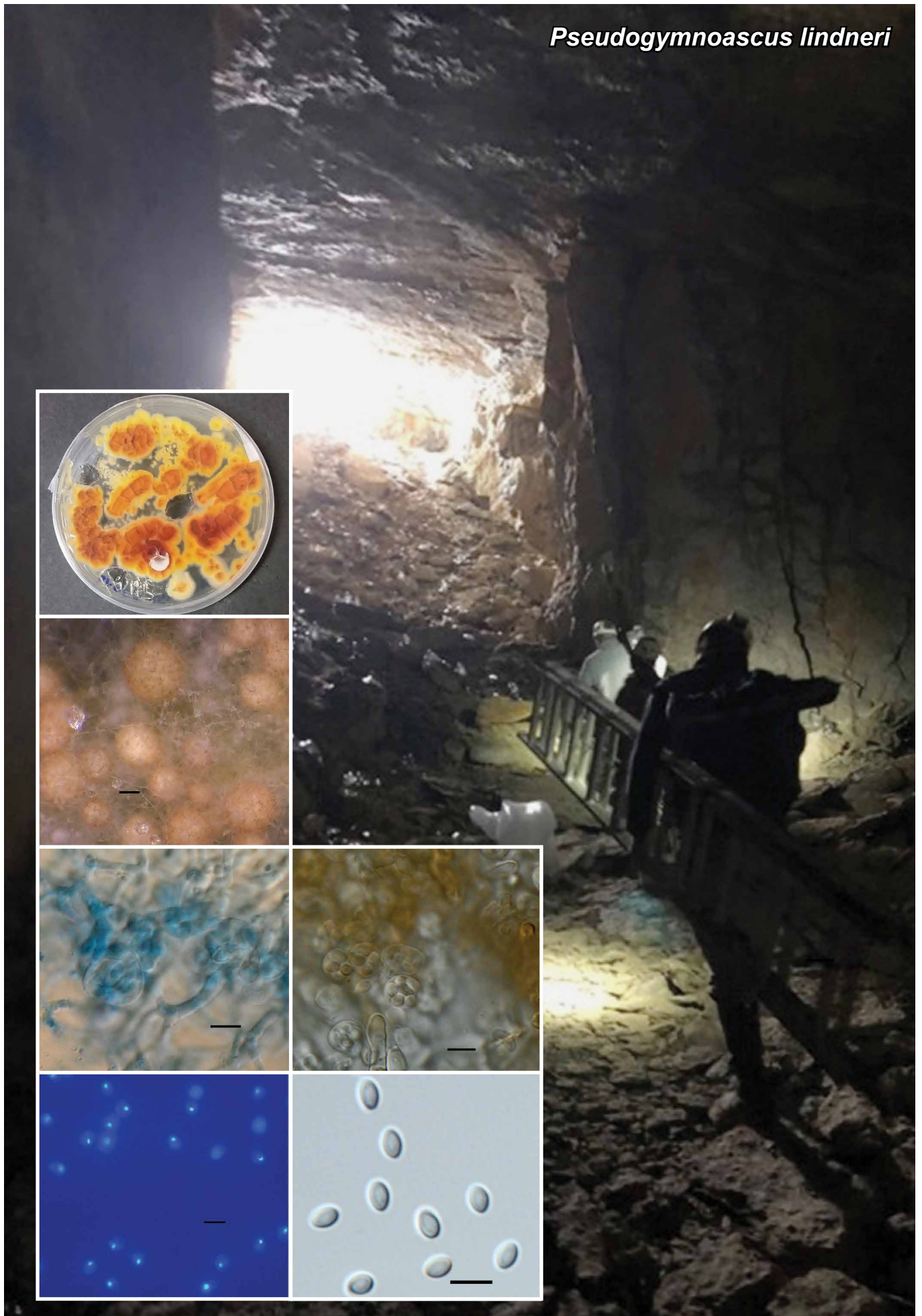


Pseudogymnoascus lindneri



Fungal Planet 1027 – 18 December 2019

***Pseudogymnoascus lindneri* Rea, Smyth & Overton, sp. nov.**

Etymology. Named after Daniel Lindner from the United States Forest Service for his significant contributions to the modern taxonomy of *Pseudogymnoascus* and his contributions to White-nose Syndrome research.

Classification — *Pseudeurotiaceae*, *incertae sedis*, *Leotiomycetes*.

