

A TAXONOMIC REVISION OF *ESPELETIA* (ASTERACEAE). II. UPDATED LIST OF TAXA, NOMENCLATURE, AND CONSERVATION STATUS IN THE COLOMBIAN RADIATION

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Abstract. In this work a taxonomic revision is made of the nomenclature, distribution, and conservation status for the 84 species in the Colombian clade of *Espeletia*. Taxonomic changes include five new combinations for taxa at the species level that are transferred to *Espeletia*. Seventy-three species are endemic to the Colombian Cordillera Oriental (including four extending into the Venezuelan side of Páramo de Tamá), six are found in the Colombian Cordillera Central (four endemic to this range, one extending into Ecuador, and one shared with the Colombian Cordillera Occidental), three are endemic to the Colombian Cordillera Occidental, and two are endemic to Sierra de Perijá (including one yet to be found within Colombian borders). Geographic distributions at the páramo massif level are given for all species and subspecies. The IUCN Red List category is listed for each species, with suggestions for recategorization of some species with small distribution areas, low number of populations, and threats to their habitat extent and quality. In all, about 60 species in the Colombian *Espeletia* clade must be classified within a threatened category. When species belonging to the Venezuelan *Espeletia* clade that are found within Colombian borders are included, the current estimate of total diversity of *Espeletia* in this country is 90 species.

Keywords: Andes, caulescent rosette, Compositae, frailejón, páramo, Colombia

Asteraceae subtribe Espeletiinae (Cuatrecasas, 1976) are rapidly becoming a model for studies of ecology and evolution in páramos, particularly with regard to population and community ecology (Mora et al., 2019), ecophysiology (Rada, 2016), climate change (Mavárez et al., 2019), diversification and adaptive radiation (Pouchon et al., 2018, 2021) and, of course, taxonomy (Diazgranados, 2012; Cuatrecasas, 2013; Mavárez, 2019). Taxonomic research in particular started more than two centuries ago with the formal publication of *Espeletia* Mutis ex Bonpl., and the Colombian species *E. grandiflora* Bonpl., *E. argentea* Bonpl., and *E. corymbosa* Bonpl. (Humboldt and Bonpland, 1809). The genus *Espeletia* was attributed by Humboldt and Bonpland to José Celestino Mutis, director of the Expedición Botánica del Nuevo Reino de Granada, who first named it at the end of the 18th century (see the detailed chronological account of systematic studies in Cuatrecasas, 2013). Another species from Venezuela described as *Trixis neriifolia* Bonpl. ex Humb. (Humboldt, 1814), was renamed *Baillieria? neriifolia* (Bonpl. ex Humb.) Kunth (Humboldt et al., 1820), later as *Clibadium? neriifolium* (Bonpl. ex Humb.) DC (De Candolle, 1836), and finally as *Espeletia neriifolia* (Bonpl. ex Humb.) Sch. Bip. ex Wedd. (Weddell, 1855). The genus remained undivided in almost all subsequent taxonomic treatments of the group—namely, Standley, 1915; Smith and Koch, 1935; Cuatrecasas, 1949; and Aristeguieta, 1964—with the only exception of Ernst (1870), who unaware of Weddell's work renamed *T. neriifolia* in a new genus as *Libanothamnus neriifolius* (Bonpl. ex Humb.) Ernst. Cuatrecasas (1976) raised the 124 *Espeletia* species known at that time to subtribe Espeletiinae and divided it into seven

genera defined mainly according to plant habitus and the position and structure of the capitulescence: *Carramboia* Cuatrec., *Coespeletia* Cuatrec., *Espeletia* Mutis ex Bonpl., *Espeletiopsis* Cuatrec., *Libanothamnus* Ernst, *Ruilopezia* Cuatrec., and *Tamania* Cuatrec. An additional genus, *Paramiflos* Cuatrec., was segregated from *Espeletiopsis* and added to the subtribe in Cuatrecasas (1995). The eight-genera system was subsequently used in biodiversity catalogues, for example, Rangel-Churio, 2000, and Hokche et al., 2008, and in taxonomic treatments of the group, for example, Diazgranados, 2012, and Cuatrecasas, 2013. The latter work, unfortunately published posthumously in an unfinished state (one genus with ca. 20 species missing), represents an impressive monographic masterpiece of the subtribe. Therein, Cuatrecasas fully developed the classification and nomenclatural system of this group sketched in his 1976 work, among many other topics.

It should be noted that, contrary to some common belief, Cuatrecasas's classification system was far from being unanimously accepted. Indeed, several workers on the ecology and physiology of these plants did not agree with this multigeneric system, and a number of very influential studies were published after 1976 using only *Espeletia*, for example, Baruch and Smith, 1979; Smith, 1981; Goldstein et al., 1984, 1985; Monasterio, 1986; Berry et al., 1988; Guariguata and Azócar, 1988; Berry and Calvo, 1989, 1994; Monasterio and Sarmiento, 1991; and Silva et al., 2000. Further doubts about the validity of Espeletiinae genera were raised when their relationships started to be analyzed with molecular phylogenetic methods—for example, Rauscher, 2002; Madriñán et al., 2013; Diazgranados and Barber, 2017—and

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have been confirmed with the advent of metabolomics (Padilla-González et al., 2017) and phylogenomic approaches (Pouchon et al., 2018, 2021). These studies have provided unequivocal phylogenetic evidence supporting patterns in clear contradiction to previous ideas on the evolution and systematics of this group:

1. There have been two geographically delimited and mostly disconnected radiations in the Venezuelan and Colombian Andes, respectively, instead of an initial radiation in Venezuela followed by multiple colonizations of Colombia, as proposed by Smith and Koch (1935) and Cuatrecasas (1986b, 2013). The “Venezuelan clade” (Fig. 1A), with 54 species, includes all taxa distributed in the Venezuelan Cordillera de Mérida, plus a few lineages that colonized the northern areas in the Colombian Cordillera Oriental, Sierra de Perijá, and Sierra Nevada de Santa Marta. The “Colombian clade” (Fig. 1B, 2), with 84 species, comprises all remaining taxa distributed in the Colombian Andes, Sierra de Perijá, and northern Ecuador (see Mavárez, 2019).

2. As currently circumscribed, most genera in the classification system of Espeletiinae proposed by Cuatrecasas (1976, 1995) are poly- or paraphyletic (Fig. 3). For instance, the phylogenomic analysis by Pouchon et al. (2021), based on 9880 fragments covering > 4 million bp of the nuclear genome, has shown that the three largest genera in the subtribe—*Espeletia*, *Espeletopsis*, and *Ruilopezia*—representing ca. 85% of the species, are clearly polyphyletic. Each of the former two genera comprises at least two distantly related clades, one in Venezuela and one in Colombia, a number that could increase upon analysis of more taxa from the latter country. The polyphyly of *Ruilopezia* is even greater, since it embraces at least three unrelated clades in Venezuela plus one species nested within *Libanothamnus*. *Espeletia semiglobulata* Cuatrec. is nested within *Coespeletia*. The monotypic *Tamania* is nested within a clade of *Ruilopezia*, whereas the phylogenetic affinities of the monotypic *Paramiflos* are still unclear. Only *Carramboia* appeared to be monophyletic.

These patterns of extensive polyphyly/paraphyly among genera of Espeletiinae indicated that the classification system proposed by Cuatrecasas (1976, 1995) is largely artificial and must be modified. Mavárez (2019) proposed a modification adopting the view that only *Espeletia* should be recognized in the subtribe, with the other seven genera considered as heterotypic synonyms. Thus, *Espeletia* recovered its original definition, encompassing the ensemble of the subtribe Espeletiinae. An obvious advantage of this system is that since the majority of the species were already placed in the genus *Espeletia* (72 species), the proposed change to the classification system implied essentially the restoration of 54 species originally named under *Espeletia* but transferred later to other genera by Cuatrecasas (1976, 1995), and 12 new combinations for some species described after 1976: 2 in *Coespeletia* (Cuatrecasas, 2013; Diazgranados and Morillo, 2013), 2 in *Libanothamnus* (Cuatrecasas, 1980), 3 in *Ruilopezia* (Cuatrecasas, 1986a), and 5 in *Espeletopsis* (Díaz-Piedrahita and Obando, 2004; Díaz-Piedrahita et al., 2006; Díaz-Piedrahita and Rodríguez-Cabeza, 2008, 2010; and Diazgranados and Sánchez, 2013). Mavárez (2019) formally applied the proposed nomenclatural changes to the taxa in the Venezuelan clade, which led to 38 species recovering their original name under *Espeletia*, while another 7 were transferred to this genus with new combinations.

Continuing with the taxonomic revision started in Mavárez (2019), in this work I present an updated list of species and nomenclatural changes in the Colombian clade of *Espeletia*. A review of distribution information is also given, in the form of presence of species and subspecies in the recognized páramo complexes in Colombia and nearby areas in northern Ecuador and western Venezuela. However, contrary to the revision in Mavárez (2019), no maps or morphological descriptions of taxa will be given here, to maintain this work’s length within reasonable limits. That information will be provided in future publications.

MATERIALS AND METHODS

The taxonomy of the Colombian clade of *Espeletia* was reexamined, with an emphasis on the nomenclatural changes proposed by Mavárez (2019). A list of valid names is provided, with all known homotypic and heterotypic synonyms, and with basionyms for new combinations (*comb. nov.*). Taxa below the rank of species are also given, that is, subspecies (*subsp.*), variety (*var.*), and forma (*f.*), although the validity of most of these infraspecific ranks remains to be verified. Autonyms are provided as well for databasing purposes. Over 300 specimens were analyzed, of which 145 corresponded to type specimens. Analyzed samples are deposited in herbaria AMD, B, BC, BM, BR, CAS, COL, CM, E, F, FI, G, GB, GH, HUA, K, L, LD, MA, MO, MY, NY, P, PRC, S, U, US, W, and WIS (acronyms according to Thiers, 2020).

The ensemble of the information gathered for each taxon was summarized as follows:

Valid name, followed by the appropriate reference or *status*. **TYPE**: whenever possible given as: **COUNTRY**.

Department: Locality, elevation, coordinates, collection date, *collection number* (herbaria acronyms).

Synonyms: List of all names associated with the taxon.

Information about the **TYPE** is provided for basionyms and heterotypic synonyms.

Distribution: retrieved exclusively from herbarium samples and provided here as confirmed presence of the species and subspecies in the main geographic units of páramo officially considered for Colombia (Morales et al., 2007) and neighboring areas in Venezuela and Ecuador (Fig. 4–6). At least one representative collection number per páramo unit is given, with preference for samples available in online databases.

Conservation status: IUCN threat category, followed by suggestions for recategorization in species that may deserve a change in their current conservation status.

A list of interspecific hybrid taxa in the Colombian clade of *Espeletia* and the reference supporting their hybrid status are provided at the end of the Taxonomy section. Parents in hybrid formulae are provided in alphabetical order.

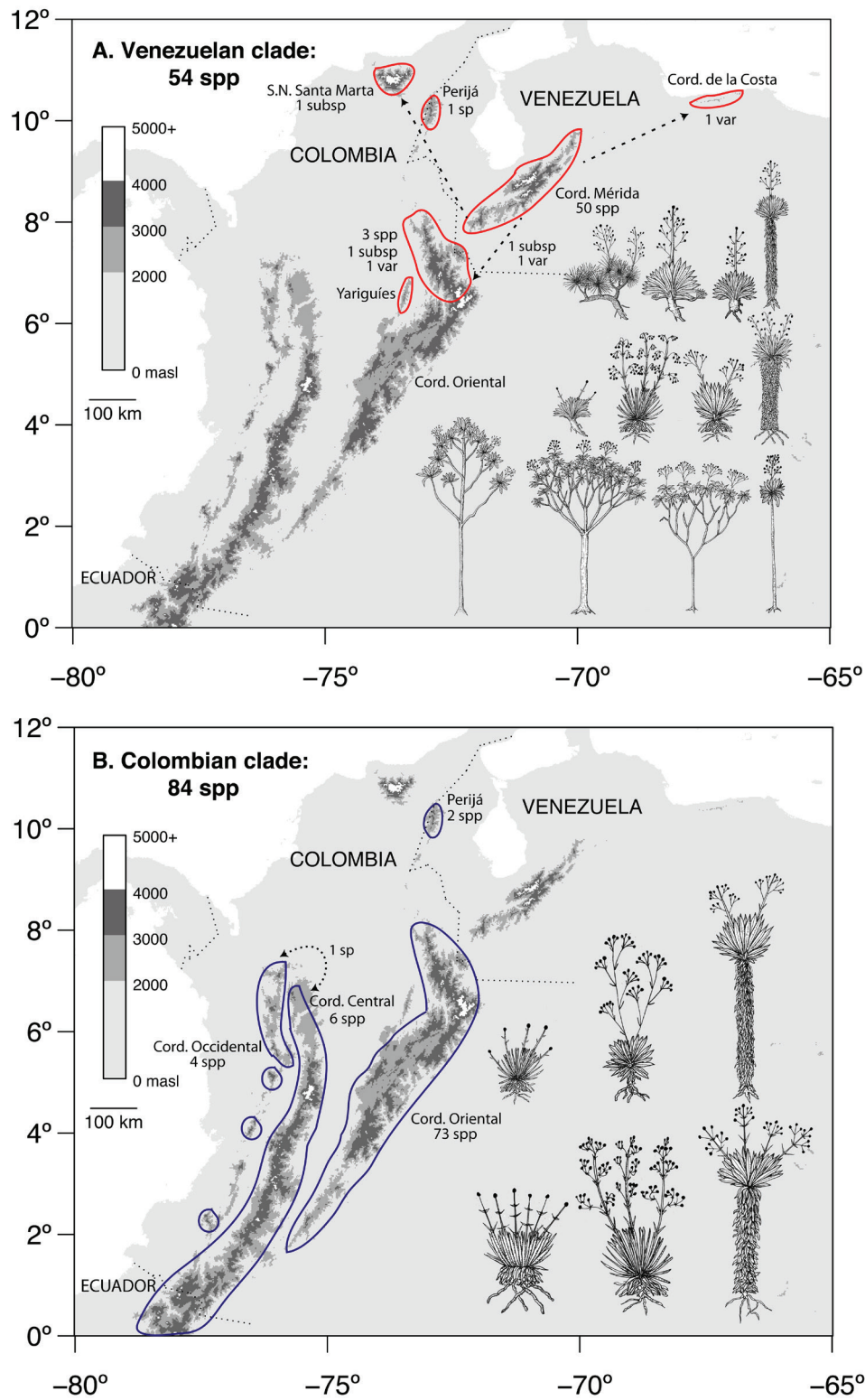


FIGURE 1. **A**, Species diversity and distribution in the Venezuelan clade of *Espeletia*. Upper row—examples of monocarpic rosette plants with monochasial inflorescences; middle row—examples of polycarpic rosette plants with monocephalous (left), dichasial (2nd), or monochasial (3rd, right) capitulescences; lower row—examples of trees with branched and unbranched stems. **B**, Species diversity and distribution in the Colombian clade of *Espeletia*. Upper row—examples of polycarpic rosette plants with monochasial capitulescences; lower row—examples of polycarpic rosette plants with dichasial capitulescences. Arrows indicate shared species between regions. (Plant drawings by C. Perrier, SAJF).



FIGURE 2. Examples of species diversity in the Colombian *Espeletia* clade. Top row, left to right: *E. garciae* Cuatrec., *E. guacharaca* S. Díaz, *E. conglomerata* A.C. Sm., and *E. incana* Cuatrec. Second row, left to right: *E. murilloi* Cuatrec., *E. brachyaxiantha* S. Díaz, *E. barclayana* Cuatrec., and *E. ramosa* Mavárez & M.T. Becerra. Third row, left to right: *E. muiska* Cuatrec., *E. jaramilloi* S. Díaz., and *E. santanderensis* A.C. Sm. Bottom row, left to right: *E. congestiflora* Cuatrec., *E. jimenezquesadae* Cuatrec., and *E. curialensis* Cuatrec.

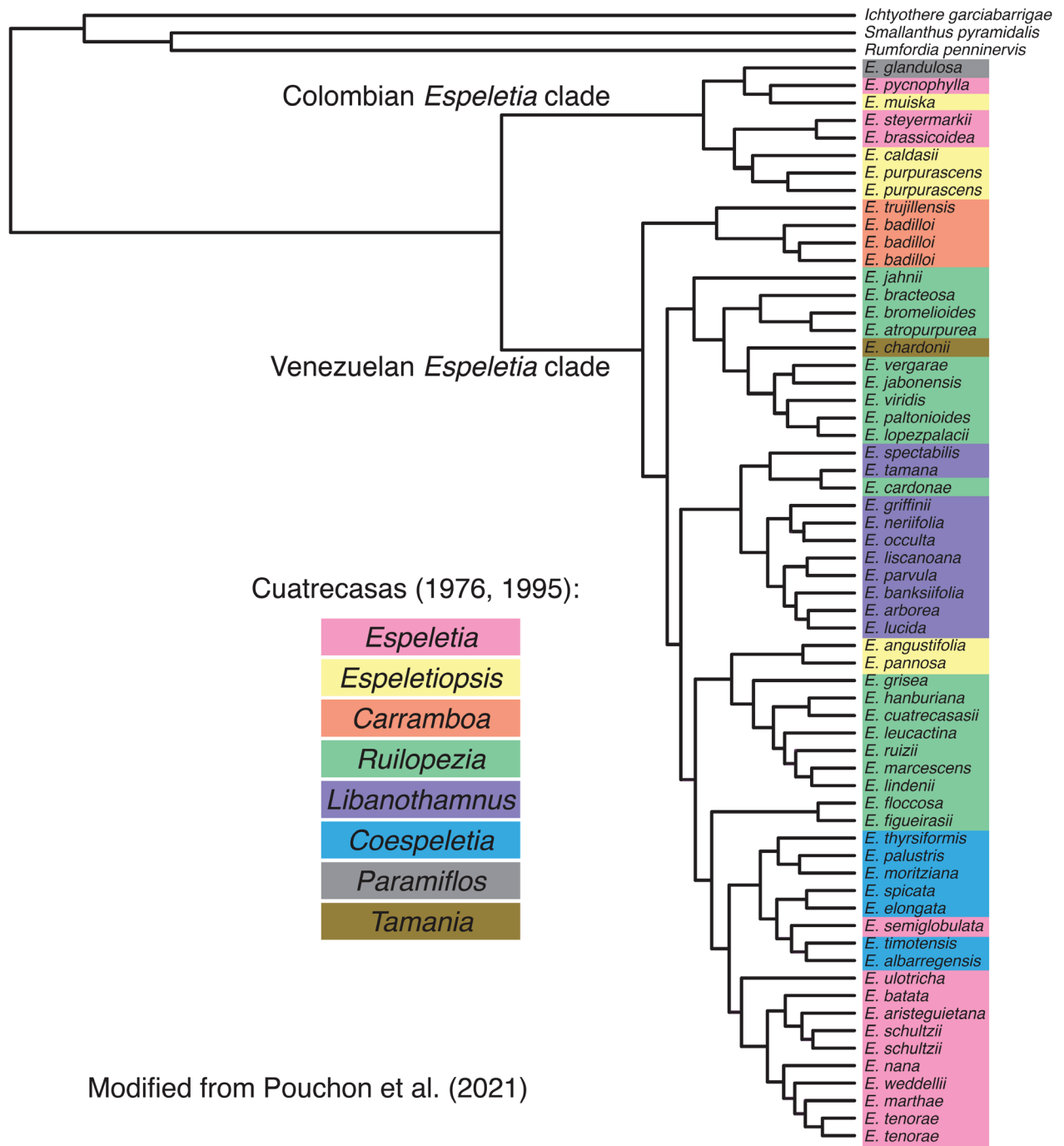


FIGURE 3. Molecular phylogenomic analysis of species in subtribe Espeletiinae based on maximum likelihood. Color shades highlight genera according to Cuatrecasas (1976, 1995). See Pouchon *et al.* (2021) for details on phylogenomic reconstructions.

