

# Typifications of the names of some Latin American species of *Fossombronia* (Fossombroniaceae)

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**ABSTRACT.** Eleven lectotypes and one neotype are designated for the names of the 12 Latin American species in the genus *Fossombronia* Raddi that have not been previously typified. The entries for each are given in alphabetical order with author citation, place and date of publication, herbarium of deposit and supporting information. The original protologue and images of the herbarium label for each type specimen can be viewed at the URL <<http://bryophytes.plant.siu.edu/fossombronia.html>>.

**KEYWORDS.** *Fossombronia*, Latin America, liverwort, Marchantiophyta, typification.



During a revisionary study of *Fossombronia* in Latin America (Freire 2002) it was realized that most of the species names had not been typified. Types are designated here to allow for the correct application of names to the taxa recognized in this study. Bonner (1965) and Scott and Pike (1988) provided some nomenclatural details on various Latin American taxa of *Fossombronia*, but as noted by Stotler et al. (2003) they did not deal with typification issues. Twenty-three species have been reported to occur in this geographic region; the names of the six that were described from either Europe or North America have already been typified. Those are *F. angulosa* (see Stotler et al. 2005), *F. foveolata* (see Grolle 1969), *F. pusilla* (see Stotler & Crandall-Stotler 2005) and *F. wondraczekii* (see Stotler et al. 2003) from Europe and *F. salina* (see Stotler et al. 2003) and *F. texana* (see Schuster 1992) from North America. Of the 17 species

described from Latin America, the names of only five have assigned types. *Fossombronia porphyrorhiza* (Nees) Prosk. was typified by Proskauer (1955) and when *F. paranapanemae* Schiffn. was described, a holotype was designated (Schiffner & Arnell 1964). *Fossombronia peruviana* was typified by Crandall-Stotler et al. (2000), and *F. lamellata* Steph. and *F. tuberifera* K. I. Goebel were typified by Stotler et al. (2003). The names of the remaining 12 species are typified here.

**Typifications.** Careful scrutiny of the protologue for each of the following species, coupled with the study of herbarium specimens, and herbarium label data have allowed us to authenticate lectotypes for 11 of the species. For one species, namely *Fossombronia ptychophylla* Spruce, we have selected a neotype since no original material appears to be extant. The names of the species typified in this paper are listed in

alphabetic order. Scientific names are followed by the abbreviation of the name(s) of the author(s) (following Brummitt & Powell 1992), by a complete literature citation and the year of publication, and by the herbarium label information exactly as it appears on the specimen selected as the type. Last is given the acronym of the herbarium housing the specimens cited following Holmgren et al. (1990) along with the accession or bar code number, if available. Each typification is followed by the phrase “designated here” in compliance with the specifications of Article 7.11 of the International Code of Botanical Nomenclature (McNeill et al., 2006). The treatments are appended with commentary to support the typification decision. Scanned images of the protologues and type specimens labels are available at the URL: <http://bryophytes.plant.siu.edu/fossombronia.html>.

**1. *Fossombronia brasiliensis* Steph., Sp. Hepat. 1:**

382. 1900. LECTOTYPE (designated here): Brazil. “*Fossombr. brasiliensis*, Original, Brasilia, *Ule 109*”, in Herb. F. Stephani (G no. 025473).

Stephani (1900) wrote in his protologue of *F. brasiliensis*: “Hab. *Brasilia* (Puiggari, Ule); *Cuba* (Wright); *Insula Dominica* (Elliott)” but he did not designate a type, nor did he indicate any collection numbers. In his unpublished icones of *F. brasiliensis*, there are drawings of a spore and elater, a stem section, one leaf with an entire margin and plane contour, two sessile caulocalyxes, an elongate seta emerging from a lobate caulocalyx and a dissected calyptra. At the bottom he wrote: “*Fossombronia brasiliensis* St nsp, Brasilia, *Ule 106*.” Unfortunately, the only “*Ule 106*” specimen that we have located is in the Schiffner herbarium at Harvard University (FH). Typically, but not always, when Stephani named a new species he would follow the name with “Stnsp” but this was not the case with any of the numerous *F. brasiliensis* specimens in his herbarium (G). In fact, in association with the designated lectotype, we have examined an additional 12 probable syntypes of this species from his herbarium as follows: Brazil: “*Foss. brasiliensis* St, sub *fossombr. angulosa* Raddi, Apiahy, Puiggari 82,” (G no. 025479), “*Foss. brasiliensis*, *Fossombronia angulosa* Raddi, Apiahy, Puiggari 804,” (G no. 025481); “*Foss. brasiliensis* St., *Fossombronia angulosa*, Brasilia, *Ule no 33*,” (G no. 025484),

