

Jafnea pallida (Pezizales), a new name for a cup fungus rediscovered in Tasmania

Genevieve GATES
Nicolas VAN VOOREN

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Abstract: A modern description is provided for *Geopyxis pallidus*, a species described by L. Rodway in 1920, based upon the lectotype selected here and additional recent collections from Tasmania. Based on its morphology, we recombine *G. pallidus* into the genus *Jafnea*. Recent records of *Jafnea pallida* comb. nov. from Tasmania have been misnamed as the morphologically similar *Tarzetia jafneospora*. The two species can be distinguished by their different spore ornamentation.

Keywords: Ascomycota, Australian fungi, discomycetes, *Pyronemataceae*, taxonomy.

Introduction

In the course of a study on the genus *Leucoscypha* Boud. and allied genera, we had the opportunity to revise material from Tasmania and New Zealand identified under this genus name. Several of the New Zealand collections proved to be *Tarzetia jafneospora* W.Y. Zhuang & Korf (ZHUANG & KORF, 1987), a rather common discomycete in that country. Another collection tentatively named *Leucoscypha* sp., from Tasmania, was different in several respects: stipitate ascumata, true hairs present at the margin and on the receptacle, and ascospores with rounded warts. These characters suggested that the species could belong to the genus *Jafnea* Korf (KORF, 1960, 1972; RIFAI, 1968) instead of *Leucoscypha* in a strict sense. Upon consulting some old articles on Tasmanian fungi, we discovered a morphologically similar species, named by its author *Geopyxis pallidus* (RODWAY, 1920). This taxon was cited by RIFAI (1968) in his "Little known or excluded species" section and no hypothesis was given by that author for a modern placement, waiting for "fresh collections". The species has not been recorded since 1920 in Australia (MAY *et al.*, 2004) or New Zealand (Anon., 2015). This note provides the revision of the type collection of this species and a modern description based on recent collections. Its placement in the current fungal systematics of *Pezizomycetes* is also discussed.

Material and methods

Dried specimens were rehydrated in tap water for two hours. Water mounts were used for the observation of microscopic characters and measurements. The content of the ascospores and the spore ornamentation were observed in 5% KOH. Additional reactive agents were used to stain specific features: iodine Lugol's solution for testing the amyloid reaction of asci, cotton blue (CB) for checking spore ornamentation and acetocarmine solution for staining the nuclei. Ascospores were measured at $\times 1000$ magnification. X represents the mean value of spore dimensions (excluding the ornamentation), and Q the ratio between spore length and width, the value in italics represents the mean value of this ratio. Line drawings were made freehand to scale.

Taxonomy

Jafnea pallida (Rodway) G.M. Gates & Van Vooren, *comb. nov.* – MB 816295.

Basionym: *Geopyxis pallida* Rodway, *Pap. & Proc. Roy. Soc. Tasmania*, 1920: 154 (1921) ["*pallidus*"].

Original diagnosis — *Geopyxis pallidus*, n.s. Cup shaped, 5–8mm. diameter, on a slender stem 10mm., all parts white, thin, fleshy, externally smooth or slightly mealy, margin brownish with short irregular fimbriations. Hymenium smooth, asci linear, spores uniseriate, oblong, $22\text{--}24 \times 10 \mu$, hyaline, minutely verruculose. Paraphyses filiform.

On ground, Mt. Nelson.

Description

Apothecia stipitate, deeply cup-shaped, measuring about 8 mm in diameter; hymenium whitish to pale pink; outer surface gray-brown, finely pustulate; margin fimbriate by the presence of small tufts of short brown hairs. **Stipe** cylindrical, $6\text{--}9 \times 1.4\text{--}1.8$ mm, subglabrous, white to dirty white.

