

Lejeunea exilis (Marchantiophyta) - New to bryoflora of North-East India

Sushil K. Singh* and Shashi Kumar

Botanical Survey of India, Eastern Regional Centre, Shillong-793003, India

Email: sksbsinc@rediffmail.com*; shashibindudham@gmail.com

*Corresponding author

Manuscript received: 15 June 2015

Accepted for publication: 27 July 2015

ABSTRACT

Singh S. K. & Kumar S. 2015. *Lejeunea exilis* (Marchantiophyta) - New to bryoflora of North-East India. Geophytology 45(2): 265-268.

Lejeunea exilis (Reinw. et al.) Grolle has been recorded for the first time from the Himalayan region in general and East Himalayan bryo-geographical territory in particular, earlier reported from Kerala, South India only. The same have been described and illustrated here.

Key-words: *Lejeunea exilis*, Lejeuneaceae, new record, Meghalaya, India

INTRODUCTION

Genus *Lejeunea* Lib. is one of the largest genera of family Lejeuneaceae with c. 300 genuine species in the world (Lee 2013). It is represented in the Indian bryoflora by c. 40 species, majority of them are recorded from eastern Himalayan bryo-geographical territory (Asthana & Sahu 2012, Verma & Rawat 2013). During the course of taxonomic studies on Lejeuneaceae Schizostipae, in North-east India, the authors came across with an interesting species of the genus collected from Meghalaya (Text-figure 1). A subsequent critical morpho-taxonomic investigation of the specimens and literature review revealed its identity as *Lejeunea exilis* (Reinw. et al.) Grolle. This species was hitherto unknown from Himalaya in general and East Himalayan bryo-geographical territory in particular. Hence it is reported here as new record for the Himalayan region. The same has been illustrated and described in present communication.

DESCRIPTION

Lejeunea exilis (Reinw. et al.) Grolle, J. Hattori Bot. Lab. 46: 353. 1979; R. L. Zhu & R. Grolle, Ann. Bot. Fenn. 40: 101. 2000; G. E. Lee, Cryptog. Bryol. 34(4): 423. 2013.

Text-figure 2

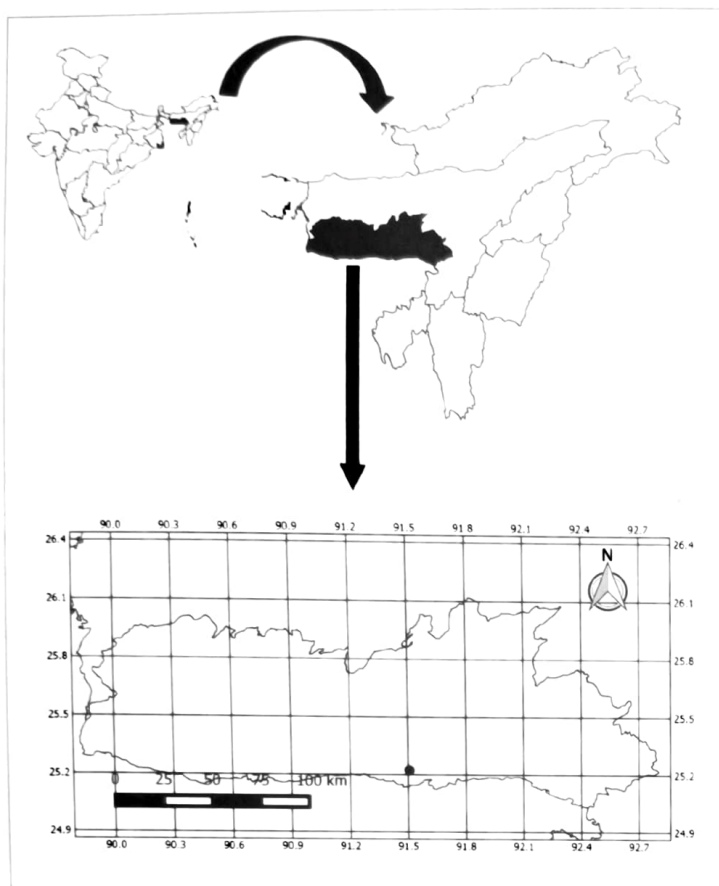
Jungermannia exilis Reinw. et al., Nova Acta Caes. Leop. Nat. Cur. 12: 227. 1825.

Jungermannia cucullata var. β *exilis* (Reinw. et al.) Nees, Enumer. Pl. Crypt. Jav. Hepat.: 57. 1980.

Lejeunea cucullata var. β *exilis* (Reinw. et al.) Gottsche et al., Syn. Hepat.: 390. 1845.

Eulejeunea cucullata var. β *exilis* (Reinw. et al.) Schiffn., Consp. Hepat. Arch. Ind.: 254. 1898.

Microlejeunea exilis (Reinw. et al.) Bischl. et al., Nova Hedwigia 3: 452. 1962.



Text-figure 1. Map showing collection site of *Lejeunea exilis*.

