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Willdenowia
Annals of the Botanic Garden and Botanical Museum Berlin

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Three new species of *Petalostelma* (*Apocynaceae*), and enlightenment of the concept of *P. sarcostemma*

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Abstract: *Petalostelma* is a taxonomically neglected genus of *Apocynaceae* with only seven species of climbing plants and voluble subshrubs with the smallest flowers of *Metastelmatinae* (c. 6 mm in diam.), mainly characterized by rotate corolla and fleshy gynostegial corona, with or without an annular corolline corona. During the revision of the genus, we recognized three new species of *Petalostelma*, two of which had specimens misidentified as *P. sarcostemma*, a species originally known only from Argentina. Here, we describe and illustrate these new species – *P. andinum*, *P. auriculatum* and *P. longipedunculatum* – and compare them with the other species of *Petalostelma* that also have flowers without corolline corona. The three new species occur in the Andean dry forests of Bolivia, but *P. andinum* also occurs in Argentina and *P. longipedunculatum* in the Brazilian Cerrado. Additionally, the occurrence of *P. sarcostemma* is confirmed for Bolivia and reported for the first time in Brazil here.

Resumo: *Petalostelma* é um gênero taxonomicamente negligenciado de *Apocynaceae* com apenas sete espécies de trepadeiras e subarbustos volúveis com as menores flores de *Metastelmatinae* (c. 6 mm diâm.), caracterizadas principalmente pela corola rotada e corona ginostegial carnosa, com ou sem uma corona corolina anular. Durante a revisão do gênero, reconhecemos três novas espécies de *Petalostelma*, duas das quais com espécimes erroneamente identificados como *P. sarcostemma*, uma espécie originalmente conhecida apenas da Argentina. Aqui, descrevemos e ilustramos essas novas espécies – *P. andinum*, *P. auriculatum* e *P. longipedunculatum* – e as comparamos com as outras espécies de *Petalostelma* que também possuem flores sem corona corolina. As três novas espécies ocorrem nas florestas secas andinas da Bolívia, porém *P. andinum* também ocorre na Argentina e *P. longipedunculatum* nas savanas do Cerrado brasileiro. Adicionalmente, a ocorrência de *P. sarcostemma* é confirmada na Bolívia e registrada pela primeira vez no Brasil aqui.

Key words: *Apocynaceae*, *Asclepiadaceae*, *Asclepiadoideae*, *Gentianales*, *Metastelmatinae*, neotropics, new species, *Petalostelma*, South America, taxonomy

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Introduction

Petalostelma E. Fourn. (*Metastelmatinae*, *Asclepiadoideae*, *Apocynaceae*) is a genus of climbing plants and voluble subshrubs with the smallest flowers of *Metastelmatinae* (c. 6 mm in diam.) arranged in umbelliform cymes, mainly characterized by the rotate corolla and a gynostegial corona with five fleshy lobes basally connate and, eventually, an annular corolline corona surrounding the gynostegium (sensu Liede & Kunze 1993). It was originally proposed in the *Flora Brasiliensis* (Fournier 1885), including only the type species *P. martianum* (Decne.) E. Fourn., followed by

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the description of the second species, *P. cearense* Malme, four decades later (Malme 1927). Since then, the genus was mainly treated by Fontella-Pereira (1994) and Liede & Meve (2001), who proposed a new species (*P. dardanoi* Fontella) and new combinations, respectively.

Currently, *Petalostelma* consists of seven species in South America (Argentina, Bolivia, Brazil, Paraguay; Endress & al. 2018), most of them were originally described in other genera (e.g. *Cynanchum* L. and *Metastelma* R. Br.), and are primarily known from their original descriptions. *Petalostelma* has been somewhat neglected and many specimens in the genus have not been correctly identified, which is probably due to the extraordinarily small diagnostic details of the flowers (e.g. corona lobes, anthers and pollinaria, see below). Its phylogenetic position along the initial evolution of *Metastelmatinae* is not congruent among phylogenetic studies with molecular data (e.g. Ribeiro & al. 2012; Silva & al. 2012; Ribeiro & al. 2014; Liede-Schumann & al. 2014), but the monophyly of the genus has never been questioned.

Field work and the study of herbarium specimens during the taxonomic revision of *Petalostelma* revealed three new species from Bolivia, one of them also distributed in Argentina and other one also occurring in Brazil. The new species have flowers without corolline corona, and specimens of two of them have been misidentified as *P. sarcostemma* (Lillo) Liede & Meve. Below, we describe and illustrate these new species and compare their morphology with those of the other two species of *Petalostelma* without corolline corona: *P. sarcostemma* and *P. robertii* (S. Moore) Liede & Meve. Additionally, we describe and illustrate *P. sarcostemma*, confirm its occurrence in Bolivia (from Santa Cruz, but not from La Paz, as previously reported by Fuentes & Morales 2014), and expand its known distribution to Brazil, near the border with Bolivia.

Material and methods

For the taxonomic treatment of *Petalostelma*, we analysed more than 200 specimens in 22 herbaria: ALCB, ASE, CEN, CGMS, COR, EAC, HST, HUEFS, HUTO, IBGE, IPA, JPB, LPB, MBM, MSUN, PEUFR, R, RB, UB, UFRN, UFP, ULM (acronyms according to Thiers 2018+), as well as available images and illustrations. The terminology used for vegetative and reproductive structures is based on Radford & al. (1974) and Harris & Harris (1994).

Results and Discussion

Petalostelma andinum Meve, Liede & A. P. B. Santos, **sp. nov.** – Fig. 1A–E.

