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NEW DISEASE REPORT

First report of *Diplodia corticola* on *Abies* and *Quercus* species in the UK

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In 2023, *Diplodia corticola* was isolated from pycnidia present on a single noble fir (*Abies procera*) sampled during a routine survey at a forest in West Sussex, England (Fig. 1). Symptoms linked to *D. corticola* were difficult to determine as the tree was already dead and co-infection with *P. ramorum*. Symptoms appear limited to a single noble fir and mature oak tree at the site, but a wider survey is needed to confirm the extent of infection. The pathogen has not previously been observed on *Abies* sp. and is generally associated with broadleaf hosts, specifically oak (*Quercus* spp.), and grape (*Vitis vinifera*) (Alves et al., 2004, Jankowiak et al., 2022). A single record of *D. corticola* on a conifer, *Pinus pinaster*, has been recorded and susceptibility to *D. corticola* infection was confirmed by artificial infection (Batista et al. 2020).

The isolate from noble fir was identified using the internal transcribed spacer (ITS1-4, Genbank Accession No. PV466431), and the D2 region of the large subunit (LSUPV613553) gene sequences (Ferreira et al., 2021). Subsequently, similar findings of *D. corticola* displaying cankers were confirmed on *Q. cerris*, *Q. ilex*, *Q. robur* (Fig. 2) and *Q. semecarpifolia* from Devon, Greater London, West Sussex and North Yorkshire, respectively. *Diplodia corticola* has been associated with oak declines across the United States, Iberian Peninsula and Mediterranean area since the 1980's and is the causal agent of bot canker (Alves et al., 2004).



FIGURE 1 Pycnidia observed on *Abies procera* (noble fir) in West Sussex, England. Arrows show pycnidia and cut cross-section of a single pycnidia.

The UK isolate of *D. corticola* (PR23/476) from noble fir was used to confirm Koch's postulates on 2-3-year-old *A. procera* *Q. petraea*, *Q. robur* and *Q. rubra* saplings. Saplings were inoculated according to Felix et al. (2017), with controls using sterile PDA plugs. Symptoms that devel-

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FIGURE 2 Symptoms observed on *Quercus robur* (pedunculate oak) wound inoculated with *Diplodia corticola* isolated from West Sussex, England.



FIGURE 3 Typical symptoms observed after 22- and 19-days post inoculation (dpi) for *Abies procera* (A), and *Quercus* robur (B) with many oak saplings (of all species tested) having pycnidia present (C), when infected with a *Diplodia corticola* isolate from West Sussex, England.

oped following wound inoculation on noble fir included lower branch dieback, deep cankers, lesions and lower branch wilting (Fig. 3A). Symptoms that developed on oak saplings following wound inoculation included girdling, epicormic growth, stem bleeding and sunken stem cankers with dark brown to black lesions (Fig. 3B). Pycnidia were also observed on all oak species (Fig. 3C). Koch's postulates were confirmed for *A. procera*, *Q. petraea*, *Q. robur* and *Q. rubra* through wound inoculation and back isolations from lesion edges. *Diplodia corticola* could not be reisolated from the negative controls and no symptoms were observed. Isolate identity of the inoculated strain was confirmed by qPCR (Muñoz-Adalia et al., 2022). The results clearly demonstrate that *D. corticola* can infect and persist on noble fir.

This report is the first evidence of *D. corticola*'s ability to colonise and develop symptoms on *A. procera*. This is also the first report of natural *D. corticola* infections of *Q. cerris*, *Q. ilex*, *Q. robur* and *Q. semecarpifolia* in the UK.

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