

A REMARKABLE BOLETE: VALIDATION OF *BOLETUS PELTATUS*

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Boletus peltatus Corner is validated, based on two recent records from lowland dipterocarp forests near Kuala Lumpur, Malaysia.

INTRODUCTION

In 1972 E. J. H. Corner produced an extensive account of the boleti of Malaysia based on his long experience. 140 taxa were described (Corner, 1972) 71% being new to Science; this latter figure is in parallel to the new species he described in the pleurotoid fungi, polypores, etc. The majority of Malaysian boletes were dealt with in the single genus *Boletus*, a treatment which would not be supported by many authorities today (e.g. Pegler & Young, 1981; Singer, 1986); one of the species treated was '*Boletus peltatus*' and although given a latin name had no supporting herbarium material. According to the International Code of Botanical Nomenclature (Art. 37) this name cannot be accepted. By good fortune a fungus agreeing with the description given was collected in 1992 whilst on a mycological field trip to Pasoh with a group of students from the Forest Research Institute, Malaysia. It was instantly recognized as Corner's species, but had he not published his description, even though he had lost his material, our data would not have come together. Amongst a collection of fungal illustrations loaned to me by Dr Lee Su See, FRIM, based on collections mainly made around Kepong, the author again recognised the Pasoh bolete so striking is it. One year later many individual basidiomes of *B. peltatus* were again found at Pasoh. I have therefore no hesitation in validating this member of the Boletales - Basidiomycotina. Prof. E.J.H. Corner has kindly agreed to join in the authorship (and the measurements for his 1930 collection are added in parenthesis in the English description below).

***Boletus peltatus* Corner & Watling, sp. nov.** Fig. 1 A-H.

Boletus peltatus Corner, *Boletus in Malaysia* 136 (1972) nom. nud.

Pileus 50 mm convexus late expansus, siccus, subtomentosus, vinaceus brunneus vel purpureo-castaneus late cinnamomeus vel testaceus. *Stipes* 110 x 20 mm basim versus 30 mm, ventricosus-clavatus, ad basim attenuatus valde lacunosus-reticulatus, apicem versus reticulatus ad basim alveolis vix elongatis. *Tubi* 4-5mm, adnati vel sinuato-subdecurrentes griseo-olivacei; *poris* citrinis late griseo-citrinis. *Caro* alba, immutabilis firma. *Basidiosporae* 10.5-14 x 4.5-5µm, leves, boletoideae. *Holotypus* Malaysia, Pasoh, Watling 25151 (E).

Pileus 30-50mm (50-60mm sic Corner), convex then expanding, dry, velvety to subtomentose, suede-like, dark vinaceous brown to purple chestnut becoming paler, brick-colour to cinnamon (cinnamomeo-cervinus v. subfulvus sec. Corner). *Stipe* 80-110 x 12-20mm 30mm at base (70-85 x 11-15, basim versus 20-25mm sec. Corner), central, sturdy, ventricose-clavate tapered at very base and attached to white mycelium, heavily and strikingly longitudinally reticulate with high, elongate, wing-like projections 3mm high toward base, concolorous with pileus on dark buff background, apical

