

On the identity of *Jungermannia obscura* Swartz

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Abstract – The type material of *Jungermannia obscura* Sw., collected by Olof Swartz in Jamaica between 1783 and 1786, is a mixture of three common tropical species of *Frullania*: *F. arecae* (Spreng.) Gottsche, *F. gibbosa* Nees and *F. riojaneirensis* (Raddi) Aongstr. The material of *F. arecae* fits the protologue best and is therefore chosen as the lectotype of *J. obscura* Sw. As a consequence, the name *Frullania arecae* (Spreng.) Gottsche is replaced by the older name *Frullania obscura* (Sw.) Dumort.

INTRODUCTION

The bryophytes described by the Swedish botanist Olof Swartz (1760-1818) from the West Indies are among the earliest bryophyte species described from the tropics. Swartz collected several thousands of specimens of plants and fungi on Jamaica and neighboring Hispaniola during 1783-1786 (Stearn, 1980); his most important publications on these collections were *Nova genera et species plantarum seu Prodrromus* (Swartz, 1788) and *Flora Indiae Occidentalis* (Swartz 1797-1806). Swartz' bryophyte collections included 78 species (44 mosses, 33 liverworts, 1 hornwort) and most of these were new to science. The majority of the new species were briefly diagnosed in the *Prodrromus* of 1788 and more fully described in 1806 in the third volume of *Flora Indiae Occidentalis* together with habitat data for the species and comparisons with related taxa. In addition, a few species were newly described in *Flora Indiae Occidentalis* that were not included in the *Prodrromus*.

In accordance with the starting point for moss nomenclature, Swartz' moss species are nowadays ascribed to Hedwig (1801) with exception of the species described after the starting point. The hepatic species, however, are still ascribed to Swartz. The majority of the hepatic species have been studied and the identities of their types have been clarified, e.g. for *Anthoceros crispus* Sw. (Proskauer, 1957), *Jungermannia adianthoidea* Sw., *J. bifaria* Sw., *J. cristata* Sw., *J. patula* Sw. and *J. simplex* Sw. (Heinrichs *et al.*, 1998), *J. atrata* Sw. (Uribe & Gradstein, 2003), *J. brachiata* Sw. (Evans, 1907), *J. capillaris* (Grolle, 1964), *J. cupressina* Sw. (Grolle, 1976), *J. dichotoma* Sw. and *J. linearis* Sw. (Costa, 2008), *J. diffusa* Sw. and *J. filicina* Sw. (Stotler & Crandall-Stotler, 1974; Gradstein, 1994), *J. flava* Sw. (Grolle, 1976), *J. fucoidea* Sw. (Meenks, 1987), *J. juniperoidea* Sw. (Grolle, 1961), *J. pallens* Sw. (Castle, 1960), *J. sinuata* Sw. (Evans, 1925), *J. tomentosa* (Fulford, 1963), *J. transversalis* Sw. (Gradstein & van Beek, 1985), *Marchantia hirsuta* Sw. (Grolle, 1976) and *Riccia? reticulata* Sw. (Bischler *et al.*,

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2005). The type specimens of few Swartz species from the West Indies have not been investigated critically, including those of *J. obscura* Sw.

Jungermannia obscura Sw. (= *Frullania obscura* (Sw.) Dumort.) was published by Swartz (1806) in his *Flora Indiae Occidentalis* and has long been considered a *nomen dubium* (Schuster, 1992). The species was collected by Swartz in the mountains of Jamaica ["Provenit in truncis arborum *Jamaicae temperatae*"; Swartz, 1806, p. 1869] and the type material, according to Nees von Esenbeck (1845, p. 411, footnote), was a mixture of three different species of *Frullania*: *F. hians* (Lehm. et Lindenb.) Lehm. et Lindenb., *F. sebastianopolitana* Lindenb. and *F. gibbosa* Nees. The name *F. gibbosa* is still accepted today but *F. hians* is a synonym of *F. arecae* (Spreng.) Gottsche (Demaret & VandenBerghen, 1948; Yuzawa, 1991) and *F. sebastianopolitana* is replaced by *F. riojaneirensis* (Raddi) Aongstr. (Spruce, 1884; Yuzawa, 1991). All three *Frullania* species are members of *Frullania* subg. *Chonanthelia* Spruce (Yuzawa, 1991) and are widespread in tropical America; two of them (*F. arecae*, *F. riojaneirensis*) occur also in tropical Africa and Asia. Because of the composite identity of *Jungermannia obscura* Sw., the name was rejected by the authors of the *Synopsis Hepaticarum* (Gottsche et al., 1844-1847) and was listed as a synonym ["*ex parte*"] under each of the three composing *Frullania* species[†].

