NOMENCLATURAL NOTES IN *ARENARIA* (CARYOPHYLLACEAE) FROM THE PÁRAMOS OF ECUADOR

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ABSTRACT

Typifications and nomenclatural corrections based on the ICN (Turland et al. 2025) of six species of *Arenaria* L. found in Ecuador are provided due to several nomenclatural issues regarding their types and history.

RESUMEN

Se presentan tipificaciones y correcciones nomenclaturales basadas en el CIN (Turland et al. 2025) de seis especies de *Arenaria* L. presentes en Ecuador que son proporcionadas debido a varios problemas nomenclaturales relacionados a los tipos y su historia.

Key Words: *Arenaria*, Andes, lectotypification, nomenclature

INTRODUCTION

The family Caryophyllaceae is a cosmopolitan taxon comprising approximately 77–100 genera and 2,200–3,000 species (Hernández-Ledesma et al. 2015; Judd et al. 2015). In South America, several taxonomic and systematic studies have clarified key aspects of its genera (Frajman et al. 2018; Montesinos-Tubée 2022; Iamonico & Montesinos-Tubée 2023; Montesinos-Tubée & Borsch 2023). However, no comprehensive taxonomic treatment of the whole family has been undertaken for Ecuador.

In Ecuador, around 15 genera and 51 species of Caryophyllaceae (including one endemic) have been documented, most of which occur in the páramo ecosystem (Jørgensen & León-Yánez 1999). The genus *Arenaria* L. accounts for one of the mot species rich genus of the family's diversity in Ecuador. Globally, *Arenaria* comprises about 200 species distributed across Eurasia, the Americas, and Africa, with approximately 15 species in the Andean páramos (Sklenář et al. 2005; Montesinos-Tubée & Teillier 2022). Ulloa-Ulloa and collaborators recorded 11 species of this genus for Ecuador in the VPA (Ulloa-Ulloa et al. 2025). These small perennial herbs are typically prostrate, forming mats or cushions, and show considerable variability in both vegetative and reproductive traits. Despite their diversity and presence in the Ecuadorian Andes, the family, and particularly this genus, composed of sometimes inconspicuous individuals, has received little attention regarding its nomenclature. This has led to a number of typification issues that need to be resolved in accordance with the ICN (Turland et al. 2025). We have identified these nomenclatural problems either because of a missing holotype or mixed type specimens and they are addressed in this paper.

TAXONOMIC TREATMENT

Arenaria L., Sp. Pl. 1:423. 1753. Type: *Arenaria serpyllifolia* L., Sp. Pl. 1:423. 1753.

1. Arenaria bourgaei Hemsl., Diagn. Pl. Nov. Mexic. 2:21. 1879. Type: MEXICO: "in convalle Mexici" [in the valley of Mexico], *E. Bourgeau 22* (**lectotype, designated here:** K-000075336 [image!: https://plants.jstor.org/stable/10.5555/al.ap.specimen.k000075336]; isolectotypes: GH-00037627 [image!: https://plants.jstor.org/stable/10.5555/al.ap.specimen.gh00037627], P-00335840 [image!: https://plants.jstor.org/stable/10.5555/al.ap.specimen.p00335840]).

***Note.*—**Hemsley (1879) described *Arenaria bourgaei* based on three different collections: *C. Parry & E. Palmer 62*, *E. Bourgeau 22* and *E. Bourgeau 280*, and omitted to specify a holotype, therefore, requiring lectotypification according to articles 9.3, 9.11 and 9.12 of the

J. Bot. Res. Inst. Texas 19(4): 607–610. 2025
https://doi.org/10.17348/jbrit.v19.i4.1444
Published online: 16 December 2025

ICN (Turland et al. 2025). Currently, these syntypes are housed between different herbaria like K, GH, MPU, NY, P and US. Among all these different collections, we designate as the lectotype a specimen from the gathering *E. Bourgeau 22* housed at K, with duplicates at GH and P. This specimen better reflects the description of the species, and also is the most suitable to have been studied by Hemsley, due to the fact that his types were mainly there (Stafleu & Cowan 1979). The specimen, *C. Parry & E. Palmer 62,* has fewer floral structures for proper identification; the same applies to *E. Bourgeau 280*, thus, are not the most suitable specimens for lectotypification, but we consider them part of the original material.

