

## Revisions of *Pterogastra* and *Schwackaea* (Melastomataceae: Melastomeae)

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The closely related neotropical melastomean genera *Pterogastra* and *Schwackaea* are revised, the species illustrated, and their distribution mapped. *Schwackaea* is maintained as a monotypic genus because it is readily distinguished from all other melastomes by its 8-winged capsule. This weedy little plant occurs from Mexico throughout Central America, chiefly on the Pacific slope, to northern Colombia and on Cocos Island and grows in natural or man-made savannas from sealevel to 2000 m altitude. Two species are recognized in *Pterogastra* and one new combination, *P. divaricata* spp. *glabra*, is made. *Pterogastra* is characterized by distinctly 4- or 5-winged capsules, unlike those of *Schwackaea* or any other New World melastome. The more widespread species occurs in Colombia, Venezuela, Guyana, Ecuador, and Peru at altitudes between sealevel and 2600 m in natural or disturbed grasslands. The second species is endemic in southwestern Venezuela and is confined to natural savannas at low altitudes.

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### Introduction

This paper presents discussions of the morphology, distribution, habitat, and relationships of two small genera of Melastomataceae that are ecologically important components of neotropical savannas. Both genera are members of the tribe Melastomeae, defined primarily on the basis of usually cochleate seeds with tuberculate surfaces and stamens with basal-ventrally prolonged connectives (Naudin 1849–1853; Cogniaux 1891; Renner 1993). At the commencement of a recent taxonomic revision of *Pterolepis* (Renner 1994), I believed that the two were very closely related to that genus. During the course of the study, however, I reached the conclusion that they are quite distinct taxa worthy of recognition at the generic level.

### Material and methods

The present revisions are based on the study of some 180 different collections of *Pterogastra* and 132 of *Schwackaea* from the following herbaria (acronyms according to Holmgren et al. 1990): AAU, B, BM, BR, C, CAS, CM, E, F, G, G-DC, G-BOISS, GH, GOET, HBG, INPA, K, L, LE, M, MO, NY, P, PH, S, TEX, TCD, U, UC, US, VEN, W, WU, and Z. A list of material studied is available upon request.

Following the descriptions are lists of representative collections that generally cite one specimen per state, except in the case of the most poorly collected taxa of which all material is cited. All measurements, except those of floral parts, refer to dried material; flowers were boiled in water and preserved in Hoyer's solution prior to measuring.

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## Taxonomic history and generic affinities

*Schwackaea cupheoides*, sole member of its genus, is an inconspicuous, weedy little plant of Central America and northern Colombia. It was first described and illustrated by G. Bentham (1844) as *Heeria cupheoides* based on material collected by R. B. Hinds during the visit of the Sulphur to Panama in 1836. A few years later it was redescribed by Beurling as *Rhexia condylocarpa* from material gathered by Billberg near Panama city in 1826. The third description, based on Chiapas (Mexico) material, is by Brandegee (as *Acisanthera simplex*).

A relationship between *H. cupheoides* and *Pterogastra*, a small genus from northern South America with similar winged capsules, was first suggested by Seemann (1854), who had seen *H. cupheoides* in Panama and Darién, and he transferred the species accordingly. Of the monographers of the family concerned with *H. cupheoides*, Naudin (1849–1853: 242) left the species in limbo, Hooker (in Bentham & Hooker 1867) and Triana (1871) accepted Seeman's generic placement, and Cogniaux (1891) preferred to keep the species in a genus of its own, named after the collector W. Schwacke.

*Pterogastra* (Greek, with a winged stomach, i.e., hypanthium) was established by Naudin who placed in it two species with conspicuously winged hypanthia collected near the Colombian-Venezuelan border by Bonpland in the fall of 1800. Earlier, A. P. De Candolle (1828) had considered this material to represent a species of *Chaetogastra* (= *Tibouchina*), but that genus does not possess winged hypanthia like the ones found in *Pterogastra* and *Schwackaea*, and Naudin's and Cogniaux' consideration that the two belong in the general vicinity of *Tibouchina* but are distinct was therefore generally accepted. A conspicuously quadrangular hypanthium with setae on the four prominent angles somewhat reminiscent of *Pterogastra minor* is found in *Pilocosta*, four species distributed from Central America to Ecuador and segregated from *Tibouchina* by Almeda & Whiffin (1980), who also provided a key to the currently unresolved plexus of genera near *Tibouchina*: *Pterogastra*, *Pilocosta*, *Schwackaea*, *Brachyotum*, *Pterolepis*, *Heterocentron*, and *Desmoscelis*, to which should be added *Macairea* (Renner 1989b).

