Quaternaria carpinicola, a comb. nov. (Diatrypaceae)

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Quaternaria carpinicola is suggested as a new combination. The species is restricted to *Fagus grandifolia* in south-eastern United States. It differs from the European *Q. quaternata* in possessing smaller stromata and ascospores. Its position in the genus *Quaternaria* rather than *Eutypella* is discussed.

Key words – ascomycetous fungi – *Diatrypales* – taxonomy

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Introduction

During a survey of pyrenomyceous fungi in some areas of the United States, such as Big Thicket National Preserve (Texas), Buffalo River National Park (Arkansas), and the territory of University of Michigan Biological Station (near Douglas Lake, Michigan) a fungus from the bark of *Fagus grandifolia* Ehrh. was collected; its characters suggested that it was the entity designated by Rappaz (1987) as "le taxon américain" in the discussion of *Eutypella quaternata* (Pers.) Rappaz. Rappaz (1987) indicated the difference between American and European material, and restricted the occurrence of *E. quaternata* to Europe. However the American taxon was not considered as definitely independent of *E. quaternata* and remained without a proper name.

"Le taxon américain" was supposedly described by Schweinitz (1822) for the first time as "*Sphaeria quaternata* ß. *maxima*", but this name is listed by Rappaz (1987) with a question mark. Only two names were considered to be pertinent to this taxon without doubt, namely *Sphaeria quaternata* b. *americana* Fr. (Fries 1823) and *Eutypella carpinicola* Ellis & Everh. (Ellis & Everhart 1894). Fries (1823) is a sanctioning work, but the informal infraspecific entities labelled with a lower case letter are never treated as being sanctioned, implying that they are not valid names; in fact, many of them are presented as a descriptive phrase rather than as an “epithet”. Although the epithet "americana" may be preferable it cannot replace the epithet "carpinicola" even though the latter makes reference to the wrong host plant, as the type specimen of *Eutypella carpinicola* is found on *Fagus* (Rappaz 1987).

Methods

Microscopic analysis was carried out using standard techniques. The measurements and photographs of ascospores were made using a Zeiss Primo Star microscope, G10 digital camera, and AxioVision Microsoft. Asci were rapidly dissolving. The photographs of stromata were taken using a Nikon D40x digital camera. The basic map was taken from the web site http://www.dienesusa.com and modified with data on the distribution of *Q. carpinicola*.

Taxonomy

Quaternaria carpinicola (Ellis & Everh.) Lar.N. Vassiljeva, **comb. nov.** Figs 1A–C MycoBank 519615

Eutypella carpinicola Ellis & Everh., Proc. Acad. Nat. Sci. Philad. 46: 342, 1894.

Massalongiella carpinicola (Ellis & Everh.) Berl., Icon. Fung. 3: 1, 1900.

Stromata densely scattered within the slightly elevated bark, dotted at the surface with tiny black ectostromatic discs pierced by 2–3 punctate perithecial ostioles; stromatal aggregations widely effused over branches and trunks resembling stromata of *Cryptosphaeria*; perithecia black, 430–630 µm diam. Asci almost cylindrical or slightly clavate, spore bearing parts 37–50 × 3.5–6 µm, stalks up to 60 µm long, apical ring indiscernible, J-negative, paraphyses numerous. Ascospores uni- or biseriate, allantoid, dilute brownish, (6.5–)7.5–10(–12.5) × 2–2.5 µm.

Specimens examined – USA, Maine, Kittery Pt., on *Fagus*, 1886 (without date and month), R. Thaxter (FH, as *Cryptosphaeria* sp.); New York: "Ellis & Everhart's North American Fungi 3028. *Eutypella carpinicola* E. & E. n. sp. On dead trunks of *Carpinus americana*, lying on the ground. Alcove, N. Y., Oct 1893, C.L. Shear" (BAA, K, MICH); New Hampshire, Intervale, on *Fagus*, 7 Aug 1901, R. Thaxter (FH, as *Cryptosphaeria* sp.); Connecticut, New Haven, on *Fagus*, Nov (without date and year), R. Thaxter (FH, as *Cryptosphaeria* sp.); Texas, Big Thicket National Preserve, Beech Creek Unit, Beech Wood Trail, dead branch of *Fagus grandifolia*, 9 Aug 2007, L. Vasilyeva (VLA P-2162); Arkansas, Buffalo River National Park, Steel Creek area, dead trunk and twigs of *Fagus grandifolia*, 26 Sep 2009, L. Vasilyeva (VLA P-2393).