2. Arenaria jamesoniana Rohrb., Linnaea 37:267. 1872. Type: ECUADOR: "Habitat in Andinum Ecuadoriensum summo jugo montis Pichincha" [Habitat in the highest ridges of the Andean mountains of Pichincha, Ecuador], 4700 m, *W. Jameson 140* (**lectotype, designated here:** P-00274246 [image!: https://plants.jstor.org/stable/10.5555/al.ap.specimen.p00274246]; isolectotypes: BM-000803932 [image!: https://plants.jstor.org/stable/10.5555/al.ap.specimen.bm000803932], F-0053263F [image!: https://plants.jstor.org/stable/10.5555/al.ap.specimen.f0053263f]).

Note.—Rohrbach (1872) described *A. jamesoniana* based on the collection W. Jameson made in the Andes of Ecuador (*W. Jameson 140*) but failed to designate a holotype, therefore, requiring lectotypification according to articles 9.3, 9.11, and 9.12 of the ICN (Turland et al. 2025). Rohrbach types were housed at B and GOET (Stafleu & Cowan 1983), but no specimen belonging to this collection was found there. However, at the beginning of his paper, Rohrbach (1872) states "Was zunächst die südamerikanischen Arten betrifft, so bildet die Mandon'sche Sammlung aus Bolivia den Kern des mir von dort vorliegenden Materials" [As for the South American species, the Mandon collection from Bolivia forms the core of the material available from there] and Rohrbach mentions he examined specimens at three herbaria "botanischen Hofkabinets zu Wien, dem De Candolle'schen und dem des Grafen Franqueville gesehen" [the Royal and Imperial Botanical Court Cabinet in Vienna, the De Candolle collection, and that of Count Franqueville], now W, G, and P, respectively. Considering this, the type must be at one of these three herbaria. Currently, we only find trace of the gathering at P, BM, and F. Upon close examination of the P specimen, and despite it is part of a mixed herbarium sheet (mixed with *G. Mandon 1258*), it is highly probable that it was examined by Rohrbach for his species description. The sample is representative and has complete structures, being suitable material and designated here as the lectotype for the species.

3. Arenaria parvifolia Benth., Pl. Hartw. 163. 1845. Type: ECUADOR: "Hacienda de Antisana", *K. Hartweg 911* (**Lectotype, designated here:** K-000075338 [image!: http://specimens.kew.org/herbarium/K000075338]; isolectotypes: LD-1044870 [image!: https://plants.jstor.org/stable/10.5555/al.ap.specimen.ld1044870]

Note.—Bentham (1845) described *Arenaria parvifolia* in his *Plantas Hartwegianas imprimis Mexicanas*; the description is based on K. Hartweg's collections. In the protologue, Bentham only states "Hacienda de Antisana," without specifying the number of the specimen or herbaria where it is deposited. Thus, a lectotype must be designated following articles 9.3, 9.11, and 9.12 of the ICN (Turland et al. 2025). We discovered two specimens belonging to *K. Hartweg 911* and housed at K and LD, respectively, where most of Hartweg's types are housed. Bentham based most of his descriptions of *Arenaria* on Hartweg collections (Stafleu & Cowan 1979). Between those two specimens (K, LD), the most suitable for being designated as a lectotype is the K specimen due to a stamp that specifies "Herbarium Benthanianum," clarifying was housed in Bentham's personal herbarium, that is now at K. Additionally, the LD sample is clearly a duplicate of the K gathering but there is no evidence of Bentham examined it. Therefore, we designate the K specimen as the lectotype for the species.

4. Arenaria radians Benth., Pl. Hartw. 163. 1845. Type: ECUADOR: "In montibus Ilinissa et Chimborazo propter nives aeternas" [In mounts Iliniza and Chimborazo, near the perpetual snow], *K. Hartweg 909* (**lectotype, designated here:** K-000075326 [image!: https://records.data.kew.org/occurrences/261dd9e6-2d16-42cc-93bb-91481e8bf7d6]; isolectotypes: BM-000939013 [image!: https://plants.jstor.org/stable/10.5555/al.ap.specimen.bm000939013], E-00394862 [image!: https://plants.jstor.org/stable/10.5555/al.ap.specimen.e00394862], G-00226471 [image!: https://plants.jstor.org/stable/10.5555/al.ap.specimen.g00226471], G-00226472 [image!: https://plants.jstor.org/stable/10.5555/al.ap.specimen.g00226472], LD-1508512 [image!: https://plants.jstor.org/stable/10.5555/al.ap.specimen.ld1508512], P-00274245 [image!: https://plants.jstor.org/stable/10.5555/al.ap.specimen.p00274245], P-00335798 [image!: https://plants.jstor.org/stable/10.5555/al.ap.specimen.p00335798]).