Holotype: Bolivia, Cochabamba, Capinota, Comunidad de Apillapampa, 17°50'27"S, 66°14'43"W [-66.245278, -17.840833], fl., 26 Mar 2003, *E. Thomas 357* (LPB!).

Diagnosis — *Petalostelma andinum* is morphologically similar to *P. longipedunculatum*, but can be distinguished from it by the shorter peduncles (≤ 0.4 cm vs ≥ 0.9 cm long), the corona with conical and massive lobes (vs ovate to rounded and flattened to slightly concave lobes), and smaller corpusculum (≤ 0.07 mm vs ≥ 0.1 mm long) and pollinia (≤ 0.9 mm vs ≥ 0.13 mm long).

Description — *Plants* climbing; *branches* glabrous; *latex* white. *Leaves* opposite to verticillate; *lamina* linear, narrowly elliptic to falcate, 1.2–2.5 × 0.2–0.4 cm, base cuneate, apex acute, margins revolute, both surfaces glabrous, coriaceous, colleters falcate, borne adaxially at base; *petiole* 2–3 mm long. *Inflorescences* umbelliform, congested, 2–6 flowers per cyme; *peduncle* 0.2–0.4 cm long, glabrous; *bracts* 1.1–1.4 × 0.18–0.25 mm; *bracteoles* not seen. *Pedicel* 2.5–7 mm long, glabrous. *Sepals* lanceolate, 1.2–1.7 × 0.4–0.6 mm, apex acute, glabrous. *Corolla* rotate, pinkish to dark purple, adaxially villous, abaxially glabrous; *tube* c. 0.5 mm long; *lobes* ovate, 1.3–2 × 1.2–1.5 mm, apex subacute. *Gynostegial corona* rotate; *lobes* dark purple, patent, cylindrical to conical, 0.3–0.45 × 0.24–0.30 mm, apex rounded to subacute. *Corolline corona* absent. *Gynostegium* subsessile, c. 0.5 mm long; *anthers* 0.27–0.4 × 0.25–0.4 mm; *corpusculum* obovate, 0.06–0.07 × 0.03–0.04 mm; *caudicles* 0.02–0.05 mm long; *pollinia* elliptic to ovate, 0.07–0.09 × 0.04–0.05 mm; *style-head* discoid, c. 0.5 mm in diam. *Follicles* one per flower (observed in Argentinian material only; Liede & Meve 2001: fig. 6G), linear-fusiform, c. 80 × 5 mm, smooth, pendant. *Seeds* dark brown, oblong, c. 7 × 1.5 mm, smooth, marginally with a wing c. 0.3 mm wide, entire; *coma* white, c. 15 mm long.

Phenology — The species was collected with flowers in February and March, and with fruits in February.

Distribution and ecology — *Petalostelma andinum* was found climbing on shrubs, slopes or rocks, in valleys with seasonally dry forests, more than 2000 m a.s.l., in the Capinota and Campero provinces (Bolivia), but at approximately 1000 m a.s.l. in the Salta and Tucumán provinces (Argentina) (Fig. 3).

Conservation status — Known from seven locations, *Petalostelma andinum* has an extent of occurrence of 81 800 km² and area of occupancy of 7 km² (calculated with the help of Geospatial Conservation Assessment Tool – GeoCAT: http://geocat.kew.org, considering 1 km² cells). This would fit the category Critically Endangered (CR) according to the B2 criteria (AOO < 10 km²). Nevertheless, we did not identify any other condition or plausible future threat to consider the species threatened. Thus, *P. andinum* should probably be better classified as Near Threatened (NT) according to the criteria of IUCN (2001).

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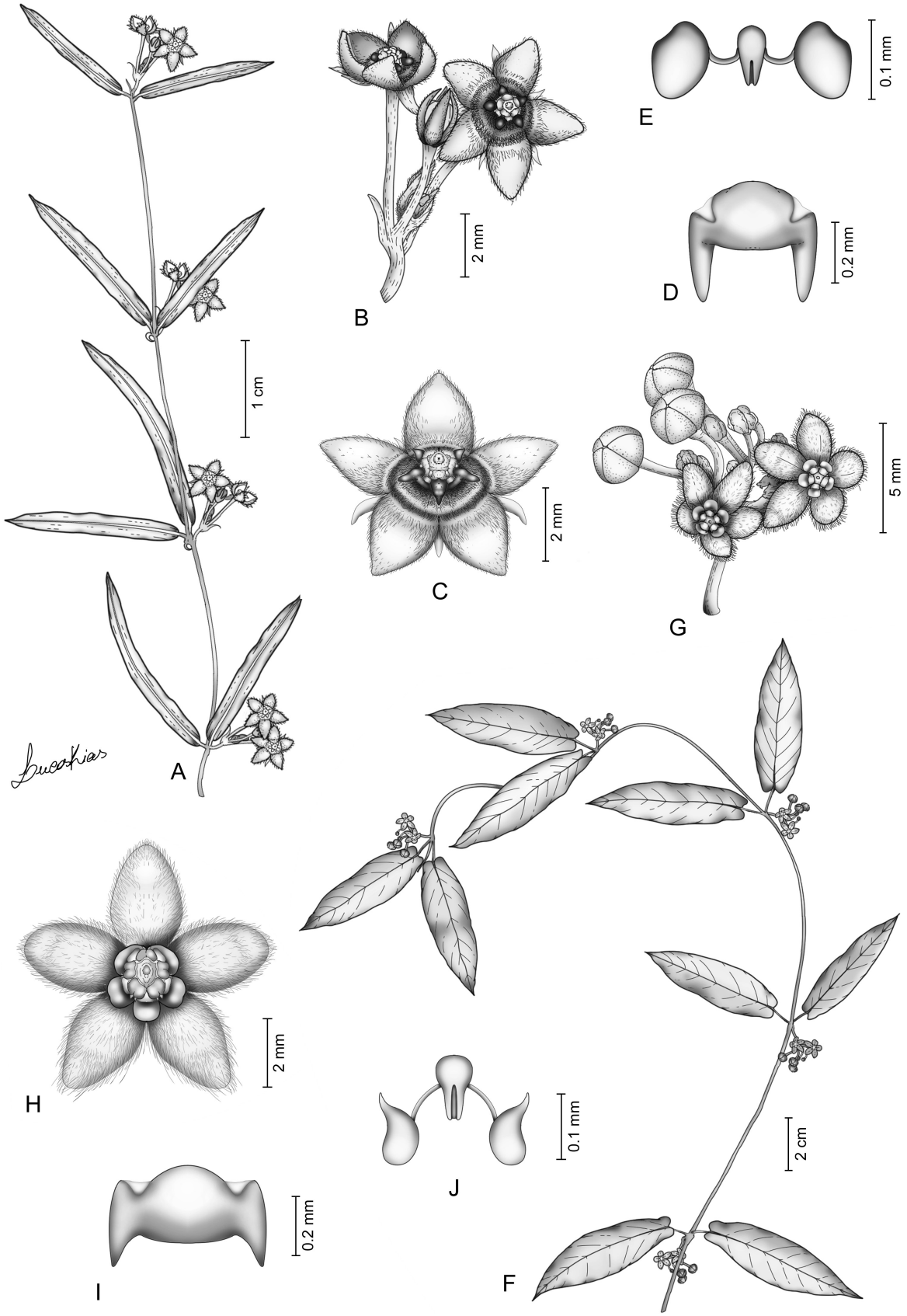


