**Senecio scapioides** (Compositae: Senecioneae: Senecioniinae): a new species from the Departamento de Boyacá, in Andean Colombia

José Aguilar-Cano¹ & D. J. Nicholas Hind²

**Summary.** Routine use of the virtual herbarium of the collections in COL (Instituto de Ciencias Naturales de la Universidad Nacional de Colombia) revealed the presence of an as yet undescribed species of *Senecio* amongst the material of *Senecio adglacialis* and *S. leucanthemoides*. Following subsequent herbarium studies and fieldwork, *Senecio scapioides* (Compositae: Senecioneae: Senecioniinae), from the Departamento de Boyacá, in Andean Colombia, was recognised and is described and illustrated; it is compared with *S. adglacialis* and *S. leucanthemoides*. Notes on its distribution and habitat, conservation status, phenology, and etymology are also provided, and the distribution of the three species mapped.

**Resumen.** Revisiones rutinarias del herbario virtual de las colecciones en COL (Instituto de Ciencias Naturales de la Universidad Nacional de Colombia) reveló la presencia de una especie aún no descrita de *Senecio* entre el material de *Senecio adglacialis* y *S. leucanthemoides*. Como resultado del trabajo de herbario y campo subsiguientes, *Senecio scapioides* (Compositae: Senecioneae: Senecioniinae), del Departamento de Boyacá, en los andes colombianos, fue reconocida e ilustrada; la nueva especie se compara con *S. adglacialis* y *S. leucanthemoides*. Adicionalmente se discute su distribución y hábitat, estado de conservación, fenología y etimología, así como el mapa de distribución geográfica de las tres especies.

**Key Words.** Asteraceae, checklist, digitisation, Flora of Colombia.

---

**Introduction**

In 2015, one of the authors (DJNH) reassessed the status of the Compositae in published Floras, checklists and available related databases. During that exercise, the available database for the checklist of the Colombian Flora (Bernal et al. 2015) was reassessed for its completeness (of both genera and species), for the Compositae. At that time, 230 genera (together with 7 splits from *Vernonia* Schreb.), including 1274 species, this represented 523 endemic species (41.1% of the total of Compositae), and equivalent to 5.6% of the Flora’s angiosperm total. However, a significant number of taxa (both genera and species) were missing from the database; this re-assessment was put on hold until mid-2017. Whilst the number of genera remains the same (with some added and others deleted), the current estimates are 1260 species (excluding purely cultivated species), including 582 endemics (46.3%).

In 2016, the Royal Botanic Gardens, Kew, became a partner in a joint programme, Colombia Bio (Colombia BIO 2016), established by ColCiencias (the Colombian Administrative Department of Science, Technology and Innovation), and aimed at increasing knowledge of Colombia’s biodiversity. This partnership involves the Instituto de Investigación de Recursos Biológicos Alexander von Humboldt (FMB = Herbario Federico Medem Bogotá), and the Universidad Pedagógica y Tecnológica de Colombia; Kew’s involvement is funded in part by the British Council (via BEIS = Department for Business, Energy & Industrial Strategy, UK). As a subset of Colombia BIO, Boyacá Bio is a regional programme which Kew has become directly involved with. The intention is to provide checklists of some of the more important families of flowering plants (Araceae, Leguminosae, Myrtaceae) where Kew has some expertise, and often in collaboration with Colombian researchers, for the Departamento de Boyacá. The experience of one author (DJNH) in creating annotated systematic checklists (see Hind 2011, for an unpublished version of one for Bolivia), was then used to create a similar style of preliminary checklist of the Compositae for the Departamento de Boyacá, Colombia, en route to a full draft list of the Compositae of Colombia.

---

¹ Instituto de Investigación de Recursos Biológicos Alexander von Humboldt, Herbario FMB, Carrera 8 # 15-08, Claustro de San Agustín, Villa de Leyva, Colombia. e-mail: jaguilar@humboldt.org.co

² Herbarium, Royal Botanic Gardens, Kew, Richmond, Surrey, TW9 3AE, UK. e-mail: n.hind@kew.org
supplementing the published Catálogo (Bernal et al. 2016a, b).

