Zwackhiomyces namibiensis, a new lichenicolous ascomycete (Xanthopyreniaceae) on *Psorotichia* from Namibia

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Abstract: Diederich, P. & Schultz, M. 2009. *Zwackhiomyces namibiensis*, a new lichenicolous ascomycete (Xanthopyreniaceae) on *Psorotichia* from Namibia. – Herzogia **22**: 173–176.

The new lichenicolous species *Zwackhiomyces namibiensis* is described on *Psorotichia* cf. *schaereri* from Namibia and is compared with the similar *Z. berengerianus* and *Z. dispersus*.

Zusammenfassung: Diederich, P. & Schultz, M. 2009. *Zwackhiomyces namibiensis*, ein neuer lichenicoler Ascomycet (Xanthopyreniaceae) auf *Psorotichia* aus Namibia. – Herzogia **22**: 173–176.

Die neue lichenicole Art *Zwackhiomyces namibiensis* wird von *Psorotichia* cf. *schaereri* aus Namibia beschrieben und mit den ähnlichen Arten *Z. berengerianus* und *Z. dispersus* verglichen.

Key words: lichenicolous fungi, new species

Introduction

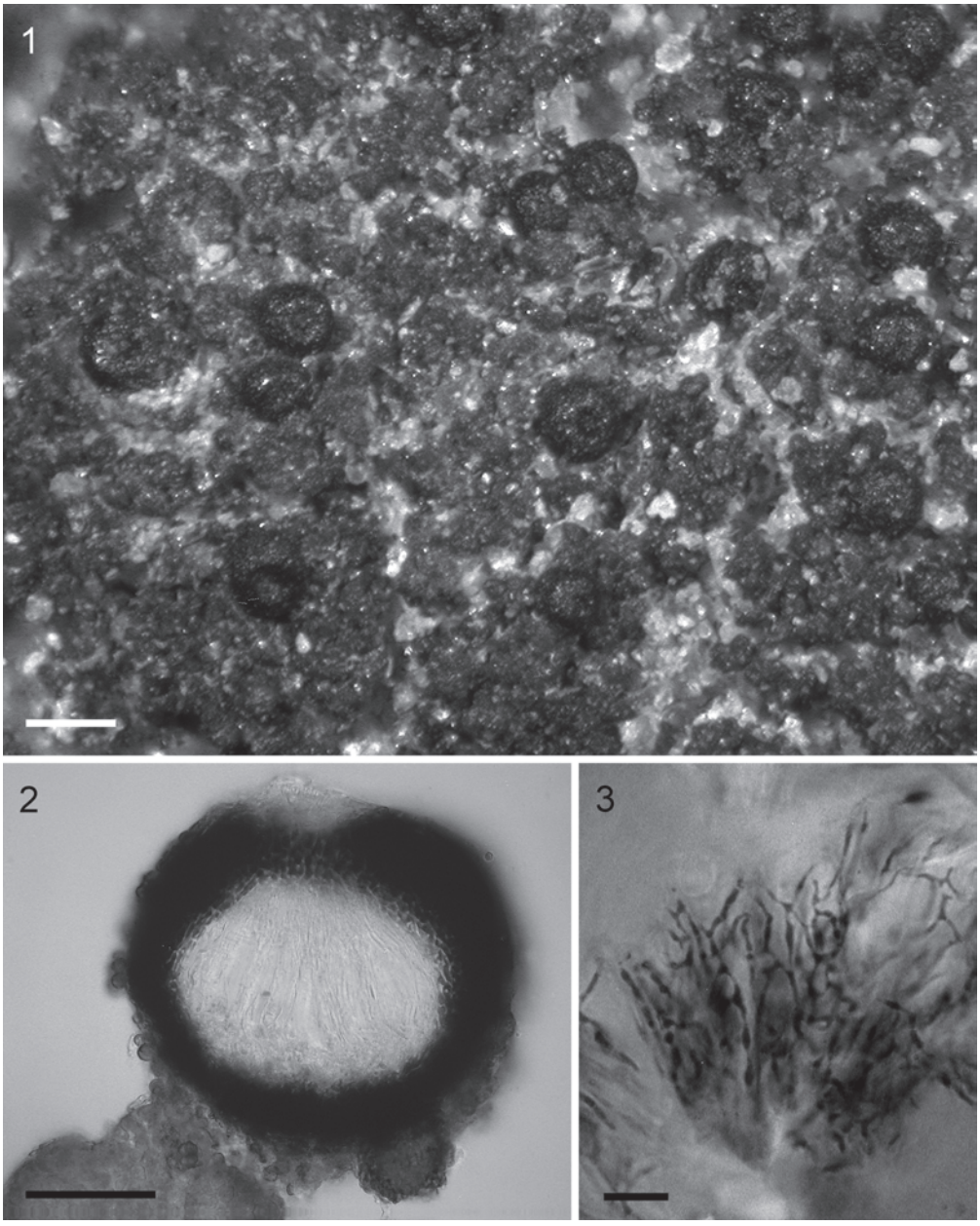
During field work in central Namibian savannah biomes conducted within the research program BIOTA-South, subproject S04 (L. Zedda & G. Rambold, University of Bayreuth), the second author collected a specimen of *Psorotichia* cf. *schaereri* with lichenicolous pseudothecia of an unknown species of *Zwackhiomyces*. The material has been studied with the usual microscopical techniques (see Diederich & Zhurbenko 2009) and is described here as a new species.