RESULTS

Taxonomic Changes

Five new combinations are proposed for taxa at the species level transferred to *Espeletia*.

Diversity

The Colombian clade of *Espeletia* currently contains valid names for 84 species, which, together with 6 others phylogenetically affiliated with the Venezuelan *Espeletia* clade but found within Colombia's political borders, elevate the total diversity of the genus in this country to 90 species.

However, it's important to note that the biological validity of these taxa was not evaluated in this work, and this number should therefore be considered approximate. A better estimate of the diversity in the Colombian *Espeletia* clade will require thorough morphological and genetic analyses, which will likely lead to the detection of previously overlooked taxa (e.g., Alzate and Giraldo-Gómez, 2020) but also to the removal of others that may not represent good biological entities, such as hybrids and poorly described taxa. With regard to the latter, seven species are known only from the type specimens, that is,

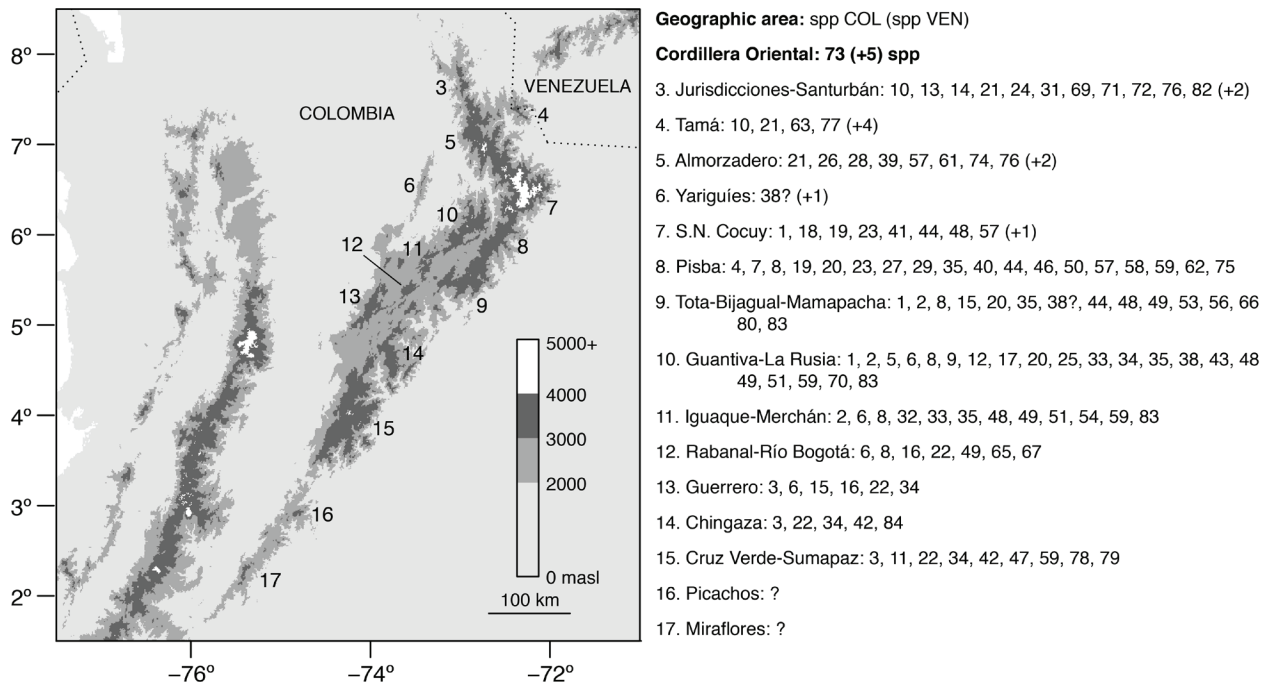


FIGURE 4. Distribution of species in the Colombian *Espeletia* clade along the main páramo complexes of the Colombian Cordillera Oriental and nearby areas in Western Venezuela. (Numbers within parentheses indicate additional species belonging to the Venezuelan *Espeletia* clade). **1.** *Espeletia annemariana* Cuatrec. **2.** *Espeletia arbelaezii* Cuatrec. **3.** *Espeletia argentea* Bonpl. **4.** *Espeletia ariana* Rodríguez-Cabeza & S. Díaz. **5.** *Espeletia azucarina* Cuatrec. **6.** *Espeletia barclayana* Cuatrec. **7.** *Espeletia betancurii* (Rodríguez-Cabeza, S. Díaz & Gal.-Tar.) Mavárez. **8.** *Espeletia boyacensis* Cuatrec. **9.** *Espeletia brachyaxiantha* S. Díaz. **10.** *Espeletia brassicoidea* Cuatrec. **11.** *Espeletia cabrerensis* Cuatrec. **12.** *Espeletia cachaluensis* Rodríguez-Cabeza & S. Díaz. **13.** *Espeletia caldasii* Cuatrec. **14.** *Espeletia canescens* A.C. Sm. **15.** *Espeletia cayetana* (Cuatrec.) Cuatrec. **16.** *Espeletia chocontana* Cuatrec. **17.** *Espeletia chontalensis* Rodríguez-Cabeza & S. Díaz. **18.** *Espeletia cleefii* Cuatrec. **19.** *Espeletia colombiana* Cuatrec. **20.** *Espeletia congestiflora* Cuatrec. **21.** *Espeletia conglomerata* A.C. Sm. **22.** *Espeletia corymbosa* Bonpl. **23.** *Espeletia curialensis* Cuatrec. **24.** *Espeletia diazii* (Diazgr. & L.R. Sánchez) Mavárez. **25.** *Espeletia discoidea* Cuatrec. **26.** *Espeletia dugandii* Cuatrec. **27.** *Espeletia episcopalis* Rodríguez-Cabeza & S. Díaz. **28.** *Espeletia estanslanana* Cuatrec. **29.** *Espeletia formosa* S. Díaz & Rodríguez-Cabeza. **31.** *Espeletia funkii* Sch. Bip. ex Wedd. **32.** *Espeletia garciae* Cuatrec. **33.** *Espeletia glandulosa* Cuatrec. **34.** *Espeletia grandiflora* Bonpl. **35.** *Espeletia guacharaca* S. Díaz. **38.** *Espeletia incana* Cuatrec. **39.** *Espeletia insignis* Cuatrec. **40.** *Espeletia jaramilloi* S. Díaz. **41.** *Espeletia jimenezquesadae* Cuatrec. **42.** *Espeletia killipii* Cuatrec. **43.** *Espeletia laxiflora* (S. Díaz & Rodríguez-Cabeza) Mavárez. **44.** *Espeletia lopezii* Cuatrec. **46.** *Espeletia mirabilis* S. Díaz & Rodríguez-Cabeza. **47.** *Espeletia miradorensis* (Cuatrec.) Cuatrec. **48.** *Espeletia muiska* Cuatrec. **49.** *Espeletia murilloi* Cuatrec. **50.** *Espeletia mutabilis* S. Díaz & Rodríguez-Cabeza. **51.** *Espeletia nemekenei* Cuatrec. **53.** *Espeletia oswaldiana* S. Díaz. **54.** *Espeletia paipana* S. Díaz & Pedraza. **56.** *Espeletia pescana* (S. Díaz) S. Díaz. **57.** *Espeletia petiolata* Cuatrec. **58.** *Espeletia pisbana* S. Díaz & Rodríguez-Cabeza. **59.** *Espeletia pleiochasia* Cuatrec. **61.** *Espeletia praesidentis* Diazgr. & L.R. Sánchez. **62.** *Espeletia pulcherrima* Rodríguez-Cabeza & S. Díaz. **63.** *Espeletia purpurascens* Cuatrec. **65.** *Espeletia rabanalensis* (S. Díaz & Rodríguez-Cabeza) Mavárez. **66.** *Espeletia ramosa* Mavárez & M.T. Becerra. **67.** *Espeletia raquirensis* Rodríguez-Cabeza & S. Díaz. **69.** *Espeletia roberti* Cuatrec. **70.** *Espeletia rositae* Cuatrec. **71.** *Espeletia sanchezii* (S. Díaz & Obando) Mavárez. **72.** *Espeletia santanderensis* A.C. Sm. **74.** *Espeletia sclerophylla* Cuatrec. **75.** *Espeletia soroca* S. Díaz & Rodríguez-Cabeza. **76.** *Espeletia standleyana* A.C. Sm. **77.** *Espeletia steyermarkii* Cuatrec. **78.** *Espeletia summapacis* Cuatrec. **79.** *Espeletia tapirophila* Cuatrec. **80.** *Espeletia tibamoensis* Rodríguez-Cabeza & S. Díaz. **82.** *Espeletia trianae* Cuatrec. **83.** *Espeletia tunjana* Cuatrec. **84.** *Espeletia uribei* Cuatrec.

E. chontalensis Rodríguez-Cabeza & S. Díaz, *E. marnixiana* S. Díaz & Pedraza, *E. mirabilis* S. Díaz & Rodríguez-Cabeza, *E. miradorensis* (Cuatrec.) Cuatrec., *E. tapirophila* Cuatrec., *E. tillettii* Cuatrec., and *E. trianae* Cuatrec. The validity of these and other taxa known from a handful of samples needs to be reviewed.

Distribution

Of the 84 species currently recognized in the Colombian *Espeletia* clade, 73 are endemic to the Colombian Cordillera Oriental (including 4 extending into the Venezuelan side of Páramo de Tamá) (Fig. 4), 6 are found in the Colombian Cordillera Central (4 endemic to this range, 1 extending into Ecuador, and 1 also found in the Colombian Cordillera Occidental) (Fig. 5), 3 are endemic to Colombian Cordillera Occidental, and 2 are endemic to Perijá (1 of which is known so far only from the Venezuelan side but very close to the border with Colombia) (Fig. 6).

Among the 73 species in the Colombian *Espeletia* clade located in the Cordillera Oriental, 19 are found in the north section (Tamá, Jurisdicciones-Santurbán, and Almorzadero), 29 in the east-central section (S.N. Cocuy, Pisba, and Tota-Bijagual-Mamapacha), 29 in the west-central section (Yariguíes, Guantiva-La Rusia, Iguaque-Merchán, Rabanal-Río Bogotá, and Guerrero), and 10 in the south section (Chingaza, Cruz Verde-Sumapaz, Picachos, and Miraflores) (Fig. 7). No species in the Colombian *Espeletia* clade is shared between the north and west-central sections of Cordillera Oriental, although these sections share a species belonging to the Venezuelan

clade, *E. chardonii* A.C. Sm. North and east-central sections share 2 species, *E. petiolata* Cuatrec. (Colombian clade) and *E. tamana* Cuatrec. (Venezuelan clade). The two central sections share 10 species: *E. boyacensis* (Cuatrec.) Cuatrec., *E. congestiflora* Cuatrec., *E. guacharaca* S. Díaz, *E. muiska* Cuatrec., *E. murilloi* Cuatrec., *E. pleiochasia* Cuatrec., *E. tunjana* Cuatrec., *E. annemariana* Cuatrec., and *E. arbelaezii* Cuatrec., although the case for the latter 2 may be based on misidentifications. Finally, east-central and south sections share 4 species—*E. argentea*, *E. corymbosa*, *E. grandiflora*, and *E. pleiochasia*—the latter being the only species found in three sections of the Cordillera Oriental.

At the páramo level, *Espeletia* is absent from P.N.N. Farallones de Cali (Fig. 5), and the only species found in S.N. Santa Marta is a tree belonging to the Venezuelan clade, *E. occulta* S.F. Blake subsp. *glossophylla* (Matff.) Mavárez (Fig. 6). In general, most páramos in the Cordillera Oriental are home to 5 or more *Espeletia* species, with the largest numbers found in Guantiva-La Rusia (21 spp.) and Pisba (18 spp.) (Fig. 4). Only three relatively small and isolated páramos in Cordillera Oriental contain 1–2 species: P.N.N. Serranía de los Yariguíes, P.N.N. Los Picachos, and P.N.R. Miraflores (the identity of the *Espeletia* species in the latter two páramos remains to be verified). In sharp contrast, the majority of páramos in Cordillera Central contain a single and widespread species, *E. hartwegiana* Sch. Bip ex Cuatrec., with 2 coexisting species found only in páramos around Laguna La Cocha, in páramo de Moras, and possibly in Belmira (Fig. 5). The distribution of species in Cordillera Occidental seems to follow the pattern of a single species in

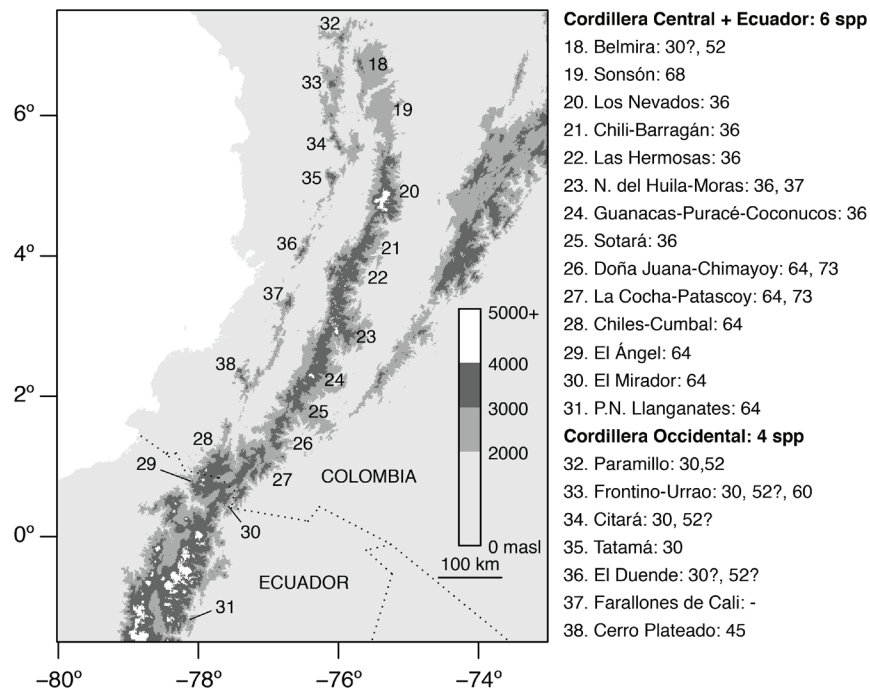


FIGURE 5. Distribution of species in the Colombian *Espeletia* clade along the main páramo complexes of the Colombian Cordillera Central, Colombian Cordillera Occidental, and nearby areas in Northern Ecuador. **30.** *Espeletia frontinoensis* Cuatrec. **36.** *Espeletia hartwegiana* Sch. Bip. ex Cuatrec. **37.** *Espeletia idroboi* Cuatrec. **45.** *Espeletia marnixiana* S. Díaz & Pedraza. **52.** *Espeletia occidentalis* A.C. Sm. **60.** *Espeletia praefrontina* Cuatrec. **64.** *Espeletia pycnophylla* Cuatrec. **68.** *Espeletia restricta* Alzate & S. Giraldo. **73.** *Espeletia schultesiana* Cuatrec.

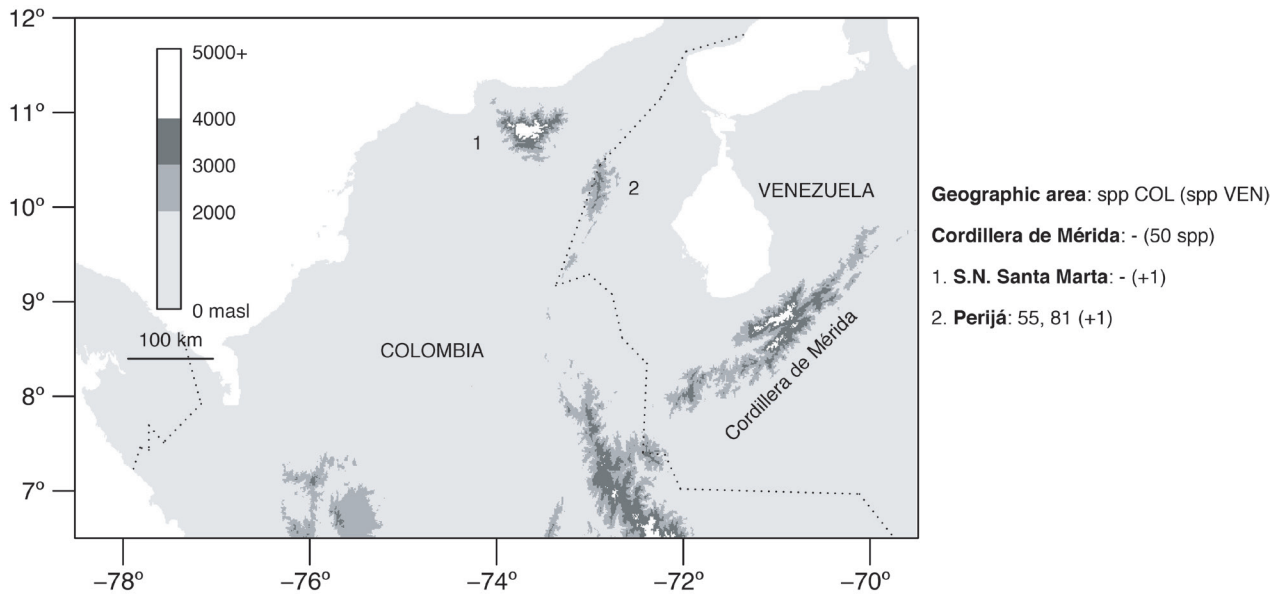


FIGURE 6. Distribution of species in the Colombian *Espeletia* clade along the páramo complexes of Sierra Nevada de Santa Marta, Perijá, and nearby areas in Western Venezuela. Numbers within parentheses indicate additional species belonging to the Venezuelan *Espeletia* clade: *E. occulta* S.F. Blake subsp. *glossophylla* (Matff.) Mavárez in Santa Marta and *E. divisoriensis* (Cuatrec.) Mavárez in Perijá. **55.** *Espeletia perijaensis* Cuatrec. **81.** *Espeletia tillettii* Cuatrec.

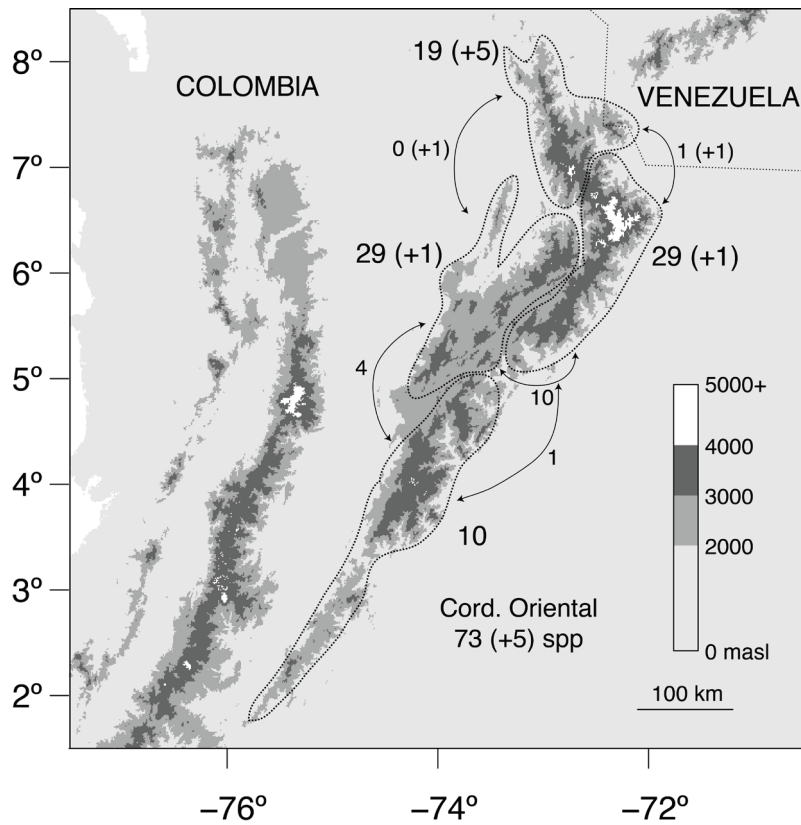


FIGURE 7. Diversity of species in the Colombian *Espeletia* clade along the four major geographic regions of the Cordillera Oriental. Arrows give the number of shared species between regions. (Numbers within parentheses indicate additional species belonging to the Venezuelan *Espeletia* clade).

small and isolated páramos, with the exception of Frontino-Urrao and perhaps Paramillo, both in the extreme north (Fig. 5). However, it is important to note that knowledge about distribution patterns of *Espeletia* at the páramo level in Colombia may be subject to change. On the one hand, as mentioned above, the presence of some species must be confirmed in some páramos, and the validity of several species must even be verified. On the other hand, scientific explorations in poorly sampled or remote areas will certainly lead to updates in the distribution of some species, and perhaps also to the discovery of others that have remained so far unknown or overlooked.

