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New Tropical Species in the Paxillaceae

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Summary: A second species of the genus *Neopaxillus* from Puerto Rico (U.S.A.) is described. The genera *Neopaxillus* and *Ripartites* are compared. A new species of *Paxillus*, section *Atrotomentosi* from Amazonian Peru is described.

Zusammenfassung: Eine zweite Art der Gattung *Neopaxillus* wird aus Puerto Rico (U.S.A.) beschrieben. Die Gattung *Neopaxillus* wird mit *Ripartites* verglichen. Eine neue Art von *Paxillus*, Sektion *Atrotomentosi* wird aus Amazonia, Peru beschrieben.

Résumé: Une deuxième espèce du genre *Neopaxillus*, récoltée à Puerto-Rico (E.U.) est décrite. Les genres *Neopaxillus* et *Ripartites* sont comparés. Une nouvelle espèce du genre *Paxillus*, section *Atrotomentosi*, récoltée en Amazonie péruvienne, est décrite.
(Résumé Mycol. Helv.)

1. *Neopaxillus plumbeus* spec. nov.

Neopaxillus was based on a species, *N. echinospora* (Speg.) Sing. from the continental Western hemisphere, reaching from the southern subtropics north to northern Mexico, but as a genus, it remained monotypic. *Neopaxillus* is herewith extended to allow entrance of a second species, *N. plumbeus* Sing. & Lodge, which was collected twice in Puerto Rico (W.I.) and which we shall describe below.

¹⁾ The Field Museum of Natural History provided additional support and Dee Research Fellowship Funds.

Neopaxillus plumbeus spec. nov. Pileo plumbeo vel caerulescente, levi vel breviter sulcato-striato, subfurfuraceo-verruculoso dein glabrescente, convexo umbilicatoque, demum infundibuliformi, 4-9 mm lato. Lamellis pallide griseolis, vel sordide griseis, simplicibus vel nonnullis furcatis, moderatim confertis, decurrentibus. Stipite griseo, subaequali, 5-7 x 0.7-2 mm; mycelio basali albo; velo nullo. Carne pallide grisea.

Sporis (5)-6-8 x (5)-6-7,8 μm , \pm globosis, paucis subglobosis, echinulatis, rarius verrucosis, ornamentatione 0.5-0.9 μm projiciente, brunnea intra perisporium, echinulis isolatis vel breviter catenulatis, inamyloideis. Hymenio e basidiis et cystidiis efformato. Basidiis 17-26-(35) x (5)-6.7-8-(9) μm , tetrasporis. Cheilocystidiis et paucis cystidiis inter basidia dimorphis (a) versiformibus, plerumque clavatis vel cylindraceutis vel fusiformibus, obtusis, interdum acutis, et 21-28-(40) x 4-8.5 μm , hyalinis, et (b) filiformibus, saepe anguste ampullaceis vel anguste utrififormibus et 21-27 x 3-4.5 μm , obtusis, hyalinis; cystidiis raris, cheilocystidiiformibus. Hyphis numquam gelatinosis, fibulis praeditis; trama hymenophorali regulari, ex hyphis parallelis vel subparallelis, inamyloideis, 1.5-8.5 μm latis efformata. Epicute supra cutem basicam ex hyphis fasciculatis ascendentibus formata; hyphis granulatim incrustatis pigmento brunneo. Ad terram in silvis tropicalibus, Puerto Rico [Lodge & Prieto 38 (F) - typus].

Pileus gray 266 to gray purple blue 204 (Kelley 1965), sometimes gray with a slight blue-green tint when young, smooth or short sulcate-striate, at first slightly furfuraceous-verruculose (lens) but glabrescent, slightly or scarcely hygrophorous, dried deep brown, convex umbilicate then infundibuliform, 4-9 mm broad. Lamellae pale grayish to sordid gray, later with some salmon to brown orange 54 (Kelley 1965) areas which are probably from spore accumulations, simple or some forked, narrow (\pm 1 mm broad), moderately close (i.e. 2 per mm), decidedly and rather deeply decurrent. Stipe gray (246-265, Kelley 1965), smooth and glabrous, subequal (some with widened apex or base) straight to somewhat curved, 5-7 x 0.7-2 mm; basal mycelium white; veil none. Context pale gray, odor and taste not recorded.

