

VOLUME 21

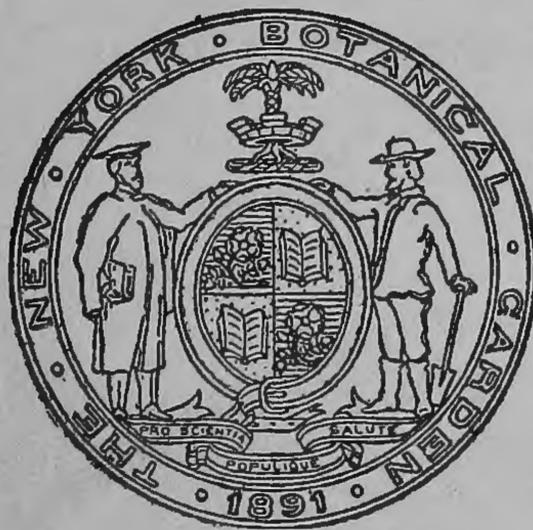
PART 2

NORTH AMERICAN FLORA

(CHENOPODIALES)

AMARANTHACEAE

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

Family 2. AMARANTHACEAE*

BY PAUL CARPENTER STANDLEY

Herbs or shrubs, rarely trees, prostrate, erect, or rarely scandent. Leaves opposite or alternate, estipulate, membranaceous, coriaceous, or fleshy, petiolate or sessile, the blades usually entire. Flowers perfect, polygamous, or dioecious, bracteate and bibracteolate, or rarely in clusters of 2-5 and each cluster subtended by a bract and 2 bractlets, solitary, capitate, spicate, or racemose; bracts and bractlets usually hyaline, never foliaceous. Perianth regular or nearly so, rarely wanting, the segments commonly 5, sometimes 1-4, scarious, hyaline, or chartaceous, very rarely herbaceous, free or united at the base, usually erect, equal, or the inner ones usually smaller, glabrous or variously pubescent, usually green, white, or yellow, rarely red. Stamens as many as the perianth-segments or fewer, rarely more numerous, opposite the segments, hypogynous or perigynous; filaments free, or united into a short or elongate, 4-10-lobed tube, the antheriferous lobes linear, subulate, or ligulate, entire or lobed, laciniate, or dentate, often with intermediate entire, dentate, or laciniate, short or elongate lobes (pseudostaminodia); anthers dorsifixed, short or elongate, 2- or 4-celled, dehiscent by introrse slits; pollen-grains minute, globose. Ovary ovoid, ellipsoid, or globose, superior, free or adnate to the base of the perianth, often compressed, sometimes obcordate, glabrous or pubescent, 1-celled; styles 1 or 2, or wanting; stigma capitate, penicillate, or the stigmatic branches 2 or 3, short or elongate; ovules solitary or numerous, campylotropous, erect or suspended from the apex of an elongate basal funicle. Fruit a membranaceous or fleshy utricle, evalvate, indehiscent, irregularly dehiscent, or circumscissile. Seeds erect or inverted, lenticular, oblong, or reniform-orbicular, naked or arillate; testa crustaceous or coriaceous, usually lustrous, smooth, punctulate, or granulate; endosperm copious, farinaceous; embryo annular or hippocrepiform, the cotyledons incumbent, the radicle superior or inferior.

Ovules 2 or more; anthers 4-celled.

I. CELOSIEAE.

Ovule solitary.

Anthers 4-celled.

Seed erect; radicle inferior; utricle dehiscent or indehiscent.

II. AMARANTHEAE.

Seed inverted; radicle ascending or superior; utricle indehiscent.

III. CENTROSTACHYDEAE.

Anthers 2-celled.

Stamens perigynous.

IV. BRAYULINEAE.

Stamens hypogynous.

Perianth-segments united into a tube, this indurate and variously appendaged in fruit.

V. FROELICHIEAE.

Perianth-segments usually free, unchanged in fruit.

VI. GOMPHRENEAE.

I. CELOSIEAE. Herbs or shrubs. Leaves alternate. Flowers perfect; perianth-segments free. Stamens hypogynous, the filaments connate at the

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base; anthers 4-celled. Ovary 2-many-ovuled, the ovules erect. Radicle inferior or ascending.

Fruit baccate; perianth-segments spreading in age.
Fruit dry; perianth-segments erect.

1. PLEUROPETALUM.
2. CELOSIA.

1. **PLEUROPETALUM** Hook. f. (Proc. Linn. Soc. 1: 278, hyponym.
1845) Lond. Jour. Bot. 5: 108. 1846.

Allochlamys Moq. in DC. Prodr. 13²: 463. 1849.

Melanocarpum Hook. f. in Benth. & Hook. Gen. 3: 24. 1880.

Glabrous shrubs with branched stems. Leaves alternate, petiolate, the blades entire. Flowers perfect, bracteate and bibracteolate, pedicellate, racemose or paniculate, greenish; perianth-segments 5, subcoriaceous, equal, obtuse, striate-nerved, spreading in fruit. Stamens 5-8; filaments subulate-filiform, connate at the base into a short cup; anthers 4-celled. Ovary globose-ovoid, attenuate to a short style; stigmas 2-4, short, subulate; ovules numerous, on capillary funicles. Fruit baccate, globose, rupturing irregularly. Seeds numerous, reniform-orbicular, lenticular, erect, the testa black, lustrous; embryo annular, surrounding the granulose endosperm; cotyledons linear; radicle inferior.

Type species, *Pleuropetalum Darwinii* Hook. f.

1. **Pleuropetalum Sprucei** (Hook. f.) Standley.

Melanocarpum Sprucei Hook. f. in Benth. & Hook. Gen. 3: 24. 1880.

Pleuropetalum costaricense Wendl.; (Hemsl. Biol. Centr. Am. Bot. 3: 12, hyponym. 1882) Hook. f. Bot. Mag. pl. 6674. 1883.

Pleuropetalum tucurriquense Donn. Smith, Bot. Gaz. 61: 387. 1916.

Shrub with smooth or sulcate, lineolate, glabrous branches, the branchlets papillose when dried; petioles slender, 2-3 cm. long; leaf-blades elliptic or ovate-elliptic, 10-18 cm. long, 4.5-6.5 cm. wide, somewhat abruptly acuminate at the apex, acute or abruptly acuminate at the base, thin, obscurely papillose on the upper surface when dried, slightly paler beneath, the lateral veins conspicuous, 12-14 on each side, arcuate-ascending; flowers paniculate, the panicles terminal and axillary, 3.5-6 cm. long, densely flowered, the bracts at the bases of the pedicels ovate, 1.5-2 mm. long; bractlets ovate, 1 mm. long; flowers yellowish-green, the sepals ovate-oval, 2.5 mm. long, glabrous; stamens 5-8; fruit red, globose, 5 mm. in diameter; seeds 1.5 mm. in diameter, smooth.

TYPE LOCALITY: At the foot of Mount Chimborazo, Ecuador.

DISTRIBUTION: Vera Cruz to Costa Rica and Ecuador.

ILLUSTRATION: Bot. Mag. pl. 6674.

2. **CELOSIA** L. Sp. Pl. 205. 1753.

Amaranthus Adans. Fam. Pl. 2: 269. 1763. Not *Amaranthus* L. 1753.

Sukana Adans. Fam. Pl. 2: 269. 1763.

Lestibudesia Thouars, Hist. Vég. Iles Afr. 53. 1806.

Lophoxera Raf. Fl. Tell. 3: 42. 1837.

Gonufas Raf. Sylva Tell. 124. 1838.

Annual or perennial herbs or shrubs, pubescent or glabrous, with simple or branched, erect or rarely scandent, terete or angulate stems. Leaves alternate, usually petiolate, the blades entire or lobed. Flowers perfect, bracteate and bibracteolate, in dense, terminal or axillary spikes, or fascicled along the simple or branched flowering branches, sessile or pedicellate, white, yellow, greenish, or red; perianth 5-parted, the segments scarious, striate-nerved. Stamens 5; filaments subulate or filiform, connate at the base into a short cup; anthers 4-celled. Ovary subglobose, ovoid, or cylindrical; style elongate, short, or none, sometimes elongate after anthesis; stigmas 2 or 3, subulate or capitate; ovules 2 or more, on elongate funicles. Utricle included in the perianth or exserted, sometimes thickened at the apex, circumscissile, rarely indehiscent or rupturing irregularly. Seeds 2 to many, usually erect, lenticular, smooth, shining; embryo annular, the endosperm farinose; radicle inferior or ascending.

Type species, *Celosia argentea* L.

- Inflorescence of simple terminal spikes 1.5–2 cm. in diameter; sepals bright-white, pink, or red, 6–9 mm. long. 1. *C. argentea*.
- Inflorescence of terminal or axillary panicles composed of few or numerous spikes 3–10 mm. in diameter; sepals stramineous to dark-brown, 2–6 mm. long. 2. *C. Palmeri*.
- Sepals 5–6 mm. long, prominently nerved. 3. *C. pleiogyna*.
- Leaf-blades hastately lobed; stigmas 2. 4. *C. virgata*.
- Leaf-blades not lobed; stigmas 3–5. 5. *C. nitida*.
- Sepals obtuse; stigmas 4 or 5. 6. *C. floribunda*.
- Sepals acuminate to acutish; stigmas 3. 7. *C. Moquini*.
- Seeds 5–8; leaf-blades ovate to lanceolate, decurrent nearly to the base of the petiole. 8. *C. Orcuttii*.
- Seeds about 20; leaf-blades deltoid to triangular-lanceolate, shortly decurrent.
- Sepals 2.5 mm. long or less, obscurely nerved.
- Leaf-blades, at least most of them, hastately lobed, puberulent beneath.
- Leaf-blades entire, glabrous.
- Utricle stipitate; sepals dark-brown.
- Utricle sessile; sepals stramineous.

1. *Celosia argentea* L. Sp. Pl. 205. 1753.

Celosia cristata L. Sp. Pl. 205. 1753.

Celosia margaritacea L. Sp. Pl. ed. 2. 297. 1763.

Celosia marilandica Retz. Obs. Bot. 3: 27. 1783.

Celosia pallida Salisb. Prodr. 145. 1796.

Amaranthus purpureus Nieuwl. Am. Midl. Nat. 3: 279. 1914.

Erect annual; stems stout, 3–10 dm. high, simple or much branched, the branches erect or ascending, green, glabrous; petioles 3 cm. long or less, often margined to the base; leaf-blades 4–12 cm. long, 0.3–6 cm. wide, linear to lanceolate, ovate, or rounded-ovate, acute to attenuate or abruptly acuminate at the apex, rounded and somewhat decurrent or acute or attenuate at the base, often sessile, entire, bright-green, glabrous, the upper blades usually smaller and narrower than the lower ones; flowers subsessile, in dense spikes terminating the branches, the spikes oblong or elongate, 2–20 cm. long, 1.5–2 cm. in diameter, obtuse or acute; bracts lanceolate or ovate, half as long as the sepals or shorter, acuminate, carinate, scarious; sepals 6–9 mm. long, lance-oblong, acute, carinate, usually parallel-nerved at the base, thin, white, pink, or red; stamens 5, the filaments slender, slightly exceeding the ovary; style slender, glabrous, equaling or exceeding the sepals; stigmas 2 or 3, very short; utricle ovoid or subglobose; seeds 3–8, about 1.2 mm. in diameter, rotund, nearly smooth, black and lustrous.

TYPE LOCALITY: Tropical America.

DISTRIBUTION: Central America and the West Indies; occasionally escaped from cultivation in the eastern United States; also in tropical South America, Asia, and Africa.

ILLUSTRATIONS: Martyn, Hist. Pl. Rar. pl. 7; Rheede, Hort. Malab. 10: pl. 38, 39; Wight, Ic. pl. 1767; E. & P. Nat. Pfl. 3^{1a}: f. 51, A–C.

2. *Celosia Palmeri* S. Wats. Proc. Am. Acad. 18: 143. 1883.

Low shrub, much branched; branches slender, glabrous up to the inflorescence, or sparsely puberulent; petioles slender, 3–12 mm. long; leaf-blades lanceolate to lance-triangular in outline, 1.5–5 cm. long, 4–25 mm. wide, more or less asymmetric, hastately lobed, the lobes shallow and rounded, acute or obtuse at the apex, obtuse to cuneate at the base, shortly decurrent, green, glabrous, or sparsely puberulent beneath; flowers few, sessile in short spikes 1–2 cm. long and 8 mm. in diameter, 2–5 spikes clustered at the end of each branch, the rachises of the inflorescence sparsely tomentulose; bracts ovate or ovate-oblong, half as long as the sepals or shorter, acute to acuminate, often with a pungent tip, sparsely villous; sepals 5 mm. long, oblong, acute or acutish, pale- or deep-brown, thin, many-nerved; stamens 5, the filaments equaling or exceeding the ovary, dilated at the base, the intervening sinuses obtuse; style longer than the ovary; stigmas 2, shorter than the style; utricle elongate-ovoid, shorter than the sepals; seeds 3 or 4, rotund, 1 mm. in diameter, smooth, black, shining.

TYPE LOCALITY: Monclova, Coahuila.

DISTRIBUTION: Western Texas and northeastern Mexico.

3. *Celosia pleiogyna* Kuntze, Rev. Gen. Pl. 541. 1891.

Low shrub; branches slender, smooth, glabrous; petioles 6–15 mm. long, slender; leaf-blades lance-oblong, symmetric, 5.5–9 cm. long, 1.5–3.5 cm. wide, abruptly acuminate at the apex, rounded to acute at the base, glabrous, deep yellowish-green, inconspicuously nerved; flowers sessile, in loose terminal or axillary panicles composed of loosely flowered spikes 1–4 cm. long and 1 cm. in diameter; bracts one fourth as long as the sepals, rounded-ovate, obtuse, carinate; sepals 5 mm. long, oblong or ovate-oblong, obtuse, finely parallel-nerved, dark-brown; stamens not exceeding the ovary, the sinuses between the filaments obtuse; style very short, stout, much exceeded by the 4 or 5 elongate stigmas; utricle ovoid, shorter than the sepals.

TYPE LOCALITY: Eastern Costa Rica.
DISTRIBUTION: Eastern Costa Rica.

4. *Celosia virgata* Jacq. Coll. Bot. 2: 279. 1788.

Lestibudesia virgata R. Br. Prodr. 414. 1810.
Achyranthes rivinaefolia Desf. Cat. Hort. Par. ed. 3. 39, hyponym. 1829.

Stems erect, 5–10 dm. high, herbaceous, or fruticose below, sparingly branched, green, glabrous, striate-angled; petioles shorter than the blades, winged nearly or quite to the base; leaf-blades ovate to lanceolate or elliptic, 4–15 cm. long, 1.5–9 cm. wide, acuminate at the apex, usually with a short slender cuspidate tip, acute or abruptly acuminate at the base, decurrent, entire, thin, green, glabrous, or sparsely pubescent beneath along the nerves, prominently veined, with small petioled falcate leaves often present in the axils; inflorescence of terminal or axillary panicles, these composed of few, sessile or pedunculate, densely flowered spikes 1–5 cm. long and about 7 mm. thick; bracts one third to one half as long as the sepals, lanceolate or ovate, abruptly attenuate to a subulate tip, carinate, often ciliolate; sepals 5–6 mm. long, lance-elliptic, acuminate, dark-brown, firm, prominently parallel-veined; stamens about equaling the ovary; style short, much shorter than the utricle, the 3 stigmas shorter than the style; utricle globose-ovoid, shorter than the sepals; seeds 5–8, 0.6 mm. in diameter, nearly smooth, black, lustrous.

TYPE LOCALITY: Not stated.
DISTRIBUTION: Cuba; Porto Rico; southeastern Mexico; also in northern South America.
ILLUSTRATION: Jacq. Ic. Pl. Rar. *pl.* 339.

5. *Celosia nitida* Vahl, Symb. Bot. 3: 44. 1794.

Lestibudesia paniculata R. Br. Prodr. 414. 1810. Not *Celosia paniculata* L. 1753.
Lophoxera paniculata Raf. Fl. Tell. 3: 42. 1837.
Gonufas paniculata Raf. Sylva Tell. 124. 1838.
Celosia texana Scheele, Linnaea 22: 148. 1849.

Stems slender, erect or clambering over shrubs, 3–15 dm. long, fruticose at the base, or sometimes herbaceous throughout, glabrous, green or glaucescent, smooth or striate; petioles slender, 0.5–2 cm. long, not margined; leaf-blades deltoid to ovate, rhombic-ovate, or triangular-lanceolate, usually asymmetric, 2–7 cm. long, 1–4 cm. wide, obtuse to acuminate at the apex, obtuse, truncate, or somewhat oblique at the base, slightly decurrent, deep-green, glabrous, often lustrous, prominently nerved beneath, with small, asymmetric, often falcate leaves frequently present in the axils; flowers in loose terminal or axillary panicles composed of few loosely flowered, sessile or pedunculate spikes 1–4 cm. long and 7–10 mm. thick; bracts rounded-ovate, about one fourth as long as the sepals, obtuse or acutish, carinate, often ciliolate; sepals 5 mm. long, oblong or oval, acute or acutish, mucronulate, firm, dark-brown or yellowish, prominently and finely parallel-nerved; stamens equaling the ovary; style stout, 1 mm. long or less, longer than the 3 stout stigmas; utricle ovoid, equaling or shorter than the sepals; seeds numerous, about 20, 1 mm. in diameter, smooth or obscurely punctulate, black and lustrous.

TYPE LOCALITY: West Indies.
DISTRIBUTION: Florida keys; southwestern Texas to northeastern Mexico; Yucatán; general in the West Indies; also on the northern coast of South America.

6. *Celosia floribunda* A. Gray, Proc. Am. Acad. 5: 167. 1861.

Shrub 4 m. high or less, much branched; branches stout, striate, green or glaucous, glabrous, at least up to the inflorescence; petioles 1–4 cm. long, often margined or winged nearly to the base; leaf-blades 3–18 cm. long, 5–9 cm. wide, from triangular-ovate and nearly entire or subhastate to narrowly oblong and subhastate or even linear, the basal lobes rounded, the blades acutish to rounded at the apex, obtuse to acute at the base and often decurrent, subcoriaceous, prominently reticulate-veined, deep-green or yellowish-green, usually glabrous on the upper surface, scabro-puberulent beneath; flowers very numerous, sessile in slender, loosely flowered spikes 2–15 cm. long and 3–4 mm. thick, these aggregate in a dense corymbiform panicle 7–25 cm. high, the rachises of the inflorescence sparsely puberulent; bracts rounded-ovate, one third to one half as long as the sepals, rounded at the apex; sepals oval or oblong, 2 mm. long, rounded at the apex, thin, stramineous or whitish, not carinate, faintly nerved; stamens 5, slightly exceeding the ovary; style short, equaling or shorter than the ovary, much shorter than the utricle; stigmas 3, longer than the style; utricle globose, equaling or slightly exceeding the sepals; seeds 2–4, rotund, 1.2 mm. in diameter, black or dark-brown, smooth, shining.

TYPE LOCALITY: Vicinity of Cape San Lucas, Lower California.
DISTRIBUTION: Southern Lower California.

7. *Celosia Moquini* Guillem.; Moq. in DC. Prodr. 13²: 239. 1849.

Chamissoa paniculata Moq. in DC. Prodr. 13²: 239, as synonym. 1849.

Stems slender, erect, branched, striate-angled, purplish; petioles 8–16 mm. long; leaf-blades 15–30 cm. long, 4–6.5 cm. wide, elliptic-lanceolate, acute at the apex, attenuate at the base, mucronulate, thin, pale-green, glabrous, the upper ones lanceolate to nearly linear; flowers sessile, in terminal and axillary panicles 30 cm. long or more and 7–10 cm. wide, the branches of the inflorescence slender, puberulent, purple; bracts triangular-ovate, carinate, brownish-white, one fifth as long as the sepals; sepals oblong-ovate, scarious, dark-brown at the base, obscurely nerved; ovary depressed-ovate, short-stipitate, 2-ovuled; style short; stigmas 2, slender.

TYPE LOCALITY: Mexico.
DISTRIBUTION: Southern Mexico.

8. *Celosia Orcuttii* Greenman, Field Columb. Mus. Publ. Bot. 2: 330. 1912.

Stems slender, striate-angled, glabrous, green or reddish; petioles stout, 7–12 mm. long; leaf-blades 6–17 cm. long, 1.8–5.7 cm. wide, narrowly obovate to elliptic-lanceolate, acute at the apex, long-attenuate at the base, yellowish-green, glabrous; flowers sessile, in loose, narrow, terminal or axillary panicles 6–40 cm. long, composed of slender, rather densely flowered, paniculate spikes 1–5 cm. long and 5 mm. thick; bracts about one fourth as long as the sepals, ovate or rounded-ovate, obtuse, thin, carinate; sepals 2.5 mm. long, ovate or oblong-ovate, obtuse or rounded at the apex, thin, stramineous, faintly nerved; stamens about equaling the ovary, the cupule 1 mm. high, the sinuses between the filaments obtuse; style very short, much exceeded by the 2 stigmas; utricle subglobose, sessile, shorter than the sepals; seeds 1–1.5 mm. in diameter, black, shining.

TYPE LOCALITY: Vicinity of Colima, Colima.
DISTRIBUTION: Vicinity of the type locality.

II. AMARANTHEAE. Herbs or shrubs. Leaves alternate. Flowers perfect, polygamous, or dioecious; perianth-segments distinct. Stamens hypogynous, the filaments distinct or united at the base; anthers 4-celled. Ovary 1-ovuled, the ovule erect. Radicle superior.

Flowers perfect; filaments united at the base.

Seeds not arillate.

Seeds arillate.

Flowers polygamous or dioecious.

Pistillate flowers with a perianth of 1-5 sepals.

Pistillate flowers without a perianth.

Bracts small and inconspicuous, not foliaceous, scarcely if at all exceeding the flowers; utricle usually indehiscent, rarely circumscissile.

Bracts large, foliaceous, complicate, several times longer than the flowers; utricle circumscissile.

3. LAGREZIA.

4. CHAMISSOA.

5. AMARANTHUS.

6. ACNIDA.

7. ACANTHOCHITON.

3. LAGREZIA Moq. in DC. Prodr. 13²: 252. 1849.

Erect or decumbent herbs or shrubs, with branched stems. Leaves alternate, petiolate, entire. Flowers perfect, bracteate and bibracteolate, sessile or subsessile, arranged in terminal and axillary, simple or paniculate spikes; perianth scarious, 5-parted, the segments equal, erect, glabrous. Stamens 5, the filaments united at the base into a short cup; anthers 4-celled. Ovary 1-ovuled, the ovule erect on an elongate funicle; style short; stigmas 2 or 3, spreading or recurved. Utricle circumscissile, included in the perianth. Seed erect, lenticular, the testa crustaceous; embryo annular, surrounding the farinaceous endosperm; radicle inferior.

Type species, *Celosia madagascariensis* Poir.

1. *Lagrezia monosperma* (Rose) Standley, Jour. Wash. Acad. Sci. 5: 393. 1915.

Celosia ? monosperma Rose, Contr. U. S. Nat. Herb. 1: 352. 1895.

Shrub 2-5 m. high; branches slender, smooth, glabrous; leaves numerous, the upper somewhat reduced, the petioles slender, 1-2.5 cm. long, the blades 5-12 cm. long, 1.5-5 cm. wide, ovate to lanceolate, acute or acuminate at the apex, abruptly acute or acuminate at the base, often slightly decurrent, yellowish-green, glabrous; inflorescence a terminal compound panicle 1-3 dm. long and of the same width, composed of very numerous sessile flowers in slender flexuous spikes 1-3 cm. long and 4-7 mm. in diameter, the rachises of the inflorescence puberulent; bracts ovate, acute or acuminate, one third to one half as long as the sepals, thin, stramineous, carinate; sepals oblong or oval, 3 mm. long, acute or obtuse, stramineous, finely nerved, carinate; filaments slender, nearly equaling the sepals, the sinuses between their bases rounded; style very short, exceeded by the 2 stout recurved stigmas; utricle ovoid, much shorter than the sepals; seed 1 mm. in diameter, reddish-brown, smooth, shining.

TYPE LOCALITY: Mountains near Manzanillo, Colima.

DISTRIBUTION: Southwestern Mexico.

4. CHAMISSOA H. B. K. Nov. Gen. & Sp. 2: 196. 1817.

Kokera Adans. Fam. Pl. 2: 269, hyponym. 1763.

Erect or climbing, pubescent or glabrous herbs or shrubs. Leaves alternate, petiolate, the blades broad. Flowers perfect, or sometimes monoecious, abortive stamens present in the pistillate flowers and an abortive ovary in the staminate flowers, each flower subtended by usually 3 bracts; inflorescence of few or many, axillary or terminal, simple or paniculate, loosely or densely flowered spikes; sepals 5. Stamens 5, connate into a cup at the base; anthers 4-celled, ovoid; filaments subulate; staminodia none. Ovary 1-ovuled; style short or elongate; stigmas 2, short or elongate. Utricle thin-walled, dehiscent at or below the middle, circumscissile, surrounded by the persistent calyx. Seed vertical, reniform-lenticular, involved in a well developed aril, or the aril minute; endosperm central; embryo annular; radicle superior.

Type species, *Achyranthes altissima* Jacq.

Style short, much shorter than the stigmas; spikes paniculate; aril completely enclosing the seed.

Style elongate, longer than the stigmas; spikes mostly axillary, simple; aril minute.

1. *C. altissima*.

2. *C. Maximiliani*.

1. *Chamissoa altissima* (Jacq.) H. B. K. Nov. Gen. & Sp. 2: 197.
1817.

Celosia paniculata L. Sp. Pl. ed. 2. 298. 1762. Not *C. paniculata* L. 1753.
Achyranthes altissima Jacq. Enum. Pl. Carib. 17. 1762.
Celosia sparsa Forsyth; Moq. in DC. Prodr. 13²: 250, as synonym. 1849.
Achyranthes baccata Pav.; Moq. in DC. Prodr. 13²: 250, as synonym. 1849.
Chamissoa altissima laxiflora Moq. in DC. Prodr. 13²: 251. 1849.
Chamissoa altissima densiflora Moq. in DC. Prodr. 13²: 251. 1849.
Chamissoa Martii Moq. in DC. Prodr. 13²: 252. 1849.
Kokera paniculata Kuntze, Rev. Gen. Pl. 542. 1891.

Stems stout, suffrutescent at the base, 6–20 dm. long or more, divaricately branched, usually climbing over trees or shrubs, sometimes erect, smooth or sulcate, green, glabrous or sparsely pilose; petioles slender, 1–3.5 cm. long; leaf-blades 6–18 cm. long, 2–8.5 cm. wide, ovate, ovate-oblong, lanceolate, or oval, abruptly acuminate or acute at the apex, acute to truncate at the base, glabrous, or sparsely pilose beneath, bright-green; flowers in large terminal and axillary, naked or leafy panicles composed of numerous stout or slender, densely or loosely flowered spikes 2–20 cm. long and 0.6–2 cm. thick, the sterile spikes more slender and less densely flowered than the fertile ones, the rachises of the inflorescence commonly pubescent; flowers greenish-white; bracts thin, about half as long as the sepals, ovate or broadly ovate, mucronate; sepals 3–4 mm. long, oval to oblong or ovate, acute or acuminate, sometimes mucronate, firm in age, carinate, prominently and coarsely nerved; style shorter than the elongate stigmas; utricle globose or oblong-ovoid, equaling or slightly exceeding the sepals, margined and usually depressed at the apex, circumscissile at or below the middle; aril bivalvate, enclosing the seed; seed flat, 2–2.5 mm. in diameter, black and lustrous, punctulate.

TYPE LOCALITY: Jamaica.

DISTRIBUTION: In thickets, subtropical Florida (?); southern and western Mexico and throughout Central America; West Indies; also from Colombia to Peru and Brazil.

ILLUSTRATIONS: Sloane, Hist. Jam. *pl.* 91, *f.* 2; H. B. K. Nov. Gen. & Sp. *pl.* 125.

2. *Chamissoa Maximiliani* Mart.; Moq. in DC. Prodr. 13²: 251.
1849.

Stems stout, herbaceous or suffruticose, erect or subscandent, 6–10 dm. long, sulcate, sparsely villous above; petioles slender, 0.5–3 cm. long, usually sparsely villous; leaf-blades 3.5–8 cm. long, 1–2.5 cm. wide, narrowly ovate, ovate, or ovate-oblong, acuminate at the apex, acute or rounded at the base, yellowish-green, puberulent along the nerves, the margins often repand-denticulate; flowers in dense, erect, axillary and terminal spikes 2–6 cm. long and 6–10 mm. thick; bracts lanceolate to ovate, half as long as the sepals, 1-nerved, acuminate to the mucronate apex; sepals 3 mm. long, narrowly oblong, acuminate, pungent, carinate, coarsely nerved; style elongate, exceeding the stigmas; utricle shorter than sepals, depressed and margined at the apex; aril minute, transverse, linear; seed foveolate-punctulate, black, 1.5 mm. in diameter.

TYPE LOCALITY: Brazil.

DISTRIBUTION: Costa Rica; also from Surinam to Brazil.

ILLUSTRATIONS: Mart. Fl. Bras. 5¹: *pl.* 74, *f.* 1; E. & P. Nat. Pfl. 3^{1a}: *f.* 54 (as *C. acuminata*).

DOUBTFUL SPECIES

CHAMISSOA MACROCARPA H. B. K. Nov. Gen. & Sp. 2: 197. 1817. Described from Colombia. Several times reported from Mexico, but the specimens so named are probably all *C. altissima*.

5. AMARANTHUS L. Sp. Pl. 989. 1753.

Bliton Adans. Fam. Pl. 2: 506. 1763.

Bajan Adans. Fam. Pl. 2: 506. 1763.

Roemeria Moench, Meth. 341. 1794. Not *Roemeria* Medic. 1792.

Glomeraria Cav. Descr. 319. 1803.

Dimeandra Raf. Neogen. 2. 1825.

Scleropus Schrad. Ind. Sem. Hort. Gott. 1835; Linnaea 11: Litt.-ber. 89. 1837.

Dimeianthus Raf. Fl. Tell. 3: 41. 1837.

Amblogyna Raf. Fl. Tell. 3: 42. 1837.

Euxolus Raf. Fl. Tell. 3: 42. 1837.

Pentrius Raf. Fl. Tell. 3: 42. 1837.

Albersia Kunth, Fl. Berol. ed. 2. 144. 1838.

Mengea Schauer, in Meyen, Nova Acta Acad. Leop.-Carol. 19: Suppl. 1: 405. 1843.

Pyxidium Moq. in DC. Prodr. 13²: 262. 1849.

Sarratia Moq. in DC. Prodr. 13²: 268. 1849.

Galliaria Bubani, Fl. Pyren. 1: 184. 1897.

Annual herbs, erect or prostrate, glabrous or pubescent, usually branched. Leaves alternate, petiolate, entire or rarely sinuate-dentate, often mucronate. Flowers small, monoecious, dioecious, or polygamous, bracteate and bibracteolate, glomerate, the glomerules axillary or spicate or paniculate; sepals 5 or rarely 1-3, membranaceous, equal or subequal, sometimes indurate at the base after anthesis, erect in fruit. Stamens 5 or rarely 1-3; filaments filiform or subulate, distinct; anthers oblong or linear-oblong, 4-celled. Ovary ovoid, compressed; style short or wanting; style-branches 2 or 3, subulate or filiform, papillose or pubescent; ovule 1, subsessile, erect. Utricle usually included in the perianth, compressed, indehiscent or circumscissile or bursting irregularly, membranaceous or coriaceous, entire or 2-3-dentate at the apex. Seed erect, compressed, smooth; embryo annular, the endosperm farinaceous; radicle inferior.

Type species, *Amaranthus caudatus* L.

Sepals of the pistillate flowers spatulate, usually contracted into a narrow claw at the base, more or less urceolate, at least in age, or, if not urceolate or spatulate, the flowers dioecious.

Inflorescence of axillary, few- or many-flowered clusters; stems weak, ascending or prostrate.

Pedicels and bracts much thickened and indurate.

Utricle indehiscent; style-branches 2.

Utricle circumscissile; style-branches 3.

Pedicels and bracts not thickened or indurate.

Utricle circumscissile; leaf-blades suborbicular to obovate or oval, the leaves not crowded.

Utricle indehiscent; leaf-blades oblong-lanceolate, the leaves crowded at the ends of the branches.

Inflorescence of terminal spikes but clusters of flowers usually present also in the axils of the leaves; stems stout, usually erect.

Flowers dioecious.

Utricle indehiscent.

Plants prostrate or ascending; pistillate sepals greenish, spatulate.

Sepals of the pistillate flowers rounded or obtuse at the apex, spreading from the middle, 3-3.5 mm. long; sepals of the staminate flowers 3 mm. long.

Sepals of the pistillate flowers retuse, 2.2-2.9 mm. long, erect; sepals of the staminate flowers 2.3 mm. long.

Plants erect; pistillate sepals oblong, tinged with red.

Utricle circumscissile.

Bracts 2-3 times as long as the pistillate calyx.

Plants viscid-pubescent; leaf-blades obtuse to rounded at the apex.

Plants not viscid-pubescent; leaf-blades attenuate to acutish at the apex.

Bracts equaling or shorter than the pistillate calyx.

Stems erect; leaf-blades oval-oblong to oblong-linear; bracts lanceolate; plants pale-green.

Stems spreading; leaf-blades oval to suborbicular; bracts ovate or broadly ovate; plants deep-green.

Flowers monoecious.

Utricle indehiscent.

Inflorescence narrow, spikelike, of numerous dense clusters; leaf-blades lanceolate to linear-oblong; sepals of the pistillate flowers 2 mm. long.

Inflorescence a broad panicle composed of numerous slender spikes; leaf-blades ovate or oblong-ovate; sepals of the pistillate flowers 3 mm. long.

Utricle dehiscent.

Stamens 5.

Bracts shorter than the pistillate perianth; leaf-blades obtuse.

Bracts longer than the pistillate perianth.

Leaf-blades obtuse or retuse; inflorescence naked above.

Leaf-blades acute; inflorescence leafy throughout.

Stamens 2 or 3.

1. *A. crassipes*.

2. *A. scleropoides*.

3. *A. polygonoides*.

4. *A. Berlandieri*.

5. *A. Greggii*.

6. *A. annectens*.

7. *A. ambigenus*.

8. *A. Watsoni*.

9. *A. Palmeri*.

10. *A. Torreyi*.

11. *A. myrianthus*.

12. *A. obcordatus*.

13. *A. scariosus*.

14. *A. chihuahuensis*.

15. *A. lepturus*.

16. *A. Bigelovii*.

- Sepals of the pistillate flowers with fimbriate margins. 17. *A. fimbriatus*.
- Sepals of the pistillate flowers with entire or crenulate margins.
- Utricle longer than the sepals; pistillate sepals narrowly obovate, obtuse or acute, 1-nerved; bracts about as long as the sepals; glomerules of flowers much shorter than the petioles. 18. *A. Brandegei*.
- Utricle shorter than the sepals; sepals broadly spatulate, with evident lateral veins.
- Bracts half as long as the flowers or shorter; axillary glomerules of flowers shorter than the petioles. 19. *A. venulosus*.
- Bracts equaling or exceeding the flowers; axillary glomerules mostly equaling or exceeding the petioles. 20. *A. Pringlei*.
- Sepals of the pistillate flowers oblong to obovate, not contracted into a claw, or, if somewhat spatulate, not urceolate; flowers monoecious.
- Utricle dehiscent.
- Inflorescence of terminal or axillary, simple or paniculate spikes, glomerules of flowers often present also in the axils of the leaves.
- Spines wanting; utricle regularly circumscissile.
- Bracts longer than the flowers, or, if shorter, the sepals shorter than the utricle.
- Pistillate sepals rhombic-obovate to broadly spatulate, the edges overlapping; terminal spikes usually recurved from the base. 21. *A. caudatus*.
- Pistillate sepals lanceolate, elliptic, oblong, or narrowly spatulate, separate, or at most the edges barely touching; spikes erect or the uppermost recurved from the middle.
- Pistillate sepals usually shorter than the utricle, if longer acuminate or acute.
- Plants not viscid-pubescent, usually more than 3 dm. high; petioles commonly shorter than the leaf-blades; bracts not indurate.
- Bracts obtuse or acutish, equaling or up to one and one half times as long as the sepals, usually red or purple. 22. *A. cruentus*.
- Bracts acute or acuminate, usually twice as long as the sepals, commonly green or pale-reddish.
- Spikes slender; bracts 3-5 mm. long, thin. 23. *A. hybridus*.
- Spikes stout; bracts usually more than 5 mm. long, thick. 24. *A. Powellii*.
- Plants densely viscid-pubescent, 3 dm. high, or less, ascending; petioles equaling or exceeding the leaf-blades; bracts somewhat indurate. 25. *A. bracteosus*.
- Pistillate sepals obtuse or truncate, equaling or usually conspicuously longer than the fruit.
- Inflorescence usually tinged with red; pistillate sepals 1.5-2 mm. long; plants nearly glabrous. 26. *A. Wrightii*.
- Inflorescence pale-green; pistillate sepals 3 mm. long; plants copiously villous. 27. *A. retroflexus*.
- Bracts about as long as the flowers; pistillate sepals usually obtuse, equaling or usually longer than the utricle. 28. *A. dubius*.
- Spines present in the axils of the leaves; utricle irregularly or imperfectly dehiscent. 29. *A. spinosus*.
- Inflorescence wholly of axillary glomerules.
- Sepals in both staminate and pistillate flowers 4 or 5; seed 1.5 mm. in diameter; stems prostrate. 30. *A. blitoides*.
- Sepals 1-3; seed 0.6-0.8 mm. in diameter; stems erect or prostrate.
- Sepals of the pistillate flowers 2 or 3, all except one reduced to minute scales; stems slender, prostrate. 31. *A. californicus*.
- Sepals of the pistillate flowers 3, equal or nearly so; stems stout, erect or ascending.
- Plants densely viscid-pubescent; leaf-blades crispate. 32. *A. pubescens*.
- Plants not viscid-pubescent; leaf-blades not crispate. 33. *A. graecizans*.
- Utricle indehiscent.
- Utricle rugose.
- Flowers in axillary glomerules; leaf-blades 6-25 mm. long, crispate. 34. *A. crispus*.
- Flowers in elongate terminal or axillary spikes; leaf-blades 2-8 cm. long, plane.
- Leaf-blades linear or oblong-linear; sepals 5. 35. *A. muricatus*.
- Leaf-blades ovate or rhombic-ovate; sepals 3. 36. *A. gracilis*.
- Utricle smooth.
- Seed 1 mm. in diameter or less; flowers usually partly in terminal spikes; leaves thin.
- Bracts with pungent tips, twice as long as the sepals; leaf-blades deeply retuse. 37. *A. acutilobus*.

- Bracts not pungent, not exceeding the sepals.
 Leaf-blades acute; flowers mostly in a dense terminal spike. 38. *A. deflexus*.
 Leaf-blades retuse; flowers mostly axillary, the terminal spike very short or slender or none.
 Leaf-blades as broad as long, 4 mm. long or less; stems filiform, creeping; flowers mostly solitary, all axillary. 41. *A. minimus*.
 Leaf-blades longer than broad, usually more than 1 cm. long; stems not filiform, not creeping; flowers glomerate, some of them spicate.
 Stems erect, tinged with red. 39. *A. lividus*.
 Stems prostrate or ascending, green. 40. *A. viridis*.
 Seed 2–2.5 mm. long; flowers all axillary; leaves thick and fleshy. 42. *A. pumilus*.

1. *Amaranthus crassipes* Schlecht. *Linnaea* 6: 757. 1831.

Scleropus amaranthoides Schrad. *Ind. Sem. Hort. Gotting.* 1835; *Linnaea* 11: Litt.-ber. 89. 1837.
Scleropus crassipes Moq. in DC. *Prodr.* 13²: 271. 1849.

Euxolus crassipes Hieron. *Bol. Acad. Nac. Córdoba* 4: 13. 1881.

Stems ascending or prostrate, 2–6 dm. long, stout, succulent, glabrous; petioles slender, 3–40 mm. long; leaf-blades deep-green, oblong to spatulate, ovate, or obovate, 0.5–3.8 cm. long, 0.5–2.5 cm. wide, rounded and shallowly emarginate at the apex, decurrent at the base, glabrous, thick, with prominent white veins; flowers monoecious, in small dense axillary clusters; peduncles thickened and indurate; bracts small and inconspicuous, indurate in age, ovate, acutish, green, with scarious margins; sepals of the pistillate flowers 4 or 5, 1.5 mm. long, scarious, spatulate, obtuse, often emarginate; style-branches 2, stout; utricle obovoid, compressed, coriaceous, finely tuberculate, indehiscent; seed about 1 mm. in diameter, smooth, dark-brown or black.

TYPE LOCALITY: Island of St. Croix.

DISTRIBUTION: Waste ground, peninsular Florida, Bahamas, and the West Indies; adventive at Mobile, Alabama; also in Venezuela and Colombia.

ILLUSTRATION: *Bot. Gaz.* 17: *pl.* 17.

2. *Amaranthus scleropoides* Uline & Bray, *Bot. Gaz.* 19: 316. 1894.

Amaranthus blitoides scleropoides Thellung, in *Asch. & Graebn. Syn. Mittel-Eur. Fl.* 5: 293. 1914.

Stems erect or ascending, 1.5–4 dm. long, stout and succulent, glabrous, whitish; petioles slender, 0.5–3 cm. long; leaf-blades narrowly oblong to oblanceolate, 1–4.5 cm. long, rounded or emarginate at the apex, attenuate at the base and decurrent, thick, glabrous or nearly so, pale-green; flowers monoecious, in small dense axillary clusters; peduncles much thickened and indurate in age; bracts finally indurate, ovate-triangular, acute; sepals of the pistillate flowers 5, spatulate, 2 mm. long, 1-nerved, indurate at the base, obtuse or acute; style-branches 3; stamens 3; utricle subglobose, thin-walled, smooth, circumscissile at the middle; seed orbicular, smooth, black, shining, 0.6 mm. in diameter.

TYPE LOCALITY: Near El Paso, Texas.

DISTRIBUTION: Central and western Texas.

3. *Amaranthus polygonoides* L. *Pl. Jam. Pugill.* 27. 1759.

Roemeria polygonoides Moench, *Meth.* 341. 1794.

Amblogyna polygonoides Raf. *Fl. Tell.* 3: 42. 1837.

Albersia polygonoides Kunth, *Fl. Berol.* ed. 2. 2: 144. 1838.

Amaranthus verticillatus Pavon; Moq. in DC. *Prodr.* 13²: 270, as synonym. 1849.

Sarratia polygonoides Moq. in DC. *Prodr.* 13²: 270, as synonym. 1849.