Conservation

Out of 84 species in the Colombian *Espeletia* clade, the conservation status of 3 have not been formally evaluated following IUCN criteria (*E. ramosa* Mavárez & M.T. Becerra, *E. restricta* Alzate & S. Giraldo, and *E. tillettii* Cuatrec.), 4 remain Data Deficient (*E. chontalensis*, *E. marnixiana*, *E. tapirophila*, and *E. trianae*), and 77 have been categorized in one of the six IUCN risk categories. Among the latter, 25 species fall within the “lower risk” categories—20 Least Concern (LC) and 5 Near Threatened (NT); and 52 species fall within “threatened” categories—14 Vulnerable (VU), 23 Endangered (EN), and 15 Critically Endangered (CR). Unfortunately, the current number of threatened species could indeed represent an underestimate, since 2 species categorized as Not Evaluated (NE) were considered Critically Endangered by their authors—*E. ramosa* (Mavárez and Becerra, 2019) and *E. restricta* (Alzate and Giraldo-Gómez, 2020). Furthermore, some species currently categorized in lower-risk categories—for example, *E. pisbana* S. Díaz & Rodríguez-Cabeza (LC), *E. praefrontina* Cuatrec. (LC), and *E. mutabilis* S. Díaz & Rodríguez-Cabeza (NT)—are known from a single páramo unit, and in some cases even from a single locality. These and other species likely need to be reclassified as Endangered according to the IUCN criteria Extent of Occurrence (< 5000 km²), Area of Occupancy (< 500 km²), number of known locations (≤ 5), and continuing future decline projected in Extent of Occurrence (IUCN, 2019). In all, the number of threatened species in the Colombian *Espeletia* clade is probably ca. 60, of which ca. 47 are likely in the Endangered or Critically Endangered categories. This means that out of 90 *Espeletia* species in Colombia, nearly 66% are threatened and about 50% are in the two extreme categories. Whatever the final number and appropriate threat category for this genus in Colombia, it is

clear that some urgent measures are required to guarantee their conservation.

Hybrid Taxa

Eight interspecific hybrids in the Colombian *Espeletia* clade have received binomial names in the past. In all cases, at least one parental species is geographically widespread and demographically very abundant—that is, *E. argentea*, *E. corymbosa*, *E. grandiflora*, and *E. petiolata*—which increases the chance for pollen transfer between different taxa by unspecific pollinators such as bees and bumblebees. This observation also casts some doubts on the taxonomic status of certain taxa that are geographically very restricted and known from a handful of samples (e.g., *E. miradorensis* and *E. tapirophila*), morphologically very close to another sympatric and abundant species (e.g., *E. killipii* Cuatrec. var. *chisacana* Cuatrec.), or morphologically variable (e.g., *E. rositae* Cuatrec. and *E. mutabilis* S. Díaz & Rodríguez-Cabeza).

Common Names

The common name *frailejón* (plural: *frailejones*) appears frequently in the herbarium samples examined. It is without doubt the most common name used for *Espeletia*, although it is also applied to some species of *Senecio*. As noted by Diazgranados (2012) and Cuatrecasas (2013), there are some common names that appear relatively more specific within *Espeletia*, but they are never or rarely used bi-univocally, and tend to be relatively local. For instance, *frailejón (f.) plateado* is used interchangeably for *Espeletia argentea* and *E. boyacensis*. Species with glabrous leaves such as *E. corymbosa* and *E. pleiochasia* are sometimes known as *f. verde* or *f. liso* (the latter also used for *E. argentea*). Several species with white indumentum—for example, *E. brachyaxiantha* S. Díaz, *E. incana* Cuatrec., and *E. pescana* (S. Díaz) S. Díaz—are sometimes given the name *f. blanco*. A notable exception to this tendency is *f. guacharaco*, a name frequently and exclusively used for *E. guacharaca* S. Díaz. Common names therefore seem rare or inconsistent in this plant group and will not be provided in this work. New common names will not be proposed either. As mentioned in Mavárez (2019), I do share the view expressed in Diazgranados (2012) that giving common names helps in “socializing the knowledge of these species and instilling a feeling of responsibility among local inhabitants to protect these resources,” but I also believe that these names must be chosen by or in agreement with local communities so that they can be accepted and used.

TAXONOMY

Espeletia Mutis ex Bonpl., Plant. Aeq. 2: 10. 1808(1809). Type species: *Espeletia grandiflora* Bonpl., Plant. Aeq. 2: 11. 1808(1809). TYPE: COLOMBIA. Santa Fe de Bogotá i Quindío, *Herbier de l'Amérique équatoriale, donné par M. A. Bonpland s.n.* (Holotype: P [MNHN-P-P00320272]; Isotypes: P [MNHN-P-P00320273, MNHN-P-P00307378, MNHN-P-P00680447]).

Synonyms: *Carramboa* Cuatrec., Phytologia 35(1): 54. 1976. Type species: *Espeletia pittieri* Cuatrec., Ciencia (México) 6(7–9): 262. 1945. TYPE: VENEZUELA. Mérida: forest between El Molino and ridge above San Isidro Alto, 2430–2895 masl, 14 May 1944, *J. Steyermark 56532* (Holotype: VEN [not seen]; Isotypes: F, NY, US).

Coespeletia Cuatrec., *Phytologia* 35(1): 56. 1976. Type species: *Espeletia spicata* Sch. Bip. ex Wedd., *Chlor. Andina* 1: 65. 1855(1856). TYPE: VENEZUELA. Mérida: Sierra Nevada de Mérida, 14,000 pieds, August 1842, *J. Linden* 400 (Holotype: P; Isotypes: F, FI, K, P).

Espeletiopsis Cuatrec., *Phytologia* 35(1): 54. 1976. Type species: *Espeletia jimenezquesadae* Cuatrec., *Rev. Acad. Col. Ci. Exact.* 3(11): 247. 1940. TYPE: COLOMBIA. Boyacá: Cordillera Oriental, Nevado del Cocuy, hacia la Cueva, en la Zanja, 3700 masl, 13 September 1938, *J. Cuatrecasas & H. García-Barriga* 1635 (Holotype: COL; Isotype: US).

Libanothamnus Ernst, *Vargasia* 7: 186. 1870. Type species: *Espeletia nerifolia* (Bonpl. ex Humb.) Sch. Bip. ex Wedd., *Chlor. Andina* 1: 67. 1855(1856). TYPE: VENEZUELA. Caracas: Silla de Caracas, [3 January] 1800, *Herbier donné par M. Bonpland en 1833 No. 652* (Lectotype: P [MNHN-P-P04086343]; Isolectotype: P [MNHN-P-P04086342]).

Ruilopezia Cuatrec., *Phytologia* 35(1): 51. 1976. Type species: *Espeletia figueirasii* Cuatrec., *Phytologia* 20(8): 475. 1971. TYPE: VENEZUELA. Mérida: Sierra Nevada de Santo Domingo, Páramo de los Granates, Loma de Paja, las Escaleras, 3240 masl, 11 October 1969, *J. Cuatrecasas, L. Ruiz-Terán & M. López-Figueiras* 28068 (Holotype: US; Isotypes: F, IVIC, MERF, U, US).

Paramiflos Cuatrec., *Proc. Biol. Soc. Wash.* 108(4): 748. 1995. Type species: *Espeletia glandulosa* Cuatrec., *Rev. Acad. Col. Ci. Exact.* 3(12): 434. 1940. TYPE: COLOMBIA. Boyacá: Cordillera Oriental, Páramo de Guantiva, Alto de Canutos, vertiente sur, 3200–3400 masl, *J. Cuatrecasas* 10360 (Holotype: COL; Isotypes: BC, COL, F, G, K, NY, P, U, US).

Tamania Cuatrec., *Phytologia* 35(1): 53, 1976. Type species: *Espeletia chardonii* A.C. Sm., *Bol. Soc. Ven. Ci. Nat.* 7: 237. 1942. TYPE: VENEZUELA. Táchira: Páramo de Tamá, El Paramito, 2550 masl, 15 August 1939, *C. E. Chardon* 78 (Holotype: US; Isotypes: NY, VEN [not seen]).

1. *Espeletia annemariana* Cuatrec. *Phytologia* 32(4): 315. 1975. TYPE: COLOMBIA. Boyacá: Carretera Vadohondo-Labranzagrando, Alto de Mogotes, subpáramo con gramíneas y muchas hierbas sobre suelos arenosos, 3300 masl, 2 April 1973, *A. M. Cleef* 9296 (Holotype: US; Isotypes: COL, F, GB, K, MO, NY, P, S, U, US).

Distribution: COLOMBIA. Tota-Bijagual-Mamapacha (*A. M. Cleef* 9556, US; *A. M. Cleef* 9466, US), Sierra Nevada del Cocuy (*A. M. Cleef* 9900, US), Guantiva-La Rusia (*A. M. Cleef* 9735, US; *A. M. Cleef* 7397, US). The taxonomic status of populations in Guantiva-La Rusia needs to be reviewed.

Conservation status: Endangered.

1.1 *Espeletia annemariana* Cuatrec. var. *annemariana*.

1.2. *Espeletia annemariana* Cuatrec. var. *rupicola* Cuatrec. *Phytologia* 32(4): 317. 1975. TYPE: COLOMBIA. Boyacá: Peña del Arnical, N. de Vadohondo, crece en grietas de roca, 3600 masl, 6 April 1973, *A. M. Cleef* 9466 (Holotype: US; Isotypes: COL, L).

2. *Espeletia arbelaezii* Cuatrec. *Revista Acad. Colomb. Ci. Exact.* 3(11): 247. 1940. TYPE: COLOMBIA. Boyacá: Páramo de Huinas, 3300 masl, 19 September 1938, *J. Cuatrecasas & H. García-Barriga* 1964 (Holotype: COL; Isotypes: BC, COL, F, US).

Distribution: COLOMBIA. Guantiva-La Rusia (*A. M. Cleef* 9837, US), Iguaque-Merchán (*R. Jaramillo-Mejía* 96, COL), Tota-Bijagual-Mamapacha (*S. Díaz* 62, COL). The taxonomic status of populations in Iguaque-Merchán and Tota-Bijagual-Mamapacha needs to be reviewed.

Conservation status: Vulnerable. According to IUCN data, this species is known from about 10 localities with Extent of Occurrence (EOO) = 4725 km², although with a continuous decline in habitat extent and quality since 1960. However, the number of populations and their EOO would be significantly reduced if populations in Iguaque-Merchán and Tota-Bijagual-Mamapacha are not conspecific with *E. arbelaezii*. If that is the case, this species would very likely need to be reclassified in the Endangered category, as in García et al. (2005).

3. *Espeletia argentea* Bonpl., *Plant. Aeq.* 2: 14. 1808 (1809). TYPE: COLOMBIA. Cundinamarca: “Nous avons trouvé l’*Espeletia argentea* dans les environs de la petite ville de Zypaquira, distante de dix lieues au nord-nord-ouest de Santa-Fe. Elle croît à une élévation de 1300 mètres au-dessus du niveau de la mer” [We have found *Espeletia argentea* nearby the small town of Zipaquira, ten leagues NNW of Bogotá. It grows at 1300 masl, 1801 [1], *Herbier de l’Amérique équatoriale, donné par M. A. Bonpland s.n.* (Holotype: P [MNHN-P-P00320277]; Isotypes: P [MNHN-P-P02441487, MNHN-P-P02441488], F [fragment, catalog number 972210]).

[1]: Humboldt and Bonpland visited Bogotá and its surroundings between 7 July and 8 September 1801. The type must have been collected or received from collectors during this time.

Nomen nudum: *Espeletia nivea* Moritz ex Wedd., *Chlor. Andina* 1: 65. 1855(1856). As synonym of *E. argentea*.

Distribution: COLOMBIA. Chingaza (*J. Cuatrecasas* 28260, US; *H. García-Barriga* 11466, US), Guerrero (*A. Fernández-Pérez & R. Jaramillo-Mejía* 439, US; *A. M. Cleef* 4201, US), Cruz Verde-Sumapaz (*S. Díaz* 2388, US; *J. Cuatrecasas* 10476, US; *A. M. Cleef* 906, US).

Conservation status: Least Concern.

3.1. *Espeletia argentea* Bonpl. f. *argentea*.

3.2. *Espeletia argentea* Bonpl. f. *phaneractis* (S.F. Blake) Cuatrec., *Phytologia* 27(3): 179. 1973. TYPE: COLOMBIA. Cundinamarca: Dry páramo on Mt. Águila west of Z. [Zipaquirá], 3100–3200 masl, 20–24 October 1917, F. W. Pennell 2522 (Holotype: US; Isotypes: F, GH, MO, NY).

Homotypic synonyms: *Espeletia argentea* Bonpl. subsp. *phaneractis* S.F. Blake, *Contr. U.S. Natl. Herb.* 22(8): 603. 1924.

Espeletia phaneractis (S.F. Blake) A.C. Sm., *Brittonia* 1(7): 525. 1935.

4. *Espeletia ariana* Rodríguez-Cabeza & S. Díaz, *Revista Acad. Colomb. Ci. Exact.* 30(116): 343. 2006. TYPE: COLOMBIA. Boyacá: Municipio de Socotá, Vereda Comezabao [1], sector Pantano Hondo, lado izquierdo arriba de la quebrada Pantano Hondo, 3600 masl, 5°55'34.1"N, 72°37'19"W, 19 October 2005, B. V. Rodríguez-Cabeza, L. Velasco & E. Benítez 1454 (Holotype: COL; Isotype: UIS [not seen]).

[1]: Type locality given as “Comeza Hoyada” in Diazgranados (2012).

Distribution: COLOMBIA. Pisba (B. V. Rodríguez-Cabeza, L. Velasco & E. Benítez 1454, COL).

Conservation status: Vulnerable. According to IUCN data, this species is known from a single locality with a population < 1000 adult individuals and Area of Occupancy = 8 km². Farming and ranching threaten its habitat. It would very likely need to be reclassified in the Endangered category.

5. *Espeletia azucarina* Cuatrec., *Phytologia* 47(1): 12. 1980. TYPE: COLOMBIA. Boyacá: Municipio Tutazá, Macizo alto N. de Belén, Cerro Pan de Azúcar y vecindades, páramo pedregoso y seco, vertiente E. del Cerro, 4000 masl, 7 May 1973, A. M. Cleef 9835 (Holotype: US; Isotypes: COL, HUA [not seen], L, US).

Distribution: COLOMBIA. Guantiva–La Rusia (A. M. Cleef 9835, US).

Conservation status: Critically Endangered.

6. *Espeletia barclayana* Cuatrec., *Phytologia* 38(1): 10. 1977. TYPE: COLOMBIA. Cundinamarca: Represa de Neusa y alrededores, cerro al NW. del embalse, en las cercanías de la estación Telecom, páramo seco, 3650 masl, 26 May 1972, A. M. Cleef & R. Jaramillo-Mejía 4174 (Holotype: US; Isotypes: COL, L, US). Fig. 2.

Distribution: COLOMBIA. Guerrero (S. Díaz & A. M. Cleef 804, US), Rabanal-Río Bogotá (J. C. Arias-G. et al. 3688, COL), Iguaque-Merchán (G. Huertas 6763, COL), Guantiva–La Rusia (J. L. Fernández-Alonso et al. 11924, MA).

Conservation status: Near Threatened.

7. *Espeletia betancurii* (Rodríguez-Cabeza, S. Díaz & Gal.-Tar.) Mavárez, *comb. nov.*

Basionym: *Espeletiopsis betancurii* Rodríguez-Cabeza, S. Díaz & Gal.-Tar., *Revista Acad. Colomb. Ci. Exact.*

30(116): 349. 2006. TYPE: COLOMBIA. Boyacá: Municipio Chita, Vereda Minas, Páramo de Los Venados, carretera hacia Sácamá, km 86 desvío a Chita, 06°03'15.8"N, 72°26'20.0"W, 3300 masl, 23 October 2005, B. V. Rodríguez-Cabeza & L. Velasco BVR-1515 (Holotype: COL).

Distribution: COLOMBIA. Pisba (B. V. Rodríguez-Cabeza & R. Galindo-Tarazona BVR-2189, COL).

Conservation status: Critically Endangered.

8. *Espeletia boyacensis* Cuatrec., *Phytologia* 27(3): 176. 1973. TYPE: COLOMBIA. Boyacá: Vereda El Bosque, vertiente sur del Alto de Canutos, loma paramuna, 3350 masl, 13 September 1969, J. Cuatrecasas & L. Rodríguez 27759 (Holotype: US; Isotypes: COL, U, US).

Heterotypic synonym: *Espeletia phaneractis* (S.F. Blake) A.C. Sm. subsp. *boyacensis* Cuatrec., *Revista Acad. Colomb. Ci. Exact.* 4(14): 167. 1941. TYPE: COLOMBIA. Boyacá: Páramo de Guantiva, cerca de Las Gaitas, 3300 masl, 3 August 1940, J. Cuatrecasas 10364-A (Holotype: COL).

Distribution: COLOMBIA. Pisba (H. Dueñas & J. Robles 81, COL), Tota-Bijagual-Mamapacha (G. Huertas & L. Camargo 6839, US), Iguaque-Merchán (S. Madriñán SM-2086, COL), Guantiva–La Rusia (H. Barclay & P. Juajibioy 7556, US), Rabanal–Río Bogotá (L. Camargo 7189, COL).

Conservation status: Least Concern.

9. *Espeletia brachyaxiantha* S. Díaz, *Mutisia* 37: 5. 1972. TYPE: COLOMBIA. Boyacá: Páramos al NW. de Belén, Vereda San José de la Montaña, Alto de las Cruces y alrededores, 3800 masl, 6 March 1972, A. M. Cleef 2326 (Holotype: COL; Isotypes: B, COL, F, MO, NY, U, US, WIS). Fig. 2.

Distribution: COLOMBIA. Guantiva–La Rusia (J. Cuatrecasas & R. Jaramillo-Mejía 28723, US).

Conservation status: Endangered.

10. *Espeletia brassicoidea* Cuatrec., *Revista Acad. Colomb. Ci. Exact.* 4(15–16): 337. 1941. TYPE: COLOMBIA. Norte de Santander: Páramo de Fontibón, 2700 masl, 21 July 1940, J. Cuatrecasas & H. García-Barriga 10096 (Holotype: COL; Isotypes: COL, F, US).

Nomen nudum: *Espeletia brassicoidea* Cuatrec. f. *pamplonensis* Cuatrec., *Revista Acad. Colomb. Ci. Exact.* 4(15–16): 338. 1941 [1].

[1]: Reference given as “Revista Acad. Colomb. Ci. Exact. 5(17): 338. 1942” in Diazgranados (2012).