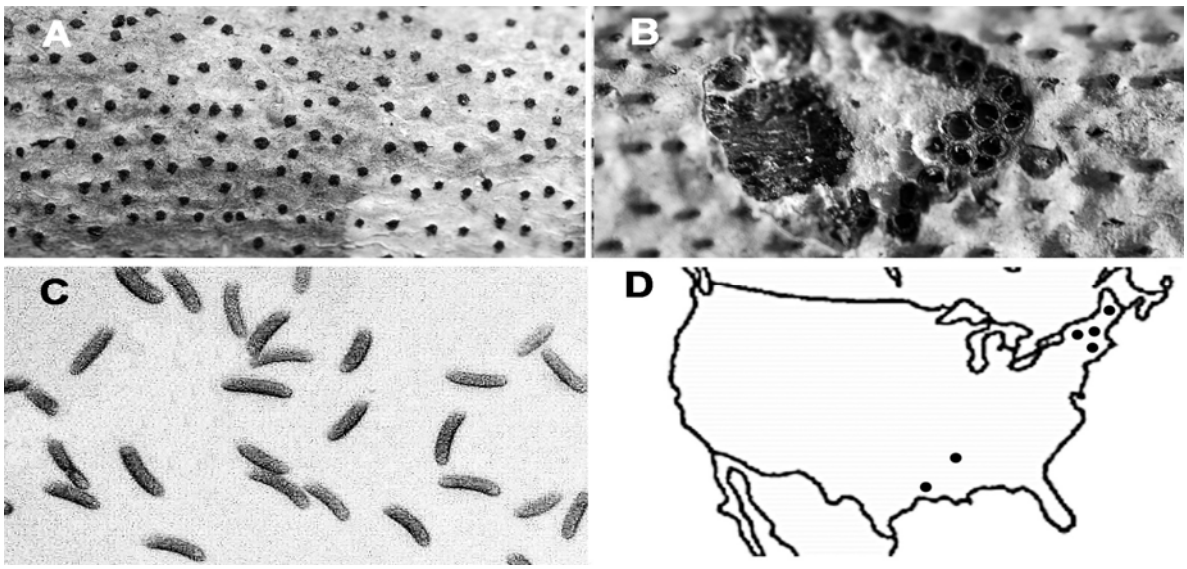
Discussion

Rappaz (1987) indicated the specimen of Ellis & Everhart's exsiccate "North American Fungi 3028" kept in the New York Botanical Garden (NY) as the isotype of *Eutypella carpinicola*. Pieces of the same exsiccate were studied in the Herbarium of University of Buenos Aires (BAA), Kew Botanical Gardens (K) and the Herbarium of Michigan University (MICH). Additionally, there is a specimen in the Farlow Herbarium (FH) labeled as "*Eutypella carpinicola* E. & E., on *Carpinus americana*, Alcorn, New York, 1 Oct 1893, C.L. Shear" and kept as the type material but without the reference to the "North American Fungi".

Quaternaria carpinicola and *Q. quaternata* (Pers.) J. Schröt. (= *Q. persoonii* Tul. & C. Tul.) are both restricted to *Fagus* spp., but seem to replace each other with the former restricted to United States and the latter to Europe. The situation is similar to *Diatrype virescens* (Schwein.) Cooke and *D. disciformis* (Hoffm.) Fr. on *Fagus* spp. in eastern USA and Europe, respectively. The specimens of *Quaternaria quaternata* collected in Austria (Steyr vicinity, on *Fagus sylvatica* L., 10 Jul 1994, L. Vasilyeva & C. Sheuer, VLA P-1710) and Germany (Weimar vicinity, on *Fagus sylvatica*, 21 Feb 1998, L. Vasilyeva, VLA P-1711) were also studied and compared with those of *Q. carpinicola*. These two entities differ in smaller ascospores and ectostromatic discs in the latter species.

Rappaz (1987) considered species of *Quaternaria* Tul. & C. Tul. (Tulasne & Tulasne 1863) as members of *Eutypella* (Nitschke) Sacc. (Saccardo 1875). My treatment of *Quaternaria* as a separate genus is not only because its name precedes that of *Eutypella*, but because the stromata of its members are cryptosphaeroid in their appearance and develop within the bark parenchyma. Several specimens of *Quaternaria* in different herbaria were initially identified as *Cryptosphaeria* species. One could only say that *Quaternaria* possessing perithecia in small groups is an 'eutypelloid' counterpart of *Cryptosphaeria* having 'diatrypoid' kind of effused stroma with separate perithecia [cf. Nitschke's description (1867) of newly established taxon *Cryptosphaeria* as a subgenus: "stroma diatrypeum, cortici interiori innatum..."].

Judging from the original description of *Valsa myriocarpa* Nitschke (1867), which was later treated as *Cryptosphaeria myriocarpa* (Nitschke) Sacc. (Saccardo 1882), it might be the third species of *Quaternaria* (also on *Fagus*) which is similar to *Q. quaternata* superficially, but has smaller and almost hyaline ascospores. The stroma of *C. myriocarpa* is



Figs 1A–B, D – *Quaternaria americana*. **A** Appearance of stromata on the bark. **B** Cross section through stromata. **C** Ascospores. **D** Known localities of *Q. americana*. – Bars **A** = 3 mm; **B** = 2 mm; **C** = 10 µm.

described as immersed in the bark parenchyma similar to that in two other species of *Quaternaria*. There are specimens in herbaria with such characteristics, for example "*Cryptosphaeria myriocarpa* (Nitschke) Sacc., on *Fagus orientalis* Lipsky, Russia, Krasnodarsky Kray, 28 Sep 1946, K. Sergeeva, LE 118654", and these specimens suit the concept of *Quaternaria*.

Unfortunately, the names *Valsa myriocarpa* and *Cryptosphaeria myriocarpa* were reduced to synonyms of *Eutypa lata* (Pers.) Tul. & C. Tul., species with a completely different type of development in the wood and different stromata. The basis of such a decision was the specimen chosen as the lectotype of *Valsa myriocarpa*: "Nitschke, 10-1865, *Fagus sylvatica* [xyl.: *Prunus* sp.], Nienberge bei Münster, Westfalen" (Rappaz 1987). Evidently, the choice of lectotype was not the best one (even the substrate was *Prunus* and not *Fagus*) and, as a consequence, the typical specimens of *Cryptosphaeria myriocarpa* on *Fagus* are mixed with those of *Eutypa lata* in herbaria (for example, K). In case of finding the new lectotype for *Valsa myriocarpa*, this species could be treated as a separate member of *Quaternaria*, but I did not study Nitschke's material.

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