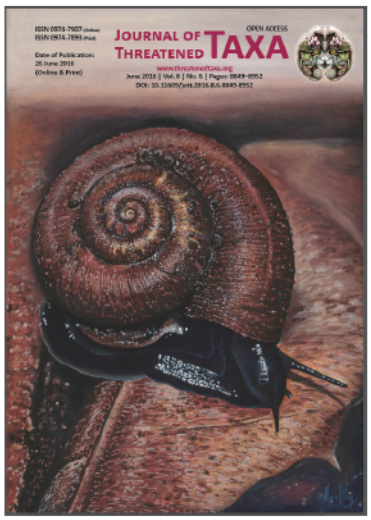

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NOTE

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Notes on three new records of foliicolous lichens from Karnataka Western Ghats, India

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Foliicolous lichens study in Asia is not exhaustive as of neotropics (Thor et al. 2000; Lücking 2008; Awasthi 2010; Singh & Pinokiyo 2014). Being a paleotropical country India provides a favorable habitat for the foliicolous lichens especially in the Western Ghats and the eastern Himalayan regions. Although the lichenological studies in India started in the early 18th century (Fries 1825), the first monograph of foliicolous lichens was published in 1952 by Santesson. After that only a few people worked on this group in India (Sinha & Singh 1987; Singh et al. 2004; Pinokiyo et al. 2006; Awasthi 2010; Singh & Pinokiyo 2003, 2014). Singh et al. (2004) classified the Western Ghats as the region with the highest endemic lichens. Exhaustive collection and detailed enumeration reports of foliicolous lichens has not been done in this region. During the recent field survey in the Western Ghats, India, we collected many foliicolous lichen including several new records. In this paper we present some of the new reports of the foliicolous lichens from the areas of Western Ghats in Karnataka.

Materials and Methods

Foliicolous lichen specimens were collected randomly from different localities of the Western Ghats. Leaves of the phorophytes reaching a height of up to three meters were considered for sampling and fallen leaves were also collected. The leaf samples containing lichens were collected in a paper cover. A stereo microscope, Carl Zeiss Stemi 2000C, was used for morphological studies and a compound microscope, Carl Zeiss Primo Star, was used for studying the anatomy of thalli and fruiting bodies. Anatomical characteristics were observed on hand cut sections mounted in water and 10% KOH (K), all measurements were taken in water. Photographs were taken using an AxioCamERc5s camera and the images were analyzed using Axio Vision LE (AxioVs40 V 4.8.2.0) software. The hemiamyloid reaction of the ascus was studied in Lugol's solution (0.2% I and 0.6% KI) after pretreatment with KOH. Standard manuals (Santesson 1952; Awasthi 1991; Lücking 1991, 1992, 2008) were used for the identification of species. Voucher specimens were deposited in the herbarium of the Department of Applied Botany, Kuvempu University, Jnanasahyadri, Karnataka, India.

Taxonomic treatment of the new records from the Western Ghats

***Bapalmuia palmularis* (Müll. Arg.) Sérus.** (Pilocarpaceae)

Nord. J. Bot. 13: 451, 1993. = *Bacidia palmularis* (Müll. Arg.) Zahlbr., Cat. Lich. Univers. 4: 231, 1926.

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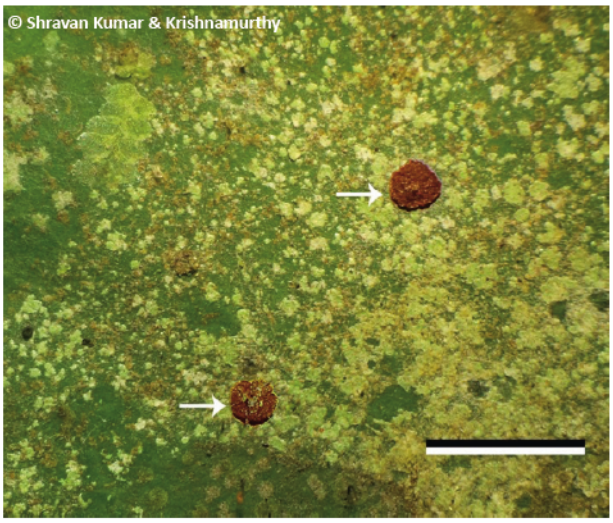

