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CHAETANTHERA ACHENO-HIRSUTA (TOMBESI) ARROYO, A.M.R.DAVIES & TILL-BOTTRAUD ELEVATED TO SPECIES, NEW FOR THE FLORA OF CHILE

CHAETANTHERA ACHENO-HIRSUTA *(TOMBESI) ARROYO, A.M.R.DAVIES & TILL-BOTTRAUD ELEVADA A ESPECIE, NUEVA PARA LA FLORA DE CHILE*

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ABSTRACT

Chaetanthera acheno-hirsuta (Tombesi) Arroyo, A.M.R. Davies & Till-Bottraud (Asteraceae: Mutisieae), previously known from the upper limits of the vegetation (>3900m) on the eastern side of the Andes in San Juan Province, Argentina, is cited for Chile from six collections made in the Andes of the III Region (Atacama Region) between 3500-4000 m. The new record for the flora of Chile is based on *Chaetanthera pulvinata* (Phil.) Hauman var. *acheno-hirsuta* Tombesi, here elevated to species. *Chaetanthera acheno-hirsuta* belongs to *Chaetanthera* subgenus *Egania*. Its closest relatives, based on morphological characteristics, are *C. apiculata* (J. Remy) Benth. & Hook.f. and *C. acerosa* (J. Remy) Benth. & Hook.f. It is distinguished from *C. pulvinata* (Phil.) Hauman by its lack of sexual dimorphism, green-black maculate bracts, and densely pubescent achenes.

KEYWORDS: *Chaetanthera pulvinata,* Cordillera de los Andes, flora of Chile, new combination, new record.

RESUMEN

Chaetanthera acheno-hirsuta (Tombesi) Arroyo, A.M.R. Davies & Till-Bottraud (Asteraceae: Mutisieae), previamente conocida cerca del límite superior de la vegetación (> 3900 m) en el lado este de la Cordillera de los Andes en la provincia de San Juan, Argentina, es citada para Chile en base a seis colecciones recogidas en la Cordillera de los Andes de la III Región (Región de Atacama) entre 3500-4000 m. La especie nueva para la flora de Chile está basada en *Chaetanthera pulvinata* (Phil.) Hauman var. *acheno-hirsuta* Tombesi, aquí elevada al nivel de especie. *Chaetanthera acheno-hirsuta* pertenece al subgénero *Egania*. Sus parientes más cercanos, basado en características morfológicas, son *C. apiculata* (J.Remy) Benth. & Hook.f. and *C. acerosa* (J. Remy) Benth. & Hook.f. Se distingue de *C. pulvinata* (Phil.) Hauman por la ausencia de dimorfismo sexual, las brácteas maculatas, verde-oscuras, y los aquenios densamente pubescentes.

PALABRAS CLAVES: *Chaetanthera pulvinata,* Cordillera de los Andes, flora de Chile, nueva combinación, nuevo registro.

INTRODUCTION

Ongoing studies of the molecular phylogeny, systematics, biogeography and reproductive biology of the species of the genus *Chaetanthera* Ruiz & Pav. (Asteraceae: Mutisieae) have confirmed the occurrence in Chile of the entity originally described as *Chaetanthera pulvinata* (Phil.) Hauman var. *acheno-hirsuta* Tombesi (Tombesi 2000).

In 1981 a species of *Chaetanthera*, hitherto unknown in Chile, was collected at 4000 m in the Andes of the III Region of Atacama, from the upper valleys and passes in the area of Laguna Grande and Laguna Chica. Three additional collections of the same entity were made in the same general area in 1983. All were reported in the florula of the area (Arroyo *et al.* 1984). The collections were included (page 10; 1984) with the commentary that the plants probably represented a new species for the genus. Additional material was collected in the following decade, but from somewhat further south in the region.

In 2000, Tombesi described a new variety, *Chaetanthera pulvinata* (Phil.) Hauman var. *acheno-hirsuta* Tombesi, based on material collected from high elevations in the Andes of San Juan Province, Argentina. The paratypes cited in the paper were exclusively Argentinian collections.

