



## ***Baccharis scopulorum*, a new species of section *Caulopterae* (Asteraceae: Astereae) from rocky cliffs of southern Brazil**

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### **Abstract**

A new species of *Baccharis* sect. *Caulopterae* endemic to rocky cliffs in southern Brazil, is here described as *Baccharis scopulorum*. This new species is characterized by the general presence of basal and persistent leaves, mostly solitary capitula born at the tips of the branches, and many flowered capitula, the pistillate capitula with an urceolate to campanulate involucre. The new species is morphologically most similar to *B. altimontana* and *B. opuntioides*, both inhabiting mountain summits in eastern Brazil. A description of *B. scopulorum*, together with illustrations, a distribution map, habitat description, conservation assessment and diagnostic comparison with *B. altimontana* and *B. opuntioides* is presented.

### **Resumo**

Uma nova espécie de *Baccharis* seção *Caulopterae*, endêmica de penhascos rochosos do Sul do Brasil, é aqui descrita como *Baccharis scopulorum*. Esta nova espécie é caracterizada pela presença de folhas desenvolvidas e algo persistentes, geralmente basais, e capítulos plurifloros e solitários no ápice dos ramos, sendo os femininos com involucre urceolado a campanulado. A nova espécie é morfolologicamente mais similar às espécies alopatricas *B. altimontana* e *B. opuntioides*, que ocorrem em topos de montanhas ao longo do leste do Brasil. Uma descrição de *B. scopulorum*, junto com a ilustração, mapa de distribuição, habitat, avaliação do estado de conservação e comparações com *B. altimontana* e *B. opuntioides* são fornecidos.

**Key words.** Atlantic rain forest, *Baccharis* subgenus *Molina*, Compositae, rocky outcrops, Santa Catarina state

### **Introduction**

*Baccharis* L. (Asteraceae, Astereae) is a New World genus comprising approximately 340 species (Müller 2010). The tufted indumentum of the leaves and stems, with adjoining basal cells of the trichomes, and the common occurrence of dioecy are probably synapomorphic characters (Müller 2006). The last treatment of *Baccharis* for Brazil, which encompassed 125 accepted names, was undertaken by Barroso (1976). Currently 150 species of *Baccharis* are recorded for Brazil (Heiden & Schneider 2010).

*Baccharis* sect. *Caulopterae* DC. is represented by ca. 30 species restricted to South America (Giuliano 2001, Heiden *et al.* 2009b, Heiden & Schneider 2010, Müller 2006, Schneider 2009). Section *Caulopterae* is characterized by presence of winged stems, epaleaceous clinanthia densely covered with biseriate glandular hairs, papillose glabrous achenes, and pappus bristles of female flowers enlarged basally and fused into a ring. Section *Caulopterae* has a distinct distribution being most common in the Andes from Colombia to Argentina and in eastern Brazil, northern Argentina, Paraguay and Uruguay (Müller 2006).

Taxonomic studies on *Baccharis* section *Caulopterae* in Brazil led to the discovery of a new species that was previously identified as *B. opuntioides* Mart. ex Baker (1882: 39) to southern Brazil (Schneider & Boldrini 2008). The new species is described below based on the presence of developed leaves, solitary or paired capitula born at the tip of the branches, number of florets in capitula, number of ribs in cypselae, restricted area of occurrence and habitat differentiating it from all other known species of this section.

### ***Baccharis scopulorum* A.A.Schneid. & G.Heiden, sp. nov. (Figures 1 and 3)**

*Ad Baccharis sect. Caulopterae pertinens, B. altimontana similis, sed foliis basalibus evolutis vel sparsim in ramis (vs. foliis evolutis absentibus), ramis erectis (vs. erectus-patentibus), capituliis staminatis cum 60–135 flosculis (vs. 35–63 flosculis), capituliis pistillatis cum 130–140 flosculis (vs. 34–42 flosculis) et cypselis 10–14-costatis (vs. 16–22-costatis) differt.*

**Type**:—BRAZIL. Santa Catarina: Grão-Pará/Urubici, Serra do Corvo Branco, rodovia SC 439, 28°03'36.5"S, 49°21'48,1"W, 1334 m, ♂, fl, 19 October 2006, *Schneider 1333* (holotype ICN).

