

DESCRIPTION OF MORPHOLOGY, ANATOMY, AND CULTURAL CHARAC-
OF HYMENochaete PAUCISETOSA SPEC. NOV.

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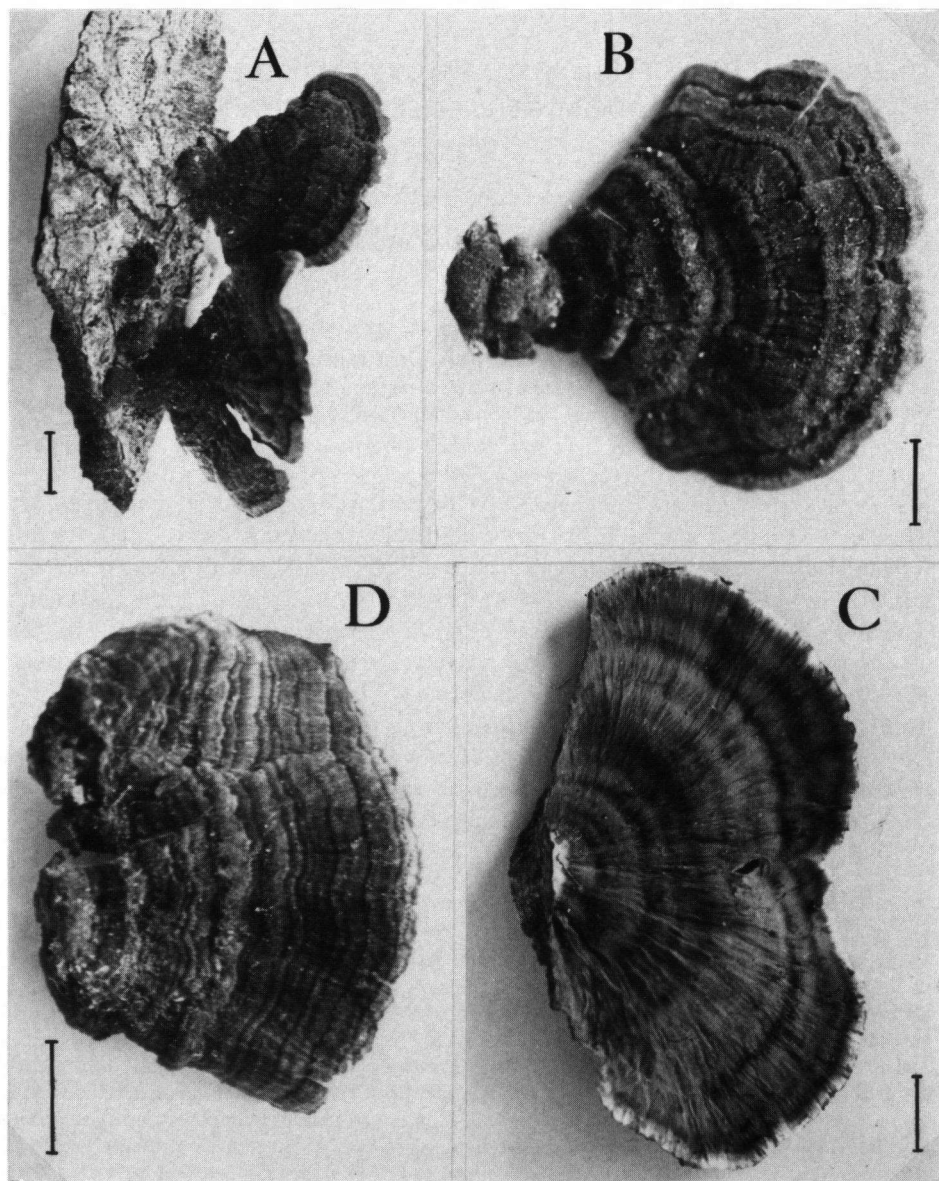
The flabelliform *Hymenochaete paucisetosa* spec. nov. is described from Gabon. Its main character is the scantiness of setae, ten percent of which moreover have an unusual shape. The new species is compared with the more or less closely related species *H. cacao*, *H. villosa* and *H. variegata*. Its cultures have been studied and compared with the only three hitherto described cultures of species of *Hymenochaete*.

