

Nomenclatural updates and typification of Cuatrecasas' Ericaceae collections from his first trip to Colombia in 1932

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Abstract. After his first trip to Colombia in 1932, José Cuatrecasas described 19 novelties in the Ericaceae based on his collections, including seven new species, one new variety, one new form, and ten new combinations. Following the examination of all relevant Cuatrecasas specimens, field books, and images, the nomenclatural and taxonomic status of the novelties is reviewed and re-evaluated. Seven new lectotypes and one new neotype are presented, while the holotypes for five species are confirmed.

Keywords. Ericaceae, Neotropics, nomenclature, plant collections, typification.

Resumen. Tras su primer viaje a Colombia en 1932, José Cuatrecasas describió 19 novedades en las Ericáceas basadas en sus colecciones, entre ellas siete nuevas especies, una nueva variedad, una nueva forma y diez nuevas combinaciones. Tras el examen de todos los ejemplares, libros de campo e imágenes relevantes de Cuatrecasas, se revisa y reevalúa el estado nomenclatural y taxonómico de dichas novedades. Se presentan siete nuevos lectotipos y un nuevo neotipo, y se confirman los holotipos de cinco especies.

Palabras claves. Ericaceae, colecciones de plantas, Neotrópico, nomenclatura, tipificación.

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INTRODUCTION

In 1932, the Spanish botanist “Don” José Cuatrecasas made his first trip to the Republic of Colombia, where he collected plants and observed natural history throughout the three Cordilleras. Cuatrecasas' handwritten statement for the purpose of his trip is found on the first page of his “Diario” and reads “Diario del Viaje a Colombia motivada por la celebración en Bogotá del acto del bicentenario del nacimiento de Mutis. 1932.” He was there to represent several Spanish cultural institutions in the celebration of the 200th year of the birth of Juan Celestino Mutis—“the famous botanist from Cádiz (Spain), who worked in Colombia in colonial times” (Cuatrecasas 1934; López-Figueiras 1985). During his two months in Colombia Cuatrecasas collected along the Magdalena river and in the departments of

Cundinamarca (chiefly páramos), Tolima (vicinity of Ibagué and Nevado del Tolima), and Valle del Cauca.

All of Cuatrecasas' field books are housed at the Smithsonian Institution-United States National Herbarium (US). The field book for his 1932 trip is simply a running list of numbers ranging from 2000 to 3499; his Ericaceae numbers range from 2664 to 2720, but the entries for numbers 2669 and 2670 were left blank and are not mentioned anywhere. Determinations for each number were written into the field book at later dates and not in Cuatrecasas' hand; there is no locality information or any mention about duplicates in his field book. A separate field journal (“Diario”), also at the US, gives daily locality information along with observations such as site elevation, air temperature, atmospheric pressure, vegetation,

associated plant species, etc. (C. Kelloff, US, pers. comm.; Luteyn pers. obs.). Cuatrecasas' collections of Ericaceae were numbered consecutively within each genus as may be seen in his two papers (Cuatrecasas 1933, 1936) and his field book. We believe that this consecutive numbering proves that Cuatrecasas did not number his collections in the field each day as he collected them, but rather at a later date, probably once he returned to Spain or when he was in Berlin determining his collections. Moreover, inside the first page of Cuatrecasas' "Diario" there is a note in an unknown hand that states that his collection numbers 2000–3500 were "Collect. Colombia 1932 numerada a posteriori" [sic]. We also believe that Cuatrecasas determined the majority of his Ericaceae specimens himself during July–August 1932 and December 1932–January 1933 while working at the Botanical Garden and Botanical Museum, Berlin-Dahlem (B) (Cuatrecasas 1936: 5–6). In reviewing his Ericaceae collections at Berlin, Cuatrecasas had first-hand help for the identification of the ericaceous genus *Bejaria* Mutis ex L. from the then world specialist H.O. Sleumer. For all other genera of Ericaceae, Cuatrecasas seems to have used A.C. Smith's annotations on specimens already in the Berlin herbarium, i.e., "según Smith (Herb. Berlin)," as well as two of Smith's publications "The American Species of Thibaudieae" (Smith 1932) and "The genera *Sphyrropermum* and *Disterigma*" (Smith 1933). Note: Smith had already annotated the Berlin Ericaceae (B but not B-W) while there "From the fall of 1931 to the spring of 1932"; see Smith (1936) and Luteyn (2024: appendix 1, p. 224).

The formal taxonomic results of Cuatrecasas' 1932 Colombia trip concerning the Ericaceae were published in two issues of the *Trabajos del Museo Nacional de Ciencias Naturales, ser. Botánica* (Cuatrecasas' 1933, 1936). On the very last page (p. 30) of his 1933 paper and not repeated again in the 1936 work, Cuatrecasas stated "Plantarum omnium hic descriptorum specimina, in Herbario Horti Botanici Matritensis," i.e., specimens of all plants described were deposited in Madrid (MA). When Cuatrecasas (1933, 1936) validly published his new Ericaceae taxa, he followed each new taxon name with the appropriate abbreviation "sp. nov.", "nov. sp.", "nov.", or "nov. comb.", followed by a detailed morphological description, the locality and his collection number. Cuatrecasas never used the word "Type" or "Typus" or its modern equivalent in the publications (this not being required until 1958, see *Code*, Art. 40.1, Turland & al. 2018). In summary, he cited the entire gathering and never mention the existence of duplicates; this goes along with our experience (in Ericaceae) that in most cases Cuatrecasas' gatherings consisted of unicates and the fact that no other duplicates were found elsewhere. Therefore, we cite that one specimen at MA (the herbarium indicated by Cuatrecasas) as the holotype (see *Code*, Art.

9.1 and Note 1 and also Art. 9.2, Turland & al. 2018). Alternatively, when we did find duplicates or fragments from the type gathering, we designated them as syntypes and from them a lectotype was selected and designated.

