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# A new species of *Poronia* from India

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A new species: *Poronia radicata*, collected from the historical Acharya Jagadish Chandra Bose Indian Botanic Garden, Howrah, India is described and illustrated. This species can be characterized by long underground branched rooting base, terminally branched stromata, capitate with an expanded and flattened stromatal disc, absence of paraphyses and apical germ pore (at maturity) and comparatively small sized ascospores with rounded germ pore. Its comparison with the allied species is also mentioned in the present paper.

**Key words** – Macrofungi – *Poronia* – taxonomy – *Xylariaceae*

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## Introduction

Since long back *Xylaria* and its allies have been investigated by different mycologists to give their proper taxonomic placement. But always a great debate persists while placing the ascocarp with stipitate stroma (of this group) that ends with capitate to hemispherical or irregular, fertile, variously sculptured head although, these specimens are mainly kept in few closely related genera i.e. *Kretzschmaria*, *Podosordaria*, *Xylaria* and *Poronia* under the family Xylariaceae (Ahmad 1946, Dennis 1957a & b, Martin 1967, Rogers 1979). Micromorphological features, like the nature of the spores and germ slits of these genera are not so distinct to separate them from each other. Critical studies undertaken by Ahmad (1946), Dennis (1957a & b), Martin (1967), Rogers (1979), Pande (2008) helped us to delimit these genera based on their habit and macromorphology. *Kretzschmaria* can be distinguished from *Poronia* by its growing

habit (caespitose) and the habitat (on wood) as mentioned by Martin (1967). Similarly, *Poronia* can be separated from both *Xylaria* and *Podosordaria* by its stalked stroma which is in the form of capitate to flattened disc (never clavate to filiform or subglobose with erumpent ascocarps) with embedded perithecia (Krug & Cain 1974, Martin 1967).

Genus *Poronia* Willd. was erected to accommodate the taxa with “black carbonous perithecia embedded in a white fleshy hemispherical or discoid stroma borne on a long or short stipe” (Ahmed 1946). Later on, Dennis (1957b) included some white flat headed Eastern hemispherical terrestrial *Xylaria* like taxa with rooting bases (which probably originated from buried wood) under *Poronia*. This genus (*Poronia*) can be characterized by upright stipitate fruit bodies; fertile part in the form of capitate to flattened disc on stalked stroma; stromata simple or branched; perithecia embedded in fertile parts, elevations

evident or lacking; asci stipitate, cylindrical with more or less well-developed apical ring which usually becoming blue with Melzer's reagent; ascospores light to dark brown, asymmetrical, one-celled or unequally two-celled due to presence of hyaline cellular appendage with a short to long conspicuous or inconspicuous germ slit (Llyod 1920; Dennis 1957b, 1978; Martin 1967).

Aacharya Jagdish Chandra Bose Indian Botanic Garden (AJCBIBG), Howrah is a 227 years old historic botanic garden and abode of several well documented native and exotic flora expanded in 273 acres. Apart from these plants, this garden also harbors a number of macrofungi. During mid-rainy season (July-August, 2013) authors, while undertaking routine survey of AJCBIBG came across an interesting species of *Xylariaceae* which after thorough macro- and micromorphological studies followed by literature survey reveals as an undescribed taxon and is proposed here as *Poronia radicata*. Detailed description of this species is given here along with the relevant photographic illustrations.

### Materials & Methods

Macromorphological/field characterization was made with the fresh fruit bodies. Field photographs of these fruit bodies were taken with the help of Nikon D300s and Olympus C-5060 (wide zoom) camera. Colour codes and terms (mostly) follow Methuen Handbook of Colour (Kornerup and Wanscher, 1978). After recording the macromorphological characters fruit bodies were dried in the sun as well as with a wooden drier.

Micromorphological characters were noted with the aid of a light microscope: Olympus CX 41 based on the dry samples mounted in a mixture of 5 % KOH and phloxin, 30 % glycerol, lactophenol, cotton blue and Melzer's reagent. Ascospore measurements are recorded based on that of twenty ascospores. Ascospores are measured in side view. Measurements of ascospore-size and length/width ratios (Q) are presented as: minimum–mean–maximum. Herbarium name is after Holmgren *et al.*, 1990.

