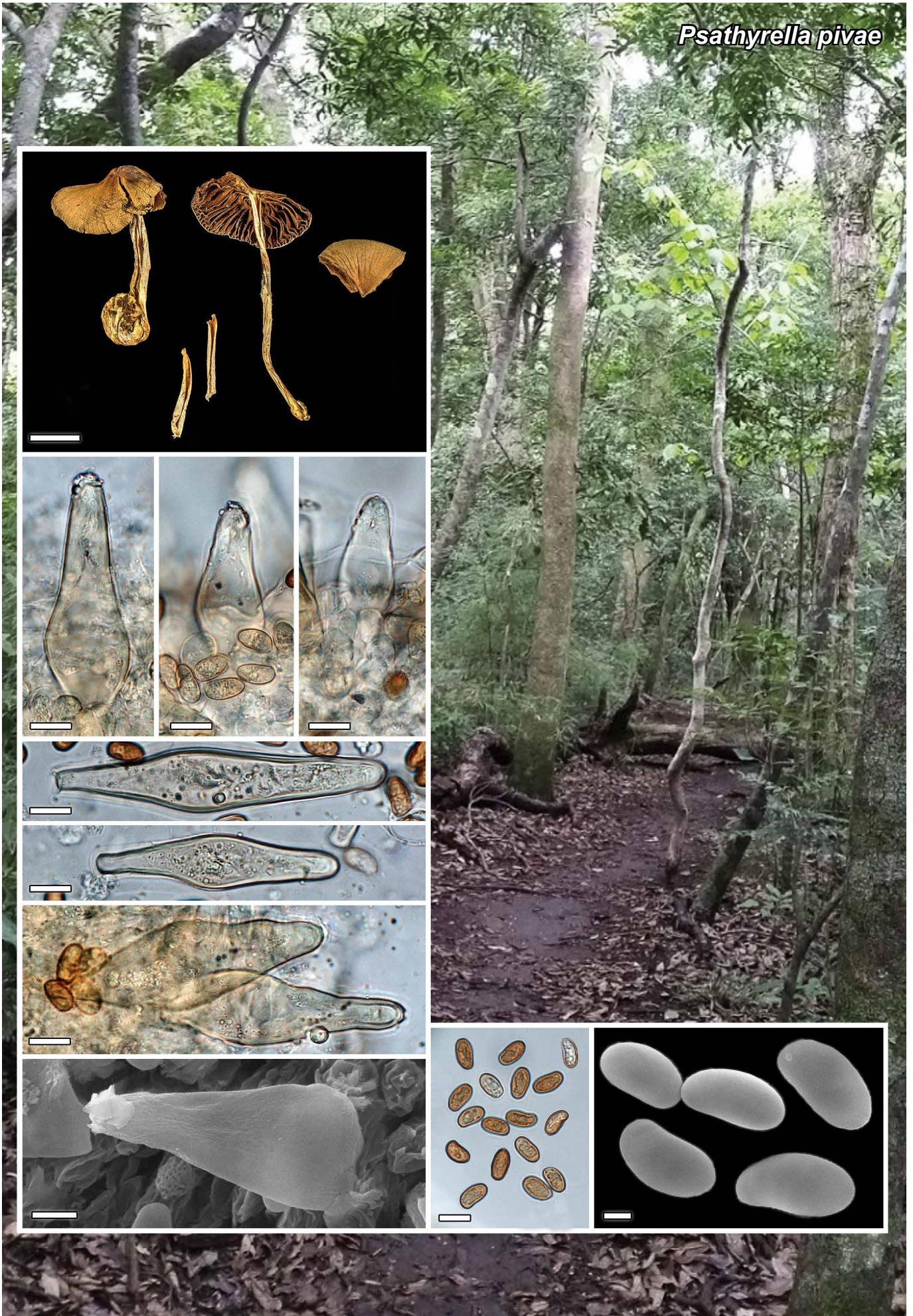


Psathyrella pivaie



Fungal Planet 1026 – 18 December 2019

***Psathyrella pivae* Heykoop, G. Moreno & M. Mata, sp. nov.**

Etymology. Named for Dr Alfio Piva, former Director of the INBio and ex vice-president of the Republic of Costa Rica, recognising his contribution to the conservation of biodiversity.

