

# Contributions to the Andean *Senecioneae* (*Compositae*), part III: A new species of *Senecio* from northern Chile

Joel CALVO<sup>1,\*</sup> & Andrés MOREIRA-MUÑOZ<sup>2</sup>

<sup>1,2</sup>Instituto de Geografía, Facultad de Ciencias del Mar y Geografía, Pontificia Universidad Católica de Valparaíso, Av. Brasil 2241, 2362807 Valparaíso, Chile.

\*Corresponding author: [calvocasas@gmail.com](mailto:calvocasas@gmail.com), <https://orcid.org/0000-0003-2340-7666>

<sup>2</sup>[andres.moreira@pucv.cl](mailto:andres.moreira@pucv.cl), <https://orcid.org/0000-0002-9136-1391>

**Abstract.** A new species of *Senecio* L. from northern Chile is described on the basis of morphological evidence. It is a caespitose species characterized by displaying vertical hypogeous stems, fleshy spatulate leaves, subentire or distantly and shallowly dentate, discoid capitula with yellowish disc florets, anthers, and style branches, and long-pilose achenes. It is compared with the morphologically related species *S. algens* Wedd., *S. altoandinus* Cabrera, and *S. cremnicola* Cabrera. Detailed pictures of living plants are provided.

**Keywords.** Andes, Antofagasta, *Asteraceae*.

**Resumen.** Se describe una especie nueva de *Senecio* L. del norte de Chile debido a su particular morfología. Es una especie cespitosa a la que caracterizan sus tallos hipogeos y verticales, sus hojas espatuladas, carnosas, subenteras o somera y superficialmente dentadas, sus capítulos discoides con flósculos, anteras y ramas estilares amarillentos y el largo indumento de sus aquenios. Su morfología se compara con la de las especies afines *S. algens* Wedd., *S. altoandinus* Cabrera y *S. cremnicola* Cabrera. Se presentan fotografías detalladas de la nueva especie en su hábitat.

**Palabras clave.** Andes, Antofagasta, *Asteraceae*.

How to cite this article: Calvo J. & Moreira-Muñoz A. 2019. Contributions to the Andean *Senecioneae* (*Compositae*), part III: A new species of *Senecio* from northern Chile. *Anales del Jardín Botánico de Madrid* 76 (2): e084. <https://doi.org/10.3989/ajbm.2522>

Title in Spanish: Contribución a las *Senecioneae* andinas (*Compositae*), parte III: Una especie nueva de *Senecio* del norte de Chile.

Received: 25–III–2019; accepted: 3–VI–2019; published on-line: 28–X–2019; Associate Editor: I. Álvarez.

## INTRODUCTION

The genus *Senecio* L. (*Asteraceae* Bercht. & J.Presl, *Senecioneae* Cass.) in Chile was comprehensively revised for the first time by the Argentinian botanist A.L. Cabrera (Cabrera 1949). He recognized 208 species, which organized under an infrageneric classification based on sections and subsections. A few contributions were done afterwards, mainly concerning the description of new species or new records (e.g., Ricardi & Marticorena (1964); Marticorena & Quezada (1977); Moreira-Muñoz & al. (2016); Muñoz-Schick & al. (2016)). Recently, the new catalogue of the Chilean flora recorded 233 *Senecio* species (Rodríguez & al. 2018). These numbers are nevertheless tentative and a modern taxonomic revision is still lacking.

As part of ongoing studies on the genus *Senecio* in the Andes (Calvo & Fuentes 2018; Beltrán & Calvo 2019), we here describe a new species from northern Chile on the basis of morphological evidence. It belongs to the group of the caespitose *Senecio* and keeps morphological affinities with *S. algens* Wedd., *S. altoandinus* Cabrera, and *S. cremnicola* Cabrera. The new species is only known from El Loa Province (Antofagasta, Chile) and thrives in the desertic ‘puna’ ecoregion. Its presence in the neighboring

regions of southern Sur Lípez (Potosí, Bolivia) and Jujuy (northwestern Argentina) is likely, and therefore, further field work in these areas is needed in order to improve the knowledge on its variability and distribution area.

## MATERIAL AND METHODS

This contribution is the result of an intensive revision of herbarium specimens, bibliography, and recent field work carried out in El Loa Province (Antofagasta, Chile). The herbaria visited were CONC and SGO; herbarium acronyms follow Thiers (2019). The main regional treatments consulted for *Senecio* were Cabrera (1949, 1985) and Freire & al. (2014).

