**Lopholejeunea pocsii** Gyarmati (Lejeuneaceae, subfam. Ptychanthoideae), a new species of subgenus Pholianthus B. Thiers & Gradst. from the Fiji-Islands

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**Abstract** – A new species of *Lopholejeunea* is described from the Rairaimatiku Plateau, Viti Levu Island, Fiji. *Lopholejeunea pocsii* is distinguished from the related *L. colensoi* Steph. by its lobule structure, underleaf insertion and by its bracteole and perianth characters.

***Lopholejeunea / Lejeuneaceae / Hepaticae / Fiji***

**INTRODUCTION**

The Pacific centers of diversity are the archipelagos of Micronesia, Polynesia and Melanesia. The last one, scattered across the Southern Pacific Ocean, including the Fiji Islands, seems to be the most important among them. In August and September 2003 Tamás Pócs and his wife Sarolta Pócs collected bryophytes on Viti Levu, Taveuni and Kadavu islands. The aim of the collecting trip was to obtain knowledge on the hepatic diversity of these islands and to compare it with that of eastern Australia, New Caledonia and Papua New Guinea. The author of this paper is working on a revision of *Lopholejeunea* (Lejeuneaceae subfam. Ptychanthoideae) in the Pacific and Indian Ocean islands (Sass-Gyarmati, 2001). As a result of the revisionary studies, a new species of Lopholejeunea is described here.

*Lopholejeunea* is the largest genus of Lejeuneaceae subfam. Ptychanthoideae. This genus includes several endemic species. Previously in the Fiji Islands 4 species of *Lopholejeunea* were known (Seeman, 1865; Verdoorn, 1934a, 1934b;
Miller et al., 1963, 1983 and Hürlimann, 1991). Recently the assumed Fiji Islands endemic *L. multiflora* Steph., has been synonymized with *L. nigricans*. In addition *L. zollingeri* (Steph.) Schiffn. has been reported for the first time from Fiji Islands. (Zhu & Gradstein, 2005).

**Key to taxa of Lopholejeunea in Fiji**

1. Ventral keel of perianth indistinct, ventral surface of the perianth covered by broad, irregularly shaped squamules ...................................................... *L. pocsii*

1. Perianth 4(-5) keeled, of which at least 1 ventrally located, ciliae restricted to the keels ................................................................. 2

2. Apex of lobule attached to the dorsal lobe across by a single cell ............. 3

2. Apex of lobule attached to the dorsal lobe across 2-4 cells ......................... 4

3. Female bracteole (1 per gynoecium) weakly dentate to entire ................

3. Female bracteoles (2-3 per gynoecium) strongly dentate ........ *L. eulopha*

4. Bract lobules strongly reduced, female bracteole entire ... *L. subfusca*

4. Bract lobules oblong, ca. 1/3-1/2 as long as bract lobe, bracteole margin often recurved ......................................................... *L. zollingeri*

The new species is closely related to *L. colensoi* Steph., which is known only from Australia and New Zealand.

**Lopholejeunea** (subgen. Pholianthus B.Thiers & Gradst.) *pocsii* Gyarmati, sp. nov. (Figs 1-18)

*Planta nigricans, caulibus irregulariter pinnatis, diametro 0,125 mm. Folia imbricata, 300 μm longa, 200-250 μm lata, apice late rotundata, incurvata, lobuli media moderate inflata, apex distalis attenuatus. Cellulae laminae diametro 15-20 μm, trigonis majusculis. Amphigastrium late reniformis, caule 7-8 latiora. Gynoezia in apicibus ramorum terminalium, sine innovatione. Folia floralia obovata, apice rotundata et incurvata. Perianthium 650 μm latum, 800 μm longum, obovatum, bicarinatum, carinis alatis, perianthii pagina ventralis magnisquamata. Rostrum parvum.*

Species nova in honorem tutoris mei, professoris Tamás Pócs dedicata.


Lopholejeunea pocsii Gyarmati, sp. nov.

Autoicous?. Plants glossy, blackish-brown when dry, forming appressed mats. Shoots 1-2 cm long and 1.5 mm wide, irregularly branched, with branching of the Lejeunea-type. Stem 125 µm in diameter, with distinct hyalodermis, in cross-section ca 6-9 cells across, composed of ca 8-10 epidermal cells surrounding 15-30 smaller medullary cells, all with evenly thickened walls. Ventral merophyte
Figs 4-8. Lopholejeunea pocsii Gyarmati: 4-6. Apical, median and basal leaf cells, respectively. 7. Underleaf, with the indication of insertion line. 8. Leaf lobule. (All drawn from the holotype).

