Phytotaxa 177 (2): 125–130
www.mapress.com/phytotaxa/

Article

ISSN 1179-3155 (print edition)
PHYTOTAXA
ISSN 1179-3163 (online edition)

http://dx.doi.org/10.11646/phytotaxa.177.2.4

Baccharis nebularis (Asteraceae, Astereae): a new species of *B.* subgen. *Tarchonanthoides* sect. *Curitybenses* from the mountains of Southern Brazil

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Abstract

Baccharis nebularis, a new species belonging to *B.* subgen. *Tarchonanthoides* sect. *Curitybenses*, is described, illustrated, and compared to *B. chionolaenoides* and *B. curitybensis*. A key for its identification is provided. The new species occurs in patches of cloud forest thickets mixed with high altitude tropical grasslands in the southern Brazilian mountains. Data on distribution and habitat, phenology, conservation status, as well as a list of specimens examined are also presented.

Resumo

Baccharis nebularis, uma nova espécie pertencente a *B.* subgen. *Tarchonanthoides* sect. *Curitybenses* é descrita, ilustrada, comparada a *B. chionolaenoides* e *B. curitybensis* e uma chave de identificação é fornecida. A nova espécie ocorre em capões de mata nebular entremeados com manchas de campo de altitude nas montanhas do Sul do Brasil. Dados sobre a distribuição e o habitat, fenologia, estado de conservação e uma lista de espécimes examinados também são apresentados.

Key words: Atlantic rainforest, Baccharidinae, Compositae, cloud forests, tropical highland grasslands

Introduction

Baccharis Linnaeus (1753: 860; Asteraceae: Astereae) is a New World genus that comprises between 354 and 400 species (Bremer 1994, Müller 2013). *Baccharis* sect. *Curitybenses* Giuliano (2005: 536) was described to accommodate *B. curitybensis* Heering ex Malme (1933) which was not placed in a subgenus and neither in a section before. The monotypic section was justified by the unusual characters of the species, since number and structure of the achene ribs and number of series and caducous condition of the pappus bristles are similar to those of *B.* subgen. *Baccharis*, whereas the style branches in *B. curitybensis* are lanceolate as in the remaining subgenera of *Baccharis* (Giuliano 2005).

Müller (2006) did not follow any sectional scheme for infrageneric classification of *Baccharis* and treated *B. curitybensis* within *B.* subgen. *Tarchonanthoides* Heering (1904: 26) along with 13 other eastern South American species. Later, *B. chionolaenoides* Falkenberg & Deble (2010: 64) was described and placed into *B.* subgen. *Tarchonanthoides* sect. *Curitybenses*.

Heiden & Pirani (2012a, 2012b) published a synopsis of *Baccharis* subgen. *Tarchonanthoides,* including four sections and 22 species (of which one species was new). In this treatment, *B.* sect. *Curitybenses* comprised the two aforementioned species. Recently Deble (2012) had proposed to segregate *B.* subgen. *Tarchonanthoides* as a new genus, *Lanugothamnus* Deble (2012: 11), a proposal which was rejected by Heiden (2013) for phylogenetic reasons. The ongoing studies on this subgenus allowed the recognition of a further species belonging here, the third to be included in *B.* sect. *Curitybenses*. The new species is described here and its affinities are discussed as follows.

Accepted by Alexander Sennikov: 21 May 2014; published: 27 Aug. 2014

Baccharis nebularis G.Heiden, *sp. nov.* (Figs. 1, 2)

Baccharis nebularis G.Heiden differs from *B. chionolaenoides* Falkenb. & Deble by pappus of male florets not twisted and broadened in the apex and by cypsela densely covered by twin trichomes; from *B. curitybensis* Heering ex Malme it is distinguished by leaves crowded at the apex of the branches and peduncles with a tomentose indumentum.

Type:—BRASIL. Paraná: Guaratuba, Serra de Araçatuba, Morro dos Perdidos, cume, 25° 53' 21" S, 48° 57' 28" W, 1411 m, 17 December 2010, ♀, *G. Heiden, J.R.V. Iganci, J.M. da Silva & J.M. Vaz 1449* (holotype SPF!; isotypes FLOR!, K!, MBM!, RB!, US!).