Whilst the second author (DJNH) constructed the Compositae checklist for the Departamento, constant checks were made against the virtual herbarium of the Instituto de Ciencias Naturales de la Universidad Nacional de Colombia (= COL). These were primarily concerned with a visual confirmation that the determinations of the material were correct, as well as supplying supplementary information to be used in the checklist (e.g. altitude of collections, habit and habitat, and flowering time). At present, following the second author’s listing, there are 23 native or native and naturalised genera from the tribe Senecioneae present in Colombia. The two largest genera are the shrubby Monticalia C.Jeffrey (45 spp. — c.f. no accepted species in Avila et al. 2016; 32 spp. endemic) and lianescent Pentacalia Cass. (46 spp. — cf. 103 spp. in Bernal et al. 2016a, b; 34 spp. endemic); Senecio L. (mostly perennial stoloniferous herbs in Colombia) is the third largest with 37 spp. recorded to date (compared to 43 spp. in Avila et al. 2016; 24 spp. endemic), of which an estimated 24 spp. are considered endemic to the country. Within Boyacá only 15 genera have been recorded, although the same genera are foremost, with Monticalia the largest (19 spp., 13 spp. endemic) and Pentacalia with only 9 spp. (6 spp. endemic), except that Senecio is the second largest (17 spp.), of which 11 spp. are endemic.

However, it was during that process that it became clear that within Senecio some imaged collections did not belong to the taxa to which they had been determined. Most of the senecios in Boyacá are high altitude species (3,000 – 5,000 m, rarely down to 2,000 m) and, excluding the weedy S. vulgaris L. (which is only present in its discoid form in Colombia — e.g. Cuatrecasas 13658, Díaz-Piedrahita et al. 958, Knoth 3379, Velasco 184), 75% of them possess radiate capitula, together with one variety of S. comosus Sch.Bip.; half of the radiate species have yellow ray limbs, the others purple or carmine-coloured. All of the discoid-headed taxa possess yellow corollas. Material determined as S. leucanthemoides Cuatrec., other than the type collection, Cuatrecasas et al. 12050 (and the contemporaneous Cuatrecasas et al. 12055), was clearly not conspecific. In addition, material determined as S. adglacialis Cuatrec. was clearly not that species, but appeared identical to that mis-determined under S. leucanthemoides together with one additional sheet under the easily-recognised S. formosus Kunth. This unmatched material is of a distinctive rhizomatous perennial herb with entire to sparsely serrate sessile leaves and solitary, scapiform radiate capitula, with yellow ray limbs.

The two authors of the present paper made contact, via Dr Steven Sylvester (now Associate Professor at NF, Nanjing Forestry University), during November 2017, and the first author examined the errant herbarium material in COL, as well as the material in FMB, securing a loan of material from FMB to COL, and undertaking fieldwork to check the localities highlighted by the material seen in COL virtual herbarium. It became clear that this material is indeed of a species of Senecio not previously recognised for Colombia and it is formally described below.

**Description**

Senecio scapioides Aguilar-Cano & D.J.N.Hind, sp. nov.

Type: Colombia. Departamento de Boyacá: Municipio de Arcabuco, Cordillera Oriental, Vereda Rupavita, Parque Natural Regional Paramo del Valle, 5°44'45"N, 73°22'7"W, 3696 m, 18 Nov. 2017 (fl.), J. Aguilar-Cano 4434 (holotype FMB, isotype K).

