NEW RECORDS OF LEJEUNEACEAE (MARCHANTIOPHYTA) FOR THE BRAZIL

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INTRODUCTION

As a result of recent collecting the knowledge on the Lejeuneaceae from Bahia have been increased considerably. Thus, the range of many species have been widened, and some new records for the Bahia and Brazil have already been published (Bastos & Vilas Bôas-Bastos, 2000; Bastos & Yano, 2003), as well as a new species from Brazil was described (Bastos & Yano, 2002). In this paper four new records for the Brazil are given: Drepanolejeunea pinnatiloba Schiffn., Lejeunea elliottii Spruce, L. filipes Spruce, and Lopholejeunea quelchii Steph.

MATERIALS AND METHODS

The specimens were collected on excursions carried out in the state of Bahia, Northeastern Brazil, the most of them from ombrophilous forest fragment, domain of Atlantic forest, at southern Bahia. All specimens are deposited at ALCB, SP and HUEFS Herbaria. The species are arranged in alphabetical order.

RESULTS

Drepanolejeunea pinnatiloba Schiffn., Bot. Jahb. 23: 591. 1827. Fig. 1
Plants diminutes, 248 µm wide, stem 40 µm wide, green, scarcely branched, branches *Lejeunea*-type. Leaves distant, erect-spreading; lobe deep laciniate, 144-204 µm x 48-84 µm, segments unisseriate 4-5 cells long, apical segments lesser, 3-4 cells long; cells oblong to rectangular, 20-24 µm x 10-12 µm, thin-walled, trigones and intermediate thickenings absents; oil-bodies not seen; ocelli 2-3 basal, large, 28-32 µm x 18-20 µm; lobe ovate, 104-116 µm x 72-76 µm, inflated, free margin involute, apical tooth acute, falcate, apical margin straight, keel arched, crenate; hyaline papilla proximal at apical tooth base. Underleaves small, 30-42 µm wide, distant, lobes unisseriate, 3 cells long, 2 cells wide at base, divergent to parallel, sinus lunate to widely acute, base partially shielded by rhizoids. Ventral merophytes two cells wide. Androecium and gynoecium not found.


Distribution and habitat: Neotropical, reported for Cuba and Porto Rico (Bischler, 1964). The specimens were collected in ombrophilous lowland forest growing on the tree trunk, mixed to *Cheilolejeunea rigidula* (Mont.) Schust.

**Lejeunea elliottii** Spruce, J. Linn. Soc. Bot. 30: 346. 1895. Figs. 2, 3.

Plants small, 720 µm wide, pallid-green, branches *Lejeunea*-type. Stems in cross section with 7 cortical cells and 4 medullary cells. Leaves contiguous to imbricate, spreading; lobe ovate, 368-400 µm x 232-296 µm, antical margin arched, strongly crenate by projecting cells, postical margin weakly arched to straight, crenate, apex rounded to obtuse; cells oblong-hexagonal, 26-46 µm x 18-24 µm, thin-walled, trigones small to inconspicuous, intermediate thickenings inconspicuous; oil-bodies not seen; lobe ovate, 120-140 µm x 92-100 µm, inflated, free margin plane, involute at proximal portion, apical tooth oblong, apical margin oblique to lunate, keel arched; hyaline papilla proximal at the apical tooth base. Underleaves small, 60-132 µm, distant, oblong to trapezoidal, sinus widely acute to lunate, base cuneate, insertion line arched. Ventral merophytes two cells wide. Androecium on short branch, 2-3 pairs of bracts, bracteole at the base of branch. Gynoecium on short branch, sterile lejeuneoid innovation, bracts short, lobe obovate, margin crenate, lobule oblong, apex rounded, bracteole oblong, bifid, sinus acute, margin entire to crenate; perianth obovate, 5-keeled, keels winged, strongly crenate by long projecting cells, rostrum distinct. Asexual reproduction likely by margin fragmentation of the leaf lobe.


Distribution and habitat: Neotropical, reported for Cuba, Dominica, St. Vicent and Guyana (Reiner-Drehwald & Goda 2000). The specimens were collected in ombrophilous lowland forest, domain of Atlantic Forest, growing on tree trunk.

**Lejeunea filipes** Spruce, Trans. Proc. Bot. Soc. Edinburgh 15: 275. Fig. 4

Plants small, 0.5 mm wide, green, branches *Lejeunea*-type. Stem in cross section with 7 cortical cells and 4-6 medullary cells. Leaves spreading to suberet, contiguous; lobe ovate, 164-244 µm x 136-
Figure 1. *Drepanolejeunea pinnatiloba* Schiffn. A: plant, ventral view; B: leaf, ventral view; C: leaf, dorsal view; D: lobule; E: underleaves (C. Bastos & S.B. Vilas Bôas-Bastos 1858 pp.).
Figure 2. *Lejeunea elliottii* Spruce. A: gametophyte, ventral view; B: lobule and basal cells of the lobe; C: underleaves; D: marginal cells of the leaf lobe; E: laminal cells; F: cross-sections of the stem (C. Bastos 1628).
Figure 3. Lejeunea elliottii Spruce. A: gynoecium and androecial branch, ventral view; B: gynoecium with perianth; C: Bracteole apex; D: detail of perianth apex (C. Bastos 1628:

