Transfer of Cuban Marsdenia to Ruehssia (Apocynaceae–Asclepiadoideae), and two new species in Ruehssia

Abstract: The cosmopolitan genus Marsdenia R. Br. in its conventional circumscription has been shown to be strongly polyphyletic, with all New World species grouping in a single clade. Therefore, the genus Ruehssia H. Karst. was recently reinstated to encompass the 42 Brazilian species, initially. In the present study, the nine Cuban species currently classified under Marsdenia are transferred to Ruehssia, and two species, R. lindenii and R. yamanigueyensis, both endemic to Cuba, are described as new. Ruehssia yamanigueyensis is characterized by very thin, wiry stems and small leaves and flowers, while R. lindenii is like R. clausa in habit, but differs strongly in the shape of the staminal corona. Illustrations and a distribution map for two new species are provided, as well as a key to all Ruehssia species on Cuba. Lectotypification is performed where necessary.

Key words: Apocynaceae, Asclepiadoideae, Cuba, Flora de la República de Cuba, lectotypification, Marsdenia, Marsdenieae, new species, Ruehssia, taxonomy

Article history: Received 30 July 2019; peer-review completed 29 October 2019; received in revised form 4 December 2019; accepted for publication 10 December 2019.

Citation: Reuss S. J., Meve U., Mangelsdorff R. D. & Liede-Schumann S. 2020: Transfer of Cuban Marsdenia to Ruehssia (Apocynaceae–Asclepiadoideae), and two new species in Ruehssia. – Willdenowia 50: 29–37. doi: https://doi.org/10.3372/wi.50.50104

Introduction

All Cuban species of Asclepiadoideae (Apocynaceae) possessing erect pollinia were always treated under Marsdenia R. Br., tribe Marsdenieae. Marsdenia was originally described by Brown (1810a) for five Australian species that are equipped with an urceolate corolla, a staminal corona of five flat, undivided lobes, anthers with appendages and erect, basifixed pollinia and smooth follicles. In the quasi-simultaneously published paper “On the Asclepiadoideae”, Brown (1810b) added two further species from outside Australia, M. tinctoria R. Br. from Indonesia and M. clausa R. Br. from Jamaica.

Bullock (1957: 510) was well aware that Marsdenia in the sense of Brown (1810a, 1810b) did not constitute a homogeneous assemblage. He designated M. tinctoria as the type of the generic name, arguing that this species is most closely associated with the patron of the genus, William Marsden, a pioneer of the scientific study of Indonesia. Bullock (1957), however, was not aware that the same choice, albeit without explicit reasoning, had been made earlier by Britton & Wilson (1925).

Over the last 200 years, Marsdenia has grown to a heterogeneous genus comprising around 300 of the c. 740 species of the tribe Marsdenieae (Endress & al. 2018). Marsdenia is considered pantropical, with some
130 species occurring in the New World (Espírito Santo & al. 2019). For Cuba, it was Richard (1850) who described the first three species: *M. affinis* A. Rich., *M. longiflora* A. Rich. and *M. saturejifolia* A. Rich. The first revision of *Marsdenia* of Cuba (and the Antilles) dates back to Schlechter (1889), who accepted eight species on the island of a total of thirteen in the West Indies. However, Schlechter (1899) overlooked *M. cubensis*, published earlier by Turczaninow (1853), for which he cited the type (*Linden 1845*) under *M. umbellata* Griseb. Instead, he listed *M. elliptica* Decne., today considered a Puerto Rican endemic, for Cuba, citing *Rugel 381*, a specimen now identified as *M. fusca* Griseb. Later, only *M. micrantha* Alain was added as a new, then ninth species to the flora (Alain 1956). Lastly, Greuter & Rankin Rodríguez (2017) listed nine indigenous and one introduced species (*M. floribunda* (Brongn.) Schltr.).