After careful examination of images of the type specimen (Instituto de Botánica Darwinion 2003) and exhaustive study, it is our conclusion that *C. pulvinata* var. *acheno-hirsuta* (Figs. 1, 2) corresponds to the entity reported by Arroyo *et al.* (1984) from the western slopes of the Andes in Chile. Accordingly, we report this taxon as a new for the flora of Chile. Additionally, this entity is considered distinctive enough to merit specific status.

Chaetanthera acheno-hirsuta (Tombesi) Arroyo, A.M.R.Davies & Till-Bottraud stat. nov. (Figs. 1, 2).

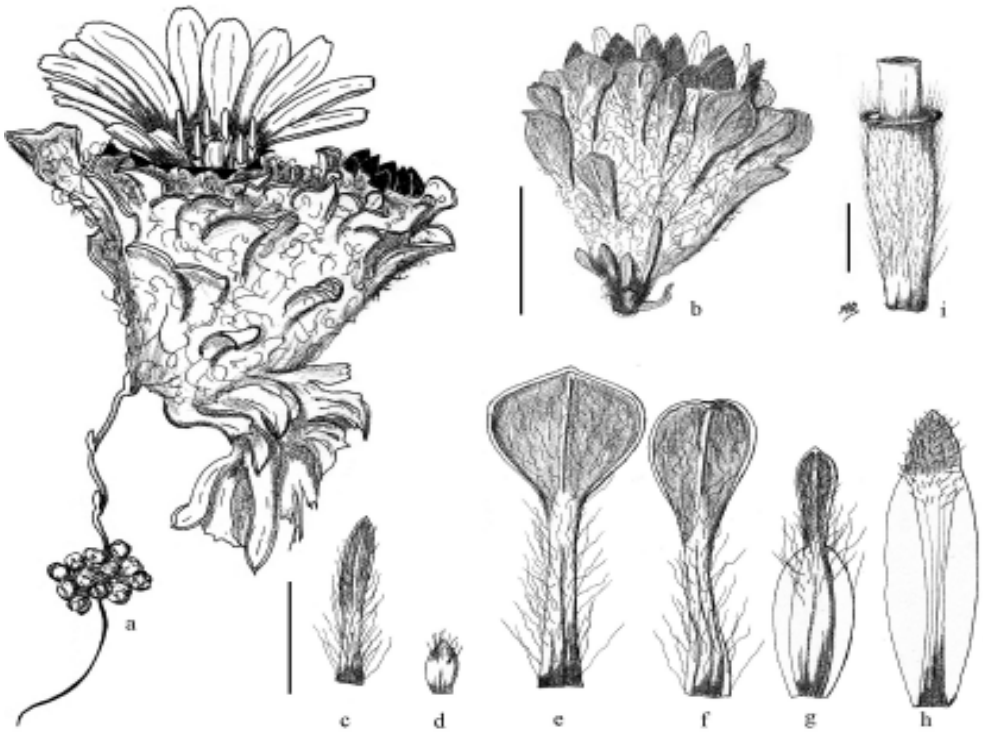

FIGURE 1. *Chaetanthera acheno-hirsuta* (Tombesi) Arroyo, A.M.R. Davies & Till-Bottraud a. Whole plant; b. Capitulum; c, d. Lower leaf and scale from stem; e. Upper stem leaf; f. Outer involucral bract; g. Middle involucral bract; h. Inner involucral bract; i. Achene immature. Scale (a, b, i) = 10 mm; c – h = 5 mm. (Illustration: A.M.R. Davies).

FIGURE 2. *Chaetanthera acheno-hirsuta* (Tombesi) Arroyo, A.M.R. Davies & Till-Bottraud, Quebrada Barriales, III Region, Chile, 3760 m (Photo: I. Till-Bottraud).

Basionym: *Chaetanthera pulvinata* (Phil.) Hauman var. *acheno-hirsuta* Tombesi, Hickenia 3 (20): 69. 2000. Argentina. San Juan, Dpto. Iglesia: Mina Las Carachas, 4050 m.s.m. 20-III-1981, *Nicora,* Guaglianone & Ragonese 8217 Holotype SI!