Classification — *Psathyrellaceae*, *Agaricales*, *Agaricomycetes*.

Cap 30–35 mm broad, applanate to slightly convex, surface fibrillose with appressed fibrils, coffee milky brown coloured. Margin deflexed, hygrophanous, striate when moist. **Context** of pileus 1 mm thick, 2 mm at centre, concolorous to surface. **Veil** forming a fibrillose annulus in the upper half of the stipe. **Gills** up to 5 mm broad, (sub)ventricose, adnate, smooth, coffee brown coloured, lamella-edge white; lamellulae present. **Stem** 50–55 × 4 mm, cylindrical, central, equal, some of them curved, hollow, fibrillose, yellow coffee coloured in the upper part, whitish in the lower part, with some dark brown fibrils at the apex and equipped with a fibrillose ring. **Odour** and **taste** not recorded. **Spores** (8.5–)9.5–11 × 5–6 µm, av. 9.9 × 5.5 (one collection); Q_{av} 1.79, ellipsoid to phaseoliform, smooth, with small apical germ pore (difficult to see), in NH₄OH (10 %) pale brown to orange brown. **Basidia** 4-spored, 22–30 × 9 µm, clavate, hyaline. **Pleurocystidia** 68–90(–100) × 15–27 µm, numerous, lageniform to ventricose-fusoid or fusiform, most of them with wall thickened 1–1.5 µm along entire length, often thickest at apex (up to 4 µm), yellowish refractive, very few thin-walled; apex of most cells encrusted with a cap of crystals and/or crystalline granular material. **Cheilocystidia** 38–50 × 12–14 µm, very abundant, lageniform to fusoid-ventricose, fusiform or even utriform, with walls thickened but thinner than those of pleurocystidia (rarely thin-walled), yellowish refractive, some of them colourless. **Hymenophoral trama** in NH₄OH (10 %) consisting of hyaline thin-walled hyphae, 2–5 µm diam, without encrustations. **Clamp connections** present.

Habitat & Distribution — Caespitose on woody debris. So far only known from Costa Rica.

Typus. COSTA RICA, Guanacaste, Parque Nacional de Guanacaste, Rincón de La Vieja, Sector Santa María, Sendero del León, 800–900 m, 10:45:48.0520N–85:18:41.9040W, on wood, 13 Mar. 1996, *M. Mata* 360 (holotype INB0003481172, ITS and LSU sequences GenBank MF966507 and MN161533, isotype AH 49110, MycoBank MB831899).

