

WHAT TO LOOK FOR?

Bright red blister-like conidial stromata on living leaves of *Prunus spinosa* (blackthorn/sloe), *P. domestica* (plum), and related trees (e.g. damson, bullace). Infected bushes can look as if leaves have been splashed with red paint, although occurrences may be restricted to a few spots on one or two leaves. Young stromata may be yellow-brown, but soon become orange to red, bright red, or reddish brown. Very distinctive, and distinguishable from other leaf diseases by the lack of leaf tissue death, “shot-holes”, or purple-coloured spots. The sexual stage has black stromata and occurs on fallen overwintered leaves.

WHEN TO LOOK?

July to September for the conidial form, based on available GB&I records. The teleomorph will occur in Spring; very little information is available.

WHERE TO LOOK?

On blackthorn/plum bushes and hedgerows throughout GB&I. Recorded populations have often been near the coast, though this may be a sampling artefact.

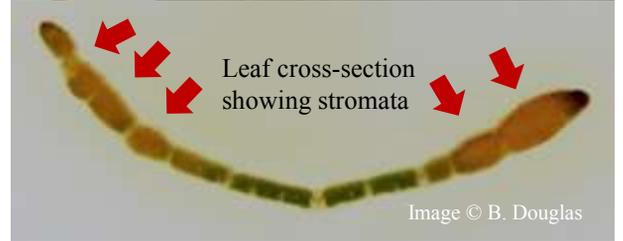


Image © P. Gainey



Image © B. Douglas

Image © P. Gainey

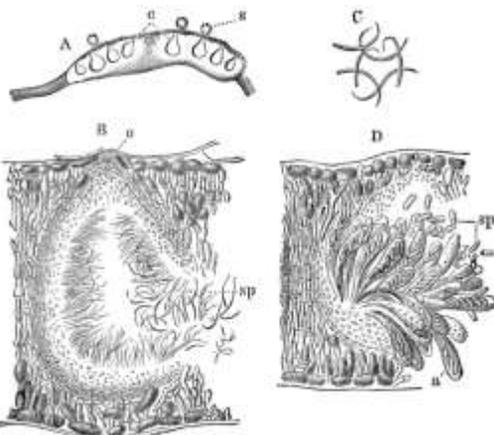


Leaf cross-section showing stromata

Image © B. Douglas



Hooked (hamate) conidia of *P. rubrum*. Image © P. Gainey.



Left: from Cilenšek (1892) showing cross section of stromatic conidiomata (a & b); conidia (c); and stromatic ascomata (d).

Polystigma rubrum – known distribution



■ Pre-1965 ■ 1965-2014 ■ During LAFF project

Map data ©2015 GeoBasis-DE/BKG (© 2009), Google

Polystigma rubrum

General description

Stromata: developing throughout late spring and summer on living leaves, producing conidia in summer and autumn, and ascospores from fallen overwintered leaves the following spring. The conidiomata sometimes persist in apparently viable condition until the ascomata are mature.

Anamorph: conidial stromata to 10(-35) mm diam., irregularly shaped but usually roughly circular, yellowish-brown in very young lesions but quickly becoming orange to reddish brown, becoming darker in the central region, locally hologenous (developing within and throughout the leaf tissue) but with the surrounding leaf hardly affected, containing a large number of conidiomata; composed of upper and lower layers of plant tissue 40-50 µm thick whose cells are filled with bright orange-brown material, and an intermediate layer 300-500 µm thick of almost completely occluded angular to vertically elongated fungal cells. Conidiomata 150-250 µm diam., roughly spherical, the ostiole showing on upper surface of stromata, very inconspicuous. Conidiomatal wall very poorly developed, not clearly distinguishable from the stromatal tissue. Conidiogenous cells developing over the entire inner surface of the wall, often laterally from sequential cells of short conidiophores to 10 µm long and ~2 µm wide; derived from a thin layer of textura angularis with hyaline thin-walled cells 3-5 µm diam. Conidiogenous cells 13-24 x 2-3 µm, at first usually cylindrical but gradually tapering towards the upper region, which is slightly irregular in appearance due to successive conidial scars; usually proliferating sympodially. Conidia (22-)28-42 x 0.5-0.75 µm, the lower part (to approximately the mid point) very narrowly lanceolate to fusiform, the upper part filiform (~0.25 µm wide), sigmoidally curved to hooked, the base ± truncate, hyaline, aseptate, apparently smooth-walled.

