



## ***Goosiomycetes bambusicola* - A new cheirosporous anamorphic species from Western Ghats, India.**

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### **Abstract**

A new hyphomycete species, belonging to genus *Goosiomycetes*, i.e. *Goosiomycetes bambusicola*, is taxonomically described and illustrated from India. It is characterized by branched; very long conidiophores, discrete conidiogenous cells, holoblastic conidiogenesis and smooth, cheiroid conidia. It can be easily differentiated from the type species *G. digitatus*, by variation in the dimensions and branching pattern of conidiophores and smooth conidia.

**Key words** – *Bambusa* – fungal diversity – long conidiophores – new species – smooth conidia – taxonomy

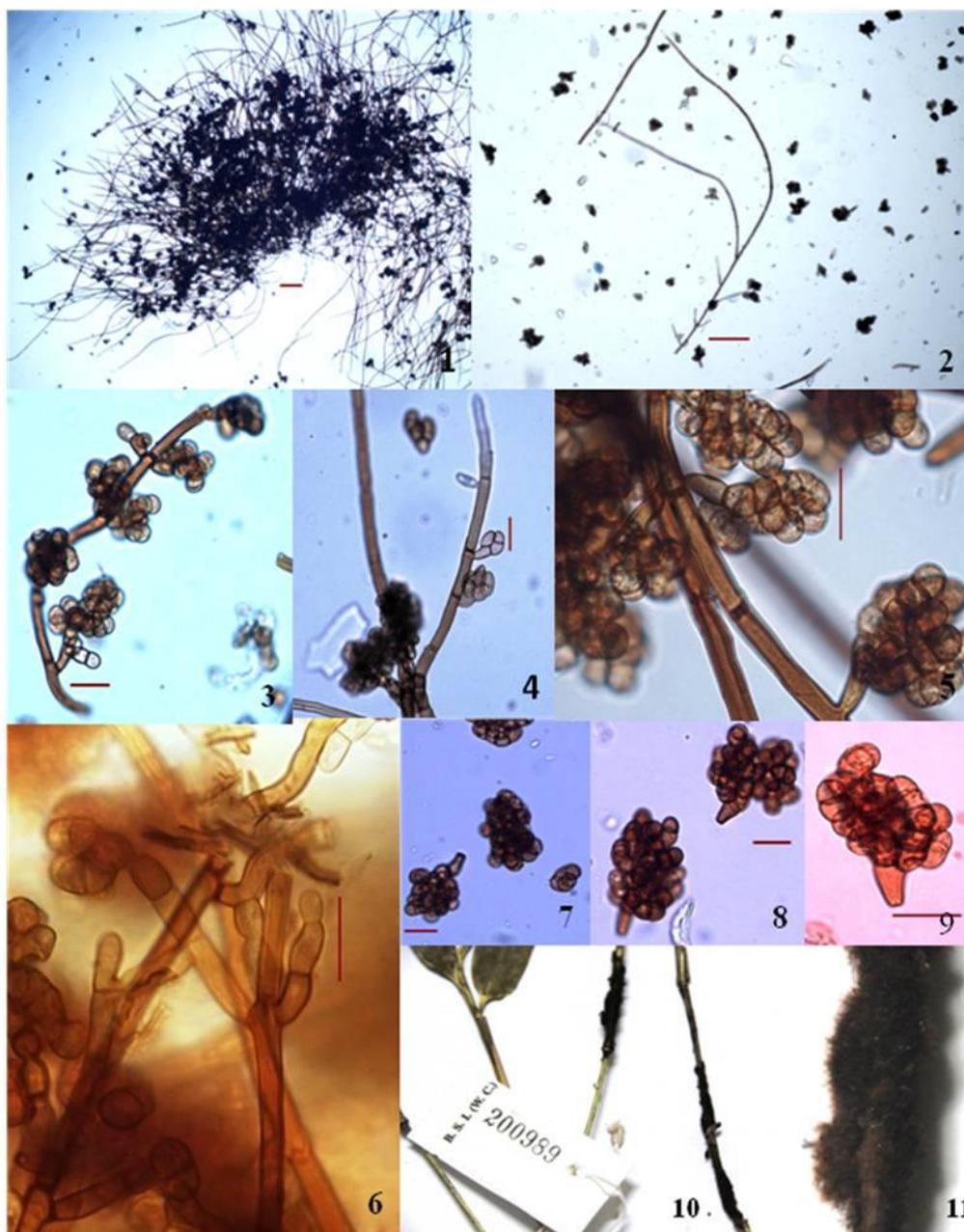
### **Introduction**

The Western Ghats of India represent some of the best non-equatorial, tropical evergreen forests in the world. Located along the west coast of India, these steep escarpments are rich in biodiversity and have the distinction of being declared as one of the 34 global biodiversity hotspots (Meyers et al. 2000). Studies on microfungi and fungal biodiversity of different microhabitats in the Western Ghats are also conducted by the Botanical Survey of India (Dubey & Moonambeth 2013 a, b, c). During a fungal biodiversity expedition in the Western Ghats region of Maharashtra, India, conducted in January 2013, an undescribed dematiaceous hyphomycete was found on stems and petioles of *Bambusa arundinacea* (Retz.) Willd. The fungus produces cheiroid conidia on conidiophores and detailed morphological studies confirmed that it is a hitherto unknown species of *Goosiomycetes* Rao & Manoharachary.

