



CAPERONIEAE AND DITAXEAE (ACALYPHOIDEAE, EUPHORBIACEAE) TRIBES IN URUGUAY

TRIBUS CAPERONIEAE Y DITAXEAE (ACALYPHOIDEAE, EUPHORBIACEAE) EN URUGUAY

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SUMMARY

Background and aims: Caperonieae and Ditaxeae (Euphorbiaceae) comprise approximately 130 species and are widely distributed in the New World, except for seven Caperonieae species that occur in Africa. Both tribes are well characterized morphologically and are monophyletic. The tribe Caperonieae is monogeneric, and Ditaxeae comprises two genera: *Argythamnia* and *Chiropetalum*. After field work and study of collections in several herbaria, we present a synopsis of Caperonieae and Ditaxeae from Uruguay.

M&M: Morphological analyses were conducted on herbarium specimens, high-resolution images of herbarium material, type collections, and plants directly observed in the field. For the biogeographic distribution analyses, iNaturalist occurrence records verified by us were also included.

Results: Our study recorded nine species belonging to tribe Ditaxeae and five belonging to tribe Caperonieae in Uruguay. We provide identification keys, updated nomenclature, morphological descriptions, distribution and habitat observations, maps, phenology, and image plates for all species.

Conclusions: This study provides an updated and comprehensive overview of the Caperonieae and Ditaxeae species for the flora of Uruguay, contributing valuable insights to their taxonomy and distribution.

KEY WORDS

Argythamnia, *Caperonia*, *Chiropetalum*, Flora of Uruguay.

RESUMEN

Introducción y objetivos: Caperonieae y Ditaxeae (Euphorbiaceae) comprenden aproximadamente 130 especies y están ampliamente distribuidas en el Nuevo Mundo, excepto por siete especies de Caperonieae que ocurren en África. Ambas tribus están bien caracterizadas morfológicamente y son monofiléticas. La tribu Caperonieae es monogénica, y Ditaxeae está compuesta por dos géneros: *Argythamnia* y *Chiropetalum*. Tras expediciones y el estudio de colecciones en varios herbarios, presentamos una sinopsis de Caperonieae y Ditaxeae para Uruguay.

M&M: Se realizaron análisis morfológicos sobre ejemplares de herbario, imágenes de alta resolución de material de herbario, colecciones tipo y plantas observadas directamente en el campo. Para los análisis de distribución biogeográfica, también se incluyeron registros de ocurrencia de iNaturalist verificados por nosotros.

Resultados: En este estudio se registraron nueve especies pertenecientes a la tribu Ditaxeae y cinco a la tribu Caperonieae en Uruguay. Se presentan claves de identificación, nomenclatura actualizada, descripciones morfológicas, observaciones sobre distribución y hábitat, mapas, fenología e ilustraciones para todas las especies.

Conclusiones: Este estudio presenta una actualización detallada de las especies de Caperonieae y Ditaxeae de la flora de Uruguay, aportando valiosos conocimientos sobre su taxonomía y distribución.

PALABRAS CLAVE

Argythamnia, *Caperonia*, *Chiropetalum*, Flora del Uruguay.

INTRODUCTION

Euphorbiaceae Juss. is one of the largest families of angiosperms, with approximately 6300 species distributed worldwide (Radcliffe-Smith, 2001; Webster, 2014; APG IV, 2016). The subfamily Acalyphoideae Beilschm. comprises 1865 species with pantropical distribution (APG IV, 2016). In the recent phylogenetic study of Külkamp *et al.* (2023a), two new tribes were proposed for Acalyphoideae: Ditaxae and Caperonieae. Tribe Ditaxae was circumscribed with two genera: *Argythamnia* P.Browne and *Chiropetalum* A.Juss. The genus *Caperonia* A.St.-Hil. resulted as a sister clade to tribes Ditaxae and Adeliaeae, and it was circumscribed in the monogeneric tribe Caperonieae (Külkamp *et al.*, 2023a).

According to the new classification of subfamily Acalyphoideae, *Argythamnia* includes ca. 68 species found from southern North America to Argentina (Külkamp *et al.*, 2023a). Species richness is highest in southern North America, Central America, the Antilles, and northeastern and central South America (Pax & Hoffmann, 1912; O'Donell & Lourteig, 1942; Ramírez-Amezcuca & Steinmann, 2013; Külkamp *et al.*, 2023b; 2024a). The species occur predominantly in seasonally dry environments, and there are a few cases of grassland species in Argentina, Brazil, and Uruguay (O'Donell & Lourteig, 1942; Ramírez-Amezcuca & Steinmann, 2013; Külkamp *et al.*, 2024a). *Chiropetalum* comprises 22 species distributed from Mexico to southern Argentina, with the highest species richness in central South America (Argentina, Chile, southern Brazil, and Uruguay; Ingram, 1980; Külkamp *et al.*, 2024a). *Caperonia* is one of the least studied genera of Acalyphoideae, yet recent work has revealed previously undocumented diversity, with new occurrence records and the description of three new species (*Caperonia amarumayu* Külkamp & Cordeiro, *C. maracaibensis* Külkamp & Cordeiro, and *C. itapevae* Külkamp; Külkamp *et al.*, 2021, 2024b). Currently, 37 species of *Caperonia* are recognized from the New World and Africa (continental Africa and Madagascar). The greatest richness of *Caperonia* occurs in South

America, mainly in Brazil, with approximately 40 % of the species (15). Unlike all other genera of Euphorbiaceae, all *Caperonia* species occur in marshy environments, which are relatively common across the Uruguayan territory (Külkamp *et al.*, 2023a).

In this context, it is important to note that most of Uruguay's territory is covered by Pampa vegetation, and it is currently included in the Pampean biogeographic province by Morrone (2006, 2014). The Pampa is characterized by grassland vegetation with small islands of forests restricted to slopes and along watercourses (*sensu* Cabrera, 1951; Prado *et al.*, 1992). In addition to Uruguay, Pampa occurs in Brazil (restricted to the state of Rio Grande do Sul) and Argentina (Morrone, 2014).

As part of ongoing research on the systematics of Caperonieae and Ditaxae, and on the flora of Uruguay, we present a synopsis of all Uruguayan species of Ditaxae (*Argythamnia*, *Chiropetalum*) and Caperonieae (*Caperonia*). The treatment includes identification keys, updated nomenclature, morphological descriptions, distribution and habitat information, maps, phenology, and image plates.

MATERIALS AND METHODS

Fieldwork and herbaria studies were conducted from 2016 to 2024. Specimens were photographed, geographic coordinates were recorded, and samples were collected for morphological analysis; vouchers from our work were deposited in herbarium collections. Physical and virtual specimens were consulted in the herbaria: A, B, BR, C, CORD, E, F, G, GOET, HBG, ICN, K, LINN, MO, MPU, MVFA, MVFQ, MVJB, MVM, NY, P, RB, S, SI, TUB, U, UC, US, V, and W (acronyms follow Thiers, 2024, constantly updated). All cited specimens were examined either online or physically by the authors. For species non-endemic to Uruguay, we cite at least one exsiccate from neighboring countries (Argentina and Brazil).

The morphological terminology used in the descriptions was based on Pax & Hoffmann

(1912), O'Donnell & Lourteig (1942), Ingram (1980), Kulkamp *et al.* (2023a), and Kulkamp *et al.* (2024a). The concept and terminology of biogeographic provinces were based on Morrone (2006, 2014). Geographic distribution data were obtained from field collections, herbarium specimens viewed in person and online, and other databases such as GBIF (2024) and iNaturalist (2024). Specimens with available images on GBIF were verified, and when images were not provided, the specimens were retrieved directly from the respective herbarium databases. Specimens whose identity could not be confirmed due to lack of imaging or physical study were not considered in the study. For material examined that did not have geographic coordinates, these were inferred (inf. coord.) from the locality (department or locality) described in the label, and when the locality was not sufficiently detailed, the sample was not used in the map.

In this study, we used observation data from the iNaturalist (2024) to confirm species occurrences and estimate their spatial distribution in Uruguay. These data are highlighted in the materials studied as observations on iNaturalist. Such observation records are not generally used to confirm the occurrence of plant species, unlike studies with birds for example (Sullivan *et al.*, 2009). In recent years, GBIF (2024) has incorporated information from observations of iNaturalist into its database, providing important geographic data. We emphasize that this information must be as carefully reviewed and identified as the physical materials of herbaria. We decided to use these data because we are specialists on the group and it is possible to determine the species from photos, and because two species (*Caperonia palustris* (L.) A.St-Hil. and *Chiropetalum griseum* Griseb.) are only registered for Uruguay based on photographic observations.

Most of the image plates were made with photographs of specimens from Uruguay, and when there were no images of specimens from Uruguay, we used images of specimens that were geographically close. In the figure captions, we highlight the geographic location of the recorded specimens.

RESULTS AND DISCUSSION

Taxonomic treatment

We recognize nine species of Ditaxeae and five species of Caperonieae from Uruguay. *Argythamnia* is represented by three species (*A. acaulis* (Herter) J.W.Ingram, *A. montevidensis* (Didr.) Müll.Arg., and *A. sellowiana* (Pax & K.Hoffm.) J.W.Ingram), *Caperonia* by five (*C. castaneifolia* (L.) A.St.-Hil., *C. cordata* A.St.-Hil., *C. hystrix* Pax & K.Hoffm., *C. linearifolia* A.St.-Hil., and *C. palustris*), and *Chiropetalum* by six (*C. foliosum* (Müll.Arg.) Pax & K.Hoffm., *C. griseum*, *C. intermedium* Pax & K.Hoffm., *C. latifolium* (Chodat & Hassl.) Kulkamp & Iganci, *C. molle* (Müll.Arg.) Pax & K.Hoffm., and *C. puntaloberense* Alonso Paz & Bassagoda). The iNaturalist database has played an important role in understanding diversity, as in this study we confirmed for the first time the occurrence of *Caperonia palustris* and *Chiropetalum griseum* in the flora of Uruguay based on a photographic record. Most species occur in the western region of the country, with the southeastern region of Uruguay having the fewest (Fig. 1).

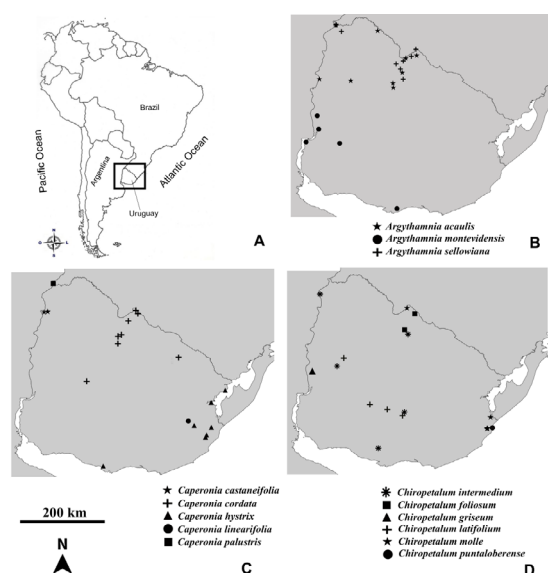


Fig. 1. Distribution map of species of the Caperonieae and Ditaxeae in Uruguay. **A:** South America map showing Uruguay territory. **B:** *Argythamnia*. **C:** *Caperonia*. **D:** *Chiropetalum*.

Identification key to tribes Caperoniaceae and Ditaxeae

1. Trichomes glandular on vegetative structures; leaf venation craspedodromous; ovary surface muricate; floral nectaries absent. Caperoniaceae
- 1'. Trichomes malpighiaceae on vegetative structures; leaf venation actinodromous basal and suprabasal; ovary surface smooth; floral nectaries present. Ditaxeae

Caperoniaceae Külkamp & Riina, *Biology* 12: 173. 2023.

Caperonia A.St.-Hil., *Histoire des plantes les plus remarquables du Bresil* 3/4: 244-247. 1825. TYPE: *Caperonia castaneifolia* (L.) A.St.-Hil. Figs. 2-5.

Herbs or subshrubs, annual or perennial, monoecious, rarely dioecious; woody subterranean structure present or absent. Stems erect, fistulous or solid, prickly or inermous, covered by simple and glandular trichomes. Leaves simple, alternate; stipules present, lanceolate to ovate, glabrous or pubescent; petiolate or subsessile; blade ovate, lanceolate, elliptic, or linear; margin serrate; venation pinnate or palmate, with craspedodromous secondary veins; trichomes glandular and/or simple on both surfaces. Inflorescences racemose axillary; pistillate flowers proximal and staminate flowers distal; bracteoles uniflorous, ovate, lanceolate, or linear, pubescent or glabrous. Staminate flowers pedicellate; sepals 5, equal, ovate, lanceolate, or elliptic, margin entire, pubescent or glabrous; petals 5, often unequal, entire, elliptic to obovate, margin entire, basally adnate to the staminal column, glabrous or pubescent; stamens 8-10 in two whorls, filaments partially united in a column, apex entire or lobed; floral nectaries absent. Pistillate flowers pedicellate; sepals 5-6, equal or unequal, entire, ovate to lanceolate, margin entire, pubescent; petals 5, equal, obovate to elliptic, margin entire, glabrous or pubescent; floral nectaries absent; ovary 3-locular, locules uniovulate, surface muricate, pubescent; styles 3, multifid, glabrous. Capsules muricate, pubescent. Seeds orbicular, apiculate or not, foveolate, gray to black.

Caperonia is distributed in Central and South America and Africa, both continental and

Madagascar (Webster, 2014). Species richness is highest in South America, especially in Brazil, with 15 of 35 species (Külkamp *et al.*, 2023a).

Identification key to *Caperonia* species in Uruguay

1. Herbs or subshrubs, stems prickly. 2
- 1'. Herbs, stems inermous. 4
2. Annual herbs, monoecious. *C. hystrix*
- 2'. Perennial subshrubs, dioecious. 3
3. Leaf blades ovate; apex of the staminal column 4-lobed. *C. cordata*
- 3'. Leaf blades lanceolate to linear; apex of the staminal column entire. *C. linearifolia*
4. Stems fistulous, secondary branches shorter than the leaves; stamens 10. *C. castaneifolia*
- 4'. Stems solid, secondary branches much longer than the leaves; stamens 8. *C. palustris*

1. *Caperonia castaneifolia* (L.) A. St.-Hil., *Histoire des plantes les plus remarquables du Bresil* 3/4: 244-247. 1825. *Croton castaneifolius* L., *Sp. Pl.*: 1005. 1753. *Meterana castaneifolia* (L.) Raf., *Sylva Tellur.*: 66. 1828. *Ditaxis castaneifolia* (L.) Baill. in *Adansonia* 4: 274. 1864. *Argythamnia castaneifolia* (L.) Kuntze, *Revis. Gen. Pl.* 2: 593. 1891. *Tournesol castaneifolia* (L.) M.Gómez, *Anales Soc. Esp. Hist. Nat.* 23: 48. 1894. TYPE: ENGLAND. Sample collected in Jardín Botánico de Chelsea, *P. Miller s.n.* (neotype designated by Külkamp *et al.*, 2024c: LINN-1492.13). Fig. 2.