On the infrageneric level, it was Rothe (1915) who proposed the first and last sectional and subsectional subdivision of New World *Marsdenia* (now *Ruehssia* H. Karst.). However, his classification, mainly based on corolla and corona characters, is artificial, as our phylogeny shows (Liede-Schumann & al. in prep.). Instead, the Antillean species analysed form a single, well-supported clade, whereas Rothe (1915) spread the Cuban species alone over four of his nine sections. Molecular studies (Espírito Santo & al. 2019; Liede-Schumann & al. in prep.) have recovered several independent clades within *Marsdenia* s.l. showing that the genus is highly polyphyletic. All species of the New World are retrieved as a monophyletic group, and Espírito Santo & al. (2019) reinstated the genus *Ruehssia* for the New World “*Marsdenia*” species. However, Espírito Santo & al. (2019) focussed their analysis on the 42 Brazilian species, and only transfered these to *Ruehssia* with *R. macrophylla* (Humb. & Bonpl. ex Schult.) H. Karst. as the generic type. Liede-Schumann & al. (in prep.) extended sampling to Cuban *Marsdenia* species, which are retrieved within the neotropical *Ruehssia* clade. In consequence, the Cuban species need to be transferred to *Ruehssia*, and the necessary new combinations are here proposed. Of the nine indigenous species, five are endemic to Cuba: *R. cubensis* (Turcz.) Liede, S. Reuss & Meve, *R. longiflora* (A. Rich.) Liede, S. Reuss & Meve, *R. micrantha* (Alain) Liede, S. Reuss & Meve, *R. umbellata* (Griseb.) Liede, S. Reuss & Meve and *R. vinciflora* (Griseb.) Liede, S. Reuss & Meve and *R. fusca* (Griseb.) Liede, S. Reuss & Meve; while *R. clausa* (R. Br.) Liede, S. Reuss & Meve, *R. yamanigueyensis* (in sched.) came to light during our herbarium studies and is described here.

The present work summarizes the treatment prepared for the account of the Asclepiadoideae in the *Flora de la República de Cuba* (Liede-Schumann & al. in prep.).

### Material and methods

For our study, we analysed c. 200 specimens from the herbaria B, FR, GOET, HAC, HAJB and JE (herbarium codes according to Index herbariorum; http://sweetgum.nybg.org/science/ih/). The terminology for morphological descriptions follows Endress & al. (2018).

### Results and Discussion


**Remarks** — Karsten (1849) placed four Venezuelan species in *Ruehssia*, characterized by broadly elliptic leaves and shortly pedunculate, many-flowered sciadiioids. The corolla tube of these species is short and rotate and the corneous, lanceolate-sulbate staminal corona is almost completely adnate to the gynostegium. The fillicles are exceptionally large and the pericarp is coriaceous. Presently these four species are considered synonyms of the widespread *R. macrophylla* (Bernal & al. 2015). Espírito Santo & al. (2019) broadened the concept of *Ruehssia* to accommodate all Brazilian species, so that the genus now comprises a wide range of growth forms, leaf shapes and floral structures. All species possess white latex, a corona of five lobes that are fused at least partially to the dorsal side of the anthers and mostly not exceeding the apex of the style-head, erect pollinia attached to the caudicles by their bases, and solitary fillicles.

### Key to the Cuban species of *Ruehssia*

1. Stems wiry (to 1 mm in diam.), lamina to 10 mm long ................. 11. *R. yamanigueyensis*
   – Stems not wiry (thicker than 1 mm), lamina more than 10 mm long .......... 2

2. Lamina linear ................. 3
– Lamina lanceolate, cordate, ovate or elliptical, but not linear ............................................. 4
3. Inflorescences with 1(or 2) flowers; corolla lobes lanceolate and twisted; style-head rostrate, bilobed ... 7. R. naturejfolia
– Inflorescences with 4(or 5) flowers; corolla lobes triangular; style-head rostrate, not bilobed .... 4. R. linearis
4. Shape of staminal corona lobes deltate, to 0.3 mm wide .......................................................... 10. R. lindenii
– Shape of staminal corona lobes not deltate .... 5
5. Inflorescences many-flowered (>12) .......................... 6
– Inflorescences few-flowered (≤12) ................. 7
6. Lamina ovate, apex acuminate, petiole 20–30 mm long; peduncle 70–80 mm long .... 3. R. fusca
– Lamina obovate, base cuneate, petiole to 8 mm long; peduncle less than 40 mm long .... 6. R. micrantha
7. Corolla lobes at most 2 mm long .............. 1. R. clausa
– Corolla lobes at least 4 mm long ................ 8
8. Corolla tube at least 15 mm long ... 9. R. vinciflora
– Corolla tube at most 10 mm long ............... 9
9. Adaxial face of leaves basally with at least 3 collerets on midvein; corolla lobes obovate, longer than corolla tube, 10–12 mm long .......... 5. R. longiflora
– Adaxial face of leaves basally with 1 or 2 collerets on midvein; corolla lobes ensiform to lanceolate, to 6 mm long. .................. 10
10. Adaxial face of leaves basally with 2 collerets on midvein; flower at most 8 mm long; corolla tube urceolate, corolla lobes ensiform ........ 2. R. cubensis
– Adaxial face of leaves basally with 1 colleret on midvein; flower at least 12.5 mm long; corolla tube infundibuliform, corolla lobes lanceolate ............... 8. R. umbellata


