



Vernonieae (Asteraceae) in the Atlantic Forest of Caparaó National Park, Southeastern Brazil

Polla Renon^{1,6}, Marcelo Monge^{2,3,4} & Jimi Naoki Nakajima^{2,5}

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- Compositae
- neotropical biodiversity
- Northern Mantiqueira
- Vernonioideae

Palavras-chave:

- Compositae
- biodiversidade neotropical
- norte da Mantiqueira
- Vernonioideae

Abstract

Vernonieae is a notable tribe within Asteraceae, and it is well represented in the mountain landscapes of the Atlantic Forest. However, research on the systematics of Vernonieae in these environments remains limited. We conducted a systematic study of Vernonieae in the Caparaó National Park, including descriptions, an identification key, photographs, taxonomic comments, and notes on distribution and conservation. We documented a total of 27 species and nine genera, with *Vernonanthura* (8 spp.) and *Lepidaploa* (7 spp.) being the richest. The greatest diversity of Vernonieae was found at Montane Semideciduous Seasonal Forest. Seven species were documented for the first time in the Caparaó, with *Hololepis pedunculata* also being a new record for the Atlantic Forest and the state of Espírito Santo. A recently described and rare species, *Lepidaploa urceolata*, was found at the park. We documented two micro-endemic species to the Caparaó mountains (*Critoniopsis bradeana* and *Lepidaploa urceolata*) and we noted that seventeen species (63% of the total species) have a restricted distribution. Our findings corroborate the importance of systematic treatments for biodiversity studies, providing a rapid means to investigate the local flora and expanding the documentation of the biodiversity in the herbarium collections.

Resumo

Vernonieae é uma tribo de destaque em Asteraceae, amplamente representada nas paisagens montanhosas da Mata Atlântica. Entretanto, pesquisas acerca da sistemática de Vernonieae nesses ambientes permanecem limitadas. Nós conduzimos um estudo sistemático para Vernonieae no Parque Nacional do Caparaó, incluindo descrições, uma chave de identificação, fotografias, comentários taxonômicos, e notas sobre distribuição e conservação. Nós documentamos um total de 27 espécies e nove gêneros, com *Vernonanthura* (8 spp.) e *Lepidaploa* (7 spp.) sendo os mais ricos. A maior diversidade de Vernonieae foi encontrada na Floresta Estacional Semidecidual Montana. Ao todo, sete espécies foram registradas pela primeira vez no Caparaó, sendo *Hololepis pedunculata* também um novo registro para a Mata Atlântica e para o estado do Espírito Santo. Uma espécie rara e recentemente descrita, *Lepidaploa urceolata*, foi encontrada no Parque. Nós também documentamos duas espécies micro-endêmicas das montanhas do Caparaó (*Critoniopsis bradeana* e *Lepidaploa urceolata*), e notamos que dezessete espécies (63% do total de espécies) tem uma distribuição restrita. Nossos achados corroboram a importância dos tratamentos sistemáticos para os estudos da biodiversidade, fornecendo uma rápida maneira de investigar a flora local e expandindo o registro da biodiversidade nas coleções de herbários.

Original Papers

¹ Universidade Estadual de Campinas, Campinas, SP, Brasil. ORCID: 0000-0002-6250-7806

² Universidade Federal de Uberlândia, Uberlândia, MG, Brasil.

³ Universidade de São Paulo, Ribeirão Preto, SP, Brasil.

⁴ ORCID: 0000-0002-2465-563X ⁵ ORCID: 0000-0001-9383-5127

⁶ Author for correspondence: renon.polla@gmail.com

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Introduction

The Atlantic Forest, one of the world's most diverse tropical forests, has an impressive 17,150 plant species, several of them are restricted to this biome (BFG 2021). It has a remarkable array of ecosystems, microclimates, and geomorphological features (Santos *et al.* 2021; Wilson *et al.* 2021), and it is recognized as one of thirty-six biodiversity hotspots, making it a top priority for conservation (Mittermeier *et al.* 2011; CEPF 2016).

Anthropogenic activities threaten natural areas, causing homogenization and decline in species diversity (Le Roux *et al.* 2019; Jaureguiberry *et al.* 2022). In the Atlantic Forest, farming, mining, and urbanization have already consumed approximately 67.72% (73,521,395 hectares) of the original land cover (MapBiomas 2024). This ongoing loss of habitat has resulted in an increase in endangered plant species (Lughadha *et al.* 2020) with about 80% of the endemic arboreal species in the Atlantic Forest threatened (Lima *et al.* 2024). To address this, it is crucial to prioritize biodiversity research in the remaining areas of the Atlantic Forest as part of conservation strategies (Pimm *et al.* 2014).

The Caparaó National Park (CNP) is a preserved area of the Atlantic Forest (ICMBio 2024). Situated in the northern region of the Mantiqueira mountain range, the CNP has a great species richness with a significant level of endemism (Moreira *et al.* 2020; Araújo *et al.* 2021). The extreme biological importance of the CNP and its unique flora have attracted numerous botanists over the years, evidenced by a long history of botanical exploration, with contributions from researchers such as Brade (1935, 1942) and Kuhlmann & Brade (1943).

Previous floristic inventories conducted in the CNP have highlighted Asteraceae as one of the most species-rich families, counting 139 species (Moreira *et al.* 2020; Araújo *et al.* 2021). Asteraceae is recognized as the largest family of flowering plants, comprising 32,000 described species, 1,600 genera and 51 tribes (Mandel *et al.* 2019; Cheek *et al.* 2020; Gostel *et al.* 2024). The members of Asteraceae occur from sea level to the top of highest peaks, but they are more diverse in areas with tropical or subtropical climate, and open vegetations (Mandel *et al.* 2019).

Vernonieae is one of the tribes of Asteraceae that stands out for its high number of species (ca. 1,500), and it is considered a taxonomic challenging group due to several overlapping morphological traits (Keeley *et al.* 2007; Keeley & Robinson 2009; Keeley *et al.* 2021). Brazil is a center of diversity for Vernonieae, hosting 459 species (Esteves *et al.* 2017), and the tribe is well represented in mountain landscapes within the Atlantic Forest (Rizzini 1954;

Barroso 1957; Meireles *et al.* 2014; Moreira *et al.* 2020). Despite its richness in Brazilian mountain ranges within the Atlantic Forest, research on the systematics of Vernonieae remains limited for this biome. Therefore, this study provides a systematic treatment of Vernonieae in the Caparaó National Park, contributing to further taxonomic, biogeographic, and conservation knowledge on Mantiqueira Mountain Range and hotspots areas.

Material and Methods

Study area

The Caparaó National Park is a fully protected conservation unit with 32,000 hectares of the Atlantic Forest (ICMBio 2024). The national park is situated between the states of Espírito Santo and Minas Gerais, with coordinates of 41°51'W and 41°43'W, 20°36'S and 20°18'S (Fig. 1). The mountain landscape of CNP reaches high elevations, nearly to 2,890 meters above sea level (Fig. 1b), and includes three of the highest peaks in Southeastern Brazil, namely "Pico da Bandeira" (2,890 m asl), "Pico do Calçado" (2,849 m asl), and "Pico do Cristal" (2,770 m asl) (ICMBio 2024).

Caparaó has a subtropical highland climate (Cwb), according to the Köppen classification (ICMBio 2015). The annual mean temperature ranges from 16°C–22°C, but can drop to -4°C during the coldest months (June–August). The annual rainfall averages are between 750–2,250 mm, with air humidity frequently exceeding 70% (ICMBio 2015). Two seasons are well-defined: a rainy-summer season from November to March, and a dry-winter season from April to October, with a brief period of declining rainfall (ICMBio 2015).

Based on field observations and literature, including IBGE (2012) and ICMBio (2015), the Atlantic Forest phytophysiognomies in Caparaó include: Montane Semideciduous Forest at elevations of 700–1,780 m asl; Upper Montane Mixed Ombrophilous Forest at 1,800–2,000 m asl (Fig. 1c); "Candeal", a transitional vegetation between forest and *campo de altitude*, characterized by the abundance of *Eremanthus erythropappus* (DC) MacLeish; *Campo de altitude* ranging from 2,000–2,800 m asl (Fig. 1d–e), presenting variations with scrub (shrubs scattered); "campo sujo" (grasses, herbs, subshrubs, and small shrubs scattered); *Chusquea* sp. grassland (Fig. 1d); and lastly rock outcrops (exposed rock with grasses, herbaceous, and small subshrub < 80 cm tall) (Fig. 1e).

Systematic treatment

Specimens of Vernonieae collected in Caparaó National Park were studied from herbarium collections and field expeditions. We considered the most representative herbaria for the flora of

Caparaó and the local herbaria: BHCB, CAP, CESJ, ESA, GFJP, HUENG, HUFU, RB, UEC, and VIES (Thiers continuously updated). A total of six field expeditions were conducted in the years 2011, 2012, 2014, 2022 and 2023, with each expedition lasting three to five consecutive days. During the expeditions, we sought individuals in reproductive stages. The sampled specimens were georeferenced, and their biological information was registered. The specimens were herborized according to the traditional methodology (Rotta *et al.* 2008). All the specimens collected during the expeditions were added to the HUFU herbarium and duplicates were sent to HUENG and VIES herbaria.

Vegetative and reproductive structures were analyzed using a stereoscope and light microscopy.

The reproductive structures from dried material were rehydrated with boiled water. The terminology for vegetative structure followed Hickey (1973), Payne (1978), Radford (1986), Hewson (2019) and Katinas (2025), while reproductive structure followed Bremer (1994) and Roque *et al.* (2009). The species and genera identifications were made using monographs, taxonomic revisions, and other systematic treatments (*e.g.*, Smith 1982; Robinson 1987, 1988, 1990, 1999, 2007; Smith & Coile 2007; Roque *et al.* 2017; Marques *et al.* 2018).

The species protologues were consulted at the Biodiversity Heritage Library (<<https://www.biodiversitylibrary.org/>>) and the National Library of France (<<https://www.bnf.fr/fr>>), as well as images of the type specimens on JSTOR Plant

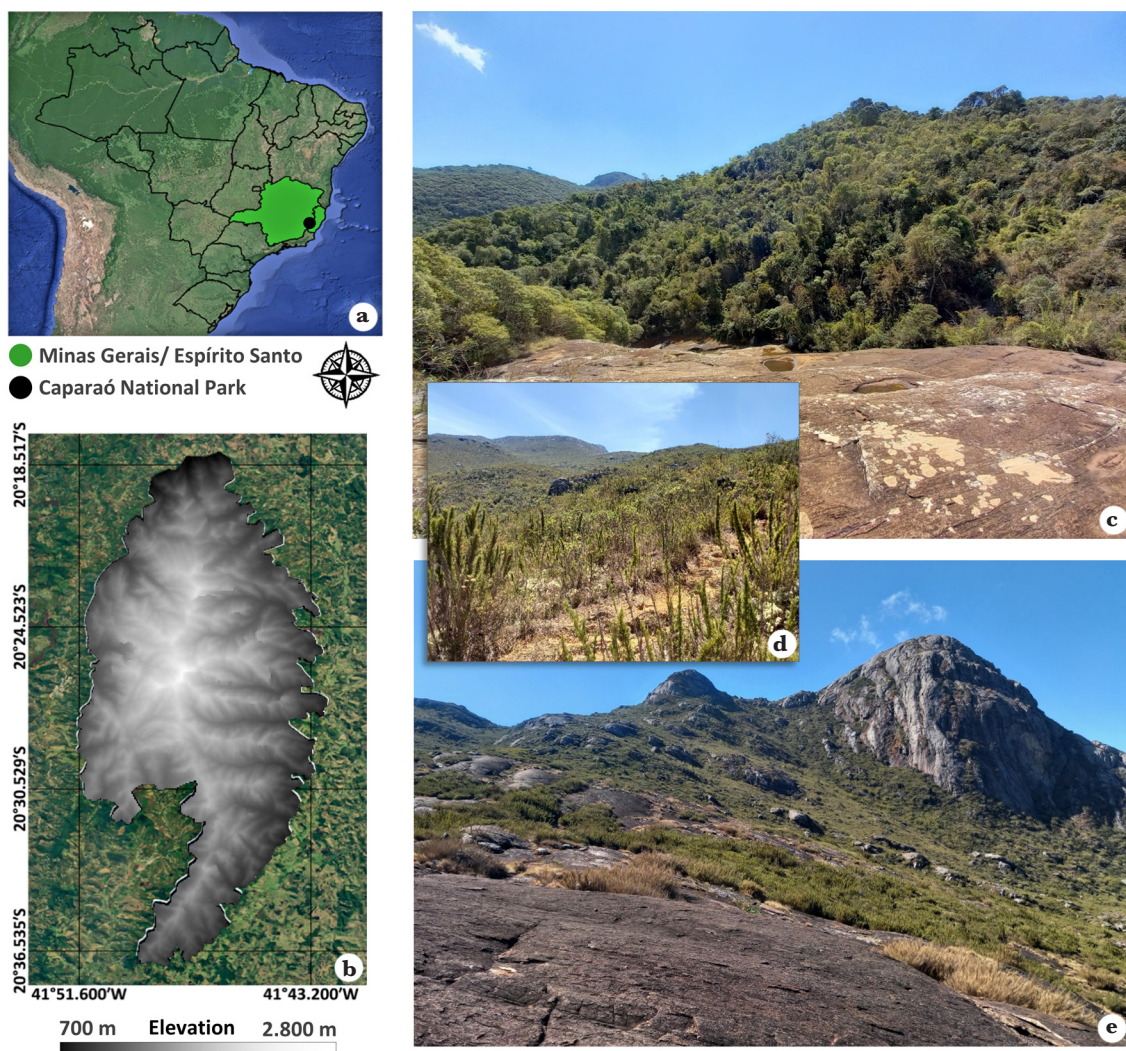


Figure 1 – a-e. Caparaó National Park – a. location; b. limits, altitude and coordinates; c. Montane Mixed Ombrophilous Forest; d. Campo de altitude with *Chusquea* sp. dominance; e. rock outcrops in Campo de altitude.

Science (<<https://plants.jstor.org/>>). Specimens identified by specialists were also viewed on the HUFU herbarium, SpeciesLink (<<https://specieslink.net/>>), and Virtual Herbarium's Reflora (<<http://reflora.jbrj.gov.br/>>).

The distribution of species was checked through Reflora (<<http://reflora.jbrj.gov.br/>>), GBIF (<<https://www.gbif.org/>>), POWO (<<https://powo.science.kew.org/>>), Tropicos (<<https://www.tropicos.org/home>>), and SpeciesLink (<<https://specieslink.net/>>). The conservation status was verified on CNCFlora (<<http://www.cncflora.jbrj.gov.br/>>).

Results

Vernonieae is represented in the CNP by 27 species and nine genera: *Critoniopsis* Sch.Bip. (1 sp.), *Cyrtocymura* H.Rob. (1 sp.), *Elephantophus* L. (1 sp.), *Eremanthus* Less. (2 spp.), *Hololepis* DC. (1 sp.), *Lepidaploa* (Cass.) Cass. (7 spp.), *Lessingianthus* H.Rob. (2 spp.), *Piptocarpha* R.Br. (4 spp.), *Vernonanthura* H.Rob. (8 spp.). The richest genera were *Vernonanthura* and *Lepidaploa*.

