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Two new foliicolous ascomycetes from Bhimashankar Wildlife Sanctuary, (M. S.) India

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ABSTRACT

A new species of the genus *Asterina* on *Carallia brachiata* and genus *Sarcinella* on *Eleagnus conferta*, collected from Bhimashankar Wildlife Sanctuary of Maharashtra State, India, have been described and illustrated here.

Keywords – *Asterina* – Black mildew – foliicolous fungi – *Sarcinella*.

INTRODUCTION

Dark or Black Mildews are black colony forming fungi often considered as minor plant pathogens; which are obligate, superficial parasites and are supposed to be host specific. They follow very typical pattern for their structures and habitat; and differentiated into several taxonomic groups, viz. Hyphomycetes, Meliolales, *Schiffnerula*, Asterinales and its anamorphic forms (Hosagoudar 2009).

During collection of foliicolous ascomycetous fungi undertaken in a Bhimashankar Wildlife Sanctuary (situated in Western Ghats region of Maharashtra State) India, two undescribed species of black milews were collected which belongs to a species of genus *Asterina* (Family-Asterinaceae) and genus *Sarcinella* (Family-Schiffnerulaceae). *Asterina* is the largest genus in family Asterinaceae comprising more than 584 species (Bhise et al. 2014a, b, 2015; Hosagoudar and Abraham, 2000; Hosagoudar 2012; Patil et al. 2014) while *Sarcinella* is the anamorphic stage of genus *Schiffnerula* and it is represented by 49 species from India (Sabeena & Hosagoudar, 2018). There were no earlier records of genus *Asterina* on *Carallia brachiata* (Rhizophoraceae) and *Sarcinella* on *Eleagnus conferta* (Eleagnaceae) (Farr & Rossman, 2019; Hosagoudar 2011, 2012). Hence, based on morpho-taxonomical characters and host specificity these are treated as new species.

MATERIALS AND METHODS

The leaves and twigs of host plants infected with black mildews were collected in polythene bags and pressed neatly and dried with the help of blotting papers; the well dried specimens were preserved in standard size herbarium packets in folders of Norway paper. For identification of host plants local floras (Singh & Karthikeyan, 2000, 2001) were used; and their current status was confirmed by referring article regarding Floristic diversity of Bhimashankar Wildlife Sanctuary (Rahangdale & Rahangdale 2017). The black mildew fungi were identified and their distributional records were checked by using standard literature (Bilgrami et al. 1991; Hosagoudar 2003, 2011, 2012; Jamaluddin et al., 2004; Sabeena & Hosagoudar, 2018). For identification of each fungal species, both micro and macro-morphological characters were studied well. Semi-permanent slides were prepared by using peeling solution (Patil & Patil, 2017), while for microscopic preparation, lactophenol and cotton blue were used. Morpho-taxonomical details were observed with the help of compound light microscope and for photomicrography Leica DM 2000 fluroscence microscope equipped with digital camera was uesd; illustrations were prepared with mirror type Camera Lucida. For accession, holotype specimens were deposited at Herbarium Cryptogamae Indiae Orientalis (HCIO), IARI, New Delhi (India).

RESULTS

Taxonomy

Asterina caralliae Lonkar, Patil & Salunkhe *sp.nov.*

MycoBank MB 826813

Etymology: The specific epithet is based on name of the host genus.

Type: India, Maharashtra: Bhimashankar Wildlife Sanctuary, on living leaves of *Carallia brachiata* (Lour.) Merr. (Rhizophoraceae); 19/01/2018, HCIO 52170.

Colonies amphigenous, thin, spreading, irregular, not very distinct, scattered over the leaf surface, rarely confluent, crustose, up to 4 mm in diameter. Hyphae substraight to undulate, flexuous, thin, brown, branching opposite to alternate, at acute to wide angles, loosely reticulate, cells 8-23 × 4-7 µm. Appresoria unicellular to bicellular, mostly unicellular, alternate to unilateral, rarely opposite (less than 1%), versiform, angular, irregularly and shallowly lobed, 7-15 × 7-16 µm. Thyriothecia flattened globose, orbicular, margin crenate to fimbriate, stellately dehisced at centre, brown to black, up to 200 µm. Asci globose to oval, 32-45 × 29-39 µm. Ascospores 1-septate, oblong, constricted at septa, both cells globose, smooth to tuberculated, 25-30 × 11-13 µm. Pycnothyria same as thyriothecia, smaller in size, up to 136 µm. Pycnothyriospores ovate, oblong, globose, unicellular, brown, up to 13-23 × 13-18 µm.

