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VEZDAEA RETIGERA (VEZDAEACEAE), A FACULTATIVELY EPIBRYOPHYTIC LICHENIZED FUNGUS NEW TO HUNGARY

Csaba Németh[1] and Jan Eckstein[2]

[1]*GINOP Sustainable Ecosystems Group, MTA Centre for Ecological Research, H–8237 Tihany, Klebelsberg Kuno út 3, Hungary; nemetcsaba@gmail.com*
[2]*Heinrich-Heine-Str. 9, DE–37083 Göttingen, Germany; jan.eckstein@octospora.de*

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Abstract: *Vezdaea retigera*, a lichenized fungus often growing on the gametophyte of various moss species, on thalli of the lichen *Peltigera* and also on soil was first observed in Hungary in the Börzsöny, Bükk and Zemplén Mts. The Hungarian finds are described in detail and illustrated with various macro- and micrographs.

Key words: epibryophytic, goniocyst, lichenized fungi

INTRODUCTION

Vezdaeaceae Poelt et Vězda ex J. C. David et D. Hawksw. is a monotypic family including a single genus *Vezdaea* Tscherm.-Woess et Poelt that comprises 12 species of lichenized fungi. Eight of them, *V. acicularis* Coppins, *V. aestivalis* (Ohlert) Tscherm. Woess et Poelt, *V. cobria* Giralt, Poelt et Suanjak, *V. dawsoniae* Döbbeler, *V. leprosa* (P. James) Vězda, *V. retigera* Poelt et Döbbeler, *V. rheocarpa* Poelt et Döbbeler, as well as *V. stipitata* Poelt et Döbbeler occur in Europe (Giralt *et al.* 1993). All of them are comparatively inconspicuous lichens forming thalli composed of corticate granules (goniocysts). The mostly minute apothecia are only formed in prolonged wet periods. Because of the inconspicuous thalli and ephemeral presence of apothecia species of *Vezdaea* are often overlooked.

MATERIAL AND METHODS

Geographical coordinates were determined using a Garmin eTrex Legend GPS. Specimens were deposited in the private collection of the first author and the lichen herbarium of BP (Hungarian Natural History Museum, Budapest, Hungary). Most of the microscopical observations were made on samples in tap water, but paraphyses were studied after staining with Lactophenol Cotton Blue.

For macrographs a Canon D1000 camera with Canon EF 100 mm F/2.8 Macro USM objective were used. Micrographs were taken with a Zeiss AxioCam HRc digital camera attached to a Zeiss Axio Imager A2 research microscope. Spore size and other microscopical quantitative characters were measured by means of AxioVision 4.8.2 microscope software. Abbreviation 'FCsN' refers to the private fungarium of the author. New Hungarian occurrence was displayed in a grid-cell map based on the Central European Mapping Scheme ('KEF', 5' × 3' = *ca* 5.5 × 6.5 km).

RESULTS AND DISCUSSION

During a bryological field trip conducted in the Börzsöny Mts, Hungary, numerous whitish, hemispherical apothecia accompanied by granulated algae were encountered growing abundantly on and among shoots of the moss *Weissia controversa* (Fig. 1a). The collected material was later identified as *Vezdaea retigera*, which proved to be new to the Hungarian lichen flora. Later it turned up in the Bükk and Zemplén Mts as well (Fig. 1b).

Specimens examined

Hungary, Börzsöny Mts, Hálás-bérc above Pokol Valley, FCsN 7923, *ca* 47.90772° N 18.92050° E, *ca* 620 m, 01.04.2016, with *Weissia controversa* on a nearly vertical bank along a forest track, on soil overlying dacite tuff bedrock, leg. Cs. Németh (accompanied by P. Erzberger, A. Kovács, J. Nagy, B. Papp and A. Rigó), det. J. Eckstein [8079.4].

Hungary, Zemplén Mts, Nagy-Vadász-tető above Rostalló, 48.42306° N 21.40917° E, *ca* 400 m, 16.04.2017, slope of forest track, leg./det. J. Eckstein (without specimen) [7594.3].

Hungary, Bükk Mts, near spring Eszperantó above Lake Hámor, FCsN 9389, *ca* 48.11078° N 20.60942° E, *ca* 368 m, 04.04.2018, with *Barbula convoluta* along a forest track, leg. Cs. Németh and P. Erzberger, det. Cs. Németh [7889.4].

Description

Thalli are composed of greyish green to dark green goniocysts (photosymbiont belongs to the genus *Leptosira*) (Fig. 1c-e) with short spines up to 2 μm (Fig. 1f). Apothecia hemispherical, 0.2–0.5(–0.6) mm in diameter (Fig. 1c-e), asci 110–120(–150) μm long and 20–24(–29) μm wide at the widest part, containing 8 ascospores arranged uni- to biseriately (Fig. 1g). Paraphyses long, intimately entwining individual asci (Fig. 1h). Spores simple, ellipsoid, smooth 17–22 × 9–11 μm with many small droplets almost filling the spore lumen (Fig. 1i).