Fig. 1. A–E: *Petalostelma andinum*; A: branch with flowers; B: inflorescence; C: flower; D: anther; E: pollinarium. – F–J: *Petalostelma auriculatum*; F: branch with flowers; G: inflorescence; H: flower; I: anther; J: pollinarium. – Drawn from: *P. andinum*: A, C from *Thomas 357*, B, D, E from *Wood & M. Atahuachi 21587*; *P. auriculatum*: F, I, J from *Araújo & al. 433*, G, H from *Cayola & al. 13*. – All drawn by Lucas Menezes Silva.

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Etymology — The epithet is a reference to its occurrence in the Andean mountains.

Remarks — *Petalostelma andinum* is morphologically similar to *P. longipedunculatum* due to the narrowly lanceolate leaves and patent corona lobes, with subacute to obtuse apex. However, it can be easily distinguished from *P. longipedunculatum* by the features noted above. *Petalostelma andinum* had been misidentified as *P. sarcostemma* in herbaria and was mistakenly illustrated in its place when Liede & Meve (2001: fig. 6) transferred *Cynanchum sarcostemma* Lillo to *Petalostelma*. The two species, however, can be distinguished by the corona lobes, patent and cylindrical to conical in *P. andinum* but erect and depressed ovate in *P. sarcostemma*. Fig. 4 shows the main diagnostic features distinguishing *P. andinum*, *P. longipedunculatum* and *P. sarcostemma,* as well as the also similar *P. robertii*, which is otherwise characterized by revolute leaves (Liede & Meve 2001: fig. 5).

Additional specimens examined — Argentina: Tucumán, San Pedro de Colalao, 26°14'0"S, 65°29'0"W [-65.483333 , -26.233333], 1120 m a.s.l., fl. & fr., 17 Feb 1993, *S. Liede & J. Conrad 3090* (MSUN, ULM); Salta, La Candelaria; right before river crossing, c. 1000 m a.s.l., fl., 18 Feb 1993, *S. Liede & J. Conrad 3099* (ULM); Salta, Cerro de San Bernardo; c. 1 km from beginning of road, 1200 m a.s.l., fl., 22 Feb 1993, *S. Liede & J. Conrad 3101* (MO, ULM). Bolivia: Cochabamba, Capinota, entre Poqueras y Santivañez, antes de llegar a la quebrada de Huirquina, 17°21'13"S, 66°09'39"W [-66.160833, -17.353611], fl., 5 Feb 2005, *J. R. I. Wood & M. Atahuachi 21587* (LPB); ibid., c. 1 km S of Playa Ancha and 2 km N of Capinota, fl., 17 Mar 1999, *J. R. I. Wood 14703* (LPB); ibid., Campero, Villa Granada y Peña Colorada, 18°12'06"S, 65°00'03"W [-65.000833 , -18.201667], fl., 3 Mar 2005, *J. R. I. Wood & al. 21715* (LPB).

Petalostelma auriculatum A. P. B. Santos & Meve, **sp. nov.** – Fig. 1F–J, 2A.
Holotype: Bolivia, La Paz, Franz Tamayo, Parque Nacional Madidi, camino de Apolo-Azarimas, arroyo Pintata. 14°27'57"S, 68°32'9"W [-68.535833, -14.465833], 863 m a.s.l., fl., 19 Feb 2003, *A. Araújo, H. Cabrera, M. Calzadilla, F. Canqui, L. Cayola, C. Maldonado & N. Paniagua 433* (LPB!; isotypes: MO!, USZ!).

Diagnosis — *Petalostelma auriculatum* is easily distinguished from all congeners by the leaves with a (sub)auriculate base and pollinia with acuminate apex.

