

***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**

Résumé – Une nouvelle espèce de *Lopholejeunea* est décrite du Plateau Rairaimatiku île Viti Levu, Fiji. *L. pocsii* se distingue de l'espèce voisine *L. colensoi* Steph. par la structure des lobules, par l'insertion de l'amphigastre, et par les caractères de la bractéole et du périanthe.

***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;

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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 gynoeceium) weakly dentate to entire *L. nigricans*
 3. Female bracteoles (2-3 per gynoeceium) 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.

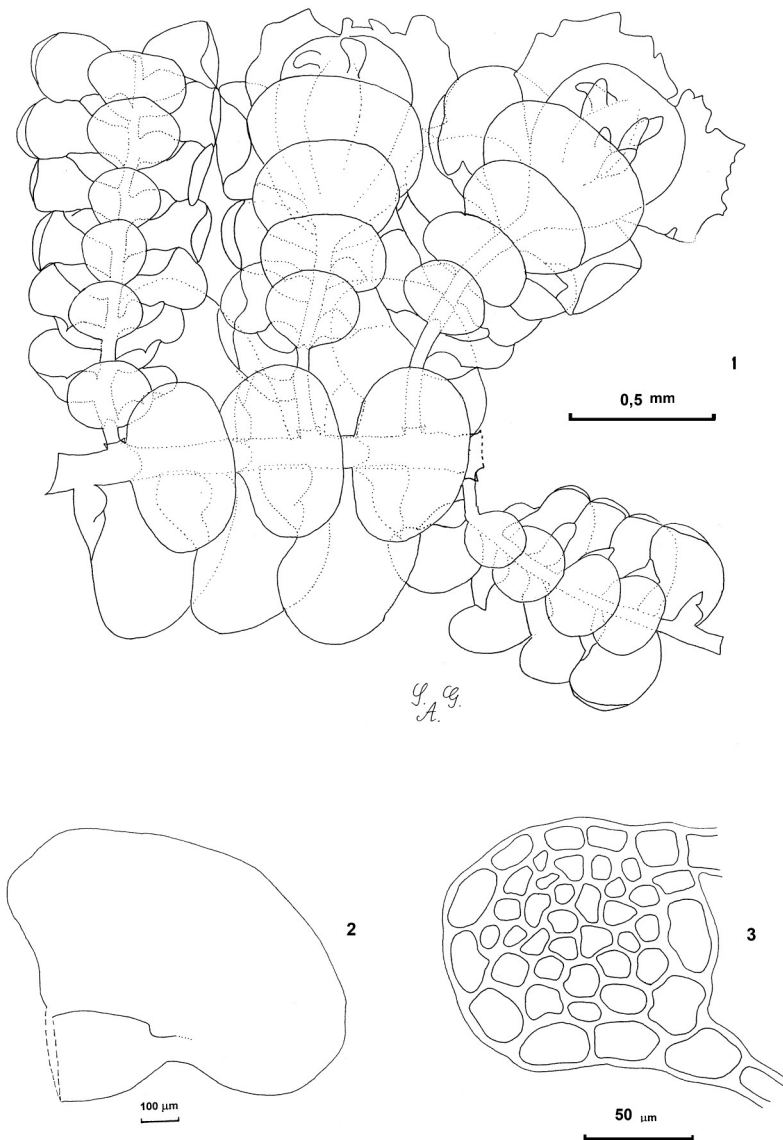
Lopholejeunea (subgen. *Pholianthus* B.Thiers & Gradst.) ***pocsii* Gyarmati, sp. nov.** (Figs 1-18)

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. Gynoecea 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.

