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Source: *Mycologia*, Vol. 94, No. 3 (May - Jun., 2002), pp. 535-538

Published by: [Mycological Society of America](#)

Stable URL: <http://www.jstor.org/stable/3761787>

Accessed: 01-06-2015 04:45 UTC

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Didymobotryum spirillum, a new synnematosus hyphomycete from India

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Abstract: A new synnematosus hyphomycete, *Didymobotryum spirillum* D'Souza & Bhat, collected from decaying culms of bamboo, *Dendrocalamus strictus*, is described and illustrated from the forests of Western Ghats in Goa, India. The fungus produces monotretic, catenate didymoconidia on spirally twisted synnemata.

Key Words: biodiversity, *Didymobotryum spirillum*, taxonomy

A hyphomycete producing monotretic, catenate, didymoconidia on spirally twisted synnemata, collected on fallen, decaying culms of bamboo (*Dendrocalamus strictus* Nees., Poaceae), a native plant of the Western Ghats in southern India, is described here as a new species of the genus *Didymobotryum* Sacc.

Didymobotryum spirillum D'Souza et Bhat, sp. nov.
(FIGS. 1–8)

Ad fungus conidiales, hyphomycetes, pertinens. Coloniae effusae, olivaceae vel atrobrunneae, velutinae. Mycelium plerumque in substrato immersum, ex hyphis septatis, ramosis, crassitunicatis, subhyalinis, 3.5 μm lat., compositum. Conidiomata synnematosas, interdum singularatas, plerumque 3–4 aggregata, recta vel flexuosa, olivacea vel atrobrunnea, 650–980 μm longa, ad basim usque ad 60 μm lat., in medio 35–55 μm lat., apice in capitulum fertile expanso usque ad 200 μm lat.; ex conidiophoris parallelis et compactis, septatis, ramosis, laevibus, olivaceo-brunneis, spiralis, 2–2.5 μm lat., composita. Cellulae conidiogenae integratae, terminales, discretas, monotreticas, clavatas vel cylindricoclavatas, olivaceo-brunneae, crassitunicatae, in parte superiore verruculosae, 7–10 (7.25 \pm 1.89) \times 3.5–5 (4.5 \pm 0.57) μm , post secessionem cellulae conidiogenum apice truncatae, 2.5–4 μm lat. apertus. Conidia catenata, sicca, acrogena, cylindrica, apice roundata, basi truncata, crassitunicata, verruculosa, 1-septata, ad septum leniter constricta, olivaceo-brunnea, 10–18 (13.22 \pm 2.3) \times 4.5–6 (5.3 \pm 0.86) μm ; conidiae intercalaris catenatae, utrinque truncata post secessionem.

HOLOTYPUS: INDIA, Goa, Mollem, Bhagwan Ma-

havar Wildlife Sanctuary, in putrido culms *Dendrocalamus strictus*, 11 Apr 2000, Maria D'Souza, IMI 384381