Distribution: COLOMBIA. Jurisdicciones-Santurbán (J. Cuatrecasas, R. E. Schultes & E. Smith 12306, US; J. Cuatrecasas & R. Jaramillo-Mejía 28754, US; J. Cuatrecasas & R. Jaramillo-Mejía 28755, US). COLOMBIA-VENEZUELA. Tamá (J. Cuatrecasas, R. E. Schultes & E. Smith 12653, US; J. Cuatrecasas, L. Ruíz-Terán & M. López-Figueiras 28354, US).

Conservation status: Vulnerable.

10.1. *Espeletia brassicoidea* Cuatrec. subsp. *brassicoidea*.

Distribution: COLOMBIA. Jurisdicciones-Santurbán (*J. Cuatrecasas, R. E. Schultes & E. Smith 12306*, US).

10.2. *Espeletia brassicoidea* Cuatrec. subsp. *angusta* Cuatrec., *Phytologia* 47(1): 13. 1980. TYPE: COLOMBIA. Norte de Santander: Entre Pamplona y Berlín, lado izquierdo carretera, abajo, km 89, 3050 masl, 23 September 1969, *J. Cuatrecasas & L. Rodríguez 27916* (Holotype: US; Isotypes: COL, U, US).

Distribution: COLOMBIA. Jurisdicciones-Santurbán (*J. Cuatrecasas & R. Jaramillo-Mejía 28755*, US).

10.3. *Espeletia brassicoidea* Cuatrec. subsp. *constricta* (Cuatrec.) Cuatrec., *Mem. New York Bot. Gard.* 107: 324. 2013. TYPE: COLOMBIA. Norte de Santander: Páramo de Tamá, alrededores de la Cueva, 3000–3200 masl, 28 October 1941, *J. Cuatrecasas, R. E. Schultes & E. Smith 12653-A* (Syntype: COL; Isosyntypes: GH, U, US), and *J. Cuatrecasas, R. E. Schultes & E. Smith 12653-B* (Syntype: COL; Isosyntypes: COL, F, U, US).

Homotypic synonym: *Espeletia brassicoidea* Cuatrec. f. *constricta* Cuatrec., *Revista Acad. Colomb. Ci. Exact.* 5(17): 23. 1942.

Heterotypic synonym: *Espeletia brassicoidea* Cuatrec. f. *minorifolia* Cuatrec., *Revista Acad. Colomb. Ci. Exact.* 5(17): 23. 1942. TYPE: COLOMBIA. Norte de Santander: Páramo de Tamá, alrededores de la Cueva, 3000–3200 m, 28 October 1941, *J. Cuatrecasas, R. E. Schultes & E. Smith 12653* (Syntype: COL; Isosyntypes: F, US) and *J. Cuatrecasas, R. E. Schultes & E. Smith 12653-C* (Syntype: COL; Isosyntypes: GH, U, US).

Distribution: COLOMBIA-VENEZUELA. Tamá (*J. Cuatrecasas, L. Ruíz-Terán & M. López-Figueiras 28354*, US).

11. *Espeletia cabrerensis* Cuatrec., *Phytologia* 32(4): 318. 1975. TYPE: COLOMBIA. Cundinamarca: Cabrera, subida al Alto de Sumapaz, planada paramuna de Hoyerías, 3200 masl, 23 February 1970, *L. Uribe-Uribe 6400* (Holotype: US; Isotype: COL).

Distribution: COLOMBIA. Cruz Verde–Sumapaz (*L. Uribe-Uribe 6400*, US).

Conservation status: Vulnerable. According to IUCN data, this species is known from a single locality with Area of Occupancy = 4 km². Furthermore, its habitat is threatened by farming and ranching. Under these conditions, this species would very likely need to be reclassified in the Endangered category.

12. *Espeletia cachaluensis* Rodríguez-Cabeza & S. Díaz, *Revista Acad. Colomb. Ci. Exact.* 33(125): 459. 2008. TYPE: COLOMBIA. Santander: Santuario de Fauna y Flora Guanentá Alto Río Fonce, Municipio de Encino, Vereda Avendaños, sector Los Cuadros, 3744 masl, 05°49'N, 73°06'W, [1], 12 October 2007, *B. V. Rodríguez-Cabeza, H. Palacios, R. Rivero, J. Velasco BVR-1897* (Holotype: COL; Isotypes: COL, UIS [not seen]).

[1]: Geographic coordinates provided with the holotypus do not match type locality.

Distribution: COLOMBIA. Guantiva–La Rusia (*B. V. Rodríguez-Cabeza, H. Palacios, S. Estepa BVR-1976*, COL).

Conservation status: Critically Endangered.

13. *Espeletia caldasii* Cuatrec., *Revista Acad. Colomb. Ci. Exact.* 3(12): 431. 1940. TYPE: COLOMBIA. Norte de Santander: Páramo de Santurbán entre Cuesta Boba y el extremo oeste, 3400 masl, 27 July 1940, *J. Cuatrecasas & H. García-Barriga 10317* (Holotype: COL; Isotypes: BC, COL, F, GH, US).

Homotypic synonym: *Espeletiopsis caldasii* (Cuatrec.) Cuatrec., *Phytologia* 35(1): 55 (1976).

Distribution: COLOMBIA. Jurisdicciones-Santurbán (*A. M. Cleef 10189*, US).

Conservation status: Critically Endangered.

14. *Espeletia canescens* A.C. Sm., *Brittonia* 1(7): 516. 1935. TYPE: COLOMBIA. Norte de Santander: Páramo del Romeral, 3800–4200 masl, 30 January 1927, *E. P. Killip & A. C. Smith 18624* (Holotype: NY; Isotypes: GH, PH [not seen], US).

Distribution: COLOMBIA. Jurisdicciones-Santurbán (*E. P. Killip & A.C. Smith 18624*, US).

Conservation status: Endangered.

15. *Espeletia cayetana* (Cuatrec.) Cuatrec., *Phytologia* 52(3): 159. 1982. TYPE: COLOMBIA. Cundinamarca: Páramo entre Cogua y San Cayetano, cercanías de la Laguna Seca, vertiente E del filo de El Santuario, valle abrigado unos 2 km S de la Laguna Seca, 3650 masl, 17 November 1972, *A. M. Cleef 6508* (Holotype: US; Isotypes: COL, K, L, NY, S, U, US).

Homotypic synonym: *Espeletia grandiflora* Bonpl. var. *cayetana* Cuatrec., *Phytologia* 32(4): 323. 1975.

Distribution: COLOMBIA. Guerrero (*S. Díaz & A. M. Cleef 805*, US), Tota-Bijagual-Mamapacha (*P. A. Gil-Leguizamón 2603*, UPTC).

Conservation status: Endangered.

16. *Espeletia chocontana* Cuatrec., *Revista Acad. Colomb. Ci. Exact.* 4(14): 164. 1941. TYPE: COLOMBIA. Cundinamarca: Páramo de Chocontá, 2760–2830 m, *J. Cuatrecasas 9658* (Holotype: COL; Isotypes: F, US)

Distribution: COLOMBIA. Guerrero (*A. M. Cleef 4202*, US), Rabanal–Río Bogotá (*J. Cuatrecasas 9646*, US).

Conservation status: Endangered.

17. *Espeletia chontalensis* Rodríguez-Cabeza & S. Díaz, *Revista Acad. Colomb. Ci. Exact.* 33(125): 462. 2008. TYPE: COLOMBIA. Santander: Santuario de Fauna y Flora Guanentá Alto Río Fonce, Municipio de Encino, Vereda Río Negro, camino sector Chontales-Páramo de La Rusia. 28 June 2007, *B. V. Rodríguez-Cabeza & H. Palacios BVR-1874* (Holotype: COL [not seen]; Isotypes: COL, UIS [not seen]).

Distribution: COLOMBIA. Guantiva–La Rusia (*B. V. Rodríguez-Cabeza, H. Palacios, S. Estepa BVR-1976, COL*).

Known only from the type specimen. The validity of this species needs to be reviewed.

Conservation status: Data Deficient.

18. *Espeletia cleefii* Cuatrec., *Phytologia* 32(4): 312. 1975. TYPE: COLOMBIA. Boyacá: Sierra Nevada del Cocuy, Boquerón de Cusirí, vertiente W, superpáramo (cerca límite con páramo prop. dicho), 4300 masl, 6 October 1972, *A. M. Cleef & P. A. Florschütz 5922* (Holotype: US; Isotypes: COL, K, MY, MO, NY, S, U, US).

Distribution: COLOMBIA. Sierra Nevada del Cocuy (*A. M. Cleef 9100, US*).

Conservation status: Endangered.

19. *Espeletia colombiana* Cuatrec., *Revista Acad. Colomb. Ci. Exact.* 3(11): 249. 1940. TYPE: COLOMBIA. Boyacá: Nevado del Cocuy, las Lagunillas, Pozo Azul, 4110 masl, 11 September 1938, *J. Cuatrecasas & H. García-Barriga 1432* (Holotype: COL; Isotypes: BC, F, US).

Homotypic synonym: *Espeletiopsis colombiana* (Cuatrec.) Cuatrec., *Phytologia* 35: 55. 1976.

Distribution: COLOMBIA. Sierra Nevada del Cocuy (*A. M. Cleef & P. A. Florschütz 5924, US*), Pisba (*J. Cuatrecasas & R. Jaramillo-Mejía 28739, US*).

Conservation status: Least Concern.

20. *Espeletia congestiflora* Cuatrec., *Revista Acad. Colomb. Ci. Exact.* 3(12): 434. 1940. TYPE: COLOMBIA. Boyacá: Páramo de Guantiva, cerca de Las Gaitas, 3300 masl, 3 August 1940, *J. Cuatrecasas 10366* (Holotype: COL; Isotypes: BC, COL, F, US). Fig. 2.

Distribution: COLOMBIA. Guantiva–La Rusia (*A. M. Cleef 7521, US*), Tota-Bijagual-Mamapacha (*A. M. Cleef 9556, US*), Pisba (*A. M. Cleef 4758, US*).

Conservation status: Least Concern.

21. *Espeletia conglomerata* A.C. Sm., *Brittonia* 1(7): 515 (1935). TYPE: COLOMBIA. Norte de Santander: Páramo del Romeral, 3800–4200 masl, 30 January 1927, *E. P. Killip & A. C. Smith 18635* (Holotype: NY; Isotypes: F, GH, K, PH [not seen], S, US). Fig. 2.

Heterotypic synonym: *Espeletia brassicoidea* Cuatrec. f. *contracta* Cuatrec., *Revista Acad. Colomb. Ci. Exact.* 5(17): 23. 1942. TYPE: COLOMBIA. Norte de Santander: Páramo de Tamá, alrededores de la Cueva, 3000–3200 m, 28 October 1941, *J. Cuatrecasas, R. E. Schultes & E. Smith 12653-D* (Holotype: COL; Isotypes: F, GH).

Distribution: COLOMBIA. Jurisdicciones-Santurbán (*J. Cuatrecasas & R. Jaramillo-Mejía 28749, US*), Almorzadero (*J. Cuatrecasas, R. E. Schultes & E. Smith 12052, US*). COLOMBIA-VENEZUELA. Tamá (*L. Ruíz-Terán & M. López-Figueiras 8886, US*).

Conservation status: Vulnerable.

22. *Espeletia corymbosa* Bonpl., *Plant. Aeq.* 2: 16 1808(1809). TYPE: COLOMBIA. Cundinamarca [1]: “*Habitat in Peruviae frigidis, juxta urbem Almaguer*” [lives in Peruvian cold areas, near the city of Almaguer]. Also, “*Nous avons trouvé l’Espeletia corymbosa dans la Cordillère des Andes, près de la ville d’Almaguer, à 1163 toises (2268 m) d’élévation au-dessus du niveau de l’Océan*” [We have found *Espeletia corymbosa* in the Andes, near the town of Almaguer, at 1163 toises (2268 m) above sea level], 1801 [2], *Herbier de l’Amérique équatoriale, donné par M. A. Bonpland s.n.* (Holotype: P [MNHN-P-P00320274, MNHN-P-P00320275, MNHN-P-P00320276]; Isotypes: P [MNHN-P-P00660025], F [fragment]).

[1]: *Espeletia corymbosa* grows only in páramos around Bogotá, Cundinamarca department, Colombia. Both country (Peru) and locality (Almaguer) were therefore incorrectly given in the original description. The country was later changed to “*Crescit in frigidis Andium Novo Granatensium, juxta urbem Almaguer*” [Grows in cold areas in the Andes of New Granada, near the town of Almaguer] in Humboldt et al. (1820), while the correct distribution was given for the first time in Smith and Koch (1935).

[2]: Humboldt and Bonpland visited Bogotá and its surroundings between 7 July and 8 September 1801. The type must have been collected or received from collectors during this time.

Homotypic synonym. *Espeletiopsis corymbosa* (Bonpl.) Cuatrec., *Phytologia* 35(1): 55. 1976.

Heterotypic synonyms. *Espeletia corymbosa* Bonpl. var. *foliosa* Duse, *Nuovo Giorn. Bot. Ital.* n.s. 12: 284. 1905. TYPE: COLOMBIA. Bogota, locis frigidis, March 1844, *Goudot s.n.* (Lectotype: P?) [3].

[3]: A specimen in P (“Bogota, locis frigidis, marzo 1844, *Goudot s.n.*,” MNHN-P-P04086355) corresponds exactly with the protologue of *Espeletia corymbosa* Bonpl. var. *foliosa* Duse and might be designated as lectotypus.

Nomen nudum: Espeletia rigida Bonpl., *Plant. Aeq.* 2: Planche 72. 1808 (1809).

Espeletia platylepis Sch. Bip. ex Wedd., *Chlor. Andina* 1: 64. 1855(1856). TYPE: COLOMBIA. Cundinamarca: “Nouvelle-Grenade, Cordillères de Bogotá, hauteur 2250 mètres,” *Goudot s.n.* (Syntype: P), *J. J. Linden 1291* (Syntype: P) [4]. As synonym of *Espeletia corymbosa* Bonpl.

[4]: Syntypes of *Espeletia platylepis* given as a single collection “*Goudot & J. J. Linden 1291*” in Diazgranados (2012).

Distribution: COLOMBIA. Chingaza (*W. S. Hodge 6492, US; J. Cuatrecasas 5643, US*), Guerrero (*O. Haught 5971, US; J. Cuatrecasas 9564, US*), Rabanal–Río Bogotá (*D. Stancik 449, COL; H. García-Barriga, R. E. Schultes & R. Jaramillo-Mejía 13618, US*), Cruz Verde–Sumapaz (*D. D. Soejarto 403, US*).

Conservation status: Least Concern.

22.1. *Espeletia corymbosa* Bonpl. subsp. *corymbosa*.

Distribution: COLOMBIA. According to Cuatrecasas (1941), this subspecies is abundant in Chingaza and Cruz Verde–Sumapaz.

22.2. *Espeletia corymbosa* Bonpl. subsp. *zipaquirana* Cuatrec., Revista Acad. Colomb. Ci. Exact. 4(14): 168. 1941. TYPE: COLOMBIA. Cundinamarca: Páramo de Zipaquirá, entre Zipaquirá y Pacho, 3100–3200 masl. 16 June 1940 [1], *J. Cuatrecasas 9564* (Holotype: COL? [2]; Isotypes: BC, COL, F, US).

[1]: Collection date given as “16 January 1940” in Diazgranados (2012) and Cuatrecasas (1941).

[2]: *J. Cuatrecasas 9564* is labelled as isotypus in all herbaria consulted. If no holotypus reappears, an exsiccata in COL must be relabelled as holotypus for *E. corymbosa* Bonpl. subsp. *zipaquirana* Cuatrec.

Distribution: COLOMBIA. Chingaza (*J. Cuatrecasas 5643*, US), Guerrero (*J. Cuatrecasas 9564*, US), Rabanal–Río Bogotá (*H. García-Barriga, R. E. Schultes & R. Jaramillo-Mejía 13618*, US).

23. *Espeletia curialensis* Cuatrec., Phytologia 20(8): 473. 1971. TYPE: COLOMBIA. Boyacá: Páramo entre Chita y Sacama, vertiente oriental de la cordillera, quebrada del Curial (la Porquera), 3550 masl, 15 September 1969, *J. Cuatrecasas & L. Rodríguez 27790* (Holotype: US; Isotypes: F, U). Fig. 2.

Distribution: COLOMBIA. Sierra Nevada del Cocuy (*A. M. Cleef 9171*, US; *B. V. Rodríguez-Cabeza, J. M. Valderrama & O. E. López 1537*, COL), Pisba (*J. Cuatrecasas & R. Jaramillo Mejía 28740*, US).

Conservation status: Least Concern. According to IUCN data, this species has Extent of Occurrence (EOO) = 294 km². No significant threats are signaled, although the species is usually found in relatively dry subpáramo habitats that are prone to fires, particularly in Pisba. Given the relatively small EOO of this species and the environmental threats to the habitat in its southern range, it would very likely need to be reclassified at least in the Vulnerable category.

23.1. *Espeletia curialensis* Cuatrec. var. *curialensis*.

23.2. *Espeletia curialensis* Cuatrec. var. *exigua* Rodríguez-Cabeza & S. Díaz, Revista Acad. Colomb. Ci. Exact. 30(116): 347. 2006. TYPE: COLOMBIA. Casanare: Parque Nacional Natural El Cocuy, Municipio de La Salina, sector El Ahogadero, 3200 masl, 03°18'49.583"N, 72°23'36.726"W, [1], 12 December 2005, *B. V. Rodríguez-Cabeza, J. M. Valderrama & O. E. López 1537* (Holotype COL; Isotypes: COL, UIS [not seen]).

[1]: Geographic coordinates provided with the holotypus do not match type locality.

24. *Espeletia diazii* (Diazgr. & L.R. Sánchez) Mavárez, *comb. nov.*

Basionym: *Espeletiopsis diazii* Diazgr. & L.R. Sánchez, PhytoKeys 32: 39. 2013. TYPE: COLOMBIA. Norte de Santander: Municipio de Cáchira, Páramo de Cáchira o de Guerrero, vía Alto Chiquito (desde Villa Caro) a Cáchira, alto del páramo, a los lados de la vía antes de comenzar el descenso a Cáchira, 3394 masl, 73.00173°W, 7.7655°N, *M. Diazgranados & L. R. Sánchez 3898* (Holotype: COL [not seen]; Isotypes: COL [not seen], HECASA [not seen]).

Distribution: COLOMBIA. Jurisdicciones-Santurbán (*M. Diazgranados & L.R. Sánchez 3898*, COL).

Conservation status: Critically Endangered.

25. *Espeletia discoidea* Cuatrec., Revista Acad. Colomb. Ci. Exact. 3(12): 437. 1940. TYPE: COLOMBIA. Boyacá: Páramo de Guantiva, Alto de Canutos, vertiente sur, 3200–3400 masl, 3 August 1940, *J. Cuatrecasas 10358* (Holotype: COL; Isotypes: BC, COL, F, P, US)

Distribution: COLOMBIA. Guantiva–La Rusia (*S. Díaz 51*, US; *H. G. Barclay & P. Juajibioy 7680*, US; *A. M. Cleef 9782*, US).

Conservation status: Endangered.

25.1. *Espeletia discoidea* Cuatrec. var. *discoidea*.

25.2. *Espeletia discoidea* Cuatrec. var. *brevis* Cuatrec., Mem. New York Bot. Gard. 107: 293. 2013 [1]. TYPE: COLOMBIA. Boyacá: Páramos al NW de Belén, cabeceras [quebrada] Laguna Grande, vertiente NW (ca. 30° inclinación) del filo divisorio, 3830 masl, 6 May 1973, *A. M. Cleef 9774* (Holotype: US; Isotypes: COL, U).

[1]: Reference given as “Revista Acad. Colomb. Ci. Exact. 3(12): 437. 1940” in Diazgranados (2012).

26. *Espeletia dugandii* Cuatrec., Revista Acad. Colomb. Ci. Exact. 4(14): 163. 1941. TYPE: COLOMBIA. Santander: Páramo del Almorzadero, extremo sur, Peralonso, 3200 masl, 19 July 1940, *J. Cuatrecasas & H. García-Barriga 9889* (Holotype: COL; Isotypes: F, US).

