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BOLETACEAE OF KUMAUN HILLS, INDIA II

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Summary: This paper gives a detailed description of four species of Boletaceae collected from various localities in the Kumaun region. These new records for India are Boletus appendiculatus, B. edulis, B. formosus and B. pulverulentus.

Zusammenfassung: Eingehende Beschreibung von vier Boletaceae, die an verschiedenen Orten der Kumaun Region gefunden wurden. Diese vier Erstfunde für Indien sind Boletus appendiculatus, B. edulis, B. formosus und B. pulverulentus.

Résumé: Description détaillée de quatre Boletaceae qui ont été trouvées dans différentes stations de la région de Kumaun et qui constituent des espèces nouvelles pour l'Inde: Boletus appendiculatus, B. edulis, B. formosus et B. pulverulentus.

Berkeley (1851, 1852, 1854) was the first to report 12 species of Boletus Fr. and 3 species of Strobilomyces Berk. from India. After him only few species have been added to the list of known Boletaceae (Bilgrami et al., 1979; Watling and Gregory, 1980). Horak (1980) re-described Berkeley's papers dealing with Indian Boletaceae. The authors

started to study these fungi from Kumaun hills in 1979 and reported Boletus craspedius Mass., B. dissiliens Corner and Tylophilus indecicus (Peck.) Murr. as new records from India (Harsh and Bisht, 1983). In the present paper 4 more species, which are new records from India, are being described in detail. The specimens have been deposited at the Herbarium, Botany Department, Kumaun University, Naini Tal.

Boletus appendiculatus (Fr.) Secretan, Mycogr. Suisse 3:34. 1833.

Syn.: Boletus edulis f. appendiculatus Fr., Syst. Mycol. 1: 390.

1821.

(Plate 1; 1-6)

Pileus 5-15 cm, convex when young becoming planoconvex to shallowly depressed on the disc at maturity, sometimes irregular, surface dry, occasionally subviscid, glabrous to slightly tomentose, buff to pale yellow when young, changing dull yellow to pale brown at maturity; margin entire, decurving on drying; context 1-3 cm, pale yellow, slowly changing to blue on bruising; stipe 5-10 x 2-4 cm, bulbous at the base or sometimes equal, solid, firm, dry, yellow with vinaceous to reddish brown stains, distinctly reticulated for two thirds to the entire length, reticulations concolourous, flesh pale yellow in the cortical region, whitish in the central portion, slightly cyanescent; tubes 1-2 cm long, narrowly depressed, pale yellow when young, slightly darkening with age, pores angular, concolourous, cyanescent.

Spores olive brown in mass, amyloid, smooth, guttulate, thin walled, subcylindric, 11-16 x 4-6 μ m; basidia hyaline, clavate, 22-30 x 8-12 μ m, four-spored; cheilocystidia hyaline, thin-walled, fusoid-ventricose, 45-65 x 7-13 μ m; tube trama boletoid, divergent, hyphae hyaline, without clamps, 5-8 μ m in diameter; pileus surface consisting of interwoven hyphae; stipe surface fertile on the ridges, interwoven in the rest portion.

Chemical tests. KOH: context pale vinaceous; NH_4OH : context blue;

HCl: cuticle scarlet; HNO_3 : context vinaceous, cuticle scarlet.

Habit and habitat: Solitary to gregarious in humus in hardwood forests, usually under oaks, collected from Government House, Naini Tal, N 446, July 10, 1980.

Boletus edulis Fr., Syst. Mycol. 1: 392. 1821.

Syn.: Leccinum Edule (Fr.) Gray, Nat. Brit. Pls. 1:647. 1821.

(Plate 1; 7-12)

Pileus 5-17 x 1-3 cm, convex when young becoming planoconvex at maturity, surface moist becoming viscid with age, often becoming irregular, pale brown to buff, darkening to reddish brown with age; margin paler in colour, entirely decurving at maturity; context 2-4 cm thick, firm, white, non cyanescent; stipe 7-15 x 1.5-2.4 cm, up to 5 cm thick at the base, basal portion uneven or wrinkled, solid, white to pale brown, reticulate at least over some portion, with white tomentum at the base; flesh white, not cyanescent; tubes 1-3 cm long, adnexed, becoming depressed with age, white when young, becoming yellow with age, not cyanescent; pores 2-3 per mm, angular, concolourous with tubes, not cyanescent.