Plants with above-ground parts to 3 cm. Underground stems long, soft, buried in substrate; glabrous below, lanate above ground, with bud clusters at base; root filamentous. Leaves opposite to rarely alternate, narrowly spathulate to linear. Leaves on peduncle or subtending the capitulum starting with a small scale, rapidly becoming broadly spathulate limbate, pale green, midrib visible, 8-15 (22) mm long, lamina (1)-4 (5.5) mm wide. Lamina sometimes decurrent to petiole rendering spathulate part somewhat indistinct. Dorsal and ventral surfaces densely lanate. Indumentum to 2 mm, hairs shorter towards apex. Apex mucronate. Capitula sessile or shortly pedunculate, gynomonoecious, solitary, 1-2 (3) per plant, (1.3) 1.5-2.0 (2.2) cm wide when open. Peduncles loosely lanate, with 0-few leaves. Small scale or bract subtending capitulum, obovate, 2-4 x 1 mm, shortly mucronate. Disk diameter 6-8 mm (fresh). Outer involucral bracts with alae to ½ way; spathulate (9) 11-13.5 mm long, lamina 2-3.5 mm wide, somewhat conduplicate. Alae 1.5-2.5 mm wide, linear oblong. Bracts getting shorter along series. Dorsal and ventral surfaces densely lanate except in areas with alae, which are glabrescent. Indumentum shorter towards apex. Middle involucral bracts with alae from ½ to nearly entirely alate; 10 mm long, lamina 1-2 mm wide, alae 2.5-3 mm wide, oblong. Inner involucral bracts 1 series, 9-13.5 x 2-3 mm, lanceolate. Apices 3-3.5 mm long, broadly acute, green-black, hirtellous. Pappus 7-8.5 mm long, white, barbellate. Ray florets white, 12-25 (mean 16), female. Corolla 10-11 mm long, corolla tube 4- 4.5 mm, outer ligule 1.5-2 mm wide, inner ligule 0.5 mm, inconspicuous, bifid. Stigmas 7-8 mm long, shortly bifid, green. Disk florets yellowish-green, 27-60 (mean 39), hermaphrodite. Corolla 8 mm, corolla tube 7-7.5 mm. Anthers 5-6 mm (7.5-8.5 mm including filaments). Stigmas 7.5-8.5 mm, lobes 0.5 mm. Achenes to 3.5 mm (immature), turbinate, ± densely hirsute (long simple hairs to 0.5 mm).

DISCUSSION

The presence of subterranean bud clusters together with inner involucral bract apices with clearly differentiated coloured apices place this species firmly in *Chaetanthera* subgenus *Egania* (J. Remy) Reiche Cabrera (1937).

With more intensive study including more collections, the most closely related taxa to *C. acheno-hirsuta* are now considered to be *C. apiculata* (J.Remy) Benth. & Hook.f. and *C. acerosa* (J.Remy) Benth. & Hook.f. rather than *C. pulvinata* (Phil.) Hauman. This relationship is supported by several characters, which are laid out in Table I. The apical morphology of the inner involucral bracts of the first three taxa is quite uniform, with green-black maculate, sparsely hirtellous triangular acute to apiculate apices. The achenes are often covered with simple, filamentous hairs (0.5 mm), and when glabrous have a non-descript surface. The habit is lax, with leaves sparsely arranged along the stems and the peduncles. Additionally, these taxa are always gynomonoecious. In contrast, *C. pulvinata*, also a high Andean species, has shortly triangular inner involucral bract apices that are brown-black maculate ± a narrow translucent margin. The achenes are always glabrous with a distinctly tesselated surface (Davies & Facher 2001). The habit is more or less lax, with lanate stems, but the upper leaves are densely whorled in a rosette below the capitulum. Furthermore, *C. pulvinata* can be sexually dimorphic.

TABLE I. Comparison of *C. acheno-hirsuta*, *C. apiculata*, *C. acerosa* and *C. pulvinata*.

