

## **Bryophytes from the Fiji Islands, IX. Liverwort collections made by R.M. Schuster**

Tamás PÓCS<sup>a\*</sup>, Andrea SASS-GYARMATI<sup>a</sup>,  
Matthew von KONRAT<sup>b</sup> & Laura BRISCOE<sup>c</sup>

<sup>a</sup>Botany Department, Institute of Biology, Eszterházy Károly University, Eger,  
Pf. 43, H-3301, Hungary

<sup>b</sup>Gantz Family Collections Center, The Field Museum, Chicago,  
Illinois 60605-2496, USA

<sup>c</sup>Cryptogamic Herbarium, New York Botanical Garden, 2900 Southern Blvd,  
Bronx, NY 10458, USA

**Abstract** – Examination of previously unstudied liverwort collections made by R.M. Schuster during 1962 and 1967 was undertaken. We report 13 new records for the Fiji Islands including *Cheilolejeunea xanthocarpa*, *Cololejeunea appressa*, *Cololejeunea floccosa*, *Cololejeunea koponenii*, *Cololejeunea magnilobula*, *Cololejeunea subtriapiculata*, *Drepanolejeunea pentadactyla*, *Heteroscyphus splendens*, *Lopholejeunea wiltensii*, *Mastigolejeunea indica*, *Schiffneriolejeunea pulopenangensis* and *Schiffneriolejeunea tumida* var. *haskarliana*. Range extensions for eight additional species were reported, which were previously known only from one locality in the islands prior to the current investigation. New morphologic features of *Cololejeunea bifalcata*, *Cololejeunea tuiwawana* Pócs and *Phaeolejeunea amicorum* were also observed. One species, *Cheilolejeunea occlusa* was collected by Schuster in Western Samoa, which is a new record to the South Pacific.

### **East Melanesia / Fiji / liverworts / new records**

**Résumé** – Une collection, non encore étudiée, d'hépatiques collectée par R.M. Schuster pendant 1962 et 1967 dans les Îles Fidji a montré 13 espèces comme nouvelles pour ces îles : *Cheilolejeunea xanthocarpa*, *Cololejeunea appressa*, *Cololejeunea floccosa*, *Cololejeunea koponenii*, *Cololejeunea magnilobula*, *Cololejeunea subtriapiculata*, *Drepanolejeunea pentadactyla*, *Heteroscyphus splendens*, *Lopholejeunea wiltensii*, *Mastigolejeunea indica*, *Schiffneriolejeunea pulopenangensis* and *Schiffneriolejeunea tumida* var. *haskarliana*. Huit autres espèces, connues uniquement d'une localité dans ces îles, ont été retrouvées. De nouveaux caractères morphologiques pour *Cololejeunea bifalcata* Pócs, *Cololejeunea tuiwawana* et *Phaeolejeunea amicorum* sont observés. Une espèce, *Cheilolejeunea occlusa*, récoltée par Schuster en W Samoa de l'Ouest est nouvelle pour la Pacifique Sud.

### **Est Mélanésie / Fidji / hépatiques / nouveaux records**

\* Corresponding author: colura@upcmail.hu

## INTRODUCTION

There have been very few bryophyte collections made in Fiji since 1945 (von Konrat *et al.* 2011). Recently, there has been a concerted effort to increase our knowledge about the liverwort and hornwort flora of the region (e.g., von Konrat *et al.*, 2011, Pócs *et al.*, 2011; Söderström *et al.*, 2011). Yet, as those authors predicted, many new records will undoubtedly be reported for the Fijian islands in future. Significantly, we were able to assess a hitherto hidden, unidentified collection made by the late professor R. M. Schuster. The Field Museum is now fortunate to have recently acquired his entire herbarium of an estimated 50,000 specimens (Qiu *et al.*, 2015). Schuster collected twice in the Fiji Islands, 699 specimens during 11-29 June 1962 and 647 specimens between 27 June and 6 July 1967. Many collections contained more than one species. The specimens remained unidentified except a few tentative field identifications written on packets until Matt von Konrat and Laura Briscoe (F) sorted out and labelled the collections. Tamás Pócs and Andrea Sass-Gyarmati (EGR) identified 170 out of the 1346 specimens, from the groups familiar to them, largely representing epiphyllous taxa. Interestingly, Schuster collected several specimens of *Cololejeunea* which were described by Pócs (2012) from later collections as new to science. Based on these determinations, we here report 13 species are new to the Fiji Islands, and eight species were that were previously known from only one Fijian locality. The hitherto unknown perianths of *Cololejeunea bifalcata* Pócs and *Phaeolejeunea amicorum* (Huerlimann) Pócs are described. Identification of the remaining specimens is ongoing and no doubt will reveal further new records. Duplicate specimens are kept at EGR and SUVA.