### Taxonomy

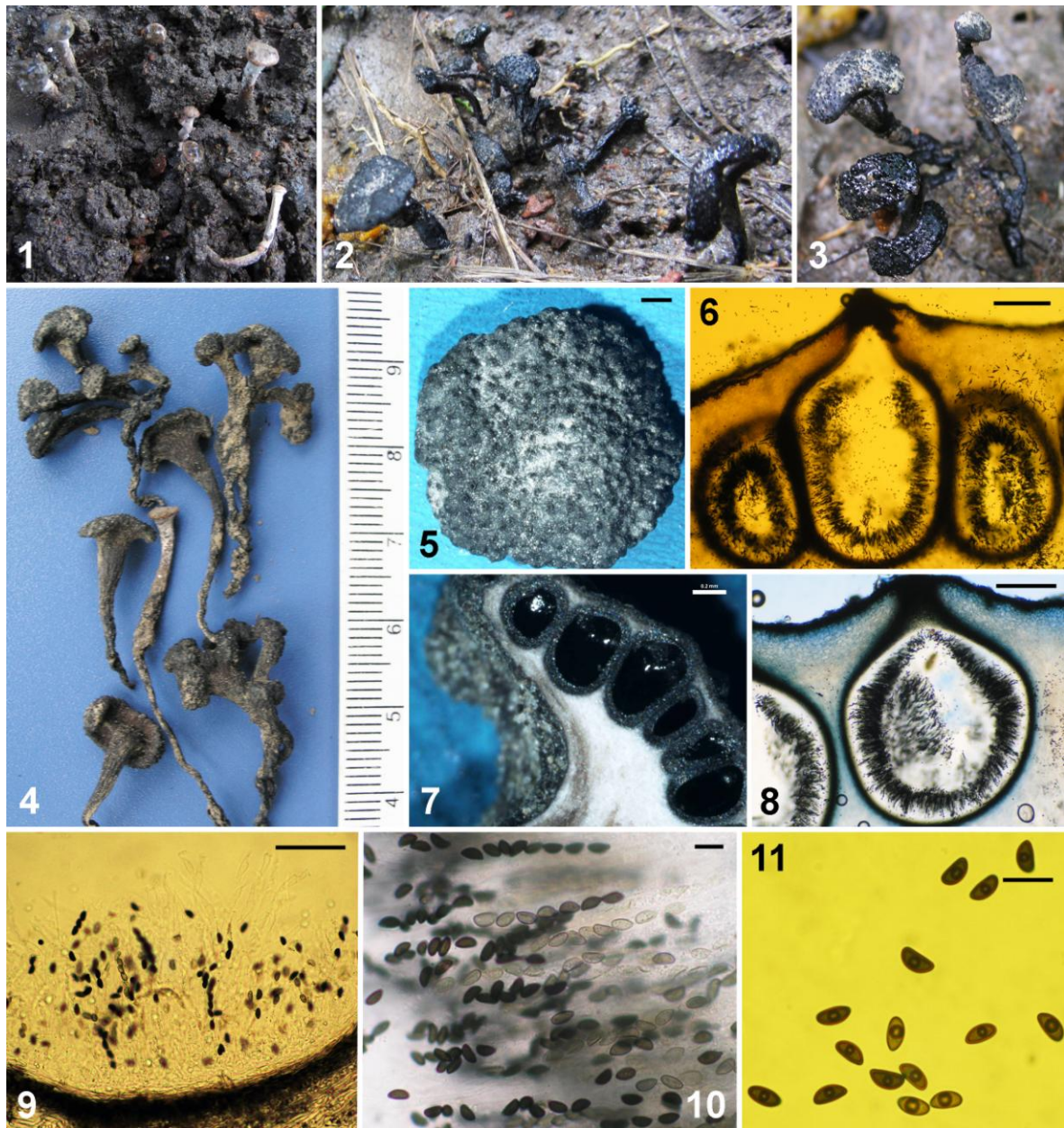
*Poronia radicata* Hembrom, A. Parihar & K. Das *sp. nov.* Figs. 1–11

MycoBank – MB 805422

Etymology – To recognize the long rooting base of the stromatal stalk.