“*Fossombr. brasiliensis* St, olim [formerly] *Fossombronia angulosa*, Brasilia, leg. Ernst Ule no 36,” (G no. 025484), “*Foss. brasiliensis* St, Brasilia, Sta. Catharina, *Ule 51*,” (G no. 025486), “*Foss brasiliensis* St, Brasilia, *Ule 105*,” (G no. 001738), “*Foss. brasiliensis*, sub *Foss. foveolata* Jack non Lindb., Herb. Jack, Rio Janeiro, *Ule 108*,” (G no 025474). Dominica: “*Foss. brasiliensis* St, Dominica, *Elliott 995*,” (G no. 025475), “*Foss. brasiliensis* St, Dominica, *Elliott 1207*,” (G no. 025476), “*Foss. brasiliensis* St, Dominica, *Elliott 1257*,” (G no. 001735), “*Foss. brasiliensis* St, Dominica, *Elliott 1265*,” (G no. 025471), “*Foss. brasiliensis* St, Dominica, *Elliott 1258*,” (G no. 025472). No “Cuba (Wright)” material was located among the *F. brasiliensis* specimens in Stephani’s herbarium.

In a comparison of *F. salina* A. Evans with *F. brasiliensis*, Evans (1923) reported that he “examined three Brazilian specimens of *F. brasiliensis* from the Boissier Herbarium at Geneva,” which were Puiggari 82, *Ule 51* and *Ule 108*. He then wrote “. . . the first being presumably the type of the species” which would be Puiggari 82. Since Evans expressed doubt as to his selection by using the word “presumably” we consider that this is not an effective lectotypification under Article 7.11 of the International Code of Botanical Nomenclature (McNeill et al. 2006), and can, therefore, be ignored. Of the 13 collections in the Stephani herbarium that we have studied, we have selected *Ule 109* as the lectotype because it is a generous specimen, it matches all characters of the protologue, and it is also the only collection with the word “Original” written on it by Stephani. It is also of interest that this packet bears a red “Typus” sticker on it that was added by a curator. The two other packets that have such a sticker are *Elliott 1258* and *1265* collections from Dominica.

We have located possible duplicates of several of the Puiggari and Ule specimens in BM, M, NY and PC but except for the collector and collection number, the label data vary. For example, *Ule 108* (M) has “Sta. Catharina, Herb. Stephani” whereas *Ule 108* in the Stephani herbarium has “Rio Janeiro;” *Ule 109* (BM) is labelled “*Fossombronia dumortieri* Lindb. Herb. Steph.” but *Ule 109* in the Stephani herbarium has “*Fossombr. brasiliensis*” only; Puiggari 82 (PC) is labelled “*Fossombronia pusilla*,” not “*Foss. brasiliensis* sub *F. angulosa*” as the original in the Stephani

Herbarium. Because of this ambiguity we have not considered any of the specimens outside of the Stephani herbarium to be duplicates and hence to represent original material.

**2. *Fossombronia carinata*** Gottsche *in* Gottsche, Lindenberg & Nees, Synop. Hepat. 469. 1846. LECTOTYPE (designated here): Mexico. “*Foss. carinata* G., sterilis, Original, Mexico, Yavesea, leg. Liebman[n], Herb. Gottsche” in Herb. F. Stephani (G no. 22164; isolectotypes: s, w).

