Heringeriana
Jardim Botânico de Brasília
https://revistas.jardimbotanico.df.gov.br/index.php/heringeriana
ISSN 2359-165X

Original Article

Reinstating *Distimake potentilloides* (Convolvulaceae): taxonomy, lectotypification, and distribution in northern Amazon

Fernanda Satori Petrongari[1,2] Rosângela Simão-Bianchini[1] Ana Rita Giraldes Simões[3,4]

[1]*Núcleo de Conservação da Biodiversidade, Instituto de Pesquisas Ambientais, Avenida Miguel Estefno 3687, São Paulo, 04301-902, São Paulo, Brazil*
[2]*Programa de Pós-graduação em Biodiversidade Vegetal e Meio Ambiente, Instituto de Pesquisas Ambientais, Avenida Miguel Estefno, 3687, São Paulo, 04301-902, São Paulo, Brazil*
[3]*Africa & Madagascar Department, Missouri Botanical Garden, 4344 Shaw Boulevard, St Louis, 63110 MO, USA*
[4]*Institut de Systématique, Évolution, Biodiversité (ISYEB), Muséum National d'Histoire Naturelle, CNRS, Sorbonne Université, EPHEPSL, Université des Antilles, CP 39, 57 Rue Cuvier, F-75005, Paris, France*

*Corresponding author: fe.sp.bio@gmail.com

Received 07 June 2026 | **Accepted** 12 August 2026 | **Published** 12 September 2026

How to cite: Petrongari, F. S., Simão-Bianchini, R. & Simões, A. R. G. (2026). Reinstating *Distimake potentilloides* (Convolvulaceae): taxonomy, lectotypification, and distribution in northern Amazon. Heringeriana, 20(1b), e918115. doi.org/10.70782/heringeriana.v20i1b.918115

Handling Editor: Dr. André Luiz da Costa Moreira

Abstract: A comprehensive analysis of herbarium specimens of *Distimake* from Central and South America revealed the presence of more than one morphological type among specimens previously identified as *Distimake quinquefolius*. Further investigation, including the examination of historical names and type specimens treated as synonyms of *D. quinquefolius*, demonstrated the existence of a distinct but previously overlooked species. Here, we re-establish *Distimake potentilloides* as a separate species, with a relatively restricted distribution in the northern Amazon region. We provide an updated taxonomic description, lectotypification, discuss the diagnostic morphological characters that distinguish it from allied species, particularly *D. cissoides* and *D. quinquefolius*, and present a preliminary conservation assessment. In addition, we provide a key to all *Distimake* species occurring in the Guiana Shield.

Keywords: conservation, herbarium, morphology, nomenclature.

Resumo: (Reestabelecendo *Distimake potentilloides* (Convolvulaceae): taxonomia, lectotipificação e distribuição no Norte da Amazônia). Uma análise abrangente de espécimes de herbário de *Distimake* da América Central e do Sul revelou a presença de mais de um tipo morfológico entre os espécimes anteriormente identificados como *Distimake quinquefolius*. Investigações adicionais, incluindo a análise de nomes históricos e espécimes-tipo tratados como sinônimos de *D. quinquefolius*, demonstraram a existência de uma espécie distinta, mas anteriormente ignorada. Aqui, restabelecemos *Distimake potentilloides* como uma espécie separada, com distribuição relativamente restrita na região norte da Amazônia. Apresentamos uma descrição taxonômica atualizada, lectotipificações, discutimos os caracteres morfológicos diagnósticos que a distinguem de espécies afins, particularmente *D. cissoides* e *D. quinquefolius*, e apresentamos uma avaliação preliminar de conservação. Além disso, fornecemos uma chave para todas as espécies de *Distimake* ocorrentes no Planalto das Guianas.

Palavras-chave: conservação, herbário, morfologia, nomenclatura.

Introduction

Recent advances in the classification of tribe "Merremieae" (Convolvulaceae) have resulted in extensive generic rearrangements within *Merremia* Dennst. ex Endl. and related taxa. Among the segregated genera, *Distimake* Raf. has emerged as the largest in the Americas, encompassing most species formerly included in *Merremia sensu lato*. Additionally, three species remained in *Merremia* (two as *incertae sedis* and *M. hederacea* Hallier f.),

and a small number of taxa now assigned to other genera: *Merremia umbellata* (L.) Hallier f. (= *Camonea umbellata* (L.) A.R.Simões & Staples) and *Merremia tridentata* (L.) Hallier f. (= *Xenostegia tridentata* (L.) D.F.Austin & Staples) (Simões & Staples, 2017).

The circumscription of *Distimake* is supported by molecular, morphological, palynological, and biogeographical evidence. Key diagnostic characters distinguishing the genus from *Merremia sensu stricto* include the presence of deeply lobed or compound leaves (versus entire or slightly lobed leaves in *Merremia*), as well as lanceolate sepals closely appressed to the corolla tube, in contrast to the ovate-elliptic, moderately convex sepals of *Merremia s.s.* (Simões et al., 2015; Simões & Staples, 2017).

The genus comprises 53 species (Petrongari et al., 2026) and reaches its greatest diversity in tropical America (27 species), followed by tropical Africa (15 species), with a smaller number of species occurring in Australia and India (six species), and five species widespread throughout the tropics (Petrongari et al., 2026). Within the Neotropics, the center of diversity of *Distimake*, two main morphological groups can be recognized: (1) suffruticose climbers, with golden-yellow corollas and predominantly deeply lobed leaves, largely distributed in Mexico and Central America; and (2) herbaceous vines, with white corollas and predominantly compound leaves, showing greater diversity and endemism in South America.

Our taxonomic studies focusing on the group 2 of *Distimake*, based on a comprehensive assessment of morphological and geographical variation, led to the recognition of a distinct morphological pattern not attributable to any currently accepted species. Nomenclatural investigation identified two names associated with these specimens *Merremia potentilloides* (Meisn.) Hallier f. and *Merremia parvifolia* Pittier, both previously treated as synonyms of *Distimake cissoides* (Lam.) A.R. Simões & Staples and *D. quinquefolius* (L.) A.R. Simões & Staples.