## ENUMERATION OF SPECIES

The list contains species new to the Fiji Islands\* and species previously known from only one locality in the Fiji Islands. In addition, one species new to Samoa and the South Pacific is listed. Abbreviations: **VL:** Viti Levu Island. **TP:** Tamás Pócs, **AG:** Andrea Sass-Gyarmati.

\**Cheilolejeunea xanthocarpa* (Lehm. & Lindenb.) Malombe

**VL:** Summit of Mt. Tomanivi (Mt. Victoria), ca 2.5-3 mi E of Navai, 4200-4330 ft, 17° 38'S, 178°W, in wet dense rain forest, accompanied by *Acrolejeunea pycnoclada*, *Lopholejeunea eulopha*, *Frullania chevalieri* and *Microlejeunea lunulatiloba*, Schuster 56475c *p.p.*, 56489a, 56493b, 56494a,b, 56496a, 23 June 1962, det. TP. Pantropical species (Zhu & So, 2001).

\**Cololejeunea appressa* (A.Evans) Benedix

**VL:** Mt. Tomanivi (Mt. Victoria), lower slopes, 3000-3500 ft, wet rain forest, accompanied by *Metalejeunea cucullata* and *Ephemeropsis tjibodensis*, Schuster 67-70101a, 27 June 1967, det. TP. Pantropical species (Müller & Pócs, 2007).

*Cololejeunea bifalcata* Pócs

**Figs 1-3**

**VL:** Mt. Tomanivi (Mt. Victoria), lower slopes and near summit, 3000-4200 ft, 17°38'S, 178°W, wet rain forest, accompanied by *Leptolejeunea* sp., Schuster 62-120a, 67-701a, 21 June 1962 and 27 June 1967; ca 2 km W of Nadarivatu, 3200-

3360 ft, in open, mixed *Agathis*-*Podocarp*-Hardwood forest, accompanied by *Leptolejeunea* sp., *Schuster 67-102c, 67105, 67-120a*, det. TP. New to Viti Levu Island, hitherto known only from Taveuni Island without gametangia. The Schuster specimen is autoicous. The female bracts are about half of the length of the perianth and with a rounded lobe apex. The perianth is dorsiventrally compressed, obpyriform with a spindle-shaped body, 500-520 × 300-320 μm, with two lateral wings and a short, 1-2 cells high beak. The androecia on the observed specimen are terminal with vegetative leaves gradually transient into male bracts (Fig. 2). Distribution: Fiji endemic (Pócs, 2012).

**\**Cololejeunea floccosa*** (Lehm. & Lindenb.) Steph.

**VL:** Slopes of Mt. Goroo (Mt. Yoo), SW of Ndelainadarivatu, west of Nadarivatu, 2700-2900 ft, rich *Podocarp*-*Agathis* hardwood forest, *Schuster 67-7471*, 29 June 1967; Summit of Mt. Tomanivi (Mt. Victoria), 3900-4300 ft, epiphyllous on *Asplenium* sp. in mossy “elfin” woodland, accompanied by *Cololejeunea tridentata* and *Cheilolejeunea* sp., *Schuster 67-7936*, 2 July 1967, det. TP. Widespread palaeotropical species (Pócs & Ninh, 2012).

**\**Cololejeunea koponenii*** (Pócs) Pócs

**Fig. 4**

**VL:** Summit of Mt. Tomanivi (Mt. Victoria), ca 2.5-3 mi E of Navai, 4200-4330 ft, 17°38'S, 178°W, in wet, dense rain forest, *Schuster 57066c*, 23 June 1962, det. TP. New to Fiji Islands. Previously known distribution: New Guinea, Philippines (Pócs & Bernecker, 2009).