Stems slender, ascending or spreading, 1–5 dm. long, much branched from the base, villous about the inflorescence; leaves rather distant, not crowded, the petioles 2–7 mm. long, slender, the blades 0.6–2 cm. long, rhombic-ovate to obovate or oval, obtuse to subtruncate and usually emarginate at the apex, acute or cuneate at the base and decurrent, pale-green, glabrous, or sparsely pubescent beneath; flowers monoecious, in dense sessile several-flowered axillary clusters; bracts lanceolate, acuminate, half as long as the sepals or less; sepals of the pistillate flowers spatulate, erect, obtuse or rounded, often apiculate, 3-nerved, scarious,

united at the base; sepals of the staminate flowers oblong, acute; stamens 2 or 3; style-branches 2 or 3; utricle ovoid or turbinate, circumscissile, thin-walled; seed black or dark-brown, shining, 0.6–0.9 mm. in diameter.

TYPE LOCALITY: Jamaica.

DISTRIBUTION: Florida, Texas, and the West Indies; Mexico to northern South America.

ILLUSTRATIONS: Willd. Hist. Amaranth. *pl.* 6, *f.* 12; Fiori & Paol. Ic. Fl. Ital. *f.* 1055.

4. **Amaranthus Berlandieri** (Moq.) Uline & Bray, Bot. Gaz. 19: 268. 1894.

Sarratia Berlandieri Moq. in DC. Prodr. 13²: 268. 1849.

Stems slender, fleshy, ascending or prostrate, 5–30 cm. long, much branched from the base, villous-tomentose, especially about the inflorescence; leaves crowded near the ends of the stems, soon deciduous below, the petioles 3–11 mm. long, the blades oblong-lanceolate to oblanceolate, 6–20 mm. long, broadly rounded at the apex or obtuse and usually emarginate, cuneate at the base and decurrent, glabrous, or sparsely pubescent when young, bright-green; flowers monoecious, in dense several-flowered sessile axillary clusters; bracts lanceolate, spine-tipped, usually half as long as the sepals or less; sepals of the pistillate flowers spatulate, 2 mm. long, rounded at the apex, united for one third their length, the tube not constricted; sepals of the staminate flowers lance-oblong, acuminate; stamens 2; style-branches 3; utricle turbinate, thin-walled, indehiscent, about equaling the sepals; seed obovoid, black and shining, 0.8 mm. long.

TYPE LOCALITY: Between San Antonio, Texas, and Matamoros, Tamaulipas.

DISTRIBUTION: Central and western Texas.

5. **Amaranthus Greggii** S. Wats. Proc. Am. Acad. 12: 274. 1877.

Stems stout, spreading or ascending, 3–9 dm. long, branched, striate, green, glabrous below, sparsely villous about the inflorescence; petioles stout, 5–18 mm. long; leaf-blades oblong to oval or rhombic-ovate, 1.2–3.5 cm. long, rounded at the apex, acute to rounded at the base, thick and fleshy, deep-green, sparingly viscid-puberulent or glabrate, prominently veined beneath; flowers dioecious, in dense stout spikes 5–15 cm. long and 7–10 mm. thick, these interrupted below; bracts ovate, ovate-oblong, or lanceolate, one third to two thirds as long as the calyx, acute, the nerves excurrent; sepals of the pistillate flowers somewhat united at the base, spatulate, 3–3.5 mm. long, rounded at the apex or obtuse, or the outer ones acute, often crenulate, glabrous, 1-nerved, the nerves sometimes shortly excurrent; sepals of the staminate flowers oblong or oblong-ovate, 3.5 mm. long, acute, subulate-tipped, 1-nerved, green along the nerves, elsewhere thin and scarious, villous, viscid; stamens 5; style-branches 3; utricle oblong, acutish, slightly exceeding or shorter than the sepals, indehiscent; seed 1.3 mm. long, slightly longer than broad, nearly black, shining.

TYPE LOCALITY: Near the mouth of the Rio Grande, Tamaulipas.

DISTRIBUTION: Along the coast from Galveston, Texas, to Tamaulipas.

6. **Amaranthus annectens** Blake, Jour. Bot. 53: 103. 1915.

Stems branched, procumbent or ascending, stout, striate, glabrous, or sparsely glandular-puberulent about the nodes; petioles 4–9 mm. long, submarginate; leaf-blades oblong or oblong-spatulate, 1–1.8 cm. long, 3–4.5 mm. broad, truncate or retuse and cuspidate at the apex, cuneate at the base, more or less glutinous, strongly nerved beneath; flowers dioecious; staminate spikes flexuous, simple and naked above, leafy and sparsely branched at the base, 17 cm. long, 1.1 cm. thick, the sepals oval, acutish, green-carinate, 2.3 mm. long, sparsely glandular; stamens 5; pistillate spikes flexuous, simple or branched at the base, naked, 7–25 cm. long, 0.8–1 cm. thick, the bracts oval-ovate, acute, 1.3–1.7 mm. long, the sepals broadly obovate-oblong or obovate-spatulate, 2.2–2.9 mm. long, retuse, cuspidate, 1-nerved, scarious-margined; utricle ovoid-fusiform, subangulate, slightly inflated, fleshy-coriaceous, indehiscent, a third

longer than the inner sepals; style-branches 3 or 2; seed globose-ovoid, 1.6–1.7 mm. long, lustrous, brownish-black.

TYPE LOCALITY: Seashore, Celestún, Yucatán.

DISTRIBUTION: Known only from the type locality.

7. *Amaranthus ambigens* Standley, sp. nov.

Plants stout, erect, sparsely branched, glabrous, the stems striate, succulent, tinged with red; petioles slender, 1.8–2.7 cm. long, reddish; leaf-blades ovate or lance-ovate, 4.5–7 cm. long, 1–2.5 cm. wide, cuneately acute and slightly decurrent at the base, tapering to the obtuse apex, mucronate, thin, plane, yellowish-green above, pale beneath and purplish-tinged, especially along the veins; flowers dioecious or polygamo-dioecious, the staminate clusters few-flowered, arranged in dense, axillary and simple or terminal and paniculate spikes 1.5–5 cm. long and 4–6 mm. thick; sepals of the staminate flowers oblong or oval-oblong, 2 mm. long, acutish, short-mucronate, scarious, often tinged with red, the midnerve green; pistillate glomerules many-flowered, in dense, simple or paniculate spikes 2–15 cm. long and 6–9 mm. thick, these spreading or drooping, naked; sepals of the pistillate flowers oblong or lance-oblong, aristate-acute or acuminate, or the inner obovate-oblong and obtuse, tinged with red, the tips slightly spreading; bracts deltoid-lanceolate, acuminate, about half as long as the sepals; style-branches 3; utricle equaling or slightly exceeding the sepals, indehiscent; seed broadly oval, 1.1 mm. long, nearly black, lustrous.

Type collected near Fountaindale, Illinois, by *M. S. Bebb* (U. S. Nat. Herb. no. 48297).

DISTRIBUTION: In wet soil, northern Illinois to southeastern Minnesota.

8. *Amaranthus Watsoni* Standley, Bull. Torrey Club 41: 505. 1914.

Amaranthus Torreyi suffruticosus Uline & Bray, Bot. Gaz. 19: 272. 1894.

Stems stout or slender, 1.5–10 dm. high, erect or ascending, branched, obtusely angled, glandular-puberulent or short-villous, densely glandular above; petioles slender or stout, 5–65 mm. long; leaf-blades rotund-ovate to rhombic-oval or oblong, 1–8 cm. long, obtuse to truncate at the apex and emarginate to deeply retuse, acutish or rounded at the base, sometimes slightly decurrent, rather thick, deep- or yellowish-green, glandular-puberulent, at least beneath, often densely so on both surfaces; flowers dioecious, in axillary clusters, especially in the pistillate plants, and in terminal, often paniculate, erect or drooping, loose or dense spikes 4–16 cm. long and 6–14 mm. thick; bracts lanceolate, slightly longer than the flowers, attenuate to a subulate spinose tip, glandular-puberulent; sepals of the staminate flowers oblong, 3–4 mm. long, obtuse or acutish, 1-nerved, the nerve excurrent; sepals of the pistillate flowers broadly spatulate, 2.5 mm. long, slightly united at the base, broadly rounded at the apex, usually emarginate, 1-nerved, the nerve sometimes excurrent in the outer sepals; stamens 5; style-branches 2; capsule globose, circumscissile; seed dark reddish-brown, rotund, 0.6 mm. in diameter.

TYPE LOCALITY: Vicinity of Guaymas, Sonora.

DISTRIBUTION: Western Sonora and southern Lower California.

9. *Amaranthus Palmeri* S. Wats. Proc. Am. Acad. 12: 274. 1877.

Amaranthus Palmeri glomeratus Uline & Bray, Bot. Gaz. 19: 272. 1894.

Stems stout, erect, 1–15 dm. high, much branched, the branches ascending or spreading, pale-green, sometimes tinged with red, glabrous, often villous about the inflorescence; petioles slender, 1.5–10 cm. long; leaf-blades broadly ovate to rhombic-ovate or lanceolate, 2–17 cm. long, acutish to abruptly acuminate or attenuate at the apex, the lowest rarely obtuse, rounded to acute at the base, bright-green, glabrous, or occasionally short-villous or puberulent beneath, prominently veined; flowers dioecious, in slender, terminal, erect or drooping, densely flowered spikes 8–30 cm. long and 7–12 mm. thick; bracts usually 2–3 times as long as the flowers, linear to lanceolate or ovate, tapering to stout green rigid spinose tips; sepals of the staminate flowers

oblong, 2–3 mm. long, acute or acutish, 1-nerved, the nerve usually excurrent, glabrous; sepals of the pistillate flowers narrowly to broadly spatulate, 2–3.5 mm. long, obtuse, often emarginate, occasionally obscurely denticulate, often tinged with red, the outer ones often acute, 1-nerved, the nerves green, rarely excurrent; stamens 5; style-branches 2 or rarely 3; utricle subglobose, somewhat compressed, circumscissile; seed oval, longer than broad, about 1.3 mm. long, dark reddish-brown.

TYPE LOCALITY: Larkins Station, San Diego County, California.

DISTRIBUTION: Dry or moist soil, California to Kansas and Texas, south to central Mexico; adventive in the eastern United States.

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 1404; ed. 2. f. 1661.

10. *Amaranthus Torreyi* (A. Gray) Benth.; S. Wats. Bot. Calif. 2: 42. 1880.

Sarratia Berlandieri Torr. Bot. Mex. Bound. Surv. 179. 1859. Not *S. Berlandieri* Moq. 1849.
Amblogyne Torreyi A. Gray, Proc. Am. Acad. 5: 167. 1861.

Stems stout, erect, whitish, glabrous, striate, simple or branched at the base, branched above; petioles slender, 5–7 mm. long; leaf-blades oval-oblong to oblong, oblanceolate, or oblong-linear, 1.5–8 cm. long, rounded to acutish at the apex, obtuse to attenuate at the base, yellowish-green, glabrous; flowers dioecious, in slender, dense or interrupted, terminal spikes; bracts lanceolate, acuminate, with spine-like tips, usually shorter than the flowers; sepals of the staminate flowers oblong, 2–3 mm. long, scarious, often tinged with pink, obtuse or acute, the midnerve usually excurrent; sepals of the pistillate flowers narrowly spatulate, slightly indurate at the base, 2 mm. long, obtuse, 1-nerved, the nerve excurrent; stamens 5; style-branches 3; utricle subglobose, circumscissile; seed about 1 mm. in diameter, dark reddish-brown.

TYPE LOCALITY: Mountains of the Cibola, a tributary of the Rio Grande, western Texas.

DISTRIBUTION: Dry soil, Iowa to Texas, west to Colorado and New Mexico; Nevada (?).

11. *Amaranthus myrianthus* Standley, Bull. Torrey Club 41: 506. 1914.

Amaranthus Greggii Muelleri Uline & Bray, Bot. Gaz. 19: 272. 1894.

Stems prostrate or ascending, 3–10 dm. long, much branched, stout, succulent, glabrous or sparsely villous; petioles stout, 4–15 mm. long; leaf-blades rounded-oval to oval or nearly orbicular, 6–20 mm. long, 5–15 mm. wide, rounded or emarginate at the apex, rounded to cuneate at the base, thick and firm, very conspicuously veined, villous beneath, at least when young; inflorescence dioecious, of numerous paniculate many-flowered spikes, these dense or sometimes interrupted below, 6–40 cm. long and 1–2 cm. thick in the pistillate plants, the spikes of the staminate plants shorter, somewhat interrupted, few-flowered, 7 mm. or less in diameter; bracts 2 or 3 at the base of each flower, ovate or broadly ovate, acute, sometimes pungent-tipped, usually half as long as the sepals but sometimes nearly equaling them; sepals of the staminate flowers oblong to oval, 2.5 mm. long, obtuse, apiculate, thin and scarious except along the single green nerve; sepals of the pistillate flowers 2 mm. long, spatulate, or narrowly oblong and narrowed toward the base, broadly obtuse to acutish, glabrous, rather thick and firm, much thickened and united at the base, the midnerve usually excurrent; stamens 5; style-branches 3, slender, elongate, divaricate; utricle obovoid, about equaling the sepals, thin-walled, nearly smooth, circumscissile; seed rotund, black and shining, about 1 mm. in diameter.

TYPE LOCALITY: Vicinity of La Barra, 8 km. east of Tampico, Tamaulipas.

DISTRIBUTION: Seashores, Tamaulipas to Vera Cruz.

12. *Amaranthus obcordatus* (A. Gray) Standley, sp. nov.

Amblogyne urceolata obcordata A. Gray, Proc. Am. Acad. 5: 168. 1861.

Amaranthus urceolatus obcordatus Uline & Bray, Bot. Gaz. 19: 269. 1894.

Amaranthus urceolatus Jonesii Uline & Bray, Bot. Gaz. 19: 269. 1894.

Stems stout, 1.5–5 dm. high, branched, the branches ascending, glabrous, whitish, often tinged with red; leaves few, soon deciduous, pale-green, glabrous, the petioles slender, 5–20 mm. long, the blades lanceolate or narrowly oblong to linear-oblong, 1–3 cm. long, truncately rounded at the apex, acute or cuneate at the base; flowers monoecious, in dense many-flowered clusters arranged in sparsely leafy or naked terminal spike-like panicles; bracts half as long as the calyx or shorter, broadly ovate, acute; sepals of the pistillate flowers 5, spatulate, 2 mm. long, united at the base, rounded or emarginate at the apex, thin, conspicuously veined, often tinged with purple, the blades spreading in age; sepals of the staminate flowers oblong, obtuse; stamens 3; style-branches 3; utricle narrowly oblong, indehiscent; seed obovoid, 0.6–0.8 mm. long, dark reddish-brown.

TYPE LOCALITY: Western Texas.

DISTRIBUTION: Western Texas and southern Arizona to Sonora and Sinaloa.

13. *Amaranthus scariosus* Benth. Bot. Voy. Sulph. 158. 1844.

Amaranthus floridus Benth. Bot. Voy. Sulph. pl. 51, hyponym. 1844.

Sarratia scariosa Moq. in DC. Prodr. 13²: 269. 1849.

Amblogyna scariosa Moq. in DC. Prodr. 13²: 269, as synonym. 1849.

Stems stout, erect, 1–1.5 meters high, stramineous, glabrous, or sparingly pubescent above; petioles slender, 2–10 cm. long; leaf-blades ovate or oblong-ovate, 6–12 cm. long, acute at the apex, the tip rounded, acute or abruptly acute at the base, yellowish-green, glabrous, conspicuously veined, the veins white beneath; flowers monoecious, in very dense, slender, erect or drooping spikes, these 8–20 cm. long, aggregate in a dense terminal panicle 3–6 dm. long and 1.3–2.5 dm. wide; bracts subulate-lanceolate, pungent-tipped, slightly exceeding the flowers; sepals 5, those of the staminate flowers oblong, acute, those of the pistillate flowers spatulate, 3 mm. long, rounded at the apex, often retuse, scarious, 1-nerved, united at the base; stamens 5; style-branches 3; utricle much shorter than the sepals, circumscissile, thin-walled; seed orbicular, black, 0.8 mm. in diameter.

TYPE LOCALITY: Tiger Island, Gulf of Fonseca, Honduras.

DISTRIBUTION: Southwestern coast of Mexico to Costa Rica.

ILLUSTRATION: Benth. Bot. Voy. Sulph. pl. 51.

14. *Amaranthus chihuahuensis* S. Wats. Proc. Am. Acad. 21: 436.
1886.

Stems stout, erect, 3–6 dm. high, the branches ascending, sparsely pubescent, pale-green; leaves numerous, yellowish-green, glabrous, or sparsely pubescent beneath, the petioles slender, 5–20 mm. long, the blades ovate to ovate-oblong or elliptic, 2–5 cm. long, obtuse or rounded at the apex, acute at the base; flowers monoecious, in dense clusters, some of these axillary, others aggregated into a slender terminal leafy spike; bracts lance-subulate, shorter than the flowers; sepals 5, those of the staminate flowers oblong, acute, those of the pistillate flowers spatulate, 2 mm. long, scarious, united and thickened at the base, spreading in age, 1-nerved, the nerve conspicuously excurrent; stamens 5; style-branches 3; utricle ovoid, shorter than the sepals, circumscissile; seed orbicular, dark reddish-brown, 0.8 mm. in diameter.

TYPE LOCALITY: Hacienda San Miguel, Chihuahua.

DISTRIBUTION: Chihuahua to Oaxaca.

15. *Amaranthus lepturus* Blake, Jour. Bot. 53: 104. 1915.

Plants erect, branched, about 1 meter high, the stems slender, whitish, glabrous; petioles 1.4–2.8 cm. long; leaf-blades rhombic-oval, 2.1–2.7 cm. long, 1.3–1.6 cm. broad, obtuse or retuse and cuspidate at the apex, broadly cuneate at the base, glabrous; flowers monoecious, spicate, the spikes erect, terminal and axillary, naked above, interrupted and leafy below, 10–41 cm. long, 0.6–1.7 cm. thick; bracts lance-subulate, spreading or recurved, 3.2 mm. long or shorter, longer than the sepals; staminate sepals ovate-lanceolate, acute, scarious, 2 mm. long; stamens 5; sepals of the pistillate flowers 5, oblong-spatulate, 2.5 mm. long, slightly spreading at the apex, retuse or obtuse or acutish, mucronulate, glabrous, or with a few short

hairs below, green, scarious-margined; style-branches 3 or 2; utricle much shorter than the calyx, circumscissile near the middle; seed subglobose, 1.2 mm. long, brownish-black, lustrous.

TYPE LOCALITY: On hills, Magdalena Bay, Lower California.
DISTRIBUTION: Known only from the type locality.

16. *Amaranthus Bigelovii* Uline & Bray, Bot. Gaz. 19: 271. 1894.

Sarratia Berlandieri emarginata Torr. Bot. Mex. Bound. Surv. 179. 1859.
Amaranthus Bigelovii emarginatus Uline & Bray, Bot. Gaz. 19: 271. 1894.

Stems erect, stout, 4–5 dm. high, with numerous slender erect branches, glabrous; leaves numerous, yellowish-green, glabrous, the petioles slender, 1–2.5 cm. long, the blades lance-ovate, 3–7 cm. long, acute at the apex, acute at the base; flowers monoecious, in dense glomerules, these mostly axillary but sometimes aggregated in a stout leafy spike; bracts lance-subulate, pungent-pointed, slightly exceeding the flowers; sepals 5, those of the staminate flowers ovate-oblong, acute, those of the pistillate flowers spatulate, obtuse, the outer with excurrent mid-nerve, somewhat united at the base; stamens 5; utricle circumscissile, shorter than the sepals; seed nearly orbicular, black and shining, 1 mm. in diameter.

TYPE LOCALITY: Mountains of the Cibola, western Texas.
DISTRIBUTION: Western Texas.

17. *Amaranthus fimbriatus* (Torr.) Benth.; S. Wats. Bot. Calif. 2: 42. 1880.

Sarratia Berlandieri fimbriata Torr. Bot. Mex. Bound. Surv. 179. 1859.
Amblogyna fimbriata A. Gray, Proc. Am. Acad. 5: 167. 1861.

Stems stout, erect, 1 meter high or less, much branched above, the branches ascending, glabrous, or puberulent above; petioles slender, 1–3 cm. long; leaf-blades narrowly lanceolate to linear, 4–7 cm. long, bright-green, acute or obtuse, apiculate, glabrous; inflorescence spike-like, 9–30 cm. long, composed of numerous dense many-flowered glomerules, interrupted and leafy below, naked above; flowers monoecious; bracts ovate, acute or acuminate, often fimbriate, half as long as the sepals or less; sepals of the pistillate flowers broadly spatulate, 2.5–3 mm. long, united at the base, conspicuously veined, often tinged with red, the margins fimbriate; sepals of the staminate flowers oblong, acute; stamens 3; style-branches 3; utricle circumscissile near the apex; seed dark-brown or black, 0.8 mm. in diameter.

TYPE LOCALITY: On the Gila River, Arizona.
DISTRIBUTION: Nevada and southern Utah to Sinaloa and Lower California.

18. *Amaranthus Brandegei* Standley, sp. nov.

Plants slender, glabrous, about 9 dm. high, erect, simple below, sparsely branched above, the branches ascending, subangulate, pale-green; petioles very slender, 0.8–2.7 cm. long; leaf-blades oval-ovate or ovate-rhombic, rarely oval-obovate, 2.5–6 cm. long, 1.4–3.4 cm. wide, acute or obtuse and abruptly decurrent or sometimes acuminate at the base, rounded or obtuse at the apex, the midvein excurrent, thin, green above, pale beneath; flowers monoecious, in rather lax glomerules, these forming axillary or terminal, naked, simple or usually paniculate spikes 12 cm. long or shorter and 6–10 mm. thick; bracts about as long as the sepals, ovate or oblong-ovate, long-acuminate, the tips rigid, green, the margins thin and whitish; sepals of the staminate flowers 1 mm. long, oval, acutish; stamens 2 or 3; sepals of the pistillate flowers narrowly obovate, 1–1.5 mm. long, urceolate in age, the tips spreading, the inner ones obtuse, the outer acute, thin, 1-nerved, green along the nerves, the margins white; utricle circumscissile, half longer than the sepals, deeply 3-corniculate at the apex, the style-branches short, erect; seed dark reddish-brown, ovate-orbicular, 1 mm. long, lustrous.

Type collected at Cofradia, near Culiacán, Sinaloa, Mexico, November 14, 1904, T. S. Brandege (Herb. Univ. Calif. no. 116342).

19. *Amaranthus venulosus* S. Wats. Proc. Am. Acad. 17: 376.
1882.

Sarratia Berlandieri denticulata Torr. Bot. Mex. Bound. Surv. 179. 1859.
Amaranthus fimbriatus denticulatus Uline & Bray, Bot. Gaz. 19: 270. 1894.

Stems erect, branched above the base, 5 dm. high or less, glabrous, whitish; leaves rather few, pale-green, glabrous, the petioles slender, 8–25 mm. long, the blades lanceolate to linear-oblong, 1.5–4 cm. long, rounded at the apex, cuneate at the base; flowers monoecious, in dense glomerules, the lowest of these axillary, the upper ones aggregated into a leafy or nearly naked spike-like panicle; bracts ovate, acute, half as long as the flowers or shorter; sepals 5, those of the pistillate flowers spatulate, 2 mm. long, united at the base, the blades spreading in age, rounded and often emarginate at the apex, usually crenulate; sepals of the staminate flowers oblong, acute; stamens 3; utricle oblong, shorter than the sepals; seed dark reddish-brown, nearly orbicular, 0.8 mm. in diameter.

TYPE LOCALITY: Santa Cruz, Sonora.
DISTRIBUTION: Southern Arizona to Sinaloa.

20. *Amaranthus Pringlei* S. Wats. Proc. Am. Acad. 22: 476. 1887.

Stems stout, erect, 2–10 dm. high, much branched, angled, glabrous, often tinged with red; petioles stout, 3–25 mm. long; leaf-blades elliptic to oblong or linear-oblong, or the uppermost linear, 1.5–4.5 cm. long, obtuse or rounded at the apex, cuneate at the base, glabrous, yellowish-green; flowers monoecious, in dense glomerules, part of these axillary but most of them aggregated into stout erect spike-like terminal panicles; bracts oblong or oblong-linear, acute, spine-tipped, rigid, equaling or exceeding the flowers; sepals 5, those of the staminate flowers oblong, acute, those of the pistillate flowers broadly spatulate, 1.5–2 mm. long, united at the base, emarginate or apiculate, thin, 1-nerved, often tinged with purple; stamens 3; utricle globose-obovoid, circumscissile near the middle; seed nearly orbicular, black and shining, about 1 mm. in diameter.

TYPE LOCALITY: Rocky hills near Chihuahua, Chihuahua.
DISTRIBUTION: In fields and canyons, western Texas to Nevada, Sonora, and San Luis Potosí.

21. *Amaranthus caudatus* L. Sp. Pl. 990. 1753.

Amaranthus maximus Mill. Gard. Dict. ed. 8. Amaranthus no. 5. 1768.
Amaranthus caudatus Alopecurus Moq. in DC. Prodr. 13²: 256. 1849.
Amaranthus caudatus maximus Moq. in DC. Prodr. 13²: 256. 1849.
Amaranthus paniculatus caudatus Regel, Flora 32: 166. 1849.
Amaranthus paniculatus pendulinus Regel, Flora 32: 167. 1849.
Amaranthus Alopecurus Hochst.; A. Br. & Bouché, Ind. Sem. Hort. Berol. App. 1. 1872.
Amaranthus leucocarpus S. Wats. Proc. Am. Acad. 10: 347. 1875.
Amaranthus leucospermus S. Wats. Proc. Am. Acad. 22: 446. 1887.
Amaranthus caudatus leucospermus Thellung, in Asch. & Graebn. Syn. Mittel-Eur. Fl. 5: 234. 1914.

Stems stout, erect, 3–20 dm. high, or in cultivation even larger, simple or sparsely branched, green or whitish, often tinged with red, glabrous, or sparsely villous about the inflorescence; petioles slender, 2.5–18 cm. long, glabrous or sparsely villous; leaf-blades lanceolate to ovate or rhombic-ovate, 6–20 cm. long, 1.5–8 cm. wide, acute or abruptly acute at the apex, acute at the base, pale- or bright-green, often tinged with red, thin, glabrous or nearly so, prominently veined; flowers monoecious, in a terminal panicle composed of numerous or few spikes, the lateral ones of these 3–25 cm. long and 8–20 mm. thick, spreading or drooping, the terminal spike usually several times as long as the lateral ones, drooping, dense clusters of very short spikes often present in the axils of the upper leaves; bracts lanceolate to ovate, twice as long as the sepals or less, at least exceeding the sepals, carinate, attenuate to a spinose subulate apex, often villous; sepals of the staminate flowers scarious, usually tinged with red, oblong to ovate, carinate, the midnerve excurrent as a pungent tip; sepals of the pistillate flowers 1.5–2 mm. long, oblong, lance-oblong, or spatulate, acute to attenuate, usually red or purplish but sometimes green, equaling or shorter than the fruit; stamens 5; style-branches 3, elongate, rigid, erect; utricle subglobose, acutish at the apex, somewhat rugulose on the upper half,

circumscissile at the middle; seed rotund, 1–1.2 mm. in diameter, usually yellowish-white and dull, sometimes red or nearly black and lustrous.

TYPE LOCALITY: Described from cultivated plants.

DISTRIBUTION: Central Mexico to Guatemala; adventive in Arizona and New Mexico, and sometimes escaped from cultivation in the eastern United States; also in tropical South America, Asia, and Africa.

ILLUSTRATIONS: E. & P. Nat. Pfl. 3^{1a}: f. 56; Fiori & Paol. Ic. Fl. Ital. f. 1045; Reichenb. Ic. Fl. Germ. 24: pl. 297, f. 1; Hegi, Ill. Fl. f. 559, a–e.

22. *Amaranthus cruentus* L. Syst. Veg. ed. 10. 1269. 1759.

- Amaranthus paniculatus* L. Sp. Pl. ed. 2. 1406. 1763.
Amaranthus flavus L. Sp. Pl. ed. 2. 1406. 1763.
Amaranthus sanguineus L. Sp. Pl. ed. 2. 1407. 1763.
Amaranthus parisiensis Schkuhr, Handb. 3: 249. 1808.
Amaranthus speciosus Sims, Bot. Mag. pl. 2227. 1821.
Amaranthus paniculatus purpurascens Moq. in DC. Prodr. 13²: 257. 1849.
Amaranthus paniculatus cruentus Moq. in DC. Prodr. 13²: 257. 1849.
Amaranthus paniculatus sanguineus Moq. in DC. Prodr. 13²: 257. 1849.
Amaranthus hybridus paniculatus Uline & Bray, Mem. Torrey Club 5: 145. 1894.
Amaranthus Dussii Sprenger, Bull. Soc. Tosc. Ort. III. 1: 178. 1896.
Galliardia patula Bubani, Fl. Pyren. 1: 187. 1897.
Amaranthus hybridus cruentus Thellung, Fl. Adv. Montp. 205. 1912.

Stems stout, erect, 5–20 dm. high, simple or much branched, green or red, somewhat sulcate, usually pubescent, villous about the inflorescence; petioles slender, 2–20 cm. long, often pubescent; leaf-blades 3.5–30 cm. long, 1.5–10 cm. wide, elliptic to ovate-lanceolate or rhombic-ovate, attenuate or acute at the apex, the tip usually obtuse, acute to attenuate at the base, pale- or bright-green, often purple, sparsely pubescent or glabrate; flowers monoecious, in dense panicles, these composed of numerous slender spreading lateral spikes 4–18 cm. long and usually 6–8 mm., rarely 15 mm., thick, the terminal spike twice as long as the lateral ones or less, usually stouter, erect or nearly so, slender sessile or pedunculate spikes often present also in the axils of the upper leaves; bracts lanceolate to ovate, equaling or half longer than the sepals, thin, 1-nerved, tapering to a short pungent tip, red or purple, sometimes green; sepals of the staminate flowers oblong-ovate, acute, 1-nerved, the nerve excurrent; sepals of the pistillate flowers oblong or narrowly oblong, 1.5 mm. long, obtuse or rounded at the apex, sometimes erose, or the outer ones acute and with an excurrent midnerve, all thin, scarious, red or purple, or sometimes green or stramineous, the inner ones faintly 1-nerved, not carinate; stamens 5; style-branches 3, stout, erect; utricle subglobose, conspicuously exceeding the sepals, rugulose above, circumscissile at the middle; seed rotund, 1 mm. in diameter, black or dark reddish-brown, lustrous, rarely white and dull.

TYPE LOCALITY: China.

DISTRIBUTION: Adventive or escaped from cultivation in the eastern and southern United States and as far west as New Mexico and Arizona; central Mexico to Panama; occasional in the West Indies; also in tropical and subtropical South America and Asia; adventive in Europe; frequent in cultivation.

ILLUSTRATIONS: Martyn, Hist. Pl. Rar. pl. 6; Willd. Hist. Amaranth. pl. 2, f. 4, f. 3; Dict. Sci. Nat. pl. 21; Mill. Fig. Pl. pl. 22; Bot. Mag. pl. 2227; Fiori & Paol. Ic. Fl. Ital. f. 1048.

23. *Amaranthus hybridus* L. Sp. Pl. 990. 1753.

- Amaranthus hypocondriacus* L. Sp. Pl. 991. 1753.
Amaranthus hecticus Willd. Hist. Amaranth. 25. 1790.
Amaranthus strictus Willd. Hist. Amaranth. 27. 1790.
Amaranthus laetus Willd. Hist. Amaranth. 28. 1790.
Amaranthus chlorostachys Willd. Hist. Amaranth. 34. 1790.
Amaranthus retroflexus hybridus A. Gray, Man. ed. 5. 412. 1867.
Amaranthus retroflexus chlorostachys A. Gray, Man. ed. 5. 412. 1867.
Amaranthus chlorostachys hybridus S. Wats. in A. Gray, Man. ed. 6. 428. 1890.
Amaranthus hybridus hypocondriacus B. L. Robinson, Rhodora 10: 32. 1908.
Amaranthus hybridus chlorostachys G. Beck, in Reichenb. Ic. Fl. Germ. 24: 175. 1908.
Galliardia hybrida Nieuwl. Am. Midl. Nat. 3: 278. 1914.

Stems stout, erect or ascending, 3–25 dm. high, usually much branched, the branches ascending, sometimes simple, pale-green, frequently tinged with red, rough-puberulent below or glabrous, usually sparsely villous above, striate or sulcate; leaves usually numerous, the

slender petioles 1.5–9 cm. long, pubescent, the blades 3–15 cm. long, 1–7 cm. wide, lanceolate to ovate or rhombic-ovate, acute or rarely rounded at the apex, bright-green or yellowish, sometimes paler beneath, often tinged with red, pubescent beneath or glabrous, prominently veined; flowers monoecious, in dense, crowded or distant, many-flowered spikes, these paniculate, few or numerous, the lateral ones erect or spreading, 2–6 cm. long, 6–12 mm. thick, the terminal spike twice as long or less, usually stouter, erect; bracts twice as long as the sepals or less, lanceolate to ovate, tapering to slender or stout spinose tips; sepals of the staminate flowers usually 5, narrowly oblong to ovate, acute, scarious, 1-nerved, the nerve usually excurrent; sepals of the pistillate flowers commonly 5, oblong or linear-oblong, 1.5–2 mm. long, acute, or the inner rarely obtuse, 1-nerved, the nerve usually excurrent as a pungent tip, green or tinged with red or purple, equaling or shorter than the fruit; stamens 5; style-branches 3; utricle subglobose, equaling or shorter than the sepals, very rarely exceeding them, thin-walled, often rugulose, circumscissile at the middle; seed rotund, 1 mm. in diameter, dark reddish-brown or black, shining.

TYPE LOCALITY: Virginia.

DISTRIBUTION: Waste and cultivated ground, southeastern Canada, southward nearly throughout the United States, but more abundant eastward; Mexico to Costa Rica; Bermuda; Bahamas; also in the warmer parts of South America; adventive in many parts of Europe, Asia, and Africa.

ILLUSTRATIONS: Willd. Hist. Amaranth. *pl.* 3, *f.* 5; *pl.* 7, *f.* 13; *pl.* 8, *f.* 15; *pl.* 9, *f.* 17; *pl.* 10, *f.* 19; *pl.* 11, *f.* 22; Mart. Fl. Bras. 5¹: *pl.* 73; Gaertn. Fruct. *pl.* 128; Lam. Tab. Encyc. *pl.* 767; T. Nees, Gen. Fl. Germ. 4: *pl.* 71; Britt. & Brown, Ill. Fl. *f.* 1399; ed. 2. *f.* 1660; E. & P. Nat. Pfl. 3^{1a}: *f.* 48, A; Reichenb. Ic. Fl. Germ. 24: *pl.* 296, *f.* 1–2; Fiori & Paol. Ic. Fl. Ital. *f.* 1047; Bull. Mich. Exp. Sta. 267: *f.* 60.

24. *Amaranthus Powellii* S. Wats. Proc. Am. Acad. 10: 347. 1875.

Amaranthus obovatus S. Wats. Proc. Am. Acad. 12: 275. 1877.

Amaranthus chlorostachys pseudoretroflexus Thellung, Viert. Nat. Ges. Zürich 52: 443. 1907.

Stems stout, 3–20 dm. high, erect, simple, or usually much branched, green or whitish, glabrous below, usually villous above; petioles slender, 1–5 cm. long; leaf-blades ovate, rhombic-ovate, rhombic-oval, or rarely lanceolate, 1.5–8 cm. long, 0.5–4 cm. wide, acute to obtuse at the apex, sometimes emarginate, cuneate to acute at the base, yellowish-green or deep-green, glabrous or sparsely pubescent; flowers monoecious, in dense, stout, erect, obtuse, simple or paniculate spikes 4–25 cm. long and 1–2 cm. thick, dense clusters of flowers usually present also in the axils of the upper leaves; bracts 2–3 times as long as the sepals, lanceolate or ovate, attenuate to a rigid spinose tip, green and indurate along the midnerve, sometimes puberulent; sepals of the staminate flowers lance-oblong, scarious, 1-nerved, acute, the midnerve excurrent; sepals of the pistillate flowers 3 mm. long, oblong or lance-oblong, acute or acutish, thin, somewhat thickened at the base, 1-nerved, the nerve usually excurrent as a spinulose tip, usually longer than the fruit; stamens mostly 3; style-branches 3, elongate, erect; utricle subglobose, compressed, equaling or shorter than the sepals, rugulose above, dehiscent at the middle; seed obovate or oval, about 1.2 mm. long, black and shining.

TYPE LOCALITY: Arizona.

DISTRIBUTION: Waste or cultivated ground, Oregon to Wyoming and northern Mexico; adventive in New England, and in Europe.

25. *Amaranthus bracteosus* Uline & Bray, Bot. Gaz. 19: 314. 1894.

Amaranthus viscidulus Greene, Pittonia 3: 344. 1898.

Stems slender or stout, erect or ascending, 1–3 dm. high, much branched from the base or above, whitish, densely viscid-villous, sometimes glabrate in age; petioles slender, 5–25 mm. long; leaf-blades usually shorter than the petioles except in the uppermost leaves, obovate to oblong, oval, rhombic-ovate, or spatulate, 1–4 cm. long, rounded at the apex, sometimes shallowly emarginate, cuneate at the base, thick, yellowish- or pale-green, viscid-puberulent or villous on the lower surface, sometimes glabrate in age, nearly glabrous on the upper surface, prominently veined; flowers monoecious, in a stout erect terminal spike 2–10 cm. long and 1–2 cm. thick, and in numerous dense axillary clusters shorter than the petioles; bracts lanceolate,

5–8 mm. long, rigid, spreading, green, with spinose tips, several times as long as the flowers, more or less villous; sepals 5, oblong, obtuse, 1-nerved, the nerve long-excurrent; stamens 3; style-branches 3, elongate, much thickened at the base; utricle slightly exceeding or equaling the sepals, subglobose or oblong, thick-walled, circumscissile, somewhat rugulose; seed rotund, 1.2 mm. in diameter, black, shining.

TYPE LOCALITY: New Mexico, probably near Santa Fe.
DISTRIBUTION: Open hillsides, New Mexico.

26. *Amaranthus Wrightii* S. Wats. Proc. Am. Acad. 12: 275.
1877.

Stems stout, erect, 2–10 dm. high, often simple, sometimes branched at the base or sparsely branched above, the branches strongly ascending, whitish or tinged with red, glabrous; leaves few, the petioles slender, 5–40 mm. long, the blades 1.2–6 cm. long, 0.4–3 cm. wide, lance-elliptic to rhombic-ovate, acutish to obtuse at the apex, sometimes emarginate, cuneate to acute or abruptly acute at the base, yellowish-green, slightly paler beneath, glabrous; flowers monoecious, in dense, stout, erect, terminal, simple or branched spikes 4–25 cm. long, these often leafy, interrupted below, dense clusters of flowers present also in the axils of the leaves, shorter than the petioles; bracts linear-lanceolate or subulate, longer than the sepals, often twice as long, rigid, greenish, pungent; sepals of the staminate flowers oblong, acute; sepals of the pistillate flowers 1.5–2 mm. long, oblong-linear, evidently narrowed at the base, rounded to truncate and usually emarginate or retuse at the apex, or the outermost one rarely pungent, thin, faintly 1-nerved, the nerve usually not reaching the apex, sometimes ciliate, erect, united at the base, often tinged with red; stamens 3; style-branches 3, short; utricle globose, about equaling the sepals, smooth or nearly so, circumscissile at the middle; seed rotund, 1 mm. in diameter, dark reddish-brown, smooth and shining.

TYPE LOCALITY: Copper mines [Santa Rita], New Mexico.
DISTRIBUTION: Arizona, western New Mexico, and southern Colorado.

27. *Amaranthus retroflexus* L. Sp. Pl. 991. 1753.

Amaranthus spicatus Lam. Fl. Fr. 2: 192. 1778.
Amaranthus recurvatus Desf. Cat. Hort. Par. ed. 3. 390. 1829.
Amaranthus Delilei Richt. & Loret, Bull. Soc. Bot. Fr. 13: 316. 1866.
Gallaria scabra Bubani, Fl. Pyren. 1: 187. 1897.
Gallaria retroflexa Nieuwl. Am. Midl. Nat. 3: 278. 1914.

Stems stout, green or whitish, 3–30 dm. high, erect or ascending, usually much branched but often simple; abundantly villous, at least above, often densely so about the inflorescence; leaves numerous, the petioles 1.5–8 cm. long, slender, usually villous, the blades 3–12 cm. long, 1.5–7 cm. wide, ovate, rhombic-ovate, or the upper, and rarely the lower, lanceolate, plane or sometimes slightly crispate, acute to obtuse and often emarginate at the apex, acute or obtuse at the base, papillose on both surfaces, glabrate above, more or less villous or puberulent beneath, pale-green, prominently nerved, the veins white beneath; flowers monoecious, in dense, obtuse, terminal or axillary, usually paniculate, densely crowded, erect spikes 5–20 cm. long and 8–20 mm. thick, dense clusters often present also in the axils of the upper leaves; bracts ovate, tapering into a stout subulate green tip, usually twice as long as the sepals, at least in age, 1-nerved, sparsely villous; sepals of the staminate flowers ovate-oblong to lanceolate, acute or acutish, scarious, 1-nerved, the nerve shortly excurrent; sepals of the pistillate flowers 3 mm. long, linear-oblong, rounded to truncate at the apex, usually emarginate, often mucronate, scarious and whitish except for the green midnerve, the bases thickened in age; stamens 5; style-branches 3, rather short; utricle subglobose, more or less rugulose on the upper half, circumscissile at the middle, shorter than the sepals; seed rotund, 1 mm. broad, dark reddish-brown, lustrous.

TYPE LOCALITY: Pennsylvania.
DISTRIBUTION: A common weed in waste ground, from southern Canada, throughout the United States, to northern Mexico; naturalized in Europe, Asia, and Africa.

ILLUSTRATIONS: Willd. Hist. Amaranth. *pl.* 11, *f.* 21; Reichenb. Ic. Crit. *pl.* 475; Britt. & Brown, Ill. Fl. *f.* 1398; ed. 2. *f.* 1659; Iowa Geol. Surv. Bull. 4: *f.* 64; Fiori & Paol. Ic. Fl. Ital. *f.* 1046; Reichenb. Ic. Fl. Germ. 24: *pl.* 295; Moss, Cambr. Brit. Fl. *pl.* 154; Hegi, Ill. Fl. *pl.* 97, *f.* 5; Clark & Fletcher, Farm Weeds Can. *pl.* 42.

28. *Amaranthus dubius* Mart. Pl. Hort. Erlang. 197. 1814.

Amaranthus tristis Willd. Hist. Amaranth. 21, at least in part. 1790. Not *A. tristis* L. 1753.
Amaranthus incomptus Willd. Enum. Hort. Berol. Suppl. 64, hyponym. 1813.
Amaranthus tristis xanthostachys Moq. in DC. Prodr. 13²: 260. 1849.
Amaranthus tristis flexuosus Moq. in DC. Prodr. 13²: 260. 1849.
Amaranthus tristis leptostachys Moq. in DC. Prodr. 13²: 260. 1849.
Amaranthus dubius xanthostachys Thellung, in Asch. & Graebn. Syn. Mittel-Eur. Fl. 5: 266. 1914.
Amaranthus dubius flexuosus Thellung, in Asch. & Graebn. Syn. Mittel-Eur. Fl. 5: 266. 1914.
Amaranthus dubius leptostachys Thellung, in Asch. & Graebn. Syn. Mittel-Eur. Fl. 5: 266. 1914.