Later authors have followed the *Synopsis* in treating *Jungermannia obscura* Sw. as a synonym, although usually in a more restricted manner. For example, Stephani (1909-1912) in *Species Hepaticarum* and Yuzawa (1991) in his monograph of *Frullania* subg. *Chonanthelia* listed *J. obscura* only as a synonym of *F. riojaneirensis* (in Yuzawa (1991) with a question mark, and with the remark "type not seen"). Evans (1914), on the other hand, treated *J. obscura* as a synonym of *F. arecae* and of *F. gibbosa*, but not of *F. riojaneirensis*. He furthermore selected the *gibbosa* element of *J. obscura* as the lectotype of *Frullania gibbosa*, based on study of a small fragment of *J. obscura* material in the Lindenberg herbarium in Vienna (nr. 6967). Evans' lectotypification of *F. gibbosa* was apparently overlooked by Yuzawa (1991) who selected a specimen from Barbados (ex hb. Hooker, collector unknown) as the lectotype of *F. gibbosa*.

The purpose of this paper is to clarify the identity of the name *Jungermannia obscura* Sw. by examination of type material in the herbarium of the Swedish Museum of Natural History in Stockholm, where the West Indian collections of Swartz are kept.

RESULTS

The type material of *Jungermannia obscura* Sw. in the herbarium of Stockholm consists of six packets, four of them originating from the herbarium of Swartz and the remaining two being duplicates originating from the Lehmann and Ångström herbaria. Three specimens were annotated by Y. Yuzawa, the monographer of *Frullania* subg. *Chonanthelia*, but his identifications are surprisingly missing in his monograph (Yuzawa, 1991). Moreover, no lectotypification of the

[†] Gottsche et al. (1844-1847, p. 428, under *F. trinervis* var. *obscura*) also mention the existence of a "*Jungermannia obscura* L. et Ldg. in Linn. Vol. IV. p. 358 [1829]" but this is an error as the name is cited there as "*Jungermannia obscura* Sw."

name *Jungermannia obscura* Sw. was hitherto attempted. The identity of the six specimens is as follows (B numbers refer to the registration numbers of bryophytes in S):

B28354 (hb. Swartz): *Frullania arecae* (det. Yuzawa) (Fig. 1 top).

The material is copious but apparently sterile, and is glued on a sheet with the annotation “*Frullania*” “*Jungermannia obscura* Sw. (*J. platyphylla* Linn.?)” “Swartz scripsit”. The annotation of this specimen (in ink) is not in the handwriting of Swartz.

B28355 (hb. Swartz): *Frullania arecae* (det. Yuzawa) (Fig. 1 bottom).

The same material as B28354 but fertile, consisting of several well-developed stems (loose in the packet) with gynoecia and a mature perianth. The packet is annotated in ink as “*Jungermannia*”, “Jamaica” in Swartz’ handwriting, with the addition “*obscura* Swz”, “Swartz scripsit”, “*Frullania sebastianopolitana*” in other handwriting.

B28356 (hb. Swartz): *Frullania gibbosa* (det. Yuzawa) (lectotype of *Frullania gibbosa* Nees, fide Evans [1914]).

The material consists of a small mat of fertile stems with many gynoecia and androecia, and one mature sporophyte. The packet is annotated in ink as “*Jungermannia obscura* Sw. fl. ind. occid.”, “Jamaica” in Swartz’ handwriting, with “*Frullania gibbosa*” and “Swartz scripsit” added in other handwriting.

B28357 (hb. Swartz): *Frullania riojaneirensis*.