220 µm, antical margin arched, entire to crenate, postical margin arched, entire, apex acute or rounded; cells oblong to hexagonal, 14-24 µm x 10-12 µm, thin-walled, cuticule verrucose, trigones small to inconspicuous, intermediate thickenings absent; oil-bodies not seen; ocelli absent; lobule ovate, 100-124 µm x 84-108 µm, inflated, free margin involute, apical tooth oblong, apical margin curved, keel arched; hyaline papilla proximal at apical tooth base; reduced lobules occasionall. Underleaves small, 56-60 µm wide, distant, lobes weakly distinct, sinus acute to lunate, base cuneate, insertion line straight to transverse. Ventral merophytes two cells wide. Autoicous. Androecium intercalar, terminal or on short lateral branch, 2-5 pair of bracts, bracteole at the base of spike. Gynoecium terminal, pycnolejeuneoid innovation, bracts with lobe ovate, margin entire, apex acute, lobule oblong, apex acute; bracteole oblong, bifid, sinus acute; perianth
obovate, 5-keeled, keels smooth to crenate, rostrum short.


Distribution and habitat: neotropical, reported for Dominica, Peru, and Argentina (Reiner-Drehwald, 2000). The specimens were collected in ombrophilous and seasonal forest, growing on the tree trunk.

**Lopholejeunea quelchii** Steph., Malpighia 10: 520. 1896. Fig. 5

Plants robust, 1.3-1.4 mm wide, brown, branches *Lejeunea*-type. Stem in cross section with 15 cortical cells, 35 medullary cells. Leaves spreading, imbricate; lobe ovate, 0.7-0.9 µm x 0.5-0.6 µm, antical margin arched, entire, postical margin straight to weakly arched, entire, apex rounded; cells oblong to rounded, 23.7-34.3 µm x 22.4-27.7 µm, thick-walled, trigones large, intermediate thickenings nodulose; oil-bodies not seen; ocelli absent; lobule ovate, 238.0-291.5 µm x 185.5 x 227.9 µm, free margin involute, plane toward apex, apical tooth short to inconspicuous, apical margin oblique, keel arched; hyaline papilla marginal. Underleaves orbicular to reniform, entire, 0.5-0.6 µm wide, margin entire, base cuneate, insertion line arched. Ventral merophytes four cells wide. Androecium lateral, 7-14 pairs of bracts, lobules inflated, bracteoles present throughout. Gynoecium terminal, pseudo-innovations of *Lejeunea*-type, bracts with lobe obovate, margin dentate, apex apiculate, incurved, lobule narrow ligulate to oblong; bracteole ovate, short bifid, margin dentate; perianth exserted, obovate, lateral and ventral keels dentate above, rostrum short.


Distribution and habitat: neotropical, reported for Cuba, Puerto Rico, Saba, Guadeloupe, Guyana and Suriname (Gradstein, 1994). The specimens were found in primary lowland ombrophilous forest, domain of Atlantic forest, growing on tree trunk.

**DISCUSSION**

*Lejeunea* Libert is a large and complex genus of Lejeuneaceae, whose circumscription is somewhat controversial, at least for some species. In Brazil the genus need to be revised, since it has not been studied in this country. Thus, the real situation of the genus in Brazil is not known. *Lejeunea filipes* in despite of hasn't been reported for Brazil, there are references for *Lejeunea autoica* Schust. from São Paulo by Visnadi (1998), a likely synonymy for these species according to Reiner-Drehwald (2000). In fact *L. filipes* is very similar to *L. autoica* described and illustrated by Schuster (1980), and to African *L. confusa* illustrated and described by Jones (1972). However, *L. confusa* is dioicous, but may be conspecific to *L. filipes*.

*Drépanolejeunea* is a large tropical and subtropical genus, with ca. 150 species, occurring in Asia, Africa, and America. In Brazil it is represented by 20 species, five of these occur in the state of Bahia. *D. pinnatiflora* was reported for Costa Rica and Cuba, and their presence in the Bahia may be an indication of a wider distribution in
Figure 4. *Lejeunea filipes* Spruce. A: gametophyte, ventral view; B: underleaf and lobule; C: underleaves; D: reduced lobule; E: laminal cells; F: androecium; G: gynoecium; H: perianth; I: cross-section of the stem (E. Melo et al. 2673).
Figure 5. Lopholejeunea quelchii Steph. A: gametophyte, ventral view; B: gametophyte with underleaves; C: gynoecial branch, ventral view; D: bract apice; E: bract; F: braceole and apice; G: laminal cells; H: cross-section of the stem (C. Bastos & Vilas Bôas-Bastos 1638).


Brazil.

*Lopholejeunea* is a pantropical genus, with more than 45 species recognized, mostly occurring in paleotropics. Four species occur in Tropical America, three of which have a pantropical distribution (*L. nigricans*, *L. subfusca*, and *L. eulopha*). *Lopholejeunea quelchii* according to Gradstein (1994) is its rare Caribbean species and may be considered a threatened species because its rarity and its growth in undisturbed rain forest.

The presence of these Neotropical elements in the state of Bahia may be indicative of needed the more inventory and taxonomic study of the Brazilian bryophyte flora, in order to amplify of range of these elements. Thus, the increment of the collecting effort in the other areas of the country will provide a more source of data on the Brazilian bryophyte flora.

REFERENCES


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