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

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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.

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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.

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**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 scree of 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. puchei* 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

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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.).

*Seneio 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 involucral bracts (vs. 13). It is considered an endemic species to La Rioja Province in Argentina (Freire & al. 2014).

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