, deciduous, subpeltate, the inflorescence strobiliform.

22. HETEROSTACHYS.

Bracts united, persistent, the flowers sunken in depressions of the branches.

Seed glabrous; endosperm present; embryo curved.

23. ARTHROCNUM.

Seed pubescent; endosperm none; embryo conduplicate.

24. SALICORNIA.

21. *ALLENROLFEA* Kuntze, Rev. Gen. 545. 1891.

Spirostachys S. Wats. Proc. Am. Acad. 9: 125. 1874. Not *Spirostachys* Sonder, 1850.

Much branched, glabrous, erect, succulent, suffruticose perennials with alternate branches, the branches articulate. Leaves reduced to short scales. Flowers perfect, sessile, arranged spirally by 3's or 5's in the axils of fleshy, peltate, persistent or tardily deciduous bracts, forming dense cylindric sessile spikes. Perianth obpyramidal, small, angled, truncate above, the apex truncate or 4- or 5-lobed, unchanged in fruit. Stamens 1 or 2; filaments exerted; anthers broadly oblong or orbicular. Stigmas 2 or rarely 3, short, usually distinct. Utricle ovoid, compressed, the pericarp membranaceous, free. Seed erect, oblong, smooth; embryo partly enclosing the copious endosperm; radicle inferior.

Type species, *Spirostachys occidentalis* S. Wats.

1. *Allenrolfea occidentalis* (S. Wats.) Kuntze, Rev. Gen. 546.
1891.

Arthrocnemum fruticosum Torr. in Stansb. Expl. Utah 394. 1853. Not *A. fruticosum* Moq. 1840.
Arthrocnemum macrostachyum Torr. Bot. Mex. Bound. Surv. 184. 1859. Not *A. macrostachyum*
Moris, 1854.

Halostachys occidentalis S. Wats. Bot. King's Expl. 293. 1871.

Spirostachys occidentalis S. Wats. Proc. Am. Acad. 9: 125. 1874.

Salicornia occidentalis Greene, Fl. Fran. 173. 1891.

Plants 3–15 dm. high, suffrutescent below or nearly throughout, more or less glaucous, much branched, the branches ascending or spreading, the younger ones 1–3 mm. in diameter, the joints 2–10 mm. long; leaves very short, broadly triangular, clasping, acute or acutish, soon deciduous or often nearly obsolete; spikes very numerous, 0.6–2.5 cm. long, 2.5–4 mm. thick, obtuse; calyx closely enclosing the fruit; seed brown or reddish-brown, about 0.6 mm. long.

TYPE LOCALITY: About Great Salt Lake, Utah.

DISTRIBUTION: In strongly alkaline soil, Oregon to western Texas, Sonora, and Lower California.

ILLUSTRATIONS: Jepson, Fl. Calif. f. 88; E. & P. Nat. Pfl. 3^{1a}: f. 36, M–O.

22. *HETEROSTACHYS* Ung.-Sternb. Atti Congr. Bot. Firenze
331. 1876.

Spirostachys Ung.-Sternb. Vers. Syst. Salicorn. 100. 1866. Not *Spirostachys* Sonder, 1850.

Fleshy, erect, much branched shrubs, the branches terete, articulate, subopposite. Leaves opposite or subopposite, free, the blades suborbicular, obtuse, usually imbricate on the branchlets. Flowers perfect, solitary in the axils of opposite deciduous bracts. Perianth orbicular, membranaceous, complanate, broadly winged on both sides, 4-lobed, the 2 lateral lobes longer, fornicate, carinate, acute, the others plane, obtuse. Stamens 2, lateral. Stigmas 2. Utricle oblong-ovoid, compressed, the pericarp membranaceous. Seed inverted, ellipsoid, compressed, smooth; endosperm copious; embryo semiannular; radicle lateral, ascending.

Type species, *Halocnemum Ritterianum* Moq.

1. *Heterostachys Ritteriana* (Moq.) Ung.-Sternb. Atti Congr. Bot.
Firenze 332. 1876.

Halocnemum Ritterianum Moq. Chenop. Enum. 109. 1840.

Halostachys Ritteriana Moq. in DC. Prodr. 13²: 148. 1849.

Halocnemum americanum Gillies; Moq. in DC. Prodr. 13²: 148, as synonym. 1849.

Spirostachys Ritteriana Ung.-Sternb. Vers. Syst. Salicorn. 100. 1866.

Stems suffruticose, erect or ascending, glaucous, the branchlets slender, densely leafy, the leaves appressed; spikes sessile or pedunculate, 4–12 mm. long, obtuse; bracts broader than long, clasping, very obtuse, concave; seed 0.6 mm. long.

TYPE LOCALITY: Santo Domingo.

DISTRIBUTION: Hispaniola; also in Argentina.

ILLUSTRATION: Atti Congr. Bot. Firenze 273. f. 13.

23. *ARTHROCNEMUM* Moq. Chenop. Enum. 111. 1840.

Erect or decumbent, glabrous, fleshy shrubs with opposite articulate branches, the joints dilated at the apex into a short sheath. Flowers perfect, free or nearly so, immersed in groups of 3 on the opposite sides of the joints, the flowering joints forming cylindric terminal spikes, or sometimes only the lower joints of the stems floriferous. Perianth obpyramidal or oval, spongy or slightly inflated in fruit, 3- or 4-dentate at the apex, the lateral teeth larger than the others. Stamens 2. Ovary oval, somewhat compressed; style elongate; stigmas 2, slender. Utricle oval, thin or indurate, included in the perianth. Seed erect, oblong, compressed, glabrous; embryo curved, surrounding the copious endosperm; radicle inferior.

Type species, *Arthrocnemum fruticosum* Moq.

1. *Arthrocnemum subterminale* (Parish) Standley, Jour. Wash. Acad. Sci. 4: 399. 1914.

? *Arthrocnemum fruticosum californicum* Moq. in DC. Prodr. 13²: 151. 1849.

Salicornia ambigua S. Wats. Proc. Am. Acad. 9: 125, in part. 1874. Not *S. ambigua* Michx. 1803.

Salicornia subterminalis Parish, Erythea 6: 87. 1898.

Shrub, 2–4 dm. high, densely branched, the branches green, ascending or erect, or the basal ones often decumbent, the joints 0.2–2.6 cm. long, 1.5–2.5 cm. in diameter, expanded at the apex into a short, truncate or bilobate sheath, the lobes obtuse or acutish; flowering joints borne on the lower part of the branches or forming terminal spikes, the spikes 3.5 cm. long or shorter, composed of few or numerous joints, these about as broad as long; flowers subequal, borne near the base of the joint and reaching half way to the apex; seed brown, 1 mm. long.

TYPE LOCALITY: Along the San Jacinto River, Riverside County, California.

DISTRIBUTION: In alkaline soil, San Francisco, California, to Sinaloa, and on the adjacent islands.

24. *SALICORNIA* L. Sp. Pl. 3. 1753.

Sarcathria Raf. Fl. Tell. 3: 47. 1837.

Branched annual or perennial herbs, often suffrutescent, glabrous, fleshy, with opposite articulate branches, the joints dilated at the apex into a short sheath. Flowers perfect or polygamious, immersed in groups of 3–7, or rarely solitary, on the opposite sides of the joints, the flowering joints forming cylindric terminal spikes, the flowers usually connate and adnate to the joints. Perianth obpyramidal, fleshy, usually truncate at the summit and 3- or 4-dentate, spongy in fruit. Stamens 1 or 2; anthers exerted, didymous. Style lacerate above or ending in 2 subulate stigmas. Ovule sessile. Utricle included in the perianth, ovoid or oblong, the pericarp membranaceous. Seed erect, oblong or ellipsoid, compressed, covered with short or long, straight or curved hairs; endosperm none; embryo conduplicate, the radicle inferior.

Type species, *Salicornia europaea* L.

Perennials, suffrutescent at the base; central flower extending little higher than the lateral ones.

Primary branches of the stems prostrate, rooting freely, the erect or ascending flowering branches usually simple, slender; hairs upon the seeds slender.

Primary branches erect, or decumbent and not rooting, usually much branched, the branches stout.

Hairs upon the seeds short, conic.

Hairs upon the seeds slender, curved or coiled.

Joints of the flowering spikes 7–10; spikes 4 mm. thick.

