

DISTRIBUTIONAL RANGE OF GENUS *SACCOGYNIDIUM* GROLLE (HEPATICAE: GEOCALYCACEAE) IN THE NORTH EAST INDIA

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ABSTRACT

The genus *Saccogynidium irregularospinum* C.H. Gao, T. Cao & M.J. Lai, has been reported for the first time from the state of Nagaland, North East India. The genus *Saccogynidium* Grolle is represented by a single species viz., *S. irregularospinum* which have been reported only from Eastern district of Sikkim, India. Therefore, the occurrence of this species shows new distributional range in the North East Sub-Himalayan region in general and Nagaland state in particular. Line drawing illustrations have been provided for easy identification.

Key words : *Saccogynidium irregularospinum*, Hepaticae, Extension of distributional range, Nagaland (North East India)

Introduction

The genus *Saccogynidium* Grolle belonging to Geocalycaceae was established by Grolle (1960). First of all, *Saccogynidium irregularospinum* C.H. Gao, T. Cao & M.J. Lai was described by Gao *et al* (2001). The occurrence of *S. irregularospinum* in the Indian bryoflora was not known before the report by Singh and Singh (2009). They have reported *S. irregularospinum* C.H. Gao, T. Cao & M.J. Lai as new generic record for Indian bryoflora from the Eastern district of Sikkim. The genus *Saccogynidium* Grolle can easily be distinguished from the other genera of the family Geocalycaceae in having densely rounded-papillose leaf cuticle, except the apical 1 or 2 cells, 8-20 oil bodies per leaf cell, plane or somewhat concave underleaves often with toothed at base, marsupium with short calyptras, 4-5 layer capsule wall and spores twice the diameter of elaters.

During our bryological studies in the state of Nagaland, an interesting species of *Saccogynidium* was collected from Mokokchung district. After critical studies the species has been identified as *S.*

irregularospinum C.H. Gao, T. Cao & M.J. Lai which has so far reported from China and Eastern District of Sikkim (India). Therefore, the occurrence of *S. irregularospinum* is the extension of distributional record for the North-East India (Sub-Eastern Himalayan Region) bryoflora in general and Nagaland state in particular.

Materials and Methods

Fresh specimens of *Saccogynidium irregularospinum* were collected from their natural localities at Changki Village in Mokokchung districts (26°19.207' N and 94°33.054' E), Nagaland (25°60' N to 27°40' N and 93°20' E to 95°15' E), North East India. The morphological characters of vegetative parts were studied under Leica digital Stereo-zoom (S6D). The anatomical studies of leaves cells and stem cells were studies under Leica digital Microscope (DM1000). The hand sections of stems were mounted in 30% aqueous solution of glycerin for observation. The photomicrographs and photomacrographs were taken under Leica

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digital Microscope (DM1000) and Leica stereo-zoom (S6D) respectively. The field photographs were taken with the help of Canon digital camera model SX120 with 10x optical zoom. The preserved specimens were deposited in the Department of Botany, Nagaland University.

Taxonomic Description and Discussion

Saccogynidium irregularospinum
C.H. Gao, T. Cao & M.J. Lai in *Bryologist* 104 (1): 129. 2001. [Type: China, Xizang (Tibet), Motou Co., Da Xing, 950 m, Su Yongge 3449 (Holotype: KUN; Isotype: IFP1)]. Plate 1. Figures a-n.