Stems rather slender, erect, 3–10 dm. high, succulent, simple or much branched, green, glabrous, rarely pubescent about the inflorescence; leaves numerous, the petioles 2–9 cm. long, slender, the blades ovate or rhombic-ovate, 2–12 cm. long, 1.2–8 cm. wide, acute to rounded at the apex, the tip rounded and usually emarginate, rounded, obtuse, or acutish at the base, thin, deep-green, glabrous, or rarely pubescent when young, rather inconspicuously nerved; flowers monoecious, green or whitish, in slender, dense, terminal or axillary, simple or paniculate, usually drooping spikes 5–25 cm. long and 4–12 mm. thick, these often interrupted below, dense clusters of flowers sometimes present in the axils of the leaves; bracts ovate or oval, acute, scarious except for the midnerve and the pungent tip, usually shorter than the sepals but often equaling or rarely slightly exceeding them; sepals of the staminate flowers oblong-ovate or oval, acute or acutish, mucronate, 1-nerved, scarious; sepals of the pistillate flowers oblong to ovate, 1.5–2 mm. long, obtuse or acutish, often emarginate, mucronate, scarious, 1-nerved, erect, distinct; stamens 5; style-branches 3, long and slender; utricle subglobose, slightly longer than thick, not compressed, usually exceeding the sepals, thin-walled, slightly rugulose, dehiscent at the middle; seed rotund, 1 mm. in diameter, usually sharp-edged, dark reddish-brown or black, lustrous.

TYPE LOCALITY: Described from cultivated plants.

DISTRIBUTION: Common nearly throughout the West Indies; southwestern Mexico and Yucatán; also in tropical South America; adventive in Europe.

ILLUSTRATIONS: Willd. Hist. Amaranth. *pl.* 5, *f.* 10; Wight, Ic. *pl.* 514, 713.

29. *Amaranthus spinosus* L. Sp. Pl. 991. 1753.

Amaranthus diacanthus Raf. Fl. Ludov. 31. 1817.
Amaranthus caracasanus H. B. K. Nov. Gen. & Sp. 2: 195. 1817.
Amaranthus spinosus rubricaulis Hassk. Flora 25: Litt. 20. 1842.
Amaranthus spinosus viridicaulis Hassk. Flora 25: Litt. 20. 1842.
Amaranthus spinosus purpurascens Moq. in DC. Prodr. 13²: 260. 1849.
Amaranthus spinosus inermis Schum. & Laut. Fl. Deuts. Schutzg. Südsee 305. 1900.
Amaranthus spinosus circumscissus Thellung, in Asch. & Graebn. Syn. Mittel-Eur. Fl. 5: 269. 1914.
Amaranthus spinosus basicissus Thellung, in Asch. & Graebn. Syn. Mittel-Eur. Fl. 5: 269. 1914.
Amaranthus spinosus indehiscens Thellung, in Asch. & Graebn. Syn. Mittel-Eur. Fl. 5: 269. 1914.
Gallaria spinosa Nieuwl. Am. Midl. Nat. 3: 278. 1914.

Stems stout and succulent, erect or ascending, 3–12 dm. high, glabrous below, more or less pubescent above, often reddish, striate or sulcate; petioles slender, 0.5–9 cm. long, often pubescent, bearing in the axils 2 rigid sharp-pointed spines 2–25 mm. long; leaf-blades ovate to rhombic-ovate or lanceolate, 1.5–12 cm. long, acute at the base, narrowed toward the apex but obtuse to broadly rounded at the tip, dark-green, glabrous or sparingly pubescent; flowers monoecious, the pistillate in dense, globose, sessile, mostly axillary clusters, the staminate in slender, erect or drooping, terminal spikes 3–18 cm. long and 4–8 mm. thick; bracts lanceolate to subulate, often spine-like, shorter than the sepals or sometimes 2–3 times as long; sepals of the pistillate flowers 5, oblong, obtuse or acute, 1.5 mm. long, those of the staminate flowers lance-oblong, acute or abruptly acuminate; stamens 5; style-branches 3; utricle ovoid, about equaling the sepals, irregularly and imperfectly circumscissile; seed smooth, black, lustrous, 0.7–1 mm. in diameter.

TYPE LOCALITY: India.

DISTRIBUTION: Southeastern Canada and Maine to Minnesota, Florida, the West Indies, Mexico, and Panama; also in tropical and sub-tropical South America, Asia, and Africa; naturalized in central and southern Europe.

ILLUSTRATIONS: Willd. Hist. Amaranth. *pl.* 4, *f.* 8; Britt. & Brown, Ill. Fl. *f.* 1400; ed. 2, *f.* 1662; Wight, Ic. *pl.* 513; Fiori & Paol. Ic. Fl. Ital. *f.* 1044; Reichenb. Ic. Fl. Germ. 24: *pl.* 297, *f.* 3-5; Darl. Am. Weeds *f.* 178; Bull. Mich. Exp. Sta. 267: *f.* 62.

30. *Amaranthus blitoides* S. Wats. Proc. Am. Acad. 12: 273. 1877.

Amaranthus blitoides densifolius Uline & Bray, Bot. Gaz. 19: 315. 1894.

Amaranthus blitoides Reverchoni Uline & Bray, Bot. Gaz. 19: 315. 1894.

Amaranthus aragonensis Sennen, Bull. Geogr. Bot. IV. 21: 123. 1911.

Galliardia blitoides Nieuwl. Am. Midl. Nat. 3: 278. 1914.

Amaranthus blitoides crassior Jepson, Fl. Calif. 449. 1914.

Stems stout, prostrate, much branched, 1.5-6 dm. long, glabrous or sparsely pubescent, pale-green or whitish, rarely tinged with red; leaves usually numerous, often crowded, especially near the ends of the branches, the petioles rather stout, 2-20 mm. long, the blades obovate to oval, spatulate, or elliptic, 0.8-4 cm. long, rounded to acutish at the apex, broadly cuneate to attenuate at the base, pale-green, glabrous, plane, prominently veined, the veins whitish beneath, the smaller leaves often white-margined; flowers monoecious, in dense axillary clusters, these usually shorter but sometimes longer than the petioles; bracts oblong to lanceolate, equaling or slightly exceeding the sepals, erect, attenuate at the apex to a short spinose tip, green; sepals 4 or 5, those of the staminate flowers scarious, oblong, acute, those of the pistillate flowers oblong or narrowly oblong, 2.5-3 mm. long, acuminate, 1-nerved, green, white-margined; stamens 3; style-branches 3; utricle subglobose, equaling or slightly longer than the sepals, smooth or nearly so, circumscissile, sometimes tinged with red; seed rotund, 1.3-1.5 mm. in diameter, black, rather dull.

TYPE LOCALITY: Not definitely stated.

DISTRIBUTION: Dry or cultivated ground, Washington to Wyoming, Kansas, Texas, and Chihuahua; established in waste ground in many places in the eastern United States and southern Canada; adventive in southern Europe.

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. *f.* 1401; ed. 2, *f.* 1663; Rob. & Fern. Man. *f.* 721; Iowa Geol. Surv. Bull. 4: *f.* 66; Bull. Mich. Exp. Sta. 267: *f.* 58.

31. *Amaranthus californicus* (Moq.) S. Wats. Bot. Calif. 2: 42.
1880.

Mengea californica Moq. in DC. Prodr. 13²: 270. 1849.

Amaranthus carneus Greene, Pittonia 2: 105. 1890.

Amaranthus albomarginatus Uline & Bray, Bot. Gaz. 19: 318. 1894.

Stems prostrate, slender or stout, much branched from the base, 8-50 cm. long, whitish or tinged with red; leaves numerous, often crowded, pale-green, the petioles 2-18 mm. long, the blades subrotund to obovate or spatulate-ob lanceolate, 3-25 mm. long, obtuse or rounded at the apex, acute to cuneate-attenuate at the base, glabrous, often white-margined and with white nerves, sometimes purplish beneath; flowers monoecious, in small, few-flowered, dense or loose, often leafy, axillary clusters; bracts lanceolate, acute, subulate-tipped, about equaling the flowers; sepals of the staminate flowers 3 or 2, elliptic-lanceolate or oblong-elliptic, scarious; sepals of the pistillate flowers 1, 2, or 3, inconspicuous, one narrowly lanceolate, acute or acuminate, the others usually reduced and scale-like; stamens 1 or 2; utricle subglobose, tardily dehiscent, often tinged with red or purple; seed dark reddish-brown, 0.6-0.8 mm. in diameter.

TYPE LOCALITY: California.

DISTRIBUTION: Southern Washington and Alberta to central California and Nevada.

32. *Amaranthus pubescens* (Uline & Bray) Rydb. Bull. Torrey
Club 39: 313. 1912.

Amaranthus graecizans pubescens Uline & Bray, Bot. Gaz. 19: 317. 1894.

Amaranthus viscidulus Thellung, in Asch. & Graebn. Syn. Mittel-Eur. Fl. 5: 289. 1914. Not *A. viscidulus* Greene, 1898.

Stems stout, ascending or prostrate, much branched, 1–3 dm. long, whitish, densely viscid-puberulent; petioles stout, 2–10 mm. long; leaf-blades elliptic to oval or obovate, 7–15 mm. long, obtuse or acutish, the midvein excurrent as a spinose awn, cuneate at the base, usually puberulent, at least beneath, thick, conspicuously crispate, strongly nerved, the nerves white beneath; flowers monoecious, in small dense axillary clusters longer than the petioles; bracts lanceolate or ovate, twice as long as the flowers, with rigid spinose divaricate tips; sepals 3, those of the staminate flowers scarious, oblong, acute, those of the pistillate flowers oblong to elliptic or linear, obtuse or acutish, thick, 1-nerved, green; stamens 3; style-branches 2 or 3; utricle globose, about equaling the sepals, circumscissile, thick-walled, slightly rugose; seed rotund, 0.8 mm. in diameter, dark reddish-brown or black, lustrous.

TYPE LOCALITY: Silver City, New Mexico.

DISTRIBUTION: Dry open slopes and plains, Nevada to southern Colorado and New Mexico.

33. *Amaranthus graecizans* L. Sp. Pl. 990. 1753.

Amaranthus albus L. Syst. ed. 10. 2: 1268. 1759.

Pyxidium graecizans Moench, Meth. 359. 1794.

Amaranthus leucanthus Raf. Fl. Ludov. 32. 1817.

Amaranthus oleraceus Eaton, Man. ed. 2. 152. 1818. Not *A. oleraceus* L. 1753.

Amaranthus Blitum nanus Moq. in DC. Prodr. 13²: 263. 1849.

Amaranthus Blitum graecizans Moq. in DC. Prodr. 13²: 263. 1849.

Amaranthus albus parviflorus Moq. in DC. Prodr. 13²: 264. 1849.

Dimeandra graecizans Raf.; Moq. in DC. Prodr. 13²: 264, as synonym. 1849.

Galliaris albida Bubani, Fl. Pyren. 1: 185. 1897.

Amaranthus albus puberulus Thellung, in Asch. & Graebn. Syn. Fl. Mittel-Eur. 5: 287. 1914.

Amaranthus albus rubicundus Thellung in Asch. & Graebn. Syn. Fl. Mittel-Eur. 5: 287. 1914.

Amaranthus albus monosepalus Thellung, in Asch. & Graebn. Syn. Fl. Mittel-Eur. 5: 287. 1914.

Galliaris graecizans Nieuwl. Am. Midl. Nat. 3: 278. 1914.

Stems stout, erect, 3–12 dm. high, densely branched, the branches divaricate or ascending, whitish, glabrous or sparingly puberulent or villous, especially near the ends; petioles slender, 0.3–5 cm. long; leaf-blades elliptic to oblong, spatulate, or obovate, 0.5–7 cm. long, obtuse or rounded at the apex, cuneate at the base, pale-green, glabrous, prominently veined, the veins white beneath; flowers monoecious, in dense or loose axillary clusters, these usually shorter but sometimes longer than the petioles; bracts oblong-lanceolate, 2–4 times as long as the sepals, green, rigid, pungent-pointed, spreading; sepals 3, those of the staminate flowers oblong, cuspidate, scarious, those of the pistillate flowers oblong to linear, acute or acutish, 1-nerved, thin, green along the nerve, often tinged with red; stamens 3; style-branches 3; utricle subglobose, circumscissile, rugose, longer than the sepals, sometimes tinged with red; seed rotund, about 0.8 mm. in diameter, dark reddish-brown, shining.

TYPE LOCALITY: Virginia.

DISTRIBUTION: Southern Canada, southward throughout the United States to northern Mexico; adventive in Europe, Asia, Africa, and Argentina.

ILLUSTRATIONS: Willd. Hist. Amaranth. pl. 1, f. 2, pl. 4, f. 7; Britt. & Brown, Ill. Fl. f. 1402; ed. 2, f. 1664; Rob. & Fern. Man. f. 720; Payer, Organogen. pl. 74, f. 21–37; Fiori & Paol. Ic. Fl. Ital. f. 1051; Fl. Batava pl. 1782; Bull. Mich. Exp. Sta. 267: f. 59; G. T. Stevens, Ill. Guide pl. 37, f. 9; Reichenb. Ic. Fl. Germ. 24: pl. 299, f. 8–11.

34. *Amaranthus crispus* (Lesp. & Thév.) A. Br.; A. Gray, Man. ed. 6. 428. 1890.

Euxolus crispus Lesp. & Thév. Bull. Soc. Bot. France 6: 656. 1859.

Albersia crispa Aschers.; Hausskn. Ber. Deuts. Bot. Ges. 8: 121. 1890.

Amaranthus cristulatus Speg. Com. Mus. Nac. Buenos Aires 1¹⁰: 344. 1901.

Stems slender, pubescent, much branched, spreading, forming mats 2–8 dm. in diameter; petioles stout, 2–5 mm. long; leaf-blades rhombic-ovate to oblong, 6–25 mm. long, acutish at the apex, broadly cuneate at the base, thick, conspicuously crispate, puberulent beneath, prominently nerved; flowers monoecious, in small axillary clusters shorter than the petioles; bracts lanceolate to oblong, cuspidate, shorter than the sepals; sepals of the staminate flowers oblong, acute, those of the pistillate flowers oblong to oblanceolate, obtuse, cuspidate, scarious, 1.5 mm. long; stamens 5; style-branches 3; utricle biturbinate, thin-walled, rugose, indehiscent; seed obovate, 0.8 mm. long, black, shining.

TYPE LOCALITY: Bessan, France.

DISTRIBUTION: Argentina; adventive in waste ground in New York, North Carolina, and Louisiana; also in Europe.

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 1407; ed. 2. f. 1668; Fiori & Paol. Ic. Fl. Ital. f. 1052.

35. *Amaranthus muricatus* (Moq.) Gillies; (Moq. in DC. Prodr. 13²: 276, as synonym. 1849) Hicken, Apunt. Hist. Nat. 2: 92. 1910.

Euxolus muricatus Moq. in DC. Prodr. 13²: 276. 1849.

Stems slender, erect or ascending, flexuous, 3–7 dm. high, sulcate-striate, glabrous, much branched; petioles 5–15 mm. long; leaf-blades linear to oblong-linear, 2–8 cm. long, rounded at the apex, apiculate, attenuate at the base and decurrent, deep-green, glabrous; flowers monoecious, in dense, often interrupted, erect or drooping, paniculate spikes, these 1.5–6 cm. long; bracts broadly ovate, obtuse or acutish, shorter than the flowers; sepals 5, narrowly oblong, obtuse or acutish, 1-nerved, mucronate, 1.75 mm. long; stamens 3; style-branches 3, short; utricle subglobose, about equaling the sepals, indehiscent, strongly rugose-tuberculate; seed obovoid, 1.5 mm. long, dark reddish-brown or black, dull.

TYPE LOCALITY: Near Mendoza, Argentina.

DISTRIBUTION: Argentina; adventive about Mobile, Alabama; adventive, also, in France and Spain.

36. *Amaranthus gracilis* Desf. Tabl. Bot. 43. 1804.

Chenopodium caudatum Jacq. Coll. 2: 325. 1788. Not *Amaranthus caudatus* L. 1753.

Albersia gracilis Webb. & Berth. Phyt. Canar. 3: 287. 1836.

Euxolus caudatus Moq. in DC. Prodr. 13²: 274. 1849.

Euxolus caudatus gracilis Moq. in DC. Prodr. 13²: 274. 1849.

Euxolus caudatus maximus Moq. in DC. Prodr. 13²: 274. 1849.

Stems rather slender, erect, 2–9 dm. high, with numerous ascending branches, glabrous, smooth; petioles slender, 1–8 cm. long; leaf-blades ovate or rhombic-ovate, 2–8 cm. long, rounded or narrowed at the apex, the tip emarginate, rounded to broadly cuneate at the base, thin, deep-green, glabrous, prominently nerved; flowers monoecious, in slender, axillary or terminal, often paniculate spikes 4–12 cm. long and 4–8 mm. thick, dense short clusters often present in the axils below the spikes; bracts ovate to lanceolate, acute, scarious, much shorter than the flowers; sepals 3, oblong to linear-oblong, acute or obtuse, cuspidate, 1–1.5 mm. long, equaling or shorter than the utricle; stamens 3; style-branches 3; utricle globose, thin-walled, strongly rugose, green; seed rotund, about 1 mm. in diameter, black or dark reddish-brown, dull.

TYPE LOCALITY: Guinea.

DISTRIBUTION: Waste ground, Florida; adventive in North Carolina and Alabama, and on ballast northward; West Indies, Mexico, and Guatemala; in tropical regions around the world.

ILLUSTRATIONS: Jacq. Ic. Pl. Rar. pl. 344; Mart. Fl. Bras. 5¹: pl. 72; Rob. & Fern. Man. f. 723.

37. *Amaranthus acutilobus* Uline & Bray, Bot. Gaz. 19: 320. 1894.

Euxolus emarginatus Braun & Bouché, Ind. Sem. Hort. Berol. 1851: 13. 1851. Not *Amaranthus emarginatus* Salzm. 1894.

Albersia emarginata Aschers. Ber. Deuts. Bot. Ges. 8: 121. 1890.

Stems slender, succulent, erect, ascending, or decumbent, much branched from the base, glabrous; petioles slender, 5–15 mm. long; leaf-blades rhombic-ovate to spatulate or obcordate, 7–20 mm. long, 5–13 mm. wide, abruptly contracted at the base and cuneate or acute, decurrent, retuse at the apex, usually deeply so, the sinus V-shaped or rounded, the lobes rounded, bright-green, thin, glabrous, prominently veined; flowers monoecious, chiefly in small axillary glomerules much shorter than the petioles, these crowded toward the ends of the branches to form a slender loose leafy spike; bracts lanceolate, twice as long as the sepals of the pistillate flowers or longer and equaling the sepals of the staminate ones, attenuate to slender rigid pungent green tips; sepals of the staminate flowers usually 5, 2–2.5 mm. long, elliptic-oblong,

scarious, acute or acutish, the midnerve excurrent; stamens 5; sepals of the pistillate flowers usually 4, 3 of them similar to those of the staminate flowers, but only half as long, the fourth usually larger and similar to the bracts; style-branches 3, slender; utricle thin-walled, indehiscent; seed 1 mm. in diameter.

TYPE LOCALITY: Described from cultivated plants.

DISTRIBUTION: Southern Mexico; adventive in Germany, Austria, and southern Italy.

38. *Amaranthus deflexus* L. Mant. 2: 295. 1771.

Glomeraria deflexa Cav. Descr. 319. 1803.

Amaranthus prostratus Balbis, Mém. Acad. Turin 7: 360. 1804.

Euxolus deflexus Raf. Fl. Tell. 3: 42. 1837.

Albersia prostrata Kunth, Fl. Berol. 2: 144. 1838.

Stems slender, much branched, ascending or decumbent, glabrous, or villous above, green or purplish, 1.5–6 dm. long; petioles slender or stout, 6–25 mm. long; leaf-blades broadly ovate to rhombic-ovate or lanceolate, narrowed toward the apex, the tip obtuse, sometimes shallowly emarginate, rounded to cuneate at the base, deep-green, often purplish, glabrous, or sparsely villous beneath, prominently veined; flowers monoecious, chiefly in stout, dense, leafy or naked, terminal spikes 2–8 cm. long and 5–10 mm. thick, usually also in dense many-flowered axillary clusters; bracts ovate, acute, cuspidate, 2 mm. long, 1-nerved, green along the nerves; stamens 3; style-branches 3; utricle oblong in outline, indehiscent, the walls fleshy, 3–5-nerved, smooth; seed oval, 1 mm. long, dark reddish-brown, shining.

TYPE LOCALITY: Not stated.

DISTRIBUTION: Adventive along the eastern coast of the United States from Massachusetts to Alabama, and in southern California; southern Mexico; also in South America, Europe, and Africa.

ILLUSTRATIONS: Willd. Hist. Amaranth. pl. 10, f. 20; Mém. Acad. Turin 7: pl. 10; Britt. & Brown, Ill. Fl. f. 1406; ed. 2, f. 1667; Fiori & Paol. Ic. Fl. Ital. f. 1054; Reichenb. Ic. Fl. Germ. 24: pl. 301, f. 1–5.

39. *Amaranthus lividus* L. Sp. Pl. 990. 1753.

Blitum lividum Moench, Meth. 359. 1794.

Albersia livida Kunth, Fl. Berol. ed. 2. 2: 144. 1838.

Euxolus lividus Moq. in DC. Prodr. 13²: 273. 1849.

Amaranthus Blitum A. Gray, Man. ed. 6. 428. 1890. Not *A. Blitum* L. 1753.

Stems stout, erect, branched, succulent, 3–10 dm. high, glabrous, green or usually red; petioles slender, 1.5–7 cm. long, often reddish; leaf-blades broadly ovate to rhombic-ovate, 2–8 cm. long, rounded at the apex and emarginate, broadly cuneate to rounded at the base, deep-green, glabrous; flowers monoecious, in slender, terminal or axillary, erect or drooping spikes 2–7 cm. long and 5–8 mm. thick, and in small or large, dense, axillary clusters; bracts scarious, ovate to oblong, obtuse or acute, one third to one half as long as the calyx; sepals 3, linear-oblong or oblong, obtuse or acutish, 1-nerved; stamens 3; style-branches 2 or 3; utricle ovoid-globose, exceeding the calyx, smooth, thin-walled, indehiscent; seed rotund, 1 mm. in diameter, dark reddish-brown or black, shining.

TYPE LOCALITY: Given as Virginia, but this doubtless incorrect; native habitat not definitely known.

DISTRIBUTION: Adventive about seaports, Massachusetts to New York; southern Mexico; also in tropical South America, eastern Asia, and northern Africa; adventive in Europe.

ILLUSTRATIONS: Willd. Hist. Amaranth. pl. 1, f. 1; Britt. & Brown, Ill. Fl. f. 1405; ed. 2. f. 1666; Rob. & Fern. Man. f. 722.

40. *Amaranthus viridis* L. Sp. Pl. ed. 2. 1405. 1763.

Pyxidium viride Moench, Meth. 359. 1794.

Glomeraria viridis Cav. Descr. Pl. 319. 1802.

Amaranthus ascendens Loisel. Not. Pl. France 141. 1810.

Euxolus viridis Moq. in DC. Prodr. 13²: 273. 1849.

Euxolus viridis ascendens Moq. in DC. Prodr. 13²: 274. 1849.

Amaranthus emarginatus Salzm.; (Moq. in DC. Prodr. 13²: 274, as synonym. 1849) Uline & Bray, Bot. Gaz. 19: 319. 1894.

Stems slender, succulent, much branched from the base, the branches glabrous, ascending or prostrate, 1–6 dm. long; leaves usually few and rather distant, the petioles slender, 4–20 mm.

long, the blades rhombic-ovate, 1–3 cm. long, deeply emarginate, the lobes broad and rounded, rounded to broadly cuneate at the base, fleshy, deep-green, often tinged with purple, glabrous, prominently nerved; flowers monoecious, mostly in small few-flowered axillary clusters much shorter than the petioles, the branches commonly terminated by a slender or stout spike 1 cm. long or less; bracts lanceolate or ovate, acute, scarious, equaling or shorter than the sepals; sepals 3, those of the staminate flowers oblong, acute, 1.5 mm. long, those of the pistillate flowers oblong to narrowly oblong-oblongate, obtuse, much shorter than the utricle; stamens 3; style-branches 3, very short; utricle 1.5 mm. high, globose-ovoid, smooth, thin-walled, indehiscent; seed rotund, 0.8 mm. in diameter, dark reddish-brown, shining.

TYPE LOCALITY: Jamaica.

DISTRIBUTION: Waste ground, Louisiana and Texas and the West Indies; adventive about New York City; also in tropical South America, Asia, and Africa, and the Pacific Islands.

ILLUSTRATION: Hegi, Ill. Fl. f. 560, a–k.

41. *Amaranthus minimus* Standley, sp. nov.

Stems filiform, 2–6 cm. long, much branched and matted, the branches creeping, copiously leafy, glabrous; petioles filiform, 5–15 mm. long; leaf-blades orbicular, 1–4 mm. long, emarginate at the apex, broadly rounded at the base, thin, green, glabrous, obscurely nerved; flowers monoecious, mostly solitary in the axils; bracts and bractlets minute, ovate; pistillate flowers sessile, the three sepals lance-oblong to linear, about one third as long as the utricle; staminate flowers few, usually long-pedicellate, the sepals scarious, 1–1.5 mm. long, ovate-oblong or ovate-oval, acute, green along the nerve; stamens 3; style-branches 3, short; utricle ovoid, 1.5 mm. long, smooth, very thin, greenish, indehiscent; seed subglobose, about 0.8 mm. in diameter, black, slightly lustrous.

Type collected in red soil between Las Martinas and the coast, Province of Pinar del Rio, Cuba, December 19, 1911, *J. A. Shafer 11090* (U. S. Nat. Herb. no. 537681).

42. *Amaranthus pumilus* Raf. Med. Repos. II. 5: 360. 1808.

Euxolus pumilus Chapm. Fl. S. U. S. 381. 1860.

Stems stout, fleshy, prostrate or ascending, 4–30 cm. long; leaves mostly clustered near the ends of the branches, the petioles stout, 2–11 mm. long, the blades obovate to suborbicular, 8–20 mm. long, rounded or emarginate at the apex, rounded to attenuate at the base and decurrent, glabrous, fleshy, prominently veined, the veins often purple; flowers monoecious, in dense axillary clusters; bracts lanceolate, acutish, half as long as the calyx or shorter; sepals of the pistillate flowers 5, narrowly oblong, obtuse, 3–4 mm. long, those of the staminate flowers similar but smaller; stamens 5; style-branches 3; utricle fleshy, indehiscent, oval in outline, about 5 mm. long, faintly 5-ribbed, rugulose; seed 2–2.5 mm. long, black and shining.

TYPE LOCALITY: On an island at Egg Harbor, New Jersey.

DISTRIBUTION: On sea beaches, Rhode Island to North Carolina.

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 1408; ed. 2. f. 1669.

6. ACNIDA L. Sp. Pl. 1027. 1753.

Montelia A. Gray, Man. ed. 2. 369. 1856.

Erect or procumbent, branched, annual herbs, glabrous or nearly so. Leaves alternate, petiolate, the blades entire. Flowers small, dioecious, bracteate and bibracteolate, glomerate, the glomerules axillary or in terminal spikes or panicles; sepals 5 in the staminate flowers, subequal, membranaceous or scarious, erect, apiculate, 1-nerved; perianth none in the pistillate flowers. Stamens 5; filaments subulate, distinct; anthers linear-oblong, 4-celled. Ovary ovoid, compressed or angled; style very short or none; stigmas 2–5, short or elongate, papillose or subplumose; ovule 1, sessile, erect. Utricle membranaceous or fleshy, smooth or rugulose, indehiscent, irregularly dehiscent, or circumscissile. Seed erect, compressed, smooth and shining; embryo annular, the endosperm farinaceous; radicle inferior.

Type species, *Acnida cannabina* L.

Utricle fleshy, 3-5-angled.

Seeds strongly flattened.

Bracts much shorter than the utricle; utricle 2.5-3.5 mm. long; seed 2 mm. in diameter; inflorescence leafy.

Bracts equaling or longer than the utricle; utricle 1.5-2.5 mm. long; seed 1 mm. in diameter; inflorescence naked or nearly so.

Seeds lenticular, turgid.

Utricle 1.2 mm. long or less, thin; clusters of the pistillate inflorescence few-flowered; leaf-blades linear to narrowly oblong.

Utricle 1.5-2 mm. long, thick; clusters of the pistillate inflorescence many-flowered; leaf-blades elliptic to ovate.

Sepals mucronate; pistillate spikes composed of few, usually distant, spherical heads 8-18 mm. in diameter.

Sepals not mucronate; pistillate spikes of numerous crowded clusters 4-10 mm. in diameter.

Utricle membranaceous, not angled.

Utricle irregularly dehiscent or indehiscent.

Stems stout, erect; leaf blades mostly ovate or lanceolate and acute or acuminate, broadest near the base.

Stems slender, decumbent or prostrate; leaf blades mostly obovate to spatulate, rounded or obtuse at the apex, broadest above the middle.

Utricle circumscissile.

1. *A. cannabina*.

2. *A. cuspidata*.

3. *A. floridana*.

4. *A. concatenata*.

5. *A. alabamensis*.

6. *A. altissima*.

7. *A. subnuda*.

8. *A. tamariscina*.

1. *Acnida cannabina* L. Sp. Pl. 1027. 1753.

Acnida rusocarpa Michx. Fl. Bor. Am. 2: 234. 1803.

Acnida rusocarpa Willd. Sp. Pl. 4: 768. 1805.

Amaranthus macrocaulos Poir. in Lam. Encyc. Suppl. 1: 314. 1810.

Acnida salicifolia Raf. Am. Mo. Mag. 2: 43. 1817.

Acnida obtusifolia Raf. New Fl. 1: 54. 1836.

Acnida obtusifolia retusa Raf. New Fl. 1: 54. 1836.

Acnida obtusifolia pumila Raf. New Fl. 1: 54. 1836.

Acnida obtusifolia procera Raf. New Fl. 1: 54. 1836.

Acnida Ellioti Raf. New Fl. 1: 54. 1836.

Acnida cannabina lanceolata Moq. in DC. Prodr. 13²: 277. 1849.

Acnida cannabina salicifolia Moq. in DC. Prodr. 13²: 278. 1849.

Plants glabrous throughout, succulent; stems stout, 3-30 dm. high, often enlarged at the base, smooth or sulcate, green, branched above, the branches strongly ascending; leaves numerous, the petioles slender, 1.5-5.5 cm. long, the blades 5-15 cm. long, 1-3 cm. wide, narrowly lanceolate to ovate, the uppermost often linear, long-attenuate or acuminate at the apex, the tip rounded or obtuse, acute to attenuate at the base, yellowish-green, the blades of the staminate plants often nearly all linear or oblong-linear; staminate flowers in an elongate leafy panicle composed of slender, naked, densely flowered spikes 4-15 cm. long and 5-7 mm. thick; pistillate flowers in narrow elongate leafy panicles composed of numerous slender, loosely flowered, axillary spikes 5-20 cm. long and 5-10 mm. thick; sepals 3 mm. long, oval or oblong, rounded to acutish at the apex, at least the outer ones mucronate, scarious, 1-nerved, twice as long as the bracts; bracts of the pistillate flowers lanceolate to ovate or oblong, half as long as the utricle, acute, often mucronate, thin, not pungent; stigmas 3-5, elongate; utricle 2.5-3.5 mm. long, obovoid, 3-5-angled, fleshy, green, becoming black, indehiscent, smooth or roughened; seed obovate, strongly flattened, 2 mm. long, minutely granulate or nearly smooth, reddish-brown.

TYPE LOCALITY: Virginia.

DISTRIBUTION: Tidal marshes, New Hampshire to northern Florida.

ILLUSTRATIONS: Michx. Fl. Bor. Am. pl. 50; Barton, Elem. Bot. pl. 29, f. 1, 2; Gaertn. Fruct. pl. 126; Britt. & Brown, Ill. Fl. f. 1409; ed. 2. f. 1670.

2. *Acnida cuspidata* Bert.; Spreng. Syst. Veg. 3: 903. 1826.

Acnida cannabina cuspidata Moq. in DC. Prodr. 13²: 277. 1849.

Acnida australis A. Gray, Am. Nat. 10: 489. 1876.

Acnida cannabina australis Uline & Bray, Bot. Gaz. 20: 157. 1895.

Plants glabrous throughout; stems stout, erect, 1-7 m. high, usually much thickened at the base, smooth, succulent, much branched above; leaves numerous, the petioles slender, 2-20 cm. long, the blades narrowly lanceolate to ovate, 6-30 cm. long, 1.5-14 cm. wide, acuminate or long-attenuate at the apex, rounded to acute at the base, undulate, yellowish- or bright-green, prominently nerved; staminate flowers in narrow, leafy or naked panicles com-

posed of numerous slender, erect or drooping, densely flowered spikes 3–9 cm. long and 6 mm. thick; pistillate flowers in narrow, elongate, axillary and terminal, naked or leafy panicles of slender, erect or drooping, loosely flowered spikes 6–15 cm. long and 5–7 mm. thick; sepals ovate or oval, 3 mm. long, acute, scarious, 1-nerved, with spreading mucronate tips, twice as long as the broadly ovate scarious bracts; bracts of the pistillate flowers equaling or longer than the utricle, ovate to subulate, rigid, attenuate to a pungent tip, green; stigmas 3–5, short and stout; utricle obovoid or turbinate, 1.5–2.5 mm. long, fleshy, indehiscent, 3–5-angled; seed flattened, 1 mm. in diameter, rotund or obovate, minutely granulate, nearly black.

TYPE LOCALITY: Jamaica.

DISTRIBUTION: In brackish marshes, Florida to Louisiana; Jamaica; Colima.

3. *Acnida floridana* S. Wats. Proc. Am. Acad. 17: 376. 1882.

Plants glabrous throughout, or sparsely villous on the younger parts; stems slender, erect or ascending, 4–15 dm. long, simple, or branched at the base, pale-green, smooth or striate; leaves few and remote, the petioles 4–30 mm. long, slender, the blades linear, oblong-linear, or narrowly oblong, 0.8–10 cm. long, 2–10 mm. wide, rounded at the apex, attenuate at the base, pale- or yellowish-green; spikes 1–5 dm. long, very slender, 3–10 mm. thick, composed of numerous, usually remote, sometimes approximate, sessile, few-flowered clusters, flexuous, often recurved; sepals oval or ovate, 2 mm. long, obtuse to acute, mucronate, thin, longer than the triangular-lanceolate bracts; bracts of the pistillate flowers lanceolate or ovate, rigid, equaling or shorter than the utricle, green, often tinged with red, pungent; utricle 1.2 mm. long or less, 3-angled, thin but somewhat fleshy, more or less rugulose, often tinged with red; seed rotund, 0.8 mm. in diameter, smooth, black and shining.

TYPE LOCALITY: Key West, Florida.

DISTRIBUTION: Florida.

4. *Acnida concatenata* Moq.; Small, Fl. SE. U. S. 393. 1903.

Acnida cannabina concatenata Moq. in DC. Prodr. 13²: 278. 1849.

Montelia tamariscina concatenata A. Gray, Man. ed. 2. 370. 1856.

Acnida tamariscina concatenata Uline & Bray, Bot. Gaz. 20: 158. 1895.

Plants glabrous throughout; stems stout, erect or ascending, 5–20 dm. high, pale-green, striate-angled, with numerous ascending branches; leaves rather numerous, the petioles slender, 1.5–3 cm. long, the blades lanceolate or elliptic, 2.5–8 cm. long, 0.5–2 cm. wide, usually attenuate to the obtuse or truncate, often emarginate apex, yellowish-green; staminate spikes slender, terminal or axillary, 5–14 cm. long, 5–8 mm. thick, erect or drooping, naked, small sessile clusters present also in the axils of the upper leaves; pistillate flowers in slender or stout spikes 10–40 cm. long and 8–18 mm. thick composed of numerous, very densely many-flowered, remote or contiguous heads, large heads of flowers present also in the axils of the upper leaves; sepals oblong to oval or ovate, 1.5–2 mm. long, obtuse or acutish, scarious, 1-nerved, the outer ones sometimes mucronate, 2–3 times as long as the lanceolate or ovate bracts; bracts of the pistillate flowers shorter than the utricle, lanceolate to linear, rather rigid, pungent; stigmas 3, elongate; utricle 1.5 mm. long, obovoid, fleshy, indehiscent, acutely trigonous, smooth or roughened; seed obovate, 1 mm. long, black and lustrous, smooth.

TYPE LOCALITY: Louisiana.

DISTRIBUTION: Sandy banks, coast of Louisiana.

5. *Acnida alabamensis* Standley, sp. nov.

Plants glabrous throughout; stems stout, erect, 15–18 dm. high, branched above, succulent, smooth or sulcate; leaves few, the petioles slender, 1–4.5 cm. long, the blades oblong-lanceolate to narrowly ovate or narrowly elliptic, 4–9 cm. long, 0.7–2.5 cm. wide, attenuate or acuminate to an obtuse tip, acute to attenuate at the base, yellowish-green; staminate flowers in open, nearly naked panicles composed of few slender, loosely flowered, drooping spikes 4–12 cm. long and 4–6 mm. thick; pistillate flowers in sparsely leafy panicles of slender, densely

flowered, erect or drooping spikes 7–15 cm. long and 4–10 mm. thick; sepals 1.5–2 mm. long, oval or ovate, scarious, 1-nerved, rounded at the apex, 2–3 times as long as the ovate bracts; bracts of the pistillate flowers shorter than the utricle, lanceolate or ovate, green, acute, not pungent; stigmas 3–5, short, stout; utricle ovoid, 2 mm. long, fleshy, indehiscent, 3–5-angled; seed 1 mm. long, lenticular, turgid, obovate, smooth, dark reddish-brown, lustrous.

Type collected on the margin of brackish marshes, One-mile Creek, Mobile County, Alabama, October 4, 1896, *Charles Mohr* (U. S. Nat. Herb. no. 721866).

DISTRIBUTION: Coast of Alabama and Louisiana.

6. *Acnida altissima* Riddell; Moq. in DC. Prodr. 13²: 278, hyponym. 1849.

Amaranthus altissimus Riddell, Syn. Fl. W. St. 41. 1835.

Amaranthus miamiensis Riddell, Syn. Fl. W. St. 41. 1835.

Acnida tuberculata Moq. in DC. Prodr. 13²: 277. 1849.

Acnida rusocarpa Moq. in DC. Prodr. 13²: 277. 1849. Not *A. rusocarpa* Michx. 1803.

Acnida tamariscina tuberculata Uline & Bray, Bot. Gaz. 20: 157. 1895.

Plants glabrous throughout; stems stout, succulent, 3–30 dm. high, smooth or sulcate, green or tinged with red, usually much branched, the branches ascending, often flexuous; leaves numerous, the petioles slender, 1–7 cm. long, the blades broadly ovate to lanceolate, or the uppermost lance-linear, 2.5–15 cm. long, 0.5–5 cm. wide, usually acute or acuminate, sometimes obtuse, broadest below the middle and always narrowed toward the obtuse, often emarginate tip, obtuse to cuneate at the base, thin, bright-green or yellowish-green; staminate inflorescence a densely leafy, narrow panicle composed of few slender, erect or drooping, densely flowered spikes 3–12 cm. long and 4–12 mm. thick; pistillate panicles narrow, elongate, densely leafy, 1–5 dm. long, composed of numerous rigid, erect or spreading, densely flowered spikes 2–10 cm. long and 5–10 mm. thick; sepals 2–3 mm. long, oblong to ovate, acute or obtuse, mucronate, scarious, 1-nerved, equaling or longer than the linear to lanceolate bracts; bracts of the pistillate flowers equaling or longer than the utricle, lanceolate or subulate, acuminate or attenuate to a rigid pungent tip, green; stigmas 3, elongate; utricle 1.5 mm. long, globose or ovoid, thin, smooth or tuberculate, green or red, irregularly dehiscent or indehiscent; seed rotund, lenticular, 0.6–0.8 mm. in diameter, smooth, dark reddish-brown, shining.

TYPE LOCALITY: On an old prairie near Hamilton, Ohio.

DISTRIBUTION: Swamps and low ground, Ontario to Colorado and Ohio; on ballast in Maine.

ILLUSTRATION: Britt. & Brown, Ill. Fl. ed. 2. f. 1672.

7. *Acnida subnuda* (S. Wats.) Standley.

Montelia tamariscina concatenata A. Gray, Man. ed. 2. 370, as to description. 1856.

Acnida tuberculata subnuda S. Wats. in A. Gray, Man. ed. 6. 429. 1889.

Acnida tamariscina subnuda Coult. Mem. Torrey Club 5: 145. 1894.

Acnida tamariscina concatenata Uline & Bray, Bot. Gaz. 20: 158, as to description. 1895.

Acnida tamariscina prostrata Uline & Bray, Bot. Gaz. 20: 158. 1895.

Acnida concatenata Moq.; Small, Fl. SE. U. S. 393, as to description. 1903. Not *A. cannabina concatenata* Moq. 1849.

Acnida tuberculata prostrata B. L. Robinson, Rhodora 10: 32. 1908.

Plants glabrous throughout; stems slender, 1–4 dm. long, prostrate or ascending, green or whitish, much branched in the pistillate plants, sparingly branched in the staminate plants; leaves numerous, the petioles 3–25 mm. long, the blades rounded-obovate, spatulate, elliptic, oblong, or lanceolate, 0.7–7 cm. long, 0.2–4 cm. wide, usually broadest above the middle but sometimes narrowed toward the obtuse to broadly rounded apex, acute, cuneate, or attenuate at the base, pale-green or yellowish-green; staminate spikes slender, erect or drooping, 3–8 cm. long, 3–5 mm. in diameter, naked or leafy, small few-flowered clusters present in the axils of the upper leaves; pistillate flowers in dense, many-flowered, usually remote, sometimes approximate clusters 5–10 mm. in diameter, these collected in elongate leafy spikes 3–15 cm. long, and solitary in the axils of most of the leaves; sepals 1.5–2.5 mm. long, oval to ovate or oblong, acute or obtuse, mucronate, scarious, twice as long as the bracts; bracts of the pistillate flowers lanceolate to subulate, shorter than the utricle, pungent; stigmas 3, elongate; utricle globose-

ovoid, 1–1.5 mm. long, thin, smooth, indehiscent, green or reddish; seed obovoid or rotund, 0.8–1 mm. in diameter, smooth, black and shining.

TYPE LOCALITY: Not definitely stated.

DISTRIBUTION: Along streams, in mud or sand, South Dakota, Michigan, and Ontario to Tennessee.

8. *Acnida tamariscina* (Nutt.) Wood, Bot. & Fl. 289. 1873.

Amaranthus tamariscinus Nutt. Trans. Am. Phil. Soc. II. 5: 165. 1837.

Montelia tamariscina A. Gray, Man. ed. 2. 370. 1856.