4 cells wide. Rhizoids numerous, brown, at base of underleaves, rhizoid disc absent. **Leaf lobes** imbricate $700 \times 1020 \, \mu m$, oblong, with broadly rounded apex and entire margin, plane on the main stem and with involute apex margin on the secondary stem. Marginal cells of dorsal lobe quadrate to rectangular, 10-12
× 10-15 µm, median cells isodiametric to oblong 15-20 × 15-25 µm, cells of leaf base similar or somewhat larger 15-25 × 30-45 µm, thick-walled, trigones large, intermediate thickenings present, 1-2 per cell-wall. Lobules 1/2-1/3 lobe length, inflated proximally, with attenuated end, one single-celled apical tooth. The distal edge of
their free margin often slightly connate with the lobe lamina over a width of 2-3 cells, keel sigmoid, with a sinus of 100-120°. Underleaves contiguous, very large, reniform, plane, 7-8 × stem width, 450 × 750 µm of size, with entire margin and obtusely rounded apex. Insertion line deeply arched. Gynoecia at the end of secondary branches, without subfloral innovations. Bract-lobe oblong or obovate, 550 × 750 µm, rounded and often incurved, margins sometimes sparsely denticulate; bract-lobule 2/3-2/5 proportional to the lobes, apex acute with 1-2 celled tooth, keel straight. Bracteole widely oblong, 650 × 950 µm, apex recurved with entire margins. Perianth emergent, obovoid, averaging 650 × 800 µm (excluding ornamentation) lateral keels with very broad, often lobed wings extending 3/4 to almost the entire perianth length, the wings can be almost entire or laciniatae, but all intergraduations can be found, even in a single plant, ventral keel indistinct, ventral surface of the perianth covered with a few broad, irregularly shaped, recurved squamules. Beak relatively wide and short, 2 cells long. Sporophyte unknown. The size of lateral keel lobules varies greatly, they may vary from almost entire to strongly lacinate on the same plant. Androecia not seen.

**Distribution:** This new species is apparently endemic to the Fiji Islands.
DISCUSSION

*Lopholejeunea* subgen. *Pholianthus* was established by Thiers & Gradstein (1989) to accommodate *Lopholejeunea colensoi* Steph. This species occurs in Australia and New Zealand. According to the above treatment, subgen. *Pholianthus* is separated from other subgenera by the bizarre perianth, covered by broad, irregularly shaped, recurved squamules inserted transversely on the whole surface of the perianth. Ventral keels are absent. With the new species the number of *Lopholejeunea* species in the Fiji Islands is raised to 5. The area, in which it was collected, is an immense, intact mossy forest at the Rairaimatiku Plateau.

Though *Lopholejeunea pocsii* is closely related to *L. colensoi*, the two species can easily be separated by the characters listed in Table 1.

Table 1. Differential characters of *Lopholejeunea pocsii* and *L. colensoi*

<table>
<thead>
<tr>
<th></th>
<th><em>L. pocsii</em></th>
<th><em>L. colensoi</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Branch-types</td>
<td><em>Lejeunea</em>-type, occasionally <em>Frullania</em>-type</td>
<td></td>
</tr>
<tr>
<td>Stem cross section</td>
<td>8-10 epidermal, 15-30 medullary cells</td>
<td>12 epidermal cells, 10 medullary cells</td>
</tr>
<tr>
<td>Leaf lobules</td>
<td>Distal edge of the free margin often slightly connate with the lobe lamina over a width of 2-3 cells, with attenuate end</td>
<td>Distal edge forming a sharp (90°) angle with truncate end</td>
</tr>
<tr>
<td>Underleaf</td>
<td>7-8 × stem width, insertion line deeply arched</td>
<td>3.5-4.5 × stem width, insertion straight to slightly arched</td>
</tr>
<tr>
<td>Bracteoles</td>
<td>Apex recurved</td>
<td>Apex plane</td>
</tr>
<tr>
<td>Perianth</td>
<td>Ventral surface covered with a few broad, irregularly shaped, recurved squamules</td>
<td>Ventral surface completely covered by large, irregularly shaped recurved squamules</td>
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</table>

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