

## WHAT TO LOOK FOR?

A smut fungus producing sori on ovaries within the flowers of *Rhynchospora alba* (white beak-sedge), visible as swollen black masses still enclosed in the glumes. Infected inflorescences may be more easily detected later in the flowering season by inspecting visibly stunted and dwarfed plants, or stunted spikelets and flowers. Sori should be well-developed and more apparent in older infected inflorescences.

Note: Although *U. gigantosporum* is the "target species" for the LAFF project, there are very few records of smuts on *Rhynchospora alba* in GB&I, and several other smuts of *Rhynchospora* spp. are known from other countries. Any smuts from inflorescences of this host would therefore constitute important records for GB&I, and would provide material to help resolve species boundaries and taxonomy of smuts on *Rhynchospora*.

## WHEN TO LOOK?

Summer to autumn, during the flowering season of *R. alba*. Infection should be more apparent later on in the season.

## WHERE TO LOOK?

Boggy habitats in which populations of *R. alba* are known to occur, e.g. the Lake District, Yorkshire Dales, South England, Scottish Highlands, much of Ireland, and west Wales, as well as scattered populations throughout the whole of GB&I.

## *Ustanciosporium gigantosporum*



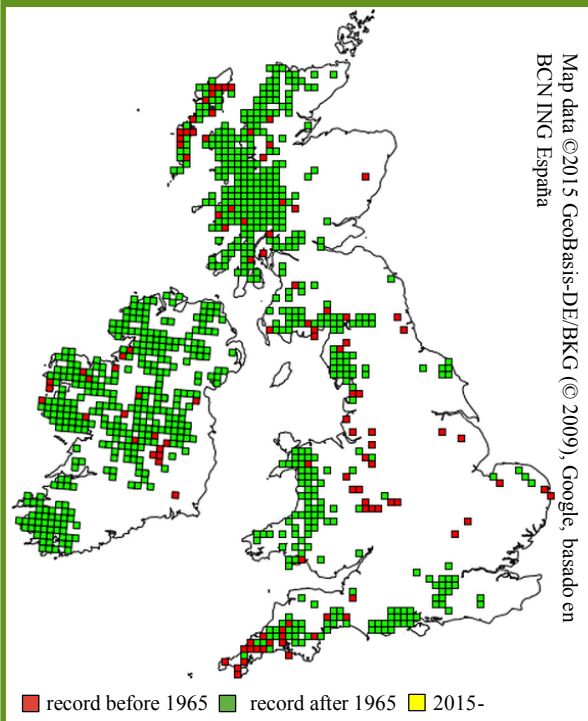
Image by Brian Douglas, [CY BY-SA 3.0](#).

## *Rhynchospora alba*

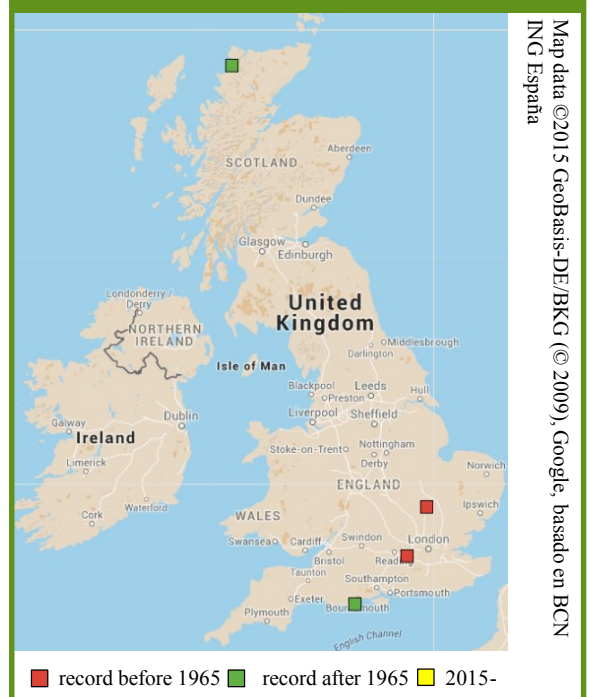


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## *Rhynchospora alba* – known distribution



## *Ustanciosporium gigantosporum* – known distribution



# *Ustanciosporium gigantosporum*

## General description

Sori in all the spikelets of an infected inflorescence, usually all the plants of one tuft infected and dwarfed. Sori surrounding rudiments of host tissue at the tip of the axis of sterile spikelets, with stunted glumes. Sori spherical to ovoid, approximately 1 x 1-1.5 mm; when young, hidden in the glumes and exposed when old, without a peridium or sterile stroma. Spores develop in a hyaline matrix on the surface of the host tissue. Spore mass agglutinated at the base, powdery in the upper part, dark. Spores single (not aggregated into clumps), subglobose to flattened, in plane view circular to  $\pm$  bluntly angular, 11-14(-15) x (15-)17-19(-20) x (16-)18-21(-24)  $\mu$ m; light to medium reddish to olive brown, sometimes with hyaline appendages. Walls approximately 1  $\mu$ m thick, thinner on both flattened sides, finely and densely foveolate-reticulate.

Note: description based on Piepenbring (2000).

## Habitat

Previously recorded from boggy habitats in association with *Rhynchospora alba*. Similar host populations occur in England in the Lake District, Yorkshire Dales, South England, Scottish Highlands, much of Ireland, and west Wales, as well as scattered populations throughout the whole of GB&I.

## Conservation status

Considered extinct in the current and unofficial Red Data List of Threatened British Fungi (Evans et al., 2006), but two recent collections from Scotland and England (prior to the LAFF project) demonstrates that this is not the case. Very infrequently recorded (only 2 records in the FRDBI, both pre-1900s).

## Associations

*Ustanciosporium gigantosporum* is a specific biotrophic parasite and pathogen of *R. alba*, infecting host plant ovaries, and is only known from this host.

## Look-alikes

- *Ustanciosporium majus*, a morphologically similar species also specific to *R. alba* ovaries, has also been previously recorded in GB&I but has not been recorded for the past 50 years and is therefore feared to be extinct (Evans et al., 2006).
- *Ustanciosporium montagnei* is known from *R. alba* in Europe, but is not considered authentically British. Historical collections under this name in the Kew Fungarium have been redetermined as a mixture of *U. majus* and *U. gigantosporum*.

Note: *U. gigantosporum*, *U. majus* and *U. montagnei* are primarily differentiated by their different teliospore sizes (largest measurement 18-21  $\mu$ m, 14-17  $\mu$ m and 9-13  $\mu$ m respectively). However, mixed infections on *R. alba* are considered common, and there is little available DNA evidence to indicate whether these represent distinct species concepts, or are one single species with different teliospore phenotypes.

## Known sites in GB&I

- Laxford Bridge (west of), West Sutherland (VC:108), Scotland. 01/10/2013, coll.: I.M. Evans, P.A. Evans. K(M): 190471.
- Studland (in bog), Dorset (VC:9), England. 14/08/2014, coll.: D. Hall & J. Winterbottom (comm. B. Edwards), K(M): 194198.
- Ascot, Berkshire (VC:22), England. 22/11/1865, coll.: M.J. Berkley. FRDBI: 896782. K(M)107349.
- Gamlingay, Cambridgeshire (VC:29), England. 18XX, coll.: J.S. Henslow. FRDBI: 896779. K(M)107346.

## References

- 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/>
- Piepenbring, M. (2000). The species of *Cintractia* s.l. (Ustilaginales, Basidiomycota). *Nova Hedwigia* 70: 289-372.
- Spooner, B. M. (2006). Additions and amendments to the list of British smut fungi. *Mycologist* 20(3): 90-96.