Plants glabrous throughout; stems stout, erect, 5–15 dm. high, green or glaucescent, striate-angulate or smooth, simple or much branched, the branches ascending; leaves few, the petioles slender, 0.6–5 cm. long, the blades usually oblong to lance-oblong, sometimes lanceolate or ovate, 1–10 cm. long, 0.4–3.5 cm. wide, rounded or obtuse at the apex, acute to attenuate at the base, pale yellowish-green above, paler beneath; staminate inflorescence of simple terminal or axillary spikes, or of narrow naked panicles composed of few slender, densely flowered, erect or drooping spikes 5–20 cm. long and 8–10 mm. thick, the spikes sometimes interrupted below; pistillate inflorescence of few terminal and axillary spikes, or a broad panicle composed of numerous slender, densely flowered, rigid or flexuous, erect or spreading spikes 3–40 cm. long and 6–15 mm. thick; sepals 2.5–3 mm. long, oblong to ovate, acuminate to obtuse, mucronate, 1-nerved, green along the nerve, equaling or longer than the bracts; bracts of the pistillate flowers linear to lanceolate, longer than the utricle, attenuate to rigid, pungent, spreading or recurved tips, green; stigmas 3; utricle 1.5 mm. long, globose-ovoid, thin-walled, smooth or somewhat tuberculate, circumscissile; seed 0.6–0.8 mm. in diameter, rotund, lenticular, smooth, dark reddish-brown, shining.

TYPE LOCALITY: On the sand beaches of the Arkansas and Grand rivers.

DISTRIBUTION: Damp or dry fields, South Dakota to Missouri, Kentucky, Texas, New Mexico, and Colorado; adventive in Pennsylvania, New Jersey, and Delaware.

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 1410; ed. 2. f. 1671.

7. *ACANTHOCHITON* Torr. in Sitgr. Rep. Exp. 170. 1853.

Glabrous erect branched annual herbs. Leaves alternate, petiolate, entire. Flowers dioecious, glomerate, the glomerules spicate. Staminate flowers ebracteate, the bractlets minute or wanting; sepals 5, subequal, lance-oblong, acuminate, 1-nerved; stamens 5, the filaments filiform, distinct, the anthers oblong, 4-celled. Pistillate flowers concealed by large rigid cordate foliaceous bracts, these spinulose at the apex, recurved; bractlets minute or elongate, rigid, and setaceous, or lanceolate; perianth none; ovary ovoid, slightly compressed, the stigmas 2–4, capillary; ovule 1, erect, on a short funicle. Utricle oval, compressed, membranaceous, circumscissile. Seed erect, obovoid, compressed, smooth, shining; embryo annular, the endosperm farinaceous; cotyledons narrow; radicle inferior.

Type species, *Acanthochiton Wrightii* Torr.

1. *Acanthochiton Wrightii* Torr. in Sitgr. Rep. Exp. 170. 1853.

Plants stout, 1.5–8 dm. high, much branched, the branches ascending, the lowest ones sometimes decumbent, striate; petioles 3–20 mm. long; leaf-blades linear to oblong or lance-oblong, 2–8 cm. long, 2–12 mm. wide, rounded at the apex, cuneate or attenuate at the base, the margins crispate, the veins prominent beneath, whitish; sepals 3 mm. long, the apex aristate; staminate flowers in elongate, nearly naked spikes, the pistillate fascicles axillary and in stout, nearly naked, terminal spikes; bracts of the pistillate flowers 5–15 mm. long, indurate in age, acuminate to a spinulose tip, reticulate-veined, the margins dentate or crenulate; seed 1–1.3 mm. long, dark reddish-brown.

TYPE LOCALITY: Western Texas.

DISTRIBUTION: On sandhills or in sandy soil, western Texas and northern Chihuahua to northeastern Arizona.

ILLUSTRATIONS: Sitgr. Rep. Exp. pl. 13; E. & P. Nat. Pfl. 3^{1a}: f. 57.

III. **CENTROSTACHYDEAE.** Herbs or shrubs. Leaves opposite or alternate. Flowers perfect, polygamous, or dioecious; perianth-segments free, or united at the base. Stamens hypogynous, united at the base to form a short or elongate tube; anthers 4-celled. Ovary 1-ovuled, the ovule pendulous, the radicle superior.

Flowers partly sterile, glomerate in the axils of bractlets, the tips of the perianth-segments of the fertile flowers usually uncinata.

Flowers all fertile, each subtended by a bract and 2 bractlets.

8. **CYATHULA.**

9. **CENTROSTACHYS.**

8. **CYATHULA** Lour. Fl. Cochinch. 101. 1790.

Pubescent, branched, annual or perennial herbs. Leaves opposite, petiolate, the blades entire. Flowers fasciculate, each fascicle consisting of 1 or 2 perfect flowers and few or many sterile ones, the fascicles bracteate and bracteolate, spicate or capitate, reflexed in age; bracts concave, scarious, usually aristate; segments of the sterile flowers finally produced into elongate bristles, these uncinata at the apex; perianth of the perfect flowers scarious, 5-parted, the segments subequal, 1-nerved. Stamens 5; filaments united at the base; staminodia linear or quadrate and lacerate; anthers oblong, 4-celled. Ovary obovoid; style filiform; stigma capitate; ovule 1, suspended from the apex of an elongate funicle. Utricle included in the perianth, areolate at the apex, membranaceous, indehiscent. Seed inverted, oblong; embryo annular, the endosperm farinaceous; cotyledons plane, linear; radicle erect.

Type species, *Cyathula geniculata* Lour.

Sepals 2 mm. long; sterile segments 12-20, equaling the perianth.

Sepals 3-4 mm. long; sterile segments 3-6, in age twice as long as the perianth.

1. *C. prostrata.*

2. *C. achyranthoides.*

1. **Cyathula prostrata** (L.) Blume, Bijdr. Ned. Ind. 549. 1826.

Achyranthes prostrata L. Sp. Pl. ed. 2. 296. 1762.

Cyathula geniculata Lour. Fl. Cochinch. 102. 1790.

Desmochaeta prostrata DC. Cat. Hort. Monsp. 102. 1813.

Pupalia prostrata Mart. Nova Acta Acad. Leop.-Carol. 13¹: 321. 1826.

Perennial, sometimes suffrutescent at the base, sparsely branched; stems slender, prostrate or ascending, 3-10 dm. long, geniculate, rooting at the nodes, the branches erect or ascending, angulate, sparsely hirtellous or puberulent, glabrate in age; petioles slender, 2-10 mm. long; leaf-blades rhombic-obovate, oblong-ovate, or oval, 2-7 cm. long, 1-4.5 cm. wide, acute at the apex, rounded or acute at the base, thin, bright-green, shortly pilose-strigose on both surfaces or sometimes nearly glabrous, the blades of the lowest leaves often broadly oval or suborbicular and rounded at the apex; spikes terminal and axillary, 5-30 cm. long, 5-7 mm. thick, obtuse or acutish, much interrupted below, the rachis puberulent; bracts oblong-ovate, long-acuminate, glabrous, membranaceous, half as long as the flowers; bractlets triangular-ovate, half as long as the perianth, aristate-mucronate, villous; fertile flowers 2, the perianth-segments 2 mm. long, lance-oblong, acuminate, prominently nerved, villous, dull, green or purplish; segments of the sterile flowers 12-20, yellowish, about as long as the fertile flowers; staminodia short, oblong, bidentate at the apex; seed oblong, 1.2 mm. long, brownish, fuscous, lustrous.

TYPE LOCALITY: India.

DISTRIBUTION: Jamaica and Panama; probably adventive in America; also in Trinidad, Brazil, eastern and southern Asia, Africa, and the East Indies.

ILLUSTRATIONS: Wight, Ic. pl. 733; Fawc. & Rendle, Fl. Jam. 3: f. 42.

2. **Cyathula achyranthoides** (H. B. K.) Moq. in DC. Prodr. 13²: 326. 1849.

Desmochaeta achyranthoides H. B. K. Nov. Gen. & Sp. 2: 210. 1818.

Desmochaeta densiflora H. B. K. Nov. Gen. & Sp. 2: 211. 1818.

Desmochaeta uncinata R. & S. Syst. Veg. 5: 554. 1819.

Achyranthes uncinata Willd.; R. & S. Syst. Veg. 5: 554, as synonym. 1819.

Pupalia densiflora Mart. Nov. Gen. & Sp. 2: 61. 1826.

Cyathula achyranthoides glabrescens Moq. in DC. Prodr. 13²: 327. 1849.

Cyathula achyranthoides densiflora Moq. in DC. Prodr. 13²: 327. 1849.

Achyranthes hirtiflora A. Rich. in Sagra, Hist. Cuba 11: 175. 1850.

Cyathula prostrata achyranthoides Kuntze, Rev. Gen. 542. 1891.

Annual or perennial; stems simple or sparsely branched, 6–10 dm. long, ascending or decumbent, geniculate, often rooting at the nodes, the branches ascending or spreading, sulcate, strigose-puberulent or glabrate; petioles stout, 2–10 mm. long; leaf-blades oval to rhombic-elliptic, 5–16 cm. long, 2–6 cm. wide, acuminate at the apex, often abruptly so, cuneate at the base, thin, bright-green, slightly paler beneath, strigose or sometimes glabrate; spikes terminal and axillary, 4–20 cm. long, 6–7 mm. thick, obtuse, the rachis short-villous; glomerules short-pedicellate, 3–4 mm. long, each containing 2 perfect flowers; bracts ovate-lanceolate, long-attenuate, glabrous; bractlets ovate-oblong, long-acuminate or attenuate, shorter than the flowers; sepals lance-oblong, acutish, 3-nerved, villous; segments of the sterile flowers 3–6, twice as long as the perianth, at least in age, pilose below; staminodia one third as long as the filaments, irregularly incised-dentate at the apex; seed oblong-ovate, 2 mm. long, fuscous-brownish, lustrous.

TYPE LOCALITY: Banks of the Magdalena River near Mompos, Colombia.

DISTRIBUTION: Southern Mexico to Panama; Cuba, Jamaica, and Hispaniola; also from Colombia to Brazil and Chile.

ILLUSTRATIONS: Mart. Nov. Gen. & Sp. *pl.* 156, *pl.* 158, *f.* 1; E. & P. Nat. Pfl. 3^{1a}: *f.* 61, A.

9. CENTROSTACHYS Wall. in Roxb. Fl. Ind. 2: 497. 1824.

Cadelaria Raf. Fl. Tell. 3: 39. 1837.

Stachyarpagophora Vaill.; Maza, Fl. Haban. 92. 1897.

Annual or perennial herbs, sometimes suffrutescent at the base, erect or decumbent, glabrous or pubescent. Leaves opposite, petiolate, the blades entire. Flowers perfect, bracteate and bibracteolate, deflexed in age, white or greenish, in slender, elongate, simple or branched spikes; perianth 4–5-parted, indurate in age, the segments subequal, glabrous or pubescent, nerved. Stamens 5 or rarely 2 or 4; filaments filiform-subulate, united at the base; pseudostaminodia quadrate, erose, lacerate, or entire, often cristate dorsally; anthers 4-celled. Ovary oblong, subcompressed, glabrous; style filiform; stigma capitate; ovule 1, suspended from the apex of an elongate funicle. Utricle included in the perianth, rounded or areolate at the apex, membranaceous, indehiscent. Seed inverted, oblong; embryo annular; endosperm farinaceous; cotyledons linear or lanceolate, plane; radicle erect.

Type species, *Centrostrachys aquatica* Wall.

Leaf-blades orbicular to obovate-orbicular, rounded and very abruptly acute at the apex; sepals 4 mm. long.

Leaf-blades oval to broadly ovate, acuminate; sepals 6–7 mm. long.

1. *C. indica*.
2. *C. aspera*.

1. *Centrostachys indica* (L.) Standley, Jour. Wash. Acad. Sci. 5: 75. 1915.

Achyranthes aspera indica L. Sp. Pl. 204. 1753.

Achyranthes indica Mill. Gard. Dict. ed. 8. *Achyranthes* no. 2. 1768.

Achyranthes obtusifolia Lam. Encyc. 1: 545. 1785.

Cadelaria indica Raf. Fl. Tell. 3: 39. 1837.

Achyranthes aspera Moq. in DC. Prodr. 13²: 314. 1849. Not *A. aspera* L. 1753.

Stachyarpagophora aspera pubescens Maza, Fl. Haban. 93. 1897.

Achyranthes aspera simplex Millsp. Field Columb. Mus. Publ. Bot. 2: 36. 1900.

Erect or ascending annual; stems 3–24 dm. high, much branched or rarely simple, the branches spreading or ascending, terete or obscurely quadrangular, cinereous; petioles 3–15 mm. long; leaf-blades rhombic-orbicular or obovate-orbicular, 2–7.5 cm. long and nearly or quite as wide, rounded and very abruptly acute or acutish at the apex, rounded to cuneate at the base, pilose-sericeous on both surfaces or glabrate above, thin; flowers green, spicate, the spikes terminal, 10–40 cm. long, 6–7 mm. thick, obtuse, the rachis pilose or villous; bracts broadly ovate or orbicular, the midnerve indurate and extended into a rigid spine as long as or longer than the body of the bract; bractlets ovate, long-aristate, shorter than the perianth; sepals narrowly lanceolate, 4 mm. long, acuminate, green, not nerved, subcartilaginous; staminodia slightly shorter than the filaments, subquadrilateral, the apex erose-dentate, the dorsal surface produced into a deeply lacinate crest; style longer than the stamens, slender; utricule oblong, truncate above, glabrous; seed oblong, 1.5–2 mm. long, fuscous, dull.

TYPE LOCALITY: India.

DISTRIBUTION: Florida and southern Alabama; West Indies; Costa Rica and Panama; also in South America, Africa, eastern and southern Asia, and the islands of the Pacific.

ILLUSTRATIONS: Wight, Ic. *pl.* 1777 (as *Achyranthes aspera*); Fawc. & Rendle, Fl. Jam. 3: *f.* 43.

2. *Centrostachys aspera* (L.) Standley, Jour. Wash. Acad. Sci.
5: 75. 1915.

Achyranthes aspera L. Sp. Pl. 204. 1753.
Achyranthes argentea Lam. Encyc. 1: 545. 1785.
Achyranthes sicula Roth, Catal. Bot. 1: 39. 1797.
Cadelaria sicula Raf. Fl. Tell. 3: 39. 1837.
Stachyarpagophora aspera Maza, Fl. Haban. 93. 1897.

Ascending or decumbent annual or perennial; stems simple or branched, 3–10 dm. long, the branches ascending, quadrangular, pilose; petioles 4–25 mm. long; leaf-blades oval, ovate-oval, or ovate, 4–20 cm. long, 2–9 cm. wide, rather abruptly acuminate or long-acuminate at the apex, obtuse to abruptly acuminate at the base, thin, green and pilose-strigose on the upper surface, paler beneath and pilose-sericeous, often densely so; flowers spicate, the spikes terminal or axillary, 4–30 cm. long, 10–12 mm. thick, acute, the rachis densely white-villous; bracts and bractlets glabrous, ovate, long-aristate; sepals lanceolate, 6–7 mm. long, long-acuminate, not nerved, subcartilaginous, glabrous; staminodia slightly shorter than the filaments, subquadrilateral, obtuse, entire, produced dorsally into a lacinate keel; style slightly longer than the stamens; utricle oblong, truncate at the apex, glabrous; seed narrowly oblong, 3 mm. long, fuscous, dull.

TYPE LOCALITY: Sicily.

DISTRIBUTION: Adventive in southern Florida; West Indies; central Mexico to Guatemala; also from the southern coast of Europe to Africa and southern Asia.

ILLUSTRATIONS: Lam. Tab. Encyc. pl. 168, f. 1; Sibth. Fl. Graeca pl. 244; E. & P. Nat. Pfl. 3^{ia}: f. 47, D, E; Fiori & Paol. Ic. Fl. Ital. f. 1043.

IV. **BRAYULINEAE.** Prostrate perennial herbs. Leaves opposite. Flowers perfect; perianth 5-lobed. Stamens 5, perigynous, inserted on the tube of the perianth; anthers 2-celled. Ovary 1-ovuled, the ovule pendulous. Radicle superior.

A single genus.

10. BRAYULINEA.

10. *BRAYULINEA* Small, Fl. SE. U. S. 394. 1903.

Guilleminea H. B. K. Nov. Gen. & Sp. 6: 40. 1823. Not *Guilleminia* Neck. 1790.

Prostrate, much branched, densely leafy, lanate, perennial herbs. Leaves opposite, those of each pair with unequal, entire blades, petiolate, the petioles connate at the base. Flowers perfect, small, glomerate in the axils of the leaves, sessile or subsessile, bracteate and bibracteolate, the bracts and bractlets subequal; perianth campanulate, lanate, the tube obconic, the limb 5-lobed, the lobes membranaceous. Stamens 5, perigynous, inserted at the base of the perianth-lobes; filaments triangular-subulate, shortly connate at the base; anthers ovoid, 2-celled. Ovary compressed; style short; stigma emarginate; ovule 1, suspended from the elongate funicle. Utricle membranaceous, indehiscent. Seed inverted, lenticular or compressed-globose, smooth; embryo annular; radicle superior.

Type species, *Illecebrum densum* Willd.

1. *Brayulinea densa* (Willd.) Small, Fl. SE. U. S. 394. 1903.

Illecebrum densum Willd.; R. & S. Syst. Veg. 5: 517. 1819.
Guilleminea illecebroides H. B. K. Nov. Gen. & Sp. 6: 42. 1823.
Guilleminea Illecebrum Spreng. Syst. 4: Cur. Post. 103. 1827.
Guilleminea densa Moq. in DC. Prodr. 13²: 338. 1849.
Achyranthes conferta Pavon; Moq. in DC. Prodr. 13²: 338, as synonym. 1849.
Guilleminea densa aggregata Uline & Bray, Bot. Gaz. 20: 343. 1895.

Stems numerous from a thick vertical root, much branched, prostrate, 5–25 cm. long, stout, densely lanate; basal leaves evanescent or wanting, long-petiolate, the blades oblanceolate or obovate, obtuse or acutish; cauline leaves short-petiolate, the petioles winged, the blades elliptic to broadly oval, asymmetric, 3–15 mm. long, 1.5–9 mm. wide, obtuse or acute at the apex, abruptly narrowed at the base, green and glabrous on the upper surface or sparsely villous when young, densely villous or lanate beneath; flowers densely glomerate, the glomerules much shorter than the leaves; bracts ovate, acute, scarious, white, glabrous; bractlets oblong-ovate, obtuse; calyx 2–2.5 mm. long, slightly longer than the bractlets, the tube densely lanate,

the lobes lance-ovate, acutish, glabrous, scarious, white; utricle glabrous; seed compressed-ovoid, 0.6 mm. long, brown, shining.

TYPE LOCALITY: Tropical America.

DISTRIBUTION: In dry, stony soil, western Texas to southern Arizona, and southward to southern Mexico; also from Brazil to Argentina and Bolivia.

ILLUSTRATION: H. B. K. Nov. Gen. & Sp. *pl.* 518.

V. FROELICHIEAE. Annual or perennial herbs. Leaves opposite. Flowers perfect; segments of the perianth united to the middle or higher to form a tube. Stamens hypogynous, the filaments united to form a tube; anthers 2-celled. Ovary 1-ovuled, the ovule pendulous. Radicle superior.

A single genus.

11. FROELICHIA.

11. FROELICHIA Moench, Meth. 50. 1794.

Oplotheca Nutt. Gen. 2: 78. 1818.

Hoplotheca Nutt.; Spreng. Syst. 4: Cur. Post. 52. 1827.

Ninanga Raf. Fl. Tell. 3: 76. 1837.

Everion Raf. Sylva Tell. 124. 1838.

Annual or perennial, erect or procumbent, pubescent herbs with simple or branched stems. Leaves opposite, sessile or petiolate, the blades entire. Flowers perfect, sessile, spicate, bracteate and bibracteolate, the spikes sessile or pedunculate; perianth 5-lobed, the lobes glabrous, the tube lanate, indurate in age and longitudinally winged or cristate, or bearing longitudinal rows of spines. Stamens 5; filaments united to form an elongate tube, this 5-lobed at the apex, the lobes short or elongate, obtuse; anthers 2-celled, sessile in the sinuses between the lobes. Ovary ovoid; style elongate and with a capitate stigma, or the stigma penicillate and sessile; ovule 1, suspended from the apex of an elongate funicle. Utricle ovoid, membranaceous, indehiscent, included in the calyx-tube. Seed inverted, lenticular or obovoid, smooth; embryo annular, with farinaceous endosperm; radicle superior.

Type species, *Froelichia lanata* Moench.

Calyx-tube, at maturity, with lateral rows of distinct spines; plants slender, much branched.

Stems densely white-lanate; faces of the calyx-tube tuberculate.

Stems pubescent with short, mostly appressed, brownish hairs; faces of the calyx-tube each with 1 or more sharp spines.

Calyx-tube, at maturity, with lateral, deeply dentate to entire crests; plants stout, sparsely branched.

Calyx-crests deeply dentate.

Pubescence on the upper part of the stem of very short, brownish hairs; one or both faces of the calyx-tube with 1 or 2 tuberculate or spinose ridges.

Pubescence of the stems white-lanate; one or both faces of the calyx-tube with a basal spine.

Perennial, from a thickened woody root; stems branched at the base.

Annual, from a slender taproot; stems usually simple at the base.

Calyx-crests merely erose or crenulate, or entire.

Annual; leaf-blades narrowly oblong or lanceolate, their pubescence fulvous; sides of the calyx-tube with 1 or 2 crests.

Perennial; leaf-blades, at least the upper ones, ovate-orbicular or oval, their pubescence white or gray; sides of the calyx-tube naked.

1. *F. gracilis*.

2. *F. Braunii*.

3. *F. floridana*.

4. *F. arizonica*.

5. *F. campestris*.

6. *F. Drummondii*.

7. *F. interrupta*.

1. *Froelichia gracilis* (Hook.) Moq. in DC. Prodr. 13²: 420. 1849.

Oplotheca gracilis Hook. Ic. under *pl.* 256. 1840.

Froelichia floridana Uline & Bray, Bot. Gaz. 20: 338, in part. 1895.

Slender, erect or ascending, sometimes procumbent annual, much branched at the base; stems simple or branched, 2-6 dm. long, densely or sparsely villous-tomentose, sometimes viscid above; leaves short-petiolate, the blades linear to lanceolate or lance-elliptic, 3-12 cm. long, 2-7 mm. wide, acute to long-acuminate at the apex, acuminate or attenuate at the base, canescent or sericeous on the upper surface, sericeous or tomentose beneath with white or gray hairs; spikes slender or stout, 1-3 cm. long; bracts acuminate, fuscous or stramineous; bractlets stramineous or fuscous; calyx-lobes oblong-linear, acute or acutish; calyx-tube with 2 lateral rows of distinct spines at maturity, the sides of the tube tuberculate near the base; seed 1.5 mm. long, yellowish-brown, shining.

TYPE LOCALITY: Texas.

DISTRIBUTION: In dry soil, Iowa to Colorado, and southward to Arkansas, Arizona, and Chihuahua.

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 1413; ed. 2. f. 1675.

2. *Froelichia Braunii* Standley.

Froelichia floridana Moq. in DC. Prodr. 13²: 420, in part. 1849.

Oplotheca texana A. Br. Ann. Sci. Nat. III. 12: 355. 1849.

Froelichia texana A. Br.; Small, Fl. SE. U. S. 397. 1903. Not *F. texana* Coult. & Fisher, 1892.

Slender, erect or ascending annual, branched at the base; stems simple or branched, pubescent with short appressed brownish hairs, somewhat viscid above, usually villous-tomentose near the base; petioles of the lower leaves often half as long as the blades, the upper leaves short-petiolate; leaf-blades linear to linear-elliptic or narrowly lanceolate, 2–12 cm. long, 0.2–2.2 cm. wide, acute to long-acuminate at the apex, acuminate or attenuate at the base, canescent to sericeous-tomentose beneath with brownish or grayish hairs; spikes dense, stout, 0.5–2 cm. long; bracts acute or acuminate, fuscous or stramineous; bractlets stramineous or fuscous; calyx-lobes lance-oblong, acute or acutish; calyx-tube with 2 lateral rows of distant spines at maturity, the sides of the tube each with 1 or more sharp spines; seed 1.5 mm. long, brown, shining.

TYPE LOCALITY: Texas.

DISTRIBUTION: Dry soil, Texas; adventive near St. Louis, Missouri.

3. *Froelichia floridana* (Nutt.) Moq. in DC. Prodr. 13²: 420. 1849.

Oplotheca floridana Nutt. Gen. 2: 79. 1818.

Gomphrena floridana Spreng. Syst. 1: 824. 1825.

Froelichia floridana pallescens Moq. in DC. Prodr. 13²: 421. 1849.

Froelichia gracilis floridana Holz. Contr. U. S. Nat. Herb. 1: 197. 1892.

Stout, erect or ascending annual; stems usually simple at the base, 3–18 dm. high, the branches puberulent or tomentulose with short, often viscid, whitish or yellowish hairs; leaves very shortly petiolate, the blades oblong-linear to narrowly lanceolate, 3–12 cm. long, 0.4–1.5 cm. wide, acute or acuminate at both ends, scaberulous or canescent on the upper surface, sericeous beneath with usually yellowish hairs; spikes 1–7 cm. long, dense, stout; bracts stramineous or fuscous, acuminate or cuspidate; bractlets stramineous or fuscous; calyx-lobes oblong, obtuse, greenish-white or pinkish; calyx-tube winged along the sides, the wings thick and firm, deeply dentate, the sides with 1 or 2 spiny or tuberculate ridges near the base; seed brown, 1.5 mm. long.

TYPE LOCALITY: On the banks of the Altamaha River, Georgia.

DISTRIBUTION: In sandy soil, southern Georgia and Florida to Mississippi; Delaware, perhaps adventive.

ILLUSTRATIONS: W. Barton, Fl. N. Am. pl. 59; Bot. Mag. pl. 2603; Hook. Ic. pl. 256.

4. *Froelichia arizonica* Thornber, sp. nov.

Froelichia campestris Small, Fl. SE. U. S. 397, in part. 1903.

Stout, erect or ascending perennial, from a thick woody root; stems usually several or numerous, simple or branched, 3–10 dm. high, sericeous-tomentose with usually white hairs; leaves usually crowded at the base, few on the stems, short-petiolate, the blades elliptic, obovate-oblong, oblong, or oval, the upper often narrowly oblong, 2–9 cm. long, 0.6–2.7 cm. wide, obtuse or acute at the apex, attenuate at the base, scaberulous or canescent on the upper surface, sericeous-tomentose beneath with white or grayish hairs; spikes stout, dense, 4 cm. long; bracts broadly ovate, acute or acuminate, usually fuscous; bractlets fuscous, rarely stramineous; calyx-lobes narrowly oblong, obtuse or acutish; calyx-tube narrowly winged, the wings dentate, often interrupted or very short, one or both sides of the tube with short thick crests, or merely tuberculate; seed 1.5 mm. long, brown.

Type collected in Stone Cabin Canyon, Santa Rita Mountains, Arizona, in 1902, *David Griffiths* & *J. J. Thornber* 73 (U. S. Nat. Herb. no. 497162).

DISTRIBUTION: Dry stony plains and hillsides, western Texas to southern Arizona, south to Coahuila and Nuevo León.

5. *Froelichia campestris* Small, Fl. SE. U. S. 397. 1903.

Froelichia floridana Uline & Bray, Bot. Gaz. 20: 338, in part. 1895.

Stout erect annual; stems 3–12 dm. high, usually simple at the base, sparsely branched above, the branches sericeous-tomentose with white or brownish hairs, slightly viscid above;

leaves short-petiolate, the blades narrowly oblong to oblong or narrowly elliptic, 4–11 cm. long, 0.7–2.5 cm. wide, obtuse or sometimes acute at the apex, acute to attenuate at the base, canescent or merely scaberulous on the upper surface, sericeous-tomentose beneath with usually fulvous hairs; spikes stout, dense, 1–10 cm. long; bracts broadly ovate, acuminate, fuscous; bractlets fuscous; calyx-lobes narrowly oblong, obtuse or acutish; calyx-tube narrowly winged at maturity, the wings dentate, one or both sides of the tube with a basal spine; seed 1.5 mm. long, brown.

TYPE LOCALITY: Coal Creek, Oklahoma.

DISTRIBUTION: Dry fields and hillsides, Illinois and Wisconsin to Nebraska, Oklahoma, and Missouri.

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 1412 (as *F. floridana*); ed. 2. f. 1674.

6. *Froelichia Drummondii* Moq. in DC. Prodr. 13²: 421. 1849.

Froelichia gracilis Drummondii Holz. Contr. U. S. Nat. Herb. 1: 214. 1892.

Froelichia floridana Drummondii Uline & Bray, Bot. Gaz. 20: 339. 1895.

Stout, erect or ascending annual; stems 3–12 dm. high, simple or branched at the base, the branches mostly simple, sericeous-lanate with brownish hairs, often viscid above; petioles of the lowest leaves half as long as the blades, the upper leaves short-petiolate, the blades oblong to oblong-lanceolate, 5–14 cm. long, 1–4 cm. wide, obtuse at the apex, acute or attenuate at the base, canescent on the upper surface, densely sericeous-tomentose beneath with brownish hairs; spikes stout, dense, 1–6 cm. long; bracts broadly ovate, acuminate, fuscous or stramineous; bractlets fuscous or stramineous; calyx-lobes lance-oblong, acutish; calyx-tube narrowly winged at maturity, the wings erose, the sides of the tube with 1 or 2 low dentate ridges; seed 1.5 mm. long, fuscous.

TYPE LOCALITY: Texas.

DISTRIBUTION: In dry soil, southern Oklahoma and Texas.

7. *Froelichia interrupta* (L.) Moq. in DC. Prodr. 13²: 421. 1849.

Gomphrena interrupta L. Sp. Pl. 224. 1753.

Celosia procumbens Jacq. Misc. Austr. 344. 1778.

Gomphrena spicata Lam. Encyc. 1: 120. 1783.

Froelichia lanata Moench, Meth. 50. 1794.

Oplothea interrupta Nutt. Gen. 2: 79. 1818.

Oplothea tomentosa Mart. Nov. Gen. & Sp. 2: 48. 1826.

Ninanga interrupta Raf. Fl. Tell. 3: 77. 1837.

Everion interrupta Raf. Sylva Tell. 124. 1838.

Froelichia floridana Moq. in DC. Prodr. 13²: 420, in part. 1849.

Froelichia tomentosa Moq. in DC. Prodr. 13²: 421. 1849.

Froelichia alata S. Wats. Proc. Am. Acad. 21: 437. 1886.

Froelichia texana Coult. & Fisher, Bot. Gaz. 17: 350. 1892.

Froelichia interrupta cordata Uline & Bray, Bot. Gaz. 20: 340. 1895.

Perennial from a woody root, branched at the base; stems ascending or decumbent, 3–10 dm. long, simple or sometimes branched, rather slender, thinly white-tomentose or sericeous, slightly viscid above; leaves petiolate, the petioles of the lower leaves sometimes as long as the blades, those of the upper leaves shorter, the blades oval to ovate-orbicular, rarely oblong or elliptic, 2.5–10 cm. long, 0.8–3.8 cm. wide, obtuse or acutish or rarely acute at the apex, rounded or obtuse at the base or sometimes acute, scaberulous or canescent on the upper surface, sericeous or floccose-tomentose beneath with whitish or grayish hairs; inflorescence lax; bracts acute or acuminate, stramineous or brown; bractlets stramineous or fuscous; calyx-lobes lance-oblong, obtuse; calyx deltoid in outline, nearly as broad as long, broadly winged laterally, the thin wings entire or crenulate, the sides of the calyx-tube not appendaged; seed brown, 1.5 mm. long.

TYPE LOCALITY: America.

DISTRIBUTION: Western Texas to Mexico; Cuba, Jamaica, and Hispaniola; also from Colombia to Paraguay and Chile.

ILLUSTRATIONS: L'Hér. Stirp. Nov. pl. 3; Lam. Tab. Encyc. pl. 180, f. 2; Jacq. Ic. Pl. Rar. pl. 51; Mart. Fl. Bras. 5¹: pl. 50, f. 1; Fawc. & Rendle, Fl. Jam. 3: f. 44.

VI. GOMPHRENEAE. Herbs or shrubs. Leaves opposite, or very rarely alternate. Flowers perfect, polygamous, or dioecious; perianth-segments usually free. Stamens hypogynous, the filaments united at the base into

a short or elongate tube, or the stamen rarely only 1; anthers 2-celled. Ovary 1-ovuled, the ovule pendulous. Radicle ascending.

Flowers glomerate, the leaves subtending the glomerules usually indurate at the base and forming an involucre in age.

Flowers capitate or spicate, the heads or spikes naked or subtended by leaves, but, in the latter case, the leaves not indurate at the base.

Stigma capitate, sometimes bilobate.

Stamen-tube 5-lobed, without pseudostaminodia.

Lobes of the stamen-tube entire.

Flowers terete.

Flowers compressed.

Lobes of the stamen-tube 3-lobed, dentate, or laciniate.

Stamen-tube 4-10-lobed, the antheriferous lobes entire, alternating with pseudostaminodia.

Stigma 2- or 3-lobed, the lobes subulate to filiform.

Stamen 1; sepals 4.

Stamens 2-5; sepals 5.

Lobes of the stamen-tube broad, 3-lobed, dentate or laciniate; pseudostaminodia none.

Lobes of the stamen-tube entire, often with intermediate pseudostaminodia.

Leaves, at least most of them, alternate.

Leaves all opposite.

Flowers not compressed, in small spikes, these loosely paniculate.

Flowers strongly compressed, in dense, axillary or terminal, head-like spikes.

Stamens 2; perianth sessile.

Stamens 5; perianth stipitate.

12. TIDESTROMIA.

13. GOSSYPIANTHUS.

15. ACHYRANTHES.

14. PFAFFIA.

15. ACHYRANTHES.

16. WOEHLERIA.

17. GOMPERENA.

18. DICRAURUS.

19. IRESINE.

20. LITHOPHILA.

21. PHILOXERUS.

12. TIDESTROMIA Standley, Jour. Wash. Acad. Sci. 6: 70. 1916.

Cladanthrax Nutt.; (Moq. in DC. Prodr. 13²: 359, as synonym. 1849) S. Wats. Bot. Calif. 2: 43. 1880. Not *Cladanthrax* Cohn, 1875.

Annual or perennial, erect or prostrate herbs, sometimes suffruticose at the base, branched, pubescent with branched hairs. Leaves opposite, petiolate, the blades broad, entire. Flowers minute, perfect, glomerate in the axils of the leaves, bracteate and bibracteolate, the bracts and bractlets hyaline, pubescent; perianth 5-parted, the segments equal, 1-nerved, membranaceous. Stamens 5, hypogynous; filaments connate into a short cup, with or without intervening lobes or staminodia; anthers 2-celled. Ovary globose; style short; stigma capitate, simple or 2-lobed; ovule 1, suspended from the apex of a slender funicle. Utricle slightly compressed, glabrous.

Type species, *Achyranthes lanuginosa* Nutt.

Annual, usually prostrate; staminodia very short or none.

Perennials, erect or ascending.

Staminodia very short and broad, sometimes emarginate.

Staminodia acute, nearly half as long as the filaments.

1. *T. lanuginosa*.2. *T. suffruticosa*.3. *T. oblongifolia*.

1. *Tidestromia lanuginosa* (Nutt.) Standley, Jour. Wash. Acad. Sci. 6: 70. 1916.

Achyranthes lanuginosa Nutt. Trans. Am. Phil. Soc. II. 5: 166. 1820.

Alternanthera lanuginosa Moq. in DC. Prodr. 13²: 359. 1849.

Cladanthrax lanuginosa Nutt.; (Moq. in DC. Prodr. 13²: 360, as synonym. 1849) S. Wats. Bot. Calif. 2: 43. 1880.

Prostrate or procumbent annual, much branched, the branches slender or stout, 1-5 dm. long, densely and finely stellate-pubescent or sometimes glabrate in age; petioles slender or stout, equaling or shorter than the blades; leaf-blades orbicular to oval or ovate-orbicular, 0.5-3 cm. long and about as broad, rounded or obtuse at the apex and base, densely stellate-pubescent on both surfaces, or, in age, often glabrate on the lower or both surfaces, the veins often prominent beneath; glomerules few-flowered, the subtending leaves sometimes indurate at the base in age; perianth 1-3 mm. long, 3 times as long as the bracts, the segments narrowly oblong to ovate-oblong, obtuse or acutish, yellowish, densely stellate-pubescent or glabrate; staminodia minute or wanting; seed 0.5 mm. long.

TYPE LOCALITY: "Sand beaches of Great Salt River" [Oklahoma?].

DISTRIBUTION: Dry plains and fields, western Kansas to southeastern Utah, south to western Texas, Sinaloa, and Zacatecas.

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 1411; ed. 2. f. 1673.

2. *Tidestromia suffruticosa* (Torr.) Standley, Jour. Wash. Acad. Sci.
6: 70. 1916.

Alternanthera suffruticosa Torr. Bot. Mex. Bound. Surv. 181. 1859.
Cladanthrax suffruticosa S. Wats. Bot. Calif. 2: 43. 1880.

Erect perennial, suffrutescent at the base or nearly throughout, densely and finely grayish-pubescent with much branched hairs; stems 1–2.5 dm. high, much branched, the stout branches ascending, often swollen at the nodes; leaves short-petiolate, the blades orbicular-ovate to broadly oval, 0.4–2 cm. long, 0.3–1.2 cm. wide, obtuse or rounded at the apex, rounded or obtuse and asymmetric at the base, the lateral veins not prominent; glomerules few-flowered, the small subtending leaves sometimes united and indurate at the base in age; perianth 2 mm. long, the lobes narrowly oblong, obtuse or acutish, glabrous below, densely pubescent above; staminodia very short, rounded or emarginate; seed 0.5 mm. broad.

TYPE LOCALITY: Mountains between the Pecos and the Limpio, Texas.

DISTRIBUTION: Dry, rocky hillsides, western Texas and southern New Mexico to Coahuila.

3. *Tidestromia oblongifolia* (S. Wats.) Standley, Jour. Wash.
Acad. Sci. 6: 70. 1916.

Cladanthrax lanuginosa S. Wats. Bot. Calif. 2: 43, in part. 1880. Not *Achyranthes lanuginosa* Nutt. 1820.

Cladanthrax oblongifolia S. Wats. Proc. Am. Acad. 17: 376. 1882.

Cladanthrax cryptantha S. Wats. Proc. Am. Acad. 26: 125. 1891.

Perennial, densely and closely pubescent throughout with short, much branched hairs; stems erect, ascending, or decumbent, slender or stout, much branched, sometimes suffruticose at the base, 2–6 dm. long; leaves short-petiolate, the blades ovate-orbicular, broadly ovate, or oblong, 0.8–4 cm. long, 0.3–2 cm. wide, obtuse at the apex, rounded to acute at the base, prominently veined; glomerules few-flowered, the small subtending leaves in age usually indurate and united at the base to form an involucre; perianth 1 mm. long, 2–3 times as long as the bracts, the lobes oblong or oblong-ovate, obtuse or acutish, densely pubescent above; staminodia acute, about half as long as the filaments; seed 0.5 mm. long.

TYPE LOCALITY: On the banks of the Colorado River near Chimney Peak, California.

DISTRIBUTION: Dry, stony soil, southeastern California and Arizona to western Nevada.

13. GOSSYPIANTHUS Hook. Ic. pl. 251. 1840.

Lanate perennial herbs, from thick woody roots, the branches ascending or prostrate. Leaves mostly basal, rosulate, the blades narrow, entire. Flowers perfect, minute, glomerate in the axils of the leaves, densely lanate, bracteate and bibracteolate; bracts and bractlets subequal, hyaline; perianth 5-parted, the segments equal, acute or obtuse, firm. Stamens 5, the filaments subulate, united at the base into a short cup; staminodia none; anthers oblong, 2-celled. Ovary ovoid or oblong, compressed; style short, the stigma emarginate; ovule 1, suspended from the apex of an elongate funicle. Utricle ovoid-oblong, membranaceous, indehiscent. Seed inverted, lenticular, the testa thinly crustaceous, smooth, lustrous; embryo annular, the endosperm farinaceous, the radicle superior.

Type species, *Gossypianthus rigidiflorus* Hook.

Bracts obtuse; caudex usually branched.

Cauline leaf-blades 4 mm. long or less, sparsely sericeous beneath, shorter than the inflorescence; flowers capitate or very shortly spicate.

1. *G. Brittonii*.

Cauline leaf-blades 7–20 mm. long, densely sericeous beneath, longer than the inflorescence; flowers mostly in spikes, these longer than broad.

2. *G. Sheldoni*.

Bracts acute or acuminate; caudex not branched.

Leaf-blades glabrous or nearly so, the basal ones acute; flowers distinctly spicate, the spikes usually longer than broad.

3. *G. tenuiflorus*.

Leaf-blades, at least the cauline ones, copiously villous-sericeous beneath, the basal ones rounded or obtuse; flowers merely capitate, or, if spicate, the spikes very short.

4. *G. lanuginosus*.

1. *Gossypianthus Brittonii* Standley, Contr. U. S. Nat. Herb.
18: 92. 1916.

Caudex much branched both above and below the surface of the soil, the branches stout or slender; stems numerous, prostrate, 4–9 cm. long, slender, lanate when young but soon

glabrate; basal leaves petiolate, the blades oblanceolate, 6–8 mm. long, 1.5–2 mm. wide, obtuse or acutish, pilose above, pilose-sericeous beneath; cauline leaves short-petiolate, the blades orbicular to oval, 2–4 mm. long, obtuse or rounded at the apex, glabrate above, pilose beneath; flowers capitate, the heads much longer than the subtending leaves; bracts ovate to orbicular-ovate, nearly equaling the sepals, obtuse or rounded at the apex, white, scarious, glabrous; sepals 2.5–3 mm. long, lance-oblong, acute, faintly 3-nerved, green along the nerves, the margins white and scarious; filaments linear, dilated at the base; utricle oval; seed oval, 1.2 mm. long, brown, shining.

TYPE LOCALITY: In a pine barren, Santa Clara, Cuba.
DISTRIBUTION: Cuba.

2. **Gossypianthus Sheldoni** (Uline & Bray) Small, Fl. SE. U. S. 395.
1903.

Gossypianthus lanuginosus Sheldoni Uline & Bray, Bot. Gaz. 20: 341. 1895.

Caudex very stout, usually branched, densely pilose; stems few, prostrate, 5–15 cm. long, stout, sparsely branched, densely lanate; basal leaves petiolate, the blades oblanceolate to spatulate-obovate or obovate-oblong, 2.5–4.5 cm. long, 0.5–1.5 cm. wide, obtuse or rounded at the apex, long-attenuate at the base, pilose-sericeous or glabrate on the upper surface, densely pilose-sericeous beneath; cauline leaves short-petiolate, the blades oval or broadly oval, 0.8–2 cm. long, obtuse or acutish, densely pilose-sericeous beneath, less so or glabrate above; inflorescence densely crowded and very leafy, the flowers in dense spikes 5–10 mm. long and 4 mm. thick, these much shorter than the subtending leaves; bracts ovate-orbicular, much shorter than the calyx, obtuse, white, scarious, glabrous; sepals 2.5–3 mm. long, linear-lanceolate or lanceolate, long-acuminate, 3-nerved, green along the nerves, elsewhere white and scarious; filaments linear; seed 1 mm. long, reddish-brown, shining.

