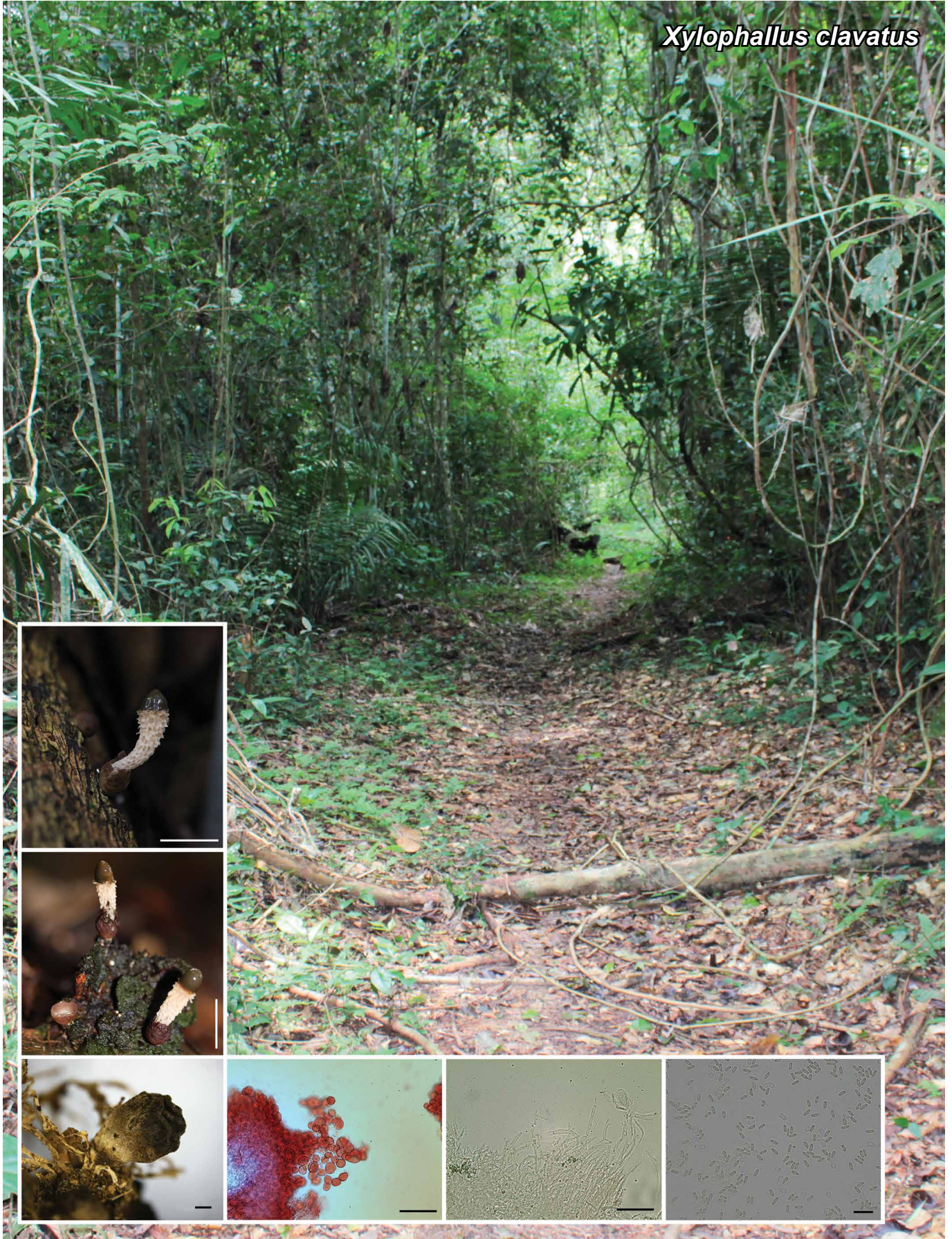


*Xylophallus clavatus*



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## *Xylophallus clavatus* T.S. Cabral, M.P. Martín, C.R. Clement, K. Hosaka & Baseia, *sp. nov.*

*Etymology.* In reference to its basidiome shape.

*Classification* — *Phallaceae*, *Phallales*, *Agaricomycetes*.

