Introduction

First reported in 2003, Phytophthora kernoviae (Pk) is one of several invasive tree Phytophthoras recently arrived in the UK which pose a threat to trees (Brasier et al. 2005). It has established to some extent, primarily in the south west of England but with smaller outbreaks in south Wales and more recently in the west of Scotland (Fig. 1). It is found in both planted woodland-gardens and woodlands where rhododendrons (mainly Rhododendron ponticum) dominate; foliage of rhododendron tends to be highly susceptible and supports abundant sporulation by Pk (Denman et al. 2006). There is little doubt that this host has played a key part in the spread of this pathogen in the natural environment and subsequent infection of trees. However, late in 2007, P. kernoviae was found infecting the heathland plant Vaccinium myrtillus (common names bilberry, blaeberry or European blueberry) in the natural environment. V. myrtillus is a native plant of Great Britain and occurs in lowland and upland heathlands but also in the understorey of some woodlands, in peat bogs and some grasslands.

Study sites

- **Site 1 in the south west of England:** In January 2008, *V. myrtillus* growing in an ancient semi-natural woodland was confirmed to be infected by Pk, possibly as a result of inoculum spread from *R. ponticum* also present on site.

- **Site 2 in the south west of England:** In March 2008, *V. myrtillus* plants on an open heathland area were also confirmed infected by Pk. The nearest infected rhododendron site was 10 km distant.

Approach

- **Time and type of symptom development on affected Vaccinium** were recorded at both sites.

- **At site 2,** detailed sampling of *V. myrtillus* plants was undertaken based on 12 m x 12 m grids. At 3 m intersections on the grid, 1–3 *V. myrtillus* plants were removed, separated into three different plant portions (1) leaves/stem/rhizome, (2) roots and (3) litter, and then tested for the presence of Pk using baiting and direct isolation.

Results

- **Vaccinium** is deciduous, so in winter (December/January) symptoms were limited to numerous black lesions on the green stems (Fig. 2).

- **Repeat checks** in January, March, June, September, October revealed that foliar symptoms did not become evident until late summer to autumn. This contrasts to Pk infection of rhododendron, when foliar symptoms develop in spring and early summer.

Conclusions

The British Isles supports around 20% of the world’s lowland heathland and 75% of upland heath. The total resource in GB amounts to more than 1 million ha. Therefore any pathogen that impacts on *Vaccinium myrtillus*, a key species of heathland habitat, could be highly significant. Since this work was completed the extent of infected *V. myrtillus* has spread considerably at sites 1 and 2, and a further three similar sites have been identified (Fig. 1). The absence of any infected rhododendrons on some of the sites indicates that *V. myrtillus* infection has occurred directly through movement of inoculum from more distant disease foci, either via climatic events (wind-driven rain) or by human vectors.

References


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