We found a new species of genus *Lepidaploa*. The species was named *Lepidaploa urceolata* Renon, D. Marques & J.N. Nakaj., due to its distinctly urceolate involucre (Renon *et al.* 2025). Three species were identified as *affinis*, *Lepidaploa* aff. *argyrotricha* (Sch.Bip. ex Baker) H.Rob., *Piptocarpha* aff. *notata* (Less.) Baker and *Vernonanthura* aff. *discolor* (Spreng.) H.Rob. Further studies are necessary to determine whether they represent new species or variations.

Seven species are new records for CNP: *Hololepis pedunculata* DC., *Lepidaploa cotoneaster* (Willd. ex Spreng.) H.Rob., *L. salzmannii* (DC.) H.Rob., *L. subsquarrosa* (DC.) H.Rob., *Piptocarpha* aff. *notata* Baker, *P. reitziana* Cabrera, and *Vernonanthura phaeoneura* (Toledo) H.Rob.

Hololepis pedunculata is also a new addition to the records of the Espírito Santo state and the Atlantic Forest (Montane Ombrophilous Forest). Previously, this species was only known to exist in the Brazilian savanna (Cerrado) of the Minas Gerais state, specifically in *campo rupestre* and the borders of gallery forests. There is a record of *H. pedunculata* in the Espírito Santo state on the

SpeciesLink site (G. Hatschbach 61125), however, the specimen was misidentified. The correct identification is *Hololepis hatschbachii* H.Rob.

Eremanthus glomerulatus Less., *Lepidaploa decumbens* (Gardner) H.Rob. and *Vernonanthura laxa* (Gardner) H.Rob. are listed in Moreira *et al.* (2020). However, these specimens were also misidentified. The correct identifications are: *E. erythropappus*, *L. estevesiana* M.Monge, Leoni & J.N.Nakaj., and *V. montevidensis* (Spreng.) H.Rob.

Vernonieae is present in all phytophysionomies in the Caparaó National Park, with the greatest diversity found in the forest environments: Montane Semidecidual Seasonal Forest (11 spp.), Montane Ombrophilous Forest (9 spp.), *Campo de altitude* (7 spp.), and "Candeal" (5 spp.). Two species occur in disturbed environments, *Lepidaploa subsquarrosa* and *Vernonanthura divaricata* (Spreng.) H.Rob. The shrubby habit had the highest frequency (11 spp.), followed by the arboreal habit (10 spp.), subshrubby (7 spp.), vines (2 spp.), and herbs (1 sp.).

In terms of geographical distribution, only six species have a wide distribution in Brazil, while 17 species (63%) have a narrower distribution. Seven species are restricted to the Atlantic Forest; two are endemic to Caparaó National Park, *Critoniopsis bradeana* (G.M.Barroso) G.Souares & Loeuille (Fig. 2) and *Lepidaploa urceolata*; one species is endemic to *campo de altitude* of the northern Mantiqueira range (*Lepidaploa estevesiana*); and two species are only found in Southeastern Brazil (*Hololepis pedunculata* (Fig. 3) and *Lepidaploa subsquarrosa*);

Regarding the conservation status, a total of 14 species (52%) have not been evaluated. Among the assessed species, *Lepidaploa estevesiana* is considered endangered (EN), *Lepidaploa urceolata* critically endangered (CR), and nine species are classified as least concern (LC): *Eremanthus crotonoides* (DC.) Sch. Bip., *Eremanthus erythropappus*, *Hololepis pedunculata*, *Lepidaploa cotoneaster*, *Piptocarpha axillaris* (Less.) Baker, *Piptocarpha macropoda* (DC.) Baker, *Piptocarpha notata*, *Vernonanthura discolor*, and *Vernonanthura petiolaris* (DC.) H. Rob.



Figure 2 – a-i. *Critoniopsis bradeana* – a. habit; b. capitulum; c. flower; d. abaxial surface glabrescent with prominent veins; e. branches with leaf scars conspicuous; f. dissected corolla exposing the anthers and style; g. style branches acute and hairy; h. anther with basal apical appendage calcarate and apical appendage acute; i. cypsel cylindrical to obconic ribbed with pappus whitish. (from Lopes *et al.* 246; HUFU75265).

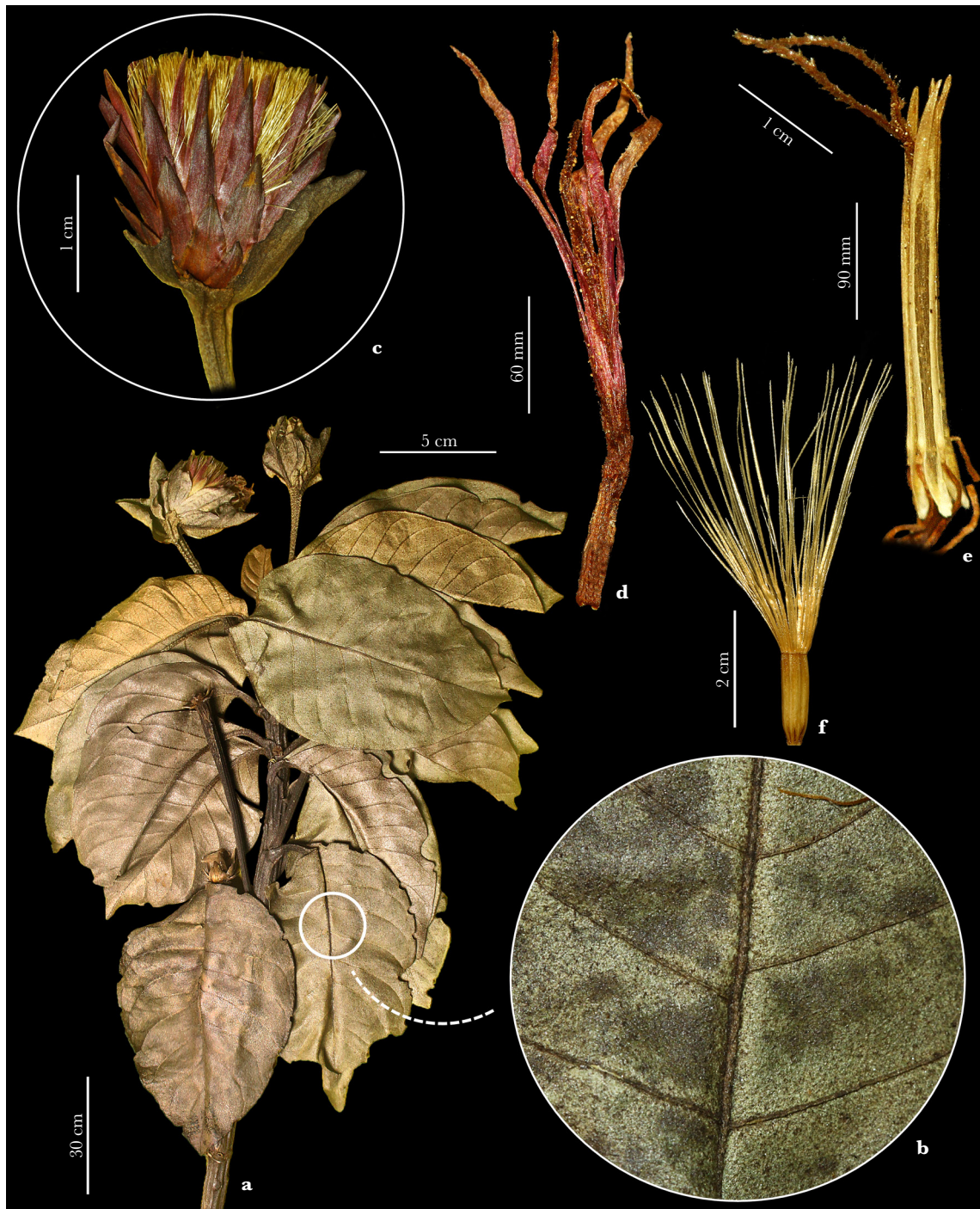


Figure 3 – a-f. *Hololepis pedunculata* – a. habit; b. adaxial surface; c. capitulum; d. corolla with lobes prolonged; e. anthers with basal appendage calcarate and apical appendage acuminate; style branches very prolonged acute and pilose; f. cypsela prismatic, glabrous and ribbed; pappus stramineous. (from Fernandes 686; HUFU51840).

Identification key to the species of Vernonieae from the Caparaó National Park

1. Peltate scales, stellate or Y-shape trichomes in branches, leaves or involucre bracts 2
- 1'. Simple trichomes in branches, leaves or involucre bracts 9
 2. Pappus 3-seriate.....3
 - 2'. Pappus 1–2-seriate.....5
 3. Leaf-blade concolor; involucre 8–10-seriate; carpopodium conspicuous; pappus stramineous 1. *Critoniopsis bradeana*
 - 3'. Leaf-blade discolor; involucre 2–5-seriate; carpopodium inconspicuous; pappus rosaceous or purplish.....4
 4. Stellate or 5-armed trichomes in branches, leaves or involucre bracts; leaves ovate; involucre 4–5-seriate; receptacle fimbriate; 5 flowers per capitulum.....4. *Eremanthus crotonoides*
 - 4'. Peltate scales in branches, leaves or involucre bracts; leaves elliptic; involucre 2–3-seriate; receptacle glabrous; 3–4 flowers per capitulum.....5. *Eremanthus erythropappus*
 5. Inverted Y-shaped trichomes on branches and leaves; secondary inflorescence terminal; subinvolucre bracts foliaceous; involucre bracts persistent; pappus 1-seriate.....6. *Hololepis pedunculata*
 - 5'. Peltate scales or 5-armed trichomes on branches and leaves; secondary inflorescence axillar; subinvolucre bracts absent; involucre bracts deciduous; pappus 2-seriate 6
 6. Trees; leaves coriaceous, apex acute or obtuse; more than 3-flowers per capitulum; cypselae cylindrical or cylindrical-obconic 7
 - 6'. Vines, leaves chartaceous, apex acuminate or caudate; 3-flowers per capitulum; cypselae prismatic or prismatic-obconic.....8
 7. Leaf-blade discolor; 5–10 flowers per capitulum; corolla lobes pubescent or glabrous; cypselae 10-ribbed..... 16. *Piptocarpha axillaris*
 - 7'. Leaf-blade concolor; 12–16 flowers per capitulum; corolla lobes papillose; cypselae 6-ribbed 17. *Piptocarpha macropoda*
 8. Branches quadrangular; leaves greenish with peltate scales trichomes; cypselae ca. 10-ribbed; carpopodium conspicuous; pappus stramineous 18. *Piptocarpha* aff. *notata*
 - 8'. Branches cylindrical; leaves grayish with 5-armed trichomes; cypselae ca. 6 ribbed; carpopodium inconspicuous; pappus whitish 19. *Piptocarpha reitziana*
 9. Capitula arranged into syncephalies; 4 flowers per capitulum; corolla zygomorphic.....3. *Elephantopus mollis*
 - 9'. Capitula not arranged into syncephalies; more than 4 flowers per capitulum; corolla actinomorphic 10
 10. Secondary inflorescence with leaves or with subinvolucre bracts at the capitulum base 11
 - 10'. Secondary inflorescence without leaves or subinvolucre bracts at the capitulum base 19
 11. Capitula sessile; cypselae frequently with ribs inconspicuous (except in *L. cotoneaster* and *L. salzmannii*); pollen grain types “C”, “D” and “G” 12
 - 11'. Capitula subsessile or pedunculate; cypselae with ribs conspicuous, pollen grain type “B” 18
 12. Leaves lacking glandular trichomes; ribs of cypselae conspicuous.....13
 - 12'. Leaves with glandular trichomes; ribs of cypselae inconspicuous 14
 13. Leaf-blade discolor, venation brochidodromous; corolla pubescent 8. *Lepidaploa cotoneaster*
 - 13'. Leaf-blade concolor, venation eucamptodromous; corolla glabrous 11. *Lepidaploa salzmannii*

- 14. Branches indument velutinous, persistent; leaf-blade with silvery aspect ..7. *Lepidaploa* aff. *argyrotricha*
- 14'. Branches indument variable, glabrescent; leaf-blade without silvery aspect 15
- 15. Leaves with glandular trichomes only in abaxial surface; corolla with glandular trichomes 16
- 15'. Leaves with glandular trichomes in both surfaces; corolla lacking glandular trichomes 17
- 16. Leaves chartaceous; style branches acuminate; involucre 0.8–1 cm long; involucre bracts acuminate-mucronate 9. *Lepidaploa estevesiana*
- 16'. Leaves membranaceous; style branches acute; involucre 0.4–0.6 cm long; involucre bracts acuminate..... 12. *Lepidaploa subsquarrosa*
- 17. Leaf scars conspicuous; leaves sessile; 10–20 flowers per capitulum; receptacle flat; outer involucre bracts ovate, not recurved; cypselae densely glandular; pappus whitish..... 10. *Lepidaploa macahensis*
- 17'. Leaf scars inconspicuous; leaves petiolate; ca. 30 flowers per capitulum; receptacle concave; outer involucre bracts lanceolate, recurved; cypselae densely sericeous; pappus stramineous 13. *Lepidaploa urceolata*
- 18. Branches densely lanate, leaf scars conspicuous; leaves lacking glandular trichomes, sessile; 20–25 flowers per capitulum; corolla lacking glandular trichomes 14. *Lessingianthus dichrous*
- 18'. Branches tomentose, leaf scars inconspicuous; leaves with glandular trichomes, petiolate; 40–50 flowers per capitulum; corolla with glandular trichomes 15. *Lessingianthus macrophyllus*
- 19. Herbs or subshrubs; secondary inflorescence scorpioid, involucre 4-seriate; carpodium inconspicuous; pappus persistent 2. *Cyrtocymura scorpioides*
- 19'. Tree or shrubs; secondary inflorescence seriate cymose, corymbiform, paniculiform or thyriform, involucre 5–14-seriate; carpodium conspicuous; pappus deciduous 20
- 20. Leaf-blade discolor; cypselae cylindrical or obovoid 21
- 20'. Leaf-blade concolor; cypselae obconic 25
- 21. Shrubs; cypselae 5-ribbed 27. *Vernonanthura polyanthes*
- 21'. Trees; cypselae 10-ribbed 22
- 22. Leaves membranaceous, abaxial surface strigose, venation eucamptodromous 25. *Vernonanthura petiolaris*
- 22'. Leaves chartaceous or subcoriaceous, abaxial surface villous, venation brochidodromous 23
- 23. Leaves with glandular trichomes in abaxial surface; involucre 8–10 seriate; corolla glabrous 22. *Vernonanthura divaricata*
- 23'. Leaves lacking glandular trichomes in abaxial surface; involucre 5–8 seriate; corolla with papillose or glandular trichomes 24
- 24. Presence of leaves orbicular, villous in adaxial surface 20. *Vernonanthura* aff. *discolor*
- 24'. Leaves never orbicular, glabrous in adaxial surface 21. *Vernonanthura discolor*
- 25. Branches pubescent; leaves sessile, glandular trichomes in both surfaces; involucre 10–14-seriate, inner involucre bracts deciduous; corolla lobes glandular 24. *Vernonanthura montevidensis*
- 25'. Branches villous; leaves petiolate, glandular trichomes absent; involucre 5–8 seriate, inner involucre bracts persistent; corolla lobes glabrous 26
- 26. Outer involucre bracts obovate or oblong, inner involucre bracts mucronate; cypselae with glandular trichomes, 10-ribbed 23. *Vernonanthura hilairiana*
- 26'. Outer involucre bracts ovate, inner involucre bracts obtuse or retuse; cypselae lacking glandular trichomes, 8-ribbed 26. *Vernonanthura phaeoneura*

1. *Critoniopsis bradeana* (G.M.Barroso) G.Souares & Loeuille, Phytotaxa 522(2): 140 (2021).