## Key to the genera *Pterogastra* and *Schwackaea*

- 1. Hypanthium distinctly 8-winged ..... *Schwackaea*
- 1. Hypanthium 4- or 5-winged ..... *Pterogastra*

## *Pterogastra* Naudin

Ann. Sci. Nat. Bot. 3, 12: pl. 15, fig. 8. 1849 and 3, 13: 97. 1850 [text]. – Type: *P. minor* Naudin.

Erect herbs, subshrubs, or shrubs, 0.2–0.6(–1.5) m tall;

dichotomously branched, the branchlets quadrangular, moderately strigose on the angles, rarely glabrous. Leaves decussate and isomorphic, elliptic to lanceate, petiolate or sessile, strigulose with simple hairs 1–2 mm long, margins minutely serrulate and setose-ciliate, with 1(–2) pairs of longitudinal primary veins arising at the base of the blade. Flowers 4- or 5-merous, pedicellate, borne in terminal dichotomous cymes; hypanthium narrowly campanulate, 4- or 5-winged, the wings dorsally spinose-ciliate (rarely glabrous); calyx lobes lanceate, persistent; petals obovate with a short claw, finely ciliate along the margins; stamens 8 or 10, dimorphic; filaments thin, terete, glabrous; anthers subulate and with a single apical pore, the connective prolonged below the thecae and arcuate, ventrally bilobed, dorsally exappendiculate; ovary 4- or 5-celled, apically setose with glandular hairs surrounding the style base. Fruit a loculicidal campanulate capsule; seeds numerous, cochleate.

## Key to the species

- 1. Flowers 5-merous ..... *P. divaricata*
- 1. Flowers 4-merous ..... *P. minor*

## 1. *Pterogastra divaricata* (Bonpl.) Naudin

Ann. Sci. Nat. Bot. 3, 13: 98. 1850. – *Rhexia divaricata* Bonpland in Humboldt & Bonpland, Monogr. Melast. 2: 59, tab. 22. 1812 [1813]. – *Osbeckia divaricata* (Bonpl.) Sprengel, Syst. veg. 2: 312. 1825. – *Chaetogastra divaricata* (Bonpl.) DC., Prodr. 3: 132. 1828. – Type: Colombia. Vichada: Maipures, Oct 1800, Bonpland 900 (P, holotype).

*Pterogastra major* Triana, Trans. Linn. Soc. London 28: 40, tab. 2, fig. 30b. 1871. – Type: Colombia. Meta: Llanos de San Martín, 300 m, Triana s.n. (BM, lectotype, selected here; BR, E, G-DC, K, NY 2 sheets, P 2 sheets, W, isotypes).

*Nomenclatural note.* Among the four syntypes Bonpland s.n., Goudot s.n., Triana s.n., and Mathews 1278 I have chosen the most widely distributed as lectotype.

*Pterogastra major* var. *angustifolia* Cogniaux in Martius, Fl. bras. 14(3): 259. 1885. – Type: Colombia. Magdalena: Rio Meta, Llanos de la Quebradita and Chiriguaná, Karsten s.n. (BR, lectotype, selected here; GOET, LE p.p., W, F photo 32322, isotypes).

*Nomenclatural note.* The syntype Grisar s.n., very likely from Zamora-Chinchipe in southern Ecuador, is represented in GH, LE, and P.

Erect, sparingly branched herb (basally woody), subshrub, or shrub 0.3–0.6(–1.5) m high, stem quadrangular to 4-angled, moderately strigose with appressed hairs on the wings. Leaves spreading, the petiole 0.2–1 cm long, lanceate, 2.5–6 × 0.5–1.5 cm, base broadly acute to rounded, apex acute, with 1(–2) pairs of lateral primary veins, above sparsely strigulose, below deciduously strigulose, the margins minutely serrulate and setose-ciliate. Flowers 5-merous, borne in terminal regularly dichotomous cymes; pedicels 1–2 mm long, floral bracts subulate, ca. 2 mm long, pubescent like the principal leaves; hypanthium 7–8 mm long, 5-winged, the wings spinose-