In this study, we re-establish this taxon as a distinct species within *Distimake*. We provide detailed taxonomic treatment, clarify its nomenclatural history, identify diagnostic morphological characters that distinguish it from allied species and highlight its restricted distribution and frail conservation status.

Materials and Methods

Morphological observations were based on specimens examined through visits to the herbaria BM, BR, G, K, P, RB, SP, and UEC (herbarium acronyms follow *Index Herbariorum*, 2026), as well as on online databases of virtual collections and photography from the herbaria F, INPA, NY, MG, MO, VEN, and US. Morphological terminology follows Beentje (2016) and Radford et al. (1974). Nomenclatural, collector, and author information was primarily obtained from Taxonomic Literature II (Stafleu & Cowan, 1976)-1988.

Distribution data was compiled from specimen label information, and when geographic coordinates were unavailable, approximate coordinates were assigned based on specimen label information. The species distribution map was generated using QGIS version 4.2.0 (QGIS Development Team, 2026).

A preliminary conservation status was assessed following the IUCN Red List Categories and Criteria (IUCN Standards and Petitions Committee, 2024), using the Geospatial Conservation Assessment Tool (GeoCAT) to estimate the Extent of Occurrence (EOO) and the Area of Occupancy (AOO), based on a 2 km grid cell size (Bachman et al., 2011).

Results and Discussion

Taxonomic and nomenclatural history

Ipomoea potentilloides Meisn. was first described by Meisner in *Flora Brasiliensis* (1869), based on a single Richard Schomburgk collection from Southern Guyana, more specifically from the Pirara region, an area that borders the state of Roraima in Brazil (Rivière, 2006). This region is, until today, under territorial dispute between the Brazilian and Guyanan states, due to the intricate history of border establishment which is, curiously, tied up with the history of the type specimen's collection of this species. The Schomburgk brothers, Robert and Richard, were German naturalists who set out on a mission to document the biodiversity of British Guyana, taking part in the Boundary Commission. After a first trip in 1841, that led them to explore the North-Western border of the country with Venezuela, they took a second trip to explore the Western border with Brazil from 1842 to 1843. Differently from the first trip, this second was accompanied by a military detachment, who was in charge of retaking the Pirara region from the Brazilians. Among a series of mishaps, the Brazilian commission ended up retreating without resistance, and the Boundary and Military commissions settled in this region. Between March and April, Schomburgk set out from Pirara on an expedition for exploration along the river Takutu, around that time ("m. April") he had collected the specimen that Meisner would later name *Ipomoea potentilloides*. During this trip, Schomburgk would have, inadvertently, marked the area with red flags, which was later interpreted by the Brazilians as an intentional action by the British to claim the region. This has led to a geopolitical wrangle that lasted until 1904 (over 50 years) until today, known as the "red line" dispute (van Dam, 2002; Rivière, 2006; Alexander, 2011).

Meisner (1869) described this species as close to *Ipomoea cissoides* (Lam.) Griseb. (syn. of *Distimake cissoides*), affirming that it could be a variety of it, but noted that the calyx was very distinct and described it as a new species. Meisner analyzed the type specimen in Berlin Herbarium, as it has his handwriting identifying as "*Ipomoea potentilloides* Meißn. n.sp." (Fig. 1), and the collection information was published in *Flora Brasiliensis* in its label "april 1843, Rich. Schomburgk n. 546". Most of the collections made by Richard were housed in B herbarium (in this case was part of Kunth herbarium). Meisner was able to get a duplicate of this type specimen to his personal collection, now housed in NY herbarium (Fig. 2).

