New or little known epiphyllous liverworts, XII.  
*Archilejeunea helenae* Pócs & Gyarmati, sp. nova

Tamás PÓCS & Andrea SASS-GYARMATI*

Research Group for Bryology of the Hungarian Academy of Sciences  
at the Botany Department of Eszterházy College, Eger, PB. 43, H-3301, Hungary

(Received 2 April 2004, accepted 15 October 2005)

**Abstract** – A new species of *Archilejeunea* is described from the Mananara North Biosphere Reserve of Northeast-Madagascar. *Archilejeunea helenae* is distinguished from the related *A. alata* Steph. by its broad and short winged perianth keels, by its very regular pinnate branching, always well developed leaf lobuli and by its overall larger cell size.

*Archilejeunea / Lejeuneaceae / Jungermanniopsida / Madagascar*

**Résumé** – Une nouvelle espèce de l’*Archilejeunea* est écrit de la Réserve de Biosphère Mananara Nord de la partie nord-oriental de Madagascar. *Archilejeunea helenae* se distingue de l’espèce voisine *A. alata* Steph. par ses carènes de périanthe larges et courtes, par sa ramification très régulièrement pinnate, par les lobules des feuilles toujours bien développées et surtout par ses plus grandes cellules.

*Archilejeunea / Lejeuneaceae / Jungermanniopsida / Madagascar*

**INTRODUCTION**

*Archilejeunea*, although the genus badly needs a thorough revision, seems to be a group of liverworts, which, during its evolution, produced a number of endemic species, which are restricted to relatively small distribution areas and only a few of the species are widespread. Madagascar, together with the other East African islands, has 5 known species of *Archilejeunea* (Grolle, 1995), while Sub-Saharan Africa has 7 of them (Wigginton *et al.*, 1996). All, but one are endemic for the concerned area, only *A. mauritiana* Linderb. occurs in both.

Our new species is related closest to *Archilejeunea alata* Steph., which is relatively widespread in the East African Islands, being known from Madagascar, the Comoro Islands and from Mauritius. (Grolle, 1995). Although the characters given in the protologue of *A. alata* seemed to us adequate to distinguish *Archilejeunea helenae* at the species level, we have examined the type specimen of *Archilejeunea alata* (coll. Marie nr. 4 Mayotte Island, Comoro, G.) The comparison proved our assumption that they are well distinct.

* Correspondence and reprints: lopho@freemail.hu
**ARCHILEJEUNEA HELENAE PÓCS & GYARMATI, SP. NOVA**
(Figs 1-11, Figs 13-16)

Archilejeuneae alatae Steph. similis, sed differt ramificationibus regulariter pinnatis, lobulis bene evolutis, perianthiis late, breve alatis, cellulis lobi majoribus et lobulis bractearum feminum rotundato-obtusis. Planta dedicata beatae Doctoris Helenae Bischler-Causse, investigatorae illustriissimae Lejeuneacearum.


