

***Troglomyces rossii* Santamaría, Enghoff & Reboleira, 2014 (Laboulbeniales) new to Britain and Ireland on *Ophiulus germanicus* (Verhoeff) (Diplopoda: Julida: Julidae)**

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The Laboulbeniales are an Order of fungi which grow on the bodies of insects and other invertebrates, including millipedes. Hitherto, only one species has been known from millipedes in Britain: *Rickia laboulbenioides* De Kesel. It has been recorded from a few host species in genus *Cylindroiulus* (Diplopoda: Julida: Julidae): *C. punctatus* (Leach), *C. britannicus* (Verhoeff), *C. latestriatus* (Curtis), *C. pyrenaicus* (Brölemann) and *C. sagittarius* (Brölemann) (Gregory *et al.*, 2018; Gregory & Owen, 2019; Storey, 2019; Gregory, in prep.).

On 17 September 2019, Roy Anderson collected several *Ophiulus germanicus* from his garden in Belfast (J349695, Co. Down VC H38), Northern Ireland, and gave them alive to the author when we met up in a restaurant that evening. Later examination of the millipedes revealed that most were heavily colonised by Laboulbeniales (Fig. 1). These were provisionally identified as *Troglomyces rossii* Santamaría, Enghoff & Reboleira, 2014 by reference to Santamaría *et al.* (2014, 2018). Specimens were sent to Prof. Sergi Santamaría who kindly confirmed their identity.



Figure 1: *Troglomyces rossii* on the legs of *Ophiulus germanicus*.

Laboulbeniales are easily overlooked and so specimens of *O. germanicus* in the author's collection from the original British locality at Trap Grounds, Oxford (SP502081, Oxfordshire VC 23; 18 April 2016) (Gregory, 2018) and a second British locality at Ventnor Botanic Gardens (SZ5476, Isle of Wight VC 10; 12 February 2019) were carefully examined. There were no Laboulbeniales on the Trap Grounds

specimens but Laboulbeniales were present on most of the Ventnor Botanic Gardens specimens. These were identified as *T. rossii* and confirmed by Prof. Sergi Santamaría.

Although there were no Laboulbeniales fungi on the Trap Grounds specimens, there were some other fungi growing singly on the tibia or tarsus of the legs. These fungi are much smaller than *T. rossii*, and lie appressed to the leg making them difficult to spot; the black point of attachment is more conspicuous than the thallus (Figs. 2, 3). They very much resemble (Henrik Enghoff, *in litt.*) the unidentified ‘enigmatic fungi’ found on *Xestoiulus laeticollis* (Porat) and *O. pilosus* (Newport) (Diplopoda: Julida: Julidae) in Denmark and illustrated in Figures 2 and 3 of Enghoff & Reboleira (2017).



Figure 2: Leg of *O. germanicus* with one ‘enigmatic fungus’ on the tarsus, showing the black point of attachment (arrowed).

Some ecological and life-history information may be inferred from the occurrence of Laboulbeniales. Laboulbeniales are thought to be transmitted between individuals by direct contact, when spores from an infected millipede attach to another. In some Laboulbeniales on millipedes, it is clear that they are primarily sexually transmitted, with the fungi concentrated around the gonopods of males and the gonopore surroundings of females, though this concentration is less clear with *T. rossii* on *O. germanicus*. It is presumably essential for the persistence of the fungus that infected millipedes mate, or otherwise come into close contact with, individuals of the younger generation. The occurrence of ‘enigmatic fungi’ on the distal segments of the leg suggests their spores are contracted by walking over substrate. If this is the case, they may not be specific to millipedes but are more likely to be detected on millipedes than other invertebrates by virtue of their pale legs and considerably greater footfall.

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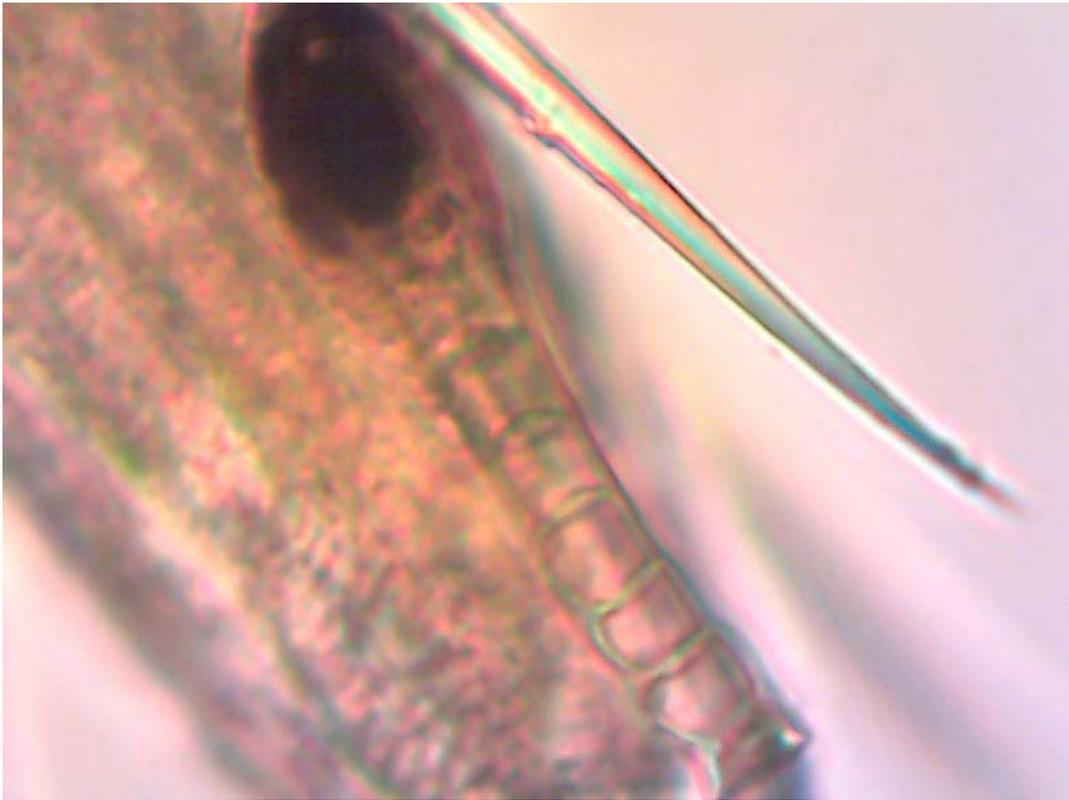


Figure 3: The ‘enigmatic fungus’ from Fig. 2, viewed through a compound microscope.

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