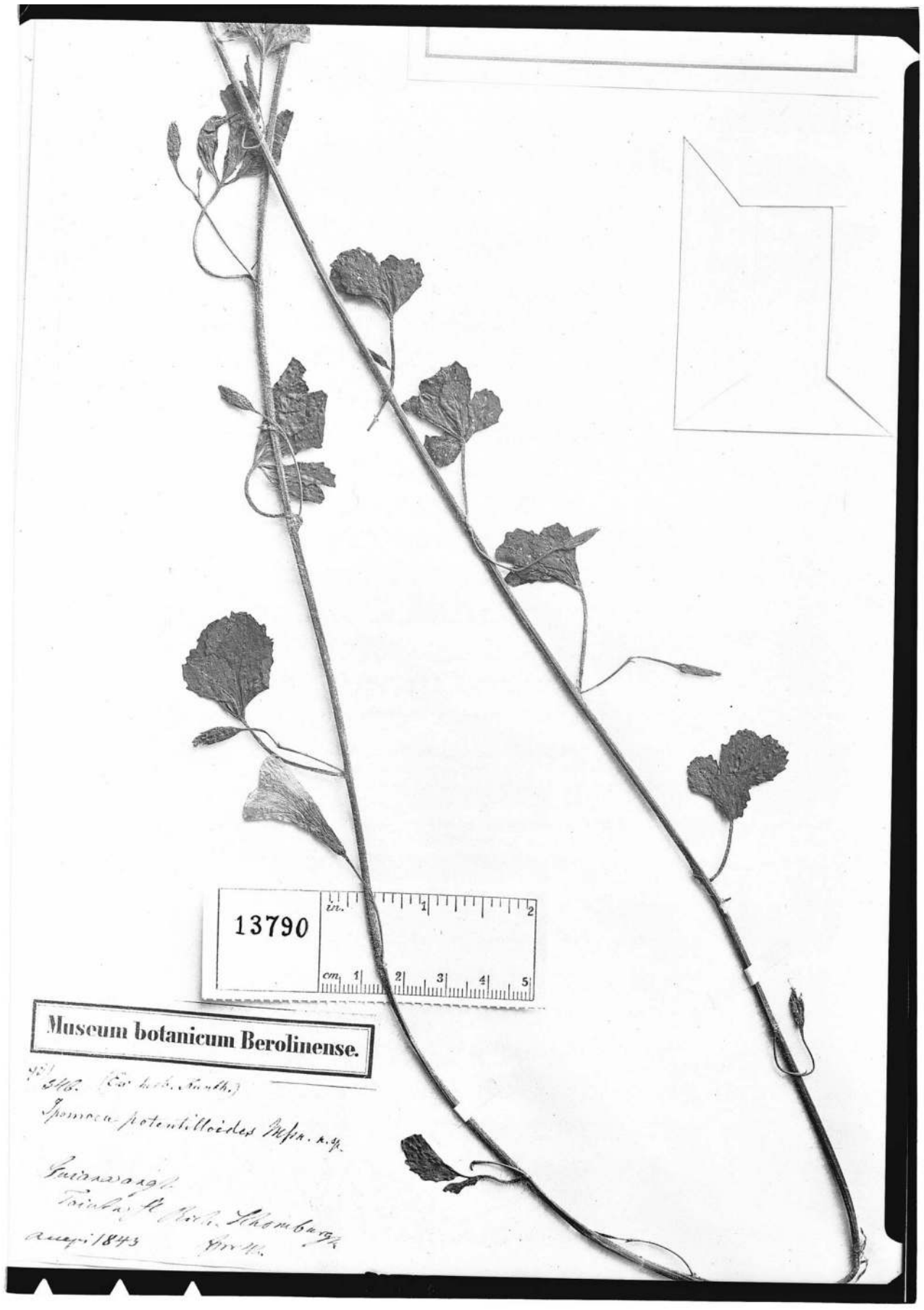


Figure 1: Photography by Macbride of the Holotype of *Ipomoea potentilloides* Meisn. (Richard Schomburgk 546 B†, Field Museum of Natural History - Botany Department © CC BY-NC - Field Museum photo negatives collection).



Figure 2: Lectotype of *Ipomoea potentilloides* Meisn. (Richard Schomburgk 546, NY [NY00319213], ex-Isotype).

Hallier f. (1893) in the systematics studies within the family Convolvulaceae, circumscribed the genus *Merremia* and combined 33 species, especially *Ipomoea* species, into the genus. Among twiner species with lobed or compound digitate leaves he recognizes *M. quinquefolia* (L.) Hallier f., *M. cissoides* (Lam.) Hallier f. and *M. potentilloides* as distinct species, without further comments. Hallier stated in the introduction of his work that Berlin was one of the herbaria to which he had access only near the end of his work. Nevertheless, there is no Hallier identification label in the type specimen photography taken by Macbride in B (Fig. 1), but it was archived under *Merremia potentilloides* in Field Museum database, and there are other photographed Berlin specimens with Hallier identification label (e.g. Negative 13789, identified as *Merremia ericoides* (Meisn.) Hallier f. by Hallier on 5 January 1893), so it was likely that he examined the type specimen in Berlin, took notes but did not made an identification label for it.

O'Donell (1941) in his taxonomic revision of *Merremia* for the Americas, synonymized *Ipomoea potentilloides* and *M. potentilloides* under *M. cissoides*. He did not cite the type specimen (Schomburgk 546 (B, NY)) as an examined specimen in this work, though there is a label with his determination on the type sheet on NY, dated from 1940, as *Merremia cissoides* (Fig. 2). Therefore, O'Donell seemed to have examined the type of *I. potentilloides* but for some reason did not cite it in his work. According to O'Donell (1941), *Merremia quinquefolia* occurrs in South America in Colombia, Venezuela, Ecuador and Peru.

In 1943, Pittier published a new species for Southern Venezuela which he named *Merremia parvifolia*, although creating confusion with the epithet – the name "*Merremia minutifolia*" is used on the type specimen label (Fig. 3), and appears in the identification key for species of his taxonomic work. However, the name "*Merremia parvifolia*" is the one used in the description's header. Pittier suggests morphological proximity of his new species with *M. cissoides* and *M. quinquefolia*, for the presence of glandular indumenta, but sets it apart from both species for the smaller-sized leaves.

From then onwards, the taxonomical position of *Merremia potentilloides* and *M. parvifolia* has been unsettled, with authors taking different views about its identity, and O'Donell himself has changed his mind over time. While he considered *M. potentilloides* as a synonym of *M. cissoides* in his taxonomic treatment of the American Merremia (1941), we have found that, in 1953, he annotated the type specimen of *M. parvifolia* as *Merremia potentilloides* (VEN12244, Fig. 3) – this seems to have never been published, since he passed away the following year, in 1954.

Austin & Cavalcante (1982), in their study of Amazonian Convolvulaceae, recognized the occurrence of *Merremia quinquefolia* in Brazil, in Amazonas and Roraima states and included *M. parvifolia* as its synonym. They did not cite *M. potentilloides* in this work.

McDonald (1993), in the Convolvulaceae treatment for Flora de Vera Cruz (México) lists *Ipomoea potentilloides* and *Merremia potentilloides* as synonyms of *Merremia quinquefolia*, as his work included a nomenclatural revision, and he was able to analyze the type collection of *I. potentilloides* from Meisner collection in NY. There is no inclusion of *M. parvifolia* in his treatment.

Austin (2007), in a Checklist of the Plants for the Guiana Shield, lists both *Merremia cissoides* and *M. quinquefolia* for the area, although specimens were not cited in this work; also, *Merremia parviflora* is listed as a synonym to *M. quinquefolia*, and there is no mention to *M. potentilloides*.

Ferrer-Pereira et al. (2010) recognized and described both *Merremia cissoides* and *M. quinquefolia* on the taxonomic revision of the genus for Venezuela, and proposed *Merremia parviflora* as a new synonym of *M. cissoides* and not *M. quinquefolia*, due to the differences in the distribution of glandular trichomes between these two species, based on the analysis of the type specimen of *M. parviflora*; there is no mention to *M. potentilloides* in this work.

The name *Ipomoea potentilloides* returned to be mentioned in Brazilian works in 2015, listed as a synonym of *Merremia cissoides* in the List of Species of Flora of Brazil (Simão-Bianchini et al., 2015), mostly since it was mandatory to place all names published in *Flora Brasiliensis* (Meisner, 1869) in the list, without revising its identity. In this list, *M. quinquefolia* was listed for the North region in the states of Amazonas and Roraima.

As a result of the systematic work on the Tribe Merremieae, *Merremia cissoides* and *M. quinquefolia*, are placed in *Distimake* Raf. as *D. cissoides* and *D. quinquefolius* respectively (Simões & Staples, 2017), but without synonyms. In the World Checklist of Selected Plant Families (Staples, G. W., 2017) *Ipomoea potentilloides*, *M. potentilloides* and *M. parvifolia* appear listed as synonyms of *D. quinquefolius*.

