Macrolichen taxa of Teloschistaceae from India

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Abstract. Morphotaxonomic description of one species of Teloschistes and 5 species of Xanthoria occurring in India are given. A new combination Xanthoria fallax var. subsofrediosa (Räs.) Awas. is also made.

Keywords. Indian lichens; Teloschistaceae; macrolichen taxa.

1. Introduction

The lichen family Teloschistaceae sensu Zahlbruckner (1926) comprised the 3 foliose-fruticose genera Xanthoria (Fr.) Th.Fr., Teloschistes Norm. and Lethariopsis Zahlbr. The circumscription of the family was expanded by Poelt (1973) by inclusion of the crustose genera Brigantiaea Trev., Caloplaca Th.Fr., Fulgensia Mass. and D Not., Protoblastenia (Zahlbr.) Steiner and Xanthopeltis R. Sant., which similarly contained the yellow red to red anthraquinone pigments (K+ red violet) in the thallus, biatorine to lecanorine apothecia and typically colourless, polaridiiblastic spores. The genera Caloplaca, Fulgensia and Protoblastenia comprised the family Caloplaceae sensu Zahlbruckner (l.c.). Henssen and Jahns (1974) followed the same circumscription of Teloschistaceae as that of Poelt except that Brigantiaea is not mentioned. Hafellner (1981) has lately suggested the removal of Brigantiaea into an independent family Brigantiaeaceae. Presently two new genera Ioplaca Poelt and Leproplaca Nyl. are also considered to belong to Teloschistaceae.

The genera Teloschistes (thallus fruticose) and Xanthoria (thallus foliose) are the only two belonging to the category of macrolichens occurring in India and are represented by 1 and 5 taxa, respectively. Morphotaxonomical details of them are given below.

2. Taxonomic account

2.1 Teloschistes Norm.


Thallus fruticose, erect to pendulous, lacking rhizinae, corticated on all sides by longitudinally disposed conglutinate hyphae. Apothecia lateral to terminal, lecanorine. Spores polar- di- to tetra-locular. Phycobiont green alga.

A single species is known from India.

2.2 Teloschistes flavicans (Sw.) Norm.

Thallus corticolous, rarely terricolous, fruticose, erect to procumbent or subpendulous, up to 4 cm tall, deep orange, yellowish orange, pale yellow to decolourized yellowish grey; apices brown black; dichotomously, trichotomously or irregularly branched; branches intricate, sinuate, gradually tapering, (0.3) 0.5-1 mm thick, rounded to angular and somewhat flattened before division; surface smooth to scabrid due to dense soralia; soralia orbicular to elongate with white, more or less granular soredia. Cortex irregular in outline, more or less lacerated adjoining the algal stratum; medulla subfistulose. Apothecia absent in specimens examined (when present 1-10 mm in diam., margin eflbrillose; asci 8 spored; spores oblong fusiform to ellipsoid, polaribilocular with thick middle septum, 12-20 × 7-9 μm). Thallus K + violet.

The colour of the thallus is dependent on the amount of exposure to sunlight and therefore variable. In the same thallus the exposed fronds on the surface ate bright orange, while the less exposed fronds underneath are yellow to pale yellow or greyish. Since bright orange colour is apparently due to greater exposure to sunlight, the variety *croceus* (Ach.) Muell. Arg. does not seem to deserve a taxonomic identity.

The taxon is widely distributed in warm subtropical to temperate regions of the world. In India it has often been found growing in association with *Heteroderma leucomela* subsp. *boryi* (Fée) Swinsc. and Krog and species of *Parmelia*. Specimens examined: Karnataka, Mysore, 1956, Awasthi 3590 (Awas). Tamil Nadu, Nilgiri hills, Ootacamund Botanic Garden, alt. 2100 m, 1959, Awasthi 4424 (Awas); Ootacamund–Mysore road at about 8 miles, 1959, Awasthi 4523 (Awas); Kodanad tea estate, Awasthi and Singh 70:1523 (LWU); same area, in shola, Singh, 71:1030 (LWU); Pykara forest range, Awasthi and Singh 71:213; Palni hills, Kodaikanal, alt. 2100 m, 1953, Høeg 2555 (Awas); same area, Awasthi, 1959, Awasthi 4413 (Awas); Foreau and Awasthi 4288 (Awas); near Pillar rocks, Awasthi and Singh 70:207 (LWU); Singh 70:690 (LWU); near Berijam lake, 1959, Foreau 4105 (Awas); Panneikoda, 1959, Foreau 4123 (Awas); same area, 1800 m, on ground by road side, Awasthi and Singh 70:575 (LWU); on way to Guvangi, Singh 73:43 (LWU).