Description — *Plants* climbing; *branches* glabrous; *latex* not seen. *Leaves* opposite; *lamina* elliptic, 3.5–5.7 × 1.3–2.2 cm, base (sub)auriculate, apex acute to acuminate, margins plane, membranaceous, both surfaces glabrous, colleters not seen; *petiole* 5–8 mm long. *Inflorescences* umbelliform, congested, 4–8 flowers per cyme; peduncle 0.3–0.5 cm long, glabrous; *bracts* not seen; *bracteoles* c. 0.5 × 0.2 mm. *Pedicel* 3.5–4.5 mm long, glabrous. *Sepals* ovate, 0.8–1 × 0.5–0.7 mm, apex acute, glabrous. *Corolla* rotate, pinkish, adaxially pubescent, abaxially glabrous; *tube* c. 0.4 mm long; *lobes* ovate, 2–2.5 × 1.6–1.8 mm, apex acute. *Gynostegial corona* rotate; lobes pinkish, patent, oblate, flattened, 0.4–0.5 × 0.5–0.6 mm, apex rounded. *Corolline corona* absent. *Gynostegium* subsessile, c. 0.5 mm long; *anthers* 0.32–0.35 × c. 0.4 mm; *corpusculum* obovate, 0.07–0.1 × 0.04–0.06 mm; *caudicles* 0.05–0.07 mm long; *pollinia* ovate, 0.11–0.14×0.07–0.08 mm, apex acuminate; *style-head* discoid, c. 0.7 mm in diam. *Fruits* and *seeds* not seen.

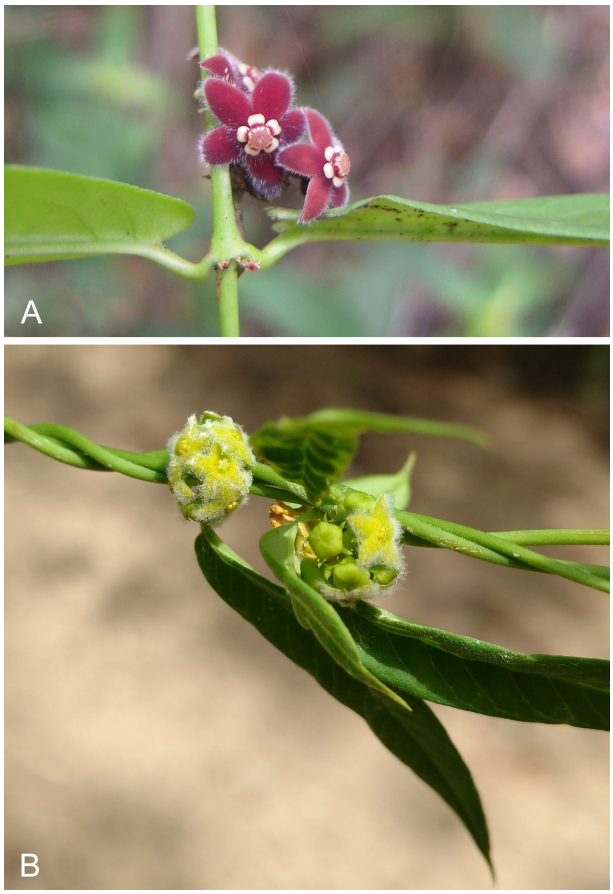


Fig. 2. A: *Petalostelma auriculatum*, inflorescence (Bolivia, La Paz, Franz Tamayo, Madidi National Park, 18 Apr 2013, photograph by A. Fuentes). – B: *Petalostelma sarcostemma*, inflorescences (Brazil, Mato Grosso do Sul, Ladário, APA Baía Negra, 30 Nov 2016, photograph by M. A. Farinaccio).

Phenology — The species was found with flowers only in February.

Distribution and ecology — *Petalostelma auriculatum* is known only from Madidi National Park, in the province of Franz Tamayo, Bolivia (Fig. 3), occurring in dry forests at mountain tops, between 800 and 1000 m a.s.l.

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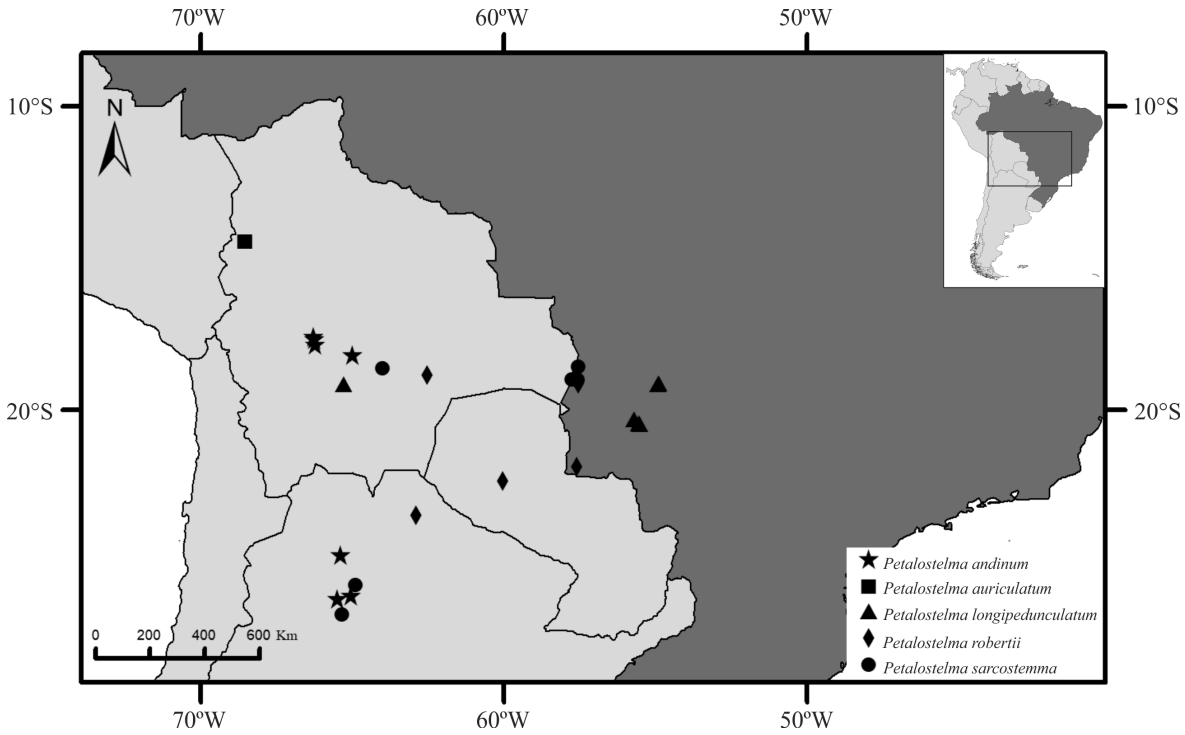