In a present ongoing revisionary study of the genus *Distimake* for Americas, we come across material of all the Americas, especially from South America, including the analysis of the type specimens, and it has become clear to us that this taxon has been misconstrued and its taxonomic status, as a distinct species, should be re-established.



Figure 3: Type of *Merremia parvifolia* Pittier (Williams 12770 [12670] VEN [VEN 12244]).

Taxonomic Treatment

Distimake potentilloides (Meisn.) Petrongari, A.R. Simões & Simão-Bianchini *comb. nov.*

= *Ipomoea potentilloides* Meisn., Fl. Bras. [Martius] 7: 230 (1869). Type:—GUYANA. "ad. flum. Taiuta Guianae Anglicae" [on the river Takutu?, British Guyana], April 1842, *Richard Schomburgk 546* (lectotype NY image! [NY00319213], designated here; B† probably destroyed, [negative F 13790 image!]).

= *Merremia potentilloides* (Meisn.) Hallier f., Bot. Jahrb. Syst. 16: 552. (1893).

= *Merremia parvifolia* Pittier, Bol. Soc. Venez. Ci. Nat. 8: 143 (1943); syn. nov. Type:—VENEZUELA. Bolivar, Sabanas de La Paragua, 19 March 1940, alt. 70, *Williams 12670* (lectotype: VEN image! [VEN 12244], designated here; isolectotype: F image! [V0442840F]).

Climber herbaceous, stems twining or herbs creeping, around 1m long, indumentum densely glandular, pilose to hirsute, simple trichomes 1–2mm long whitish to yellowish; white latex present. *Leaves* digitate, 5-foliolate, petiole 0.6–2.8cm long, glandular, pilose to hirsute, leaflets sessile, elliptic to widely-elliptic or widely-rhombic, central leaflet 1.5–2.4 × 0.7–2.1cm, lateral and basal regularly smaller, lateral 1–2 × 0.5–1cm, base cuneate, margin irregularly serrate to sinuate, apex acute to acuminate, mucronate; green, abaxial opaque (Jardim 6013); dense glandular indumentum; major secondary venation craspedodromous, with the venation finishing with a mucro on the apex of the lobes. *Solitary flowers*, axillar, rarely a congested monochasial cyme 2–3 flowers; peduncle 0.8–2cm long, glandular and pilose to hirsute; bracts minute, triangular, 1mm long, glandular and pilose. *Flowers* pedicels 0.8–1.2cm long, glandular and pilose; sepals subequal or outer slightly shorter, lanceolate, 6–13 × 2–4mm, margin membranaceous, apex acuminate, mucronate, outer glandular sparsely pilose to glabrous inner glandular in apex or glabrous; corolla campanulate-infundibuliform, 1.5–3.2 cm long, white, glabrous; anthers twisting at dehiscence, cream, style 1, entire, glabrous; stigma 2, globose. *Capsules*, chartaceous, 4-valvar, globose, apex rounded, ca. 1 × 1 cm, sepals non-accrescent, cupping the fruit. *Seeds*, 1-4, black, puberulent.

Specimens Examined–BRAZIL. Amazonas: Manaus, Base aérea de Manaus, km 3 da estrada do paredão, 3 Aug. 1955, *Coelho 4165* (INPA 1553 image!, MG021822 image!, RB00264437!), Arredores do Aeroporto Velho, 12 Dec. 1976, *Cordeiro 1331* (MG055517 image!, MO1176384 image!, NY2360672 image! RB00264426!), near airfield Manaus, 20 May 1971, *Maas & Maas 315* (INPA 34865 image!, K00945035!) *Kulhmann s.n. 1913* (RB00264612!); Roraima: Boa Vista, Lago Redondo, 29 June 1994, *Abey 173* (INPA 174773 image!), campo em torno da cidade, 31 Oct. 1951, *Black 14006* (R 106337!, NY1922968 image!), Fazenda Alagadiço, margem esquerda da trilha que liga a sede da fazenda ao rio Uraricoera, 3°24'24"N, 60°37'20"W, 5 Jan. 2006, *Melo & Oliveira 12* (INPA0216781 image!), Lago Redondo, 26 June 1994, *Miranda 246* (INPA 187102 image!), Estrada de Caracaraí, planta ruderal dos terrenos abandonados. 14 Nov. 1958, *Rodrigues & Aubreville 664* (INPA image!, RB00264531!) 5 Nov. 1954, *Rodrigues 7* (MG021829 image!, RB00264604!), beira do rio, 20 Feb. 1964, *Silva 2*, (MG030601 image!); Caracaraí, Parque Nacional Viruá, Rio Baraúana, 26 July 2010, *Delgado Junior et al. 131* (INPA0235197 image!), 17km de Caracaraí direção Manaus, BR-174-RR, Oct. 1983, *Hutchison 321*, (UEC080147!); Mucajaí, Margem do Rio Mucajaí, 02°30'N, 60°55'W, 6 Aug. 1986, *Sette Silva 716* (INPA0195844 image!), Vicinal 1/ Tamandaré, ca. 3 - 5 km da entrada após a ponte sobre o Rio Mucajaí. Entrada para o Aventura Park, ca. 500 m da entrada, 2°30'38"N, 60°52'37" W, 76m, 28 May 2011, *Jardim et al. 6013* (HUEFS000126822 image!, UFRN00012360 image!), Margem do Rio Branco, *Anon. s.n.* (R 40496!), T. F. De Roraima, margem da estrada Boa Vista Caracaraí, 15 Feb. 1977, *Rosa & Cordeiro 1481* (INPA 79506 image!, MG053751 image!, NY2360668 image!, RB00264411!).

GUYANA. Upper Takutu-Upper Essequibo: Rupununi Northern Savanna, Granite Hill, 1 mi. S of Emprensa, 14 Sept. 1963, *Goodland & Persaud 723* (US693555 image!) Apr. 1839, *Robert Schomburgk 736* (BM! G-DC G00134766!, US693552 image!), river Taiutu [Takutu?], Apr. 1842, *Richard Schomburgk 546* (NY image!).