Figs 1-3. *Archilejeunea helena* Pócs & Gyarmati. 1. Habit, ventral view, with female branches and male spike. 2-3. Leaves, ventral view. (holotype: EGR)
Figs 4-6. *Archilejeunea helenae* Pócs & Gyarmati. 4. Lobule. 5. Mid-leaf cells. 6. Underleaf, with the indication of insertion line. (holotype: EGR)
Autoicous. Plants yellowish brown in dried condition, forming appressed mats of 2-3 cm diameter. **Shoots** 1-2 cm long and 2.3 mm wide, **stem** 160-180 μm in diameter, in cross section composed of 15-20 cortical and 35-40 medullary cells Ventral merophyte 6(-8) cells wide. **Branching Lejeunea** type, growth habit regularly unipinnate. **Leaf lobes** imbricate to contiguous, 550 (-600) × 725 (-825) μm, kidney shaped, with broadly rounded apex and entire margin, revolute towards the apex. Marginal cells quadrate to rectangular, 15 × 20 μm; median cells 20 × 35 μm with small trigones, intermediate thickenings 0-1 per cell wall; basal cells 25 × 40 μm. **Lobules** never reduced, subrectangular about 1/2 lobe length with one tooth of 1-2 cells long. **Underleaves** plane, reniform, wider than long, 3-4 × stem width, 800 μm long × 1350 μm wide with entire margin and obtusely rounded apex, basal insertion line shallowly curved. **Androecia** terminal on elongate side branches (pinnae), with 9-11 pairs of bracts, bracteoles throughout the male spike. **Gynoecia** terminal on long primary branches (pinnae), with one subfloral innovation, which is repeatedly fertile, often continuing to produce further single innovations.
**Bracts** about as large as the leaves, 500 × 900 μm, with rounded apex, recurved margins and with ligulate, obtusely rounded **lobules**, about 1/2 of the lobe length, female bracteole oblong, margins plane 450-500 μm wide × 650 μm long. **Perianth** emergent, oblong-obovoid 500-800 × 1300-1400 μm, 4 (-5) keeled, with 0-1 (weak) dorsal keel, 2 lateral keels and 2 ventral keels. Each possesses a 2-5 cells wide wing. The wings are restricted more or less to the upper half of the perianth and downward end abruptly. Beak relatively wide and short. **Sporophyte** unknown.

**DISCUSSION**

The regularly pinnate habit is at the first sight the most striking feature of the plant, unusual by other members of the genus. With the new species the known number of *Archilejeuna* species in Madagascar is raised to 6, almost equaling the number of species known from continental Africa. The area where it was collected, is one of the larger, more or less intact remnants of the already very decimated lowland rain forests at the eastern coast of Madagascar. Mananara Nord Biosphere Reserve proved to be a diversity center not only for mammals and vascular plants, but also for the cryptogams. The first representative of the hepatic genus *Xylolejeuna* (He & Grolle, 2001), *Xylolejeuna grolleana* (Pócs) He & Grolle was described from here under the basionym Trachylejeuna grolleana by Pócs (1999) and a moss species hitherto known only from the Neotropics was also found in the Reserve [Calymperes venezuelanum (Mitt.) Pitt., Orbán, 2000]. Other new taxa of Lejeuneaceae are under description.

Concerning the differences between *Archilejeuna helenae* and *A. alata*, the following table serves for comparison.

<table>
<thead>
<tr>
<th></th>
<th><em>A. helenae</em></th>
<th><em>A. alata</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Growth habit</td>
<td>Branching intercalary, perianths on the tip of side branches with one very shortedly fruity innovation</td>
<td>Branching mostly terminal, with very few intercalary branches, perianths terminal with two repeatedly fruiting innovations</td>
</tr>
<tr>
<td>Leaf lobule</td>
<td>well developed, never reduced</td>
<td>even when developed, much smaller</td>
</tr>
<tr>
<td>Leaf cells</td>
<td>median cells: 20 × 35 μm, basal cells: 25 × 40 μm</td>
<td>median cells 18 × 27 μm, basal cells 18 × 36 μm</td>
</tr>
<tr>
<td>Underleaf</td>
<td>always plane</td>
<td>recurved with few exceptions</td>
</tr>
<tr>
<td>Bract lobule</td>
<td>obtusely rounded</td>
<td>acute</td>
</tr>
<tr>
<td>Perianth wings</td>
<td>restricted more or less to the upper half of keels</td>
<td>wings cover 3/4 part of the keels</td>
</tr>
</tbody>
</table>

**Acknowledgements.** The first author expresses his gratitude towards his colleague András Szabó, his companion on the trip in Mananara North Reserve, with whom the new species was collected and acknowledges with thanks the financial help of the National Geographic Society (USA) for sponsoring the Madagascar expedition in 1998. We are grateful to the director and staff of Cryptogamic Herbarium of Geneva (G) for the possibility to study the type specimen of *A. alata* Steph., and Dr. Bóka Károly for his help with the SEM micrography.

**REFERENCES**