The genus *Goosiomycetes*, was established by Rao & Manoharachary in 1989 with *G. digitatus* Rao & Manoharachary as type species. Perusal of relevant literature reveals that the genus is monotypic (Anonymous 1989 – 2014) characterized by pale brown, septate, irregularly branched hyphae; simple or branched, macronematous, mononematous, erect, straight or flexuous, smooth, septate, reddish brown conidiophores; discrete conidiogenous cells, holoblastic, solitary, dry, lateral, cheiroid, branched, septate, constricted, olivaceous and verrucose conidia (Rao & Manoharachary, 1989)

### **Materials and methods**

The fungal samples were brought to the laboratory in zip-lock plastic bags. Tease mounts were made in distilled water and lactic acid and cotton blue solution. Measurements of the conidiophores and conidia were made of the material mounted in distilled water. Photomicrographs



**Figs 1–11** – *Goosiomycetes bambusicola* sp.nov. 1 Colonies. 2–5 Mature conidia and conidiophores. 6 Branching pattern of conidiophores. 7–9 Conidia. 10, 11 Colonies on host surface. (Bar 1, 2 = 100  $\mu$ m; 3–9 = 20  $\mu$ m).

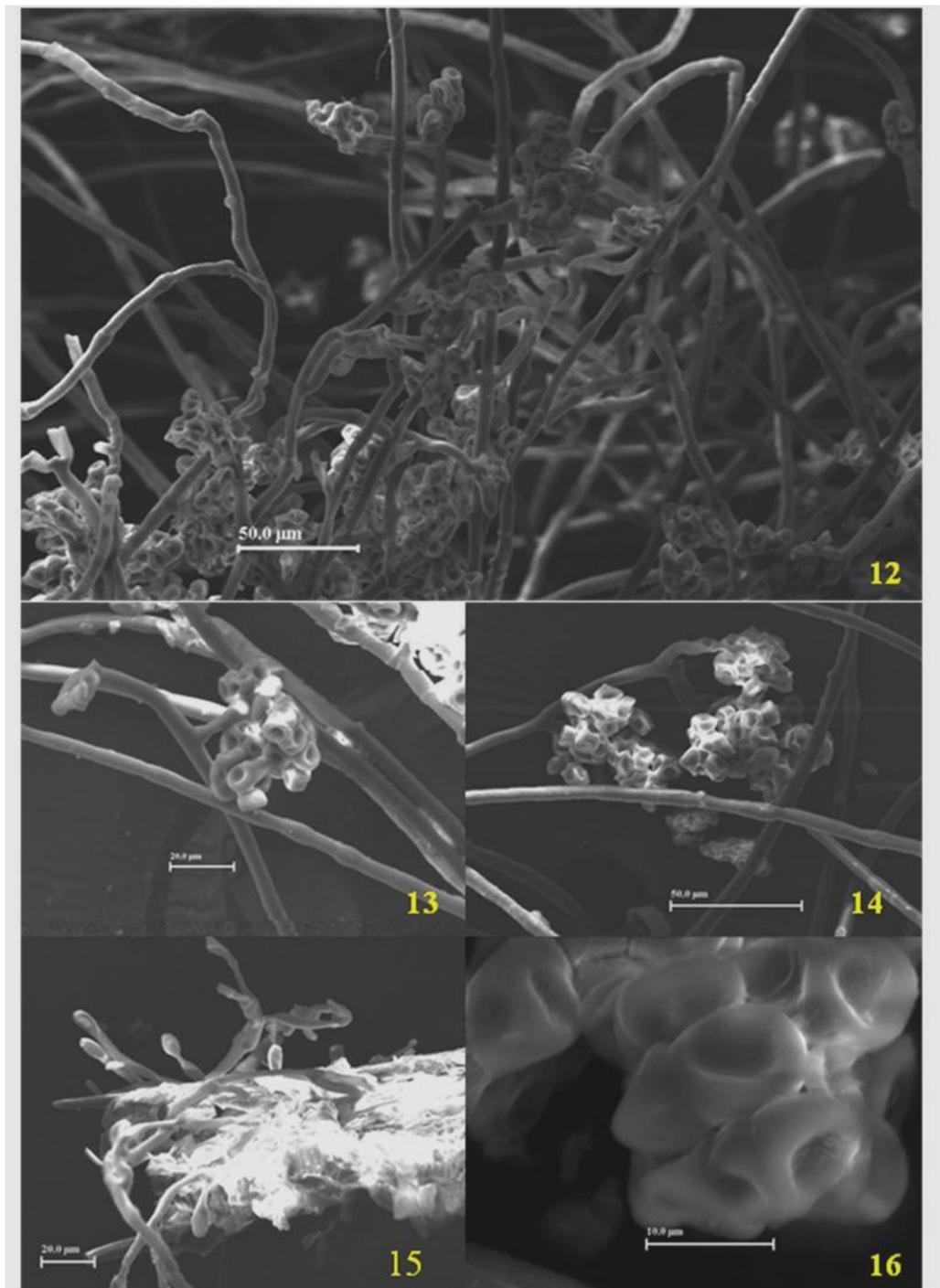
were made using a digital color CCD Camera (Nikon DS Fi1) attached to a Nikon eclipse 50i microscope with interference optics. The type specimen (holotype) is deposited in Ajrekar Mycological Herbarium, Pune (AMH), India. Descriptions and nomenclatural details are deposited in MycoBank.