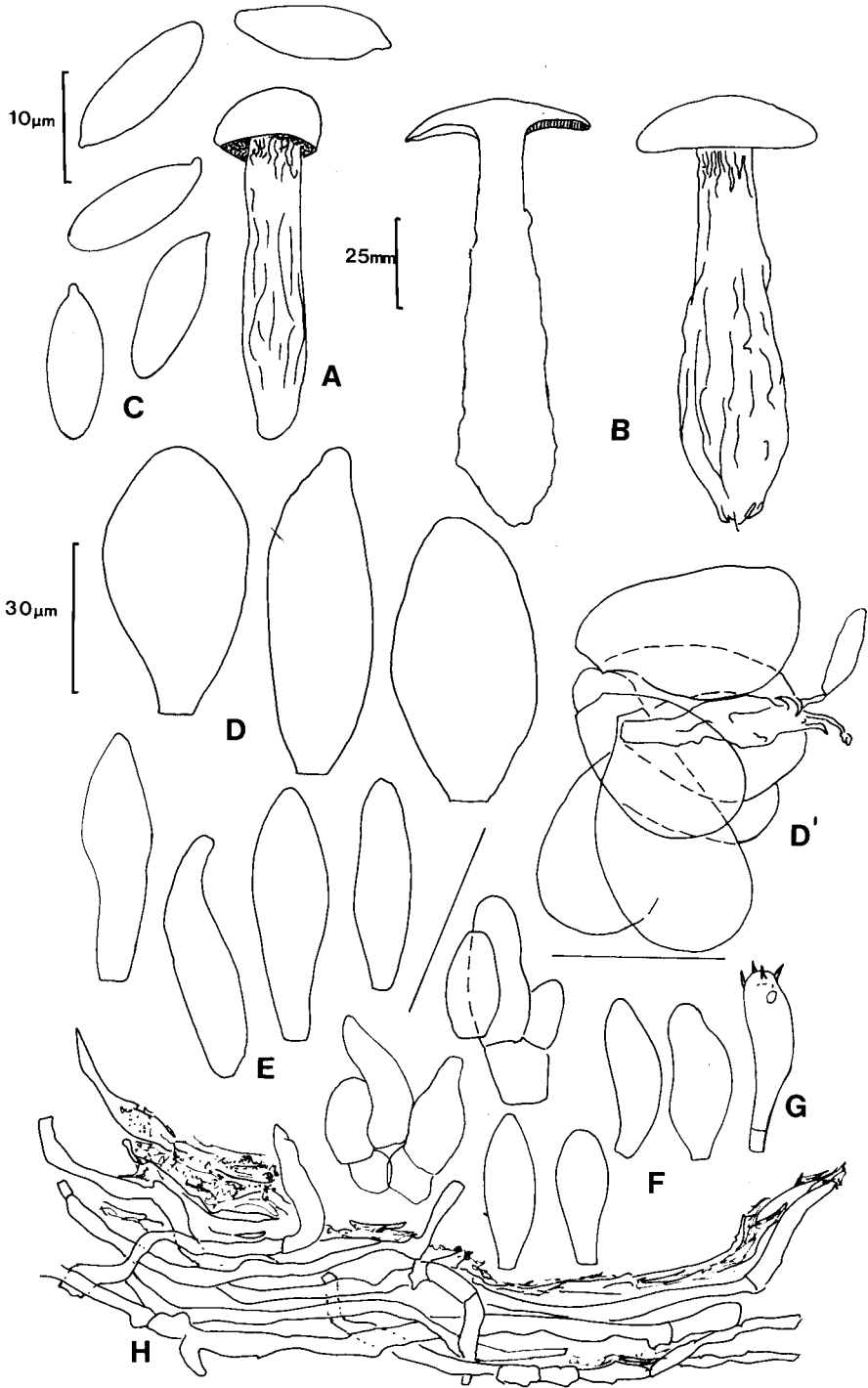


FIG. 1. *Boletus peltatus*. A, basidiome; B, basidiome and section; C, basidiospores, D, D', cells of stipitipellis; E, pleurocystidia; E, cheilocystidia; G, basidium; H, pileipellis. A from *Lee Su See* 633; B-H from *Walling* 25151 (holo. E).

areas strongly reticulate more tawny to rust-colour on a yellowish or ochraceous buff background. *Tubes* adnate to sinuate with or without subdecurrent tooth, 4–5mm long, greyish yellow; *pores* lemon yellow then duller and perhaps streaked irregularly with rust-colour where handled, quite small. *Flesh* thick and solid in pileus and stipe, thinner towards margin, white or faintly streaked with pinkish brown in stipe-base, unchanging (not cyanescent).

Basidiospores 11.5–14 x 4.5–5µm, subfusiform, flattened in one plane (inequilateral), pale olivaceous yellow (s.m.), (olivaceous in mass sec. Corner), smooth, lacking any apical differentiation (Fig. 1C). *Basidia* 4-spored, clavate, hyaline to honey-coloured (Fig. 1G). *Cheilocystidia* not highly differentiated forming well-developed fringe to pore orifice, acuminate to mucronate to clavate or obclavate, hyaline to honey-coloured 20–25 x 5–6.5µm (Fig. 1F); *pleurocystidia* very rare, fusiform-lanceolate, hyaline 40–50 x 15–16µm, otherwise similar to those on margin (Fig. 1E). *Hymenophoral trama* distinctly divergent, hyaline with little gelatinization, and poor bilateral pattern, passing into anastomosing, thin-walled, open, hyaline hyphal cells. *Pileipellis* composed of distinct suprapellis of irregular tangle of hyaline to honey-yellow, flexuous, smooth, more rarely faintly roughened, septate, uniform hyphae 3–5µm broad with apical differentiation of end components in a few hyphae, and those slightly torpedo-shaped < 7.5µm and ± sub-erect, collapsing and possibly slightly agglutinated into small compacted areas; *subpellis* tawny orange, colour leaking into media in ammoniacal solutions, rather more compacted than suprapellis and pileus trama and with dispersed silvery laticiferous elements (Fig. 1 H). *Stipitipellis* filamentous supporting high ridges of inflated cells interspersed with basidioles and basidia (Fig. 1D & D').