Figs. 2a-i; 4a

Shrub or subshrub, 0.5–1.5 m tall; branches densely lepidote, whitish, persistent; leaf scars conspicuous. Leaves alternate; leaf sheath present; petiolate, petiole 1–1.5 cm long; lamina 3.2–7 × 1.3–3.4 cm, elliptic, obovate, chartaceous or sub coriaceous, concolor, base acute, margin entire or crenate, apex obtuse, venation brochidodromous, abaxial and adaxial surfaces with glandular trichomes, persistent, veins covered by lepidote indumentum, whitish, glabrescent, with peltate scales and/or 3–5-armed trichomes. Secondary inflorescence corymbiform, terminal; capitula pedunculated; peduncle 0.2–1 cm long; involucre 0.5–1 × 0.3–0.4 cm, cylindrical, 8–10-seriate, purplish, vinaceous, villous and lepidote, trichomes whitish, glandular trichomes rounded; involucre bracts imbricate, bracts ovate, apex acute or mucronate, outer bracts persistent, inner bracts deciduous; receptacle flat, glabrous. Flowers 5, bisexual; corolla 0.8–0.9 cm long, actinomorphic, tubulose, 5-lobed, lilac; lobes ca. 0.3 cm long, glandular trichomes in tube and lobes; anthers with basal appendage calcarate, apical appendage acute; style branches acute, pilose. Cypselae cylindrical or obconic, densely strigose and covered by glandular trichomes, 10-ribbed; carpogonium conspicuous; pappus 3-seriate, stramineous, apparently deciduous, outer series paleaceous, inner series barbellate.

Examined material: ESPÍRITO SANTO: Parque Nacional do Caparaó, Dolores do Rio Preto, trilha da Casa Queimada, Campo de altitude, 2,000 m asl, 14.IX.2017, *Lopes et al.* 246 (HUFU!); Pedra Menina, caminho para o Pico do Calçado, Campo de altitude, 2,489m asl, 20°27'4"S, 41°48'4"W, 13.X.2022, *Renon* 545 (HUFU!); trilha para Pedra do Calçado, Campo de altitude, 26.IX.2023, *Monge M et al.* 4014/4030 (HUFU!). MINAS GERAIS: Parque Nacional do Caparaó, Alto Caparaó, trilha para Pico da Bandeira, 20.4333°S, 41.8683°W, 19.IX.2013, *Manhães et al.* 424 (HUFU!, UEC!, VIES!).

Critoniopsis bradeana is easily recognized by branches with conspicuous leaf scars, sheath present, glandular trichomes in both surfaces, veins covered by lepidote indumentum, inflorescence corymbiform, terminal, 5-flowers per capitulum, cypselae densely strigose and glandular, and pappus 3-seriate. This is the only species of the genus occurring in CNP, and it is morphologically very distinct from the other species of the Atlantic Forest (Robinson 1993; Monge *et al.* 2019a,b).

The species is endemic to Caparaó. It is found at *campo de altitude*, near rocks, around 2,000–2,500 m asl. Regarding conservation status, *C. bradeana* has not yet been evaluated, but it is possibly a critically endangered species, because it is known from only two locations less than 1 km apart. So, a

single local disturbance, such as fire, might reach both populations (IUCN 2022).

2. *Cyrtocymura scorpioides* (Lam.) H. Rob., Proc. Biol. Soc. Washington 100(4): 852 (1987). Fig. 4b

Subshrub, 1–1.5 m tall; branches densely villous, tomentose, or pubescent, brownish, glabrescent; leaf scars inconspicuous. Leaves alternate; leaf sheath absent; petiolate, petiole 0.2–2.5 cm long; lamina 1–9.5 × 0.5–4 cm, elliptic or lanceolate, membranaceous or chartaceous, concolor, base acute or attenuate, margin serrate or entire, apex acute or acuminate, venation brochidodromous, abaxial surface densely villous or tomentose, whitish or brownish, glabrescent, adaxial surface densely strigose-tomentose, whitish or brownish, glabrescent, glandular trichomes in both surfaces. Secondary inflorescence scorpioid; capitula sessile; involucre 0.3–0.4 × 0.3–0.4 cm, cylindrical to campanulate, 4-seriate, greenish to purplish, densely setose or villous, trichomes whitish to brownish; involucre bracts imbricate, outer bracts ovate or oblong, apex acute, inner bracts elliptic, apex acute or acuminate, both outer and inner bracts persistent; receptacle flat, glabrous. Flowers 15–25, bisexual; corolla 0.4–0.5 cm long, actinomorphic, tubulose, 5-lobed, glabrous, lilac; lobes ca. 0.2cm long, setose; anthers with basal appendage sagittate, apical appendage acute; style branches acute or acuminate, pilose. Cypselae obconic, setose, 10-ribbed; carpogonium inconspicuous; pappus 2-seriate, whitish, persistent, outer series paleaceous, inner series barbellate.

Examined material: ESPÍRITO SANTO: Parque Nacional do Caparaó, Alegre, 1,110 m asl, 20°26'45"S, 41°44'07"W, 22.II.2000, *Souza et al.* 23769 (ESA!). Divino de São Lourenço, Patrimônio da Penha, 16.VIII.2007, *Chimalli* (HUFU!). Dolores do Rio Preto, Cachoeira da Farofa, 2,223 m asl, 20°27'58"S, 41°49'01"W, 16.III.2014, *Monge et al.* 2625 (UEC!). MINAS GERAIS: Parque Nacional do Caparaó, próximo ao curso d'água, 20°23'40"S, 41°44'10"W, 1,085 m, 8.III.2010, *Biünger et al.* 430 (BHCB!); Vale Verde, 19.IX.1988, *Krieger et al.* 23142 (UEC!); Córrego Ignácio, 17.XII.1988, *Krieger et al.* 23320 (UEC!); 20.XII.1988, *Krieger et al.* 23991 (UEC!). Alto Caparaó, trilha para Tronqueira, 12.I.2010, *Colletta & Flores* 319 (ESA, RB!); trilha para Tronqueira, 1,363 m asl, 20°25'2"S, 41°51'3"W, 7.X.2022, *Renon* 491 (HUFU!).

Cyrtocymura scorpioides is recognized by its strong scorpioid secondary inflorescence with capitula sessile. This is the only species of the genus represented in the CNP. *Cyrtocymura scorpioides* is morphologically differentiated from other species of the genus due to elliptic or lanceolate leaves, with acute or attenuate bases and acute or acuminate apices, and petioles up to 10 mm long (Robinson 1987).

The species is considered a weed (Lorenzi 2008) and it is widely distributed in South America

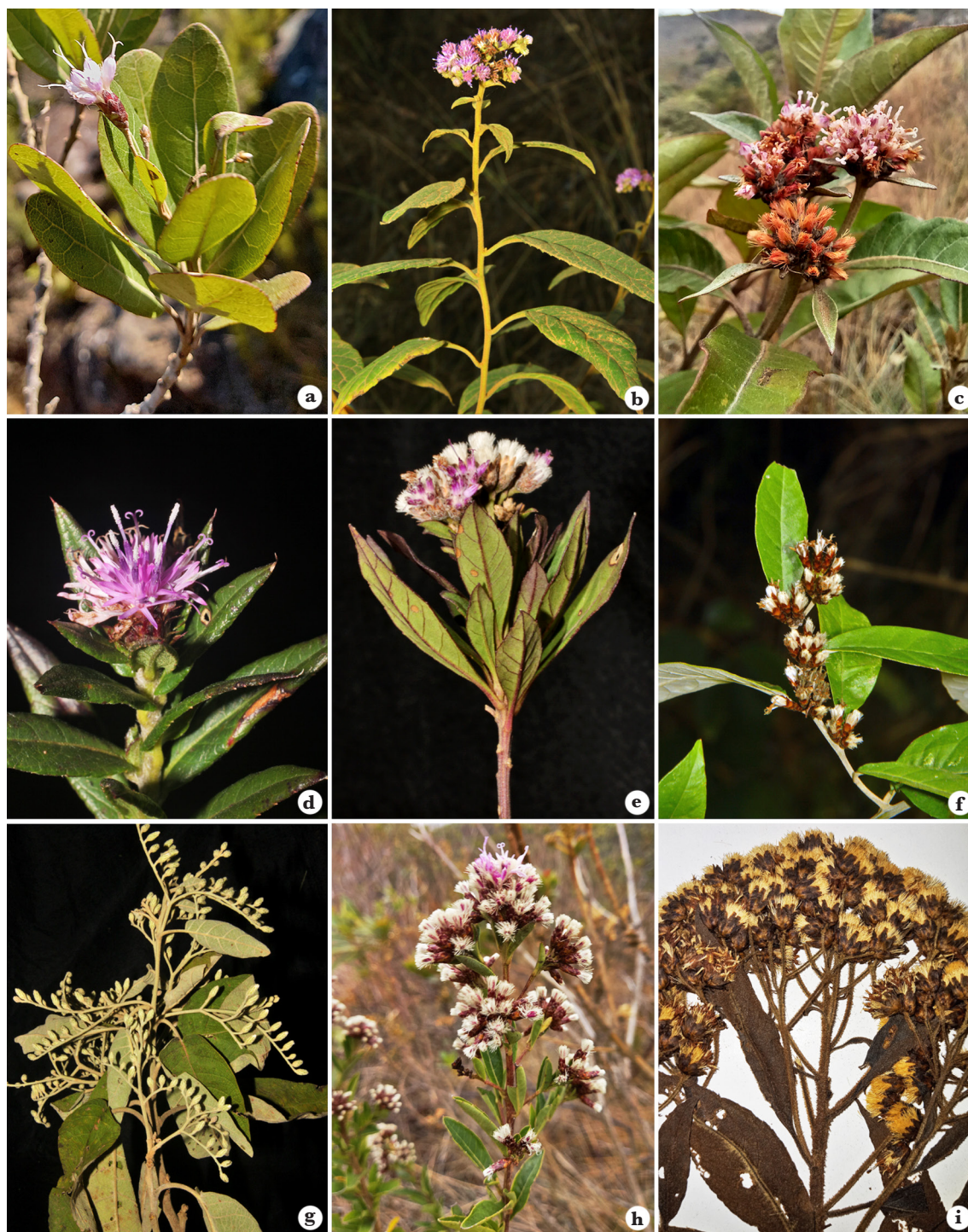


Figure 4 – a-i. Vernoniaceae from Caparaó National Park – a. *Critoniopsis bradeana*; b. *Cyrtocymura scorpioide*; c. *Eremanthus erythropappus*; d. *Lepidaploa estevesiana*; e. *Lepidaploa macahensis*; f. *Piptocarpha macropoda*; g. *Vernonanthura divaricata*; h. *Vernonanthura montevidensis*; i. *Vernonanthura phaeoneura*. (Photos: a,c,h. P. Renon; b,d,e,f,g. M. Monge; i. from Colleta et al. 242; HUFU59614).

and Central America, occurring in Argentina, Belize, Brazil, Bolivia, Colombia, Ecuador, French Guyana, Guatemala, Guyana, Haiti, Honduras, Mexico, Nicaragua, Paraguay, Peru, Suriname, Trinidad-Tobago, Uruguay and Venezuela. In Brazil, it is spread through all phytogeographic domains. *Cyrtocymura scorpioides* was collected at montane semideciduous seasonal forest and “candéal” around 1,100–2,200 m asl.

3. *Elephantopus mollis* Kunth, Nov. Gen. Sp. [H.B.K.] 4(14): 20 (ed. fol.) (1818).

Herb, ca. 0.5 m tall; branches strigose-hirsute or strigose-setose, whitish, glabrescent; leaf scars inconspicuous. Leaves rosulate and alternate; leaf sheath absent; sessile; basal leaves rosulate, lamina 4–8 × 2–3.6 cm; apical leaves alternate, lamina 1.5–4.5 × 0.6–2.5 cm, both basal and apical leaves elliptic, chartaceous, concolor, base acute, margin crenate or serrate, apex obtuse or acute, venation cladodromous, abaxial surface densely strigose-sericeous, whitish, adaxial surface sparsely strigose, whitish. Secondary inflorescence dichasial, frequently corymbiform; capitula combined into syncephalies, subtended by bracts; involucre 0.5–0.7 × 0.1–0.2 cm, cylindrical, 4-seriate, greenish to stramineous, strigose-setose; involucre bracts subimbricate, bracts lanceolate or elliptic, apex acuminate or apiculate, persistent; receptacle flat, glabrous. Flowers 04, bisexual; corolla 0.5–0.6 cm long, zygomorph, with one deep insertion, tubulose, 5-lobed, glabrous, whitish; lobes 0.2–0.3 cm long, glabrous; anthers with basal appendage sagittate, apical appendage acute; style branches acute, pilose. Cypselae cylindrical, setose, 8–10-ribbed; carpodium inconspicuous; pappus 1-seriate with 5 bristles, subpaleaceous, whitish, persistent.

Examined material: ESPÍRITO SANTO: Iúna, comunidade do Rio Claro, Floresta Estacional Semidecidual, 20°20'24"S, 41°50'36"W, 19.III.2014, *Monge et al.* 2695 (UEC!). MINAS GERAIS: Parque Nacional do Caparaó, Alto Caparaó, 1.100 m asl, 14.I.2009, *Leoni* 7308 (RB!); Vale Verde, 1.127 m asl, 20°25'11"S, 41°50'54"W, 2.III.2010, *Neves et al.* 619 (BHCB!).

Elephantopus mollis is recognized by herbaceous habit, basal leaves rosulate, syncephalies subtended by bracts, 4-flowers per capitulum, corolla zygomorph, with one deep insertion, and pappus 1-seriate, subpaleaceous, with 5 bristles. The species is the only one of its genus represented in the CNP, and it is differentiated from other Atlantic Forest species by its frequent corymbiform secondary inflorescence (Souza-Souza 2025).

Elephantopus mollis also is considered a weed (Lorenzi 2008), and it is widely spread in South America and Central America, occurring in Argentina, Belize, Brazil, Bolivia, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, French Guyana, Guatemala, Guyana,

Haiti, Honduras, Jamaica, Leeward Island, Mexico, Nicaragua, Panama, Paraguay, Peru, Puerto Rico, Suriname, Trinidad-Tobago, Uruguay, Venezuela and Windward Island. In Brazil, it is occurring in all phytogeographic domains. *Elephantopus mollis* was collected at montane semideciduous seasonal forest around 1,100–1,120 m asl. The conservation status of this species has not yet been assessed.

4. *Eremanthus crotonoides* (DC.) Sch.Bip., Jahresber. Pollichia 20-21: 396 (1863).