In the genus *Hymenochaete* the shape of the basidiocarp varies from stipitate to effused. Whereas the stipitate species appear to be absolutely constant in their form (Reeves & Welden, 1967), many effused species have been reported also with effuso-reflexed or sessile-pileate basidiocarps. Among the African specimens deposited in the Lyon herbarium (LY), the species previously described as new all possess completely effused basidiocarps and exhibit this growth form consistently (Léger, 1980, 1981, 1982, and 1983). The new African species described in this paper, *Hymenochaete paucisetosa*, has a flabelliform (or rarely subdimidiate) habit and strongly resembles *H. cacao* Berk. Little is known about the cultural characters of *Hymenochaete* species. The work of Boidin (1968), restricted to three species, summarizes the limited knowledge, to which the present publication adds information on the cultural characters of *H. paucisetosa*.

Hymenochaete paucisetosa Léger & Lanquetin, spec. nov. — Figs. 1-4

Basidioma saepissime flabelliforme, raro subdimidatum, coriaceum, firmum, in sicco fragile, pileo usque ad 3.5 cm lato. Superficies pilei velutina, zonata, striata, e rufa brunnea, ambitu primum magis luteo dein subconcolore. Superficies hymenii radiatim leviter plicatula, in sicco griseo-luteola, margine maxime sericea, in sicco lutea. Trama monomitica ex hyphis luteis, hymenio parallele jacentibus, pariete crassa, septatis ramosisque, 3-4 μ m diam. Cortex abest. Tomentum ex hyphis brunneo-luteolis, pariete crassa, septatis, parum ramosis, 3.5-4 μ m diam. Hymenium constans e basidiolis dense confertis atque rarioris basidiis, 10-12 \times (2-) 2.5-3 μ m, sterigmatibus 2 μ m longis, utrisque permulta granula non crystallina ferentibus. Spinulae brunneae rarissimae, lanceolatae vel ventricosae, pariete crassa, (20-) 30-40 (-45) \times 5-7 (-8) μ m, usque ad 20 (-25) μ m eminentes vel inclusae. Aliquae spinulae insolitae videndae sunt. Sporae oblongae breves subellipsoideae, 2.8-3.2 \times (1.5-) 1.8-2 μ m, hyalinae, uninucleatae, haud amyloideae, in massa albae.

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Figs. 1A–D. *Hymenochaete paucisetosa* — A., B. Upper surface of flabelliform pilei of type. — C. Hymenial surface of type. — D. Subdimidiate pileus of paratype (LY 7902). (Each bar represents 0.5 cm).

Holotypus: A. David, Julius 1970, Gabon, Makokou, in substrato incognito (LY 6513).

Etymology: from 'paucus' (few) and 'setosus' (setose).

Basidiocarp pileate-sessile, rarely subdimidate (Fig. 1D), very often flabelliform and then attached to substratum by narrow base. Although sessile, pileus sometimes arising from a small adnate patch of basidiocarp resembling a very short stipe (Fig. 1A, B).

Pileus coriaceous and firm, brittle when dry, up to 3.5 cm in radius and 0.7 mm thick in section. Upper surface velvety, concentrically zonate and sulcate, reddish brown (Munsell 5 YR 5/6) with brighter (5 YR 5/8 = ochraceous tawny of Ridgway) and darker zones (5 YR 4/6). Margin somewhat lighter, sometimes entire but lobed in most specimens. Hymenial surface matt umber when fresh (5 YR 4/4-4/3), becoming much brighter when dry, i.e. yellowish grey (10 YR 6/3-6/4 to 10 YR 5/4 = Saccardo's umber of Ridgway), concentrically marked with some narrow lines (corresponding to main grooves of upper surface) and with radiately arranged, very crowded, faintly projecting ridges. Margin of hymenial surface very clearly marked, up to 1 mm wide, very silky, beige when freshy (10 YR 7/4), much more yellow when dry (2.5 YR 8/6 = Naples yellow of Ridgway) (Fig. 1, C). Context (Fig. 2) monomitic, composed of rather compact parallel, light yellow, thick-walled, branched and septate hyphae, 3-4 μ m in diam. Cortex (= cuticle sensu Reeves & Welden, 1967) absent though basal zone of context which gives rise to tomentum is composed of more compact parallel, yellowish brown hyphae. Tomentum 100-300 μ m thick in young specimens, thinner in older ones, composed of loosely woven, yellowish brown, thick-walled, septate, somewhat branched hyphae, 3.5-4 μ m in diam. Hymenium 10-15(-20) μ m thick, a close palisade of basidioles, 10-15 \times 3 μ m, and scattered clavate basidia, 10-12 \times (2-) 2.5-3 μ m, with four slender and arcuate sterigmata 2 μ m long. Both basidioles and basidia covered with numerous small, non-crystalline granulations turning dark blue in Cotton Blue. Setae extremely scattered, arising only from subhymenium, lanceolate to ventricose, thick-walled, reddish brown, (20-) 30-40(-45) \times 5-7(-8) μ m, projecting up to 20(-25) μ m or remaining immersed in hymenium, about 10 out of 100 unusually shaped, some very strange and never described before in the genus, e.g. furcate ones (Fig. 3). Spore print white. Spores oblong to subellipsoid, 2.8-3.2 \times (1.5-) 1.8-2 μ m, hyaline, uninucleate (Giemsa), non-amyloid (Fig. 3).

