

(675)–(678) Proposals for the conservation of the “Sprucean” genera of Lejeuneaceae (Hepaticae).

Introduction

The Lejeuneaceae are the largest family of the Hepaticae with over 1500 species in about 90 currently accepted genera (Gradstein, 1980). Much has already been written on the nomenclatural and taxonomic problems associated with the generic names in this family. A brief review of the problems is given, introductory to the proposals presented here.

Current generic concepts in Lejeuneaceae are essentially based on Richard Spruce's treatment of the group in his “Hepaticae of the Amazon and of the Andes of Peru and Ecuador” (Spruce, 1884). Spruce recognized, besides the monotypic *Myriocolea* Spruce, one single genus, *Lejeunea*, for several hundreds of species of Lejeuneaceae known at that time. This much-embracing genus was subdivided by Spruce into 37 subgenera. Each of the subgenera received a name in which the generic name “*Lejeunea*” was hyphenated with an appropriate, descriptive prefix: e.g. *Acro-Lejeunea*, *Cerato-Lejeunea*, *Hygro-Lejeunea*, *Sticto-Lejeunea*.

In the generic diagnosis, as well as in nine pages of introductory remarks on the genus *Lejeunea*, Spruce (1884) wrote of subgenus “*Acrolejeunea*”, “*Stictolejeunea*”, etc. without a hyphen and, subsequently, with a hyphen: “I have named all my subgenera by prefixing to the word *Lejeunea* some characteristic term—thus, *Sticto-Lejeunea*, . . .” (p. 73). In the rest of the work the subgeneric names are hyphenated, except in the index, the legends of the plates, and the plates themselves. Following Art. 73.9 of the 1978 Code, the hyphen in these subgeneric names (epithets) are now to be deleted.

Also confusing is (as Bonner et al., 1961, already pointed out), the way in which the species names are written: “*Acro-Lejeunea torulosa*”, etc., thus using a binary nomenclature by combining the subgeneric epithets with the species epithets. Nevertheless, the combinations in *Lejeunea* appear in the index and, from the context, it is clear that these are combinations in *Lejeunea*. It is common practice to consider these species names, many of which are new, as validly published.

Most of these subgenera have proved to be very natural, well-defined groups, which were soon adopted by subsequent authors as genera and provided with lectotypifications. The question to which author the generic names are to be accredited, as well as the designation of lectotypes have, however, been the subject of much confusion and debate. Spruce himself (1884, p. 73), in his introduction, suggested that at least some of his subgenera were really the equivalent of acknowledged genera in other groups of Hepaticae:

“The species of *Lejeunea* are perhaps the most elegant and delicate of all hepaticae. They abound in the wooded plains and mountains of all tropical countries, but are rare and of few species in the temperate zones; and they have been so seldom gathered by any one previously conversant with the order, that they have been less generally studied than most others. Careful observation of their habits, aspect, and structure, in their native forests, as well as in the cabinet, has led me to the conclusion that the entire genus is divisible, and ought to be divided, into subgenera. This task I have set myself, and how far or how well I have succeeded in performing it, I must leave to the judgment of others. I can at least claim that all my subgenera are natural groups, and (as nearly as I could make them) of approximately equal value. Some of them, indeed, seem to me more distinct than most of those separated as “genera” in the Synopsis. I may instance *Stictolejeunea*, which, besides the unique character of the leaves and other appendages being beset with pellucid dots, has the flattened urniform perianth dilated at each apical angle into large round auricles, often bordered with white, that give it a remarkable resemblance to the head and ears of that curious Andine rodent, the chinchilla. *Odontolejeu-*

nea, also, is a very distinct and natural group, of whose affinity to the genus *Jubula* I have already spoken.

"Whoever shall carefully study these plants will plainly perceive that several of my *subgenera* of *Lejeunea* are equivalent to certain *genera* of *Jungermanniae* of whose right to that rank no one seems to have any doubt. It follows that either some recombination is needed among the latter, or else that the genus *Lejeunea* should be broken up into several genera. Without venturing to decide this knotty point"

Nevertheless, Spruce continued to write of them as subgenera and, even in his last paper (1895, published after his death) they are so designated, as Evans (1900) and Bonner et al. (1961) already pointed out. We cannot find any basis justifying the view of Verdoorn (1934) and Schuster (1980a) to consider Spruce (1884) as the author responsible for the establishment of the genera of the Lejeuneaceae.