Description: Plant light green; shoots 8-12 mm long, 0.22-0.25 mm wide; branching irregular, *Lejeunea*-type; stem cross section subquadrate-orbicular in outline, $45\text{-}52.5 \times 40\text{-}45 \mu\text{m}$, 4-6 cells across the diameter; cortical cells in a layer of 7-8 cells, subquadrate-polygonal, $7.5\text{-}20 \times 10\text{-}15 \mu\text{m}$, thin-walled, medullary cells 3, polygonal, $7.5\text{-}10 \times 5\text{-}7.5 \mu\text{m}$, thin-walled. Leaves very distant, obliquely - erect spreading; leaf lobes ovate-ovate-oblong or subtriangular, 0.09-0.16 mm long, 0.08-0.11 mm wide, apex subacute-acute, margin entire; marginal cells towards apex subquadrate-polygonal, $7.5\text{-}12.5 \times 5\text{-}10 \mu\text{m}$, median cells hexagonal-polygonal, $10\text{-}15 \times 7.5\text{-}10 \mu\text{m}$, basal cells like median cells, hexagonal-polygonal, $7.5\text{-}15 \times 5\text{-}12.5 \mu\text{m}$; cells thin-walled, small or indistinct trigones and without intermediate thickenings; cuticle smooth; leaf lobule large, inflated, ovate-oblong-ovate, $2/5\text{-}3/4$ as long as the lobe, 0.07-0.13 mm long, 0.07-0.10 mm wide, bidentate, first tooth unicellular, erect or curved, second tooth obsolete, hyaline papilla at the proximal side of first tooth, free

lateral margin with 4 rectangular or linear cells. Underleaves distant, bilobed or unlobed, 1-2 times as wide as the stem, bilobed underleaves, oblong-ovate, 0.05-0.07 mm long, 0.04-0.06 mm wide, bilobed to $1/2$ of its length, lobes lanceolate-triangular, 3-6 cells long, 2-4 cells wide at base, apex subacute-acute. Androecial and gynoecial branches not observed. Ribbon-like regenerants occasionally present along the leaf margins.

Type: Indonesia, Java, without collector name (Holotype: STR; isotype: PC, S, W).

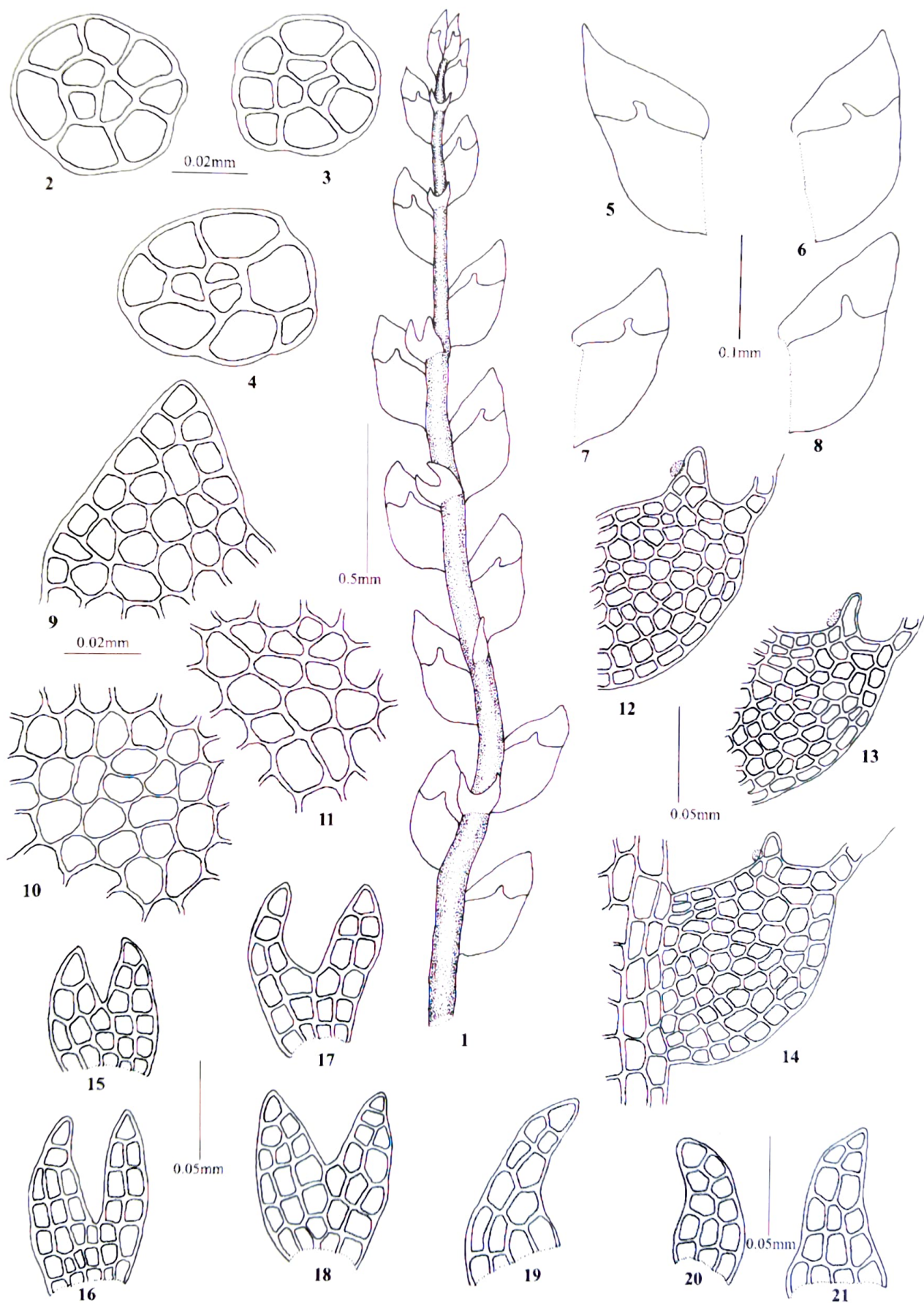
Habitat: Epiphytic, growing on moist and shady places.