http://www.ipni.org/urn:lsid:ipni.org:names:77206330-1

Rhizomatous, single-stemmed perennial herb up 45 cm tall; basal stem creeping, decumbent, thin-woody, 1.5 – 3.5 mm diam., unbranched. Inflorescence scapiform, erect, 15 – 37 cm tall, purple, indumentum densely arachnoid and sericeous, white, covering stems, abaxial leaf surface and involucre, together with glandular, simple multicellular-uniseriate, whitish hyaline trichomes 1.4 – 2.8 mm long, composed of 22 – 36 (– 42) short-oblong cells, these becoming gradually smaller towards apex, ending in a rounded cell. Basal leaves 15 – 20 together in a loose rosette, these present at anthesis, leaf blade narrowly oblong-oblong to oblong-oblong, 22 – 45 (– 50) × 3 – 6 mm, sessile, lamina base abruptly attenuate and not dilated at node, herbaceous, pubescent especially along margins, on apex and veins, abaxially whitish green to purple, with an arachnoid and sericeous indumentum, adaxially green, midrib purple, margins entire to obscurely dentate and moderately revolute, apex acute-apiculate; cauline leaves 7 – 15, dissimilar to basal leaves, sparser and gradually smaller towards stem apex, sessile, base dilated but not auriculate, blade narrowly oblong-lanceolate or linear-lanceolate, 16 – 28 × 3 – 5 mm, herbaceous, adaxially green, densely sericeous-pubescent, abaxially completely purple and indumentum densely arachnoid and pubescent, midrib purple, margins dentate and strongly revolute, apex acute-apiculate. Capitula heterogamous and radiate, solitary and nodding; involucre campanulate, 10 – 33 × 16 – 43 mm, involucre closely subtended by a calycus, calycular bracts 10 – 12, linear-lanceolate, 13 – 15 × 0.9 – 1.3 mm, herbaceous, green and apically purplish, densely arachnoid and sericeous, apex acuminate with a tuft of short glandular, unicellular trichomes; phyllaries 15, uniseriate, linear-lanceolate, 14 – 17 × 1.3 – 2.5 mm, herbaceous, green, apically purplish, indumentum arachnoid and sericeous,
Margins scarious, 0.4 – 0.8 mm wide, often fimbriate, apex acuminate with a tuft of short, glandular, unicellular trichomes; receptacle weakly convex, 5 – 6 × 9 – 10 mm, surface honeycombed. Ray florets 16 – 18, female and fertile, ray limb elliptic-oblong, 15.1 – 16.2 × 6.2 – 7.2 mm, yellow, glabrate, apex finely 3-dentate, 8-veined, corolla tube yellow, cylindrical, 5.9 – 6.4 mm long, densely pubescent towards apex with simple, glandular, multicellular uniseriate trichomes, 0.3 – 0.6 mm long; staminodes present; style yellow, 5.4 – 8.5 mm long, base dilated, style arms with marginal stigmatic lines, 1.3 – 2.1 mm long, apices truncate, covered by regularly distributed papillae. Achenes ovate, 1.5 – 1.9 × 0.5 – 0.8 mm, covered with short, glandular, unicellular trichomes; carpodipodium symmetrical in a broad ring, 0.2 mm diam.; pappus setae numerous, unequal, biseriate, 4.5 – 7.3 mm long, barbellate, deciduous, white. Disc florets numerous, 90 – 200, hermaphrodite, fertile; corollas bright yellow at anthesis (brownish post anthesis), 8.2 – 9.9 mm long, limb funnel-shaped, tube 3.0 – 3.6 mm long, glabrate, throat 4.4 – 5.4 × 1.1 – 1.5 mm, 5-lobed, triangular-ovate, 0.9 – 1.0 × 0.5 – 0.6 mm, abaxially thickened and adaxially with a tuft of papillae; anthers barely exerted, 2.8 – 3.0 × 0.2 – 0.4 mm, apical anther appendages lanceolate, anther bases calcareate, anther collars 0.8 – 1.0 mm long, in front view 0.2 – 0.3 mm and 0.1 – 0.2 mm wide (proximal and distal measurements respectively), in side view distally flattened and proximally elongate, balusterform, composed of 8 – 9 layers of rectangular cells; filaments flat, inserted below apex of corolla tube and adnate throughout; style yellow, 7.9 – 10.6 mm long, glabrous, style arms 1.7 – 2.2 mm long, with marginal stigmatic lines, apices sub-truncate to obtuse with a tuft of irregularly distributed papillae, longer papillae surrounding apex and shorter papillae covering whole surface of apex. Achenes cylindrical, 1.7 – 2.9 × 0.5 – 0.8 mm, covered with short, glandular, unicellular setulae; carpodipodium a symmetrical broad ring, 0.2 mm diam.; pappus setae numerous, biseriate, unequal, 6.2 – 9.5 mm long, barbellate, deciduous, white.

RECOGNITION. In habit, leaf shape and yellow radiate capitula Senecio scapioides resembles S. adglacialis but the new species differs in having a densely arachnoid indumentum and in being sericeous pubescent on its stems, abaxial leaf surface and involucre (vs sparsely arachnoid and sericeous pubescent), generally longer glandular trichomes (1.2 – 2.5 mm long vs 0.5 – 1.7 mm long), possessing solitary capitula (vs inflorescences densely sub-corymbose, 3 – 5-headed, very rarely single-headed on dwarf specimens, e.g. van der Hammen 1317), an involucre of fewer phyllaries (15 vs 20) and fewer ray florets (16 – 18 vs 24). (Figs 1, 2 & 3), (Table 1).