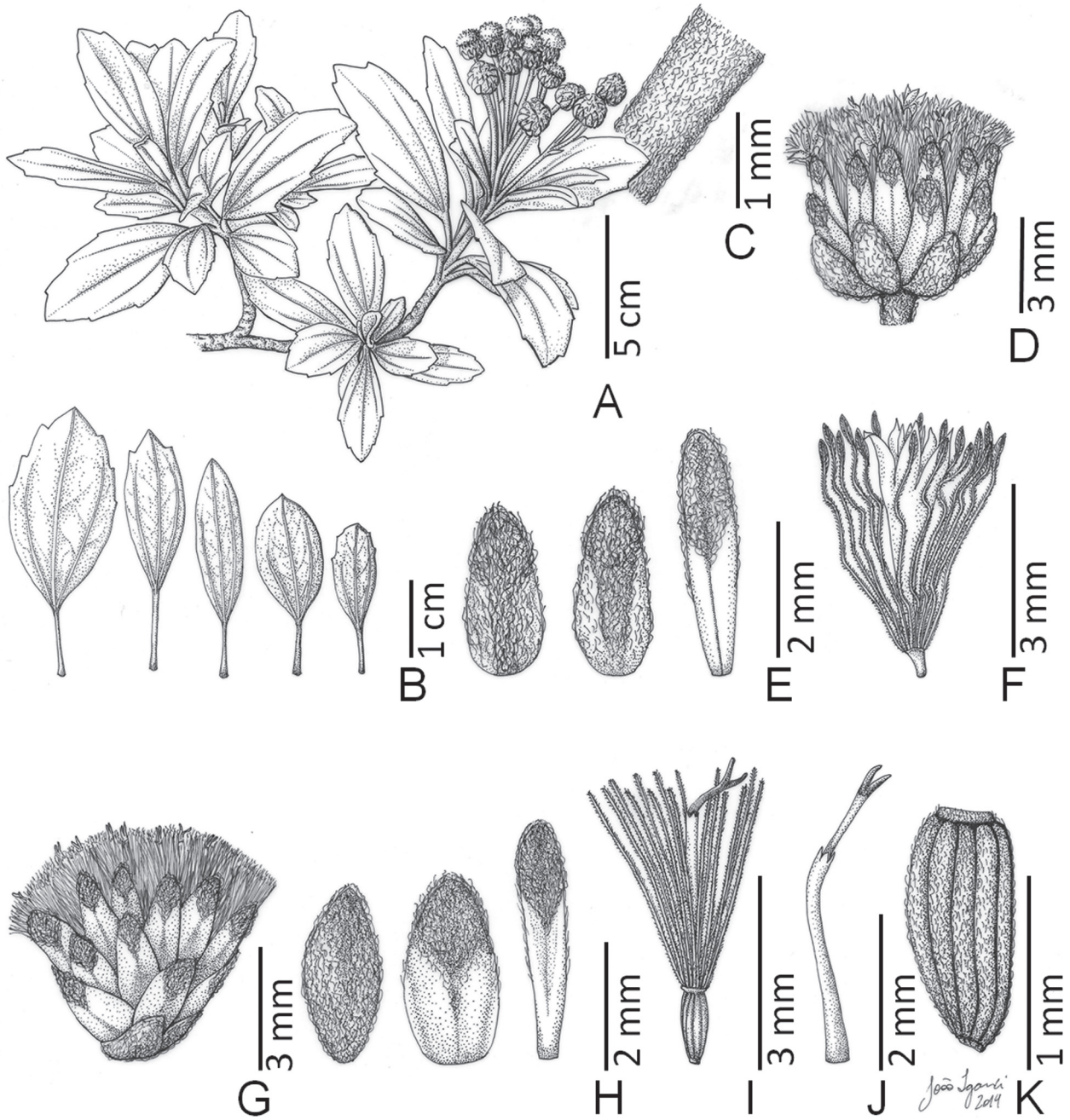

FIGURE 1. *Baccharis nebularis*. **A.** Fertile shoot of pistillate plant. **B.** Leaves. **C.** Peduncle indumentum. **D.** Male capitulum. **E.** Phyllaries of male capitulum (outer to inner). **F.** Male floret. **G.** Female capitulum. **H.** Phyllaries of female capitulum (outer to inner). **I.** Female floret. **J.** Corolla and style of female floret. **K.** Cypsela. **A, C, G–K:** *Heiden 1449* (SPF). **B** (from left to right)**:** *Roderjan 1510* (MBM); *Hatschbach 6835* (MBM); *Kummrow 2626* (MBM); *Santos 297* (MBM); *Heiden 1449* (SPF). **D–F:** *Heiden 1450* (SPF). Illustration by João Iganci.