Spores dark olive brown, fusiform to subellipsoid, smooth, hyaline in KOH, 12-18 x 3.5-7 μ m; basidia 25-40 x 9-12 μ m, four-spored; cystidia hyaline, thin-walled, deeply embedded in the hymenium, 45-65 x 5-10 μ m, tube trama boletoid, hyphae 5-7 μ m in diameter, clamps absent; hyphae of the pileal surface hyaline, 5-7 μ m in diameter, stipe surface fertile, caulocystidia fusoid-ventricose, scattered among the basidia.

Chemical tests. KOH: context pale brown; NH_4OH : context red to pink.

Habit and habitat: Solitary to gregarious on soil in pine forest, collected from Almora, N 220; August 6, 1979.

Boletus formosus Corner, Boletus in Malaysia. p.118. 1972.

(Plate 2; 1-6)

Pileus 6-10 cm, convex to plano-convex, surface dry, sub-tomentose, dull, purplish crimson then rufescent fawn; margin entire; context 0.5-1.0 cm, pale, slowly cyanescent in younger fruiting bodies, may or may not be cyanescent in older ones; stipe 4-8 x 0.7-1.5 cm, solid, subcylindric, slightly thickening and ribbed at the base, concolourous with the pileal surface or darker, shallowly reticulate with elongated meshes, sometime only in the upper part; flesh brownish, slowly cyanescent or not at all; tubes 0.5-1.5 cm, sinuate-ventricose, pale yellow then ochraceous; pores angular to circular, 2-3 per mm, concolourous with the tubes, slightly cyanescent when young.

Spores pale yellow, cinnamon, smooth, thin-walled, guttulate, sub-cylindric, 11-16 x 4.5-5.5 μm ; basidia hyaline, clavate, 25-35 x 8.5-12 μm , four-spored; cystidia abundant on the tube surface as well as on the edge, thin-walled, ventricose, obtuse, sometimes with a short obtuse appendage, 12-17 x 5.5-12 μm ; pileal surface consisting of interwoven and appressed hyphae, 5-13 μm wide, some ending into clavate cells; caulocystidia hyaline, ventricose, considerably varying in length, up to 75 μm long.

Habit and habitat: In humus, usually in oak forests, collected from College campus and Government House Road, Naini Tal, N 516; August 29, 1981.

Boletus pulverulentus Opatowski, Wieg. Archiv. Naturgesch. 2:27. 1836.
Syn.: Xerocomus pulverulentus (Opat.) Gilbert, Les Bolets p.116. 1931.
(Plate 2: 7-12)

Pileus 5-8 cm, broadly convex when young, becoming plane with slightly elevated or uplifted margin at maturity; surface dry, velutinous to dark brown, sometimes pale buff, rarely with rust-coloured tinges or flushes when older; margin entire, decurving on drying; context 0.5-1.5 cm, yellow, quickly cyanescent; stipe 4-7.5 x 1-2.5 cm, equal or tapering slightly towards the base, solid, dry, bright yellow at the apex, changing to deep yellow at the central portion, finally becoming reddish brown at the basal portion, not reticulated, sometimes longitudinally ridged; flesh yellow, quickly cyanescent; tubes 1-1.5 cm long, decurrent to adnate, greenish-yellow at the beginning olive green with age, quickly cyanescent.

Spores dark olive to olive brown in mass, ochraceous in KOH, weakly amyloid, subellipsoid, smooth, moderately thick-walled, many appearing obscurely truncate with no annular thickening, 14-17.5 x 4-6.5 μm ; basidia hyaline, clavate four-spored, 25-32 x 6-9 μm , cheilocystidia hyaline, thin-walled, fusoid to clavate, often with elongated and tapering apices, 45-60 x 10-15 μm ; tube trama obscurely divergent; hyphae hyaline, without clamps, 3-5 μm broad; pileus trama homogenous and interwoven; pileal cuticle differentiated as a tufted trichodermium; hyphae brown to dark brown, some incrustated, incrustation all over the surface, 5-6.5 μm broad with a few erect hyphal tips.

Chemical tests. KOH: cuticle darkening; HNO_3 : cuticle red.

Habit and habitat: Usually in groups of 2-4 pilei on soil, collected in oak forests, Mall Road, Naini Tal, N 483; July 25, 1981.

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PLATE 1

Boletus appendiculatus (1-6)

1, 2. Fruit body; 3. Hyphae from pileal surface;
4. Basidia; 5. Basidiospores; 6. Cheilocystidia.

