



## *Dasyphyllum diamantinense* (Asteraceae, Barnadesioideae): a new species from the Chapada Diamantina, Bahia State, Brazil

MARIANA MACHADO SAAVEDRA<sup>1</sup>, MARCELO MONGE<sup>2</sup> & ELSIE FRANKLIN GUIMARÃES<sup>1</sup>

<sup>1</sup>Instituto de Pesquisas Jardim Botânico do Rio de Janeiro, Escola Nacional de Botânica Tropical, Programa de Pós-graduação em Botânica, Rua Pacheco Leão 2040, 22460-036, Rio de Janeiro, RJ, Brazil. Email: mariana.saav@gmail.com

<sup>2</sup>Programa de Pós-graduação em Biologia Vegetal, Instituto de Biologia, UNICAMP, Campinas, SP, Brazil.  
E-mail: marcelomonge@gmail.com

### Abstract

*Dasyphyllum diamantinense* is a new species endemic to the Chapada Diamantina Mountains in the northern section of the Espinhaço Range, in Bahia State, Brazil, which grows in rocky fields, forests and savannas, and on inselbergs. The new taxon is morphologically similar to *Dasyphyllum leptacanthum*. Affinities and diagnostic characters are discussed, and illustrations and a map are provided.

**Key words:** Barnadesieae, Campos rupestres, Compositae, Espinhaço Range, northeastern Brazil

### Resumo

*Dasyphyllum diamantinense* é uma nova espécie endêmica do norte da Cadeia do Espinhaço, no estado da Bahia, Brasil, e que cresce em campos rupestres, florestas, savanas e inselbergs. O novo táxon é morfologicamente similar a *Dasyphyllum leptacanthum*. Afinidades e caracteres diagnósticos são discutidos e ilustrações e mapas apresentados.