Spores (5)-6-8 x (5)-6-7,8 μm , \pm globose, few subglobose, echinulate, more rarely verruculose, the ornamentation projecting 0.5-0.9 μm , the echinules isolated, sometimes short-catenulated but not crested, brown, wall and ornamentation inamyloid, without germ pore or plage, without suprahilar applanation or depression, wall subhyaline with strongly contrasting yellow-brown to reddish brown (KOH) ornamentation. Hymenium: Basidia 17-26-(35) x (5)-6.7-8-(9) μm , 4-spored. Edge with cheilocystidia among basidia, the former of two types: (a) versiform, mostly clavate, cylindrical, and obtuse, or fusiform and acute to obtuse, 21-28-(40) x 4-8.5 μm , and (b) filiform, obtuse,

some narrowly ampullaceous or narrowly utriform, 21-27 x 3-4.5 μm , often slightly granularly incrustated; both types hyaline and thin-walled. Pleurocystidia not differentiated, but both types of cheilocystidia also scattered on the sides of the lamellae.

Hyphae nowhere gelatinized, inamyloid, clamped; hymenophoral trama regular, the hyphae parallel to subparallel, 1.5-8.5 μm broad. Subhymenium well developed, subcellular.

Epicutis: A basic cutis of elongated hyphae, with some ascendant fascicular hyphal strands; hyphae with brown, granular pigment incrustation.

Growing on clay soil in small groups, in wet tropical montane forest.

Material studied: USA: Puerto Rico, El Verde, Luquillo Mts., Caribbean National Forest, 5. IX 1986, Lodge & Prieto PR 38 (F), holotype. - Same location, IX 1986, Lodge PR 572 (F).

The species is clearly a *Neopaxillus*, but as such it shows that this genus is closely related to *Ripartites* because of general habit, and spore shape and ornamentation (as has been expressed in the system accepted by Singer 1975, 1986) and comes closest to *Ripartites amparae* Sing. However, the spores in *Neopaxillus* are definitely larger; the ground color of the pileus is usually not white or pallid, as in most species of *Ripartites* except *R. amparae*; cystidia are only rarely found on the edge and never on the sides of the lamellae in *Ripartites*; the pileus is velutinous to minutely furfuraceous when young in *Neopaxillus* but rather fibrillose-squarrose to dotted-fibrillose or scaly (often with a fimbriate margin) in *Ripartites*. Furthermore the spores of the latter genus are typically subglobose to very broadly ellipsoid whereas in *Neopaxillus* they are more nearly truly globose in a majority of spores. The two genera may be most easily distinguished by the breadth of the spore which is up to 5 μm in *Ripartites* and is well over 5 μm in *Neopaxillus*. Aside from the microscopical characters, *Neopaxillus* seems to be chemically more reactive than *Ripartites*. We regret to have no chemical data on *N. plumbeus*. In distribution, *Neopaxillus* is tropical to subtropical while *Ripartites* is more north and south temperate with only one south-subtropical species.

2. A new tropical *Paxillus*

Paxillus amazonicus Sing. is another exotic species (description below) of the *Paxilli* which were described after the few European *Paxilli* had become known. It is very significant that most of the species of *Paxillus* are known only from the Southern hemisphere or at least include parts of the Southern hemisphere in their area of distribution. This situation is particularly

remarkable in four out of the six sections viz. *Parapaxillus*, *Atrotomentosi*, *Veluticipites*, and *Defibulati* (see Singer 1986). The new species described below belongs in section *Atrotomentosi* Sing. (1946) and is known from south of the equator. If, as we assume, the veiled and clamp-bearing species of the *Boletineae* are primitive, these characteristics are most prominent in the sections *Parapaxillus* and *Atrotomentosi*, ancient enough to have in part participated in the migration that took place from Australia and New Zealand via Antarctica to Southern South America. If so, it is perhaps significant that gasteroid secotioid genera like *Austrogaster* and *Singeromyces* are likewise found in the south-temperate zone of the Western hemisphere; these genera (see Horak & Moser, 1965) are undoubtedly related to *Paxillus* and *Phyllobolites*, and are interpreted by the senior author as evolutionary forerunners leading to the *Paxillaceae*.