Results

Zwackhiomyces namibiensis Diederich & M.Schultz **sp. nov.** (Figs 1–5)

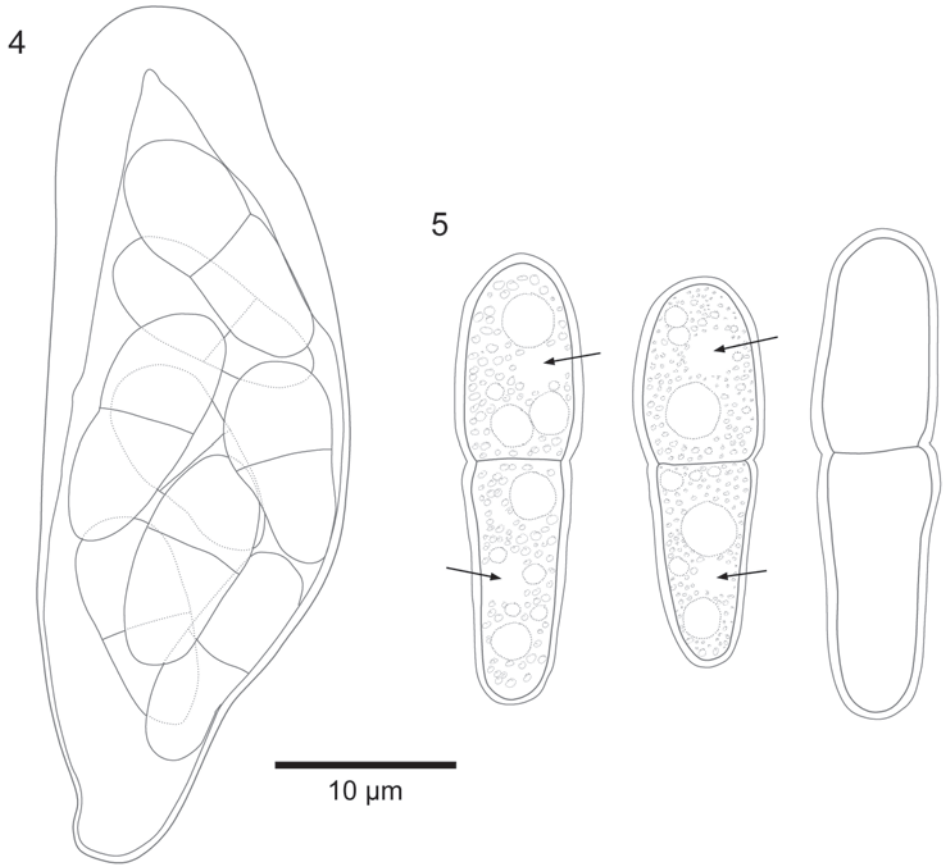
Zwackhiomyces species lichenicola insignis pseudotheciis semi-immersis ad superficialibus globosis 120–150 µm diam., ascis 8-sporis c. 45–50 × 8–14(–17) µm, ascosporis 1-septatis levibus (16–)21–26.5 × (5–)6–7 µm.

Type: Namibia, Khomas Distr., NW of Rehobot, just E of D1237, N end of farm Duruchaus, BIOTA-observatory Duruchaus, hectare plot 37, chamaephytic shrubland, exposed on small, flat rocky outcrops at ground level, alt. 1650 m, on *Psorotichia* cf. *schaereri* over siliceous rocks, 11.03.2006, M. Schultz 19153 (HBG 019554: holotype; M 0138876, WIND, herb. Diederich: isotypes).



Figs 1–3: *Zwackhiomyces namibiensis* (holotype). **1** – Perithecioid ascomata developing on the thallus of *Psorotichia* cf. *schaereri* (scale = 200 µm). **2** – Section through ascoma in water (scale = 50 µm). **3** – Interascal filaments in lactophenol cotton blue (scale = 10 µm).