Habitat and Distribution: Inhabiting living leaves of *Carallia brachiata* (Lour.) Merr. (Rhizophoraceae), Gupt Bhimashankar, 19°04'12.95" N, 73°32'09.58" E, elev. 936 m, 05/02/2017, Lonkar S. V., DKASC1377; In front of Bhimashankar Temple, 19°04'19.26" N, 73°32'09.65" E, elev. 929 m, 19/01/2018, Lonkar S. V., DKASC 1404.

Note: *Meliola anisophylleae* was recorded on *Carallia brachiata* by Hansford (1961); but there was no any record found regarding *Asterina* or member of family Asterinaceae on the same host. Hence, this is the first report of genus *Asterina* on *Carallia brachiata* and that of family Rhizophoraceae.

Sarcinella eleagni Lonkar, Patil & Salunkhe *sp.nov.*

MycoBank MB 826829

Etymology: The specific epithet is based on name of the host genus.

Type: India, Maharashtra: Bhimashankar Wildlife Sanctuary, on living leaves of *Eleagnus conferta* Roxb. (Eleagnaceae)); 25/01/2018, HCIO 52171.

Colonies strictly epiphyllous, thin, circular to spreading, confluent, crustose, dark black, up to 7 mm in diameter. Hyphae straight to substraight, branching opposite to alternate, at acute angles, loosely reticulate cells 11-30 × 4-7 µm. Appresoria unicellular, hemispherical, globose to subglobose, entire, alternate to unilateral, 7-9 × 7-13 µm. Sarciniform conidiophores micronematous, mononematous, simple, straight; arise on lateral side of hyphae, 9-11 µm. Sarciniform conidia many, globose, 4-6 septate, constricted, brown, 30-41 × 23-36 µm.

Habitat and Distribution: Inhabiting living leaves of *Eleagnus conferta* Roxb. (Eleagnaceae), Kondhwal near stream, 19°06'23.63"N, 73°33'14.69"E, elev.932 m, 25/01/2018, Lonkar S. V., DKASC 1399.

Note: *Asterina eleagni* was recorded on *Eleagnus conferta;* but this is the first report of anamorphic genus i.e. *Sarcinella* on the same host plant.