TYPE LOCALITY: Cash Creek, Oklahoma.
DISTRIBUTION: On prairies, Oklahoma and northwestern Texas.

3. **Gossypianthus tenuiflorus** Hook. Ic. under *pl.* 251. 1840.

Gossypianthus lanuginosus Uline & Bray, Bot. Gaz. 20: 340, in part. 1895. Not *G. lanuginosus* Moq. 1849.

Caudex simple; stems few or numerous, prostrate, 0.5–2 dm. long, slender, much branched, sparsely lanate or glabrate; basal leaves petiolate, the blades linear-oblanceolate or linear, 1.5–4 cm. long, 1.5–4 mm. wide, acute at the apex, long-attenuate at the base, usually glabrous, the bases of the petioles pilose; cauline leaves short-petiolate, the blades elliptic, oblong, or oval, 5–15 mm. long, acute, glabrous, rarely slightly pilose-strigose beneath; flowers in dense spikes 5–10 mm. long and 6–7 mm. thick, these usually equaling or exceeding the subtending leaves; bracts ovate or broadly ovate, acute or acuminate, white, scarious, glabrous; sepals 2.5–3 mm. long, lanceolate or linear-lanceolate, acuminate, 3-nerved, green along the nerves, elsewhere white and scarious, densely lanate; filaments lanceolate; seed oblong-ovoid, 1 mm. long, brown, shining.

TYPE LOCALITY: Texas.
DISTRIBUTION: Oklahoma and eastern Texas to eastern New Mexico.

4. **Gossypianthus lanuginosus** (Poir.) Moq. in DC. Prodr. 13²: 337.
1849.

Paronychia lanuginosa Poir. in Lam. Encyc. Suppl. 4: 303. 1816.

Gossypianthus rigidiflorus Hook. Ic. *pl.* 251. 1840.

Celosia piloselloides Poit.; Moq. in DC. Prodr. 13²: 337, as synonym. 1849.

Achyranthes piloselloides Poit.; Moq. in DC. Prodr. 13²: 337, as synonym. 1849.

Illecebrum lanuginosum Poir.; Moq. in DC. Prodr. 13²: 337, as synonym. 1849.

Guilleminea lanuginosa Benth. & Hook. Gen. Pl. 3: 37. 1880.

Caudex simple, lanate; stems numerous, ascending or prostrate, 1–2 dm. long, stout or slender, much branched, lanate, sometimes glabrate in age; basal leaves petiolate, the blades oblong-oblanceolate to obovate-spatulate, 1.5–6.5 cm. long, 3–10 mm. wide, obtuse or rounded at the apex, long-attenuate at the base, sparsely appressed-pilose or glabrate on the upper

surface, pilose-sericeous beneath or glabrate; cauline leaves on very short, broad petioles, the blades oval, orbicular-oval, or rounded-obovate, 5-10 mm. long, 3-8 mm. wide, obtuse or acutish, pilose-strigose above, densely pilose-sericeous beneath; flowers glomerate or capitate, the inflorescence equaling or shorter than the subtending leaves; bracts ovate, acute or acuminate, shorter than the flowers; calyx 2.5-3 mm. long, densely lanate, the sepals lanceolate to lance-linear, acuminate, 3-nerved, green along the nerves, elsewhere white and scarious; filaments linear, or dilated at the base; seed 1 mm. long, brown, shining.

TYPE LOCALITY: Santo Domingo.

DISTRIBUTION: In dry soil, southern and western Texas to Chihuahua and Tamaulipas; Hispaniola.

ILLUSTRATION: Hook. Ic. pl. 251.

14. PFAFFIA Mart. Nov. Gen. & Sp. 2: 20. 1826.

Serturera Mart. Nov. Gen. & Sp. 2: 36. 1826.

Hebanthe Mart. Nov. Gen. & Sp. 2: 42. 1826.

Pubescent or glabrate, branched herbs or shrubs, sometimes scandent. Leaves opposite, sessile or short-petiolate, the blades entire. Flowers mostly perfect, bracteate and bibracteolate, capitate or spicate, the spikes or heads pedunculate, often numerous and paniculate; perianth sessile, terete, the 5 segments free, subequal, pilose or lanate. Filaments united in a 5-lobed tube, the lobes fimbriate, dentate, or 3-lobed; staminodia none; anthers narrowly oblong, 2-celled. Ovary ovoid; style very short or wanting; stigma capitate or bilobate; ovule 1, suspended from the apex of an elongate funicle. Utricle ovoid, membranaceous, indehiscent. Seed inverted, smooth; embryo annular, surrounding the farinaceous endosperm; cotyledons linear; radicle superior.

Type species, *Pfaffia glabrata* Mart.

1. *Pfaffia Hookeriana* (Hemsl.) Greenman, Field Mus. Publ. Bot. 2: 330. 1912.

Gomphrena pulverulenta Moq. in DC. Prodr. 13²: 386, in part. 1849. Not *Hebanthe pulverulenta* Mart. 1826.

Hebanthe Hookeriana Hemsl. Biol. Centr. Am. Bot. 3: 19. 1882.

Gossypianthus Hookerianus Kuntze, Rev. Gen. 543. 1891.

Scandent shrub, much branched, the branches stout, terete, smooth, the younger ones and those of the inflorescence densely villous with short ascending fulvous hairs, the older branches glabrate; petioles stout, 3-13 mm. long; leaf-blades ovate-oblong, broadly ovate, or oval-oblong, 4-9 cm. long, 1.2-4 cm. wide, abruptly acute or long-acuminate at the apex, obtuse or usually rounded at the base, thick and firm, pilose-strigose, or sometimes glabrate on the upper surface, the hairs short, slender, fulvous; flowers spicate, the spikes 1.5-5 cm. long, verticillately paniculate, the panicles short and narrow, the branches divaricate; bracts and bractlets about one fourth as long as the sepals, suborbicular, concave, short-villous; sepals ovate-oblong, 2-2.5 mm. long, obtuse, the outer ones pilose-strigose, the inner ones densely pilose, the hairs soft, white, twice as long as the sepals; filaments filiform; style very short.

TYPE LOCALITY: Córdoba, Vera Cruz.

DISTRIBUTION: Vera Cruz to Panama.

DOUBTFUL SPECIES

HEBANTHE? PARVIFLORA Benth. Bot. Voy. Sulph. 156. 1844. (*Alternanthera parviflora* Moq. in DC. Prodr. 13²: 360. 1849. *Iresine Benthiana* Kuntze, Rev. Gen. 543. 1891.) Type locality not given in the original description; Moquin gives the locality as "In Mexico?"; Index Kewensis (2: 1097) gives the distribution as Porto Rico.

15. ACHYRANTHES L. Sp. Pl. 204. 1753.

Alternanthera Forsk. (Fl. Aegypt.-Arab. 28, hyponym. 1775); J. F. Gmel. Syst. Nat. 2: 106. 1791.

Allaganthera Mart. Pl. Hort. Erlang. 69. 1814.

Pityranthus Mart. Denks. Akad. Münch. 5: 179. 1817.

Telanthera R. Br. in Tuckey, Narr. Exped. Congo 477. 1818.

Brandesia Mart. Nov. Gen. & Sp. 2: 25. 1826.
Mogiphanes Mart. Nov. Gen. & Sp. 2: 29. 1826.
Bucholzia Mart. Nov. Gen. & Sp. 2: 49. 1826.
Steiremis Raf. Fl. Tell. 3: 40. 1837.

Pubescent or glabrous, prostrate, erect, or scandent herbs or shrubs. Leaves opposite, petiolate or sessile, the blades entire or obscurely denticulate. Flowers perfect, bracteate and bibracteolate, capitate or spicate, usually compressed, the heads or spikes few or numerous, sessile or pedunculate, axillary or terminal; perianth sessile or stipitate, the stipe sometimes 5-sulcate, the sepals distinct, unequal, glabrous or pubescent. Filaments united to form a short or elongate tube, this with 3-5 entire antheriferous lobes and as many intervening entire or variously laciniate or dentate, short or elongate staminodia, or the staminodia rarely wanting; anthers short or elongate, 2-celled. Ovary globose, ovoid, or obovoid; style short or elongate; stigma capitate; ovule 1, pendulous from an elongate funicle. Utricle membranaceous, indehiscent. Seed inverted, smooth; embryo annular, surrounding the farinaceous endosperm; cotyledons narrow, the radicle superior.

Type species, *Achyranthes repens* L.

Heads sessile, or a few inconspicuously pedunculate.

Staminodia shorter than the filaments, entire or denticulate, or wanting; stamen-tube very short.

Staminodia present.

Sepals with rigid spinose tips.

Stems erect or ascending; leaves densely pubescent beneath, the pubescence of branched hairs.

Stems prostrate; leaves glabrous or nearly so; pubescence of simple beaded hairs.

Sepals 6-7 mm. long, sparsely villous; leaf-blades usually as broad as long; staminodia dentate.

Sepals 3-5 mm. long, densely villous; leaf-blades longer than broad; staminodia usually entire.

Sepals never with rigid spinose tips.

Utricle much shorter than the calyx; sepals 4 mm. long.

Utricle equaling or exceeding the calyx; sepals 2 mm. long or less.

Staminodia none.

Staminodia equaling or usually much longer than the filaments, usually laciniate at the apex; stamen-tube elongate.

Pubescence of branched or conspicuously hispidulous hairs.

Leaf-blades mostly orbicular, usually as broad as long.

Outer sepals lanceolate, acuminate; leaf-blades 0.6-1 cm. long.

Outer sepals lance-ovate, acute or acutish; leaf-blades 1.5-3.5 cm. long.

Leaf-blades never orbicular, much longer than broad.

Bracts, at least the outer ones, laciniately lobed; petioles equaling or at least half as long as the blades.

Bracts entire or merely denticulate; petioles less than half as long as the blades.

Plants erect or ascending.

Plants prostrate or procumbent.

Leaves glabrate, usually acute; outer sepals acuminate; heads little if at all longer than broad.

Leaves densely grayish-pubescent beneath, usually rounded at the apex, sometimes acutish; outer sepals acutish or obtuse; heads usually much longer than broad.

Pubescence of simple or fasciculate hairs.

Leaves succulent; heads 0.6-1 cm. long, few-flowered; sepals glabrous.

Leaves thin; heads 1-3 cm. long, many-flowered; sepals pilose.

Flowers white; staminodia entire.

Flowers brownish; staminodia laciniate.

Leaf-blades abruptly long-acuminate, 11-17.5 cm. long; sepals 6-7 mm. long; staminodia pectinate-laciniate.

Leaf-blades acute to rounded at the apex, 5 cm. long or shorter; sepals 3.5 mm. long or less; staminodia laciniate only at the apex.

Stems subfiliform; leaf-blades 1-2 cm. long, most of them suborbicular.

Stems stout; leaf-blades 2-5 cm. long, ovate or ovate-oblong.

Heads pedunculate, the peduncles elongate.

Flowers sessile in the bractlets or nearly so.

Sepals glabrous.

1. *A. axillaris*.

2. *A. leiantha*.

3. *A. repens*.

4. *A. polygonoides*.

5. *A. sessilis*.

6. *A. serpyllifolia*.

7. *A. martinicensis*.

8. *A. portoricensis*.

9. *A. Bettzickiana*.

10. *A. Watsoni*.

11. *A. ficoidea*.

12. *A. halimifolia*.

13. *A. maritima*.

14. *A. obovata*.

15. *A. megaphylla*.

16. *A. Urbani*.

17. *A. olivacea*.

- Spikes 12–15 mm. in diameter; leaf-blades narrow, nearly glabrous. 18. *A. philoxeroides*.
 Spikes 5–7 mm. in diameter; leaf-blades broad, copiously pubescent.
 Peduncles branched, stout; flowers purplish. 19. *A. panamensis*.
 Peduncles simple, slender; flowers white or stramineous. 20. *A. mexicana*.
 Sepals villous or pilose.
 Spikes cylindrical in age.
 Stamminodia pectinate-laciniate; pubescence retrorse. 21. *A. costaricensis*.
 Stamminodia laciniate only at the apex; pubescence not retrorse.
 Spikes 5–9 mm. thick; leaf-blades linear to narrowly lanceolate.
 Sepals 4–5 mm. long, long-pilose, the hairs equaling the sepals. 22. *A. laguroides*.
 Sepals 2.5 mm. long, sparsely very short-pilose.
 Leaf-blades linear or elliptic-linear, 3–6 mm. wide, acute or acutish. 23. *A. stenophylla*.
 Leaf-blades ovate to elliptic-oblong, 1–3.5 mm. wide, abruptly acute to attenuate. 24. *A. Lehmannii*.
 Spikes 10–15 mm. thick; leaf-blades oblong to broadly ovate or oval.
 Sepals densely long-pilose, 6–7 mm. long; leaves nearly glabrous; peduncles usually branched. 25. *A. pycnantha*.
 Sepals sparsely short-pilose, 5 mm. long; leaves copiously pubescent; peduncles usually simple.
 Leaf-blades long-acuminate or abruptly acuminate, densely pilose-sericeous beneath; sepals acutish. 26. *A. cordobensis*.
 Leaf-blades acute or acutish, sparsely pilose-strigillose beneath; sepals acuminate. 27. *A. Williamsii*.
 Spikes globose. 28. *A. gracilis*.
 Flowers conspicuously pedicellate, the pedicel articulate, deeply 5-sulcate. 29. *A. Jacquini*.
 Bractlets longer than the sepals, broadly cristate.
 Bractlets much shorter than the sepals. 30. *A. ramosissima*.
 Stems strigillose or glabrate; leaf-blades mostly lanceolate or narrowly ovate, thick; bractlets not cristate. 31. *A. brasiliiana*.
 Stems pilose with ascending or spreading hairs; leaf-blades broadly ovate or oval, thin; bractlets usually narrowly cristate.

1. *Achyranthes axillaris* Hornem.; Willd. Enum. 270. 1809.

- Achyranthes spinosa* Hornem. Hort. Hafn. 1: 240. 1813.
Celosia axillaris Mart. Pl. Hort. Erlang. 70. 1814.
Alternanthera spinosa R. & S. Syst. Veg. 5: 555. 1819.
Illecebrum spinosum Spreng. Syst. 1: 819. 1825.
Alternanthera axillaris D. Dietr. Syn. Pl. 1: 866, as synonym. 1839.

Erect or ascending annual; stems 3–10 dm. high, much branched, the branches stout, ascending, striate, villous with grayish hispidulous hairs; petioles 2–10 mm. long; leaf-blades oblong to oblong-ovate or rhombic-ovate, 2–6.5 cm. long, 1–3 cm. wide, obtuse or acutish at the apex, acute at the base, firm, densely and finely grayish-pubescent beneath with hispidulous hairs, green and less densely pubescent on the upper surface; heads axillary, sessile, solitary or glomerate, 7–10 mm. in diameter, the flowers stramineous; bracts lance-subulate, shorter than the sepals, attenuate to a rigid spinose tip, glabrous; sepals very unequal, lance-subulate, 5–6 mm. long, indurate, attenuate to a rigid spinose tip, pilose with very slender white hairs; filaments subulate-linear, the tube short, the staminodia shorter than the filaments, obtuse, irregularly dentate or subentire; style short; utricle short, truncate and obscurely bidentate; seed broadly oblong, 1 mm. long, reddish-brown.

TYPE LOCALITY: Not stated.

DISTRIBUTION: In thickets and along roadsides, Cuba.

2. *Achyranthes leiantha* (Seub.) Standley, Jour. Wash. Acad. Sci. 5: 73. 1915.

- Alternanthera pungens* H. B. K. Nov. Gen. & Sp. 2: 206. 1817. Not *Achyranthes pungens* Lam. 1783.
Celosia echinata Humb. & Bonpl.; R. & S. Syst. Veg. 5: 531. 1819. Not *Achyranthes echinata* Retz. 1781.
Illecebrum pungens Spreng. Syst. 1: 820. 1825.
Telanthera pungens Moq. in DC. Prodr. 13²: 371. 1849.
Alternanthera Achyrantha leiantha Seub. in Mart. Fl. Bras. 5¹: 183. 1875.

Stems prostrate, 3–8 dm. long, stout, much branched, villous with obscurely scaberulous white hairs; petioles 2–5 mm. long, margined; leaf-blades orbicular, rhombic-orbicular, or

broadly oval, 1.3–5 cm. long, rounded at the apex, apiculate and mucronate, firm, prominently veined, appressed-pilose when young but soon glabrate; heads axillary, solitary, sessile, 8–10 mm. long; bracts and bractlets lance-oblong, equaling the perianth, attenuate to an aristate apex, glabrous; sepals oblong or ovate-oblong, 5–6 mm. long, acuminate to a long-aristate rigid tip, 3-nerved, stramineous, sparsely villous near the base and along the nerves, the inner sepals narrower and shorter than the outer ones; filaments linear, the staminodia slightly shorter, triangular, remotely dentate; style short; utricle strongly compressed, truncate; seed 1.5 mm. long, dark-brown.

TYPE LOCALITY: Banks of the Orinoco near the cataract of Maipures, Venezuela.

DISTRIBUTION: Adventive in southern Florida and Alabama; eastern Mexico; Cuba and Jamaica; also from Venezuela to Bolivia and Uruguay.

ILLUSTRATION: Mart. Fl. Bras. 5¹: pl. 55.

3. *Achyranthes repens* L. Sp. Pl. 205. 1753.

Illecebrum Achyrantha L. Sp. Pl. ed. 2. 299. 1762.

Achyranthes mucronata Lam. Encyc. 1: 547. 1785.

Achyranthes radicans Cav. Anal. Ci. Nat. 3: 27. 1801.

Alternanthera Achyrantha R. Br. Prodr. 417. 1810.

Paronychia Achyrantha Desf. Tabl. Bot. ed. 2. 54. 1815.

Pityranthus crassifolius Mart. Denks. Akad. Münch. 5: 179. 1817.

? *Steiremis ciliata* Raf. New Fl. 4: 45. 1838.

Alternanthera Achyrantha parvifolia Moq. in DC. Prodr. 13²: 359. 1849.

Alternanthera villiflora Scheele, Linnaea 22: 149. 1849.

Alternanthera repens Kuntze, Rev. Gen. 536. 1891.

Alternanthera parvifolia Fawc. & Rendle, Fl. Jam. 3: 139. 1914.

Perennial from a thick woody vertical root; stems prostrate or procumbent, 1–5 dm. long, much branched, the branches stout or slender, striate, white-villous, sometimes glabrate in age; leaves numerous, often crowded, the petioles 4–10 mm. long, the blades rhombic-ovate, oval, or obovate, 0.5–2.5 cm. long, 0.3–1.5 cm. wide, obtuse at the apex, acuminate or acute at the base, firm, green, sparsely villous when young but soon glabrate; heads ovoid or short-cylindric, 4–15 mm. long, 5–8 mm. thick, axillary, sessile, usually glomerate, the flowers pale-yellowish; bracts and bractlets shorter than the sepals, ovate, mucronate-pungent, glabrous or pilose, the margins usually ciliate-denticulate; sepals very unequal, the outer ones oval or broadly ovate, 3–5 mm. long, acutish, short-aristate, 3-nerved, villous along the nerves, especially near the base, with jointed, retrorsely scaberulous, white hairs, the inner sepals linear-subulate; filaments triangular-linear, the tube short; staminodia usually shorter than the filaments, triangular or subulate, entire or rarely denticulate; style very short; utricle ovoid-orbicular; seed ovate-orbicular, 1–1.5 mm. long, reddish-brown, shining.

TYPE LOCALITY: Turkestan.

DISTRIBUTION: South Carolina to Florida and southern New Mexico; adventive in Los Angeles County, California; Mexico to Panama; Jamaica, Hispaniola, Porto Rico, and the Lesser Antilles; also from Colombia to Argentina and Peru, and in southern Europe, Asia, and the East Indies.

ILLUSTRATIONS: Mart. Nov. Gen. & Sp. pl. 152; Fawc. & Rendle, Fl. Jam. 3: f. 45.

4. *Achyranthes polygonoides* (L.) Lam. Encyc. 1: 547. 1785.

Gomphrena polygonoides L. Sp. Pl. 225. 1753.

Illecebrum polygonoides L. Sp. Pl. ed. 2. 300. 1762.

Alternanthera polygonoides R. Br. Prodr. 417. 1810.

Bucholzia polygonoides Mart. Nov. Gen. & Sp. 2: 51. 1826.

Alternanthera paronychioides St. Hil. Voy. Distr. Diam. 2: 439. 1833.

Steiremis repens Raf. Fl. Tell. 3: 41. 1837.

Telanthera polygonoides Moq. in DC. Prodr. 13²: 363. 1849.

Telanthera polygonoides radicans Moq. in DC. Prodr. 13²: 364. 1849.

? *Telanthera polygonoides compacta* Moq. in DC. Prodr. 13²: 364. 1849.

Alternanthera ficoidea Griseb. Fl. Brit. W. Ind. 67. 1859. Not *Gomphrena ficoidea* L. 1753.

Prostrate herbaceous perennial; stems 1–8 dm. long, branched, the branches stout, striate, often rooting at the nodes, white-villous when young, glabrate in age; petioles 4–8 mm. long, densely white-villous at the base; leaf-blades oval, elliptic, or ovate-rhombic, 0.6–2.5 cm. long, 3–11 mm. wide, acute or obtuse at the apex, acuminate or attenuate at the base, green, densely villous beneath when young but soon glabrate, glabrous or nearly so on the upper surface; heads axillary, sessile, solitary or glomerate, usually as broad as long, the flowers white; bracts and bractlets half as long as the sepals or shorter, ovate, acute, mucronate, glabrous; sepals

oblong-lanceolate, 4 mm. long, acute, 3-nerved, sparsely pilose below or glabrate; stamens 5, the filaments subulate, the tube very short; staminodia much shorter than the filaments, ovate, denticulate; style very short; utricle orbicular or rounded-obovate, nearly half as long as the sepals; seed orbicular, 1 mm. broad, dark-brown, shining.

TYPE LOCALITY: Tropical America.

DISTRIBUTION: Adventive along the coast from North Carolina to Louisiana; on ballast at Camden, New Jersey; in damp soil in the Bahamas and the Greater Antilles; Guadeloupe; Grenada; eastern Mexico; Panama; also in Brazil.

ILLUSTRATIONS: Mart. Fl. Bras. 5¹: pl. 56; Sloane, Hist. Jam. pl. 86, f. 2.

5. *Achyranthes sessilis* (L.) Steud. (Nom. Bot. ed. 2. 1: 16, as synonym. 1840); Standley, Jour. Wash. Acad. Sci. 5: 73. 1915.

Gomphrena sessilis L. Sp. Pl. 225. 1753.

Illecebrum sessile L. Sp. Pl. ed. 2. 300. 1762.

Alternanthera triandra Lam. Encyc. 1: 95. 1783.

Alternanthera denticulata R. Br. Prodr. 417. 1810.

Alternanthera sessilis R. Br. Prodr. 417. 1810.

Allaganthera Forskalii Mart. Pl. Hort. Erlang. 69. 1814.

Paronychia sessilis Desf. Tabl. Bot. ed. 2. 54. 1815.

Illecebrum denticulatum Spreng. Syst. 1: 820. 1825.

Achyrantha triandra Roxb. Fl. Ind. 1: 678. 1832.

Procumbent annual or perennial; stems 2–6 dm. long, often rooting at the nodes, simple or sparsely branched, the branches slender, puberulent in lines or glabrate; petioles 1–4 mm. long; leaf-blades elliptic to oblong-obovate or spatulate-obovate, 1.2–5 cm. long, 0.5–2.2 cm. wide, rounded to acuminate at the apex, cuneate at the base, entire or obscurely denticulate, bright-green, glabrous, or sparsely villous along the nerves beneath; heads sessile, axillary, solitary or glomerate, subglobose, the flowers white; bracts and bractlets ovate, mucronate, one third to half as long as the sepals, glabrous; sepals broadly ovate, 1.5 mm. long, acute, hyaline, 1-nerved, glabrous, the margins obscurely denticulate; filaments subulate-linear, the tube about as long as the ovary; staminodia equaling the filaments, subulate, entire; style very short; utricle obcordate, equaling or slightly exceeding the calyx, compressed; seed 1 mm. long, yellowish, dull.

TYPE LOCALITY: India.

DISTRIBUTION: General in the West Indies; Costa Rica; also from the Guianas to Brazil, and in Africa, southern and eastern Asia, the East Indies, and Australia.

ILLUSTRATIONS: Wight, Ic. pl. 727; Dict. Sci. Nat. pl. 194; E. & P. Nat. Pfl. 3^{1a}: f. 48, H; Mart. Fl. Bras. 5¹: pl. 57, f. 2.

6. *Achyranthes serpyllifolia* Poir. in Lam. Encyc. Suppl. 1: 11. 1810.

Iresine serpyllifolia Moq. in DC. Prodr. 13²: 341. 1849.

Achyranthes tenella Poit.; Moq. in DC. Prodr. 13²: 341, as synonym. 1849.

Alternanthera serpyllifolia Urban, Symb. Ant. 5: 340. 1907.

Stems suffruticose, prostrate, very slender, flexuous, branched, geniculate, terete, striate, glabrate, the branches filiform, divaricate, appressed-pubescent, villous in the axils; petioles 2–6 mm. long; leaf-blades ovate-orbicular, 5–15 mm. long, 3–12 mm. wide, subdecurent at the base, mucronulate at the apex, subcoriaceous, the younger ones appressed-hirtellous; heads sessile, axillary and terminal, oblong, obtuse, 5–10 mm. long, 4 mm. in diameter, the rachis villous, the flowers sublustrous, subfuscous; bracts and bractlets about one third as long as the perianth, acute, pilosulous, white; sepals ovate-lanceolate, 2 mm. long, acute, 3-nerved, hirtellous; filaments short, triangular-subulate; staminodia none; utricle ovoid, subcompressed; seed oblong, lustrous, reddish-brown.

TYPE LOCALITY: Hispaniola.

DISTRIBUTION: Hispaniola and eastern Cuba.

7. *Achyranthes martinicensis* (Moq.) Standley, Jour. Wash. Acad. Sci. 5: 73. 1915.

Telanthera martinicensis Moq. in DC. Prodr. 13²: 366. 1849.

Stems procumbent, 1–3 dm. long, slender, sparsely branched, the branches geniculate, striate, pilose; petioles 1–2 mm. long; leaf-blades orbicular or ovate-orbicular, 7–10 mm. long,

6–8 mm. wide, obtuse or rounded at the apex, mucronulate, firm, puberulent and green on the upper surface, tomentulose beneath, the hairs hispidulous; heads sessile or very shortly pedunculate, axillary, solitary, ovoid, the flowers sordid-samineous; bracts and bractlets half as long as the sepals, ovate, mucronate, short-villous; sepals 3 mm. long, the outer ones ovate-lanceolate, 5-nerved, the inner narrower, short-villous; stamen-tube short; staminodia slightly longer than the filaments, ligulate, laciniate at the apex; style elongate; utricle ovate; seed lenticular, fuscous, shining.

TYPE LOCALITY: Martinique.

DISTRIBUTION: Martinique.

8. *Achyranthes portoricensis* (Kuntze) Standley, Jour. Wash. Acad. Sci. 5: 73. 1915.

? *Brandesia serpyllifolia* Mart. Denks. Akad. Münch. 5: 106, in part. 1817. Not *Achyranthes serpyllifolia* Poir. 1810.

? *Telanthera serpyllifolia* Moq. in DC. Prodr. 13²: 373. 1849.

Alternanthera portoricensis Kuntze, Rev. Gen. 540. 1891.

Telanthera Sintenisii Urban, Symb. Ant. 1: 301. Ap 1899.

Telanthera dolichocephala Urban, Symb. Ant. 1: 302. 1899.

Alternanthera culebrasensis Uline, Field Columb. Mus. Publ. Bot. 1: 420. Au 1899.

Alternanthera Sintenisii Uline, Field Columb. Mus. Publ. Bot. 1: 421. 1899.

Alternanthera dolichocephala Urban, Symb. Ant. 4: 221. 1905.

Prostrate perennial; stems much branched, 2–10 dm. long, very slender, densely villous when young with hispidulous white hairs, usually glabrate in age; petioles slender, 3–10 mm. long; leaf-blades orbicular, rounded-ovate, or broadly oval, 1–4 cm. long, thin, densely pilose with hispidulous or branched hairs when young, usually glabrate in age, rounded at the apex, mucronulate, often apiculate, rounded at the base and short-decurrent; heads axillary, sessile, solitary, the flowers white; bracts and bractlets ovate-oblong, long-acuminate, half as long as the sepals, subhyaline, sparsely or densely short-pilose; sepals lance-oblong, 3–4 mm. long, long-acuminate, 3-nerved, densely pilose, the inner ones narrower; filaments linear, the tube short; staminodia equaling or slightly exceeding the filaments ligulate, laciniate at the apex; style elongate.

TYPE LOCALITY: Guayama, Porto Rico.

DISTRIBUTION: On rocky hillsides or in moist thickets, Porto Rico and the Danish West Indies.

9. *Achyranthes Bettzickiana* (Regel) Standley.

Telanthera Bettzickiana Regel, Gartenflora 11: 178. 1862.

Achyranthes picta Pass. Giardini 9: 515. 1863.

Alternanthera spathulata Lemaire, Ill. Hort. 12: pl. 445. 1865.

Telanthera picta C. Koch, Wochenschr. Gartn. 9: 15. 1866.

Telanthera Bettzickiana typica Seub. in Mart. Fl. Bras. 5¹: 172. 1875.

Telanthera Bettzickiana spathulata Seub. in Mart. Fl. Bras. 5¹: 172. 1875.

Alternanthera Kerberi Uline & Bray, Bot. Gaz. 20: 450. 1895.

Erect or ascending annual or perennial, sometimes suffrutescent at the base, 0.7–4 dm. high, much branched, the branches ascending, stout, swollen at the nodes, striate, villous when young but soon glabrate; petioles slender, equaling or shorter than the blades; leaf-blades rhombic, rhombic-ovate, or rhombic-obovate, 1–3.5 cm. long, 0.7–1.7 cm. wide, acuminate or abruptly acute at the apex, mucronulate, abruptly long-attenuate at the base, undulate or crispate, sparsely appressed-pilose when young, glabrate in age, green or usually purplish-red, often variegated; heads axillary, sessile, usually solitary, ovoid or oblong, the flowers whitish; bracts and bractlets broadly ovate, shortly aristate-acuminate, at least the lower ones laciniately lobed, glabrous, half as long as the sepals; sepals lance-oblong, acute or acuminate, mucronate, 3-nerved, sparsely pilose; staminodia equaling the filaments, ligulate, laciniate at the apex; style elongate; utricle ovoid.

TYPE LOCALITY: Brazil.

DISTRIBUTION: Escaped from cultivation in Porto Rico, Guadeloupe, and southern Mexico; believed to be a native of Brazil.

ILLUSTRATION: Ill. Hort. pl. 445.

10. *Achyranthes Watsoni* Standley, Jour. Wash. Acad. Sci. 5: 73. 1915.

Telanthera stellata S. Wats. Proc. Am. Acad. 21: 436. 1886. Not *Achyranthes stellata* Willd. 1797.

Alternanthera stellata Uline & Bray, Bot. Gaz. 20: 451. 1895.

Alternanthera stellata glabrata Uline & Bray, Bot. Gaz. 20: 451. 1895.

Telanthera stellata glabrata Rose; Uline & Bray, Bot. Gaz. 20: 451, as synonym. 1895.

Erect or ascending annual or perennial, 4–10 dm. high, much branched, the branches slender, ascending, finely pubescent with branched white hairs when young, glabrate in age; petioles 2–20 mm. long; leaf-blades ovate, rhombic-ovate, oval, or lance-oblong, 2.5–10 cm. long, 1–3.5 cm. wide, thin, densely and finely pubescent with short branched whitish hairs when young, glabrous or nearly so in age; heads axillary, sessile, solitary or glomerate, as broad as long; bracts shorter than the sepals, ovate, long-attenuate to a rigid spinose tip, carinate, sparsely short-villous, whitish; sepals lance-oblong, 5 mm. long, acuminate to a rigid mucronate tip, whitish-stramineous, 3-nerved, short-villous; filaments linear, the staminodia ligulate, exceeding the anthers, slightly over half as long as the sepals, deeply lacerate at the apex; style elongate, the stigma entire; utricle broadly obovoid, obtuse; seed 1.2 mm. long, reddish-brown, shining.

TYPE LOCALITY: Hacienda San Miguel, Chihuahua.

DISTRIBUTION: Dry hillsides and plains, southwestern Chihuahua to Sonora and Sinaloa.

11. *Achyranthes ficoidea* (L.) Lam. Encyc. 1: 548. 1785.

Gomphrena ficoidea L. Sp. Pl. 225. 1753.

Illecebrum ficoideum L. Sp. Pl. ed. 2. 300. 1762.

Alternanthera ficoidea R. Br. Prodr. 1: 417. 1810.

Paronychia ficoidea Desf. Tabl. Bot. ed. 2. 14. 1815.

Bucholzia polygonoides erecta Mart. Nov. Gen. & Sp. 2: 51. 1826.

Bucholzia polygonoides diffusa Mart. Nov. Gen. & Sp. 2: 51. 1826.

Bucholzia polygonoides radicans Mart. Nov. Gen. & Sp. 2: 51. 1826.

Bucholzia ficoidea Mart. Nov. Gen. & Sp. 2: 52. 1826.

Stiremis ficoidea Raf. Fl. Tell. 3: 41. 1837.

Telanthera ficoidea Moq. in DC. Prodr. 13²: 363. 1849.

Telanthera polygonoides diffusa Moq. in DC. Prodr. 13²: 364. 1849.

Telanthera polygonoides brachiata Moq. in DC. Prodr. 13²: 364. 1849.

Alternanthera polygonoides Griseb. Fl. Brit. W. Ind. 67. 1859. Not *Gomphrena polygonoides* L. 1753.

Alternanthera polygonoides glabrescens Griseb. Fl. Brit. W. Ind. 67. 1859.

Alternanthera ficoidea brachiata Uline & Bray, Bot. Gaz. 20: 453. 1895.

Prostrate or ascending perennial, rarely suffrutescent at the base; stems 2–10 dm. long, branched or simple, the branches slender, when young pubescent with short, appressed, branched or hispidulous, white hairs, glabrate in age, often rooting at the nodes; petioles slender or stout, 2–7 mm. long; leaf-blades elliptic, oblong, oval, or ovate-oblong, 2.5–5.5 cm. long, 0.8–2.3 cm. wide, acute or rarely obtuse at the apex, acute or acuminate at the base, when young finely pubescent with short hispidulous hairs, soon glabrate; heads axillary, sessile, solitary or glomerate, about as broad as long, the flowers white or yellowish; bracts and bractlets half as long as the sepals, broadly ovate, acuminate to a rigid spinose tip, usually sparsely pilose; sepals lance-oblong or ovate, 3–3.5 mm. long, acuminate, mucronate, 3-nerved, short-pilose; staminodia equaling or longer than the filaments, ligulate, lacinate at the apex; style elongate; utricle suborbicular; seed 1 mm. long, dark reddish-brown, shining.

TYPE LOCALITY: Tropical America.

DISTRIBUTION: General in the West Indies; southern Mexico to Costa Rica and Panama; also from Colombia to Argentina.

ILLUSTRATIONS: Mart. Nov. Gen. & Sp. pl. 148; 149; 151, f. 1, 2.

12. *Achyranthes halimifolia* Lam. Encyc. 1: 547. 1785.

Illecebrum frutescens L'Hér. Stirp. Nov. 75. 1788.

Illecebrum alsinaefolium Scop. Delic. Insub. 3: 27. 1788. Not *I. alsinaefolium* L. 1767.

Illecebrum limense Dum.-Cours. Bot. Cult. 1: 646. 1802.

Paronychia frutescens Desf. Tabl. Bot. ed. 2. 54. 1815.

Telanthera Crucis Moq. in DC. Prodr. 13²: 362. 1849.

Gomphrena Crucis Vahl; Moq. in DC. Prodr. 13²: 362, as synonym. 1849.

Illecebrum incanum Rich.; Moq. in DC. Prodr. 13²: 362, as synonym. 1849.

Telanthera frutescens Moq. in DC. Prodr. 13²: 365. 1849.

Telanthera frutescens acutifolia Moq. in DC. Prodr. 13²: 366. 1849.

- Alternanthera ficoidea halimifolia* Kuntze, Rev. Gen. 539. 1891.
Telanthera flavogrisea Urban, Symb. Ant. 1: 300. Ap 1899.
Alternanthera asterotricha Uline, Field Columb. Mus. Publ. Bot. 1: 419. Au 1899.
Alternanthera flavogrisea Urban, Symb. Ant. 5: 340. 1907.
Alternanthera Crucis Boldingh, Fl. Dutch W. Ind. 1: 58. 1909.
Telanthera halimifolia A. Stewart, Proc. Calif. Acad. IV. 1: 58. 1911.
Alternanthera ficoidea flavogrisea Fawc. & Rendle, Fl. Jam. 3: 140. 1914.

Prostrate or decumbent perennial, often suffrutescent at the base; stems 3–10 dm. long, simple or sparsely branched, subangulate, striate, when young densely pubescent with short, closely appressed, grayish, hispidulous hairs, usually glabrate in age; petioles 2–8 mm. long; leaf-blades oblong, oval, elliptic-oblong, or obovate-oblong, 1.5–6 cm. long, 1–2.2 cm. wide, usually rounded at the apex but sometimes acutish, acute or acuminate at the base, firm, densely pubescent beneath with short appressed hispidulous hairs, or glabrate in age, the upper surface soon glabrate; heads axillary or terminal, sessile or subsessile, solitary or glomerate, short-cylindric or ovoid, 12 mm. long or shorter, the flowers stramineous; bracts and bractlets half as long as the sepals, ovate, acuminate, long-mucronate, appressed-pilose; sepals 3–4 mm. long, ovate-oblong, acute, 3- or 5-nerved, densely pubescent with short hispidulous hairs; filaments linear, the tube short; staminodia ligulate, longer than the filaments, lacinate at the apex; style short; utricle subglobose; seed 1 mm. long, reddish-brown, shining.

TYPE LOCALITY: Vicinity of Lima, Peru.

DISTRIBUTION: In thickets and on beaches along the coast, Jamaica, Danish West Indies, and Grenada; Yucatán to Guatemala and Panama; also from Colombia to Venezuela and Chile.

ILLUSTRATIONS: Lam. Tab. Encyc. pl. 168, f. 2; L'Hér. Stirp. Nov. pl. 37; Scop. Delic. Insub. 3: pl. 13.

13. *Achyranthes maritima* (Mart.) Standley, Jour. Wash. Acad. Sci. 5: 74. 1915.

- Bucholzia maritima* Mart. Nov. Gen. & Sp. 2: 50. 1826.
Illecebrum maritimum Spreng. Syst. 4: Cur. Post. 103. 1827.
Alternanthera maritima St. Hil. Voy. Distr. Diam. 2: 437. 1833.
Alternanthera maritima communis St. Hil. Voy. Distr. Diam. 2: 437. 1833.
Telanthera maritima Moq. in DC. Prodr. 13²: 364. 1849.
Telanthera maritima communis Moq. in DC. Prodr. 13²: 365. 1849.

Prostrate or procumbent perennial, glabrous except in the axils of the leaves, there sparsely villous; stems 3–20 dm. long, sometimes suffrutescent at the base, subgeniculate, rooting at the nodes, stout, striate; petioles 2–10 mm. long; leaf-blades elliptic-oblong, oblong, broadly oblanceolate, or broadly oval, 2–6 cm. long, 0.8–3 cm. wide, rounded to acutish at the apex and mucronate, acute or cuneate at the base, succulent; heads axillary, sessile, solitary or glomerate, few-flowered, the flowers stramineous; bracts and bractlets broadly ovate, half as long as the sepals, mucronate, carinate, coriaceous; sepals 4 mm. long, coriaceous, the outer ones ovate, long-acuminate to a rigid apex, 5-nerved, the inner ones narrower, obscurely 3-nerved; staminodia slightly longer than the filaments, lacinate at the apex; utricle obovoid, brownish; seed 1 mm. long, fuscous, shining.

TYPE LOCALITY: Brazil.

DISTRIBUTION: On sandy sea-beaches, Florida, Bermuda, the Bahamas, and Cuba; also from French Guiana to Brazil, and on the west coast of Africa.

ILLUSTRATION: Mart. Nov. Gen. & Sp. pl. 147.

14. *Achyranthes obovata* (Mart. & Gal.) Standley, Jour. Wash. Acad. Sci. 5: 74. 1915.

- Bucholzia obovata* Mart. & Gal. Bull. Acad. Brux. 10¹: 348. 1843.
Telanthera obovata Moq. in DC. Prodr. 13²: 370. 1849.
Gomphrena procumbens Pavon; Moq. in DC. Prodr. 13²: 370, as synonym. 1849. Not *G. procumbens* Zucc. 1809.

Perennial, sometimes suffrutescent at the base; stems prostrate or decumbent, 2–10 dm. long, rooting at the nodes, much branched, the branches erect or ascending, stout, densely villous when young, glabrate in age; petioles 5 mm. long or less, the upper leaves subsessile; leaf-blades rounded-obovate to broadly oval, cuneate-obovate, or oblong, 1.5–4.5 cm. long, 0.7–2 cm. wide, rounded or obtuse at the apex, cuneate to rounded at the base, thick, bright-green, villous when young, glabrate in age; spikes axillary or terminal, sessile, solitary, sub-

globose to cylindric, 1.2–3.5 cm. long, 1 cm. thick, the flowers yellowish-white; bracts and bractlets broadly ovate, half as long as the sepals, acuminate, mucronulate, hyaline, glabrous, serrulate near the apex; sepals oblong, 4 mm. long, acute, serrulate at the apex, 1-nerved, glabrous; filaments linear, the tube about as long as the ovary; staminodia linear, acutish, entire, longer than the filaments, two thirds as long as the sepals; style short.

TYPE LOCALITY: On dry and volcanic rocks of the barranca of Los Baños, near the hot spring of Acasonica, Vera Cruz, Mexico.

DISTRIBUTION: Tamaulipas to Guatemala.

15. *Achyranthes megaphylla* Standley, sp. nov.

Erect or decumbent perennial; stems 6 dm. high, simple, stout, geniculate at the base and rooting at the nodes, appressed-pilose above, glabrate below; petioles 3–13 mm. long, stout; leaf-blades broadly oval to oblong-oval, 12–17.5 cm. long, 5.5–7.5 cm. wide, abruptly long-acuminate at the apex, obtuse or rounded and short-decurrent at the base, slightly succulent, olivaceous when dry, glabrous above, sparsely appressed-pilose beneath; spikes axillary and terminal, sessile, solitary, about 2 cm. long and 1.5 cm. thick, the flowers brown; bracts and bractlets half as long as the sepals, ovate, long-attenuate, short-pilose, the tips rigid; sepals lance-oblong, 6–7 mm. long, attenuate, 3- or 5-nerved, sparsely short-pilose; filaments linear, the tube short; staminodia ligulate, exceeding the anthers, pectinate-laciniate nearly to the base; style elongate; seed 2.5 mm. long, ovoid, reddish-brown, shining.