### Taxonomy

*Goosiomycetes bambusicola* Rashmi Dubey and Neelima **sp.nov**  
 MycoBank: MB809042.

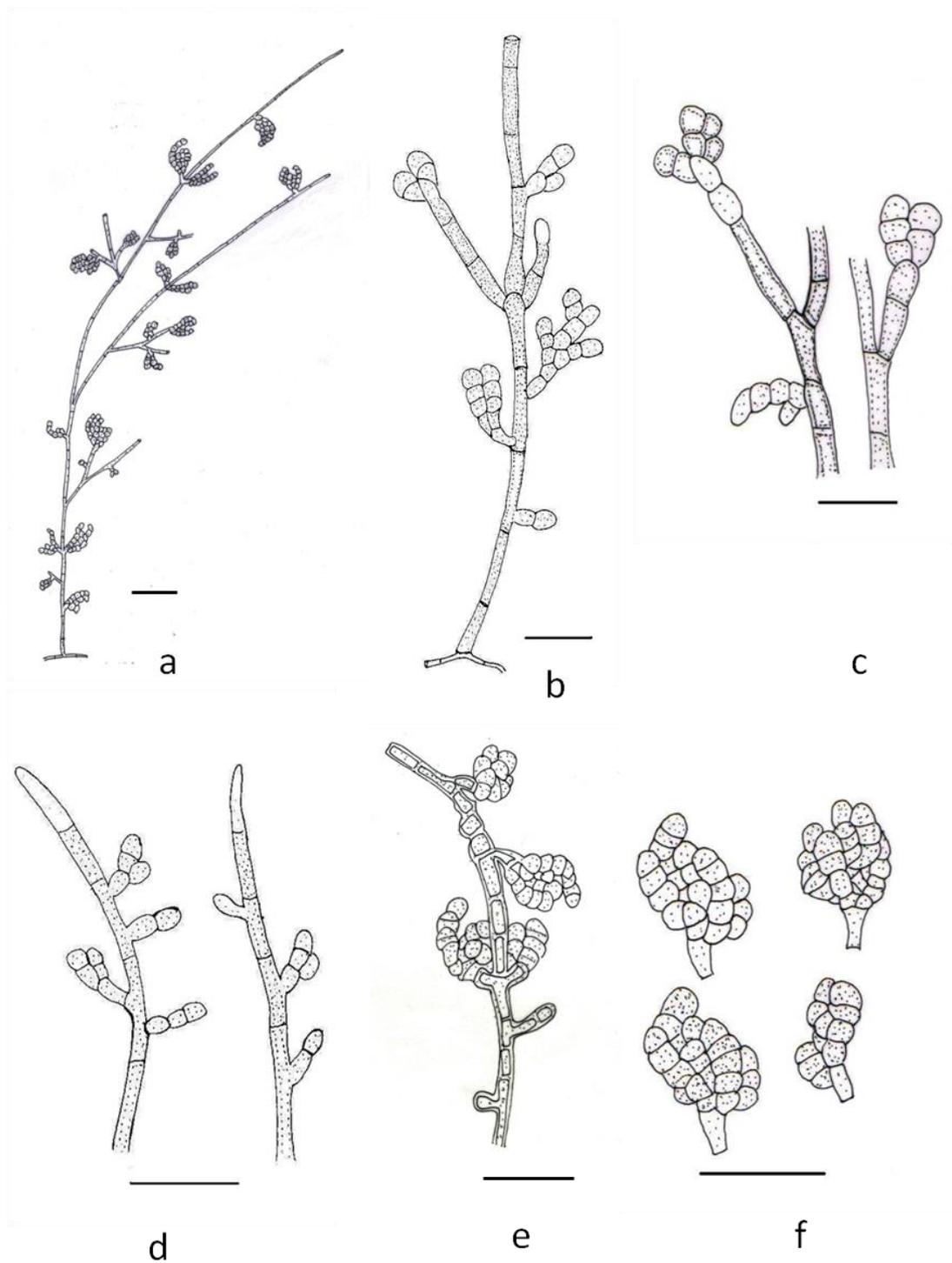
Figs 1–17

Etymology – species named after the name of host plant (*Bambusa arundinacea* (Retz.) Willd.) on which it is reported.



**Figs 12–16** – Scanning Electron Microscope (SEM) images of *Goosiomycetes bambusicola* sp.nov. (Holotype). 12 Colony. 13, 14 Conidia and conidiophores. 15 Conidiogenesis. 16 Smooth surface of conidia.

Colonies on host surface, discrete, effuse velvety, brown to reddish brown. Mycelium mostly immersed, partly superficial, composed of pale brown, smooth, irregularly branched, smooth hyphae 1.9–4.0 µm wide. Conidiophores macronematous, mononematous, very long, up to 1200 µm long, 5–8 µm wide, straight or flexuous, septate, often branched, with simple, bifurcate or trifurcate branches arising laterally or apically from the main hyphae, smooth, thick-walled, brown, terminating into hyaline apex. Conidiogenous cells integrated to discrete, terminal and intercalary, holoblastic. Conidia solitary, sometimes in fascicles, smooth, dry, produced laterally or rarely apically, cheiroid, branched, multicellular, brown, 40–60 µm long and 30–45 µm wide; with basal cell 12–18 µm long and 4.0–5.5 µm wide.



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**Fig. 17**—Camera lucida drawings. a–c Branching patterns in conidiophores. d,e Conidiogenesis. f Smooth conidia (Bar– 50µm).

Sexual state – Unknown.

Known distribution – Reported in the natural forest of southern and western parts of India.

Material examined – India: Maharashtra, Ratnagiri, Kurne Lanja, on stems and petioles of *Bambusa arundinacea* (Retz.) Willd, 24 Jan13, Rashmi Dubey, B.S.I. (W.C) 200989 (Ajrekar Mycological Herbarium, AMH 9661, holotype).