Several authors subsequently followed Spruce in his taxonomy, as well as in his nomenclature, e.g. Schiffner (1890, e.g. see pp. 24, 35) and Pearson (1892). Although Bonner et al. (1961) stated that Pearson (1892) treated the Sprucean subgenera as genera, it is clear from Pearson's introductory remark (p. 3) and the corresponding remark in Pearson (1922, p. 217) that they are meant as subgenera.

But a tendency to consider these subgenera as true genera soon became manifest, first in the writings of Stephani (e.g. 1888, 1889, 1890a). This author, however, was notoriously inconsistent in his use of the Sprucean subgenera, which he treated now as generic, now as subgeneric, spelled them now with a hyphen, now without a hyphen (see Table 1). For a more detailed nomenclatural analysis of the relevant papers by Stephani, see the contribution by Zijlstra elsewhere in this issue of Taxon.

Table 1. Stephani's treatments of *Acrolejeunea*.

Reference	Cited as
Hedwigia 27: 107, 112. 1888.	<i>Acro-Lejeunea</i> (2 spp.)
Hedwigia 28: 164–166. 1889.	<i>Acrolejeunea</i> (several spp.)
Hedwigia 29: 9. 1890 (Jan–Feb)	. . . bei zwei Gattungen (<i>Acro-Lej.</i> und <i>Brachio-Lej.</i>) . . .
Hedwigia 29: 133. 1890 (May–Jun)	<i>Lejeunea: Acro-Lejeunea</i> Spr.
Bot. Gaz. 15: 286. 1890 (Nov)	<i>Acro-Lejeunea</i> (1 new sp.)
Hedwigia 31: 165. 1892 (Jul–Aug)	<i>Acrolejeunea</i> (1 sp.)
Hedwigia 31: 203–204. 1892 (Sep–Oct)	<i>Acrolejeunea</i> (several spp.)
Bull. Soc. Roy. Bot. Belgique 32(1): 119. 1894 (Sep) ('1893')	<i>Lejeunea</i> (<i>Acrolejeunea</i>)

Schiffner (1893), in his Engler-Prantl treatment of the Hepaticae, tried to clarify the existing chaos by formally elevating the majority of the Sprucean subgenera to generic rank. Most workers have since accredited these genera to "(Spruce) Schiffn.", for instance in major floras (Müller, 1905–1916, 1951–1958; Frye and Clark, 1937–1947; Van den Berghen, 1972; Schuster, 1980a), checklists of Europe (Grolle, 1976), North America (Stotler and Crandall-Stotler, 1977), Japan (Mizutani and Hattori, 1969) and New Zealand (Hamlin, 1972), in monographs (Evans, 1902–1912; Gradstein, 1975), and in the Index Nominum Genericorum (Farr et al., 1979).

However, it has been pointed out by Bonner et al. (1961) and, more recently, by Grolle (1976, 1979a, b) that under the present rules of the ICBN several individual Sprucean subgeneric names can be considered as having been validly published prior to 1893 by Stephani.

In the course of our work for the Index Hepaticarum (Bonner, 1962–), since the death of its founder C. E. B. Bonner pursued by an international team of specialists, it has become increasingly clear that measures, in accordance with the provisions of the ICBN, have to be taken to stabilize the nomenclature of these genera of Lejeuneaceae. For that purpose the following conservation proposals are being submitted to the Nomenclature Committee. The names submitted here for conservation have been selected as characteristic examples from the involved "Sprucean" genera. Some of them are to be dealt with in forthcoming issues of the Index Hepaticarum.

(675) Proposal to conserve *Lopholejeunea* (Spruce) Schiffn., 1893, against *Lopho-Lejeunea* Steph., 1890 (Hepaticae).

Lopholejeunea (R. Spruce) V. Schiffner in Engler et Prantl, Nat. Pflanzenfam. 1(3): 119, 129. Sep 1893, nom. cons. prop. (*Lejeunea* subg. *Lopholejeunea* R. Spruce, Trans. & Proc. Bot. Soc. Edinburgh 15: 74, 119. Apr 1884). LT.: *L. sagraeana* (Montagne) Schiffner (*Phragmocima sagraeana* Montagne) (vide Evans, Bull. Torrey Bot. Club 34: 24. 1907).