**\**Cololejeunea magnilobula*** (Horik.) S. Hatt.

**Figs 5-6**

**VL:** Summit of Mt. Tomanivi (Mt. Victoria), ca 2.5-3 mi E of Navai, 4200-4330 ft, 17°38'S, 178°W, in wet, dense rain forest, *Schuster 56491*, 23 June 1962, det. TP. New to Fiji Islands. Previously known only from S China (Taiwan, Zhejiang, Zhu 1995) and its variety, *C. magnilobula* var. *falcidentata* Pócs & G.E. Lee from Malaysia: Kelantan. (Pócs & Lee, 2016).

***Cololejeunea societatis*** Tixier

**Figs 7-8**

**VL:** Nausori Highlands, E of Nadi, 1800 ft, open but primeval forest, accompanied by *Cololejeunea tridentata*, *Schuster 5731*, 26 June 1962; summit of Mt. Victoria, ca 2.5-3 mi E of Navai, 4200-4330 ft, 17° 38'S, 178°W, in wet dense rain forest, accompanied by *Radula nymanii* Steph. and *Leptolejeunea epiphylla*, *Schuster 5705a*, 23 June 1962, det. TP. The Fiji plants are autoicous. (Tixier in Hürlimann [1987] describes it with question mark, as dioicous). New to Viti Levu. Previously known distribution: Fiji, Taveuni Island; Society Islands (Pócs *et al.*, 2011).

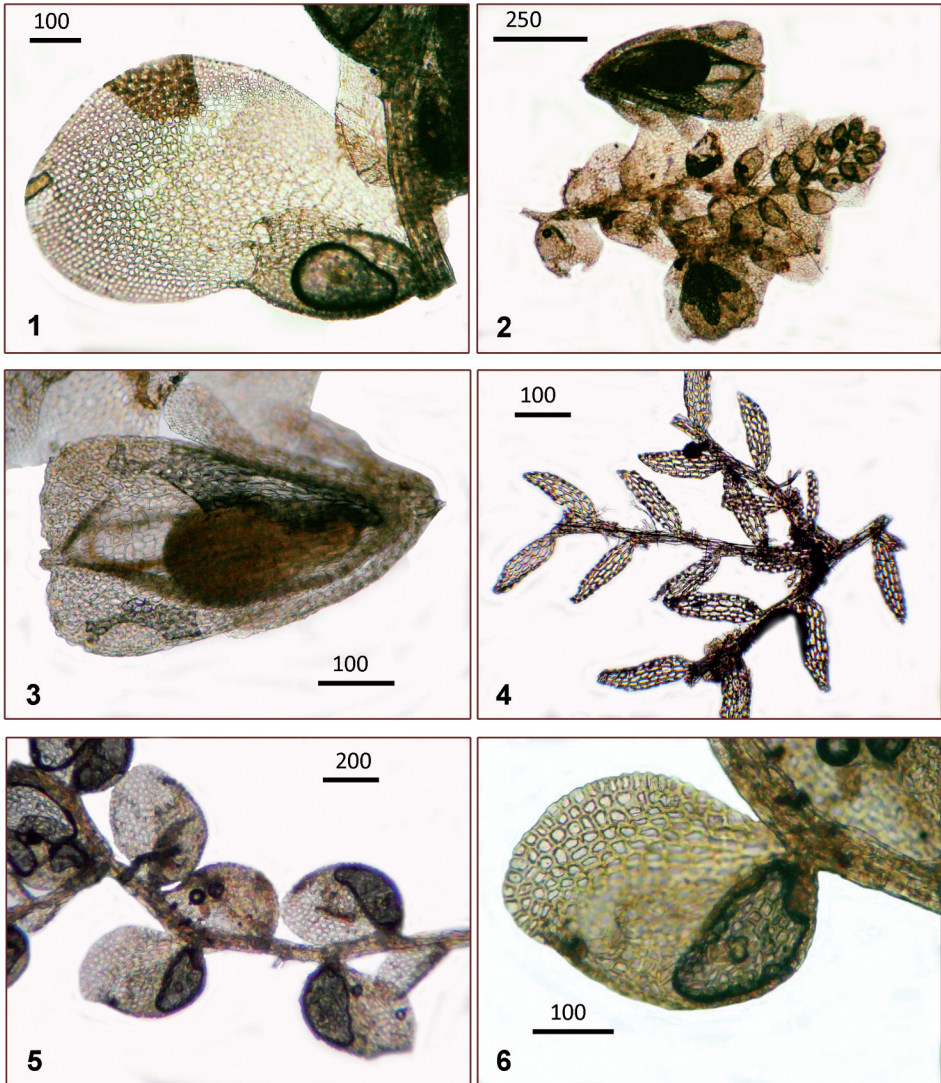
**\**Cololejeunea subtriapiculata*** Tixier

**VL:** Nausori Highlands, E of Nadi, 1800 ft, open but primeval forest, accompanied by *Leptolejeunea epiphylla* and *Radula nymanii*, *Schuster 5755b*, 26 June 1962, det. TP. New to Fiji Islands. Previously known distribution: New Caledonia (Tixier, 1979).