Teleomorph: stromata 1-5 mm diam., irregularly shaped but usually roughly circular, strongly raising the upper surface of the leaf, flat or slightly concave on the upper surface, formed throughout infected leaf tissues, reddish brown to black, sometimes faintly verrucose (a feature of the leaf epidermal architecture), the ostioles sometimes inconspicuous but appearing as small black dots on paler stromata, often somewhat sunken; composed of pigmented outer layers 20-40 µm thick and a hyaline inner layer containing the ascomata. Ascomata ± spherical. Paraphyses rather sparse, to 7 µm diam., gradually tapering towards the apex, very thin-walled, strongly inflated between the septa. Asci 94-118 x 10-5-12 µm, narrowly clavate, very long-stalked (to ~60 µm), very thin-walled at all stages, the apex obtuse, with an apical ring 2-3 µm diam. and ~0-5 µm thick, 8-spored. Ascospores arranged biserially, 10.5-14 x 3-5-4.5(-5.5) µm, cylindric-ellipsoidal, occasionally obovoid, occasionally slightly curved (bean-shaped), hyaline, aseptate, thin- and smooth-walled, without a gelatinous sheath.

Note: description adapted from Cannon (1996).

Habitat

Many recent and historical records in GB&I have been coastal or relatively near the coast, although there have been a small number of records from more inland sites. Older bushes and hedges may be more likely to act as refugia for *P. rubrum*.

Conservation status

Considered Vulnerable/ D2 in the unofficial “Red Data List of Threatened British Fungi” (Evans *et al.* 2006). Historically considered “common” in GB (Ellis & Ellis, 1987), and widely distributed, but not frequently recorded. The host species are common and widespread, but it is difficult to assess whether the fungus has been overlooked in the past as infections may be inconspicuous. Current data suggest that the species has a greatly reduced range, supporting its provisional Vulnerable status.

Associations

Restricted to leaves of *Prunus spinosa* (blackthorn/sloe), *P. domestica* (plum), and possibly also damson and bullace.

Look-alikes

Reddish brown or purple leaf spots caused by other agents are common on *Prunus* spp. However, these typically resulting in dead tissue around the leaf spot and/or “shot hole” symptoms. In contrast, *Polystigma rubrum* stromata are typically swollen, red/orange/brown (not purple), bordered by apparently healthy leaf tissue, and produce distinctive hooked or curved conidia.

Distribution in GB&I

Historically reported from 32 sites in 30 vice counties in GB&I, mostly distributed along the E and W coasts of England & Wales, the W coast of Ireland, with a smaller number of inland records. Four records come from Scotland but two lack locality data.

Recent reports are limited to 11 sites in Cornwall (VC:1, 2015, 2003) in England; single sites in Aberystwyth (VC:46, 2015), Anglesey (VC:52, 2014), and Cardigan (VC:46, 2010), in Wales; one record from Eilean Mor (VC:102) in Scotland; and one from the Burren (VC:H9, 2006), in Ireland. A number of sites along the W coast of Ireland were also recorded between 1965 and 1967.

References

- Cannon, P. F. (1996). Systematics and diversity of the Phyllachoraceae associated with Rosaceae, with a monograph of *Polystigma*. *Mycological Research* 100(12), 1409-1427.
- Ellis, M. B., & Ellis, J. P. (1987). *Microfungi on Land Plants: an identification handbook*. Croom Helm.
- Evans, S., Henrici, A. & Ing, B. (2006). "The Red Data List of Threatened British Fungi: Preliminary Assessment." *Unpublished report. British Mycological Society*. Manchester. Available at: <http://www.britmycolsoc.org.uk/mycology/conservation/red-data-list/>