Collections examined. — GABON, Makokou: July 1970, A. David (LY no. 6513; holotype); July 1970, A. David (LY no. 6513 bis); 20 May 1976, J. Boidin (LY no. 7902, 7907).

The main character of this flabelliform species is the extreme scarcity of the setae. It proved impossible, however, to express the density of the setae in the number per unit of area because of those setae which remain immersed and cannot be detected from the outside. A study of sections taken along radii from the base to the margin of the pileus gave the following results: out of 50 sections, 8 were completely without setae; the greatest number of setae found was 18 in a 2000 μ m long section; the average number of setae per millimeter of section length was 3 (as compared with 80-120 being the average number of setae in similar sections of *H. tabacina* (Sow. ex Fr.) Lév.). The setae are not evenly distributed over the hymenial surface. In some zones they are less rare than in others where they are nearly or completely absent (especially at the margin).

Hymenochaete paucisetosa must be included in section *Fultochaete* Escobar, defined by the presence of a setigerous layer seated on a context devoid of setae and by the lack of a cortex (Escobar, 1978). The only species of this section greatly resembling *H. pau-*

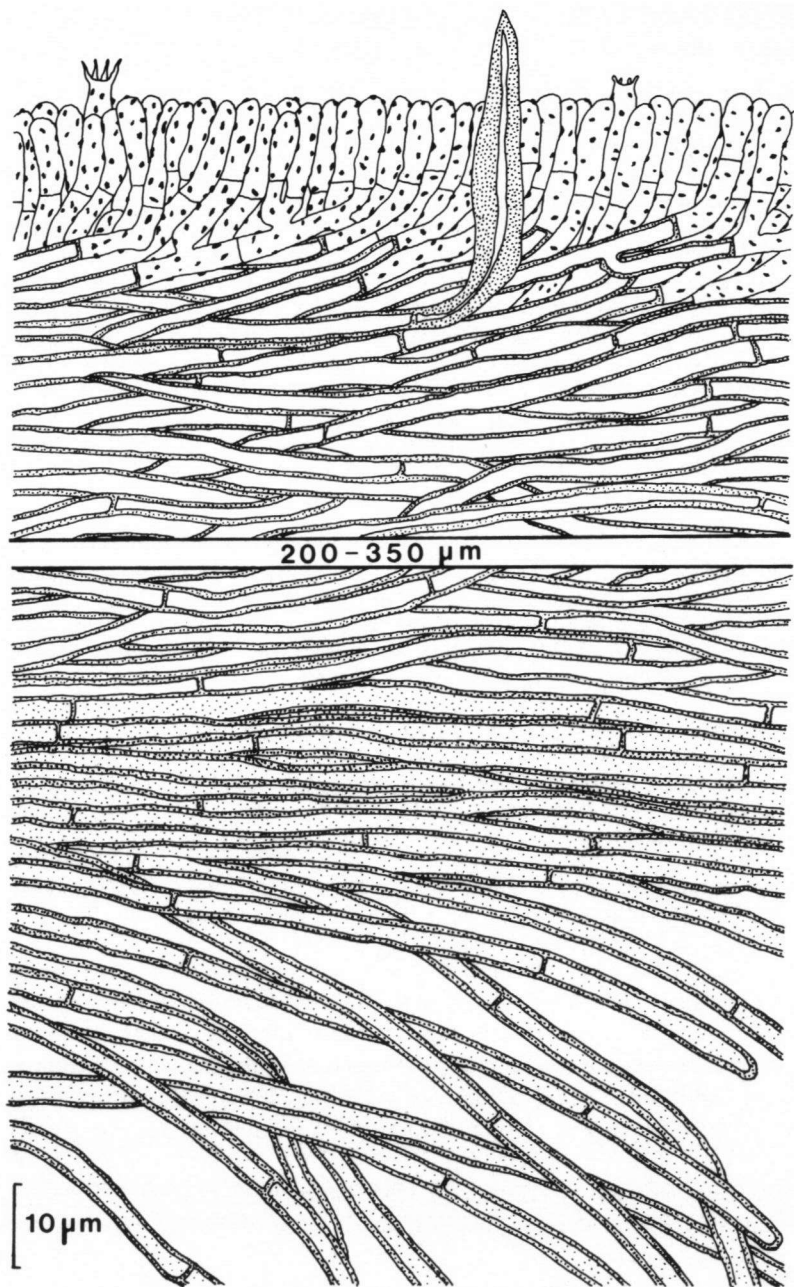


Fig. 2. *Hymenochaete paucisetosa* (type). — Transverse section of basidiocarp.