**Palavras-chave:** Barnadesieae, Campos rupestres, Compositae, Cadeia do Espinhaço, nordeste do Brasil

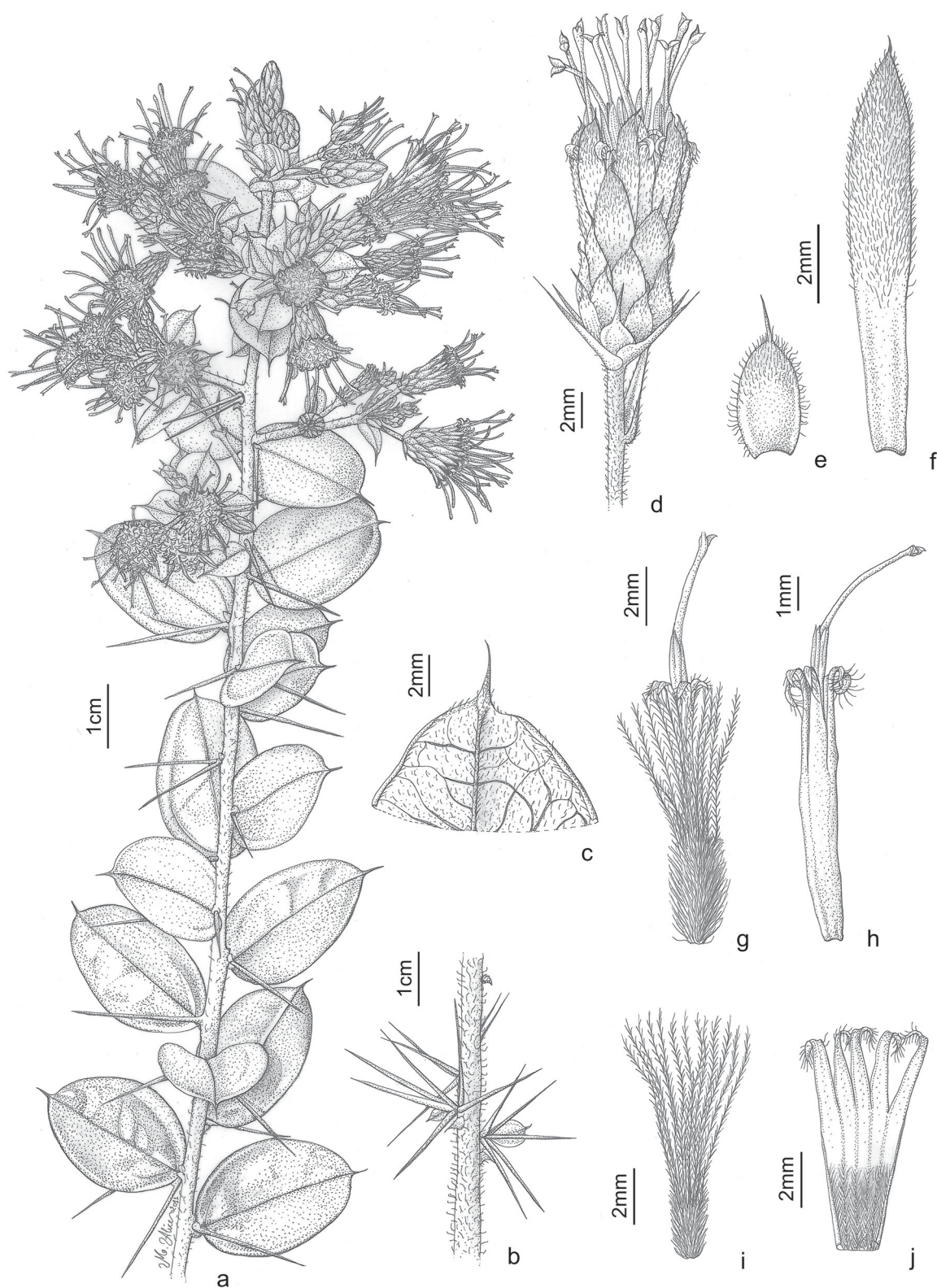
### Introduction

The South American genus *Dasyphyllum* Kunth (1820) comprises ca. 40 species distributed throughout the continent, except in the Amazon domain. It is taxonomically complicated due to morphologically poorly defined species with overlapping distributions. Cabrera (1959) undertook the most recent revision of this genus and had to deal with these issues, resulting in some species receiving only vague delimitations. Three new species have been described since then (Sagástegui-Alva 1980; Sagástegui-Alva & Dillon 1985; Zardini & Soria 1994) and a new combination made (Cabrera 1997). Several regional floras were also prepared, increasing the number of herbarium specimens available as well as the information about the genus (Cabrera & Klein 1973; Hind 1995; Roque & Pirani 1997; Cabrera & Freire 1998; Nakajima & Semir 2001; Magenta *et al.* 2011). Saavedra (2010) recently reported 21 species of *Dasyphyllum* from Brazil, occurring in the Atlantic Rain Forest, Cerrado, and Caatinga domains.

