LARA REGINA PARRA & ANA MARIA GIULIETTI

Nomenclatural and taxonomic changes in Brazilian *Syngonanthus (Eriocaulaceae)*

Abstract

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In preparation of the *Syngonanthus* account for the Flora of the Serra do Cipó, Minas Gerais, Brazil, *Syngonanthus* sect. *Dimorphocaulon* is relegated to synonymy under *Syngonanthus* sect. *Syngonanthus*, three species names are lectotypified, and nine names of species and infraspecific taxa described from the Serra do Cipó are placed in synonymy.

The correct name for *Syngonanthus* sect. *Dimorphocaulon* Ruhland

Syngonanthus sect. ***Syngonanthus*** ≡ *Syngonanthus* sect. *Dimorphocaulon* Ruhland in Engler, Pflanzenr. 13: 243. 1903. – Type: *Syngonanthus umbellatus* (Lam.) Ruhland

The genus *Syngonanthus* was originally created by Ruhland (1900) to accommodate a group of species formerly included in *Paepalanthus* Kunth. The author mentioned only three species in the protologue, in the following order: *S. umbellatus* (Lam.) Ruhland, *S. androsaceus* (Griseb.) Ruhland, and *S. lagopodioides* (Griseb.) Ruhland, but did not indicate a type of the generic name. Britton & Brown (1913: 455) then considered *S. umbellatus* to be the type of *Syngonanthus* as it is the first species mentioned in the protologue of the new genus. According to ICBN Art. 10.5 (Greuter & al. 1994), lectotypification by a mechanical method can be superseded. However, as *S. umbellatus* shows all the characters stated in the original description of *Syngonanthus*, it is here confirmed as the type of the generic name. Ruhland (1903) divided *Syngonanthus* into five sections and included *S. umbellatus* in *S.* sect. *Dimorphocaulon*. According to ICBN Art. 22 (Greuter & al. 1994), the correct name of this section therefore is the autonym *S.* sect. *Syngonanthus.*

New synonyms and a new combination in Brazilian *Syngonanthus*

Syngonanthus anthemidiflorus (Bong.) Ruhland in Engler, Pflanzenr. 13: 258, fig. 37. 1903 var. ***anthemidiflorus.*** – Type: Brazil, Minas Gerais, "Prov. Minarum, in paludosis Serra da Lapa", *Riedel 1409* (isotype: K!).
= *Syngonanthus glandulifer* Silveira, Floral. Mont. 1: 321, t. 204. 1928. – Syntypes: Brazil,

Minas Gerais, "in campis in Serra do Cipó, loccis arenosis, 4.1909" & "in Serra de Diamantina, 4.1918", *Silveira 549* (R!). – Lectotype (designated here): *Silveira 549* consists of several unmounted plants of two different collections of the same taxon packed together in one envelope, so that none of the plants can be attributed to one of both collections; we have selected a single plant to be mounted on a separate, correspondingly annotated sheet (R!).

Syngonanthus anthemidiflorus var. ***similis*** (Ruhland) L.R. Parra & Giul., **comb. & stat. nov.** ≡ *Syngonanthus similis* Ruhland in Engler, Pflanzenr. 13: 259. 1903. – Holotype: Brazil, "Prov. Minas Geraes, Serra do Cipó", 8.1901, *Sena in herb. Schwacke 14570* (B!)
= *Syngonanthus filipes* Silveira, Floral. Mont. 1: 323, t. 205. 1928. – Syntypes: Brazil, Minas Gerais, "in campis arenosis in Serra do Cipó Minas, 4.1909" & "in Serra do Cabral, 5.1910", *Silveira 547* (R!). – Lectotype (designated here): *Silveira 547* consists of several unmounted plants of two different collections of the same taxon packed together in one envelope, so that none of the plants can be attributed to one of both collections; we have selected a single plant to be mounted on a separate, correspondingly annotated sheet (R!).