***Cololejeunea tridentata*** Tixier

**Fig. 9**

**VL:** N facing slopes W. of Mt. Goroo (Mt. Yoo), 3-4 mi W of Nadarivatu, 2700-3200 ft, open mixed *Agathis*-*Podocarpus*-forest, accompanied by *Lejeunea micholitzii*, *Schuster 67-7407, 67-7481a,d*, 6 July and 29 June 1967, det. TP. New to Viti Levu. Previously known from Fiji (Taveuni Island), Borneo and Malaysia (Pócs *et al.*, 2011).



**Figs 1-6.** Figs 1-3. *Cololejeunea bifalcata* Pócs, from *Schuster 67-70105*. 1. Leaf, ventral view. 2. Shoot with gametangia and a perianth, ventral view. 3. Perianth, ventral view. Fig 4. *Cololejeunea koponenii* (Pócs) Pócs, shoot, ventral view, from *Schuster 57066/c*. Figs 5-6. *Cololejeunea magnilobula* (Horik.) Hatt. from *Schuster 56491*. 5. Shoot, ventral view. 6. Leaf, ventral view. (Scales in  $\mu\text{m}$ ).

### *Cololejeunea tuiwawana* Pócs

### Figs 10-11

**VL:** Mt. Goroo (Mt. Yoo), ca 2 mi W of Nadarivatu, 3200-3360 ft, in open mixed *Agathis-Podocarpus*-forest, *Schuster 67-70104, 67-70128a*, 28 June 1967, det. TP. With sporophyte. Although both lobule teeth in the type are blunt or obsolete, some of Schuster's specimens have acute, stout, 2-3-cells long first lobule teeth, or lobules with or without a long first tooth on the same plant. The lobule tooth variation is



similar to that in *Cololejeunea grushvitzkiana* Pócs (1971) from Vietnam, but *C. tuiwawana* well differs by its ellipsoid-ovate, entire leaves (oblong and toothed in *C. grushvitzkiana*), female bracts less than half the length of the perianth (*C. grushvitzkiana* has female bracts of half perianth length) and by its spindle-shaped perianth with two broad, auriculate wings (*C. grushvitzkiana* has an obovate perianth with four narrow, not-auriculate wings). *Cololejeunea tuiwawana* was known only from its type specimen from Viti Levu Island, Rairaimatuku Plateau (Pócs, 2012).

**\**Drepanolejeunea pentadactyla* (Mont.) Steph.**

**VL:** Slopes of Mt. Lomalagi, above Nadarivatu, 3100-3600 ft, epiphyll *Schuster 67-70268a*, 30 June 1967; Mt. Goroo (Mt. Yoo), ca 2 m W of Nadarivatu, 3200-3360 ft, in open mixed *Agathis-Podocarpus*-forest, *Schuster 67-70136* pp. det. TP. New to Fiji Islands. Widespread Palaeotropic species distributed from East Africa to Society Islands (Zhu & So 2001; Wigginton, 2009 under *Drepanolejeunea cambouena* (Mont.) Steph.; Pócs, 2011).

**\**Heteroscyphus splendens* (Lehm & Lindenb.) Grolle**

**VL:** Summit of Mt. Tomanivi (Mt. Victoria), ca 2.5-3 mi E of Navai, 4200-4330 ft, 17° 38'S, 178°W, in wet dense rain forest and elfin forest, *Schuster 56475c* pp., 23 June 1962, det. TP. New to Fiji Islands. Palaeotropic species distributed from East Africa to Hawaii, Vanuatu and Samoa (Pócs, 1976).