Ectal excipulum of *textura angularis/subglobulosa*, with pale yellowish cells, $17\text{--}65 \mu$ wide, with a brown pigment on walls, more dense on the outermost cells. **External hairs** scattered, superficial, more or less appressed, obtuse, pale brownish, septate, with a simple base, $55\text{--}150 \times 8\text{--}25 \mu$, thin-walled. **Marginal hairs** similar, partially fasciculate. Medullary excipulum thin, of *textura intricata*, with hyaline hyphae, mixed with some larger cells or subglobose. **Asci** cylindrical, $220\text{--}260 \times 12\text{--}15 \mu$, with a slender stalk, with a forked base, 8-spored, operculate, inamyloid. **Paraphyses** cylindrical, hyaline, septate, not or few enlarged at the top, $4\text{--}6$ (7) μ in diam., sometimes forked; nuclei not seen in acetocarmine solution. **Ascospores** uniseriate, fusoid, with rounded ends, $23\text{--}26 \times (9.5) 9.8\text{--}11 \mu$, $X = 24.6 \times 10.2 \mu$ ($n=30$), $Q = 2.1\text{--}2.4\text{--}2.6$, hyaline, with a small oil drop at each pole¹, thick-walled, warted; warts cyanophilic, isolated, rounded, $0.3\text{--}2 \mu$ in diameter (front view) and $0.5\text{--}1 \mu$ in height (side view), dissolving in 5% KOH.

Studied material: AUSTRALIA. Tasmania, Mt Nelson, Aug. 1920, *leg.* L. Rodway, coll. RH 377 (HO), *lectotypus hic designatus*, MBT 204552. Myrtle Forest, approx. $42^\circ 52' S$, $147^\circ 09' E$, on the ground under *Nothofagus* sp., *leg.* G. Gates and D. Ratkowsky, 2 Nov. 2004, under the name "*Leucoscypha* sp.", PDD 83310. North of Longley, approx. $42^\circ 57' S$, $147^\circ 12' E$, 18 Sept. 2003, *leg.* G. Gates, HO 581569.

Other material examined: *Tarzetia jafneospora*: NEW ZEALAND. Taupo district, Clements Mill Road, Kaimanawa Forest Park, alt. 713 m, $38^\circ 59' 25'' S$, $176^\circ 8' 34'' E$, on dead bark of *Nothofagus fusca*, 18 May 2011, *leg.* and det. J.A. Cooper, PDD 96264. Auckland district, Hunua, Workman Road, Workman Track, on mossy soil, in a *Leptospermum* and *Nothofagus* mixed forest, 14 Jun. 2015, *leg.* C. Shirley, det. N. Van Vooren, CSAK 416.

¹ The oily content of the ascospores was hard to see in water mount on rehydrated material. The small guttules appear in 5% KOH mount.

