

WHAT TO LOOK FOR?

A rust fungus on the underside of leaves of *Pyrola* spp. (“wintergreen”), particularly *P. rotundifolia* ssp. *maritima* and *P. minor*. Orange-yellow pustule-like uredinia (stage II), 0.5-1 mm wide, are most common; or very rarely in GB&I as orange-red telia (stage III). Upper leaf surfaces may have dark spotting corresponding to sori below. Orange-yellow aecia (stage I) on *Picea* cone scales have been reported elsewhere but never in GB&I.

WHEN TO LOOK?

April to August, although *Pyrola* spp. can be perennial hosts. The telial (III) stage is rarely seen but is thought to occur in June.

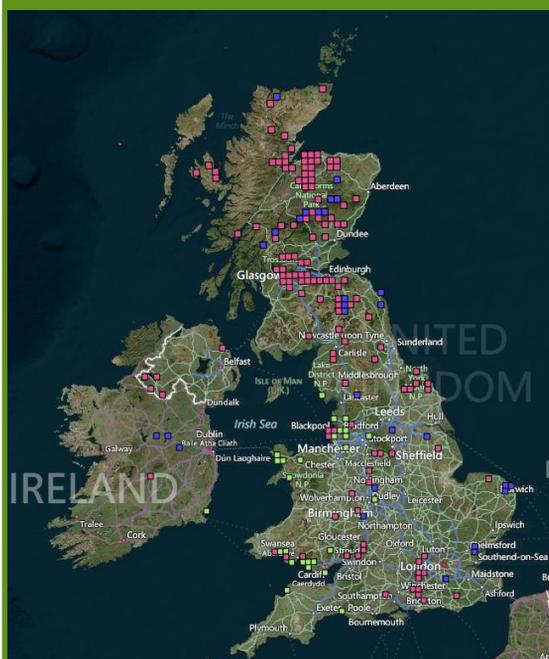
WHERE TO LOOK?

P. rotundifolia ssp. *maritima* can be found in wet calcareous dune slacks and fixed dunes, with *Salix repens*, or in nearby conifer plantations. *P. minor* and *P. rotundifolia* ssp. *rotundifolia* can be found in damp shady wooded areas, scattered throughout GB&I. Investigation of known sites of the hosts should be prioritised.



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Known *Pyrola* spp. distribution (1990-2015)



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■ *P. rotundifolia* subsp. *maritima*
■ *P. rotundifolia* subsp. *rotundifolia*
■ *P. minor*

Known *Chrysomyxa pyrolata* distribution



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■ record before 1965
 ■ record after 1965
 ■ 2015-

Chrysomyxa pyrolata

General description

Uredinia distributed evenly on the lower surface of living leaves of *Pyrola minor*, *P. rotundifolia* subsp. *rotundifolia* and *maritima*, circular, yellow to orange, 0.5-1 mm diameter, surrounded by a torn epidermis and a delicate, quickly disappearing peridium. **Uredospores** ellipsoid-ovoid, 19-33(-36) x 13-24 µm excluding circular-to-elongate warts 0.4-1 µm thick, hyaline, warts irregularly spaced 1-3.2 µm apart, 0.5-1.8 µm high, 0.5-2 µm wide to 4 µm long. **Telia** present in summer, also on lower leaf surfaces; prominent, covering whole leaf surface uniformly, flat, waxy, yellow-red, turning to red-brown when dry. **Teliospores** irregularly cylindrical-ellipsoidal, wall smooth, colourless and 1 µm thick or less, 7-10 x 14-26 µm, in columns 100-130 µm long.

Spermogonia on cone scales of *Picea* spp. (never reported from GB&I!), subepidermal, flat, inconspicuous, 0.5-1 mm wide x 50-100 µm high. **Aecia** on both surfaces of cone scales, conspicuous, large, irregularly shaped and confluent to 0.5-1 cm diameter, 1-3 per scale, bullate, convex peridium evanescent, white-yellow, pulverulent. **Aeciospores** orange, ellipsoidal, 22-37(-46) x 17-35 µm, wall hyaline, 2-4.7 µm thick including crowded, large polygonal-elongate warts 1.5-4.7 µm diam. x 2-8(-10) µm long.

