

Four foliicolous lichens new to Indian flora

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DURING the course of studies on the foliicolous lichens of India under the project "All India Co-ordinated Project on Taxonomy (AICOPTAX)", several lichen specimens collected earlier from Arunachal Pradesh have been examined. Their study has resulted in the discovery of 4 species, viz. *Calopadia perpallida* (Nyl.) Vêzda, *Mazosia tumidula* (Stirt.) Müll. Arg., *Tapellaria epiphylla* (Müll. Arg.) R. Sant. and *Tapellaria molleri* (Henriques) R. Sant. as new records to Indian lichen flora. The specimens examined are lodged in Assam herbarium at Botanical Survey of India, Eastern Circle, Shillong.

ECTOLECHIACEAE

Calopadia perpallida (Nyl.) Vêzda, Folia Figs 1-3 Geobot. Phytax. Praha, 21: 215. 1996; *Lopadium perpallidum* (Nyl.) Zahlbr., Lichenes, in Engler Prantle, Die Natürlichen Pflanzen. 1:1. 1905; R. Sant., Symb. Bot. Upsal. 12 (1): 531. 1952; *Lecidea perpallida* Nyl., Ann. Sci. Nat. Ser. 15: 354. 1863.

Thallus greenish grey, effuse with irregular margin, roughened with developing apothecia, up to 20 mm across. Apothecia up to 1 mm in diam., constricted at base, marginate; margin crenulate, pale greyish; disc dark brown, convex, pruinose; pruina pale greyish; exciple paraplectenchymatous, uncoloured; hymenium hyaline, 140-180 µm high; hypothecium brown to dark brown; asci cylindrical to narrowly clavate, 1-spored, 100 – 125 x 16–22 µm; ascospores muriform, ellipsoid to oblong, 80-105 x 20-28 µm; paraphyses simple to sparingly branched.

Morphologically present species is closely allied to *Calopadia foliicola* (Fée) R. Sant., which has 2-4-spored asci.

Distribution-Pantropical regions of the world.

Specimens examined-Arunachal Pradesh: Tirap district, Miao, alt. 900m, Singh 11802 g, Singh 11805; West Siang district, on the way from Payun to Gassang, alt. 1200m, Singh 12979 b.

Tapellaria epiphylla (Müll. Arg.) R. Sant., Figs 4-6 Symb. Bot. Upsal. 12(1): 505. 1952; Thorold, J. Ecol. 40: 129. 1952; *Lopadium epiphyllum* Müll. Arg., Flora, 64: 107. 1881.

