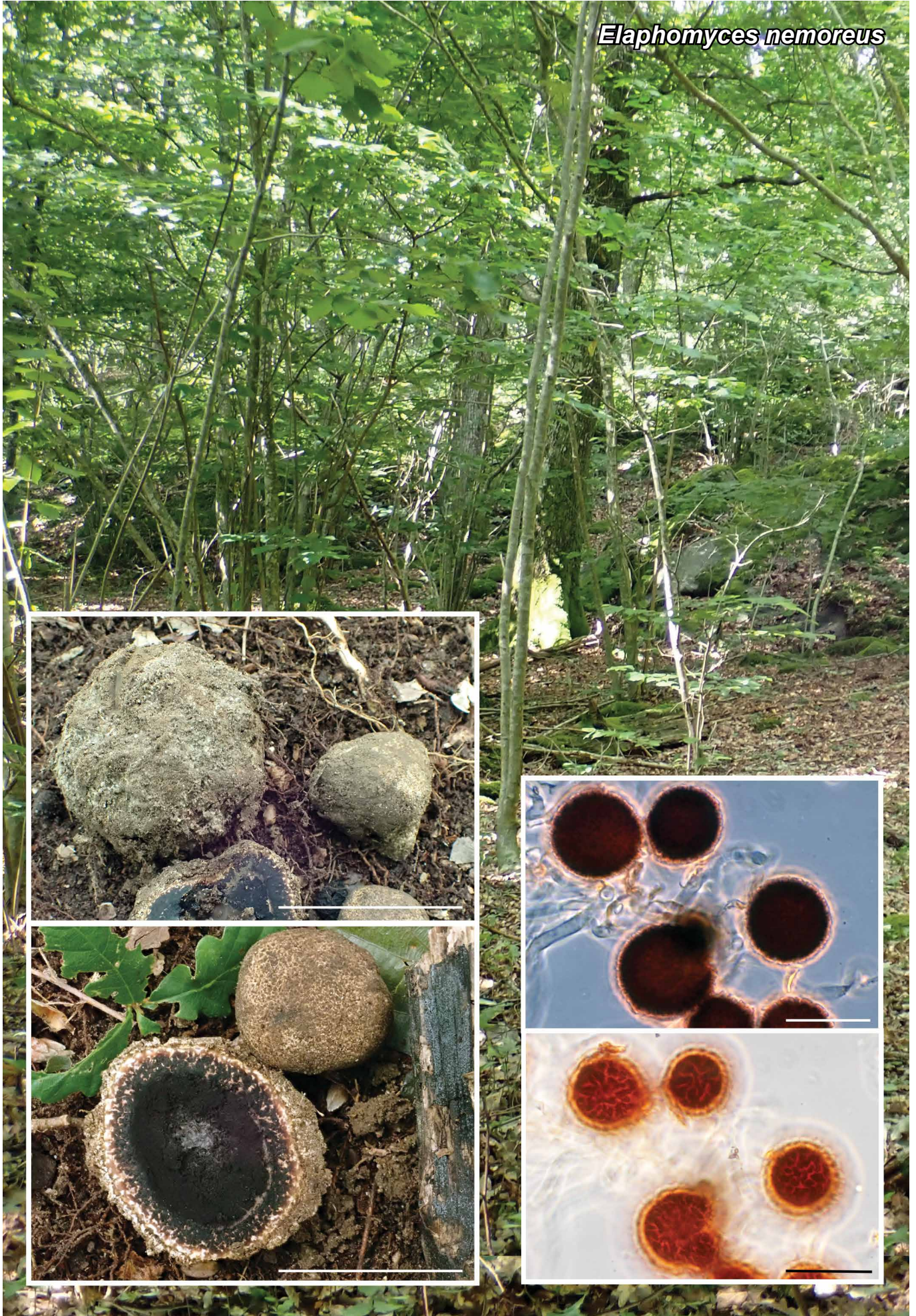


Elaphomyces nemoreus



Fungal Planet 1152 – 19 December 2020

***Elaphomyces nemoreus* Jeppson, Molia & E. Larss., sp. nov.**

Etymology. Name refers to the occurrence in deciduous woodlands.

Classification — *Elaphomycetaceae*, *Eurotiales*, *Eurotiomycetes*.

Ascomata subglobose 1–6 cm diam. *Peridial surface* yellowish grey-brown with a covering of low and flat, obtuse, somewhat darker warts or platelets on a lighter background. Ascomata are found solitary or in small groups and are covered by a pale yellow to sulphur yellow mycelial layer encrusting soil. Cortex and mycelial covering constructed of loosely to intricately interwoven thin-walled, hyaline to yellowish hyphae, 2–5 µm diam, sometimes with slightly encrusted walls. Areas between the warts are formed by compacted parallel bundles of hyaline compacted hyphae. *Peridium* in section thick (fresh up to 5 mm), distinctly marbled with large ochraceous to dark brown or purplish brown and irregularly rounded marbles divided by winding, more or less radially arranged whitish veins. Peridium formed by loosely to intricately interwoven hyphae up to 10 µm diam, in darker areas of the marbling with adhering brown grains of extra-cellular pigments. *Gleba* young greyish white, web-like, later pulverulent and black. *Asci* not observed. *Ascospores* dark brown, globose, in KOH 3 % 23–32 µm (av. 26 µm) including ornamentation, 17–25 µm (av. 22 µm) ornamentation excluded, in Hoyer's solution significantly smaller: 20–25.5 µm (av. 22 µm) including ornamentation, 16.5–22 µm (av. 18.7 µm) ornamentation excluded. Ornamentation in side view with broad spines and warts up to 3 µm high. A surface view reveals groups of spines with confluent apices, with age coalescing to form coarse meshes and crests.