Distribution: COLOMBIA. Almorzadero (*A. H. G. Alston 7380*, US).

Conservation status: Critically Endangered.

27. *Espeletia episcopalis* Rodríguez-Cabeza & S. Díaz [1], Revista Acad. Colomb. Ci. Exact. 30(116): 341. 2006. TYPE: COLOMBIA. Boyacá: Municipio Socotá, Vereda Comeza Hoyada, sector río Arzobispo, parte alta, Los Corazones, alrededores de las lagunas Larga y Peña Negra, 3700 masl, 05°55'47"N, 72°35'51"W, 21 October 2005, *B. V. Rodríguez-Cabeza, L. Velasco & E. Benitez BVR-1498* (Holotype: COL, Isotype: UIS [not seen]).

[1]: Author given as “S. Díaz & Rodríguez-Cabeza” in Diazgranados (2012).

Distribution: COLOMBIA. Pisba (*B. V. Rodríguez-Cabeza & L. Velasco BVR-1514*, COL).

Conservation status: Vulnerable. According to IUCN data, this species is known from a single locality with a population < 1000 adult individuals and Area of Occupancy (AOO) = 16 km². Its habitat is supposed to be a relatively well-conserved area without significant threats within PNN Pisba. However, the low number of populations and their small AOO suggest that this species would very likely need to be reclassified in the Endangered category.

28. *Espeletia estanislana* Cuatrec., Revista Acad. Colomb. Ci. Exact. 3(12): 429. 1940. TYPE: COLOMBIA. Santander: Páramo del Almorzadero, 3700–3800 masl, 28 May 1940, *Hno. Antonio Miguel s.n.* (Holotype: COL [1]).

[1]: The holotypus is deposited in COL, not US as stated in Diazgranados (2012) and Cuatrecasas (2013).

Distribution: COLOMBIA. Almorzadero (*A. M. Cleef 10187*, US).

Conservation status: Endangered.

29. *Espeletia formosa* S. Díaz & Rodríguez-Cabeza, Revista Acad. Colomb. Ci. Exact. 30(116): 336. 2006. TYPE: COLOMBIA. Boyacá: PNN Pisba, Municipio Socotá, Vereda Chipa Viejo, ruta libertadora, sector El Santuario, 3414 masl, 06°08'49.963"N, 72°45'33.672"W, [1], 16 June 2005, *B. V. Rodríguez-Cabeza & L. Velasco BVR-1407* (Holotype: COL; Isotype: COL, HUA, UIS [not seen]).

[1]: Geographic coordinates provided with the holotypus do not match type locality.

Distribution: COLOMBIA. Pisba (*B. V. Rodríguez-Cabeza & L. Velasco BVR-1407*, COL).

Conservation status: Endangered.

30. *Espeletia frontinoensis* Cuatrec., Phytologia 38(1): 15. 1977. TYPE: COLOMBIA. Antioquia: Páramo Frontino, near Llano Grande, 3450 masl, 25 October 1976, *J. D. Boeke & J. B. McElroy 234* (Holotype: US; Isotype: GH, MEDEL [not seen], NY, U).

Distribution: COLOMBIA. Paramillo (*H. Cuadros 5004*, MO), Frontino-Urrao (*J. M. MacDougal, F. J. Roldán & J. Betancur 4317*, US), Citará (*W. D. Rodríguez et al. 6517*, COL), Tatamá (*J. H. Torres et al. 1778*, COL). Apparently found as well in Belmira (e.g., *R. Callejas 10069*, US) and El Duende (e.g., *W. Vargas 4854*, COL), but these records need to be confirmed.

Conservation status: Least Concern.

31. *Espeletia funckii* Sch. Bip. ex Wedd., Chlor. Andina 1: 64. 1855(1856). TYPE: COLOMBIA. Norte de Santander: Province de Pamplona, paramos de La Baja, 10.500 pieds, January 1847, *N. Funck & L. J. Schlim 1290* [1] (Holotype: P [2]; Isotypes: BR, F, G, GH, KW [not seen], P, US [photograph], W).

[1]: Collectors given as “*V. A. Funck & L. J. Schlim*” in Diazgranados (2012).

[2]: The holotypus in P needs status label.

Homotypic synonym. *Espeletiopsis funckii* (Sch. Bip. ex Wedd.) Cuatrec., Phytologia 35(1): 55. 1976.

Heterotypic synonym [3]: *Espeletia smithiana* Cuatrec., Revista Acad. Colomb. Ci. Exact. 4(15–16): 339. 1941. TYPE: COLOMBIA. Santander: Páramo de Santurbán, entre Cuesta Boba y el extremo oeste, 3400 masl, 27 July 1940, *J. Cuatrecasas & H. García-Barriga 10315* (Holotype: COL; Isotypes: F, P, US).

[3]: Synonym status given in Diazgranados (2012).

Distribution: COLOMBIA. Jurisdicciones-Santurbán (*E. P. Killip & A. C. Smith 18425*, US).

Conservation status: Endangered.

32. *Espeletia garciae* Cuatrec., Phytologia 23(4): 358. 1972. TYPE: COLOMBIA. Boyacá: Villa de Leyva, vereda de capilla, encima del km 21, en el monte, 2640 masl, 2 January 1940, *L. Uribe-Urbe 6491* (Holotype: US; Isotypes: COL, MA, MO, NY, US). Fig. 2.

Homotypic synonym. *Espeletiopsis garciae* (Cuatrec.) Cuatrec., Phytologia 35(1): 55. 1976.

Distribution: COLOMBIA. Iguaque-Merchán (*J. Cuatrecasas, H. García-Barriga, & R. Jaramillo-Mejía 28660*, US).

Conservation status: Vulnerable. According to IUCN data, this species is known from at least 10 localities with Extent of Occurrence (EOO) = 342 km², including a large and abundant population supposedly found in Cundinamarca, Guerrero. However, no verifiable herbarium records of this species have been found for that páramo. *Espeletia garciae* is in fact known only from some upper Andean forests and subpáramos in Iguaque-Merchán, some of which are threatened by agriculture and frequent fires. This species would very likely need to be reclassified in the Endangered category, as in García et al. (2005).

33. *Espeletia glandulosa* Cuatrec., Revista Acad. Colomb. Ci. Exact. 3(12): 434. 1940. TYPE: COLOMBIA. Boyacá: Páramo de Guantiva, Alto de Canutos, vertiente sur, 3200–3400 masl, 3 August 1940, *J. Cuatrecasas 10360* (Holotype: COL; Isotypes: BC, COL, F, G, K, NY, P, U, US).

Homotypic synonyms. *Paramiflos glandulosus* (Cuatrec.) Cuatrec., Proc. Biol. Soc. Wash. 108(4): 749. 1995. *Espeletiopsis glandulosa* (Cuatrec.) Cuatrec., Phytologia 35(1): 55. 1976.

Heterotypic synonym: *Espeletia glandulosa* Cuatrec. var. *scaberrima* Cuatrec., Brittonia 8(3): 185. 1956. TYPE: COLOMBIA. Norte de Santander: Andes de Pamplona, 2800 masl, June 1851, *J. Triana 1327* (Holotype: P; Isotypes: COL [= *J. Triana 2476*], P).

Distribution: COLOMBIA. Iguaque-Merchán (*J. Cuatrecasas & R. Jaramillo-Mejía 28760*, US), Guantiva–La Rusia (*H. G. Barclay & P. Juajibioy 7196*, US).

Conservation status: Vulnerable.

34. *Espeletia grandiflora* Bonpl., Plant. Aeq. 2: 11. 1808(1809). TYPE: COLOMBIA. Cundinamarca: Santa Fe de Bogotá i Quindío, *Herbier de l'Amérique équatoriale, donné par M. A. Bonpland s.n.* (Holotype: P [MNHN-P-P00320272]; Isotypes: P [MNHN-P-P00320273, MNHN-P-P00307378, MNHN-P-P00680447]).

Heterotypic synonyms: *Espeletia grandiflora* Bonpl. f. *longiligulata* Cuatrec., Revista Acad. Colomb. Ci. Exact. 4(14): 169. 1941. TYPE: COLOMBIA. Cundinamarca: Páramo de Cruz Verde, 3400–3500 masl, 15 September 1940, *J. Cuatrecasas 10467* (Holotype: COL; Isotypes: CM, F, US).

Espeletia grandiflora Bonpl. f. *multiflora* Cuatrec., Revista Acad. Colomb. Ci. Exact. 4(14): 169. 1941. TYPE: COLOMBIA. Cundinamarca: Páramo de Zipaquirá, entre Zipaquirá y Pacho, 3100–3200 masl, 16 June 1940, *J. Cuatrecasas 9527* (Holotype: COL; Isotypes: F, US).

Espeletia grandiflora Bonpl. f. *reducta* Cuatrec., Revista Acad. Colomb. Ci. Exact. 4(14): 169. 1941. TYPE: COLOMBIA. Cundinamarca: Páramo de Zipaquirá, 3100–3200 masl, 16 June 1940, *J. Cuatrecasas 9527-A* (Holotype: COL; Isotypes: F, US).

Distribution: COLOMBIA. Guerrero (*R. E. Schultes, R. T. Martin & T. C. Plowman 43*, US), Chingaza (*H. G. Barclay, P. Juajibioy & J. Gama 3259*, US; *H. García-Barriga 8103*, US; *G. Huertas & L. Camargo 5957*, US), Cruz Verde–Sumapaz (*H. García-Barriga 10440*, US; *S. Díaz 2360*, US; *A. M. Cleef 1115*, US; *A. M. Cleef 8054*, US), Guantiva–La Rusia (*B. V. Rodríguez Cabeza, H. Palacios & S. Estepa BVR-1977*, COL; *R. Jaramillo-Mejía, J. Hernandez-Camacho & Th. Van der Hammen 942*, US).

Conservation status: Least Concern.

34.1. *Espeletia grandiflora* Bonpl. subsp. *grandiflora*.

Distribution: COLOMBIA. Chingaza (*H. G. Barclay, P. Juajibioy & J. Gama 3259*, US), Cruz Verde–Sumapaz (*H. García-Barriga 10440*, US), Guerrero (*R. E. Schultes, R. Martin & T. C. Plowman 43*, US).

34.1.1. *Espeletia grandiflora* Bonpl. subsp. *grandiflora* var. *grandiflora*.

34.1.2. *Espeletia grandiflora* Bonpl. subsp. *grandiflora* var. *attenuata* Cuatrec., Phytologia 32(4): 325. 1975. TYPE: COLOMBIA. Cundinamarca: Macizo de Bogotá, Páramo de Chisacá, around the Laguna de Chisacá, 3650–3700 masl, 29 December 1959, *J. Cuatrecasas & R. Jaramillo-Mejía 25748* (Holotype: US; Isotypes: BC, COL, F).

34.2. *Espeletia grandiflora* Bonpl. subsp. *boyacana* (Cuatrec.) Cuatrec., Mem. New York Bot. Gard. 107: 194 (2013). TYPE: COLOMBIA. Boyacá: Páramo de La Rusia, NW-N de Duitama, Serranía Negra, vertiente sur, ca. 3900 masl, 10 December 1972, *A. M. Cleef 6955* (Holotype: US; Isotypes: COL, K, MO, S, U, VEN [not seen]).

Homotypic synonym: *Espeletia grandiflora* Bonpl. var. *boyacana* Cuatrec., Phytologia 32(4): 322. 1975.

Distribution: COLOMBIA. Guantiva–La Rusia (*R. Jaramillo-Mejía, J. Hernandez-Camacho & Th. Van der Hammen 942*, US).

34.3. *Espeletia grandiflora* Bonpl. subsp. *subnivalis* (Cuatrec.) Cuatrec., Mem. New York Bot. Gard. 107: 193. 2013. TYPE: COLOMBIA. Meta: Páramo de Sumapaz, Cerro Nevado del Sumapaz, vertiente SW hacia el Alto del Buque, 3650 masl, 29 January 1972, *A. M. Cleef 1372* (Holotype: US; Isotypes: COL, K, U, VEN [not seen]).

Homotypic synonym: *Espeletia grandiflora* Bonpl. var. *subnivalis* Cuatrec., Phytologia 32(4): 324. 1975.

Distribution: COLOMBIA. Cruz Verde–Sumapaz (*A. M. Cleef 8054*, US).

35. *Espeletia guacharaca* S. Díaz, Caldasia 11(53): 19. 1975. TYPE: COLOMBIA. Boyacá: Páramo de La Rusia, cerca a la cima, carretera Duitama-Charalá, 3500 masl, 13 May 1968, *S. Díaz 42* (Holotype: COL; Isotype: US). Fig. 2. Homotypic synonyms: *Espeletiopsis guacharaca* (S. Díaz) Cuatrec., Phytologia 35(1): 55. 1976.

Espeletiopsis jimenezquesadae var. *guacharaca* (S. Díaz) Cuatrec., Anales Jard. Bot. Madrid 54(1): 374. 1996.

Distribution: COLOMBIA. Guantiva–La Rusia (*L. Uribe-Urbe 5213*, US), Iguaque-Merchán (*M. Melampy 1325*, US), Tota-Bijagual-Mamapacha (*J. Cuatrecasas, R. Jaramillo-Mejía & A. Kleef 28699*, US), Pisba (*D. Stancik & S. Medina 2441*, COL).

Conservation status: Near Threatened.

36. *Espeletia hartwegiana* Sch. Bip. ex Cuatrec., Trab. Mus. Nac. Ci. Nat., Ser. Bot. 26: 17. 1933. TYPE: COLOMBIA. Cauca: Páramo de Guanacas, Andes de Popayán, 1843, *C. T. Hartweg 1137* (Lectotype: G; Isolectotypes: BM, E, FI, G, K, LD, P, W).

Homotypic synonym: *Espeletia grandiflora* Bonpl. var. *hartwegiana* (Cuatrec.) Benoist, Bull. Soc. Bot. France 92: 139. 1945.

Nomen nudum: Espeletia hartwegiana Sch. Bip. ex Wedd., Chlor. Andina 1: 62. 1855(1856). As a synonym of *Espeletia grandiflora* Bonpl.

Distribution: COLOMBIA. Los Nevados (*J. Cuatrecasas 23129*, US), Chili-Barragán (*J. L. Luteyn, J. Fuertes & O. Rangel 12946*, US), Las Hermosas (*W. Devia & F. Prado 1881*, US; *J. Cuatrecasas & H. Cuadros 28893*, US), Nevado del Huila-Moras (*J. Cuatrecasas 28783*, US; *J. Cuatrecasas 27440*, US), Guanacas-Puracé-Coconucos (*J. Cuatrecasas & L. Willard 26333*, US; *H. Pittier 1116*, US), Sotará (*J. Cuatrecasas & F. C. Lehmann 27387*, US; *J.M. Idrobo 4025*, US).

Conservation status: Least Concern.

36.1. *Espeletia hartwegiana* Sch. Bip. ex Cuatrec. subsp. *hartwegiana*.

Distribution: COLOMBIA. Las Hermosas (*W. Devia & F. Prado 1881*, US), Nevado del Huila-Moras (*J. Cuatrecasas 27440*, US), Guanacas-Puracé-Coconucos (*J. Cuatrecasas & L. Willard 26333*, US), Sotará (*J. Cuatrecasas & F. C. Lehmann 27387*, US).

36.1.1. *Espeletia hartwegiana* Sch. Bip. ex Cuatrec. subsp. *hartwegiana* var. *hartwegiana*.

36.1.2. *Espeletia hartwegiana* Sch. Bip. ex Cuatrec. subsp. *hartwegiana* var. *morarum* Cuatrec., Phytologia 45(1): 25. 1980. TYPE. COLOMBIA: Cauca: Cordillera Central, vertiente occidental, Páramo de Moras, 3600 masl, 19 March 1973, *J. Cuatrecasas & C. Lehmann 28638* (Holotype: US; Isotypes: COL, U, US).

36.1.3. *Espeletia hartwegiana* Sch. Bip. ex Cuatrec. subsp. *hartwegiana* var. *vegasana* Cuatrec., Phytologia 45(1): 24. 1980. TYPE. COLOMBIA. Valle del Cauca: Cordillera Central, vertiente occidental, cabeceras de los ríos Tuluá y Bugalagrande: Páramo de las Vegas, 3600–3800 masl, 22 March 1946, *J. Cuatrecasas 20285* (Holotype: US; Isotypes: COL, F).

36.2. *Espeletia hartwegiana* Sch. Bip. ex Cuatrec. subsp. *barragensis* Cuatrec., Phytologia 45(1): 23. 1980. TYPE. COLOMBIA. Valle del Cauca: Cordillera Central, vertiente occidental, hoya del río Bugalagrande, Barragán: Páramo de Bavaya, 3600–3680 masl, 16–17 March 1946, *J. Cuatrecasas 20076* (Holotype: COL; Isotypes: BC, F, US).

36.3. *Espeletia hartwegiana* Sch. Bip. ex Cuatrec. subsp. *centroandina* Cuatrec., Phytologia 45(1): 21. 1980. TYPE. COLOMBIA. Caldas: Cordillera Central, vertiente occidental, vertiente sudoeste del [Nevado] del Ruiz, El Aprisco, páramos, 3600 masl, 5 May 1940, *J. Cuatrecasas 9312* (Holotype: COL; Isotypes: COL, US).

Nomen nudum: Espeletia centroandina Cuatrec., Trab. Mus. Nac. Ci. Nat., Ser. Bot. 26: 17. 1933. As synonym of *Espeletia hartwegiana* Sch. Bip. ex Cuatrec.

Distribution: COLOMBIA. Los Nevados (*J. Cuatrecasas 23129*, US), Chili-Barragán (*J. L. Luteyn, J. Fuertes & O. Rangel 12946*, US).

37. *Espeletia idroboi* Cuatrec., Phytologia 38(1): 12. 1977. TYPE: COLOMBIA. Cauca: Macizo Colombiano, Valle de las Papas, alrededores de Valencia, 2910 masl, 11 September - 1 October 1958, *J. M. Idrobo, P. Pinto & H. Bischler 3212 [1]* (Holotype: COL; Isotypes: COL, P).

[1]: Type collection number given as “*Idrobo, Pinto & Bischler 3372*” in Diazgranados (2012).

Distribution: COLOMBIA. Nevado del Huila-Moras (*H. G. Barclay & P. Juajibioy 6083*, US).

Conservation status: Endangered.

38. *Espeletia incana* Cuatrec., Revista Acad. Colomb. Ci. Exact. 3(12): 435. 1940. TYPE: COLOMBIA. Santander: Páramo de La Rusia, vertiente noroeste, 3300–3500 masl, 4 August 1940, *J. Cuatrecasas 10430* (Holotype: COL; Isotypes: BC, COL, F, US). Fig. 2.

Distribution: COLOMBIA. Guantiva–La Rusia (*J. Cuatrecasas & R. Jaramillo-Mejía 28728*, US; *J. H. Langenheim 3511*, US). Records of this species from Yariquíes and páramo de Siscunsi-Ocetá (Tota-Bijagual-

Mamapacha complex) need to be verified. The latter probably represent confusions with *Espeletia pescana* (S. Díaz) S. Díaz.

Conservation status: Vulnerable. According to IUCN data, this species has Extent of Occurrence (EOO) = 1920 km², with 6 to 10 localities distributed in two main areas: Guantiva–La Rusia and Siscunsi-Oceta (part of the Tota-Bijagual-Mamapacha complex). However, herbarium records from the latter probably belong to *Espeletia pescana*. The real EOO and number of localities of *E. incana* are probably much smaller than shown in current IUCN analyses, and this species would very likely need to be reclassified in the Endangered category.

38.1. *Espeletia incana* Cuatrec. f. *incana*.