DISTRIBUTION AND HABITAT. Senecio scapioides occurs in high grass páramos up to the lower limit of the superpáramo, at elevations of 3450 – 4053 m, throughout the north Cordillera Oriental of Colombia, including the páramo complexes of La Rusia, Iguaque-Merchan, Pisba and Tota-Bijagual-Mamapacha in the Department of Boyacá, and the complex of Chingaza in the Department of Cundinamarca, Colombia (Map 1). The species is a solitary terrestrial plant occurring as scattered individuals with low population density on the summits of mountains and on plateaus dominated by grass-stem rosette plant communities of Calamagrostis effusa (Kunth) Steud., Chusquea tessellata Munro (Poaceae) and Espeletia barclayana Cuatrec. (Compositae) (Fig. 3A).

SPECIMENS EXAMINED. COLOMBIA. Boyacá: Municipio de Arcabuco, Cordillera Oriental, Vereda Rupavita, Parque Natural Regional Paramo del Valle, 5°44'45"N, 73°22'7"W, 3696 m, 18 Nov. 2017 (fl.), J. Aguilar-Cano 4434 (holotype FMB, isotype K); Municipio de Belen, Complejo Guantiva-La Rusia, parte alta de la montana, cerca al Boqueron El Consuelo, 6°4'8.3"N, 72°57.7.2"W, 4053 m, 23 Nov. 2017, M. Diazgranados 4443 (COL!, FMB!, K!); Municipio de Duitama, Santa Rosa de Viterbo-Duitama, paramo Pan de Azucar, near the road to El Carmen [5°54'1.56"N, 73°3'20.03"W], 3450 m, 30 Nov. 1998, D. Stanchik 1490 (COL-422996!; FMB-36140!); Municipio de Mongua, Vereda Mongui, alrededores y parte alta del sector Laguna Negra. Parque Natural Regional Siscunsi-Oceta, 5°41'22.8186"N, 72°47'20.8032"W, 3832 m, 29 Nov. 2017, M. Diazgranados 4532 (COL!, FMB!, K!); Municipio de Pesca, Vereda Butaga, Páramo de La Cortadera, Mata Blanca, [5°31'21"N, 73°7'48.8"W], 3750 m, 16 Jan. 1982, Matilde Bejarano de Arcabuco ([COL-242620!]; Municipio de Toca, Páramo Cortadero, boundary with Páramo Siachoque. 5°30'N, 73°15'W, 3650 m, 14 Nov. 1998, D. Stanchik 1380 (COL-421010!; FMB-57827!); Municipio Socotá, Páramo Písba, Alto de Cardon. [6°3'45"N, 72°36'2"W], 3540 m, 11 Feb. 1999, D. Stanchik 2317 (COL-430122!; FMB-38144!). Cundinamarca: Municipio de Fomeque, Páramo de Chingaza, cordilleras vecinas a la laguna y límite con el departamento del Meta [4°31'15"N, 73°42'55"W], 3200 – 3640 m, 1 Nov. 1966, G. Huertas & L. Camargo 6587 (COL-231859!); Municipio de Fomeque, Parque Nacional de Chingaza, orilla del camino a San Juanito, pasando el boqueron [4°29'11"N, 73°46'33"W], 3610 m, 2 Dec. 1981, P. Franco 843 (COL-231859!).

CONSERVATION STATUS. Senecio scapioides is endemic to Colombia, occurring in the Andean páramo, throughout the northern Cordillera Oriental in the Departments of Boyacá and Cundinamarca. The estimated extent of occurrence (5989 km²) is almost within the threshold for Endangered in criterion B1 and its area...
Fig. 1. Senecio scapioides. A habit; B disc floret; C disc floret corolla opened out showing stamen arrangement; D adaxial surface of apex of disc floret corolla lobe; E abaxial surface of apex of disc floret corolla lobe; F anther cylinder opened out; G stamen; H disc floret style; J apex of disc floret style arm showing the truncate apex with a tuft of irregularly distributed papillae; K ray floret; L ray floret style; M calycular bract; N phyllary; P apex of ray floret style arm with apices truncate covered by regularly distributed papillae; Q unicellular trichome from a calycular bract; R unicellular trichome from achene; S multicellular uniseriate trichome from phyllary. All from Aguilar-Cano 4434 (holotype FMB). DRAWN BY GUSTAVO SURLO.
Fig. 2. Senecio scapioides. A phyllary base; B phyllary apex; C ray floret; D ray floret limb; E detail of upper part of corolla tube and base of ray limb; F ray floret style; G disc floret corolla; H apex of mature disc floret. All from M. Diazgranados 4443 (K).
Fig. 3. Senecio scapioides at the type locality. A habitat; B habit; C basal part of stem and basal leaves; D top view of capitulum; E lateral view of capitulum. All from Aguilar-Cano 4434. PHOTOS: JOSÉ AGUILAR-CANO.
Table 1. Table of comparison of selected characters of *Senecio scapioides* and its closest relatives