When preparing his Ericaceae collections, originally printed on PLANTAE COLUMBIANAE labels, the handwriting was always that of Cuatrecasas giving the determinations and field data and on some of the MA sheet labels he wrote the word "Typus." When duplicates do exist for a Cuatrecasas type gathering, and there are very few, the labels do not have any Cuatrecasas' handwriting indicating type status; therefore, it is possible that he wrote the labels at a date later than when he identified the plants and wrote the protologue, and perhaps after any duplicates had already been distributed. On the actual MA herbarium specimens (labels or sheets) of the new taxa described by Cuatrecasas (1933, 1936), only six mentioned the status of the collection as "sp. nov." or used the word "Typus," and it appears that most of the type numbers at MA are unicates, the only duplicate sheets found to date being two syntypes (full sheets) deposited in the Royal Botanic Gardens, Kew (K) and two type fragments (ex MA) found one each at the Field Museum (F) and Leiden (L). It is also possible that Sleumer may have seen duplicate specimens of Cuatrecasas' new taxa held at Berlin (B) or mention of them in a pre-publication manuscript, because for one sheet he mentioned "*Ceratostema guascense* Cuatrec., in sched. Herb. Berlin" (Sleumer 1935a: 289); unfortunately, all of the Ericaceae collections in the general herbarium at Berlin, including any duplicates that Cuatrecasas may have deposited there, were destroyed during WWII.

Taken as a whole, we believe that these statements and herbarium specimens verify that MA was the herbarium of deposit for all of Cuatrecasas' Ericaceae type collections and that the specimens were mostly unicates, because Cuatrecasas failed to mention any duplicates for his type collections in his field books or in the published protologues and none exist at MA. In the few instances in which duplicates were found and lectotypes needed to be designated, we followed Recommendation 9A.3 of the *Code* in choosing a lectotype, i.e., we selected the best sheet and the one on which label (or sheet itself) Cuatrecasas, the author of the name, had written the word "Typus."

MATERIAL AND METHODS

The nomenclatural and taxonomic status of the 19 Ericaceae novelties published and discussed by Cuatrecasas (1933, 1936) is here based on direct examination of actual herbarium specimens, field books, and photographs and digital images of herbarium specimens. In the following

discussions the taxa are listed in alphabetical order following Cuatrecasas' (1933, 1936); the currently accepted scientific names and authorities are herein given in **bold-face** type. Barcode numbers for the MA and other relevant type sheets are indicated. Digital images available on JSTOR (2020) are noted as “online image;” those images received directly from MA (not on JSTOR) are noted as “MA image;” those images from institutions other than MA and not on JSTOR are noted by the herbarium acronym and specimen barcode followed by the word “image” (e.g., P00715709 P image).

All herbarium specimens cited have been seen by us unless followed by “n.v.” Nomenclatural corrections and updated typifications follow the guidelines in the *International Code of Nomenclature for algae, fungi, and plants* (Turland & al. 2018; hereafter referred to as the *Code*) and recent suggestions for best practices outlined by McNeill (2014) and Staples & Prado (2018). All herbarium specimens, original literature references, and photographs and digital images herein cited have been examined by us. For Berlin types that were destroyed during World War II (hereafter WWII), a dagger (†) follows the acronym (i.e., B†). Herbarium acronyms follow *Index Herbariorum* (Thiers 2008+). Author abbreviations follow *Authors of Plant Names* (Brummitt & Powell 1992). Journal names are abbreviated as designated by the current online version of *Botanico-Periodicum-Huntianum* (B-P-H 2020+), and book abbreviations follow *Taxonomic Literature-2* (Stafleu & Cowan 1976–1988).

RESULTS AND DISCUSSION

1. *Cavendishia guascensis* Cuatrec., Trab. Mus. Nac. Cienc. Nat. Jard. Bot., Ser. Bot. 26: 8, figs. 3, 4. 1933. Type: Colombia. Cundinamarca: Cordillera Oriental, Páramo de Guasca, El Boquerón, 3200 m, 24 May 1932 (fl), Cuatrecasas 2666. **Lectotype, here designated:** MA (MA249376; online image; photos, F neg. 29342 and NY neg. 12495); isolectotype, F frags. (F0055296F; online image). = *Plutarchia guascensis* (Cuatrec.) A.C.Sm. (see Sleumer [1935a: 289] and Smith [1936: 312] for a full discussion of the nomenclatural history of this species).

The original label on the type sheet at MA bears the identification “*Ceratostema guascense* Cuatrec.” in Cuatrecasas' hand, but this name was never published. Sleumer (1935a: 289) similarly mentioned “*Ceratostema guascense* Cuatrec., in sched. Herb. Berlin,” implying that there was also a duplicate of this collection at B, which, if actually there, was destroyed during WWII. In any event, this name was never published, but instead Cuatrecasas published his plant in the genus *Cavendishia* (Cuatrecasas 1933: 8). The MA type sheet also bears Luteyn's 1989

annotation label stating “HOLOTYPE OF: *Cavendishia guascensis* Cuatrec. = *Plutarchia guascensis* (Cuatrec.) A.C.Sm.” Thus, MA249376 is herein designated as the lectotype of *C. guascensis* in accordance with the *Code* (Art. 9, Turland & al. 2018) because it is deposited in the home institution of Cuatrecasas from which he studied and described the species and it is the best of the two syntype sheets (a full sheet vs. fragments).

2. *Cavendishia mutisiana* Cuatrec., Trab. Mus. Nac. Cienc. Nat. Jard. Bot., Ser. Bot. 26: 5, fig. 1. 1933. Holotype. Colombia. Tolima: Cordillera Central, Cuesta del Sacrificio, between Ibagué and Nevado del Tolima, 2000 m, 17 May 1932 (fl), Cuatrecasas 2668 (MA249067; online image; photo, NY neg. 9170). = *Cavendishia macrocephala* A.C.Sm. (see Luteyn 1983: 183).

Cuatrecasas 2668 (MA249067) is the holotype of *Cavendishia mutisiana*—no duplicates are known and Cuatrecasas himself wrote on the label of the MA sheet the determination “*Cavendishia Mutisiana* Cuatr. sp.n. Typus” [sic].