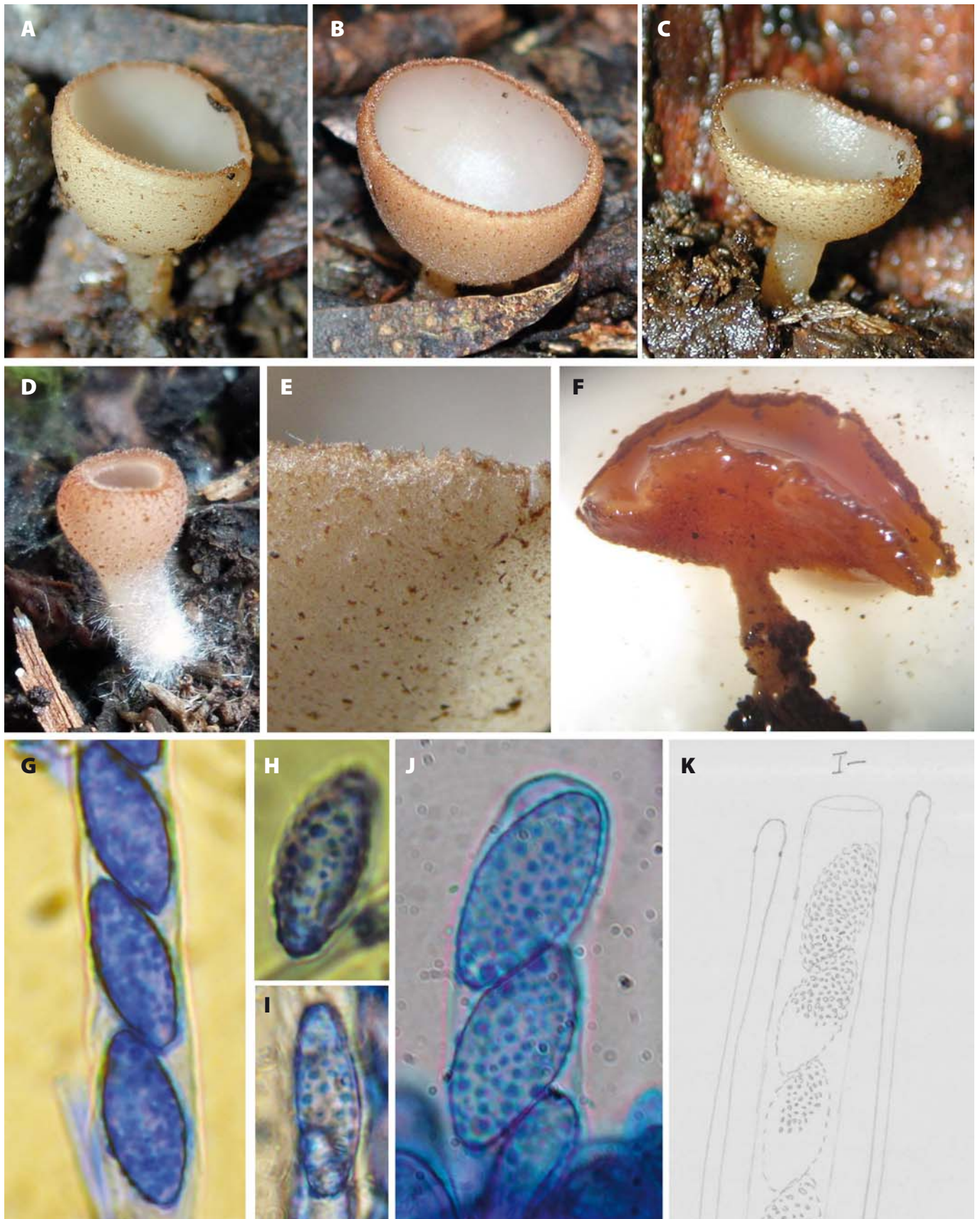


Plate 1 – *Jafnea pallida*

A, B, C: Macroscopic aspects. D: Very young specimen. E: Detailed view of the external surface and margin. F: Holotype in rehydrated state. G: Ascospores from the type, in cotton blue. H, I: Ascospores from the collection HO 581569, in CB. J: Ascospores from the collection PDD 83310, in CB. K: Part of the unpublished Dennis' drawing accompanying the slide K(M) 199841 kept in K herbarium [with the courtesy of the Trustees of the Royal Botanic Gardens, Kew]. Photos by G. Gates, except B: Rose Boltong; D: Herman Anderson; J: Nicolas Van Vooren.