*Subshrub*, 25–40 cm tall; shoots erect or erect-patent, terminating in solitary or paired capitula born at the tip of the branches; *stems* 3-winged, wings 4–7 x 0.7–1.4 cm, laminate or slightly undulate, coriaceous, slightly resinous, light green, indumentum tufted. *Basal leaves* 1.5–4 x 1–3.4 cm, obovate to orbicular or spatulate, sessile to sub-sessile, subcoriaceous, 3(–5)-veined, the base attenuate, the margins entire, slightly revolute, the apex obtuse to rounded, mucronulate; *stem leaves* developed or bract-like. *Capitula* sessile, solitary or paired, born mostly at the tips of the branches. *Staminate capitula* 5.6–7 mm; florets 60–135; involucre 4–4.5 x 6–8 mm, campanulate; phyllaries in 4 or 5 series, the outermost phyllaries ovate, the median phyllaries oblong, the innermost phyllaries lanceolate, resinous and brightly coloured, the apex acute; corolla 2.7–4 mm, tube 2.2–3.2 mm, lobes 0.5–0.8 mm; style 4.0–5.3 mm, the apex nearly fully cleft into two lanceolate branches, these slightly dilated towards their apex, ovary abortive, glabrous; pappus uniseriate, 4–4.5 mm, bristles 16–18, apically broadened and scarcely barbellate. *Pistillate capitula* 7–8 mm; florets 130–140; involucre 4.5–5 x 5–7 mm, campanulate to urceolate; phyllaries in 4 or 5 series, outermost phyllaries ovate, the median phyllaries oblong, innermost phyllaries lanceolate, resinous and brightly coloured, the apex acute; corolla 2–4 x 0.05–0.15 mm, filiform, ligulate with a dentate ligule, glabrous; style 3–4 mm; *cypselae* 1.3–2 x 0.3–0.4 mm, nearly cylindrical, 10–14-ribbed, papillose, *pappus* uniseriate, 2.2–3 mm, bristles 16–19, stramineous, persistent, basally fused.

**Distribution**:—Known only from elevations above 1400 m at Serra do Corvo Branco, part of the eastern edge of the Serra Geral plateau, which is the boundary between the municipalities of Grão-Pará and Urubici, at the state of Santa Catarina, southern Brazil (Figure 2).