Shrubs 0.5–2 m tall, erect; fertile shoots ascending, terminating in a capitulescence, proliferating. *Stems* brown, fissured, ochraceous or whitish in younger shoots; indumentum tomentose, trichomes filiform, flagelliform and biseriate glandular. *Leaves* 1.2–5 cm long, 0.7–2 cm wide, petioles 2–18 mm long, evenly distributed along the branches;

leaf blade discoloured, adaxial surface green, abaxial surface white to ochraceous, chartaceous, obovate to elliptic, apex acute to obtuse, sometimes mucronulate, base acute, margin entire or with 1–3 pairs of teeth; leaves basally 3-nerved, acrodromous imperfect, with a secondary semicraspedodromous reticulum, adaxial surface with a caducous lanose indumentum, abaxial surface with a persistent felted indumentum, both surfaces with filiform, flagelliform and biseriate glandular trichomes. *Capitulescences* corymbose, terminal; corymbs lax, 3–6.5 cm long, 3.3–6.8 cm wide. *Capitula* pedunculate; peduncles 0.7–2.5 cm long, ochraceous, tomentose. *Male capitula* 4.7–6 mm long; florets 34–45; involucre 4–5 mm long, 7–9.6 mm wide, cup-shaped; phyllaries in 3–4 series, outer phyllaries and median phyllaries ovate, innermost phyllaries linear-lanceolate, margin entire, apex rounded; clinanthium plane, nearly glabrous, with scarce biseriate trichomes; corolla 3–3.6 mm long, tube 1.6–1.9 mm long, throat 0.7–0.9 mm, lobes 0.7–0.8 mm long, biseriate hairs on the lobes; anthers including apical appendages 2.3–2.7 mm long; style 2.3–2.9 mm long, branches free, lanceolate; ovary abortive, 0.3–0.5 mm long, 0.1–0.3 mm wide, covered by biseriate and twin trichomes; pappus uniseriate, 3.3–3.7 mm long, bristles 18–22, not twisted, apically broadened, with short-protruding, adpressed cell apices. *Female capitula* 6.7–8.5 mm long; florets 26–44; involucre 4.2–5.5 mm long, 7.3–9.9 mm wide, campanulate; phyllaries in 4–5 series, outer phyllaries elliptic, median ovate, innermost phyllaries oblanceolate-linear, margin entire, apex rounded; clinanthium plane, nearly glabrous, with scarce flagelliform trichomes; corolla 2.8–3 mm long, filiform, with 5 teeth; style 3.9–4.2 mm long, branches 0.3–0.5 mm long; cypselae 1.2–1.4 mm long, 0.4–0.8 mm wide, brown, evenly covered by twin trichomes, obconical, narrowed at base, 8–10 longitudinal ribs; pappus multiseriate, 2.9–3.2 mm long, deciduous; bristles 32–48, connate basally, slightly broadened apically, not elongated at cypsela maturity. Chromosome number unknown.