3. *Cavendishia pubescens* var. *elegans* Cuatrec., Trab. Mus. Nac. Cienc. Nat. Jard. Bot., Ser. Bot. 33: 102. 1936. Type. Colombia. Tolima: Cordillera Central, “Bosque en Ibagué, 8-V (núm. 2699)” [sic]. **Lectotype, herein designated:** MA (MA249073; MA image); syntypes: MA (MA249071; MA image) and MA (MA249072; MA image). = *Cavendishia pubescens* (Kunth) Hemsley.

In the protologue of *Cavendishia pubescens* var. *elegans* (Cuatrecasas 1936: 102), Cuatrecasas 2699 was cited as the only collection. That gathering consists of three duplicate sheets (syntypes) at MA each with its own barcode number. The label on each duplicate bears the determination “*Cavendishia pubescens* (H.B.K.) Hook. var. *elegans* nova” [sic], habitat information, date of collection, and collection number in Cuatrecasas' hand, but none bears the word “Typus.” The label of each duplicate states the habit as a forest near Ibagué at 1300 m altitude. The labels differ, however, as follows: the label of MA249073 bears the date 8 May, but has no collection number; the label of MA249072 bears the date 8 May and the inked collection number 2669; the label of MA249071 bears the date 10 May and the collection number 2669, but written in pencil in Cuatrecasas' hand but presumably at a different time than all of the other label information. Despite the fact that one of these three syntypes (MA249073) lacks an original inked collection number and another has the collection number in pencil along with a different date of collection, it is quite certain that all were given the same collection number, because this was the only Cuatrecasas collection number cited for

this species from his 1932 trip. The collection date given in the protologue is May 8th, the same as on two of the three sheets, whereas sheet MA249071 says “10 May.” The plant parts on all three sheets also fall well within the diagnosis given in the protologue—“flores ad 15 mm Usque long., fructus 11–16 mm, pedicellate. Folia lanceolata.” Syntype sheet MA249071 shows several naked rachises and 4–5 old calyces, all but one of which is mounted separate from rachis. Syntype sheet MA249072 shows two inflorescences in bud. Syntype sheet MA249073 shows a full inflorescence (with floral bracts, flowers, immature fruits, etc.). Thus, the third synsheet (MA249073) is the most complete and best sheet of all and although the sheet’s label does not have a collection number on it, there is no doubt it is part of the same collection event (Cuatrecasas 2669).

The varietal name *Cavendishia pubescens* var. *elegans* (Cuatrecasas 1936: 102) and the associated specimens were not included in Luteyn’s (1983: 179–182) revision of the genus and their type status remained unknown even after his visit to MA in 1986. It was not until 2019 that Luteyn found the Cuatrecasas publication and reexamined digital images of all the specimens, concluding that they fell well within the range of morphological variation of *C. pubescens*. Thus, MA249073 is herein designated as the lectotype of *C. pubescens* var. *elegans* in accordance with the *Code* (Art. 9, Turland & al. 2018) because it is deposited in the home institution of Cuatrecasas from which he studied and described the species and it is the best of the three syntype sheets.

4. *Cavendishia tolimensis* Cuatrec., Trab. Mus. Nac. Cienc. Nat. Jard. Bot., Ser. Bot. 26: 7, fig. 2. 1933. Type. Colombia. Tolima: Cordillera Central, between El Salto and La Selva, 3400 m, 16 May 1932 (fl), Cuatrecasas 2667. **Lectotype, herein designated:** MA (MA249079; online image; photo, NY neg. 9171); isoelectotypes: K (K000534834; online image; photo, NY neg. 9433), MA (MA249089; online image; photo, NY neg. 9664). = *Cavendishia bracteata* (Ruiz & Pav. ex J.St.-Hil.) Hoerold (see Luteyn 1983: 142).

The labels on all three syntype sheets of Cuatrecasas 2667 bear Cuatrecasas’ handwritten determination “*Cavendishia tolimensis* Cuatr.” [sic]. There is no mention or annotation on any of them that indicates a new species or a type. In 1977 (and again in 1986) Luteyn incorrectly annotated the MA249079 herbarium sheet as holotype and MA249089 as isotype. In 1978, Luteyn annotated the K000534834 sheet as an isotype; those sheets should now be reannotated as lectotype and isoelectotypes, respectively. Thus, syntype sheet MA249079 is herein designated as the lectotype of *C. tolimensis* in accordance with the *Code* (Art. 9, Turland & al. 2018) because it is deposited in the

home institution of Cuatrecasas from which he studied and described the species and it is the best of the three syntype sheets.

5. *Ceratostema dichogamum* Cuatrec., Trab. Mus. Nac. Cienc. Nat. Jard. Bot., Ser. Bot. 26: 10, fig. 5. 1933. Holotype. Colombia. Tolima: Cordillera Central, El Salto, 3300 m, 15 May 1932 (fl), Cuatrecasas 2664 (MA249375 mounted on two clearly connected sheets, the second one marked MA249375-2; online images for both). = *Plutarchia rigida* (Benth.) A.C.Sm.

We have verified Cuatrecasas 2664 as the holotype of *Ceratostema dichogamum*. It is mounted onto two different (but clearly connected) sheets, MA249375 and MA249375-2, following the common practice in the RJB Madrid herbarium. Cuatrecasas himself wrote on the label of the MA holotype sheet 1 the word “Typus” and on holotype sheet 2 the words “n.sp.” and “Typus” indicating to us that that gathering was the one he studied and used for his protologue. No duplicates are known. Unaware of this practice in 1986, Luteyn annotated MA249375 as “Holotype” and MA249375-2 as “Isotype”; these annotations should now be changed to read “Holotype, sheet 1” and “Holotype, sheet 2”, respectively, in accordance with the *Code* (Art. 8.2 and 8.3, Turland & al. 2018). For a full discussion of the nomenclatural history of this species, see Sleumer (1935a: 289) and Smith (1936: 312).