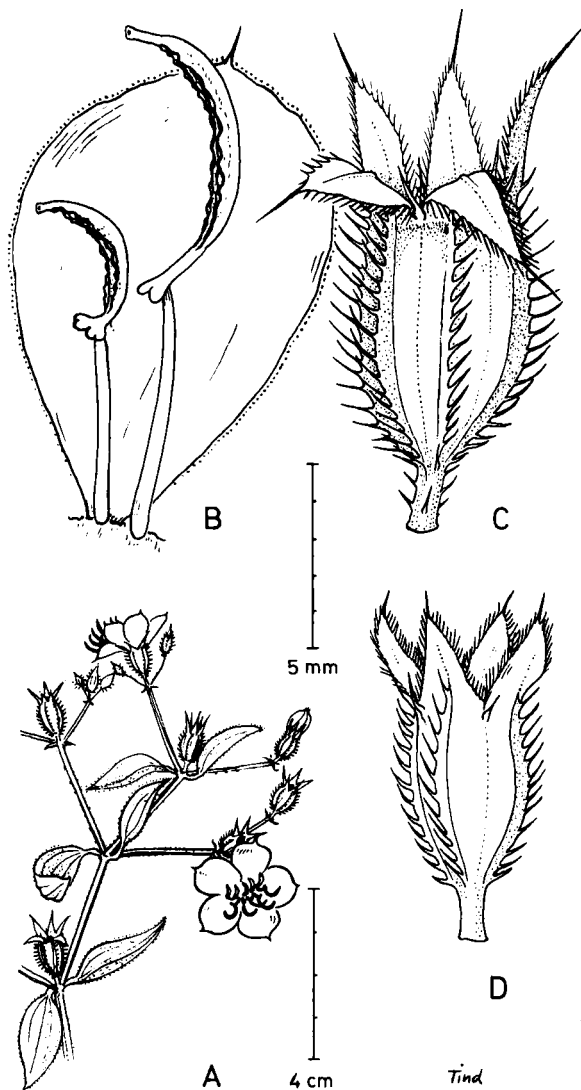


Fig. 1. *Pterogastra divaricata*. – A: Habit. – B: Dissected petal with two stamens. – C: Hypanthium and calyx lobes. – D: Hypanthium of *P. minor*.

ciliate or almost glabrous (var. *glabra*), calyx lobes lanceate, subcoriaceous in fruit, (4.5–)6–8 mm long and ca. 2–3 mm wide at the base, glabrous except for marginal and apical setae to 1 mm long; petals reddish purple, deep lavender, or pink, finely glandular-ciliolate along the margins; stamens dimorphic, the antesepalous ones longer than the antepetalous ones, anthers subulate with a minute terminal pore, the longer stamens with filaments and thecae pink or purple, the thecae 5–6(–8) mm long, the shorter stamens with filaments whitish and thecae yellow, the thecae 3.5–6 mm long, connective below the thecae to the filament insertion prolonged, 1.3–2 or 0.2–0.5 mm long, ventrally bilobed, the yellow lobes ca. 2.3 mm long; ovary 4- or 5-celled, ovoid, with an apical

circle of glandular hairs. Fruit a 8–10 mm high grayish-tan capsule.

**Notes.** Besides on the plate accompanying the protologue, *P. divaricata* is illustrated in the Flora brasiliensis (tab. 60) and in Uribe's Flora de Cundinamarca (1972, as *P. major*). The schematic figure of the upper part of a hypanthium and two stamens provided by Triana (along with the protologue of *P. major*) is misleading in showing four calyx lobes; all syntypes of this species are 5-merous and no different from typical *P. divaricata*.

*Pterogastra divaricata* and its close relative *P. minor* coexist at various localities, e.g., around Puerto Ayacucho where I have observed *P. divaricata* in flower in January 1985. It is buzz-pollinated by small pollen collecting halictid bees (Renner 1989a).

Only two vernacular names have been recorded: "canagria" from Colombia (Daniel 1365) and "juanera" from Venezuela (Liesner 3500).

### Key to the varieties of *Pterogastra divaricata*

1. Hypanthium with conspicuously spinose-ciliate wings . . . . . var. *divaricata*
2. Hypanthium almost wingless, prominently 10-nerved and usually glabrous or rarely appressed spinulose on the 5 major nerves . . . . . var. *glabra*

#### 1a. *Pterogastra divaricata* var. *divaricata*

Hypanthium with conspicuously spinose-ciliate or setulose wings, the setae 1–2 mm long.

**Illustration.** Fig. 1 A–C.

**Distribution and habitat** (Fig. 2). The typical variety of *P. divaricata* is distributed in Colombia, Venezuela, Guyana, Ecuador (for which country this is the first report), and Peru at altitudes between sealevel and 2600 m. It grows in marshy places on sandy clay soils in savannas, often associated with, for example, *Mauritia flexuosa*, but also along roadsides or as a weed in fields and coffee plantations. In Colombia, from which the largest number of collections are available, the species has been collected flowering in all months of the year except March.