Syngonanthus anthemidiflorus is an endemic and abundant species in the southern part of the Cadeia do Espinhaço in Minas Gerais, Brazil. It is a herb easily recognized by its basal leaf rosettes with a solitary, erect flowering stem, which is leafless except for a terminal tuft of leaves. From the centre of this tuft of leaves a number of long-scapose capituliform inflorescences arise, forming an umbel (Fig. 1). The involucral bracts of the capitula overtop the flowers. *S. similis* was described from the Serra do Cipó, Cadeia do Espinhaço, and differs from *S. anthemidiflorus* by its golden to cream, thinner involucral bracts. In spite of these differences, *S. similis* presents all the diagnostic features of *S. anthemidiflorus* such as capitate trichomes on the leaves of the apical tuft, on the scapes and spathes (Figs 2, 5), floral bracts being pilose in the middle of the abaxial face (Figs 3–4), and a ring of hairs between the insertion of the sepals and petals in pistillate flowers. The differences do not actually justify the recognition of two distinct species and therefore *S. similis* is reconsidered as a variety of *S. anthemidiflorus.*

Silveira (1928) described *Syngonanthus glandulifer* and *S. filipes* considering them closely related, differing from each other only in the shape and colour of the involucral bracts. According to the author, *S. glandulifer* differs from *S. anthemidiflorus* in shape and indumentum of the involucral bracts and the leaves, the hairiness of the spathes and scapes, and the colour of the sepals and petals. An analysis of the type material of *S. glandulifer* and *S. filipes* revealed that they show the same diagnostic characters as *S. anthemidiflorus. S. glandulifer* possesses involucral bracts with the same characters found in *S. anthemidiflorus* var. *anthemidiflorus* (Fig. 2) and is here placed in the synonymy of *S. anthemidiflorus* var. *anthemidiflorus.* The involucral bracts of *S. filipes* are of the same type as in *S. anthemidiflorus* var. *similis* (Fig. 5), and this species is therefore placed in the synonymy of *S. anthemidiflorus* var. *similis.*

Both varieties occur along the Cadeia do Espinhaço and are sympatric in the Serra do Cipó. A key to these varieties is presented here:

1. Involucral bracts 1–2 mm wide, arranged in 4–5 rows, dark castaneous to pale castaneous in the outer row and cream to white in the two innermost rows, ciliate and sparsely pilose to glabrescent on the abaxial face . . . . . *S. anthemidiflorus* var. *anthemidiflorus*
— Involucral bracts 0.5–1.5 mm wide, arranged in 6–7 rows, pale castaneous to golden, changing gradually to cream in the inner rows, sparsely pilose to glabrescent on the abaxial face . . . . . *S. anthemidiflorus* var. *similis*

Syngonanthus arenarius var. ***heterophyllus*** (Körn.) Ruhland in Engler, Pflanzenr. 13: 260. 1903. – Holotype: Brazil, Minas Gerais, Minas Novas, "in Minis Novis ad Chapada oppidulum", 5.1818, *Martius s.n.* ([photo of the holotype at F]!)
= *Syngonanthus heterotrichus* Silveira, Fl. Serr. Min.: 73, t. 29. 1908. – Type: Brazil, Minas