6. *Disterigma empetrifolium* f. *densa* (Wedd.) Cuatrec., Trab. Mus. Nac. Cienc. Nat. Jard. Bot., Ser. Bot. 33: 102. 1936. **Neotype, herein designated:** Colombia. Tolima: páramo on eastern slopes of Volcán Tolima, 4400 m, 15 May 1932 (fl), Cuatrecasas 2717 (MA249102; MA image). Basionym: *Vaccinium penaeoides* subvar. *densa* Wedd., Chlor. and. 2: 179. 1860. = *Disterigma empetrifolium* (Kunth) Drude.

Weddell (1860: 179) did not mention a type collection (or any collection) or herbarium of deposit when he described *Vaccinium penaeoides* subvar. *densa*; furthermore, no specimen has been found bearing this name during or after the monographing of *Disterigma* and the examination of the many specimens relevant to it. Smith (1933: 223) synonymized *V. penaeoides*, including all of Weddell’s varieties and subvarieties, under *D. empetrifolium* (Kunth) Drude and mentioned (p. 226) that “no particular collection is cited” for the form *densa* Wedd. Cuatrecasas (1936: 102) made the new combination *D. empetrifolium* f. *densa* (Wedd.) Cuatrec. and in so doing retained Weddell’s subvariety as described, cited Weddell’s taxon as the basionym (although without mentioning a type collection or herbarium of deposit), and honored Weddell by citing him as the parenthetical authority. It is interesting

that the original determination on the herbarium label of Cuatrecasas 2717 at MA (MA249102) was “*Disterigma empetrifolia* (H.B.K.) Nied. v. *densa* (Wedd.)” [sic]—i.e., at the varietal level—whereas the published protologue presented it as a forma. We think that since there is no original material known for the Weddell name a neotype needs to be designated as mentioned above. Pedraza-Peñalosa (2010) was not aware of Cuatrecasas' (1936) new combination, nor was the herbarium specimen Cuatrecasas 2717 (a unicate) available when she revised *Disterigma*. A close examination of the MA specimen (MA249102) now reveals that it is merely another variant within the morphologically variable *D. empetrifolium*.

7. *Disterigma empetrifolium* f. *epacridifolia* (Benth.) Cuatrec., Trab. Mus. Nac. Cienc. Nat. Jard. Bot., Ser. Bot. 33: 103. 1936. Basionym: *Vaccinium epacridifolium* Benth., Pl. hartw.: 221. 1846 (type, Colombia. Cauca: slopes of Volcán Sotará near Pitayo, Hartweg 1212). Lectotype, designated by Smith 1933: 224: K (K000534746); isolecotypes: B* (photo, F neg. 4640), BM, C n.v., CGE, G, NY frag. ex K, OXF, P. Voucher collection cited: Cuatrecasas 2716 (MA249108; MA image). = *Disterigma empetrifolium* (Kunth) Drude.

Weddell (1860: 179) referred Bentham's (1846: 221) *Vaccinium epacridifolium* to varietal status as *V. penaeoides* Kunth var. β *epacridifolium*. Smith (1933: 223) subsequently synonymized it under *Disterigma empetrifolium* and therein (p. 224) also inadvertently lectotypified it with the specimen in Bentham's herbarium at K (K000534746). Possibly unaware of Smith's 1933 paper, Cuatrecasas (1936: 103) published the new combination *D. empetrifolium* f. *epacridifolium* (Wedd.) Cuatrec. (incorrectly giving “Wedd.” as the parenthetical author instead of Bentham). It is interesting that the original determination on the herbarium label of Cuatrecasas 2716 at MA (MA249108) was “*Disterigma empetrifolia* H.B.K. var. *epacridifolia* (Wedd.)” [sic], i.e., at the varietal level, whereas the published protologue presented it as a forma. Pedraza-Peñalosa was not aware of Cuatrecasas' (1936) new combination and new status (as forma) for Weddell's variety, nor was the herbarium specimen Cuatrecasas 2716 available when she revised *Disterigma* (Pedraza-Peñalosa 2010). After seeing the digital image of Cuatrecasas' voucher of his f. *epacridifolium* (Cuatrecasas 2716, MA249108) it is clear that the specimen is no more than a variant within the morphologically variable *D. empetrifolium*.

8. *Gaultheria bolivarii* Cuatrec., Trab. Mus. Nac. Cienc. Nat. Jard. Bot., Ser. Bot. 26: 13, fig. 7. 1933. Type. Colombia. Tolima: Cordillera Central, Las Mesetas, 3800–4000 m, 14 June 1932 (fl), Cuatrecasas 2719. **Lectotype, here**

designated: MA (MA249243 mounted on two clearly connected sheets, the second one marked MA249243-2; online images for both); isolecotypes: K (K000442446; online image), L frags. ex MA (L0007097; online image). = *Gaultheria foliolosa* Benth. (see Luteyn 1995a: 420).

The epithet “*bolivari*” as originally spelled by Cuatrecasas (1933: 13) should be orthographically corrected to “*bolivarii*” (Art. 60.8, Turland & al. 2018). The lectotype of *Gaultheria bolivarii* at MA (Cuatrecasas 2719) is mounted onto two different but clearly connected sheets MA249243 and MA249243-2, following the common practice in the RJB Madrid herbarium; the label of each lectotype sheet at MA bears Cuatrecasas' handwritten determination “*Gaultheria Bolivari* Cuatr. Typus” [sic], whereas the label of the K isolecotype bears the same determination but without the word “Typus.” The syntype fragments at L have Sleumer's 1982 annotation label that states “leg. Cuatrecasas 2719, Isotype” but there is no indication of which syntype sheet this material was taken from.

The MA249243 and MA249243-2 sheets of Cuatrecasas 2719 are herein designated as lectotype sheet 1 and 2, respectively, in accordance with Art. 9.12 of the *Code* (Turland & al. 2018), because they are deposited in the home institution of Cuatrecasas (from which he studied and described them), the labels on both lectotype sheets bear the word “Typus” in Cuatrecasas' hand, and they are the better of the three syntype sheets. In 1986, Luteyn annotated MA249243 as “Holotype of: *Gaultheria bolivari* Cuatr. = *Gaultheria foliolosa* Benth.” [sic] and MA249243-2 as “Isotype of: *Gaultheria bolivari* Cuatr. = *Gaultheria foliolosa* Benth.” [sic], respectively; these annotations should now be changed to read “Lectotype, sheet 1” and “Lectotype, sheet 2”, respectively, in accordance with the *Code* (Art. 8.2 and 8.3, Turland & al. 2018).