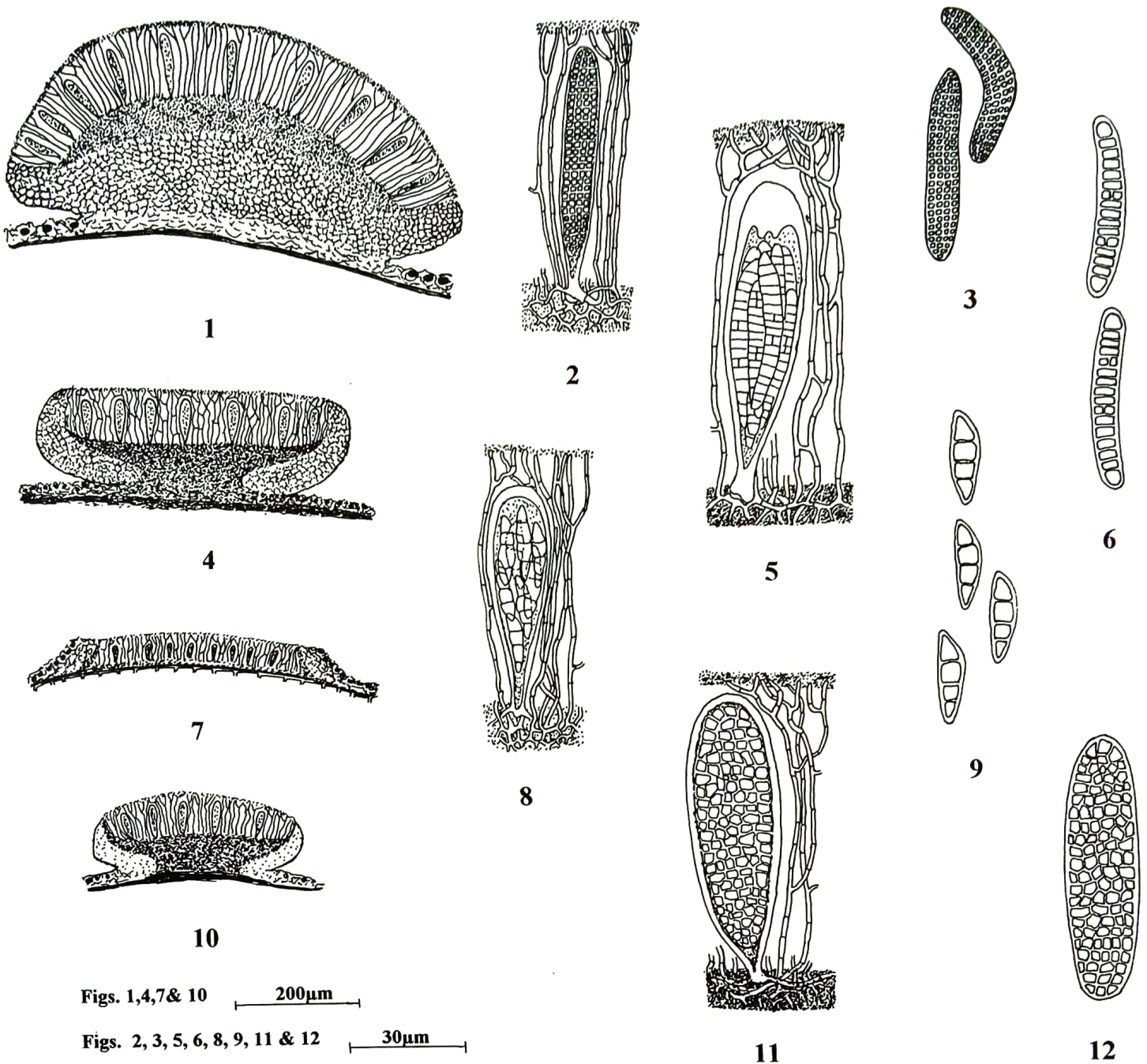
Thallus greenish grey to whitish grey, up to 10 mm across, smooth; peripheral part slightly dispersed. Apothecia 0.2 - 0.5 mm in diam., constricted at base; margin indistinct; disc black, convex, nonpruinose; exciple paraplectenchymatous, uncoloured, hymenium hyaline, 140-180 µm high; hypothecium brown to dark brown with violet tinge, central portion reaches to the substratum; asci clavate, 1 spored, 70-100 x 20-25 µm; ascospores ellipsoid, muriform, 60-95 x 18-22 µm; paraphyses branched and anastomosed.

This species is close to *Tapellaria nana* R. Sant. but can be easily separated from the latter species by the absence of prunia.

Distribution- Tropical America and Hawaii, extending into subtropical regions.

Specimens examined- Arunachal Pradesh: Debang Valley district, on the way to Mehao Lake from Abango to Anda camp foot track, alt. 500-1300m, Singh & Barua 11786; Upper Subansiri district, Taliah, Nachoo foot track, alt. 500m, Singh & Barua 12931 g, 12933 h.

Tapellaria molleri (Henriques) R. Sant., Figs 10-12 Symb. Bot. Upsal. 12(1): 501. 1952; Thorold, J. Ecol. 40: 129. 1952; *Lecidea molleri* Henriques apud Nyl., Lich. Insul. Guineen.: 20. 1889.



