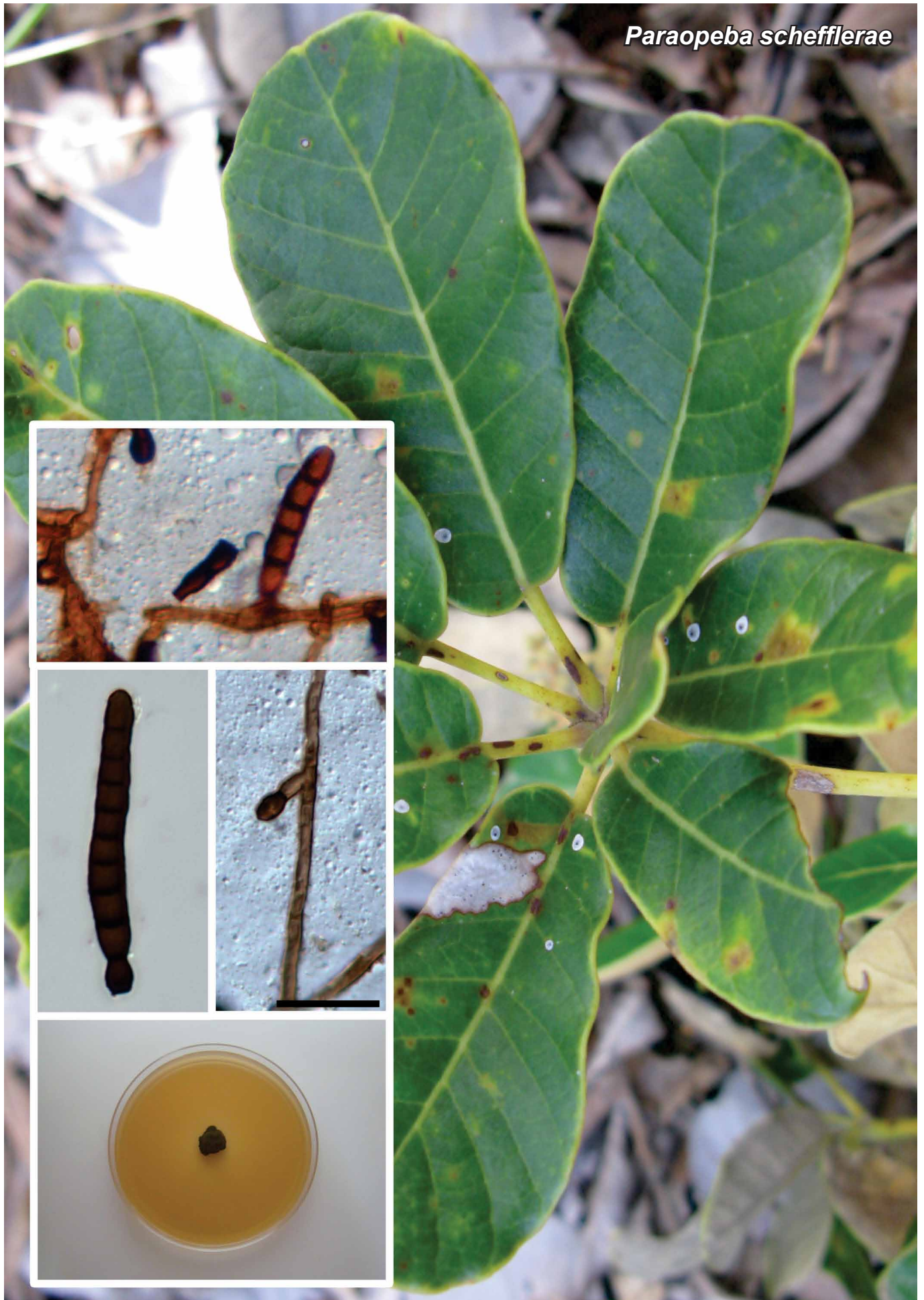


*Paraopeba schefflerae*



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***Paraopeba* V.P. Abreu, A.A.M. Gomes, Firmino & O.L. Pereira, gen. nov.**

*Etymology.* Name refers to the city of Paraopeba, state of Minas Gerais, Brazil, where the fungus was first found.

*Classification* — *Asterinaceae*, *Asterinales*, *Dothideomycetes*.

*Leaf spots* epiphyllous, circular to irregular, single to confluent, brown. *Hyphae* straight to slightly flexuous, brown, septate, smooth. *Appressoria* numerous, entire, globose to cylindrical,

alternate to unilateral, unicellular, brown, penetration peg central on the appressorial cell. *Conidiogenous cells* schizolytic, cylindrical to elliptical, light brown to brown, smooth. *Conidia* cylindrical, multicellular, brown, smooth, rounded ends, septate. *Sexual morph* unknown.

*Type species.* *Paraopeba schefflerae* V.P. Abreu, A.A.M. Gomes, Firmino & O.L. Pereira.

Mycobank MB821209.

***Paraopeba schefflerae* V.P. Abreu, A.A.M. Gomes, Firmino & O.L. Pereira, sp. nov.**

*Etymology.* Named after its host genus, *Schefflera*.

*Leaf spots* epiphyllous, circular to irregular, single to confluent, brown, 2–8 mm diam. *Hyphae* straight to slightly flexuous, brown, septate, 1.5–3.5 µm diam, smooth. *Appressoria* numerous, entire, globose to cylindrical, alternate to unilateral, unicellular, 3–6 × 4.5–6.5 µm, brown, penetration peg central on the appressorial cell. *Conidiogenous cells* schizolytic, cylindrical to elliptical, 4.5–10 × 3.5–6.5 µm, pale brown to brown, smooth. *Conidia* cylindrical, multicellular (3–14 cells), brown, smooth, rounded ends, 18–85 × 4.5–7 µm, 2–13-septate. *Sexual morph* unknown.