38.2. *Espeletia incana* Cuatrec. f. *prolificens* Cuatrec., Mem. New York Bot. Gard. 107: 276. 2013. TYPE: COLOMBIA. Boyacá: Páramo de La Rusia, NW-N de Duitama, Serranía Peña Negra, cerca de las torres transmisoras del ejército nacional, pedregales de la peña, 2900 masl, 12 December 1972, *A. M. Cleef 7124* (Holotype: US; Isotypes: COL, U).

39. *Espeletia insignis* Cuatrec., Revista Acad. Colomb. Ci. Exact. 3(12): 432. 1940. TYPE: COLOMBIA. Norte de Santander: Hoya del río Chitagá, en “Vega Colombia,” abajo de Presidente, 2880–3000 masl, 21 July 1940, *J. Cuatrecasas & H. García-Barriga 10071* (Holotype: COL; Isotypes: BC, COL, F, US).

Homotypic synonym: *Espeletiopsis insignis* (Cuatrec.) Cuatrec., Phytologia 35(1): 55. 1976.

Distribution: COLOMBIA. Almorzadero (*J. Cuatrecasas 13476*, US).

Conservation status: Endangered.

40. *Espeletia jaramilloi* S. Díaz, Mutisia 37: 1. 1972. TYPE: COLOMBIA. Boyacá: por la carretera entre Socha y Sácama en el páramo de Pisba (o Socha), 3550–3650 masl, 9 October 1971, *R. Jaramillo-Mejía, G. Lozano & S. Díaz 5047* (Holotype: COL; Isotype: US). Fig. 2.

Distribution: COLOMBIA. Pisba (*J. Cuatrecasas & R. Jaramillo-Mejía 28738*, US).

Conservation status: Vulnerable.

41. *Espeletia jimenezquesadae* Cuatrec. [1], Rev. Acad. Col. Ci. Exact. 3(11): 247. 1940. TYPE: COLOMBIA. Boyacá: Cordillera Oriental, Nevado del Cocuy, hacia la Cueva, en la Zanja, 3700 masl, 13 September 1938, *J. Cuatrecasas & H. García-Barriga 1635* (Holotype: COL; Isotype: BC, F, P, US). Fig. 2.

[1]: According to Art. 60.11 of the International Code of Nomenclature for algae, fungi, and plants (Turland et al., 2018), the correct spelling for the derived substantival epithet is “*jimenezquesadae*” (instead of “*jimenez-quesadae*”).

Homotypic synonym: *Espeletiopsis jimenezquesadae* (Cuatrec.) Cuatrec., Phytologia 35(1): 56. 1976.

Distribution: COLOMBIA. Sierra Nevada del Cocuy (*J. Cuatrecasas & L. Rodríguez 27835*, US).

Conservation status: Vulnerable.

42. *Espeletia killipii* Cuatrec., Revista Acad. Colomb. Ci. Exact. 3(12): 425. 1940. TYPE: COLOMBIA. Cundinamarca: Municipio de Guasca, Páramo de Guasca, vertiente oriental, 3000–3500 masl, 11 October 1939, *H. García-Barriga 8117* (Holotype: COL; Isotypes: COL, US).

Distribution: COLOMBIA. Chingaza (*J. H. G. Barclay & P. Juajibioy 6527*, US; *J. Cuatrecasas 13543*, US), Cruz Verde-Sumapaz (*H. G. Barclay & P. Juajibioy 6472*, US).

Conservation status: Least Concern. According to IUCN data, this species has Extent of Occurrence (EOO) = 1993 km², with several localities distributed in two main areas: Chingaza and the north area of Cruz Verde–Sumapaz. However, inspection of herbarium records indicates that individuals from Cruz Verde–Sumapaz could indeed be hybrids between *Espeletia grandiflora* Bonpl. and *E. summapacis* Cuatrec., and that in Chingaza *E. killipii* is frequently confounded with the much more broadly distributed *E. grandiflora* (pers. obs.). Thus, the real EOO, AOO, and number of localities of *E. killipii* are certainly significantly smaller than shown in current IUCN analyses, and this species would very likely need to be reclassified at least in the Vulnerable category.

42.1. *Espeletia killipii* Cuatrec. var. *killipii*.

42.2. *Espeletia killipii* Cuatrec. var. *chisacana* Cuatrec., Phytologia 32(4): 326. 1975. TYPE: COLOMBIA. Cundinamarca: Macizo de Bogotá, Páramo de Chisacá, open hill at the left side of the road, 3680–3700 masl, 16 September 1961, *J. Cuatrecasas & R. Jaramillo-Mejía 25986* (Holotype: US; Isotypes: BC, COL, F, US).

43. *Espeletia laxiflora* (S. Díaz & Rodríguez-Cabeza) Mavárez, *comb. nov.*

Basionym: *Espeletiopsis laxiflora* S. Díaz & Rodríguez-Cabeza, Revista Acad. Colomb. Ci. Exact. 34(133): 442. 2010. TYPE: COLOMBIA. Santander: Santuario de Fauna y Flora Guanentá Alto Río Fonce, Municipio de Encino, Vereda Avendaños Tres, sector Páramo de las Playas, 19 October 2008, *B. V. Rodríguez-Cabeza, H. Palacios, R. Rivero & S. Estepa BVR-1993* (Holotype: COL; Isotypes: COL, HUA [not seen], UIS [not seen], UPTC [not seen]).

Homotypic synonym: *Coespeletia laxiflora* (S. Díaz & Rodríguez-Cabeza) S. Díaz & Rodríguez-Cabeza, Revista Acad. Colomb. Ci. Exact. 35(137): 422. 2011.

Distribution: COLOMBIA. Guantiva–La Rusia (*B. V. Rodríguez-Cabeza, H. Palacios, R. Rivero & S. Estepa BVR-1993*, COL).

Conservation status: Critically Endangered.

44. *Espeletia lopezii* Cuatrec., Revista Acad. Colomb. Ci. Exact. 3(11): 248. 1940. TYPE: COLOMBIA. Boyacá: Nevado del Cocuy, alto valle de Las Lagunillas, 4000–4300 masl, 12 September 1938, *J. Cuatrecasas & H. García-Barriga 1540* (Holotype: COL; Isotypes: BC, F, P, U, US).

Distribution: COLOMBIA. Sierra Nevada del Cocuy (*H. G. Barclay & P. Juajibioy 7444*, US; *H. G. Barclay & P.*

Juajibioy 7397, US; *M. Villarreal 3*, US; *J. Cuatrecasas & L. Rodríguez 27826*, US; *A. M. Cleef & T. van der Hammen 10345*, U), Pisba (*A. M. Cleef 4759*, US), Tota-Bijagual-Mamapacha (*J. Cuatrecasas, R. Jaramillo-Mejía & A. Kleef 28696*, US).

Conservation status: Least Concern.

44.1. *Espeletia lopezii* Cuatrec. subsp. *lopezii*.

Distribution: COLOMBIA. Sierra Nevada del Cocuy (*H. G. Barclay & P. Juajibioy 7397*, US; *H. G. Barclay & P. Juajibioy 7444*, US; *M. Villarreal 3*, US; *J. Cuatrecasas & L. Rodríguez 27826*, US), Pisba (*A. M. Cleef 4759*, US), Tota-Bijagual-Mamapacha (*J. Cuatrecasas, R. Jaramillo-Mejía & A. Kleef 28696*, US).

44.1.1. *Espeletia lopezii* Cuatrec. subsp. *lopezii* var. *lopezii*.

44.1.1.1 *Espeletia lopezii* Cuatrec. subsp. *lopezii* var. *lopezii* f. *lopezii*.

44.1.1.2 *Espeletia lopezii* Cuatrec. subsp. *lopezii* var. *lopezii* f. *alticola* Cuatrec., Phytologia 31(4): 327. 1975. TYPE: COLOMBIA. Boyacá: Sierra Nevada del Cocuy, Páramo Coñcavo, valle abrigado y pantanoso entre morrenas peladas, límite páramo-superpáramo, 4335 masl, 26 February 1973, *A. M. Cleef 8547* (Holotype: US; Isotypes: COL, GB, NY, S, U, US, VEN [not seen]).

44.1.2. *Espeletia lopezii* Cuatrec. subsp. *lopezii* var. *escobalensis* Cuatrec., Phytologia 45(1): 21. 1980. TYPE: COLOMBIA. Boyacá: Between Soatá and Cocuy, páramo del Alto del Escobal, 3750 masl, 8 September 1938, *J. Cuatrecasas & H. García-Barriga 1236* (Holotype: US; Isotypes: COL, F).

44.1.3. *Espeletia lopezii* Cuatrec. subsp. *lopezii* var. *major* Cuatrec., Phytologia 31(4): 325. 1975. TYPE: COLOMBIA. Boyacá: Páramo entre Chita y Sácama, vertiente oriental de la cordillera, Quebrada del Curial (La Porquera), 3350 masl, 15 September 1969, *J. Cuatrecasas & L. Rodríguez 27791* (Holotype: COL; Isotype: US).

44.2. *Espeletia lopezii* Cuatrec. subsp. *ursina* Cuatrec., Mem. New York Bot. Gard. 107: 303 (2013). TYPE: COLOMBIA. Arauca: Sierra Nevada del Cocuy, cabeceras de Q[uebrada] Los Osos, 3800 masl, 25 March 1977, *A. Cleef & T. van der Hammen 10345* (Holotype: US? [1]; Isotypes: AMD, U).

[1]: According to Cuatrecasas (2013), the holotypus is located in US, but it does not appear in online databases.

Distribution: COLOMBIA. Sierra Nevada del Cocuy (*A. M. Cleef & T. van der Hammen 10345*, U).

45. *Espeletia marnixiana* S. Díaz & Pedraza, Revista Acad. Colomb. Ci. Exact. 25(94): 12. 2001. TYPE: COLOMBIA. Cauca: Municipio de Argelia, Vereda el Naranjal, Cordillera Occidental, Río Plateado, nacimiento del río Micay, Páramo de La Soledad, 3250 masl, 19 June 1993, *M. L. Becking 1042* (Holotype: COL).

Distribution: COLOMBIA. Cerro Plateado (*M. L. Becking 1042*, COL).

Known only from the type specimen. The validity of this species needs to be reviewed.

Conservation status: Data Deficient.

46. *Espeletia mirabilis* S. Díaz & Rodríguez-Cabeza, *Revista Acad. Colomb. Ci. Exact.* 34(133): 449. 2010. TYPE: COLOMBIA. Boyacá: Parque Nacional Natural Pisba, Municipio Socotá, vereda Corral de Piedra, sector río Arzobispo, parte alta de Los Estupendos, 3550 masl, 5°58'33"N, 72°33'47"W, 14 September 2008, *B. V. Rodríguez-Cabeza & L. Velasco 2001* (Holotype: COL; Isotypes: COL, HUA, UIS [not seen], UPTC [not seen]).

Distribution: COLOMBIA. Pisba (*B. V. Rodríguez-Cabeza & L. Velasco 2001*, COL).

Known only from the type specimen. The validity of this species needs to be reviewed.

Conservation status: Critically Endangered. Given the lack of information this taxon would likely need to be reclassified as Data Deficient.

47. *Espeletia miradorensis* (Cuatrec.) Cuatrec., *Phytologia* 52(3): 158. 1982. TYPE: COLOMBIA. Cundinamarca: Páramo de Sumapaz, Alto de Lagunitas, El Mirador, 5 km al S de San Juan, 3560 masl, 28 January 1973, *A. M. Cleef 8421* (Holotype: COL; Isotypes: COL, K, MO, U, US, VEN [not seen]).

Homotypic synonym: *Espeletia grandiflora* Bonpl. var. *miradorensis* Cuatrec., *Phytologia* 32(4): 324. 1975.

Distribution: COLOMBIA. Cruz Verde–Sumapaz (*A. M. Cleef 8421*, US).

Known only from the type specimen. The validity of this species needs to be reviewed.

Conservation status: Critically Endangered. Given the lack of information this taxon would likely need to be reclassified as Data Deficient.

48. *Espeletia muiska* Cuatrec., *Revista Acad. Colomb. Ci. Exact.* 3(12): 429. 1940. TYPE: COLOMBIA. Boyacá: Páramo de Guantiva, Alto de Canutos, vertiente sur, 3200–3400 masl, 3 August 1940, *J. Cuatrecasas 10359* (Holotype: COL; Isotypes: F, US). Fig. 2.

Homotypic synonym: *Espeletiopsis muiska* (Cuatrec.) Cuatrec., *Phytologia* 35(1): 56. 1976.

Distribution: COLOMBIA. Guantiva–La Rusia (*J. Cuatrecasas 10409*, US), Iguaque-Merchán (*J. Cuatrecasas 10440*, US), Tota-Bijagual-Mamapacha (*F. O. Zuloaga & X. Landonó 4158*, COL), Sierra Nevada del Cocuy (*J. Cuatrecasas & L. Rodríguez 27806*, US).

Conservation status: Least Concern.

49. *Espeletia murilloi* Cuatrec., *Revista Acad. Colomb. Ci. Exact.* 3(12): 425. 1940. TYPE: COLOMBIA. Boyacá: Páramo de Arcabuco, 2800 masl, 24 February 1940 [1], *E. Pérez-Arbeláez & J. Cuatrecasas 8098* (Holotype: COL; Isotypes: F, US). Fig. 2.

[1]: Collection date given as “22 February 1940” in Diazgranados (2012) and Cuatrecasas (2013).

Distribution: COLOMBIA. Guantiva–La Rusia (*A. M. Cleef 7184*, US; *J. Cuatrecasas 10429*, US; *J. Cuatrecasas 10411*, US), Iguaque-Merchán (*H. García-Barriga 20371*, US), Tota-Bijagual-Mamapacha (*A. M. Cleef 9540*, US), Rabanal–Río Bogotá (*D. Stancik 1282*, COL).

Conservation status: Least Concern.

49.1. *Espeletia murilloi* Cuatrec. var. *murilloi*.

49.2. *Espeletia murilloi* Cuatrec. var. *rusiana* Cuatrec., *Revista Acad. Colomb. Ci. Exact.* 4(14): 168. 1941. TYPE: COLOMBIA. Santander [1]: Páramo de La Rusia, vertiente noroeste, 3300–3500 masl, 4 August 1940, *J. Cuatrecasas 10429* (Holotype: COL; Isotypes: F, US).

[1]: Department given as “Boyacá” in Diazgranados (2012).

49.3. *Espeletia murilloi* Cuatrec. var. *subcoriacea* Cuatrec., *Revista Acad. Colomb. Ci. Exact.* 4(14): 168. 1941. TYPE: COLOMBIA. Boyacá: Páramo de La Rusia, vertiente sudeste, Boca del Monte, 3300–3400 m, 4 August 1940, *J. Cuatrecasas 10411* (Holotype: COL; Isotype: US).

Nomen nudum: Espeletia murilloi Cuatrec. subsp. *subcoriacea* Cuatrec., *Revista Acad. Colomb. Ci. Exact.* 4(14): 168. 1941 [1].

[1]: Cuatrecasas never validly published *Espeletia murilloi* subsp. *subcoriacea*. The name with subsp. rank appeared in the legend of the figure depicting *E. murilloi* var. *subcoriacea*, probably by mistake, and has never been used again.

50. *Espeletia mutabilis* S. Díaz & Rodríguez-Cabeza, *Revista Acad. Colomb. Ci. Exact.* 30(16): 345. 2006. TYPE: COLOMBIA. Boyacá: Municipio de Socha, Vereda El Mortiñal (parte alta), sector El Alizal, sitio El Frailejonal, finca de la Alcaldía, 3700 masl, 28 July 2006, *B. V. Rodríguez & P. Velasco BVR-1675* (Holotype: COL; Isotypes: COL, UIS [not seen]).

Distribution: COLOMBIA. Pisba (*B. V. Rodríguez & P. Velasco BVR-1675*, US).

Conservation status: Near Threatened. According to IUCN data, this species has Area of Occupancy (AOO) = 12–20 km², with three to five localities distributed within a single páramo nearby Socha, Boyacá, and with ca. 1000–1500 adult individuals. Its habitat is described as relatively well conserved so far but surrounded by areas with active farming, ranching, and coal mining. Under these conditions, this species would very likely need to be reclassified at least in the Vulnerable category.

51. *Espeletia nemekenei* Cuatrec., *Revista Acad. Colomb. Ci. Exact.* 3(12): 430. 1940. TYPE: COLOMBIA. Boyacá: Páramo de Guantiva, Alto de Canutos, vertiente sur, 3200–3400 masl, 3 August 1940, *J. Cuatrecasas 10348* (Holotype: COL; Isotypes: BC, COL, F, US).

Distribution: COLOMBIA. Guantiva–La Rusia (*J. Cuatrecasas & L. Rodríguez 27749*, US), Iguaque-Merchán (*L. Uribe-Urbe 6604*, US).

Conservation status: Endangered.

52. *Espeletia occidentalis* A.C. Sm., Brittonia 1(7): 520. 1935. TYPE: COLOMBIA. Border Antioquia-Bolívar [currently Antioquia-Córdoba]: Páramo de Chaquiro, 3000–3200 masl, 23 February 1918, *F. W. Pennell 4266* (Holotype: NY; Isotypes: GH, US).

Distribution: COLOMBIA. Paramillo (*E. L. Core 544*, US), Belmira (*R. Fonnegra & D. Tuberquia 4605*, US). Apparently found as well in Frontino-Urrao (*E. Rentería 5125*, HUA), Citará (*F. Alzate 4733*, HUA), and El Duende (*Vargas 4855*, HUA), but these records need to be confirmed.

Conservation status: Near Threatened.

52.1. *Espeletia occidentalis* A.C. Sm. subsp. *occidentalis*.

Distribution: COLOMBIA. Paramillo (*E. L. Core 544*, US).

52.2. *Espeletia occidentalis* A.C. Sm. subsp. *antioquiensis* (Cuatrec.) Cuatrec., Mem. New York Bot. Gard. 107: 216. 2013. TYPE: COLOMBIA. Antioquia: Entre Yarumal y Santa Rosa, páramo en Llanos de Cuiba, 2700 masl, 20 February 1942, *J. Cuatrecasas & R. D. Metcalf 30163* (Holotype: COL; Isotypes: BC, F, G, GH, LIL [not seen], US).

Homotypic synonym: *Espeletia occidentalis* A.C. Sm. var. *antioquiensis* Cuatrec., Revista Acad. Colomb. Ci. Exact. 5(17): 24.1942.

Distribution: COLOMBIA. Belmira (*R. Fonnegra & D. Tuberquia 4605*, US).

53. *Espeletia oswaldiana* S. Díaz, Mutisia 32:1. 1970. TYPE: COLOMBIA. Boyacá: Carretera Sogamoso-Pajarito, 2 km adelante de Vadohondo, valle del Río Cusiana, 2 July 1968, *S. Díaz-Piedrahita 74* (Holotype: COL; Isotypes: ENCB [not seen], NY, US, VEN [not seen]).

Distribution: COLOMBIA. Tota-Bijagual-Mamapacha (*J. Cuatrecasas & R. Jaramillo-Mejía 28703*, US).

Conservation status: Critically Endangered.

54. *Espeletia paipana* S. Díaz & Pedraza, Revista Acad. Colomb. Ci. Exact. 25(94): 12. 2001. TYPE: COLOMBIA. Boyacá: Municipio Paipa, Cuchilla “El Páramo,” 3300 masl, 3–4 December 1998, *D. Stancik 1507* (Holotype: COL; Isotypes: COL, PRC).

Distribution: COLOMBIA. Iguaque-Merchán (*B. V. Rodríguez-Cabeza et al. 1918*, COL).

Conservation status: Critically Endangered.

55. *Espeletia perijaensis* Cuatrec., Phytologia 38: 17. 1977. TYPE: COLOMBIA. Magdalena: Sierra de Perijá, east of Manaure, Quebrada de Floridablanca, 2700–2800 masl, 10 November 1959, *J. Cuatrecasas & R. Romero-Castañeda 25192* (Holotype: US; Isotype: COL).