Herbs 50-120 cm tall, annual, monoecious; woody subterranean structure absent. Stems fistulous, secondary branches shorter than the leaves, inermous, glabrous or rarely with simple and glandular trichomes. Leaves with stipules ovate, glabrous, with simple trichomes on the margin; petioles 7-30 mm long; blades 2-9 × 0.7-5 cm, elliptic or ovate, apex acute, base rounded, margin serrated, venation pinnate, secondary veins 9-22, inermous, glabrous or rarely with simple and glandular trichomes on both surfaces. Inflorescences with 2-4 proximal pistillate flowers and numerous distal staminate flowers; bracteoles ovate, glabrous.

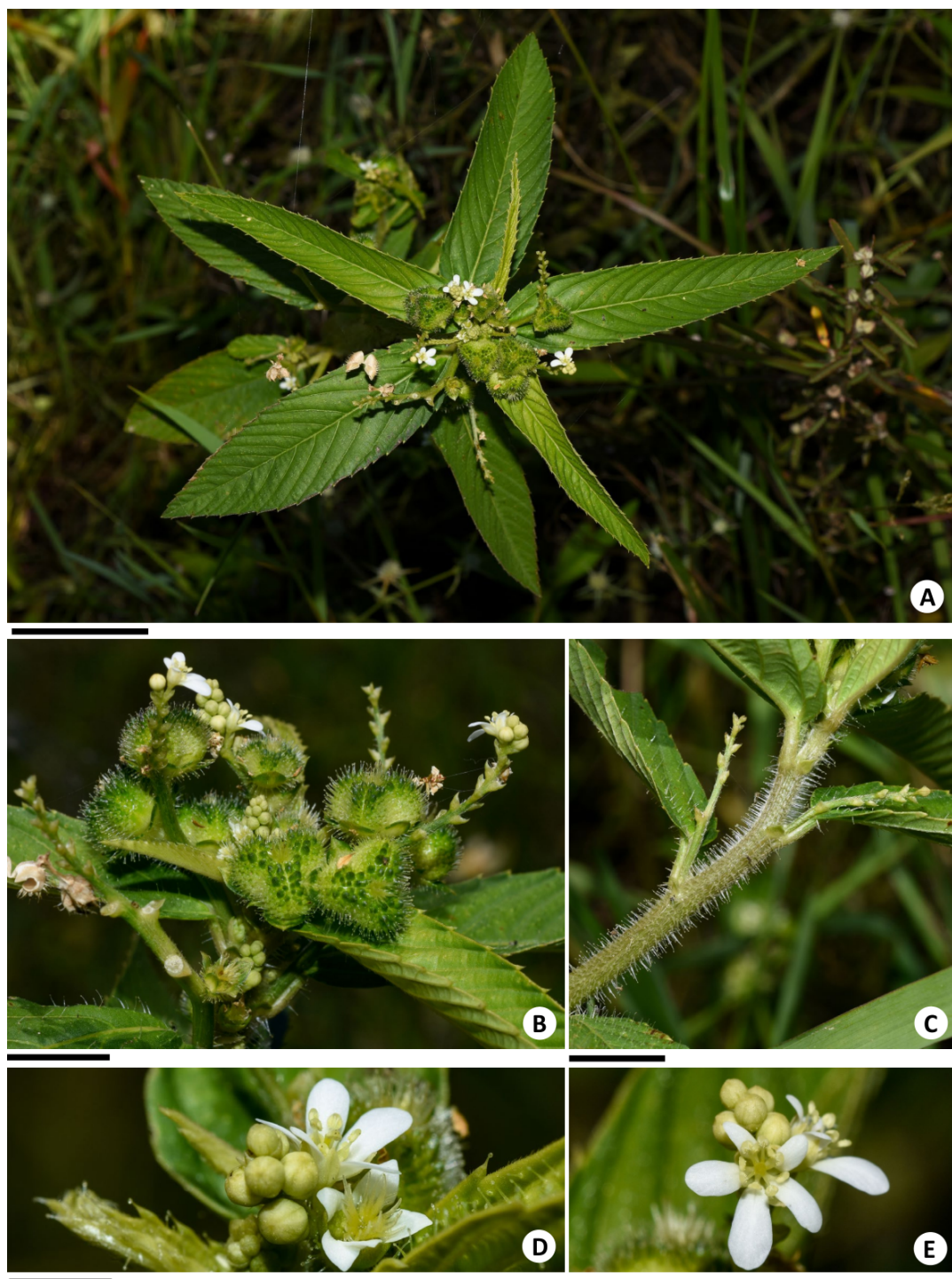


Fig. 2. *Caperonia castaneifolia*. **A:** Whole plant. **B:** Inflorescences with glandular trichomes. **C:** Glandular trichomes on stem. **D:** Pistillate and staminate flowers. **E:** Staminate flower with heteromorphic petals. Photos by Ary Mailhos. Plant photographed in the Department of Salto, Uruguay. Scales= A: 3 cm; B: 1 cm; C: 2 cm; D: 4 mm; E: 6 mm.

Staminate flowers with pedicels 1.3-1.8 mm long; sepals 5, 1.1-2 mm long, equal, elliptic, margin entire, glabrous; petals 5, 2-2.5 mm long, equal, obovate, margin entire, glabrous; stamens 10 in two whorls, column apex 2-3-lobed. Pistillate flowers subsessile, pedicels 0.1-0.5 mm long; sepals 5-6, 2-4 mm long, equal, lanceolate, margin entire, with glandular and simple trichomes on the margin; petals 5, 2-3.5 mm long, equal, elliptic, margin entire, glabrous; ovary muricate, with glandular and simple trichomes; styles 3, united at the base, 6-10 lobes each. Capsules 6-9 mm diam. Seeds orbicular, 3.2-3.5 mm diam., apiculate, foveolate, gray.

Distribution and habitat: Species native to tropical America, from Mexico and the Antilles to northern and eastern Argentina. In Uruguay it is recorded in the Department of Salto, in the northwest of the country (Fig. 1C). All records are from the vicinity of the Río Uruguay, along the border with Argentina.

Flowering and fruiting: December to February in Uruguay.

Material examined: ARGENTINA. Corrientes: San Miguel., 14-III-2001, *M.M. Arbo et al.* 8789 (ESA). BRAZIL. Paraná: Guaira. Parque Nacional Sete Quedas, 04-VI-1961, *G. Hatschbach* 7919 (MBM). URUGUAY. Salto: Est. El Espinillar, 30° 57' 03.6" S, 57° 49' 44.4" W, 18-II-1982, *E. Marchesi* 16873 (MVFA).

Observations on iNaturalist: URUGUAY. Salto: Pueblo Belén, 30° 56' 16.8" S, 57° 44' 24.0" W, 27-XII-2023, observed by Santiago Mailhos (ID - 195077991). Salto: Pueblo Belén, 30° 56' 16.8" S, 57° 44' 24.0" W, 27-XII-2023, observed by Ary Mailhos (ID - 195083942).

2. *Caperonia cordata* A. St.-Hil., *Histoire des plantes les plus remarquables du Bresil* 3/4: 245. 1825. *Ditaxis cordata* (A.St.-Hil.) Baill., *Adansonia* 4: 272. 1864. *Argythamnia cordata* (A.St.-Hil.) Kuntze, *Revis. Gen. Pl.* 2: 593. 1891. TYPE: BRAZIL. Rio Grande do Sul: Près de Belem, 1816, *A. St. Saint-Hilaire* C2-2664 (syntypes: MPU012443, P00634994, P00634995, P00634996, P02441707). Fig. 3.

Subshrubs ± 1.20 m tall, perennial, dioecious; woody subterranean structure present. Stems fistulous, prickles, with simple and glandular trichomes. Leaves with stipules lanceolate, with simple trichomes on both surfaces; petioles 1-3 mm long; blades 4.5-11 × 2.5-7.5 cm, ovate, apex acute or obtuse, base cordate, margin serrate, venation palmate, secondary veins 4-8, some prickles on the abaxial surface, simple and glandular trichomes on both surfaces. Inflorescences with 1-5 proximal pistillate flowers and more than 20 distal staminate flowers; bracteoles lanceolate, pubescent. Staminate flowers with pedicels 2.8-4 mm long; sepals 5, 4.7-5 mm long, equal, lanceolate, margin entire, pubescent; petals 5, 3.5-5.5 mm long, equal, obovate, apex emarginate or obcordate, margin entire, glabrous; stamens 10 in two whorls, column apex 4-lobed. Pistillate flowers with pedicels 5-8 mm long; sepals 5, 6-9 mm long, unequal, lanceolate, margin entire, with simple and glandular trichomes on the abaxial surface; petals 5, 5-6 mm long, equal, obovate or elliptic, margin entire, with simple trichomes on the abaxial surface; ovary muricate, with dense simple and glandular trichomes; styles 3, united at the base, 8-13 lobes each. Capsules 8-10 mm diam. Seeds globose or ovoid, 3.7-4.5 mm diam., apiculate, foveolate, black.

Distribution and habitat: This species is found in southern Brazil, Paraguay, Uruguay, and northeastern Argentina, mainly in banks of the Río de la Plata (Chiarini *et al.*, 2024). In Uruguay, it occurs in the western half of the country (Fig. 1C).

Flowering and fruiting: October to January in Uruguay.

Material examined: ARGENTINA. Corrientes: s.d., *Dupré* s.n. (P04864158). BRAZIL. Rio Grande do Sul: Près de Belem, 1816, *A. St. Saint-Hilaire* C2-2664 (MPU, P). URUGUAY. Cerro Largo: Río Negro. Palleros, 32° 39' 43.2" S, 56° 46' 37.2" W (inf. coord.), 4-I-1936, *M.B. Berro* 1700 (MVM); Rivera: cerca de Tranqueras 31° 10' 04.8" S, 55° 44' 56.4" W (inf. coord.), I-1941, *C.D. Legrand* 2507 (MVM); *Ibidem:* alrededores de la capital, 30° 54' 25.2" S, 55° 33' 43.2" W (inf. coord.), 20-I-1944, *C.D. Legrand* 3448 (MVM); *Ibidem:* Campos de Rivera, XI-1899, *J. Arechavaleta* s.n. (MVM-5161a); *Ibidem:* *J. Arechavaleta* s.n. (MVM-

5161b); *Ibidem*: Ataques, 31° 05' 42.0" S, 55° 41' 16.8" W (inf. coord), 200 m.s.l., 2-4-XII-1933, *W.G. Herter* 1625 (MO, MVM, RB, U, US, V); *Ibidem*, Cerro del Gobierno, X-1907, *M.B. Berro* 4971 (MVM); *Ibidem*, X-1896. *J. Arechavaleta s.n.* (MVFQ 813); *Ibidem*, XI-1899. *J. Arechavaleta s.n.* (MVFQ-812); Tacuarembó: Paso Ceferino,

31° 32' 56.4" S, 56° 00' 10.8" W (inf. coord.), I-1940, *C.D. Legrand* 1808 (MVM); *Ibidem*: 31° 43' 44.4" S, 56° 00' 21.6" W (inf. coord.), X-1896, *J. Arechavaleta* 214 (MVM); *Ibidem*: Paso del Medio, Ao Tres Cruces, 31° 30' 28.8" S, 55° 55' 12.0" W (inf. coord.), 9-XII-1965, *Del Puerto* 5571 (MVFA).

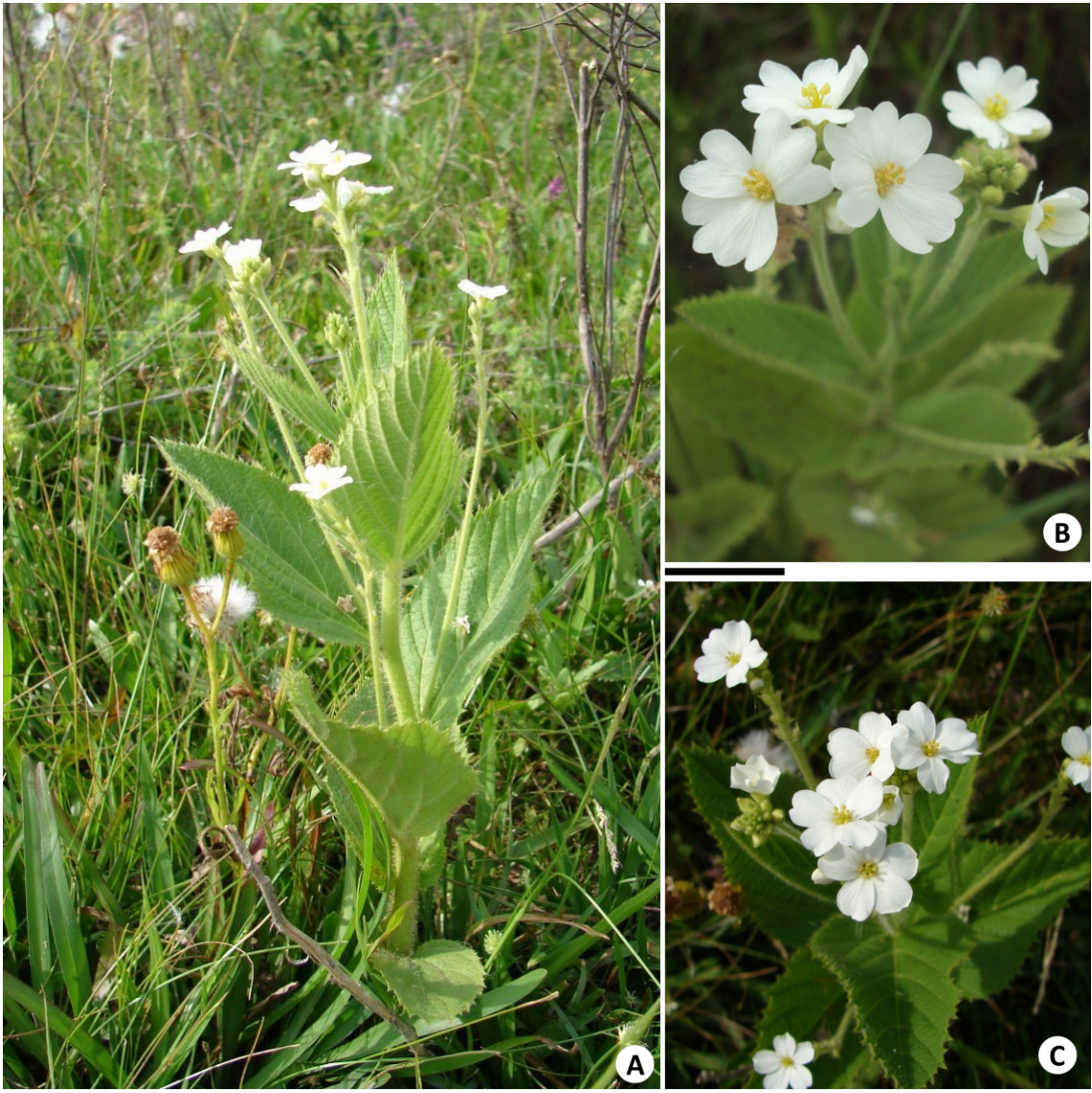


Fig. 3. *Caperonia cordata*. **A:** Whole plant. **B:** Staminate flowers. **C:** Staminate inflorescences. Photos: A-C. Iherb - photographed in the Department of Mercedes, Corrientes, Argentina. B. Juan Matías - photographed in the Department of Mercedes, Corrientes, Argentina. Scales= A: 4 cm; B: 2 cm; C: 3 cm.