| Character                        | *adglacialis* | *leucanthemoides* | *scapioides* | *funkii* |
|----------------------------------|---------------|-------------------|--------------|---------|
| distribution                     | ARA, BOY      | SAN               | BOY, CUN     | MAG, VEN |
| elevation (m)                    | 3900 – 4400   | 3800              | 3200 – 4053  | 3345 – 4150 |
| habitat                          | perennial herbs | no data         | subshrubs or suffrutex | perennial herbs |
| total height (m)                 | 0.4 – 0.7     | 0.6 – 1.0         | 0.20 – 0.45  | 0.5 – 1.0 |
| rhizome diam. (mm)               | 4.0 – 8.5     | 3.0 – 6.8         | 1.2 – 2.5    | no rhizome |
| trichome length (mm)             | 0.5 – 1.7     | 0.4 – 0.7         | 1.2 – 2.5    | glabrous |
| basal stem branching             | simple         | branched         | simple      | branched |
| inflorescence stem indumentum    | sparsely arachnoid | sparsely arachnoid and short-pubescent | densely arachnoid and sericeous | glabrous |
| basal leaves: petiole presence   | absent         | present          | absent      | present |
| basal leaves: petiole length (mm)| –             | 40 – 50          | 40 – 55     | –       |
| leaves lamina size (length × width, mm) | 50 – 129 × 5 – 12   | 25 – 65 × 9 – 16  | 22 – 45 (–50) × 3 – 6 | 10 – 80 × 18 – 25 |
| leaves lamina shape              | basal         | elliptic-oblongicate | elliptic   | narrowly elliptic |
| leaves lamina shape              | cauline       | oblong-lanceolate | narrowly-ovate | narrowly elliptic |
| basal leaves: lamina base shape  | basal         | narrowly-attenuate, dilated | abruptly attenuate, not dilated | decurrent |
| cauline                          | clasp, subauriculate | amplexicaul, auriculate | dilated but not auriculate | glabrous |
| leaves lamina indumentum         | basal (adaxial surface) | pubescent         | pubescent   | glabrous |
| cauline (adaxial surface)        | sparsely pubescent | sparsely pubescent, arachnoid | densely pubescent | glabrous |
| basal (abaxial surface)          | glabrescent   | arachnoid and pubescent | arachnoid | arachnoid |
| cauline (abaxial surface)        | sparsely arachnoid and pubescent | sparsely arachnoid and pubescent | densely arachnoid and pubescent | arachnoid |
| inflorescence stem height (m)    | 0.3 – 0.5     | 0.3 – 0.4         | 0.15 – 0.37  | 0.10 – 0.15 |
| inflorescence                    | scapiform, densely sub-corymbiform | scapiform, sub-corymbiform | scapiform, capitula solitary | scapiform, densely corymbiform, leafy throughout |
| number of capitula               | 3 – 5-headed (rarely solitary) | 2 – 5-headed heads solitary | 5 – 4-headed | 16 |
| posture of mature capitula       | nodding       | erect             | erect        | glabrous |
| phyllary indumentum              | pubescent     | puberulent        | densely pubescent | 4.2 – 5.5 × 0.4 – 0.5, |
| calycreular bracts: number       | 10 – 12       | numerous          | 10 – 12      | 8 |
| calycreular bracts: size (length × width, mm) | 10 – 18 × 1.5 – 2.0 | 10 – 15 × 0.6 – 0.9 | 13 × 0.9 – 1.3 | 13 |
| calycreular bracts: shape        | linear-lanceolate | linear-lanceolate | linear-lanceolate | linear |
| phyllaries: number               | 20            | 20                | 15           | 15 – 20 |
| phyllaries: size (length × width, mm) | 15 × 2 – 3    | 13 × 2 – 3        | 14 – 17 × 1.3 – 2.5 | 7.7 – 9.8 × 0.7 – 1.0 |
of occupancy is (348 km²) within the threshold for Endangered in criterion B2. The number and size of the populations is not well-known, and the species could not be accurately assessed based on its population size and decline. Nevertheless, the modern threats to habitat of livestock grazing and frequent fires, as well as climate warming and drying in the northern Andes (Vásquez et al. 2015; IPCC 2014), and more than a third of the Páramos de Boyacá now destroyed, mainly due to the introduction of grasslands and crops (Moreno et al. 2016), mean that the species habitat is in continuous decline. Therefore, following the criteria established by the IUCN (2013), Senecio scapioides is at present assessed as Endangered [EN B2 ab (iii)] mainly based on its distribution range. Research is urgently needed to establish the current population size of this new species, as well as to improve the understanding of plant diversity of Compositae in the Andean páramo.