Distribution: COLOMBIA-VENEZUELA. Perijá (*J. Cuatrecasas & R. Romero-Castañeda 25032*, US).

Conservation status: Endangered.

56. *Espeletia pescana* (S. Díaz) S. Díaz, Revista Acad. Colomb. Ci. Exact. 33(125): 459. 2008. TYPE:

COLOMBIA. Boyacá: Municipio de Pesca, Páramo de la Cortadera, Vereda la Peña, 3750 masl, 21 August 1982, *M. Bejarano 257* (Holotype: COL; Isotypes: COL, US).

Homotypic synonym: *Espeletia brachyaxiantha* S. Díaz subsp. *pescana* S. Díaz, Mutisia 61: 8. 1985.

Distribution: COLOMBIA. Tota-Bijagual-Mamapacha (*M. Bejarano 335*, US).

Conservation status: Vulnerable.

57. *Espeletia petiolata* Cuatrec., Revista Acad. Colomb. Ci. Exact. 4(15–16): 338. 1941. TYPE: COLOMBIA. Santander: Páramo del Almorzadero, región media, 3500–3700 masl, 20 July 1940, *J. Cuatrecasas & H. García-Barriga 9973* (Holotype: COL; Isotypes: BC, F, US).

Homotypic synonyms: *Espeletiopsis petiolata* (Cuatrec.) Cuatrec., Phytologia 35(1): 56. 1976.

Nom. Illeg.: *Espeletia petiolata* Cuatrec. f. *paniculata* Cuatrec., Revista Acad. Colomb. Ci. Exact. 5: 22 (1942).

Distribution: COLOMBIA. Almorzadero (*J. Cuatrecasas & L. Rodríguez 27877*, US), Sierra Nevada del Cocuy (*D. Stancik & J. R. Carvajal 1813*, COL), Pisba (*R. Jaramillo-Mejía, G. Lozano-Contreras & S. Díaz-Piedrahita 5058*, US). The status of populations in Pisba must be reviewed.

Conservation status: Least Concern.

57.1. *Espeletia petiolata* Cuatrec. var. *petiolata*.

57.1.1. *Espeletia petiolata* Cuatrec. var. *petiolata* f. *petiolata*.

57.1.2. *Espeletia petiolata* Cuatrec. var. *petiolata* f. *corymbosa* Cuatrec., Revista Acad. Colomb. Ci. Exact. 5(17): 22. 1942. TYPE: COLOMBIA. Norte de Santander: Quebrada de Presidente en la alta hoya del Río Chitagá, 3100 masl, 28 November 1941, *J. Cuatrecasas 13479* (Holotype: COL; Isotype: COL).

Homotypic synonym: *Espeletiopsis petiolata* Cuatrec. f. *corymbosa* (Cuatrec.) Diazgr., PhytoKeys 16: 31. 2012.

57.1.2. *Espeletia petiolata* Cuatrec. var. *petiolata* f. *media* Cuatrec., Revista Acad. Colomb. Ci. Exact. 5(17): 22. 1942. TYPE: COLOMBIA. Santander: Páramo del Almorzadero, vertiente norte, 3600–3800 masl, 28 November 1941, *J. Cuatrecasas 13497 [1]* (Holotype: COL; Isotype: US).

[1]: Collection date given as “28 November 1931” in Diazgranados (2012).

Homotypic synonym: *Espeletiopsis petiolata* Cuatrec. f. *media* (Cuatrec.) Diazgr., PhytoKeys 16: 32. 2012.

57.1.3. *Espeletia petiolata* Cuatrec. var. *petiolata* f. *reducta* Cuatrec., Revista Acad. Colomb. Ci. Exact. 4(15–16): 338. 1941. TYPE: COLOMBIA. Santander: Páramo del Almorzadero, vertiente norte, 3500–3700 masl, 20 July 1940, *J. Cuatrecasas & H. García-Barriga 9987-A* (Holotype: COL).

Homotypic synonym: *Espeletiopsis petiolata* Cuatrec. var. *petiolata* f. *reducta* (Cuatrec.) Diazgr., PhytoKeys 16: 32. 2012.

57.2. *Espeletia petiolata* Cuatrec. var. *escobensis* Cuatrec., Revista Acad. Colomb. Ci. Exact. 5(17): 22. 1942. TYPE: COLOMBIA. Boyacá: Between Soatá and Cocuy, Páramo del Alto del Escobal, 3800–3900 masl, 15 September 1938, *J. Cuatrecasas & H. García-Barriga 1760* (Holotype: COL; Isotypes: F, US).

Homotypic synonym: *Espeletiopsis petiolata* Cuatrec. var. *escobensis* (Cuatrec.) Diazgr., PhytoKeys 16: 31. 2012.

58. *Espeletia pisbana* S. Díaz & Rodríguez-Cabeza, Revista Acad. Colomb. Ci. Exact. 30(116): 332. 2006. TYPE: COLOMBIA. Boyacá: PNN Pisba, Municipio Socotá, Vereda Pueblo Viejo, ruta Libertadora, Sector La Australia, sitio El Alto del Almorzadero, 3406 masl, 6°09'57.229"N, 72°46'11.615"W, [1], 16 June 2005, *B. V. Rodríguez-Cabeza & L. Velasco 1389* (Holotype: COL; Isotypes: COL, UIS [not seen]).

[1]: Geographic coordinates provided with the holotypus do not match type locality.

Distribution: COLOMBIA. Pisba (*B. V. Rodríguez-Cabeza & L. Velasco 1402*, COL).

Conservation status: Least Concern. According to IUCN data, this species has EOO = 62 km², Area of Occupancy (AOO) = 12 km², with all localities distributed within the Páramo de Pisba. Its populations are described as locally abundant (up to 300 mature individuals), in habitats considered well conserved and without major threats. However, given the small known distribution of this species, it would very likely need to be reclassified at least in the Vulnerable category.

59. *Espeletia pleiochasia* Cuatrec., Revista Acad. Colomb. Ci. Exact. 3(12): 432. 1940. TYPE: COLOMBIA. Boyacá: Quebrada de Becerra al noroeste de Duitama, páramos entre bosque, 2970–3300 masl, 4 August 1940, *J. Cuatrecasas 10399* (Holotype: COL; Isotypes: BC, COL, F, P, US).

Homotypic synonym: *Espeletiopsis pleiochasia* (Cuatrec.) Cuatrec., Phytologia 35(1): 56. 1976.

Distribution: COLOMBIA. Guantiva–La Rusia (*H. García-Barriga & R. Jaramillo-Mejía 20279*, US), Pisba (*R. Jaramillo-Mejía, G. Lozano-Contreras & S. Díaz-Piedrahita 5017*, US), Iguaque–Merchán (*D. Stancik 1680*, COL), Cruz Verde–Sumapaz (*G. Huertas & R. Jaramillo-Mejía 6087*, COL).

Conservation status: Near threatened.

59.1. *Espeletia pleiochasia* Cuatrec. var. *pleiochasia*.

59.2. *Espeletia pleiochasia* Cuatrec. var. *socotana* Cuatrec., Phytologia 31: 328. 1975. TYPE: COLOMBIA. Boyacá: Carretera Socha–Los Pinos, km 40, 2 km al N. del Alto Las Pilas y 4 km al E-NE de Socha, 2970 masl, 22 May 1973, *A. M. Cleef 9870* (Holotype: US; Isotypes: COL, U, US).

Homotypic synonym: *Espeletiopsis pleiochasia* Cuatrec. var. *socotana* (Cuatrec.) Diazgr., PhytoKeys 16: 32. 2012.

60. *Espeletia praefrontina* Cuatrec., Phytologia 47(1): 10. 1980. TYPE: COLOMBIA. Antioquia: Páramo Frontino, near Llano Grande, 3450 masl, 25 October 1976, *J. D. Boeke & J. B. McElroy 273* (Holotype: US; Isotypes: MEDEL [not seen], NY, U).

Distribution: COLOMBIA. Frontino-Urrao (*J. D. Boeke & J. B. McElroy 309*, US). Apparently found as well in Paramillo (e.g., *H. Cuadros 5004*, US), but these records need to be confirmed.

Conservation status: Least Concern. According to IUCN data, this species has Extent of Occurrence (EOO) = 1100 km², with three localities distributed in Paramillo, Frontino-Urrao, and El Duende. However, there are no confirmed records of *Espeletia praefrontina* in the latter. Furthermore, this species is sometimes confounded with the more broadly distributed *E. frontinoensis* and *E. occidentalis* (obs. pers.). Indeed, when only confirmed *E. praefrontina* occurrences are used in the analysis, its EOO = 43 km² and its AOO = 24 km², with only two localities (data not shown). This species would very likely need to be reclassified in the Endangered category.

61. *Espeletia praesidentis* Diazgr. & L.R. Sánchez, PhytoKeys 76: 3. 2017. TYPE: COLOMBIA. Norte de Santander: Páramo de Presidente, en vía a Chitagá, llegando al páramo, 3503 masl, -72°40.8828'W, 6°59.8362'N, 3 October 2009, *M. Diazgranados & L. R. Sánchez 3865* (Holotype: COL; Isotype: HECASA [not seen]).

Distribution: COLOMBIA. Almorzadero (*M. Diazgranados & L. R. Sánchez 386*, COL).

Conservation status: Least Concern. According to IUCN data, this species has Area of Occupancy (AOO) = 8 km², with only one locality in Páramo de Presidente. The species is described as locally abundant, with several hundred individuals in a habitat that, although currently not threatened, is not formally protected. Given its extremely small distribution, low number of known populations, and absence of conservation actions, this species would very likely need to be reclassified in the Critically Endangered category, as originally in Diazgranados and Sánchez (2017).

62. *Espeletia pulcherrima* Rodríguez-Cabeza & S. Díaz, Revista Acad. Colomb. Ci. Exact. 30(116): 339. 2006. TYPE: COLOMBIA. Boyacá: Municipio Chita, Vereda Minas, Páramo de Los Venados, carretera hacia Sácama, km 86 - desvío a Chita, 3300 masl, 6°03'0.65"N, 72°25'40.7"W, 23 October 2005, *B. V. Rodríguez-Cabeza & L. Velasco 1520* (Holotype: COL; Isotype: UIS [not seen]).

Distribution: COLOMBIA. Pisba (*B. V. Rodríguez-Cabeza & L. Velasco 1520*, COL).

Conservation status: Endangered.

63. *Espeletia purpurascens* Cuatrec., *Revista Acad. Colomb. Ci. Exact.* 5(17): 16. 1942. TYPE: COLOMBIA. Norte de Santander: Páramo de Tamá, alrededores de La Cueva, 3000–3200 masl, 28 October 1941, *J. Cuatrecasas, R. E. Schultes & E. Smith 12689* (Holotype: COL; Isotypes: BC, COL, F, GH, U, US).

Homotypic synonym: *Espeletiopsis purpurascens* (Cuatrec.) Cuatrec., *Phytologia* 35(1): 56 (1976).

Distribution: COLOMBIA-VENEZUELA. Tamá (*L. Ruíz-Terán & M. López-Figueiras 8926*, US).

Conservation status: Endangered.

64. *Espeletia pycnophylla* Cuatrec., *Revista Acad. Colomb. Ci. Exact.* 5(17): 24. 1942. TYPE: COLOMBIA. Nariño-Putumayo: Alta cuenca del Río Putumayo, filo de la cordillera entre El Encano y Sibundoy, Páramo de San Antonio del Bordoncillo, 3250 masl, 4 January 1941, *J. Cuatrecasas 11736* (Holotype: COL; Isotypes: BC, F, US).

Distribution: COLOMBIA. La Cocha–Patascoy (*J. Cuatrecasas, E. Hernández & A. Estrada 28652*, US; *J. Cuatrecasas 11820*, US), Doña Juana–Chimayoy (*S. L. Díaz-Ibarra 2311*, US), Chiles-Cumbal (*J. L. Luteyn, J. Fuertes & J. O. Rangel-Ch. 12881*, US). ECUADOR: Páramo del Angel (*H. G. Barclay & P. Juajibioy 9411*, US), Páramo El Mirador (*V. A. Funk & M. Gavilanes 11049*, US), P.N. Llanganates (*H. Vargas, J. C. Ronquillo & N. Granda 2713*, US).

Conservation status: Least Concern.

64.1. *Espeletia pycnophylla* Cuatrec. subsp. *pycnophylla*.

Distribution: COLOMBIA. La Cocha–Patascoy (*J. Cuatrecasas, E. Hernández & A. Estrada 28652*, US), Doña Juana–Chimayoy (*S. L. Díaz-Ibarra 2311*, US).

64.1.1. *Espeletia pycnophylla* Cuatrec. subsp. *pycnophylla* var. *pycnophylla*.

64.1.2. *Espeletia pycnophylla* Cuatrec. subsp. *pycnophylla* var. *galerana* Cuatrec., *Phytologia* 45(1): 17. 1980. TYPE: COLOMBIA. Nariño: Macizo del Volcán Galeras, eastern slopes, páramo bushes, 3900 masl, 7 February 1960, *J. Cuatrecasas & L. E. Mora 26931* (Holotype: COL; Isotype: US).

64.1.3. *Espeletia pycnophylla* Cuatrec. subsp. *pycnophylla* var. *lacinulata* Cuatrec., *Phytologia* 45(1): 17. 1980. TYPE: COLOMBIA. Nariño-Putumayo: Filo de la cordillera, Páramo de Quilinchayaco, lado oriental, 3200–3250 masl, 21 March 1973, *J. Cuatrecasas, E. Hernández & A. Estrada 28643* (Holotype: US; Isotypes: COL, U, US).

64.2. *Espeletia pycnophylla* Cuatrec. subsp. *angelensis* Cuatrec., *Phytologia* 45(1): 18. 1980. TYPE: ECUADOR. Carchi: Páramo del Angel, 3400 masl, 21 June 1939, *E. Asplund 7078* (Holotype: S; Isotypes: CAS, G, US).

Heterotypic synonym: *Espeletia cochensis* Cuatrec., *Revista Acad. Colomb. Ci. Exact.* 5(17): 25. 1942. TYPE: COLOMBIA: Putumayo: Lado sur de la Laguna de La

Cocha, Quebrada de Santa Lucía, bosque, 2850 masl, 8 January 1941, *J. Cuatrecasas 11820* (Holotype: COL; Isotypes: F, US).

Distribution: COLOMBIA. Chiles-Cumbal (*J. L. Luteyn, J. Fuertes & J. O. Rangel-Ch. 12881*, US), La Cocha–Patascoy (*J. Cuatrecasas 11820*, US). ECUADOR. Páramo del Angel (*H. G. Barclay & P. Juajibioy 9411*, US), Páramo El Mirador (*V. A. Funk & M. Gavilanes 11049*, US).

64.3. *Espeletia pycnophylla* Cuatrec. subsp. *llanganatensis* Cuatrec., *Phytologia* 45(1): 20. 1980. TYPE: ECUADOR. Tungurahua: Cordillera de Llanganates, near Las Torres, páramo, 3700–3800 masl, 23 November 1939, *E. Asplund 9944* (Holotype: S; Isotype: S).

Distribution: ECUADOR. P.N. Llanganates (*H. Vargas, J. C. Ronquillo & N. Granda 2713*, US).

65. *Espeletia rabanalensis* (S. Díaz & Rodríguez-Cabeza) Mavárez, *comb. nov.*

Basionym: *Espeletiopsis rabanalensis* S. Díaz & Rodríguez-Cabeza, *Revista Acad. Colomb. Ci. Exact.* 33(125): 456. 2008. TYPE: COLOMBIA. Boyacá: Municipio de Samacá, Páramo del Rabanal, 3412 masl, 05°44'N, 73°35'W, 3–5 October 2007, *B. V. Rodríguez-Cabeza & F. Márquez 1895* (Holotype: COL; Isotypes: COL, UIS [not seen]).

Distribution: COLOMBIA. Rabanal–Río Bogotá (*J. C. Arias-G. et al. 3704*, COL).

Conservation status: Endangered.

66. *Espeletia ramosa* Mavárez & M.T. Becerra, *Phytologia* 101(4): 223. 2019. TYPE: COLOMBIA. Boyacá: near El Alto, about 4.5 km in the road Pesca-Tota, 3060 masl, 5.546853 N 73.031896 W, 17 August 2019, *M. T. Becerra, J. Mavárez & J. Aguirre 35* (Holotype: COL; Isotype: COL). Fig. 2.

Distribution: COLOMBIA. Tota-Bijagual-Mamapacha (*M. T. Becerra, J. Mavárez & J. Aguirre 35*, COL).

Conservation status: Not Evaluated. Critically Endangered according to Mavárez and Becerra (2019).

67. *Espeletia raquirensis* Rodríguez-Cabeza & S. Díaz, *Revista Acad. Colomb. Ci. Exact.* 34(133): 446. 2010. TYPE: COLOMBIA. Boyacá: Municipio de Ráquira, Vereda Firitá, Peña Arriba, Páramo de Rabanal, en límites con el municipio de Guachetá, vereda San Antonio (Cundinamarca), 3260 masl, 5°24'35.7"N, 73°36'33.0"W, 12 August 2008, *B. V. Rodríguez-Cabeza, R. Galindo-T. & I. Cortez BVR-1973* (Holotype: COL; Isotypes: COL, HUA, UIS [not seen], UPTC [not seen]).

Distribution: COLOMBIA. Rabanal–Río Bogotá (*B. V. Rodríguez-Cabeza, R. Galindo-T. & I. Cortez BVR-1973*, HUA).

Conservation status: Critically Endangered.

68. *Espeletia restricta* Alzate & S. Giraldo, Phytotaxa 433(4): 289. 2020. Type: COLOMBIA. Antioquia: Municipio Sonsón, Vereda La Paloma, Páramo de Sonsón, Cerro de Las Palomas, 3370 masl, 5°43'3"N, 75°14'58"W, 7 January 2016, *F. Alzate 5220* (Holotype: HUA [not seen]; Isotypes: COL [not seen]).

Distribution: COLOMBIA. Sonsón (*J. Betancur & S. P. Churchill 5868*, COL).

Conservation status: Not Evaluated. Critically Endangered according to Alzate and Giraldo (2020).

69. *Espeletia roberti* Cuatrec., Phytologia 38(1): 7. 1977. TYPE: COLOMBIA. Norte de Santander-Cesar: límites entre los departamentos de Norte de Santander y Cesar, Cerro de Oroque (Las Jurisdicciones), 3700–3900 masl, 22–27 July 1974, *H. García-Barriga & R. Jaramillo-Mejía 20648* (Holotype: US; Isotype: COL).

Distribution: COLOMBIA. Jurisdicciones-Santurbán (*H. García-Barriga & R. Jaramillo-Mejía 20662*, US).

Conservation status: Endangered. According to IUCN data, this species has Extent of Occurrence (EOO) = 216 km², with three to five localities distributed in two main areas: Cerro de Oroque and around Vetas, both within the Jurisdicciones-Santurbán complex. However, no confirmed records of the species in the latter area have been found. Indeed, all confirmed records are located within an area with EOO < 20 km², with the largest population occupying a patch with ca. 5 ha of páramo habitat (García et al., 2005). Furthermore, the area is severely affected by farming and ranching, with no formal protection. Given its extremely small distribution, low number of known populations, and absence of conservation actions, this species would very likely need to be reclassified in the Critically Endangered category, as originally in García et al. (2005).

70. *Espeletia rositae* Cuatrec., Revista Acad. Colomb. Ci. Exact. 4: 164. 1941. TYPE: COLOMBIA. Boyacá: Páramo de Güina - Santa Rosita, 3300–3400 masl, 3 August 1940, *J. Cuatrecasas 10371* (Holotype: COL; Isotypes: BC, COL, F, U, US).

Distribution: COLOMBIA. Guantiva–La Rusia (*J. Cuatrecasas 10371*, US; *A. M. Cleef 9824*, US).

Conservation status: Endangered.

70.1. *Espeletia rositae* Cuatrec. subsp. *rositae*.