Tree, 3–5 m tall, branches densely tomentose, whitish, persistent, trichomes stellate or 5-armed; leaf scars inconspicuous. Leaves alternate; leaf sheath absent; petiolate, petiole 0.5–3 cm long; lamina 2.2–19 × 1.2–11 cm, ovate, chartaceous, discolor, base obtuse, margin irregular entire, apex obtuse, venation cladodromous or brochidodromous, abaxial surface densely tomentose, whitish, persistent, trichomes stellate or 5-armed, adaxial surface tomentose, whitish, glabrescent, trichomes glandular and trichomes non-glandular stellate or 5-armed. Secondary inflorescence corymbiform; capitula clustered or not, sessile to shortly pedunculate, involucre 0.3–0.5 × 0.2–0.3 cm, cylindrical, 4–5-seriate, greenish, densely tomentose, glabrescent, trichomes stellate or 5-armed, whitish; involucre bracts imbricate, outer bracts ovate, apex acute, inner bracts lanceolate, apex acute, both outer and inner bracts apparently persistent; receptacle flat, fimbriate. Flowers 5, bisexual; corolla 0.5–0.6 cm long, actinomorphic, tubulose, 5-lobed, glabrous, lilac; lobes ca. 0.2 cm long, setose; anthers with basal appendage sagittate, apical appendage acute; style branches acute, pilose. Cypselae obovate, setose and glandular, 8-ribbed; carpodium inconspicuous; pappus 3-seriate, purplish-rosaceous, deciduous, outer series paleaceous, inner series barbellate.

Examined material: MINAS GERAIS: Parque Nacional do Caparaó, Alto Caparaó, Vale Verde, Floresta Estacional Semidecidual, 20.2600°S, 41.5260°W, 20.IX.2012, *Monge et al.* 1250 (UEC!); Córrego Caparaó, 1.257 m asl, 14.I.2010, *Moura & Leoni* 842 (UEC!); Vale Verde, 5.IV.1996, *Leoni* 3265 (GFJP!, RB!).

Eremanthus crotonoides is recognized by habit arboreal, branches, leaves and involucre with trichomes stellate or 5-armed, leaves ovate with base and apex obtuse, 5 flowers per capitulum, pappus purplish or rosaceous. *Eremanthus crotonoides* differs from *E. erythropappus* mainly due its large leaves ovate (*vs.* elliptic) with base and apex obtuse (*vs.* acute), presence of trichomes stellate or 5-armed (*vs.* peltate scales), the capitula clustered or not, but not fused in glomerule (*vs.* capitula always fused in glomerule), 5 flowers per capitulum (*vs.* 3–4 flowers), receptacle fimbriate (*vs.* glabrous) and pappus dimorphic (*vs.* isomorphic).

Eremanthus crotonoides is distributed in Brazil occurring at Atlantic Forest and *Cerrado*. The species was found at montane semideciduous seasonal forest around 1,120–1,250 m asl. Regarding conservation status, *E. crotonoides* is Least Concern (LC).

5. *Eremanthus erythropappus* (DC.) MacLeish, Ann. Missouri Bot. Gard. 74(2): 284 (1987). Fig. 4c

Tree or shrub, 2–10 m tall; branches densely lepidote, whitish, glabrescent, peltate scales trichomes; leaf scars inconspicuous. Leaves alternate or subopposite; leaf sheath absent; petiolate, petiole 0.5–1 cm long; lamina 3.5–8.5 × 1–3.3 cm, elliptic, chartaceous, discolor, base acute, margin entire, apex acute, venation brochidodromous, abaxial surface densely lepidote, whitish, persistent, peltate scales trichomes, adaxial surface lepidote, whitish, persistent, trichomes glandular and non-glandular peltate scales trichomes. Secondary inflorescence corymbiform; capitula clustered in glomerule, sessile; involucre 0.2–0.3 × 0.2–0.3 cm, cylindrical, 2–3-seriate, greenish, tomentose, peltate scales and trichomes glandular, rounded; involucre bracts subimbricate, linear or obovate, apex acute, bracts deciduous; receptacle flat, glabrous. Flowers 3–4, bisexual; corolla ca. 0.5 cm long, actinomorphic, tubulose, 5-lobed, glabrous, lilac-rosaceous; lobes ca. 0.2 cm long, glabrous; anthers with basal appendage calcarate, apical appendage obtuse; style branches acute, pilose. Cypselae obovate or cylindrical, glandular, 10-ribbed; carpodium inconspicuous; pappus 3-seriate, barbellate, rosaceous, deciduous.

Examined material: ESPÍRITO SANTO: Parque Nacional do Caparaó, Macieira, 30.III.2006, Viana *et al.* 357 (HUFU!); Dores do Rio Preto, Macieira, 2.IV.2006, Viana *et al.* 68 (HUFU!); Iúna, Cachoeira do Brás, 1.287 m asl, 20°20′49″S, 41°48′55″W, 18.VIII.2021, Horst *et al.* 177 (HUFU!); 1.286 m asl, 20°20′47″S, 41°49′1″W, 18.VIII.2021, Horst *et al.* 185 (HUFU!). MINAS GERAIS: Parque Nacional do Caparaó, 1.500–1.600 m asl, 6.IX.1977, Shepherd *et al.* 5777 (RB!); caminho para Pico da Bandeira, 2.200 m asl, 6.VIII.1969, Souza 50 (RB!); Alto Caparaó, trilha para Tronqueira, Candeal, 20°26′00″S, 41°53′00″W, 21.IX.2012, Monge *et al.* 1275 (UEC!); Campo de altitude, 2.085 m asl, 20°24′49″S, 41°49′58″W, 9.X.2022, Renon 514 (HUFU!); caminho entre Tronqueira ao Pico da Bandeira, Campo de altitude, 1.970–2.890 m asl, 20°25′54.0″S, 41°48′27.4″W, 2.IX.1996, Souza *et al.* 12155 (HUFU!); Espera Feliz, próximo a Macieira, 1.870 m asl, 20.IX.2016, Ferreira *et al.* 353 (RB!).

Eremanthus erythropappus is recognized by branches, leaves and involucre with peltate scales, leaves elliptic with base and apex acute, involucre 2–3-seriate, 3–4 flowers per capitulum and pappus barbellate, rosaceous. To differentiate it from *E. crotonoides*, check the taxonomy comment on the later species.

Eremanthus erythropappus occurs in Brazil through Atlantic Forest and *Cerrado*. The species

was collected at “candeal” and *campo de altitude* around 1,500–2,200 m asl. Regarding conservation status, *E. erythropappus* is Least Concern (LC).

6. *Hololepis pedunculata* (DC. ex Pers.) DC., Ann. Mus. Natl. Hist. Nat. 16: 190 (1810). Fig. 3a-f

Shrub, ca. 3 m tall; branches densely pubescent, whitish, glabrescent, trichomes inverted Y-shaped; leaf scars inconspicuous. Leaves alternate; leaf sheath present; petiole 1–1.5 cm long; lamina 6–12.5 × 3–4 cm, elliptic or obovate, subcoriaceous, discolor, base acute, margin entire, apex acute to acuminate, venation brochidodromous, abaxial surface densely pubescent, whitish, persistent, trichomes inverted Y-shaped, trichomes glandular rounded, adaxial surface pubescent, whitish, glabrescent, trichomes inverted Y-shaped. Secondary inflorescence simple, terminal; capitulum solitary, pedunculated, peduncle 4.5–5.5 cm long; subinvolucral bracts alternate or subopposite, sessile; lamina 2.5–4 × 1–1.5 cm, ovate, subcoriaceous, discolor, base acute, margin entire, apex acute to acuminate, venation acrodromous with 4–5 primary veins or brochidodromous, abaxial surface densely pubescent, whitish, persistent, trichomes inverted Y-shaped, trichomes glandular rounded, adaxial surface pubescent, whitish, glabrescent, trichomes inverted Y-shaped, trichomes glandular rounded; involucre ca. 2.6 × 2 cm, campanulate, 4–5-seriate, rosaceous, villous, whitish, glabrescent, trichomes inverted Y-shaped, trichomes glandular rounded; involucre bracts imbricate, coriaceous, outer bracts obovate to elliptic, apex acute, inner bracts linear, apex mucronate, bracts persistent; receptacle not seen. Flowers ca. 30, bisexual; corolla ca. 2 cm long, actinomorphic, tubulose, 5-lobed, rosaceous, sparse trichomes Y-shaped; lobes ca. 1 cm long, tomentose, trichomes Y-shaped; anthers with basal appendage calcarate, apical appendage acuminate; style branches ca. 3.3 cm long, acute, pilose. Cypselae prismatic, glabrous, 12–14-ribbed; carpodium inconspicuous; pappus 1-seriate with uneven bristles, paleaceous, stramineous, deciduous.

Examined material: ESPÍRITO SANTO: Ibitirama, Santa Marta, Cachoeira Encantada, Floresta Ombrófila Altomontana, 22.VIII.2012, Dias & Silva 763 (HUFU!).

Hololepis pedunculata is recognized by its inverted Y-shaped trichomes in branches, leaves and bracts, a subinvolucral bracts ovate, corolla ca. 2 cm long with Y-shaped trichomes, anthers calcarate, style branches above 3 cm long and pappus uniseriate with uneven bristles. The species is the only one of its genus found in the CNP. *Hololepis pedunculata* is mainly distinguished from the other Atlantic Forest species, *H. hatschbachii*, by its ovate subinvolucral bracts and stramineous pappus (Loeulle & Nakajima 2024).

Hololepis pedunculata is restricted to Brazil, occurring in the *Cerrado* and Atlantic Forest, with the first record for the latter biome made in this study. It was found in the CNP at upper montane ombrophilous forest. *Hololepis pedunculata* is Least Concern (LC).

7. *Lepidaploa* aff. *argyrotricha* (Sch.Bip. ex Baker) H.Rob., Proc. Biol. Soc. Washington 103: 482 (1990).

Shrub, ca. 0.5 m tall; branches densely velutinous, whitish, persistent; leaf scars inconspicuous. Leaves alternate; leaf sheath absent; shortly petiolate, petiole ≤ 0.5 cm long; lamina $5.5\text{--}10 \times 1.5\text{--}3.8$ cm, membranaceous, concolor with silvery aspect, elliptic, base obtuse, margin entire, revolute, apex acute, venation eucamptodromous, abaxial surface densely pubescent-strigose, whitish, glabrescent, trichomes with base expanded apparently glandular or trichomes glandular rounded, adaxial surface pubescent-strigose, whitish, glabrescent, trichomes with base expanded apparently glandular. Secondary inflorescence seriate cymose; capitula sessile; involucre $0.5\text{--}0.8 \times 0.4\text{--}0.5$ cm, cylindrical-campanulate, 8-seriate, greenish or purplish, densely pubescent-tomentose, trichomes with base expanded, whitish; involucre bracts imbricate, outer bracts ovate, apex mucronate, not recurved, inner bracts elliptic to narrowly elliptic, apex mucronate, not recurved, bracts persistent; receptacle flat, glabrous. Flowers 15–20, bisexual; corolla ca. 0.7 cm long, actinomorphic, tubulose, 5-lobed, lilac, glabrous; lobes ca. 0.3 cm long, setose; anthers with basal appendage sagittate, apical appendage acute; style branches acute, pilose. Cypselae obconic, densely sericeous, ribs inconspicuous; carpogonium conspicuous; pappus 2-seriate, whitish, outer series paleaceous, inner series barbellate.

Examined material: ESPÍRITO SANTO: Parque Nacional do Caparaó, Dolores do Rio Preto, caminho para o Pico da Bandeira, 2,448 m asl, $20^{\circ}27'16.5''\text{S}$, $41^{\circ}48'4.0''\text{W}$, Tinti et al. 344 (HUEMG!). RIO DE JANEIRO: Parque Nacional do Itatiaia, Três Picos, 1,200 m asl, $22^{\circ}15'00''\text{S}$, $44^{\circ}34'00''\text{W}$, Guedes et al. 2538 (HUFU!).

Lepidaploa aff. *argyrotricha* is recognized by branches densely velutinous, leaves concolor with silvery aspect, secondary inflorescence cyme-seriate and capitula sessile. The examined specimen resembles *L. argyrotricha*, but it differs mainly by branches densely velutinous in *L. aff. argyrotricha* (vs. sericeous), leaves concolor (vs. discolor), base obtuse (vs. attenuate), apex acute (vs. acuminate or cuspidate) and surfaces pubescent-strigose with glandular trichomes (vs. sericeous without glandular trichomes).

Lepidaploa aff. *argyrotricha* was found at campo de altitude around 2,500 m asl.

8. *Lepidaploa cotoneaster* (Willd. ex Spreng.) H.Rob., Proc. Biol. Soc. Washington 103(2): 486 (1990).

Subshrub, ca. 0.5 m tall; branches densely pubescent-tomentose, whitish, persistent; leaf scars inconspicuous. Leaves alternate; leaf sheath absent; sessile or shortly petiolate, petiole ≤ 0.3 cm long; lamina $2.2\text{--}4 \times 0.6\text{--}1$ cm, elliptic, membranaceous, discolor, base acute, margin entire, apex acute, venation brochidodromous, abaxial surface strigose-tomentose, whitish, persistent, adaxial surface densely tomentose, whitish, persistent. Secondary inflorescence seriate cymose; capitula sessile; involucre $0.4\text{--}0.6 \times 0.4\text{--}0.7$ cm, campanulate, ca. 6-seriate, greenish, villous-pubescent, whitish, glabrescent; involucre bracts imbricate, outer bracts ovate, apex shortly mucronate, not recurved, inner bracts elliptic to lanceolate, apex obtuse to shortly mucronate, not recurved, bracts persistent; receptacle flat, glabrous. Flowers ca. 20, bisexual; corolla ca. 0.6 cm long, actinomorphic, tubulose, 5-lobed, lilac, sparsely pubescent; lobes ca. 0.3 cm long, densely pubescent; anthers with basal appendage sagittate, apical appendage acute; style branches acute, pilose. Cypselae cylindrical or obconic, densely setose, glandular, ribs conspicuous, ca. 10-ribbed; carpogonium conspicuous; pappus 2-seriate, whitish, outer series paleaceous, inner series barbellate.

Examined material: ESPÍRITO SANTO: Parque Nacional do Caparaó, Iúna, Poços das Antas, 1,210 m asl, $20^{\circ}22'25''\text{S}$, $41^{\circ}49'38''\text{W}$, 4.IX.2021, Horst et al. 227 (HUFU!).

Lepidaploa cotoneaster is easily recognized by its leaves elliptic, discolor, densely tomentose in adaxial surface, secondary inflorescence seriate cymose with sparse capitula and cypselae ca. 10-ribbed.

Lepidaploa cotoneaster occurs in Brazil, Guyana and Venezuela. In Brazil, it is distributed across Atlantic Forest and *Cerrado*. The species was found at montane forest along the watercourse around 1,200 m asl. Regarding conservation status, *L. cotoneaster* is Least Concern (LC).