(H) *Lopho-Lejeunea* Stephani, Bot. Gaz. 15: 285. Nov 1890, nom. rej. prop. T.: *L. multilacera* Stephani.

Lopholejeunea (Spruce) Schiffn. 1893 is widely accepted by bryologists as the correct name of a common, pantropical genus of Hepaticae. Over 100 binomials have been assigned to it since its establishment and according to Gradstein (1975) ca. 15–25 species are currently to be recognized.

Bonner et al. (1961) suggested that *Lopholejeunea* was first validly published as a genus by Stephani in *Hedwigia* 29: 14. Jan–Feb 1890 (“Die Gattung *Lejeunea* im Herbarium Lindenbergs”). On that page there is indeed a description of a new species “*Lopho-Lejeunea zollingeri*” Steph., with a reference to “*Lopho-Lej. Spr.*” The introduction of this paper, however, as well as the conclusion (pp. 1 and 98) clearly state that the Sprucean subdivisions of *Lejeunea* are being treated as subgenera, whereas the end of the same paper, published in the subsequent fascicule of *Hedwigia* 29, May–June 1890, indeed lists the species dealt with (over 300!) according to the Sprucean subgenera to which they belong. For that reason, we cannot accept *Lopholejeunea* (Spruce) Steph. Jan–Feb 1890 as a valid generic name. The same reasoning would apply to a monotypic *Lopholejeunea* in Pearson, 1892 (p. 5), based on “*Lopholejeunea lepidoscypha* Kiaer et Pearson n. sp.”: an explicit reference to subgeneric status of the Sprucean subdivisions in the introduction excludes acceptance. In short, we do not know of any validation as a genus of *Lopholejeunea* (Spruce) earlier than Sep 1893.

It has generally been overlooked, however, that the description of “*Lopho-Lejeunea multilacera* Steph. n. sp.” in the *Botanical Gazette* 15: 285. Nov 1890 formally can be considered as the establishment of *Lopho-Lejeunea* Steph., in accordance with Art. 42 ICBN. As the type species of *Lopholejeunea* (Spruce) Schiffn. 1893 and of *Lopho-Lejeunea* Steph. 1890 are congeneric (we have checked the type specimen of *L. multilacera* Steph., Reunion, Rodriguez s.n. (G), and found it to belong in *Lopholejeunea* (Spruce) Schiffn. sect. *Acutifolia* Steph. ex Verd.), formally the latter name has to be adopted for this group, and the spelling *Lopholejeunea* has to be retained according to Art. 73.9.

Such action would, however, be most undesirable in view of the confusion that would arise with *Lejeunea* subg. *Lopho-Lejeunea* Spruce, that stands as basionym for *Lopholejeunea* (Spruce) Schiffn. The argument is strengthened by the fact that over 80% of the generic names in Lejeuneaceae are compounding forms, constructed like *Lopholejeunea* by prefixing the name *Lejeunea* with another word. None of these compound generic names are spelled with a hyphen, as contrary to the 37 subgeneric names introduced by Spruce, which were all hyphenated.

Although the Sprucean subgeneric epithets nowadays have to be written without hyphen according to ICBN Art. 73.9, introduction of hyphenated generic names in Lejeuneaceae should definitely be avoided in view of current usage and spelling of these names.

(676) Proposal to conserve *Acrolejeunea* (Spruce) Schniffn., 1893, against *Acro-Lejeunea* Stephani, 1890 (Hepaticae).

Acrolejeunea (R. Spruce) V. Schiffner in Engler et Prantl, Nat. Pflanzenfam. 1(3): 119, 128. Sep 1893, nom. cons. prop. (*Lejeunea* subg. *Acrolejeunea* R. Spruce, Trans. & Proc. Bot. Soc. Edinburgh 15: 74, 115. Apr 1884). LT.: *A. torulosa* (Lehmann et Lindenberg) V. Schiffner (*Jungermannia torulosa* Lehmann et Lindenberg) (vide Gradstein, J. Hattori Bot. Lab. 38: 329. 1974).