Image 1. *Bapalmuia palmularis*

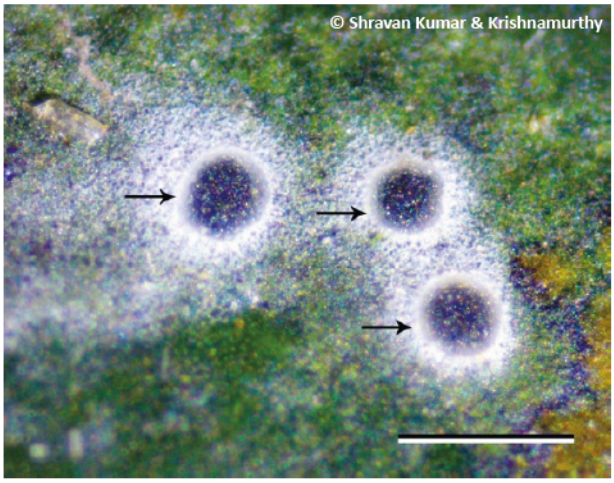

Image 2. *Byssoloma leucoblepharum*

Thallus smooth, effuse, ecorticate, thin, 3–6 mm across; photobiont - a species of chlorococcaceae; 5–7 µm diam. Ascomata-apothecia, sessile, evanescent; excipulum prosoplectenchymatous. Asci 8-spored; ascospores hyaline, acicular-filiform with obtuse ends, 20–35 – septate, 70–120 x 1.5–2.5 µm long.

Specimens examined: India: 5742, 04.xii.2013, Karnataka: Chikkamagaluru District: Chandra-Drona Parvatha: shola forest on the way to Mullaiahnagiri Peak, 13^{0}23'25"N & 75^{0}42'59"E, 1693m, epiphyllous on *Memecylon malabaricum* (C. B. Clarke.) Cogn., coll. Shravan Kumar S. & Y.L. Krishnamurthy (Image 1).

Remarks: The genus is characterized by elongated dichotomously branched lobes of the thallus with black bordered margins.

Ecology and Distribution: The genus *Bapalmuia* (*Sérus*)., comprises 17 species, which are distributed in the pan-tropical region of the world. In India only one species (*B. palmularis*) is reported from Arunachal Pradesh, Tamil Nadu, West Bengal. In the present survey it is collected from Karnataka and Tamil Nadu. It usually grows in shady places on the leaves of the small shrubs.

***Byssoloma leucoblepharum* (Nyl.) Vain.** (Pilocarpaceae)

Dansk Bot. Ark. 4: 23, 1926. = *Pilocarpon leucoblepharum* (Nyl.) Vain., Acta Soc. Fauna Fl. Fenn. 7(2): 89, 1890. = *Lecidea leucoblephara* Nyl., Annls Sci. Nat., Bot., sér. 4 19: 337, 1863.

Thallus epiphyllus, greenish-grey, smooth, continuous, 12–30 mm across. Photobiont a species of Chlorococcaceae, 5–8 µm diam. Apothecia scattered, adnate-sessile, 0.3–0.6 mm diam., 100–150 µm diam. high; disk brown, epruinose, slightly convex; margin white, thin, arachnoid. Excipulum spreading laterally on the surface of the thallus, K-. Paraphyses simple-sparingly branched. Asci 8-spored, clavate, 35–45 x 10–16 µm. Ascospores hyaline, obliquely arranged,3-septate, sometimes young ones 1–2-septate, slightly constricted at septa, obtuse at ends, bacillary-oblong, 8–18 x 2–4 µm.