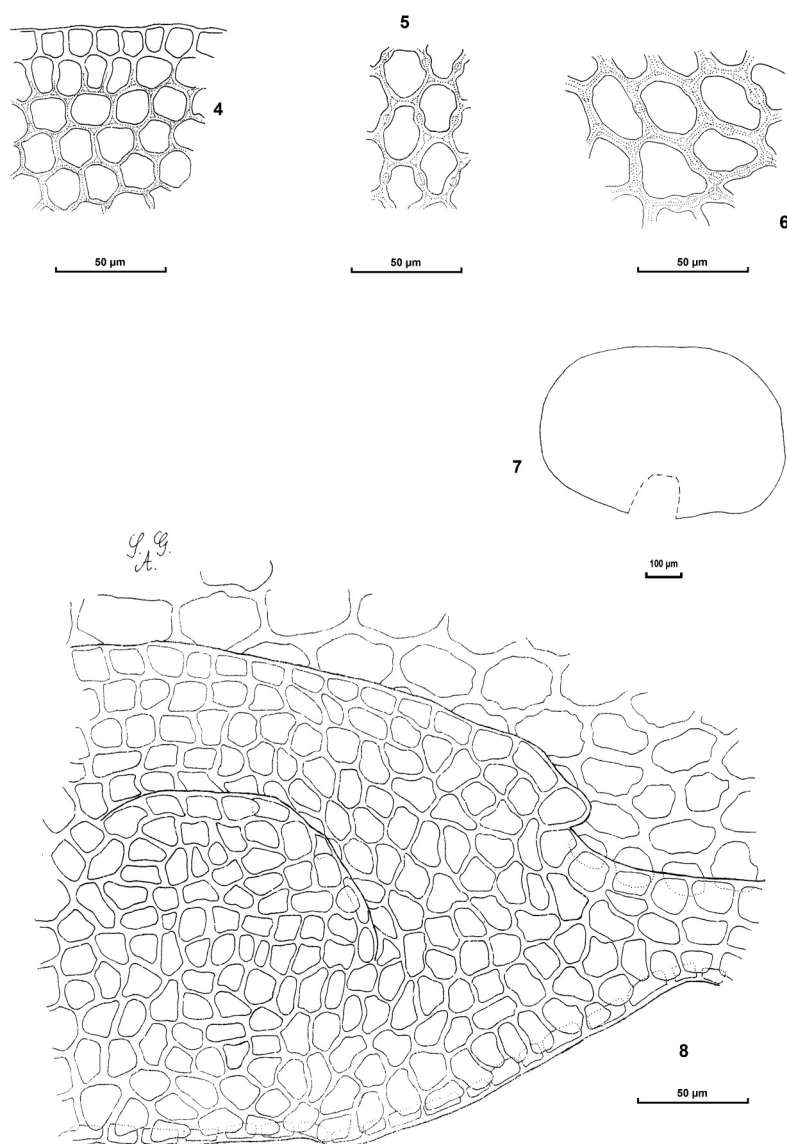
Typus: FIJI. Central part of Viti Levu Island. On the ridge of Rairaimatiku Plateau SSE of NAVA I (about 10 km). Mossy elfin forest composed mostly of Musaceae, *Cyathea* and, to a lesser degree, of broadleaved, dicotyledonous trees. Alt.: 990-1010 m. 17°43.503'S, 178°02.252'E. On twigs. Coll. S. & T. Pócs 03274/S date: 24 Aug. 2003 (Holotype: EGR, Isotypes: SUVA, NYBG).

Additional specimens examined: Central Viti Levu, NE escarpment of Rairaimatuku Plateau, above Nagelewai village, 700-720 m, S 17°44.190', E 178°04.430'. Secondary montane rainforest with understorey occupied by an introduced *Piper* sp. Poor in bryophytes. On *Piper* bark. S. & T. Pócs 03272/A, 24. Aug. 2003. — Central Viti Levu, NE edge of Rairaimatuku Plateau, above Nagelewai village, S from "Barclay's Point", 855-945 m, S 17°44.208-264', E 178°03.300-573'. Montane mossy (cloud) forest. On twigs, on bark of trees and on native *Piper* stem. S. & T. Pócs 03273/AB, C, Q, 24. Aug. 2003 (Paratype: EGR).