**Selected collections.** (146 collections examined). Colombia. Antioquia: between Anorí and Robles, Core 685 (NY, US). – Bolívar: El Mico airstrip (camp 1), last savanna before Río Cuejar, Philipson et al. 1320 (BM, US). – Boyacá: rd. Guateque – Sta. María, between Sta. María and Piedra Campana, García-Barriga 17229 (P); rd. Sogamoso – Aguazul, 2 km from Aguazul, Sastre 902 (P); Pajarito, near Quebrada Curisí, Uribe U. 4559 (F, NY). – Casanare, Tauramena, Uribe U. 3576 (AAU); Río Igará-Parana; La Chorrera, Sastre 2253 (US). – Cundinamarca: Paima, Ariste-Joseph A805 (GH, NY, US). – Guainía: opposite jct. of Río Negro, Brazo Casiquiare and Río Guainía, Davidse & Miller 26628 (US). – Magdalena: Chiriguaná, Allen 181 (MO); sabanas de Zapatosa, Uribe U. 3509 (US). – Meta: rd. to San Martín, vic. of Río Ocoa, Allen 3359 (F, G, MO, US);

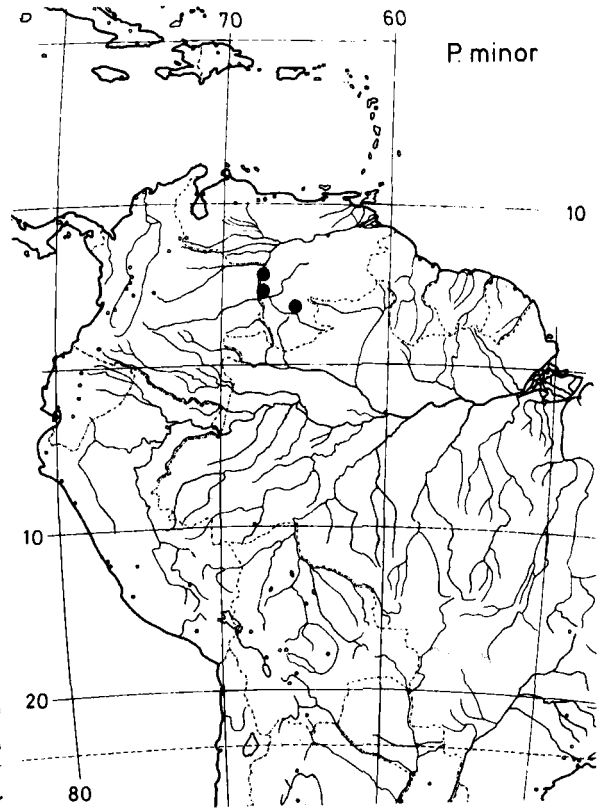
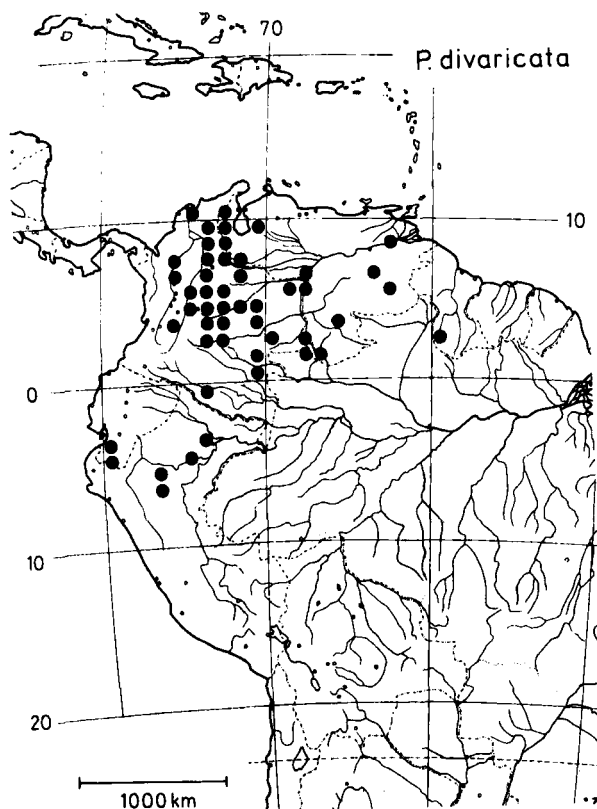


Fig. 2. Distribution of *Pterogastra* species.

Villavicencio, Cuatrecasas 4598 (F, US); Las Acacias, Jaramillo et al. 427 (CM, US); Serranía de la Macarena, Philipson 2385 (BM, NY). – Norte de Santander: región de Sarare, Río Cubugón, El Indio, Cuatrecasas 13115 (US). – Santander: La Gomez, between Bucaramanga and Puerto Wilches, Fassett 25067 (NY, US). – Tolima: ca. 2 km W of Chaparral, Smith 1273 (GH, IAN, MO, US); vic. of Lucarón; Rastrojos, Gutierrez V. & Schultes 911 (GH). – Vaupés: Yurupari, 350 km above Mitú, Cuatrecasas 6983 (US); San Felipe, Romero-Castañeda 1195 (NY), Humbert 27396 (P), Pabón E. et al. 241 (INPA), Molina & Barkley 18 VA 007 (NY, US); Raudal de Yuruparí, Schultes & Cabrera 19729 (GH, NY, U, US); ca. 51 km E of Las Gaviotas along dirt rd. to Santa Rita, Davidse & Llanos 5220 (MO).