Habitat & Distribution — Found associated with *Fagus sylvatica* and *Quercus robur* on basic and acidic soils. Likely to have a northern distribution range in Europe, but occurs also in Southern Europe.

Typus. SWEDEN, Bohuslän, Valla, Sundsby, deciduous woodland under *Quercus robur* and *Fagus sylvatica*, 20 m asl., N58.065348° E11.676246°, 17 July 2020, *E. Larsson & M. Jeppson 11077* (holotype GB-0207587, ITS-LSU sequence GenBank MT872017, MycoBank MB837347).

Additional materials examined. ***Elaphomyces decipiens*:** SWEDEN, Gotland, Mästerby, wooded meadow under *Quercus robur*, 24 Oct. 2019, *E. Larsson 268-19* (GB-0207592), ITS-LSU sequence GenBank MT872011. ***Elaphomyces nemoreus*:** NORWAY, Agder, Farsund, 2013, *A. Molia 351-2013* (O-F21484), ITS-LSU sequence GenBank KR029742; Aust-Agder, Arendal, 9 Nov. 2013, *A. Molia et al.* (O-F21513), ITS-LSU sequence GenBank KR027943. – SWEDEN, Bohuslän, Valla, Sundsby, deciduous woodland under *Fagus sylvatica*, 26 Aug. 2014, *K. Rense & M. Jeppson 10151* (GB-0207593), ITS-LSU sequence GenBank MF614923; *ibid.*, 17 July 2020, *E. Larsson & M. Jeppson 11180* (GB); Bohuslän, Ljung, Tjöstelseröd, under *Quercus robur*, 24 Apr. 2020, *E. Larsson & M. Jeppson 11141* (GB), ITS sequence GenBank MT872012; *ibid.*, 24 Apr. 2020, *E. Larsson & M. Jeppson 11139*

Colour illustrations. *Elaphomyces nemoreus* (holotype), habitat. Ascomata; ascospores in side view and surface view. Scale bars = 10 µm (ascospores), 50 mm (ascomata).

(GB-0207589); Bohuslän, Resteröd, under *Fagus sylvatica*, 20 Nov. 2019, *E. Larsson 382-19* (GB-0207590), ITS-LSU sequence GenBank MT872015; *ibid.*, 16 Apr. 2020, *E. Larsson 44-20* (GB-0207591), ITS-LSU sequence GenBank MT872013; Bohuslän, Uddevalla, Rimmersvallen, deciduous woodland under *Quercus robur*, 3 Aug. 2016, *A. Molia & M. Jeppson 10482* (GB-0207594), ITS sequence GenBank MT872016; Västergötland, V. Tunhem, deciduous woodland under *Quercus robur*, 26 Dec. 2019, *A. Bohlin, E. Larsson & M. Jeppson 11076* (GB-0207588), ITS sequence GenBank MT872014.

Notes — *Elaphomyces nemoreus* belongs to *Elaphomyces* section *Elaphomyces* subsection *Muricati*. It is closely related to *E. decipiens* (with a neotype recently designated by Paz et al. 2017), with which it shares the characteristic marbled peridium with whitish, more or less radially arranged veins and the ochraceous to dark purplish brown, irregularly rounded, large marbles. Both species have a cortex surface with low flat, grey-brown warts. In *E. nemoreus* the surface warts typically appear as plates forming a cheetah pattern. In *E. decipiens* the hyphal crust surrounding the ascomata is creamy white whereas in *E. nemoreus* it has distinct sulphur yellow tinges. The spores are similar in size and ornamentation in the two species.

In Molia et al. (2020), a genetic divergence was observed within *E. decipiens*. Further sequenced collections from Scandinavia confirmed this observation and the occurrence of two genetically distinct but morphologically similar species. So, we here recognise *E. nemoreus* as a distinct species in the subsection *Muricati*. In the phylogenetic analyses it comes out with support as a sister species to *E. decipiens* from which it differs by five substitutions and two 1–2 bp insertion/deletion events in the ITS1 region and two substitutions in the ITS2 region. Based on the sequences included here no gene flow between the two genotypes can be observed, which supports their evolutionary autonomy. The sequences originating from North America submitted to GenBank as *E. decipiens* (EU837299, EU846311) did not come out together with the neotype of *E. decipiens* nor with the herein described species, and these two sequences are shown to be more closely related to *E. barrioi* and the recently described *E. bucholtzii* (Crous et al. 2020a).

Elaphomyces nemoreus is recorded from coastal areas of south-western Scandinavia (Norway and Sweden) where it occurs in south-facing, warm forest habitats with *Fagus sylvatica* and *Quercus robur*, often on acid, but more nutrient-rich soils. *Elaphomyces nemoreus* is more frequently encountered in Scandinavia than *E. decipiens*, that must be regarded as rare but with confirmed finds from meadow areas under *Quercus robur* on calcareous ground. *Elaphomyces decipiens* may have a more southern European distribution range, but sequence data published in Paz et al. (2017) indicate that also *E. nemoreus* occurs under *Fagus* in northernmost Spain.

Supplementary material

FP1152 Phylogram obtained using PAUP v. 4.0a (Swofford 2003) based on ITS and LSU data showing the position of *E. nemoreus* in *Elaphomyces* subsection *Muricati*. Bootstrap values are indicated on branches, *E. nemoreus* is marked in **bold** and the holotype is indicated.