Taxonomic notes, distribution, and conservation status of two species of *Asteraceae* firstly recorded for Colombia

Antoni Buira¹*, Carlos A. Velasco² & Joel Calvo³

¹Real Jardín Botánico de Madrid CSIC, Pza. de Murillo n.º 2, 28014 Madrid, Spain.
²Herbario Universidad del Cauca-CAUP, Cra 2 n.º 1A-25 Popayán, Colombia.
³Instituto de Geografía, Facultad de Ciencias del Mar y Geografía, Pontificia Universidad Católica de Valparaíso, Avda. de Brasil 2241, 2362807 Valparaíso, Chile.

*Author for correspondence: abuira@rjb.csic, https://orcid.org/0000-0002-2775-7017
²caavelasco@unicauca.edu.co, https://orcid.org/0000-0002-5090-541X
³calvocasas@gmail.com, https://orcid.org/0000-0003-2340-7666

Abstract. As a result of herbarium studies and field work carried out by the signing authors, two *Asteraceae* species are recorded for the first time in Colombia, i.e., *Floscaldasia azorelloides* Sklenář & H.Rob. (tribe Astereae) and *Senecio subinvolucratus* Cuatrec. (tribe Senecioneae). Taxonomic notes, pictures, conservation status, and distribution maps are provided for both species.

Keywords. Compositae, Floscaldasia, Senecio.

INTRODUCTION

The *Asteraceae* Bercht. & J.Presl is the second largest family of the Colombian flora, consisting of c. 1,303 species represented by 258 genera (Ávila & al. 2018). It is one of the most important plant groups in the páramo and the montane forest ecosystems, becoming the most diverse family along the altitudinal gradient of 3000–5000 m a.s.l. (Bernal 2016).

Herein, we record two new species of *Asteraceae* for the Colombian flora belonging to the tribes *Astereae* Cass. and *Senecioneae* Cass.: *Floscaldasia azorelloides* Sklenář & H.Rob. and *Senecio subinvolucratus* Cuatrec. respectively. Both were considered hitherto endemic to Ecuador. These new findings were possible due to collection trips carried out by the authors, which highlights the importance of the field work, and the revision of herbarium specimens. Taxonomic notes, pictures, conservation status, and distribution maps are provided for both species.

MATERIAL AND METHODS

This contribution is the result of an intensive review of the published bibliography, and the revision of specimens kept at CAUP, COL, QAP, QCA, and QCNE. Furthermore, photographs of specimens from other institutions were studied: F, MO, UDBC, and US; herbarium acronyms follow Thiers (2018). The conservation status of both species —considered endemic to Ecuador— was reassessed following the IUCN methodology, according to *IUCN Red List Categories and Criteria*, version 3.1 (IUCN 2001). Distribution maps were prepared using QGIS version 3.0.1 (QGIS Development Team 2018), and geographical coordinates were obtained from herbarium specimens.

RESULTS AND DISCUSSION


Tiny rosetteiform perennial herb with ramified creeping rhizomes. It is well characterized by its 3-lobed leaves, the solitary terminal capitula, which are subsessile in bloom.
and become long pedunculate as time passes, and the smooth bristles of the pappus (fig. 1).

**Distribution and habitat.**—In Ecuador it is known from four Andean localities in the northern half of the country—Sara-Urco, Yuibug-Paiacajas, Hermoso and El Altar mounts—, where it forms loose mats in shallow, wet, and sandy substrata on both metamorphic and igneous bedrock of the upper superpáramo —sensu Cleef (1978)—, between elevations of 4200–4500 m a.s.l. (Sklenář & Robinson 2000). The new Colombian locality was found in the summit of the Sotará Volcano—Cauca Department, southern Central Andes—, about 300 km away from the northernmost Ecuadorian known population (fig. 2). The species was found thriving in moist sandy soils around igneous rocks, with sparse surrounding vegetation dominated by *Calamagrostis* sp., *Halenia elata* Wedd., *Halenia elata* var. *mollis* (Kunth) P.Peris & U.Krucka, *Phlegmariurus* cf. *rubus* (D.C.Hook.) B.Øllg., *Xenophyllum humile* (Kunth) V.A.Funk, and *Xenophyllum sotarense* (Hieron.) V.A.Funk.

**Conservation status.**—It was catalogued as ‘Vulnerable D2’ (Barriga & al. 2011) due to its low number of known locations. This new Colombian locality, besides a recent collection in Central Ecuador—P. Sklenář 13145 leg., QCA—, has considerably increased the extent of occurrence and the number of known populations. While it is still a rare species, it does not meet the criteria to be considered as ‘Vulnerable’, since the number of known locations is over five. Consequently, *Floscaldasia azorelloides* is qualified as ‘Near Threatened’.

**Remarks.**—The 3-lobed leaves are very useful to distinguish this species from the other members of the genus, i.e., *Floscaldasia hypsophila* Cuatrec. The genus *Floscaldasia* Cuatrec. is strictly endemic to the páramo and consists of only two species that thrive in Colombia and Ecuador.