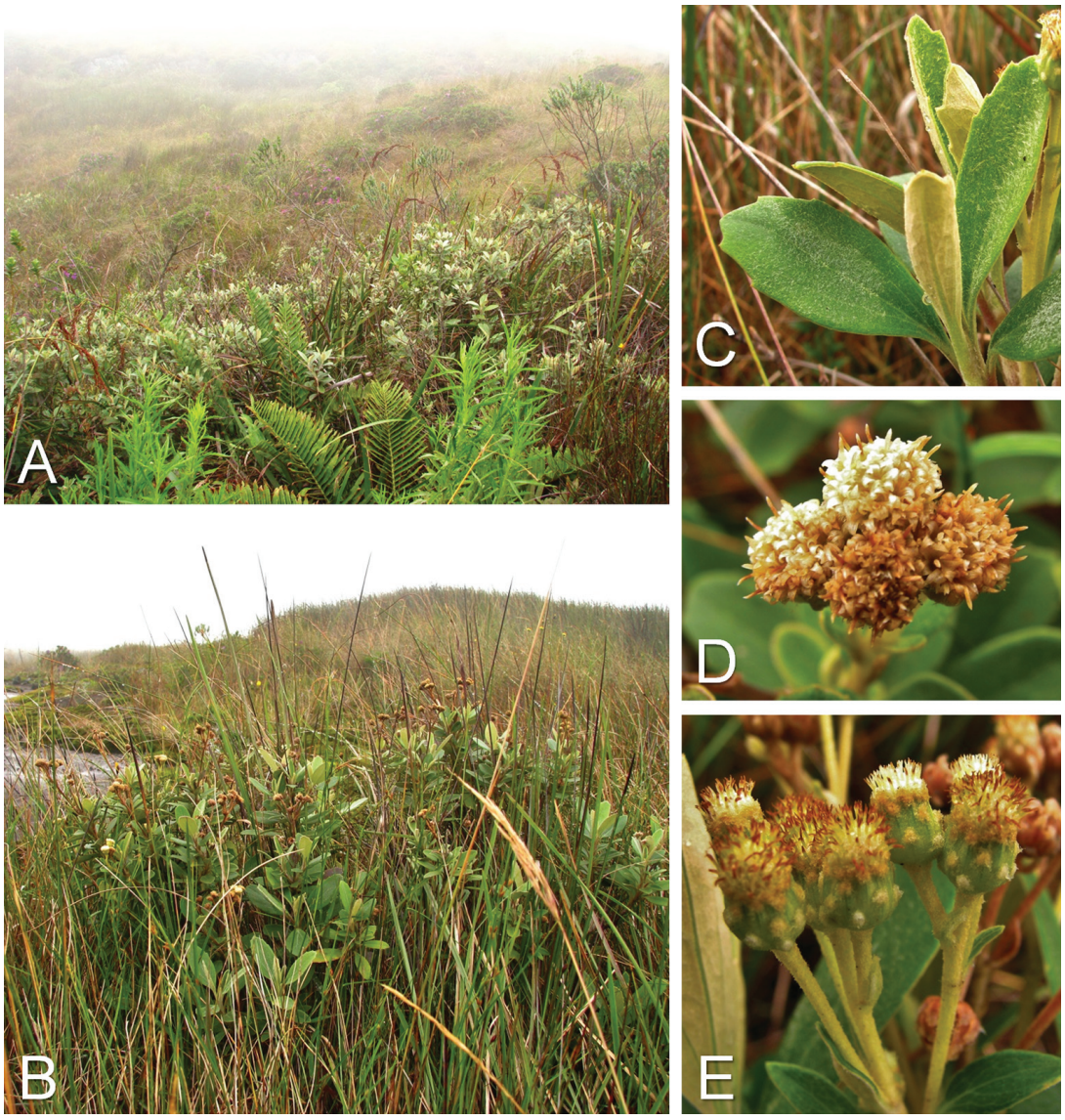

FIGURE 2. *Baccharis nebularis*. **A.** Habitat. **B.** Habit. **C.** Leaves. **D.** Male capitula. **E.** Female capitula.

Etymology:—The specific epithet refers to the habitat in cloud forest thickets amidst high altitude grasslands.

Distribution and habitat:—*Baccharis nebularis* occurs in southern Brazil (Paraná and Santa Catarina) and is restricted to the summits of the peaks of the southernmost range of Serra do Mar, at elevations between 1400 and 1700 m a.s.l. (Fig. 3). It grows in patches of high altitude tropical grasslands mixed with cloud forest thickets (Fig. 2), forming sparse populations, in the buffer zone between the ombrophilous dense forest and the high altitude tropical grasslands of the Atlantic province.