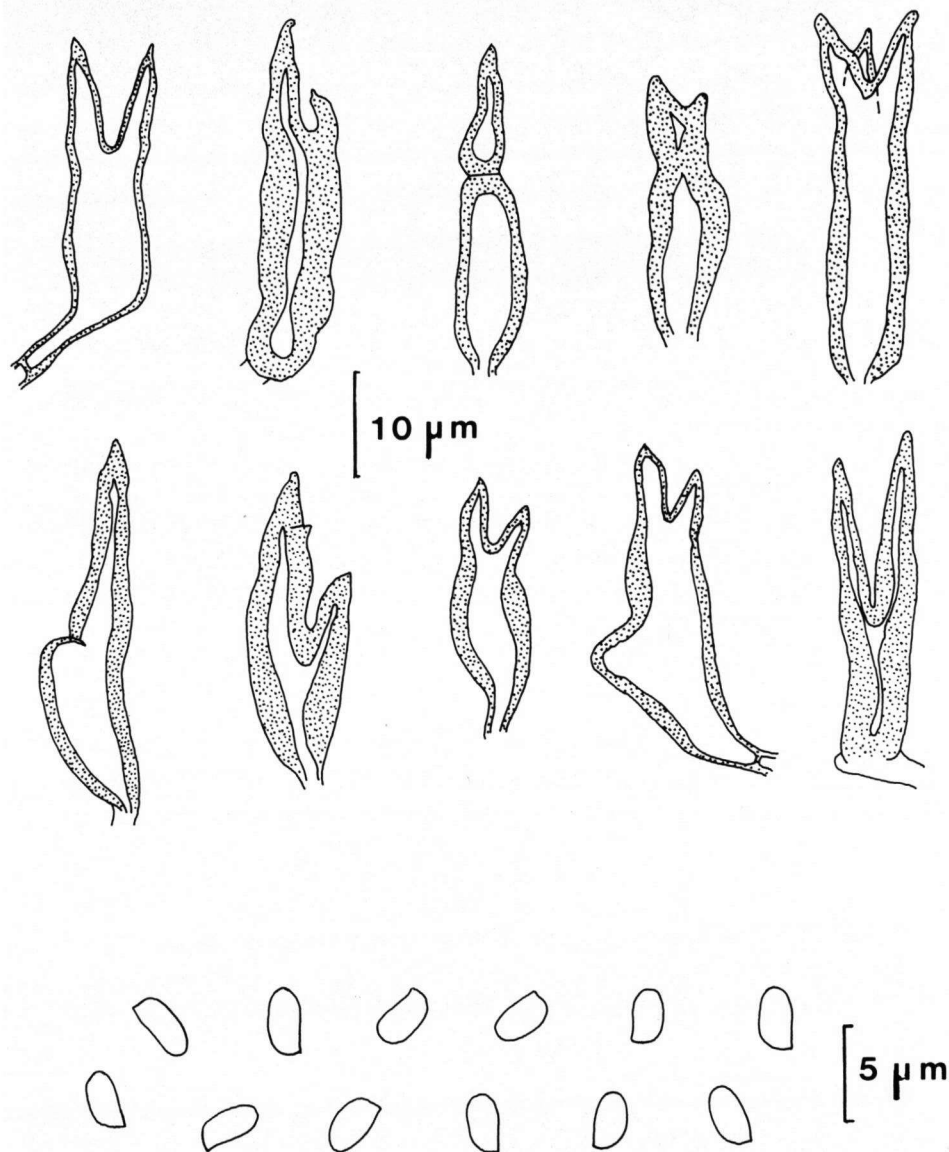


Fig. 3. *Hymenochaete paucisetosa* (type). — Above: Some examples of unusually shaped setae. Below: Spores as seen in phloxine-5% KOH mixture.