Remarks — Typification of all taxa associated with Ruehsia clausa needs some explanation. Because Robert Brown stated explicitly (Brown 1811: 18) that he worked on the personal collections of Sir Joseph Banks, now housed in BM, the BM specimen of O. P. Swartz s.n. (BM 000952935) can be regarded as the holotype of Marsdenia clausa.

Of the synonymous names, Marsdenia affinis and M. obovata are homotypic because Richard (1850) as well as Turczaninow (1853) cited a single gathering, J. Linden 1846, in the respective protologues. However, neither author indicated a herbarium in which a specimen (syntype) of this gathering was housed. The KW specimen (KW 001001590), which Turczaninow probably saw, is richer and better preserved than the P specimen (P 00645929), which probably served Richard for his description, and is therefore designated as the lectotype for both names.

For lectotypification of the Grisebach names, remarks of Gray (1860) are to be considered. In his preface to the Plantae Wrightianae, Gray (1860) stated that Grisebach examined the specimens of Wright (except lost numbers added by Gray in brackets) sent by him to Göttingen. Therefore, selection of lectotypes should use GOET specimens, as suggested by Howard (1988). Of Marsdenia campulata, two isotypes are found in GOET, GOET 000294 and GOET 000734. Of these, GOET 000734 bears a dissected flower, a drawing and several handwritten notes, and is therefore designated as the lectotype. Finally, of the two syntypes of M. campulata var. bifida, C. Wright 2973 and F. I. X. Rugel 393, the specimen of Wright GOET 000295 is designated as the lectotype, again following a suggestion by Howard (in sched.). This specimen is furnished with a flower drawing and handwritten notes of Grisebach, and isolectotypes are extant in several herbaria, whereas F. I. X. Rugel 393 has only been located in MO (MO 238134).

Remarks — Because in the protologue Turczaninow (1853) did not indicate a herbarium in which any specimen was housed, lectotypification is necessary. We designate the specimen in KW, because it is certainly the one with which Turczaninow worked.

Schlechter (1899) included in his work for the Antilles Marsdenia elliptica Decne., originally a Puerto Rican taxon (cf. Rothe 1915), and cited Reuss & al.:


Remarks — In the protologue of Marsdenia longiflora, neither a specimen nor a housing institution is cited, only a note “Crescit circa Canasi”. However, a single specimen of the Herbarium Richard in P (P 00645952) is encountered, bearing in La Sagra’s own handwriting the inscription: “Marsdenia longiflora nob. sp. nov.” as well as a short description. This specimen is designated as the lectotype of *M. longiflora*, according to the recommendation of McNeill (2014). This specimen obviously belongs to the original material seen by Richard, and not Wright 2974 (see Gómez 1894), actually housed in GOET and K, which was collected ten years after the publication of *M. longiflora*.

5. **Ruehssia linearia** (Decne.) Liede, S. Reuss & Meve, **comb. nov.** = Marsdenia linearia Decne. in Candolle, Prodr. 8: 617. 1844. – **Lectotype (designated here):** St. Domingo, H. Nectoux s.n. (P 00645951).

Remarks — Alain (1956) chose the specimen of Hno. Alain & al. 5678 in LS as the [holo]type, and the one in SV as the isotype. Meanwhile, both herbaria have been included in HAC, but the specimens bear the handwritten annotations “Típo” and “Isotipo”, clearly indicating the designation by Alain.

Grisebach listed Marsdenia clausa R. Br. in his *Catalogus plantarum cubensium* (Grisebach 1866: 178), citing the gathering Wright 1374, which is in fact Ruehssia micrantha (BM 000514282, BM 000952934, GOET;
S 05-1242). The specimen in GOET is labelled as *M. clausa*, while the specimen BM 000514282 is labelled as “Marsdenia Wrightiana Rendle”, which is in fact a nomen nudum.


Remarks — Richard (1850) and Turczaninow (1853) described *Marsdenia saturejifolia* and *M. pauciflora*, respectively, based on duplicates of the same gathering, *J. Linden 2165*. The specimen in Herb. Richard in P (P 04055872), which bears a handwritten description, is the richer one, and is therefore designated as the lectotype of *M. saturejifolia*.