Type collected in forest, Río Hondo, plains of Santa Clara, Costa Rica, altitude 100 meters, May 6, 1903, O. F. Cook & C. B. Doyle 573 (U. S. Nat. Herb. no. 474437).

16. *Achyranthes Urbani* Standley, Jour. Wash. Acad. Sci. 5: 74. 1915.

Alternanthera geniculata Urban, Symb. Ant. 7: 211. 1912. Not *Achyranthes geniculata* Standley, 1915.

Procumbent perennial; stems numerous from a woody caudex, slender, 0.5–3 dm. long, subgeniculate, branched, the branches striate, appressed-pilose; petioles slender, 2–4 mm. long; leaf-blades rounded-ovate or broadly ovate to suborbicular, 1–2 cm. long, 0.6–1.5 cm. wide, acute to rounded at the apex, rounded at the base, olivaceous when dry, sparsely appressed-pilose when young, glabrate in age; spikes terminal and axillary, sessile, solitary, ovoid or cylindric, 1.2 cm. long or less, the flowers sordid-brownish; bracts and bractlets broadly ovate, acuminate, mucronate, less than half as long as the sepals, nearly glabrous; sepals lance-oblong, 3 mm. long, long-acuminate, 3- or 5-nerved; filaments lance-subulate, the tube elongate; staminodia ligulate, equaling the filaments, laciniate at the apex; style 1 mm. long; utricle ovoid; seed oval, 1.3 mm. long, brown, shining.

TYPE LOCALITY: Near Barahona, Santo Domingo.

DISTRIBUTION: On rocks along the coast, Santo Domingo.

17. *Achyranthes olivacea* (Urban) Standley, Jour. Wash. Acad. Sci. 5: 74. 1915.

Telanthera olivacea Urban, Symb. Ant. 1: 302. 1899.

Alternanthera olivacea Urban, Symb. Ant. 5: 340. 1907.

Procumbent perennial, suffrutescent at the base; stems numerous, 2–5 dm. long, sparsely branched, the branches slender, terete, densely appressed-pilose when young, glabrate in age; petioles 2–4 mm. long; leaf-blades ovate or ovate-oblong, 2–5 cm. long, 0.8–2.2 cm. wide, rounded to acutish at the apex, mucronate, obtuse or rounded at the base and slightly decurrent, thick and firm, olivaceous, sparsely appressed-pubescent with very short hairs; spikes axillary, solitary or glomerate, sessile or short-pedunculate, short-cylindric, 1 cm. long or less, the flowers brown; bracts and bractlets broadly ovate, less than half as long as the sepals, acuminate, short-pilose; sepals ovate-lanceolate, 3.5 mm. long, attenuate, 3- or 5-nerved, short-pilose; filaments subulate, the tube short, the staminodia ligulate, equaling the filaments, laciniate at the apex; style nearly as long as the ovary; utricle ovoid; seed ovoid, 1.2 mm. long, brownish-black, shining.

TYPE LOCALITY: St. Vincent.

DISTRIBUTION: In damp woods, St. Vincent to Grenada.

18. *Achyranthes philoxeroides* (Mart.) Standley, Jour. Wash. Acad. Sci. 5: 74. 1915.

Bucholzia philoxeroides Mart. Nova Acta Acad. Leop.-Carol. 13¹: 315. 1826.

Telanthera philoxeroides Moq. in DC. Prodr. 13²: 362. 1849.

Telanthera philoxeroides obtusifolia Moq. in DC. Prodr. 13²: 363. 1849.

Telanthera philoxeroides acutifolia Moq. in DC. Prodr. 13²: 363. 1849.

Telanthera philoxeroides phyllantha Seub. in Mart. Fl. Bras. 5¹: 169. 1875.

Telanthera philoxeroides denticulata Seub. in Mart. Fl. Bras. 5¹: 170. 1875.

Alternanthera philoxeroides Griseb. Abh. Ges. Wiss. Gött. 24: 36. 1879.

Herbaceous perennial; stems stout, often fistulous, ascending or decumbent, 3–10 dm. long, simple or branched, villous in the axils of the leaves, elsewhere very sparsely villous or glabrous; leaves very short-petiolate, the blades elliptic-linear to elliptic or obovate, 3.5–11 cm. long, 0.5–2 cm. wide, acute or obtuse at the apex, acuminate or attenuate at the base, thick, glabrous; peduncles axillary or terminal, simple, 1–5 cm. long, pilose; spikes globose, 14–17 mm. thick, the flowers white; bracts one fourth as long as the sepals, broadly ovate, acute or acuminate, glabrous; sepals ovate-oblong, 6 mm. long, acute or acutish, sub-chartaceous, obscurely nerved, often serrulate near the apex; filaments linear-subulate, the staminodia exceeding the anthers, half as long as the sepals, ligulate, lacerate at the apex; style elongate, the stigma entire.

TYPE LOCALITY: Southern Brazil.

DISTRIBUTION: In ponds and slow streams or in wet soil, adventive from North Carolina to Florida and Louisiana; also from Colombia to Brazil and Argentina.

ILLUSTRATIONS: Mart. Fl. Bras. 5¹: pl. 51, 52; E. & P. Nat. Pfl. 3^{1a}: f. 47, C.

19. *Achyranthes panamensis* Standley, Contr. U. S. Nat. Herb. 18: 89. 1916.

Stems weak and probably clambering over shrubs, herbaceous, much branched, the branches slender, angulate, short-pilose with solitary or fasciculate, spreading or reflexed hairs; petioles 1–4 mm. long; leaf-blades oblong-elliptic or ovate-oblong, 2–5.5 cm. long, 0.6–2 cm. wide, acute or acuminate at the apex, acutish at the base, firm, bright-green, appressed-pilose on both surfaces with short slender fulvous hairs; peduncles axillary and terminal, simple or usually branched, 1–6 cm. long, slender, densely short-pilose; spikes usually solitary, globose-ovoid or short-cylindric, 7–11 mm. long, 7 mm. thick; bracts broadly ovate, acuminate, glabrous; bractlets broadly ovate, half as long as the sepals, aristate-acuminate, sparsely short-villous; sepals lance-oblong, 2.5 mm. long, acute or acutish, 3-nerved, purplish (brownish or fuscous when dry), glabrous; filaments short, linear-subulate; staminodia equaling or exceeding the anthers, two thirds as long as the sepals or shorter, lacerate at the apex; style short, the stigma entire; seed subglobose, 1 mm. long, black and shining.

TYPE LOCALITY: Panama.

DISTRIBUTION: Panama.

20. *Achyranthes mexicana* (Schlecht.) Standley, Jour. Wash. Acad. Sci. 5: 74. 1915.

Brandesia mexicana Schlecht. Linnaea 7: 392. 1832.

Telanthera microcephala Moq. in DC. Prodr. 13²: 371. 1849.

Telanthera mexicana Moq. in DC. Prodr. 13²: 372. 1849.

Alternanthera mexicana Hieron. Bot. Jahrb. 20: Beibl. 49: 8. 1895. Not *A. mexicana* Moq. 1849.

Plants herbaceous, or suffrutescent below; stems erect or ascending, 4–10 dm. high, sparsely branched, the branches rather stout, often geniculate, striate, pilose with spreading or retrorse hairs; petioles 2–20 mm. long; leaf-blades oval or ovate-oval, 3–10 cm. long, 1–5 cm. wide, rather abruptly long-acuminate at the apex, acute or obtuse at the base, thin, bright-green, appressed-pilose on both surfaces with long slender hairs; peduncles axillary simple, filiform or nearly so, 2–6.5 cm. long, sparsely pilose or glabrate; spikes short-cylindric or subglobose, 5–10 mm. long, 5–7 mm. thick; bracts broadly ovate, acute, subscarious, glabrous; bractlets broadly ovate, about half as long as the sepals, long-aristate, villous along the nerve, white or stramineous; sepals narrowly oblong, 2.5–3.5 mm. long, acute or acutish, membranaceous, white or stramineous, 3-nerved, glabrous, the tips erect or incurved; stamino-

dia longer than the anthers, slightly shorter than the sepals, ligulate, laciniate at the apex; style evident, the stigma entire; seed subglobose, 1 mm. in diameter, dark reddish-brown.

TYPE LOCALITY: State of Oaxaca.

DISTRIBUTION: Vera Cruz to Oaxaca and Panama.

21. *Achyranthes costaricensis* (Kuntze) Standley, Jour. Wash. Acad. Sci. 5: 74. 1915.

Alternanthera costaricensis Kuntze, Rev. Gen. 538. 1891.

Stems 3–7 dm. high, erect, suffrutescent below, subpilose with long retrorse stellate hairs; leaf-blades ovate or broadly lanceolate, 10 cm. long or less, sparsely pubescent with simple hairs, the veins pilose like the stems; peduncles densely pilose, axillary, 1–4 cm. long; spikes globose, solitary, 2.5 cm. long or less; bracts ovate, entire, aristate-acuminate, shorter than the sepals; perianth subsessile, the sepals lanceolate, acuminate, subpilose, 3-nerved, stramineous; staminodia longer than the filaments, lanceolate, pectinately incised; anthers very short, ovoid; ovary attenuate to a short style; stigma entire.

TYPE LOCALITY: Eastern Costa Rica, at an altitude of 300 meters.

DISTRIBUTION: Known only from the type locality.

22. *Achyranthes laguroides* Standley, Contr. U. S. Nat. Herb. 18: 90. 1916.

Stems erect or ascending, suffrutescent below, 1 meter long or less, much branched, the branches striate, sparsely pilose-strigose or glabrate; leaves very short-petiolate, the blades narrowly lanceolate to elliptic-linear, 1.5–5.5 cm. long, 2–6 mm. wide, acuminate or attenuate at both ends, pilose-sericeous, densely so beneath; peduncles simple or branched, 0.5–2 cm. long, or the heads often sessile or subsessile, the peduncles densely pilose-sericeous; spikes ovoid or short-cylindric, 1–2 cm. long, 9 mm. thick, the flowers whitish-stramineous; bracts and bractlets ovate-triangular, half as long as the sepals, acuminate or long-acuminate, sparsely pilose or glabrate; sepals linear-oblong, 4–5 mm. long, acuminate, membranaceous, 1-nerved, pilose near the base with straight erect jointed white hairs, these equaling or slightly exceeding the sepals; stamen-tube elongate, the antheriferous lobes short; staminodia ligulate, exceeding the anthers, deeply and acutely laciniate at the apex; style elongate.

TYPE LOCALITY: Near San Francisco de Guadalupe, Costa Rica.

DISTRIBUTION: In hedges and thickets, Costa Rica.

23. *Achyranthes stenophylla* Standley, Contr. U. S. Nat. Herb. 18: 90. 1916.

Stems slender, branched, the branches ascending or suberect, striate, very sparsely pilose or glabrate; leaves numerous, the internodes short, the petioles 2–10 mm. long, the blades linear to elliptic-linear, 2.5–5 cm. long, 3–6 mm. wide, acute or acutish at the apex, acuminate at the base, very sparsely appressed-pilose or glabrate; peduncles axillary, simple, 2–5 cm. long, short-pilose, very slender; spikes ovoid or short-cylindric, 6–10 mm. long, 6 mm. thick; bracts broadly ovate, acute, glabrous; bractlets half as long as the sepals, acuminate, long-aristate, sparsely short-villous; sepals lance-oblong, 2.5 mm. long, acute or acutish, membranaceous, 3-nerved, sparsely short-pilose, stramineous, the tips erect or slightly incurved; filaments short, the staminodia ligulate, longer than the anthers, two thirds as long as the sepals, lacerate at the apex; style evident, the stigma entire.

TYPE LOCALITY: Panama.

DISTRIBUTION: Panama.

24. *Achyranthes Lehmannii* (Hieron.) Standley, Jour. Wash. Acad. Sci. 5: 74. 1915.

Alternanthera Lehmannii Hieron. Bot. Jahrb. 20: Beibl. 49: 8. 1895.

Stems slender, sparsely branched, the branches ascending or procumbent, appressed-pilose or glabrate; leaves numerous, mostly shorter than the internodes, the petioles 4–10

mm. long, the blades broadly ovate to elliptic-oblong, 2.5–8.5 cm. long, 1–3.5 cm. wide, abruptly acute to long-attenuate at the apex, abruptly acute to acuminate at the base and decurrent, thin, copiously appressed-pilose; peduncles axillary, simple, 1.5–9 cm. long, very slender, appressed-pilose or glabrate; spikes short-cylindric or globose, 6 mm. thick; bracts broadly ovate, half as long as the sepals, aristate-acuminate, stramineous or white, glabrous; sepals lance-oblong, 2.5–3 mm. long, acutish, sparsely short-pilose, 3-nerved, stramineous; staminodia ligulate, longer than the filaments, laciniate at the apex; style very short, the stigma entire.

TYPE LOCALITY: Near Popayán, Colombia, at an altitude of 1700 to 1800 meters.
DISTRIBUTION: Costa Rica to Colombia.

25. *Achyranthes pycnantha* (Benth.) Standley, Jour. Wash. Acad. Sci. 5: 74. 1915.

Brandesia pycnantha Benth. Bot. Voy. Sulph. 157. 1844.
Telanthera pycnantha Moq. in DC. Prodr. 13²: 376. 1849.
Telanthera mollis B. L. Robinson, Proc. Am. Acad. 35: 324. 1900.

Plants much branched, the branches slender or stout, ascending, angulate, strigillose or short-villous or soon glabrous; petioles stout, 3–12 mm. long; leaf-blades ovate, oval, or lance-elliptic, 6–16 cm. long, 2–5 cm. wide, long-acuminate or attenuate at the apex, acute at the base, rather thick, bright-green, sparsely strigillose or glabrous, sometimes pilose; peduncles axillary and terminal, usually branched, glabrate, 1–5 cm. long; spikes globose to cylindric, 1–3 cm. long, 10–12 mm. thick, the flowers stramineous; bracts and bractlets ovate, acute, about one third as long as the sepals, short-pilose; sepals narrowly oblong, acute, 6–7 mm. long, densely pilose with rather long hairs, 3-nerved, the tips erect or incurved; staminodia ligulate, exceeding the anthers, two thirds as long as the sepals, lacerate at the apex; style elongate, the stigma entire.

TYPE LOCALITY: Acapulco, Guerrero.
DISTRIBUTION: Pacific coast of Mexico, from Colima to Oaxaca.

26. *Achyranthes cordobensis* Standley, Contr. U. S. Nat. Herb. 18: 90. 1916.

Plants much branched, the branches spreading, loosely short-pilose, or glabrate in age; petioles 1–3 mm. long; leaf-blades ovate-oblong or oval, or the uppermost lance-oblong, 3–6 cm. long, 0.8–2 cm. wide, rather abruptly long-acuminate at the apex, obtuse at the base, thin, densely pilose-sericeous beneath, less densely so on the upper surface; peduncles simple, axillary, 2–6 cm. long, pilose with ascending hairs; spikes solitary, rarely sessile, ovoid or short-cylindric, 0.8–1.5 cm. long, 11 mm. thick; bracts and bractlets half as long as the sepals, broadly ovate, aristate-acuminate, subscarios, stramineous; sepals lance-oblong, 5 mm. long, acutish, subcartilaginous in age, 3-nerved, stramineous, sparsely short-pilose, the tips slightly spreading; stamen-tube short; staminodia much exceeding the anthers, less than half as long as the sepals, ligulate, deeply fimbriate at the apex; style evident, the stigma entire.

TYPE LOCALITY: Valley of Córdoba, Vera Cruz.
DISTRIBUTION: Southern Mexico.

27. *Achyranthes Williamsii* Standley, Contr. U. S. Nat. Herb. 18: 89. 1916.

Stems herbaceous, clambering over shrubs and herbs, sparsely branched, the branches stout, striate, cinereous-puberulent; petioles stout, 2–10 mm. long; leaf-blades oblong, ovate-oblong, or rarely elliptic, 2.5–8 cm. long, 0.8–3.3 cm. wide, acute, acutish, or obtuse at the apex, acute or obtuse at the base, pubescent on both surfaces with very short, lightly appressed hairs, bright-green, rather thick; peduncles axillary, simple or rarely branched, 2–6 cm. long, stout, cinereous or glabrate; heads solitary, short-cylindric or ovoid, 1–3 cm. long, 10–12 mm. thick; bracts broadly ovate, acuminate, glabrous; bractlets half as long as the sepals, ovate, aristate-acuminate, short-pilose; sepals narrowly lance-oblong, 5 mm. long, acuminate, whitish or stramineous, 3-nerved, short-pilose, the tips slightly spreading; filaments very short, the

staminodia ligulate, longer than the anthers and slightly shorter than the sepals, lacerate at the apex; style evident, the stigma entire.

TYPE LOCALITY: Near Cituro, Panama.

DISTRIBUTION: Southwestern Mexico to Panama.

28. *Achyranthes gracilis* (Mart. & Gal.) Standley, Jour. Wash. Acad. Sci. 5: 74. 1915.

Gomphrena gracilis Mart. & Gal. Bull. Acad. Brux. 10¹: 350. 1843.

Telanthera gracilis Moq. in DC. Prodr. 13²: 375. 1849.

Plants erect, clambering over shrubs, or sometimes procumbent, suffruticose below; stems 5–30 dm. long, much branched, the branches ascending or spreading, striate, strigillose or glabrate; petioles slender, 3–15 mm. long; leaf-blades ovate-oblong to broadly ovate or oval, 4–9 cm. long, 1.2–4 cm. wide, acute to acuminate at the apex, obtuse or acute at the base, bright-green, sparsely appressed-pubescent or glabrous; peduncles terminal and axillary, usually trichotomous, 1–5 cm. long, pilose-strigose or glabrate; spikes globose, solitary or glomerate, 10–12 mm. in diameter, the flowers white or slightly stramineous; bracts and bractlets broadly ovate, acute, mucronulate, one third to one half as long as the sepals, short-villous; sepals oblong-linear, 5 mm. long, acutish, subcartilaginous, obscurely 3-nerved, short-pilose, the tips spreading; staminodia ligulate, exceeding the anthers and slightly shorter than the sepals, lacerate at the apex; style evident, the stigmas entire; seed subglobose, 1 mm. long, black and shining.

TYPE LOCALITY: In the ravine of Acasonica, Vera Cruz.

DISTRIBUTION: Tamaulipas and Vera Cruz.

29. *Achyranthes Jacquini* (Schrad.) Standley, Jour. Wash. Acad. Sci. 5: 74. 1915.

Gomphrena brasiliensis Jacq. Coll. 2: 278. 1788. Not *G. brasiliensis* L. 1756.

Gomphrena dentata Moench, Meth. Suppl. 273. 1802.

Philoxerus brasiliensis R. Br. Prodr. 416. 1810.

Mogiphanes brasiliensis Mart. Nov. Gen. & Sp. 2: 34. 1826.

Mogiphanes Jacquini Schrad. Ind. Sem. Gotting. 1834: 4. 1834.

Caraxeron brasiliensis Raf. Fl. Tell. 3: 38. 1837.

Telanthera dentata Moq. in DC. Prodr. 13²: 378, in part. 1849.

Alternanthera brasiliensis Jacquini Kuntze, Rev. Gen. 538. 1891.

Erect or ascending annual or perennial, sometimes suffrutescent at the base, simple or much branched, the branches stout, ascending, striate, pilose-strigose or glabrate; petioles slender, 5–12 mm. long; leaf-blades oval, oblong, or broadly oblong-ovate, 2.5–11 cm. long, 1–4.5 cm. wide, abruptly acute or attenuate at the apex, abruptly acute at the base, thin, sparsely or densely pilose-sericeous, sometimes glabrate; peduncles simple or trifid, 2–12 cm. long, pilose-sericeous or glabrate; heads subglobose or cylindrical, 1–2.5 cm. long, 9–11 mm. thick; bracts much shorter than the flowers, triangular-ovate, white, glabrous, long-acuminate; bractlets longer than the sepals, oblong, acute, sparsely villous, denticulate, cristate dorsally, the crest serrulate above; sepals lance-oblong, rigid, 3-nerved, acute, appressed-pilose, 3–3.5 mm. long; pedicel 0.8–1 mm. long; filaments short; staminodia longer than the filaments, ligulate, lacerate at the apex; style short, the stigma entire; seed 0.8 mm. long, reddish-brown.

TYPE LOCALITY: Brazil.

DISTRIBUTION: Barbados, Dominica, and Martinique; also from Trinidad to Brazil.

ILLUSTRATIONS: Jacq. Ic. Pl. Rar. pl. 346; Mart. Nov. Gen. & Sp. pl. 133, 134.

30. *Achyranthes ramosissima* (Mart.) Standley, Jour. Wash. Acad. Sci. 5: 74. 1915.

Mogiphanes ramosissima Mart. Nov. Gen. & Sp. 2: 36. 1826.

Celosia diffusa Hoffmsgg.; Mart. Nov. Gen. & Sp. 2: 36, as synonym. 1826.

Telanthera ramosissima Moq. in DC. Prodr. 13²: 381. 1849.

Celosia altissima Salzm.; Moq. in DC. Prodr. 13²: 381, as synonym. 1849.

Telanthera floridana Chapm. Fl. S. U. S. 383. 1860.

Alternanthera brasiliensis Uline & Bray, Bot. Gaz. 20: 452. 1895. Not *Gomphrena brasiliensis* L. 1756.

Alternanthera floridana Small, Fl. SE. U. S. 396. 1903.

Plants slender, 6–15 dm. high, suffrutescent at the base, much branched, the branches striate, sparsely strigillose or glabrate, ascending or spreading; petioles 5 mm. long or less; leaf-blades lanceolate to ovate, 1.8–8 cm. long, 0.5–3 cm. wide, long-acuminate or acute at the apex, rounded to acuminate at the base, rather thick, green, very sparsely strigose or often glabrate; peduncles simple, 2–10 cm. long, strigillose near the spikes, these subglobose to short-cylindric, 0.9–2.5 cm. long, 1 cm. thick; bracts broadly ovate, acute or acutish, shorter than the bractlets, glabrous; bractlets triangular-ovate, acuminate, one third as long as the sepals, glabrous; sepals narrowly oblong or lance-oblong, 4–5 mm. long, acute, short-mucronate, short-pilose with appressed or spreading hairs, brownish-stramineous; staminodia much longer than the filaments, often equaling the sepals, ligulate, laciniate at the apex; utricle areolate at the apex; style 0.5 mm. long; stigma entire; seed subglobose, 1.5 mm. long, reddish-brown.

TYPE LOCALITY: In shady forests near Chapada, vicinity of Minas Novaes, Minas Geraes, Brazil.

DISTRIBUTION: Southern Florida; Yucatán; Porto Rico, Grenada, and St. Vincent; also from British Guiana to Brazil.

ILLUSTRATION: Mart. Nov. Gen. & Sp. *pl.* 130.

31. *Achyranthes brasiliana* (L.) Standley, Jour. Wash. Acad. Sci. 5: 74. 1915.

Gomphrena brasiliana L. Cent. Pl. 2: 13. 1756.

Gomphrena brasiliensis Lam. Encyc. 1: 119. 1783.

Gomphrena patula Wendl. Beob. 43. 1798.

Philoxerus brasiliana Smith, in Rees, Cycl. 27: Philoxerus no. 4. 1814.

Mogiphanes straminea Mart. Nov. Gen. & Sp. 2: 35. 1826.

Telanthera dentata Moq. in DC. Prodr. 13²: 378, excluding description. 1849.

Telanthera brasiliana Moq. in DC. Prodr. 13²: 382. 1849.

Alternanthera brasiliana Kuntze, Rev. Gen. 537. 1891.

Alternanthera brasiliana strigosa Kuntze, Rev. Gen. 538. 1891.

Alternanthera brasiliana sericea Kuntze, Rev. Gen. 538. 1891.

Alternanthera brasiliana Moquini Uline & Bray, Bot. Gaz. 20: 453, in part. 1895. Not *Telanthera Moquini* Webb.

Alternanthera straminea Millsp. Field Columb. Mus. Publ. Bot. 1: 16. 1895.

Erect or decumbent annual or perennial, much branched, the branches ascending or suberect, striate, pilose with ascending or spreading hairs, sometimes glabrate; petioles slender, 3–10 mm. long; leaf-blades oblong-ovate, oval, or oblong, 4–10 cm. long, 1–4 cm. wide, acuminate at the apex, sometimes abruptly so, rounded to acute at the base, thin, pilose or pilose-sericeous; peduncles usually simple, 2–10 cm. long, pilose; spikes globose, 8–12 mm. in diameter, the flowers stramineous or whitish; bracts nearly as long as the bractlets, oblong-ovate, long-acuminate, glabrous; bractlets half as long as the sepals, ovate-oblong, long-acuminate, often denticulate, usually narrowly cristate near the apex, the crest denticulate; sepals ovate-lanceolate or lance-oblong, 3–4 mm. long, rigid, prominently nerved, acute, short-pilose; pedicel 0.8–1 mm. long; staminodia longer than the filaments, ligulate, laciniate at the apex; utricle areolate at the apex; seed 0.8 mm. in diameter, reddish-brown.

TYPE LOCALITY: Brazil.

DISTRIBUTION: Southern Mexico to Guatemala; also in Brazil.

ILLUSTRATIONS: Lam. Tab. Encyc. *pl.* 180; Mart. Nov. Gen. & Sp. *pl.* 135.

DOUBTFUL SPECIES

ALTERNANTHERA ? HERNIARIOIDES Beurl. Sv. Vet.-Akad. Handl. 1854: 143. 1856. Described from specimens collected at Porto Bello, Panama. Probably not of the Amaranthaceae, and excluded, by the description, from *Achyranthes*.

ALTERNANTHERA MEXICANA Moq. in DC. Prodr. 13²: 352. 1849. Type, *Berlandier 431*, "cult in horto mexicano."

GOMPHRENA FLAVA L. Sp. Pl. 224. 1753. "Habitat in Vera Cruce." From the description probably an *Achyranthes*, perhaps *A. gracilis*.

TELANTHERA PUBIFLORA GLOMERATA Moq. in DC. Prodr. 13²: 376. 1849. Based in part on *Galeotti 444* (in part), from the State of Vera Cruz, Mexico.

TELANTHERA PUBIFLORA MONOCEPHALA Moq. in DC. Prodr. 13²: 376. 1849. Type collected in Panama.

16. **WOEHLERIA** Griseb. Abh. Ges. Wiss. Gött. 9: 11. 1861.

Slender, prostrate, glabrous, branched, annual herbs. Leaves opposite petiolate, membranaceous. Flowers perfect, minute, capitate-spicate, bracteate and bibracteolate, sessile in the bractlets, the peduncles axillary or terminal; bracts and bractlets adherent to the rachis. Perianth 4-parted, glabrous, the segments oblong, obtuse or acutish, subequal, 3-nerved, greenish-white. Stamen 1; filament cuneate, 3-lobed, the lobes triangular, the middle one longest and antheriferous; anther small, oblong, 2-celled. Ovary broadly ovoid, compressed; stigmas 2, subulate, recurved; ovule 1, pendulous from the apex of an elongate funicle. Utricle oval-oblong, membranaceous, indehiscent. Seed inverted, lenticular-reniform, smooth, shining; embryo annular, the endosperm farinaceous; cotyledons linear, the radicle superior.

Type species, *Woehleria serpyllifolia* Griseb.

1. **Woehleria serpyllifolia** Griseb. Abh. Ges. Wiss. Gött. 9: 11. 1861.

Branches filiform, 1–3 dm. long, rooting at the nodes; petioles slender, 1–6 mm. long; leaf-blades orbicular or rhombic-orbicular, 4–10 mm. long, often slightly broader, rounded at the apex, short-decurrent at the base, bright-green; peduncles filiform, 3–10 mm. long; spikes 2–13 mm. long, 2 mm. in diameter; bracts and bractlets ovate-triangular, one fourth as long as the sepals, obtuse or acutish, scarious, whitish; sepals 1.2 mm. long; utricle nearly as long as the sepals; seed 0.5 mm. broad, reddish-brown.

TYPE LOCALITY: Among ferns, near Monteverde, eastern Cuba.
DISTRIBUTION: Cuba.

17. **GOMPHRENA** L. Sp. Pl. 224. 1753.

Coluppa Adans. Fam. Pl. 2: 268. 1763.
Bragantia Vand. Fasc. Pl. Nov. 6. 1771.
Wadapus Raf. Fl. Tell. 3: 77. 1837.
Xerosiphon Turcz. Bull. Soc. Nat. Mosc. 16: 55. 1843.
Xeraea (L.) Kuntze, Rev. Gen. 545. 1891.
Amarantoides (Tourn.) Maza, Fl. Haban. 94. 1897.

Annual or perennial, erect or prostrate, branched, pubescent herbs, the joints often swollen. Leaves opposite, sessile or petiolate, the blades entire. Flowers perfect, bracteate and bibracteolate, spicate or capitate, the heads solitary or glomerate, terminal or axillary, naked or subtended by leaves, the flowers white, yellow, or red; bractlets concave, carinate, often winged or cristate dorsally; perianth sessile, terete or compressed, 5-lobed or 5-parted, usually lanate at the base. Stamens 5, the filaments united to form a tube, this included in the perianth or exserted, 5-lobed at the apex, the lobes bifid or emarginate, the anthers sessile or stipitate in the sinus of the lobe, oblong or linear, 1-celled. Ovary turbinate or subglobose; style short or elongate; stigmas 2 or rarely 3, subulate or filiform, or the stigma bilobate; ovule 1, suspended from the apex of an elongate funicle. Utricle compressed; seed inverted, sublenticular, smooth; embryo annular, the endosperm farinaceous; radicle superior.

Type species, *Gomphrena globosa* L.

Bractlets cristate along the keel, at least near the apex.

Stigmas short, stout, nearly sessile; perennial from a fleshy fusiform root.

Stigmas filiform, on a long style; annuals or perennials.

Heads of flowers 8–15 mm. in diameter.

Crests conspicuously widest at the apex of the bractlets, the flowers thus appearing obtuse or acutish; bractlets equaling or shorter than the flowers.

Calyx-lobes obtuse; perianth longer than the bractlets.

Calyx-lobes acute or acuminate; perianth about equaling the bractlets.

Crests as wide as the bractlets.

Crests narrower than the bractlets.

Crests widest below the apex of the bractlets if perceptibly widest anywhere, the flowers thus acuminate; bractlets much longer than the flowers.

Spikes densely glomerate, each cluster subtended by numerous leaves.

1. *G. Nealleyi*.

2. *G. parviceps*.

3. *G. Pringlei*.

4. *G. dispersa*.

- Bractlets bright-white, indurate, strongly compressed, broadly cristate. 5. *G. Palmeri*.
- Bractlets yellowish- or brownish-white, slightly compressed, narrowly cristate. 6. *G. nana*.
- Spikes usually solitary, sometimes 2 or 3 together, subtended by 2-4 leaves.
- Crests denticulate, often sparsely so; heads about 1 cm. thick, usually tinged with red; plants mostly decumbent or spreading. 7. *G. decumbens*.
- Crests lacinate; heads mostly 1.5 cm. thick, yellowish-white, rarely reddish; plants commonly erect. 8. *G. nitida*.
- Heads of flowers 20-28 mm. in diameter. 9. *G. globosa*.
- Annual; leaf-blades mostly oblong to ovate. 10. *G. Haageana*.
- Perennial from a fusiform root; leaf-blades oblanceolate to oblong-linear. 11. *G. Sonorae*.
- Bractlets not cristate.
- Heads of flowers subtended by 2 or more leaves.
- Heads of flowers not subtended by leaves.
- Plants caespitose, low, each stem bearing 1 or 2 pairs of leaves; sepals obtuse or rounded at the apex. 12. *G. viridis*.
- Leaves green, very sparsely appressed-pilose; blades of the cauline leaves longer than broad.
- Leaves grayish, densely appressed-pilose; blades of the cauline leaves usually as broad as long. 13. *G. caespitosa*.
- Plants not caespitose, tall, the stems bearing numerous pairs of leaves; sepals acute or acuminate.
- Pubescence of the stems appressed; peduncles longer than the leaves. 14. *G. pilosa*.
- Pubescence of the stems spreading or ascending; peduncles shorter than the leaves. 15. *G. Tuerckheimii*.

1. *Gomphrena Nealleyi* Coult. & Fisher, Bot. Gaz. 17: 349. 1892.

Perennial from a thickened fleshy fusiform root; plants erect or ascending, 1-4 dm. high, branched at the base; stems simple or with few erect branches, slender, pilose with long, slender, appressed or spreading hairs; leaves short-petiolate, the blades obovate-oblong to oval, or the lowest spatulate, 1.5-4 cm. long, 0.6-1.5 cm. wide, rounded at the apex and mucronate, acute to acuminate at the base, green, copiously pilose-sericeous on the lower surface, glabrous on the upper; heads solitary, terminating long peduncles, each subtended by 2 sessile, oval or ovate bracts, these equaling or shorter than the heads, the latter subglobose or short-cylindric, about 12 mm. in diameter; bracts ovate-triangular, long-acuminate, yellowish-white; bractlets 2-2.5 times as long as the bracts, long-acuminate, yellowish-white or pinkish, subcoriaceous, narrowly cristate just below the apex, the crest entire or denticulate; perianth slightly shorter than the bractlets, densely lanate below, the lobes oblong-linear, acuminate, whitish; stamen-tube usually exerted; stigmas very short and stout, subsessile; seed globose-ovoid, 1.5 mm. long, reddish-brown, shining.

TYPE LOCALITY: Corpus Christi, Texas.

DISTRIBUTION: Southwestern Texas and adjacent Mexico.

2. *Gomphrena parviceps* Standley, Contr. U. S. Nat. Herb. 18: 92. 1916.

Gomphrena decumbens Pringlei Stuchlík, Repert. Sp. Nov. 11: 156, in part. 1912. Not *G. Pringlei* Coult. & Fisher, 1892.

Prostrate or procumbent annual, much branched; stems 1-3 dm. long, slender or stout, often tinged with red, appressed-pilose; leaves numerous, subsessile, the blades oblong or spatulate, 1-3.5 cm. long, 0.4-1 cm. wide, rounded or obtuse at the apex, acutish at the base, green, appressed-pilose beneath, glabrate above; heads solitary or glomerate, terminal or axillary, subglobose, 7 mm. in diameter, each spike or cluster of spikes subtended by 2 or several sessile leaves, these usually 2-3 times as long as the heads; bracts broadly ovate, acuminate; bractlets 3 mm. long, scarious, white, tinged with pink, twice as long as the bracts, narrowly cristate at the apex, the crest obscurely denticulate, pink or white; perianth conspicuously exceeding the bractlets, the lobes oblong, obtuse, truncate, or emarginate at the apex, the outer ones subcoriaceous, white or pink, glabrous, the inner ones thin, bright-green

except along the margin, very sparsely lanate; stamen-tube about equaling the perianth; style elongate, the stigmas filiform; seed ovoid, 1.5 mm. long, reddish-brown.

TYPE LOCALITY: Valley of Mexico, Federal District, Mexico, at an altitude of 2190 meters.
DISTRIBUTION: Valley of Mexico.

3. *Gomphrena Pringlei* Coult. & Fisher, Bot. Gaz. 17: 349. 1892.

Gomphrena decumbens Pringlei Stuchlík, Repert. Sp. Nov. 11: 156. 1912.

Prostrate or procumbent annual, much branched throughout; stems slender, 5–12 cm. long, rather sparsely appressed-pilose; leaves numerous, sessile, the blades narrowly oblong, oblanceolate, or ovate-oblong, 1–2 cm. long, 2–4 mm. wide, acute, acutish at the base, green, sparsely appressed-pilose on both surfaces; spikes terminal, solitary, each subtended by usually 2 ovate-oblong sessile leaves, subglobose, 7–10 mm. in diameter; bracts ovate-triangular, acuminate, white; bractlets 3–4 mm. long, one and one half times as long as the bracts, white, subcoriaceous, broadly cristate at the apex, the irregularly and acutely dentate crest as broad as the bractlet, gradually narrowed below and extending nearly to the base of the bractlet; perianth nearly as long as the bractlets, lanate below, the linear lobes white, acute or acutish, often dentate; stamen-tube exerted; style elongate, the stigmas filiform; seed subglobose, 1 mm. long, brown, shining.

TYPE LOCALITY: State of Mexico.
DISTRIBUTION: State of Mexico.

4. *Gomphrena dispersa* Standley, Contr. U. S. Nat. Herb. 18: 91. 1916.

Gomphrena decumbens Moq. in DC. Prodr. 13²: 410, in part. 1849. Not *G. decumbens* Jacq. 1804.
Gomphrena decumbens genuina Stuchlík, Repert. Sp. Nov. 11: 156, in part. 1912.
Gomphrena decumbens grandifolia Stuchlík, Repert. Sp. Nov. 11: 157, in part. 1912.

Prostrate or procumbent annual or perennial, much branched, the branches 2–10 dm. long, slender, sparsely or densely appressed-pilose; leaves numerous, short-petiolate, the blades oval-obovate to oblong, 1.5–5 cm. long, 0.5–2 cm. wide, obtuse to rounded at the apex, mucronate, acuminate to attenuate at the base, bright-green, pilose-sericeous, often glabrate on the upper surface; heads usually solitary, terminal or axillary, subglobose or short-cylindric, 9–13 mm. in diameter, each subtended by 2 acute sessile leaves, these usually shorter than the spikes; bracts rounded-ovate, acuminate, white, often denticulate; bractlets 5–6 mm. long, about 3 times as long as the bracts, thin, acute to obtuse, white or rarely purplish-red, narrowly cristate at the apex, the crest extending along the keel for only a short distance, denticulate or lacinate; perianth usually equaling the bractlets, densely lanate, the lobes oblong-linear, acuminate or attenuate, white; stamen-tube commonly included; style elongate, the stigmas slender; seed 1.5 mm. long, reddish-brown, shining.

TYPE LOCALITY: Edge of a cultivated field, Sierra de Anafe, Pinar del Rio, Cuba.
DISTRIBUTION: Dry soil, often in waste or cultivated ground, Cuba, Isle of Pines, Porto Rico, and Jamaica; central Mexico to Costa Rica; adventive in southern Florida.
ILLUSTRATION: Fawc. & Rendle, Fl. Jam. 3: f. 47 (as *G. decumbens*).

5. *Gomphrena Palmeri* Standley, sp. nov.

Gomphrena globosa albiflora Moq. in DC. Prodr. 13²: 409, in part. 1849.

Prostrate or procumbent annual, much branched, the branches stout, 1–5 dm. long, appressed-villous; leaves numerous, the basal ones long-petiolate, the cauline ones short-petiolate, the blades broadly oval, oblong, or oblanceolate, 2–5.5 cm. long, 0.7–1.3 cm. wide, rounded or obtuse at the apex, mucronate, acute to attenuate at the base, green, sericeous beneath, canescent or short-pilose above; heads short-cylindric, 1.2–1.5 cm. in diameter, solitary or glomerate, mostly terminal, each head or cluster of heads subtended by 4 or several broadly oval, acutish, sessile leaves, these equaling or shorter than the heads; bracts broadly ovate-triangular, acuminate, white; bractlets 3 times as long as the bracts, long-acuminate, white, subcoriaceous, broadly cristate above, narrowly cristate to the base, the crests denticulate above; flowers very strongly compressed; perianth much shorter than the bractlets, densely

lanate, the lobes linear, acute, white, nearly concealed by the pubescence; stamen-tube usually exerted; style elongate, the stigmas slender; seed 1.5 mm. long, brown, shining.

Type collected near Acapulco, Mexico, in 1894 or 1895, *Edward Palmer 269* (U. S. Nat. Herb. no. 258744).

DISTRIBUTION: Guerrero, Oaxaca, and Guatemala.

6. *Gomphrena nana* (Stuehlík) Standley, sp. nov.

Gomphrena globosa albiflora Moq. in DC. Prodr. 13²: 409, in part. 1849.

Gomphrena decumbens nana Stuehlík, Repert. Sp. Nov. 11: 158. 1912.

Procumbent or ascending annual, much branched or nearly simple, the branches 1–5 dm. long, stout, appressed-pilose; leaves numerous, short-petiolate, the blades oblong, oval, or broadly obovate, 1.5–4.5 cm. long, 0.7–2 cm. wide, obtuse, mucronate, appressed-pilose; heads short-cylindric, 1 cm. in diameter or slightly larger, crowded at the ends of the branches, each cluster subtended by numerous acute short-petiolate leaves; bracts triangular-ovate, long-acuminate, sordid-white; bractlets 6–7 mm. long, twice as long as the bracts, long-acuminate, thin, yellowish-white, very narrowly cristate below the apex, the crest remotely denticulate; flowers only slightly compressed; perianth shorter than the bractlets, densely lanate below, the lobes oblong-linear, long-attenuate, white, firm; stamen-tube included; style elongate, the stigmas slender; seed globose-ovoid, 1.5 mm. long, brown.

TYPE LOCALITY: Manzanillo, Mexico.

DISTRIBUTION: Central and eastern Mexico to Guatemala.

7. *Gomphrena decumbens* Jacq. Hort. Schoenbr. 4: 41. 1804.

Xeraea decumbens Kuntze, Rev. Gen. 545. 1891.

Gomphrena decumbens albiflora Chod. & Hassl. Bull. Herb. Boiss. II. 3: 389. 1903.

Gomphrena perennis simplex Stuehlík, Repert. Sp. Nov. 11: 153. 1912.

Gomphrena decumbens genuina Stuehlík, Repert. Sp. Nov. 11: 156, in part. 1912.

Gomphrena decumbens grandifolia, Stuehlík, Repert. Sp. Nov. 11: 157, in part. 1912.

Gomphrena decumbens roseiflora Stuehlík, Repert. Sp. Nov. 11: 157, in part. 1912.

Prostrate or decumbent annual, rarely erect, usually much branched, the branches slender, 1–6 dm. long, appressed-pilose; leaves usually numerous, short-petiolate, the blades broadly obovate to oblong or oval, 1.5–7.5 cm. long, 0.6–2.5 cm. wide, rounded or obtuse at the apex, mucronate, acute to attenuate at the base, bright-green, pilose-sericeous beneath, canescent or glabrate above; heads subglobose, about 1 cm. in diameter, usually solitary, terminal, each subtended by usually 2 acute sessile leaves, these shorter or longer than the heads; bracts ovate-triangular, long-acuminate; bractlets 5–6 mm. long, about twice as long as the bracts, long-acuminate, thin, yellowish-white or usually tinged with purplish-red, very narrowly cristate below the apex, the crest remotely denticulate or often entire; perianth shorter than the bractlets, densely lanate, the lobes oblong-linear, long-attenuate, white; stamen-tube usually exerted; style elongate, the stigmas slender; seed 1.5 mm. long, reddish-brown, shining.