9. *Lepidaploa estevesiana* M.Monge, Leoni & J.N.Nakaj., Brittonia 75(2): 216 (2023). Fig. 4d

Shrub or subshrub, 0.3–0.6 m tall; branches densely tomentose or tomentose-strigose, whitish, glabrescent, trichomes glandular rounded; leaf scars conspicuous. Leaves alternate; leaf sheath absent; shortly petiolate, petiole ≤ 0.4 cm long; lamina $1.5\text{--}6.5 \times 0.5\text{--}2$ cm, elliptic, lanceolate or ovate, chartaceous, concolor, frequently purplish, base obtuse or slightly acute, margin slightly serrate, revolute, apex acute or acuminate, venation brochidodromous or eucamptodromous, abaxial surface densely pubescent or pubescent-

strigose, whitish, glabrescent, trichomes with base apparently glandular or trichomes glandular rounded, adaxial surface pubescent or strigose-pubescent, whitish, glabrescent, trichomes with base apparently glandular. Secondary inflorescence seriate cymose, cymose-corymbiform or solitary capitulum; capitula sessile; involucre 0.8–1 × 0.5–0.8 cm, campanulate, 8-seriate, purplish, densely tomentose or villous, whitish, glabrescent, trichomes glandular rounded; involucre bracts imbricate, outer bracts ovate to lanceolate, apex acuminate-mucronate, recurved, squarrose, inner bracts oblong, apex mucronate, not recurved, spinescent aspect, bracts persistent; receptacle flat, glabrous. Flowers 15–30, bisexual; corolla ca. 0.8 cm long, actinomorphic, tubulose, 5-lobed, lilac or purple, glandular and sparsely puberulent; lobes ca. 0.3 cm long, glandular; anthers with basal appendage sagittate, apical appendage acute; style branches acuminate, pilose. Cypselae obconic to obovoid, densely sericeous, ribs inconspicuous; carpogonium conspicuous; pappus 2-seriate, whitish, outer series paleaceous, inner series barbellate.

Examined material: MINAS GERAIS: Parque Nacional do Caparaó, Alto Caparaó, caminho ao Pico da Bandeira, rock outcrops, 2.890 m asl, 20°26'05"S, 41°47'45"W, 9.III.2010, *Bünger et al.* 475 (BHCB!); humid grassland, 2.600 m asl, 20°25'48"S, 41°48'13"W, 26.VI.2018, *Cruz et al.* 227 (HUFU!); Pico da Bandeira, 20°26'S, 41°47'53"W, 9.III.2010, *Heringer et al.* 420 (BHCB!); Trilha do Terreirão, 20°25'60"S, 41°52'6"W, 10.III.2014, *Manhães et al.* 473 (HUFU!); Trilha da Tronqueira, 2.037 m asl, 20°24'42"S, 41°50'05"W, 3.III.2010, *Martins da Costa et al.* 185/190 (BHCB!); 22.IX.2012, *Monge et al.* 1299 (UEC!); 18.IX.2021, *Monge et al.* 1170 (UEC!); Campo de altitude, 2.052 m asl, 20°24'43"S, 41°50'3"W, 11.X.2022, *Renon* 520 (HUFU!); Campo de altitude, 20°25'16"S, 41°48'46"W, 11.X.2022, *Renon* 523 (HUFU!); Espera Feliz, entre Macieira e Casa Queimada, rock outcrops, 2.216 m, 7.VI.2018, *Couto et al.* 3753 (HUFU!); Campo de altitude, 31.III.2021, *Leoni* 11592 (HUFU!).

Lepidaploa estevesiana is recognized by its leaves purplish, margin revolute, corolla glandular and puberulent, outer involucre bracts recurved, squarrose. The species has morphological similarities with *Lepidaploa macahensis* such as, branches and leaves with glandular trichomes, leaves chartaceous, leaf scars conspicuous and the secondary inflorescence corymbiform. But they differ mainly by leaf-margin revolute (*vs.* flat), outer involucre bracts with apex acuminate and recurved (*vs.* acute, obtuse or mucronate and not recurved), and cypselae densely sericeous (*vs.* densely glandular).

Lepidaploa estevesiana is restricted to *campo de altitude* (Monge *et al.* 2023). In the CNP, the species is found at 2,000–2,900 m asl. *Lepidaploa estevesiana* was assessed as Endangered (EN) by Monge *et al.* 2023.

10. *Lepidaploa macahensis* (Glaz. ex G.M.Barroso) H.Rob., Proc. Biol. Soc. Washington 103(2): 489 (1990). Fig. 4e

Shrub, 0.5–1.5 m tall, branches pubescent, puberulent or strigose, whitish, glabrescent, trichomes glandular rounded; leaf scars conspicuous. Leaves alternate; leaf sheath absent; sessile; lamina 1–5.2 × 0.5–1.7 cm, elliptic or obovate, chartaceous, concolor, base acute, margin serrate or irregular entire, apex acute or obtuse, venation eucamptodromous, both surface pubescent or puberulent, whitish, glabrescent, trichomes glandular rounded. Secondary inflorescence cymose corymbiform or cymose glomeruliform; capitula sessile or shortly pedunculated, peduncle ≤ 0.3 cm long; involucre 0.5–0.8 × 0.4–0.6 cm, cylindrical, 6–8-seriate, greenish or vinaceous, densely villous, whitish; involucre bracts imbricate, outer bracts ovate, apex acute or mucronate, not recurved, inner bracts lanceolate, ovate or elliptic, apex acute, obtuse or mucronate, not recurved, bracts persistent; receptacle flat, glabrous. Flowers 10–20, bisexual; corolla ca. 0.6 cm long, actinomorphic, tubulose, 5-lobed, lilac, pubescent or setose; lobes ca. 0.2 cm long, pubescent; anthers with basal appendage sagittate, apical appendage acuminate; style branches acute, pilose. Cypselae prismatic or obovoid, densely glandular, ribs inconspicuous; carpogonium conspicuous; pappus 2-seriate, whitish, outer series paleaceous, inner series barbellate.

Examined material: ESPÍRITO SANTO: Parque Nacional do Caparaó, Dolores do Rio Preto, trilha para Pico da Bandeira, 20°28.839'S, 41°49.757'W, 20.X.2012, *Flores et al.* 1335 (RB!); trilha da Casa Queimada, 20.5434°S, 41.7930°W, 20.VII.2013, *Manhães* 362 (UEC!, VIES!); afloramento rochoso, 13.VIII.2011, *Monge et al.* 966 (UEC!); torre da Samarco, 1.497 m asl, 20°35'51.3"S, 41°48'41.3"W, 28.XII.2007, *Tinti et al.* 413 (HUFU!). MINAS GERAIS: Caparaó, 2.500 m asl, 18.IX.1941, *Brade* 16973 (RB!). Parque Nacional do Caparaó, Alto Caparaó, Vale Encantado, Floresta Estacional Semidecidual, com transição para Campo de altitude, 1.700 m, 17.X.2000, *Forster & Romão* 735 (HUFU!); 1.980 m, III.1998, *Leoni* 3906 (UEC!); Tronqueira, 3.III.1991, *Leoni* (RB!); Floresta Estacional Semidecidual, 20.2600°S, 41.5260°W, 18.IX.2012, *Monge et al.* 1203 (UEC!); *Monge et al.* 1207 (UEC!); trilha para Terreirão, Candeal, 1.982 m asl, 20°24'99"S, 41°50'10"W, 9.X.2022, *Renon* 504 (HUFU!). Espera Feliz, caminho Macieira para Casa Queimada, afloramento rochoso, 2.216 m asl, 7.VI.2018, *Couto et al.* 3746 (HUFU!); *Couto et al.* 3751 (HUFU!).

Lepidaploa macahensis is very distinct from the other species of the genus in the CNP, by its branches with very conspicuous leaf scars, leaves sessile, secondary inflorescence cymose corymbiform or glomeruliform, 10–20 flowers per capitulum and cypselae densely glandular with ribs inconspicuous.

Lepidaploa macahensis is restricted to Brazilian Atlantic Forest. In the CNP, the species was found at

montane semideciduous seasonal forest, “candeal” and *campo de altitude*, around 1,700–2,500 m asl. It is not evaluated regarding conservation status.

11. *Lepidaploa salzmannii* (DC.) H. Rob., Proc. Biol. Soc. Washington 103(2): 492 (1990).

Subshrub, ca. 0.8 m tall, branches densely pubescent, whitish, glabrescent; leaf scars inconspicuous. Leaves alternate; leaf sheath absent; sessile; lamina 4.5–7.5 × 0.7–2.3 cm, lanceolate, oblong or elliptic, chartaceous to subcoriaceous, concolor, base acute, margin entire, apex acuminate, venation eucamptodromous, abaxial surface densely sericeous, whitish, glabrescent, adaxial surface strigose, whitish, glabrescent. Secondary inflorescence seriate cymose; capitula sessile, usually geminate; involucre 0.5–0.7 × 0.5–0.6 cm, campanulate, 5–6-seriate, greenish, sericeous, whitish; involucre bracts imbricate, outer bracts ovate, apex acuminate, not recurved, inner bracts oblong, apex acute or acuminate, not recurved, bracts persistent; receptacle convex, apparently with small paleas. Flowers 20–30, bisexual; corolla 0.7–0.8 cm long, actinomorphic, tubulose, 5-lobed, lilac, glabrous; lobes 0.2–0.3 cm long, glabrous; anthers with basal appendage sagittate, apical appendage acute; style branches acute, pilose. Cypselae cylindrical, setose, glandular, ribs conspicuous, 10-ribbed; carpogonium conspicuous; pappus 2-seriate, whitish, outer and inner bristles barbellate.

Examined material: MINAS GERAIS: Parque Nacional do Caparaó, Alto Caparaó, trilha entre Tronqueira e Sede Administrativa, 11.IV.2010, *Colletta & Flores* 495 (RB!). Carangola, Estrada da Furriel, 11.V.2009, *Angulo et al.* 67 (ESA!).

Lepidaploa salzmannii is recognized by leaves lanceolate, oblong or elliptic, sessile, apex acuminate, capitula usually geminate and pappus with outer and inner barbellate bristles. *Lepidaploa salzmannii* resembles morphologically *Lepidaploa subsquarrosa*, because both have leaves lanceolate and elliptic, adaxial surface strigose, apex acuminate and 20–30 flowers per capitulum. But they differ by leaves chartaceous or subcoriaceous (*vs.* membranaceous), receptacle convex (*vs.* flat), secondary inflorescence paucicephala with geminate capitula (*vs.* secondary inflorescence pluricephala with isolated capitula), corolla glabrous (*vs.* pilose), ribs of cypselae conspicuous (*vs.* inconspicuous) and outer bristles of pappus barbellate (*vs.* paleaceous).

Lepidaploa salzmannii is widely distributed in South America to Central America occurring in Belize, Brazil, Bolivia, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Guyana, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru and Venezuela. In Brazil, the species occurs in Atlantic Forest and *Cerrado*. In the CNP, it was

found at montane semideciduous seasonal forest around 1,500–1,900 m asl. *Lepidaploa salzmannii* is not assessed regarding its conservation status.

12. *Lepidaploa subsquarrosa* (DC.) H. Rob., Proc. Biol. Soc. Washington 103(2): 495 (1990).

Subshrub, ca. 0.5 m tall; branches tomentose-pubescent or tomentose-villous, whitish, glabrescent; leaf scars inconspicuous. Leaves alternate; leaf sheath absent; sessile or shortly petiolate, petiole ≤ 0.5 cm; lamina 2.5–9 × 0.4–3 cm, lanceolate, elliptic, or obovate, membranaceous, concolor, base acute or slightly oblique, margin entire, revolute, apex acute to acuminate, venation eucamptodromous, abaxial surface pubescent, whitish, glabrescent, trichomes glandular rounded, adaxial surface strigose-pubescent, whitish, glabrescent. Secondary inflorescence seriate cymose; capitula sessile; involucre 0.5–0.6 × 0.4–0.6 cm, campanulate, 6–8-seriate, greenish, tomentose-villous, whitish, glandular trichomes rounded; involucre bracts imbricate, outer bracts ovate, apex acuminate, slightly recurved, inner bracts oblong, apex acute or mucronate, not recurved, bracts persistent; receptacle flat, glabrous. Flowers ca. 20, bisexual; corolla ca. 0.6 cm long, actinomorphic, tubulose, 5-lobed, whitish, pubescent or puberulent; lobes tube 0.2–0.3 cm long, setose, apparently glandular trichomes present; anthers with basal appendage shortly sagittate, apical appendage acute; style branches acute, pilose. Cypselae obconic, densely sericeous, glandular, ribs inconspicuous; carpogonium conspicuous; pappus 2-seriate, whitish, outer series paleaceous, inner series barbellate.

Examined material: ESPÍRITO SANTO: Parque Nacional do Caparaó, Divino São Lourenço, Patrimônio da Penha, 17.V.2007, *Chimalli* (VIES!). Iúna, Serra do Valentim, Floresta Ombrófila Montana, 1.422 m asl, 20°21'48"S, 41°28'17"W, VIII.2016, *Zorzanelli* 2056 (HUFU!); Floresta Ombrófila Montana, 1.382 m asl, 20°21'51"S, 41°28'19"W, VIII.2016, *Zorzanelli* 2066 (HUFU!). Mimoso do Sul, Conceição do Muqui, afloramento rochoso, 977 m asl, 9.VIII.2013, *Pinto Junior* 107 (HUFU!). MINAS GERAIS: Carangola, Morro da Torre, área degradada, 750 m asl, 20°44'S, 42°04'W, 28.VI.1994, *Leoni* 2593 (GEJP!).

Lepidaploa subsquarrosa is recognized by leaves lanceolate, elliptic or obovate, sessile or shortly petiolate, base slightly oblique or acute, secondary inflorescence strongly seriate cymose, and cypselae obconic, densely sericeous and glandular, ribs inconspicuous. *Lepidaploa subsquarrosa* resembles *L. salzmannii*. To differentiate them, check the taxonomy comment on the later species.

Lepidaploa subsquarrosa is restricted to Brazil, occurring in Atlantic Forest and *Cerrado*. In the CNP, the species was found at montane ombrophilous forest, rock outcrops and disturbed areas around 900–1,500 m asl. Regarding conservation status, *L. subsquarrosa* has not yet been assessed.

13. *Lepidaploa urceolata* Renon, D. Marques & J.N. Nakaj., Kew Bulletin 80 (2025).

Shrub, 1.5–2 m tall; branches densely pubescent or puberulent, whitish, glabrescent; leaf scars inconspicuous. Leaves alternate; leaf sheath absent; petiolate, petiole 0.5–0.7 cm long; lamina 5.5–10.2 × 1.6–3.8 cm, elliptic or lanceolate, chartaceous or subcoriaceous, concolor, strongly bullate, base obtuse, margin entire, apex acute to acuminate, venation eucamptodromous, abaxial surface densely strigose-pubescent, base expanded apparently glandular, whitish, persistent, adaxial surface strigose-pubescent, base expanded apparently glandular, whitish, glabrescent. Secondary inflorescence seriate cymose; capitula sessile; involucre 0.6–0.9 × 0.7–0.8 cm, urceolate, 6-seriate, greenish, densely villous or setose-pubescent, whitish; involucral bracts imbricate, lanceolate, apex acuminate or mucronate, recurved, bracts persistent; receptacle concave, glabrous. Flowers ca. 30, bisexual; corolla 0.6–0.8 cm long, actinomorphic, tubulose, 5-lobed, lilac, glabrous; lobes 0.3–0.4 cm long, setose; anthers with basal appendage sagittate, apical appendage acute; style branches acute, pilose. Cypselae obconic, densely sericeous, ribs inconspicuous; carpodium conspicuous; pappus 2-seriate, stramineous, outer series paleaceous, inner series barbellate with enlarged apices.