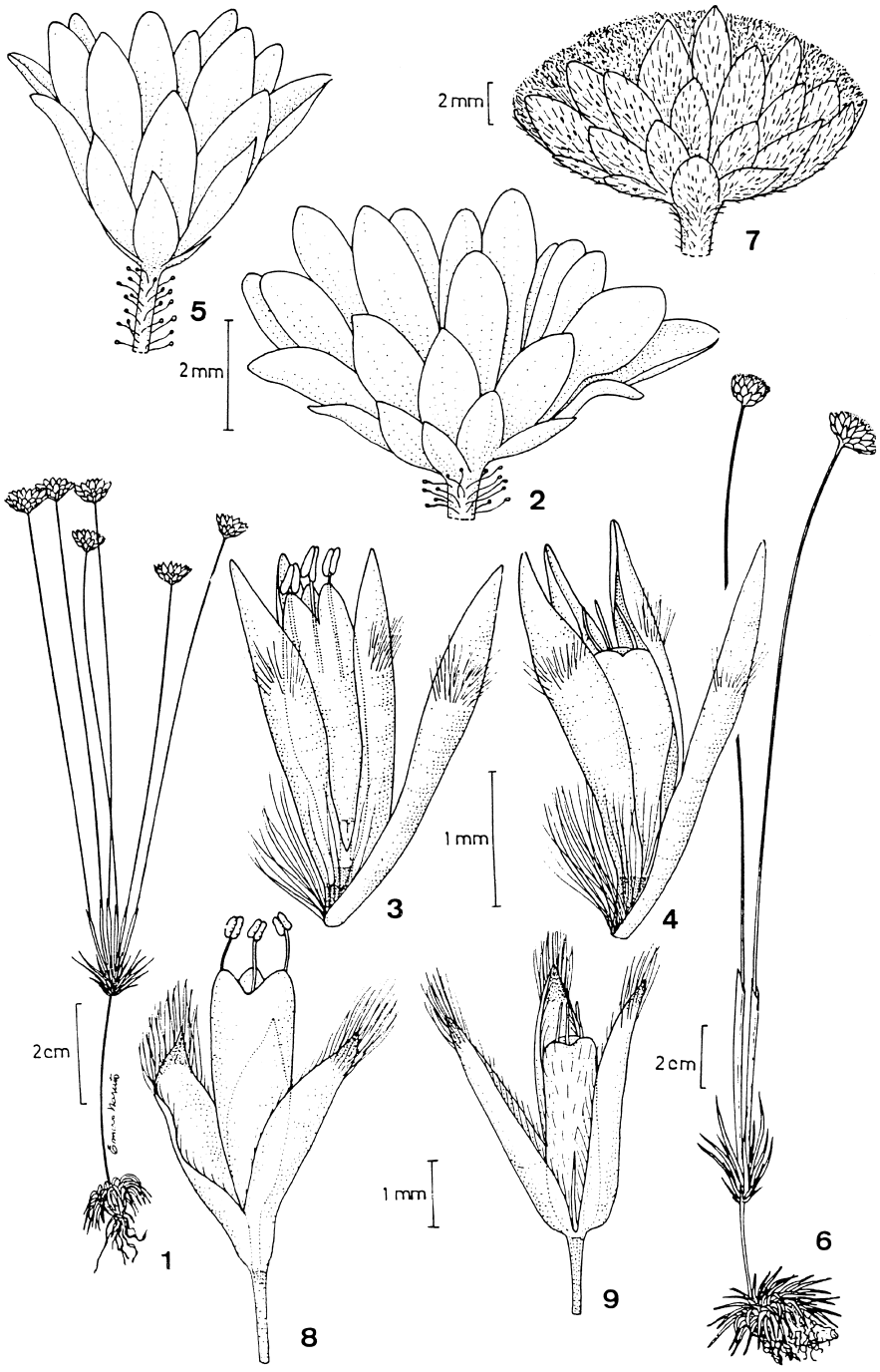

Fig. 1–4. *Syngonanthus anthemidiflorus* var. *anthemidiflorus*. – 1: habit (*Smith 6845*, R), 2: capitulum (*Silveira 549*, R), 3: staminate flower (*CFSC 65*, SPF), 4: pistillate flower (*CFSC 4000*, SPF). – 5. *S. anthemidiflorus* var. *similis*, capitulum (*CFSC 12652*, SPF). – 6–9. *S. arenarius* var. *heterophyllus* (*CFSC 7178*, SPF) – 6: habit,7: capitulum, 8: staminate flower, 9: pistillate flower.

Gerais, "in campis in cacumine Morro do Breu et aliis locis humidis in Serra do Cipó, 4.1905", *Silveira 379* (R!).
= *Syngonanthus marginatus* Silveira, Floral. Mont. 1: 336, t. 112. 1928. – Type: Brazil, Minas Gerais, "in campis arenosis siccis prope Bandeirinhas, Serra do Cipó Minas", 4.1909, *Silveira 542* (R!).

