Baccharis napaea (Asteraceae, Astereae): a new species of subgen. Tarchonanthoides sect. Coridifoliae from the subtropical highlands of southern Brazil

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Abstract

Baccharis napaea, a new species belonging to subgen. Tarchonanthoides sect. Coridifoliae is described and illustrated. The new species is compared to and distinguished from the sympatric species B. coridifolia, B. erigeroides, and B. scabrifolia, and from the allopatric B. bicolor. Baccharis napaea occurs in open subtropical highland grasslands and the edges and open glades of subtropical mixed forests on the south Brazilian plateau. Additionally, a distribution map and description of habitat and conservation status of the new species are presented.

Resumo


Key words: Baccharidinae, Compositae, subtropical highland grasslands, subtropical mixed forests

Introduction

Baccharis Linnaeus (1753: 860; Asteraceae: Astereae) is a New World genus that comprises between 338 and 400 species (Bremer 1994, Müller 2010). The genus is characterized broadly by the usually tufted indumentum of the leaves and stems, with fused trichomes that have only a single adjoining basal cell, and the common occurrence of dioecy (Müller 2006). Barroso (1976) provided the most recent treatment of the genus for Brazil, encompassing about 130 species. Currently, in a checklist, 167 species of Baccharis are recorded for the country (Heiden & Schneider 2012).

The most recent proposal of a subgeneric classification of Baccharis was published by Müller (2006), who thought the subgenera Baccharis, Pteronioides Heering (1904: 15) and Tarchonanthoides Heering (1904: 26) were probably monophyletic, while he considered Baccharis subgen. Molina (Persoon 1807: 424) Heering (1904: 40) as a possibly paraphyletic assemblage. According to this author, Baccharis subgen. Tarchonanthoides is the morphologically best circumscribed subgenus of Baccharis. This subgenus is characterized by corollas of female florets with five papillose teeth, by male florets with pappus bristles rarely broadened apically and with a style apex nearly fully cleft into lanceolate or ovate branches. This subgenus is...
found in the southeastern South American grasslands and savannahs, from eastern Brazil and central Bolivia south to central Argentina, with the greatest diversity found in southeastern Brazil (Müller 2006, Heiden 2008). Heiden & Pirani (2012) recently published an updated synopsis for the subgenus, accepting 21 species; during a taxonomic revision and a phylogenetic analysis of Baccharis subgen. Tarchonanthis currently underway, we found a previously undescribed species. This species is described and illustrated in this paper, and its affinities, systematic position and area of occurrence are discussed.

Baccharis napaea G.Heiden, sp. nov. (Fig. 1)

Baccharis napaea G.Heiden is characterized by its tomentose and lanate indumentum of developed shoots and leaves, differing from B. erigeroides DC. and B. coridifolia DC. which are characterized by glabrescent developed shoots and glabrescent leaves, and from B. scabrifolia G.Heiden that is characterized by shoots and leaves with villous and scabrous indumentum.

**Type**—BRAZIL. Paraná: Palmas, Horizonte, divisa PR/SC, Campos de Água Doce e Palmas, BR 280, próximo às turbinas da Central de Energia Eléctrica de Palmas, 1303 m, fl., ♀, 8 February 2011, G. Heiden, J.M. da Silva & J.M. Vaz 1581 (holotype SPF!; isotypes FLOR!, ICN!, F!, JE!, K!, LP!, MBM!, MVFA!, MO!, PACA!, RB!, SP!, US!, and Herbário da Embrapa Clima Temperado, Pelotas, RS, Brasil!).