In his protologue Gottsche (Gottsche et al. 1846) wrote that the specimen used to describe this species was part of the collections made by Liebmann during his journey to Mexico, and that the habitat was soil, near Yavesea. We assume that the majority of the collection was in the Gottsche herbarium in Berlin (B) that was destroyed during World War II. No collections were located in the herbarium at the Institut für Allgemeine Botanik, Hamburg (HBG) where several Gottsche hepatic types have previously been located. We did, however, locate three small packets of original material that had been either sent to or acquired by Lehmann (s), Lindenberg (w) and Stephani (G), respectively. The label data of all three agree with the protologue but the specimen deposited in G is designated as the lectotype because it contains the most plant material. The specimens in s and w consist of very few plants but are duplicates and hence isolectotypes.

**3. *Fossombronia crassifolia*** Spruce, Trans. & Proc. Bot. Soc. Edinburgh 15: 527. 1885. LECTOTYPE (designated here): Ecuador. “*Fossombronia crassifolia* Spruce, Original, Herb Slater, Andes Quitenses, Banos ad pedem Montis Tunguragua, leg Spruce”, in Herb. F. Stephani (G no. 22165; isolectotypes: BM (2), E, M, S).

*Fossombronia crassifolia* was described by Spruce (1885) from his collection in Baños, Ecuador, at the foot of Montis Tunguragua (= Mount Tungurahua) on black and humid soil. The Spruce herbarium is at Manchester Museum (MANCH) but no specimens with this name could be located there. According to Edwards (1996), the personal herbarium of Spruce did not come to Manchester Museum until 1919 and moreover, Spruce did not retain a complete set of his Hepaticae Amazonicae et Andinae in his own

herbarium. Mathew Slater, a close friend of Spruce, distributed many of his collections and the packet labelled “ex herb. Slater” in the Stephani herbarium is designated as the lectotype. The diagnostic characters of the material and the information on the label fully match the protologue, even though the writing is in the hand of Stephani. The designated lectotype is also accompanied by two OM photomicrographs and two SEM micrographs of spores. Those photos, although not signed, are labeled in the hand of D. C. Pike (né Cargill). The five isolectotypes that we have been able to locate are all part of “Hepaticae Spruceanae: Amazonicae et Andinae” issued by Spruce. According to Sayre (1975), Spruce sent the first set to K and a second was acquired by BM. That would explain why there are two specimens at BM since the bryophytes from Kew were later incorporated into The Natural History Museum.

**4. *Fossombronia cubana*** Austin, Bot. Bull. 1: 36. 1876. LECTOTYPE: Austin No. 118 p.p. Hepaticae Boreali-Americanae, “*Fossombr. texana* n.sp. Lindb., n. 118 p.p., Texas, Wright” (H-SOL) [see Schuster 1992: 403].

*Fossombronia cubana* is nomenclaturally superfluous under Article 52 of the International Code of Botanical Nomenclature (McNeill et al. 2006). Austin (1876) effected inclusion of the type of the name *F. texana* Lindb. (Lindberg 1875) by citation of that name in synonymy. Furthermore, under Article 7.5 (McNeill et al. 2006), since Austin (1876) did not designate or definitely indicate a different type it must necessarily be typified by the type of *F. texana*. Thus, the name *F. cubana* is illegitimate and homotypic with *F. texana*.

**5. *Fossombronia fernandeziensis*** Steph., Kungl. Svenska Vetenskapsakad. Handl. 46(9): 15. 1911. LECTOTYPE (designated here): Chile. “*Fossombronia Fernandeziensis* Stnsp. Juan Fernandez, Masatierra, 104 Skottsberg, 1908” in Herb. F. Stephani (G no. 22168; isolectotype: s).