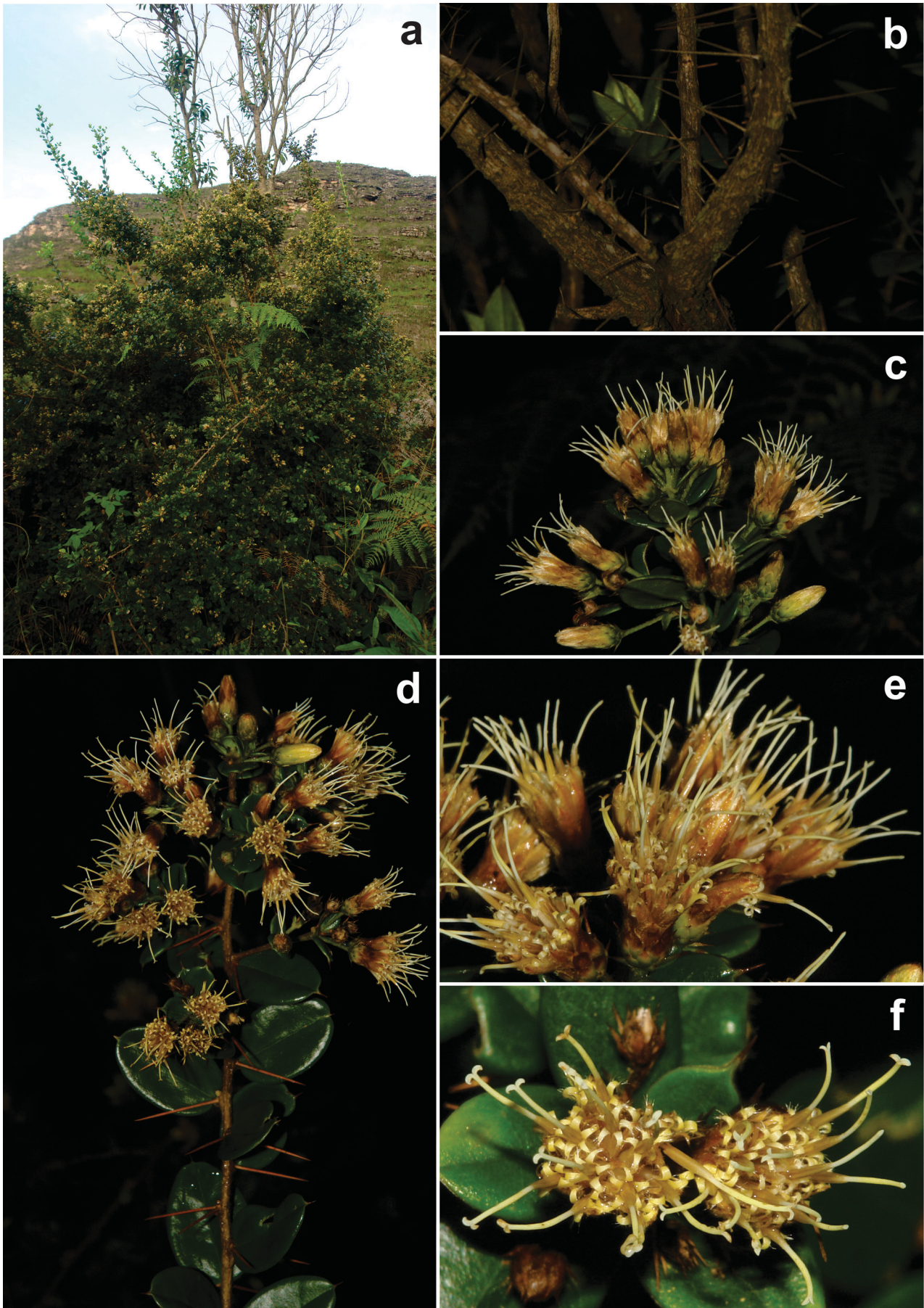
While conducting taxonomic studies of *Dasyphyllum*, it was noted that the delimitation of *D. leptacanthum* (Gardner 1845: 128) Cabrera (1959: 55) seemed too broad, and that two distinct morphotypes were represented in various herbarium collections. After analyzing the morphotype referable to *D. leptacanthum* s. str., the other morphotype was identified as belonging to a new species, described and illustrated here; its affinities and diagnostic features are discussed.

*Dasyphyllum diamantinense* Saavedra & M. Monge, *sp. nov.* (Figs. 1–2)

Type:—BRAZIL. Bahia: Mucugê, Capão do Correia, estrada vicinal saindo de Caraíba a 17.5 km da BA-142, 1221 m elev., 13°06'38" S, 41°22'39" W, 11 July 2009, *M.M. Saavedra et al.* 968 (holotype RB!; isotypes CEPEC!, CEN!, HUEFS!, HUFU!, K!, NY!, P!, SI!, SPF!, SPFR!).



**FIGURE 1.** *Dasyphyllum diamantinense*. A. Fertile branch. B. Branch spines. C. Leaf apex. D. Capitula. E. Outermost involucre. F. Innermost involucre. G. Complete bisexual flower. H. Corolla, anthers, and style. I. Cypselae and pappus. J. Internal portion of corolla (Saavedra et al 1968, RB). Drawn by Maria Alice Rezende.



**FIGURE 2.** *Dasyphyllum diamantinense*. A. Habit. B. Branch with long spines. C. Apex of a fertile branch. D. Fertile branch. E. Lateral view of the capitula. F. Frontal view of the capitula, with tubulose corolla. Photos by C.N. Fraga.