9. *Gaultheria mutisiana* Cuatrec., Trab. Mus. Nac. Cienc. Nat. Jard. Bot., Ser. Bot. 26: 12, fig. 6. 1933. Holotype. Colombia. Cundinamarca: Páramo de Guasca, El Santuario, 3300 m, 25 April 1932 (fl), Cuatrecasas 2718 (MA249258; online image). = *Gaultheria hapalotricha* A.C.Sm. (see Luteyn 1995a: 472).

The only known sheet of Cuatrecasas 2718 is at MA and was determined by Cuatrecasas himself as “*Gaultheria Mutisiana* Cuatr. sp. nov. Typus” [sic] indicating to us that that gathering was the one he studied and used for his protologue.

10. *Gaultheria sclerophylla* Cuatrec., Trab. Mus. Nac. Cienc. Nat. Jard. Bot., Ser. Bot. 26: 14. 1933. Holotype. Colombia. Tolima: Cordillera Central, Alto del Cóndor,

3300 m, 17 May 1932 (fl), Cuatrecasas 2720 (MA249272; online image). = *Gaultheria sclerophylla* Cuatrec. var. *sclerophylla* (see Luteyn 1995a: 462).

There are no known duplicates of Cuatrecasas 2720 and Cuatrecasas himself wrote on the label of the MA sheet the determination “*Gaultheria sclerophylla* Cuatrec. n.sp. Typus” [sic] indicating to us that that gathering was the one he studied and used for his protologue.

11. *Macleania rupestris* var. *trianae* (Hoerold) Cuatrec., Trab. Mus. Nac. Cienc. Nat. Jard. Bot., Ser. Bot. 33: 105. 1936. Basionym: *Macleania trianae* Hoerold (type, Colombia. Cundinamarca: “Andes de Bogotá,” 3000 m, August 1856, Triana 36). Holotype: B⁺; lectotype, designated by Luteyn (2024: 213): F frags. ex B⁺ holotype. No duplicates are known. Cuatrecasas voucher collection cited: Cuatrecasas 2700 (MA-01-00249362; MA image). = *Macleania rupestris* (Kunth) A.C.Sm.

After seeing the digital image of Cuatrecasas 2700, it is clear that the specimen is no more than a variant within the morphologically variable *Macleania rupestris* (see Luteyn 2024: 213).

12. *Macleania rupestris* f. *arbutifolia* (Kunth) Cuatrec., Trab. Mus. Nac. Cienc. Nat. Jard. Bot., Ser. Bot. 33: 105. 1936. Basionym: *Thibaudia ardisiaefolia* Kunth (holotype, P n.v., seemingly lost). Cuatrecasas voucher collection cited: Cuatrecasas 2701 (MA249363; MA image). = *Macleania rupestris* (Kunth) A.C.Sm. (Luteyn 2024).

Cuatrecasas cited “(*Thibaudia arbutifolia* (HBK.))” [sic] as the basionym for his new combination f. *arbutifolia*, certainly an orthographic error for “*ardisiaefolia*” the epithet originally used by Kunth (1819: 274). The label on the MA unicate herbarium specimen Cuatrecasas 2701 (MA249363), cited by Cuatrecasas (1936: 105) as a voucher for his new combination, bears only the determination “*Macleania rupestris* (HBK) Smith var. *trianae* (Höerold) Cuatrec.” [sic]—it does not bear a forma name or any indication that Cuatrecasas planned to publish it in the rank of forma. The sheet also bears Luteyn’s annotations (from 1986, 1998, and 2000) of *M. rupestris*, Luteyn then being unaware of Cuatrecasas’ new combination and new status for Kunth’s (1819) species. After the recent examination of the MA herbarium specimen of the Cuatrecasas 2701, it is clear that the collection lacks any outstanding morphological distinctions and represents *M. rupestris*.

13. *Pellegrinia colombiana* (A.C.Sm.) Cuatrec., Trab. Mus. Nac. Cienc. Nat. Jard. Bot., Ser. Bot. 36: 105, fig. 3. 1936. *Ceratostema colombianum* A.C.Sm., Phytologia

1: 130. 1935 (holotype, Colombia. Cundinamarca: Páramo de Guasca, Ariste Joseph B.112, US [US00113589]). Cuatrecasas voucher collections cited: Cuatrecasas 2665 (MA249372 and MA249373) = *Plutarchia guascensis* (Cuatrec.) A.C.Sm.

There are two sheets of Cuatrecasas 2665 at MA with all label data written in Cuatrecasas’ hand, but without dates. The determination on the label of MA249372, probably the first sheet mounted, states “*Pellegrinia paramensis* Cuatrec.”—an unpublished name—the sheet was never re-determined by Cuatrecasas. The determination on the label of the second MA sheet (MA249373) states “*Pellegrinia colombiana* (A.C.Sm.) Cuatrec. (= *P. paramensis* Cuatrec. in Sched.)”—that name being a new combination for Smith’s (1935: 130) *Ceratostema colombianum*, but not indicated as such on the MA label. A small paper label is also attached to this sheet (MA249373) with penciled line-drawings and staminal measurements, at the top of which is the collection “no. 2665” and the identification *C. parvifolium* Benth. in Cuatrecasas’ hand (probably a preliminary determination made in Berlin in 1932–1933 during the time he was there to identify his collections). For a full discussion of the nomenclatural history of this species, see Smith (1936: 312).

14. *Pernettya prostrata* f. *parvifolia* (Benth.) Cuatrec., Trab. Mus. Nac. Cienc. Nat. Jard. Bot., Ser. Bot. 33: 107. 1936. Basionym: *Pernettya parvifolia* Benth., Pl. hartw.: 219. 1846 (type, Ecuador. Pichincha: Volcán Guagua Pichincha, Hartweg 1203). **Lectotype, herein designated:** K-Herb. Benth. (K000534752; online image). Cuatrecasas voucher collection cited: Cuatrecasas 2711. = *Pernettya prostrata* (Cav.) DC.