TYPE LOCALITY: Not known.

DISTRIBUTION: Dry and waste ground, eastern and central Mexico to Guatemala; also in South America.

ILLUSTRATION: Jacq. Hort. Schoenbr. *pl.* 482.

8. *Gomphrena nitida* Rothr. Bot. Wheeler's Surv. 233. 1878.

Xeraea nitida Kuntze, Rev. Gen. 545. 1891.

Gomphrena decumbens albiflora Stuehlík, Repert. Sp. Nov. 11: 158, in part. 1912. Not *G. decumbens albiflora* Chod. & Hassl. 1903.

Annual, 2–7 dm. high, usually erect, rarely decumbent, much branched or sometimes simple, the branches slender, ascending or suberect, pilose-strigose; leaves usually few, the nodes distant, short-petiolate, the blades obovate, oblong, or oval, 1.5–6 cm. long, 0.4–2.5 cm. wide, green, obtuse or rounded at the apex, acuminate or attenuate at the base, appressed-pilose on both surfaces; spikes subglobose, 12–16 mm. in diameter, usually solitary, terminal, each subtended by 2 leaves, these sessile, acute, usually shorter than the spikes but sometimes longer; bracts ovate-triangular, acuminate, white; bractlets twice as long as the bracts, long-attenuate, yellowish-white or rarely tinged with red, cristate from below the apex nearly to the base, the crests laciniate-dentate; perianth much shorter than the bractlets, copiously

lanate, the lobes linear, long-attenuate, white; stamen-tube usually included; style elongate, the stigmas slender; seed 1.5 mm. long, brown.

TYPE LOCALITY: Chiricahua Mountains, Arizona.

DISTRIBUTION: Dry, stony soil, southwestern New Mexico and southeastern Arizona to Jalisco and Durango.

9. *Gomphrena globosa* L. Sp. Pl. 224. 1753.

Gomphrena globosa carnea Moq. in DC. Prodr. 13²: 409. 1849.

Xeraea globosa Kuntze, Rev. Gen. 545. 1891.

Amarantoides globosus Maza, Fl. Haban. 94. 1897.

Amarantoides globosus albiflorus Maza, Fl. Haban. 95. 1897.

Gomphrena globosa aureiflora Stuchlík, Repert. Sp. Nov. 12: 340. 1913.

Annual, 3–10 dm. high, much branched throughout, or sometimes simple; branches stout, swollen and often purplish at the nodes, pilose-strigose, or sometimes pilose; leaves short-petiolate, the blades oblong, oval, ovate-lanceolate, broadly ovate, or spatulate, 2–10 cm. long, 0.5–5 cm. wide, acute at the apex, mucronate, rounded to acuminate at the base, bright-green, appressed-pilose on both surfaces, often densely so; each head subtended by 2 or rarely 3 leaves, these cordate-ovate or broadly ovate, sessile, acute, shorter than or sometimes exceeding the heads; heads globose or short-cylindric, long-pedunculate, mostly 2–2.5 cm. in diameter, the rachis villous; bracts triangular-ovate, long-acuminate; bractlets 8–12 mm. long, 2–3 times as long as the bracts, oblong, acute, and white, yellow, red, or purple, broadly cristate along the keel, the crest serrulate; perianth densely lanate, shorter than the bractlets, the lobes lance-subulate, 1-nerved, scarious, white or purplish, green along the nerve; stamen-tube longer or shorter than the perianth, the free part of the filaments oblong; style elongate, slender; stigmas linear, erect; utricle oblong; seed ovoid or sublenticular, shining, yellowish.

TYPE LOCALITY: India.

DISTRIBUTION: Southern Asia; escaped from cultivation in Mexico, Central America, the West Indies, and rarely in the United States; also in South America.

ILLUSTRATIONS: Gaertn. Fruct. Suppl. pl. 128; Bot. Mag. pl. 2815; Descourt. Fl. Ant. pl. 320; Schnitzl. Iconogr. pl. 102; Wight, Ic. pl. 1784; Hegi, Ill. Fl. f. 559, i–m.

10. *Gomphrena Haageana* Klotzsch, Allg. Gart. 21: 297. 1853.

? *Gomphrena coccinea* Decaisne, Rev. Hort. IV. 3: 161. 1854.

Gomphrena tuberifera Torr. Bot. Mex. Bound. Surv. 181. 1859.

Xeraea tuberifera Kuntze, Rev. Gen. 545. 1891.

Perennial from an elongate tuberous root about 1 cm. in diameter; plants 2–7 dm. high, much branched or simple, the branches erect, pilose or appressed-pilose; leaves subsessile or on petioles 2 cm. long or shorter, the petioles usually loosely pilose; leaf-blades oblanceolate to oblong-linear, 3–10 cm. long, 0.3–1 cm. wide, acute or acuminate at the apex, mucronate, attenuate at the base, green, appressed-pilose or loosely pilose, rarely glabrate; leaves subtending each head 2, shorter than or much exceeding the head, linear-lanceolate to ovate, long-acuminate, sessile; peduncles elongate; heads globose or short-cylindric, 2–2.8 cm. in diameter; bractlets 2–3 times as long as the bracts, 1–1.5 cm. long, very broadly cristate along the keel, the crest serrulate; perianth equaling or shorter than the bractlets, the lobes lance-linear, acuminate, the tube densely lanate; stamen-tube slightly shorter than the perianth or sometimes longer; free part of the filaments elongate; style elongate, the stigmas short, subdivaricate; seed brownish-red, 1.5 mm. broad, lenticular, shining.

TYPE LOCALITY: Not known.

DISTRIBUTION: Western Texas to Coahuila and Nuevo León.

11. *Gomphrena Sonorae* Torr. Bot. Mex. Bound. Surv. 181. 1859.

Gomphrena decipiens S. Wats. Proc. Am. Acad. 21: 437. 1886. Not *G. decipiens* Seub. 1875.

Xeraea Sonorae Kuntze, Rev. Gen. 545. 1891.

Gomphrena Sonorae Watsonii Stuchlík, Beih. Bot. Centr. 30: 405. 1913.

Annual or perennial from fibrous or woody roots, the top of the caudex sparsely branched; plants 1.5–6 dm. high, much branched or rarely simple, the branches erect or ascending, slender, glabrate or sparsely pilose-strigose; leaves short-petiolate or the upper subsessile, the blades elliptic, oblanceolate, or oblong, 3–10 cm. long, 0.5–1.2 cm. wide, acuminate to acutish at

the apex, acuminate or attenuate at the base, green, sparsely appressed-pilose, often glabrate; leaves subtending the head 2, exceeding or shorter than the inflorescence, sessile, long-pilose; heads solitary or glomerate at the ends of the branches or often sessile in the axils, subglobose or short-cylindric, 8–13 mm. in diameter; bracts triangular-ovate, long-acuminate; bractlets slightly longer than the bracts, 5–6 mm. long, concave, carinate, acutish, whitish or often tinged with red; perianth-lobes lanceolate, long-acuminate, white or rose, the tube densely lanate with white or brownish hairs; stamen-tube slightly shorter than the perianth or often conspicuously exceeding it; style short, the short stigmas linear; seed reddish-brown, 1.5 mm. long.

TYPE LOCALITY: Mountain near Santa Cruz, Sonora.

DISTRIBUTION: Stony plains and foothills, southern Arizona to Lower California, Sinaloa, and Chihuahua.

12. *Gomphrena viridis* Wooton & Standley, Contr. U. S. Nat.
Herb. 16: 120. 1913.

Cespitose perennial from a deep-seated woody root; stems slender, 5–15 cm. long, simple, ascending, sparsely appressed-villous, often glabrate, bearing 1 or 2 pairs of leaves remote from the inflorescence; leaves mostly apparently basal, borne near the summit of the branching caudex, long-petiolate, the blades broadly spatulate to oblong or oval, 3.5–7.5 cm. long, 2–3 cm. wide, rounded or obtuse at the apex, acute or acuminate at the base, bright-green, sparsely appressed-pilose, often glabrate; cauline leaves short-petiolate, oblong-obovate, oval, or rarely rounded-obovate, conspicuously longer than broad; heads on naked peduncles 2–7 cm. long, subglobose, 10–17 mm. in diameter; bracts ovate-orbicular, obtuse; bractlets half longer than the bracts, ovate-oblong, 6–7 mm. long, obtuse or acute, white, hyaline, concave; perianth usually slightly longer than the bractlets, the lobes oblong, rounded or emarginate, often minutely serrulate, white, green along the midnerve, the tube densely long-pilose with white hairs; stamen-tube shorter than the perianth; seed reddish-brown, 1 mm. long.

TYPE LOCALITY: Hanover Mountain, Grant County, New Mexico.

DISTRIBUTION: Dry plains and hillsides, southwestern New Mexico and southeastern Arizona to northern Chihuahua and Sonora.

13. *Gomphrena caespitosa* Torr. Bot. Mex. Bound. Surv. 181.
1859.

Xeraea caespitosa Kuntze, Rev. Gen. 545. 1891.

Densely cespitose perennial from a perpendicular woody root having a woody branched caudex; flowering branches stout or slender, 3–15 cm. long, decumbent or ascending, simple or rarely branched, densely pilose with white, often spreading hairs, each stem bearing 1 or 2 pairs of leaves; leaves mostly basal, on petioles equaling or shorter than the blades, the latter suborbicular or rounded-obovate to oval, rounded-oblong, or obovate, 1–5 cm. long, 0.7–2.5 cm. wide, densely appressed-pilose, rounded or obtuse at the apex, abruptly acute at the base; cauline leaves very shortly petiolate, orbicular to broadly oval, usually as broad as long; peduncles naked, 0.5–6 cm. long; heads subglobose or short-cylindric, 1.2–1.8 cm. in diameter; bracts white, ovate-oblong, obtuse or acute; bractlets half longer than the bracts, ovate-oblong or oval, acute or obtuse, often denticulate at the apex, white, hyaline; perianth usually shorter than the bractlets, the lobes oblong or linear-oblong, obtuse, sometimes green along the nerve, otherwise white, the tube densely white-pilose; stamen-tube slightly shorter than the perianth; seed reddish-brown, shining, 1.5 mm. long.

TYPE LOCALITY: Organ Mountains, New Mexico.

DISTRIBUTION: Dry, stony plains and hillsides, southwestern New Mexico, Arizona, and northern Sonora.

14. *Gomphrena pilosa* (Mart. & Gal.) Moq. in DC. Prodr. 13²: 395.
1849.

Mogiphanes pilosa Mart. & Gal. Bull. Acad. Brux. 10¹: 348. 1843.

Xeraea pilosa Kuntze, Rev. Gen. 545. 1891.

Stems erect or ascending, suffrutescent at the base, slender, branched, the branches ascending, appressed-pilose with fulvous hairs when young, glabrate in age; petioles slender,

4–10 mm. long; leaf-blades lance-elliptic to ovate-oblong, 3–6 cm. long, 0.8–2 cm. wide, acute or acuminate at the apex, acute or obtuse and short-decurrent at the base, thin, green, sparsely appressed-pilose on both surfaces; peduncles axillary, 2.5–7 cm. long, slender, naked; heads subglobose, 12 mm. in diameter; bracts and bractlets half as long as the sepals, ovate, aristate-acuminate, hyaline, fulvous, pilose; sepals 4–5 mm. long, lance-elliptic, long-acuminate, 3-nerved, short-pilose above, densely long-pilose at the base, white-stramineous; stamen-tube nearly equaling the sepals, the free part of the filaments very short, the lobes narrowly triangular, acute or obtuse, equaling the anthers; style very short, the stigmas short, subulate.

TYPE LOCALITY: Cultivated fields near Ario, Michoacán, at an altitude of 1350 meters.

DISTRIBUTION: Michoacán and Guanajuato.

15. *Gomphrena Tuerckheimii* (Vatke) Uline & Bray, Bot. Gaz. 20: 161. 1895.

Telanthera Tuerckheimii Vatke; Uline & Bray, Bot. Gaz. 20: 161, as synonym. 1895.

Stems stout, ascending or procumbent (?), 6 dm. long or more, striate, densely pilose when young, glabrate in age; petioles slender, 1–2 cm. long; leaf-blades ovate-oblong, 6–11.5 cm. long, 2.5–5.5 cm. wide, acute at the apex, acute at the base, densely pilose-sericeous beneath, sparsely appressed-pilose on the upper surface and deep-green, thin; peduncles axillary, very slender, naked, 5–8 cm. long; heads subglobose, 1 cm. in diameter; bracts and bractlets less than half as long as the sepals, ovate-triangular, aristate-acuminate, stramineous, pilose or glabrate; sepals 3.5–4 mm. long, narrowly elliptic-oblong, acute, whitish, 3-nerved, glabrate above, densely long-pilose at the base; stamen-tube nearly as long as the sepals, the filaments very short, the sides entire, the apical lobes narrowly triangular, attenuate; style very short, the stigmas subulate, elongate.

TYPE LOCALITY: Cobán, Alta Verapaz, Guatemala.

DISTRIBUTION: Vicinity of the type locality.

DOUBTFUL SPECIES

GOMPHRENA FILAGINOIDES Mart. & Gal. Bull. Acad. Brux. 10¹: 350. 1843. (*Xeraea filaginoides* Kuntze, Rev. Gen. 545. 1891). Described from specimens collected at Misteca Alta and Yavezia, Mexico (*Galeotti 441 bis*). This may be *Gomphrena nana*.

18. *DICRAURUS* Hook. f. in Benth. & Hook. Gen. Pl. 3: 42. 1880.

Erect pubescent branched shrubs. Leaves mostly alternate, petiolate, the blades entire. Flowers dioecious or polygamo-dioecious, small, bracteate and bibracteolate, spicate, the spikes in terminal or axillary panicles; perianth terete, the 5 segments distinct, 1-nerved. Stamens united into a cup, the 5 filaments subulate, the staminodia minute; anthers oblong, 2-celled. Ovary ovoid; style very short; stigmas 2, subulate; ovule 1, suspended from the apex of an elongate funicle. Utricle broadly ovoid, membranaceous, indehiscent. Seed inverted, smooth; embryo annular, surrounding the farinaceous endosperm; radicle superior.

Type species, *Dicraurus leptocladus* Hook. f.

Leaf-blades ovate to ovate-lanceolate, acute, 3–9 mm. wide; petioles 1–2 mm. long.

1. *D. leptocladus*.

Leaf-blades rounded-ovate, ovate-rhombic, or rounded-deltoid, usually rounded at the apex, 1.3–3.5 cm. wide; petioles 5–10 mm. long.

2. *D. alternifolius*.

1. *Dicraurus leptocladus* Hook. f. in Benth. & Hook. Gen. Pl. 3: 43. 1880.

Iresine diffusa Torr. Bot. Mex. Bound. Surv. 180. 1859. Not *I. diffusa* Humb. & Bonpl. 1805.

Dicraurus diffusus Baillon, Hist. Pl. 9: 214. 1888.

Iresine alternifolia texana Coult. Contr. U. S. Nat. Herb. 1: 48. 1890.

Shrub, 2–10 dm. high, with numerous stems from a woody base, these simple or sparsely branched, the branches slender, ascending, rigid, often spinescent in age, subangulate, densely villous-sericeous; petioles 1–2 mm. long; leaf-blades ovate, ovate-lanceolate, or ovate-oblong,

7–25 mm. long, 3–9 mm. wide, acute or acuminate or rarely obtuse, acute at the base, thick and firm, sparsely sericeous on the upper surface or glabrate, densely villous-sericeous beneath or glabrate in age; inflorescence narrowly paniculate, the panicles axillary or terminal, 2–15 cm. long, usually dense and congested, naked or sparsely leafy below, the spikelets short, few-flowered, sessile or short-pedunculate; bracts and bractlets of the staminate flowers less than half as long as the sepals, subscarios, suborbicular, densely short-villous, the sepals elliptic-oblong, 2 mm. long, densely villous; filaments linear, equaling the sepals, the staminodia very short, papillose-dissected at the apex; bracts and bractlets of the pistillate flowers nearly as long as the sepals, suborbicular, whitish-stramineous, villous, the sepals elliptic-oblong, 1.5 mm. long, obtuse, densely pilose with long, soft, sordid-white hairs; style very short, the stigmas elongate; utricle oval, subcompressed; seed 1 mm. long, brown.

TYPE LOCALITY: Western Texas.

DISTRIBUTION: Rocky hillsides, western Texas and Chihuahua to San Luis Potosí.

2. *Dicraurus alternifolius* (S. Wats.) Uline & Bray, Bot. Gaz.
21: 355. 1896.

Iresine alternifolia S. Wats. Proc. Am. Acad. 24: 72. 1889.

Erect shrub, 1–2 meters high, much branched, the branches stout, terete, densely and finely tomentose, the older ones covered with grayish-brown bark; leaves mostly alternate, those near the base of the branches usually opposite, the slender petioles 5–10 mm. long, the blades rounded-ovate, ovate-rhombic, or broadly rounded-deltoid, 1.3–3.5 cm. long, 1.2–2.5 cm. wide, rounded or rarely acute at the apex, broadly rounded or truncate at the base and short-decurrent, thin, green and glabrate or sparsely villous on the upper surface, densely villous-tomentose beneath, the lateral veins inconspicuous; panicles terminal, the pistillate ones 2–10 cm. long, usually very dense, naked, or leafy below, the staminate panicles loose and open, usually larger; spikes loosely flowered, interrupted, elongate, pedunculate or sessile; bracts and bractlets of the staminate flowers suborbicular, one third as long as the sepals, scarious, whitish, sparsely villous or glabrate, the sepals elliptic-oblong, 1.5–1.7 mm. long, obtuse, scarious, short-villous; filaments linear-subulate, nearly equaling the sepals, the staminodia very short, dissected into fine papillose lobes; bracts and bractlets of the pistillate flowers as long as the sepals, suborbicular, concave, hyaline, stramineous-white, glabrous or sparsely villous, the sepals elliptic-oblong, 1.5 mm. long, obtuse, densely pilose with long soft white hairs; style short, the stigmas slender, elongate; utricle compressed-globose.

TYPE LOCALITY: Mountains about Guaymas, Sonora.

DISTRIBUTION: Dry rocky hillsides, western Sonora and southern Lower California.

19. IRESINE P. Br. Hist. Jam. 358. 1756.

Trommsdorffia Mart. Nov. Gen. & Sp. 2: 40. 1826.

Rosea Mart. Nov. Gen. & Sp. 2: 58. 1826.

Xerandra Raf. Fl. Tell. 3: 43. 1837.

Ireneis Moq. in DC. Prodr. 13²: 349. 1849.

Erect, decumbent, or scandent herbs, shrubs, or small trees, pubescent or glabrous. Leaves opposite, petiolate, the blades entire or serrulate. Flowers perfect, polygamous, or dioecious, bracteate and bibracteolate, capitate or spicate, the spikes numerous, paniculate; perianth terete, sessile, the 5 segments distinct, usually lanate or pilose. Stamens united at the base into a short tube, the 5 filaments subulate, entire, the pseudostaminodia usually short or wanting, sometimes elongate; anthers oblong, 2-celled. Ovary compressed; style short or wanting; stigmas 2 or 3, subulate or filiform or in the staminate flowers sometimes capitate; ovule 1, suspended from the apex of an elongate funicle. Utricle compressed, membranaceous, indehiscent. Seed inverted, smooth; embryo annular, surrounding the farinaceous endosperm; cotyledons narrow; radicle superior.

Type species, *Celosia paniculata* L.

Flowers perfect or polygamous.

Branches of the inflorescence glabrous or obscurely pubescent.

Spikelets 2 mm. in diameter or less.

Leaf-blades broadly ovate to lance-ovate, 2.5–6 cm. long; branches mostly herbaceous.

1. *I. jaliscana*.

- Leaf-blades elliptic or oblong-elliptic, 14–21 cm. long; branches fruticose nearly throughout.
Spikelets 3–5 mm. in diameter.
Bracts and bractlets rounded or obtuse at the apex.
Inflorescence naked; bracts stramineous or whitish; pubescence of the sepals bright-white; leaf-blades broadest at the middle.
Inflorescence leafy; bracts fuscous; pubescence of the sepals brownish; leaf-blades broadest near the base.
Bracts and bractlets acute or acuminate, cuspidate.
Staminodia minute; sepals acute or acutish; bracts sparsely villous.
Staminodia one third as long as the filaments; sepals obtuse or rounded at the apex; bracts densely villous.
Branches of the inflorescence densely canescent or tomentose.
Outer sepals hyaline or at least very thin, glabrate or lanate.
Leaf-blades elliptic to oblanceolate-oblong, 12–20 cm. long, soon glabrate; spikelets sessile; sepals sparsely lanate at the base.
Leaf-blades ovate to lanceolate, 8 cm. long or less, permanently pubescent; spikelets mostly pedicelated; sepals densely lanate.
Outer sepals subcoriaceous, thick and rigid, pilose below with straight hairs.
Hairs at the base of the flowers more than twice as long as the sepals.
Hairs at the base of the flowers scarcely exceeding the sepals.
Sepals 1.5–1.7 mm. long or less; spikelets sessile or pedunculate, 3–4 mm. thick; leaf-blades abruptly acuminate or long-acuminate.
Spikelets mostly sessile, less than 3 mm. thick; leaf-blades 11–18 cm. long, 4–7 cm. wide.
Spikelets mostly pedunculate, 4 mm. thick; leaf-blades 3.5–7 cm. long, 2–3 cm. wide.
Sepals 2–2.5 mm. long; spikelets mostly pedunculate, 5–6 mm. in diameter; leaf-blades acute, acuminate, or abruptly acute.
Leaf-blades rounded at the base, broadest at or below the middle, subcoriaceous.
Leaf-blades acute at the base, broadest above the middle, thin.
- Flowers dioecious.
Stems conspicuously fruticose nearly throughout, sometimes scandent.
Branches of the inflorescence glabrous or nearly so.
Bracts subcoriaceous, rounded at the apex; lateral veins of the leaves nearly obsolete.
Bracts scarious, mucronulate; lateral veins of the leaves coarse and prominent.
Branches of the inflorescence densely canescent, tomentose, or strigose.
Staminate spikelets glomerate at the ends of fruticose branches; leaf-blades about as broad as long, usually suborbicular.
Staminate spikelets paniculate; leaf-blades much longer than broad.
Sepals of the pistillate flowers rigid, green, the tips slightly spreading.
Sepals of the pistillate flowers thin, whitish, the tips erect or incurved.
Pubescence of branched hairs.
Pubescence of simple hairs.
Panicles on long naked peduncles, narrow, the branches usually short.
Leaves soon glabrate; pubescence of the stems lustrous.
Leaves permanently pubescent, at least beneath; pubescence dull.
Panicles short-pedunculate or usually sessile, broad, the branches usually elongate.
Leaves white beneath with a usually dense tomentum.
Spikelets usually sessile, short; leaf-blades thick, subrugose; branches of the panicle stout.
Spikelets nearly all pedunculate, elongate; leaf-blades thin; branches of the panicle slender, flexuous.
Leaves not white beneath, the pubescence of yellowish, straight or loosely matted hairs.
Panicles very dense; bracts and sepals villous only at the base; sepals of the staminate flowers 2.5–3 mm. long.
2. *I. arbuscula.*
4. *I. nigra.*
5. *I. pacifica.*
6. *I. angustifolia.*
7. *I. arenaria.*
3. *I. tomentella.*
8. *I. Hartmanii.*
9. *I. completa.*
10. *I. costaricensis.*
11. *I. domingensis.*
12. *I. argentata.*
13. *I. Wrightii.*
14. *I. Palmeri.*
15. *I. interrupta.*
16. *I. rotundifolia.*
17. *I. Pringlei.*
18. *I. stricta.*
19. *I. nitens.*
20. *I. Schaffneri.*
21. *I. cassiniaeformis.*
22. *I. discolor.*
23. *I. grandis.*

- Panicles loose and open; bracts and sepals copiously villous; sepals of the staminate flowers 2 mm. long or less.
- Stems herbaceous throughout, or suffrutescent at the base, never truly fruticose.
- Leaf-blades linear, 2 mm. wide or less.
- Leaf-blades lanceolate or narrowly oblong to broadly ovate or orbicular, 0.4–7 cm. wide.
- Leaf-blades green, never retuse at the apex.
- Pubescence of the inflorescence of lustrous, bright amber-colored hairs; bracts dentate near the base.
- Pubescence of whitish hairs, or wanting; bracts entire.
- Leaf-blades obtuse, narrowly oblong to oblong-lanceolate.
- Leaf-blades, at least the upper ones, acute to attenuate, lanceolate to broadly ovate.
- Sepals of the pistillate flowers faintly 1-nerved, acute, equaling or usually shorter than the utricle; plants perennial, with rootstocks.
- Sepals of the pistillate flowers 3-nerved, usually obtuse, longer than the utricle; annuals or perennials.
- Flowers small, 0.5–0.75 mm. long, the spikelets 1.75 mm. thick or less; upper leaves narrowly lanceolate, long-attenuate; plants suffrutescent below.
- Flowers larger, 1 mm. long or more, the spikelets 2–4 mm. thick; upper leaves ovate or broadly ovate, acute or acuminate; plants herbaceous.
- Annual; sepals of the pistillate flowers obtuse or acutish; lower leaves similar to the upper ones, acuminate, inconspicuously veined, thin.
- Perennial; sepals of the pistillate flowers acute or acuminate; lower leaves much broader than the upper ones, obtuse or acutish, conspicuously nerved with coarse whitish veins, thick and succulent.
- Leaf-blades variegated with red or yellow, suborbicular, retuse at the apex.
24. *I. Calea*.
25. *I. inaguensis*.
26. *I. acicularis*.
27. *I. flavescens*.
28. *I. rhizomatosa*.
29. *I. frutescens*.
30. *I. Celosia*.
31. *I. heterophylla*.
32. *I. Herbstii*.

1. *Iresine jaliscana* Uline & Bray, Bot. Gaz. 21: 351. 1896.

Ascending or decumbent perennial, suffruticose below, sparsely branched, the branches slender, striate, green, glabrous, or very sparsely short-villous when young; petioles slender, 5–8 mm. long; leaf-blades ovate or rhombic-ovate, 2.5–6 cm. long, 1–1.7 cm. wide, acute or acuminate at the apex, obtuse or rounded and slightly decurrent at the base, thin, glabrous; flowers polygamo-dioecious, loosely paniculate, the panicle pyramidal, nearly naked, the very slender branches ascending or spreading; spikelets elongate, sessile or pedunculate, the rachis lanate; bracts and bractlets ovate, about as long as the sepals, acuminate, mucronate, glabrous, scarious, stramineous; sepals oblong, hyaline, 1.5 mm. long, short-lanate at the base; pistillate flowers with 5 short imperfect stamens, the staminodia minute; style short, the stigmas elongate, slender; utricle turbinate.

TYPE LOCALITY: Near Guadalajara, Jalisco.

DISTRIBUTION: Known only from the type locality.

2. *Iresine arbuscula* Uline & Bray, Bot. Gaz. 21: 350. 1896.

Tree, 4.5–6 meters high, the branches terete, smooth, glabrous; petioles 2.5–4 cm. long; leaf-blades elliptic or oblong-elliptic, 14–21 cm. long, 5.5–7 cm. wide, acute or acuminate at both ends, rather thick, deep-green, glabrous, prominently veined, the veins ascending; flowers polygamo-dioecious, loosely paniculate, the panicle as broad as long, the branches divaricate, puberulent or glabrate, subtended by narrow scarious bracts; spikelets mostly sessile, the rachis lanate; bracts and bractlets ovate-orbicular, rounded at the apex, scarious, stramineous, glabrous; sepals of the staminate flowers oblong-oval, 1.5 mm. long, obtuse, enervate, very sparsely lanate at the base, pale-stramineous; staminodia minute; stigma elongate; utricle ovoid.

TYPE LOCALITY: Volcán de Tecuamburro, Santa Rosa, Guatemala, at 2000 meters.

DISTRIBUTION: Southern Guatemala.

3. *Iresine tomentella* Standley, Contr. U. S. Nat. Herb. 18: 97. 1916.

Shrub; branches slender, sparsely whitish-tomentose when young, glabrate in age; petioles 0.8–1.5 cm. long, tomentulose when young; leaf-blades oblong-elliptic, elliptic, or oblanceolate-

oblong, 12.5–21.5 cm. long, 3.3–6.5 cm. wide, cuneate at the base, acute or long-acuminate at the apex, usually somewhat abruptly so, thin, bright-green, glabrous above, loosely tomentose beneath along the veins when young, glabrate in age, the lateral veins conspicuous, arcuate-ascending; flowers polygamous, loosely paniculate, the panicle 9.5 cm. long and as broad, the branches ascending, thinly tomentose, the basal bracts linear, 2–2.5 cm. long; spikelets sessile, few-flowered, 2–2.5 mm. in diameter, the rachis lanate; bracts and bractlets ovate-orbicular, half as long as the sepals, obtuse or acutish, stramineous, hyaline, glabrous; sepals oval, 1.5–2 mm. long, obtuse, sparsely lanate at the base, stramineous; staminodia minute.

TYPE LOCALITY: Near Gómez Farias, Tamaulipas, at an altitude of 350 meters.

DISTRIBUTION: Known only from the type locality.

4. *Iresine nigra* Uline & Bray, Bot. Gaz. 21: 350. 1896.

Much branched shrub, the branches slender, spreading, terete, striate, glabrous, or sparsely puberulent in the inflorescence; petioles 3–15 mm. long; leaf-blades ovate, elliptic, or lance-elliptic, 4.5–14 cm. long, 1.5–4 cm. wide, acute to long-acuminate at the apex, acute or acuminate at the base and short-decurrent, glabrous, or, when young, sparsely appressed-pilose, thick and firm, blackish when dry, the lateral veins divergent, not prominent; flowers polygamo-dioecious or sometimes perfect, loosely paniculate, the panicles pyramidal, often as broad as long, naked or sparsely leafy, the branches ascending or divergent; spikelets short, mostly sessile; bracts and bractlets half as long as the sepals or shorter, rounded-ovate, rounded at the apex, stramineous, glabrous; sepals ovate-oblong, 1.5 mm. long, obtuse, obscurely nerved, brownish, glabrous or sparsely pilose at the apex, the basal hairs soft, whitish, equaling or longer than the sepals; staminodia minute; style elongate, the stigmas slender; utricle obovoid; seed suborbicular, 0.8 mm. broad, shining.

TYPE LOCALITY: San Pedro Sula, Honduras.

DISTRIBUTION: Vera Cruz to Honduras and Salvador.

5. *Iresine pacifica* Standley, Contr. U. S. Nat. Herb. 18: 96. 1916.

Erect shrub, much branched, the branches ascending, slender, striate, green, glabrous except about the inflorescence, there very sparsely short-villous; petioles slender, 4–11 mm. long; leaf-blades broadly ovate or rhombic-ovate to lance-oblong, or the uppermost lanceolate, 3.5–10.5 cm. long, 1.3–4 cm. wide, acute to long-acuminate at the apex, acute at the base, thin, glabrous, or very sparsely short-villous along the veins beneath; flowers polygamo-monoecious, in broad, open, much branched, sparsely leafy panicles, the branches elongate, very slender, ascending or spreading, the spikelets short, nearly all sessile, their rachises lanate; bracts and bractlets less than half as long as the flowers, suborbicular, rounded at the apex, short-villous, brown; sepals oval-oblong, 1.5 mm. long, rounded at the apex, 3-nerved, densely pilose with long soft brownish hairs; filaments shorter than the sepals, the staminodia less than half as long as the filaments, narrowly triangular, entire; style short, the stigmas slender; seed orbicular, slightly compressed, 0.6 mm. broad, black and shining.

TYPE LOCALITY: Near Manzanillo, Colima.

DISTRIBUTION: Sinaloa to Colima.

6. *Iresine angustifolia* Euphrasén, Beskr. St. Barthel. 165. 1795.

Iresine elatior Rich.; Willd. Sp. Pl. 4: 766. 1805.

Iresine racemosa Poir. in Lam. Encyc. Suppl. 3: 180. 1813.

Rosea elatior Mart. Nov. Gen. & Sp. 2: 59. 1826.

Xerandra elatior Raf. Fl. Tell. 3: 43. 1837.

Iresine virgata Poepp.; Moq. in DC. Prodr. 13²: 343, as synonym. 1849.

Iresine acutifolia Sw.; Moq. in DC. Prodr. 13²: 343, as synonym. 1849.

Rosea virgata Klotzsch; Seub. in Mart. Fl. Bras. 5¹: 226, as synonym. 1875.

Alternanthera linearis Bello, Anal. Soc. Esp. Hist. Nat. 12: 107. 1883.

Erect perennial, 5–10 dm. high, suffrutescent at the base, much branched, the branches slender, ascending, striate, green, very sparsely short-villous on the young branches and in the inflorescence, soon glabrate; petioles very slender, 0.5–2.5 cm. long; leaf-blades lance-ovate to linear-lanceolate, 5–10.5 cm. long, 0.8–4 cm. wide, acuminate to long-attenuate at the apex, acute to long-acuminate at the base, thin, deep-green, glabrous, or very sparsely short-villous

beneath along the veins, the leaves of the inflorescence smaller, mostly linear or lance-linear; flowers perfect, loosely paniculate, the panicles pyramidal, leafy below, the branches very slender, often flexuous, ascending or spreading, the spikelets short or elongate, usually pedunculate, the rachis lanate; bracts broadly ovate, acute, the bractlets ovate, cuspidate-acuminate, twice as long as the bracts and equaling the calyx, hyaline, brown or brownish, glabrous or villous; sepals elliptic-oblong, acute or acutish, mucronulate, 1.5 mm. long, 1-nerved, greenish, densely villous, the hairs soft, sordid-whitish or pale-brown, 2 or several times as long as the sepals, the staminodia minute; style short, the stigmas slender; utricle orbicular, compressed; seed orbicular, 0.7 mm. broad, dark reddish-brown, shining.

TYPE LOCALITY: Gustavia, Island of St. Bartholomew, West Indies.

DISTRIBUTION: Vera Cruz; Lower California; Costa Rica and Panama; West Indies; also from Colombia to Ecuador and Brazil.

ILLUSTRATIONS: Lam. Tab. Encyc. *pl.* 813, *f.* 2; Mart. Nov. Gen. & Sp. *pl.* 155; Fawc. & Rendle, Fl. Jam. 3: *f.* 48.

7. *Iresine arenaria* Standley, Contr. U. S. Nat. Herb. 18: 93.
1916.

Erect perennial, suffrutescent at the base, much branched, the branches slender, erect-ascending, green, striate, glabrous; petioles slender, 4–5 mm. long; leaf-blades linear to narrowly ovate, 2.5–4.5 cm. long, 2–12 mm. wide, acute or acuminate at the apex, obtuse to acuminate at the base, rather thick, deep-green, glabrous; flowers polygamous, narrowly paniculate, the panicles open or congested, nearly naked, 4–20 cm. long, the branches slender or stout, ascending, short, the spikelets few, short or elongate, pedunculate or sessile, the rachis densely lanate; bracts and bractlets rounded-ovate, obtuse or acutish, short-cuspidate, hyaline, whitish-stramineous, densely short-villous; sepals oblong-oval, 1.5 mm. long, rounded at the apex, 3-nerved, densely pilose with soft white hairs; filaments subulate-linear, shorter than the sepals, the staminodia one third as long as the filaments, narrowly triangular, entire; style short, the stigmas slender; utricle orbicular, compressed; seed orbicular, 1 mm. broad, dark reddish-brown, shining.

TYPE LOCALITY: Topolobampo, Sinaloa.

DISTRIBUTION: On sandy hillsides, vicinity of the type locality.

8. *Iresine Hartmanii* Uline, Field Columb. Mus. Publ. Bot. 1: 422.
1899.

Erect shrub, 1.5–2.5 meters high, fruticose nearly throughout, the branches slender, terete, brownish or stramineous, villous-canescens when young but soon glabrate; petioles slender, 3–7 mm. long; leaf-blades ovate to lanceolate, 3.5–8 cm. long, 2–3.3 cm. wide, rounded or obtuse at the base, often unequal or short-decurrent, acuminate to attenuate at the apex, green, thinly canescens on the upper surface, appressed-pilose or canescens beneath; flowers polygamous, in loose naked open panicles, the spikelets mostly pedunculate, densely flowered, 5–15 mm. long, 4 mm. thick; bracts and bractlets one third to one half as long as the perianth, stramineous or whitish, ovate to ovate-orbicular, rounded or obtuse at the apex, glabrous; sepals oblong, 2 mm. long, densely white-lanate; filaments half as long as the sepals, the staminodia slender, about equaling the filaments; stigmas short and stout.

TYPE LOCALITY: Granados, Sonora.

DISTRIBUTION: Sonora and Durango.

9. *Iresine completa* Uline & Bray, Bot. Gaz. 21: 349. 1896.

Much branched shrub, erect or scandent, the branches slender, terete, glabrate, the young ones and those of the inflorescence canescens; petioles 5–7 mm. long; leaf-blades elliptic-oblong or broadly ovate-oblong, 5–9 cm. long, 2–4.5 cm. wide, acuminate or abruptly long-acuminate at the apex, obtuse or rounded at the base, thin, deep-green, glabrate on the upper surface, sparsely appressed-pilose beneath; flowers perfect, paniculate, the panicles terminal or axillary, naked, short, 7–15 cm. long, narrow, the branches short, opposite or verticillate, spreading or ascending, the spikelets short, usually pedunculate; bracts and bractlets one

third as long as the sepals, ovate-orbicular, stramineous, sparsely short-villous; sepals elliptic-oblong, obtuse or acutish, 2.5 mm. long, 3-nerved, brownish-fuscous, densely pilose at the base, the hairs sordid-whitish, stiff, conspicuously articulate, twice as long as the sepals or longer; filaments shorter than the sepals, the staminodia short, entire; style short, the stigmas very short, stout; utricle oval; seed 1 mm. long.

TYPE LOCALITY: San Pedro Sula, Honduras.

DISTRIBUTION: Honduras to Panama.

10. *Iresine costaricensis* Standley, Contr. U. S. Nat. Herb. 18: 94. 1916.

Scandent shrub, much branched, the branches stout, terete, smooth, the younger ones and those of the inflorescence densely pubescent with short stout appressed fulvous hairs; petioles stout, 7-17 mm. long; leaf-blades oval to oblong-elliptic, 11-18 cm. long, 4-7 cm. wide, abruptly acuminate or long-attenuate at the apex, obtuse at the base, thick, sparsely short-villous on the upper surface and deep-green, appressed-pilose beneath with slender stiff hairs; flowers perfect, in a loose, much branched, naked, terminal panicle sometimes 5 dm. long, the branches slender, spreading, opposite or verticillate, the spikelets 3 mm. thick or less, sessile, few-flowered, the rachis canescent; bracts and bractlets less than half as long as the sepals, suborbicular, fuscous-stramineous, sparsely short-villous; sepals oval-oblong, 1.5 mm. long, obtuse, 3-nerved, brownish-fuscous, densely pilose, the hairs stiff, grayish, scarcely exceeding the sepals; filaments shorter than the sepals, the staminodia short, entire; style short, the stigmas short and stout.

TYPE LOCALITY: Las Vueltas, Tucurrique, Costa Rica.

DISTRIBUTION: In thickets, vicinity of the type locality.

11. *Iresine domingensis* Urban, Symb. Ant. 5: 337. 1907.

Scandent shrub, the branches grayish, glabrate, the branchlets densely pubescent; petioles 5-8 mm. long; leaf-blades ovate-oval or oval, 3.5-7 cm. long, 2-3 cm. wide, subcuneately narrowed at the base, acutely acuminate at the apex, chartaceous, glabrate above, appressed-pubescent beneath; flowers perfect, in a loose, much branched panicle 20 cm. long or shorter, the branches spreading, the spikelets 4 mm. thick, 2.5-4 mm. long, usually pedunculate, the rachis densely pubescent; bracts and bractlets deltoid-reniform, about half as long as the sepals, villosulous; sepals ovate-lanceolate, acutish, 1.6-1.7 mm. long, obscurely 3-nerved, densely pilose, the hairs whitish, about as long as the sepals; filaments 0.8 mm. long, the staminodia subquadrate, truncate, obscurely crenulate; style very short, the stigmas short and stout.

TYPE LOCALITY: Haïti.

DISTRIBUTION: Haïti.

12. *Iresine argentata* (Mart.) D. Dietr. Syn. Pl. 1: 870. 1839.

Trommsdorffia argentata Mart. Nov. Gen. & Sp. 2: 41. 1826.

Achyranthes nodosa Bertero; Mart. Nov. Gen. & Sp. 2: 41, as synonym. 1826.

Alternanthera argentata Moq. in DC. Prodr. 13²: 352. 1849.

Erect or scandent shrub, much branched, the branches stout or slender, terete, smooth, glabrate, the young branches and those of the inflorescence densely pubescent with short, stout, soft, appressed or ascending hairs; petioles stout, 2-8 mm. long; leaf-blades oblong-oval to broadly oval or rounded-ovate, 6-12 cm. long, 3.5-6 cm. wide, acute or usually abruptly acute at the apex, rounded at the base, subcoriaceous, glabrous, or sparsely canescent when young; flowers perfect, in pyramidal or elongate, terminal or axillary panicles, the branches spreading, opposite or verticillate; spikelets short, sessile or pedunculate, their rachises canescent; bracts and bractlets one third as long as the flowers, orbicular-ovate, obtuse or acutish, densely short-villous; sepals elliptic-oblong, acutish, 2 mm. long, subfuscous, faintly 3-nerved, densely pilose, the hairs stiff, brownish-white, scarcely exceeding the sepals; filaments filiform, the staminodia short, obtuse, entire; style very short, the stigmas short and stout.

TYPE LOCALITY: Porto Rico.

DISTRIBUTION: In thickets, Porto Rico; apparently also in Colombia and Venezuela.

ILLUSTRATION: Mart. Nov. Gen. & Sp. *pl.* 145, *f.* 3.

13. *Iresine Wrightii* Standley, Contr. U. S. Nat. Herb. 18: 97.
1916.

Shrub, the branches slender, terete, smooth, the young ones and those of the inflorescence densely canescent; petioles stout, 3–7 mm. long; leaf-blades obovate-oblong or oval-oblong, broadest above the middle, 7–9 cm. long, 3–4 cm. wide, acute at the apex, acute or acuminate at the base, rather thin, sparsely appressed-pilose beneath or glabrate; flowers perfect, paniculate, the panicles pyramidal, loosely branched, naked, the branches spreading, opposite, the spikelets short, pedunculate or sessile; bracts and bractlets one third as long as the sepals, suborbicular, stramineous, sparsely short-villous or glabrate; sepals elliptic-oblong, 2.5 mm. long, acute, brownish-fuscous, faintly nerved, short-villous at the apex, pilose at the base, the hairs sordid-white, stiff, about equaling the sepals; filaments filiform, shorter than the sepals, the staminodia very short, entire; style short, the stigmas short and stout.

TYPE LOCALITY: Nicaragua.
DISTRIBUTION: Nicaragua.

14. *Iresine Palmeri* (S. Wats.) Standley, Jour. Wash. Acad. Sci.
5: 395. 1915.