A small packet with 2-3 stems of fertile, autoicous stems with a few gynoecia and androecia. The packet is annotated as “*Frullania sebastianopolitana*, *Jung. obscura* Sw., Jamaica”. The annotation of this specimen is in pencil and not in Swartz’ handwriting.

B28358 (hb. Lehmann): *Frullania arecae*.

A small duplicate of B28354 and B28355, containing a single, sterile shoot.

Without number (hb. Ångström, ex hb. Lindenberg): *Frullania gibbosa* (isolectotype of *Frullania gibbosa* Nees, fide Evans [1914]).

A copious duplicate of B28356, containing fertile stems with gynoecia and androecia.

DISCUSSION AND CONCLUSION

All three *Frullania* species mentioned by Nees von Esenbeck (1845) are present in the type material of *Jungermannia obscura* Sw. in Stockholm, each of them kept in separate packets. The specimens of *Frullania arecae* and *F. gibbosa* are copious and Swartz’ handwriting is on the packets. The material of *F. riojaneirensis*, however, consists of only a few shoots and lacks Swartz’ handwriting.

Most of the characters mentioned in Swartz’ original description (Swartz, 1806) fit all three *Frullania* species. The specimen B28356 (*F. gibbosa*) is the only collection with a sporophyte (a single sporophyte is contained in the packet) and for this reason would fit the protologue best, because the sporophyte is described in the protologue. However, Swartz’ description of the sporophyte is very brief and unspecific, and the statement “*capsulae oblongae*” does not fit *Frullania*, which has a rounded capsule. *Frullania arecae* (B28354, B28355; Fig. 1), on the other hand, fits the protologue very well because it is the only species of the three with distinctly undulate underleaf margins, which are described by Swartz [“*margine undulate*”]. Moreover, *F. arecae* is the only one resembling *Porella*