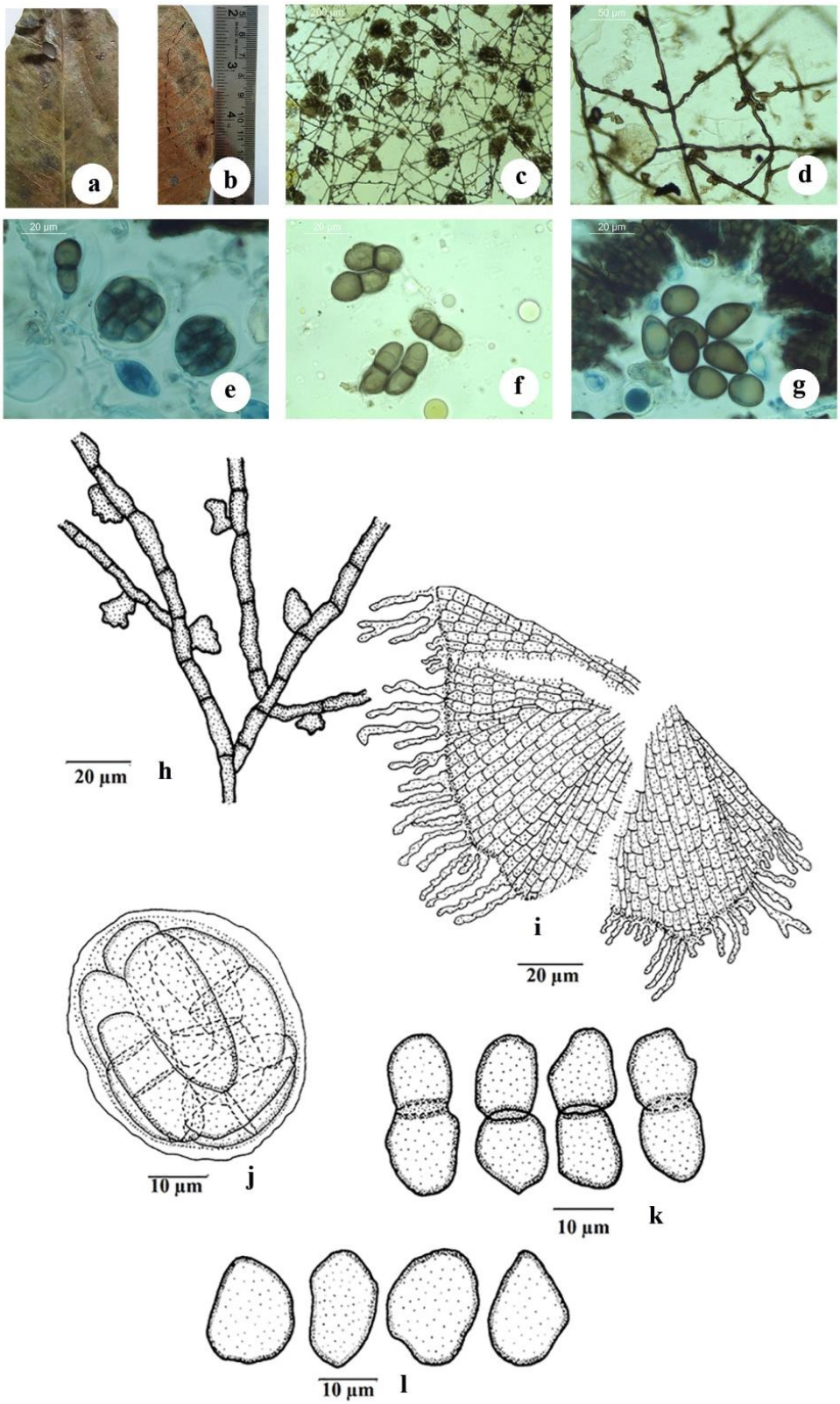

Fig. 1: *Asterina caralliae* Lonkar, Patil & Salunkhe.
a, b. Infected leaves; c. Mycelial colony with thyriothecia; d. h. Appresoriate mycelium; e, j. Asci; f, k. Ascospores; g, l. Pycnothyriospores; i. Part of thyriothecium.

