

WHAT TO LOOK FOR?

A smut fungus of *Gagea lutea* (Yellow Star-of-Bethlehem"), visible as lesions/pustules on leaves and stems, up to 10 mm in length, that later split to release a dark black-brown powdery mass of spores.

WHEN TO LOOK?

February to May. The host (*Gagea lutea*) is a spring ephemeral plant with a short above-ground life-cycle, flowering in March to May then dying back to an underground bulb. All dated UK records are within this period. Plants may be easier to locate if looked for when in flower.

WHERE TO LOOK?

Areas to prioritise include known large, well-established populations of the host (*Gagea lutea*), although incidental finds in woodland habitats should also be investigated. In GB&I, *G. lutea* is widely distributed in a wide geographic strip stretching from Southampton (England) to Perth (Scotland), typically in moist, shady habitats in woods on calcareous soil. Absent in south-west England (the geographic limit appears to be around East Somerset); much of Scotland; and Wales, except one native population in Llanarmon-yn-Iâl, Denbighshire, near the English border, and a recent find on *Gagea bohémica* in Stanner Rocks, Radnorshire.

Vankya ornithogali (on leaves of *G. lutea*)



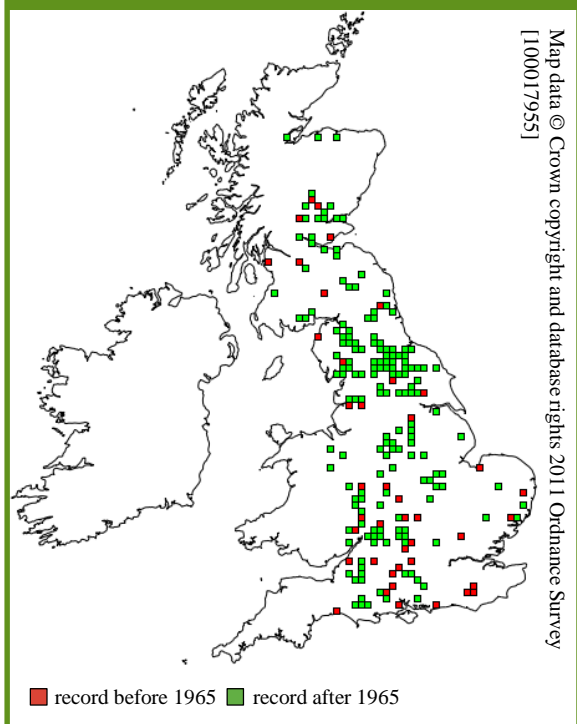
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Gagea lutea

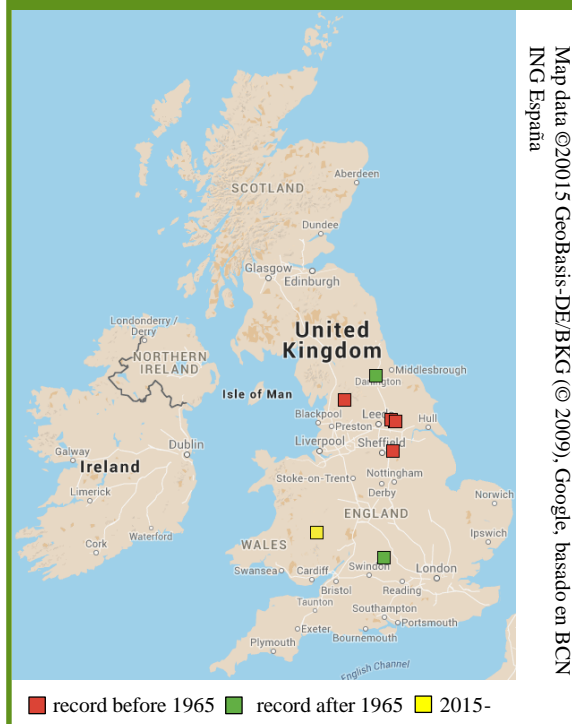


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Gagea lutea – known distribution