VENEZUELA. Bolívar: Ciudad Bolívar, 21 Apr.1940, *Williams 12862* (US760142 image!), Angostura, Raúl Leoni, La Paragua, Mar. 2001, 6°50'30"N 63°20'06"W, 280m, *Fernández & Rondón 17435* (US905439 image!, MO5956462 image!), La Paragua, Sabana de la Paragua, 19 Mar. 1940, alt. 70, *Williams 12670* (F image! [V0442840F] VEN image! [VEN 12244]), Alredores del caserio Camurica, cerca de Moitaco, 29 Dec. 1976, *Trujillo 14315* (F image! [V0442839F]).

Phenology–Flowering collections are recorded throughout the year. Fruits are collected in February, July, November, and December.

Distribution and habitat– Northern Brazil, Guyana, Venezuela. Restricted to southern Venezuela, northern Brazil and the region of "Guayana Esequiba", thus falling within the geological and phytogeographical limits of the Guiana Shield (Fig. 4). In the Amazon biome, in the savanna, at the forest edge, in secondary forest; cultivated fields with low vegetation; abandoned cultivated land; riverbanks; "capoeira fechada"; in clay and sandy soil.

Preliminary Conservation Status–*Distimake potentilloides* is an herbaceous climber that grows in grassland formations in the Amazon biome, but it has potential to grow in altered environments. It is known from 25 collections from 1839 to 2011 and has an Extent of Occurrence (EOO) of 251.092km² which qualifies it as Least Concern (LC) under criterion B1 and Area of Occupancy (AOO) of 64km² (Fig. 4) qualifies it as Endangered (EN) under

criterion B2. Although the species meets subcriterion B2 in EN, this may reflect a low number of samples collected from climber plants in the species range; and there is no evidence of a continuing decline in EOO, AOO, or habitat quality, thus the species should be assessed as Least Concern (LC) following the IUCN criteria (IUCN 2024).

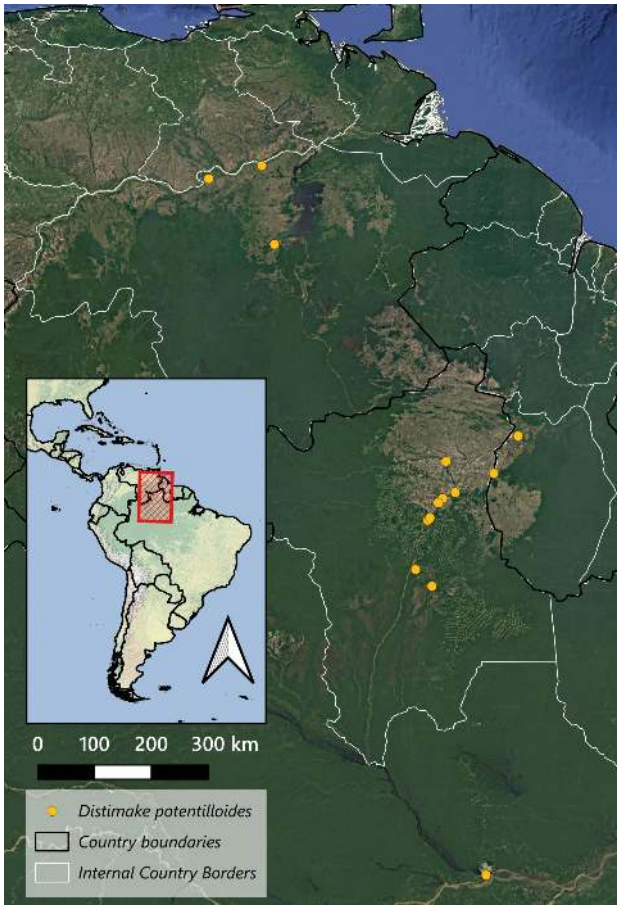


Figure 4: Distribution map of *D. potentilloides* Petrongari, A.R. Simões & Simão-Bianchini.

Nomenclatural notes–Here we designated as lectotype the isotype from NY herbarium (barcode NY00319213, Fig. 2), since the holotype was probably destroyed by the fire in B herbarium in 1943, following Art. 9.3 of Madrid Code (Turland et al., 2025). The holotype was recorded in a photograph by Macbride in 1929 (Fig. 1), and we can recognize Meisner's handwriting on the label identifying as "*Ipomoea potentilloides* Meißn. n. sp.". The lectotype is part of Meisner's herbarium and was donated to him by B herbarium ("Com. ex Hb. Reg. Berol.") in 1867. We did not find other duplicates of this collection. For *Merremia parvifolia* Pittier, we found a duplicate of the Type collection in F Herbarium, the dates between both collections differ by one day (19 March and 20 March), but all the other information, including Collector number (12670) and notes are identical. We selected as lectotype the specimen at VEN Herbarium, as it bears most of Pitter's notes, including the alternative name "minutifolia".

Taxonomic notes–The taxonomic history clearly shows that two allied taxa have obscured the identity of this species: *Distimake cissoides* and *D. quinquefolius*. These three taxa are often associated because they are herbaceous twining plants with compound, palmately five-foliolate leaves with non-entire margins (serrate or sinuate) and white flowers. However, they can be distinguished based on indumentum, inflorescence, and floral characters (Table 1; Figs. 5–6).

Distimake cissoides is a relatively widespread species across Central and South America, with some gaps in its distribution, it has been naturalized in western Africa and Southeast Asia. It is very common in Brazil and exhibits considerable morphological variation. In contrast, *D. quinquefolius* has a more restricted distribution, although common in Central America (including most of the Caribbean islands) and Mexico, only a few collections are known from northern Venezuela and the northern Andean countries (Colombia, Ecuador and Peru). In this context, *D. potentilloides* appears to be restricted to the Guiana Shield, even though there are some records outside this region; these are typically associated with urban environments, often near airports (e.g., Coelho 4165), and may result from human-mediated dispersal.

Table 1. Morphological differences between *Distimake cissoides*, *D. potentilloides* and *D. quinquefolius*.