***Lejeunea pulchriflora* (Pears.) G.E.Lee, Bechteler, Pócs, Schäf.-Verw. & Heinrichs**

**VL:** Summit of Mt. Tomanivi (Mt. Victoria), ca. 2.5-3 mi E of Navai, 4200-4330 ft, 17°38'S, 178°W, in wet rain forest, *Schuster 56467b*, 23 June 1962, det. TP. New to Viti Levu, known from Kadavu Island (Pócs & Wei, 2017). Distribution: Paleotropical (see map in Lee *et al.*, 2016: 19) from West Africa to Fiji Islands.

**\**Lopholejeunea wiltensii* Steph.**

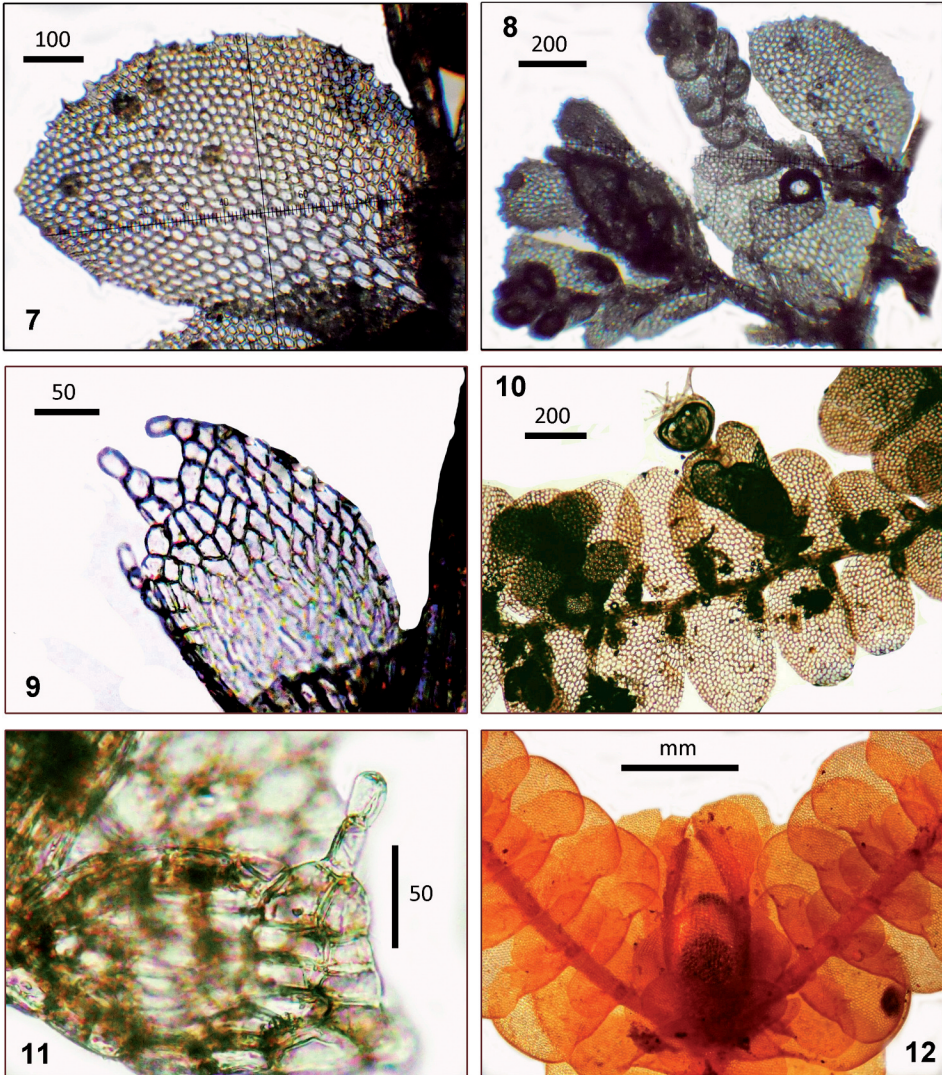
**VL:** Ridge crest from Mt. Lomalagi to NE of Naggarambuluti, near Nadarivatu, 3550-3690 ft, mossy hardwood-*Podocarpus* forest, accompanied by *Mastigolejeunea calcarata*, *Schuster 67-7441*, 4 July 1967; Nausori Highlands, E of Nadi, 1800 ft, in relatively open but primeval *Dacrydium-Agathis* - forest, within 3-5 m of edge of the grassland, *Schuster 57050*, 26 June 1962, det. AG. New to Fiji Islands. Distributed from Malaysia through Indonesia, Philippines to New Caledonia (Zhu & Gradstein, 2005).