3. *Caperonia hystrix* Pax & K.Hoffm. *Pflanzenr.* IV. 147.vi (Heft 57), 91. 1912. TYPE: BRAZIL. Rio Grande do Sul: Porto Alegre, 24-X-1897, *E.M. Reineck & J. Czermak 139* (syntypes: E00326402, HBG516530, K000600267, P00635001, S-R-10605, W1900-0001381). Fig. 4.

Herbs 40-60 cm tall, annual, monoecious; woody subterranean structure absent. Stems fistulous, prickles, with glandular and simple trichomes. Leaves with stipules ovate or lanceolate, with simple and glandular trichomes on both surfaces; petioles 1-7 mm long; blades 5-10 × 1.1-2.8 cm, ovate, apex attenuate, base subcordate, margin serrated, venation pinnate, secondary veins 5-13, prickles, with simple and glandular trichomes on both surfaces. Inflorescences with 1-3 proximal pistillate flowers and 5-17 distal staminate flowers; bracteoles lanceolate, with simple trichomes. Staminate flowers with pedicels 2.1-2.8 mm long; sepals 5, 1.9-2.1 mm long, equal, lanceolate, margin entire, with simple trichomes on the abaxial surface and glabrous on the adaxial surface; petals 5, 2.5-3.5 mm long, equal, obovate, margin entire, glabrous; stamens 10 in two whorls, column apex 2-lobed, rarely entire. Pistillate flowers with pedicels 3-4 mm long; sepals 5, 4-8 mm long, unequal, elliptic to ovate, margin entire, with glandular and simple trichomes on the abaxial surface and simple on the adaxial surface; petals 5, 1.7-4 mm long, equal, elliptic, margin entire, glabrous; ovary muricate, with dense glandular and simple trichomes; styles 3, united at the base, 5-7 lobes each. Capsules 9-11 mm diam. Seeds orbicular, 3-4 mm diam., not apiculate, foveolate, gray to black.

Distribution and habitat: Species from southern Brazil, Uruguay, and northeastern Argentina. In Uruguay, it occurs in the east and south of the country (Fig. 1C), with a large disjunction with the known populations of Brazil and Argentina (Chiarini *et al.*, 2024). This is the only species of *Caperonia* recorded for eastern Uruguay, associated with the flooded areas of the lagoon complex in this region.

Flowering and fruiting: October to March in Uruguay.

Material examined: ARGENTINA. Buenos Aires: Dpto. Ensenada, Punta Lara, Burkart 26798

(SI). BRAZIL. Rio Grande do Sul: Butiá, estrada BR, km 66, 14-IV-1982, *K. Hagelund 13873* (ICN). URUGUAY. Rocha: *San Miguel*, Cañada Grande, 33° 48' 00.0" S, 53° 42' 00.0" W (inf. coord.), 12-I-1989, *E. Marchesi et al. 19359* (MVFA); *Ibidem*, Camino de los Indios, 33° 59' 31.2" S, 53° 49' 01.2" W (inf. coord.), 25-III-1966, *Del Puerto & E. Marchesi 6146* (MVFA); *Ibidem*: Ruta 16 entre Cerro de los Indios y Camino a Velázquez, 34° 02' 52.8" S, 53° 50' 38.4" W (inf. coord.), 6-X-1965, *Del Puerto & E. Marchesi 5293* (MVFA); *Ibidem*, Lascano, 33° 45' 14.4" S, 54° 07' 26.4" W, 24-I-2001, *E. Alonso-Paz 3244* (MVFQ); *San José*, Delta del Tigre, 34° 45' 32.4" S, 56° 22' 08.4" W (inf. coord.), 29-XI-1961, *Del Puerto 808* (MVFA); no local, IX-no year, *J. Arechavaleta 39* (MVFQ).

Observations on iNaturalist: URUGUAY. Rocha: *Cebollati*, Isla del Padre, 33° 11' 06.0" S, 53° 42' 18.0" W, 2-XII-2022, observed by Ary Mailhos (ID - 144039193). Treinta y Tres: *General Enrique Martínez*, Establecimiento La Querencia, 32° 53' 02.4" S, 53° 21' 25.2" W, 11-I-2024, observed by Agustina Medina (ID - 198058040).

4. *Caperonia linearifolia* A. St.-Hil., *Histoire des plantes les plus remarquables du Bresil* 3/4: 246. 1825. *Ditaxis linearifolia* (A. St.-Hil.) Baill., *Adansonia* 4: 272. 1864. *Argythamnia linearifolia* (A.St.-Hil.) Kuntze, *Revis. Gen. Pl.* 2: 593. 1891. TYPE: BRAZIL. Rio Grande do Sul: *Rincão de Soneloes*, no date, *A. St. Hilaire C2-2606-bis* (syntypes: P00634997, P00634998).

Subshrubs 80-110 cm tall, perennial, dioecious; woody subterranean structure present. Stem solid, with prickles, and simple and glandular trichomes. Leaves with stipules lanceolate, simple and glandular trichomes on abaxial surface; sessile or petioles to 1-2 mm long; blades 3.5-9 × 1.1-2.5 cm, lanceolate, apex acute, base rounded, margin serrate, venation palmate, secondary veins 5-9, prickly only on central vein of the abaxial surface, with simple and glandular trichomes on both surfaces. Inflorescences with pistillate flowers not seen, 12-21 staminate flowers; bracteoles lanceolate, with simple trichomes on both surfaces. Staminate flowers with pedicels 1.7-2.5 mm long; sepals 5, 3.7-4.2 mm long, equal, lanceolate, margin entire, with simple trichomes on both surfaces;

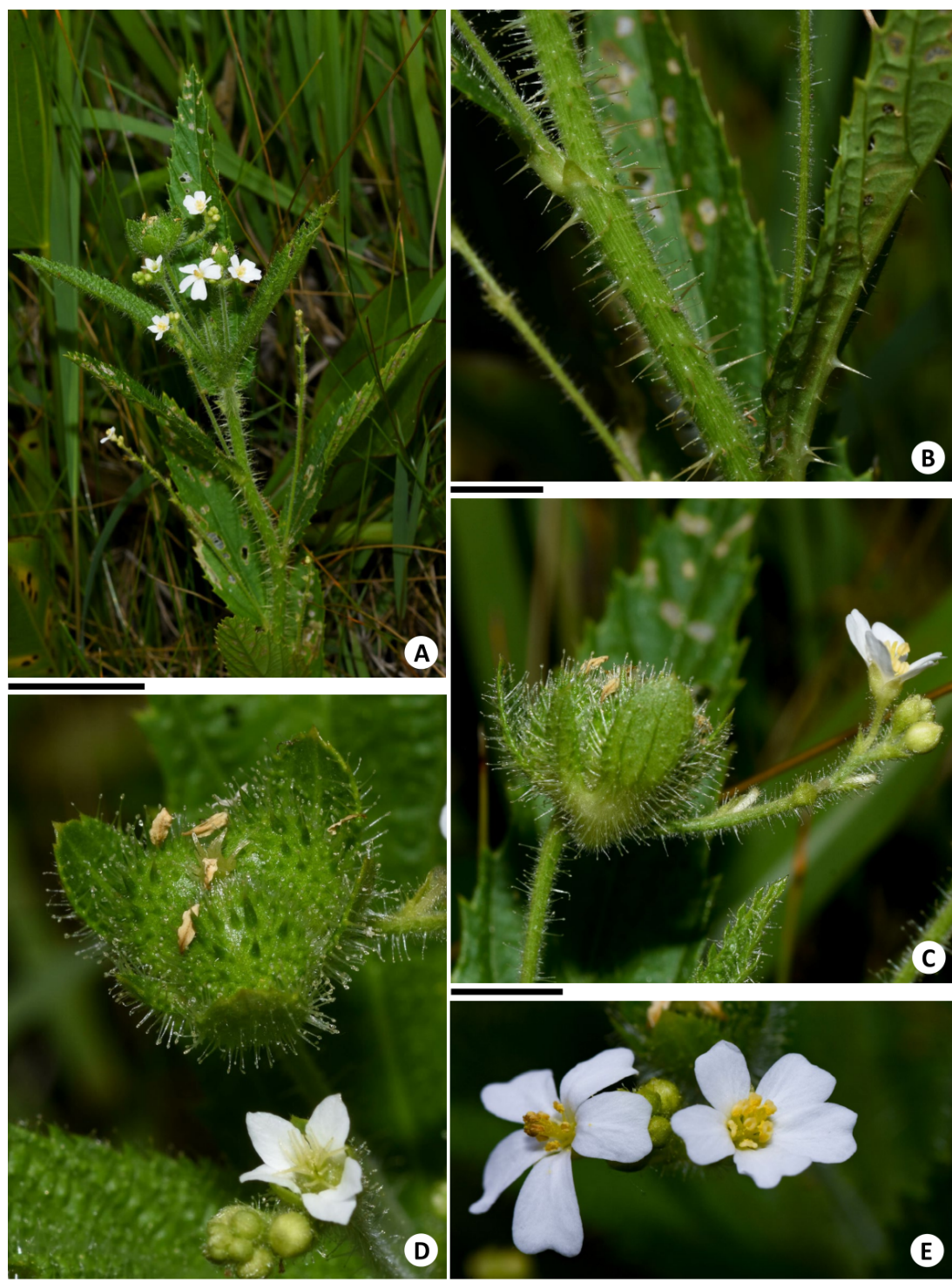


Fig. 4. *Caperonia hystrix*. **A:** Whole plant. **B:** Stem with prickles and glandular trichomes. **C:** Inflorescence. **D:** Immature fruit and pistillate flower. **E:** Staminate flower with homomorphic petals. Photos by Ary Mailhos. Plant photographed in the Department of Rocha, Uruguay. Scales= A: 5 cm; B-C: 1 cm; D: 5 mm; E: 6 mm.

petals 5, 3–4.5 mm long, equal, obovate, margin entire, glabrous; stamens 10 in two whorls, column apex entire. Pistillate flowers and fruits not seen.

Distribution and habitat: *Caperonia linearifolia* occurs in Brazil (Rio Grande do Sul) and Uruguay, where a single record has been reported from the Department of Treinta y Tres (Fig. 1C). Most records from Argentina identified as *C. linearifolia* correspond to *C. castaneifolia*. Most of the records of *C. linearifolia* in iNaturalist from Uruguay are of *C. hystrix*, which in some publications is incorrectly treated as a synonym of *C. linearifolia*.

Flowering and fruiting: The only record from Uruguay was flowering in February.

Material examined: BRAZIL. Rio Grande do Sul: Rincão de Soneloes, no date, A. St. Hilaire C2-2606-bis (P). URUGUAY. Treinta y Tres: Bañados del Río Cebollati, 6 km al O de Lascano, 33° 38' 38.4" S, 54° 16' 04.8" W (inf. coord.), 20-II-2005, M. Dematteis & A. Schinini 1649 (SI).

5. *Caperonia palustris* (L.) A. St.-Hil., *Histoire des plantes les plus remarquables du Bresil* 3/4: 244–247. 1825. *Croton palustris* L., *Sp. Pl.*: 1004. 1753. *Meterana palustris* (L.) Raf., *Sylva Tellur.*: 66. 1838. *Argythamnia palustris* (L.) Kuntze, *Revis. Gen. Pl.* 2: 593. 1891. TYPE: MEXICO. “Habitat in Vera Cruce, locis paludosis”, G. Clifford 445 (lectotype designated by Külkamp *et al.*, 2024c: LINN-1140.2, isolectotype: BM000647403). Fig. 5.

Herbs or shrubs 50–100 cm tall, annual, monoecious; woody subterranean structure absent. Stem solid, secondary branches longer than the leaves, inermous, dense simple and glandular trichomes. Leaves with stipules lanceolate, with simple trichomes on both surfaces; petioles 2–45 mm long; blades 1.5–14 × 0.3–4.5 cm, lanceolate, apex acute, base rounded, margin serrate, venation pinnate, secondary veins 8–22, inermous, with simple and glandular trichomes on both surfaces. Inflorescences with 1–5 proximal pistillate flowers and 6–13 distal staminate flowers; bracteoles ovate, glabrous or with simple trichomes. Staminate flowers with pedicels 1.4–2.1 mm long; sepals 5, 1.5–1.7 mm, equal, lanceolate, margin entire, glabrous; petals 5, 1.4–1.6 mm long, equal, obovate, margin

entire, glabrous; stamens 8 in two whorls, column apex 3-lobed. Pistillate flowers with pedicels 0.4–0.9 mm long; sepals 6, 2–4 mm long, unequal, lanceolate, margin entire, glabrous or with simple trichomes on the abaxial surface, rarely ciliate; petals 5, 2.4–4 mm long, equal, elliptic to obovate, margin entire, glabrous; ovary muricate, glandular trichomes; styles 3, united at the base, 10–12 lobes each. Capsules 6–7 mm in diam. Seeds ovoid, 2.1–2.3 mm diam., not apiculate, foveolate, gray.

Distribution and habitat: This is the *Caperonia* species with the widest natural distribution, ranging from Mexico and the Antilles to Argentina and Uruguay (Külkamp *et al.*, 2024b). Here we report the first record for Uruguay (Fig. 1C) based on an iNaturalist observation. No herbarium specimens are known in the country yet.

Flowering and fruiting: The only record from Uruguay was flowering in May.

Material examined: ARGENTINA. Chaco: 1° de Mayo, Colonia Benites, 20-III-1950, A.G. Schulz 9143 (CTES, MBM). BRAZIL. Paraná: Maringá, Câmpus sede da Universidade Estadual de Maringá, I-2004, S.A. Maglia s.n. (HUEM000003981).

Observations on iNaturalist: URUGUAY. Artigas: Bella Unión, 30° 14' 24.0" S, 57° 36' 07.2" W, 14-V-2022, Florencia Grattarola (ID - 117048881).

Ditaxeae Külkamp & Riina, *Biology* 12: 173. 2023.