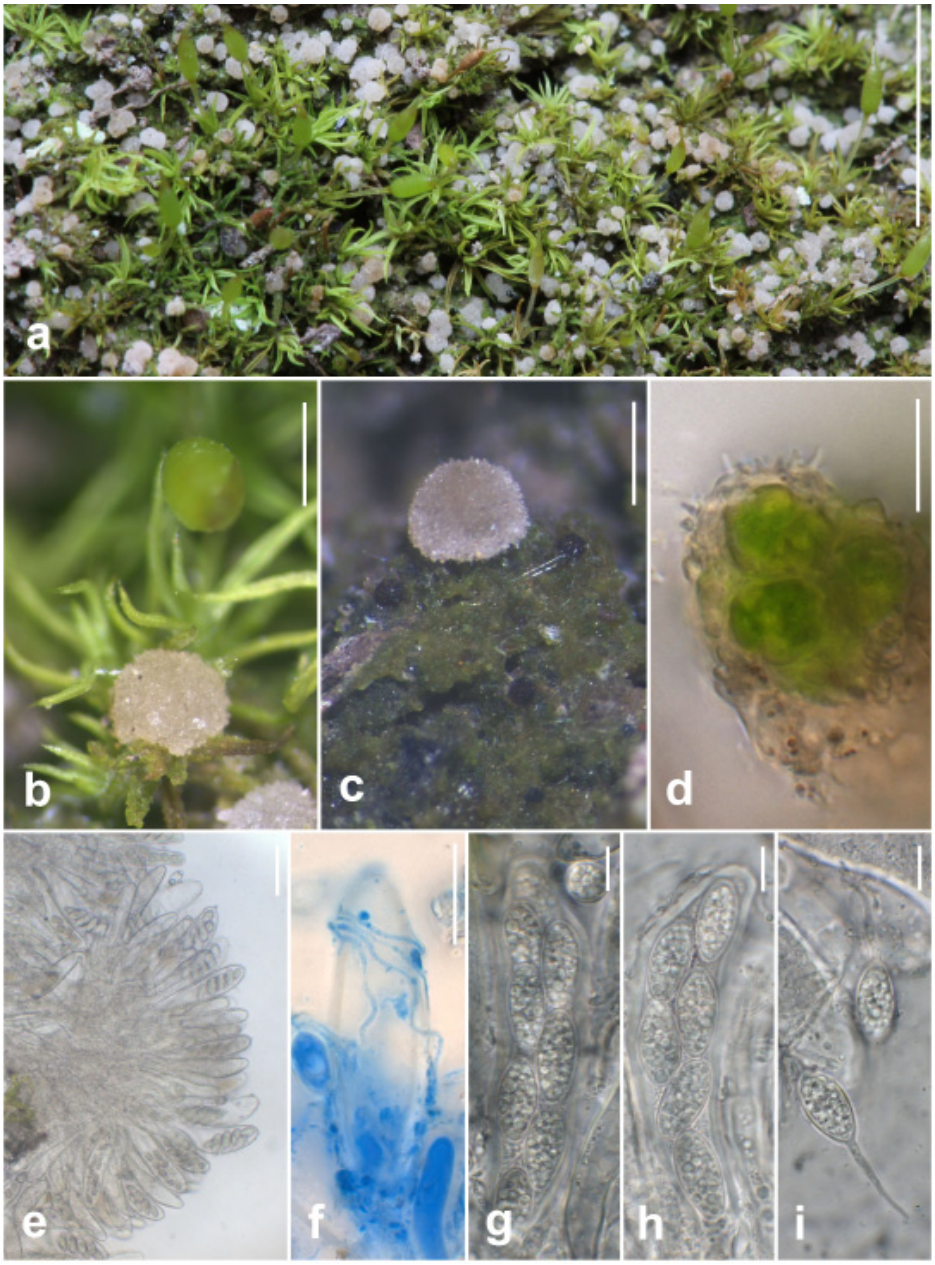


Fig. 1. *Vezdaea retigera*. – a = Greenish granular thallus and whitish hemispherical apothecia on and among shoots of *Weissia controversa*. – b = Greenish granular thallus and whitish hemispherical apothecia on and among shoots of *Barbula convoluta*. – c, d = Hemispherical ascomata and granular goniocysts growing on leaves of *W. controversa* and the surrounding soil surface. – e = Hemispherical ascomata and granular goniocysts growing on leaves of *B. convoluta*.– f = Structure of a goniocyst with spiny surface. – g = Structure of an ascomata composed solely of the hymenium. – h = Paraphyses entwining an ascus (stained with Lactophenol Cotton Blue). – i = Ascus with ascospores; scale bars a–b = 5 mm, c–e = 0.5 mm, f = 10 μm, g = 50 μm, h–i = 10 μm. (Photos by Cs. Németh).