Ecuador. Zamora-Chinchi: immediately N of Zamora, Øilgaard et al. 74788 (AAU, QCA).

Guyana. Rupununi: St. Ignatius, Harrison 1284 (K, NY); 4 mi N of Lethem, Irwin 742 (US); without exact loc., Ro. Schomburgk I 721 (BM, G, G-BOIS, K, L, NY, P, W); Kanuku Mts., Iramaipang Wilson-Browne 589 (K).

Peru. Loreto: Balsapuerto, Klug 3049 (BM, F, G, GH, K, NY, S, US). – San Martín: near Moyobamba, Mathews 1278 (E, syntype of *P. major*) and Klug 3314 (F, G, GH, K, MO, NY, S, US); San Roque, Williams 7116 (F), 7643 (F, NY, US).

Venezuela. Amazonas: 35 km from Puerto Ayacucho toward Sanariapo, Bunting et al. 3509 (U, US); Puerto Ayacucho, next to herbarium building, Renner 2000 (AAU, US, VEN); San Carlos de Río Negro, Holt & Gehringer 304 (G, NY, RB, US), Apr 1970, Steyermark & Bunting 102711 (NY, US, VEN, W); San Carlos, IVIC main study site, Clark 6436 (NY); Esmeralda, Maguire & Wurdack 34700 (B, F, G, GH, K, IAN, MO, NY, US); Casiquiare, Vaciva [Paciba], Pacimoni [Yatua], Spruce 2972 (BM, BR, E, G-DC, G-BOIS, K, NY, P, TCD, W). –

Apure: Distr. Páez, Selva de Cutuffí, between Cutuffí on the Río Cutuffí and the Río Sanare, Davidse & González 21989 (CAS, MO). – Bolívar: Caroní, Cerro Upuima, Cardona 2361 (US, VEN); ca. 20 km NE of Cerro Guaiquinima, Huber & Medina 10883 (NY, US). – Táchira: 10 km S of El Piñal, Davidse & González 21699 (MO, US). – Zulia: Distr. Perijá, 13 km N of intersection of the Río Aricuaisá and the Maracaibo – La Fria Hwy., Davidse et al. 18268 (MO, NY, TEX, US, VEN). – Zulia: vic. of Perijá, Tejera 163 (US).

**1b. *Pterogastra divaricata* var. *glabra* (Gleason) Renner, comb. et stat. nov.**

*Pterogastra glabra* Gleason, Bull. Torrey Bot. Club 52: 326, fig. 1. 1925. – Type: Venezuela. Zulia: vic. of Mene Grande, 28 Oct 1922, Pittier 10577 (NY, holotype; G, GH, P, US, isotypes).

Hypanthium almost wingless, prominently 10-nerved and usually glabrous or rarely appressed spinulose on the 5 major nerves.

*Distribution.* The variety so far is known only from Zulia in Venezuela.

*Note.* Future collecting in the area will have to show whether this morph deserves taxonomic recognition; at this time, however, intermediate forms in terms of hypanthium morphology are unknown. The name *P. lasiocalyx*

was suggested by the collector of the type, H. Pittier, but never published (see EXCLUDED NAMES AND TAXA).

## 2. *Pterogastra minor* Naudin

Ann. Sci. Nat. Bot. 3, 12, tab. 15, fig. 8. 1849 and 3, 13: 98. 1850 [text]. – Type: “Nouvelle Grenada” [Venezuela, Amazonas], Atures, Oct 1800, Bonpland 892 (P, F photo 36143, holotype).

Annual erect herb, 0.2–0.6 m high, stem quadrangular to 4-winged, moderately strigose with appressed hairs on the angles. Leaves spreading, subsessile or shortly petiolate, the petiole 0.2–0.3 cm long, blades lanceate to elliptic, 1.5–5 × 0.6–1.5 cm, base broadly acute to rounded, apex acute, with 1 pair of lateral primary veins, above and below sparsely strigulose, the margins serrulate and setose-ciliate. Flowers 4-merous, borne in terminal regularly dichotomous cymes; pedicels 1–2 mm long, floral bracts subulate, ca. 2 mm long, pubescent like the principal leaves; hypanthium 5–6 mm long, 4-winged, the wings spinose-ciliate or setulose, calyx lobes erect, lanceate, subcoriaceous in fruit, 5–6 mm long and ca. 2–2.2 mm wide at the base, glabrous except for marginal and apical setae to 1 mm long; petals reddish purple, lilac, or pink, finely glandular-ciliolate along the margins; stamens dimorphic, the four antepetalous ones longer than the antepetalous ones, anthers subulate with a minute terminal pore, the longer stamens with thecae pink, 4.5–8 mm long, the shorter stamens with thecae yellow, 2.5–4 mm long, connective below the thecae to the filament insertion prolonged, ca. 0.9–1.6 mm or 0.1–0.2 mm long, ventrally bilobed, the lobes ca. 0.1 mm long; ovary 4-celled, ovoid, with an apical circle of stiff glandular hairs. Fruit a 6–8 mm high grayish-tan capsule.