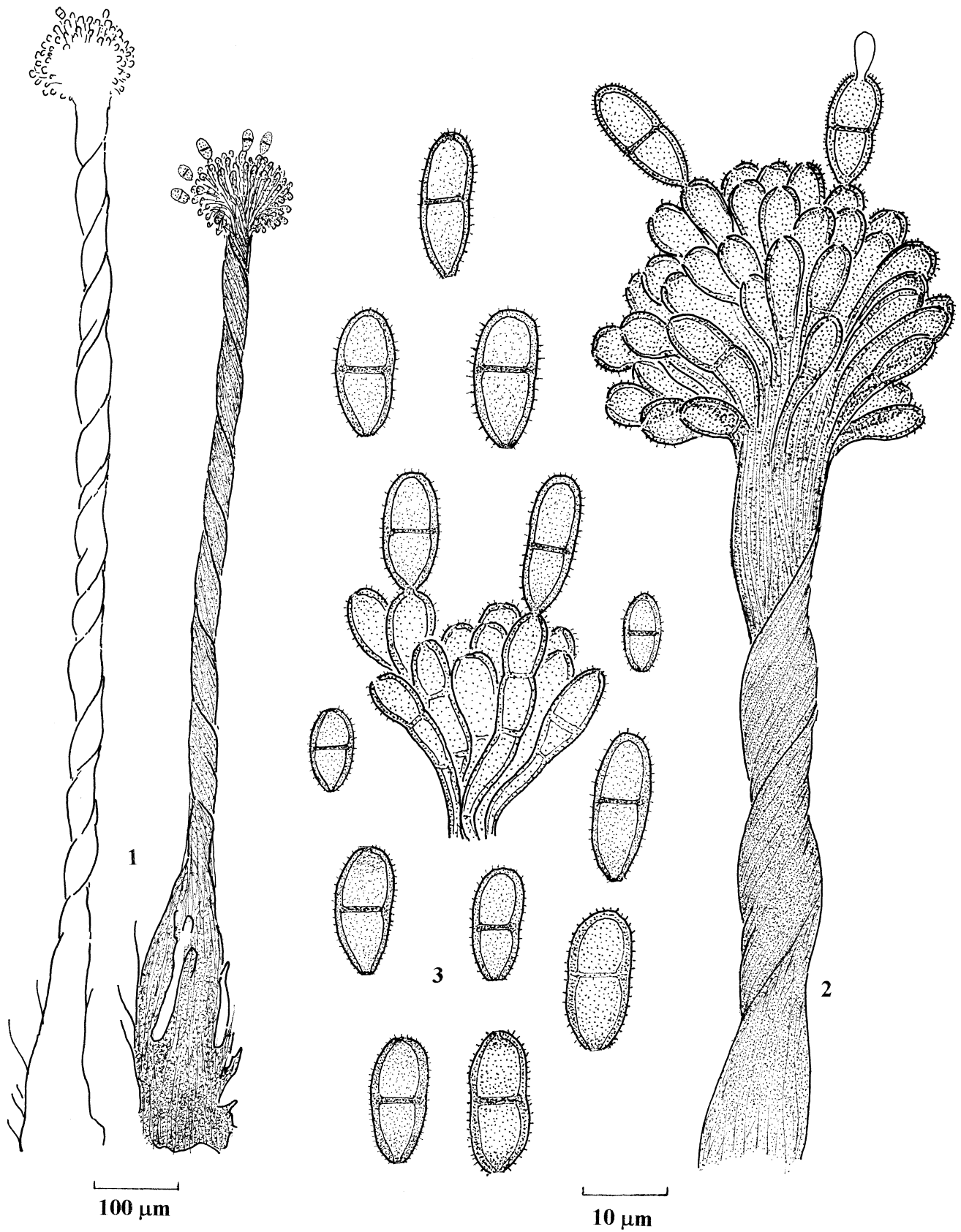
Additional specimens examined from India. Goa, Mollem, Bhagwan Mahavir Wildlife Sanctuary, on dead stems of *Dendrocalamus strictus*, 20 Sep 2000, Maria D'Souza, GUFCC 0256; on dead culms of *Dendrocalamus strictus*, 19 Oct 2000, Maria D'Souza, GUFCC 0267; Bondla Wildlife Sanctuary, on dead culms of *Dendrocalamus strictus*, 20 Nov 2000, Maria D'Souza, GUFCC 0289; Mollem, Bhagwan Mahavir Wildlife Sanctuary, on dead culms of *Dendrocalamus strictus*, 21 Dec 2000, Maria D'Souza, GUFCC 0316; Bondla Wildlife Sanctuary, on dead culms of *Dendrocalamus strictus*, 23 Jan 2001, Maria D'Souza, GUFCC 0357.

Colonies effuse, olivaceous to dark brown, velvety, mostly immersed, composed of septate, branched, thick-walled, subhyaline hyphae up to 3.5 μm wide. Conidiomata synnematosus, sometimes arising singly, mostly in groups of 3–4, erect, straight or flexuous, fertile at the apex; olivaceous to dark brown, 650–980 μm long, up to 60 μm wide at the base, 35–55 μm wide in the middle, stipe compact, spirally twisted, flared to a spherical head up to 200 μm wide at the apex, composed of septate, branched, smooth, olivaceous brown hyphae 2–2.5 μm wide. Conidiogenous cells monotretic, terminal, integrated or discrete, cylindrical to clavate, olivaceous brown, thick-walled, verrucose in the upper half, slightly truncate and 2.5–4 μm wide at the aperture on conidial secession, 7–10 (7.25 \pm 1.89) \times 3.5–5 (4.5 \pm 0.57) μm . Conidia catenate, dry, acrogenous, cylindrical, rounded at the tip, slightly truncate at the base, thick-walled, verrucose, 1-septate, slightly constricted at the septa, olivaceous brown, 10–18 (13.22 \pm 2.3) \times 4.5–6 (5.3 \pm 0.86) μm ; intercalary conidia in chains slightly truncate at both ends on secession.