Identification key for *Argythamnia* and *Chiropetalum* species occurring in Uruguay

1. Pistillate flowers dichlamydeous; staminate flowers with unlobed petals, stamens 8, in two whorls. 2. (*Argythamnia*)
- 1'. Pistillate flowers monochlamydeous; staminate flowers with lobed petals, stamens 4–5, in one whorl. 4. (*Chiropetalum*)
2. Plants caulescent, stems erect; leaves spaced along the branches, margin serrate; staminodes. 3 *A. montevidensis*
- 2'. Plants prostrate and/or acaulescent; leaves rosulate, margin entire; staminodes absent. 3

3. Leaves linear to linear-elliptic; sepals of pistillate flowers 6, 9-11.4 mm long, non-falcate. *A. acaulis*
- 3'. Leaves elliptic to obovate; sepals of pistillate flowers 5 rarely 6, 5.9-8.5 mm long, falcate. *A. sellowiana*
4. Leaf blades with stellate trichomes and/or simple or malpighiaceae trichomes. 5
- 4'. Leaf blades with simple and/or malpighiaceae trichomes. 7
5. Floral nectaries pubescent. *C. griseum*
- 5'. Floral nectaries glabrous. 6
6. Style pubescent in basal half and glabrous in the apical half. *C. molle*
- 6'. Style pubescent to the apex. ... *C. puntaloberense*
7. Leaves with malpighiaceae and simple trichomes. *C. foliosum*
- 7'. Leaves with malpighiaceae trichomes and without simple trichomes. 8
8. Inflorescence with 2-7 staminate flowers; stamens 3-4, floral nectaries glabrous. *C. intermedium*
- 8'. Inflorescence with 12-28 staminate flowers; stamens 5, floral nectaries pubescent. *C. latifolium*

Argythamnia P.Browne, *The Civil and Natural History of Jamaica* 3: 338-339. 1756. TYPE: *Argythamnia candicans* Sw. Figs. 6-8.

Herbs to subshrubs, perennial, monoecious; subterranean structure present or absent. Stems erect, caulescent or acaulescent, decumbent or prostrate, inermous, with simple and malpighiaceae trichomes. Leaves simple, alternate; stipules present, lanceolate to ovate, glabrous, pubescent, or hirsute; petiolate; blade ovate, lanceolate, or elliptic; margin serrate to entire; venation pinnate actinodromous; with malpighiaceae or simple trichomes on both surfaces. Inflorescence racemose axillary; pistillate flowers proximal and staminate flowers distal; bracteoles uniflorous, ovate to lanceolate, pubescent, rarely glabrous. Staminate flowers pedicellate; sepals 5, lanceolate to linear, margin entire, pubescent or glabrous; petals 5, equal, entire, ovate, elliptic or obovate, margin entire, basally adnate to the receptacle, glabrous or pubescent; stamens 8 in two whorls, filaments partially united in a column; staminodes at the

apex of the staminal column, sometimes absent; floral nectaries 5, adnate at the base of the column, glabrous or pubescent. Pistillate flowers pedicellate; sepals 5-6, equal, entire, lanceolate to elliptic, margin entire or serrate, pubescent; petals 5, equal, lanceolate, elliptic or rhomboid, margin entire, glabrous or pubescent; floral nectaries 5, globose, linear, or filiform, adnate to the receptacle at the base of the ovary, glabrous; ovary 3-locular, locules uniovulate, surface smooth, pubescent; styles 3, bifid, pubescent. Capsules pubescent. Seeds orbicular to ovoid, apiculate, rough or reticulate, gray to black.

Argythamnia is distributed throughout the Americas, from southern United States to Patagonia (Külkamp *et al.*, 2023a). The areas of highest species richness are southern North America, the Caribbean Islands, and South America (northern, northeastern, and center) usually associated with seasonally dry vegetation (Külkamp *et al.*, 2024a). In Uruguay, three species are recorded, which occur in the grassland vegetation of the Pampa province, which covers the entire territory.

6. *Argythamnia acaulis* (Herter) J.W.Ingram, *Bull. Torrey Bot. Club.* 84: 422. 1958. *Ditaxis acaulis* Herter, *Anales Mus. Nac. Montevideo*, ser. 2, 1: 79. 1911. *Paxia acaulis* (Herter) Herter, *Estud. Bot. Reg. Uruguay* 4: 80. 1931. *Paxiuscula acaulis* (Herter) Herter, *Revista Sudamer. Bot.* 6: 93. 1939. TYPE: URUGUAY. Artigas: Cuareim, Entre peñascos, no date, *J. Arechavaleta* 15 (neotype designated by Külkamp *et al.*, 2023b: MVM-5191). Fig. 6.

Herbs 5-10 cm tall, perennial, monoecious, woody subterranean structure present. Stems prostrate and/or acaulescent, with simple and malpighiaceae trichomes. Leaves rosulate; stipules lanceolate, with malpighiaceae trichomes on both surfaces; petioles 2-4 mm long; blades 2-7 × 0.4-2 cm, linear to linear-elliptic, apex acute, base acuminate to acute, margin entire, venation pinnate actinodromous, hirsute on both surfaces with malpighiaceae trichomes. Inflorescences with one proximal pistillate flower and 3-5 distal staminate flowers; bracteoles lanceolate, simple trichomes on abaxial surface. Staminate flowers with pedicels 1.8-2.2 mm long; sepals 5, 1.5-1.7

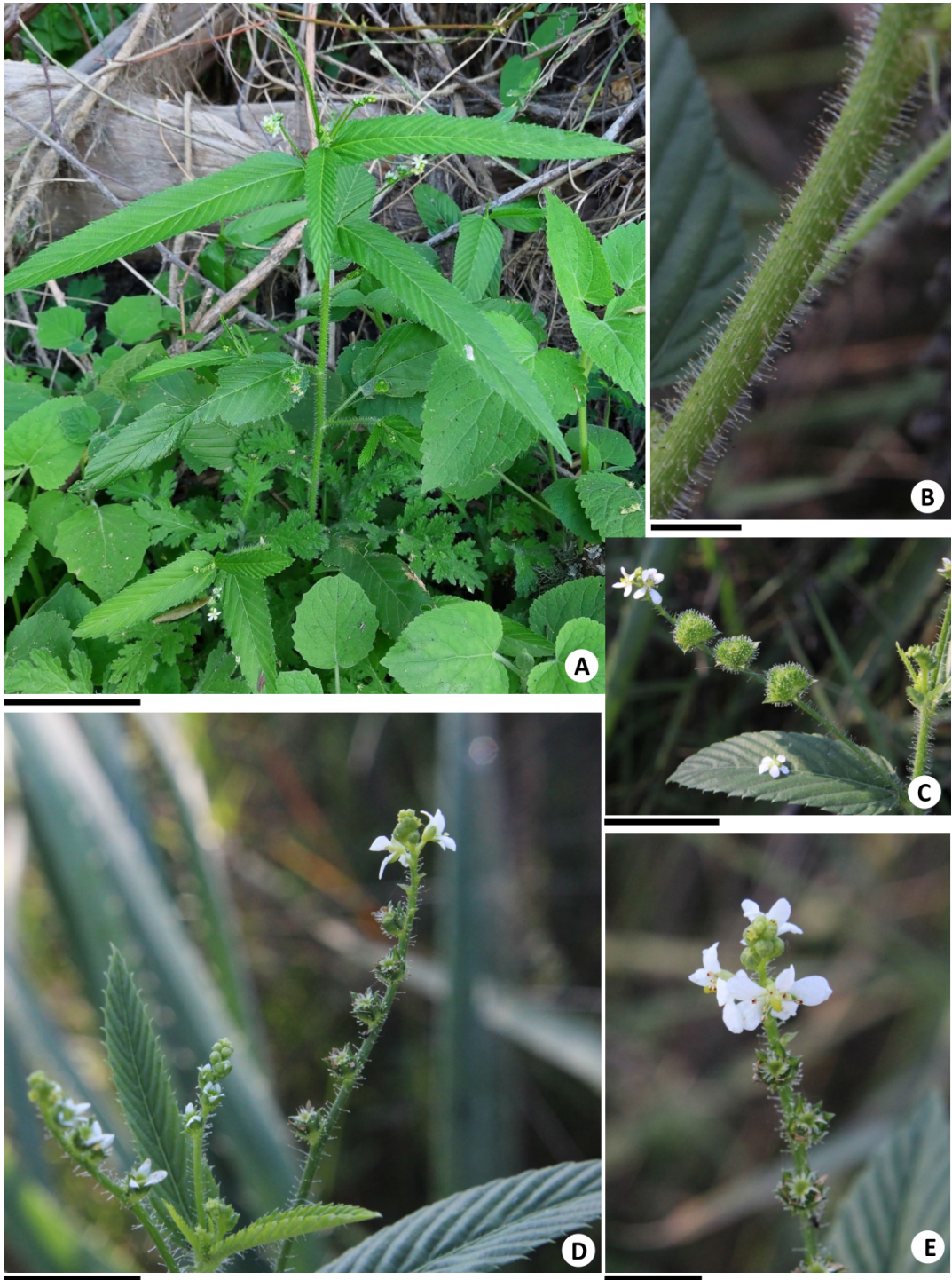


Fig. 5. *Caperonia palustris*. **A:** Whole plant. **B:** Stem with glandular trichomes. **C-D:** Inflorescence with pistillate and staminate flowers. **E:** Staminate flower with homomorphic petals. Photos: A. Tomás Tamagno - photographed in Chaco Province, Argentina. B-E. Candela Castro - photographed in Buenos Aires Province, Argentina. Scales= A: 4 cm; B: 6 mm; C-D: 2 cm; E: 1 cm.

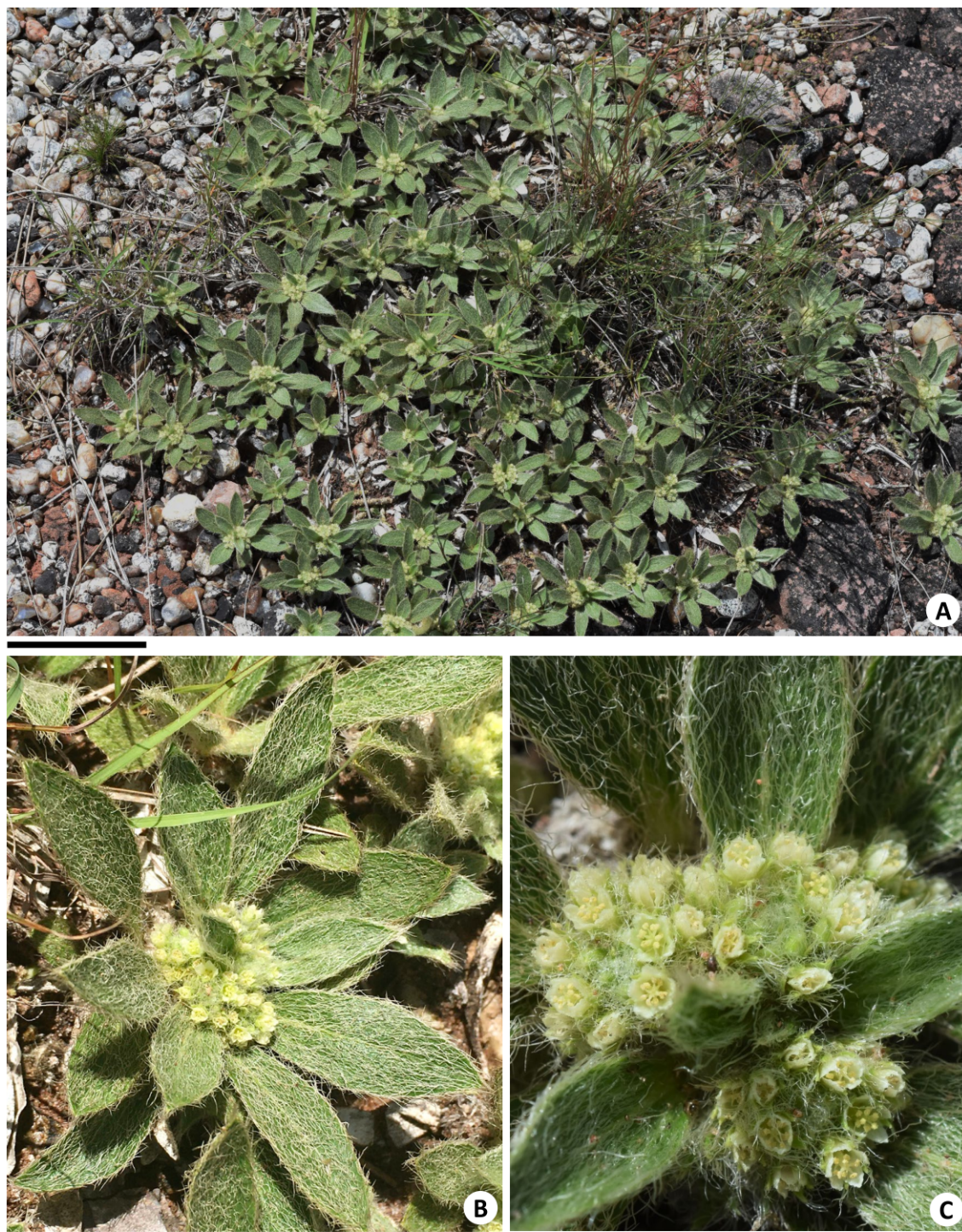


Fig. 6. *Argythamnia acaulis*. **A:** Grouping of individuals on stony soil. **B:** Whole plant. **C:** Inflorescences. Photos by Ary Mailhos. Plant photographed in the Department of Paysand, Uruguay. Scales= A: 10 cm; B: 2 cm; C: 1 cm.

mm long, linear, margin entire, with simple and malpighiaceae trichomes on the abaxial surface; petals 5, 1.9-2.1 mm long, lanceolate, margin entire, with simple trichomes on abaxial surface; stamens 8 (5 + 3) in two whorls; staminodes absent; floral nectaries globose, glabrous. Pistillate flowers with pedicels 1.6-3.2 mm long; sepals 6, 9-11.4 mm long, lanceolate non-falcate, margin entire, with simple and malpighiaceae trichomes on both surfaces; petals 5, 2.5-3 mm long, lanceolate, margin ciliate, with simple and malpighiaceae trichomes on abaxial surface; floral nectaries linear, glabrous; ovary smooth, covered with malpighiaceae trichomes, styles 3, united at the base, bifid, with simple trichomes. Capsules 7-8 mm diam., with dense malpighiaceae trichomes. Seeds globose, 2-2.4 mm diam., slightly apiculate, reticulate, gray.

Distribution and habitat: *Argythamnia acaulis* is endemic to Brazil and Uruguay (Külkamp *et al.*, 2023b). The species is endemic to the grassland of the Pampa province and associated with grazed and stony soils. In Uruguay, the records are from the northwest (Fig. 1B).

Flowering and fruiting: December to June in Uruguay.

