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## New records of Ascomycota from Sanjay Gandhi National Park (SGNP), Maharashtra, India

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RASHMI DUBEY\* AND AMIT DIWAKAR PANDEY

Botanical Survey of India, Western Regional Centre, Pune- 411001, Maharashtra

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The paper deals with an account of 03 species of microfungi which are reported as new records to India viz., *Acanthohelicospora scopula* (Peck) Rossman & W.C. Allen 2016; *Acrogenospora ellipsoidea* D.M. Hu, L. Cai & K.D. Hyde, 2010; *Angustimassarina acerina* Jayasiri, Thambug., R.K. Schumach. & K.D. Hyde 2015.

**Keywords:** Microfungi, New Records, Sanjay Gandhi National Park (SGNP), Maharashtra, India

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### INTRODUCTION

Nestled within the Mumbai Metropolitan Region of India's north coast, Sanjay Gandhi National Park (SGNP) is one of the national parks of Maharashtra. The National Park lies between longitude 72°53' E to 72°58' E and latitude 19°8' to 19°21' N, and covers 103.09 km<sup>2</sup> of area spanning over three districts viz., Mumbai Suburbs (towards the south and west), Thane (towards the east) and Palghar (towards the north). The Sanjay Gandhi National Park (SGNP) is one of the few national parks in the world entirely lying within the limits of a bustling metropolis. While working on microfungal biota of SGNP, it was observed that 03 species of microfungi have not earlier been described from India and thus constitute new records for India. Hence, in present paper those 03 species are duly described along with their nomenclature, taxonomic position and distribution.

### MATERIALS AND METHODS

The three forest ranges (Tulsi, Krishangiri and Yeoor range and 10% adjoining areas of the National Park were thoroughly surveyed in different

seasons viz., monsoon, post monsoon, winter and summer, to study the diversity of microfungi. Litter samples include dried, decaying plant specimens (wood, logs), infected samples of fallen leaves, twigs and other litter. Global Positioning System (GPS) coordinates of collection locations were also recorded. QGIS 3.14 'Pi' version was used for plotting GPS data to prepare a survey map showing collection sites visited during the field tours, given along with range map of SGNP (source: forest authorities), are shown in Fig. 1. The slides showing vegetative, asexual and sexual structures of fungi were observed under Olympus compound microscope model CX-41 and microphotographs were captured with the attached DP22 and DP27 cameras. Fungi belonging to Ascomycetes were identified by Dennis (1978), Pande (2008), Hanlin (1998). Bitunicate Ascomycetes were studied by the help of Sivanesan (1983).

The isolates were assigned to respective genera and species using aforementioned approaches based on morphology. The recent taxonomic position of fungal taxa was verified from the online databases such as Index fungorum (<http://www.indexfungorum.org>) and Mycobank (<http://www.mycobank.org>).

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\*Correspondence: dr.rashmidubey@gmail.com

## RESULTS AND DISCUSSION

***Acanthohelicospora scopula*** (Peck) Rossman & W.C. Allen, in Rossman, Allen & Castlebury, *IMA Fungus* 7 (1): 2 (2016). **Fig. 2 (A–G)**

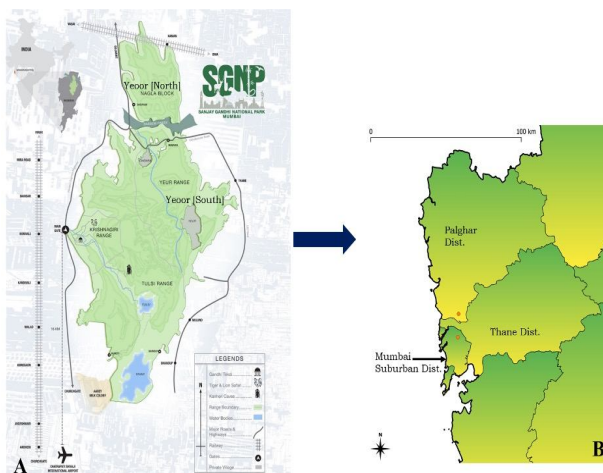
### Position in classification

Fungi, Ascomycota, Pezizomycotina, Dothideomycetes, Pleosporomycetidae, Tubeufiales, Tubeufiaceae.

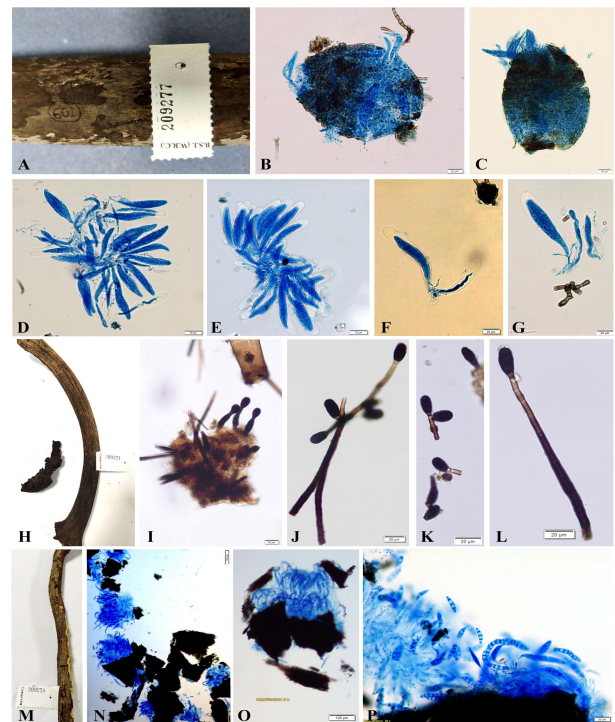
Saprobic on decaying wood. Ascomata 130–270 µm diam, globose, superficial, solitary or gregarious, dark brown, membranous, ostiolate with setae; Asci 95–120 × 8–10 µm, 8-spored, cylindric-clavate, bitunicate, broadly rounded and thickened at the apex, short stalked, pseudoparaphyses. Ascospores 70–85 × 3–3.5(–4) µm fasciculate, long-fusiform to cylindrical-fusiform, hyaline, slightly curved or bent in the third cell, 9–12-septate, non-constricted in the septa, often smooth-walled, guttulate, lacking appendages and sheaths.