(H) *Acro-Lejeunea* Stephani, Bot. Gaz. 15: 286. Nov 1890, nom. rej. prop. T.: *A. parviloba* Stephani [= *Schiffnerolejeunea parviloba* (Stephani) S. R. Gradstein].

Acrolejeunea (Spruce) Schiffn. 1893 was recently restored by one of us (Gradstein 1974) as the correct name for a common, pantropical genus of Lejeuneaceae previously known as *Ptychocoleus* Trev. 1877.

As pointed out by Gradstein, the latter name was misapplied and belongs in fact in the synonymy of *Frullanoides* Raddi 1822, as an illegitimate substitute. *Acrolejeunea* (Spruce) Schiffn. was subsequently monographed (Gradstein, 1975) and has now again been generally accepted by bryologists (e.g. Vanden Berghe, 1972 (with ref. to Gradstein, pers. comm.); Grolle, 1978; Schuster, 1980a). Bonner et al. (1961) have suggested that *Acrolejeunea* (Spruce) was already validly published as a genus in 1890 by Stephani, Hedwigia 29 (Jan–Feb 1890), but for reasons given under *Lopholejeunea* (cons. prop. 675) purported establishment of the generic name *Acrolejeunea* in this paper cannot be accepted. However, formally the existence of a valid, monotypic genus *Acro-Lejeunea* Steph., Botanical Gazette 15: 286 (Nov 1890), based on *A. parviloba* Steph. n. sp. and spelled with hyphen, calls for conservation of the name *Acrolejeunea* (Art. 73.9). For arguments we may also refer to the above *Lopholejeunea* conservation proposal.

A difference with the *Lopholejeunea* case is that the types of *Acrolejeunea* (Spruce) Schiffn. (*A. torulosa* (Lehm. et Lindenb.) Schiffn., lectotype *fide* Gradstein, 1974) and *Acro-Lejeunea* Steph. are not congeneric. *A. parviloba* Steph. belongs in the genus *Schiffnerolejeunea* Verd., together with some 15 other species formerly placed in *Acrolejeunea* (Gradstein, 1974; Gradstein and Terken, 1981). If *Acro-Lejeunea* Steph. 1890 were to be accepted, *Schiffnerolejeunea* would fall into its synonymy and a new generic name would have to be introduced for *Acrolejeunea* (Spruce) Schiffn. as no other legitimate name is currently available for that group, as it is currently circumscribed.

(677) Proposal to conserve *Trachylejeunea* (Spruce) Schiffn., 1893, against *Trachylejeunea* Stephani, 1889 (Hepaticae).

Trachylejeunea (R. Spruce) V. Schiffner in Engler et Prantl, Nat. Pflanzenfam. 1(3): 119, 126. Sep 1893, nom. cons. prop. (*Lejeunea* subg. *Trachylejeunea* R. Spruce, Trans. & Proc. Bot. Soc. Edinburgh 15: 76, 180. Apr 1884). LT.: *T. acanthina* (R. Spruce) V. Schiffner (*Lejeunea acanthina* R. Spruce) (vide Vanden Berghe, Lejeunia Mém. 6: 29. 1948).
(H) *Trachylejeunea* Stephani, Hedwigia 28: 262. Jul–Aug 1889, nom. rej. prop. T.: *T. elegansissima* Stephani.

Trachylejeunea (Spruce) Schiffn. is one of the Sprucean subdivisions of *Lejeunea* whose taxonomic status has remained almost unaltered since its establishment in 1884 (cf. Evans, 1903; Schuster, 1963). Stephani (1912) lists 27 binomina, most of them from tropical America, but we assume that a critical revision would reduce this number to less than 10 species. An infrageneric classification for *Trachylejeunea*, involving the establishment of three different subgenera, was recently proposed by Schuster (1980a). Bonner et al. (1961) and Grolle (1976) have called attention to the formal existence of the monotypic earlier homonym *Trachylejeunea* Steph. 1889, established on the basis of Art. 42 by the description of *T. elegansissima* Steph. sp. nov. This species was shown by Grolle (1976) to belong to *Siphonolejeunea* Herz., a genus wholly unrelated to *Trachylejeunea* (Spruce) Schiffn. and in fact belonging in a different subfamily (Tuyamaelloideae). *Siphonolejeunea* was revised by Schuster (1963) and Grolle (1973) and includes about 5 well-defined species from the Southern Hemisphere and Malesia. If *Trachylejeunea* Steph. were to be accepted, this name has to replace *Siphonolejeunea* Herz. whereas a new name should be created for *Trachylejeunea* (Spruce) Schiffn.