Fig. 4. *Hymenochaete paucisetosa* (type). — Microphotograph of the crust developed in culture.

cisetosa is *H. cacao* Berk., which is distinguished from our species by having larger spores ($3.5-4 \times 2-2 \mu\text{m}$) and smaller setae ($20-35 \times 4-7 \mu\text{m}$) densely crowded in 3-6 overlapping rows. *H. paucisetosa* resembles also *H. villosa* (Lév.) Bres. which possesses larger spores ($3.5-4 \times 2-2.5 \mu\text{m}$), a dimittic hyphal system, and above all a cortex of cemented hyphae (Cunningham, 1957). As mentioned above, some specimens of *H. paucisetosa* are subdimidiate. So it seemed interesting to compare this species with the imperfectly known dimidiate species, *H. variegata* Bres. This species, described in 1915, has not been found nor studied again since that time. Examination of the type has shown that two microfeatures, not observed by Bresadola, permit an easy distinction between *H. variegata* and *H. paucisetosa*: the spores of *H. variegata* are short cylindrical, $4-4.5 \times 2-2.5 \mu\text{m}$ and a distinct cortex composed of reddish brown, septate, and thick-walled hyphae, $4 \mu\text{m}$ in diam. is present. In addition the upper surface of the pileus of *H. variegata* is zoned with very dark, almost black lines which are never present in *H. paucisetosa*.

Summarizing it can be said that *H. paucisetosa* is an attractive and well-characterized new flabelliform species growing in Africa, which probably remained undiscovered till now because it occurs on a mycologically poorly investigated continent.

CULTURAL CHARACTERS OF HYMENOGHAETE PAUCISETOSA

(Type, LY no. 65131)

Spores: uninucleate.

Germination: the spores germinate after five days, producing one to two hyphae composed of uni- or binucleate articles, most frequently in rows.

Monosporous cultures: the four cultures studied showed hyphae with binucleate articles. However, one of the cultures had rare and isolated cell containing 1-3 to 4 nuclei and exhibited some limited rows of trinucleate articles. The monosporous mycelia seem identical with the polysporous cultures thus this species could be homothallic.

Polysporous cultures:

Growth: very slow (Petri-dishes not covered after six weeks).

Aspect: Margin irregular. In the young part of the culture the aerial mycelium (poor, slightly mustard-coloured, loosely arachnoid to faintly flocculose by examination with (lens) does not conceal the red-brown colour of the medium. In the older half of the culture a pale chocolate crust (5 YR 5/3 to 6/3) takes form, covered initially with very fine down-like hyphae which from time to time produce dark tufts which finally agglomerate into a granular, honey coloured (2.5 YR 7/6) layer tending to become ferruginous (10 YR 6/6) when the layer is thicker. Reverse red-brown, about 5 YR 4/3 and 3/4. No odour.

Microscopical characters:

Aerial mycelium: made up of rather regular hyphae without clamps. The axis, 3.5–4 μ m in diam., and the branches, 1.25–2 μ m in diam., are slightly to clearly thick-walled, sometimes distinctly brown. On the surface of the medium, the brown crust is composed of brown hyphae which are joined in a jig saw puzzle manner (Fig. 4).

Submerged mycelium: the hyphae are identical with those of the aerial mycelium but with more irregular branches. The dark brown colour observed on the reverse of the cultures does not penetrate more than 3 mm; the remainder of the medium being simply amber-coloured.

Cytology: hyphae with regularly binucleate articles.

Oxidases: gallic acid: +++, tr. gaicol: +++, 0

p-cresol: - tyrosine: -, 0

Code (Nobles, 1965; Boidin, 1966): 2a-6-10-32-37-39-47-54-(57)-(61).

The main cultural characters of *Hymenochaete* species, which can be found in the work of Boidin (1958), are the absence of clamps, the presence of a brown crust and also the identical aspect and cytology of both monosporous and polysporous cultures (leading to the supposition that the species could be homothallic). The behaviour in culture of *H. paucisetosa* agrees with these three points.

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RÉSUMÉ

Description d'une nouvelle espèce d'*Hymenochaete*: *H. paucisetosa* Léger & Lanquetin. Cette belle espèce flabelliforme, récoltée en Afrique, est comparée à trois espèces qui semblaient les plus proches d'après la littérature: *H. cacao* Berk., *H. villosa* (Lév.) Bres. et *H. variegata* Bres. Le caractère majeur de *H. paucisetosa* est la rareté des spinules. Les caractères culturels font d'autre part l'objet d'une étude détaillée qui apporte confirmation des principaux caractères déjà observés dans quelques espèces du genre.

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