Weddell (1860: 170) reduced Bentham’s *Pernettya parvifolia* to a variety (as “ β parvifolia”) of *P. pentlandii* DC., whereas Kuntze (1898: 193) reduced the same taxon to a variety (as “var. *parvifolia*”) of *P. purpurea* G.Don. Then Sleumer (1935a: 290, 1935b: 643–644) synonymized both Bentham’s species and Kuntze’s variety under *P. prostrata* var. *purpurea* (G.Don) Sleumer. Cuatrecasas (1936: 107) further reduced the rank and changed the status of Bentham’s species to that of “forma” as *P. prostrata* var. *purpurea* f. *parvifolia*. Luteyn was unaware of Cuatrecasas’ (1936) new combination and new status for Bentham’s species when he revised *Pernettya* (Luteyn 1995b: 377). He did, however, synonymize Bentham’s species and annotated the Cuatrecasas 2711 herbarium sheet at MA (without any indication of a “forma” status) as *P. prostrata*. It is herein confirmed that Bentham’s species as well as Cuatrecasas’ forma are both no more than small-leaved variants in the morphologically variable *P. prostrata*.

Note: Bentham (1846: 219) cited Hartweg 1203 as the original gathering of his new *Pernettya parvifolia*, but in so doing failed to mention an herbarium of deposit. Syntypes are now found at BM, BR, CGE, E, FI, G(x2), K(x2), LD, NY(x2), OXF, P(x2), and W. Therefore, it needs to be lectotypified in accordance with the citation of types as per McNeill (2014) and with Arts. 9.6, Art. 40 Note 1, and Art. 40.7 of the *Code* (Turland & al. 2018). Sleumer (1935b: 645) cited “Hartweg n. 1203, Typus von *P. parvifolia*” [sic] but failed to state an herbarium of deposit. In 1986, Luteyn annotated the specimen of Hartweg 1203 in K-Herb. Benth. as “Holotype of: *Pernettya parvifolia* Benth. = *Pernettya prostrata* (Cav.) DC.” [sic] and the collection of Hartweg 1203 in K-Herb. Hook. as “Isotype of: *Pernettya parvifolia* Benth. = *Pernettya prostrata* (Cav.) DC.” [sic]. Luteyn's annotations remained unpublished until now. Therefore, we herein designate as the lectotype of *P. parvifolia* Benth. the Hartweg 1203 specimen at K-Herb. Benth. (K000534752) because it bears Hartweg's original, descriptive field label, it is the sheet in Bentham's herbarium, and Bentham likely examined that sheet for his description.

15. *Pernettya prostrata* f. *parvifolia-humilis* Wedd. ex Cuatrec., Trab. Mus. Nac. Cienc. Nat. Jard. Bot., Ser. Bot. 33: 107. 1936. Basionym: *Pernettya pentlandii* DC. subvar. *humilis* Planch. ex Wedd. **Lectotype, herein designated:** P (P00715708; online image), Colombia. Bogotá, 1844, Goudot s.n.; see discussion below. No duplicates are known. Cuatrecasas voucher collection cited: Cuatrecasas 2712 (MA-01-00249413). = *Pernettya prostrata* (Cav.) DC.

Weddell (1860: 170) failed to mention a collection or a herbarium of deposit for his new *Pernettya pentlandii* var. *parvifolia* subvar. *humilis*. Sleumer (1935b: 643) synonymized Weddell's subvar. *humilis* under his (Sleumer's) *P. prostrata* var. “eu-prostrata” [= var. *prostrata*] and on p. 644 inadvertently lectotypified it when he cited “Bogotá (Goudot, Typus von *P. humilis*)” [sic], but without mentioning a herbarium of deposit. A year later, Cuatrecasas (1936: 107) published his unorthodox epithet “f. *parvifolia-humilis* (Benth. Weddell) Cuatr.” [sic]. We believe that that irregular citation was Cuatrecasas' way of fully citing the taxon name as *Pernettya pentlandii* DC. var. β *parvifolia* (Benth.) Wedd. s.v. [= subvariety] *humilis* Planch. ex Wedd., but that he was, in fact, merely providing a new name (nom. nov.) in the rank of forma to the subvar. *humilis* Wedd. Cuatrecasas voucher collection for this forma, Cuatrecasas 2712 (MA-01-00249413), was a páramo plant occurring in the “Espeletietum hartwegianae calamagrostiosum” plant community (“Cuadro 22”); therein, Cuatrecasas (1934: 105–108) also gave it a preliminary name “*Pernettya purpurea* D. Don f. *glabrescens*” [sic], that name being a nom. nud. (manuscript name) that was never formally published.

Luteyn was unaware of Cuatrecasas' (1936) paper when he revised *Pernettya* (Luteyn 1995b: 377). Later, in 1986, Luteyn did examine the MA voucher collection of Cuatrecasas 2712 and annotated it as *P. prostrata* because it did not have any Cuatrecasas annotation or morphology worthy of forma status, but is instead only a minor variant of the variable *P. prostrata*.