It is highly undesirable that two well-established generic names be obliterated because of the existence of an almost 100 year old generic name previously unused and, as it seems, established unintentionally (that is, a. Stephani most likely thought of “*Lejeunea* subg. *Trachylejeunea* Spruce” 1884, but a reference to that name is lacking. b. The index of Hedwigia 28 prints names of new taxa “durchschlossen”; in this case only “*elegansissima*” is printed as such, not the generic name. Since the index was published in a later issue of Hedwigia, however, and most likely prepared by the editor (Prantl), not by Stephani, this index only seems interpretation, the importance of which should, however, not be underrated (cf. Zijlstra, 1982)).

Conservation of *Trachylejeunea* (Spruce) Schiffn. against *Trachylejeunea* Steph. is therefore proposed.

(678) Proposal to conserve *Taxilejeunea* (Spruce) Schiffn., 1893, against *Taxilejeunea* Steph., 1889 (Hepaticae).

Taxilejeunea (R. Spruce) V. Schiffner in Engler et Prantl, Nat. Pflanzenfam. 1(3): 118, 125. Sep 1893, nom. cons. prop. (*Lejeunea* subg. *Taxilejeunea* R. Spruce, Trans. & Proc. Bot. Soc. Edinburgh 15: 77, 212. Apr 1884). LT.: *T. pterigonia* (Lehmann et Lindenberg) V. Schiffner ('pterigonia') (*Jungermannia pterigonia* Lehmann et Lindenberg) (vide Jones, Trans. Brit. Bryol. Soc. 5: 292. 1967).

(H) *Taxilejeunea* Stephani, Hedwigia 28: 262. Jul-Aug 1889, nom. rej. prop. T.: *T. convexa* Stephani [= *Lejeunea microloba* Taylor, fide Grolle, J. Hattori Bot. Lab. 45: 177. 1979].

Since Spruce established *Lejeunea* subg. *Taxilejeunea* in 1884, almost 200 binomina have been attributed to this *Lejeunea* segregate. The species of *Taxilejeunea* occur most commonly in tropical "mossy" forests, where they attract attention also from non-bryologists by their growth as shiny, whitish-green festoons hanging often in great abundance from twigs and branches. *Taxilejeunea* (Spruce) Schiffn. was lectotypified by Vanden Berghen, 1948 through the choice of *T. umbilicata* (Nees) Jack et Steph., but Jones (1967) pointed out that this lectotypification was faulty and proposed *T. pterigonia* (L. et L.) "Jack et Steph. 1892" [Schiffn. 1893] instead. The latter lectotypification has now been accepted uniformly. *T. pterigonia* was amply described and illustrated by Evans (1921).

Bonner et al. (1961) and Grolle (1979a) have called attention to the formal existence of the monotypic earlier homonym *Taxilejeunea* Steph. 1889, established in a similar way as *Trachylejeunea* Steph. (see above, cons. prop. 677) by the description of *Taxilejeunea convexa* Steph. sp. nov. According to Grolle (1979a), *Taxilejeunea convexa* and *T. pterigonia* are not closely related and three options can currently be recognized as to their taxonomic placement: 1. in different subgenera of *Taxilejeunea* (cf. Schuster, 1963), *Taxilejeunea* thus widely circumscribed; 2. in different genera, viz. *Taxilejeunea* s. str. and *Lejeunea* (cf. Jones, 1967 and Grolle, 1979a). *Taxilejeunea* more narrowly circumscribed, part of it excluded and placed in *Lejeunea*, including the subgenus to which *T. convexa* belongs. *Taxilejeunea* s. str. still comprises many binomina; and 3. both placed in *Lejeunea*, *Taxilejeunea* returned to subgeneric rank under *Lejeunea* (cf. Mizutani, 1970). The latter course has often been suggested but rarely (not?) truly been adopted.

Notwithstanding the divergence of taxonomic opinions, it seems clear that the traditional concept of *Taxilejeunea* (Spruce) can only be preserved through conservation.

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