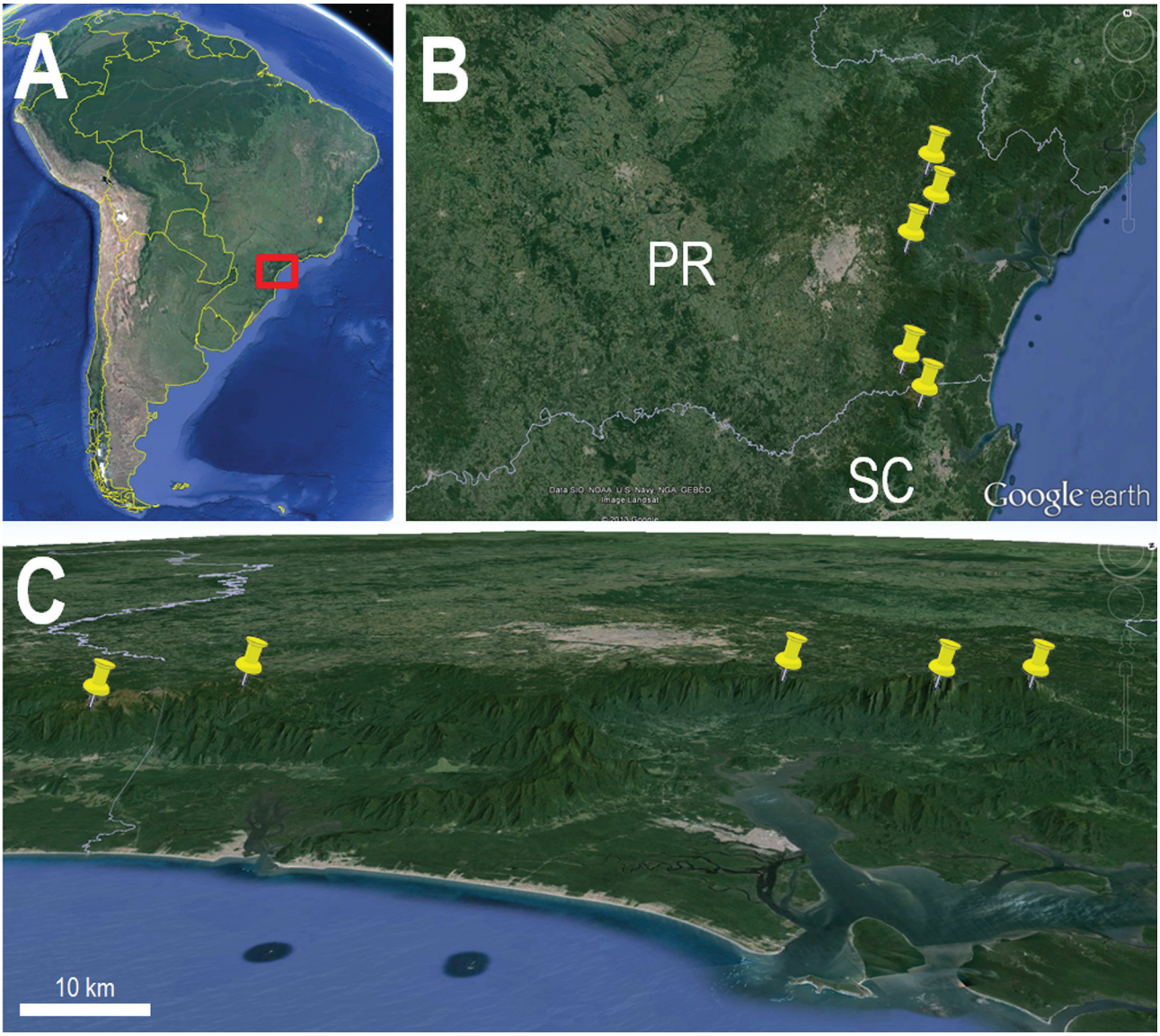

FIGURE 3. Distribution of *Baccharis nebularis* in southern Brazil. **A.** Overview map of South America highlighting the position of the Southern range of Serra do Mar. **B.** Known distribution in Paraná and Santa Catarina from north to south: Capivari, Ibitiraquire or Serra dos Órgãos, Graciosa, Araçatuba, and Quiriri. **C.** Southern range of Serra do Mar: the five massifs where the new species is recorded are pinpointed from left to right: Quiriri, Araçatuba, Graciosa, Ibitiraquire or Serra dos Órgãos and Capivari.