**\**Mastigolejeunea indica* Steph.**

**VL:** Slopes SW of Ndelainadarivatu, west of Nadarivatu, 2700-2900 ft, rich *Podocarpus-Agathis* forest, *Schuster 67-7467a*, 29 June 1967, det. AG. New to Fiji Islands, widely distributed Indomalaysian-Australasian species known from India to New Guinea and New Caledonia (Sukkharak & Gradstein, 2014; Thouvenot *et al.*, 2011).

***Metalejeunea crassitexta* (J.B.Jack) Pócs**

**VL:** Mt. Goroo (Mt. Yoo), ca 2 mi W. of Nadarivatu, 3200-3360 ft, in open mixed *Agathis-Podocarpus*-forest, Mt. Goroo (Mt. Yoo), ca 2 m W of Nadarivatu, 3200-3360 ft, accompanied by *Radula tjobodensis* and *Drepanolejeunea pentadactyla*. *Schuster 67-70136*, 28 June 1967, det. TP. This species seems to be endemic to the Fiji Islands and was hitherto known only from Ovalau and Taveuni Islands (Miller *et al.*, 1963; Pócs *et al.*, 2011).



**Figs. 7-12.** Figs. 7-8. *Cololejeunea societatis* Tixier, from *Schuster 57055/a*. **7.** Leaf. **8.** Shoot with male and female gametangia, ventral view. Fig. **9.** *Cololejeunea tridentata* Tixier, from *Schuster 67-7936*, lobule. Figs. 10-11. *Cololejeunea tuiwawana* Pócs, from *Schuster 67-70128*. **10.** Shoot with sporophyte. **11.** Lobule, ventral view. Fig. **12.** *Phaeolejeunea amicorum* (Hürl.) Pócs, from *Schuster 67-7024/b*. Perianth with two innovations, dorsal view.

***Microlejeunea lunulatiloba* Horik.**

**VL:** Summit of Mt. Tomanivi (Mt. Victoria), ca 2.5-3 mi E of Navai, 4200-4330 ft, 17° 38'S, 178°W, in wet dense rain forest, *R.M. Schuster 56495b*, 23 June 1962, det. TP. Thus far only one record from Viti Levu Island. A species with Pacific distribution (Miller *et al.*, 1963).

***Myriocoleopsis minutissima* (Sm.) R.L. Zhu, Y.Yu & Pócs**

Syn.: *Cololejeunea minutissima* (Sm.) Schiffn.

**VL:** at the same locality as the previous, *Schuster 56495c*, 23 June 1962, det. TP. In the Fiji Islands hitherto known only from one locality, in Viti Levu, Sigatoka (Hürlimann, 1987). A widespread pantropical and warm-temperate species (Pócs & Piippo, 2011).

***Phaeolejeunea amicornum* (Hürl.) Pócs****Fig. 12**

**VL:** Slopes of Mt. Lomalagi, above Nadarivatu, 3100-3600 ft, *Schuster 67-7024b*, 30 June 1967, det. AG. The perianth of the species, which was previously unknown, is obovate, flattened, with two broad lateral wings and two narrower ventral wings (Fig. 12). It is similar to that of *Phaeolejeunea latistipula* (Schiffn.) Mizut., as illustrated by Mizutani (1968: 132, fig. 1/2), but differs by its wider, auriculate wings and by its two subfloral innovations. The distribution of the species is seemingly restricted to Fiji and Tonga islands (Pócs, 2008).

**\**Schiffneriolejeunea pulopenangensis* (Gottsche) Gradst.**

**VL:** Tholo North Distr., steep N-facing slope of Nandarivatu, 3200-3600 ft, 17°35'S, 177°57'W, mixed broadleaved *Agathis* forest, *Schuster 57200*, 23 June 1962, det. AG. New to Fiji Islands. Widely distributed in Indomalesia to Australasia (Australia and New Caledonia) (Thiers & Gradstein, 1989; Gradstein, 2015).

