A new host, *Anthoxanthum odoratum*, for stripe smut *Ustilago striiformis* in Britain

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Abstract

Ustilago striiformis s.l. is reported as infecting *Anthoxanthum odoratum* for the first time in Britain. It has previously been suggested that this may represent a segregate taxon, *U. anthoxanthi*, but a clear understanding awaits molecular investigation. A literature search detected only eleven reports of a stripe smut on *A. odoratum*, so this may be an uncommon taxon which is worth looking out for.

Key words: *Ustilago anthoxanthi*, distribution

Ustilago striiformis (Westend.) Niessl, the common stripe smut of grasses, is widespread throughout Britain & Ireland (Legon & Henrici 2005). The old and new versions of the FRDBI include records from a range of hosts, principally *Holcus lanatus* and *H. mollis*, but also quite frequently on *Dactylis glomerata* and *Phalaris arundinacea*, with small numbers of records on *Arrhenatherum elatius*, *Elytrigia repens*, *Festuca rubra*, *Lolium perenne* and *Sesleria caerulea*, with singletons on *Agrostis gigantea*, *Agrostis stolonifera*, *Brachypodium sylvaticum*, *Deschampsia cespitosa*, *Poa pratensis*, and *Phleum pratense*. Kruse *et al*. (2018) investigated the *U. striiformis* complex in a multigene study; they identified some host-specific differences and resurrected some older names as distinct, and additionally described some new segregates (though www.bladmineerders.nl considers that there is a need for more evidence before these are widely accepted). The infections on this range of hosts from Britain and Ireland may therefore represent several closely related species. In this note *U. striiformis* is meant in the wide sense (sensu lato) pending resolution of these issues.

A recording visit to the Outer Hebrides (vc110) is always an opportunity to look for interesting plant parasites, and on 1 June 2023 I set out for some unprepossessing moorland territory in the south of Lewis. In moorland habitats, old shielings (rudimentary buildings previously used when looking after grazing animals on the moorland in the summer) often provide a different habitat, so I looked at the area at Totaral (NB25662246), where there was indeed some shorter, (slightly) richer turf and a variety of plant species. Amongst the turf were a few smutted leaves which proved to be *Anthoxanthum odoratum* infected by *Ustilago striiformis* s.l. (Fig. 1).

Vanky (1994) gives a very long list of hosts for *U. striiformis* in Europe, which includes *A. odoratum*, but gives no information on the abundance on most of the hosts. Klenke & Scholler (2015) cite only one record on *A. odoratum*, from Switzerland (of which more details are in Zogg (1985)), in the area that they cover. None of the specimens in Kruse *et al*. (2018)'s study had *A. odoratum* as a host, so the position of stripe smuts on this host within the *U. striiformis* complex remains to be elucidated.

The stripe smut on *Anthoxanthum* was separated by Liro (1938, p509-510) as *U. anthoxanthi* on the basis of its apparent host specificity, but stripe smuts on *Anthoxanthum* have not yet been investigated by molecular methods (Kruse *et al*. 2022). Liro also comments on the scarcity of

Figure 1: *Ustilago striiformis* infecting *Anthoxanthum odoratum.* Photograph © Paul A. Smith

records on this host – it was originally reported by Westendorp (1851) from Belgium on *Holcus* and *Anthoxanthum odoratum*, and seems to have been included on many other lists primarily on the basis of this information, rather than from additional original observations.

A detailed search of the literature and a range of regional smut checklists and floras turned up only eleven records of *U. striiformis* s.l. on *Anthoxanthum odoratum* including the present report; they are listed in Table 1. If this does represent a distinct taxon it therefore appears to be an uncommon one and may be worthy of a threat assessment. Nonetheless, the records are very widespread, so it does not seem to be a local taxon, and may be overlooked as well as sparse.

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country	locality	date	source
Belgium	nr Courtrai		Westendorp (1851)
Finland	Könkämäeno, Kelottijärvi, Saarenpää[1]	18/7/1936	Liro (1938), H 6025893, H 6025894
Finland	Enontekiö, Urtasvankka, Urtasvanghi	9/8/1936	Liro (1938), H6025896
Germany	Landkreis Lüchow-Dannenberg, Jeetzel-Niederung 0.5 km N Prabstorf, horse pasture	13/5/2019	Kruse *et al*. (2022)
Germany	Landkreis Harburg, Ochtmannsbruch 0.25 km SW Seggernhoff, mesophilic hay meadow	13/6/2021	Kruse *et al*. (2022)
Italy	Pordenone		Tomasi (2014)
Norway	Kaofjorde in Alta	1/8/1924	Savchenko *et al*. (2014), BPI 167082
Poland	Mt. Pieniny	31/5/1973	Vánky (1985)
Spain	nr Estación Alpina de Biología del Guadarrama	8/1921	González Fragoso (1924)
Switzerland	Val de Joux, L'Abbaye, Chalet aux Hermitages	8/1975	Zogg (1985)
UK	Outer Hebrides, Lewis, Totaral	1/6/2023	

Table 1: Records of *Ustilago striiformis* s.l. and *U. anthoxanthi* on *Anthoxanthum odoratum*. Herbarium abbreviations: H – Helsinki, BPI – USDA United States National Fungus Collections.
[1]Savchenko *et al*. (2014) also report this record, but assign it to the Russian Federation, apparently from a misreading of which location is meant by Saarenpää.

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