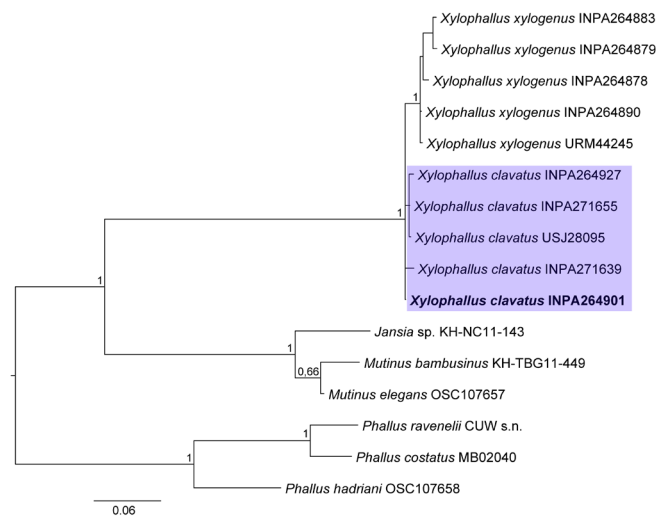
Immature *basidiome* globose to subglobose, with protuberances on the surface, up to 8 × 6 mm, pale brown (N40A99M20; Küppers 1979) on base to brown (N90A99M99) to the apex, rhizomorphs on the base. Mature basidiome up to 38 × 7 mm in its thickest portion when fresh, clavate shape. Receptacle campanulate, smooth, with an umbilicated depression or minutely perforated at apex, adnate to pseudostipe, up to 6 × 7 mm. *Pseudostipe* up to 21 × 7 mm, cylindrical, hollow, not attached to the volva, reticulated surface with reticulations deeper when closer to receptacle, white (N00A00M00), composed of ovoid to pyriform pseudoparenchymatous hyphae 20–35 × 20–27 µm, hyaline in 5 % KOH (same hyphae of receptacle). *Volva* pale brown (N40A99M20) to brown (N90A99M99), with irregular dehiscence, rhizomorphs at base forming a net spreading through substrate, interconnecting basidiomes; external layer composed of filamentous hyphae, 2.5–3.5 µm wide, hyaline in 5 % KOH, sinuous, septate and with clamp connections; internal gelatinous layer composed of pseudoparenchymatous hyphae, 19–34 × 19–27 µm, hyaline in 5 % KOH. *Rhizomorphs* composed of filamentous hyphae, 1.5–3.5 µm wide, thick-walled, septate, hyaline in 5 % KOH. *Gleba* olive-brown (N99A50M10), mucilaginous. *Basidium* clavate, bearing 6–8 spores. *Basidiospores* bacillar, smooth, (4–)4.5–5(–5.5) × 1.5–2(–2.5) µm, greenish to hyaline in 5 % KOH.

*Typus.* BRAZIL, Pará, Belterra, National Forest of the Tapajós, -2.94166667, -54.92972222, on rotten wood, 2014, T.S. Cabral & D.L. Komura (holotype INPA 264901, ITS, *rpb2* and *tef-1α* sequences GenBank KU871795, KU871723 and KU871513, MycoBank MB824521; isotype INPA 264902).

*Additional material examined.* BRAZIL, Amazonas, São Gabriel da Cachoeira, Itacoatiara-Mirim Community, S0°07'43.4" W66°58'24.4", 2014, T.S. Cabral, paratype INPA 264927, ITS, *rpb2* and *tef-1α* sequences GenBank KU871800, KU871716 and KU871497; Barcelos, 2015, T.S. Cabral, paratype INPA 271655, ITS, *rpb2* and *tef-1α* sequences GenBank KU871814, KU871742 and KU871515; Parintins, Açaí Community, -2.64750000, -56.54833333, 2015, T.S. Cabral, paratype INPA 271639, ITS, *rpb2* and *tef-1α* sequences GenBank KU871803, KU871719 and KU871506. – COSTA RICA, Heredia, Sarapiquí, La Selva, 1986, C. Ovrebo, USJ 28095, ITS, *rpb2* and *tef-1α* sequences GenBank KU871815, KU871715 and KU871514.

*Colour illustrations.* Brazil, Pará, Belterra, National Forest of the Tapajós; fresh basidiomes of INPA 271639 and INPA 264901 (top, scale bar = 10 mm); immature basidiome with protuberances on surface (bottom, scale bar = 1 mm); pseudoparenchymatous hyphae of pseudostipe (scale bar = 100 µm); filamentous hyphae from volva (scale bar = 50 µm); basidiospores (scale bar = 10 µm).

*Notes* — To date, the genus *Xylophallus* has been considered monospecific with *X. xylogenus*, the smallest phalloid yet described (up to 15 mm high), as the type of the genus. The immature basidiomes of *X. xylogenus* have a smooth surface, and mature basidiomes are fusiform, with reticulate pseudostipes. However, *X. clavatus* is macroscopically characterised by its large basidiome size, the immature basidiome surface with protuberances, the clavate shape of the mature basidiomes, and the pseudostipe with relatively shallow reticulations. Microscopically, they differ mainly in basidiospore size: in *X. clavatus* the basidiospores are 4.5–5 µm in length, while in *X. xylogenus* basidiospores are 3–4 µm (Trierveiler-Pereira & Da Silveira 2012). Sáenz et al. (1972) provided a very detailed description of specimens from Costa Rica. In our analysis, the Costa Rican specimen (USJ 28095) grouped in the new species clade. We found morphological similarities between the author's description and the specimens of *X. clavatus* analysed here, such as mature and immature basidiomatal sizes, immature basidiomatal surface with protuberances, and basidiospore sizes. In fact, Sáenz et al. (1972) state that their results are somewhat different from those previously published, which now can be explained by the fact that previous papers were dealing with *X. xylogenus*. The species tree indicates that the previous taxonomy of *Xylophallus* does not reflect its evolutionary history. This genus is actually composed of at least two evolutionary units, with *X. xylogenus* being a sister species to the clade representing *X. clavatus*.



Phylogenetic tree obtained with MrBayes v. 3.1.2 (Ronquist & Huelsenbeck 2003) using ITS nrDNA, *tef-1α* and *rpb2* concatenated genes, under GTR+G, TRN+G and SYM+G models, for 3 M generations. Both type and paratype of the new species are marked with a coloured rectangle. Posterior probabilities values are indicated on the branches. TreeBASE submission ID 22365.

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