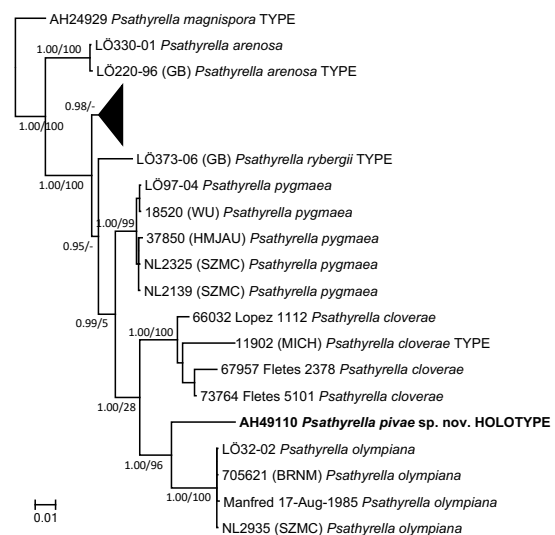
Additional materials examined. ***Psathyrella cloverae***: USA, Texas, Hidalgo County, Mission, scattered on the ground, June, year unknown, *E. Clover*, holotype MICH 11902 (E. Clover 2129), ITS sequence GenBank MF966417. – COSTA RICA, Guanacaste, Arenal, Zona Protegida Arenal-Monteverde, A.C Arenal, R.B. Nuboso Santa Elena, Sendero Caño Negro, 900–1000 m; 10:21:17.8908N–84:46:11.2907W, on woody debris, 16 Feb. 2000, *I. López*, INB0003407719 (I. López 1112), ITS sequence GenBank MF966508; Puntarenas, Osa, Parque Nacional Corcovado, Sendero Espaveles, 0–100 m; 8:29:21.9637N–83:35:13.9191W, on trunks, 9 May 2003, *E. Fletes*, INB0003718172 (E. Fletes 5101), ITS sequence GenBank MF966510; Puntarenas, Osa, Parque Nacional Corcovado, Sendero Espaveles, 0–100 m; 8:29:21.9637N–83:35:13.9191W, on trunks, 12 May 2001, *E. Fletes*, INB0003752257 (E. Fletes 2376), ITS sequence GenBank MF966509.

Colour illustrations. Costa Rica, Parque Nacional Rincón de la Vieja, where the holotype was collected (photo Mauricio Torres). Basidiomata; cystidia and spores under LM and SEM (all from the holotype). Scale bars = 1 cm (basidiomata), 10 µm (microscopic elements under LM), 5 µm (cystidia under SEM), 2 µm (spores under SEM).

Notes — *Psathyrella pivae* is characterised by its fibrillose ring, abundant and very long thick-walled pleurocystidia and by growing caespitose on woody debris.

In our ITS phylogeny (see below) *Psathyrella pivae* belongs to the *pygmaea* clade (Örstadius et al. 2015) in which it is significantly related to *P. olympiana*. Within this monophyletic assemblage *P. pivae* forms a subclade together with *P. pygmaea*, *P. cloverae* and *P. olympiana*, all of them sharing the presence of more or less thick-walled pleuro- and cheilocystidia, apically covered with a crown of crystals and/or crystalline granular material. This clade has been included by Kits van Waveren (1985) in sect. *Spadiceae*. However, according to Larsson & Örstadius (2008), Vasutová et al. (2008), Nagy et al. (2013) and Örstadius et al. (2015), sect. *Spadiceae* turned out to be a polyphyletic taxon including species from two different genera, viz. *Psathyrella* and *Homophron*, since the presence of muricate pleurocystidia evolved independently at least in three different clades.

Because of the muricate pleurocystidia and the presence of veil *Psathyrella pivae* keys out in Kits van Waveren's monograph (1985) close to *P. olympiana*. *Psathyrella pivae*, however, differs from *P. olympiana* genetically and by the presence of a fibrillose annulus, larger spores and much longer pleurocystidia (up to 100 µm in length). *Psathyrella pivae* is a species with abundant fibrillose veil recalling macroscopically a *Stropharia* species, and as such it was tentatively identified in the field. Kits van Waveren (1985) included in his monograph *P. olympiana* f. *amstelodamensis*, characterised by its strongly developed veil but mentioning “in all other respects this form is identical with *P. olympiana*”. Moreover, the illustrations of his f. *amstelodamensis* do not show any annulus on the stipe.



50 % majority rule ITS-28S rDNA consensus phylogram of the /pygmaea clade of *Psathyrella* (as delimited in Örstadius et al. 2015), with *P. magnispora* as outgroup. It was obtained in MrBayes from 3900 sampled trees. Values next to nodes represent Bayesian PP and Maximum Likelihood BP. Only nodes supported by > 0.95 PP or > 70 % BP were annotated. Several clades around *P. panaeoloides* and *P. abieticola* were condensed (black triangle), and the rooting branch was reduced for publishing.