Joints of the spikes usually 12–18; spikes 3 mm. thick or less.

Annuals; central flower much higher than the lateral ones.

Plants erect, usually simple at the base; branches usually forming an acute angle with the stem.

Scales mucronate; spikes 4–6 mm. thick.

Scales rounded or merely acutish; spikes 1.5–4 mm. thick.

Joints of the spikes about as thick as long, scarcely exceeding the middle flower; plants very densely branched.

Joints of the spike much longer than thick, conspicuously exceeding the middle flower; plants rather sparsely branched.

Lower branches of the plants elongate and prostrate, forming a wide angle with the stems.

Seed about 2 mm. long; branches rather sparsely branched.

Seed about 0.8 mm. long; branches very densely branched.

1. *S. perennis*.

2. *S. fruticosa*.

3. *S. utahensis*.

4. *S. pacifica*.

5. *S. Bigelovii*.

6. *S. rubra*.

7. *S. europaea*.

8. *S. prostrata*.

9. *S. depressa*.

1. *Salicornia perennis* Mill. Gard. Dict. ed. 8. *Salicornia* no. 2. 1768.

Salicornia europaea perennis Gouan, Hort. Monsp. 2. 1762.

Salicornia fruticosa With. Brit. Pl. ed. 2. 1: 3. 1787. Not *S. fruticosa* L. 1762.

Salicornia ambigua Michx. Fl. Bor. Am. 1: 2. 1803.

Salicornia radicans Smith, Engl. Bot. pl. 1691. 1807.

Sarcathria ambigua Raf. Fl. Tell. 3: 47. 1837.

Sarcathria radicans Raf. Fl. Tell. 3: 47. 1837.

Arthrocnemum fruticosum radicans Moq. Chenop. Enum. 111. 1840.

Arthrocnemum ambiguum Moq. Chenop. Enum. 112. 1840.

Salicornia peruviana Moq. in DC. Prodr. 13²: 145, in part. 1849. Not *S. peruviana* H. B. K. 1818.

Perennial, the main branches suffrutescent, prostrate, rooting freely, forming clumps or mats 1 meter or less in diameter, the flowering branches ascending or erect, often densely

clustered, the joints 0.6–2 cm. long, 1–3 mm. thick, the sheaths rounded or the lobes acutish; flowering spikes 1.5–5 cm. long, 2–2.5 mm. thick, the numerous joints as long as or longer than thick; flowers in groups of 3, of about the same height, the terminal one larger than the lateral ones and reaching half way to the top of the joint or farther; seed little longer than broad, about 1.2 mm. long, densely covered with slender curved hairs.

TYPE LOCALITY: Sheepey Island, England.

DISTRIBUTION: Sea beaches and salt marshes, New Hampshire to Mississippi; southeastern Alaska (?); Bermuda; Bahamas, and the West Indies generally; also in the British Isles and southwestern Europe, and Algeria.

ILLUSTRATIONS: Engl. Bot. *pl.* 1691, 2467; Britt. & Brown, Ill. Fl. *f.* 1391; ed. 2. *f.* 1708; Moss, Cambr. Brit. Fl. *pl.* 195, 196; Engl. Bot. ed. 3. *pl.* 1183; G. T. Stevens, Ill. Guide *pl.* 36, *f.* 9.

2. *Salicornia fruticosa* L. Sp. Pl. ed. 2. 5. 1762.

Salicornia europaea fruticosa L. Sp. Pl. 3. 1753.

Salicornia peruviana H. B. K. Nov. Gen. & Sp. 2: 193. 1818.

Halocnemum fruticosum A. Dietr. Sp. Pl. 1: 88. 1831.

Arthrocnemum fruticosum Moq. Chenop. Enum. 111, in part. 1840.

Erect or ascending perennial, suffrutescent at the base, 3–6 dm. high, much branched, the branches ascending, rarely decumbent and then not rooting, the joints 7–20 mm. long, 1.5–3 mm. thick, the sheaths rounded or the lobes acutish; flowering spikes about 2 cm. long, 3 mm. thick, the rather few joints thicker than long; flowers in groups of 3, subequal and of nearly the same height, the terminal flower reaching only half way or nearly to the top of the joint; seed about 1.3 mm. long, yellowish-brown, covered with very short conic hairs.

TYPE LOCALITY: Seashores of Europe.

DISTRIBUTION: Coast of Louisiana; Bahamas; also in southern Europe, western Asia, northern and southern Africa, and Polynesia.

ILLUSTRATION: Reichenb. Ic. Fl. Germ. 24: *pl.* 287.

3. *Salicornia utahensis* Tidestrom, Proc. Biol. Soc. Wash. 26: 13. 1913.

Perennial, suffrutescent at the base, 1.5–3 dm. high, the stems solitary or clustered, erect or decumbent, not rooting, sparsely or much branched, the branches erect or ascending, the joints 7–18 mm. long, 2–5 mm. thick, the sheaths rounded or the lobes acutish; spikes few, 10–20 mm. long, 4–5 mm. thick; flowers 3 in each cluster, subequal, of about the same height, extending nearly to the top of the joint.

TYPE LOCALITY: Near the shore of the Great Salt Lake, Utah.

DISTRIBUTION: In strongly alkaline soil, vicinity of the type locality.

4. *Salicornia pacifica* Standley, sp. nov.

Salicornia ambigua S. Wats. Proc. Am. Acad. 9: 125, in part. 1874. Not *S. ambigua* Michx. 1803.

Perennial, suffrutescent at the base, 2–5 dm. high, usually with several stems, these erect or decumbent, rarely procumbent, not rooting, stout, much branched, the branches stout, erect or ascending, the joints 6–20 mm. long, 2–4.5 mm. thick, the sheaths rounded or lobed with acutish lobes; flowering spikes 1.5–4 cm. long, 2.5–3 mm. thick, composed of usually 10–18 joints, or the joints sometimes fewer, about as long as thick; flowers extending nearly to the top of the joint, the 3 of about the same height, nearly equal; seed brown, about 1.2 mm. long, densely covered with short slender curved hairs.

Type collected at Moss Landing, Monterey County, California, December 2, 1901, *M. H. Lapham* (U. S. Nat. Herb. no. 413157).

DISTRIBUTION: In salt marshes and alkaline soil, mostly near the coast, British Columbia to Sonora, and on the adjacent islands.

5. *Salicornia Bigelovii* Torr. Bot. Mex. Bound. Surv. 184. 1859.

Salicornia mucronata Bigel. Fl. Bost. ed. 2. 2. 1824. Not *S. mucronata* Lag. 1817.

Salicornia virginica Moq. in DC. Prodr. 13²: 145, in part. 1849. Not *S. virginica* L. 1753.

Salicornia mucronata suffrutescens S. Wats. Proc. Am. Acad. 9: 124. 1874.

Erect annual, 1–5 dm. high, green, usually simple at the base, sparsely or copiously branched above, the branches ascending or rarely spreading, the joints 7–25 mm. long, 2–3 mm.

thick, the sheaths 2-lobed, the lobes acutely mucronate; flowering spikes 2–12 cm. long, 4–6 mm. thick, obtuse, the numerous joints as broad as long or broader; flowers 3 in each group, the central one higher and larger than the lateral ones and extending nearly or quite to the top of the joint; seed nearly black, 1.5–2 mm. long, covered with short curved hairs.

TYPE LOCALITY: Salt marshes, vicinity of Boston, Massachusetts.

DISTRIBUTION: In salt marshes along the coast, Nova Scotia to Texas; southern California; Yucatán; Bahamas, Cuba, and Porto Rico.

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 1390; ed. 2. f. 1707; G. T. Stevens, Ill. Guide pl. 36, f. 8.

6. *Salicornia rubra* A. Nelson, Bull. Torrey Club 26: 122. 1899.

Salicornia rubra prona Lunell, Am. Midl. Nat. 1: 236. 1910.

Erect annual, 1–2.5 dm. high, becoming bright-red in age, very densely branched, the branches ascending or erect, the joints 5–13 mm. long, 1–2 mm. thick, the lobes of the sheaths acute or acutish; flowering spikes 0.6–5 cm. long, 1.5–2.5 mm. thick, the numerous joints about as broad as long; flowers 3 in each group, subequal, the central one highest and reaching nearly or quite to the top of the joint; seed about 1.2 mm. long, brown, covered with short curved hairs.