Material examined: Malaysia, Pasoh, Negri Sembilah, 17 iii 92, track side in rainforest, *Wat.* 24479 (E); Pasoh, Negri Sembilah, track side under dipterocarps, 30 iii 1993, *Watling* 25151 (holo. E).

Illustration of material from Hutan S. Berkelah Jengka (1991) apparently on wood (*Lee Su See* 633): Fig. 1A.

Recorded by Corner (1972) from Gunong Panti, Johore (30 iii 1930; in troop on soil in woodland). Now the author has seen more material he believes that despite the colour of the spore-print, more bronze than olivaceous *Woods* 18 in E from Sarawak (Matang, 1st Div.) is the same taxon (Watling & Hollands, 1990). Further field data have come to light on this collection previously concealed by a spore-print and these indicate that the stipe of *Woods* 18 was 'rough, dark brown yellow towards the top with reticulations'. A small sketch of the reticulation demonstrates that P.J.B. Woods too was impressed by this feature. Chalermpongse (1992) recorded *B. peltatus* from Thailand, but failed to validate the name.

As Corner (1972) indicated, *B. peltatus* is a remarkable *Boletus* with its evenly coloured brown, rather flattened pileus and strongly lacunose-reticulate stipe, and with this the author concurs. But this latter phenomenon is found in other bolete genera. Thus the N America *Boletellus russellii* (Frost) Gilb. is similarly ornamented and *Austroboletus eburneus* Watling & *A. occidentalis* Watling from East and West Australia respectively and *A. niveus* (McNabb) Wolfe and *A. novae-zelandiae* (McNabb) Wolfe from

New Zealand are equally endowed. *Boletellus*, however, has striate basidiospores and in *Austroboletus* the spores are verrucose or have peg-like ornamentation particularly well-developed in the mid-region. They are both distantly related to *Boletus peltatus*. In Malaysia the stipes of *Boletus mucosus* Corner are strongly ornamented and those of *B. valens* Corner are strongly reticulate but both species are not close taxonomically. Both species have ornamented basidiospores.

Corner (1972) draws comparison between *Boletus frostii* Peck of N. America and *B. peltatus* but the former species is a member of the *Luridi* with red pores, pileus and stipe; the stipe it is true is strongly reticulate. The N. American *B. ornatipes* Peck, as the epithet suggests, also possesses strongly ornamented stipes, but a definite reticulum is present and not a raised, lacerate coarseness. *Pulveroboletus retipes* (Berk. & Curt.) Singer which for some time was considered a synonym of *B. ornatipes* also has a reticulate stipe but no more strongly developed than in many other boletes. The stipe ornamentation in *B. peltatus* although striking is not unique in the boletes; it shows again how a single character may be found in several unrelated genera; see Watling & Turnbull, 1993.

The sturdy facies and flesh characters resemble two other N. American boletes viz. *Boletus mirabilis* Murrill and *B. projectellus* Murrill. The former is also found in Japan and both species have reticulate stipes, the first with a particularly wide, coarse reticulum at the apex. However, both also have enormous basidiospores 19–24 x 7–9 μ m and 18–33 x 7.5–10(–12) μ m respectively, which distinguishes them readily.

ACKNOWLEDGEMENTS

My thanks are expressed to Professor E. J. H. Corner for sharing his experiences with me and to Dr Lee Su See for the loan of her illustrations.

REFERENCES

- CHALERMPOONGSE, A. (1992). Biodiversity of ectomycorrhizal fungi in the department Forests of Thailand. *Proceedings of Tsukuba Workshop, May 19–21 1992*, pp. 143–153. Tsukuba.
- CORNER, E. J. H. (1972). *Boletus in Malaysia*. Singapore.
- PEGLER, D. N. & YOUNG, T. W. K. (1981). A natural arrangement of the Boletales with reference to spore morphology. *Transactions British Mycological Society* 76: 103–146.
- SINGER, R. (1986). *Agaricales in Modern Taxonomy*. Edn 4. Koenigstein.
- WATLING, R. & HOLLANDS, R. (1990). *Boletus* from Sarawak. *Notes from the Royal Botanic Garden Edinburgh*, 46: 405–422.
- WATLING, R. & TURNBULL, E. (1993). *Boletus* from South and East Central Africa - 1. *Edinburgh Journal of Botany* 49: 343–361.