*Illustration.* Fig. 1 D.

*Distribution and habitat.* (Fig. 2). *Pterogastra minor* is endemic in the States of Bolívar and Amazonas in Venezuela and is expected in Colombia near the Venezuelan/Colombian border; it grows at low altitudes (to 235 m) in moist places in savannas (often associated with *Curatella americana*) and may become locally abundant in depressions above granitic lajas. Flowering mainly between September and January.

*Notes.* A further illustration of *P. minor* may be found in the Flora of Venezuela (Wurdack 1973). Although very similar to *P. divaricata*, *P. minor* consistently differs from that species in the smaller, 4-merous flowers, a difference not bridged by any specimens available so far. The fruits with their 4 or 5 persistent calyx lobes remain on the plants until the next crop of flowers is produced, and fruiting plants are therefore as easily identified as flowering ones.

*Selected collections.* (33 collections examined). Colombia. Meta: Río Orinoco, Puerto Carreño, Cuatrecasas 4026 (F, US).

Venezuela. Amazonas: Río Autana, affl. of Río Sipapo, Cruyent 61 (VEN); Orinoco, southern part of Isla del Ratón, Breteler 4785 (F, G, K, MO, NY, S, U, US); savane Atures, Chaffanjon 259 and 712 (P); Puerto Sanariapo, Río Orinoco, Holt & Gehringer 217 (CM, US, VEN); ca. 30 km N of Savanna de Rimones de Chocorro, 5 km NE of Galipero, Huber 4206 (US, VEN); Puerto Ayacucho, Maguire et al. 36061 (F, GH, IAN, K, MO, NY, P, U, US, VEN, W); Laja Picure, Río Orinoco just below Raudal Picure between Sta. Rosa and mouth of Río Vichada, Maguire et al. 36195 (F, K, NY, US, VEN). – Bolívar: Río Pargueni, 0.2–1.5 km N of river mouth, Wurdack & Monachino 39800 (F, GH, K, NY, P, RB, U, US).

## Excluded names and taxa

*Pterogastra lasiocalyx* Pittier, Feddes Repert. Spec. Nov. Regni Veg. Beih. 43: 521. 1927; nomen nudum.

The specimens so annotated are *P. divaricata* var. *glabra* (Gleason) Renner.

*Pterogastra cupheoides* (Benth.) Seemann, Bot. voy. Herald 122. 1854. = *Schwackaea cupheoides* (Benth.) Cogniaux.

## *Schwackaea* Cogniaux

In DC., Monogr. Phan. 7: 182. 1891. – Type: *S. cupheoides* (Benth.) Cogniaux.

Erect herbs, 15–40(–50) cm tall; trichotomously branched, the branchlets quadrangular, setulose on the nodes and sometimes along the angles, otherwise glabrous. Leaves decussate and isomorphic, ovate to elliptic, petiolate, setulose or nearly glabrous, margins entire, with 1 pair of longitudinal primary veins arising at the base of the blade. Flowers 4-merous, subsessile, borne solitary in the upper leaf axils; hypanthium narrowly oblong, with 8 thick longitudinal wings, the wings dorsally tuberculate and with minute setae; calyx lobes linear-subulate, persistent; petals obovate with a short claw and with a single apical seta; stamens 8, dimorphic; filaments thin, terete, glabrous; anthers minute, curved and with a single apical pore, the connective prolonged below the thecae and arcuate, ventrally bilobed, dorsally exappendiculate; ovary 4-celled, glabrous or with a few apical setae. Fruit a loculicidal narrowly elongate capsule; seeds numerous, cochleate.

## *Schwackaea cupheoides* (Benth.) Cogniaux

In Durand, Index gen. phan. 132. 1888. – *Heeria cupheoides* Benth., Bot. voy. Sulphur 93, tab. 33. 1844. – *Pterogastra cupheoides* (Benth.) Seemann, Bot. voy. Herald 122. 1854. – Type. Panama, Hinds s.n. (K, holotype).

*Nomenclatural note:* Although Gleason (1958) cites *Schwackaea* Cogniaux ex Durand the correct form is Cogniaux in Durand because Cogniaux himself wrote the section on the Melastomataceae in Durand's Index.