Note: description adapted from Wilson & Henderson (1966).

Habitat

P. rotundifolia subsp. *maritima* can be found in wet calcareous dune slacks and fixed dunes, with *Salix repens*, or in nearby conifer plantations. *P. minor* and *P. rotundifolia* subsp. *rotundifolia* can be found in damp shady wooded areas, scattered throughout GB&I. Investigation of known sites of the hosts should be prioritised.

Conservation status

Covered under Sections 41 (England) and 42 (Wales) of the NERC Act (2006). Previously a UK BAP species. In Wales, known only from one site (last record 1971) and unofficially classed as Critically Endangered / D1 (Woods *et al.*, 2015). In England, known from two current sites. Classed as Endangered / B in the current but unofficial "Red Data List of Threatened British Fungi" (Evans *et al.* 2006).

Associations

Uredinial (II) and telial (III) phases exist on the leaves of *Pyrola* spp. throughout the year, and the spermogonial (0) and aecial (I) phases exist on the cone scale of spruce (*Picea* spp.). In GB&I, the species has only been reported

on *Pyrola*, particularly *Pyrola minor* and *Pyrola rotundifolia* subsp. *maritima*.

Look-alikes

The uredinial stage of the rust *Pucciniastrum pyrolae* also occurs on *Pyrola* leaves, and can be easily mistaken for *C. pyrolata*. Distinguishing characteristics include the occurrence of uredinia in poorly-defined clusters (rather than discrete and evenly dispersed), sometimes appearing on the upper leaf surface or petioles; and the lack of a visibly distinct peridium (the initial "covering" of sori), with uredospores emerging from a minute opening in each uredinium.

Known sites in GB&I

Historical sites

- 1845. Baldovan Woods, Dundee, Angus (VC:90), Scotland. Coll.: anon. (ex herb. W. Gardiner). K(M) 116983. Grid ref: NO33X.
- 1875. Ludlow (near), Shropshire (VC:40), England. Coll.: anon. (ex herb. W. Phillips). K(M) 116970. Grid ref: SO47.
- 1876. Balgillo, Angus (VC:90), Scotland. Coll.: anon. (ex herb. C.B. Plowright). K(M) 116980. Grid ref: NO43R.
- 18XX. Edinburgh (near), Midlothian (VC:83), Scotland. Coll.: anon.. K(M) 116978. Grid ref: NT27.
- 1971. Newborough Warren, Anglesey (VC:52), Wales. Coll.: B. Ing.. Grid ref: SH4163, SH4162, SH4264, SH4263, SH4262, SH4362, SH4361, or SH4461. NB. Record from Ing (1978). Surveyed unsuccessfully in 2007, *Pyrola* populations reportedly extensive, requires extensive resurveying.
- 1975. Fonthill Terraces, Fonthill Gifford, Shaftesbury, South Wiltshire (VC:8), England. Coll.: J.B. Hindley. K(M) 116977. Grid ref: ST9232. Site surveyed as far as possible from public footpath in 2011 but no *Pyrola* seen.

Current sites

- 2009. Sandscale Haws NNR, Duddon Estuary SSSI, Westmorland (VC:69), England. Coll.: A.M. Ainsworth. K(M) 164410. Grid ref: SD1975.
- 2014. Ainsdale Sand Dunes, Sefton Coast SSSI, South Lancashire (VC:59), England. Coll.: M.W. Storey. K(M) 195660. Grid ref: SD29331187.

References

- Evans, S., Henrici, A. & Ing, B. (2006). "The Red Data List of Threatened British Fungi: Preliminary Assessment." *Unpublished report. British Mycological Society*. Manchester. ([Link](#))
- Ing, B. (1978). New and interesting fungi in north Wales. *Nature in Wales*, Vol. 16 (2): 91-94. ([Link](#))
- Wilson, M. & Henderson, D. M. (1966). *British Rust Fungi*, Cambridge Univ. Press, Cambridge.
- Woods, R.G., Stringer, R.N., Evans, D.A. & Chater, A.O. (2015). *Rust Fungus Red Data List and Census Catalogue for Wales*. A.O. Chater, Aberystwyth. ([Link](#))