---

**Fig. 1.** *Floscaldasia azorelloides* Sklenář & H. Rob.: a, rosette and receptacle after the seed dispersal; b, leaf; c, capitulum with some leaves; d, disc floret without ovary and pappus; e, ray floret without ovary and pappus; f, disc floret; g, ray floret. [A. Buira, J. Calvo and C.A. Velasco 7638 leg. (MA 923838); drawing by A. Buira.]
Two species of Asteraceae firstly recorded for Colombia

Scandent subshrub characterized by displaying discoid, homogamous, nodding capitula, supplementary bracts at the base of the involucre as a calyculus, and penicillate style branches. It has c. 13 involucral bracts and supplementary bracts usually not adpressed to the capitulum and very conspicuous (fig. 3).

Distribution and habitat.—Senecio subinvolucratus occurs from Cotopaxi —northern Ecuadorian Andes— to Puracé —southern Colombian Andes—, growing from the montane forest to the páramo —sensu Cleef 1978), between elevations of 3200–4550 m a.s.l. It has to be noted that the distribution map (fig. 4) of Senecio subinvolucratus provided in this work is not exhaustive and further Colombian herbarium material should be revised in order to accurately delimit its distribution area —see Remarks section below.

Conservation status.—It was catalogued as ‘Endangered B1ab(iii)’ —Barriga (2011); sub Aetheolaena subinvolucrata— since only two collections were considered when it was evaluated. Both the current extent of occurrence and the number of known localities show that it is a widespread species and should be treated as ‘Least Concern’.

Remarks.—This species, which belongs to the informal ‘Senecio group Lasiocephalus’ (Calvo & Freire 2016), is morphologically close to Senecio patens (Kunth) DC. Indeed, it has been frequently misidentified as the latter species. They can be basically differentiated by the shape and arrangement of the supplementary bracts. Senecio subinvolucratus displays lanceolate to broadly lanceolate supplementary bracts, clearly

Fig. 2. Distribution map of Floscaldasia azorelloides Sklenár & H.Rob. [open dot, new record; closed dots, previous records].

Fig. 3. Discussed species of Senecio L.: a, b, S. subinvolucratus Cuatrec.; c, S. patens (Kunth) DC. [a, Cauca, southern Colombia, J. Calvo 7669 leg. (CAUP); b, c, Carchi, northern Ecuador; photographs by J. Calvo.]

Fig. 4. Distribution map of Senecio subinvolucratus Cuatrec. [open dot, new record; closed dots, previous records].
patent or even slightly reflexed—not adpressed to the capitulum—, and arising from the same level at the base of the capitulum (fig. 3). In contrast, the supplementary bracts of Senecio patens are narrower, almost linear, usually adpressed to the capitulum or almost so, and arising from different levels at the base of the capitulum. This latter feature makes that the supplementary bracts of Senecio patens seem imbricate or multi-seriate, and therefore, it is usually difficult to differentiate between the supplementary bracts and the uppermost synflorescence bracts of the pedicel. All the studied specimens of Senecio subinvolucratus have capitula with 13 involucral bracts, while in Senecio patens the number ranges from 11 to 13. These species are sympatric, which means that a detailed study of the aforementioned characters is required to properly identify them. Until now, Senecio subinvolucratus was only recorded from Ecuador (Salomón & al. 2018) although Calvo & Freire (2016) pointed out the possible presence in Colombia on the basis of the Ecuadorian localities near the border. The field work carried out in southern Colombia has enabled us to confirm that Senecio subinvolucratus also occurs in this country. A later revision of some herbarium specimens of this group revealed that Senecio subinvolucratus was already collected in Colombia but misidentified as Senecio patens.


ECUADOR. Carchi: 11.4 km NE of El Ángel on road toward Tulcán, 0°38′ N 77°53′ W, 3240 m a.s.l., 13–IX–1990, J. Jaramillo et al. 3175 leg. (QCA); Tabacundo, lagunas Mojanda, 0°3′ N 77°59′ W, 4350 m a.s.l., 29–X–2010, P. Sklenář 9103 leg. (QCA); n side of nevado Cayambe, 0°3′ N 77°59′ W, 4300 m a.s.l., 6–VIII–2004, P. Sklenář 8100 leg. (QCA); purcu Ruccu Pichincha, 0°9′ S 78°33′ W, 4550 m a.s.l., 29–X–2010, P. Sklenář 9313 leg. (QCA); n side of nevado Cayambe, quebrada Angurea, 0°3′ N 77°59′ W, 4220 m a.s.l., 3–XI–2007, P. Sklenář and E. Rejzková 10715 leg. (QCA)

ACKNOWLEDGEMENTS

We are grateful to the curators of the herbaria mentioned in the text. Special thanks to Bernardo Ramírez —CAUP— for all the provided facilities. Andrés F. Bohórquez-Osorio and Laurent Raz —COL— kindly attended our queries. This work has partially been funded by FONDECYT from Chile by means of a postdoctoral fellowship of the last author —project N3170270.

REFERENCES