Material examined: BRAZIL. Rio Grande do Sul: *Santana do Livramento*, 14-I-1941, *B. Rambo* 11350 (SP). URUGUAY. Artigas: *Cuareim*, 30° 16' 22.8" S, 57° 34' 22.8" W (inf. coord.), IX, *J. Arechavaleta 15a* (MVM5-191a); *Ibidem*, Orillas del Cuareim, 30° 16' 22.8" S, 57° 34' 22.8" W (inf. coord.), IX, *J. Arechavaleta s.n.* (MVFQ - 825); Rivera: *Rivera*, Barren hill top with flat outcrops near Rivera, 31° 01' 37.2" S, 55° 35' 06.0" W (inf. coord.), 07-XII-1943, *H.H. Bartlett 21079* (US); *Ibidem*, Cerros, 31° 05' 49.2" S, 55° 51' 14.4" W (inf. coord.), 20-I-1944, *C.D. Legrand 3565* (MVFA, MVM); *Ibidem*, Camino de la Diligencia, ex campo de maniobra del Ejército, 30° 16' 22.8" S, 57° 34' 22.8" W, 23-III-1989, *E. Alonso-Paz 3875* (MVFQ); Tacuarembó: *Tambores*, 31° 42' 50.4" S, 56° 10' 12.0" W (inf. coord.), *C.D. Legrand 2640* (MVM); *Ibidem*, Vale Edén, 31° 49' 12.0" S, 56° 09' 39.6" W (inf. coord.), *A.E. Paz 792* (MVM).

Observations on iNaturalist: URUGUAY. Paysandú: *Chapicuy*, 31° 36' 39.6" S, 57° 58'

58.8" W, 3-I-2020, observed by Ary Mailhos (ID - 37286618). Salto: 31° 39' 07.2" S, 57° 12' 36.0" W, 30-V-2024, observed by Agustina Medina (ID - 220716953). Tacuarembó: *Paso del Cerro*, 31° 27' 10.8" S, 55° 56' 24.0" W, 24-VI-2023, observed by Mario Oloriz (ID - 169645865).

7. *Argythamnia montevidensis* (Didr.) Müll. Arg., *Linnaea* 34: 147. 1865. *Stenonia montevidensis* Didr., *Vidensk. Meddel. Naturhist. Foren. Kjøbenhavn* 148: 1857. *Ditaxis montevidensis* (Didr.) Pax, *Nat. Pflanzenfam.* 3: 45. 1890. TYPE: URUGUAY. Montevideo: *C.F.E. Otto s.n.* (holotype C [mounted on 2 sheets] C10011214, C10011215). Fig. 7.

Herbs to subshrubs 15-45 cm tall, perennial, monoecious, woody subterranean structure absent. Stems erect, caulescent, branched at the base, young branches with malpighiaceae trichomes. Leaves non-rosulate; stipules lanceolate, with malpighiaceae trichomes on abaxial surface; petioles 2.3-8 mm long; blades 0.8-5.2 × 0.5-2.4 cm, lanceolate to elliptic, apex acute, base acute to cuneate, margin serrate, venation pinnate actinodromous, with malpighiaceae trichomes on both surfaces, glabrescent. Inflorescence with one proximal pistillate flower and 2-4 distal staminate flowers; bracteoles lanceolate, with simple trichomes on abaxial surface. Staminate flowers with pedicels 2.1-2.5 mm long; sepals 5, 0.9-1.4 mm long, lanceolate, margin entire, with sparse malpighiaceae trichomes on abaxial surface; petals 5, 1-1.8 mm long, elliptic, margin entire, with malpighiaceae trichomes on the central vein of the abaxial surface; stamens 8 (5 + 3) in two whorls; staminodes 3, glabrous; floral nectaries oval, glabrous. Pistillate flowers with pedicels 1.6-3.2 mm long; sepals 5, 4-5.1 mm long, ovate to lanceolate, margin entire, with simple and malpighiaceae trichomes on both surfaces; petals 5, 0.3-0.5 mm long, ovate to rhomboid, margin entire, glabrous; floral nectaries filiform, glabrous; ovary smooth, covered with malpighiaceae trichomes; styles 3, united 1/3 length, bifid, with simple trichomes. Capsules 4-5.2 mm diam., with dense malpighiaceae trichomes. Seeds globose, ca. 2.2 mm diam., apiculate, rough, gray with central line black.

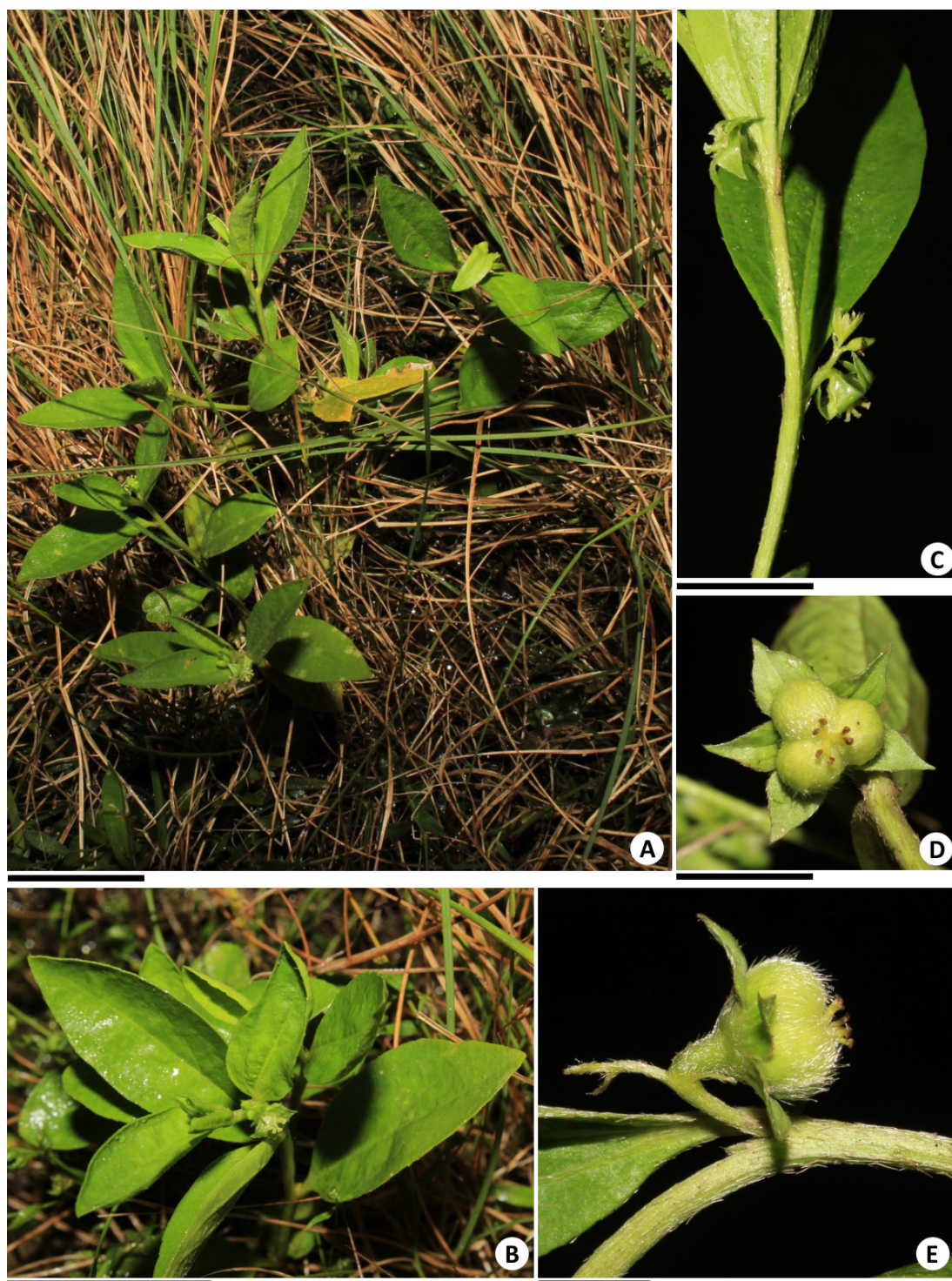


Fig. 7. *Argythamnia montevidensis*. **A-B:** Plant growing on native grassland. **C:** Branch with inflorescences. **D:** Fruit. **E:** Fruit in lateral view. Photos by Josimar Klkamp. Plant photographed in Barra do Quara, RS, Brazil, border with Uruguay. Scales= A-B: 6 cm; C: 1 cm; D: 5 mm; E: 6 mm.

Distribution and habitat: *Argythamnia montevidensis* is distributed in Argentina, Bolivia, Brazil, Paraguay, and Uruguay (Külkamp *et al.*, 2024a). It occurs in open areas of the Chaco and Pampa provinces (Külkamp *et al.*, 2023b) associated with sparse tree vegetation. In Uruguay, the species occurs in southwest (Fig. 1B).

Flowering and fruiting: November to February in Uruguay.

Material examined: ARGENTINA. Corrientes: *Corrientes Maraetá*, Ruta 14, Camino antes de Maraetá, 27-IV-1953, *E.G. Nicora 6360* (SI). BRAZIL. Rio Grande do Sul: *Barra do Quarai*, Parque Estadual do Espinilho, 12-X-2017, *J. Külkamp et al. 367* (ICN, RB). URUGUAY. Montevideo: *Montevideo*, 34° 48' 54.0" S, 56° 04' 15.6" W (inf. coord.), 1-II-1877, *Fruchat s.n.* (US-28124490). Río Negro: *Campos Mafalda*, Ruta 24, km 46, 32° 51' 00.0" S, 58° 00' 00.0" W, 5-II-1997, *E. Marchesi & M. Vignale s.n.* (MVFA-26641). *Ibidem*, Fray Bentos, II-1877, *Fruchat s.n.* (MVFQ-1128, MVFQ-830). Soriano: *Vera*, 33° 12' 00.0" S, 57° 28' 58.8" W (inf. coord.), no date, *M. Berro 48* (MVM - 2 sheets). No location, no date, no collector, (MVFQ-829); *Ibidem* (MVFQ-828).

Observations on iNaturalist: URUGUAY. Río Negro: *San Javier*, 32° 31' 01.2" S, 58° 02' 09.6" W, 4-XI-2023, observed by Santiago Mailhos (ID - 189981498).

8. *Argythamnia sellowiana* (Pax & K.Hoffm.) J.W.Ingram, *Bull. Torrey Bot. Club.* 84: 423. 1958. *Ditaxis sellowiana* Pax & K.Hoffm., *Pflanzen.* IV.147.vi (Heft 57), 77. 1912. TYPE: BRAZIL. Rio Grande do Sul: *Bagé*, Próximo ao trevo, 55° 49' 46" W, 29° 48' 32" S, XI-2017, *J. Külkamp et al. 394* (neotype designated by Külkamp *et al.*, 2023b: RB827128, isoneotype: ICN197214). Fig. 8.

=*Argythamnia rhizantha* (Pax & K.Hoffm.) J.W.Ingram, *Bull. Torrey Bot. Club* 84: 423. 1958.

=*Argythamnia rosularis* (Pax & K.Hoffm.) J.W.Ingram, *Bull. Torrey Bot. Club* 84: 423. 1958.

Herbs 10-20 cm tall, perennial, monoecious, woody subterranean structure present. Stems

prostate and/or acaulescent, with simple and malpighiaceae trichomes. Leaves rosulate; stipules lanceolate, with malpighiaceae trichomes on both surfaces; petioles 5-12 mm long; blades 2-9 × 0.7-3.6 cm, elliptic to obovate, apex acute, base acuminate to acute, margin entire, venation pinnate actinodromous, hirsute on abaxial surface with simple and malpighiaceae trichomes. Inflorescences with one proximal pistillate flower and 3-5 distal staminate flowers; bracteoles lanceolate, with simple trichomes on abaxial surface. Staminate flowers with pedicels 1.5-2.1 mm long; sepals 5, 1.5-1.8 mm long, linear, margin entire, with simple trichomes on the abaxial surface; petals 5, 1.9-2.2 mm long, lanceolate, margin entire, with simple trichomes on abaxial surface; stamens 8 (5 + 3), in two whorls, staminode absent; floral nectaries oval, glabrous. Pistillate flowers with pedicels 1.8-3 mm long; sepals 5(-6), 5.9-8.5 mm long, lanceolate falcate, margin entire, with simple and malpighiaceae on both surfaces; petals 5, 2.5-3 mm long, lanceolate, margin entire ciliate, with simple and malpighiaceae trichomes on abaxial surface; floral nectaries linear, glabrous; ovary smooth, covered with malpighiaceae trichomes; styles 3, united at the base, bifid, with simple trichomes. Capsules 5-6 mm diam., with dense malpighiaceae trichomes. Seeds globose, 1.9-2 mm diam., slightly apiculate, reticulate, gray.

Distribution and habitat: The species is distributed in central and northern Uruguay (Fig. 1B), in northeastern Argentina, south of Brazil, and south of Paraguay, always associated with grassland vegetation and rocky outcrops.

Flowering and fruiting: November to May in Uruguay.