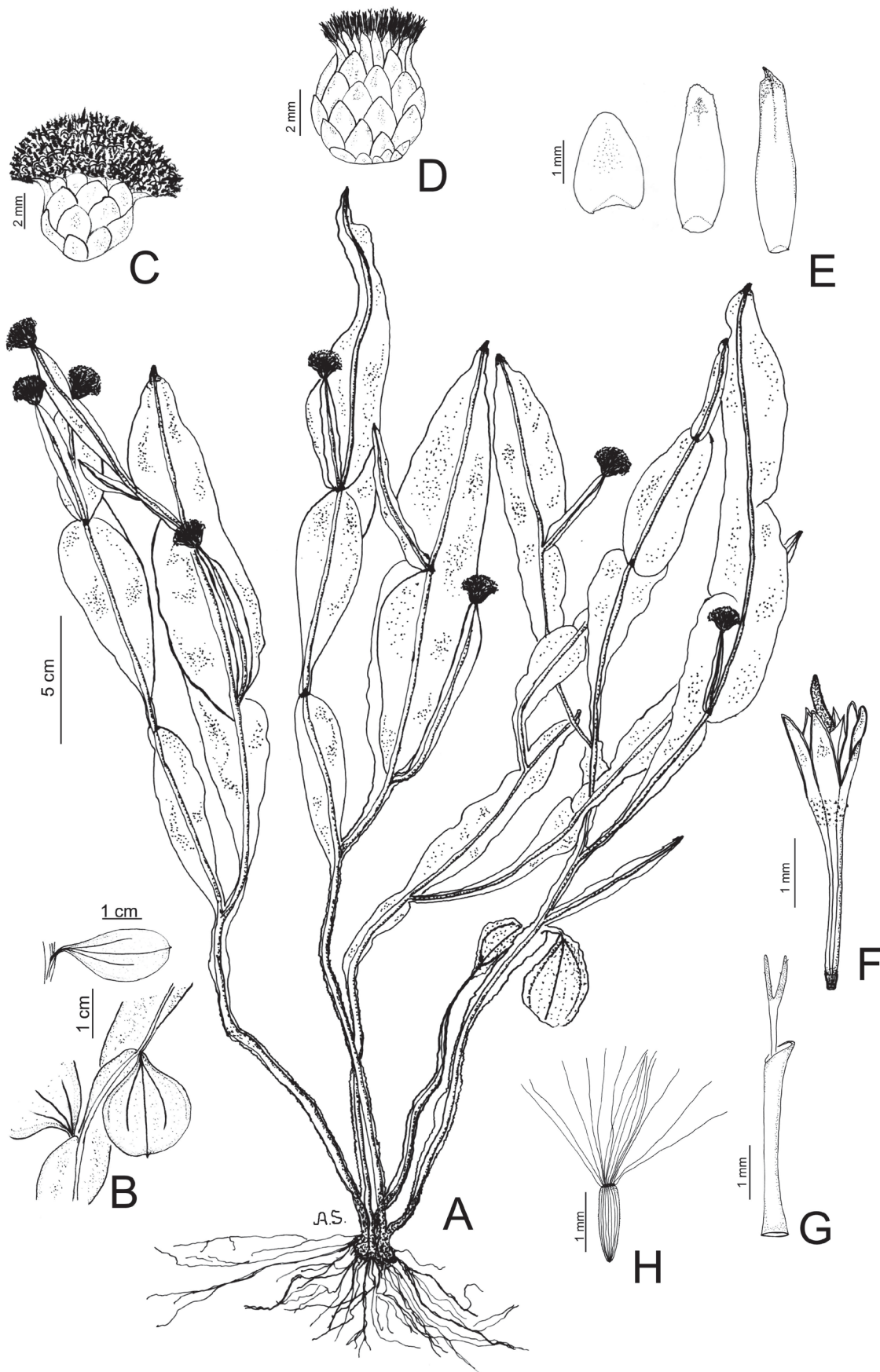
**Phenology**:—Flowering and fruiting specimens have been collected during October and November.

**Habitat**:—To date *Baccharis scopulorum* is known from a single site growing directly attached to bare rock at the ledges of outcrops and cliffs on steep slopes subject to constant fog and high humidity. These outcrops occur in the transitional zone of cloud forests and dense forests of the Atlantic Rainforest.

**Conservation status**:—The new species, according to IUCN Red list category (IUCN 2010), is considered Endangered (EN subcriteria D1—very small or restricted population) as it grows in a highly specialized habitat and is known from a single population, found in an area difficult to access due the steep and slippery slopes. We can estimate the existence of about 150 individuals in the most accessible places.

**Etymology**:—The epithet means 'of the cliffs' referring to the habitat of the species on the cliffs of the Serra do Corvo Branco, part of the Serra Geral range.

**Additional specimens examined** (paratypes):—BRAZIL. Santa Catarina: Grão-Pará/Urubici, Serra do Corvo Branco, SC 439, 28°03'36.5"S, 49°21'48,1"W, 1334 m, 13 November 1995, ♂, *M. R. Ritter 892* (ICN); 19 October 2006, ♀, *A. A. Schneider 1326, 1347* (ICN); ♂, *A. A. Schneider 1331, 1332* (ICN); 28 October 2008, ♀, *J.R.V. Iganci 505* (SPF); ♂, *J. R. V. Iganci 506* (HECT, SPF); 3 April 2010, sterilis, *G. Heiden, J. R. V. Iganci & T. Särkinen 1336* (SPF).



**FIGURE 1.** *Baccharis scopulorum*. **A.** Habit (Schneider 1333, ICN). **B.** Representative leaves (Schneider 1331, 1332, ICN). **C.** Staminate capitulum (Schneider 1333, ICN). **D.** Pistillate capitulum (Schneider 1326, ICN). **E.** Phyllaries of pistillate capitulum (Schneider 1326, ICN). **F.** Staminate floret (pappus removed) (Schneider 1333, ICN). **G.** Corolla and style of pistillate floret (Schneider 1326, ICN). **H.** Cypsela with pappus (Schneider 1326, ICN).