Fig. 3. Distribution of the species of *Petalostelma* exhibiting flowers without corolline corona.

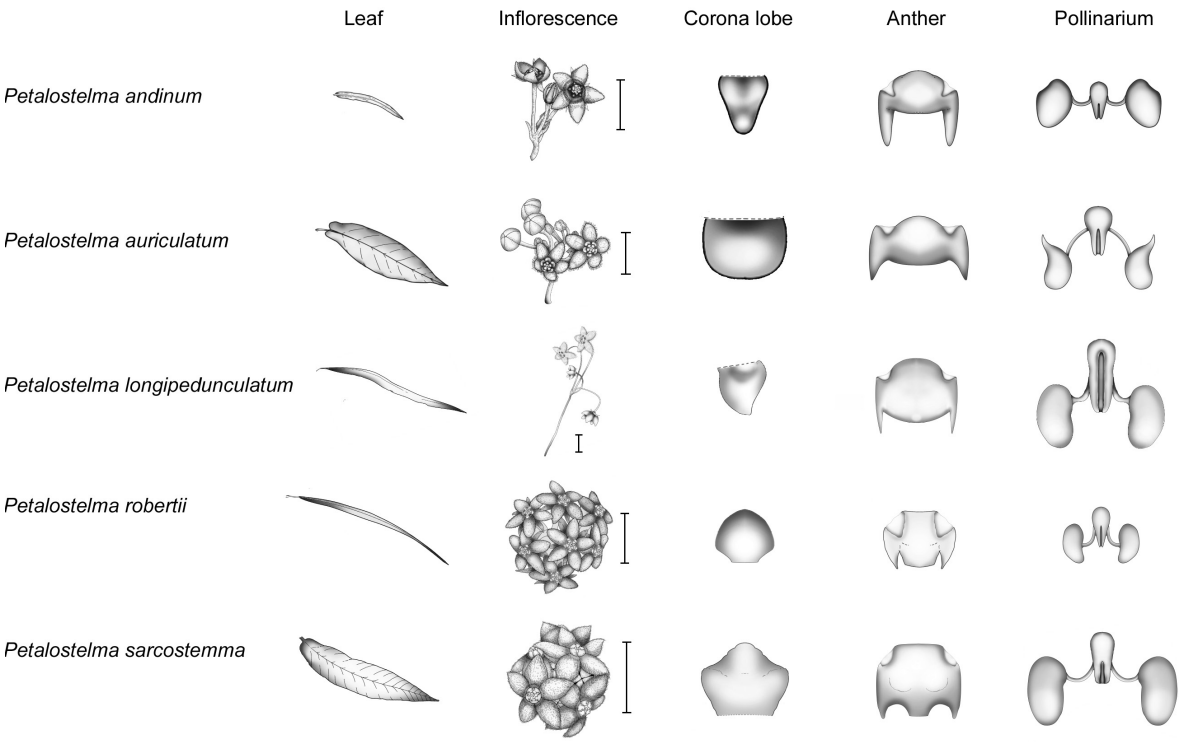


Fig. 4. Main diagnostic features distinguishing the species of *Petalostelma* without corolline corona; for direct comparison, floral structures are under the same scale (inflorescence scales = 4 mm).

Conservation status — *Petalostelma auriculatum* is known from only two specimens from the same locality (approximately 0.5 km from one another), corresponding to an area of occupancy and occurrence smaller than 10 km² (considering a 3 × 3 km cell). Despite the narrow distribution, the species inhabits the Madidi National Park, in NW Bolivia, one of the largest protected areas in this country, comprising a reserve of 1 271 500 ha and an Integrated Natural Area Management (IMNA) of 624 250 ha (Salinas & Wallace 2012). According to the B2a crite-

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ria of the IUCN (2001), *P. auriculatum* partially fits the Critically Endangered category (CR) and, according to the D2 criterion (≤ 5 locations), the Vulnerable category; however, it does not meet any other condition to justify these classification and therefore should be considered as Near Threatened (NT).

Etymology — The specific epithet refers to the leaves, which are basally auriculate.