Ecology

*Vezdaea retiger*a is an ephemeral lichenised fungus predominantly found as muscicolous or lichenicolous species growing on various terricolous bryophytes and *Peltigera* sp. (Alstrup *et al.* 2004, Chambers and Purvis 2009, Czarnota and Kukwa 2009, Palice 1999), but also growing directly on mineral soil in different types of habitats. *V. retigera* develops mature ascomata mainly during winter and spring (Coppins 1987). In Western Europe and North America it is considered to be a toxitolerant species occurring in metal-enriched habitats on base-rich grounds, in post-mining areas or on waste heaps (Chambers and Purvis 2009). In Sweden it was collected on calcareous rocks in an abandoned quarry (Svensson and Westberg 2010). In Poland it was found on calcareous substrates, sand dune and granite boulders as well (Czarnota and Kukwa 2009). In Hungary it was found on rather acidic soil developing on dacite tuff bedrock (Gyalog and Síkhegyi 2005) in the Börzsöny Mts , on mixed badrock composed of sandstone, limestone and marl in the Bükk Mts, and on intermediate soil on the slope of a forest track overlying rhyolite tuff bedrock in the Zemplén Mts.

Distribution

Vezdaea retigera is a circumpolar species widely distributed throughout the Northern Hemisphere. It was reported from North America (Lendemer and Yahr 2004) and various European countries (Alstrup *et al.* 2004, Aptroot *et al.* 2004, Clauzade and Roux 1985, Coppins 1987, Diederich *et al.* 2006, Kocourková 2000, Pykälä 2006, Santesson *et al.* 2004, Scholz 2000, Smith *et al.* 2009, Stepanchikova *et al.* 2011, Svensson and Westberg 2010, Svoboda 2007, Türk and Berger 1999, Wirth *et al.* 2013). The new occurrences in the Börzsöny and Zemplén Mts represent its first Hungarian observations (Fig. 2; Lőkös and Farkas 2009, Verseghy 1994). Due to its inconspicuous habit and small ascomata developing characteristically in winter when field activity of lichenologists is quite moderate, *V. retigera* is probably an often overlooked species and may be underrepresented in lichen collections.

Differentiating from similar taxa

Vezdaea retigera differs from most of its congeners in having simple rather than septate spores, a trait shared only with *V. rheocarpa* within the whole genus. The latter, however, has distinctive verrucose spores (smooth in *V. retigera*), shorter and free paraphyses (entwining individual asci in *V. retigera*) and longer spines on goniocysts (4–15 μm contrary to up to 2 μm in *V. retigera*).

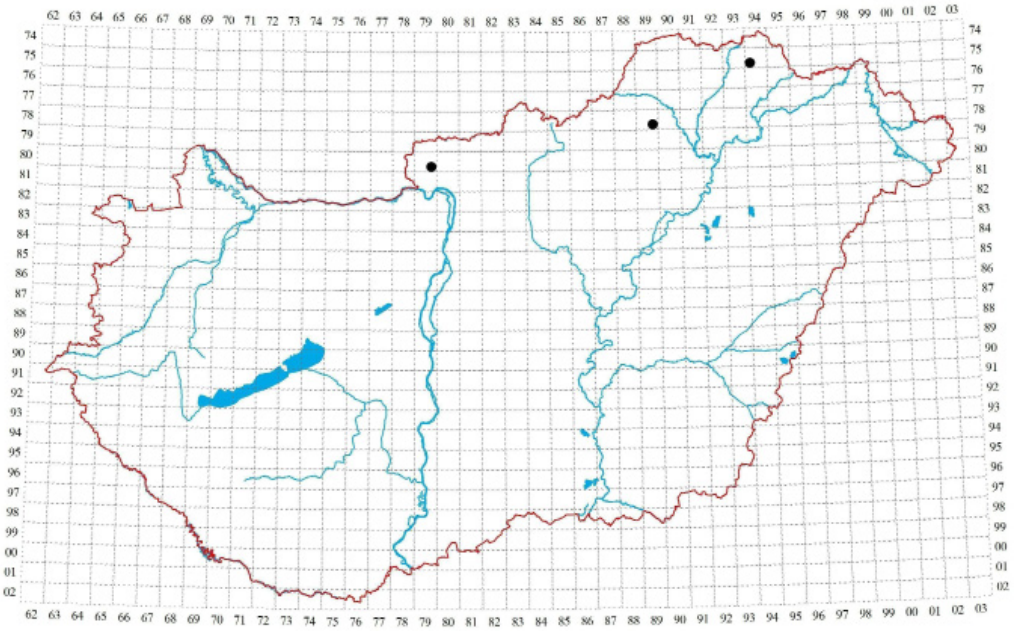


Fig. 2. Occurrences of *Vezdaea retigera* in Hungary.

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Összefoglaló: A *Vezdaea retigera* cirkumpoláris elterjedésű, efemer karakterű, aszkómáit jellemzően a téli–tavaszi időszakban fejlesztő, különféle lombosmohák gametofitonján, zuzmótelepeken, de nyers talajfelszínen is megjelenő zuzmófaj. Az észak-amerikai kontinensen és Európában egyaránt elterjedt, de kis mérete és jellemzően téli megjelenése miatt ismert előfordulási adatait tekintve valószínűleg alulreprezentált. Magyarország területéről eddig nem volt ismert, börzsönyi, bükki és zempléni előfordulásai újak a hazai zuzmóflórára.

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