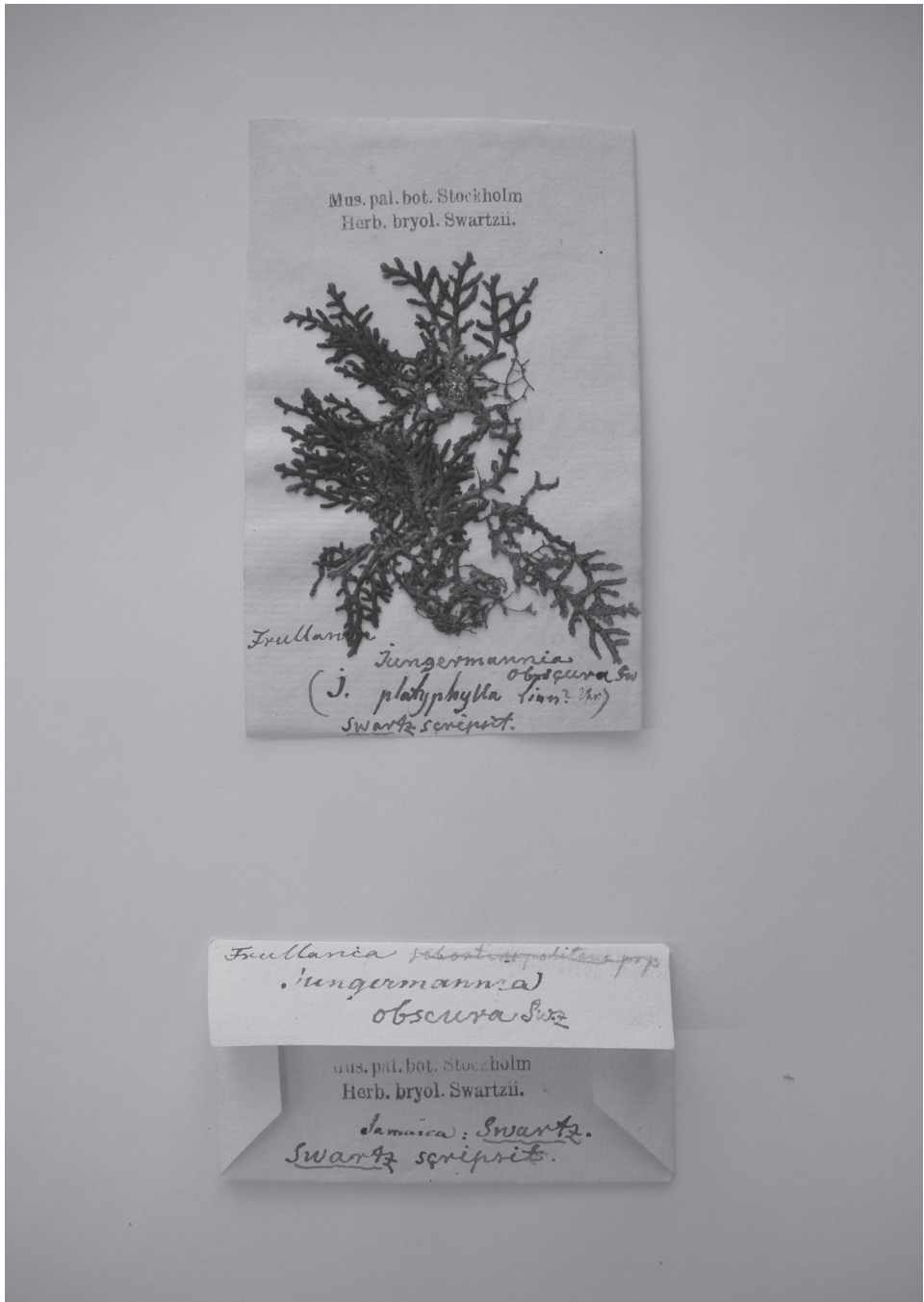


Fig. 1. Lectotype material of *Jungermannia obscura* Sw. (= *Frullania obscura* (Sw.) Dumort.) in the herbarium of the Swedish Museum of Natural History in Stockholm (S). Bottom: the lectotype (S nr. B28354). Top: isolectotype (S nr. B28354). (Photograph L. Hedenäs).

platyphylla in habit, a feature mentioned explicitly by Swartz in a note with his description of *J. obscura* ["OBS. Forma *J. platyphyllae* Linn. accredit..."] and on the label of specimen B28354.

Because the characters of *Frullania arecae* fit the protologue of *Jungermannia obscura* best and because copious material of this species is present in the Swartz herbarium, being accompanied by Swartz' own handwriting, the *F. arecae* component is selected as the lectotype of *J. obscura* Sw. The nomenclatural consequences of this lectotypification are as follows:

***Frullania obscura* (Sw.) Dumort.**, *Recueil Observ. Jungerm.*: 13 (1835); (non *F. obscura* Steph. 1910, *nom. illeg.*).

≡ *Jungermannia obscura* Sw., *Fl. Ind. Occ.*: 1869 (1806). **Type**: Jamaica, Swartz *s.n.* (lectotype, designated here, S nr. B28355! (Fig. 1 bottom); isolectotypes, S nr. B28354! (Fig. 1 top), S nr. B28358! [ex hb. Lehmann]).

= *Jungermannia arecae* Spreng., *Neue Entdeck. Pflanzenk.* 2: 99 (1821); *Frullania arecae* (Spreng.) Gottsche, *Mex. Leverm.*: 236 (1863); *Kong. Danske Vidensk. Selsk. Srkift.* VI: 332 (1867). **Type**: (Demaret & Vanden Berghen, 1948): Puerto Rico, *Bertier s.n.* ["Bertero"] (location?). Demaret & Vanden Berghen (1948) studied type material without mention of its location; Evans (1914) mentioned the presence of an isotype in W; Yuzawa (1991) did not examine the type. The concept of *F. arecae* in this paper follows Demaret & Vanden Berghen (1948) and later authors.

= *Jungermannia hians* Lehm. et Lindenb., *Nov. Min. Cogn. Stirp. Pug.* 4: 55 (1932); *Frullania hians* (Lehm. et Lindenb.) Lehm. et Lindenb., *Syn. Hepat.*: 414 (1845). **Type**: Mexico, Xalapa, *Schiede s.n.* (G, S!, STR, W).

For further synonymy see Yuzawa (1991).

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