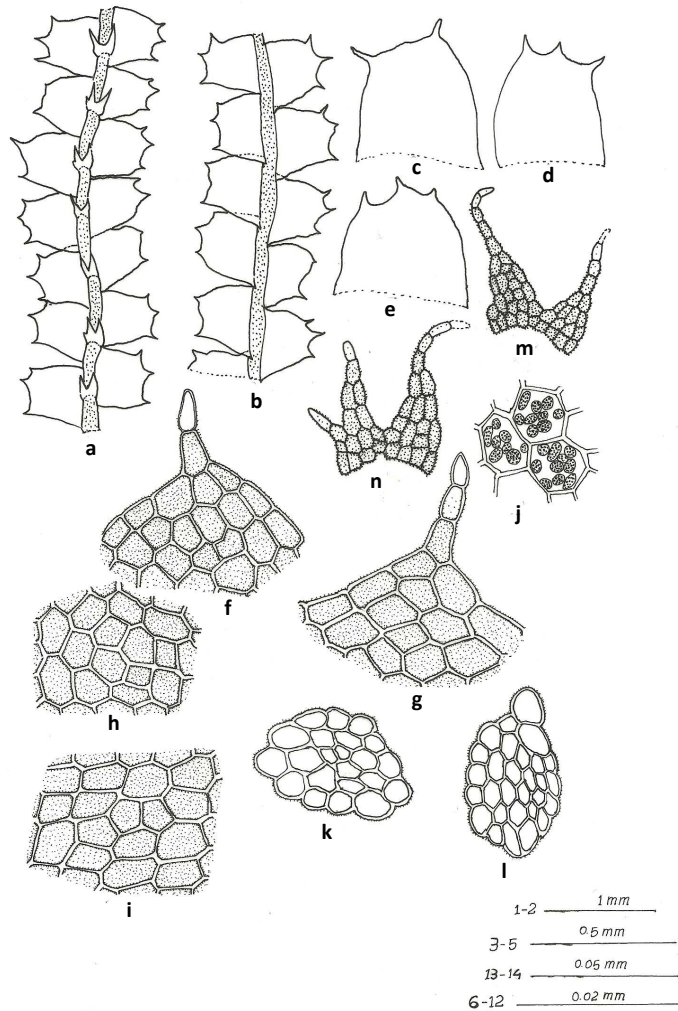
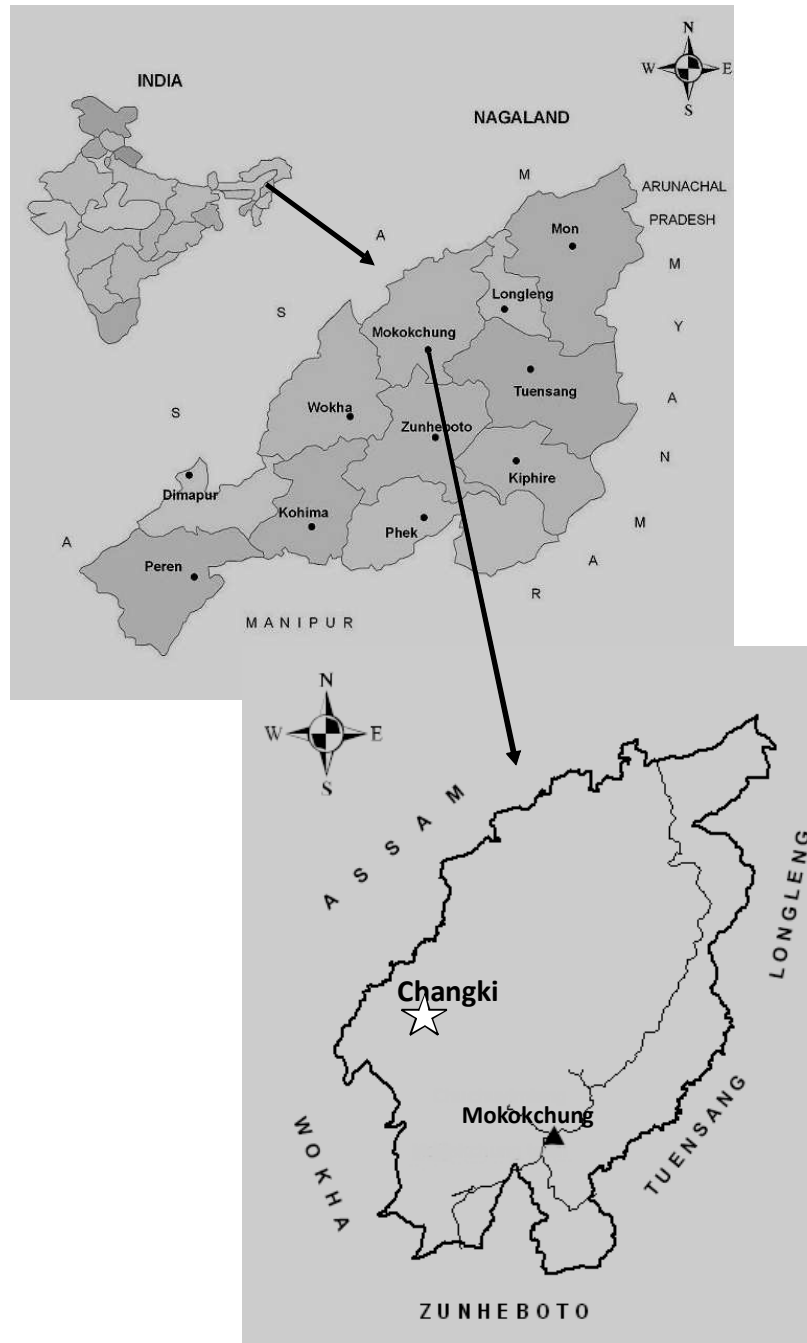