Figs 1-3. *Calopadia perpallida* (Nyl.) Vêzda, 1. V. S. of apothecium, 2. Ascus and paraphyses, 3. Ascospores; Figs 4-6. *Tapellaria molleri* (Henriques) R. Sant 4. V. S. of apothecium, 5. Ascus and paraphyses, 6. Ascospores; Figs 7-9. *Mazosia tumidula* (Stirt.) Müll. Arg.; 7. V. S. of apothecium, 8. Ascus and paraphyses, 9. Ascospores; Figs 10-12. *Tapellaria epiphylla* (Müll. Arg.) R. Sant 10. V. S. of apothecium, 11. Ascus and paraphyses, 12. Ascospores.

Thallus whitish grey to greenish grey, smooth to slightly rough, continuous, thin. Apothecia 0.1 - 0.3 μm, constricted at base, marginate; margin dark-greyish; disc black, sometimes very dark brown, nonpruinose; exciple light brown to colourless, paraplectenchymatous; hymenium, hyaline, up to 140

μm high; hypothecium dark brown with purplish tinge; asci clavate, 8 spored, thick walled, 70-100 x 17-30 μm; ascospores transversely septate to submuriform, narrowly ellipsoid, 70-90 x 17-25 μm; paraphyses branched and anastomosed.

The species is closely related to *Tapellaria phyllophila* (Stirt.) R. Sant. which has 2-4 spored asci.

Distribution - Tropical Africa and America.

Specimens examined - Arunachal Pradesh: Debang Valley district, on the way to Mehao Lake, from Abango to Anda Camp foot track, alt. 500-1300m, Singh & Barua 11747 b, 11748 b; Subansiri district, Ranga-Daporizo, near Musi-Mugli, alt. 230-500m, Singh & Barua 11931 c; near Loa Basti alt. 230-500m, Singh & Barua 11933 b; Near Sadal, alt. 230-500m, Singh 11938 b.

OPEGRAPHACEAE

Mazosia tumidula (Stirt.) Müll. Arg. Figs 7-9 Durrand & Pitter, Bull. Soc. Bot. Belg. **30**: 77. 1891; R. Sant., Symb. Bot. Upsal. **12(1)**: 115. 1952; *Platygrapha tumidula* Stirt., Proc. Phil. Soc. Glasgow, **11**: 103. 1878.

Thallus grey to greenish grey to almost off-white with irregular margin, ca. 8 mm across, verrucose; verrucae white, small, numerous. Apothecia 0.3-0.4 mm in diam., immersed, marginate; margin sharply sloping; disc black, slightly nitidous, nonpruinose;

excipullum dark brown, covered by thalline layer; hymenium 40-70 µm high; hypothecium light brown, thin; asci clavate, 8 spored, 40-50 x 12-16 µm; ascospores 3 septate, fusiform, microcephalic, 18-22 x 4-6 µm; paraphyses branched and anastomosed.

This species can be easily distinguished by its 3 septate ascospores, however, morphologically it is close to *Mazosia praemorsa* (Strit.) R. Sant. which has 5-7 septate ascospores.

Distribution- Pantropical regions of the world.

Specimens examined- Arunachal Pradesh: Tirap district, Miao, alt. 900m, Singh 11802 f, West-Siang district, Keying, alt. 850m, Singh 12895 b, 12898 n; East-Siang district, Ninging, alt. 750m, Singh 12982 h, Tuting-Kapu foot track, alt. 750-800m, Singh 12983 c.

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ERRATA

Magnification of the text figures in the paper "Endophytic fungal infection in a moss from Nepal by Nupur Bhowmik and Vineeta Rai (Geophytology 32(1&2): 39-45) may kindly be read as follows :

Fig. 1: 1. xca 1; 2. xca 5; 3-4. xca 1; 5-6. xca 5

Fig. 2: 1-2. xca 50; 3. xca 10; 4. xca 250

Fig. 3: 1-3. xca 50; 4. xca 280

Fig. 4: 1. xca 50; 2. xca 160; 3. xca 40; 4. xca 280

Fig. 5: 1. xca 30; 2. xca 150; 3. xca 30; 4. xca 150; 5. xca 20

Fig. 6: 1. xcal; 2-3. xca 1; 4. xca 60

Fig. 7: 1. xca 300; 2. xca 300; 3. xca 300; 4. xca 500

Inconvenience caused to readers is regretted.