	D.cissoides	*D. potentilloides*	*D. quinquefolius*
Stem indumentum	Always densely glandular, sometimes mixed, hirsute to pilose long simple hair	Always densely glandular, sometimes mixed, hirsute to pilose long simple hair	Hirsute to glabrous long simple hairs, non-glandular
Leaves indumentum	Glandular, can have some sparse simple trichomes over the nervures	Glandular, simple trichomes restricted to petiole	Glabrous
Inflorescence	Monochasium, 1–4(–7) flowers, congested, flowers small-medium	Solitary flowers, rarely monochasium 2–3 flowers, congested flowers small-medium	Dichasium, 3(–10) flowers, lax, flowers small
Bracts	Linear, more than 5mm long	Triangular, less than 1.5mm long	Triangular, less than 2mm long
Outer sepals	8–22 × 5–10 mm, ovate to trulate	6–12 × 2–4 mm, lanceolate	4–6 × 2–4 mm, ovate
Inner sepals	8–22 × 3–6 mm, lanceolate or elliptic	7–13 × 2–5 mm, lanceolate	6–8 × 2–5 mm, ovate
Sepals apex	caudate	acuminate	obtuse



Figure 5: Comparison of *Distimake potentilloides* (Meisn.) Petrongari, A.R. Simões & Simão-Bianchini. and allied taxa *in situ*, habit and lateral view, arrows pointing the bracts AB *D. potentilloides* CD *D. cissoides* (Lam.) A.R.Simões & Staples EF *D. quinquefolius* (L.) A.R.Simões & Staples. Photos: Nelson Wisnik (A–D, iNaturalist AB 63271034 CD 62798063 ©CC BY-NC 4.0), Lara Muñoz (E iNaturalist 62002673 ©CC BY-NC 4.0), Alexis López Hernández (F).

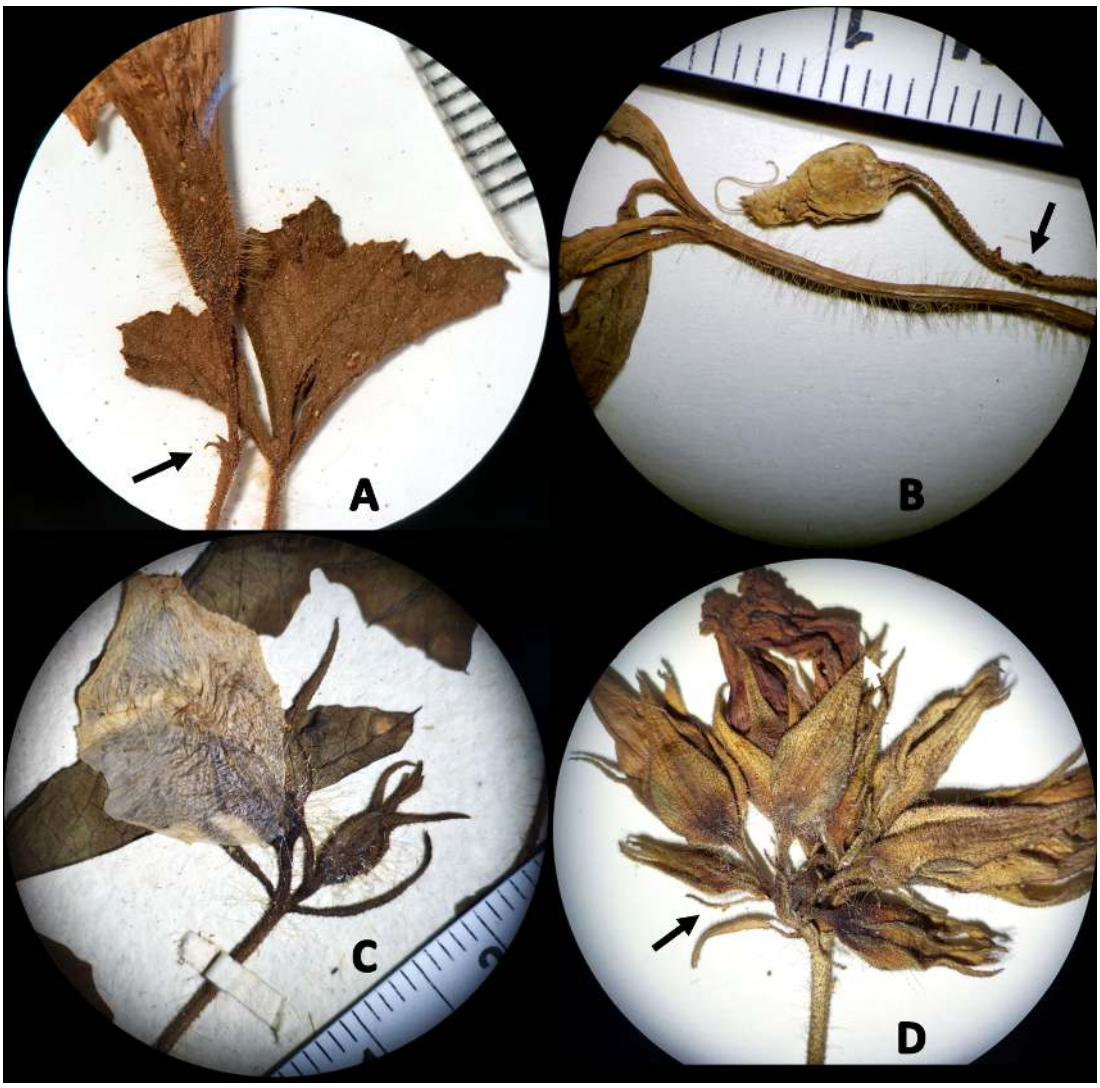


Figure 6: Comparison of *Distimake potentilloides* Petrongari, A.R. Simões & Simão-Bianchini and allied taxa in dried specimens over stereomicroscope magnification, arrows pointing to bracts. A *D. potentilloides* (Hutchison 321 [SP]) B *D. quinquefolius* (L.) A.R.Simões & Staples (Wrigth 448 [BR00001330745]) C and D *D. cissoides* (Lam.) A.R.Simões & Staples (C Peckolt 262 [BR000013307202] D Cremers 7992 [BR0000029906772]).