Silveira (1928) described *Syngonanthus heterotrichus* and *S. marginatus* as two closely related species differing in the pilosity of the leaves as well as in the shape and colour of the involucral bracts. Actually, the differences between *S. heterotrichus* and *S. marginatus* are extremely small, relating to the longer aerial stem of *S. heterotrichus* and the longer scapes of *S. marginatus*. Such differences do not justify their recognition as separate species, and it was further observed that both show all the diagnostic characters of *Syngonanthus arenarius* var. *heterophyllus* (Figs 6–9), a taxon that displays a wide range of morphological variation. *Syngonanthus heterotrichus* and *S. marginatus* are therefore placed here in the synonymy of *S. arenarius* var. *heterophyllus.*

Syngonanthus centauroides (Bong.) Ruhland in Engler, Pflanzenr. 13: 277. 1903. – Type: Brazil, Minas Gerais, "in pratis humidis paludosis Serra da Lapa", *Riedel 1063* (isotypes: B!, BR!, GH!, K!)
= *Syngonanthus centauroides* var. *subappressus* Ruhland in Engler, Pflanzenr. 13: 278. 1903. – Type: Brazil, "Prov. Minas Geraes, Serra do Cipó", 8.1904, *Sena in herb. Schwacke 14567* (isotype: BHCB!)

Syngonanthus centauroides is characterized by erect, densely ciliate leaves, broad and dark castaneous sheaths, and involucral bracts with membranous, revolute margins.

According to Ruhland (1903), *Syngonanthus centauroides* var. *subappressus* can be distinguished from *S. centauroides* var. *centauroides* by the slightly flatter, subappressed and yellowish grey involucral bracts. An analysis of isotype material of the variety confirmed that the involucral bracts possess revolute margins similar to those found in isotype material of typical *S. centauroides* (Fig. 10). The greyish colour of the involucral bracts, mentioned by Ruhland, is a character that can vary, depending on the stage of development. It is clear that the differences are not sufficient to consider the two taxa as distinct, and *Syngonanthus centauroides* var. *subappressus* is therefore placed in the synonymy of *Syngonanthus centauroides.*

Syngonanthus cipoensis Ruhland in Engler, Pflanzenr. 13: 278. 1903. – Holotype: Brazil, Minas Gerais, "Serra do Cipó", 7.1896, *Sena in herb. Schwacke 12288* (B!)
= *Syngonanthus rufipes* Silveira, Fl. Serr. Min.: 77. 1908. – Type: Brazil, Minas Gerais, "in campis prope Capão dos Palmitos, ad Serra do Cipó", 4.1905, *Silveira 454* (R!)

The holotype of *Syngonanthus cipoensis* consists only of a 23 cm long scape and a leaf without a base of 80 × 4 mm, being densely pilose in the apical region on the abaxial face. The author characterized the species by having leaves with a densely pilose indumentum over the entire abaxial face, later persisting only near the apex, as well as by thickened leaf margins, which are castaneous on the adaxial face. The trichomes are white at first and become darker when more developed. *S. cipoensis* (Fig. 11) appears morphologically distinct, principally on account of the colour and form of the involucral bracts, the dimensions of the leaves, the spathes and the scapes. Apart from this, all material examined consistently possesses leaves apically hairy on the abaxial face.

S. rufipes was characterized by Silveira (1908) by leaves hairy at the apex and the reddish colour of the spathes and leaf bases. No reference to flower characters is made in the original description as the flowers of the type material are in bud. An examination of type material of *S. rufipes* revealed that it shows no significant differences to *S. cipoensis* with respect to hairiness and size of the scapes, and hairiness, size and form of the leaves. It is therefore proposed to place *S. rufipes* in the synonymy of *S. cipoensis*.