Plate I. Figs: a-n. *Saccogynidium irregularospinum* C.H. Gao, T. Cao & M.J. Lai
a). Portion of plant in ventral view; b). Portion of plant in dorsal view; c-e). Leaves; f-g). Apical leaf cells; h). Median leaf cells; i). Basal leaf cells; j). Oil bodies; k-l). T/S of stem; m-n). Underleaves.



Source: Geography Department, Nagaland University, Lumami.



☆ Distribution of *Saccogynidium irregularospinum* C.H. Gao, T. Cao & M.J. Lai

▲ District Headquarter.

Plants small, fragile, whitish yellowish green, dorso-ventral, 10-25 mm long, 0.5-1.2 mm wide including leaves, widely spreading, branched, branching intercalary, rarely terminal. Rhizoids hyaline, in bunch at the base of the underleaves. Stem oval, 75.2-79.2 x 108-116.5 μm in diameter, 6 cells across, cortical cells in 12-13 radial rows, thin walled, 17.5-27.6 μm long, cuticle finely papillose; medullary cells thin walled, 10-14 rows of cells, 16.8-26.2 μm long, 9.1-19.1 μm wide, medullary cells smaller than the cortical cells. Leaves distant to contiguous or contiguous to slightly imbricate, orbicular, rectangular, ovate, 0.43-0.47 mm long, 0.48-0.5 mm wide; wider than long, denticulate, dentation 2-4 per leaf or sometime entire; 2-6 cells long, 2-4 uniseriate cells at apex; cells thin walled, non-trigonal, rectangular, hexagonal; apical cells 21.9-33.7 μm long, 15.2-25.8 μm wide, middle cells 22.1-37.9 μm long, 15.2-26.2 μm wide; basal cells 24.9-42.6 μm long, 20-28.7 μm wide; leaves cuticle finely papillose; leaves oil bodies circular, rounded, 3-7 per cell. Underleaves distant, small, free, 0.22-0.28 mm long, 0.15-0.2 mm wide, sinus wide, deeply bilobed, 8-9 cells wide, 1-2 cells long in lamina; 1 lateral tooth arises from one lobed or sometime both; 4-8 cells long, 2-4 cells broad at base, 2-5 uniseriate cells at apex; cells non-trigonal, thin walled, rectangular, quadrate, hexagonal; cuticles cells finely papillose except at the apical cells (sometime penultimate apical cell has been observed without papillae). Androecia and gynoecia not seen.

Habitat and Ecology: Plants grow on soils (terricolous), on moist rocks (Saxicolous) in association with other Liverworts like *Heteroscyphus parvus*, *H. argutus*,

Jungermannia sp. and mosses along the roadside of moist shady areas.

Distribution: China, (Xizang, Taiwan); India-Sikkim.

Specimen examined: Nagaland, Mokochung district, Changki, 2300-3018 feet, 02.11.2010, KZR 10341.

Discussion

Saccogynidium irregularospinum is characterised by the stem densely covered with papillae, subquadrate to rectangular leaves, apex with 2-4 unequal teeth, densely papillose leaf cuticle, underleaf with deep bilobed with or without one tooth at both lateral margin and cuticle densely papillose. *Saccogynidium irregularospinum* is similar to *Saccogynidium muricellum* (De Not.) Grolle, but it differs from *Saccogynidium muricellum* in having broad subquadrate leaves with 2-4 teeth at the leaf apex and small underleaves deeply bilobed nearly to the base, often with 1 or 2 lateral teeth at the base.

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