Paxillus amazonicus Sing. spec. nov. - Pileo fulvo-brunneo, haud viscoso, convexo, centro depresso. Lamellis alutaceo-luteolis, decurrentibus. Stipite ad apicem abrupte flavido-albidulo et glabriusculo, sursum brunneo et hispidulo, subcentrali. Carne crassiuscula, flavido-albidula, fractu aurantiaca dein violascente. Sporis 4.5-4.8 x 2.5-3 μm , ellipsoideis vel breviter ellipsoideis, sordide melleis, levibus. Cystidiis (11)-21-25 x (5)-7-9 μm fusoides vel ventricosis. Trama hymenophorali laterali. Hyphis fibulatis. Epicute hypnosa, pigmento intraparietali. In silvis ad terram. Peru, Miller (F).

Pileus tawny-brown, dried dark brown, paler towards margin, dry, unshining, naked, convex with depressed center, up to about 45 mm broad. Lamellae buff-yellowish, apparently somewhat thickish, with a few forked and many short ones, moderately broad, with entire edge, close or subclose, decidedly decurrent. Spore print not obtained. Stipe at the apex abruptly buff-yellowish and subglabrous, the larger lower portion hispidulous and rather deep brown, fresh 8 C 12 (Maerz & Paul, 1930), subequal, subcentral, slightly shorter than pileus diameter and around 10 mm broad; basal mycelium apparently white; veil none. Context yellowish pallid, rather thick and firm, turning orange when broken and finally violet. Odor and taste not checked.

Spores 4.5-4.8 x 2.5-3 μm , ellipsoid to short ellipsoid, dusky melleous, smooth, inamyloid, axially asymmetric, with a slightly thickened or firm wall and a central oil drop. Hymenium: Basidia 11-14 x 5-5.5 μm , 4-spored. Cystidia on edge and sides of the lamellae, (11)-21-25 x (5)-7-9 μm , fusoid to ventricose, hyaline, thin-walled, without optically visible contents. Hyphae not distinctly gelatinized but neither densely agglutinated, with clamp connections; hymenophoral trama bilateral (but not of the *Amanita*-type), with a brownish mediostratum of subparallel hyphae and a hyaline lateral stratum of distinctly diverging hyphae, both with thin-filamentous hyphae (single or in strands)

mixed in with broad to very broad hyphae (6-17 μm broad), later becoming rather irregular with hyphae running in several directions. Epicutis of pileus hyphous, now appearing to form a cutis, its hyphae with brown intraparietal pigment.

Growing on soil in tropical forest ("high jungle").

Material studied: Peru: Rio Yarapa, SE of Iquitos, III 1986, leg. Gerry Miller s.n. (F), holotypus.

This species is close to *P. polychrous* Sing. and *P. pahagnensis* Corner. *Paxillus janthinophyllus* Bres. (1925) differs in lateral stipe and larger (5-7 x 5-6 μm) spores.

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Explanation of figures

Fig. 1. Left: Two types of cheilocystidia. Right: Spore and an isolated spinule of *N. plumbeus*. Del. D. Jean Lodge.

Fig. 2. Fresh carpophores of *N. plumbeus*, nat. size. Del. D. Jean Lodge.

