

# *ELAPHOMYCES CYANOSPORUS*

## new to Britain

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During the 2011 BMS autumn foray we visited Yarner Wood belonging to the National Trust. This is one of the best ancient oak woodlands in Devon. It is on acid soil and was originally coppiced for charcoal production.

Emerging from a bank near to a rather large oak was a black rounded object approx 1 cm across covered in fine warts. I assumed it was an immature *Tuber* species or, rather more exciting, *Pachyphloeus melanoxanthus* a rarity which I had collected the previous month. Closer inspection revealed a number of ascocarps. When cut it was clear that most of the collection was immature, however a turquoise interior was revealed in the one semi-mature specimen. I realised this was one of the rarely found black *Elaphomyces* species.

The genus *Elaphomyces* is cosmopolitan yet it is difficult to ascertain the number of distinct species. Montecchi & Sarasini (2000) refer to "about 30 species" worldwide, and 98 legitimate names are listed on *Index Fungorum* but their synonymy is poorly understood. Apparently "Molecular information is presently lacking because extracting useable DNA for sequencing has been difficult for most *Elaphomyces* collections" (Castellano *et al.*, 2011).

Nineteen species of *Elaphomyces* are described from Europe in *Funghi Ipogei d'Europa* (Montecchi & Sarasini, 2000) though 21 species occur in their key. This publication is recognised as the most recent overview of the European hypogeous fungi. In Britain we seem to have far fewer species; with only five being described in Pegler *et al.* (1993) and one of them, *E. citrinus*, without *exsiccata*, is not considered by them as British. The FRDBI lists nine British species, the five in Pegler *et al.* (1993) and four others. Two of these, *E. cervinus* and *E. leucocarpus* are considered by Pegler *et al.* (1993) and by Montecchi & Sarasini to be synonyms of *E. granulatus*. A third species, *E. asperulus*, is rather doubtfully distinct from *E. granulatus* and no differences were found in the British material assigned here. Lastly, *E. leucosporus* is undoubtedly distinctly, but the British records were misdetermined. I therefore conclude that up to now there have been only four confirmed British species.

Of these four accepted species, two are common throughout Britain, occurring with both deciduous and coniferous hosts; *E. muricatus*, with a marbled peridium in section and *E. granulatus* with a plain buff one. Both are gingery and warty and often have mycorrhizal roots surrounding their surface. They have a dark purple-black solid interior when the spores are mature. The other two species are black and have



Fig. 1. Ascocarp of *Elaphomyces cyanosporus* showing the fine irregularly warted surface. Photograph © C. Hobart.



Fig. 2. Immature ascocarps showing the distinctive peridium with inner darker band. Photograph © C. Hobart.

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a very limited known distribution. These were collected by Broome in 1845 near Bristol and later by Lillian Hawker in Gloucestershire in 1948 and 1953.

No previously recorded British species has a turquoise interior. Two black warty *Elaphomyces* species with turquoise interiors have been recorded in Europe: *E. persoonii* which is very rare and *E. cyanosporus* described as fairly common (Montecchi & Sarasini, 2000). According to their volume there are two main differences between them; the size of the meshes across the spores (up to eight in *E. persoonii* more in *E. cyanosporus*), the latter also has a grey fleshy band in the inner peridium adjacent to the gleba. In both respects my collection fitted *E. cyanosporus*.

#### Description of material collected at Yarner Wood, Devon on 16/9/2011

**Ascocarps** up to 1.2 cm diam., dark brown to black, covered in small, low, irregular warts.

**Peridium** a thin black warty cortex, surrounding a light coloured middle band which pinks slightly after time. The inner layer which surrounds the gleba is grey.

**Gleba** when immature typically felty and grey; when mature solid, composed of intertwined hyphae 2–5µm wide, and in mass a turquoise colour. Darker spots of turquoise (seen with a hand lens) indicate the maturing spores in the asci.

**Asci** globose 60 µm diameter with thin hyaline 2 µm walls.

**Ascospores** turquoise, globose, up to 24 µm diameter including ornamentation. Ornamentation 2 µm high, forming a fine reticulum. Approx. ten meshes across the spore.

**Collection examined:** England, Devonshire, Yarner Wood, hypogeous under *Quercus robur*, 16/9/2011, CA Hobart, K(M) 174166.

#### Commentary

*Elaphomyces cyanosporus* Tul. & C. Tul. is a rather distinctive species described by the brothers Tulasne in 1851 in their *Fungi Hypogei* and named for its blue-green spores. Montecchi & Sarasini (2000) state that it is fairly common in Italy and collected under various deciduous trees, at altitudes of 500–1000 m. An internet search suggested otherwise and that it is in fact a rarely found species, but does occur in France, Spain,

Czech Republic and Poland where it is red-listed. It is unlikely just to occur in Devon, but without knowing more about its ecological requirements it is difficult to know where else in Britain it is likely to occur.

#### Acknowledgement

Thanks to Alick Henrici for his useful comment on the text and content and for accessing information on the *Elaphomyces* collections lodged in the fungarium at the Royal Botanic Gardens, Kew.



Fig. 3. Spores showing strong turquoise colour with fine reticulation. Photograph © C. Hobart.

#### References

- Castellano, M., Trappe, J. M., & Vernes, K. (2011). Australian species of *Elaphomyces* (*Elaphomycetaceae*, *Eurotiales*, *Ascomycota*) *Australian Systematic Botany*, 24, 32–57.
- Hawker, L. E., Fraymouth, J., De La Torre, M. (1967). The identity of *Elaphomyces granulatus*, *Trans. Br. Mycol. Soc.* 50 (1), 129–136.
- Montecchi, A., Sarasini, M., (2000). *Funghi Ipogei d'Europa*. AMB.
- Pegler, D.N., Spooner, B.M., & Young, T.W.K. (1993). *British Truffles: Revision of British Hypogeous Fungi*. Royal Botanic Gardens, Kew.

#### Internet

<http://www.fieldmycology.net/GBCHKLST/gbchklst.asp> (for FRDBI).

<http://www.indexfungorum.org/>