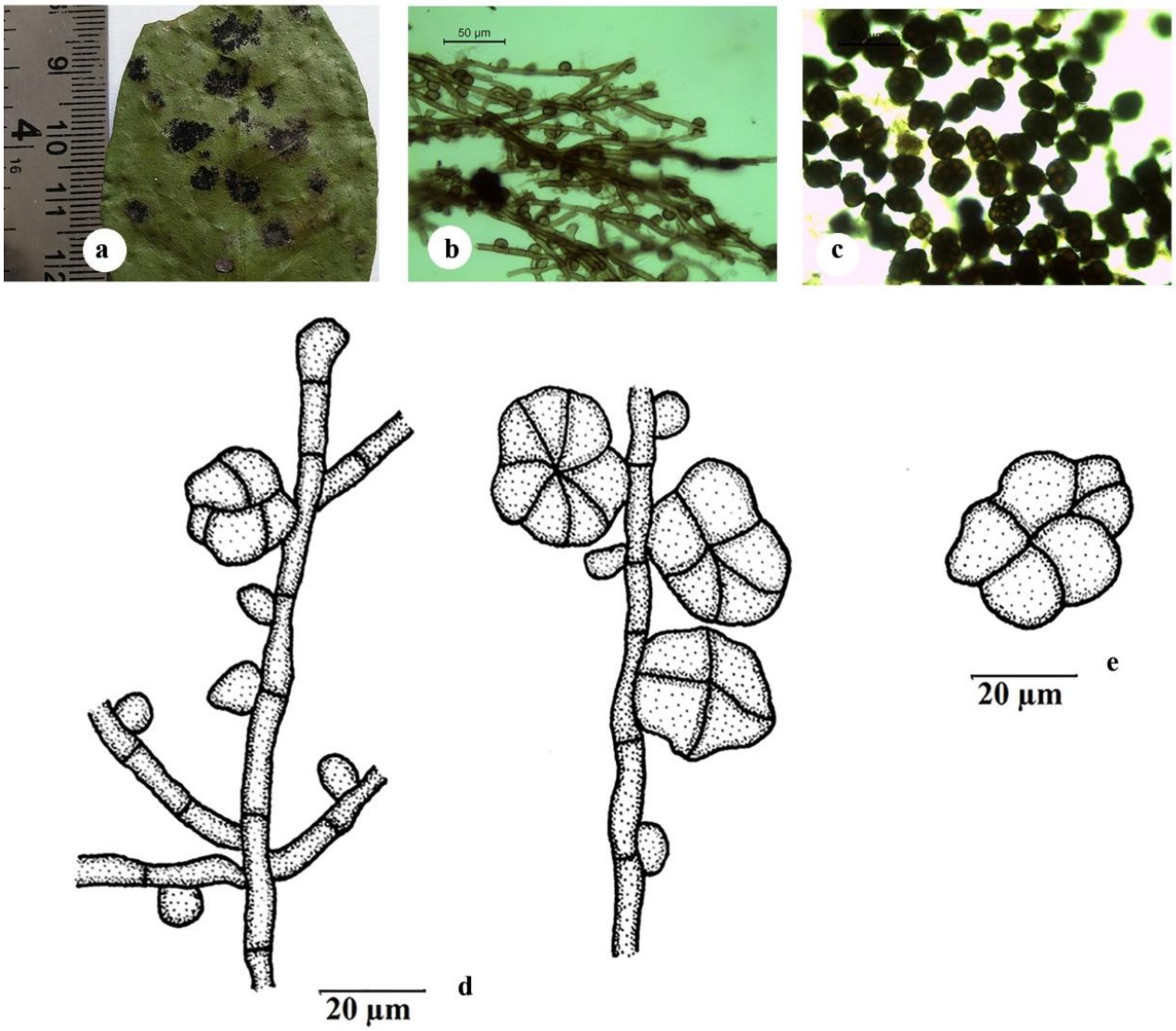

Fig 2: *Sarcinella eleagni* Lonkar, Patil & Salunkhe.
a. Infected leaf; b, d. Appresoriate mycelium; c,e. Sarciniform conidia.

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REFERENCES

Bhise MR, Patil CR and Salunkhe CB (2014,a) Two new species of asterinaceous fungi from Mahabaleshwar, Maharashtra, India, *Phytotaxa*, 184(5):283-289.

Bhise MR, Patil CR and Salunkhe CB (2014,b) Three new black mildew fungi from Mahabaleshwar, Maharashtra, India, *Int. J. of Life Sciences*, 2(4):304-310.

Bhise MR, Patil CR and Salunkhe CB (2015) New species of genus *Asterina* (Asterinaceae) from Western Ghats, India, *Int. J. of Life Sciences*, 3(1):67-75.

Bilgrami KS, Jamaluddin S and Rizwi MA (1991) Fungi of India. List & References. Today & Tomorrow's Printers and Publishers, New Delhi, pp: 798.

Farr DF and Rossman AY (2019) Fungal Databases, U.S. National Fungus Collections, ARS, USDA. Retrieved January 12, 2019, from https://nt.ars-grin.gov/fungaldatabases/

Hosagoudar VB and Abraham TK (2000) A list of *Asterina* Lev. species based on the literature, *J. Econ. Taxon. Bot.* 24, 557-587.

Hosagoudar VB (2003) The genus *Schiffnerula* and its synanamorphs. *Zoos' print journal* 18(4):1071-1078.

Hosagoudar VB (2011) The genus *Schiffnerula* in India, *Plant Pathology & Quarantine,* 1(2), 131 – 204, doi 10.5943/ppq/1/2/4

Hosagoudar VB (2012) Asterinales of India, *Mycospere*, Doi 10.5943/*mycosphere*/3/5/9. 2(5), 617-852.

Jamaluddin, Goswami MG and Ojha BM (2004) Fungi of India, 1989-2001. Scientific Publishers, India, pp: 326.

Patil CR, Bhise MR and Patil SC (2014) Three new asterinaceous fungi from western ghats, India, *Current Research in Environmental & Applied Mycology* 4(1): 80-86.

Patil CR and Patil SC (2017) A mounting and permanent slide preparation technique for Cryptogam, *Bioscience Discovery*, 8 (1):06-08

Rahangdale SS and Rahangdale SR (2017) Floristic Diversity of Bhimashankar Wildlife Sanctuary, Nothern Western Ghats, Maharashtra, India, *Journal of Threatned Taxa*, 9(8):10493-10527

Sabeena A and Hosagoudar VB (2018) Diversity and distribution of the genus *Schiffnerula* and its synanamorphs in India, *International Journal of Development Research*, 8(5):20425-20429.

Singh NP and Karthikeyan S (2000) Flora of Maharashtra State: Dicotyledons, vol. I. Botanical Survey of India, Calcutta.

Singh NP, Lakshminarasimhan P, Karthikeyan S and Prasanna PV (2001) Flora of Maharashtra State: Dicotyledones vol.-II. Botanical Survey of India, Calcutta.