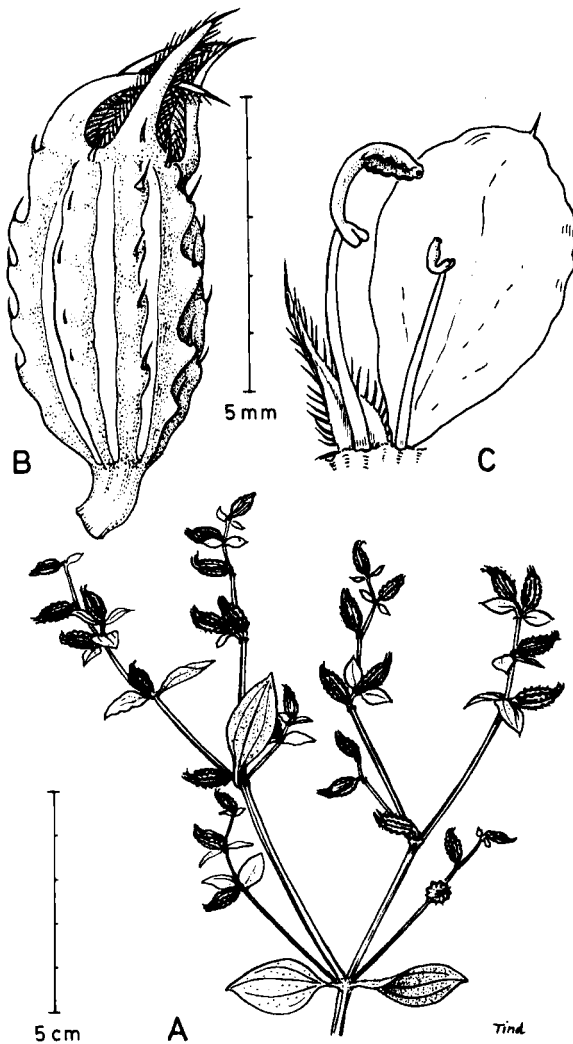


Fig. 3. *Schwackaea cupheoides*. – A: Habit. – B: Hypanthium and calyx lobes. – C: Dissected petal with two stamens.

*Rhexia? condylocarpa* Beurling, Kongl. Vet. Akad. Handl. 1854: 124. 1855. – Type. Panama. Colón: Portobelo, on rd. to Panama city, Apr 1826, Billberg s.n. (S, holotype).

*Acisanthera simplex* Brandegee, Univ. Calif. Publ. Bot. 6: 57. 1914. – Type: Mexico. Chiapas: Sierra de Tomalá, Sep 1913, Purpus 6804 (UC, holotype; BM, F, GH mixed collection, MO, US, isotypes).

Erect annual herb, 15–40(–50) cm tall, the stems usually reddish, branchlets quadrangular, setulose on the nodes and sometimes along the angles, otherwise glabrous. Leaves petiolate, the petiole 2–8 mm long, blade membranaceous, ovate to elliptic, 1.5–6 × 0.5–3 cm, base obtuse, apex acute, with 1 pair of lateral primary veins diverging at the blade base, both surfaces setulose or nearly glabrous. Flowers 4-merous, borne solitary in the upper leaf axils, subsessile, the pedicel ca. 1 mm long; hypanthium sparsely pilose, glandular-pilose or glabrous, 4–6 mm long, with 8 thick, corky longitudinal wings, the

wings dorsally tuberculate and with minute setae; calyx lobes linear-subulate, (2.5–)3 mm long and 0.5–0.6 mm wide at the base, ciliate along the margin and with an apical seta 1 mm long; petals purplish-pink or white, eciliate except for an apical seta; stamens 8, dimorphic, the antesealous ones larger than the antepetalous ones, filaments pink, thecae yellow, 1–1.3 or c. 0.5 mm long, connective below the thecae to the filament insertion ca. 1 mm long in the larger stamens, ca. 0.1 mm long in the shorter ones, ventrally with a bilobed yellow appendage about 0.5 mm long; ovary 4-celled, glabrous or with a few apical hairs; style clavate, apically incurved, 3.5–4 mm long, stigma truncate and somewhat enlarged. Fruit a 6–10 mm high brown capsule.

Illustration. Fig. 3.

*Distribution and habitat.* (Fig. 4). *Schwackaea cupheoides* occurs from Mexico throughout Central America, chiefly on the Pacific slope, to northern Colombia. It grows in humid places in savannas, along ditches, in dried-out river beds, open fields and plantations, and between cliffs near the sea; from sealevel to 2000 m altitude; flowering October to November, fruiting mostly in December.