TYPE LOCALITY: Laramie, Wyoming.

DISTRIBUTION: In alkaline soil, western Kansas and Nebraska to Saskatchewan and Nevada.

7. *Salicornia europaea* L. Sp. Pl. 3. 1753.

Salicornia europaea herbacea L. Sp. Pl. 3. 1753.

Salicornia virginica L. Sp. Pl. 4. 1753.

Salicornia herbacea L. Sp. Pl. ed. 2. 5. 1762.

Salicornia herbacea virginica L. Sp. Pl. ed. 2. 5. 1762.

Salicornia europaea annua Gouan, Hort. Monsp. 2. 1762.

Salicornia annua Sm. Engl. Bot. pl. 415. 1797.

Salicornia procumbens Sm. Engl. Bot. pl. 2475. 1813.

Sarcathria virginica Raf. Fl. Tell. 3: 47. 1837.

Salicornia herbacea pachystachya Koch, Syn. Fl. Germ. ed. 2. 693. 1844.

Salicornia herbacea patula Crép. Man. Fl. Belg. ed. 3. 363. 1874.

Salicornia europaea pachystachya Fernald, Rhodora 9: 206. 1907.

Erect annual, 0.5–4.5 dm. high, often simple at the base, usually much branched above, the branches erect or ascending, slender, the joints 5–25 mm. long, 1–2.5 mm. thick, often red or reddish in age; flowering spikes 2.5–6 cm. long, 1.5–3 mm. or sometimes 4.5 mm. thick, tapering above, the joints longer than thick, usually 10–15 or even more in each spike; flowers 3 in each cluster, subequal, the terminal one much higher than the others and reaching two thirds the distance to the apex of the joint; seed 1.5–2 mm. long, brown, covered with short curved hairs.

TYPE LOCALITY: Seashores of Europe.

DISTRIBUTION: In salt marshes, New Brunswick to Georgia, and in saline soil in New Brunswick and New York; on the Pacific Coast from Cook Inlet, Alaska, to British Columbia, and in eastern California; also in the Dutch West Indies, Europe, Asia, the East Indies, and Africa.

ILLUSTRATIONS: Reichenb. Ic. Fl. Germ. 24: pl. 286; Engl. Bot. pl. 415, 2475; Fl. Dan. pl. 303; E. & P. Nat. Pfl. 3^{1a}: f. 36, G–L; Britt. & Brown, Ill. Fl. f. 1389; ed. 2. f. 1706; Lam. Tab. Encyc. pl. 4; Schkuhr, Handb. pl. 1; Sv. Bot. pl. 252; Baxter, Brit. Bot. pl. 307; Schnizl. Iconogr. 2: pl. 101; Perrin, Brit. Fl. Pl. 1: pl. 57; Moss, Cambr. Brit. Fl. pl. 199; Pratt, Fl. Pl. Great Brit. pl. 180, f. 1; Fiori & Paol. Ic. Fl. Ital. f. 1030; Hegi, Ill. Fl. pl. 97, f. 1, f. 557, a–i; G. T. Stevens, Ill. Guide pl. 36, f. 7; Benth. Ill. Handb. f. 831.

8. *Salicornia prostrata* Pall. Ill. Pl. 8. 1803.

Salicornia herbacea myosuroides R. & S. Syst. Veg. 1: 38. 1817.

Salicornia herbacea procumbens Mert. & Koch, Deuts. Fl. 1: 291. 1823. Not *S. procumbens* Sm. 1813.

Salicornia europaea prostrata Fernald, Rhodora 9: 206. 1907.

Annual, usually dark-green, 1–2 dm. high, freely branched, the branches forming a wide angle with the stems, the lower branches elongate, 1.5–2 dm. long, prostrate or procumbent, or the whole plant depressed and matted, the joints 5–12 mm. long, 1.5–2 mm. thick, the sheaths rounded or lobed, the lobes acutish; spikes slender, 1–7 cm. long, 2–2.5 mm. thick, tapering above, often branched, the joints much longer than broad; flowers 3 in each group,

subequal, the central one much higher than the lateral ones and reaching nearly two-thirds the distance to the top of the joint; seed 1.5–2 mm. long, covered with short uncinat hairs.

TYPE LOCALITY: In saline soil along the Ural River near Kalmikof, Central Asia.

DISTRIBUTION: Brackish shores, Newfoundland, New Brunswick, Quebec, and eastern Maine; Saskatchewan; also in Europe.

ILLUSTRATIONS: Pall. Ill. Pl. *pl.* 3; Moss, Cambr. Brit. Fl. *pl.* 203–205.

9. *Salicornia depressa* Standley, sp. nov.

Prostrate or procumbent annual, very densely branched throughout, the branches often fascicled, rigid, the lowest ones 4–18 cm. long, the lateral branches usually forming wide angles with the main stem, the joints 5–12 mm. long, 1.5–2 mm. thick, the sheaths rounded or the lobes acutish; flowering spikes 1.2–4.5 cm. long, 2–2.5 mm. thick, blunt, the 12 or fewer joints longer than thick, often twice as long; flowers in groups of 3, the central one larger than the lateral ones and almost wholly above them, reaching half or two thirds the distance to the top of the joint; seed brown, 0.8 mm. long, densely covered with short curved hairs.

Type collected at San Diego, California, in 1899, *Katherine Brandege* (U. S. Nat. Herb. no. 735007).

DISTRIBUTION: San Diego County, California, and northern Lower California.

VIII. SARCOBATIDAE. Succulent shrubs. Leaves alternate or opposite, the blades narrow. Flowers monoecious, ebracteolate, the staminate ones each consisting of 3 or fewer stamens beneath a peltate scale, arranged in ament-like spikes, the pistillate flowers axillary. Fruit coriaceous, surrounded by a transverse median wing. Seed erect; embryo spirally coiled.

A single genus.

25. SARCOBATUS.

25. SARCOBATUS Nees, in Max. Reise N. Am. 1: 510. 1839.

Fremontia Torr. in Frém. Rep. 91. 1843.

Much branched shrubs with spinescent branches. Leaves alternate or opposite, sessile, the blades linear or nearly so, fleshy. Flowers monoecious or dioecious, ebracteate; staminate flowers spirally arranged in cylindric pedunculate aments, without perianths, each consisting of 3 or fewer stamens underneath a peltate stipitate scarious scale; pistillate flowers sessile, solitary or 2 together, each in the axil of a leaf, the axis of the fertile inflorescence often prolonged and bearing 1–8 staminate flowers; perianth of the fertile flowers compressed, turbinate, confluent with the ovary. Stigmas 2, subulate, recurved. Fruit coriaceous, developing a broad scarious veined crenulate wing at the middle, the lower part turbinate, the upper conic. Seed erect, orbicular, the embryo spirally coiled; endosperm none.

Type species, *Sarcobatus Maximiliani* Nees.

Leaves glabrous or glabrate, rarely stellate-puberulent, 10–30 mm. long; fruit glabrous, the body 4–5 mm. long, the wing 7–13 mm. broad; axis of the pistillate inflorescence bearing only 1 or 2 staminate flowers, or often none.

1. *S. vermiculatus*.

Leaves finely stellate-pubescent, or becoming glabrate, 5–14 mm. long; fruit minutely puberulent, at least when young, the body 8–9 mm. long, the wing 10–15 mm. broad; axis of the pistillate inflorescence bearing 4–8 staminate flowers.

2. *S. Baileyi*.

1. *Sarcobatus vermiculatus* (Hook.) Torr. in Emory, Notes Mil.

Rec. 150. 1848.

Batis ? vermiculata Hook. Fl. Bor. Am. 2: 128. 1838.

Sarcobatus Maximiliani Nees, in Max. Reise N. Am. 1: 510. 1839.

Fremontia vermicularis Torr. in Frém. Rep. 91. 1843.