Remarks — *Petalostelma auriculatum* is morphologically similar to *P. longipedunculatum* because of the patent and flattened corona lobes, but is easily distinguished from it by the basally (sub) auriculate, elliptic leaves (vs basally acute, lanceolate leaves in *P. longipedunculatum*), shorter peduncles (≤ 0.5 cm vs ≥ 0.9 cm long) and, most significantly, the apically acuminate pollinia (vs apically rounded) (Fig. 4). The shape of the pollinia in *P. auriculatum* is unique, unknown from any other species in the *Metastelmatinae*.

Additional specimens examined — Bolivia: La Paz: Franz Tamayo, Parque Nacional Madidi, a 450 m del campamento em dirección SE, 14°28'06.5"S, 68°32'19.7"W [-68.538806, -14.468472], 1011 m a.s.l., fl., 19 Feb 2003, *L. Cayola & al. 13* (LPB).

Petalostelma longipedunculatum A. P. B. Santos, **sp. nov.** – Fig. 5A–E.
Holotype: Brazil, Mato Grosso do Sul, Aquidauana, Piraputanga, fl. & fr., 18 Feb 1970, *G. Hatschbach 23787* (COR!; isotypes: CGMS!, ESA!, MBM!, UB!, SPF!; W!).

Diagnosis — *Petalostelma longipedunculatum* differs from the morphologically most similar species, *P. andinum*, by the longer peduncles (≥ 0.9 cm vs ≤ 0.4 cm long), the gynostegial corona with ovate to rounded and flattened to slightly concave lobes (vs conical and massive coronal lobes), and larger corpusculum (≥ 0.1 mm vs ≤ 0.07 mm long) and pollinia (≥ 0.13 mm vs ≤ 0.09 mm long).

Description — *Plants* climbing; *branches* glabrous when young, sparsely pubescent, with lenticels and detaching rhytidome when old; *latex* white. *Leaves* opposite; *lamina* lanceolate, 3–6.5 × 0.2–0.9 cm, base cuneate to attenuate, apex acute, margins revolute, papyraceous, both sides glabrous, colleters falcate, borne adaxially at base; *petiole* 3–11 mm long. *Inflorescences* umbelliform, lax, 2–6 flowers per cyme; *peduncle* 0.9–3 cm long, glabrous; *bracts* c. 0.9 × 0.3 mm; *bracteoles* 0.5–0.8 × 0.15–0.22 mm. *Pedicel* 3–12 mm long, glabrous. *Sepals* ovate, 0.7–1.2 × 0.32–0.5 mm, glabrous, apex acute. *Corolla* rotate, purple, adaxially villous, abaxially glabrous; *tube* c. 0.4 mm long; *lobes* ovate, 1.5–2.2 × 0.9–1.2 mm, apex rounded. *Gynostegial corona* rotate; *lobes* patent, ovate to rounded, flattened to slightly concave, adaxially with a basal protuberance, 0.2–0.4 × 0.25–0.45 mm, apex obtuse to rounded. *Corolline corona* absent. *Gynostegium* subsessile, c. 0.5 mm long; *anthers* 0.32–0.4 × 0.25–0.3 mm; *corpusculum* obovate, 0.1–0.15 × 0.05–0.07 mm; *caudicles* 0.05–0.06 mm long; *pollinia* elliptic to reniform, 0.13–0.15 × 0.06–0.08 mm; *stylehead* discoid, c. 0.4 mm in diam. *Follicles* one per flower, brown, fusiform, 3.5–6.2 cm long, smooth, pendant. *Seeds* not seen.

Phenology — The species was found with flowers from February to August and with fruits in February.

Distribution and ecology — *Petalostelma longipedunculatum* is distributed in CW Brazil and SC Bolivia (Fig. 3). In Brazil, it is restricted to the state of Mato Grosso do Sul, occurring in savannas of the E border of Pantanal domain, on sandstone walls of the Maracaju Mountain Range, in Aquidauana, and in the Pimenteira Mountain, in Rio Verde de Mato Grosso. In Bolivia, it is restricted to the province of Oropeza, Chuquisaca, climbing on plants of dry bushland of the Inter-Andean valley of Cachimayo, at 2600 m a.s.l.

Conservation status — The new species is known only from three locations (none with geographic coordinates), in regions still poorly explored floristically. Its extent of occurrence (EOO) is > 20 000 km^2 (c. 80 000 km^2) and its area of occupancy (AOO) < 10 km² (c. 6 km²) (calculated with the help of Geospatial Conservation Assessment Tool, with 1 km² cells – GeoCAT: http://geocat.kew.org). Based on these data, *Petalostelma longipedunculatum* may fit the Critically Endangered (CR) or Vulnerable (VU) categories of IUCN (2001), according to the B2a and D2 criteria. However, the inaccurate information of locations prevents reliable inferences about other conditions, such as possible threats and population decline. Therefore, this species needs more data and is classified here as Data Deficient (DD).

Etymology — The specific epithet emphasizes the length of peduncles, which are the longest in *Petalostelma*.

Remarks — *Petalostelma longipedunculatum* can be easily recognized by the peduncles, the longest in the genus (≥ 0.9 cm long). With small, star-shaped, purplish and villous flowers, it is similar to *P. andinum* and *P. robertii*, but can be readily distinguished from *P. andinum* by the corona with ovate to rounded and flattened to concave lobes (vs conical and massive lobes) and from *P. robertii* by the corona patent with flattened to slightly concave lobes (vs lobes erect with recurvate apex) (Fig. 4).