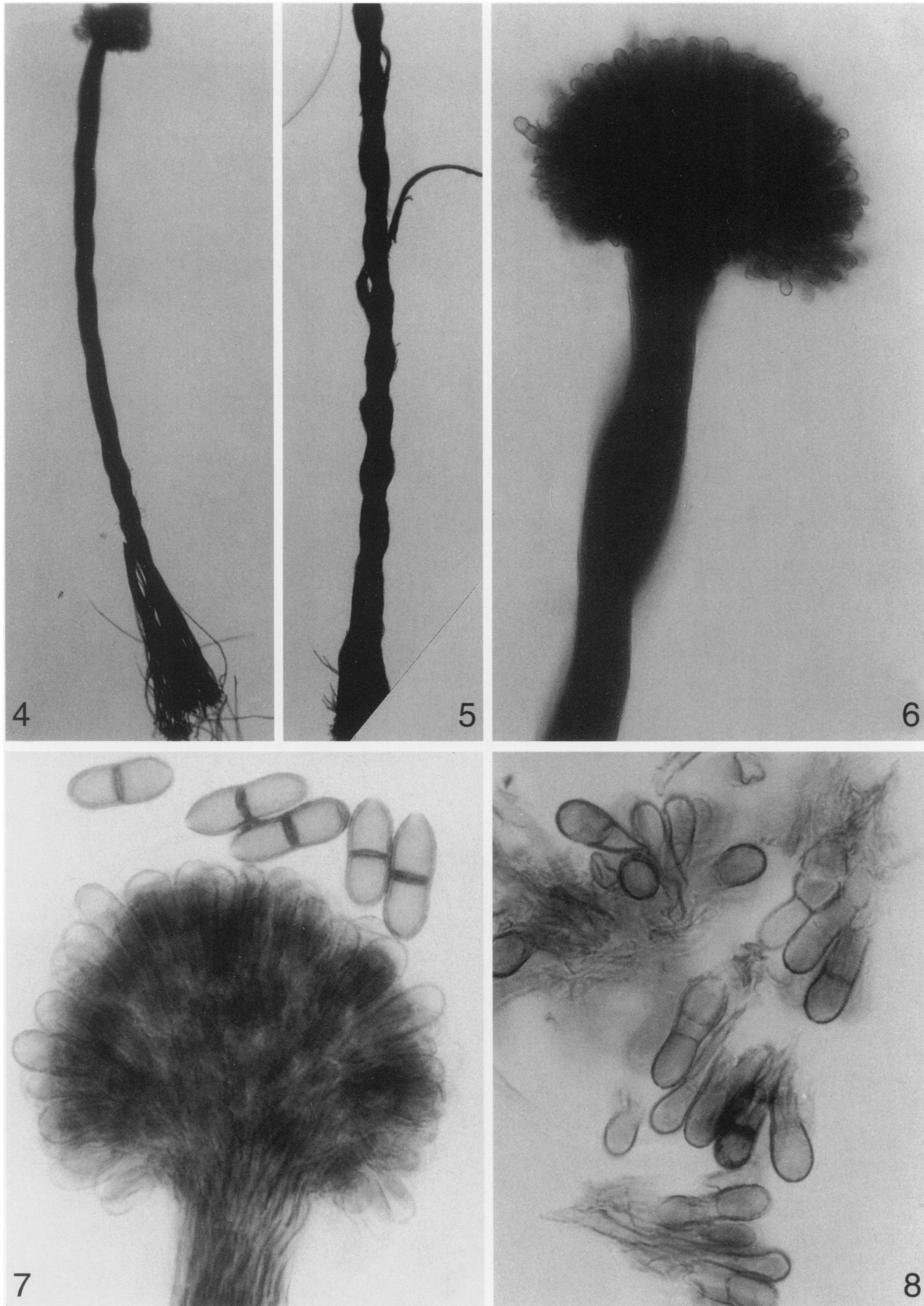
Among the several species described in the genus *Didymobotryum* Sacc., lectotypified by *D. rigidum* (Berk. & Br.) Sacc., *D. spirillum* may be compared with *D. rigidum* and *D. verrucosum* Hino & Katumoto (Ellis 1971). *Didymobotryum rigidum* is characterized by catenate, smooth conidia with a distinguished thick brown band at the septum, developing on synnema with a clavate head and untwisted stipe. In *D. verrucosum*, the verrucose and catenate conidia are broadly ellipsoidal to cylindrical with a septum, and the conidiophores are straight and parallelly compacted before terminating into a clavate head. *Didy-*

Accepted for publication September 20, 2001.

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FIGS. 1–3. *Didymobotryum spirillum*. 1. Synnemata. 2. A synnema consisting of stipes and conidiogenous cells. 3. Conidia and conidiogenous cells.



FIGS. 4-8. 4, 5. Twisted synnemata. 6. Spherical head with the twisting stipe. 7. Conidia. 8. Monotretic conidiogenous cells.

mobotryum spirillum has verrucose and catenate conidia that are similar to those of *D. verrucosum* but differs from the latter by its spirally twisted stipes that terminate in a spherical head. The spiral nature of the stipe in the synnema was very consistent and observed in all subsequent collections, including those made in the dry seasons. We compared *D. spirillum* with our own collections of *D. verrucosum* on bamboo from the Western Ghats in southern India, and the overall distinctiveness of the two species was very evident.

ACKNOWLEDGMENTS

This work was supported by a research grant to Dr. D.J. Bhat from the Department of Science and Technology, Government of India, New Delhi.

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