Distribution: COLOMBIA. Guantiva–La Rusia (*J. Cuatrecasas 10371*, US).

70.2. *Espeletia rositae* Cuatrec. subsp. *macrocephala* (Cuatrec.) Cuatrec., Mem. New York Bot. Gard. 107: 264. 2013. TYPE: COLOMBIA. Boyacá: Gran páramo entre Santa Rosita y Gonzaga [Onzaga], extreme NW, 3300 masl, 6 April 1973, *J. Cuatrecasas & R. Jaramillo-Mejía 28743* (Holotype: US; Isotypes: COL, F, U, US).

Homotypic synonym: *Espeletia rositae* Cuatrec. var. *macrocephala* Cuatrec., Phytologia 31(4): 329. 1975.

Distribution: COLOMBIA. Guantiva–La Rusia (*A. M. Cleef 9824*, US).

71. *Espeletia sanchezii* (S. Díaz & Obando) Mavárez, *comb. nov.*

Basionym: *Espeletiopsis sanchezii* S. Díaz & Obando, Revista Acad. Colomb. Ci. Exact. 28(108): 324. 2004. TYPE: COLOMBIA. Norte de Santander: Pamplona, sector de La Lejía, páramo de Tierranegra, 3200–3300 masl, 23 November 2002, *L. R. Sánchez, M. A. Murcia & W. Valencia 7281* (Holotype: COL; Isotypes: COL, HECASA [not seen]).

Distribution: COLOMBIA. Jurisdicciones-Santurbán (*L. R. Sánchez, M. A. Murcia & W. Valencia 7281*, COL).

Conservation status: Endangered.

72. *Espeletia santanderensis* A.C. Sm., Brittonia 1(7): 527. 1935. TYPE: COLOMBIA. Santander: Páramo de Vetas, 3400–3700 masl, 16 January 1927, *E. P. Killip & A. C. Smith 17422* (Holotype: NY; Isotypes: F, GH, K, PH [not seen], S, US). Fig. 2.

Homotypic synonym: *Espeletiopsis santanderensis* (A.C. Sm.) Cuatrec., Phytologia 35(1): 56. 1976.

Distribution: COLOMBIA. Jurisdicciones-Santurbán (*H. G. Barclay & P. Juajibioy 10439*, US).

Conservation status: Least Concern.

73. *Espeletia schultesiana* Cuatrec., Revista Acad. Colomb. Ci. Exact. 5(17): 26. 1942. TYPE: COLOMBIA. Putumayo: Páramo del Tambillo, northwest of the Valle de Sibundoy, ca. 8400 ft [2560 masl], 13–14 December 1941, *R. E. Schultes & C. E. Smith 3096* (Holotype: COL; Isotypes: BR, CAS, F, FI, G [not seen], GH, MO [not seen], NY, P, US).

Distribution: COLOMBIA. La Cocha–Patascoy (*J. Cuatrecasas & E. Hernández 28656*, US), Doña Juana–Chimayoy (*S. Garzón 42*, COL).

Conservation status: Vulnerable. According to IUCN data, this species has Extent of Occurrence (EOO) = 254 km², with eight to ten localities distributed in two main areas to the East and Northeast of Laguna La Cocha. However, although this species can be locally abundant, it inhabits low-elevation and azonal páramos that are threatened by agriculture and fires, most of which are not formally protected. This species would very likely need to be reclassified in the Endangered category.

73.1. *Espeletia schultesiana* Cuatrec. f. *schultesiana*.

73.2. *Espeletia schultesiana* Cuatrec. f. *alternifolia* (Cuatrec.) Cuatrec., Mem. New York Bot. Gard. 107: 236. 2013. TYPE: COLOMBIA. Nariño-Putumayo: Páramo de San Antonio, entre Santiago y El Encano, 3500 masl, 10 February 1942, *F. Miguel-de-Ipiales 42* (Holotype: COL?; Isotypes: US).

Homotypic synonym: *Espeletia alternifolia* Cuatrec., Revista Acad. Colomb. Ci. Exact. 5(17): 27. 1942.

74. *Espeletia sclerophylla* Cuatrec., Revista Acad. Colomb. Ci. Exact. 3(12): 436. 1940. TYPE: COLOMBIA. Santander: Páramo del Almorzadero, extremo sur, Peralonso, 3200 masl, 19 July 1940, *J. Cuatrecasas & H. García-Barriga*

9929 (Holotype: COL; Isotypes: F, US).

Homotypic synonym: *Espeletiopsis sclerophylla* (Cuatrec.) Cuatrec., *Phytologia* 35(1): 56. 1976.

Distribution: COLOMBIA. Almorzadero (J. Cuatrecasas & L. Rodríguez 27868, US).

Conservation status: Endangered.

75. *Espeletia soroca* S. Díaz & Rodríguez-Cabeza, *Revista Acad. Colomb. Ci. Exact.* 30(116): 334. 2006. TYPE: COLOMBIA. Boyacá: Municipio de Chita, Vereda Minas, Páramo de Los Venados, carretera hacia Sácama, km. 86, desvío a Chita, 3200 masl, 6°02'26.1"N, 72°24'45.5"W, 23 October 2005, B. V. Rodríguez-Cabeza & L. Velasco BVR-1509 [1] (Holotype: COL; Isotypes: COL, HUA [not seen], UIS [not seen]).

[1]: Collection number given as “B. V. Rodríguez-Cabeza & L. Velasco BVR-150” in Díaz-Piedrahita et al., (2006) and Diazgranados (2012).

Distribution: COLOMBIA. Pisba (B. V. Rodríguez-Cabeza & L. Velasco BVR-2013, COL).

Conservation status: Critically Endangered.

76. *Espeletia standleyana* A.C. Sm., *Brittonia* 1(7): 514. 1935. TYPE: COLOMBIA. Santander: Páramo de Santurbán, en route from Tona to Mutiscua, 3800–4300 masl, 18 February 1827, E. P. Killip & A. C. Smith 19558 (Holotype: NY; Isotypes: F, GH, K, PH [not seen], US).

Distribution: COLOMBIA. Jurisdicciones-Santurbán (J. Cuatrecasas & H. García-Barriga 10290, US; S. Díaz-Piedrahita 78, US), Almorzadero (J. Cuatrecasas & L. Rodríguez 27894, US).

Conservation status: Vulnerable.

76.1. *Espeletia standleyana* A.C. Sm. subsp. *standleyana*.

Distribution: COLOMBIA. Jurisdicciones-Santurbán (J. Cuatrecasas & H. García-Barriga 10290, US).

76.2. *Espeletia standleyana* A.C. Sm. subsp. *ampla* (Cuatrec.) Cuatrec., *Mem. New York Bot. Gard.* 107: 205. 2013. TYPE: COLOMBIA. Santander: Páramo de Santurbán, vertiente oeste, matorrales-bosque, bajando hacia Bucaramanga, 3100 masl, 27 July 1940, J. Cuatrecasas & H. García-Barriga 10323 (Holotype: COL; Isotypes: F, US).

Homotypic synonym: *Espeletia standleyana* A.C. Sm. var. *ampla* Cuatrec., *Revista Acad. Colomb. Ci. Exact.* 5: 22. 1942.

Distribution: COLOMBIA. Jurisdicciones-Santurbán (S. Díaz-Piedrahita 78, US).

76.3. *Espeletia standleyana* A.C. Sm. subsp. *laxior* (Cuatrec.) Cuatrec., *Mem. New York Bot. Gard.* 107: 205. 2013. TYPE: COLOMBIA. Santander: Páramo del Almorzadero, vertiente norte, 3600–3800 masl, 28 November 1941, J. Cuatrecasas 13515 (Holotype: COL; Isotypes: BC, GH, US).

Homotypic synonym: *Espeletia standleyana* A.C. Sm. var. *laxior* Cuatrec., *Revista Acad. Colomb. Ci. Exact.* 5: 23. 1942.

Distribution: COLOMBIA. Almorzadero (J. Cuatrecasas & L. Rodríguez 27894, US).

77. *Espeletia steyermarkii* Cuatrec., *Ciencia (Mexico)* 6: 265. 1945. TYPE: VENEZUELA. Táchira: Swampy meadow in Paramito, between Quebrada de Palmar and Quebrada de Paramito, at base of Páramo de Tamá, 2 km above Betania and 7 km above Villapaez, 2500 masl, 14 July 1944, J. A. Steyermark 57217 (Holotype: VEN [not seen]; Isotypes: F, NY, US).

Homotypic synonym: *Espeletia brassicoidea* Cuatrec. var. *contracta* Aristeg., *Fl. Venez.* 10(1): 449. 1964.

Distribution: COLOMBIA-VENEZUELA. Tamá (J. Cuatrecasas, L. Ruíz-Terán & M. López-Figueiras 28324, US). According to Diazgranados and Sánchez (2017), *Espeletia steyermarkii* is apparently also found in Colombia, Santander, Páramo del Almorzadero.

Conservation status: Critically Endangered.

78. *Espeletia summapacis* Cuatrec., *Phytologia* 31(4): 331. 1975. TYPE: COLOMBIA. Cundinamarca: Macizo de Sumapaz, adelante de Andabobos, cerca al Pico de San Mateo, 3950–4000 masl, 7 February 1975, L. Uribe-Uribe & R. Jaramillo-Mejía 6895 (Holotype: US; Isotypes: COL, G, NY, US).

Distribution: COLOMBIA. Cruz Verde–Sumapaz (A. M. Cleef 1574, US).

Conservation status: Endangered.

79. *Espeletia tapirophila* Cuatrec., *Phytologia* 32(4): 320. 1975. TYPE: COLOMBIA. Meta: Páramo de Sumapaz, Hoya Río Nevado, Puerta de Las Dantas, ca. 3400 masl, 25 January 1973, A. M. Cleef 8301 (Holotype: US; Isotypes: COL, K, MO, U, US, VEN [not seen]).

Distribution: COLOMBIA. Cruz Verde–Sumapaz (A. M. Cleef 8301, US).

Known only from the type specimen. The validity of this species needs to be reviewed.

Conservation status: Data Deficient.

80. *Espeletia tibamoensis* Rodríguez-Cabeza & S. Díaz, *Revista Acad. Colomb. Ci. Exact.* 34(133): 451. 2010. TYPE: COLOMBIA. Boyacá: Limites entre los municipios de Siachoque y Toca, veredas Cormechoque arriba y Tubenecos, Páramo La Cortadera, sector Alto Tibamoá, 3600 masl, 16 May 2008, B. V. Rodríguez-Cabeza & A. Burgos BVR-1959 (Holotype: COL; Isotypes: COL, HUA, UIS [not seen], UPTC [not seen]).

Distribution: COLOMBIA. Tota-Bijagual-Mamapacha (B. V. Rodríguez-Cabeza & A. Burgos BVR-1959, HUA).

Conservation status: Critically Endangered.

81. *Espeletia tillettii* Cuatrec., *Phytologia* 47(1): 8. 1980. TYPE: VENEZUELA. Zulia: Distrito Maracaibo, Campamento “Monte Viruela,” on tepui-like limestone

massif 5 x 2.5 km, on international boundary, Sierra de Perijá, Serranía de Valledupar, ca. 3100 masl, 10°25'13"N, 72°52'42"W, 21–28 July 1974, *S. Tillett 747-1126* (Holotype: US; Isotypes: US, VEN [not seen]).

Distribution: VENEZUELA. Perijá (*S. Tillett 747-1126*, US). *Espeletia tillettii* is likely to be found on the Colombian side of Perijá.

Known only from the type specimen. The validity of this species needs to be reviewed.

Conservation status: Not Evaluated.

82. *Espeletia trianae* Cuatrec., *Revista Acad. Colomb. Ci. Exact.* 5(17): 18. 1942. TYPE: COLOMBIA. Norte de Santander: Páramos de Pamplona, 3000 masl, June 1851, *J. Triana 2476-5* (Holotype: COL; Isotypes: P).

Homotypic synonym: *Espeletiopsis trianae* (Cuatrec.) Cuatrec., *Phytologia* 35(1): 56. 1976.

Distribution: COLOMBIA. Jurisdicciones-Santurbán (*J. Triana 2476-5*, COL).

Known only from the type specimen. The validity of this species needs to be reviewed.

Conservation status: Data Deficient.

83. *Espeletia tunjana* Cuatrec., *Revista Acad. Colomb. Ci. Exact.* 3(12): 433. 1940. TYPE: COLOMBIA. Boyacá: Páramo de Santa Rosa, entre Santa Rosa y Cerinza, El Portachuelo, 3000 masl, 3 August 1940, *J. Cuatrecasas 10338* (Lectotype: COL; Isolectotype: F, US).

Heterotypic synonym: *Espeletia tunjana* Cuatrec. f. *reducta* Cuatrec., *Revista Acad. Colomb. Ci. Exact.* 3(12): 433. 1940. TYPE: COLOMBIA. Boyacá: Páramos de Tunja, 3100 masl, 5 August 1940, *J. Cuatrecasas 10445* (Holotype: US; Isotype: COL).

Nom. Illeg.: *Espeletia tunjana* Cuatrec. f. *magnificens* Cuatrec., *Revista Acad. Colomb. Ci. Exact.* 3(12): 433. 1940.

Distribution: COLOMBIA. Guantiva-La Rusia (*J. Cuatrecasas & R. Jaramillo-Mejía 28714*, US), Totabijagual-Mamapacha (*X. Londoño & F. O. Zuluaga 443*, US), Iguaque-Merchán (*G. Huertas & L. Camargo 6306*, US).

Conservation status: Endangered.

84. *Espeletia uribei* Cuatrec., *Mutisia* 16: 1. 1953. TYPE: COLOMBIA. Cundinamarca: Municipio de La Calera, Páramo de Siberia, 3500 masl, 25 October 1952, *L. Uribe-Urbe 2475* (Holotype: F; Isotypes: BC, COL, LP [not seen]).

Distribution: COLOMBIA. Chingaza (*A. M. Cleef 5120*, US).

Conservation status: Least Concern. According to IUCN data, this species has Extent of Occurrence (EOO) = 582 km², with all known localities distributed in the Chingaza complex. The species can be locally abundant, and most of its known populations are found within protected areas. However, its relatively small distribution concentrated within a single páramo unit indicates that species would very likely need to be reclassified in the Near Threatened or Vulnerable categories.

Hybrid Taxa

H1. *Espeletia* × *garcibarrigae* Cuatrec. (= *Espeletia argentea* Bonpl. f. *phaneractis* (S.F. Blake) Cuatrec. × *E. grandiflora* Bonpl.), *Revista Acad. Colomb. Ci. Exact.* 3(12): 426. 1940. TYPE: COLOMBIA. Cundinamarca: Páramo de Guasca, 3000–3500 masl, 11 October 1939, *H. García-Barriga 08108* (Holotype: COL). Cuatrecasas suggested the hybrid combination in the original publication. Hybrid status in Diazgranados (2012).

H2. *Espeletia* × *pachoana* Cuatrec. (= *Espeletia argentea* Bonpl. f. *phaneractis* (S.F. Blake) Cuatrec. × *E. grandiflora* Bonpl.), *Revista Acad. Colomb. Ci. Exact.* 4(14): 165. 1941. TYPE: COLOMBIA. Cundinamarca: Páramo de Zipaquirá, entre Zipaquirá y Pacho, 3100–3200 masl, 16 June 1940, *J. Cuatrecasas 9563* (Holotype: COL; Isotypes: F, US). Hybrid status in the original publication.

Heterotypic synonym: *Espeletia* × *pachoana* Cuatrec. f. *brevifolia* Cuatrec. (= *Espeletia argentea* Bonpl. f. *phaneractis* (S.F. Blake) Cuatrec. × *E. grandiflora* Bonpl.), *Revista Acad. Colomb. Ci. Exact.* 4(14): 166. 1941. TYPE: COLOMBIA. Cundinamarca: Páramo de Zipaquirá, entre Zipaquirá y Pacho, 3100–3200 masl, 16 June 1940, *J. Cuatrecasas 9561* (Holotype: COL; Isotype: US). Hybrid status in the original publication.

H3. *Espeletia* × *verdeana* Cuatrec. (= *Espeletia argentea* Bonpl. × *E. grandiflora* Bonpl.), *Revista Acad. Colomb. Ci. Exact.* 4(14): 166. 1941. TYPE: COLOMBIA. Cundinamarca: Páramo de Cruz Verde, 3400–3500 masl, 15 September 1940, *J. Cuatrecasas 10477* (Holotype: COL; Isotypes: F, US). Hybrid status in the original publication.

H4. *Espeletia* × *guascensis* Cuatrec. (= *Espeletia argentea* Bonpl. f. *phaneractis* (S.F. Blake) Cuatrec. × *E. killipii* Cuatrec.), *Revista Acad. Colomb. Ci. Exact.* 4(14): 166. 1941. TYPE: COLOMBIA. Cundinamarca: Páramo de Guasca, 3200–3300 masl, 2 June 1940, *J. Cuatrecasas 9493* (Holotype: COL; Isotypes: BC, F, US). Hybrid status in the original publication.

H5. *Espeletia* × *conglomerata* A.C. Sm. var. *macroclada* Cuatrec. (= *E. brassicoidea* Cuatrec. × *Espeletia conglomerata* Cuatrec.), *Revista Acad. Colomb. Ci. Exact.* 5(17): 23. 1942. TYPE: COLOMBIA: Santander: Páramo del Almorzadero, northern slopes, 3600–3800 masl, 28 November 1941, *J. Cuatrecasas 13494A* (Holotype: COL; Isotypes: BC, F, US). Hybrid status in Cuatrecasas (2013).

H6. *Espeletia* × *conglomerata* A.C. Sm. var. *pedunculata* Cuatrec. (= *E. brassicoidea* Cuatrec. × *Espeletia conglomerata* Cuatrec. *Revista Acad. Colomb. Ci. Exact.* 5(17): 23. 1942. TYPE: COLOMBIA: Santander: Páramo del Almorzadero, eastern slopes, 3600–3800 m, 28 November 1941, *J. Cuatrecasas 13494* (Holotype: COL; Isotypes: BC, F, US). Hybrid status in Cuatrecasas (2013).

H7. *Espeletia* × *almorzana* Cuatrec. (= *Espeletia sclerophylla* Cuatrec. × *Espeletia petiolata* Cuatrec.), *Revista Acad. Colomb. Ci. Exact.* 4(14): 340. 1941. TYPE: COLOMBIA. Santander: Páramo del Almorzadero, región media, 3500 masl, 20 July 1940, *J. Cuatrecasas & H. García-Barriga 9987* (Holotype: US). Hybrid status in the original publication.

Homotypic synonym: *Espeletiopsis* × *almorzana* (Cuatrec.) Diazgr., *Phytokeys* 16: 34. (2012).

Heterotypic synonym: *Espeletia* × *almorzana* Cuatrec. f. *latifolia* Cuatrec., *Revista Acad. Colomb. Ci. Exact.* 5(17): 22. 1942 [1]. TYPE: COLOMBIA. Santander: Páramo del Almorzadero, vertiente norte, 3600–3800 masl, 28 November 1941, *J. Cuatrecasas 13503*

(Holotype: COL). Hybrid status in the original publication.

[1]: Reference given as “*Revista Acad. Colomb. Ci. Exact.* 4(14): 340. 1941” in Diazgranados (2012).

H8. *Espeletia* × *bogotensis* Cuatrec. (= *Espeletia corymbosa* Bonpl. × *Espeletia grandiflora* Bonpl.), *Revista Acad. Colomb. Ci. Exact.* 3(12): 427. 1940. TYPE: COLOMBIA. Cundinamarca: Macizo de Bogota en Cerro de Monserrate, vert. oriental, 3000 masl, 28 January 1940, *J. Cuatrecasas 7998* (Holotype: COL; Isotypes: COL, US). Hybrid status in the original publication.

Homotypic synonym: *Espeletiopsis* × *bogotensis* (Cuatrec.) Cuatrec., *Phytologia* 35(1): 55 (1976).

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