*Culture characteristics* — The colony grows slowly on malt extract agar, reaching 7 mm diam after 40 d at 25 °C with a photoperiod of 12 h; margins irregular, with aerial mycelium sparse, black, colonies fertile.

*Typus.* BRAZIL, Minas Gerais, Paraopeba, Floresta Nacional de Paraopeba (FLONA-Paraopeba), on leaves of *Schefflera morototoni* (*Araliaceae*), 30 Jan. 2016, V.P. Abreu & O.L. Pereira (holotype VIC 44232, culture ex-type COAD 2249; ITS and LSU sequences GenBank KY952164 and KY952165, MycoBank MB821409).

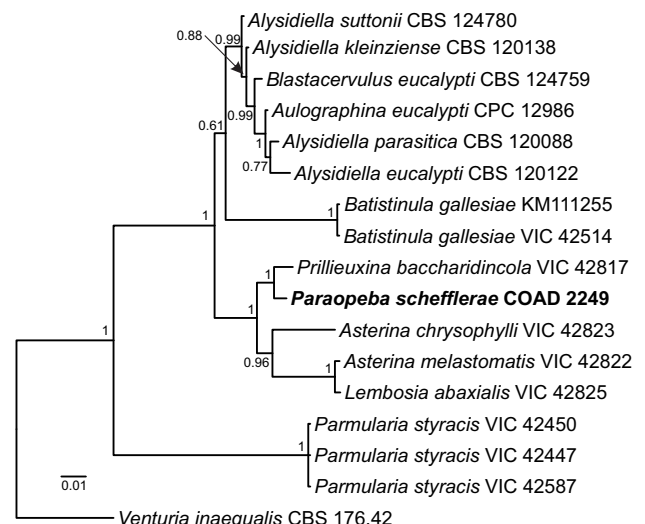
*Notes* — The order *Asterinales* is characterised by epiphytic fungi, biotrophic parasites, with superficial non-ostiolate ascomata, opening irregularly at maturity; surface mycelium and haustoria are present in several genera (Bezerra 2004). The *Asterinales* is composed by two families, *Asterinaceae* and *Parmulariaceae* (Guatimosim et al. 2015, Giraldo et al. 2017). Members of *Asterinaceae* are characterised by producing black colonies consisting of a brown mycelium on the leaf surface (Guatimosim et al. 2015). Asexual morphs (hyphomycetous and coelomycetous) have been observed in some *Asterinaceae* (Summerell et al. 2006, Hongsanan et al. 2016). The conidia of *Paraopeba schefflerae* are formed in schizolytic conidiogenous cells while conidia of *Alysidiella*, *Blastacervulus* and *Asterostomula* are formed in sporodochial, acervular and pycnothyrial conidiomata, respectively (Summerell et al. 2006, Giraldo et al. 2017). Additionally, the appressorial cells are present in *Paraopeba*, but have not been observed in *Alysidiella*, *Blastacervulus* and *Asterostomula* (Summerell et al. 2006, Giraldo et al. 2017). Bayesian inference analysis (alignment and tree were deposited into TreeBASE under accession number S21280) suggests that *Paraopeba schefflerae* is related to members of *Asterinaceae*, and represents a different genus

*Colour illustrations.* Leaves of *Schefflera morototoni* in Floresta Nacional de Paraopeba, state of Minas Gerais, Brazil; conidia formed on superficial mycelium; thick-walled pigmented conidium; conidium being formed in the conidiogenous cell; colony on MEA after 40 d at 25 °C. Scale bar = 20 µm.

in this family. *Paraopeba schefflerae* is phylogenetically close but clearly distinct from *Prillieuxina baccharidicola*. Phylogenetic analysis and morphological comparisons support the introduction of *Paraopeba* as a new genus of *Asterinaceae* and *Paraopeba schefflerae* as the type species of this genus. To our knowledge this is the first *Asterinaceae* member described colonising *Schefflera morototoni* leaves. In addition, *Paraopeba schefflerae* is a rare case of *Asterinaceae* known from culture (ex-type COAD 2249).

*ITS.* Based on a megablast search of NCBI GenBank nucleotide database, the closest hits using the ITS sequence are *Alysidiella parasitica* (GenBank NR\_132811; Identities = 457/513 (89 %), Gaps = 9/513 (1 %)), *Alysidiella suttonii* (GenBank HM628774; Identities = 460/517 (89 %), Gaps = 11/517 (2 %)) and *Blastacervulus eucalypti* (GenBank GQ303271; Identities = 460/517 (89 %), Gaps = 11/517 (2 %)).

*LSU.* Based on a megablast search of NCBI GenBank nucleotide database, the closest hits using the LSU sequence are *Prillieuxina baccharidicola* (GenBank KP143735; Identities = 742/755 (98 %), Gaps = 2/755 (0 %)), *Asterina melastomatis* (GenBank KP143739; Identities = 722/757 (95 %), Gaps = 4/757 (0 %)) and *Asterina chrysophylli* (GenBank KP143738; Identities = 717/755 (95 %), Gaps = 2/755 (0 %)).



Phylogenetic tree inferred from Bayesian analysis based on LSU sequences. The analysis was performed with 10 M generations in MrBayes v. 3.2.6. The Bayesian posterior probability values are indicated at the nodes. The tree was rooted to *Venturia inaequalis* CBS 176.42. The new species is highlighted in bold.