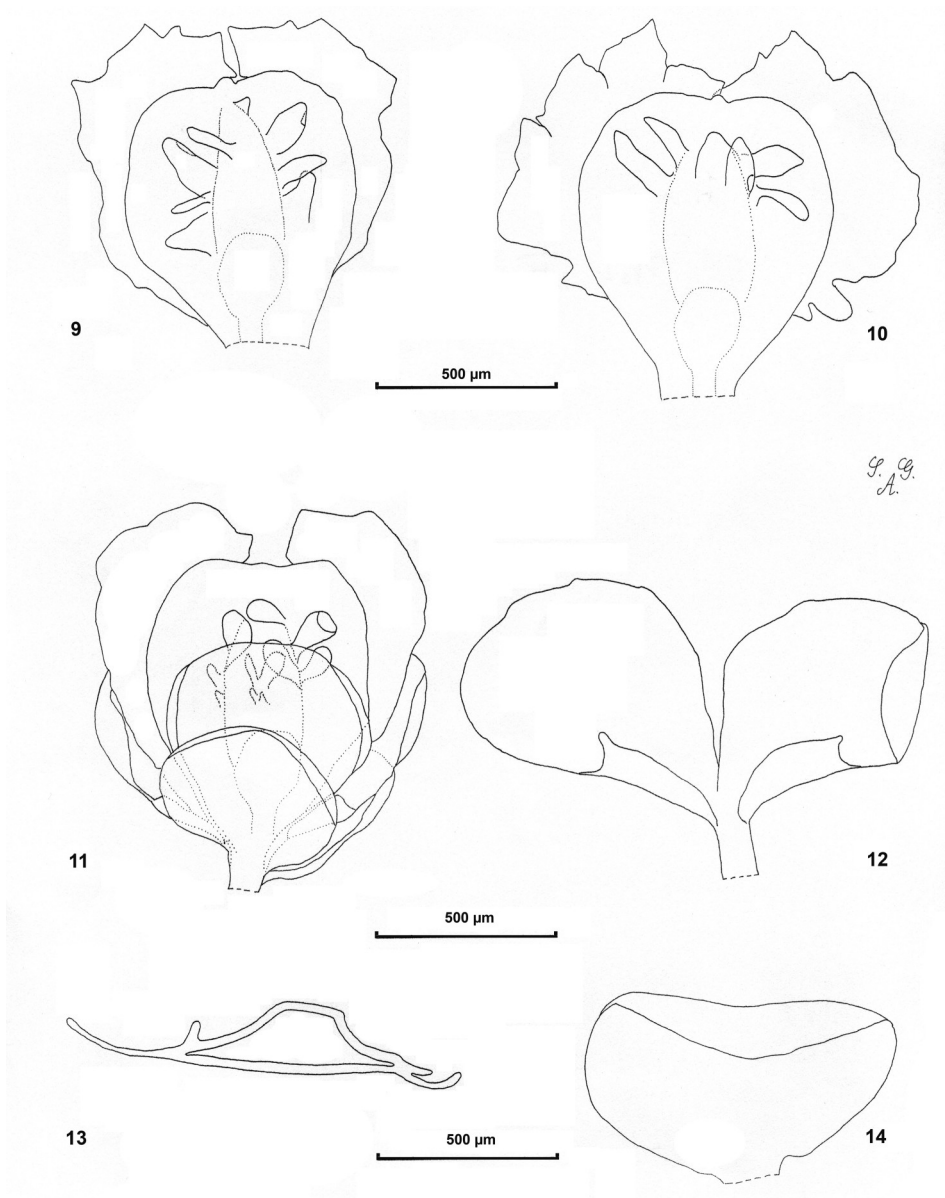
Figs 1-3. *Lopholejeunea pocsii* Gyarmati: **1.** Habit, ventral view, with female branches. **2.** Leaves, ventral view. **3.** Transverse section of stem. (All drawn from the holotype).