2.3 *Xanthoria* (Fr.) Th.Fr.


Thallus foliose, appressed to suberect, dorsiventral, both sides corticated, usually with rhizinae on under surface. Apothecia sessile or subsessile, rounded, lecanorine; asci 8 spored; spores hyaline, polaribilocular. Thallus K + red violet.

Key to the species:
1a. Thallus isidiate and/or sorediate
   2a. Thallus with laminal granular isidia, sometimes sorediate . . . . . . . . . . . . (5) *X. sorediata* (Vain.) Poelt

2b. Thallus marginally sorediate or pseudoisidiate, true isidia absent.
   3a. Lobes narrow (1 mm), incised, apically narrower, with soredia or pseudoisidia  . . . . . . . . . . . . (1) *X. candelaria* (L.) Arn.
   3b. Lobes broader (1-2 mm), flattened, apically expanded, often with colourless pale yellow cilia (rhizinae) protruding beyond margin, soredia present or absent . . . . . . . . . . . . (3) *X. fallax* var. *subsorediosa* (Räs.) Awas.
2.4 Xanthoria candelaria (L.) Arn.


Thallus corticolous or saxicolous, yellow orange; lobes appressed to suberect, 1 (1-5) mm wide, dissected and becoming narrower apically; margin with soredia or pseudo-isidia. Apothecia 0.5-1.5 mm across, sessile; disc orange, margin paler; spores 9-15 x 6-10 μm.

The taxon is restricted in temperate to alpine areas in western Himalaya in India, though it is widely distributed in Europe.

Specimens examined: Jammu and Kashmir, Gulmarg, alt. 2560-2800 m, on bark of tree, Dange 77.425 (LWU)—rather atypical. Uttar Pradesh, Chamoli district, Badrinath temple area, alt. 3250 m, on boulder, Dange 76.885 (LWU)—fertile. 76.791 (LWU)—pr. p.; Uttarkashi district, on way to Gangotri, alt. 3200 m, on boulder, 1976, Awasthi and Singh 8164 (Awas).

2.5 Xanthoria elegans (Link.) Th.Fr.


Thallus saxicolous, often suborbicular in out line if undisturbed in plane surface, adnate, mostly up to 3 cm across, rarely up to 7 cm across, reddish brown, reddish orange to deep orange; laciniae radiating, compact, sometimes discrete, 0.25-0.7 (1) mm wide, convex, rounded at apices, smooth to verruculose, usually the peripheral about 5 mm wide zone with contiguous intact laciniae, inwards (centrally) laciniae indistinct due to dense and crowded apothecia. Isidia and soredia absent. Apothecia sessile, up to 1 mm across, constricted at base; disc plane to slightly convex, deep red brown, margin paler; spores 12-16(18) x 6-8(10) μm, with a 4-5 μm thick transverse septum.

The taxon is widely distributed in upper temperate, alpine to frigid zones all over the world.