Shrub, 1–3 m tall, erect, gynodioecious; branchlets hirtellous, densely spined; branchlet spines two, axillary, straight, 10–25 mm long, branch spines in fascicle, straight, 18–32 mm long. Leaves simple, alternate, subsessile, petiole ca. 2 mm; blades (1.5–)2–3.6(–4) × (0.8–)1.2–2.5 cm, coriaceous, elliptical to broadly ovate, orbicular; base obtuse, rounded; apex obtuse, rounded, apiculate to aristate, apical projection 1–4 mm long, erect; margin entire, revolute; abaxial surface sparsely sericeous, adaxial surface glabrous; venation basal acrodromous with 3 main veins. Synflorescence in panicles or racemes formed by corymbs or umbels, terminal or axillary; capitula with discoid involucre, pedunculate, peduncle (3–)6–13 mm long, hirtellous. Involucre cylindrical, 1.0–1.2 × 0.9–1.1 cm, involucre bracts in 6–7 whorls, brownish; external bracts 2–6 × 1.5–2 mm, in 4 whorls, ovate, elliptical, erect, coriaceous, apex acute, apiculate, the outermost whorl aristate, margin entire, plane, ciliate, abaxial surface sericeous, glabrescent, adaxial surface glabrous; internal bracts 8–12 × 1.5–2 mm, in 2–3 whorls, lanceolate, erect, papyraceous, apex acute, mucronate, margin entire, plane, ciliate, abaxial surface sericeous at apex, glabrescent, adaxial surface glabrous. Receptacle paleaceous, pilose. Monoclinous flowers 10–15; corolla tubular, 5-lobed, 8.5–9.5 mm long, tube ca. 5 mm long, external surface glabrous, internal surface sericeous at the base of the tube to the insertion of the filaments; lobes ca. 4 mm, external surface sericeous at apex, trichomes extending 0.5 mm beyond lobes, internal surface glabrous; filaments ca. 4.5 mm long, inserted 2 mm above the base of the corolla, anthers 4.5 mm long, basal appendage sagittate, apical appendage bilobed; style 11–15.5 mm long, glabrous, style arms shortly bilobate, papillose. Pistillate flowers 10–15; corolla tubular, 5-lobed, actinomorphic, 7.5–9 mm long; tube ca. 5.5 mm long, external surface glabrous, internal surface sericeous from the base of the tube to the insertion of the filaments; lobes ca. 3 mm long, external surface sericeous at apex, trichomes extending 0.5 mm beyond lobes, internal surface glabrous; staminoid filaments 1 mm long, inserted 2 mm above the base of the corolla, anthers 1.5–3 mm long; style 10–11.5 mm long, glabrous, style arms shortly bilobate, papillose. Cypselae 1.5 mm long, densely sericeous; pappus 9 mm long, plumose, bristles 15, golden.

**Distribution and habitat:**—The species is endemic to Chapada Diamantina, in the northern Espinhaço Range, in Bahia state, Brazil (Figure 3). It grows on rocky fields or in gallery forests, montane forests, and seasonal forests, on sandy and rocky soils, at elevations of 700–1750 m.

**Phenology:**—Flowering from March to September, fruiting in September.

**Etymology:**—The epithet refers to the locality where the new species occurs, the Chapada Diamantina Mountains, in Bahia State.

