Leptolejeunea subdentata Schiffn. ex Herzog, new to Meghalaya from East Khasi hills

Abstract
Leptolejeunea subdentata Schiffn. ex Herzog, has been reported as new to Meghalaya from Khasi Hills of Meghalaya. The paper provides its detailed taxonomic description with the note on their status and distribution.

Key-words: Bryophytes, Liverwort, Leptolejeunea, East Khasi Hills, Meghalaya

Introduction
Leptolejeunea (Spruce) Schiffn. is usually tropical in distribution with majority of the species growing as epiphyllous flora. The genus is characterized by small, delicate nature of plant; ‘Lejeunea-type’ branching; stem with 7 large (2 ventral row) cortical and 3 small medullary cells in cross-section; leaf never appressed to each other, more or less erect at an angle of about 45º-60º with numerous small ocelli in leaf-lobe; single large dark-brown supra-basal ocellus; bilobed underleaf with linear lanceolate lobes; basal disc of small compactly arranged cells; always terminal hypostatic androecia; male bracteole present only at the base of androecium and presence of gynoecial innovation. The taxonomic parameters used for species determination are texture of plant; morphology of leaf-lobe, leaf lobule and underleaves; their margin; position and number of ocelli and position of androecial innovation.

Being the part of Meghalaya plateau, the Khasi Hills are highly dissected and have irregular terrain and steep slope interspersed with river valleys. The climate of the district ranges from temperate in the plateau region to the warmer tropical and sub-tropical pockets on the Northern and Southern regions. The region hosts an interesting diversity of plants including all the three lineages of bryophytes viz. Liverworts, Hornworts and Mosses, out of which several have already been recorded from Khasi hills from time to time (Srivastava and Rawat 2001; Nath and Singh 2006; Singh et al 2008a; 2008b; Singh and Nath 2007a, 2007b, 2008).

In recent collections from Khasi Hills, one of the terricolous species has been identified as *Leptolejeunea* and after proper taxonomic study and comparison with available authentic literature (Zhu and So, 2001; Singh et al. 2006), the species has been validated as *Leptolejeunea subdentata* (Mitt.) Steph. It is a welcome addition to Meghalaya state, as it was earlier known in India only from ‘Lower Dibang Valley’ district of Arunachal Pradesh (Singh et al., 2006).

**Material and Method**

Field survey of bryophytes growing as terricolous population in East Khasi hills of Meghalaya was made in the month of September 2012. All the specimens collected from this site are deposited at the Cryptogamic Herbarium of Rain Forest Research Institute (RFRI), Jorhat, India.

**Taxonomic description and discussion**

*Leptolejeunea subdentata* Schiffn. ex Herzog, Flora 135: 403. 1942 (Fig. 1. 1-3)

Plants terricolous, appressed, pale green or light green, up to 9 mm long, 1.3 mm wide; growth habit deliquescent, branching *Lejeunea*-type, collar small, microphyllous branches present. Stem differentiated; cortical cells 7, ventral stem merophytes 2 cells wide. Rhizoids hyaline, numerous, fasciculate. Leaves contiguous to sub imbricate, spreading at angle of 60º from stem; leaf-lobe obovate (fan shaped), widely spreading, 0.55-0.83 mm long, 0.40-0.61 mm wide, apex apiculate; teeth present at apex, 3-6 in number, blunt,1-3 cells long; leaf –lobe cells thin-walled, trigones small, intermediate nodulous present along the walls; marginal cells subquadrate, 14-20 x 11-19 µm, median cells hexagonal, 18-25 x 13-24 µm. Suprabasal ocellus single, light brown, 53-89 x 26-31 µm; Scattered Ocelli up to 14 per leaf lobe, scattered, (11) 30 x 26 (09) µm; leaf-lobule oblong, 1/3 as long as the lobe, inflated, rectangular, free lateral margin usually slightly incurved, apex obliquely truncate, with 2 teeth, tooth obtuse, first tooth one celled, second tooth obsolete, hyaline papilla at proximal side of first tooth, keel faintly arched to straight, smooth. Underleaves distant, deeply bilobed, about half of underleaf length, lobes lanceolate to ligulate, sinus ‘U’ shaped, 2-3 cells long. Fertile plant not found.

**Type locality:** Indonesia (Java - Tjiburrum. Massart) (Zhu and So 2001).

**Range:** Asia: Vietnam (Jovet-Ast & Tixier 1958), Japan, Indonesia, Malaysia, Philippines (Onraedt 1991; Piippo & Tan 1992), New Caledonia (Hiirlimann 1995), China (Zhu and So 2001) and India (Singh et al. 2006).

**Distribution in India:** Arunachal Pradesh – Lower Dibang Valley (Singh et al. 2006), Meghalaya (present report).

**Ecology:** Plants form terricolous population on wet rocks.
**Leptolejeunea subdentata** new to Meghalaya

**Specimen examined**: India: Meghalaya – East Khasi Hills (1.5 km from Laitlyngkot towards Dawaki), 25°26'31.0" N, 91°50'46.6" E; about 1556 m; 26.09.2012; P. K. Verma and Party; 212/2012 (RFRI).

*Leptolejeunea subdentata* is easily separable from other Indian species of *Leptolejeunea* in shape and size, while differentiation with other species of the genus already described in detailed by Singh *et al.* 2006.

**Acknowledgments**

We are thankful to the Director, Rain Forest Research Institute, Jorhat, Assam, for his valuable support and facilities for study and Department of Environment and Forests, Meghalaya for permission to carry out field activities.

**Literature**:


Online July 3, 2013
Fig.1. 1-3: *Leptolejeunea subdentata* Schiffn. ex Herzog. 1. Panoramic view of East Khasi hills of Meghalaya, 2. Terricolous plant population (showing in arrow), mixed with other taxa of lejeuneaceae, 3. Plant, ventral view (from 212/2012 (RFRI).