## Discussion

The monotypic genus *Goosiomycetes*, typified by *G. digitatus*, superficially resembles to several other genera with cheiroid or digitate conidia, viz. *Sirosporium* Karst. (synonym of *Chelisporium* Speg.), *Cheiroconium* v. Hohn., *Cheiromycella* v. Hohn, *Cheiromyces* Berk. & Curtis and *Digitodesmium* Kirk (Ellis 1971, 1976, Carmichael et al 1980, Sutton 1985). The most distinguishing character differentiating *Goosiomycetes* from other genera is that *Sirosporium* and *Cheiroconium* are coelomycetous fungi, whereas *Cheiromyces*, *Cheiromycella* and *Digitodesmium* are hyphomycetes and possess sporodochial fruiting body. Rao & Manoharachary, 1989 noticed all these differences when they established the genus *Goosiomycetes*.

*Goosiomycetes bambusicola* is differentiated from *G. digitatus* by its long conidiophores (up to 1200µm), branching patterns of conidiophores and smooth conidia (Table 1).

**Table 1** Comparative account *Goosiomycetes digitatus* and *G. bambusicola* sp. nov.

S.No.	Morphotaxonomic characters	<i>Goosiomycetes digitatus</i> Rao & Manoharachary, 1989	<i>Goosiomycetes bambusicola</i> sp. nov. Rashmi Dubey and Neelima
1.	Colonies	Punctiform, discrete, brown to reddish brown	Discrete, effuse, velvety, brown to reddish brown.
2.	Conidiophores	Simple or rarely branched, up to 300 µm long and 5.5–8.5 µm wide.	Generally branched, branching bifurcate or trifurcate, up to 1200 µm long and 5–8 µm wide.
3.	Conidia	Holoblastic, solitary, produced laterally, branched, olivaceous brown, verruculose, 35–50 × 25–36 µm, basal cell 4–5.5 µm wide.	Holoblastic, solitary or sometimes in fascicle, produced laterally or sometimes apically, smooth, 40–60 × 35–40 µm, basal cell 12–18 × 4–5.5 µm.

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