Much branched shrub, 6–30 dm. high, the branches stout, the older ones grayish, the younger ones yellowish-white, glabrous or pubescent with short white branched hairs, the ultimate branchlets stout, spinose; leaf-blades 5–30 mm. long, usually 12–20 mm., glabrous or sparsely pubescent, obtuse or acute, the lower leaves of the branchlets opposite and often shorter and broader than the others; staminate aments 7–30 mm. long, the scales rhombic-

orbicular, sometimes abruptly acuminate, occasionally tinged with red, glabrous or pubescent; axis of the pistillate inflorescence usually not prolonged, but sometimes bearing 1 or 2 staminate flowers; fruit minutely stellate-pubescent, at least when young, the body 4–5 mm. long, 2.5–3.5 mm. broad, the wings 5–13 mm. long and 5–8 mm. broad, sometimes tinged with red.

TYPE LOCALITY: Barren grounds of the Columbia River.

DISTRIBUTION: Alkaline soil, western North Dakota to Alberta, Washington, California, and New Mexico.

ILLUSTRATIONS: Frém. Rep. Calif. *pl.* 3; Bot. Zeit. 2: *pl.* 7; E. & P. Nat. Pfl. 3^{1a}: *f.* 37; Britt. & Brown, Ill. Fl. *f.* 1392; ed. 2. *f.* 1709; Jepson, Fl. Calif. *f.* 90; Clements, Rocky Mt. Fl. *pl.* 10, *f.* 6–8.

2. *Sarcobatus Baileyi* Coville, Proc. Biol. Soc. Wash. 7: 77. 1892.

Sarcobatus vermiculatus Baileyi Jepson, Fl. Calif. 446. 1914.

Shrub, 5–10 dm. high, intricately much branched, the branches in age dark-gray, the ultimate branchlets slender, sharply spinescent, pubescent with short branched hairs or finally glabrate; leaf-blades 5–14 mm. long, acute or obtuse, cuspidate, pubescent with short white branched hairs, or glabrate in age; staminate aments 5–10 mm. long, the scales rhombic-orbicular, abruptly acute or acuminate, pubescent with short branched hairs; axis of the pistillate inflorescence 1–1.5 cm. long, bearing 4–8 staminate flowers; body of the fruit 8–9 mm. long and 5 mm. wide, the wing 10–15 mm. long and 8–10 mm. wide, the whole fruit glabrous even when young, sometimes tinged with red.

TYPE LOCALITY: Valley near Thorpe's quartz mill, Nye County, Nevada.

DISTRIBUTION: Dry slopes and plains, eastern California and western Nevada; southwestern Colorado.

ILLUSTRATION: Contr. U. S. Nat. Herb. 4: *pl.* 20.

IX. DONDIEAE. Succulent herbs or shrubs. Leaves opposite or alternate, the blades usually narrow. Flowers mostly perfect; bractlets small, scale-like; perianth-segments 5, herbaceous or membranaceous, more or less united. Stamens 5. Fruit enclosed in the unchanged or variously modified perianth. Seed erect or horizontal, the seeds often dimorphous; embryo plane-spiral.

A single genus in North America.

26. DONDIA.

26. DONDIA Adans. Fam. Pl. 2: 261. 1763.

Lerchea Rueling (Ordin. Pl. 45, hyponym. 1774); Kuntze, Rev. Gen. 549. 1891. Not *Lerchea* L. 1771.

Suaeda Forsk. Fl. Aegypt. 69. 1775.

Schoberia C. Meyer, in Ledeb. Fl. Alt. 1: 395. 1829. Not *Schobera* Scop. 1777.

Sevada Moq. in DC. Prodr. 13²: 154. 1849.

Chenopodina Moq. in DC. Prodr. 13²: 159. 1849.

Calvelia Moq. in DC. Prodr. 13²: 167. 1849.

Belowia Moq. in DC. Prodr. 13²: 168. 1849.

Annual or perennial, erect or prostrate, green or glaucous, glabrous or pubescent herbs or shrubs. Leaves alternate, terete or semiterete, rarely flat or spatulate, entire. Flowers small, perfect or by abortion unisexual, solitary or glomerate in the axils of the leaves, bracteate and bibracteolate; perianth 5-lobed or 5-parted, globose, turbinate, or urceolate, fleshy, the lobes equal and unappendaged, or 1 or more larger and corniculate-appendaged, or sometimes developing transverse wings. Stamens 5, subhypogynous or perigynous, included or exerted. Ovary usually broadly sessile or adnate to the tube of the perianth; stigmas 2–5, short, subulate, recurved. Utricle enclosed in the perianth, compressed or depressed, membranaceous or subspongious; pericarp usually free from the seed. Seed horizontal or erect, the coat smooth or roughened; embryo spiral, usually green, the radicle ascending, descending, or lateral; endosperm scanty or none.

Type species, *Chenopodium altissimum* L.

Calyx-lobes, at least some of them, corniculate-appendaged or winged.

Leaves erect.

Leaves ascending or spreading.

1. *D. minutiflora*.

- Leaves broadest at the base, those of the inflorescence ovate or ovate-lanceolate; flowers and leaves crowded.
- Leaves narrowed at the base, or at least not broadened, those of the inflorescence linear or linear-lanceolate; spikes slender, the flowers and leaves not crowded.
- Seed 1 mm. broad or less.
- Seed 1.5–2 mm. broad.
- Calyx-lobes not appendaged nor winged, often cucullate or carinate.
- Annuals, or two of the species perhaps sometimes perennial but not suffrutescent at the base.
- Seed about 2 mm. broad.
- Seed 1–1.5 mm. broad.
- Calyx-lobes rounded on the back.
- Stems procumbent, stout.
- Stems erect, slender.
- Calyx-lobes, at least some of them, carinate.
- One or two of the calyx-lobes more strongly cucullate-carinate than the others.
- All the calyx-lobes equally carinate.
- Seed 1–1.5 mm. broad.
- Seed 0.8 mm. broad or less.
- Perennials, suffrutescent at the base.
- Stems and leaves glabrous or nearly so.
- Plants green; leaves strongly flattened.
- Plants glaucous; leaves subterete.
- Leaves 2–5 mm. long.
- Leaves mostly 10–35 mm. long, or those of the inflorescence shorter.
- Seed 1.5–2 mm. broad; leaves of the inflorescence crowded.
- Seed about 0.8 mm. broad; leaves of the inflorescence not crowded.
- Stems and leaves densely tomentulose or villous when young, sometimes glabrate in age.
- Branches of the inflorescence very slender, spreading or divaricate, flexuous, elongate; leaves strongly flattened.
- Branches of the inflorescence stout, ascending or erect, not flexuous, short; leaves terete.
- Calyx nearly or quite glabrous.
- Leaves glaucous, rounded at the apex, 3–7 mm. long; bractlets rounded; seed 1.5 mm. broad.
- Leaves green, acute or acuminate, 7–15 mm. long; bractlets acuminate; seed 1 mm. broad.
- Calyx densely pubescent.
- Flowers 2.5–3 mm. broad; leaves 12–25 mm. long, acute.
- Flowers 1–2 mm. broad; leaves 3–13 mm. long.
- Leaves 3–8 mm. long, obtuse or rounded at the apex, crowded, those of the inflorescence little or not at all reduced; flowers 1–3 in each axil.
- Leaves 5–13 mm. long, acute, not crowded, those of the inflorescence much smaller; flowers more numerous in the axils.

2. *D. depressa*.3. *D. occidentalis*.4. *D. Fernaldii*.5. *D. maritima*.6. *D. Richii*.10. *D. nigra*.7. *D. americana*.8. *D. linearis*.9. *D. mexicana*.11. *D. Torreyana*.12. *D. insularis*.13. *D. californica*.14. *D. fruticosa*.15. *D. ramosissima*.16. *D. Palmeri*.17. *D. tampicensis*.18. *D. taxifolia*.19. *D. brevifolia*.20. *D. suffrutescens*.1. *Dondia minutiflora* (S. Wats.) A. Heller, Cat. N. Am. Pl. 3. 1898.*Suaeda minutiflora* S. Wats. Proc. Am. Acad. 18: 194. 1883.

Glaucous glabrous erect annual or perennial; stems very stout, 3–6 dm. high, simple below, sparsely branched above, the branches erect; leaves linear or lance-linear, 2–5 cm. long, 1–3 mm. wide, semiterete, broadest at the base, erect, numerous, those of the inflorescence broader and shorter; inflorescence little branched, the lateral branches very short and erect, the flowers densely crowded; one or more of the calyx-lobes corniculate-appendaged; bractlets mostly obtuse; seed horizontal, 1 mm. broad, dark reddish-brown.