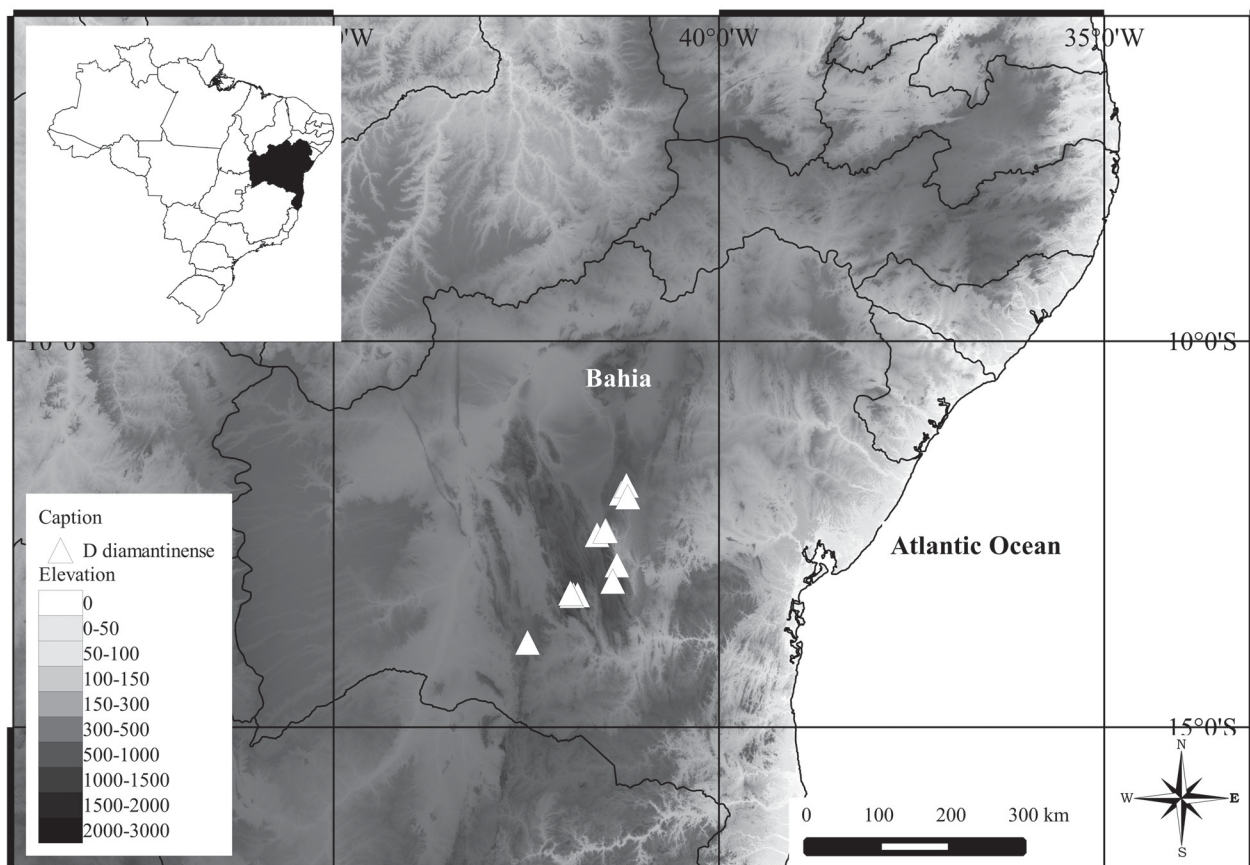


FIGURE 3. Distribution map of *Dasyphyllum diamantinense* in northeastern Brazil.