Material examined: ARGENTINA. Corrientes: *Ituzaingó*, Playadito, 20 km O de Apóstoles, 1879, *A. Schinini 21790* (CTES). BRAZIL. Rio Grande do Sul: *Arroio dos Ratos*, Estrada do Faxinal, Fazenda Esperança, 15-III-2018, *J. Külkamp et G.P. Coelho 466* (ICN). URUGUAY. Artigas: *Tomás Gomensoro*, 30° 26' 13.2" S, 57° 26' 20.4" W, 16-I-1971, *E. Marchesi s.n.* (MVFA-10232, MVFQ). Rivera: *Rivera*, Parque Gran Bretaña, 30° 52' 15.6" S, 55° 36' 14.4" W (inf. coord.), 5-II-1989, *E. Alonso-Paz 567* (MVM); *Ibidem*, Cerro Aurora,

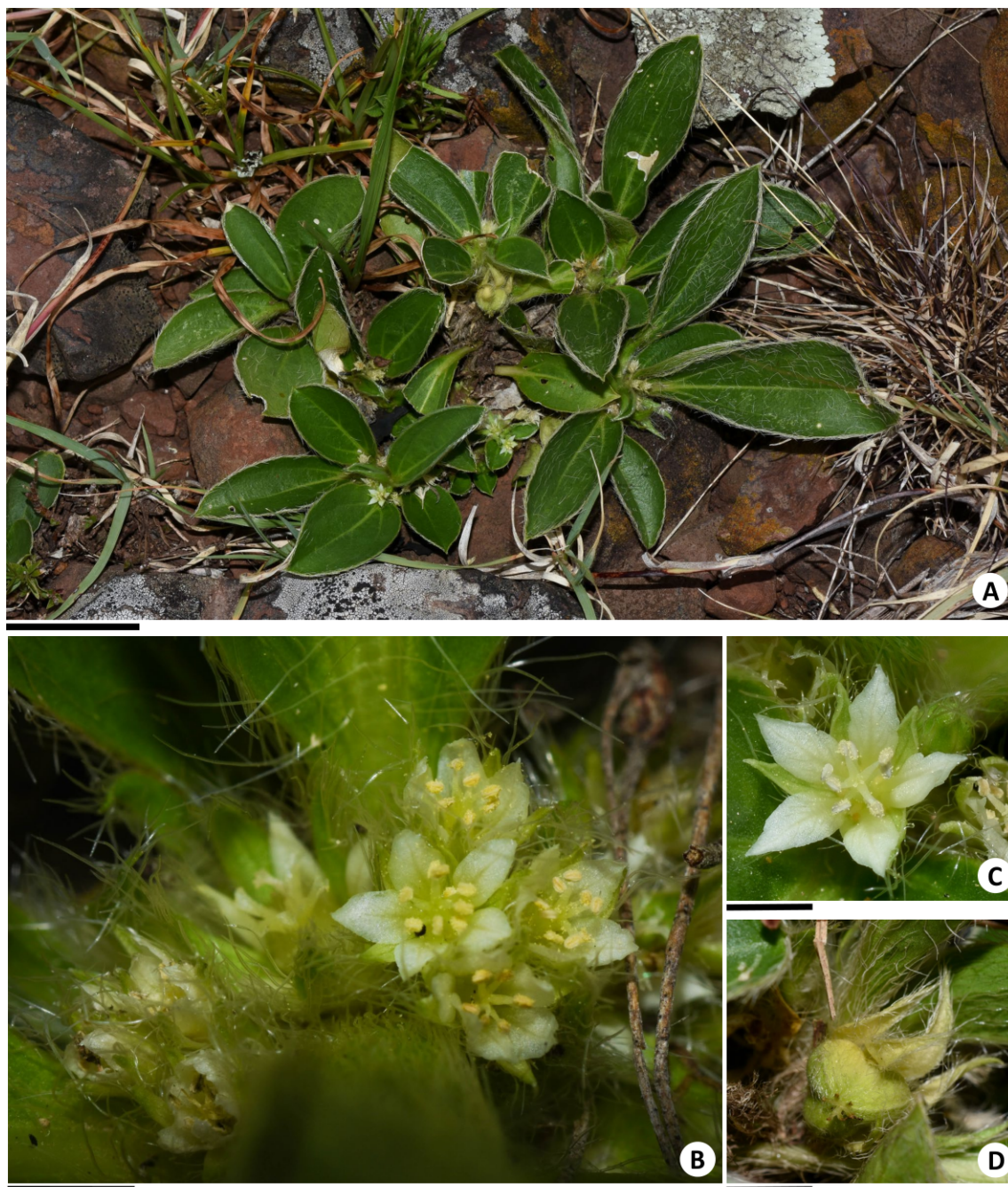


Fig. 8. *Argythamnia sellowiana*. **A:** Plant growing on stony soil. **B:** Inflorescences. **C:** Staminate flower. **D:** Fruit with falcate sepals. Photos by Ary Mailhos. Plant photographed in the Department of Rivera, Uruguay. Scales= A: 4 cm; B: 7 mm; C: 6 mm; D: 1 cm.

31° 03' 07.2" S, 55° 42' 57.6" W (inf. coord.), 10-12-II-1961, *Arrillaga et al.* 1137 (MVFA); *Ibidem*, Camino de la Diligencia, ex campo de maniobra del Ejército, 30° 16' 22.8" S, 57° 34' 22.8" W, 23-III-1989, *E. Alonso-Paz* 3874 (MVFQ); *Ibidem*, Gajo del Lunarejo, campo de Abelenda 841, 31° 09' 54.0" S, 55° 54' 50.4" W, 19-VI-2004, *E. Alonso-Paz* 3755 (MVFQ).

Observations on iNaturalist: URUGUAY. Tacuarembó: *Bañado de Rocha*, 31° 36' 43.2" S, 55° 55' 01.2" W, 9-XI-2021, observed by Ary Mailhos (ID - 101000745). Tacuarembó: *Establecimiento Bichadero*, 31° 21' 36.0" S, 55° 59' 06.0" W, 30-V-2022, observed by Mathias Iglesias (ID - 119664123). Rivera: *Laureles*, 31° 13' 58.8" S, 56° 05' 27.6" W, 7-I-2024, observed by Ary Mailhos (ID - 196858855).

Chiropetalum A. Juss., *Ann. Sci. Nat.* 25: 21. 1832. TYPE: *Chiropetalum lanceolatum* (Cav.) A. Juss. Figs. 9-14.

Herbs or subshrubs, perennial, monoecious, gynodioecious, or androdioecious; subterranean structure absent. Stems erect or decumbent, solid, inermous, glabrous or with malpighiaceus, simple, or stellate trichomes. Leaves simple, alternate; stipules present, lanceolate, glabrous or pubescent; petiole; blade ovate to lanceolate; margin crenate, serrate or bisserrate; venation pinnate, basal and suprabasal actinodromous; trichomes malpighiaceus, simple, and stellate on both surfaces. Inflorescences racemose axillary; pistillate flowers proximal and staminate flowers distal; bracteoles uniflorous, ovate to lanceolate, pubescent. Staminate flowers pedicellate; sepals 5, lanceolate, margin entire, pubescent or glabrous; petals 5, equal, 3-7-lobed, basally adnate to the receptacle, glabrous; stamens 3-6 in one whorl, filaments partially united in a column; staminodes absent; floral nectaries 5, adnate at the base of the staminal column, glabrous or pubescent. Pistillate flowers pedicellate; sepals 5, equal, ovate to lanceolate, margin entire, pubescent; petals absent; floral nectaries 5, adnate to the receptacle at the base of the ovary, glabrous or pubescent; ovary 3-locular, locules uniovulate, surface not muricate, pubescent; styles 3, bifid, glabrous or pubescent.

Capsules smooth, pubescent. Seeds orbicular, not apiculate, rough or foveolate, gray to black.

Twenty-two *Chiropetalum* species and one variety are recognized, distributed in South America (20 species), and North America (Mexico; two species). Most species grow in central South America. In Uruguay, the genus includes six species.

9. *Chiropetalum foliosum* (Müll.Arg.) Pax & K.Hoffm., *Pflanzenr.* IV.147.vi (Heft 57), 91. 1912. *Argythamnia foliosa* Müll.Arg., *Linnaea* 34: 150. 1865. TYPE: In Brasilia Meridionalis [BRAZIL. Rio Grande do Sul]: *F. Sellow s.n.* (lectotype designated by Ingram, 1980: G00434168, isolectotype: P). Fig. 9.

Herbs 20-40 cm tall, perennial, monoecious. Stems erect or decumbent, with simple and malpighiaceus trichomes. Leaves with stipules lanceolate, with simple trichomes on abaxial surface; petioles 1-2 mm long; blades 1-3 × 1.2-1.6 cm, ovate, apex acute, base rounded, margin serrate, teeth 5-8, venation pinnate, basal actinodromous, with malpighiaceus and simple trichomes on both surfaces. Inflorescence with 1 rarely 2 proximal pistillate flowers and 2-5 distal staminate flowers; bracteoles lanceolate, with simple trichomes on abaxial surface. Staminate flowers with pedicels 2.3-3.4 mm long; sepals 5, 1.4-1.6 mm long, lanceolate, margin entire, with simple and malpighiaceus trichomes on the abaxial surface, glabrous on the adaxial surface; petals 5, 1.4-1.56 mm long, apex 3-lobed, free portion of lacinia 1/2 of petal length, glabrous; stamens 5 in one whorl; floral nectaries oval, glabrous. Pistillate flowers with pedicels 2.3-3.5 mm long, sepals 5, 3.5-4 mm long, lanceolate, margin entire, with simple trichomes on abaxial surface; petals absent; floral nectaries globose, glabrous; ovary smooth, covered with simple and malpighiaceus trichomes; style 3, united at the base, bifid, glabrous. Capsules 5.6-6.2 mm diam., with simple and malpighiaceus trichomes. Seeds globose, 1.9-2.1 mm diam., not apiculate, rough, black.

Distribution and habitat: Chiropetalum foliosum occurs in Brazil (Rio Grande do Sul) and Uruguay (Fig. 1D), in the Pampa province (Külkamp *et*



Fig. 9. *Chiropetalum foliosum*. **A:** Whole plant. **B:** Inflorescence. **C:** Staminate flowers. Photos by Ary Mailhos. Plant photographed in the Department of Rivera, Uruguay. Scales= A: 4 cm; B: 8 mm; C: 1 cm.

al., 2024a). In Uruguay, there is a single recorded specimen in the northern region, near to the border with Brazil.

Flowering and fruiting: November and December.

Material examined: BRAZIL. Rio Grande do Sul: *Piratini*, Quinto distrito, 6-IX-2023, J. Külkamp

et al. 1584 (FLOR, PEL, RB). URUGUAY. Rivera: Ruta 29, km 15, Cerro Chato Dorado, Laderas de cerro, 31° 03' 57.6" S, 55° 27' 25.2" W, 12-XII-1997, E. Marchesi & I. Grela *s.n.* (MVFA-27163).

Observations on iNaturalist: URUGUAY. Rivera: *Tres Cerros*, 31° 28' 22.8" S, 55° 42' 50.4" W, XI-2021, observed by Ary Mailhos (ID - 109605819).

10. *Chiropetalum griseum* Griseb., *Abh. Königl. Ges. Wiss. Göttingen* 24: 57. 1879. *Argythamnia grisea* (Griseb.) Allem & Irgang, *Rev. Bras. Biol.* 36: 286. 1976. TYPE: ARGENTINA. Córdoba: *G. Hieronymus* 92 (lectotype designated by Ingram, 1980: GOET003318, isoelectotypes: CORD00005965, F0055984F, G00434167). Fig. 10.

Herbs to subshrubs 45-12 cm tall, perennial, monoecious. Stems erect, rarely decumbent, with malpighiaceae trichomes. Leaves with stipules lanceolate, ciliate, with simple, stellate and malpighiaceae trichomes on abaxial surface; petioles 1-5 mm long; blade 1.4-7.2 × 1-3 cm, elliptic to ovate, apex acute, base rounded, margin crenate-serrate, teeth 5-11, venation pinnate, basal actinodromous, with malpighiaceae, simple and stellate trichomes on both surfaces. Inflorescence with 1-2 proximal pistillate flowers and 4-12 distal staminate flowers; bracteoles lanceolate, with simple trichomes on abaxial surface. Staminate flowers with pedicels 2.8-3.4 mm long; sepals 5, 1.5-1.7 mm long, lanceolate, margin entire, with simple and stellate trichomes on abaxial surface, glabrous on the adaxial surface; petals 5, 1-1.2 mm long, apex 3-5-lobed, free portion of lacinia 1/2 of petal length, glabrous; stamens (2)3-5 in one whorl; floral nectaries oval, covered with simple trichomes. Pistillate flowers with pedicels 3.1-3.7 mm long, sepals 5, 2.4-3.2 mm long, lanceolate to elliptic, margin entire, with simple and stellate trichomes on both surfaces; petals absent; floral nectaries globose, covered with simple trichomes; ovary smooth, covered with simple and malpighiaceae trichomes; style 3, united at the base, bifid, glabrous. Capsules 3.5-4.3 mm diam., with dense stellate, malpighiaceae and simple trichomes. Seeds globose, 1.5-1.8 mm diam., foveolate, rough, gray.

Distribution and habitat: *Chiropetalum griseum* occurs in Argentina, Paraguay, and Uruguay (Fig. 1D), in the Chaco and Pampa provinces (Külkamp *et al.*, 2024a). In Uruguay, it occurs in the western region, near the Río Uruguay, bordering Argentina.

Flowering and fruiting: The only fertile record from Uruguay dates from September.

Material examined: ARGENTINA. Corrientes: San Luis del Palmar, X-1976, A. Schinini *et al.* C.L. Cristobal 13680 (MBM, SI).

Observations on iNaturalist: URUGUAY. Río Negro: San Javier, 32° 30' 57.6" S, 58° 02' 02.4" W, 21-IX-2021, observed by Ary Mailhos (ID - 95724489).

11. *Chiropetalum intermedium* Pax & K.Hoffm., *Pflanzenr.* IV.147.vi (Heft 57), 91. 1912. *Argythamnia intermedia* (Pax & K.Hoffm.) Allem & Irgang, *Rev. Bras. Biol.* 36: 286. 1976. TYPE: URUGUAY. Campos del Uruguay, XII-1894, J. Arechavaleta 37 (lectotype designated here: MVM-5261! (specimen bearing a label that reads "campos secos")). Fig. 11.

Herbs to subshrubs 30-100 cm tall, perennial, monoecious. Stems erect rare decumbent, with malpighiaceae trichomes. Leaves with stipules lanceolate, ciliate, with simple trichomes on the abaxial surface; petioles 1-4 mm long; blades 1-4 × 0.6-3 cm, elliptic to ovate, apex acute, base rounded, margin crenate-serrate, teeth 12-19, venation pinnate, basal actinodromous, with malpighiaceae trichomes. Inflorescences with 1-3 proximal pistillate flowers and 2-7 distal staminate flowers, bracteoles ovate to lanceolate, glabrous. Staminate flowers with pedicels 2.2-3 mm long; sepals 5, 1.8-2 mm long, lanceolate, margin entire, with simple and malpighiaceae trichomes only on abaxial surface; petals 5, 1-1.2 mm long, apex (3)5-lobed (three major central lobes and two smaller lateral), glabrous; stamens 3-4 in one whorl; floral nectaries oval, glabrous. Pistillate flowers with pedicels 2.4-3.1 mm long, sepals 5 rare 6, 2-2.7 mm long, oblanceolate, margin entire, with simple trichomes on both surfaces, malpighiaceae only on the abaxial surface; petals absent; floral nectaries globose, glabrous; ovary smooth, covered with simple and malpighiaceae trichomes; styles 3, united at the base, bifid, covered with malpighiaceae trichomes. Capsules 3.9-4.1 mm diam., with malpighiaceae trichomes. Seeds globose, 1.7-1.9 mm diam., not apiculate, rough, gray.

Distribution and habitat: *Chiropetalum intermedium* occurs in Brazil (Rio Grande do Sul) and Uruguay (Fig. 1D), in the Pampa province



Fig. 10. *Chiropetalum griseum*. **A:** Whole plant. **B:** Inflorescence. **C:** Staminate flowers with lobed petals. **D:** Inflorescence apex with one staminate flower and buds. **E:** Staminate flower with two stamens. **F:** Pistillate flower. **G:** Fruit. Photos by Ary Mailhos. Plant photographed in the Department of Río Negro, Uruguay. Scales= A: 3 cm; B: 8 mm; C, F-G: 5 mm; D: 2 cm; E: 3 mm.



Fig. 11. *Chiroptetalum intermedium*. **A:** Whole plant. **B:** Pistillate flower. **C:** Pistillate flower and leaf base with densely malpighiaceae trichomes. Photos by Ary Mailhos. Plant photographed in the Department of Rivera, Uruguay. Scales= A: 3 cm; B-C: 3 mm.

(Külkamp *et al.*, 2024a). In Uruguay, it occurs in the north and west of the country, near the Río Uruguay.

Flowering and fruiting: throughout the year.