TYPE LOCALITY: Santa Barbara, California.

DISTRIBUTION: In alkaline plains or salt marshes, southern California.

2. *Dondia depressa* (Pursh) Britton; Britt. & Brown; Ill. Fl. 1: 585. 1896.*Salsola depressa* Pursh, Fl. Am. Sept. 197. 1814.*Chenopodium americanum* Spreng. Syst. Veg. 1: 922, excluding the first synonym. 1825.*Chenopodium calceoliforme* Hook. Fl. Bor. Am. 2: 126. 1838.*Suaeda calceoliformis* Moq. Chenop. Enum. 128. 1840.*Chenopodium depressa* Moq. in DC. Prodr. 13²: 164. 1849.*Schoberia americana* C. Meyer; Moq. in DC. Prodr. 13²: 164, as synonym. 1849.*Suaeda plattensis* Nutt.; Moq. in DC. Prodr. 13²: 164, as synonym. 1849.*Schoberia calceoliformis* Moq. in DC. Prodr. 13²: 166. 1849.

- Suaeda depressa* S. Wats. Bot. King's Expl. 294. 1871.
Suaeda depressa erecta S. Wats. Proc. Am. Acad. 9: 90. 1874.
Lerchea calceoliformis Kuntze, Rev. Gen. 549. 1891.
Dondia depressa erecta A. Heller, Cat. N. Am. Pl. 3. 1898.
Dondia erecta A. Nelson, Bot. Gaz. 34: 364. 1902.
Suaeda erecta A. Nelson; Coult. & Nels. Man. 169. 1909.
Dondia calceoliformis Rydb. Bull. Torrey Club 39: 313. 1912.

Glaucous or green, erect or spreading, glabrous annual or perennial, 2–4 dm. high, usually branched from the base, the branches stout, erect, spreading, or prostrate, simple, or paniculately branched above; leaves linear, semiterete, 0.7–3 cm. long, 1.5 mm. wide or less, acute, usually broadest at the base, ascending or spreading, often crowded, those of the inflorescence much shorter and broader, commonly lanceolate or ovate, often but slightly exceeding the flowers; flowers crowded, 1–5 in each axil, forming stout spikes; calyx-lobes acute or obtuse, one or more of them corniculate-appendaged; seed vertical or horizontal, 1 mm. broad, black.

TYPE LOCALITY: Volcanic plains of the Missouri River.

DISTRIBUTION: In alkaline soil, Minnesota to Saskatchewan, Washington, California, and western Texas.

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 1395; ed. 2. f. 1712.

3. *Dondia occidentalis* (S. Wats.) A. Heller, Cat. N. Am. Pl. 3. 1898.

- Schoberia occidentalis* S. Wats. Bot. King's Expl. 295. 1871.
Suaeda occidentalis S. Wats. Proc. Am. Acad. 9: 90. 1870.

Green or slightly glaucous, glabrous, erect or spreading annual, 6–25 cm. high, much branched or nearly simple, the branches slender, flexuous, ascending or spreading; leaves linear, 10–25 mm. long, 1 mm. wide, mostly spreading, acute or acuminate, not widened at the base, those of the inflorescence little reduced and not broader than the lower ones; flowers 1–3 in each axil, the glomerules usually distant; calyx-lobes obtuse, transversely winged in age, the wing irregularly lobed; seed horizontal, 1 mm. broad, black and shining.

TYPE LOCALITY: Dry, alkaline meadow, Ruby Valley, Nevada.

DISTRIBUTION: Eastern Washington and Oregon to southwestern Wyoming, Colorado, and northern Nevada.

4. *Dondia Fernaldii* Standley, sp. nov.

Green glabrous erect annual, 2.5–3.5 dm. high, simple or sparsely branched, the branches erect or strongly ascending, rather stout, slightly flexuous; leaves rather distant, linear, 8–17 mm. long, about 1 mm. wide, spreading or ascending, acute, those of the inflorescence little reduced and not broader than the lower ones; flowers 1–3 in each axil, forming interrupted spikes; calyx-lobes broadly transverse-winged below the middle in fruit, the wings obtuse, entire; seed 1.5–2 mm. broad, black and shining.

Type collected on Red Sandstone alluvium near the brackish mouth of Salmon River, Truro, Colchester County, Nova Scotia, September 11, 1910, *M. L. Fernald & K. M. Wiegand* 3324 (Gray Herb.).

5. *Dondia maritima* (L.) Druce, Ann. Scot. Nat. Hist. 1896: 42. 1896.

- Chenopodium maritimum* L. Sp. Pl. 221. 1753.
Atriplex maritima Crantz, Inst. 1: 208. 1766.
Salsola maritima Poir. in Lam. Encyc. 7: 291. 1806.
Suaeda maritima Dumort. Fl. Belg. 22. 1827.
Schoberia maritima C. Meyer, in Ledeb. Fl. Alt. 1: 400. 1829.
Chenopodina maritima Moq. in DC. Prodr. 13²: 161. 1849.
Schoberia linifolia Nutt.; Moq. in DC. Prodr. 13²: 161, as synonym. 1849.
Suaeda linearis S. Wats. Proc. Am. Acad. 9: 87, in part. 1874. Not *S. linearis* Moq. 1840.
Lerchea maritima Kuntze, Rev. Gen. 549. 1891.

Ascending or depressed, glabrous, more or less glaucous annual, 0.5–6 dm. high, branched or simple, the branches ascending or decumbent, forming mats 5 dm. or less in diameter; leaves numerous, linear, ascending or spreading, semiterete, acute or obtuse, 1.5–5 cm. long, those of the inflorescence slightly shorter; inflorescence sparsely branched or simple, the flowers 1–4 in each axil; calyx deeply cleft, the lobes rounded at the apex, rounded or obscurely carinate on the back; seed horizontal, 2 mm. broad, reddish-brown or black.

TYPE LOCALITY: Seashores of Europe.

DISTRIBUTION: Coastal marshes, Nova Scotia to Quebec and New Jersey; also in Europe and Asia.

ILLUSTRATIONS: T. Nees, Gen. Fl. Germ. 4: pl. 62; Rep. N. J. Mus. 1910: pl. 56, f. 2; Britt. & Brown, Ill. Fl. f. 1394; ed. 2. f. 1711; Fl. Dan. pl. 489; Engl. Bot. pl. 633; Moss, Cambr. Brit. Fl. pl. 190 (as *Suaeda maritima macrocarpa*), pl. 191 (as *S. maritima flexilis*); Pratt, Fl. Pl. Great Brit. pl. 180, f. 4; Fiori & Paol. Ic. Fl. Ital. f. 1041; Hegi, Ill. Fl. pl. 97, f. 2, f. 557, l-r; F. Muell. Ic. Austr. Sals. pl. 89; Benth. Ill. Handb. f. 833.

6. *Dondia Richii* (Fernald) A. Heller, *Muhlenbergia* 6: 83. 1910.

Suaeda Richii Fernald, *Rhodora* 9: 145. 1907.

Green glabrous annual, the branches procumbent, forming mats 5 dm. or less in diameter; leaves linear or oblong-linear, obtuse or acutish, subcylindric, 8–15 mm. long, those of the inflorescence broader and only 4–5 mm. long; calyx deeply cleft, the lobes rounded on the back; seed 1.25–1.5 mm. broad, black.

TYPE LOCALITY: Wells, Maine.

DISTRIBUTION: Salt marshes along the coast, Nova Scotia to Massachusetts.

7. *Dondia americana* (Pers.) Britton; Britt. & Brown, Ill. Fl. 1: 584. 1896.

Salsola salsa Michx. Fl. Bor. Am. 1: 174. 1803. Not *S. salsa* L. 1762.

Salsola salsa americana Pers. Syn. Pl. 1: 296. 1805.

Chenopodium salsum americanum R. & S. Syst. Veg. 6: 270. 1820.

Suaeda americana Fernald, *Rhodora* 9: 146. 1907.

Green glabrous annual, the branches procumbent, 2–3 dm. long, the flowering ones ascending; lower leaves linear, acute, about 2 cm. long, those of the inflorescence much broader and shorter; calyx deeply cleft, one or two of the sepals more strongly cucullate-carinate than the others; seed horizontal, 1–1.5 mm. broad.