Distribution: India [Meghalaya –present report (Text-figure 1); Kerala (Nair et al. 2006)], Australia (Zhu & Grolle 2003), China (Zhu & Grolle 2003), Indonesia (Söderström et al. 2010, Lee 2013), Papua New Guinea (Zhu & Grolle 2003), Japan (Zhu & Grolle 2003), Malaysia (Chuah-Petiot 2011), Samoa (Eggers & Pócs 2010), Taiwan (Wang et al. 2011).

Specimens examined: India, Meghalaya, near Laitlyngkot, epiphytic, $25^{\circ}26'23.9''$ N, $91^{\circ}50'50.6''$ E, 1838 m, 09.11.2014, S. K. Singh & party TSLI-438 (ASSAM).

DISCUSSION

Lejeunea exilis is a variable species under the genus *Lejeunea*. The variability in *L. exilis* was discussed in details by Zhu and Grolle (2003). The species is characterized by its smaller plants with obliquely spreading, ovate to ovate-oblong leaf lobe with apices acute-acuminate, margin entire, leaf lobe margin occasionally with ribbon-like propagule or regenerant cells; inflated leaf lobule which is $2/5\text{-}1/2$ as long as the lobe and unlobed or bilobed underleaves. *L. exilis* resembles *L. cocoes*, but the former differs from the latter in having 4-6 medullary cells, remotely arranged leaves, acute-acuminate apices and bilobed or unlobed underleaves whereas in *Lejeunea cocoes*, medullary cells are (5-) 8-14, leaves distant and underleaves are bilobed. Juvenile plants or branch leaves of *L. exilis* can be mistaken for *Microlejeunea punctiformis*, which differs in the presence of ocelli (see also Lee 2013).



Text-figure 2. *Lejeunea exilis* (Reinw. et al.) Grolle: 1. A portion of plant in ventral view; 2-4. Cross sections of stem; 5-8 Leaves; 9. Marginal cells towards apex; 10. Median leaf cells; 11. Basal leaf cells; 12-14. Leaf lobules; 15-21. Underleaves.

ACKNOWLEDGEMENTS

The authors are grateful to Director, BSI, Kolkata and Head of Office, Eastern Regional Centre, Botanical Survey of India, Shillong for facilities and encouragement.

REFERENCES

- Asthana A.K. & Sahu V. 2012. Current status of genus *Lejeunea* Libert. in India. *Ann. Forrest.* 20(1): 67-73.
- Chuah-Petiot, M.S. 2011. A checklist of Hepaticae and Anthocerotae of Malaysia. *Polish Bot. J.* 56: 1-44.
- Eggers J. & Pócs T. 2010. Epiphyllie Lebermoose aus Samoa: Auf den Spuren von Eduard Graeffe in der Farn-Abteilung des Herbarium Hamburgense. *Ber. Bot. Ver. Hambg.* 25: 3-11.
- Lee G. E. 2013. A systematic revision of the genus *Lejeunea* Lib. (Marchantiophyta: Lejeuneaceae) in Malaysia. *Cryptog. Bryol.* 34 (4): 381-484.
- Nair M. C., Rajesh K. P. & Madhusoodanan P. V. 2006. *Lejeunea exilis* (Lejeuneaceae, Hepaticae) - a new record to India. *Acta Bot. Hung.* 48: 85-88.
- Söderström L. Gradstein S.R. & Hagborg A. 2010. Checklist of the hornworts and liverworts of Java. *Phytotaxa* 9: 53-149.
- Verma P.K. & Rawat K.K. 2013. *Lejeunea srivastavae* sp. nov. (Marchantiophyta: Lejeuneaceae), from Nilgiri hills of Western Ghats (India). *Taiwania* 58(1): 7-11.
- Wang J., Lai M.J. & Zhu R.L. 2011. Liverworts and hornworts of Taiwan: an updated checklist and floristic accounts. *Ann. Bot. Fenn.* 48: 369-395.
- Zhu R. L. & Grolle R. 2003. Taxonomy and distribution of *Lejeunea exilis* (Lejeuneaceae, Hepaticae). *Ann. Bot. Fenn.* 40: 101-106.