This species was published by F. Stephani (1911) in the second part, “Die Lebermoose,” of the 11 part series “The Botanical results of the Swedish Expedition to Patagonia and Tierra del Fuego” (Skottsberg 1910–1938). The locality cited in the protologue is “Juan Fernandez: Masatierra” and a packet in the

Stephani herbarium that has matching label data in the hand of Stephani is selected as the lectotype. That specimen consists of about a dozen plants and is accompanied by two OM photomicrographs and two SEM micrographs of spores. Those unsigned photos are labeled in the hand of D. C. Pike (né Cargill). A specimen with a printed label “Expeditio suecica 1907–1909” in the Swedish Museum of Natural History (s), which houses Skottsberg’s collections, is a duplicate and hence an isolectotype. Stephani wrote on that label as follows: “*Fossombronia fernandeziensis* St., Juan Fernandez, Masatierra, prope colonia, in humus 22/8 1908.” This information matches the protologue that includes the words “unweit der Kolonie, auf Erde” [near the colony on soil]. The collection in s contains numerous plants with mature sporophytes.

**6. *Fossombronia herzogii*** K. I. Goebel in Herzog, Biblioth. Bot. 87: 269. 1916. LECTOTYPE (designated here): Bolivia. “*Fossombronia herzogii* Goebel n.sp., Typus! Herbarium Theodor Herzog, Jena. 4388. Fl. v. Bolivia. Am Bachrand beim Abstieg von der Passhöhe (Cerros de Malaga) zum Rio Paracti, ca 3600–3800 m., leg. Th. Herzog, Juni 1911. aus d. Alkohol-präparat”! in Herb. T. Herzog (JE; isolectotype: M).

As indicated in the protologue, Goebel named *F. herzogii* based on Herzog’s collection no. 4388 from Cerros de Malaga, Bolivia. That collection had initially been given the name *Androcryphia confluens* forma *major* by Herzog. The specimen in JE with “Typus!” written on it is selected as the lectotype. In his protologue, Goebel pointed out that the collection was sterile as depicted in his earlier illustration (Goebel 1915: 583). From our study of the specimens in JE and M it was confirmed that only sterile material exists, although Scott and Pike (1988: 196) wrote that the specimen in JE “. . . has spores too immature to be useful, and other specimens in the same herbarium are sterile.” We found no reproductive plants, nor did we find “other specimens” in JE. There exists an additional specimen labelled only “*Fossombronia Herzogii*” in M with a note in pencil that it had been in alcohol and was sterile. Since Goebel’s collections are in M, it is very likely that these were the plants studied by him when he named *F. herzogii*. However that specimen was not considered a type because the word

“woher ?” [where from ?] was written on the label, probably by a curator placing the alcohol preserved specimen, without a specified location, on the herbarium sheet. An additional specimen in M with a printed label “Plantae in itinere secundo per Boliviam lectae” with *Androcryphia confluens* Nees forma *major*, N° 4388, leg. Th. Herzog, is an isolectotype.

**7. *Fossombronia lophoclada*** Spruce, Trans. & Proc. Bot. Soc. Edinburgh 15: 529. 1885. LECTOTYPE (designated here): Peru. “*Fossombronia lophoclada*, Spruce ♂. In M. Campana supra ligna putrida, terram purpureum” in Herb. R. Spruce (MANCH no. 4271; isolectotype: G no. 21392).

According to the protologue, Spruce (1885: 529) described *Fossombronia lophoclada* from a specimen collected “ac terram purpuream in humidis umbrosis montis Campana, in Andibus Peruvianis: pl. ♂ sola.” The specimen in the Spruce herbarium with a label in his handwriting and information that matches the original protologue, including a male sign, is chosen as the lectotype. A duplicate specimen in G labelled “Original” communicated to Stephani by M. Slater with very similar label information is an isolectotype.

**8. *Fossombronia luetzelburgiana*** K. I. Goebel, Flora 105: 55. 1912. LECTOTYPE [icon] (designated here): Brazil. Figs. 1–4 in Flora 105: 55. 1912. Epitype (designated here): Brazil. “*Jamesoniella* sp. ? det. Stephani 1905, Prov. Minas Ger. in Serra de Caldas inter gramina paludis, 18 5/9 73 [September 5, 1873], C. W. H. Mosén s.n.” in Herb. Regnell (s).