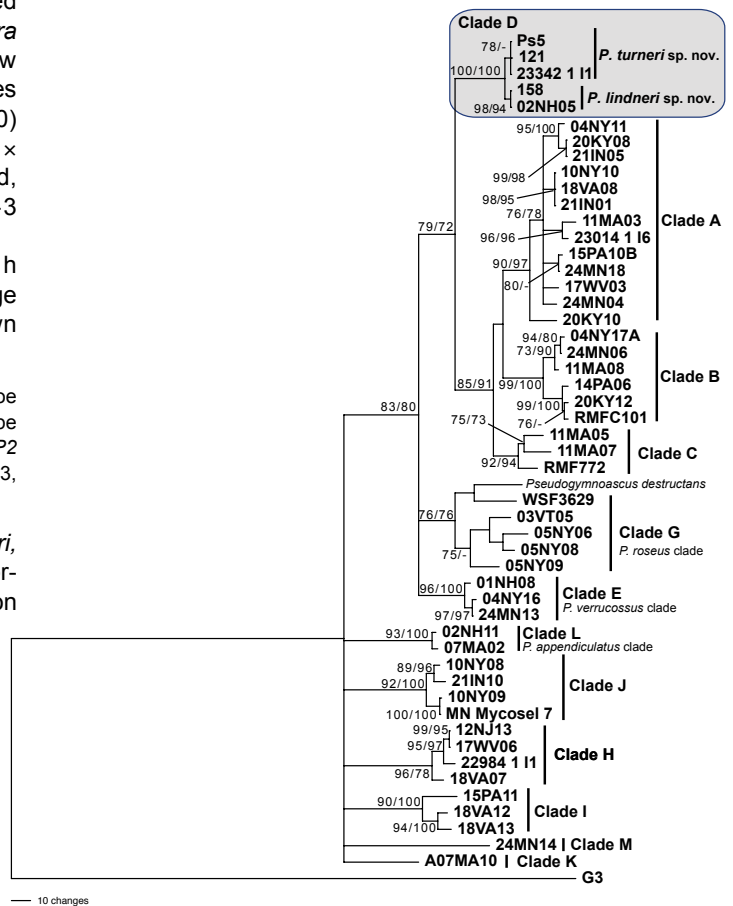
On Sabouraud dextrose acidified with 120 µL 85 % lactic acid for optimal pigment production: *Conidia* borne singly at the tips, globose to obovate, smooth, with one abscission scar 2.8–4.1 (3.5, n = 30) µm in length. Intercalary conidia with two abscission scars, globose to truncate, measuring 3–4 (3.5, n = 10) µm in length. On oatmeal salt sediment agar: *Ascomata* gymnothecial, solitary, globose, measuring 181–311 (220, n = 20) µm diam; greyish orange (5B6; Korerup & Wanscher 1978); developing rapidly and ripening within 10 d at 25 °C (12 h white fluorescent light / 12 h dark). *Ascomatal* initials coiled to irregular; peridium is a gymnothecium composed of *textura intricata*, the peridial hyphae darkly pigmented brownish yellow (5C7), smooth to minutely roughened with distinct appendages measuring 5.1–10.1 (7.6, n = 10) × 1.92–3.24 (2.5, n = 10) µm. *Asci* globose to ovoid, 8-spored, 5.4–8 (6.7, n = 84) × 3–6.1 (4.7, n = 84) µm in size. *Ascospores* aseptate, fusoid, smooth, greyish orange (5B6); 2.6–4 (3.2, n = 216) × 1.6–3 (2.1, n = 216) µm in size.

Culture characteristics — (12 h white fluorescent light / 12 h dark at 25 °C): Colonies at first yellow-orange to dark orange (4A7/8–5A8), in age changing to brown-orange to brown (6C8–6E8) after 10 d.

Typus. USA, Pennsylvania, Blair County, Canoe Creek State Park, Canoe Creek Hartman Mine, from sediment, 2017, *B. Overton* LHU 158 (holotype in Cornell University Plant Pathology Herbarium (CUP-070714), ITS, *RBP2* and *TEF-1α* sequences GenBank MN542212, MN541384 and MN541383, MycoBank MB832750).

Notes — Morphological analyses suggest that *P. lindneri*, and *P. bhattii* could be sister taxa. They are similar in the morphological characteristics of gymnothecial ascomata production

and colony colouration. Samson (1972) described *P. bhattii* as being characterised by yellow ascomata and the absence of distinct peridial appendages. However, *P. lindneri* can be distinguished from *P. bhattii* based on conidiogenesis (*P. bhattii* does not produce conidia) and the presence of distinct peridial appendages. Minnis & Lindner (2013), were the first to study many *Pseudogymnoascus* taxa using modern phylogenetic methods using a multigene approach. In their work, they identified multiple clades of *Pseudogymnoascus*. The new species described here is identical in the three genes studied to the same three genes from Minnis & Lindner's 02NH05 isolate deposited in GenBank. Isolate 02NH05 up until this point has remained an undescribed homothallic species since the publication of their work. This work is the first to unite morphological characters used by Samson (1972) with molecular data.



Phylogenetic placement of *Pseudogymnoascus lindneri* on a maximum parsimony tree with maximum likelihood/maximum parsimony bootstrap support values, generated from the concatenated dataset of three loci (rDNA, *TEF* and *RBP2*) using PAUP v. 4.0a build 166 (Swofford 2003). The parsimony analysis generated a single most parsimonious tree via strict consensus. A maximum likelihood analysis was completed using GARLI v. 2.01 (Zwickl 2006) on the CiPRES Science Gateway (Miller et al. 2010). We generated a consensus tree from a single replicate ML analysis with 1000 bootstrap pseudo-replications. The General Time Reversible (GTR) evolutionary model was used with estimate selected for the proportion of invariant sites, and gamma distribution as the model of rate heterogeneity. Bootstrap support values located at nodes are: Maximum Likelihood/Maximum Parsimony. Alignment and tree(s) in TreeBASE (study 25145).

Colour illustrations. Background photo of Canoe Creek Hartman Mine, Canoe Creek State Park. Fluorescence image of nuclei in conidia on SAB; asci and peridial hyphae on oatmeal agar; ascomatal initials on oatmeal agar at 10 d; ascospores on oatmeal agar; gymnothecia on oatmeal agar; colony back colour on SAB at 10 d. Scale bar = 100 µm (gymnothecia), 5 µm (all others).

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