

Endoxylina rufula, a new species of pyrenomyces from eastern Russia (Diatrypaceae)

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INTRODUCTION

Chacón (2002) has the most recent comparison of species belonging to the genus *Endoxylina* Romell. The genus has a wide range of concepts and is defined by the presence of uni- to triseptate ascospores and stromata with valsoid or eutypoid shapes (Ju et al. 1996). According to Sivanesan (1977) and Chacón (2002), two species have been divided; the first has ellipsoid, subfusoid to ovoid ascospores, while the other has cylindrical to allantoid ascospores.

There are just four species in the first category, which includes a species from the Russian Far East. Two of these, namely *Endoxylina citricola* Ou and *E. mori* Sawada, were reported from tropical eastern Asian locales, in Taiwan (Sawada 1959) and southern China (Teng 1938), respectively.

Diabetic *endoxylina* spora Only the type locality in Turkmenistan (Frolov 1970) is known for Frolov, but all of Asia is home to *E. indica* Maharkar & V.G. Rao.

With the exception of North American *E. allantospora* (Ellis & Everh.) Shoemaker & Egger and Mexican *E. tehucanensis* S. Chacón, most species of the second group—*Endoxylina astroidea* (Fr.) Romell, *E. anserina* (Pers. :Fr.) E. Müll., *E. crocea* Kirschst., *E. pini* Sivan., and *E. polyspora* E. Müll.—with cylindrical to allantoid ascospores are European. Due to the presence of either 3-septate ascospores (*E. tehucanensis*) or valsoidstromata (*E. allantospora*), these latter taxa differ from European species.

Methods: Standard procedures were used to conduct microscopic analyses. Using a Zeiss Primo Star, asci and ascospore measurements, observations, and photos were taken. Axio-164, a digital camera, and a microscope Microsoft Vision. A Nikon D40x digital camera was used to take the stromata photos.

Outcomes

Figs 1–9 of *Endoxylina rufula* Lar.N. Vassiljeva, sp. nov.

518298 MycoBank Ruffled surface of stromata is the etymology of the term *rufula*.

Adspersa; peritheciis profunde immersis, nigris, 400–600 µm diam. Stromata 3–15 × 2.5–5 mm, ligno immersa, ex parte erumpentia, intus et extus rufula, ostilis nigris et globosis. Commens apicalis J-negativus, annulus fasciculati, paraphysati, cylindrici, p. sp. (57–)60–80(–83) × 5–7 µm, stipitibus (24–)30–40(–44) longitudine. Fusoideae, fuscae, interdum leviter constrictae, fuscae, Ascosporae uniseriatae, 1-septatae, and (8.5–)9–13(–13.8) × 2.7–3.7(–4) µm are among the species. VLA P-2492 is the homotypus.

Stromata measuring 3–15 × 2.5–5 mm and submerged in wood partially erumpent, with an upper section that is frequently rust-colored, studded with black, and rounded tops of perithecial necks measuring 300–450 µm in diameter; perithecia submerged in 400–600 µm of black wood. Asci cylindrical, stalks (24–)30–40(–44) µm long, spore-bearing portions (57–)60–80(–83) × 5–7 µm, apical apparatus J-negative, paraphyses in abundance.

Ascospores: 1-celled ascospores (in the same perithecia) light brown, (10.3–)11–13 × (3.6–)4–5(–5.4) µm; uniseriate, fusiform, 1-septate, occasionally slightly constricted at the septum, brown. Holotype: L. Vasilyeva, VLA P-2492; Russia, Primorsky Territory, Vladivostok vicinity; 8 October 2000; wood.

Talk

Other Asian species have larger ascospores than *Endoxylina rufula*: 15–22 × 4.5–10 µm (*E. mori*), 27–34 × 12–14 µm (*E. citricola*), and 30–36 × 12–13 µm (*E. dilabentispora*).

Additionally, the upper portion of the stromata's rust-colored tissue is absent from these species. *E. rufula* is easily recognized by its broad, rounded perithecial neck tips, or "ostioles," which are located on the surface of stromata. Since "the presence of cruciform ostioles on the perithecia, along with the characteristically dark, septate, oblong-allantoid spores, are sufficient reasons to ratify the genus *Endoxylina* within the order Diatrypales," this appears to be at odds with the genus position within a taxonomic system (Chacón 2002: 61). Nevertheless, cruciform ostioles are absent from a number of diatrypaceous fungi (*Diatrype hypoxyloides* De Not., *D. caryae* Lar.N. Vassiljeva & S.L. Stephenson, *Eutypa lata* (Pers.) Tul. & C. Tul., *Eutypella bonariensis* (Speg.) Sacc.), thus this characteristic is only useful for species-level differentiation.

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Thus, *Endoxylina rufula*'s absence of cruciform ostioles enables us to identify a new species within the genus. Ascospore septation, on the other hand, was frequently thought to be of general significance.

Because of this, *Endoxylina* and *Eutypa* Tul. & Tul. can be separated from one another (see Rappaz 1987). However, other characteristics should be taken into consideration when classifying both genera into the distinct order Diatrypales.

Romero & Minter (1988) made the interesting notion that the Diatrypaceae should be distinguished at the ordinal level by the way their ascogenous cells are organized. My understanding is that this specific ascogenous system organization involves the joining of asci in distinctive fascicles that are seen in many diatrypaceous fungus when ascomata are crushed.

In spite of the fact that all pyrenomycetes were originally thought to be ascohymenial and classified under the group Ascohymeniales, this may contradict these fungi's fasciculate asci with hymenial asci found in xylariaceous fungi (Nannfeldt 1932). The two types of ascomatal ontogenies (the "Eutypa"-type and the "Xylaria"-type) were identified for the Diatrypaceae and the Xylariaceae (Parguey-Leduc 1970, 1971), despite the Diatrypaceae being placed under the Xylariales (Kirk et al. 2008).

Even some superficial pyrenomycete ascomata resemble the huge, semiglobose 'ostioles' of *Endoxylina rufula*. In this regard, one may recall the ascomata of *Scotiosphaeria endoxylinae* Sivan, which parasitize the *endoxylina pini* stromata (Sivanesan 1977). The ascospores of both the parasitic and host fungus are brown, 1-septate, and vary in size and shape.

Although *Endoxylina rufula*'s stromata show nothing of the sort, the same ascus fascicles in this case contain asci with two different kinds of ascospores, giving the impression that one fungus parasitizes another.

Certain asci are filled with the typical 1-celled light brown ascospores found in *Barrmaelia* Rappaz, whereas other asci contain the 2-celled, dark brown ascospores found in *Endoxylina*. According to Rappaz (1995), the latter genus contains eutypoid Stromata and *Libertella* anamorphs, which are indications of the diatrypaceous affinity. *Barrmaelia*-like ascospores are somewhat different in appearance from their young *Endoxylina* ascospore relatives; in fact, they can occasionally be even wider while having nearly the same size (Figs 7–9). My hypothesis is that ascospores in some asci develop a septum during the maturation process.

In some, however, they continue to be inept. We deal with *Barrmaelia* species if all ascospores remain aseptate, while one sees the usual *Endoxylina* member if all ascospores turn septate. According to this theory, the divergence of the *Barrmaelia* and *Endoxylina* lineages may have begun with *Endoxylina rufula*. Indeed, *E. rufula*'s asci may produce two

different types of ascospores, leading to the possibility that the species belongs in a different genus. However, further observations are needed before making this determination.

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