*Fossombronia luetzelburgiana* was described by K. I. Goebel (1912) from a specimen collected in 1911 by his former student Philipp von Lützelburg in the Serra dos Orgãos mountain range located in the province of Rio de Janeiro, southeastern Brazil, Serra do Mar. It was not possible to locate this specimen in any of the herbaria known to house Goebel or Lützelburg collections. We assume that the specimen used to illustrate this new species was not vouchered, a practice not uncommon with a morphologist such as by K. Goebel (H. Hertel, pers. comm.). The four 1912 illustrations in the protologue, treated as a unit, have been selected to serve as the lectotype. *Fossombronia luetzelburgiana* has remained an obscure species, because of the lack of specimens and because it was

described in a publication that dealt with a comparison of antheridia and archegonia in liverworts (Goebel 1912). It was not included in the Index Hepaticarum (Bonner 1965). We were unable to locate any herbarium specimens even labelled as *F. luetzelburgiana*. Luckily, study of a collection on loan from s was found to match perfectly with the type illustrations. That specimen was part of the Regnell herbarium and was collected by C. W. H. Mosén in Serra de Caldas, Prov. Minas Gerais that had been determined as *Jamesoniella* sp.? by Stephani. Fortunately, that collection had been annotated “*Fossombronia* spec. c. sp. non *Jamesoniella* spec.” by R. Grolle in 1968 and refiled under *Fossombronia*. This is an excellent fertile specimen of the same species as that illustrated as *F. luetzelburgiana* and is designated as the epitype.

**9. *Fossombronia mexicana*** Steph., Sp. Hepat. 6:74. 1917. Lectotype (designated here): Mexico. “7755, *Fossombronia mexicana* St. ms. Mexico, Arsén [Arsène], Sporae flavescentes, 36–45 $\mu$ , papillatae (subhispidae) papillis truncatis”, in Herb. F. Stephani (G no. 22179; isolectotypes: G(2), M, PC(2)).

This species was described by Stephani (1917) from a collection made by Frère Gustav Arsène (secular name: Arsène Gustav Joseph Brovard) in Puebla, Mexico. Three packets of *Fossombronia mexicana* that are extant in the Stephani herbarium all represent original material labelled in the hand of Stephani. One has “St. nsp., Mexico, Puebla, Herb. Lacouture” but the collector is not indicated. The other two both have “St. ms., Mexico, Arsén [Arsène]” but do not indicate Puebla. We have chosen as the lectotype a collection with the collector Arsène indicated as per the protologue, which also has in pencil, spore descriptors that are found in the original description. The type packet also includes three OM photomicrographs and three SEM micrographs of spores (distal and proximal surface), not signed, but labeled in the hand of D. C. Pike (né Cargill). The other two specimens in the Stephani herbarium are considered isolectotypes since they are no doubt duplicates of the same collecting event. Three other collections housed elsewhere have also been listed as isolectotypes because they have label data that likewise

fit the protologue and appear to be portions of the original collection.

**10. *Fossombronia ptychophylla*** Spruce, Trans. & Proc. Bot. Soc. Edinburgh 15: 529. 1885. NEOTYPE [icon.] (designated here): Ecuador. “*Fossombronia ptychophylla* Spr., 4 drawings [each signed E. M. T. = Isabella (“Ella”) Mary Tindall],” in Herb. R. Spruce (MANCH no. cc 4304).

Spruce (1885) named *F. ptychophylla* from a sterile population collected in Andes Quitenses (Ecuadorian Andes) in montis Altar, loco Condorasto, at 3700 m. Following a very extensive search, we have concluded that no extant specimens of *F. ptychophylla* exist. We did, however, find pencil drawings prepared by Ella M. Tindall and labeled *Fossombronia ptychophylla* on four 3.5  $\times$  4.5” thin cardboard cards in MANCH. We assumed that these were drawn from the original Spruce specimen and are selected as the neotype. The figure legends for the illustrations are handwritten in pencil on the back of one of those cards. In the corner of each card are three initials that resemble “EMJ” that we were finally able to decipher to be “EMT” and came to realize that those were the initials that the British botanist Isabella Tindall (1850–1928) used.