Remarks — Grisebach (1866) cited “Wr. 2972; conferatur Wr. 582” under *Marsdenia umbellata*. GOET 000732 bears a label stating; Coll. C. Wright, 1860 – 1864, No. 2972 with “2972” heavily crossed out and the note “sent … as : 582. …” exactly corresponding to the protologue remark of Grisebach (1866). This specimen, used and annotated by Grisebach, can be regarded as the holotype of *M. umbellata*. The gathering Wright 2972 includes two different species: *R. cubensis* and *R. umbellata* (see above under *R. cubensis*).


Remarks — Howard (in sched., 17 Jun 1988) considered GOET 000299, bearing a long, handwritten description and an analytical flower drawing, as the holotype of *Marsdenia vinciflora*. Considering also that no second specimen of C. Wright 2975 was found in GOET, and that this was the only gathering cited in the protologue, Howard’s conclusion seems justified.

Two new species of *Ruehssia* in Cuba

10. *Ruehssia lindenii* S. Reuss, Manitz & Liede, sp. nov. – Fig. 1.


Diagnosis — With lanceolate leaves and urceolate corolla, this new species resembles *Ruehssia clausa* in habit, but the staminal corona lobes in *R. lindenii* have a deltate shape, whereas they are almost completely reduced to scales in *R. clausa*.

Morphological description — Woody vine. Stems c. 2 mm in diam., bifurcately pubescent, older branches up to 6 mm in diam., glabrescent, with scattered lenticels. Leaves petiolate; petiole 7–9 mm long, adaxially pubescent; stipular rudiments triangular, brown to black; lamina 40–80 × 12–22 mm, lanceolate (obcordate to obovate when young), discolorous, basally with 2 collleters on midvein, margin revolute, apically mucronate-apiculate, adaxially green, abaxially with protuberant midvein and 12–15 lateral veins on each side, bright green. Inflorescences extra-axillary, many-flowered, sciadiodial; peduncle 7–10 mm long, bifurcately pubescent; pedicels 4–5 mm long, bifurcately pubescent. Sepals c. 1.5 mm long, reaching more than one third of corolla tube length, ovate, ciliate. Corolla c. 4 mm in diam.; corolla tube urceolate, c. 2.2 × 2.2 mm, almost glabrous inside; corolla lobes 1–1.2 mm long, ovate with obtuse apex, margin membranous, adaxially densely bearded. Staminal corona lobes c. 0.5 × 0.5 mm, deltate. Anther wings completely parallel over whole length, forming guide-rails of c. 0.4 mm length; connective appendages c. 0.4 mm long, trapezoidal. Pollinia with pollinia c. 0.25 × 1.7 mm, obovoid, corpusculum c. 0.22 × 0.075 mm, ellipsoid, caudicles c. 0.16 μm long, U-shaped. Style-head c. 0.45 mm in diam., pulvinate. Fruits and seeds unknown.

Phenology — Recorded as flowering from April to June.

Distribution and ecology — *Ruehssia lindenii* occurs all over Cuba. As far as reported, it can be found in drier to humid, semi-deciduous, sublittoral to hilly bushland near the coast, or in cliffs (Fig. 3).

Conservation status — Occurring all over Cuba, this species could be categorized as Least Concern (LC). However, because the species seems to be nevertheless rare, and actual data on flourishing populations are missing, the category Data Deficient (DD) according to IUCN Red List categories and criteria (IUCN 2012) seems appropriate.

Etymology — This new species is named Ruehssia lindenii to honour the heritage of Jean Jules Linden.
(1817–1898), a Belgian botanist, who made many collections not only in Cuba (especially eastern Cuba), picking up a misnomer / erroneous labelling present in the Berlin herbarium (“Marsdenia lindenii?”, in sched., B 10 0374603; H. Manitz, pers. comm.). Linden is known as the father of modern orchid horticulture. He initiated the construction of greenhouses in Gent and Brussels to cultivate tropical plants that were sold even to the Russian Tsar. Linden also collected the type specimens of *M. affinis*, *M. cubensis* and *M. saturejifolia*.