**\**Schiffneriolejeunea tumida* (Gottsche) Gradst. var. *haskarliana* (Gottsche) Gradst. & Terken**

**VL:** Slopes of SW of Ndelainadarivatu, west of Nadarivatu, 2700-2900 ft, in rich *Podocarpus-Agathis* forest, *Schuster 67-7504*, 29 June 1967, det. AG. New to Fiji. Widespread Indomalesian-Pacific species reaching westwards the Seychelles Islands (Gradstein & Terken, 1981; Gradstein *et al.* 2002; Gradstein 2015).

**\**Cheilejeunea oclusa* (Herz.) Kodama & Kitag.**

**Western Samoa:** Savai'i, N. side of island, above Upopo, moist, undisturbed forest over old lava flow, epiphyllous, *R.M. Schuster 56407 p.p.*, 14 June 1962, det. T. Pócs. New to the Pacific. Known distribution: Sumatra, Malaysia (Sarawak, Sabah), Kalimantan and Australia (Queensland) (Mizutani, 1980; Pócs, 2015).

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**REFERENCES**

- HÜRLIMANN H., 1987 — Hepaticae aus dem Gebiete des südlichen Pazifik IX. *Bauhinia* 8: 221-234.  
 GRADSTEIN S.R. & TERKEN L., 1981 — Studies on Lejeuneaceae subfam. Ptychanthoideae VI. A revision of *Schiffneriolejeunea* sect. *Saccatae* from Asia. *Occasional papers of Farlow Herbarium, Cryptogamic botany* 16: 71-81.  
 GRADSTEIN S.R., HE X., PIIPPO S., MIZUTANI M., 2002 — Bryophyte flora of the Huon Peninsula, Papua New Guinea. LXVIII. Lejeuneaceae subfamily Ptychanthoideae (Hepaticae). *Acta botanica fennica* 174: 1-88.  
 GRADSTEIN S.R., 2015 — An overview of the genus *Schiffneriolejeunea* (Marchantiophyta: Lejeuneaceae). *Nova Hedwigia* 100(3-4): 507-524.