TYPE LOCALITY: Mouth of the St. Lawrence River.

DISTRIBUTION: Salt marshes along the coast, Nova Scotia to Maine.

8. *Dondia linearis* (Ell.) A. Heller, Cat. N. Am. Pl. 3. 1898.

Chenopodium maritimum Pursh, Fl. Am. Sept. 198. 1814. Not *C. maritimum* L. 1753.

Salsola linearis Ell. Bot. S. C. & Ga. 1: 332. 1821.

Suaeda linearis Moq. Chenop. Enum. 130. 1840.

Suaeda maritima Torr. Fl. N. Y. 2: 141. 1843. Not *S. maritima* Dumort. 1827.

Chenopodium maritima erecta Moq. in DC. Prodr. 13^o: 161, in part. 1849.

Chenopodium linearis Moq. in DC. Prodr. 13^o: 164. 1849.

Chenopodium maritima A. Gray, Man. ed. 2. 366. 1856. Not *C. maritima* Moq. 1849.

Suaeda linearis ramosa S. Wats. Proc. Am. Acad. 9: 87, in part. 1874.

Dondia americana Britton; Britt. & Brown, Ill. Fl. 1: 584, as to description and illustration. 1896.

Dondia carinata Millsp. Field Columb. Mus. Publ. Bot. 2: 297. 1909.

Erect annual, or the plants sometimes persisting in warm regions, 2–9 dm. high, green, glabrous, much branched, the branches ascending or spreading; leaves linear, narrowed at the base, acute or obtuse, the lower ones 2–5 cm. long, those of the inflorescence shorter; inflorescence paniculate, much branched, the spikes slender, densely flowered, the flowers several or numerous in each axil; calyx 2 mm. broad, deeply cleft, the lobes obtuse, all equally cucullate-carinate; seed 1–1.5 mm. broad, black and shining, horizontal.

TYPE LOCALITY: Seashores of South Carolina and Georgia.

DISTRIBUTION: In sand or about salt marshes along the coast, Maine to Texas; Bahamas and Cuba.

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 1393 (as *D. americana*); ed. 2. f. 1710.

9. *Dondia mexicana* Standley, sp. nov.

Erect green annual, stout, branched, the branches ascending or nearly erect; leaves numerous but not crowded, linear, the lower ones 1.2–2.5 cm. long, 1.2 mm. wide, acuminate or attenuate, those of the inflorescence shorter; inflorescence paniculately branched, the branches erect, the flowers crowded in the axils and forming spikes 4–5 mm. thick; calyx deeply cleft, the lobes rounded, becoming enlarged and strongly cucullate in age, the fruiting calyx 3 mm. broad; stamens exserted; seed 0.8 mm. in diameter, horizontal, dark brownish-red, shining.

Type collected on alkaline plains, Hacienda de Angostura, State of San Luis Potosí, Mexico, July 15, 1891, C. G. Pringle 3788 (U. S. Nat. Herb. no. 48314).

DISTRIBUTION: Western Texas to San Luis Potosí.

10. *Dondia nigra* (Raf.) Standley.

Chenopodium maritimum Torr. Ann. Lyc. N. Y. 2: 239. 1828. Not *C. maritimum* L. 1753.

Chenopodium nigrum Raf. Atl. Jour. 146. 1832.

Suaeda maritima S. Wats. Bot. King's Expl. 294. 1871. Not *S. maritima* Dumort. 1827.

Suaeda diffusa S. Wats. Proc. Am. Acad. 9: 88. 1874.

Dondia diffusa A. Heller, Cat. N. Am. Pl. 3. 1898.

Green, nearly or quite glabrous, erect, much branched annual or perennial, 2–10 dm. high, the branches ascending or spreading, slender, usually flexuous or even geniculate; leaves linear, 7–25 mm. long, somewhat flattened, spreading or ascending, acute, usually conspicuously contracted at the base, those of the inflorescence much reduced; flowers 1–4 in each axil, the clusters mostly remote; calyx cleft to the middle, green, the lobes obtuse or acutish, rounded on the back; seed usually vertical, 1 mm. broad, black.

TYPE LOCALITY: Upper part of the Canadian River, New Mexico.

DISTRIBUTION: Alkaline soil, Idaho and eastern Oregon to northern Mexico.

11. *Dondia Torreyana* (S. Wats.) Standley.

Chenopodina linearis Torr. in Stansb. Expl. Utah 394. 1853. Not *C. linearis* Moq. 1849.

Suaeda fruticosa S. Wats. Bot. King's Expl. 294. 1871. Not *S. fruticosa* Forsk. 1775.

Suaeda Torreyana S. Wats. Proc. Am. Acad. 9: 88. 1874.

Green, mostly glabrous, branched, erect perennial, 3–7 dm. high, the branches usually slender, ascending, sparsely leafy; leaves linear, 2–3 cm. long, ascending or erect, strongly flattened, acute or acuminate, those of the inflorescence much reduced; flowers 1–5 in each axil, the branches of the inflorescence slender but not flexuous; calyx deeply cleft, green, the lobes obtuse, rounded on the back; seed vertical or horizontal, 1–1.5 mm. broad, black, minutely tuberculate.

TYPE LOCALITY: Mountain on the west shore of the Great Salt Lake, Utah.

DISTRIBUTION: Alkaline soil, eastern Oregon to California, and eastward to western New Mexico.

12. *Dondia insularis* Britton, Bull. N. Y. Bot. Gard. 4: 138. 1906.

Glaucous, glabrous, much branched perennial, 1.5–3 dm. high, the branches spreading or ascending; leaves crowded, very fleshy, oblong to broadly obovate-oblong, 2–5 mm. long, rounded at the apex, narrowed at the base; flowers 1–3 in each axil, shorter than the leaves; calyx cleft to the middle, the lobes rounded at the apex, fleshy, rounded on the back; seed vertical, 1 mm. long, black, and shining.

TYPE LOCALITY: In a salina, Grand Turk, Bahamas.

DISTRIBUTION: Bahamas; Cuba; St. Lucia.

13. *Dondia californica* (S. Wats.) A. Heller, Cat. N. Am. Pl. 3. 1898.

Suaeda californica S. Wats. Proc. Am. Acad. 9: 89. 1874.

Glaucous, glabrous or sparsely villous, ascending or decumbent, branched perennial, 2–8 dm. high, the branches very stout, frutescent below, densely leafy, or the leaves deciduous below; leaves subterete, 1.5–3.5 cm. long, ascending or suberect, acute or acuminate, those of the inflorescence little reduced; flowers 1 or 2 in each axil; calyx deeply cleft, glaucous, the lobes obtuse or acutish, rounded on the back; seed vertical or horizontal, 1.5–2 mm. broad, black, shining.

TYPE LOCALITY: Salt marshes of San Francisco Bay, California.

DISTRIBUTION: Salt marshes along the coast of California and Lower California.

ILLUSTRATION: Jepson, Fl. Calif. f. 91.

14. *Dondia fruticosa* (L.) Druce, List Brit. Pl. 60. 1908.

Chenopodium fruticosum L. Sp. Pl. 221. 1753.

Salsola fruticosa L. Sp. Pl. ed. 2. 324. 1762.

Suaeda fruticosa Forsk. Fl. Aegypt.-Arab. 70. 1775.

Suaeda fruticosa multiflora Torr. Pacif. R. R. Rep. 4: 130. 1857.

Chenopodina Moquini Torr. Pacif. R. R. Rep 7³: 18, hyponym. 1858.

Suaeda Torreyana S. Wats. Proc. Am. Acad. 9: 88, in part. 1874.

Suaeda intermedia S. Wats. Proc. Am. Acad. 14: 296. 1879.

Dondia intermedia A. Heller, Cat. N. Am. Pl. 3. 1898.

Dondia multiflora A. Heller, Cat. N. Am. Pl. 3. 1898.

Dondia conferta Small, Bull. N. Y. Bot. Gard. 1: 280. 1899.

Lerchea conferta Schumann, Bot. Jahresb. 27: 482. 1901.

Dondia Moquini A. Nelson (Bot. Gaz. 34: 363, hyponym. 1902); Abrams, Fl. Los Angeles 131. 1904.