With regard to a lectotype for *Pernettya prostrata* f. *humilis*, Sleumer's (1935b: 644) citation of “Bogotá (Goudot, Typus von *P. humilis*)” did not mention a herbarium of deposit. We, however, have recently found two distinct “Bogotá, 1844, Goudot s.n.” specimens of *P. prostrata* in the P herbarium with barcodes P00715708 (online image) and P00715709 (P image). The P sheet P00715708 has: **1)** a small, original Goudot handwritten label (see Burdet 1975: 221–222) with the determination “*Gaultheria*” and locality “Bogota”; **2)** a printed institutional label “HERB. MUS. PARIS.” with the printed locality “N^{elle}. Grenade” and printed collector name and date “M. Justin Goudot 1844” [sic], with Planchon's handwritten (when compared with handwriting at MPU) determination “*Pernettya humilis*, Planch” and beneath it the determination (in Weddell's hand) “*Pernettya Pentlandii* DC. β *parvifolia* Wedd., Chloris.” [sic]—the journal name *Chloris*. underlined; **3)** Sleumer's 1968 annotation “*Pernettya prostrata* (Cav.) DC. var. *prostrata*”; **4)** Luteyn's 1986 annotation “*Pernettya prostrata* (Cav.) DC.”—neither annotation with any indication of a type status for the specimen; and **5)** a red, printed “Holotype” label that was attached to the specimen at a date later than 1986. The P sheet P00715709 also has: **1)** an original, Goudot handwritten label with the determination “*Gaultheria anastomosans*” (“*anastomosans*” scratched out) and the locality “Bogota .. la Peña”; **2)** the same printed label with printed local and collector and date as the P00715708 sheet; **3)** Luteyn's 1978 and 1986 annotations *P. prostrata* (without any Sleumer annotation); and **4)** a red, printed “Isotype” label that was attached to the specimen at a date later than 1986. The plant mounted under barcode P00715709 is morphologically distinct from that mounted under barcode P00715708 and thus is not part of the type gathering, i.e., it is not a syntype, and only represents another Goudot collection of *P. prostrata*. Therefore, we are herein designating as lectotype of *P. pentlandii* var. *parvifolia* f. *humilis* Planch. ex Wedd. the Goudot s.n. collection at P (P00715708) because it bears: **1)** an original Goudot handwritten label, **2)** a printed institutional label with Planchon's handwritten determination “*Pernettya humilis*, Planch”, **3)** Weddell's handwritten determination “*Pernettya Pentlandii* DC. β *parvifolia* Wedd., Chloris.” beneath Planchon's, and **4)** the actual plant specimen fits the morphology befitting its name, i.e., the epithet is derived from the Latin *humilis* “low, lowly”.

16. *Vaccinium floribundum* var. *moritzianum* (Klotzsch) Cuatrec., Trab. Mus. Nac. Cienc. Nat. Jard. Bot., Ser. Bot. 33: 107. 1936. Basionym: *Vaccinium moritzianum* Klotzsch, Linnaea 24: 63. 1851 (type, see discussion below). Cuatrecasas voucher collection cited: Cuatrecasas 2704 (MA249508; MA image). = ***Vaccinium floribundum* Kunth.**

Klotzsch (1851: 63) described *Vaccinium moritzianum* as consisting of two varieties—var. α *ovatum* (citing two syntypes) and var. β *oblongum* (citing Moritz 1341), but never using the word “type” nor mentioning a herbarium of deposit. Sleumer (1936: 129, 131) combined both varietal names, cited types, and synonymized both under *V. floribundum* (var. *oblongum* Klotzsch under *V. floribundum* var. *floribundum* and var. *ovatum* Klotzsch under *V. floribundum* var. *marginatum*), but he also failed to mention herbaria of deposit. [Note: Lectotypes for both of Klotzsch’s varieties will be designated by Luteyn (in prep.)]. Cuatrecasas (1936: 107) reduced Klotzsch’s (1851) species to varietal status as *V. floribundum* var. *moritzianum* (“Klotzsch, pr. sp., Stud. Bicorn., pág. 63), but did not mention Klotzsch’s two varieties,” nor did he mention Sleumer’s paper (published 15 Mar 1936 versus Cuatrecasas’ paper published 30 Jul 1936).

Cuatrecasas’ combination might at first seem superfluous, but from a nomenclatural point of view this combination was not (superfluous). In the varietal rank “moritzianum” is an autonym created automatically by Klotzsch for the “var. α ” (Art. 6.8: the variety that includes the type should repeat the specific epithet); therefore, according to Art. 26.2 of the *Code* (Turland & al. 2018) Klotzsch’s var. α *ovatum* is invalid (nom. inval.) because it does not repeat the specific epithet unaltered—it should have been cited as var. *moritzianum*. Thus, Cuatrecasas rightly combined this epithet as var. *moritzianum* under *V. floribundum* (with the same type as for *V. moritzianum*).

17. *Vaccinium floribundum* var. *ottonis* (Klotzsch) Cuatrec., Trab. Mus. Nac. Cienc. Nat. Jard. Bot., Ser. Bot. 33: 107. 1936. Basionym: *Vaccinium ottonis* Klotzsch, Linnaea 24: 61. 1851 [**Lectotype, here designated:** K-Herb. Hook. (K000442546; online image); isolectotypes: B⁺ (online image; photo, F neg. 4618), CGE (Herb. Lindley, CGE00060201); F frag. ex B⁺ n.v., NY frag. ex K lectotype (NY00743738; NY image)]. Cuatrecasas voucher collection cited: Cuatrecasas 2703 (MA249509; MA image). = ***Vaccinium floribundum* Kunth.**

Klotzsch (1851: 61) published *Vaccinium ottonis* citing “(leg. cl. Ed. Otto n. 639.)” [sic] as the only collection; he did not use the word “type” and failed to mention a herbarium of deposit. Weddell (1860: 177) cited Klotzsch’s species as a synonym of his own *V. floribundum* var. β *splendens*

Wedd.; he also failed to mention a type or herbarium of deposit. Sleumer (1936: 133) synonymized Klotzsch’s species under his *V. crenatum* (G. Don) Sleumer citing Otto 639 as “Typus von *V. ottonis*” [sic], but therein failed to mention a herbarium of deposit. Cuatrecasas (1936: 107) published *V. floribundum* var. *ottonis* (Klotzsch) Cuatrec., being aware of Weddell’s (1860) treatment, because on the label of his collection Cuatrecasas 2703 he had written “*Vaccinium floribundum* H.B.K. var. *ottonis* (Kl.) C. (= β *splendens* Wedd.)” [sic]; however, Cuatrecasas probably did not see Sleumer’s (1936: 133) revision of *Vaccinium* that was published four months earlier in which Sleumer synonymized *V. ottonis* under *V. crenatum*. Cuatrecasas’ MA voucher specimen, Cuatrecasas 2703, does not show the distinctive leaves (with prominently raised venation and crenations) of *V. ottonis* (= *V. crenatum*); it does, however, show leaves of a type that fall well within the morphological variation known for *V. floribundum* and it was annotated as such by Luteyn in 2007.