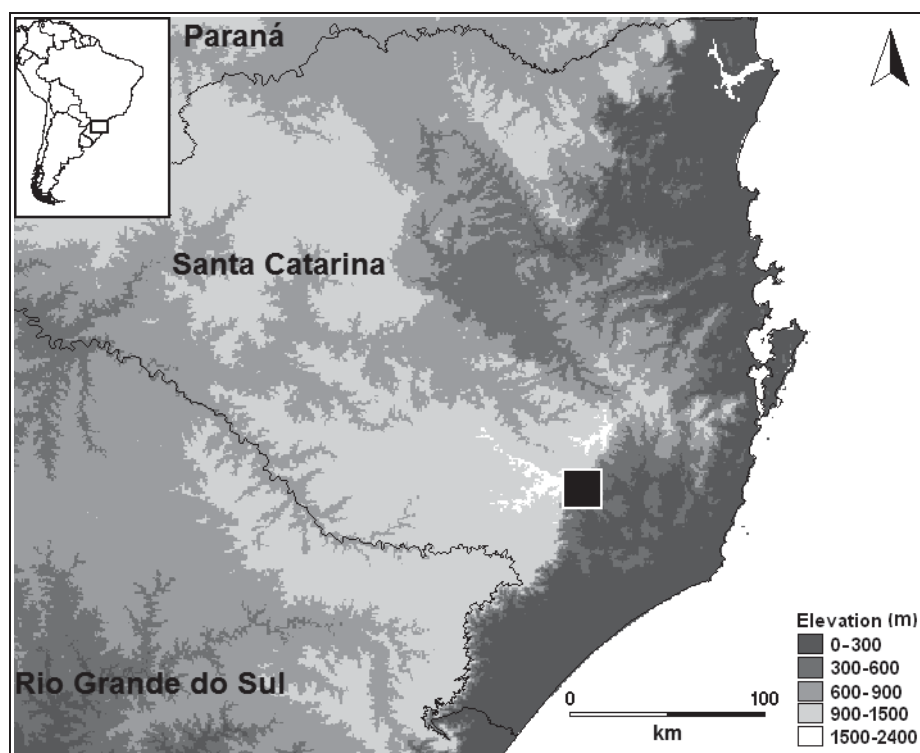


FIGURE 2. Distribution of *Baccharis scopulorum* in southern Brazil.

Current taxonomic studies on Brazilian *Baccharis* sect. *Caulopterae* recovered a species previously identified as a new record of *B. opuntioides* Mart. ex Baker for southern Brazil (Schneider & Boldrini 2008). In the current work, this species is identified as an undescribed species on the basis of its distinctive morphology, geographical distribution and habitat preferences.