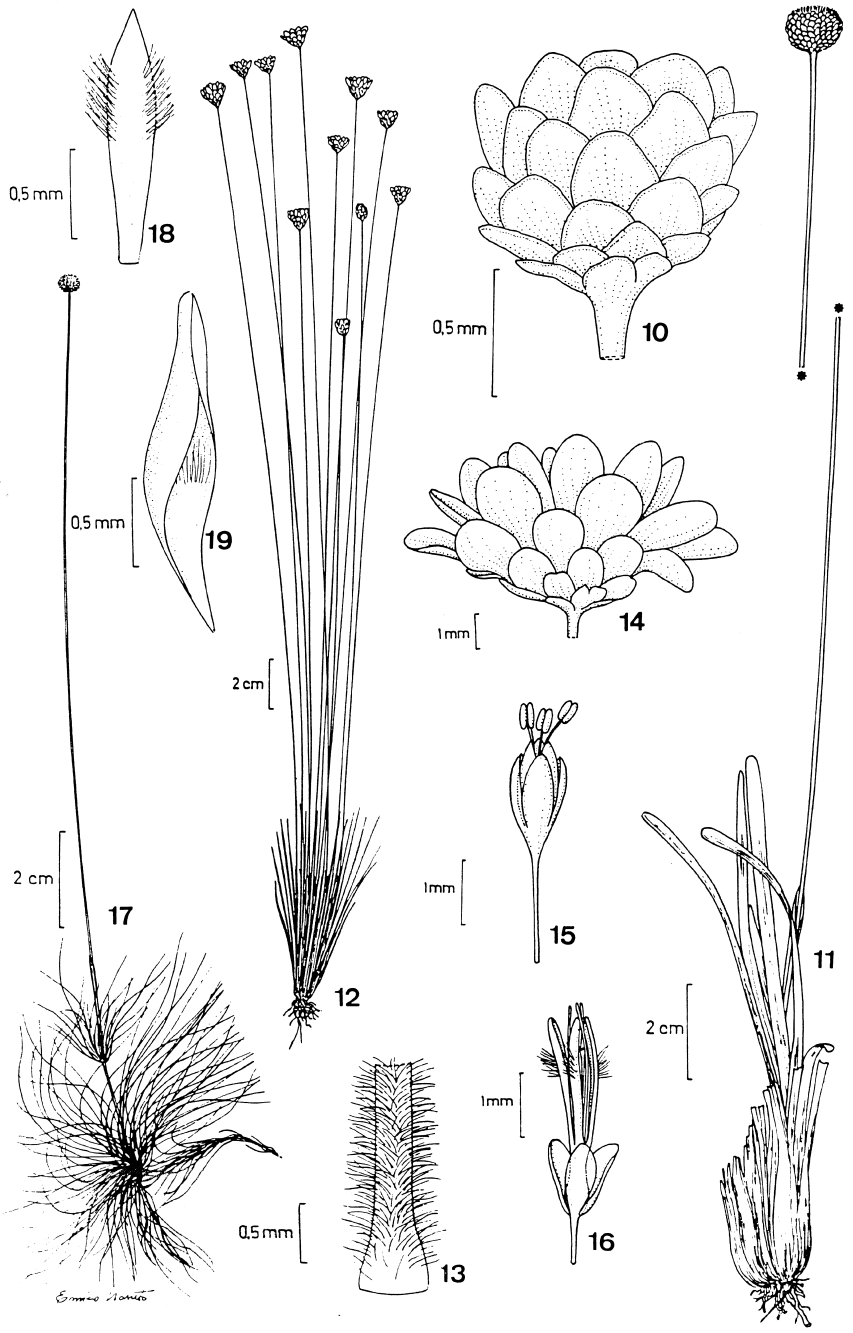

Fig. 10. *Syngonanthus centauroides* var. *centauroides*, capitulum *(Riedel 1063)*. – 11. *S. cipoensis*, habit *(Mello-Barreto 2573)*. – 12–16. *S. elegans* var. *elanatus (CFSC 10851* (12), *CFSC 13054a* (13–16) , SPF) – 12: habit, 13: abaxial face of the sheath, 14: capitulum, 15: staminate flower, 16: pistillate flower. – 17–19. *S. hygrotrichus* (*Silveira 213*, R) – 17: habit, 18: abaxial face of the petal of the pistillate flower, 19: adaxial face of the sepal of the pistillate flower.

Syngonanthus elegans var. ***elanatus*** Ruhland in Engler, Pflanzenr. 13: 275. 1903. – Type: Brazil, "Prov. Minas Geraes, Diamantina", 8.1840, *Gardner 5283* (isotype: K!)
= *Syngonanthus elegans* var. *canescens* Silveira, Floral. Mont. 1: 365. 1928. – Type: Brazil, Minas Gerais, "in campis arenosis in Serra do Cipó Minas", 4.1915, *Silveira 650* (R!)