Note: The type of *Vaccinium ottonis* (Klotzsch 1851: 61) was cited as “(leg. cl. Ed. Otto n. 639.)” [sic], although Klotzsch did not use the word “type” and he failed to mention a herbarium of deposit. A lectotype for *V. ottonis* will be designated by Luteyn (in prep.).

18. *Vaccinium floribundum* var. *polystachyum* (Benth.) Cuatrec., Trab. Mus. Nac. Cienc. Nat. Jard. Bot., Ser. Bot. 33: 107. 1936. Basionym: *Vaccinium polystachyum* Benth., Pl. Hartw.: 140. 1844 (type, Hartweg 782; see discussion below). Cuatrecasas voucher collections cited: Cuatrecasas 2705 and 2707. = ***Vaccinium floribundum* Kunth.**

Weddell (1860: 177) reduced Bentham’s (1844: 140) *Vaccinium polystachyum* to varietal status as *V. floribundum* var. *polystachyum*, thus preempting Cuatrecasas’ combination (1936: 107) and making it superfluous (a later homonym). Sleumer (1936: 131) synonymized Bentham’s species under his *V. floribundum* var. *ramosissimum* (Dunal) Sleumer. Why Cuatrecasas did not accept Weddell’s treatment is unknown; he probably did not see Sleumer’s treatment that was published four months earlier. Both Sleumer’s *V. floribundum* var. *ramosissimum* and Bentham’s *V. polystachyum* are herein recognized as mere variants within the morphologically variable *V. floribundum*. [Note: As mentioned above, no herbarium of deposit was ever mentioned for any of Hartweg’s collections of Ericaceae published in *Plantae Hartwegianae* (Bentham 1839–1857), including for *V. polystachyum*; thus all need to be lectotypified. A lectotype for *V. polystachyum* will be designated by Luteyn (in prep.)]

The determinations on the labels of vouchers Cuatrecasas 2705 (collected on 14 May, Tolima, 3500–3600 m, with

six duplicates, all at MA) and 2707 (collected on 17 May, Tolima, 3400 m, a unicate, no known duplicates) were all written in his hand, but with variations of the name that did not appear in the publication (Cuatrecasas 1936: 107–108). For example, Cuatrecasas determined one of the duplicates from collection 2705 (MA249510-3) simply as “*Vaccinium floribundum* HBK.” [sic] without any variety or forma name; duplicate sheet MA249511 was determined as “*Vaccinium floribundum* H.B. et K. var. *polystachyum* (Bth) Cuatrec.” [sic]; duplicate sheet MA249510 was determined as “*Vaccinium floribundum* H.B.K. var. *prostratum*” [sic] with “*prostratum*” being scratched out and after it written “*polystachyum*” in a different, darker ink; duplicate sheet MA249510-2 was determined as “*Vaccinium floribundum* H.B.K. var. *prostratum*” [sic] with “*prostratum*” scratched out and nothing more written to replace it; and duplicate sheet MA249510-4 was determined as “*Vaccinium floribundum* var. *prostratus*” [sic] with “*prostratus*” scratched out. The label of the sixth duplicate of no. 2705 (MA249512; collected on 14 May, Tolima, 3500–3600 m) was re-numbered by Cuatrecasas as 2705a and had the determination “*Vaccinium floribundum* HBK. v. *polystachyum* (Bth) Cuatr. fma. *parvifolia* Cuatr.” [sic].

The voucher collection Cuatrecasas 2707 (MA 249506; collected on 17 May, Tolima, 3400 m) was determined as “*Vaccinium floribundum* HBK. var. *prostrata*” with “var. *prostrata*” being scratched out by pencil. Note that the varietal epithet written by Cuatrecasas on no. 2707 was “*prostrata*”, this being incorrect and certainly a mental error on the part of Cuatrecasas. There is no varietal name “*prostrata*” in *V. floribundum* and it has never been proposed within that species.

19. *Vaccinium floribundum*. f. *parvifolia* Cuatrec., Trab. Mus. Nac. Cienc. Nat. Jard. Bot., Ser. Bot. 33: 108. 1936. Holotype. Colombia. Tolima: Cordillera Central, “vertiente del Tolima, páramo,” 4000–4200 m, 15 May 1932, Cuatrecasas 2706 (MA249513; MA image)]. = *Vaccinium floribundum* Kunth.

Cuatrecasas 2706 (MA249513; collected on 15 May, Tolima, 4000 m; no known duplicates) was determined as “*Vaccinium floribundum* H.B.K. var. *prostrata* fma. *parvifolia* Cuatr.” [sic] with “*parvifolia*” underlined with a heavy black ink. The full scientific name should be cited as *Vaccinium floribundum* Kunth var. *polystachyum* (Benth.) Cuatrec. f. *parvifolia* Cuatrec. Note again Cuatrecasas' usage of the varietal epithet “*prostrata*” (as in collection no. 2707 mentioned above). We suspect that when Cuatrecasas was writing the labels for his collections of *V. floribundum* that he momentarily mixed up in his mind the taxon name “*prostrata*” from *Pernettya prostrata* for the *Vaccinium* collections, as these two species look very

similar vegetatively and when in flower and often grow together intermixed in high-elevation páramos.

We herein verify that Cuatrecasas 2706 (MA249513) is the holotype of *Vaccinium floribundum*. f. *parvifolia* Cuatrec. because the unicate sheet at MA clearly states “f. *parvifolia* Cuatr.” and it is the only collection cited by Cuatrecasas. After seeing all of the herbarium specimens of *Vaccinium* herein mentioned at MA, as well as all duplicates, we are able to reconfirm that all of the variants fall well within the morphology of *V. floribundum*.

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AUTHORSHIP CONTRIBUTION STATEMENT

James L. LUTEYN: Data curation, Investigation, Writing—original draft, Writing—review & editing. Paola PEDRAZA-PENALOSA: Data curation, Investigation, Writing—original draft, Writing—review & editing.

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