Phenology:—Fertile specimens have been recorded from August to late December with a flowering peak in October and November.

Conservation status:—The new species is known from five massifs (Serra de Araçatuba, Serra de Capivari, Serra da Graciosa, Serra do Ibitiraquire or Serra dos Órgãos, and Serra do Quiriri—Fig. 3), represented in herbaria by 24 collections made between 1960 and 2010. Only five of these collections, all from Serra do Araçatuba, were made in the last 10 years. The high altitude tropical grasslands and cloud forest environments in the southern range of Serra do Mar have different levels of accessibility and are partially covered by preserves of various levels, but several of its mountain peaks are private owned. The environment of the new species is naturally fragmented, related to the sky island distribution of its habitats. Some of these areas are remote and inaccessible, whereas others are under anthropogenic pressure such as cattle grazing, tourism, accidental fires, forestry and introduction of exotic species. Disturbances

of the natural environment occur because some peaks can be reached by car for installation and maintenance of antennas and other telecommunication facilities in the summits. During the collection of the type specimens in Serra do Araçatuba it was observed that *B. nebularis* is a rare species with sparse populations and discontinuous distribution, but due to the lack of more precise information the data available was found to be insufficient to place the taxon into a category of threat and the new species is considered Data Deficient: DD (IUCN 2013).

Etnobotany & vernacular names:—Unknown.

Specimens examined:—BRAZIL. Paraná: Campina Grande do Sul, Serra do Capivari, 23 October 1997, ♂, *C.V. Roderjan & A.P. Tramujas 1510* (MBM, UPCB); Capivari Grande, 23 October 2001, ♂, *E. Barbosa, O.S. Ribas & E.F. Costa 670* (B, MBM); Serra do Ibitiraquire (Serra dos Órgãos), 2 November 2001, ♂, *A.Y. Mocochinski & M. Scheer 40* (UPCB); Morro Camapuã, 9 September 1999, ♂, *E. Barbosa, J.M. Silva & L.A. Ferreira 390* (C, CTES, ESA, G, INPA, MBM); Morro Tucum, 19 November 1999, ♂, *J. Cordeiro, J.M. Cruz & L.A. Ferreira 1643* (B, CESJ, G, MBM, UFP); Pico Caratuva, 2 August 1967, 1950 m, ♂, *G. Hatschbach 16829* (MBM); 5 October 1967, *G. Hatschbach 17322* (CTES, K, MBM, MO, UPCB); ♂, 15 November 1967, *G. Hatschbach 17845* (HBR, MBM, UPCB). Guaratuba, Serra de Araçatuba, 9 November 1983, ♂, *R. Kummrow 2391* (GB, HBG, MBM, NY, UB, UPCB); 23 November 1996, ♂, *E.P. Santos, H.M. Fernandes & C.M.S. Coimbra 297* (MBM, UPCB); 1 December 1998, ♂, *J.M. Silva, E. Barbosa & J.M. Cruz 2661* (C, FLOR, G, HBG, HUEFS, K, MBM, NY, SPF); 25 February 2000, ♂, *J.M. Silva, E. Barbosa & J. Cordeiro 3262* (CESJ, ESA, HUEFS, MBM); 30 October 2003, ♂, *J.M. Silva, E. Lucas, F.F. Mazine & C.M. Sakuragui 3809* (CORD, MBM, NY, SP); Morro dos Perdidos, cume, 25° 53’ 21” S, 48° 57’ 28” W, 1411 m, 17 December 2010, ♂, *G. Heiden, J.R.V. Iganci, J.M. da Silva & J.M. Vaz 1450* (MBM, RB, SPF, US); 9 November 1994, ♀, *C.B. Poliquesi & J.M. Cruz 208* (BHCB, HAS, MBM, UB); 9 September 2006, bud, *G.O. Romão & A.P.T. Dantas 1676* (BHCB, ESA, UEC); 29 October 2006, ♂, *G.O. Romão, C.D. Rodrigues & A.P. Dantas 1496* (BHCB, ESA, SPF, UEC); 23 November 1996, ♂, *E.P. Santos, H.M. Fernandes & C.M.S. Coimbra 297* (NY, UPCB). Quatro Barras, Serra da Graciosa, Morro Mãe Catira, 8 October 1985, ♀, *R. Kummrow & J.M. Silva 2626* (C, CORD, FLOR, GB, MBM, US); 31 October 1989, ♂, *J.M. Silva & C.B. Poliquesi 655* (MBM, SP). Santa Catarina: Campo Alegre, Serra do Quiriri, 19 November 1992, *J. Cordeiro & C.B. Poliquesi 953* (C, HUEFS, MBM, MO); 28 December 1999, ♀, *J. Cordeiro, J.M. Silva, E. Barbosa & O.S. Ribas 1747* (CTES, MBM). Garuva, Monte Crista, 6 October 1960, *R. Reitz & R.M. Klein 10034* (HBR, RB).