Based on our analysis of herbarium specimens and virtual databases (e.g. GBIF, speciesLink and Reflora), which allowed us to evaluate both the geographical and morphological ranges of these taxa, the recognition of *Distimake potentilloides* highlights the need to clarify the distribution of *D. quinquefolius* in South America. The latter has been widely reported in taxonomic and floristic works over the past century under *Merremia quinquefolia* (Austin & Cavalcante, 1982; Austin, 2007; Simão-Bianchini et al., 2015), but this interpretation requires reassessment.

In South America, *Distimake quinquefolius* occurs in Colombia, Ecuador, Peru and Venezuela, where it is restricted to the regions north of the Orinoco River (Ferrer-Pereira et al., 2010). Records from other countries, such as Brazil, Guyana and French Guiana, are here considered to represent misidentifications, mostly involving *D. cissoides* and *D. potentilloides*, although occasionally including other *Distimake* species with compound, five-foliolate leaves.

This confusion is partly due to the fact that many South American taxonomists have not examined authentic specimens or images of *D. quinquefolius*. Consequently, specimens that deviate from typical morphological patterns are often assigned to this species, given their reputation as a widespread weed, without verification against its diagnostic characters (Table 1). Furthermore, much of the available literature is itself based on misidentified South American material (e.g. Austin & Cavalcante 1982), perpetuating this misconception.

As a result, most Brazilian specimens identified as *Merremia quinquefolia* or *Distimake quinquefolius* correspond instead to *D. potentilloides*. Therefore, the occurrence of *D. quinquefolius* should be excluded from these countries. In Flora do Brasil (Petrongari & Simões, 2026), the description, taxonomic key and selected specimens for *D. quinquefolius* were based on its correct circumscription; thus, no Brazilian specimens are expected to correspond to this species, despite its continued erroneous listing for the states of Amazonas and Roraima.

The distinction between *Distimake potentilloides* and *Merremia cissoides*, as treated by Ferrer-Pereira et al.

(2010) has fewer consequences as both species co-occur in the Guiana Shield and share many morphological traits. If *D. potentilloides* were not recognized, it would most likely be subsumed under a broadly defined *D. cissoides sensu lato*. In Flora do Brasil (Petrongari & Simões, 2026), specimens of *D. potentilloides* would key out under *D. cissoides*, although some diagnostic characters (e.g. bract morphology) would not fully match.

Key to the species of *Distimake* from the Guiana Shield

1. Plant without leaves or with scale-like leaves, <2mm long ..... ***D. aturensis (Kunth) A.R.Simões & Staples***
1. Plant with conspicuous leaves
   2. Leaves simple, palmatilobed, 5-9 lobes ..... ***D. dissectus (Jacq.) A.R.Simões & Staples***
   2. Leaves compound, palmate, 3, 5, (7) leaflets
      3. Glandular trichomes absent
         4. Indumentum of stellate trichomes; leaflets linear to narrowly elliptic ..... ***D. digitatus (Spreng.) A.R.Simões & Staples***
         4. Indumentum of simple trichomes, or glabrous; leaflets elliptic, lanceolate, ovate, obovate, or oblanceolate
            5. Leaf with 3 leaflets ..... ***D. ternifoliolus (Pittier) A.R.Simões & Staples***
            5. Leaf with 5, (7) leaflets
               6. Plant entirely glabrous, rarely shortly pubescent ..... ***D. macrocalyx (Ruiz & Pav.) A.R.Simões & Staples***
               6. Plant with a hirsute indumentum of yellowish long simple trichomes ..... ***D. aegyptius (L.) A.R.Simões & Staples***
      3. Glandular trichomes present (restrict to peduncle and pedicels in *D. quinquefolius*)
         7. Bracts linear, longer than 5mm; sepals ovate to trullate; apex caudate ..... ***D. cissoides (Lam.) A.R.Simoes & Staples***
         7. Bracts triangular, shorter than 5mm; sepals narrowly elliptic, elliptic, lanceolate, or ovate; apex rounded to attenuate
            8. Stem with glandular trichomes; sepals subequal in length, rarely outer slightly shorter (outer 6–12mm × inner 7–12mm long) ..... ***D. potentilloides Petrongari, A.R. Simoes & Simao-Bianchini***
            8. Stem eglandular (glandular trichomes restrict to pedicels and peduncles); sepals unequal, outer distinctly shorter (outer 4–6mm × inner 6–8mm long) ..... ***D. quinquefolius (L.) A.R.Simoes & Staples***

Conclusion

The reinstatement of *Distimake potentilloides* increases the number of recognized species in *Distimake* to 54 and highlights the importance of revisiting historical literature and type specimens in taxonomic studies. Although morphologically distinct taxa are often described as new species, our analyses showed that this taxon corresponded to previously published names that had been overlooked in synonymy. By evaluating its nomenclatural history and applying the principle of priority, we re-established *D. potentilloides* and transferred it to *Distimake*.

Acknowledgements

We thank the curators and staff of all visited herbaria, and all the authors of the photos for using a copyright license which allows us to use it. All the photos are edited, with color and level adjustment and cut to better framing. We thank José Ramón Grande Allende for making available for us the Pittier (1943) work, and Mayara Pastore by providing photos from details of INPA specimens. RSB thanks Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq - 311738/2016-8) for her Productivity Grants; ARGS thanks Coordenação de Aperfeiçoamento de Pessoal de Nível Superior - Brasil (CAPES) for the post-doctoral grant (BJT 88881.067993/2014-01) and FSP makes a statement that this study was financed in part by the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior - Brasil (CAPES) - Finance Code 001.

References

Alexander, S. (2011). Making Sense of the Schomburgk Expeditions. *The Plant Press*, *14*(2), 9–11. https://naturalhistory.si.edu/sites/default/files/media/file/vol14no2.pdf

Austin, D. F. (2007). Convolvulaceae. In V. Funk, P. Berry, S. Alexander, T. Hollowell, & C. Kelloff (Eds.), *Checklist of the plants of the Guiana Shield (Venezuela: Amazonas, Bolivar, Delta Amacuro; Guyana, Surinam, French Guiana)* (pp. 271–275). National Museum of Natural History, Washington, DC. https://naturalhistory.si.edu/sites/default/files/media/file/2007funk-et-alguianas-flora-checklist_0.pdf

Austin, D. F., & Cavalcante, P. B. (1982). Convolvuláceas da Amazônia. *Publicações Avulsas do Museu Paraense Emílio Goeldi*, *36*, 5–134. https://repositorio.museu-goeldi.br/handle/mgoeldi/350

Bachman, S. P., Moat, J., Hill, A., de la Torre, J., & Scott, B. (2011). Supporting Red List threat assessments with GeoCAT: geospatial conservation assessment tool. *ZooKeys*, *150*, 117–126. https://doi.org/10.3897/zookeys.150.2109

Beentje, H. J. (2016). *The kew plant glossary: An illustrated dictionary of plant identification terms* (Vol. 2). Royal Botanic Gardens, Kew, Richmond.