Note.—The case of *A. radians* is similar to *A. parvifolia*. Bentham (1839) described this species based on K. Hartweg's collections but failed to designate a holotype, thus, requiring lectotypification according to articles 9.3, 9.11, and 9.12 of the ICN (Turland et al. 2025). Today, we can find seven specimens of this gathering distributed across several European herbaria. Of all these specimens, we select the one housed at K as the lectotype due to Bentham's herbarium stamp on the specimen indicating it was in Bentham's personal herbarium, and therefore studied by him for the description of the species. The other specimens show no evidence Bentham having examined them; they are designated here as isolectotypes.

5. Arenaria reptans Hemsl., Diagn. Pl. Nov. Mexic. 2:22. 1879. Type: MEXICO: "in convalle Mexici" [in the valley of Mexico], *W. Schaffner 53* (**Lectotype, designated here:** K-000075333 [image!: https://plants.jstor.org/stable/10.5555/al.ap.specimen.k000075333]; isolectotypes: P-00335821 [image!: https://plants.jstor.org/stable/10.5555/al.ap.specimen.p00335821], P-00335823 [image!: https://plants.jstor.org/stable/10.5555/al.ap.specimen.p00335823]).

***Note.*—**Hemsley (1878) described *A. reptans* based on two collections housed at K: *W. Schaffner 47* and *W. Schaffner 53*, without designating either one of them as the holotype. Per articles 9.3, 9.11, and 9.12 of the ICN (Turland et al. 2025), lectotypification is required. In the protologue, Hemsley (1878) mentioned that the types are in K, where we found a single mixed specimen with numbers *47* and *53*. Considering both specimens were studied by Hemsley, we are designating *W. Schaffner 53* as the lectotype. This specimen has more complete reproductive and vegetative structures, and it is a more representative sample. Also, we found two other specimens belonging to this gathering at P, and they are treated as isolectotypes.

6. Arenaria tetragyna Willd. ex D.F.K. Schltdl., Mag. Neuesten Entdeck. Gesammten Naturk. Ges. Naturf. Freunde Berlin 7(3):201. 1816. TYPE: ECUADOR: "Auf den Südamerikanschen Gebirgen" [In the South American mountains], *A. von Humboldt & A. Bonpland 2255* (**LECTOTYPE, designated here:** B-W08748-010 [image!: https://herbarium.bgbm.org/object/BW08748010]; ISOLECTOTYPES: P-00274226 [image!: https://plants.jstor.org/stable/10.5555/al.ap.specimen.p00274226], P-00335803 [image!: https://plants.jstor.org/stable/10.5555/al.ap.specimen.p00335803]).

***Note.*—**Schlechtendal (1816) described *A. tetragyna* without specifying any collections, herbarium, or types in the protologue. He just mentions "Auf den Südamerikanschen Gebirgen, von Humboldt entdeckt" [discovered by Humboldt in the South American mountains]. However, the article mentions several times in the introduction and the following sections that the descriptions were made analyzing the material of Willdenow's collection and Humboldt's types housed in Berlin (Schlechtendal 1816). According to articles 9.3, 9.11, and 9.12 of the ICN (Turland et al. 2025), a lectotype must be designated. Most of Willdenow's plants are now at B (Stafleu & Cowan 1988: 298). Therefore, the collection *A. von Humboldt & A. Bonpland 2255* is here designated as lectotype of *A. tetragyna*. There are two other specimens of this gathering, housed at P, are designated as isolectotypes.

ACKNOWLEDGMENTS

We thank the herbaria cited in this study (B, B-W, BM, E, F, G, K, LD, P) for their ongoing digitization efforts, which greatly facilitate access to historical types and make taxonomic contributioins such as this possible. We also thank the Biodiversity Heritage Library for providing free, open access to these resources, thereby preserving and disseminating invaluable historical information. Thanks to Juraj Paule from B herbarium for the valuable information about one of the types. Finally, thanks to the JBRIT editor, Daniel Montesinos, and an anonymous reviewer for their valuable comments and suggestions that improved this manuscript.

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