

NEW DISEASE REPORT OPEN ACCESS

First Report of *Phaeobotryon ulmi* Causing Decline in *Ulmus glabra* in Finland

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In June 2025, a declining wych elm (*Ulmus glabra*) with branch and twig browning and dieback was detected in Helsinki, Finland. Five shoots were sampled from the transition zone between living and dead tissue. Similar symptoms were later found on *U. glabra* in Vantaa, where four branches were collected in August (Figure 1). After surface sterilisation, samples were

European Nucleotide Archive under accessions OZ373025 and OZ373026. The observed conidia were ellipsoid, smooth, and predominantly hyaline and aseptate; only a few were brownish, and only a single 1-septate conidiospore was observed, indicating that they were mostly immature but morphologically consistent with Zhang et al. (2021).



FIGURE 1 | Dead shoot tip of *Ulmus glabra* in the field (left) and laboratory (middle and right).

cultured on malt extract agar (MEA) and modified Tchernoff medium. Emerging fungal colonies were grouped by morphology, and the internal transcribed spacer (ITS) and β -tubulin were sequenced from Helsinki isolates. Isolate ELM1-4 from the Helsinki site showed 100% (443/443 bp) ITS identity and 99.3% (425/428 bp) β -tubulin identity to the ex-type strain of *Phaeobotryon ulmi* (KX464232, KX465068; Zhang et al. 2021). *Phaeobotryon* isolates from the Vantaa site had an identical ITS sequence to ELM1-4. The sequences were deposited in the

The pathogenicity of isolate ELM1-4 was tested in August 2025 by inoculating four 50 cm long *U. glabra* branches that were kept in water. Mycelial plugs (3 mm) from 24-day-old cultures were placed on exposed sapwood and wrapped with plastic film. After 7 days at room temperature, inoculated branches developed clear necrosis (Figure 2A), while controls remained symptomless (Figure 2B). *Phaeobotryon ulmi* was reisolated from the inoculated branches, but was not recovered from controls. Species identity was confirmed by ITS sequencing.

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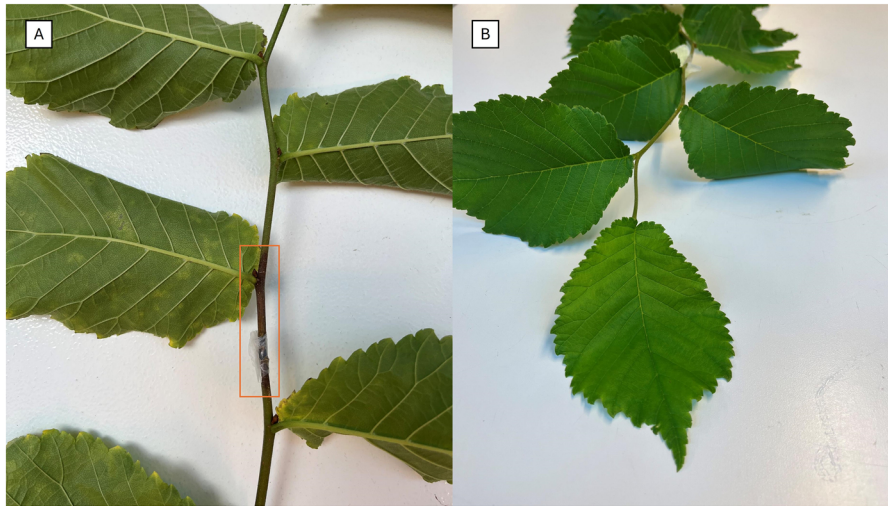


FIGURE 2 | (A) Inoculated elm branch, the orange box highlights the area of necrosis. (B) Control plants mock-inoculated with sterile malt-agar plugs showed no signs of necrosis or decline.

This is the first report of *P. ulmi* causing decline in elm in Finland. The pathogen was first recorded in Europe in Poland as the causal agent of *Botryodiplodia* canker in *U. glabra* (Bartnik et al. 2019). In Estonia, it has been found; under the name *Sphaeropsis ulmicola*; in both symptomatic and asymptomatic elms, with the highest prevalence and severity in symptomatic *U. laevis*. It was also common in *U. glabra*, but less frequent in symptomatic hybrid elms (Jürisoo et al. 2025). Since it also occurs in healthy tissues (Jürisoo et al. 2025), environmental factors such as increased summer temperatures may trigger symptom development.

Although first formally reported in Europe in 2019 (Bartnik et al. 2019), the earliest known European record of *P. ulmi* is a 1963 Finnish specimen from *U. glabra* preserved in the CBS-KNAW culture collection (CBS114123), later sequenced by Zhu et al. (2025). However, no additional information is available regarding the isolate or the host's condition. *Phaeobotryon ulmi* is absent from records of the Finnish Biodiversity Information Facility and from historical Finnish literature (Liro 1924; Rauhala 1958; Karsten 1873). This study provides the first report of shoot symptoms and dieback of *U. glabra* caused by *P. ulmi*.

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