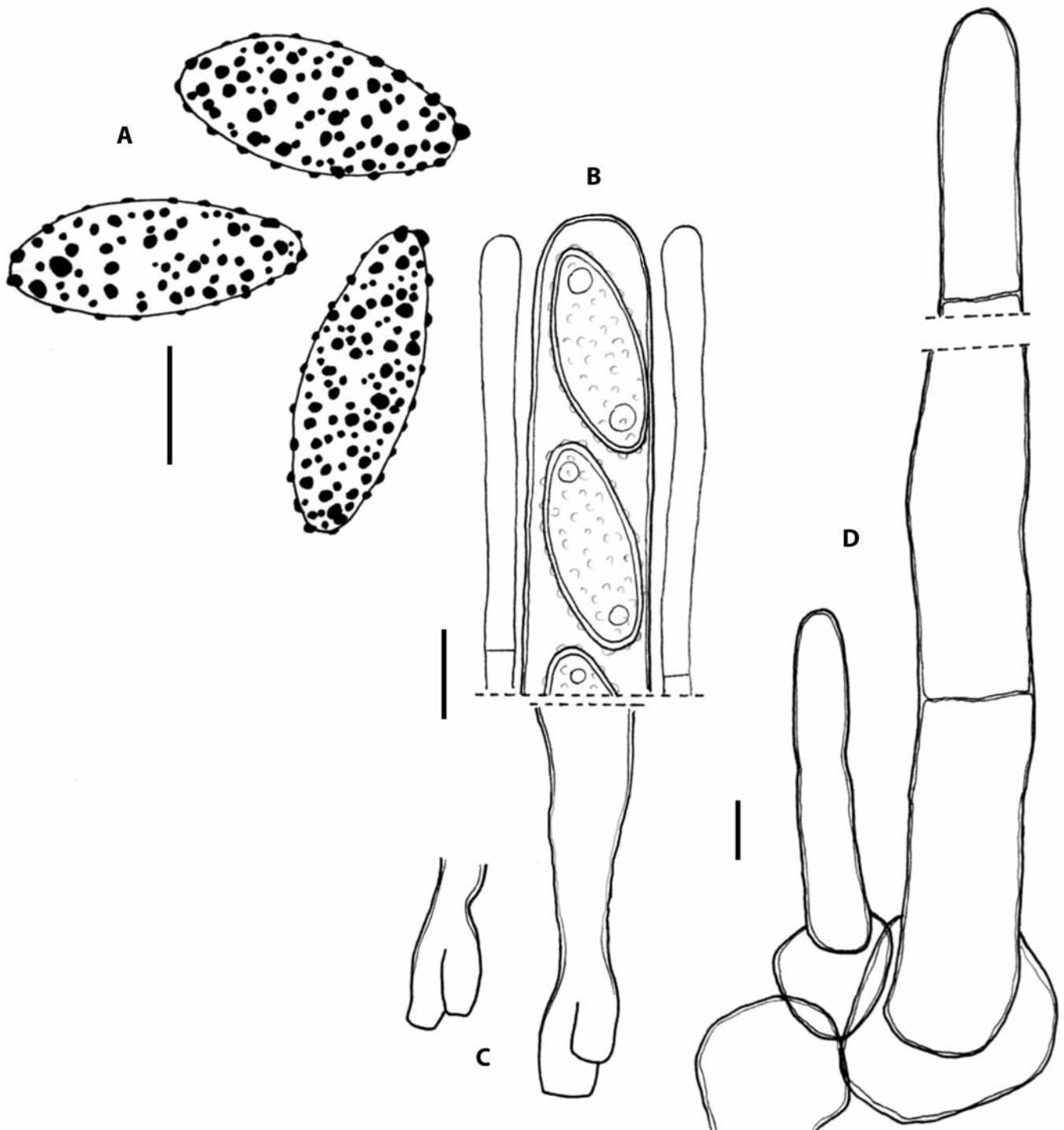


Plate 2 – *Jafnea pallida*

Microscopic characters from collection PDD 83310. A. Ascospores (in CB). B. Top of paraphyses and ascus (in water). C. Ascus bases. D. Marginal hairs. Drawing by N. Van Vooren.