Hebanthe Palmeri S. Wats. Proc. Am. Acad. 18: 144. 1883.

Scandent or decumbent shrub, much branched, the branches ascending, slender or stout, sharply angulate, glabrous, or sparsely puberulent when young; petioles 2–6 mm. long; leaf-blades lanceolate, narrowly ovate, or lance-oblong, 1.2–6 cm. long, 0.5–1.7 cm. wide, acute or acuminate or rarely obtuse at the apex, acute and decurrent at the base, thick, bright-green, glabrous, the lateral veins obsolete or nearly so; flowers dioecious, the pistillate in short or elongate, very narrow, sparsely leafy panicles; spikelets loosely flowered, sessile or pedunculate, the rachis scaberulous; sepals of the pistillate flowers about as long as the bractlets, oval, 1 mm. long, obtuse, sparsely pilose, obscurely nerved, the bracts and bractlets orbicular, stramineous or fuscous, strongly concave, glabrous, the hairs at the base of the perianth several times as long as the sepals, soft, sordid-whitish; filaments short, the staminodia wanting; style very short, the stigmas elongate, stout; utricle subglobose, exceeding the sepals; seed subglobose, 1 mm. long, reddish-brown.

TYPE LOCALITY: Guajuco, Nuevo León.
DISTRIBUTION: Nuevo León and San Luis Potosí to Vera Cruz.

15. *Iresine interrupta* Benth. Bot. Voy. Sulph. 156. 1844.

Ireneis interrupta Moq. in DC. Prodr. 13²: 349. 1849.

Alternanthera Richardii Moq. in DC. Prodr. 13²: 353. 1849.

Iresine angustifolia Rich.; Moq. in DC. Prodr. 13²: 353, as synonym. 1849.

Hebanthe subnuda Hemsl. Biol. Centr. Am. Bot. 3: 20. 1882.

Gossypianthus subnudus Kuntze, Rev. Gen. 543. 1891.

Scandent or reclining shrub, much branched, often 5–6 meters long, the branches terete, striate, divergent, glabrous, or rarely short-villous when young, pale-green; petioles stout, 0.5–5 cm. long; leaf-blades broadly ovate-rhombic to ovate or lanceolate, 4–15 cm. long, 1–10 cm. wide, acute to attenuate at the apex, rounded or obtuse at the base and very shortly decurrent, thick, sometimes very shortly villous when young, soon glabrous, prominently veined, the lateral veins divergent, the few leaves of the inflorescence small and narrow, sometimes rounded at the apex; flowers dioecious, in broad or narrow, loose, sparsely leafy panicles, or the inflorescence sometimes congested in the pistillate plants; spikelets elongate or short, sessile or pedunculate; sepals of the staminate flowers oblong, 1.5–2 mm. long, whitish, scarious, densely villous; staminodia half as long as the filaments, denticulate at the apex or subentire; bracts of the pistillate flowers ovate-orbicular, nearly as long as the sepals, obtuse, mucronulate, stramineous, glabrous; sepals oval, obtuse, 1.5 mm. long, 3-nerved, usually greenish, villous, or sometimes glabrous at the apex, the basal hairs 2–4 times as long as the sepals, white; stigmas elongate, slender; seed suborbicular, 0.8 mm. broad, black and shining.

TYPE LOCALITY: Tepic.
DISTRIBUTION: In thickets and among rocks, Sonora and San Luis Potosí to Guatemala.

16. *Iresine rotundifolia* Standley, Contr. U. S. Nat. Herb. 18: 96.
1916.

Low shrub, fruticose nearly throughout, much branched, the branches stout, ascending or divergent, dark-gray or blackish, the branchlets stout, densely tomentose; leaves few, remote, undeveloped at anthesis in the staminate plant; petioles stout, 1–4 mm. long; blades orbicular to broadly ovate-oval, 3.5–17 mm. long, 3.5–12 mm. wide, broadly rounded at the base, rounded or obtuse at the apex, sometimes emarginate, coriaceous, deep-green and puberulent or glabrate on the upper surface, densely yellowish-tomentose beneath, the veins conspicuous beneath and usually evident on the upper surface; flowers dioecious; staminate spikelets 6–9 mm. long, densely flowered, in fascicles of 2–4 at the ends of short fruticose branches; bracts and bractlets ovate-orbicular, less than a third as long as the sepals, scarious, yellowish-white, glabrous or nearly so, the sepals narrowly oblong, 3 mm. long, obtuse, sparsely short-villous at the apex; filaments slightly exerted, the tube very short, the staminodia minute; pistillate spikes (immature) short, densely flowered, in short narrow terminal panicles, the bracts and bractlets broadly ovate, obtuse or acute, fuscous, glabrate.

TYPE LOCALITY: Vicinity of San Luis Tultitlanapa, Puebla.
DISTRIBUTION: Puebla.

17. *Iresine Pringlei* S. Wats. Proc. Am. Acad. 25: 161. 1890.

Erect shrub, 1.5–3 meters high, much branched, the branches slender, ascending or spreading, terete, smooth, densely and finely canescent with branched hairs; petioles stout, 4–7 mm. long; leaf-blades ovate or oblong-ovate, 4–8 cm. long, 1.5–3.5 cm. wide, acuminate or long-acuminate at the apex, obtuse at the base, rather thick, sparsely stellate-pubescent or glabrate on the upper surface, densely stellate-tomentose beneath; flowers dioecious, loosely paniculate, the panicles 1.5–3 dm. long and about as wide, sparsely leafy below, the branches slender, divaricate or ascending; spikelets short, mostly sessile, the rachis lanulose; bracts and bractlets rounded-ovate, half as long as the sepals or nearly equaling them, hyaline, pale-stramineous, glabrous, often denticulate; sepals of the staminate flowers oblong or oval, obtuse or rounded at the apex, densely villous; filaments as long as the sepals, the staminodia minute; sepals of the pistillate flowers ovate, 1.5 mm. long, long-acuminate, coarsely 3-nerved, bright-green along the nerves, densely villous, the basal hairs longer than the sepals, soft, white, the tips of the sepals connivent; stigmas elongate, slender; seed 0.6 mm. long, brown, shining.

TYPE LOCALITY: Barranca near Guadalajara, Jalisco.
DISTRIBUTION: Rocky slopes, Jalisco to Puebla and Oaxaca.

18. *Iresine stricta* Standley, Contr. U. S. Nat. Herb. 18: 97.
1916.

Erect shrub, 3–8 dm. high, sparsely branched, the branches suberect, slender or stout, striate, densely stellate-canescens; petioles stout, 2–6 mm. long; leaf-blades oblong-oval, ovate-oblong, broadly ovate, or ovate-rhombic, 1.3–3.5 cm. long, 0.5–1.5 cm. wide, rounded or obtuse at the apex, obtuse or rounded at the base, subcoriaceous, stellate-canescens on the upper surface when young, glabrate in age, densely stellate-canescens beneath, subrugose, the veins coarse, prominent beneath, ascending; flowers dioecious, the panicle on a long naked peduncle 10–15 cm. long, narrow, the primary branches elongate and ascending or usually very short; spikelets elongate, slender, sessile, their rachises lanate; bracts and bractlets of the staminate flowers half as long as the sepals, broadly ovate, pilose, the sepals oblong, obtuse or acute, pilose, hyaline, dull-white; filaments equaling the sepals, the staminodia short, fimbriate at the apex; bracts and bractlets of the pistillate flowers equaling the sepals, pilose, the sepals ovate-lanceolate, 1.5 mm. long, acuminate, 3-nerved, white, densely long-pilose, the hairs exceeding the perianth, soft, white; stigmas elongate, filiform; seed 1 mm. long, reddish-brown, shining.

TYPE LOCALITY: Near Tehuacán, Puebla.
DISTRIBUTION: Dry, rocky soil, Oaxaca and Puebla.

19. *Iresine nitens* Standley, Contr. U. S. Nat. Herb. 18: 95. 1916.

Erect shrub, sparsely branched, the branches erect, striate, densely and closely pilose-sericeous with lustrous silvery-white hairs, glabrate in age; petioles 5–7 mm. long; leaf-blades lanceolate, 2–6 cm. long, 0.5–1.3 cm. wide, long-acuminate or acute at the apex, acute at the base, thick and firm, when young strigose-pilose with lustrous white hairs, soon glabrate, the lateral veins conspicuous, ascending; flowers dioecious, paniculate, the panicle on a long naked peduncle, very narrow, elongate, the simple primary branches very short, the spikelets elongate, mostly sessile, the rachis densely lanate; bracts and bractlets of the pistillate flowers equaling the sepals, ovate or ovate-oblong, acute or acuminate, hyaline, stramineous or fuscous, glabrous, the sepals narrowly lanceolate, 2 mm. long, long-attenuate, 3-nerved, densely lanate, the long soft hairs brownish; style nearly as long as the ovary, the stigmas short, slender; utricle oblong, acute; seed 1 mm. long, yellowish-brown, shining.

TYPE LOCALITY: Tehuacán, Puebla.

DISTRIBUTION: Known only from the type locality.

20. *Iresine Schaffneri* S. Wats. Proc. Am. Acad. 21: 437. 1886.

Erect shrub, 4–10 dm. high, much branched, the branches suberect, slender, terete, striate, densely pilose-strigose, sometimes glabrate in age; petioles stout, 3–20 mm. long; leaf-blades ovate, lanceolate, or lance-oblong, 2–9 cm. long, 0.5–3 cm. wide, acute or acuminate at the apex, rarely obtuse, acute or obtuse at the base, firm, densely appressed-pilose on the lower surface, canescent above when young but soon glabrate and bright-green; flowers dioecious, in narrow elongate naked panicles, or the panicles rarely broad, their branches ascending or suberect, the inflorescence always on a long naked peduncle, this often longer than the panicle; spikelets sessile, usually congested, the rachis densely lanate; bracts and bractlets of the staminate flowers one third as long as the sepals, obtuse or rounded at the apex, glabrous, scarious, dull-whitish, the sepals ovate-oblong, obtuse, pilose; filaments filiform, equaling the sepals, the staminodia short, finely dissected at the apex; bracts and bractlets of the pistillate flowers nearly as long as the sepals, ovate-orbicular, often denticulate, the sepals oblong-ovate, 1.5 mm. long, acuminate, 3-nerved, densely villous with long soft white hairs; stigmas elongate, filiform; utricle ovoid.

TYPE LOCALITY: San Luis Potosí.

DISTRIBUTION: Dry, rocky hillsides, southern Chihuahua, San Luis Potosí, Hidalgo, and Querétaro.

21. *Iresine cassiniaeformis* Schauer, Linnaea 19: 708. 1847.

Erect shrub, 1–1.5 meters high, much branched, the branches slender or stout, terete, smooth, densely and closely tomentose when young, glabrate in age, the bark of older branches brown; petioles stout, 3–23 mm. long; leaf-blades broadly ovate to ovate-oblong or elliptic-oblong, 1.5–10.5 cm. long, 1.5–6 cm. wide, acute to obtuse or rounded at the apex, acute to rounded at the base, subcoriaceous, subrugose, puberulent or scaberulous on the upper surface, glabrate in age, densely whitish-tomentose beneath, the veins very prominent, coarse, ascending; flowers dioecious, paniculate, the panicles terminal, broad or somewhat congested, 2.5–4 dm. long, leafy below; spikelets sessile, short and dense, the rachis tomentose; bracts and bractlets of the staminate flowers one third as long as the sepals, suborbicular, stramineous, glabrous, the sepals elliptic-oblong, 2 mm. long, obtuse, whitish, glabrous, or the inner ones sparsely villous; filaments shorter than the sepals, subulate, the staminodia narrowly triangular, entire, less than half as long as the filaments; bracts and bractlets of the pistillate flowers shorter than the sepals, suborbicular, stramineous or brownish, glabrous, the sepals oval-oblong, obtuse, 1.5 mm. long, faintly nerved, white-pilose with long soft hairs; style very short, the stigmas short and stout; utricle subglobose; seed 1 mm. long, yellowish-brown.

TYPE LOCALITY: Mexico.

DISTRIBUTION: San Luis Potosí and Tamaulipas.

22. *Iresine discolor* Greenman, Proc. Am. Acad. 33: 477. 1898.

Erect shrub, much branched, the branches slender, ascending, densely and finely tomentose when young, glabrate in age, the older branches with grayish bark; petioles slender, 3–8

mm. long; leaf-blades oblong-ovate, rarely oblong or oval, 2-7 cm. long, 0.6-2.6 cm. wide, acute to obtuse or rounded at the apex, acute or obtuse at the base, thin, sparsely tomentulose or glabrate on the upper surface and deep-green, densely white- or grayish-tomentose beneath, the lateral veins evident, ascending; flowers dioecious, in slender, short, axillary or terminal, naked or leafy panicles; spikelets slender, much elongate, flexuous, rather loosely flowered, their rachises tomentose; bracts and bractlets of the staminate flowers one third as long as the sepals, suborbicular, rounded at the apex, glabrous or sparsely villous, the sepals elliptic-oblong, 2.5 mm. long, obtuse, scarious, stramineous, glabrous, or the inner ones lanate at the base; filaments shorter than the sepals, the staminodia half as long as the filaments, narrowly triangular, denticulate; bracts and bractlets of the pistillate flowers about as long as the sepals, broadly rounded at the apex, hyaline, brownish, glabrous or sparsely villous, the sepals lanceolate to ovate, 1.5-2 mm. long, acute, 1-nerved, densely white-villous; style short, the stigmas slender, elongate; utricle oblong, about equaling the calyx; seed 1 mm. long, yellowish-brown.

TYPE LOCALITY: Santa Catarina Canyon, Oaxaca.
DISTRIBUTION: Oaxaca and Puebla.

23. *Iresine grandis* Standley, sp. nov.

Alternanthera canescens Moq. in DC. Prodr. 13²: 351, in part. 1849. Not *A. canescens* H. B. K. 1817; nor *Iresine canescens* Humb. & Bonpl. 1805.

Erect shrub, 1.5-3 meters high, sparsely branched, the branches stout, terete, smooth, densely villous-tomentulose or rarely glabrate in age; petioles stout, 1-2 cm. long; leaf-blades broadly ovate-rhombic to broadly ovate, 6-13 cm. long, 3-7 cm. wide, acute or acuminate at the apex, acute or obtuse at the base and short-decurrent, firm, sparsely canescent on the upper surface or glabrate, densely villous-tomentulose beneath, or rarely glabrate; flowers dioecious, loosely paniculate, the terminal panicles pyramidal, usually as broad as long, 1.5-3 dm. long, sparsely leafy below, the branches spreading or ascending; spikelets sessile or pedunculate; bracts and bractlets of the staminate flowers one third as long as the sepals, ovate-orbicular, glabrous, the sepals oblong, obtuse or acutish, 2.5-3 mm. long, glabrous, stramineous; filaments equaling the sepals, subulate, the staminodia rhombic or lanceolate, finely dissected into subulate segments; bracts of the pistillate flowers as long as the sepals, round-ovate, whitish, glabrous, the sepals oblong, obtuse, 1.5 mm. long, densely pilose, the hairs white, twice as long as the sepals or shorter; stigmas slender, elongate; utricle oblong, about as long as the sepals; seed 1 mm. long, reddish-brown.

Type collected on limestone ledges, Las Canoas, San Luis Potosí, Mexico, December 5, 1891, C. G. Pringle 3962 (U. S. Nat. Herb. no. 537675).

DISTRIBUTION: San Luis Potosí to Guatemala.

24. *Iresine Calea* (Ibáñez) Standley, Contr. U. S. Nat. Herb. 18: 94. 1916.

Gomphrena latifolia Mart. & Gal. Bull. Acad. Brux. 10¹: 349. 1843.

Alternanthera latifolia Moq. in DC. Prodr. 13²: 351. 1849.

Achyranthes Calea Ibáñez, Naturaleza 4: 79. 1879.

Iresine latifolia Benth. & Hook. Gen. Pl. 3: 42. 1880. Not *I. latifolia* D. Dietr. 1839.

Hebanthe mollis Hemsl. Biol. Centr. Am. Bot. 3: 20. 1882.

Iresine laxa S. Wats. Proc. Am. Acad. 21: 454. 1886.

Gossypianthus mollis Kuntze, Rev. Gen. 543. 1891.

Erect shrub, 1.5-2.5 meters high, much branched, the branches slender, ascending, densely and finely villous-canescens when young, glabrate in age; petioles 2-15 mm. long; leaf-blades broadly ovate, ovate-oblong, or lance-ovate, 3-10.5 cm. long, 1.3-7 cm. wide, acuminate at the apex or rarely obtuse or even rounded, rounded or obtuse at the base, sometimes short-decurrent, thinly scaberulous-canescens or glabrate on the upper surface and green, densely or sparsely pilose-sericeous beneath; flowers dioecious, in broad open terminal panicles, these leafy below, the branches divaricate or ascending, often flexuous, the spikelets densely flowered, short or elongate, sessile or pedunculate, the rachis lanate; bracts and bractlets of the staminate flowers one third as long as the sepals, broadly ovate, rounded to acutish at the apex, scarious, whitish or stramineous, more or less villous; sepals narrowly oblong, obtuse, 2 mm. long,

pilose; filaments shorter than the sepals, the staminodia very short, broad, dissected at the apex into short filiform segments, or rarely subentire; bracts and bractlets of the pistillate flowers nearly as long as the sepals, these lanceolate, attenuate, 1.5 mm. long, densely pilose with whitish or brownish hairs, very faintly nerved; style short, the stigmas slender, elongate; utricle globose-ovoid.

TYPE LOCALITY: District of Izúcar de Matamoros, Puebla.

DISTRIBUTION: Southern Lower California, Sonora, and Coahuila to Costa Rica.

ILLUSTRATION: *Naturaleza* 4: pl. 3.

25. *Iresine inaguensis* Millsp. Field Columb. Mus. Publ. Bot.
2: 149. 1906.

Perennial from a vertical woody root; stems several from each root, erect, stout, 3–9 dm. high, glabrous, sparingly branched, the branches erect, the internodes usually short, 0.5–8.5 cm. long; leaves very numerous, sometimes with fascicles of smaller leaves in the axils, linear, 2–6 cm. long, 1–2.5 mm. wide, obtuse, attenuate to the base but scarcely petiolate, thick, glabrous, yellowish-green; inflorescence narrowly paniculate, 7–14 cm. long, 1.5–2.5 cm. wide, dense, sparingly branched, the branches erect or ascending, glabrous, sparsely leafy or naked; spikelets densely flowered, alternate or opposite, 3–12 mm. long; bracts one third as long as the sepals or longer, ovate-orbicular, acutish, entire, stramineous; sepals oval-oblong, about 1 mm. long, obtuse or rounded, yellowish-white, those of the pistillate flowers prominently 3-nerved, bearing many long white hairs at the base, elsewhere glabrous; styles very short; utricle slightly shorter than the sepals; seed subreniform, 0.5 mm. long, dark-red, shining.,

TYPE LOCALITY: Sheep Cay, Inagua, Bahama Islands.

DISTRIBUTION: Atwood Cay and Inagua, Bahama Islands.

26. *Iresine acicularis* Standley, Contr. U. S. Nat. Herb. 18: 93.
1916.

Stems erect, very sparsely pubescent with short slender hairs, the internodes 10–23 cm. long; petioles slender, 1–5.5 cm. long; leaf-blades ovate or broadly ovate, 6.5–20 cm. long, 3.5–10 cm. wide, or those among the inflorescence somewhat smaller, rather abruptly long-attenuate or acute at the apex, rounded or obtuse at the base and abruptly short-decurrent, thin, bright-green, very sparsely villous on the upper surface with short, remote, soft, yellowish-white hairs, similarly pubescent beneath and furnished in addition with numerous appressed, shining, amber-colored or bright-yellow, acicular hairs, villous-ciliate, rather prominently veined, but the veins slender, diverging at angles of from 50 to 70 degrees; inflorescence a broad, dense, somewhat leafy panicle, 25 cm. long and 15 cm. broad, the rachises sparsely villous and bearing in addition numerous stout, acicular, glistening amber-colored or yellow hairs, these most abundant at the base of the spikelets; spikelets alternate, pedunculate or sessile, densely flowered, stout, 4–12 mm. long; bracts white, rounded-ovate to narrowly ovate, acute, from half as long to fully as long as the sepals; sepals about 1.5 mm. long, narrowly oblong, acute, those of the pistillate flowers 3-nerved, the flowers furnished at the base with copious long white wool; staminal cup not lobed; utricle shorter than the sepals; seed suborbicular, 0.5 mm. in diameter, dark reddish-brown, shining.

TYPE LOCALITY: On the Volcán de Fuego, Department of Sacatepequez, Guatemala, at an altitude of 2700 meters.

DISTRIBUTION: Guatemala to Costa Rica.

27. *Iresine flavescens* Humb. & Bonpl.; Willd. Sp. Pl. 4: 766.
1805.

Iresine obtusifolia H. B. K. Nov. Gen. & Sp. 2: 198. 1818.

Alternanthera flavescens Moq. in DC. Prodr. 13²: 350. 1849. Not *A. flavescens* H. B. K. 1817.

Achyranthes dioica Pavon; Moq. in DC. Prodr. 13²: 350, as synonym. 1849.

Iresine keyensis Millsp. Field Columb. Mus. Publ. Bot. 2: 148. 1906.

Perennial from a stout woody perpendicular root; stems 3–10 dm. high, stout, erect, suffrutescent below, glabrous, simple or much branched, especially near the base, the branches erect or ascending, the nodes usually swollen, the internodes 3–20 cm. long; leaves numerous

or few, fascicles of smaller ones sometimes present in the axils, yellowish-green, thick and firm, glabrous; petioles stout, 3–30 mm. long, those of the upper leaves shorter; blades linear-oblong to oval-oblong, lanceolate, lance-oblong, or rarely ovate, 2–10 cm. long, 0.4–2.5 cm. wide, obtuse or rounded at the apex or rarely a few of the leaves acute, cuneate to attenuate at the base, the midvein conspicuous beneath, the lateral veins few and inconspicuous; pistillate panicles narrow and dense, 10–30 cm. long, 2–6 or rarely 12 cm. broad, much branched, the branches erect or ascending, glabrous, the spikelets alternate or opposite, pedunculate or sessile, slender or stout, 0.3–4 cm. long, sometimes flexuous; staminate panicles usually more slender and diffuse, the branches often flexuous and the spikelets sometimes longer; bracts yellowish-white, half to two thirds as long as the sepals, suborbicular to broadly ovate, obtuse or acute; sepals about 1 mm. long, oblong, obtuse or acutish, those of the pistillate flowers 3-nerved, the pistillate flowers bearing copious long white wool at the base; lobes of the staminal cup rather prominent, rounded; utricle shorter than the sepals; seed suborbicular, dark reddish-brown, shining, 0.5 mm. in diameter.

TYPE LOCALITY: Tropical America.

DISTRIBUTION: Usually on rocks along the coast, southern Florida, the Bahama Islands, and Cuba; also in Colombia.

28. *Iresine rhizomatosa* Standley, Proc. Biol. Soc. Wash. 28: 172. 1915.

Iresine celosioides Michx. Fl. Bor. Am. 2: 244. 1803. Not *I. celosioides* L. 1763.

Iresine paniculata Uline & Bray, Bot. Gaz. 21: 353, in part. 1896. Not *Celosia paniculata* L. 1753.

Perennial from slender elongate horizontal rootstocks; stems commonly solitary, herbaceous, stout, erect, 3–15 dm. high, usually simple up to the inflorescence, sparsely villous with short hairs, more densely villous at the nodes, sometimes glabrous throughout, the nodes slightly swollen, the internodes 5–14 cm. long; petioles slender, 0.8–3 cm. long; leaf-blades broadly deltoid-ovate to ovate or elliptic-oval, 6–15 cm. long, 2–7 cm. wide, acute or rather abruptly acute to long-acuminate, or the lowermost very rarely obtuse at the apex, truncate to acute at the base, usually slightly decurrent, thin, bright-green, bearing a few scattered short stout hairs on the upper surface along the veins, sparsely pubescent beneath with short stout soft hairs, or sometimes nearly glabrous; pistillate panicles 7–30 cm. long and 2.5–20 cm. broad, much branched, the stoutish branches erect or ascending, usually dense, sparsely villous, the spikelets alternate or opposite, stout, densely flowered, 0.5–2 cm. long, the staminate panicles often laxly branched and with longer spikelets; bracts white, equaling or somewhat shorter than the sepals, ovate to ovate-orbicular, acute or acutish; sepals ovate-oblong or oblong, acute or acuminate, 1–1.3 mm. long, faintly 1-nerved, white, the pistillate flowers bearing copious long white wool at the base; lobes of the staminal cup nearly obsolete; utricle equaling or commonly longer than the sepals; seed suborbicular, dark-red, shining, 0.5 mm. in diameter.

TYPE LOCALITY: Plummers Island, Montgomery County, Maryland.

DISTRIBUTION: Maryland to Kansas, central Texas, Tennessee, and Alabama.

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 1414; ed. 2. f. 1676 (both as *I. paniculata*).

29. *Iresine frutescens* Moq. in DC. Prodr. 13²: 344. 1849.

Stems suffruticose, at least below, glabrous, very slender, flexuous, ascending or scandent, somewhat swollen at the nodes, the internodes 1.5–12 cm. long; leaves few or numerous, very thin, bright-green, glabrous, or with a few short coarse hairs along the veins beneath; petioles slender, 1–5 cm. long; blades of the lower leaves oval-ovate, ovate, or narrowly ovate, 9–22 cm. long, 3–6 cm. wide, long-acuminate or attenuate at the apex, obtuse or rounded at the base, the veins very slender; blades of the upper leaves linear-elliptic to narrowly lanceolate or rarely ovate-lanceolate, 3–7 cm. long, 0.3–2 cm. wide, acuminate to long-attenuate at the apex, cuneate to attenuate at the base; panicles much branched, the branches elongate, very slender, spreading or reflexed, flexuous, glabrous or with a few short slender yellow hairs; pistillate spikelets 2–4 mm. long, 1.75 mm. thick or less, densely flowered, alternate, the staminate spikelets more slender, often 2 cm. long, loosely flowered, flexuous; bracts less than half as long as the sepals, oval to orbicular, obtuse, yellowish-white; sepals 0.5–0.75 mm.

long, broadly oblong or oblong-ovate, obtuse, those of the pistillate flowers 3-nerved; lobes of the staminal cup nearly obsolete; utricle slightly shorter than the sepals; seed orbicular, 0.4 mm. in diameter or smaller, dark reddish-brown, shining.

TYPE LOCALITY: Hacienda de la Laguna, Vera Cruz.

DISTRIBUTION: Wet forests and ravines, Vera Cruz to Costa Rica.

30. *Iresine Celosia* L. Syst. ed. 10. 1291. 1759.

- Celosia paniculata* L. Sp. Pl. 206. 1753.
Iresine celosioides L. Sp. Pl. ed. 2. 1456. 1763.
Iresine diffusa Humb. & Bonpl.; Willd. Sp. Pl. 4: 765. 1805.
Iresine elongata Humb. & Bonpl.; Willd. Sp. Pl. 4: 765. 1805.
Iresine parvifolia H. B. K. Nov. Gen. & Sp. 2: 198. 1818.
Iresine havanensis H. B. K. Nov. Gen. & Sp. 2: 199. 1818.
Iresine Mutisii H. B. K. Nov. Gen. & Sp. 2: 200. 1818.
Iresine verticillata Spreng. Syst. 1: 821. 1825.
Iresine polymorpha Mart. Nov. Gen. & Sp. 2: 56. 1826.
Iresine polymorpha alopecuroidea Mart. Nov. Gen. & Sp. 2: 56. 1826.
Iresine polymorpha effusa Mart. Nov. Gen. & Sp. 2: 56. 1826.
Iresine polymorpha verticillata Mart. Nov. Gen. & Sp. 2: 56. 1826.
Xerandra celosioides Raf. Fl. Tell. 3: 43. 1837.
Iresine gracilis floribunda Mart. & Gal. Bull. Acad. Brux. 10¹: 347. 1843.
Iresine celosioides eriophylla Benth. Bot. Voy. Sulph. 156. 1844.
Iresine Hookeri Moq. in DC. Prodr. 13²: 344. 1849.
Iresine acuminata Moq. in DC. Prodr. 13²: 345. 1849.
Celosia parviflora Vahl; Moq. in DC. Prodr. 13²: 346, as synonym. 1849.
Iresine celosioides pubescens Moq. in DC. Prodr. 13²: 347. 1849.
Iresine eriophylla Moq. in DC. Prodr. 13²: 347. 1849.
Iresine gossypiantha A. Rich. in Sagra, Hist. Cuba 11: 177. 1850.
Iresine eriophora Peyr. Linnaea 30: 21. 1859.
Alternanthera paniculata Bello, Anal. Soc. Esp. Hist. Nat. 12: 106. 1883.
Iresine paniculata Kuntze, Rev. Gen. 542. 1891. Not *I. paniculata* Poir. 1813.
Achyranthes lanata Sessé & Moc. Fl. Mex. ed. 2. 67. 1894. Not *A. lanata* L. 1753.
Iresine paniculata floridana Uline & Bray, Bot. Gaz. 21: 353. 1896.

Annual, or the plants often persisting for several years, from a slender or stout vertical root; stems slender or stout, usually much branched, erect or ascending, sometimes clambering over other plants, 4–30 dm. long, glabrous or usually sparsely villous, especially at the nodes, with short multicellular hairs, often soft-pubescent, swollen at the nodes, the internodes 4–20 cm. long; leaves few or numerous, fascicles of smaller ones sometimes present in the axils, thin and bright-green or rarely thicker and yellowish-green; petioles slender, 0.8–6.5 cm. long; blades broadly ovate to rhombic-ovate or rarely deltoid-ovate or lanceolate, 3–14 cm. long, 1.5–7 cm. wide, acute to acuminate at the apex, sometimes rather abruptly so, rounded or truncate to broadly cuneate at the base, slightly decurrent, glabrous or more or less villous with short multicellular hairs, often soft-pubescent on both surfaces; panicles usually broad and much branched, 1–4 dm. long or even larger, the branches ascending, divergent, or reflexed, more or less villous with whitish hairs, the spikelets alternate, opposite, or verticillate, sessile or pedunculate, usually densely flowered, 5–25 mm. long, often flexuous; flowers white to stramineous, the pistillate ones furnished with copious long white wool at the base; bracts from one third to two thirds as long as the sepals, ovate to ovate-orbicular, obtuse to acute, often pubescent, usually entire; sepals 1–1.5 mm. long, oblong, obtuse or rounded, those of the pistillate flowers conspicuously 3-nerved; lobes of the staminal cup obsolete; utricle shorter than the sepals; seed 0.5 mm. in diameter, broadly obovoid or suborbicular, dark-red, shining.

TYPE LOCALITY: Jamaica.

DISTRIBUTION: North Carolina to Florida, mostly near the coast; southern Louisiana; general in the West Indies; central and western Mexico, and southward through Central America; also throughout the warmer parts of South America.

ILLUSTRATIONS: Sloane, Hist. Jam. pl. 90; Mart. Nov. Gen. & Sp. pl. 153, 154.

31. *Iresine heterophylla* Standley, Contr. U. S. Nat. Herb. 18: 95. 1916.

- Iresine celosioides obtusifolia* Coult. Contr. U. S. Nat. Herb. 2: 364. 1894.
Iresine paniculata obtusifolia Coult.; Uline & Bray, Bot. Gaz. 21: 354. 1896.

Perennial from long slender branching woody rootstocks; stems herbaceous, stout, erect or ascending, solitary or several from a single base, simple up to the inflorescence, 5–10 dm. high, swollen at the nodes, often sulcate, short-villous at the nodes and sparsely pubescent

elsewhere with very short stout soft hairs, the internodes 1.5–10 cm. long; leaves usually asymmetric, very variable in outline, the lower ones much broader and more obtuse than the upper ones; petioles stout, 2–20 mm. long, the uppermost leaves usually sessile or subsessile; blades of the lower leaves broadly rhombic-ovate, often as broad as long, frequently with fascicles of small leaves in the axils, 3–6 cm. long, 2–4 cm. wide, rounded to acutish at the apex, rounded or abruptly acute at the base and more or less decurrent, thick and firm, yellowish-green, scabrous or smooth on the upper surface, pubescent beneath along the veins with short stiff hairs, scabrous and denticulate on the margins, the veins prominent beneath, coarse, the lateral ones diverging at a very acute angle, nearly parallel and all extending more than half way to the apex; blades of the upper leaves ovate to narrowly ovate or oval, obtuse or acute, smaller than the lower blades but with similar pubescence; inflorescence a narrow, dense, much branched panicle, 1.5–4 dm. long and 3–9 cm. broad, the branches erect or ascending, sparsely villous; spikelets stout, densely flowered, 4–23 mm. long; bracts one half to one third as long as the sepals, ovate-orbicular, acute, entire; sepals 1–1.3 mm. long, elliptic-oblong, yellowish-white, acuminate to acutish, those of the pistillate flowers 3-nerved; lobes of the staminal cup broadly rounded; utricle shorter than the sepals; seed suborbicular, 0.6 mm. in diameter, dark reddish-brown, shining.

TYPE LOCALITY: Near the city of Durango, Mexico.

DISTRIBUTION: Dry rocky hillsides, western Texas to southern Arizona and Sonora, and southward to central Mexico.

32. *Iresine Herbstii* Hook. Gard. Chron. 1864: 654. J1 1864.

Achyranthes ? *Verschaffellii* Lemaire, Ill. Hort. 11: pl. 409. Au 1864.

Iresine Verschaffellii Lemaire, Ill. Hort. 11: under pl. 418. N 1864.

Annual; stems erect or ascending, rather stout and succulent, usually branched, sparsely short-villosulous, especially about the nodes, becoming glabrate in age, the internodes short or elongate; leaves numerous, often with fascicles of smaller ones in the axils, the petioles slender, 1–5 cm. long, sparsely short-villous or glabrate; blades suborbicular or ovate-orbicular, 2.5–6.5 cm. long, and usually of equal or greater breadth, rounded to truncate at the base, usually short-decurrent, deeply retuse at the apex, or sometimes merely rounded, or the uppermost acute, thick and succulent, purplish-red, or green and striped with yellow or pink along the veins, glabrous on the upper surface or sparsely scaberulous, beneath rather sparsely furnished with short, appressed, often lustrous yellowish hairs, glabrate in age; flowers dioecious, the panicles naked or nearly so, usually much branched, 1–2 dm. long, the slender branches ascending or spreading, short-villous with usually lustrous hairs, the spikelets slender, loosely flowered, sessile or short-pedicellate; flowers stramineous, the pistillate ones copiously lanate; bracts and bractlets ovate-orbicular, obtuse, glabrous, half as long as the sepals, entire; sepals about 1 mm. long, ovate to oblong, obtuse or acutish, those of the pistillate flowers 3-nerved; utricle shorter than the sepals; seed 0.5 mm. in diameter.

TYPE LOCALITY: Described from cultivated plants.

DISTRIBUTION: Brazil; frequent in cultivation; naturalized in southern Mexico and in Guadeloupe, and probably elsewhere in the West Indies.

ILLUSTRATIONS: Ill. Hort. 11: pl. 409; Bot. Mag. pl. 5499; Fl. Serres pl. 1601.

DOUBTFUL SPECIES

AERVA SANGUIOLENTA LANCEOLATA Moq. in DC. Prodr. 13²: 301. 1849. Based on specimens from Mexico. The genus *Aerva* is not known from the Western Hemisphere, and the specimens are probably some species of *Iresine*.

IREFINE GOSSYPINA Nees, Linnaea 19: 709. 1847. Stems fruticose, terete, tomentose; leaves ovate, tomentose and white beneath; panicle terminal, pyramidal, subdecomposited; pubescence of the flowers longer than the calyx, very dense. In Mexico (*De Berghes* 132).

20. *LITHOPHILA* Sw. Prodr. 14. 1788.

Perennial lanate herbs from thick woody roots; stems decumbent or erect, leafy or naked. Leaves mostly basal and rosulate. Flowers small, perfect, bracteate and bibracteolate, forming dense, subglobose, axillary or terminal, sessile or pedunculate spikes or heads; perianth 5-parted, sessile, dorsally compressed, the 2 interior segments narrower. Stamens 2; filaments

united at the base into a cup; staminodia 3; anthers oblong or linear, 2-celled. Stigmas 2, slender. Ovule 1, pendulous from the apex of an elongate funicle. Utricle compressed-ovoid. Seed inverted, lenticular, the testa coriaceous, smooth; embryo annular, surrounding the farinaceous endosperm; radicle superior.

Type species, *Lithophila muscoides* Sw.

1. *Lithophila muscoides* Sw. Prodr. 14. 1788.

? *Illecebrum lineare* Thunb. Mus. Upsal. App. 17: 6, *nomen nudum*. 1809.

Achyranthes linearifolia Sw. Sv. Vet.-Akad. Handl. 1825: 48. 1825.

Iresine linearis Moq. in DC. Prodr. 13²: 339. 1849.

Alternanthera caribaea Moq. in DC. Prodr. 13²: 354. 1849.

Lithophila muscoides longifolia Griseb. Fl. Brit. W. Ind. 66. 1859.

Lithophila muscoides brevifolia Griseb. Fl. Brit. W. Ind. 66. 1859.

Alternanthera muscoides Benth. & Hook. Gen. Pl. 3: 39. 1880.

Iresine muscoides Kuntze, Rev. Gen. 542. 1891.

Lithophila muscoides macrantha Urban, Symb. Ant. 5: 338. 1907.

Lithophila muscoides micrantha Urban, Symb. Ant. 5: 339. 1907.

Root stout, somewhat woody, vertical, terminating in a branched caudex; stems few, slender, prostrate or ascending, 1–20 cm. long, branched, villous, especially about the nodes, or glabrate; basal leaves usually numerous, crowded, linear or filiform to spatulate-oblong, 1.5–5 cm. long, 0.3–5 mm. wide, obtuse, villous near the base, elsewhere glabrous; cauline leaves linear to obovate, 3–10 mm. long, 0.3–4 mm. wide, rounded at the apex, cuneate or attenuate at the base, 1-nerved, glabrous; spikes solitary or glomerate, terminal or axillary, sessile or subsessile, 3–15 mm. long, 5 mm. in diameter; bracts ovate-triangular, acute or acuminate, half as long as the perianth, white, membranaceous; bractlets similar but longer, nearly equaling the perianth; sepals 1–2.5 mm. long, oblong or lance-oblong, the outer obtuse, villous at the base, white, membranaceous, the inner narrower, acute, villous along the nerve; seed lenticular, suborbicular, 0.5 mm. broad, brown, shining.

TYPE LOCALITY: West Indies.

DISTRIBUTION: In moist soil and on cliffs near the coast, from the Bahamas to the islands off the coast of Venezuela, but not known from Hispaniola and Jamaica.

21. PHILOXERUS R. Br. Prodr. 416. 1810.

Caraxeron Vaill.; Raf. Fl. Tell. 3: 38. 1837.

Blutaparon Raf. New Fl. 4: 45. 1838.

Prostrate or procumbent, glabrous or pubescent, branched, perennial herbs, usually succulent, the branches terete or angled. Leaves opposite, narrow, the blades entire. Flowers perfect, bracteate and bibracteolate, imbricate in dense, white, sessile or pedunculate, short or elongate spikes; bracts chartaceous; perianth dorsally compressed, thickened at the base and produced into a short stipe, 5-parted, the segments subequal, the outer ones obtuse, the inner ones narrower and acute. Stamens 5; filaments subulate, connate at the base; anthers oblong, 2-celled. Utricle broadly ovoid, compressed, coriaceous, indehiscent. Seed inverted, lenticular, smooth; embryo annular; endosperm farinaceous; cotyledons narrow; radicle superior.

Type species, *Philoxerus conicus* R. Br.

1. *Philoxerus vermicularis* (L.) R. Br. Prodr. 416. 1810.

Gomphrena vermicularis L. Sp. Pl. 224. 1753.

Illecebrum vermiculatum L. Sp. Pl. ed. 2. 300. 1762.

Gomphrena aggregata Willd. Enum. 294. 1809.

Philoxerus vermiculatus Smith, in Rees, Cycl. 27: Philoxerus no. 5. 1814.

Philoxerus aggregatus H. B. K. Nov. Gen. & Sp. 2: 203. 1818.

Philoxerus crassifolius H. B. K. Nov. Gen. & Sp. 2: 203. 1818.

Achyranthes vermicularis Ell. Bot. S. C. & Ga. 1: 310. 1821.

Gomphrena crassifolia Spreng. Syst. 1: 824. 1825.

Caraxeron vermicularis Raf. Fl. Tell. 3: 38. 1837.

Blutaparon breviflorum Raf. New Fl. 4: 45. 1838.

Blutaparon repens Raf. New Fl. 4: 46. 1838.

Iresine vermicularis Moq. in DC. Prodr. 13²: 340. 1849.

Iresine crassifolia, Moq. in DC. Prodr. 13²: 340. 1849.

Iresine aggregata Moq. in DC. Prodr. 13²: 340. 1849.

Celosia maritima Salzm.; Moq. in DC. Prodr. 13²: 341, as synonym. 1849.

Cruzeta crassifolia Maza, Fl. Haban. 94. 1897.

Lithophila vermiculata Uline, Field Columb. Mus. Publ. Bot. 2: 39. 1900.

Plants much branched, glabrous outside the inflorescence except in the axils of the leaves, there villous; branches stout, fleshy, prostrate or procumbent, 3–20 dm. long, subgeniculate, often rooting at the nodes; leaves sessile, linear to oblanceolate or rarely oblong, 1.5–5.5 cm. long, 2–12 mm. wide, obtuse or acute at the apex, attenuate to the base, thick and fleshy, the veins scarcely distinguishable, glabrous; spikes solitary or glomerate, sessile or short-pedunculate, globose or usually cylindric in age, 0.7–3 cm. long, 0.7–1.1 cm. thick, obtuse, the rachis lanate, the flowers white; bracts broadly ovate, 1-nerved, acute or obtuse; bractlets ovate-oblong, slightly shorter than the sepals, acute, glabrous; sepals oblong, 3–5 mm. long, the outer ones obtuse, glabrous, the inner narrower, acute, usually lanate near the base; seed orbicular, 0.8–1 mm. broad, dark-brown, shining.

TYPE LOCALITY: Curaçao.

DISTRIBUTION: On seashores, Florida to Texas; Mexico to Panama; West Indies; also from Colombia to Brazil, and on the west coast of Africa.

ILLUSTRATIONS: Beauv. Fl. Oware *pl.* 98; Fawc. & Rendle, Fl. Jam. 3: *f.* 46.

DOUBTFUL GENUS

PHYLLEPIDUM Raf. Med. Repos. 5: 335. 1808. Type species, *P. squarrosum* Raf., said to have been found near Baltimore, Maryland. The genus was referred to the Amaranthaceae by Rafinesque, but the description and illustration (Raf. Specchio 1: *pl.* 4) do not apply to any known North American plant of the family.

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9 : i-iv, 1-542. (Agaricales:) Polyporaceae (pars), Boletaceae, Agaricaceae (pars). Complete in 7 parts.

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- 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).
- 34³: 181-288. (Carduales:) Carduaceae (pars).

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