Syngonanthus elegans is an ornamental species and one of a group known collectively as "sempreviva" or "everlasting flowers". *S. elegans* is the commercially most important Brazilian *Eriocaulaceae* species. Its capitula are large, have spreading bracts, and the pistillate flowers with petals larger than the sepals are characteristic of *S.* sect. *Eulepis. S. elegans* var. *elanata* (Figs 12–16) differs from *S. elegans* var. *elegans* by leaves with an expanded and membranous sheath, and the lamina and sheath having a densely pilose to glabrescent indumentum of white, patent hairs.

S. elegans var. *canescens* is characterized by leaves with a dense indumentum of white, erect and patent hairs, and spathes being much larger than the leaves. An analysis of the original descriptions and type material of *S. elegans* var. *elanatus* and *S. elegans* var. *canescens* confirmed that both, however, display the same characters: the leaf sheaths are membranous, expanded, and densely covered with patent hairs to glabrescent. The only differences are that the type material of *S. elegans* var. *canescens* displays larger and more rigid scapes, larger capitula and involucral bracts, features which are taxonomically insignificant and also found in the specimen *Silveira 649* ("Serra do Cipó", 4.1915(R!) identified as *S. elegans* var. *elanatus* by Silveira himself. It appears thus more appropriate to consider *S. elegans* var. *canescens* as a synonym of *S. elegans* var. *elanatus*.

Syngonanthus hygrotrichus Ruhland in Engler, Pflanzenr. 13: 246. 1903. – Syntypes: Brazil, Prov. Minas Geraes, Biribiry bei Diamantina, more Podostemonacearum ad rupes cataract", 3.1892, *Schwacke 8479* (BM!, RB!, K!); ibid., Minas Gerais, "Serra do Cipó", *Schwacke 14553* (not traced); ibid., "Minas Geraes, Biribiry, dans l'eau des rapides sur le rocher", 29.3.1892, *Glaziou 19998* (BM!, BR!, K!, P!). – Lectotype (designated here): *Glaziou 19998* (P!; isolectotypes: BR!, BM!, K!)
= *Syngonanthus aquaticus* Silveira, Fl. Serr. Min.: 74, t. 29. 1908. – Type: Brazil, Minas Gerais, "in stagnis et in paulo fluentibus rivulosum aquis in Serra do Cipó", 4.1905, *Silveira 213* (R!)

Syngonanthus hygrotrichus (Figs 17–19) is, uncommon in the genus, a submerged aquatic species. It is endemic of the southern part of the Cadeia Espinhaço, Minas Gerais, Brazil, and was first described by Ruhland (1903), who cited three sheets in the protologue: *Glaziou 19998*, *Schwacke 8479*, both collected in Diamantina, and *Schwacke 14553*, collected in the Serra do Cipó. The syntype *Glaziou 19998* corresponds with the protologue, whilst *Schwacke 8479* actually represents *Leiothrix fluitans* (Mart.) Ruhland, an *Eriocaulaceae* species somewhat convergent with *S. hygrotrichus* due to its aquatic habit and hairlike leaves. *Schwacke 14553* was not found in any of the herbaria including Schwacke's most important collections. Therefore, *Glaziou 19998* has been chosen as the lectotype of *S. hygrotrichus.*

Syngonanthus aquaticus was described by Silveira (1908) as an aquatic, tussock forming herb with short, white and densely hairy aerial stems with a single, erect and densely hairy scape; the basal hairlike leaves are scarcely hairy and ciliate, the capitula are globose, the sepals of the staminate flowers are hairy on the adaxial face, and the petals of the pistillate flowers are hairy along the margins on the abaxial face. Such characters, when compared to those of the type of *S. aquaticus*, demonstrate that the taxon differs in no way from *S. hygrotrichus,* and it is therefore placed in the synonymy of the latter species.

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Addresses of the authors:
L. R. Parra, Departamento de Botânica, Instituto de Biociências, Universidade de São Paulo, C. Postal 11461, 05422–970, São Paulo, SP, Brazil; email: llazzari@usp.br.
A. M. Giulietti, Departamento de Ciências Biológicas, Universidade Estadual de Feira de Santana, km 3, BR 116–44, Feira de Santana, BA, Brazil.