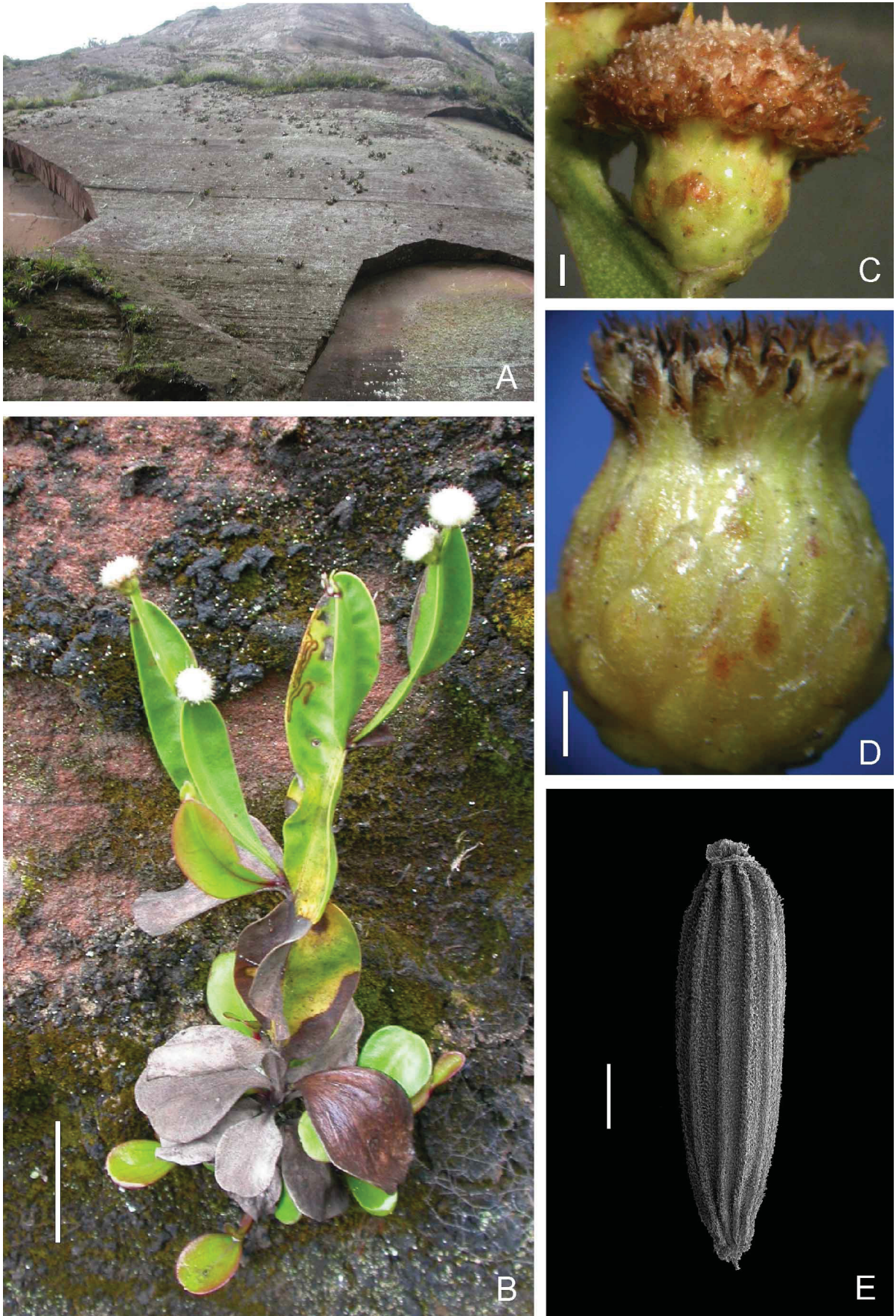
*Baccharis scopulorum* belongs to *Baccharis* sect. *Caulopterae* on the basis of its 3-winged stems, epaleaceous clinathia which are densely covered with bisseriate glandular hairs and the bristles of the female pappus which are basally fused into a ring. This species is morphologically most similar to *B. altimontana* Heiden, Baumgratz & Esteves (2009a: 140) and *B. opuntioides*.

We believe *Baccharis scopulorum* to be most closely related to *B. altimontana* based on its 3-winged stems, urceolate to campanulate involucra of the female capitula and the uniseriate pappus of the female florets; and to *B. opuntioides* based on its 3-winged stems, erect branches, and the uniseriate pappus of the female florets. *Baccharis scopulorum* may be distinguished from *B. altimontana* and *B. opuntioides* based on the characters listed in Table 1.

TABLE 1. Main characters distinguishing *B. scopulorum* from *B. altimontana* and *B. opuntioides*.

Character/Species	<i>B. altimontana</i>	<i>B. opuntioides</i>	<i>B. scopulorum</i>
Developed leaves	absent	absent	present
Habit	erect-patent	erect	erect
Florets in pistillate capitula	34–42	30–50	130–140
Florets in staminate capitula	35–63	20–40	60–135
Distribution	South-Eastern Brazil, Serra do Mar (Rio de Janeiro)	South-Eastern Brazil, Serra do Caparaó (Espírito Santo and Minas Gerais)	Southern Brazil, Serra do Corvo Branco (Santa Catarina)





**FIGURE 3.** *Baccharis scopulorum*. **A.** Habitat on cliffs of bare rock outcrops. **B.** Habit. **C.** Staminate capitulum. **D.** Pistillate capitulum. **E.** Cypsela in SEM. **C.** *Schneider 1333* (ICN). **D–E.** *Schneider 1326* (ICN). Scale bars **B.** 5 cm. **C–D.** 1 mm. **E.** 200  $\mu$ m.

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