Additional specimens examined — Bolivia: Chuquisaca: Oropeza, in a valley NE of Cachimayo, fl., 13 Apr 1997, *J. R. I. Wood 12012* (LPB). Brazil: Mato Grosso do Sul: Aquidauana, Serra de Maracaju, fl., Aug 1970, *G. Hatschbach & O. Guimarães 24576* (HUEFS,

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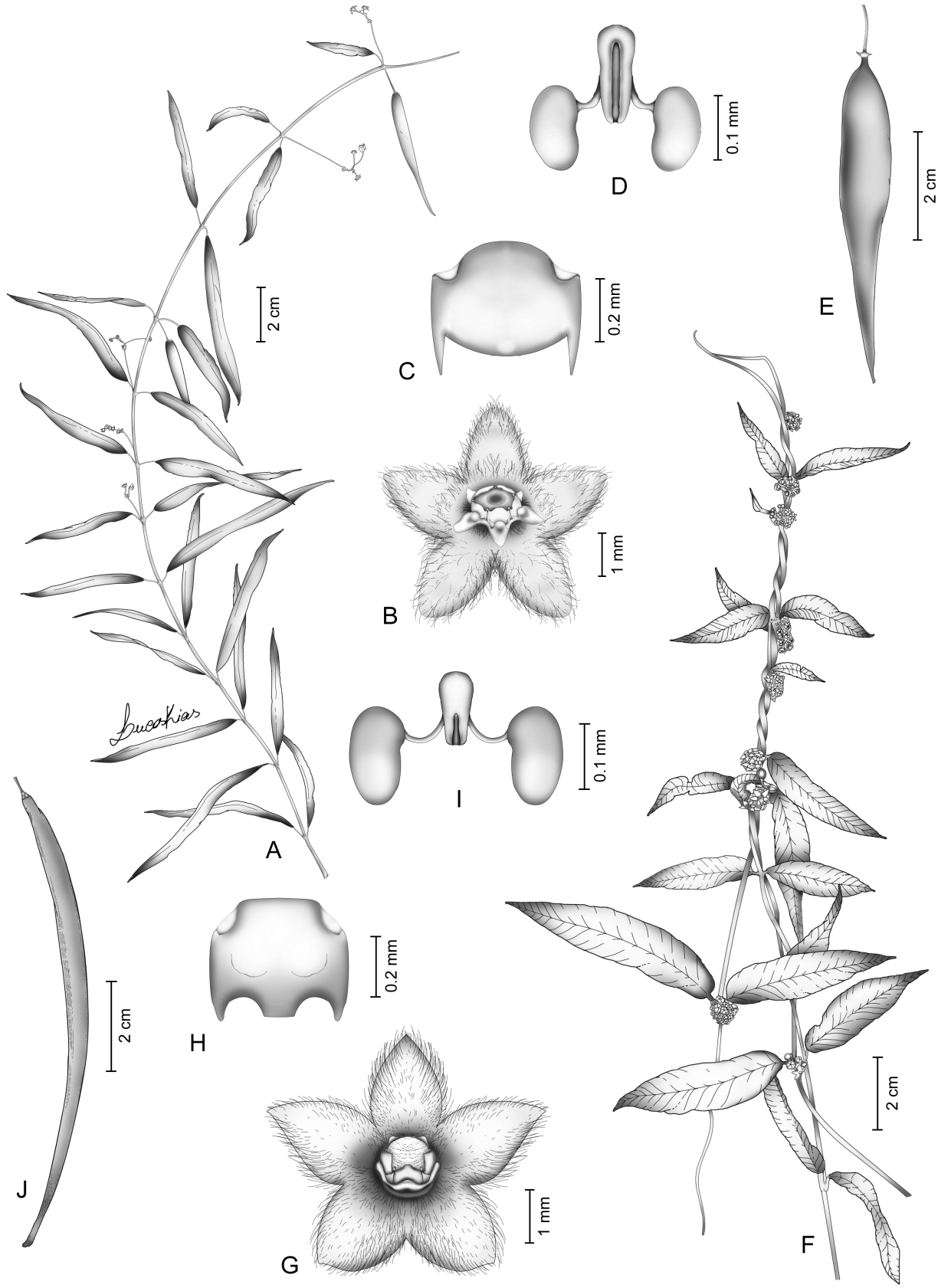


Fig. 5. A–E: *Petalostelma longipedunculatum*; A: branch with flowers; B: flower; C: anther; D: pollinarium; E: follicle. – F–J: *Petalostelma sarcostemma*; F: branch with flowers; G: flower; H: anther; I: pollinarium; J: follicle. – Drawn from: *P. longipedunculatum*: A from *Hatschbach & al. 35969* (MBM), B, E from *Hatschbach 23787* (COR), C, D from *Hatschbach & O. Guimarães 24576* (HUEFS); *P. sarcostemma*: F–J from *Pessoa & al. 10* (COR). – All drawn by Lucas Menezes Silva.

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MBM); ibid., fl., 4 Jun 1994, *G. Hatschbach & J. M. Silva 60725* (HUEFS, MBM); Rio Verde de Mato Grosso, borda do Chapadão, fl., 20 May 1973, *G. Hatschbach 32095* (MBM); ibid., Serra da Pimenteira, fl. & fr., 8 Feb 1975, *G. Hatschbach & al. 35969* (MBM).

Petalostelmma sarcostemma (Lillo) Liede & Meve in Novon 11: 176. 2001 ≡ *Cynanchum sarcostemma* Lillo in Physis (Buenos Aires) 4: 424. 1919. – Lectotype (designated by Meyer 1944: 152): Argentina, Salta, Rosario de la Frontera, fl. & fr., 6 Jan 1905, *M. Lillo 3844* (LIL; isolectotypes: GH!, MO!). – Fig. 2B, 5F–J.