Examined material: MINAS GERAIS: Parque Nacional do Caparaó, Alto Caparaó, Tronqueira, vegetação de transição, 1.980 m asl, VII.2008, *Leoni* 7196 (HUFU!, GFJP!); Floresta Estacional Semidecidual Montana, 1.787 m asl, 20°24'13"S, 41°50'27"W, 7.X.2022, *Renon* 501 (HUFU!).

Lepidaploa urceolata is a remarkably distinctive species. It is easily recognized by its strongly bullate leaves, urceolate involucre, involucral bracts with deflexed apices, inner bristles of the pappus with enlarged apices, and an atypical pollen grain (type G) (Renon *et al.* 2025).

Lepidaploa urceolata was found at montane semideciduous seasonal forest and “candea”, around 1,700–1,980 m asl. The species is previously assessed as critically endangered (CR) (Renon *et al.* 2025).

14. *Lessingianthus dichrous* (Mart. ex Colla) P.L.R.Moraes & Guglielmo, Harvard Pap. Bot. 18(2): 215 (2013).

Shrub, 4–5 m tall; branches densely lanate, whitish, glabrescent; leaf scars conspicuous. Leaves alternate; leaf sheath absent; sessile; lamina 2.5–3.5 × 0.9–1.2 cm, elliptic, subcoriaceous, discolor, base acute, margin entire, apex obtuse, venation brochidodromous, abaxial surface densely lanate, whitish, glabrescent, adaxial surface glabrous. Secondary inflorescence raceme-corymbiform; capitula clustered or not, subsessile or pedunculate,

peduncle ≤ 0.8 cm long; involucre 0.7–1 × 0.5–0.7 cm, campanulate or cylindrical, 8-seriate, greenish to purplish, tomentose, whitish, glabrescent, involucral bracts imbricate, outer bracts ovate, apex acute, persistent, inner bracts linear, apex acute, deciduous; receptacle flat, glabrous. Flowers 20–25, bisexual; corolla 1.1–1.4 cm long, actinomorphic, tubulose, 5-lobed, purple, glabrous; lobes 0.3–0.4 cm long, setose; anthers with basal appendage sagittate, apical appendage acute; style branches acute, pilose. Cypselae cylindrical, sericeous, 8-ribbed; carpodium conspicuous; pappus 2-seriate, whitish-stramineous, outer series paleaceous, inner series barbellate.

Examined material: MINAS GERAIS: Caparaó mountain, 2.100 m asl, 1.X.1941, *Brade* 17064 (RB!); Parque Nacional do Caparaó, próximo a Congonha, 2.II.1996, *Leoni* 3176 (RB!). Alto Caparaó, Tronqueira road, 20.III.2012, *Kuntz* 501 (ESA!).

Lessingianthus dichrous is easily recognized by its branches or leaves densely lanate, leaves sessile, discolor, secondary inflorescence of cyme corymbiform or racemiform with capitula very closely and 20–25 flowers per capitulum.

Lessingianthus dichrous is restricted to Brazil occurring in Atlantic Forest and *Cerrado*. In the CNP, it was found at *campo de altitude* around 2,100 m asl. The species is not evaluated regarding its conservation status.

15. *Lessingianthus macrophyllus* (Less.) H. Rob., Proc. Biol. Soc. Washington 101(4): 944 (1988).

Shrub, 2–3 m tall; branches tomentose, whitish, glabrescent; leaf scars inconspicuous. Leaves alternate; leaf sheath absent; petiolate, petiole 0.3–1.8 cm long; lamina 3–24 × 0.5–19.5 cm, elliptic to ovate, chartaceous or subcoriaceous, concolor or slightly discolor, base obtuse or acute, margin serrate or dentate, apex acute or acuminate, venation brochidodromous, abaxial surface densely tomentose-villous, whitish, glabrescent, trichomes glandular rounded, adaxial surface strigose, whitish or brownish, glabrescent. Secondary inflorescence seriate cymose; capitula not clustered, subsessile or shortly pedunculate, peduncle ≤ 0.3 cm long; involucre 1–1.2 × 1–1.5 cm, campanulate, ca. 8-seriate, greenish or brownish, tomentose-pubescent or sericeous, whitish, glabrescent, trichomes glandular rounded; involucral bracts imbricate, outer bracts ovate, apex mucronate, persistent, inner bracts narrowly lanceolate or linear, apex acute or obtuse, deciduous; receptacle flat, glabrous. Flowers 40–50, bisexual; corolla 1 cm long, actinomorphic, tubulose, 5-lobed, whitish to cream, sparsely pubescent-strigose; lobes 0.2 cm long, strigose, glandular trichomes in tube and lobes; anthers with basal appendage sagittate, apical appendage acuminate; style branches acute,

pilose. Cypselae cylindrical, sericeous, ca. 10-ribbed; carpodium conspicuous; pappus 2-seriate, stramineous, outer series paleaceous, inner series barbellate.

Examined material: MINAS GERAIS: Parque Nacional do Caparaó, Alto Caparaó, estrada entre Vale Verde e alojamento, Floresta Montana, 1.IX.1996, *Souza et al.* 12074 (HUFU!). Leopoldina, Tebas, pasture nearly the forest, 11.VIII.1973, *Brugger* 13267 (HUFU!).

Lessingianthus macrophyllus is easily distinctive by its large leaves reaching ca. 24 cm long and ca. 20 cm width, petiolate, margin serrate or dentate, secondary inflorescence seriate cymose and 40–50 flowers per capitulum.

Lessingianthus macrophyllus is restricted to Brazilian Atlantic Forest. The species was found at montane semideciduous seasonal forest, the altitude was not mentioned. Regarding conservation status, *L. macrophyllus* is not evaluated yet.

16. *Piptocarpha axillaris* (Less.) Baker, *Fl. bras.* (Martius) 6(2): 122 (1873).

Tree, 3–5 m tall, branches cylindrical, densely lepidote, brownish, glabrescent, peltate scales trichomes; leaf scars little conspicuous. Leaves alternate; leaf sheath absent; petiolate, petiole 0.7–1.5 cm long; lamina 3.5–6.5 × 1.3–2.7 cm, elliptic or oblong, coriaceous, discolor, base obtuse, margin entire, apex acute, venation eucamptodromous or brochidodromous, abaxial surface densely tomentose, brownish, persistent, trichomes 5-armed, adaxial surface tomentose, brownish, glabrescent, trichomes 5-armed. Secondary inflorescence spiciform; capitula clustered in glomerule in leaf axils, sessile; involucre cylindrical, 0.8–1 × 0.3–0.5 cm, 8-seriate, greenish or brownish, villous, brownish, glabrescent, involucre bracts imbricate, outer bracts ovate, apex acute, inner bracts elliptic, apex acute, bracts deciduous; receptacle flat, glabrous. Flowers 5–10, bisexual; corolla 0.7–0.8 cm long, actinomorphic, tubulose, 5-lobed, glabrous, cream; lobes ca. 0.3 cm long, glabrous or sparsely pubescent; anthers with basal appendage calcarate, apical appendage acute; style branches acute, pilose. Cypselae cylindrical-obconic, glandular, 10-ribbed; carpodium conspicuous; pappus 2-seriate, stramineous, deciduous, outer series paleaceous, inner series barbellate.

Examined material: MINAS GERAIS: Parque Nacional do Caparaó, Macieira, humid area, 1,800 m asl, 12.VII.1941, *Castro* (RBI). Alto Caparaó, próximo a Cachoeira Farofa, 20°28'17"S, 41°49'42"W, 4.XI.2013, *Zorzanelli* 865 (HUFU!, VIES!). SÃO PAULO: Jundiá, Serra do Japi, 9.IX.1993, *CCJ* 46 (HUFU!).

Piptocarpha axillaris is recognized by tree habit, leaves coriaceous, discolor, secondary inflorescence spiciform of glomerules, involucre 8-seriate, 5–10 flowers per capitulum and corolla lobes pubescent. *Piptocarpha axillaris* resembles *P. macropoda*, because

both have tree habit, branches with leaf scars little conspicuous, leaves elliptic, coriaceous, secondary inflorescence spiciform of glomerules and cypselae cylindrical. But it differs by leaves discolor in *P. axillaris* (vs. concolor), involucre 8-seriate (vs. 10-seriate), 5–10 flowers (vs. 12–16 flowers), corolla lobes pubescent (vs. papillose) and cypselae with 10-ribbed (vs. 6-ribbed).

Piptocarpha axillaris is restricted to Brazilian Atlantic Forest. In the CNP, it was found at montane forest in a humid area around 1,800 m asl. Regarding conservation status, *P. axillaris* is Least Concern (LC).

17. *Piptocarpha macropoda* (DC.) Baker, *Fl. bras.* (Martius) 6(2): 123 (1873). Fig. 4f

Tree, 9–10 m tall, branches cylindrical, densely lepidote, whitish, glabrescent, peltate scales trichomes; leaf scars little conspicuous. Leaves alternate; leaf sheath absent; petiole 1–3 cm long; lamina 3.7–19 × 1.5–10.5 cm, elliptic, coriaceous, concolor, base obtuse or acute, margin entire or slightly serrate, apex obtuse or acute, venation brochidodromous, abaxial surface tomentose, whitish, persistent, trichomes 5-armed, adaxial surface tomentose, whitish, glabrescent, trichomes 5-armed. Secondary inflorescence spiciform; capitula clustered in glomerule, sessile; involucre 0.8–1.2 × 0.4–0.5 cm cylindrical, 10-seriate, greenish or brownish, villous, whitish, glabrescent, involucre bracts imbricate, outer series ovate, apex mucronate or acute, inner series linear, apex obtuse, bracts deciduous; receptacle flat, glabrous. Flowers 12–16, bisexual; corolla 0.7–0.8 cm long, actinomorphic, tubulose, 5-lobed, cream, glabrous; lobes 0.2–0.3 cm long, papillose; anthers with basal appendage calcarate, apical appendage acute, style branches acute, pilose. Cypselae cylindrical, glandular, 6-ribbed; carpodium inconspicuous; pappus 2-seriate, stramineous, deciduous, outer series paleaceous, inner series barbellate.

Examined material: ESPÍRITO SANTO: Parque Nacional do Caparaó, Ibitirama, Santa Marta, Vale Santa Marta, Floresta Ombrófila Montana, 1,260 m asl, 20°29'33"S, 41°44'50"W, 29.VI.2015, *Araújo et al.* 174 (HUFU!); 1,110 m asl, 20°29'30"S, 41°44'22"W, 2014, *Araújo* 492 (HUFU!); I.2013, *Campanharo* 13 (VIES!). MINAS GERAIS: Carangola, Serra Araponga, fazenda Neblina, 1,300 m asl, 9.VIII.1994, *Leoni* 2628 (UEC!). Perdizes, Estação Ambiental Galheiro, 4.IX.2003, *Mendes & Araújo* 940 (HUFU!).

Piptocarpha macropoda is recognized by tree habit, large leaves reaching ca. 20 cm long, coriaceous, concolor, secondary inflorescence spiciform of glomerules, involucre 10-seriate, 12–16 flowers per capitulum, corolla lobes papillose and cypselae 6-ribbed. The morphological similarities and differences between *P. macropoda* and *P. axillaris* are described on the taxonomic comments of the later species.

Piptocarpha macropoda is restricted to Brazil occurring in Atlantic Forest and *Cerrado*. In the CNP, it was found at montane ombrophilous forest around 1,100–1,300 m asl. Regarding conservation status, *P. macropoda* is Least Concern (LC).

18. *Piptocarpha* aff. *notata* Baker, *Fl. bras.* (Martius) 6(2): 129 (1873).

Vine, branches quadrangular, lepidote, whitish or yellowish, glabrescent, peltate scales trichomes; leaf scars inconspicuous. Leaves alternate; leaf sheath absent; petiole 0.5–1 cm long; lamina 6–15.5 × 1.8–3 cm, narrowly elliptic or lanceolate, chartaceous, slightly discolor, greenish, base acute or obtuse, margin slightly serrate, apex acuminate or caudate, venation brochidodromous, abaxial and adaxial surfaces lepidote, whitish, glabrescent, peltate scales trichomes. Secondary inflorescence glomeruliform; capitula clustered in glomerule, sessile; involucre (buds ca. 0.5 × 0.3 cm), ovoid or cylindrical, ca. 4-seriate, greenish, lepidote, whitish, glabrescent, sparse peltate scales; involucral bracts imbricate, outer series ovate, apex obtuse, inner series elliptic or ovate, apex slightly acute, bracts deciduous; receptacle flat, glabrous. Flowers 3, bisexual; corolla (bud ca. 0.3 cm long), actinomorphic, tubulose, 5-lobed, white, glandular; lobes glandular, anthers with basal appendage calcarate, apical appendage acute; style branches acute, pilose. Cypselae prismatic-obconic, apparently glabrous, ca. 10-ribbed little conspicuous; carpodopodium conspicuous; pappus 2-seriate, stramineous, deciduous, outer and inner bristles barbellate.

Examined material: ESPÍRITO SANTO: Parque Nacional do Caparaó, Ibitirama, Santa Marta, Vale Santa Marta, Floresta Ombrófila Montana, 1,260 m asl, 29.VI.2015, *Araújo* 173 (HUFU!); 2014, *Araújo* 485 (HUFU!).

Piptocarpha aff. *notata* is recognized by climbing habit, branches quadrangular, leaves with apex acuminate or caudate, discolor, secondary inflorescence glomeruliform, capitula clustered in glomerule, involucre ca. 4-seriate, 3-flowers per capitulum and corolla with glandular trichomes. *Piptocarpha* aff. *notata* is closely similar to *P. notata*, but differs mainly in density of indument on branches and leaves (denser in *P. notata*), and by serrate leaf margin (*vs.* entire). *Piptocarpha* aff. *notata* also resembles *P. reitziana*, but both species are differentiated by quadrangular branches in *P. aff. notata* (*vs.* cylindrical), peltate scales in leaves (*vs.* trichomes 5-armed) and cypselae 10-ribbed (*vs.* 6-ribbed).

Piptocarpha aff. *notata* is restricted to Brazilian Atlantic Forest. In the CNP, it was found at montane ombrophilous forest around 1,300 m asl.

19. *Piptocarpha reitziana* Cabrera, Arch. Jard. Bot. Rio de Janeiro 15: 73, tab. 5 (1957).

Vine; branches cylindrical, densely lepidote, whitish, glabrescent, peltate scales trichomes; leaf scars inconspicuous. Leaves alternate, grayish; leaf sheath absent; petiolate, petiole 0.6–1 cm long; lamina 5.6–9.5 × 1–3 cm, elliptic, chartaceous, discolor, base acute or slightly obtuse, margin entire or slightly serrate, apex acute or acuminate, venation brochidodromous, abaxial surface densely lanate-tomentose, whitish, persistent, trichomes 5-armed, adaxial surface glabrous. Secondary inflorescence glomeruliform; capitula clustered in glomerule, sessile; involucre (bud ca. 0.2 × 0.3 cm), cylindrical, ca. 5-seriate, greenish or brownish, villous, whitish, glabrescent; involucral bracts imbricate, outer bracts ovate, apex acute, inner bracts ovate, apex obtuse, bracts deciduous; receptacle flat, glabrous. Flowers 3, bisexual; corolla actinomorphic, tubulose, 5-lobed, cream. Cypselae prismatic, glandular, 6-ribbed; carpodopodium inconspicuous; pappus 2-seriate, whitish, deciduous, outer series paleaceous, inner series barbellate.