**Subshrubs** 1–1.5 m tall, erect; sterile lateral shoots prostrate, fertile shoots ascending, terminating in a capitulaceous, greenish to greyish; indumentum tomentose, hairs filiform. **Leaves** 1–4.4 cm long, 0.14–0.28 cm wide, greenish to greyish, sessile; leaf blade chartaceous, linear, plane, apex acute, base attenuate, margins entire, ciliate; leaves 1-nerved, midrib flat on adaxial surface and slightly prominent on abaxial surface, both surfaces with a lanate indumentum (puberulous in very old leaves), filiform hairs and biseriate glandular hairs, tufted indumentum absent. **Capitulaces** paniculate, terminal; panicles conical to ellipsoid, 16–60 cm long, 6–18 cm wide. **Capitula** pedunculate; peduncles 2.2–5.3 mm long. **Male capitula** 2.2–3 mm long; florets 7–12; involucre 1.7–2.8 mm long, 2.6–3 mm wide, cup-shaped; phyllaries in 3 series, greenish, outer and median phyllaries ovate, innermost ones linear-lanceolate, margin broadly scarious, short-dentate, apex obtuse to acute; clinanthium (receptacle) convex, glabrous or with scattered biseriate glandular hairs and uniseriate hairs; corolla 1–2 mm long, tube 0.4–0.9 mm long, throat 0.1–0.3 mm, lobes 0.5–0.7 mm long, biseriate hairs on tube and throat; anthers including apical appendages 0.8–1 mm long; style 0.9–1 mm long, apex nearly fully cleft into broadly lanceolate branches with sweeping hairs of equal size; ovary abortive, puberulous with twin and biseriate glandular hairs; pappus uniseriate, 1.1–2 mm long, bristles 18–24, twisted, apically not broadened, with short-protruding, erecto-patent terminal cell apices. **Female capitula** 4.5–8 mm long; florets 5–10; involucre 4.1–4.8 mm long, 2.2–3.5 mm wide, cylindrical to campanulate, narrowed distally; phyllaries in 4–5 series, greenish, outer and median phyllaries ovate, innermost ones oblong-lanceolate, margins scarious, short dentate, apex obtuse; clinanthium (receptacle) convex to conical, with scattered biseriate glandular hairs; corolla 2–3.1 mm long, filiform, with 5 papillose teeth; style 3.6–4 mm long, branches 0.4–0.8 mm long; cypselae 1.9–2.4 mm long, 0.7–1 mm wide, stramineous to light brown, covered with biseriate glandular hairs and twin hairs, cylindrical, slightly narrowed at base, 5–6 longitudinal ribs; pappus multiseriate, 2.6–4.3 mm long at cypsela maturity, persistent; bristles 80–140, connate basally, not broadened apically.

**Distribution & habitat:**—Baccharis napaea occurs in the highlands of the south Brazilian plateau (Planalto Sul-Brasileiro, also known as Planalto Meridional), in elevations between 750 and 1300 m a.s.l., in the states of Paraná, Santa Catarina, and Rio Grande do Sul, in southernmost Brazil (Fig. 2). It forms sparse populations, mainly across open grasslands within the subtropical highland grassland biome and along the edges or in open glades of Araucaria angustifolia (Bertol.) Kuntze forest thickets, in the contact zone with the subtropical mixed forest biome (Iganci et al. 2011). These environments occur in the transitional zone of high elevation grasslands and ombrophilous mixed forests of the Atlantic Rainforest Domain.
FIGURE 2. Distribution of Baccharis napaea in southern Brazil.

Phenology:—Baccharis napaea flowers from February to March and specimens setting fruits were collected from April to June.

Conservation status:—Despite many efforts during the years of 2010 and 2011 looking for populations of B. napaea in most of the known localities of occurrence of this species in southern Brazil, none of them were found except for a new record at the border of the municipalities of Água Doce (Santa Catarina) and Palmas (Paraná). The new species is well represented in herbaria; however, only three of these records were registered in the last 10 years (considering the authors’ records to the neighboring places of Paraná and Santa Catarina Border as one record). Since a wider former distribution of the species seems likely, we suspect that its area has been reduced in recent years due to the conversion of native grasslands into extensive fields of soybean, corn, and wheat, as well as by the great increase of pine plantations, and the invasion of pine seedlings into the native environments across the southern Brazilian highland grasslands in the last years. Because of the continuing decline of the area of the native grasslands, the loss of habitat quality and the effects of Pinus invasion of the native vegetation the new species is assessed as Vulnerable: VU A2ce (IUCN 2011).