- LEE G.E., BECHTELER J., PÓCS T., SCHÄFER-VERWIMP A., HEINRICHS J., 2016 — Molecular and morphological evidence for an intercontinental range of the liverwort *Lejeunea pulchriflora* (Marchantiophyta: Lejeuneaceae). *Organisms, diversity & evolution* 16(1): 13-21.
- MILLER H.A., BONNER C.E.B. & BISCHLER H., 1963 — Studies in Lejeuneaceae V. *Microlejeunea* in Pacific Oceania. *Nova Hedwigia* "1962", 4: 551-561.
- MIZUTANI M., 1968 — Studies of little known Asiatic species of Hepaticae in the Stephani Herbarium, 4. *Phaeolejeunea*, a new genus of Lejeuneaceae. *Journal of the Hattori botanical laboratory* 31: 130-134.
- MIZUTANI M., 1980 — Notes on the Lejeuneaceae, 3. Some Asiatic species of the genus *Cheilolejeunea*. *Journal of the Hattori botanical laboratory* 47: 319-331.
- MÜLLER F. & PÓCS T., 2007 — A contribution to the knowledge of epiphyllous bryophytes of Bioko Island (Equatorial Guinea), including additional remarks on non-epiphyllous species. *Journal of bryology* 29: 81-94.
- PÓCS T., 1971 — An investigation on the mountain bryoflora of the Hashang Province (Democratic Republic of Vietnam). Hepaticae. *Botaniceskij žurnal (Moscow & Leningrad)* 56: 270-677.
- PÓCS T., 1976 — Correlations between the tropical African and Asian bryofloras, I. *Journal of the Hattori botanical laboratory* 41: 95-106.
- PÓCS T., 2008 — Bryophytes from the Fiji Islands, III. The genus *Phaeolejeunea* Mizut. (Lejeuneaceae), with detailed description of *P. amicum* (Hurl.) Pócs, stat. nov. *Fieldiana: Botany* (n.ser.) 47: 139-145. doi: 10.3158/0015-0746-47.1.139
- PÓCS T. & BERNECKER A., 2009 — Overview of *Aphanolejeunea* (Jungermanniopsida) after 25 years. *Polish botanical journal* 54 (1): 1-11.
- PÓCS T., 2011 — Type studies of some African Lejeuneaceae. *Acta botanica hungarica* 53(1-2): 181-192.
- PÓCS T. & PIIPPO S., 2011 — Bryophyte flora of the Huon Peninsula, Papua New Guinea. LXXIV. *Cololejeunea* (Lejeuneaceae, Hepaticae). *Acta bryolichenologica asiatica* 4: 59-137.
- PÓCS T., SASS-GYARMATI A., NAIKATINI A., TUIWAWA M., BRAGGINS J., S. PÓCS & VON KONRAT M., 2011 — New liverwort (Marchantiophyta) records for the Fiji Islands. *Telopea* 13: 455-494.
- PÓCS T., 2012 — Bryophytes from the Fiji Islands, VI. The genus *Cololejeunea* Raddi (Jungermanniopsida), with the description of seven new species. *Acta botanica hungarica* 54(1-2): 145-188.
- PÓCS T. & TRẦN NINH, 2012 — New or little known epiphyllous liverworts, XVII. Records from the Cát Tiên National Park, southern Vietnam. *Acta biologica plantarum agriensis* 2: 11-19.
- PÓCS T., 2015 — Contribution to the bryoflora of Australia, V. *Colura streimannii* sp. nov. from Queensland. *Polish botanical journal* 60(1): 7-11.
- PÓCS T. & LEE G.E., 2016 — Data to the Malaysian liverwort flora, II. *Cryptogamie/Bryologie* 37(1): 39-52.
- PÓCS T. & WEI Y.-M., 2017 — Bryophytes from Fiji Islands, VIII. The genus *Lejeunea* Lib.1820. *Biodiversity, biogeography and nature conservation in Wallacea and New Guinea*. Vol. III. Riga, the Entomological Society of Latvia: In press.
- QIU Y.-L., VON KONRAT M.J., ENGEL J. J., 2013 — Rudolf Mathias Schuster 1921-2012. *Plant science bulletin* 59(4): 165-168.
- SÖDERSTRÖM L., HAGBORG A., PÓCS T., SASS-GYARMATI A., BROWN E., VON KONRAT M., RENNER M.A.M., 2011 — Checklist of hornworts and liverworts of Fiji. *Telopea*: 13(3): 405-454.
- SUKKHARAK P. & GRADSTEIN S.R., 2014 — A taxonomic revision of the genus *Mastigolejeunea* (Marchantiophyta: Lejeuneaceae). *Nova Hedwigia* 99 (3/4): 279-345. doi: 10.1127/0029-5035/2014/0206
- THIERS B. & GRADSTEIN S.R., 1989 — Lejeuneaceae (Hepaticae) of Australia. I. Subfamily Ptychanthoideae. *Memoirs of the New York botanical garden* 52: 1-82.
- TIXIER P., 1979 — Contribution a l'étude du genre *Cololejeunea*. Les Cololejeuneoidees de Nouvelle Calédonie. *Nova Hedwigia* 31: 721-787.
- THOUVENOT L., GRADSTEIN S.R., HAGBORG A., SÖDERSTRÖM L. & BARDAT J., 2011 — Checklist of the liverworts and hornworts of New Caledonia. *Cryptogamie, Bryologie* 32(4): 287-390. doi: 10.7872/cryb.v32.iss4.2011.287
- VON KONRAT M., NAIKATINI A., TUIWAWA M., SÖDERSTRÖM L., FIFE A., RENNER M., BROWNSEY P., PERRIE L., HAGBORG A., PÓCS T., LUMBSCH H.T., BRAGGINS J., SENECA A. & BROWN E. 2011 — A brief history of the cryptogams of Fiji and prospects for the future. *Telopea*: 13(3): 361-374.
- WIGGINTON M.J., 2009 — Checklist and distribution of the liverworts and hornworts of sub-Saharan Africa, including the East African Islands. *Tropical bryology research reports* 8: 1-116.
- ZHU R.-L., 1995 — Notes on some species of the genus *Cololejeunea* (Lejeuneaceae, Hepaticae) in China. *Journal of the Hattori botanical laboratory* 78: 83-109.
- ZHU R.-L. & SO M.L., 2001 — Epiphyllous liverworts of China. *Nova Hedwigia, Beiheft* 121: 1-418.
- ZHU R.-L., & GRADSTEIN S.R., 2005 — Monograph of *Lopholejeunea* (Spruce) Schiffn. (Lejeuneaceae, Hepaticae) in Asia. *Systematic botany monographs* 74: 1-98.