Baccharis nebularis is placed in *B.* subgen. *Tarchonanthoides* based on the following combination of features: conspicuous indumentum of filiform hairs and lack of tufted indumentum; cup-shaped involucres of male capitula, contrasting to cylindrical to campanulate involucres of female capitula, and corollas of female florets with five papillose teeth. The new species is assigned to *B.* sect. *Curitybenses* due to female flowers with deciduous pappus and ca. 10-ribbed cypselae covered by twin trichomes.

Both in habit and habitat, *B. nebularis* resembles the allopatric *B. chionolaenoides:* they are densely branched shrubs with leaves crowded at the apex of branches, growing in moist places in the transition zone of cloud forest thickets to open areas. However, *B. chionolaenoides* is endemic to the cliffs of Morro da Igreja further south in Santa Catarina, and the new species is more similar to the parapatric *B. curitybensis*, distributed in high altitude open and dry grasslands from Serra da Mantiqueira range in southeastern Minas Gerais and São Paulo south to the highlands of Aparados da Serra in Rio Grande do Sul. *Baccharis curitybensis* and *B. nebularis* have a small area of contact in the Serra do Quiriri massif, at the boundary between Paraná and Santa Catarina. In that area, open and dry high altitude grasslands co-exist with thickets of cloud forest and moist grasslands and both species are recorded there, although growing in distinct habitats. The studied specimens of *B. nebularis* were previously determined in herbaria as *B. curitybensis*. The two species have in common similar 3-nerved, entire or dentate leaves, corymbose capitulescences, cup-shaped male and campanulate female capitula, apically broadenend pappi of male florets, and cypselae densely covered by twin trichomes. A key for differentiating the three species of *B.* sect. *Curitybenses* is provided below.

Key to the species of *Baccharis* sect. *Curitybenses*

1. Pappus of male floret twisted, not broadened at apex; cypsela sparsely covered by twin trichomes ..... *B. chionolaenoides*
1. Pappus of male floret not twisted, broadened in the apex; cypsela densely covered by twin trichomes.
2. Leaves evenly distributed along the branches; peduncles with pilose indumentum; female floret with style 3–3.4 mm long; pappus 3.6–4 mm long, longer than style ..... *B. curitybensis*
2. Leaves crowded at the apex of the branches; peduncles with tomentose indumentum; female floret with style 3.9–4.2 mm long; pappus 2.9–3.2 mm long, shorter than style ..... *B. nebularis*

Acknowledgements

The authors acknowledge FAPESP (processes 2010/00519-8, 2011/18385-0 and 2012/17911-3), IAPT Research Grants in Plant Systematics 2010, and the Smithsonian Institution's 2011 Cuatrecasas Fellowship Award, for financial support. We are also grateful to the staff of the consulted herbaria (B, BHCB, C, CESJ, CORD, CTES, ESA, G, GB, FLOR, HAS, HBG, HBR, HUEFS, INPA, K, MBM, MO, NY, RB, SP, SPF, UB, UEC, UFP, UPCB, US) for offering support and loaning specimens for study; to João Iganci for preparing the illustration; and to the staff of Museu Botânico Municipal de Curitiba, Paraná, especially Clarisse Bolfe Poliquesi, Joel Morais da Silva, Joel Vaz, and Osmar dos Santos Ribas, for assistance during fieldwork in Paraná State.

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