Description — *Plants* climbing; *branches* glabrous; *latex* white. *Leaves* opposite; *lamina* lanceolate to elliptic, 3–6.2 × 0.3–1.8 cm, base cuneate, apex acute or acuminate to cuspidate, margins revolute, papyraceous, both surfaces glabrous, colleters falcate, borne adaxially at base; *petiole* 2–5(–7) mm long. *Inflorescences* umbelliform, congested, (3)4–10 flowers per cyme; *peduncle* 0.07–0.18 cm long, glabrous; *bracts* 1.1–1.7 × 0.2–0.52 mm; *bracteoles* 0.7–1.1 × 0.17–0.2 mm. *Pedicel* 0.08–0.2 cm long, glabrous. *Sepals* lanceolate, 1.2–1.8 × 0.42–0.6 mm, apex acute, glabrous. *Corolla* rotate, dark purple, cream or greenish-yelllow to light green, adaxially villous, abaxially glabrous; *tube* c. 0.6 mm long; *lobes* ovate, 1.4–2 × 1–1.7 mm, apex acute to obtuse. *Gynostegial corona* cyathiform; *lobes* purple to greenish-yellow, depressed-ovate, erect, 0.25–0.55 × 0.45–0.65 mm, apex obtuse, reaching to c. ½ of gynostegium length; *Corolline corona* absent. *Gynostegium* subsessile, c. 0.6 mm long; *anthers* 0.3–0.4 × 0.4–0.5 mm; *corpusculum* obovate, 0.1–0.13 × 0.04–0.06 mm; *caudicles* 0.04–0.07 mm long; *pollinia* elliptic-oblong to reniform, 0.13–0.16 × 0.07–0.09 mm; *style-head* discoid, c. 0.5 mm in diam. *Follicles* one per flower, brown, linear-fusiform, 7–10.5 × 0.3–0.4 cm, smooth, pendant. *Seeds* oblong, c. 12 × 2 mm, smooth, marginally with wing c. 0.4 mm wide, entire (seeds described and depicted in Meyer 1944).

Phenology — The species has been found with flowers throughout the year, but with fruits only in November.

Distribution and ecology — *Petalostelma sarcostemma* is known from N Argentina (Tucumán, Meyer 1977). This species was recently reported also from Bolivia (Fuentes & Morales 2014), but probably based on a misidentification of *Choque & al. 31* (LPB), because the specimens of *Petalostelma* from Madidi National Park, in La Paz department examined by us so far (*Cayola & al. 13* in LPB and *Araujo & al. 433* in LPB and USZ) belong to *P. auriculatum* (for morphological differences between the two species, see Fig. 4). However, we can confirm the occurrence of *P. sarcostemma* in Bolivia, though in Santa Cruz department, here. We also report its occurrence in Brazil for the first time, from deciduous seasonal forests at the W border of the Pantanal domain, in non-flooded limestone formations of the state of Mato Grosso do Sul (Fig. 3).

Remarks — *Petalostelma sarcostemma* was originally described in *Cynanchum*. Liede and Meve (2001) correctly transferred it to *Petalostelma*, but illustrated *P. andinum*, formally described above, rather than *P. sarcostemma* (for morphological differences between the two species, see Fig. 4). *Petalostelma sarcostemma* is also illustrated with a full plate in Meyer (1944: t. 71).

Petalostelma sarcostemma is morphologically most similar to *P. robertii* because of the short peduncles and pedicels and erect, cyathiform corona, with laminar lobes, but differs from it by the corona lobes (straight vs recurvate in *P. robertii*) and larger pollinaria (corpusculum > 0.09 mm vs < 0.09 mm long and pollinia > 0.12 mm vs < 0.12 mm long) (Fig 4). The specimens from the Pantanal of Mato Grosso do Sul (Brazil) and the province of Germán Busch (Bolivia) differ from those from Argentina and the province of Vallegrande (Bolivia): their inflorescences are more congested and usually with a shorter peduncle and shorter pedicels (≤ 0.2 mm vs ≤ 4 mm); the flowers are cream, greenish-yellow or light green (vs dark purple).

Additional specimens examined — Bolivia: Santa Cruz: Germán Busch, Puerto Quijarro, 6 km hacia Puerto Suarez (de Arroyo Concepción), 19°00'S, 57°43'W [-57.716667, -19.000000], fl., 9 Sep 2000, *S. G. Beck 27529* (LPB, K n.v., MO n.v.); Vallegrande, Camino que va de Guadalupe a Paraimiri, 18°38'18"S, 63°58'57"W [-63.982500, -18.638333], fl., 28 Mar 2013, *J. R. I. Wood & al. 27667* (LPB); ibid., Valle de Paraimiri em el camino vecinal, al norte del rio, 08°38'10"S, 63°58'34"W [-63.976111, -8.636111], fl., 4 Mar 2005, *J. R. I. Wood & al. 21754* (LPB). — Brazil: Mato Grosso do Sul: Corumbá, morro da região do Castelo, 18°35'27.6"S, 57°32'39.4"W [-57.544278, -18.591000], fl., 17 Oct 2002, *I. M. Bortolotto & al. 1106* (COR); Ladário, APA Baia Negra, próximo a Codrasa, fl., 6 Jul 2015, *A. Pott 16777* (COR); ibid., 19°01'28.4"S, 57°34'19.0"W [-57.571944, -19.024556], fl. & fr., 30 Nov 2016, *K. A. M. Pessoa & al. 10* (COR, HUEFS).

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