Examined material: ESPÍRITO SANTO: Divino São Lourenço, Patrimônio da Penha, Águas Claras do Caparaó, Floresta Ombrófila Montana, 894 m asl, 20°36'4"S, 41°46'44"W, 25.XII.2019, *Zorzanelli et al.* 1957 (HUFU!). Ibitirama, Santa Marta, próximo ao alojamento ICMBio, 22.X.2012, *Flores et al.* 1435 (UEC!).

Piptocarpha reitziana is easily recognized by climbing habitat, leaves grayish, discolor, abaxial surface lanose-tomentose, secondary inflorescence glomeruliform, capitula clustered in glomerule, involucre ca. 5-seriate, 3-flowers per capitulum and cypselae prismatic. The morphological differences between *P. notata* are described on the taxonomic comments of the later species.

Piptocarpha reitziana is restricted to Brazilian Atlantic Forest. In the CNP, it was found at montane ombrophilous forest around 900 m asl. The species Regarding conservation status, *P. reitziana* is Least Concern (LC).

20. *Vernonanthura* aff. *discolor* (Spreng.) H. Rob., Phytologia 73(2): 70 (1992).

Tree, ca. 14 m tall; branches densely villous, whitish, persistent; leaf scars inconspicuous. Leaves alternate; leaf sheath absent; petiolate, petiole 2–2.5 cm long; lamina 5.5–12.5 × 2.6–5 cm, elliptic, obovate or orbicular, chartaceous or subcoriaceous, discolor, base acute, margin entire, apex acute, mucronate or retuse, venation brochidodromous, abaxial surface densely villous, whitish, persistent, adaxial surface villous, whitish, glabrescent. Secondary inflorescence seriate cymose, racemiform; capitula pedunculate, peduncle ≤ 0.3 cm long; involucre 0.3–0.5 × 0.2–0.3 cm, cylindrical or campanulate, 5–6-seriate, greenish or brownish, villous, whitish,

glabrescent; involucre bracts imbricate, outer bracts ovate, apex slightly acute, inner bracts elliptic or ovate, apex acute, deciduity of bracts unknown; receptacle flat, glabrous. Flowers ca. 10, bisexual; corolla (bud ca. $0.2 \times < 0.1$ cm long), actinomorphic, tubulose, 5-lobed, color unknown, glandular; lobes glandular. Cypselae imature; pappus 2-seriate, stramineous, apparently deciduous, outer and inner bristles barbellate.

Examined material: ESPÍRITO SANTO: Parque Nacional do Caparaó, Ibitirama, Santa Marta, vale Santa Marta, Floresta Ombrófila Montana, 1,200 m asl, $20^{\circ}29'29''\text{S}$, $41^{\circ}44'46''\text{W}$, 29.VI.2015, *Araújo* 161 (HUFU!).

Vernonanthura aff. *discolor* is recognized by tree habit, leaves petiolate, lamina elliptic, obovate or orbicular, chartaceous or subcoriaceous, apex acute, mucronate or retuse, involucre 5–6-seriate, ca. 10 flowers per capitulum, corolla and lobes glandular. The specimens examined of *Vernonanthura* aff. *discolor* resembles the species *V. discolor*, due morphological similarities as branches villous, leaves elliptic or obovate, discolor, densely villous in abaxial surface, secondary inflorescence seriate cymose racemiform, ca. 10 flowers per capitula. But, *Vernonanthura* aff. *discolor* differs from *V. discolor* mainly by presence of orbicular leaves with apex retuse and a villous adaxial surface, which do not occur in *V. discolor*. Further studies are necessary to understand whether *Vernonanthura* aff. *discolor* can be considered a variety of *V. discolor* or a new species to be recognized.

Vernonanthura aff. *discolor* was found at montane ombrophilous forest around 1,200 m asl.

21. *Vernonanthura discolor* (Spreng.) H.Rob., *Phytologia* 73(2): 70 (1992).

Tree, 8–9 m tall; branches densely tomentose or villous, whitish, glabrescent; leaf scars inconspicuous. Leaves alternate; leaf sheath absent; petiolate, petiole 0.5–3 cm long; lamina 4–22 $\times$ 1.8–7.5 cm, elliptic or obovate, chartaceous, discolor, base acute, margin entire to slightly crenate, apex acute or acuminate, venation brochidodromous, abaxial surface densely villous, whitish, glabrescent, adaxial surface glabrous. Secondary inflorescence seriate cymose, racemiform; capitula, pedunculate, peduncle 0.2–0.8 cm long; involucre 0.5–0.8 $\times$ 0.3–0.4 cm, cylindrical, 6–8-seriate, greenish, densely villous, whitish, glabrescent, glandular trichomes rounded, glabrescent; involucre bracts imbricate, outer bracts ovate, apex slightly acute, persistent, inner bracts linear to elliptic, apex acute, deciduous; receptacle flat, glabrous. Flowers 8–10, bisexual; corolla ca. 0.6 cm long, actinomorphic, tubulose, 5-lobed, cream or whitish, papillose, trichomes apparently glandular; lobes ca. 0.2 cm long, villous; anthers with basal appendage sagittate, apical appendage acute; style branches

acuminate, pilose. Cypselae cylindrical, setose, glandular, 10-ribbed; carpogonium conspicuous; pappus 2-seriate, whitish, apparently deciduous, outer series paleaceous, inner series barbellate.

Examined material: ESPÍRITO SANTO: Parque Nacional do Caparaó, Ibitirama, Santa Marta, Vale Santa Marta, Floresta Ombrófila, 1,400 m asl, $20^{\circ}29'32''\text{S}$, $41^{\circ}45'20''\text{W}$, XII.2015, *Araújo & Silva* 555 (HUFU!); 1,260 m asl, $20^{\circ}29'33''\text{S}$, $41^{\circ}44'50''\text{W}$, *Pinto-Junior* 85 (HUFU!). MINAS GERAIS: Serra Araponga, fazenda Neblina, Floresta Estacional Semidecidual, 1,300 m asl, $20^{\circ}43'\text{S}$, $42^{\circ}29'\text{W}$, 30.IX.1994, *Leoni* 2651 (UEC!). Alto Caparaó, próximo Vale Verde, Floresta Montana, 3.IX.1996, *Souza et al.* 12215 (HUFU!, RBI, UEC!).

Vernonanthura discolor is easily recognized by arboreal habit, leaves discolor, abaxial surface densely villous, adaxial surface glabrous, secondary inflorescence seriate cymose racemiform, 8–10 flowers per capitulum, corolla papillose, lobes villous and cypselae cylindrical. Morphological similarities and differences between *Vernonanthura discolor* and *Vernonanthura* aff. *discolor* are described on the taxonomic comments of the later species.

Vernonanthura discolor is restricted to Brazil, occurring in Atlantic Forest and *Cerrado*. In the CNP, it was found at montane semideciduous seasonal forest and montane semideciduous seasonal forest, around 1,200–1,400 m asl. Regarding conservation status, *V. discolor* is Least Concern (LC).

22. *Vernonanthura divaricata* (Spreng.) H.Rob., *Phytologia* 78(5): 385 (1995). Fig. 4g

Tree, 5–8 m tall; branches densely villous and pubescent, whitish, glabrescent; leaf scars inconspicuous. Leaves alternate or occasionally opposite; leaf sheath; petiolate, petiole 1–3.5 cm long; lamina 4.5–19 $\times$ 2.2–8 cm, elliptic, chartaceous, slightly discolor, base acute or obtuse, margin irregular entire, apex acute, venation brochidodromous, abaxial surface densely villous, whitish, persistent, glandular trichomes rounded, adaxial surface strigose, whitish, glabrescent, glandular trichomes rounded. Secondary inflorescence seriate cymose, racemiform; capitula sessile or pedunculate, peduncle ≤ 0.2 cm long; involucre 0.3–0.5 $\times$ 0.3–0.4 cm, cylindrical, 8–10-seriate, greenish, densely villous-lanuginose or sericeous, whitish, persistent, glandular trichomes rounded, persistent; involucre bracts imbricate, outer bracts ovate, apex obtuse or slightly acute, persistent, inner bracts ovate, apex obtuse, deciduous; receptacle flat, glabrous. Flowers 10–15, bisexual; corolla ca. 0.6 cm long, actinomorphic, tubulose, 5-lobed, cream, glabrous; lobes 0.1–0.2 cm long, glabrous; anthers with basal appendage sagittate, apical appendage acute; style branches acuminate, pilose. Cypselae obovoid, setose, glandular, 10-ribbed; carpogonium conspicuous; pappus 2-seriate, stramineous,

apparently deciduous, outer series paleaceous, inner series barbellate.

Examined material: ESPÍRITO SANTO: Parque Nacional do Caparaó, Dorcas do Rio Preto, estrada Pedra Menina, 20.X.2012, Flores *et al.* 1364 (RBI, UEC!). Ibitirama, Pedra Roxa, Reserva Águas de Gaya, 990 m asl, 6.XI.2010, Couto 1718 (HUFU!); 960m asl, 20°24'24"S, 41°43'15"W, 16.IX.2016, Couto *et al.* 4027 (HUFU!). MINAS GERAIS: Ibitirama, Santa Marta, 20°29'32"S, 41°45'20"W, XI.2015, Araújo *et al.* 496 (HUFU!); Alto Caparaó, estrada entre Alto Caparaó e Caparaó, 20°28.741'S, 41°52.907'W, 20.X.2012, Flores *et al.* 1305 (RBI, UEC!).

Vernonanthura divaricata is easily recognized by arboreal habit, leaves occasionally opposite, glandular trichomes in both surfaces, slightly discolor, secondary inflorescence seriate cymose racemiform, 10–15 flowers per capitulum, corolla and lobes glabrous, cypselae obovoid.

Vernonanthura divaricata is restricted to Brazilian Atlantic Forest. In the CNP, it was found at montane ombrophilous forest and disturbed area, around 950–1,400 m asl. Regarding conservation status, *V. divaricata* is not evaluated.

23. *Vernonanthura hilairiana* (Gardner) A.J. Vega & Dematt., Bol. Soc. Argent. Bot. 46(3-4): 372 (2011).

Shrub or tree, 2–3 m tall; branches densely villous and pubescent, whitish or brownish, glabrescent, trichomes apparently multicellular; leaf scars inconspicuous. Leaves alternate; leaf sheath absent; petiolate, petiole 0.5–1 cm long; lamina 5–18 × 1–3.5 cm, narrowly elliptic or oblong, membranaceous or chartaceous, concolor, base acute, margin crenate, serrate or irregular entire, apex acute or acuminate, venation broquidodromous, abaxial surface villous, strigose, whitish or brownish, glabrescent, trichomes multicellular, adaxial surface strigose, brownish, glabrescent, trichomes multicellular. Secondary inflorescence thyriform; capitula, sessile or shortly pedunculate, peduncle ≤ 0.2 cm long; involucre 0.5–0.8 × 0.6–0.8 cm, campanulate, 6–8-seriate, greenish, villous, brownish, glabrescent; involucre bracts imbricate, outer bracts obovate or oblong, apex mucronate, persistent, inner bracts lanceolate or oblong, apex mucronate, persistent, receptacle flat, glabrous. Flowers 20–25, bisexual; corolla 0.5–0.7 cm long, actinomorphic, tubulose, 5-lobed, whitish, glabrous; lobes 0.1–0.2 cm long, glabrous; anthers with basal appendage sagittate, apical appendage acute; style branches acute, pilose. Cypselae obconic, strigose, glandular, 10-ribbed; carpodium conspicuous; pappus 2-seriate, stramineous, deciduous, outer and inner bristles barbellate.

Examined material: ESPÍRITO SANTO: Parque Nacional do Caparaó, Dorcas do Rio Preto, 20°29'06"S, 41°49'26"W, 16.III.2014, Monge *et al.* 2534 (UEC!); Iúna, "Poço das Antas" waterfall, 20°22'26"S, 41°49'4"W, 1.216m, 4.IX.2021, Horst

et al. 222 (HUFU!). MINAS GERAIS: Parque Nacional do Caparaó, Alto Caparaó, Vale Verde, 1.300 m, VII.1997, Leoni 3689 (RBI, UEC!); Macieira, 20°28'42"S, 41°49'35"W, VI.2014, Zorzanelli & Dias 1117 (VIES!).

Vernonanthura hilairiana is recognized by leaves narrowly elliptic or oblong, margin usually serrate or crenate, secondary inflorescence lax, thyriform, 20–25 flowers per capitulum and cypselae obconic. *Vernonanthura hilairiana* is very similar to *V. phaeoneura* due to its branches densely villous, leaves elliptic and lengthy with the same dimensions, primary vein prominent, adaxial surface strigose and secondary inflorescence thyriform. However, both species are differentiated by outer involucre bracts obovate or oblong in *V. hilairiana* (*vs.* ovate), inner involucre bracts with apex mucronate (*vs.* obtuse or retuse), cypselae glandular 10-ribbed (*vs.* strigose 8-ribbed). Despite of *V. hilairiana* and *V. phaeoneura* having a thyriform secondary inflorescence, there are some differences in their arrangement, for example, in *V. phaeoneura*, there are more capitula than in *V. hilairiana*, the secondary inflorescence is denser and arranged in corymbs. While in *V. hilairiana* the secondary inflorescence is lax and not arranged in corymbs.

Vernonanthura hilairiana is restricted to Brazilian Atlantic Forest. In the CNP, it was found at montane ombrophilous forest and montane semideciduous seasonal forest around 1,200–1,800 m asl. Regarding conservation status, it is not evaluated.

24. *Vernonanthura montevidensis* (Spreng.) H. Rob., Phytologia 73(2): 72 (1992). Fig. 4h

Shrub, 1.5–3 m tall; branches pubescent, trichomes apparently multicellular, whitish, glabrescent, glandular trichomes rounded; leaf scars inconspicuous. Leaves alternate; leaf sheath absent; sessile; lamina 2–5 × 0.6–2.3 cm, elliptic, chartaceous or subcoriaceous, concolor, obovate or linear, base acute, margin entire or slightly serrate, apex obtuse or acute, venation broquidodromous or eucamptodromous, abaxial and adaxial surfaces pubescent, whitish or brownish, glabrescent, trichomes apparently multicellular, trichomes glandular rounded, persistent. Secondary inflorescence thyrse-corymbiform; capitula sessile or shortly pedunculate, peduncle ≤ 0.2 cm long; involucre 0.5–0.8 × 0.3–0.5 cm, cylindrical, 10–14-seriate, greenish or purplish, tomentose or villous, trichomes apparently multicellular, brownish, glabrescent, glandular trichomes present or not; involucre bracts imbricate, outer bracts ovate, apex obtuse, persistent, inner bracts oblong or elliptic, apex obtuse or slightly acute, deciduous; receptacle flat, glabrous. Flowers 8–10, bisexual; corolla 0.8–1 cm long, actinomorphic, tubulose, 5-lobed, purple or lilac, glabrous; lobes 0.3–0.4 cm

long, glandular; anthers basal appendage sagittate, apical appendage acute; style branches acuminate, pilose. Cypselsae obconic, setose, glandular, 8–10-ribbed; carpopodium conspicuous; pappus 2-seriate, stramineous, deciduous, outer series paleaceous, inner series barbellate.

