WHAT TO LOOK FOR?

Bright red blister-like stromata on both surfaces of living attached leaves of *Prunus spinosa* (blackthorn/sloe), *P. domestica* (plum), and possibly hybrids, subspecies and cultivars in this group (e.g. damson, bullace). Infected bushes can look as if leaves have been splashed with red paint, although some 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.

WHEN TO LOOK?

July to September, based on available GB&I records.

WHERE TO LOOK?

On blackthorn/plum bushes and hedgerows throughout GB&I. Recently recorded populations have been restricted to the west coast of GB, often near the coast.

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

Image from Cilenšek (1892) *Naše škodljive rastline v podobi in besedi*, showing cross section of stromatic conidiomata (a & b); conidia (c); and cross section of stromatic ascomata (d).
**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 holoblastic (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, 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(-35) mm diam., 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. Conidiogenous cells 13-24 x 2-3 µm, at a thin layer of textura angularis with hyaline thin-walled conidiophores to 10 µm long and ~2 µm wide; derived from intermediate layer 300-500 µm thick of almost completely occluded angular to vertically elongated fungal cells. Conidia (22-)28-42 x 0.5-0.75 µm, the lower part (to 8-spored. Ascospores arranged biseriately, 10.5-14 x 3-5.5(-5.5) µm, cylindric-ellipsoidal, occasionally obovoid, occasionally slightly curved (bean-shaped), hyaline, asceptate, thin- and smooth-walled, without a gelatinous sheath.

**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. Ascii 94-118 x 10-5-12 µm, narrowly clavate, very long-stalked (to ~6.0 µm), very thin-walled at all stages, the apex obtuse, with an apical ring 2-3 µm diam. and ~0.5 µm thick, 8-sспорed. Ascospores arranged biseriately, 10.5-14 x 3-5.5(-5.5) µm, cylindric-ellipsoidal, occasionally obovoid, occasionally slightly curved (bean-shaped), hyaline, asceptate, 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 current but unofficial “Red Data List of Threatened British Fungi” (Evans *et al.* 2006). Considered “common” in GB (Ellis & Ellis, 1988), and widely distributed, but not frequently recorded. Potentially not uncommon (the host species are common and widespread), but it is difficult to assess whether it has been overlooked in the past because infections may range in size from a few inconspicuous lesions on leaves to highly visible outbreaks across whole bushes.

**Associations**

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

**Look-likes**

Reddish brown or purple leaf spots caused by fungal, bacterial, viral or insect agents are common on *Prunus* spp. However, these are typically necrotrophic, resulting in dead tissue and “shot hole” symptoms. In contrast, *Polystigma rubrum* stromata are typically swollen, red/orange/brown (not purple), bordered by apparently healthy leaf tissue, and can be microscopically confirmed by the presence of distinctive hooked or curved conidia.

**Distribution in GB&I**

Historically (pre-1965) reported from 32 sites in 30 Watsonian vice counties throughout GB&I. Four records come from Scotland but two lack locality data. More recent records (1965-2014) number only seven sites in Britain (all from the west coast), and eight from the west coast of Ireland.

Recorded from 39 1 km squares in Britain during the LAFF project, with records restricted to Anglesley (where it is fairly widespread), along or near the coast of Caernarvon and Cardiganshire, one site in North Devon, and widespread throughout coastal areas in Cornwall. Recorded from three sites in Ireland: the Burren, County Clare (where it is abundant); and two sites near Lough Gill in County Sligo.

**References**


For more information, questions, queries or corrections, contact: Dr. Brian Douglas (b.douglas@kew.org), or visit the Lost and Found Fungi project website (http://fungi.myspecies.info/content/lost-found-fungi-project). 16/01/2018