**PHENOLOGY.** Flowering and fruiting simultaneously between November and January.

**ETYMOLOGY.** The specific epithet derives from the Latin *scapus* (scape) and -*oides* (like) and alludes to the scapiform inflorescence of the species.

**DISCUSSION.** A comparison of the material has shown that *Senecio scapioides* superficially matches that of *S. adglacialis* Cuatrec. and *S. leucanthemoides* Cuatrec., together forming a close morphological and geographical group within the senecionoid complex (subtribe Senecioninae s.str.) (Nordenstam et al. 2009) of specialised herbs or suffrutices exclusively adapted to the high páramos of the north Colombian Cordillera Oriental (Map 1). The three species are morphologically characterised by the presence of stems with creeping rhizomes, basal leaves forming a loose rosette, the inflorescence scapiform (Fig. 1A, 3B, C), yellow radiate capitula similar in size and shape (Fig. 3D, E), and staminodes present in the fertile ray florets (Fig. 2E).

Although most of the collections studied of the new species have been previously identified as *Senecio leucanthemoides* and/or *S. adglacialis*, this is understandable, because both species have yellow radiate capitula and grow in areas of páramo (Fig. 3). Both J. Cuatrecasas and S. Díaz-Piedrahita, renowned American synantherologists, saw material of the undescribed species but did not describe it.

*Senecio adglacialis* does not grow sympatrically with *S. scapioides*, since no material of the new species has been found from the superpáramo vegetation of the Sierra Nevada del Cocuy (Map 1). This Sierra has a high percentage of endemics within the Colombian Cordillera Oriental and several senecios are endemic to the Sierra (e.g. *S. cocuyanus* Cuatrec., *S. supremus* Cuatrec. and *S. fasciandinus* Cuatrec.) (Cleef 1981; Miranda-Esquivel et al. 2002). Otherwise, *S. leucanthemoides* is only known from the type locality.
in the páramo of Almorzadero (Departamento de Santander) (Map 1), a humid shrubby páramo at 3800 m elevation, and represents the northernmost distribution for this group of rhizomatous, scapiform species with yellow radiate capitula. A table of comparison of selected characters amongst Senecio scapioides and these closest relatives is provided in Table 1.

The radiate capitula with the two types of yellow floret noted in the new species also resembles Senecio funckii, a species restricted to two disjunct localities in the Venezuelan Sierra Nevada de Merida and in the Colombian Sierra Nevada de Santa Marta (Ávila et al. in Bernal et al. 2015; Hokche et al. 2008) (Map 1). Nevertheless, the indumentum, habit and leaf type of S. funckii are distinctly different, being glabrate, suffrutescent with erect branches, no rhizome, an inflorescence leafy throughout, with flat leaves possessing doubly dentate margins, while S. scapioides and its morphological and geographical relatives, are perennial herbs with a basal rhizomatous stem, their basal leaves rosetiform, the inflorescences scapiform and the leaf margins always revolute, crenate, and completely covered with an arachnoid and sericeous indumentum (Fig. 1A; 2A, B; 3B, C).

Acknowledgements
This study was conducted under the memorandum of Collaboration between Instituto Humboldt and RBG Kew, “Building a Partnership of Systematic Excellence” supported by the Boyaca Bio programme and Newton fund (via BEIS = Department for Business, Energy & Industrial Strategy, UK). The authors would like to thank Gustavo Surlo, the Margaret Mee Fellowship Programme Artist Scholar 2018, and the 24th such scholar, for providing the black and white line drawings of this new species. Grateful thanks is also given to two anonymous reviewers whose comments have helped improve the original submission.

Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article’s Creative Commons
licence, unless indicated otherwise in a credit line to the material. If material is not included in the article’s Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit http://creativecommons.org/licenses/by/4.0/.

References

Avila, F., Funk, V. A., Diazgranados, M., Díaz-Piedrahita, S. & Vargas, O. (contribs.). (2016). Asteraceae. In: R. Bernal, S. R. Gradstein & M. Celis (eds), Catálogo de plantas y líquenes de Colombia. Vol. I. Capítulos introductórios — Líquenes a Lythraceae, pp. 795 – 908. Instituto de Ciencias Naturales, Facultad de Ciencias, Sede Bogotá, Universidad Nacional de Colombia.

Bernal, R., Gradstein, S. R. & Celis, M. (2015). Catálogo de plantas y líquenes de Colombia. Instituto de Ciencias Naturales, Universidad Nacional de Colombia, Bogotá. Available from: http://catalogoplantasdecolombia.unal.edu.co. (Data base accessed from 15 August 2016).

____, ____ & ____ (eds) (2016a). Catálogo de plantas y líquenes de Colombia. Vol. I: Capítulos introductorios — Líquenes a Lythraceae. Instituto de Ciencias Naturales, Facultad de Ciencias, Sede Bogotá, Universidad Nacional de Colombia.

____, ____ & ____ (eds) (2016b). Catálogo de plantas y líquenes de Colombia. Vol. II: Magnoliaceae a Zygophyllaceae — Épecies introducidas y cultivadas. Instituto de Ciencias Naturales, Facultad de Ciencias, Sede Bogotá, Universidad Nacional de Colombia.

Cleef, A. M. (1981). The vegetation of the páramos of the Colombian Cordillera Oriental. Diss. Bot. 61: 1 – 320. Cramer, Vaduz.

Colombia BIO (2016). Colombia BIO. https://www.colciencias.gov.co/portal/colombia-bio. Site accessed 26 Dec. 2018 [Downloadable PDF resena-colombibio-2016 explains the programme, in Spanish.]

Hind, D. J. N. (2011). An annotated preliminary checklist of the Compositeae of Bolivia. Vers. 2. [See www.kew.org/science/tropamerica/boliviacompositae for the web version and www.kew.org/science/tropamerica/boliviacompositae/checklist.pdf for the PDF file of the checklist].

Hokche, O., Berry, P. E. & Huber, O. (2008). In: O. Hokche, P. E. Berry & O. Huber (eds), Nuevo Catálogo de la Flora Vascular de Venezuela. Dicotiledoenas, pp. 185 – 352. Fundación Instituto Botánico de Venezuela, Caracas.

IPCC (2014). R. K. Pachauri & L. A. Meyer (eds), Climate Change (2014). Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. IPCC, Geneva.

IUCN Standards and Petitions Subcommittee (2013). Guidelines for using the IUCN Red List Categories and Criteria. Version 10.1. Prepared by the Standards and Petitions Subcommittee. Available from: http://www.iucnredlist.org/documents/RedListGuidelines.pdf (accessed 25 August 2018).

Miranda-Esquivel, D., Rangel, J. & Roa, L. (2002). Endemismo en páramos colombianos con base en la distribución de espermatozóforos y el análisis de parsimonia de endemismo (PAE). In: C. Ange-Jaramillo, C. Castaño-Uribé & C. L. Durán, Memorias del Congreso Mundial de Páramos 1: 253 – 266. Ministerio del Ambiente, Bogotá.

Moreno, L. A., Andrade, G. I. & Ruiz-Contreras, L. F. (eds) (2016). Biodiversity 2016. Status and Trends of Colombian Continental Biodiversity. Research Institute of Biological Resources Alexander von Humboldt, Bogotá.

Nordenstam, B., Pelser, P. B., Kadereit, J. W. & Watson, L. E. (2009). Senecioneae. In: V. A. Funk, A. Susanna, T. F. Stuessy & R. J. Bayer (eds), Systematics, Evolution, and Biogeography of Compositae, pp. 503 – 525. International Association for Plant Taxonomy, Vienna.

Vásquez, D. L. A., Balslev, H. & Sklenář, P. (2015). Human impact on tropical-alpine plant diversity in the northern Andes. Biodivers. & Conservation 24: 2673 – 2683.

Publisher’s Note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.