Revision of the type material

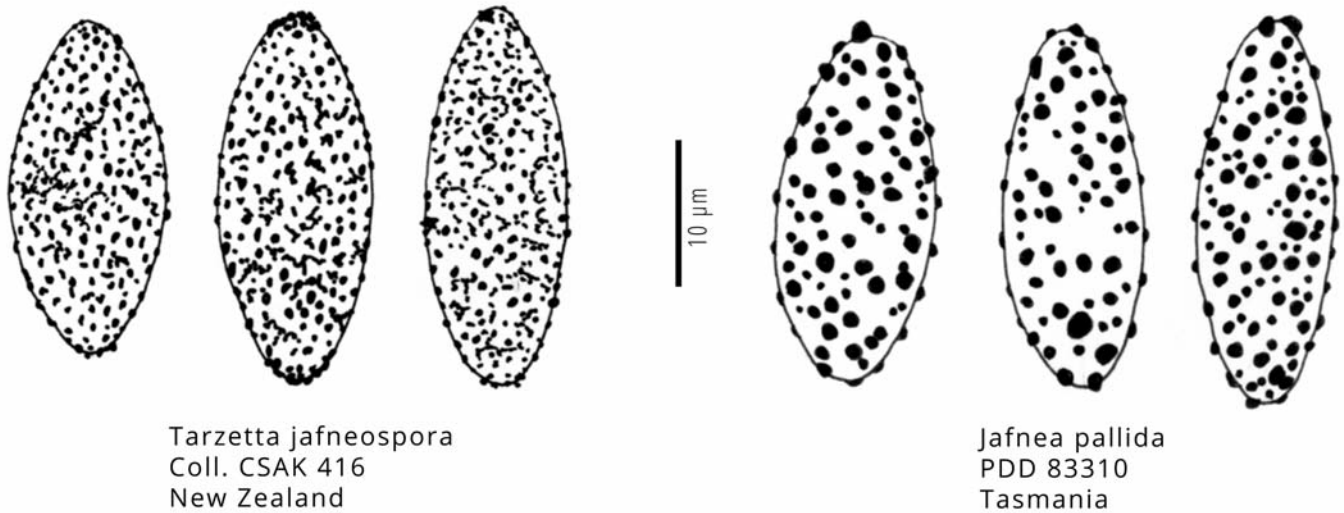
There exists only one collection of *Geopyxis pallida* from Rodway's herbarium, numbered RH 377, housed in the Tasmanian Herbarium (HO), and it consists of a single and tiny apothecium. Its label provides the following data: "Mt Nelson, on ground, Aug 1920, L. Rodway s.n." Although there is no doubt this collection represents the type material, there is no evidence in the protologue proving this is definitely the holotype (e.g. no date is given). Thus we think it is preferable to designate it as a lectotype.

The revision of this collection is in conformity with drawings and notes written by R.W.G. Dennis (accompanying a slide housed in K)

when he examined a part of the type material. The ascospores are not oblong and minutely verruculose as stated by RODWAY (1920) but fusoid and distinctly warted (Plate 1, fig. G). This ornamentation is best seen in cotton blue. The ascospores measure $24\text{--}26 \times 10\text{--}11 \mu\text{m}$.

Discussion

The microscopic features of the type specimen and the two more recent examined collections of *Geopyxis pallida* are unsuitable with the genus *Geopyxis* (Pers.) Sacc. in its current acceptance (species with eguttulate smooth or only finely ornamented ascospores) but



Tarzetta jafneospora
Coll. CSAK 416
New Zealand

Jafnea pallida
PDD 83310
Tasmania

Plate 3 – Sporogram. Comparison between the ascospore ornamentation of *T. jafneospora* and *J. pallida*. Drawing by N. Van Vooren.

they fit the genus *Jafnea*. This genus was published by KORF (1960) to accommodate mainly two deeply cup-shaped American discomycetes, characterized by their short, brown and superficial hairs, and warted, eguttulate (at maturity) ascospores. The type species of the genus is *Peziza fusicarpa* Gerard. RIFAI (1968) emended the genus to exclude *J. imaii* Korf due to the absence of true hairs. This new circumscription of *Jafnea* species was accepted by BERTHET & KORF (1969) and KORF (1972). Although we could not obtain the acetocarmine stain of nuclei characteristic of other *Jafnea* spp. (BERTHET & KORF, *op. cit.*) in the collection PDD 83310 (the only one tested), we believe that based on the other morphological features “*Geopyxis pallida* is a member of the genus *Jafnea*. Future collections and DNA analysis should confirm or contradict that.

Jafnea pallida could be restricted to Tasmania, where it has sometimes been misidentified as *Tarzetta jafneospora* (GATES & RATKOWSKY, 2014). The two species can be distinguished by spore morphology (Pl. 3). Phylogenetically their genera belong to different lineages within the *Pyronemataceae* (PERRY *et al.*, 2007).

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Genevieve Gates

School of Land and Food, University of Tasmania
Hobart, Tasmania 7001
Australia
genevieve.gates@utas.edu.au



Nicolas Van Vooren

36 rue de la Garde
69005 Lyon
France
nicolas@vanvooren.info