**Paratypes:**—BRAZIL. Bahia: Abaíra, Chapada Diamantina, Catolés, trilha para a Serra do Barbado, 13°17'07" S, 41°53'19" W, 25 March 2005, *M.L. Guedes et al. 11880* (ALCB); subida para a Serra do Barbado, 13°17' S, 41°50' W, 30 April 2006, *M.L. Guedes et al. 12298* (ALCB); trilha para o Pico do Barbado, 13°17'41" S, 41°54'31" W, 17 November 2007, *S.C. Ferreira et al. 363* (HUEFS). Bonito, estrada Bonito–Utinga km 13, 12°01' S, 41°11' W, 870 m elev., 22 November 1992, *L. Coradin et al. 8697* (CEN, K, SPF, UEC); Assentamento Piratini, ponto T6, 20 May 2001, *L.J. Alves et al. 95* (ALCB); sede provisória do assentamento Santa Terezinha, 21 May 2001, *L.J. Alves et al. 120* (ALCB). Iguatu, estrada para Mucugê, 13 June 2005, *M.D. Moraes 744* (UEC, TEX). Morro do Chapéu, próximo a Moreira, 11°52' S, 41°12' W, 880 m elev., 31 March 1986, *H.P. Bautista & A.C. Sarmiento 1061* (HUEFS, RB). Mucugê, Capão do Correia, 13°06'38" S, 41°22'38" W, 1221 m elev., 5 August 2004, *E.L. Borba et al. 1937* (HUEFS). Palmeiras, Morro do Pai Inácio, 12°27'20" S, 41°28'23" W, 1070 m elev., 20 July 2006, *J. Paula-Souza et al. 6235* (ESA); 12°27'17" S, 41°28'05" W, 960 m elev., 25 November 1994, *M.L. Guedes et al. PCD763* (ALCB, CEPEC, HST, HUEFS, K, SPF); BR 242, west of Lençóis at Km 232, 12 June 1981, *S.A. Mori & B.M. Boom 14351* (CEPEC, NY); descida da torre de repetição, 12°27'34" S, 41°28'29" W, 1000 m elev., 27 June 1995, *M.L. Guedes et al. PCD1913* (ALCB, CEPEC, K, SPF); trilha de subida da antena para o topo, 12°27'22" S, 41°28'23" W, 710 m elev., 9 July 2009, *M.M. Saavedra et al. 954* (RB); lower slopes of Morro do Pai Inácio, ca. 14.5 km NW of Lençóis, just N of the main Seabra–Itaberaba road, 12°27' S, 41°28' W, 700–1000 m elev., 23 May 1980, *R.M. Harley et al. 22506* (CEPEC, IPA, K, NY, RB, SI). Rio do Pires, Campo do cigano, 13°15'43" S, 41°55'29" W, 166–1750 m elev., 1 April 2000, *F.H.F. Nascimento 352* (ALCB, CEPEC, HRCB, HUEFS, SPF); 1 April 2000, *F.H.F. Nascimento 365* (HUEFS); beira do riacho da Forquilha, 13°54' S, 42°29' W, 1500 m elev., 24 July 1993, *W. Ganev 1945* (ALCB, HUEFS, K, SPF).

**Discussion:**—*Dasyphyllum diamantinense* belongs to *D.* sect. *Dasyphyllum* according to its cylindrical involucre 1–1.2 × 0.9–1.1 cm, and synflorescences in panicles or racemes. It is morphologically similar to *D. leptacanthum* due to its small, aristate leaves, short internodes, and densely spiny branches. *Dasyphyllum diamantinense* differs from *D. leptacanthum* by the spines on the branches being 10–32 mm long (versus 5–10 mm long), leaves with erect (vs. recumbent) arista at the apex, capitula pedunculate (vs. sessile), synflorescences in panicles or racemes formed by corymbs or umbels (vs. capitula solitary, or rarely synflorescences in single umbels with 3–4 capitula), involucre bracts brownish (vs. black), and corolla tubular (vs. subligulate or sub-bilabiate).

These two species occur in mountainous areas, although *Dasyphyllum diamantinense* is endemic to the Chapada Diamantina Mountains in the Espinhaço Range, in the Caatinga domain, whereas *D. leptacanthum* is endemic to the Serra dos Órgãos and Itatiaia areas, both in Mantiqueira Range in the Atlantic Forest domain. The areas of occurrence of these two species therefore are separated by at least 1,000 km.

## Acknowledgements

This paper is part of the Doctoral thesis of the first author. The authors would like to thank Marcelo Trovó and Benoit Loeuille for their critical comments; the curators and staff of the herbaria visited; Maria Alice Rezende for the illustrations; Claudio Nicoletti de Fraga for providing the photographs; Rosemeri Morokawa for her help with the map; Roy Funch for the English revision; CNPq, CAPES, FAEPEX, FAPESP and FAPERJ for their financial support; and the anonymous reviewers.

## References

- Cabrera, A.L. (1959) Revisión del género *Dasyphyllum* (Compositae). *Revista del Museo de La Plata, Sección Botánica* 38(6): 20–109.
- Cabrera, A.L. (1997) Nota crítica en la tribu Mutisieae (Compositae) para la Flora de Paraguay. *Candollea* 52: 216.
- Cabrera, A.L. & Freire, S. (1998) Compositae V: Asteroideae, Inuleae and Mutisieae. In: Spichiger, R. & Ramella, L. (Eds.) *Flora del Paraguay* 28. Conservatoire et Jardin Botanique de Genève and Missouri Botanical Garden Press, pp. 103–214.
- Cabrera, A.L. & Klein, R.M. (1973) Compositae 1. Tribo Mutisieae. In: Reitz, R. (ed.) *Flora Ilustrada Catarinense*. Herbário Barbosa Rodrigues, Itajaí, pp. 5–20.
- Gardner, G. (1845) Contributions towards a Flora of Brazil, being the distinctive Characters of a Century of New Species of Plants from the Organ Mountains. *London Journal of Botany* 4: 97–136.
- Hind, D.J.N. (1995) Compositae. In: Stannard, B.L. (Ed.) *Flora of the Pico das Almas, Chapada Diamantina, Bahia, Brazil*. Royal