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



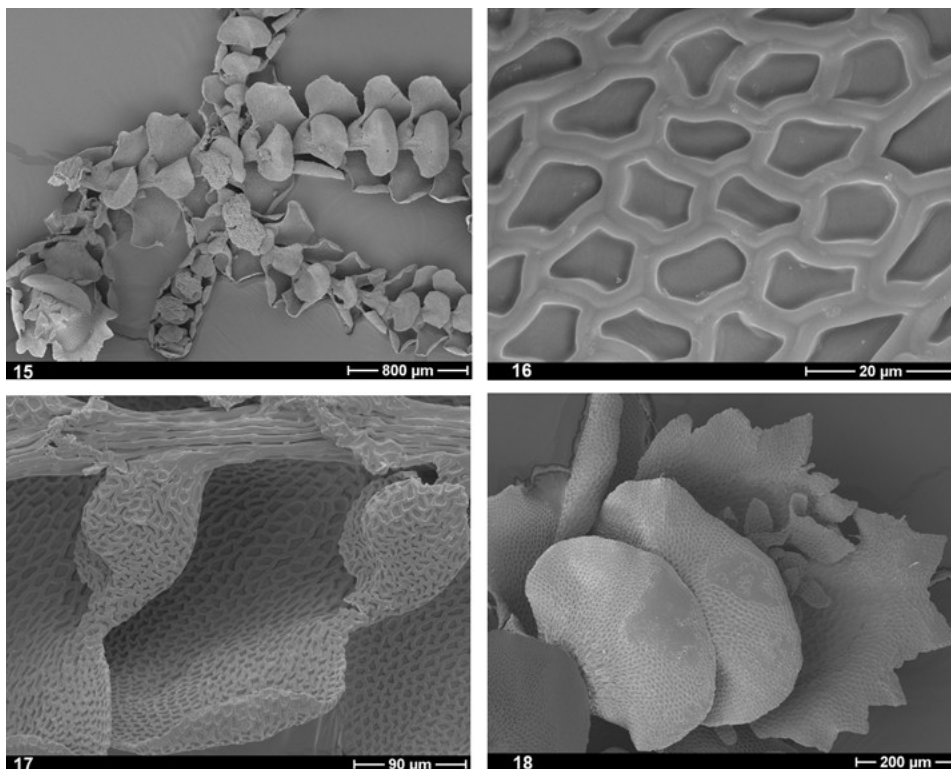
Figs 4-8. *Lopholejeunea pocsii* Gyarmati: **4-6**. Apical, median and basal leaf cells, respectively. **7**. Underleaf, with the indication of insertion line. **8**. Leaf lobule. (All drawn from the holotype).

4 cells wide. Rhizoids numerous, brown, at base of underleaves, rhizoid disc absent. **Leaf lobes** imbricate $700 \times 1020 \mu\text{m}$, 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



Figs 9-14. *Lopholejeunea pocsii* Gyarmati: **9-11.** Perianths, ventral view. **12.** Gynoeceial bract. **13.** Perianth cross section. **14.** Bracteole. (All drawn from the holotype).

$\times 10-15 \mu\text{m}$, median cells isodiametric to oblong $15-20 \times 15-25 \mu\text{m}$, cells of leaf base similar or somewhat larger $15-25 \times 30-45 \mu\text{m}$, 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



Figs 15-18. *Lopholejeunea pocsii* Gyarmati: **15**. Plant, ventral view. **16**. Median cells of the leaf lobes. **17**. Lobules. **18**. Perianth, ventral view. (All made from the holotype).

their free margin often slightly connate with the lobe lamina over a width of 2-3 cells, keel sigmoid, with a sinus of $100-120^\circ$. **Underleaves** contiguous, very large, reniform, plane, $7-8 \times$ stem width, $450 \times 750 \mu\text{m}$ 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, $550 \times 750 \mu\text{m}$, 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, $650 \times 950 \mu\text{m}$, apex recurved with entire margins. **Perianth** emergent, obovoid, averaging $650 \times 800 \mu\text{m}$ (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 intergradations 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*

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

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