Examined material: ESPÍRITO SANTO: Parque Nacional do Caparaó, Dorés do Rio Preto, trilha Pico da Bandeira, 20°28.839'S, 41°49.757'W, 20.X.2012, *Flores et al.* 1338 (RBI, VIES!); Macieira, 20°29'00"S, 41°49'37"W, 16.III.2014, *Monge et al.* 2574 (UEC!); humid area, 2,223 m asl, 20°27'58"S, 41°49'01"W, 16.III.2014, *Monge et al.* 2600 (UEC!); 2,223 m asl, 20°27'58"S, 41°49'01"W, 16.III.2014, *Monge et al.* 2608 (UEC!); próximo a Macieira, Campo de altitude, 13.VIII.2011, *Monge et al.* 987 (UEC!); Macieira, 1,987 m asl, 20°28' 50"S, 41°49'47.4"W, 19.X.2007, *Tinti et al.* 312 (HUFU!); Macieira, Candéal, 1,821 m asl, 20°28'49"S, 41°49'45"W, 12.X.2022, *Renon* 527 (HUFU!); 20°28'48"S, 41°49'46"W, 12.X.2022, *Renon* 528 (HUFU!); Floresta Estacional Semidecidual, 1,821 m asl, 20°28'48"S, 41°49'46"W, 12.X.2022, *Renon* 540 (HUFU!). MINAS GERAIS: Parque Nacional do Caparaó, Lajão, 14.XI.1960, *Ferreira* 20 (RBI!); Campo de altitude, 19.XI.1988, *Lkrieger et al.* 23102 (UEC!); "Pico da Bandeira", 16.XI.1996, *Silva* 8 (HUFU!); Alto Caparaó, Campo de altitude, 2,100 m asl, 29.IX.1995, *Leoni* 3082 (RBI!); Campo de altitude, 2,200 m asl, 16.XI.1996, *Leoni* 4522 (HUFU!); Cachoeira do Aurélio, 20°28'S, 41°50'W, 1,834 m asl, 1.XII.2010, *Machado et al.* 264 (RBI!); 20.4333°S, 41.8683°W, 21.VI.2013, *Manhães et al.* 348 (UEC!); trilha do Terreirão, 20°25'60"S, 41°52'6"W, 29.VIII.2013, *Manhães et al.* 387 (HUFU!); caminho para Pico da Bandeira, 20°25'60"S, 41°52'6"W, 19.IX.2013, *Manhães et al.* 411 (HUFU!); 20.4333°S, 41.8683°W, 19.IX.2013, *Manhães et al.* 423 (UEC!); Tronqueira, 20°26'00"S, 41°53'00"W, 21.IX.2012, *Monge et al.* 1277 (UEC!); Campo de altitude, 2,066 m asl, 20°24'44"S, 41°50'3"W, 9.X.2022, *Renon* 509 (HUFU!); 2,066 m asl, 20°24'44"S, 41°50'3"W, 9.X.2022, *Renon* 511 (HUFU!); Espera Feliz, trilha Macieira a cachoeira do Aurélio, 1,841m asl, 5.III.2010, *Bünger et al.* 381 (BHCBI!).

Vernonanthura montevidensis is easily recognized by shrub habit, leaves sessile, concolor, glandular trichomes persistent in both surfaces, secondary inflorescence thyriform arranging in numerous corymbs, involucre 10–14 seriate, 8–10 flowers per capitulum, corolla glabrous, lobes glandular and cypselsae obconic.

Vernonanthura montevidensis occurs in Argentina, Bolivia, Brazil, Paraguay and Uruguay. In Brazil, *V. montevidensis* is spread across Atlantic Forest and *Cerrado*. In the CNP, it was found at "candéal" and *campo de altitude* around 1,800–2,220 m asl. Regarding conservation status, the species is not evaluated.

25. *Vernonanthura petiolaris* (DC.) H. Rob., *Phytologia* 73(2): 73 (1992).

Tree, 2–5 m tall; branches densely villous, whitish, glabrescent, trichomes apparently multicellular; leaf scars inconspicuous. Leaves alternate; leaf sheath; petiolate, petiole 0.5–1.5 cm

long; lamina 8.5–17 × 1.6–4 cm, narrowly elliptic or oblong, consistency membranaceous, slightly discolor, base acute, margin entire, apex acute, venation eucamptodromous, abaxial surface pubescent-strigose, whitish, glabrescent, trichomes multicellular, trichomes glandular rounded, adaxial surface strigose, whitish or yellowish, glabrescent, trichomes multicellular, trichomes glandular rounded. Secondary inflorescence seriate cymose, racemiform; capitula sessile or shortly pedunculate, peduncle ≤ 0.3 cm long; involucre 0.6–0.8 × 0.5–0.7 cm, cylindrical to campanulate, 8–12-seriate, greenish, densely sericeous, whitish, persistent, glandular trichomes rounded, persistent; involucral bracts imbricate, outer bracts ovate, apex acute, inner bracts elliptic or linear, apex acute, outer bracts persistent, inner bracts apparently deciduous; receptacle flat, glabrous. Flowers 20–40, bisexual; corolla ca. 0.6 cm long, actinomorphic, tubulose, 5-lobed, cream or whitish, glandular; lobes ca. 0.2 cm long, glandular; anthers with basal appendage sagittate, apical appendage acuminate; style branches acuminate, pilose. Cypselsae cylindrical, densely sericeous, 10-ribbed; carpopodium conspicuous; pappus 2-seriate, whitish, deciduous, outer series paleaceous, inner series barbellate.

Examined material: ESPÍRITO SANTO: Dorés do Rio Preto: estrada entre Pedra Menina e Dorés do Rio Preto, 21.X.2012, *Flores et al.* 1362 (UEC!); 21.X.2012, *Flores et al.* 1363 (RBI, UEC!).

Vernonanthura petiolaris differs from others species by its leaves narrowly elliptic or oblong, membranaceous, glandular trichomes in both surfaces, margin entire, involucre 8–12-seriate, 20–30 flowers per capitulum, corolla and lobes glandular, cypselsae cylindrical.

Vernonanthura petiolaris occurs in Argentina, Brazil and Paraguay. In Brazil, the species spread across Atlantic Forest and *Cerrado*. In the CNP, it was found at disturbed area, the altitude was not mentioned. Regarding conservation status, *V. petiolaris* is Least Concern (LC).

26. *Vernonanthura phaeoneura* (Toledo) H. Rob., *Phytologia* 73: 73 (1992). Fig. 4i

Shrub or small tree, 1–4 m tall; branches densely villous, brownish, persistent, trichomes multicellular, apparently glandular; leaf scars inconspicuous. Leaves alternate; leaf sheath; petiolate, petiole 0.5–1.5 cm long; lamina 4–17 × 1–3 cm, elliptic or lanceolate, membranaceous, concolor, base acute, margin serrate, apex acute or acuminate, venation broquidodromous, abaxial surface densely villous, trichomes multicellular, apparently glandular, brownish, adaxial surface strigose, trichomes multicellular, apparently glandular, brownish. Secondary inflorescence corymbiform;

capitula sessile or shortly pedunculate, peduncle ≤ 0.3 cm long; involucre $0.5\text{--}0.7 \times 0.4\text{--}0.5$ cm, cylindrical to campanulate, 5–6-seriate, greenish, villous, brownish, glabrescent; involucre bracts imbricate, outer bracts ovate, apex obtuse or shortly mucronate, persistent; inner bracts oblong, apex obtuse or retuse, persistent; receptacle flat, glabrous. Flowers 10–20, bisexual; corolla $0.6\text{--}0.7$ cm long, actinomorphic, tubulose, 5-lobed, whitish, glabrous; lobes $0.1\text{--}0.2$ cm long, glabrous; anthers with basal appendage sagittate, apical appendage acute; style branches acuminate, pilose. Cypselae obconic, strigose, 8-ribbed; carpophodium conspicuous; pappus 2-seriate, stramineous, deciduous, outer series paleaceous, inner series barbellate.

Examined material: ESPÍRITO SANTO: Parque Nacional do Caparaó: Divino São Lourenço, Patrimônio da Penha, 24.VI.2007, *Chimalli* (HUFU!); Floresta Ombrófila, 894 m asl, $20^{\circ}36'4''\text{S}$, $41^{\circ}46'44''\text{W}$, 25.V.2019, *Zorzanelli et al.* 1952 (HUFU!); Does do Rio Preto, 1,797 m asl, $20^{\circ}29'06''\text{S}$, $41^{\circ}49'26''\text{W}$, 16.III.2014, *Monge et al.* 2534 (UEC!); Ibitirama, Santa Marta, Vale Santa Marta, Floresta Ombrófila Altomontana, $20^{\circ}29'29''\text{S}$, $41^{\circ}44'43''\text{W}$, 5.V.2015, *Araújo* 493 (HUFU!). MINAS GERAIS: Parque Nacional do Caparaó, Alto Caparaó, vegetação de transição, 12.V.2019, *Colletta et al.* 242 (HUFU!, RB!); Espera Feliz, $20^{\circ}28'48''\text{S}$, $41^{\circ}49'57''\text{W}$, 5.III.2010, *Bünger* 355 (BHCB!).

Vernonanthura phaeoneura is easily recognized by leaves elliptic or lanceolate, membranaceous, concolor, margin serrate, secondary inflorescence corymbiform, involucre 5–6-seriate, inner involucre bracts with obtuse or retuse apex, 10–20 flowers per capitulum, corolla and lobes glabrous, cypselae obconic. *Vernonanthura phaeoneura* resembles *V. hilairiana*, the morphological differences among both species are described on the taxonomic comments of *V. hilairiana*.

Vernonanthura phaeoneura is restricted to Brazilian Atlantic Forest. In the CNP, it was found at upper montane ombrophilous forest, “candeal” and *campo de altitude*, around 800–1,850 m asl. It is not evaluated regarding conservation status.

27. *Vernonanthura polyanthes* (Spreng.) A.J.Vega & Dematt., *Phytotaxa* 8: 47 (2010).

Shrub, ca. 2 m tall; branches densely tomentose, whitish or brownish, glabrescent, trichomes multicellular; leaf scars inconspicuous. Leaves alternate; leaf sheath; petiolate, petiole $0.5\text{--}1$ cm long; lamina $5\text{--}12 \times 0.5\text{--}2.5$ cm, elliptic, chartaceous to subcoriaceous, slightly discolor, base acute, margin entire, apex acute, venation broquidodromous, abaxial surface densely villous, brownish, glabrescent, trichomes multicellular, trichomes glandular rounded, adaxial surface strigose, brownish, glabrescent, trichomes multicellular. Secondary inflorescence

seriate cymose, racemiform; capitula sessile or pedunculate, peduncle ≤ 0.5 cm long; involucre $0.3\text{--}0.6 \times 0.3\text{--}0.6$ cm, campanulate, 5–6-seriate, greenish, villous, whitish or yellowish, glabrescent; involucre bracts imbricate, outer bracts ovate, apex acute, inner bracts ovate or elliptic, apex acute, bracts persistent; receptacle flat, glabrous. Flowers 20–30, bisexual; corolla $0.5\text{--}0.6$ cm long, actinomorphic, tubulose, 5-lobed, whitish, glabrous; lobes ca. 0.1 cm long, glabrous; anthers with basal appendage sagittate, apical appendage acute; style branches acute or acuminate, pilose. Cypselae cylindrical, strigose, densely glandular, 5-ribbed; carpophodium conspicuous; pappus 2-seriate, stramineous, deciduous, outer and inner bristles barbellate.

Examined material: MINAS GERAIS: Parque Nacional do Caparaó, Alto Caparaó, entre Vale Verde e alojamento, Mata de altitude, 1.IX.1996, *Souza et al.* 12101 (HUFU!, RB!).

Vernonanthura polyanthes is easily recognized by shrubby habit, leaves petiolate, lamina elliptic, chartaceous or sub coriaceous, slightly discolor, glandular trichomes rounded in abaxial surface, involucre 5–6-seriate, corolla and lobes glabrous, cypselae cylindrical, 5-ribbed, densely glandular.

Vernonanthura polyanthes is considered a weed (Lorenzi 2008) and occurs in Brazil and Bolivia. In Brazil, the species spread across Atlantic Forest and *Cerrado*. In the CNP, it was found at montane semideciduous seasonal forest, the altitude was not mentioned. Regarding conservation status, *V. polyanthes* has not yet been assessed.

Discussion

Vernonieae exhibits a diverse flora within Caparaó National Park, with a significant proportion of Brazilian species (63%) displaying a narrower distribution. Our findings corroborate with other floristic surveys conducted in mountain habitats of the Atlantic Forest, where Vernonieae stands out as one of the most diverse tribes of Asteraceae in these environments (Rizzini 1954; Barroso 1957; Borges *et al.* 2010; Lombardi *et al.* 2012; Meireles *et al.* 2014).

Lepidaploa and *Vernonanthura* were the richest in number of species in the national park. Both genera are the largest within Vernonieae (Robinson 1999; Keeley *et al.* 2021), and represent the greatest diversity for the tribe in the mountain landscapes of Southeastern Brazil (Rizzini 1954; Barroso 1957; Meireles *et al.* 2014; Moreira *et al.* 2020).

A deficiency was noted in the conservation status; 61% of the species documented have not yet been evaluated. Efforts should be made to address this gap, since the environmental perturbations have led to a rapid decline in biodiversity and its habitats (Jantz *et al.* 2015; Leão *et al.* 2014; Lughadha

et al. 2020). It is fundamental that non-evaluated species be categorized according to their threat level, especially species that are endemic or have restricted distribution.

The discovery of the new species and the seven new records for Caparaó National Park, as well as a new record of *Hololepis pedunculata* in the Atlantic Forest and the state of Espírito Santo, emphasizes the importance of systematic studies in enriching our biodiversity knowledge. In addition, the correction of three species that were misidentified and incorrectly listed for the park by Moreira *et al.* (2020) highlights the necessity of systematic treatments to obtain precise information about the flora of mega-diverse biomes and complex groups of plants. This not only broadens our understanding of morphological patterns and species distribution, but also strengthens future researches and conservation efforts.

The diversity of Vernonieae in Caparaó National Park exhibits a significant percentage of species with a narrow distribution. CNP safeguards populations of species that are restricted to Brazil, the Atlantic Forest, the Southeastern region of Brazil, and the *campos de altitude*, including the populations of micro-endemic species of the Caparaó (*Critoniopsis bradeana* and *Lepidaploa urceolata*). Our results highlight the importance of preserving natural areas to conserve the biodiversity of hotspots. Systematic treatments provide a rapid means to investigate the local flora and are essential for updating collections, reducing directly Linnean and Walaccean biodiversity shortfalls (Hortal *et al.* 2015). The present research notably contributes to the study of Asteraceae in the CNP and Atlantic Forest, especially for Vernonieae in the mountain landscapes of Southeastern Brazil.

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Data availability statement

In accordance with Open Science communication practices, the authors inform that all data supporting this manuscript are shared within the article.

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