## RESULTS AND DISCUSSION

***Senecio toconaoensis*** J.Calvo & A.Moreira sp. nov. Type: Chile, región de Antofagasta, El Loa, Toconao, cordón S de los cerros de La Pacana, 23°9'28" S, 67°27'56" W, 4880 m a.s.l., 4–III–2019, J. Calvo 7911 leg. (holo-: SGO; iso-: CONC, MA, Z). Figs. 1 and 2.

LSID: [urn:lsid:ipni.org:names:77201991-1](http://urn:lsid:ipni.org:names:77201991-1)



**Fig. 1.** *Senecio toconaoensis* J. Calvo & A. Moreira sp. nov.: **a**, habit; **b**, capitulum; **c**, subentire leaf; **d**, rather dentate leaf; **e**, hypogeous stems; **f**, achene [*J. Calvo 7911* leg.; scales: c = 5 mm; d = 6 mm; e = 1 cm; f = 1 mm].

Within the discoid caespitose species with yellowish anthers, style-branches, and corollas, this species differs in its vertical hypogeous stems, fleshy spatulate leaves, entire or with a few incipient teeth, usually with the distal margin undulate or strongly recurved, its solitary capitula subsessile or short-pedunculate, and the long-pilose achenes.

Caespitose perennial herb. Rhizome 1–3 cm long, oblique. Stems 3–8 cm long, hypogeous nearly the whole length, usually with remnants of old leaves, glabrous, plainly white. Leaves spatulate, long-attenuate into a pseudopetiole, glabrous. Leaf lamina 6.5–9 × 3.6–7 mm, rounded at the apex, attenuate at the base, entire or with 3–6 incipient teeth on the margin, usually undulate or strongly recurved at the distal part (in living plants), with the midrib barely conspicuous, fleshy. Capitulum discoid, solitary, terminal, subsessile or short-pedunculate; involucre 7–9 × 6–7 mm. Involucral bracts 13(14), linear-oblong, 5.6–7 × 1.3–2.3 mm, smooth, glabrous. Supplementary bracts 1–2, linear-subulate, 3–4.5 × 0.4–0.8 mm, a third to a half as long as the involucral bracts, glabrous. Disc florets c. 55, 4.7–5.8 × 0.6–0.9 mm, 5-lobed, yellowish with the lobes deep-red. Anthers rounded, yellowish; filament collar balusterform. Style branches truncate with a crown of

sweeping hairs, yellowish except for the abaxial surface that is deep-red. Achenes 3.1–3.8 × 0.7–0.8 mm, long-pilose, with trichomes 0.3–0.35 mm long, white; pappus 4.5–5.6 mm long, barbellate, white. Chromosome number: unknown.

*Distribution and habitat*.—Chile (Antofagasta). Until now, *S. toconaoensis* sp. nov. is only known from the southern part of La Pacana hills, located in El Loa Province. It grows in extremely arid screes from the desertic ‘puna’ ecoregion, near the vegetation limit at elevations between 4800 and 5000 m a.s.l. (Fig. 2). The remarkably few species observed thriving in the same habitat were *Menonvillea virens* (Phil.) Rollins (*Cruciferae* Juss.), *Nototriche* sp. (*Malvaceae* Juss.), *Oriastrum polymallum* Phil. (*Compositae*), and *S. pucheii* Phil. (*Compositae*).

*Phenology*.—Collected in bloom in March.

*Etymology*.—The epithet refers to the community of Toconao, whose municipality encompasses the mountains where the plant was collected. The toponym Toconao comes from the extinct language Kunza (or ‘atacameño’) and it means stony place (‘tocknar’ being stone, and ‘ao’, place).