Vankya ornithogali – known distribution



Vankya ornithogali

General description

Sori 1-5(-10) mm long, dark blackish-olive-brown ellipsoidal or fusiform pustules on leaves of *Gagea* in GB&I, initially covered by the epidermis, but then rupturing to expose a blackish brown, powdery spore mass. **Spores** variable in shape and size; subglobose, ovoid, irregular, subpolyhedral or elongate; sometimes with an acute tip or short pedicel; 10.5-19(-24) μm x 9.5-15 μm , yellowish to reddish brown; wall 0.5-1.5 μm thick, apparently one-layered, nearly to finely smooth, moderately densely punctate-verruculose, but dots not affecting the spore profile. **Sterile cells** few, solitary or in groups of 2-4, subglobose, ellipsoidal, slightly irregular, rarely elongated, collapsed in old specimens, 11-20 μm long, usually of the same colour as the spores; wall 1.5-3(-4) μm thick, one-layered, smooth (but rough under high magnification SEM). Infection systemic, appearing on the same host plant year after year. Occurs on at least 27 species of *Gagea* throughout Europe, N. Africa and Asia.

Notes: Known as *Ustilago ornithogali* prior to 2000. Description based on Vánky, K. (2013).

Habitat:

In GB&I, most likely to be associated with long-established, large host populations, since teliospores overwinter in the soil. *Gagea lutea* prefers moist, calcareous, shady habitats, e.g. woods, hedgerows, limestone pavements, pastures, riverbanks and stream banks. Mainly lowland.

Conservation status

Not formally assessed, but classed as Vulnerable / D2 in the provisional Red Data List of Threatened British Fungi (Evans *et al.*, 2006).

Associations

Parasite/pathogen of *Gagea lutea*. Originally described from numerous members of *Gagea* but only two specimens of *V. ornithogali* have been DNA-barcoded at present, and so could potentially represent a cryptic species complex. Does not occur on *Ornithogalum*, despite previous records: these are almost certainly either misidentifications of smut or host, or referring to host species later transferred to *Gagea* (Vánky, 2009).

Look-alikes

The rust *Uromyces gageae* produces scattered sori on leaves of *Gagea lutea*, which are roundish to elliptical, 1-3 mm long, covered by a lead-coloured epidermis that splits longitudinally to expose teliospores 26-40 x 18-28 μm . *Uromyces gageae* is also of conservation interest, being considered as Vulnerable / D2 (Evans. *et al.*, 2006).

A similar further species of rust, *Uromyces acutatus*, has been reported once from *Gagea lutea* in GB&NI, although more typically found on *Gagea arvensis* and *Allium sphaerocephalon*.

When not in flower, leaves of *Gagea lutea* could be mistaken for those of *Hyacinthoides non-scripta* (blue-bell), which is associated with a number of rusts, especially *Uromyces muscari*. However, sori of *Uromyces muscari* are considerably smaller than those of *Vankya ornithogali*, appearing as ovoid- to diamond-shaped clusters of minute pustules.

Known sites in GB&I

- Stanner Rocks, Radnorshire VC:43, Wales. 2015, coll.: A. Shaw. Grid ref: SO2658. Note: On *G. bohemica*, frequent on plants on the quarry floor.
- Evenlode valley, Combe, Oxfordshire VC:23, England. 2012, coll.: A.M. Ainsworth. Grid ref: SP3915.
- Ingleborough NNR, Mid-West Yorkshire VC:64, England. 2011, coll.: M. Storey. Grid ref: SD77.
- Low Coniscliffe, by River Tees, Durham VC:66, England. 2004, coll.: A.W. Legg. Grid ref: NZ242133.
- Nun Appleton (incl. Sicklebit Wood), Mid-West Yorkshire VC:64 (1966, 1945, 1937, 1934, 1937 coll.: W.G. Bramley). Grid ref: SE54
- Tanfield (near Ripon), Mid-West Yorkshire VC64, England. 1956, coll.: C.M. Robb. Grid ref: SE27U.
- Maltby (near Braithwell), South-West Yorkshire VC63, England. 1951, coll.: J. Webster. Grid ref: SK59.
- Tadcaster, Mid-West Yorkshire VC64, England. 1928, coll.: F.A. Mason, W.G. Bramley. Grid ref: SE44R or SE44W (approx.).

Literature

- Evans, S., Henrici, A. and 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/>
- Vánky, K. "The genus *Vankya* (Urocystidaceae) revisited." *Mycologia Balcanica* 6.1/2 (2009): 73-78.
- Vánky, K. (2013). Illustrated Genera of Smut Fungi, Third Edition. APS Press.