Notes: Pax & Hoffmann (1912) described *C.*

intermedium and cited the collection *J. Arechavaleta* 37 in the protologue. The original material was deposited at B and destroyed during World War II; only a photograph remains (F-5241; <https://fm-digital-assets.fieldmuseum.org/34/052/5241>).

jpg). Külkamp *et al.* (2024a) designated a specimen from the collection *J. Arechavaleta s.n.* as a neotype for *C. intermedium* because they did not locate any original material. However, during the current revision of the genus, we found two specimens from MVM labeled *J. Arechavaleta* 37. These specimens match the protologue of *C. intermedium* in morphology, collector, and collection number, and should therefore be considered original material (Art. 9.4 ICN - Turland *et al.*, 2018). Upon examining the photograph F-5241 of the former B specimen, it is evident that the MVM specimens are not isotypes because they were collected on a different date (specimen at B: February 1894; specimens at MVM: December 1894). Therefore, following the ICN, these specimens should be treated as syntypes, and a lectotype should be selected among them. Both specimens bear the same herbarium number (MVM-5261), however, they differ in label information (“campos” vs. “campos secos”) and therefore cannot be considered duplicates. Here, we designate the specimen *Arechavaleta* 37 (MVM-5261 with the habitat indication “campos secos”) as the lectotype of *Chiropetalum intermedium*, which takes precedence over the previously designated neotype (Art. 9.13). This specimen bears abundant reproductive and vegetative material and is well preserved.

Material examined: BRAZIL. Rio Grande do Sul: *Santana da Boa Vista*, Pedra da Cruz, 3-XII-2016, *J. Külkamp et al.* 154 (ICN). URUGUAY. Artigas: *San Gregorio*, Costa del Río Uruguay, Campos de arrocería Riusa, unos 2 km al oeste de confluencia de Cañada Yacaré y A Tigre, 30° 34' 26.4" S, 57° 50' 20.4" W, 28-IX-2014, *Rossado & F. Haretche* 801 (MVJB); Canelones: 15-XI-1908, *M.B. Berro* 542 (MVM); Santa Lucía: en el monte, terreno arenoso, 34° 27' 32.4" S, 56° 22' 26.4" W (inf. coord.), XII-1874, *Arechavaleta* 3552 (MVM); *Ibidem*, 1-XI-1869, *Gibert* 782 (MVFQ); Florida: *San Pedro Del Timote*, Arroyo Mansavillagra, en bosque ribereño, 33° 33' 00.0" S, 55° 43' 04.8" W (inf. coord.), 2-X-1942, *PE* 5021 (MVM); Paysandú: Ruta 90, km 68, 32° 23' 24.0" S, 57° 24' 43.2" W (inf. coord.), 17-IX-2002, *E. Alonso-Paz* 3166 (MVFQ). No locality, no date, *J. Arechavaleta s.n.* (MVFQ-834); *J. Arechavaleta s.n.* (MVFQ-833); *J. Arechavaleta s.n.* (MVFQ-832).

Observations on iNaturalist: URUGUAY. Rivera: *Minas de Corrales*, 31° 30' 0" S, 55° 15' 0" W, 11-IX-2021, observed by Ary Mailhos (ID - 109605821).

12. *Chiropetalum latifolium* (Chodat & Hassl.) Külkamp & Iganci, *Acta Bot. Brasil.* 38: e20230220. 2024. *Chiropetalum tricoccum* (Vell.) Chodat & Hassl. f. *latifolia* Chodat & Hassl., *Bull. Herb. Boissier*, 2: 502. 1905. TYPE: PARAGUAY. Central: Ad ripam lacus Ypacaray, II-1898-1899, *E. Hassler* 3927 (lectotype designated by Külkamp *et al.*, 2024a: G00307035; isolectotypes: A00045924, BM000504338, G00307030, G00307032, G00307033, G00307034, K000600299, MPU014910, NY00246361, P00634980, UC941597). Fig. 12.

Subshrubs 50-110 cm tall, perennial, monoecious. Stems erect or decumbent, with malpighiaceae trichomes. Leaves with stipules lanceolate, with simple trichomes on margin, malpighiaceae on the abaxial surface, adaxial surface glabrous; petioles 3.7-9 mm long; blades 2-9.2 × 1-3.5 cm, ovate to lanceolate, apex attenuate, base acute to rounded, margin serrate, teeth 12-25, venation pinnate, basal actinodromous, sparse malpighiaceae trichomes on both surfaces. Inflorescences with 1-4 proximal pistillate flowers and 12-28 distal staminate flowers; bracteoles lanceolate, glabrous. Staminate flowers with pedicels 1.7-2.1 mm long; sepals 5, 0.9-1.5 mm long, ovate or lanceolate, margin entire, with malpighiaceae trichomes on both surfaces; petals 5, 0.7-1 mm long, apex 4-7-lobed, free portion of lacinia 1/2-1/3 of petal length, central lobe longer than the lateral ones, glabrous; stamens 5 in one whorl; floral nectaries oval, covered with simple trichomes. Pistillate flowers with pedicels 2.1-3 mm long, sepals 5, 1-2.3 mm long, lanceolate, margin entire, with simple trichomes on both surfaces or only in abaxial surface; petals absent; floral nectaries globose, covered with simple trichomes; ovary smooth, covered with malpighiaceae trichomes; style 3, united at the base, bifid, glabrous. Capsules 3.2-3.86 mm diam., with malpighiaceae trichomes. Seeds globose, 0.9-1.1 mm diam., not apiculate, foveolate, gray to black.

Distribution and habitat: The species grows in Argentina, Brazil (South), Paraguay, and Uruguay. It occurs in the understory of open and riparian

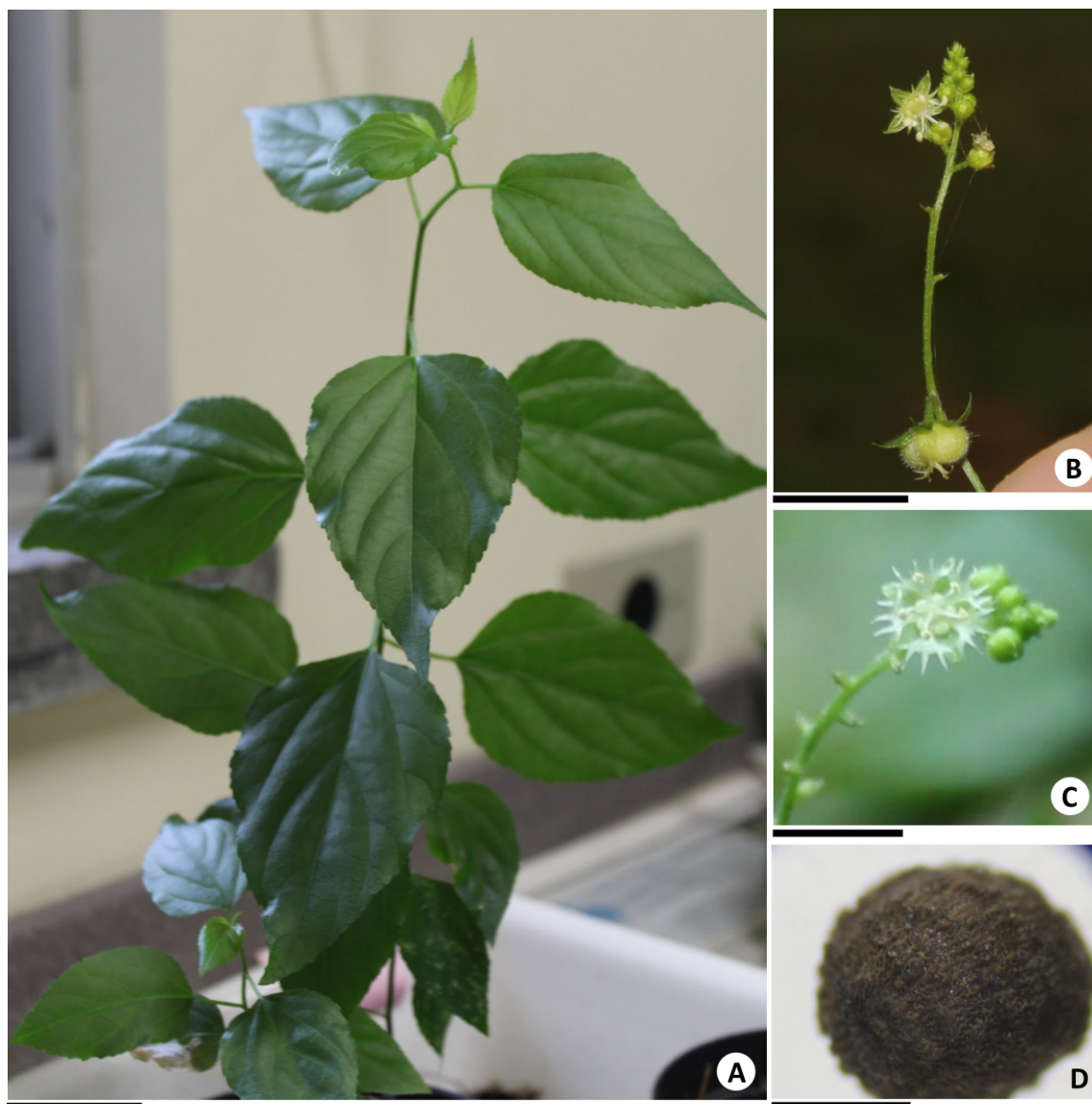


Fig. 12. *Chiropetalum latifolium*. **A:** Whole plant. **B:** Inflorescence. **C:** Staminate flower. **D:** Seed. Photos by Josimar Külkamp. Plant photographed in Quaraí, RS, Brazil, border with Uruguay. Scales= A: 3 cm; B: 7 mm; C: 5 mm; D: 1 mm.

forests of the Pampa province in the central and western Uruguay (Fig. 1D).

Flowering and fruiting: Throughout the year but more frequently from October to February.

Notes: *Chiropetalum latifolium* was recently elevated to the rank of species from *Chiropetalum*

tricoccum f. *latifolium* Chodat & Hassl (Külkamp et al., 2024a).

Material examined: ARGENTINA. Corrientes: *En baldío*, Sotobosque, 1-V-1989, A. Krapovickas et C.L. Cristóbal 15380 (MBM). BRAZIL. Rio Grande do Sul: *Estrela*, Barranco do Rio Taquari, V-2017, J. Külkamp et al. 225 (ICN, RB).

URUGUAY. Durazno: *Durazno*, 33° 21' 28.8" S, 56° 35' 09.6" W, 30-IX-1899, *C. Osten* 3847 (MVM, MVFQ); *Ibidem*, 23-XII-1900, *C. Osten* 4330 (MVFQ); Florida. Timote, Estancia Santa Clara, 33° 38' 20.4" S, 55° 45' 54.0" W, Dec 1937, *Gallinal et al.* 3132 (MVM); *Ibidem*, Rincón de Santa Elena, Sotomonte, 1-XI-1946, *C.D. Legrand* 4528 (MVM); *Ibidem*, Paso Polanco del Yí, 33° 28' 51.6" S, 56° 08' 56.4" W, 2-XII-2012, *F. Haretche* 480 (MVJB); Salto, 12-IX-1961, *D. Puerto* 31 (MVFA); Paysandú: *Paso Andrés Perez*, Queguay Grande, 32° 11' 09.6" S, 57° 14' 31.2" W, 5-IV-2008, *F. Haretche* 106 (MVJB).

13. *Chiropetalum molle* (Müll.Arg.) Pax & K.Hoffm., *Pflanzenr.* IV.147.vi (Heft 57) 92, 1912. *Argythamnia mollis* Müll. Arg., *Adansonia* 4: 289. 1864. TYPE: BRAZIL. Rio Grande do Sul: *F. Sellow s.n.* (lectotype [first-step] designated by Ingram, 1980, [second step] designated by Kùlkamp *et al.*, 2024a: G00415056, isolectotypes: BR0000006998776, F336638, F336651, F336652, G00415057, G00415058, K000600302, P00634975, P04865053 - specimen of Sellow numbered by Gaudichaud [*Gaudichaud* 1691], TUB009144). Fig. 13.

Subshrubs to shrubs 50-140 cm tall, perennial, monoecious. Stems erect, with simple and malpighiaceae trichomes. Leaves with stipules lanceolate, ciliate, with malpighiaceae trichomes on abaxial surface; petioles 1.3-9 mm long; blades 2-7 × 1-2.6 cm, lanceolate to elliptic, apex acute, base obtuse, margin biserrate, teeth 14-40, venation pinnate, basal actinodromous, with malpighiaceae, simple and stellate trichomes on both surfaces. Inflorescences with 1-3 proximal pistillate flowers and 11-34 distal staminate flowers, or sometimes inflorescence with 3-5 pistillate flowers; bracteoles lanceolate, with simple and stellate trichomes on both surfaces. Staminate flowers pedicels 3.1-3.7 mm long; sepals 5, 1.2-1.5 mm long, lanceolate, margin entire, with simple and malpighiaceae trichomes only on abaxial surface; petals 5, 0.5-0.75 mm long, apex 5-7-lobed, free portion of lacinia 1/2 of petal length, glabrous; stamens 5 rare 6; floral nectaries oval, glabrous. Pistillate flowers with pedicels 3.2-3.9 mm long, sepals 5, 1.8-2.3 mm long, oblanceolate, margin entire, with trichomes

simple and malpighiaceae on both surfaces; petals absent; floral nectaries globose, glabrous; ovary smooth, covered with simple, malpighiaceae, and stellate trichomes; styles 3, united at the base, bifid, glabrous or with simple trichomes. Capsules 3.9-4.1 mm diam., densely covered with malpighiaceae, simple and stellate trichomes. Seeds globose, ca. 1 mm diam., not apiculate, foveolate, gray to black.

Distribution and habitat: *Chiropetalum molle* grows in Brazil and Uruguay. In Uruguay, it occurs in the north and east region (Fig. 1D), in forest understory.

Flowering and fruiting: September and October in Uruguay.

Material examined: BRAZIL: Rio Grande do Sul. *Bagé*, Casa de Pedra, 10-X-2017, *J. Kùlkamp et al.* 334 (ICN). URUGUAY. Rivera: *Rivera*, 30° 55' 48.0" S, 55° 39' 14.4" W, 10-X-2022, *A. González & J.L. Antúnez s.n.* (MVM-23504). Rocha: *Dieciocho de Julio*, Sierra San Miguel, 33° 40' 51.6" S, 53° 33' 18.0" W, 26-IX-1948, *D. Legrand* 2869 (MVFQ); *Ibidem*, *Laguna Negra*, Potrerillo de Santa Teresa, 33° 58' 04.8" S, 53° 38' 38.4" W, 17-II-1994, *E. Alonso-Paz* 1697 (MVFQ).

Observations on iNaturalist: URUGUAY. Rocha: Estación Biológica Potrerillo de Santa Teresa, 33° 57' 28.8" S, 53° 37' 58.8" W, 8-II-2022, observed by Mathias Iglesias (ID - 141809151).