Botanic Gardens, Kew, pp. 175–278.

- Kunth, K.S. (1820) Compositae. In: Humboldt, F.W.H.A., Bonpland, A.J.A. & Kunth, K.S. *Nova Genera et Species Plantarum quas in peregrinatione ad plagam aequinoctialem orbis novi collegerunt Bonpland et Humboldt*. Chez N. Maze, Paris, pp. 1–312.
- Magenta, M.A.G., Semir, J., Heiden, G., Teles, A.M., Souza-Buturi, F.O., Nakajima, J., Pirani, J.R., Monge, M., Ritter, M.R., Roque, N., Esteves, R.L., Esteves, V., Borges, R.A.X. & Biachini, R. (2011) Asteraceae. In: Wanderley, M.G.L., Sheperd, G.J., Martins, S.E., Duarte Estrada, T.E.M., Romanini, R.P., Koch, I., Pirani, J.R., Melhem, T.S., Harley, A.M.G., Kinoshita, L.S., Magenta, M.A.G., Wagner, H.M.L., Barros, F., Lohmann, L.G., Amaral, M.C.E., Bianchini, R.S. & Aragaki, S. (Eds.) *Checklist das Spermatophyta do Estado de São Paulo, Brasil*. *Biota Neotropica* 11(1a). <http://www.biotaneotropica.org.br/v11n1a/pt/fullpaper?bn0131101a2011+pt>.
- Nakajima, J.N. & Semir, J. (2001) Asteraceae do Parque Nacional da Serra da Canastra, Minas Gerais, Brasil. *Revista Brasileira de Botânica* 24(4): 471–478.  
<http://dx.doi.org/10.1590/S0100-84042001000400013>
- Roque, N. & Pirani, J.R. (1997) Flora da Serra do Cipó, Minas Gerais: Compositae — Barnadesieae e Mutisieae. *Boletim de Botânica da Universidade de São Paulo* 16: 151–185.  
<http://dx.doi.org/10.11606/issn.2316-9052.v16i1p151-185>
- Saavedra, M.M. (2010) *Dasyphyllum*. In: Forzza, R.C., Leitman, P.M., Costa, A.F., Carvalho Jr., A.A., Peixoto, A.L., Walter, B.M.T., Bicudo, C., Zappi, D., Costa, D.P., Lleras, E., Martinelli, G., Lima, H.C., Prado, J., Stehmann, J.R., Baumgratz, J.F.A., Pirani, J.R., Sylvestre, L., Maia, L.C., Lohmann, L.G., Queiroz, L.P., Silveira, M., Coelho, M.N., Mamede, M.C., Bastos, M.N.C., Morim, M.P., Barbosa, M.R., Menezes, M., Hopkins, M., Secco, R., Cavalcanti, T.B. & Souza, V.C. 2010. *Catálogo de Plantas e Fungos do Brasil* (1). Andrea Jacobsen & Instituto de Pesquisas Jardim Botânico do Rio de Janeiro, Rio de Janeiro, 871 pp.
- Sagástegui-Alva, A. (1980) Compuestas andino-peruanas nuevas para la ciencia. I. *Boletín de la Sociedad Argentina de Botánica* 19(1–2): 61–68.
- Sagástegui-Alva, A. & Dillon, M.O. (1985) Four new species of Asteraceae from Peru. *Brittonia* 37(1): 6–13.  
<http://dx.doi.org/10.1007/BF02809659>
- Zardini, E.M. & Soria, N. (1994) A new species of *Dasyphyllum* (Asteraceae-Mutisieae) from Paraguay. *Novon* 4: 80–82.