Dondia Wilsonii Millsp. Field Columb. Mus. Publ. Bot. 2: 297. 1909.

Suaeda Moquini Greene (Pittonia 1: 264, hyponym. 1889); A. Nelson; Coult. & Nels. Man. 170. 1909.

Glaucous, nearly or quite glabrous, erect or ascending perennial, fruticose at the base, 2–8 dm. high, much branched, the branches slender or stout, ascending, rather densely leafy; leaves 1–1.5 or rarely 3 cm. long, nearly terete, acute or obtuse, spreading or ascending, those of the inflorescence usually little reduced; flowers 1–5 in each axil, the branches of the inflorescence mostly stout and straight; calyx deeply cleft, glaucous, the lobes obtuse or acute, rounded on the back; seeds mostly horizontal, 0.8 mm. broad, black and shining.

TYPE LOCALITY: Seacoast of France.

DISTRIBUTION: Alkaline soil, Alberta to southern California and northern Mexico; Bahamas and Cuba; also in Europe, Asia, and Africa.

15. *Dondia ramosissima* Standley, sp. nov.

Suaeda suffrutescens S. Wats. Bot. Calif. 2: 59, in part. 1880.

Green, much branched, erect perennial, woody at the base, 1 meter high or less, densely and very finely pubescent throughout, the branches very slender, much elongate, spreading or more rarely ascending, flexuous or geniculate; leaves strongly flattened, 5–20 mm. long, linear, mostly acute or acuminate, or the upper ones obtuse, narrowed at the base, not crowded, those of the inflorescence much reduced; flowers 1.5–2 mm. broad, globose or depressed-globose, 1–4 in each axil, in very slender spikes, the glomerules distant; bractlets acute; calyx deeply cleft, the lobes obtuse or acute, rounded on the back; seed vertical or horizontal, 1 mm. broad, reddish-brown or black.

Type collected at Lees Ferry, Arizona, August 24, 1909, *E. W. Nelson 62* (U. S. Nat. Herb. no. 564515).

DISTRIBUTION: Alkaline plains, western Arizona to southeastern California and Lower California.

16. *Dondia Palmeri* Standley, sp. nov.

Glaucous, much branched perennial, woody at the base; branches stout, ascending or somewhat spreading, mostly simple, densely white-tomentulose when young, often glabrate in age; leaves terete, 3–7 mm. long, 1.5–2 mm. thick, rounded at the apex, narrowed at the base, white-tomentulose when young, becoming glabrate, spreading, those of the inflorescence little reduced; flowers globose-obovoid, 1.5–2 mm. broad, 1 or 2 in each axil; bractlets rounded or obtuse at the apex; calyx glaucous, glabrous or nearly so, cleft to the middle or lower, the lobes obtuse, rounded on the back, fleshy; seed usually horizontal, 1.5 mm. broad, black.

Type collected near Parrás, Coahuila, Mexico, in 1880, *Edward Palmer 1168* (U. S. Nat. Herb. no. 48315).

DISTRIBUTION: Coahuila and Zacatecas.

17. *Dondia tampicensis* Standley, sp. nov.

Green, much branched perennial, the branches stout, ascending or decumbent, copiously short-villous, paniculately branched; leaves terete, 7–15 mm. long, acute or acuminate, spreading, those of the inflorescence little reduced; flowers 1.5–2 mm. broad, globose-obovoid, 1–5 in each axil; bractlets acuminate; calyx glabrous or nearly so, cleft to below the middle, the lobes rounded at the apex, fleshy, rounded on the back; seed usually horizontal, 1 mm. broad, black and shining.

Type collected along the coast near La Barra, Tamaulipas, 8 km. east of Tampico, Mexico, in February, 1910, *Edward Palmer 262* (U. S. Nat. Herb. no. 463200).

18. *Dondia taxifolia* Standley, sp. nov.

Suaeda Torreyana S. Wats. Bot. Calif. 2: 59, in part. 1880.

Dondia californica Abrams, Fl. Los Angeles 131, in part. 1904. Not *Suaeda californica* S. Wats. 1874.

Suaeda californica pubescens Jepson, Fl. Calif. 447, in part. 1914.

Green, much branched perennial, 2–12 dm. high, copiously tomentulose or short-villous throughout; branches very stout, 3–7 mm. in diameter, paniculately branched, the ultimate branches ascending; leaves terete, 12–25 mm. long, acute or acuminate, ascending or spreading, crowded, those of the inflorescence little reduced; flowers globose, 2.5–3 mm. broad, 1–4 in each axil; bractlets acuminate or attenuate; calyx densely pubescent, cleft to the middle or lower, the lobes obtuse or acute, rounded on the back; seed usually vertical, 1.5–2 mm. long, black.

Type collected in salt marshes, Playa del Rey, Los Angeles County, California, June 10, 1902, *Le Roy Abrams 2490* (U. S. Nat. Herb. no. 614215).

DISTRIBUTION: Salt marshes, along the coast of California from Santa Barbara to Los Angeles County, and on San Nicolas and Santa Catalina islands.

19. *Dondia brevifolia* Standley, sp. nov.

Suaeda californica pubescens Jepson, Fl. Calif. 447, in part. 1914.

Green perennial, fruticose at the base, ascending or procumbent, much branched, the branches stout, straight, ascending or rarely spreading; leaves terete, 3–8 mm. long, obtuse or rounded at the apex, narrowed at the base, spreading or ascending, crowded, those of the inflorescence little reduced; flowers globose, 1.5–2 mm. broad, 1–3 in each axil; calyx densely pubescent, cleft to the middle or lower, the lobes obtuse, rounded on the back; bractlets acuminate; seed usually horizontal, 1.5–2 mm. broad, black.

Type collected near Newport, California, in September, 1907, *A. Davidson 1779* (U. S. Nat. Herb. no. 692790).

DISTRIBUTION: Coast of California from Orange County southward; San Clemente Island; Lower California.

20. *Dondia suffrutescens* (S. Wats.) A. Heller, Cat. N. Am. Pl. 3. 1898.

Suaeda suffrutescens S. Wats. Proc. Am. Acad. 9: 88. 1874.

Green, much branched perennial, 3–10 dm. high, copiously tomentulose throughout, the pubescence loose and spreading; branches ascending, paniculately branched; leaves terete, mostly 5–13 mm. long, those of the inflorescence much reduced, all acute, not crowded, ascending or spreading; flowers 1–1.5 mm. broad, globose, 1–6 in each axil, crowded in dense spikes; calyx cleft to below the middle, the lobes obtuse, thin, rounded on the back, densely pubescent; bractlets acuminate or attenuate; stamens exserted; seed usually vertical, 0.7 mm. broad, black.

TYPE LOCALITY: Western Texas.

DISTRIBUTION: Alkaline plains and valleys, western Texas to Arizona and Chihuahua.

X. SALSOLEAE. Herbs or shrubs, the branches often articulate. Leaves opposite or alternate, the blades usually narrow, often much reduced. Flowers mostly perfect, bracteolate, usually solitary in the axils of foliaceous bracts; perianth-segments usually 5 and membranaceous. Fruit included in the usually horizontally winged perianth. Embryo conic-spiral or plane-spiral.

A single genus in North America.

27. SALSOLA.

27. SALSOLA L. Sp. Pl. 222. 1753.

Kali Tourn.; Adans. Fam. Pl. 2: 261. 1763.

Isgarum Raf. Fl. Tell. 3: 46. 1837.

Sarcomorpha Bojer; Moq. in DC. Prodr. 13²: 179, as synonym. 1849.

Soda Fourr. Ann. Soc. Linn. Lyon II. 17: 145. 1869.

Annual or perennial herbs or shrubs, usually branched, glabrous or pubescent. Leaves usually alternate, sessile or clasping, narrow, the apex often pungent. Flowers perfect, small, solitary or fascicled, axillary, bibracteolate; perianth 5- or rarely 4-parted, the segments oblong or lanceolate, concave, in fruit usually transversely carinate and often transversely winged, the basal portions free or connate, the apices free, usually inflexed. Stamens 5 or fewer, hypogynous or rarely inserted on a minute disk; filaments subulate or linear; anthers short or elongate. Stigmas 2 or rarely 3, subulate. Ovule sessile or suspended from a long funicle. Utricle included in the perianth, broadly ovoid or orbicular, the apex concave or convex; pericarp fleshy or membranaceous, free from the seed. Seed horizontal, rarely inverted, erect or oblique, orbicular; endosperm none; embryo spiral or cochleate-spiral, usually green.