Taxon	Bracts	Achenes	Habit	Leaves
C. acheno-hirsuta	Maculate black-green; triangular acute; sparsely pubescent	Pubescent, hairs long, simple, filamentous (0.5 mm)	Leaves lax, sparsely arranged	Broadly spathulate, limbate; lanate
C. apiculata	Maculate black-green; triangular apiculate; sparsely pubescent	When pubescent, then long, simple, filamentous (0.5 mm)	Leaves lax, sparsely arranged	Broadly linear, apices ± dilated, apiculate, limbate; lanate
C. acerosa	Maculate black-green; triangular acute; sparsely pubescent	When pubescent, then long, simple, filamentous (0.5 mm)	Leaves lax, sparsely arranged	Narrowly linear, apiculate, lightly limbate; lanate at bases, hirtellous on lamina
C. pulvinata	Maculate brown-black ± translucent margins; triangular acute; sparsely pubescent	Glabrous, tesselated achene surface	Clusters of leaves densely whorled below capitula	Narrowly linear, apices ± dilated, obtuse; lanate

In Chile *C. acheno-hirsuta* inhabits consolidated high-elevation fell field habitats of gentle slope between 3500 and 4000 m.a.s.l. It grows at the base of small rocks, or in the cracks between smaller rocks. So far it has only been collected from the province of Huasco in the Region de Atacama. In Argentina it occurs in the Departamento of Iglesia in San Juan Province, which lies immediately east of the III Region. Thus, the species has a highly restricted, endemic distribution in the arid sector of the high South American Andes.

In Chile [and San Juan, Argentina - fide Katinas 1996] the closely related species, *C. acerosa*, occurs sympatrically with *C. acheno-hirsuta*. The two species may even be found growing close to one another. The pale green, broadly spathulate, limbate lanate leaves of *C. acheno-hirsuta* provide the best character for recognizing the species. The individuals also typically have 1 to few capitula per plant. *C. acerosa* on the other hand has a more open, lax habit, has stiff, bright-olive green, linear leaves and is more coarsely pubescent. Individuals of the

latter species also tend to have more and smaller capitula (5-10 per plant). The apparent surface rosette habit of *C. acheno-hirsuta* superficially resembles *C. pusilla* (D.Don) Hook. & Arn. (subgenus *Oriastrum*), a dwarf annual species from the Metropolitana Region, Chile and Mendoza Province, Argentina. However, *C. pusilla* is easily distinguished from *C. acheno-hirsuta* by its distinctive dark wine red to pale orange-pink bract apices, a lack of clustered subterranean buds and pyriform achenes densely coated with globular twin hairs.

MATERIAL EXAMINED

CHILE, III REGION Quebrada Cantarito, entre Quebrada Marancel y Portezuelo de Cantarito, 4000 m (28º37'S-69º47'W), M.T.K. Arroyo 81612, 12-II-1981 (CONC); Quebrada Cantarito, entre Quebrada Marancel y Portezuelo de Cantarito, 3500-4300 m, (28º37'S-69º47'W), C. Marticorena, M.T.K. Arroyo & C. Villagrán 83473, 23-I-1983 (CONC), Quebrada Cantarito, Portezuelo Vizcachas, 3900 m (28º42'S-69º45'W), C. Marticorena, M.T.K. Arroyo & C. Villagrán 83576, 26-I-1983 (CONC); Entre Laguna Chica y Portezuelo Yerba Buena, lado de Laguna Chica 3400-3950 m (28º48'S-69º50'W), C. Marticorena, M.T.K. Arroyo & C. Villagrán 83590, 27-I-1983 (CONC); Quebrada Los Barriales, 4000 m (29°15'-70°03'), G. Arancio, F. Squeo & [P.?] León 238, 21-I-1994, (CONC, ULS); Quebrada Barriales, Mina de Pascua Lama, 3760 m (29º15'48.9"S-70º03'46.8"W), M.T.K. Arroyo & I. Till-Bottraud 25093, 24-I-2003 (CONC, SGO, M).

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