Ascomata perithecioid, half-immersed when young, soon becoming superficial, black, subspherical or slightly applanate, 120–150 µm wide; wall entirely dark brown, K–, 15–45 µm thick, pigment extracellular; centrum not inspersed, K/I–; interascal filaments present, linear,



Figs 4–5: *Zwackhiomyces namibiensis* (holotype). **4** – Ascus with ascospores in Congo Red after pre-treatment with KOH. **5** – Ascospores in water (arrows indicate regions devoid of lipid guttules, probably representing nuclei).

branched or anastomosed, 1.5–2.0 µm thick; asci subcylindrical to clavate, K/I–, wall apically thickened, 8-spored, c. 45–50 × 8–14(–17) µm (difficult to measure, as basal parts often obscured, and as most asci examined were overmature); ascospores 1–2-seriate, hyaline, 1-septate, (16–)21–26.5 × (5–)6–7 µm (ratio length/breadth 3.2–4.4); perispore distinct, hyaline, c. 0.5 µm thick and smooth in water, up to 1 µm thick and wrinkled (giving a verrucose appearance) in KOH; ascospore cells with several large and many small lipid guttules (not disappearing in KOH), each cell probably with one nucleus (region devoid of lipid guttules). Conidiomata unknown.

Host: *Psorotichia* cf. *schaereri* (thallus), commensalistic.

Distribution: Known only from the type locality in Namibia.

Observations: A key to all known *Zwackhiomyces* species was published by CALATAYUD et al. (2007), and three additional species have been added more recently (DIEDERICH & ZHURBENKO 2009, BRACKEL 2008, HAWKSWORTH & ITURRIAGA 2006). Following this key, the new species has to be compared with *Z. berengerianus* (Arnold) Grube & Triebel and *Z. dispersus* (Körb.) Triebel & Grube.

Z. berengerianus has obpyriform ascomata, slightly shorter ascospores becoming eventually pale brown, 17–24(–27) × 5–8(–10) µm (ratio length/breadth 2.9–3.1), a distinctly verrucose perispore, much longer asci, 70–90(–95) × 12–13.5 µm, and is confined to *Mycobilimbia berengeriana* (A.Massal.) Hafellner & V.Wirth. *Z. dispersus* has slightly smaller, subspherical to obpyriform ascomata, 100–130(–170) µm diam., distinctly shorter and broader ascospores, (17.5–)18–22 × (6–)7–7.5(–8) µm (ratio length/breadth 2.4–2.6), and is confined to *Protoblastenia rupestris* (Scop.) J.Steiner (Grube & Hafellner 1990).

This is the first known lichenicolous fungus inhabiting species of the genus *Psorotichia*, though occasionally non-lichenized fungi can be found growing on sterile or moribund thalli of crustose Lichinaceae such as *Psorotichia*, *Porocyphus*, *Pyrenopsis* etc. However, the determination of infected, dying or barely sterile specimens is often extremely difficult or virtually impossible. Additionally, we have a specimen of an unknown *Nectria*-like fungus with 3-septate ascospores collected on *Psorotichia schaereri* in Luxembourg (Diederich 12444). Parasymbiotic and parasitic ascomycetes growing of fruticose members of the Lichinaceae have been reported by Henssen (1963) on *Ephebe* spp. and by Henssen et al. (1985) on *Lichinella* spp.

References

Brackel, W. v. 2008. *Zwackhiomyces echinulatus* sp. nov. and other lichenicolous fungi from Sicily, Italy. – Herzogia **21**: 181–198.

Calatayud, V., Triebel, D. & Pérez-Ortega, S. 2007. *Zwackhiomyces cervinae*, a new lichenicolous fungus (Xanthopyreniaceae) on *Acarospora*, with a key to the known species in the genus. – Lichenologist **39**: 129–134.

Diederich, P. & Zhurbenko, M. 2009. *Sphaerellothecium phaeorrhizae* and *Zwackhiomyces sipmanii* spp. nov. on *Phaeorrhiza sareptana* from north-eastern Asia, with a key to the species of *Sphaerellothecium*. – Biblioth. Lichenol. **99**: 113–121.

Grube, M. & Hafellner, J. 1990. Studien an flechtenbewohnenden Pilzen der Sammelgattung *Didymella* (Ascomycetes, Dothideales). – Nova Hedwigia **51**: 283–360.

Hawksworth, D. L. & Iturriaga, T. 2006. Lichenicolous fungi described from Antarctica and the sub-Antarctic islands by Carroll W. Dodge (1895–1988). – Antarctic Sc. **18**: 291–301.

Henssen, A. 1963. Eine Revision der Flechtenfamilien Lichinaceae und Ephebaceae. – Symb. Bot. Upsal. **18**: 1–123.

Henssen, A., Büdel, B. & Nash III, T. H. 1985. Three new species of *Lichinella* described from Mexico. – Bryologist **88**: 285–292.

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