*Notes.* Apart from the illustration provided with the protologue, *Schwackaea* is illustrated, for example, in the Flora of Guatemala (Standley & Williams 1963, Fig. 80)

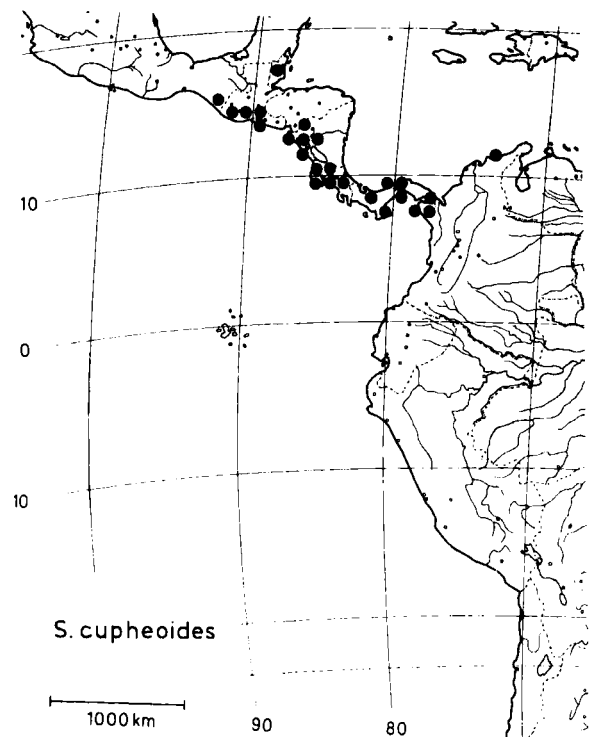


Fig. 4. Distribution of *Schwackaea cupheoides*.

and the Flora of Panama (Gleason 1958, Fig. 73). Solt & Wurdack (1980) reported a chromosome number of  $n = 18$  for *S. cupheoides*, a frequent number in the Melastomeae.

**Selected collections.** (132 specimens examined). Colombia. Magdalena: Sta. Marta, Recuerdo, Engstedt 69 (S); Sta. Marta, Agua Dulce rd., Smith 772 (BM, BR, CM, E, F, G, GH, K, L, MO, NY, P, PH, S, U).

Costa Rica. Alajuela: San Pedro and San Ramón, Brenez 4714 (F). – Cartago: s. loc., Liebmann 16 (2951) (C) and Oersted 17 (BR, RB). – Guanacaste: Santa Rosa National Park, 30 km NW of Liberia, Janzen 12265 (MO). – Heredia: Carrillos de Poas, near Mt. Poas, Brenez 17259 (F); banks of Río Torres near San Francisco de Guadalupe, Pittier & Tonduz 8460 (BM, BR, C, CAS, F, G, GH, K, M, P, US, Z). – Puntarenas: southern tip of Nicoya Peninsula, Burger & Liesner 6587 (F). – San José: ca. 2.1 km beyond San Isidro del General en route to Cerro de La Muerte on the Cordillera de Talamanca, Almada 2107 (CAS, F); vic. San Isidro del General, Molina R. et al. 18081 (F, GH, W).

El Salvador. San Salvador: Río Acelhuate bei Apopa, Rohweder 3116 (HBG); vic. of San Salvador, Standley 19565 (GH).

Guatemala. Chiquimula: along Río Playa; between Finca San José (1.5 mi SE of Concepción de Las Minas) and Montaña Nube (Montaña Volcancitos), Steyermark 30870 (F). – Retalhuleu: s. loc., Bernoulli & Cario 2873 (BR, GOET, LE). – Sacatepéquez: between El Rodeo and Alotenango, Molina R. 15291 (F). – Santa Rosa: near Cuilapilla, Standley 78125 (F).

Honduras. El Paraíso: carretera a Las Manos, 15 km S of El Paraíso, Molina R. 18427 (F).

Mexico. Chiapas: Mpio. Motozintla de Mendoza, 25–27 km NE of Huixtla, along rd. to Motozintla, SW of Tolima, Breedlove & Smith 22565 (MO); Sierra de Tomalá, Purpus 6804 (BM, F, GH mixed coll., MO, UC, US).

Nicaragua. Boaco: slopes of Mt. Mombacho, near Granada, Grant 759 (GH). – Chinandega: southern slope of Volcán Cosigüina, Fonseca Z. 104 (MO). – Managua: Sierra de Managua, Grant 1028 (GH). – Masaya: Catarina, Baker 20 (GH). – Nuevo Segovia: El Júcaro, Quebrada de Tranquera, Moreno 13742 (MO).

Panama. Chiriquí: Francés Arriba School, ca. 14 mi N of David, Lewis et al. 668 (GH, US). – Colón: along coastline between Garotte and La Guaira, D'Arcy 9373 (MO). – Darién: Punta Guayabo Grande, Antonio & Hahn 4218 (MO). – Golfo de Panamá: San José Island, Perlas Archipelago, Gulf of Panama, ca. 55 mi SSE of Balboa, Johnston 936A (GH). – Herrera: between Chitré and Pesé, D'Arcy & Antonio 13474 (NY). – Panamá: Fort San Lorenzo, Burch et al. 1036 (GH, K, US); Barro Colorado Isl., Killip 40033 (K). – Veraguas: Concepción, Hammel 5236 (MO).

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