**Remarks** — Ruehssia lindenii resembles *R. clausa* in habit, pubescence, leaves, and even inflorescences and flowers. However, the staminal corona in *R. lindenii* differs significantly in its deltate shape (Fig. 1D), whereas the staminal corona in *R. clausa* is almost completely reduced to scales. And while *R. clausa* occurs in wet bushlands of low to medium elevation, *R. lindenii* is presently only known from coastal areas of low elevation.


11. Ruehssia yamanigueyensis Mangelsdorff, sp. nov. — Fig. 2.

Holotype: Cuba, Holguín, Moa, charrascal al este de Yamanigüey, 6 Jan 1969, J. Bisse & H. Lippold HFC 11992 (JE).

**Diagnosis** — This species can easily be distinguished from all other Cuban species of *Ruehssia* by its wiry stems and leaves of around 10 mm long (the smallest within the genus in Cuba).

**Morphological description** — Woody vine. Stems wiry, c. 1 mm in diam., scabridulous. Leaves petiolate; petiole c. 1.4 mm long, adaxially canaliculate; stipular rudiments triangular to linear, brown to black; lamina c. 10 × 2.5 mm, oblanceolate to linear, apex rounded with minute mucro, discolorous, colleters absent, margin revolute, adaxially...
green, scattered scabridulous with conical hair-papillae of 0.05–0.08 mm length, midvein abaxially protuberant, adaxially sunken. Inflorescences extra-axillary, with 2–4 flowers, sciadioidal; peduncle c. 1.5 mm long, bifariously pubescent; pedicels 1–1.2 mm long, bifariously scabrid. Sepals c. 0.7 mm long, reaching one third to half of corolla tube length, ovate, apex rounded. Corolla c. 2 mm in diam.; corolla tube urceolate, 1.7–2 × 1.12 mm, inside with 5 lines of trichomes extending to base of lobes; corolla lobes c. 1 mm long, triangular, proximal half adaxially densely bearded with whitish-translucent trichomes, margin membranous. Staminal corona lobes c. 0.4 mm long, ovate, erect, appressed to gynostegium, apically acuminate into a small, free, lanceolate tooth incurved on basal back of connective appendage. Anther wings completely parallel over whole length, forming guide-rails of c. 0.3 mm length; connective appendages to 0.35 mm long, trapezoidal. Pollinia: pollinia c. 0.17 × 0.08 mm, obovate, corpusculum c. 0.1 × 0.025 mm, ellipsoidal, c. 0.12 mm long, bent upward. Style-head c. 0.4 mm in diam., pulvinate. Fruits and seeds unknown.

Phenology — Flowering from January to April.

Distribution and ecology — To date, Ruehsia yamanigueyensis has been collected only in the province of Holguín (Moa), where it seems to be limited in distribution to the surroundings of Yamanigüey. It typically grows in charrascal (bosque esclerófilo humedo), a moist, sclerophyllous bushland on ultramafic soil at low elevations of up to 400 m (Fig. 3).

Conservation status — With an area of occupancy of less than 500 km² and just two gatherings from one (or two?) locations known, Ruehsia yamanigueyensis could be categorized as Endangered (EN). However, because the data are so poor, the category Data Deficient (DD) according to IUCN Red List categories and criteria (IUCN 2012) seems appropriate.

Etymology — This species is named after the type locality in the province of Holguín, near the village of Yamanigüey.

Remarks — Ruehsia yamanigueyensis is clearly separated from all other species of Ruehsia in Cuba by its wiry habit and adaxially scabridulous leaves (Fig. 2A) of just about 10 × 2.5 mm (making it the tiniest of all Cuban species of Ruehsia). Likewise, the flowers are diminutive, hardly reaching 3 mm in length (Fig. 2).

Additional specimens examined (paratypes) — CUBA: HOLGUÍN: Moa, charrascales al este de Yamanigüey, 6 Jan 1969, J. Bisse & H. Lippold HFC 11872a (JE) and HFC 11992 (JE).

Acknowledgements

We would like to thank the herbaria B, FR, GOET, HAC, HAJB and JE for providing their specimens; Dr.
Hermann Manitz (Jena, JE) is owed our gratitude for an introduction to the Cuban geo mapping; we thank Dr. Martin Feulner (Bayreuth) for producing the distribution map; and we are grateful to Fabio da S. do Espírito Santo (Universidade Federal do Sul da Bahia), Cecilia Ezcurra (Universidad Nacional del Comahue, BCRU) and Hermann Manitz for their comments on an earlier version of this article.

References

Botánico Nacional, Universidad de La Habana. – Published at https://doi.org/10.3372/cubalist.2017.1