B. edulis (7-12)

7, 8. Fruit body; 9. Hyphae from pileal surface;
10. Basidiospores; 11. Caulocystidia; 12. Basidia.

PLATE 2

B. formosus (1-6)

1, 2. Fruit body; 3. Hyphae from pileal surface;
4. Basidia; 5. Basidiospores; 6. Caulocystidia.

B. pulverulentus (7-12)

7, 8. Fruit body; 9. Hyphae from pileal cuticle;
10. Basidiospores; 11. Cheilocystidia; 12. Basidia.

PLATE 1

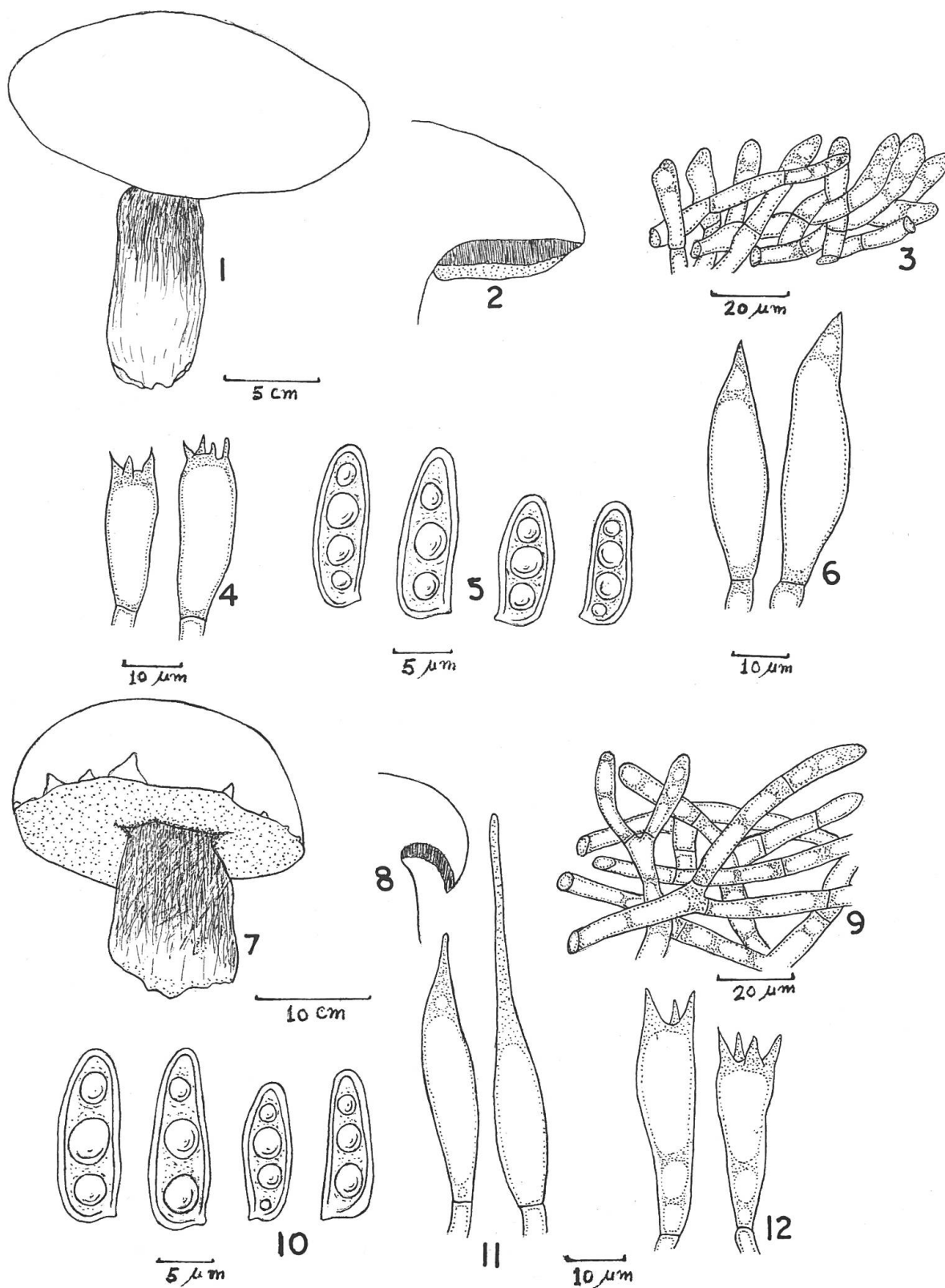


PLATE 2