Ferrer-Pereira, H., Vivas-Arroyo, Y., Hokche, O., Nozawa, S., Pérez-Cortéz, S., Rodríguez, L., & Estrada-Sánchez, J. (2010). The genus *Merremia* (Convolvulaceae) in Venezuela. *Rodriguésia*, *61*(4), 639–660. https://doi.org/10.1590/2175-7860201061406

Hallier, H. J. G. (1893). *Versuch einer natürlichen Gliederung der Convolvulaceen auf morphologischer und anatomischer Grundlage* (Vol. 16). Botanische Jahrbücher Für Systematik, Pflanzengeschichte Und Pflanzengeographie.

Index Herbariorum (updated continuously). (2026). *Index Herbariorum: A Global Directory of Public Herbaria and Associated Staff*. New York Botanical Garden. Published online. (accessed 7 June 2026). https://sweetgum.nybg.org/science/ih/

IUCN Standards and Petitions Committee. (2024). Guidelines for Using the IUCN Red List Categories and Criteria. Version 16. https://www.iucnredlist.org/documents/RedListGuidelines.pdf

McDonald, A. (1993). *Flora de veracruz. fascículo 73: Convolvulaceae*. Instituto de Ecologia, A.C. Xalapa, Ver. University of California, Riverside, CA. https://doi.org/10.21829/fv.408.1993.73

Meisner, C. F. (1869). Convolvulaceae. In C. F. P. von Martius & A. G. Eichler (Eds.), *Flora Brasiliensis, enumeratio plantarum in Brasilia hactenus detectarum: quas suis aliorumque botanicorum studiis descriptas et methodo naturali digestas partim icone illustratas* (pp. 199–370, Vol. 7). Monachii et Lipsiae [Munich & Leipzig]. https://doi.org/10.5962/bhl.title.454

O'Donell, C. A. (1941). Revisión de las especies americanas de *Merremia* (Convolvulaceae). *Lilloa*, *6*(1-2), 467–554. https://www.lillo.org.ar/journals/index.php/lilloa/article/view/1414

Petrongari, F. S., Faria-Jr, J. E. Q., Costa-Moreira, A. L. d., Simões, A. R. G., & Simão-Bianchini, R. (2026). *Distimake caespitosus* (convolvulaceae), a new erect species from the brazilian cerrado. *Brittonia*, *78*(1), 39–46. https://doi.org/10.1007/s12228-025-09857-8

Petrongari, F. S., & Simões, A. R. (2026). *Distimake*. In *Flora e funga do brasil*. Jardim Botânico do Rio de Janeiro. (accessed 16 august 2026). https://floradobrasil.jbrj.gov.br/FB603005

Pittier, H. (1943). Una contribución más al estudo de la flora venezolana. *Boletín de la Sociedad Venezolana de Ciencias Naturales*, *8*(54), 135–145.

QGIS Development Team. (2026). *QGIS Geographic Information System: Open Source Geospatial Foundation Project*. QGIS association). https://www.qgis.org

Radford, A. E., Dickison, W. C., Massey, J. R., & Bell, C. R. (1974). *Vascular plant systematics*. Harper & Row, New York.

Rivière, P. (Ed.). (2006). *The Guiana travels of Robert Schomburgk, 1835-1844*. Volumes I (406pp.) & II (266pp.). Hakluyt Society, London,

Simão-Bianchini, R., Ferreira, P. P. A., & Pastore, M. (2015). Convolvulaceae. In *Lista de Espécies da Flora do Brasil*. Jardim Botânico do Rio de Janeiro. (accessed 16 august 2026). https://ckan.jbrj.gov.br/dataset/floradobrasil

Simões, A. R., Culham, A., & Carine, M. (2015). Resolving the unresolved tribe: a molecular phylogenetic framework for the Merremieae (Convolvulaceae). *Botanical Journal of the Linnean Society*, *179*(3), 374–387. https://doi.org/10.1111/boj.12339

Simões, A. R., & Staples, G. (2017). Dissolution of Convolvulaceae tribe Merremieae and a new classification of the constituent genera. *Botanical Journal of the Linnean Society*, *183*(4), 561–586. https://doi.org/10.1093/botlinnean/box007

Stafleu, F. A., & Cowan, R. S. (1976). *Taxonomic Literature : a selective guide to botanical publications and collections with dates, commentaries and types*. Utrecht, Bohn, Scheltema & Holkema, 1976-1988. https://doi.org/10.5962/bhl.title.48631

Staples, G. W. (2017). *World Checklist of Selected Plant Families: Convolvulaceae*. Royal Botanic Gardens, Kew. Available from: kew.org (accessed 7 June 2026).

Turland, N. J., Wiersema, J. H., Barrie, F. R., Gandhi, K. N., Gravendyck, J., Greuter, W., Hawksworth, D. L., Herendeen, P. S., Klopper, R. R., Knapp, S., Kusber, W.-H., Li, D.-Z., May, T., Monro, A., Prado, J., Price, M., Smith, G., & Zamora Señoret, J. (2025). *International Code of Nomenclature for algae, fungi, and plants (Madrid Code)*. University of Chicago Press. https://doi.org/10.7208/chicago/9780226839479.001.0001

van Dam, J. A. C. (2002). The Guyanan Plant Collections of Robert and Richard Schomburgk. In M. Jansen-Jacobs (Ed.), *Flora of the guianas supplementary series: Fascicle: 003* (p. 211). Kew Publishing.

This is an open-access article distributed under the terms of the Creative Commons Attribution License.