Scott and Pike (1988) were also unable to locate any original material of this species but suggested that it was distinct based upon the description. While the Tindall drawings fully match the diagnosis of Spruce, this species is clearly synonymous with *Fossombronia peruviana* Gottsche & Hampe.

**11. *Fossombronia tenuifolia*** Spruce, Trans. & Proc. Bot. Soc. Edinburgh 15: 528. 1885. LECTOTYPE (designated here): Ecuador. “Original, *Fossombronia tenuifolia* Spruce, Andes Quitenses, in Mte Altar ad terram umbrosam humidum, Spruce leg., Herb. Kew”, in Herb. F. Stephani (G no. 22188).

Spruce (1885) described *Fossombronia tenuifolia* based on his collection from the Ecuadorian Andes. The original treatment reads “Hab. Andes Quitenses, in monte Altar, ad terram umbrosum.” Unfortunately, there are no specimens with these label data extant in the Spruce herbarium in Manchester Museum. We have located a specimen in the Stephani herbarium in Geneva (G) with label information in the hand of

Stephani that is identical to that in the protologue, with “Herb. Kew” added, that we have chosen as the lectotype. This specimen contains but two very small subpackets; one labeled “planta” with three plant fragments and the other labeled “spora” that contains a capsule with an elongate seta. Although the specimen is not annotated, two OM photomicrographs and two SEM micrographs of spores (distal and proximal surface), not signed, but labeled in the hand of D. C. Pike (né Cargill) are included.

## 12. *Fossombronia wrightii* Austin, Bot. Bull. 1: 36.

1876. 4. LECTOTYPE (designated here): Cuba.

“comm. O. D. Allen, Hepaticae Cubenses

Wrightianae, No. [blank], *Fossombronia Wrightii*,

Aust., Bot Gazette, I, 36. Herb. CFAustin [manu.

Austin], Coll. C. Wright.” (NY; isolectotypes: BM, G,

NY(2), MICH, US (2), YU).

In his protologue, Austin wrote “On riparian rocks, Cuba, *Wrightii*.” The syntype in NY with a printed “Hepaticae Cubenses Wrightianae” label designated as the lectotype includes an additional label inside the packet with “*Fossombronia pusilla* cfr.” in black ink in the hand of Gottsche. In a reddish brown ink and no doubt in Wright’s hand is: “Hepat on rock in river Sta Cruz. Feby 18 [crossed out] Feby 18”. That is followed by “*F. wrightii* n. sp.” written in pencil by Austin, which has been written over in black ink, followed by Bot. Gazette, vol. I, p. 36.

Rodgers (1940: 244) quoted from a letter by William Sullivant to Asa Gray “Wright ought to send his Hepaticae to Gottsche” [for identification], which would explain the *F. pusilla* determination by Gottsche. Underwood (1896: 68), in fact, mentioned that Austin based *F. wrightii* on material that was distributed in Hep. Cubenses Wrightianae as “*F. pusilla*.” Although the exsiccatae was never published, it was distributed as shown in a letter we have seen in the correspondence of Asa Gray (H) and George W. Clinton (BUF) from “Chas. Wright” to “Hon. G. W. Clinton” stating that “a set of the ‘Hepaticae Cubenses Wrightianae’ - 176 specimens = \$17.60” had been dispatched.

All the isolectotype specimens have printed “Hepaticae Cubenses Wrightianae” labels and *F. pusilla* written on them except for the one in the Stephani Herbarium (G). Written on that packet by

Stephani is: “*Foss. wrightii* Austin, Sub *Foss. verruculosa* G[ottsche] ms, cfr. Cuba. On rocks in river Sta. Cruz. Wright.” It is likely that Stephani received this specimen from the Gottsche herbarium in Berlin and that Gottsche had considered naming this a new species with the epithet “*verruculosa*” in reference to the verruculose spore wall surface markings that characterize *F. wrightii*.

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