Specimens examined: Himachal Pradesh, Lahul–Spiti valley, alt. 3500-3600 m, 1952, Hoeg 1571, 1625, 1673, 1715, 1717 (Awas); Kunjan Pass, alt. 4445 m, 1984, Divya Darshan Awasthi s.n. (Awas); Jammu and Kashmir, Srinagar, Sankaracharya hill, alt. 1650 m, Mujoo 70.851 (LWU); Pahalgam, Chandanbari, alt. 2250 m, Dange 77-153, 77-296, 77-303, 77-309, 77-319, 77-370, 77-415 (LWU). Uttar Pradesh, Almora district, Phurkia near Pindari glacier, alt. 3450 m, 1950, Awasthi and Awasthi 788 (Awas); same locality, 1970, Awasthi 7734 (Awas); Chamoli district, Badrinath temple area, alt. 3150 m, Dange 76-792, 76-863 (LWU); Pithoragarh district, near Milam glacier, alt. 3600 m, 1950, Awasthi 828 (Awas); Uttarkashi district, near Gomukh, alt. 3800 m, 1976, Awasthi and Singh 8426, 8576 (Awas).
2.6 Xanthoria fallax (Hepp) DR.


var. subsorediosa (Räs.) Awasthi comb. nov.


Thallus mostly corticolous, rarely saxicolous, orange yellow light yellow to yellow brown, suborbicular or not, often several thalli growing close together forming large patches, lobes up to 2 mm wide, plane to somewhat convex, appressed to generally apically suberect with yellowish cilia (rhizinae) projecting beyond the lobe margin, lobes laterally sorediate or soredia absent specially in young thalli. Apothecia of 10%, 13(5) mm across, disc deep orange with paler margin, yellow to pale yellow cilia sometimes projecting from the base of the receptacle; spores 12–14 × 4.5–6.5 μm with thick middle septum.

The variety is restricted in the western Himalaya only.

Specimens examined: Himachal Pradesh, Manali, Awasthi s.n. (LWU); Parbati river valley, alt. 1650 m, Awasthi and Dange 75-480, 75-90, 75-181, 75-357, 75-685 (LWU). Jammu and Kashmir, Srinagar, Sankaracharya hill, 1953, Awasthi 2619 (Awas); Acchabal, Raghubir (Awas); Pahalgam, alt. 2100 m 1953, Awasthi 2633 (Awas); same locality, Dange 77-49, 77-122, 77-234, 77-239, 77-396 (LWU). Uttar Pradesh, Chamoli district, Badrinath area, Dange 76-867, 76-881 (LWU); Uttarkashi district. Gomukh area, alt. 3000 m, 1976, Awasthi and Singh 8270, 8155, 8163, 8179 (LWU).

2.7 Xanthoria parietina (L.) Fr.


Thallus corticolous on trunks or twigs of trees, appressed to somewhat ascending along margin, up to 5 cm across, orange yellow or darker orange; laciniae plane to wrinkled and folded, imbricate or discrete, up to 3 mm wide, often flabellate at apices, cilia (rhizinae) not protruding beyond the margin of lobes. Apothecia usually dense and crowded, 1.5–2(3) mm across, constricted at base or substipitate; disc orange brown, concave with thin pale margin; spores variable in shape from oval to ellipsoid, 11–16(18) × 6.8–10 μm, with thick septum in the middle.

The taxon is widely distributed in temperate areas throughout the world, but is so far known from Jammu and Kashmir.

Specimens examined: Jammu and Kashmir, Srinagar and environs, 1953, Awasthi 2620 (Awas); 1954, comm. Seshadri (Awas); same locality, Dange 77-565, 77-570 (LWU); Sankaracharya hill, Acchabal and Harwan, Mujoo several specimen (LWU); Pahalgam, 1953, Awasthi 2623 (Awas); Dange 77-184 A(LWU).

2.8 Xanthoria sorediata (Vain.) Poelt

Thallus saxicolous, suborbicular, appressed, up to 3 cm across, orange brown to reddish orange brown; laciniae radiating, discrete, up to 1 mm wide, plane or convex, apices often polyfidi; central part of the thallus with granular isidia and sometimes with soredia. Apothecia absent.

The taxon is widely distributed in temperate-alpine regions of Europe.

Specimens examined: Uttar Pradesh, Almora district, above Phurkia near Pindari glacier, alt. 3300 m, 1950, Awasthi and Awasthi 759 (Awas); Chamoli district, Badrinath temple area, alt. 3125-3200 m, Dange 76.750, 76.751, 76.789, 76.902 (LWU).

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