Etymology:—The specific epithet (a noun in singular in apposition) refers to the Napaeae, the nymphs of valleys in Greek mythology, and the homonymous floristic province of Martius, referring to the alternate and intermittent distribution of grasslands and forests in this region.

Baccharis napaea is placed in subgenus Tarchonanthoides because of the following combination of features: a conspicuous indumentum of filiform hairs and the lack of tufted indumentum, appearing as small resinous dots, typical of most Baccharis species of other subgenera; the cup-shaped involucre of male capitula, contrasting with the cylindrical to campanulate involucre of the female capitula; apically not broadened pappus bristles of male florets; and the corollas of female florets with five papillose teeth. The new species is also assigned to the section Coridifoliae Giuliano (2011) because of its sessile and 1-nerved leaves and the multisierate and persistent pappus of female flowers, accentres in cypselae maturity.

Most of the specimens of B. napaea found in herbaria were determined as B. puberula Candolle (1836: 401) or B. erigeroides DC. var. dusenii Heering (1910: 23); both names are synonyms of the sympatric B. erigeroides Candolle (1836: 418), which is endemic to Brazil and occurs north to central Goiás state and south to northeastern Rio Grande do Sul state (Heiden & Schneider 2012) in tropical savannahs (cerrado) and subtropical highland grasslands (campos de cima da serra). Baccharis napaea can be distinguished from B. erigeroides by its height (1–1.5 m vs. 0.3–0.7 m tall); the tomentose and lanate indumentum of shoots and leaves (vs. caducous filiform hairs found in leaves of young shoots that later become glabrescent); linear leaf blades (vs. narrow elliptic to narrow oblanceolate leaf blades) that are mostly smaller (1.1–4.4 × 0.14–0.28 cm vs. 4–5 × 0.3–0.7 cm), shorter peduncles (2.2–5.3 mm vs. 6–31 mm long), smaller male capitula (2.2–3 × 2.6–3 mm vs. 3.5 × 4.5–6.7 mm) with fewer florets (7–12 vs. 12–20), and fewer-flowered female capitula (5–10 vs. 12–22), with female florets with shorter pappus bristles (2.6–4 vs. 5.6–6.9 mm long).

Due to the similar habit, sessile linear 1-nerved leaves and broad paniculate capitulescences, B. napaea superficially resembles the widespread and sympatric B. coridifolia Candolle (1836: 422), which occurs in grasslands, pastures and disturbed areas from lowlands to highlands across central Argentina, north to central Bolivia and south-eastern Brazil (Müller 2006, Heiden & Schneider 2012). Despite this similarity, B. napaea can be differentiated by the persistent tomentose and lanate indumentum of filiform hairs present in the developed shoots and leaves respectively (vs. caducous filiform hairs found on leaves of very young shoots that later become glabrescent), fewer-flowered male capitula (7–12 vs. 15–30), shorter corolla of female florets (2–3.1 mm vs. 3.7–4.5 mm long), and shorter pappus of mature cypselae (2.6–4 vs. 5.6–6.9 mm long).

Baccharis scabrifolia Heiden (2008: 6), an endemic highland species of the south Brazilian plateau (Santa Catarina and Rio Grande do Sul) where it is restricted to peat bogs and swampy grasslands, is another sympatric species similar to B. napaea. Both species can be separated by the tomentose and lanate indumentum of shoots and leaves of B. napaea (vs. villous and scabrous indumentum of shoots and leaves of B. scabrifolia); not revolute, ciliate leaf margins and attenuate leaf bases (vs. revolute, not ciliate leaf margins and obtuse to subcordate leaf bases); fewer-flowered male capitula (7–12 vs. 12–16); and longer female capitulescences (vs. partial capitulescences mostly racemose), few-flowered male capitula (7–12 vs. 18–30), shorter corolla of female florets (2–3.1 mm vs. 3.7–4.5 mm long), and shorter pappus of mature cypselae (2.6–4 vs. 5.3–6.5 mm long).
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References