*Discussion*.—This species might be confused with *S. algens*, *S. altoandinus*, and *S. cremnicola*. Indeed, the single collection of the new taxonomic entity that was studied during the herbarium studies was identified as *S. algens* (CONC 139358). Although this latter species has a wide distribution and is quite variable, the characters regarding the leaf lamina, stems, and the achenes are useful for a proper identification. *Senecio algens* has the leaf lamina narrower (2–5 mm vs. 3.6–7 mm) and plane (vs. distally undulate or strongly recurved). It develops epigeous



Fig. 2. *Senecio toconaoensis* J.Calvo & A.Moreira sp. nov. Habitat.

stems, rather elongated that lie on the ground. In contrast, *S. toconaoensis* sp. nov. has vertical hypogeous stems arising from the rhizome, which usually bear remnants of old leaves and are plainly white; at the surface the leaves grow clasped on the ground conferring a rosette-like habit. The achene indumentum is an unequivocal character to discriminate them from each other (glabrous in *S. algens* vs. long-pilose in *S. toconaoensis* sp. nov.).

*Senecio altoandinus* differs from the new species in the achene indumentum (papillose-pubescent vs. long-pilose), the more conspicuous denticulation of the leaves, and the epigeous prostrate woody stems. It is only known from a few collections made in the Humahuaca range (Jujuy, Argentina).

The leaves of *S. cremnicola* also slightly resembles those of the new species, however, it has glabrous achenes (vs. long-pilose) and 18–20 involucre bracts (vs. 13). It is considered an endemic species to La Rioja Province in Argentina (Freire & al. 2014).

#### ACKNOWLEDGEMENTS

We are very grateful to the curators and staff of the herbaria mentioned in the text. This work has been funded by FONDECYT from Chile by means of a postdoctoral fellowship of the first author (project N° 3170270).

#### REFERENCES

- Beltrán H. & Calvo J. 2019. *Senecio carhuanishoensis* H.Beltrán & J.Calvo sp. nov. (*Asteraceae*, *Senecioneae*), una nueva especie del centro de Perú. *Anales del Jardín Botánico de Madrid* 76 (1): e077. <https://doi.org/10.3989/ajbm.2515>
- Cabrera A.L. 1949. El género *Senecio* en Chile. *Lilloa* 15: 27–501.
- Cabrera A.L. 1985. El género *Senecio* (*Compositae*) en Bolivia. *Darwiniana* 26: 79–217.
- Calvo J. & Fuentes A.F. 2018. Three new caespitose species of *Senecio* (*Senecioneae*, *Compositae*) from Central Andes. *Phytotaxa* 375 (1): 70–80. <https://doi.org/10.11646/phytotaxa.375.1.3>
- Freire S.E., Ariza Espinar L., Salomón L. & Hernández M.P. 2014. *Senecio* L. In Zuloaga F.O. & al. (eds.), *Flora Argentina. Flora vascular de la República Argentina* 7 (3): 27–220. Instituto de Botánica Darwinion, Buenos Aires.
- Marticorena C. & Quezada M. 1977. Una nueva especie de *Senecio* (*Compositae*) para Chile. *Boletín de la Sociedad de Biología de Concepción* 51 (1): 149–152.
- Moreira-Muñoz A., Muñoz-Schick M., Marticorena A. & Morales V. 2016. Catálogo de *Asteraceae* (*Compositae*) de la Región de Arica y Parinacota, Chile. *Gayana Botánica* 73 (2): 226–267. <https://doi.org/10.4067/s0717-66432016000200226>
- Muñoz-Schick M., Moreira-Muñoz A. & de Trenqualye A. 2016. *Senecio guatulamensis*, nueva especie de *Asteraceae* endémica de Chile. *Gayana Botánica* 73 (1): 166–169. <https://doi.org/10.4067/s0717-66432016000100020>
- Ricardi M. & Marticorena C. 1964. Compuestas nuevas o interesantes para Chile. *Gayana Botánica* 11: 3–28.
- Rodríguez R., Marticorena C., Alarcón D., Baeza C., Cavieres L., Finot V.L., Fuentes N., Kiessling A., Mihoc M., Pauchard A., Ruiz E., Sánchez P. & Marticorena A. 2018. Catálogo de las plantas vasculares de Chile. *Gayana Botánica* 75 (1): 1–430. [http://www.gayanabotanica.cl/pdfs/2018/1/01\\_Rodriguez\\_etal\\_2018.pdf](http://www.gayanabotanica.cl/pdfs/2018/1/01_Rodriguez_etal_2018.pdf)
- Thiers B. 2019 [continuously updated]. Index Herbariorum: A global directory of public herbaria and associated staff. New York Botanical Garden's Virtual Herbarium. Website: <http://sweetgum.nybg.org/science/ih/> [accessed: 31 May 2019].