14. *Chiropetalum puntaloberense* Alonso Paz & Bassagoda, *Comun. Bot. Mus. Hist. Nat. Montevideo* 6(135): 1-2. 2009. TYPE: URUGUAY. Rocha: Parque de Santa Teresa, Punta de los Loberos, Cerro Verde, 33° 56' 42.8" S, 53° 30' 22.9" W, 16-X-2003, *E. Alonso-Paz & M.J. Bassagoda* 3659 (holotype: MVM, isotypes: MVFQ, MVFA, MVJB). Fig. 14.

Subshrubs to shrubs 45-90 cm tall, perennial, monoecious. Stems erect or decumbent, with simple and malpighiaceae trichomes. Leaves with stipules lanceolate, with simple trichomes on both surfaces; petioles 1.92-3.3 mm long; blades 1.6-6.3 × 1.15-2.5 cm, ovate, elliptic to lanceolate, apex

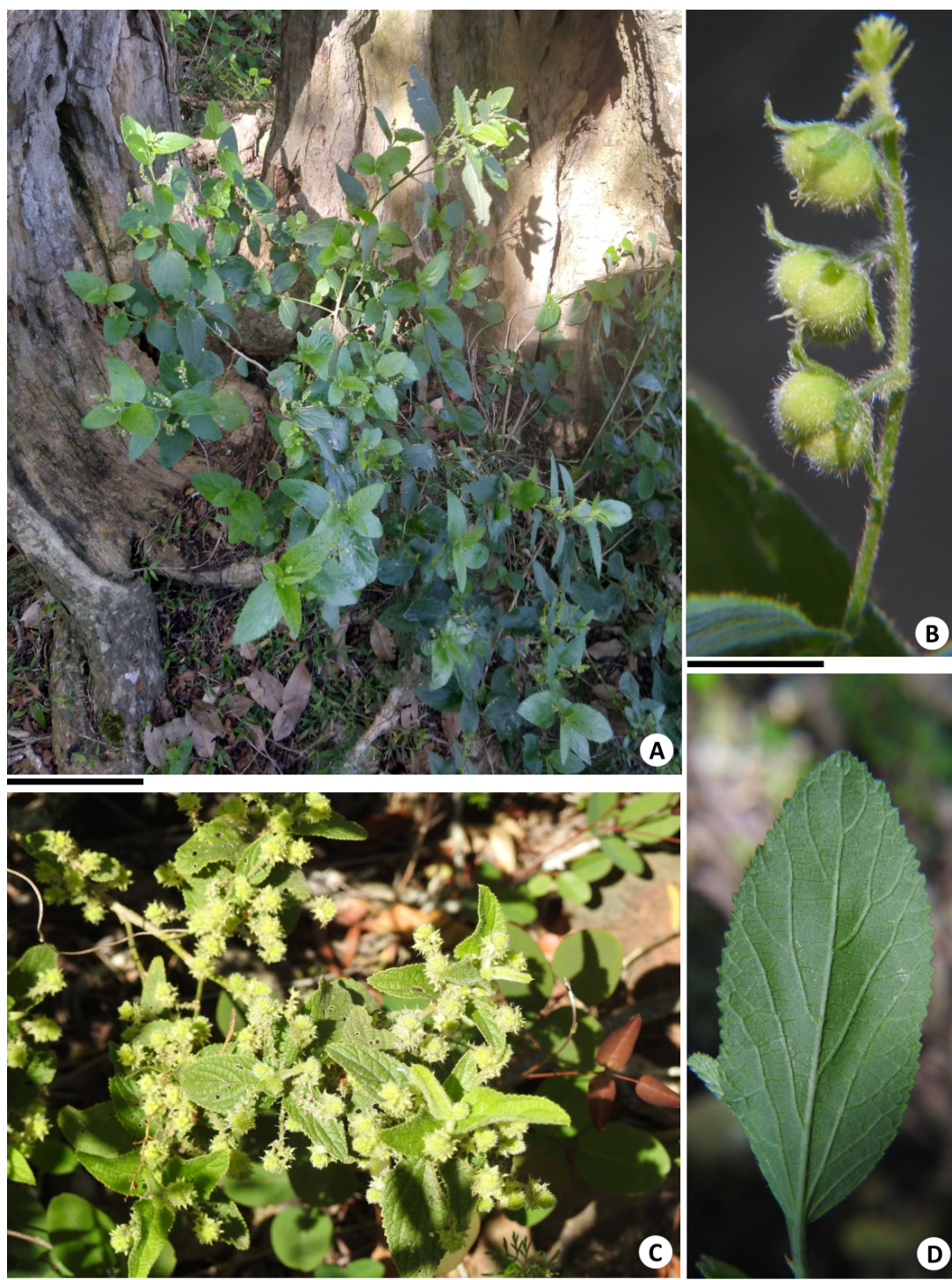


Fig. 13. *Chiropetalum molle*. **A:** Whole plant. **B:** Pistillate inflorescence. **C:** Branch with staminate inflorescences. **D:** Adaxial surface of leaf. Photos: A. Mathias Iglesias - photographed in the Department of Rocha, Uruguay. B-D. Andrés González - photographed in Bañado de Rocha, the Department of Tacuarembó, Uruguay. Scales= A: 8 cm; B, D: 1 cm; C: 4 cm.



Fig. 14. *Chiroptetalum puntaloberense*. **A:** Branches. **B:** Branch. **C:** Adaxial surfaces of leaves of different sizes. Photos by Josimar Klkamp. Plant photographed in the Department of Rocha, Uruguay. Scales= A, C: 2 cm; B: 3 cm.

acute, base acute to rounded, margin serrate, 13-29 teeth, venation pinnate, basal actinodromous, with simple, stellate, and malpighiaceus trichomes on both surfaces. Inflorescence with 1-4 proximal pistillate flowers and 12-35 distal staminate flowers; bracteoles lanceolate, with simple and malpighiaceus trichomes on abaxial surface. Staminate flowers with pedicels 2.1-3 mm long; sepals 5, 1.3-2.5 mm long, lanceolate, margin entire, with simple and malpighiaceus trichomes on both surfaces; petals 5, 0.61-1 mm long, apex 5-7-lobed, free portion of lacinia 1/2 of petal length, glabrous; stamens 5 rarely 4 in one whorl; floral nectaries oval, glabrous. Pistillate flowers with pedicels 3.2-3.5 mm long, sepals 5, 2.3-3.1 mm long, ovate, lanceolate or oblong, margin entire, with simple and stellate trichomes on both surfaces; petals absent; floral nectaries globose, glabrous; ovary smooth, covered with simple, stellate, and malpighiaceus trichomes; styles 3, united at the base, bifid, with simple and malpighiaceus trichomes. Capsules 4-5.4 mm diam., with malpighiaceus, simple and stellate trichomes. Seeds globose, ca. 2 mm diam., not apiculate, foveolate, gray to black.

Distribution and habitat: *Chiropetalum puntaloberense* is endemic to Uruguay, known from one location along the southeast coast (Fig. 1D), open coastal vegetation of the Pampa province.

Flowering and fruiting: October to March.

Material examined: URUGUAY. Rocha: *La Coronilla*, Santa Teresa, punta de los loberos, 33° 56' 43.2" S, 53° 30' 23.2" W, 20 m.s.l., 28-IV-2019, J. Külkamp & J. Iganci 801 (RB); *Ibidem*, 33° 56' 42.0" S, 53° 30' 25.2" W, III-1946, A. Lombarde 4685 (MVJB); *Ibidem*, 33° 56' 42.0" S, 53° 30' 25.2" W, 8-X-2006, E. Alonso-Paz & M.J. Bassagoda 4107 (MVFQ).

CONCLUSIONS

This study confirms the occurrence of nine Ditaxae species and five Caperoniae species in Uruguay, contributing to the knowledge of the country's flora. The integration of iNaturalist data proved valuable, enabling the first confirmed record of *Caperonia palustris* and *Chiropetalum griseum*

in Uruguay. However, such data must be used critically, as species-level identification is not always reliable from images alone. Whenever possible, herbarium specimens—allowing for present and future verification—remain the preferred standard for documenting new records.

There is a higher concentration of Caperoniae and Ditaxae species in western Uruguay, while the lower richness in the southeast highlights areas that require further exploration. Altogether, these findings provide a valuable reference for future research on Caperoniae and Ditaxae in Uruguay.

AUTHOR CONTRIBUTION

JK and AG conceptualized the project and curated the herbarium data. JK performed the formal analysis, prepared the maps and plates, and developed the species key. All authors contributed to writing and revising the manuscript.

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BIBLIOGRAPHY

- APG IV. 2016. An update of the Angiosperm Phylogeny Group classification for the orders and families of flowering plants: APG IV. *Bot. J. Linn. Soc.* 181: 1-20. <https://doi.org/10.1111/boj.12385>
- CABRERA, A. L. 1951. Territorios fitogeográficos de la República Argentina. *Bol. Soc. Argent. Bot.* 4: 21-65.
- CHIARINI, F. E., A. M. ANTON, M. J. BEGRANO, P. E. BERRY, ... & R. RIINA. 2024. Euphorbiaceae. In: ZULOAGA, F. O., C. A. ZANOTTI & P. D. MORONI. (eds.) *Flora Vascular de la República Argentina*, vol 10: 1-251. Estudio Sigma S.R.L., Buenos Aires.

- GBIF - The Global Biodiversity Information Facility. 2024. <https://www.gbif.org/pt/occurrence>. [Access 12 Aug. 2024].
- INATURALIST. 2024. Observations of species from Uruguay observed on <https://www.inaturalist.org>. Accessed on 3 Sep 2024.
- INGRAM, J. 1980. A revision of *Argythamnia* subgenus *Chiropetalum* (Euphorbiaceae). *Gentes Herb.* 11: 437-468.
- KÜLKAMP, J., J. R. V. IGANCI, I. CORDEIRO & J. F. A. BAUMGRATZ. 2021. New species and occurrences of *Caperonia* (Euphorbiaceae) for South America. *Phytotaxa* 529: 86-92. <https://doi.org/10.11646/phytotaxa.529.1.6>
- KÜLKAMP, J., R. RIINA, R. RAMÍREZ-AMEZCUA, J. R. V. IGANCI, ... & J. F. A. BAUMGRATZ. 2023a. Systematics of Ditaxinae and related lineages within subfamily Acalyphoideae (Euphorbiaceae) based on molecular phylogenetics. *Biology* 12: 173. <https://doi.org/10.3390/biology12020173>
- KÜLKAMP, J., J. R. V. IGANCI, I. CORDEIRO & J. F. A. BAUMGRATZ. 2023b. *Argythamnia* (Euphorbiaceae) from biogeographic provinces of the Chaco and Pampa in South America. *Brittonia* 75: 393-410. <https://doi.org/10.1007/s12228-023-09758-8>
- KÜLKAMP, J., J. R. V. IGANCI, R. RAMÍREZ-AMEZCUA, I. CORDEIRO & J. F. A. BAUMGRATZ. 2024a. Synopsis of *Argythamnia*, *Chiropetalum* and *Philyra* (Euphorbiaceae) in South America. *Acta Bot. Bras.* 38: e20230220. <https://doi.org/10.1590/1677-941x-abb-2023-0220>
- KÜLKAMP, J., E. VALDUGA & J. R. V. IGANCI. 2024b. A new endangered species of *Caperonia* (Acalyphoideae, Euphorbiaceae) from South Brazil, with morphological and phylogenetic support. *Phytotaxa* 633: 29-40. <https://doi.org/10.11646/phytotaxa.633.1.4>
- KÜLKAMP, J., J. R. V. IGANCI, I. CORDEIRO & J. F. A. BAUMGRATZ. 2024c. Typification of the Linnaean names *Croton castaneifolius* and *C. palustris* (Euphorbiaceae). *Taxon* 73: 1279-1283 <https://doi.org/10.1002/tax.13200>
- MORRONE, J. J. 2006. Biogeographic areas and transition zones of Latin America and the Caribbean Islands based on panbiogeographic and cladistic analyses of the entomofauna. *Ann. Rev. Entomol.* 51: 467-494. <https://doi.org/10.1146/annurev.ento.50.071803.130447>
- MORRONE, J. J. 2014. Cladistic biogeography of the Neotropical region: Identifying the main events in the diversification of the terrestrial biota. *Cladistics* 30: 202-214. <https://doi.org/10.1111/cla.12039>
- O'DONELL, C. A. & A. LOURTEIG. 1942. Chrozophorae Argentinae. *Lilloa* 8: 37-81.
- PAX, F. & K. HOFFMANN. 1912. Euphorbiaceae - Acalypheae - Chrozophorinae. In: ENGLER, A. (ed.), *Das Pflanzenreich*. Leipzig, Engelmann, IV.147 vi (Heft 57), 1-142.
- PRADO, D. E., P. E. GIBBS, A. POTT & V. J. POTT. 1992. Chaco-Pantanal transition in Southern Mato Grosso (Brazil). Pp. 451-470. In: FURLEY, P.A., J. PROCTOR & J. A. RATTER (Eds.), *Nature & Dynamics of Forest-Savanna Boundaries*. Chapman & Hall, London.
- RADCLIFFE-SMITH, A. 2001. *Genera Euphorbiacearum*. Royal Botanic Garden Kew, London.
- RAMÍREZ-AMEZCUA, Y. & V. W. STEINMANN. 2013. Revisión taxonómica de *Argythamnia* subgénero *Ditaxis* (Euphorbiaceae) en México. *Bot. Sci.* 91: 427-459. <https://doi.org/10.17129/botsci.422>
- SULLIVAN, B. L., C. L. WOOD, M. J. ILIFF, R. E. BONNEY, ... & S. KELLING. 2009. eBird: a citizen-based bird observation network in the biological sciences. *Biol. Conserv.* 142: 2282-2292. <https://doi.org/10.1016/j.biocon.2009.05.006>
- THIERS, B. 2024. Index Herbariorum: A global directory of public herbaria and associated staff. New York, New York Botanical Garden's, Virtual Herbarium. Available from: <http://sweetgum.nybg.org/ih/>. [Access: 02 Sep. 2024].
- TURLAND, N. J., J. H. WIERSEMA, F. R. BARRIE, W. GREUTER, ... & G. F. SMIT (eds.) 2018. *International Code of Nomenclature for algae, fungi, and plants (Shenzhen Code) adopted by the Nineteenth International Botanical Congress Shenzhen, China, July 2017*. Regnum Vegetabile 159. Koeltz Botanical Books, Glashütten. <https://doi.org/10.12705/Code.2018>
- WEBSTER, G. L. 2014. Euphorbiaceae. In: KUBITZKI, K. (ed.). *The Families and Genera of Vascular Plants. Flowering plants. Eudicots. Malpighiales*. v. 11, p. 51-216. Springer, Berlín. https://doi.org/10.1007/978-3-642-39417-1_10