Type species, *Salsola Soda* L.

Leaves linear, mostly 1.5–2 mm. broad and 3 cm. long or less, the upper ones swollen at the base in age; calyx in fruit 6–10 mm. broad.

1. *S. Kali*.

Leaves almost filiform, mostly 3–6 cm. long, the upper ones little thickened at the base in age; calyx in fruit 3–6 mm. broad.

2. *S. Pestifer*.

1. *Salsola Kali* L. Sp. Pl. 222. 1753.

Salsola caroliniana Walt. Fl. Car. 111. 1788.

Salsola Kali caroliniana Nutt. Gen. 1: 199. 1818.

Salsola Kali hirsuta Hornem. Oec. Pl. ed. 3. 1: 293. 1821.

Salsola Kali glabra Deth. Consp. Pl. Megalop. 25. 1828.

Salsola Kali crassifolia Reichenb. Fl. Germ. Exc. 583. 1832.

Salsola Kali rubella Moq. Chenop. Enum. 136. 1840.

Annual, 3–6 dm. high, much branched, the branches very stout, ascending or spreading, short-villous or scabrous, sometimes nearly or quite glabrous, striate, commonly tinged with red; leaves linear, usually 1.2–3 cm. long, rarely longer, 1.5–2 mm. wide, pungent-tipped, thick and succulent, scabrous or glabrous, the upper leaves shorter and broader, their bases in age much thickened and indurate and closely enclosing the fruit; fruiting calyx 6–10 mm. wide, transversely winged in age, the wings thin, crenate or dentate, conspicuously veined, often tinged with red, the calyces of the flowers in the lower axils often merely carinate or with short thick wings; seed 2–3 mm. broad, black and shining.

TYPE LOCALITY: Seacoasts of Europe.

DISTRIBUTION: In sand along the coast, Newfoundland to Mississippi, and rarely adventive inland; also in Europe, western Asia, and northern Africa.

ILLUSTRATIONS: E. & P. Nat. Pfl. 3^{1a}: f. 40, S–Z; Britt. & Brown, Ill. Fl. f. 1396; ed. 2. f. 1713; Fl. Dan. pl. 818; Pall. Ill. pl. 28, 29; Gaertn. Fruct. pl. 75; Lam. Tab. Encyc. pl. 181; Engl. Bot. pl. 634; Woodv. Med. Bot. pl. 143; Baxter, Brit. Bot. pl. 255; Sv. Bot. pl. 471; T. Nees, Gen. Fl. Germ. Dicot. 1: pl. 61; Schnizl. Iconogr. pl. 101; Reichenb. Ic. Fl. Germ. 24: pl. 293, f. 1–2; Moss, Cambr. Brit. Fl. pl. 192–194; Pratt, Fl. Pl. Great Brit. pl. 180, f. 5; Benth. Ill. Handb. f. 834; Fiori & Paol. Ic. Fl. Ital. f. 1037; Hegi, Ill. Fl. pl. 97, f. 4; F. Muell. Ic. Austr. Sals. pl. 90; Karst. Deuts. Fl. f. 313; Hegi, Ill. Fl. f. 557, s–y.

2. *Salsola Pestifer* A. Nelson; Coult. & Nels. Man.

169. 1909.

Salsola rosacea Schkuhr, Handb. 1: 175. 1791. Not *S. rosacea* L. 1753.

Salsola Kali tenuifolia Tausch, Flora 11: 326. 1828.

Salsola Tragus Reichenb. Fl. Germ. Exc. 583. 1832. Not *S. Tragus* L. 1756.

Salsola Kali angustifolia Fenzl, in Ledeb. Fl. Ross. 3: 798. 1849.

Salsola Kali pseudotragus G. Beck, in Reichenb. Ic. Fl. Germ. 24: 172. 1909.

Annual, the plants 3–8 dm. high, densely and intricately branched, the stems slender or stout, striate, usually tinged with red or purple, ascending or spreading, forming dense clumps often a meter in diameter, the branches glabrous, scabrous, or short-villous; leaves nearly filiform, the lower ones usually 3–6 cm. long, pungent-pointed, glabrous or scaberulous, deep-green or glaucescent, the upper leaves shorter and broader, little thickened or indurate in age; fruiting calyx 3–6 mm. broad, the segments with thin transverse wings, these conspicuously veined and usually tinged with red, the calyx of the flowers in the lower axils sometimes merely carinate or with very narrow, veinless wings; seed 1.5–2 mm. broad, black or nearly so, shining.

TYPE LOCALITY: Not stated.

DISTRIBUTION: Borders of the Mediterranean Sea, central and southern Russia, and western Asia; thoroughly naturalized in western North America from Minnesota to Saskatchewan, Washington, California, and Texas, and occasional in the eastern United States.

ILLUSTRATIONS: Schkuhr, Handb. 1: pl. 57, a; Reichenb. Ic. Fl. Germ. 24: 293, pl. f. 3–5; Britt. & Brown, Ill. Fl. f. 1397; ed. 2. f. 1714; Iowa Geol. Surv. Bull. 4: f. 271, A; Blatchley, Ind. Weed Book f. 39; Bull. Mich. Exp. Sta. 267: f. 56.

COMPLETED VOLUME

9 : i-iv, 1-542. (Agaricales:) Polyporaceae (pars), Boletaceae, Agaricaceae (pars). Complete in 7 parts.

PARTS OF VOLUMES PREVIOUSLY PUBLISHED

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- 7¹: 1-82. Ustilaginales: Ustilaginaceae, Tilletiaceae.
- 7²: 83-160. Uredinales: Coleosporiaceae, Uredinaceae, Aecidiaceae (pars).
- 7³: 161-268. (Uredinales:) Aecidiaceae (pars).
- 10¹: 1-76. (Agaricales:) Agaricaceae (pars).
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- 15²: 77-166. (Bryales:) Dicranaceae, Leucobryaceae.
- 16¹: 1-88. Ophioglossales: Ophioglossaceae. Marattiales: Marattiaceae. Filicales: Osmundaceae, Ceratopteridaceae, Schizaeaceae, Gleicheniaceae, Cyatheaceae (pars).
- 17¹: 1-98. Pandanales: Typhaceae, Sparganiaceae. Naiadales: Zannichelliaceae, Zosteraceae, Cymodoceaceae, Naiadaceae, Lilaeaceae. Alismales: Scheuchzeriaceae, Alismaceae, Butomaceae. Hydrocharitales: Elodeaceae, Hydrocharitaceae. Poales: Poaceae (pars).
- 17²: 99-196. (Poales:) Poaceae (pars).
- 17³: 197-288. (Poales:) Poaceae (pars).
- 22¹: 1-80. Rosales: Podostemonaceae, Crassulaceae, Penthoraceae, Parnassiaceae.
- 22²: 81-192. (Rosales:) Saxifragaceae, Hydrangeaceae, Cunoniaceae, Iteaceae, Pterostemonaceae, Hamamelidaceae, Altingiaceae, Phyllonomaceae.
- 22³: 193-292. (Rosales:) Grossulariaceae, Platanaceae, Crossosomataceae, Connaraceae, Calycanthaceae, Rosaceae (pars).
- 22⁴: 293-388. (Rosales:) Rosaceae (pars).
- 22⁵: 389-480. (Rosales:) Rosaceae (pars).
- 25¹: 1-88. Geraniales: Geraniaceae, Oxalidaceae, Erythroxylaceae, Linaceae.
- 25²: 89-171. (Geraniales:) Tropaeolaceae, Balsaminaceae, Limnanthaceae, Koeberliniaceae, Zygophyllaceae, Malpighiaceae.
- 25³: 173-261. (Geraniales:) Rutaceae, Surianaceae, Simaroubaceae, Burseraceae.
- 29¹: 1-102. Ericales: Clethraceae, Monotropaceae, Lennoaceae, Pyrolaceae, Ericaceae.
- 34¹: 1-80. (Carduales:) Carduaceae (pars).
- 34²: 81-180. (Carduales:) Carduaceae (pars).

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