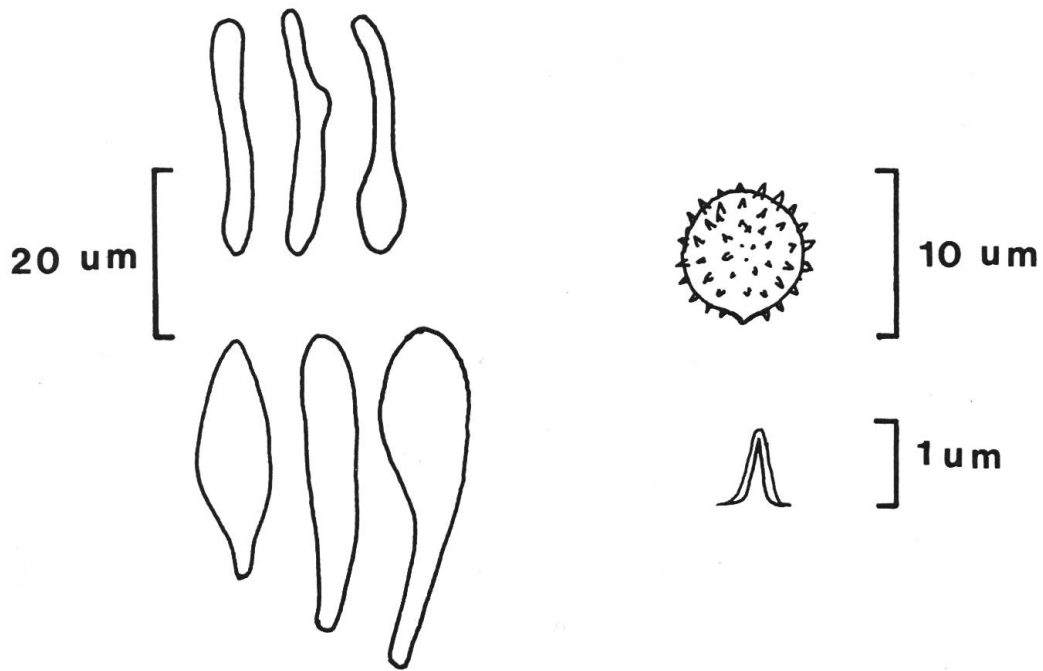


Fig. 1

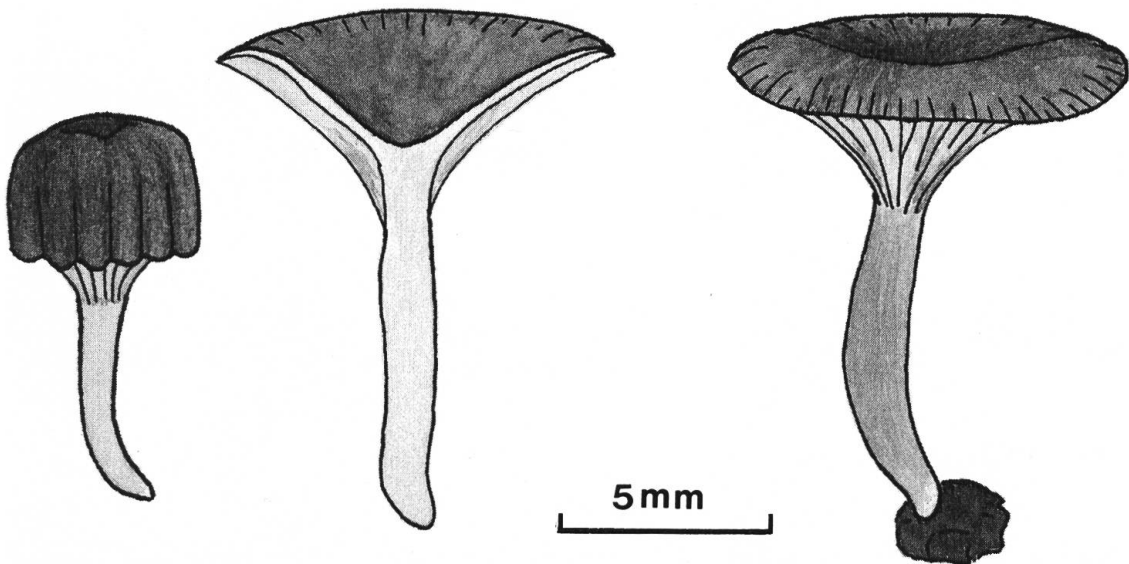


Fig. 2