Specimens examined: 5681, 15.iii.2013, India: Karnataka: Chikkamagaluru District: Moodigere: Tea plantation, 13^{0}48'52"N & 74^{0}57'55"E, 602m, epiphyllous on *Camellia sinensis* (L.) Kuntze, coll. Shravan Kumar S. & Y.L. Krishnamurthy (Image 2).

Remarks: The species can easily be distinguished from the other species of the genus by the presence of blackish hypothallus. It usually grows on the leaves of tea bushes.

Ecology and Distribution: The genus *Byssoloma* Vain., is represented by 41 foliicolous species in the world of which five are reported from India (Singh & Pinokiyo 2014). It usually grows on the leaves of tea bushes and other dicotyledonous shrubs in tropical and subtropical areas. It has a pantropical distribution. In India it is reported from Arunachal Pradesh, Manipur, Meghalaya, Nagaland, Tamil Nadu and West Bengal. In the present study it is collected from Karnataka.

***Gyalectidium filicinum* Müll. Arg.** (Gomphillaceae)

Flora 64: 101, 1881.= *Ectolechia filicina* (Müll. Arg.) Vain. J. Bot. 34: 206, 1896. = *Sporopodium filicinum* (Müll. Arg.) Zahlbr. Cat. Lich. Univers. 2: 679, 1924.

Thallus crutaceous, whitish-green, continuous, effuse, finely verrucose due to incrustation with calcium oxalate crystals, sometimes with hyphophores, 1-8 mm

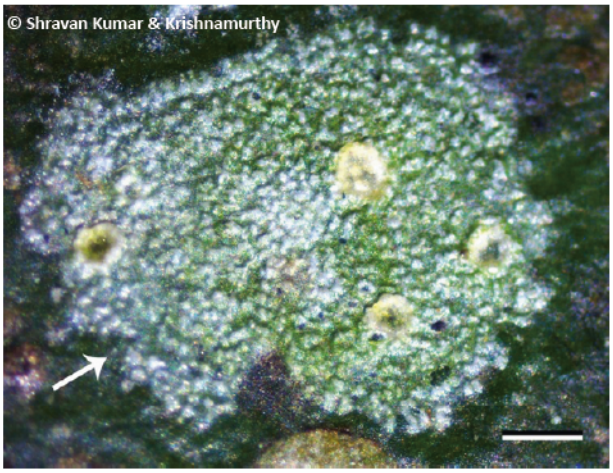

Image 3. *Gyalectidium filicinum*

across; verrucae white, 0.02-0.05mm diam. Hypothallus absent. Photobiont - a species of Chlorococcaceae; rounded, 8–12 µm diam., cells in one to several layers, rounded, irregularly arranged. Apothecia immersed but open, circular-rarely lobate, 0.2–0.3 mm diam., greenish-white; asci1-spored; ascospores hyaline, muriform, oblong-ellipsoid, 22–38 x 9–16 (-20) µm. Conidiomata - hyphophores, with well-developed scales, pale yellowish-white, broadly squamiform, with acute lateral projections, 0.3–0.6 mm long, 0.3–0.4 mm broad; conidia produced in moniliform chains; pycnidia not seen.

Remarks: Peculiar greenish-grey disc with abundant epithecial algae is the key characters which differentiate *G. filicinum* from all other species of the genus. This species has wide ecological amplitude and found in exposed conditions in evergreen forests at lower elevations.

Ecology and Distribution: It grows on the leaves of *Hopea parviflora* and *Psychotria nigra* observed during the early winter season in shola forest. It has pantropical-subtropical distribution. In India it is reported from Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tamil Nadu and West Bengal. The present paper describes it from Karnataka.

Specimens examined: 5524, 18.xi.2011, India: Karnataka: Shivamogga District: evergreen forest, on the way to Kodachadri Hill, 14^{0}56'59"N & 74^{0}35'11"E, 864 m, epiphyllous on *Persea macrantha,* coll. Shravan Kumar S. & Y.L. Krishnamurthy (Image 3).

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