Fruit bodies (stromata) scattered to gregarious, distinctly marked into fertile head bearing perithecia, supporting stalk holding heads and underground rooting bases, 1.5–5.5 cm high, overall stromatal exterior glabrous and crusty whereas interior homogenous, waxy in texture, chalky white (A1). Stromatal head, 1–9 mm wide, convex when young gradually capitate with an expanded flattened disc, glabrous, overall (1A2–1B2) when fresh while charcoal black on drying, upper fertile surface rough appearing mammilose (under stereo zoom microscope). Stromatal stalk, 0.5–8 mm wide, erect to irregularly tortuous, simple to branched, cylindrical to flat, gradually widening towards the head, glabrous, striations like decurrent lamellae, yellowish white to orange white (3A2–5A2) powdery mass on outer surface when fresh and young, gradually turning into charcoal black to dull black; texture soft when fresh, waxy and hard when dry, context white; basal underground roots (often more than the half length of fruit bodies) often branched, cylindrical, crusty, solid, gradually thinning towards the tip, 0.2–5 mm wide, texture soft when fresh, hard on drying, context white (A1).

Perithecia globose to slightly elongate, 600–800 × 450–600 μm, papillate, papillae 130–170 μm long, most of the part embedded in white and waxy flesh, each perithecia are separated from the each other by up to 50 μm. Asci 8-spored, 62–68 × 5–7 μm, arranged in a uniseriate manner, cylindrical, stipitate, spore bearing part 35–41 μm long, cube shaped apical ring up to 1.5 μm, which turns blue in Melzer's reagent and found only in young specimens. Paraphyses 80–150 × 3–5 μm, hyaline, septate, many, remain among the asci and visible well in young specimens. Ascospores 5–6.96–9 × 2.5–3.15–4 μm, Q = 1.33–2.24–3, hyaline to dark olive brown, fusiform, (sometimes concave in one side).



**Figs 1–11** – *Poronia radicata* Hembrom, A. Parihar & K. Das (KMA 13-023). **1–3** Young and mature fruit bodies on their habitat. **4** Fruit bodies showing capitate stromatal head and rooting stromatal base. **5** Top view of stromatal head. **6, 8** Papillate perithecia. **7** Longitudinal section through stromatal head showing the arrangement of perithecia. **9** Spores and paraphysis inside the perithecia of young fruit body. **10–11** Ascospores. Scale bars: **5** = 1 mm; **6, 8, 9** = 50  $\mu$ m; **7** = 0.2 mm; **10,11** = 10  $\mu$ m.

Specimens examined – Type: India, West Bengal, Howrah, Shibpur, AJCBIBG, alt. 12m, N 22°33'39.1" E 88°18'03.7", on ground, under hedge of *Putranjiva roxburghii* Wall., 15 July 2013, K. Das, M.E. Hembrom & A. Parihar, KMA 13-023, CAL 1140 (holotype).

Notes – *Xylaria* like erect habit of fruit bodies, scattered to gregarious and terrestrial growing pattern, stalked stroma bearing fertile disc which is capitate to expanded or flattened,

place the present taxon under the genus *Poronia*. Considering most of the macro- and micromorphology, *Poronia radicata* appears to be quite close to *Poronia pileiformis* (Berk.) Fr. but, the latter one can only be separated by its distinct bulbous (never rooting or tortuous or branched) base and the coprophilous habitat (Rawla & Narula 1983). Feature like the stromata with long rooting base of the present species well resembles *Xylaria kurziana* Curr.

(also reported from AJCBIBG), (Currey 1874, Ahmad 1946) but *X. kurziana* can be separated by its distinguishingly larger spores: 12.5–16.5 × 6–7.5 μm (Ahmad 1946).

Moreover, the combination of features like, long underground branched rooting base (more than half of the length of the entire fruiting bodies), upright branched stipe and/terminally branched stromata, absence of paraphyses and apical germ pore in the mature specimens and hyaline to dark olive brown comparatively small sized spores with rounded germ pore, undoubtedly, place the present taxon as a distinct species. Furthermore, *Poronia radicata* are found on ground and under hedge of *Putranjiva roxburghii* Wall.

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