### Material examined

On decaying wood, Sarjamori, North of Vasai Creek, Yeoor Range [North], SGNP, Palghar Dist., Maharashtra, India, date 20/12/2017, RD, 209277 BSI (WC), Accession no. BSI-F734.



**Fig. 1:** Map of SGNP showing collection locations: A Map of SGNP ranges provided by forest authorities. B. Survey map prepared by plotting GPS of collection locations using QGIS 3.14 'Pi' version



**Fig. 2:** New records of fungi from Sanjay Gandhi National Park. **A–G.** *Acanthohelicospora scopula*: **A.** Decaying wood; **B–C.** Ascomata; **D–E.** Ascus; **F.** Ascus and **G.** Ascospores. **H–L.** *Acrogenospora ellipsoidea*: **H.** Dead twig; **I.** Conidiophores attached with host surface; **J–L.** Conidia with Conidiophores. **M–P.** *Angustimassarina acerina*: **M.** Dead stem; **N–O.** Ruptured ascomata with asci and ascospores. Scale bars: **B, D, F–I, M** = 20 µm; **C** = 10 µm; **K, L** = 100 µm.

### Geographical Distribution

Earlier reported from Austria and USA (Reblova & Barr 2000).

***Acrogenospora ellipsoidea*** D.M. Hu, L. Cai & K.D. Hyde, *Sydowia* 62 (2): 194 (2010), **Fig. 2 (H–L)**

### Position in classification

Fungi, Ascomycota, Pezizomycotina, Dothideomycetes, Incertae sedis, Minutisphaerales, Acrogenosporaceae

Colonies sparse, scattered, glistening. Mycelium mostly immersed in the substratum, consisting of septate, smooth, yellowish brown, 2–4 µm wide hyphae. Conidiophores macronematous, mononematous, solitary, erect, smooth, pale orange brown to mid brown, paler towards the apex, rarely septate, 1–2-septate, 87.5–162.5 µm long, 6.5–7.5

µm wide, with multiple percurrent proliferations. Conidiogenous cells monoblastic, integrated, terminal, cylindrical, pale brown. Conidia acrogenous, dry, ellipsoidal, dark brown, smooth, non-septate, 35–17 µm, with a truncate base 4.5–5.5 µm wide; conidial secession schizolytic.

**Material examined:** On Wood, Kanheri caves, Tulsi Range, SGNP, Mumbai, Maharashtra, India, date 07/09/2016, RD, 209271 BSI (WC), Accession no. BSI-F737.

**Geographical Distribution:** China (Hu *et al.* 2010).

***Angustimassarina acerina*** Jayasiri, Thambug., R.K. Schumach. & K.D. Hyde, *Fungal Diversity* 74: 255. (2015). **Fig. 2 (M–P)**

#### **Position in classification**

Fungi, Ascomycota, Pezizomycotina, Dothideomycetes, Pleosporomycetidae, Pleosporales, Amorosiaceae

Ascomata 210–350 × 164–183 µm scattered to gregarious, dark brown to black, immersed, coriaceous, globose to subglobose, without a crest, ostiolate. Ostiole central, rounded, papillate, opening through the cracks of host surface. Peridium 15–26 µm thick at the sides, broad at the apex and thinner at the base, comprising brown to dark brown cells of textura angularis, fusing at the outside with the host tissues. Hamathecium comprising 1.5–2.5 µm wide, septate, long, cellular pseudoparaphyses, embedded in a gelatinous matrix. Asci 92–105 × 7.5–8.6 µm, 8-spored, bitunicate, fissitunicate, cylindrical to clavate, pedicellate, rounded at the apex, with a minute ocular chamber. Ascospores 21–23 × 4.1–4.6 µm, bi-seriate, partially overlapping, hyaline, becoming ocher brown at maturity, 1(–3)-septate, deeply constricted at the central septum, widest at the centre and tapering toward the ends, straight, smooth-walled, guttulate, surrounded by a thin mucilaginous sheath.

#### **Material examined**

On Dry twig litter, Sarjamori, North of Vasai Creek, Yeoor Range [North], SGNP, Palghar Dist.,

Maharashtra, India, date 20/12/2017, RD, 209258 BSI (WC), Accession no. BSI-F704.

**Geographical Distribution:** Previously reported from Germany (Thambugala *et al.* 2015)

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