A documented record of Anthracoidea pratensis on Carex flacca from a calcareous woodland edge near Aschfeld, Lower Franconia (Germany)

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Short communication

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Abstract

A record of the sedge smut Anthracoidea pratensis (Syd.) Boidol & Poelt on Carex flacca Schreb. is presented from near Aschfeld, municipality of Eußenheim, district of Main-Spessart, Lower Franconia, Bavaria, Germany. The infection was observed in female spikes of the host plant. Black, powdery sori replacing parts of the fruiting structures, together with the documented host and light-microscopic images of dark brown, rounded to slightly polygonal spores, support the identification. The locality is a light, base-rich woodland edge close to an old quarry, with companion species indicating a calcareous and nutrient-poor edge habitat. The record is documented by field photographs, stereomicroscopic and light-microscopic images, GPS data, and herbarium vouchers: HTMG/120/19 for the smut and HTMG/320/6/14 for Carex flacca as host.

Keywords

Anthracoideaceae; Bavaria; Carex flacca; Cyperaceae; Lower Franconia; phytoparasitic fungi; smut fungi; woodland edge.

Introduction

Smut fungi of the genus Anthracoidea Bref. are closely associated with members of Cyperaceae, especially Carex. Infected plants usually show sori in the female spikes, where the fungus replaces or deforms fruiting structures. Because host range is an important character in the group, records are strongest when the host plant, position of the sori and spore characters are documented together.

The present note documents a collection from a light woodland-edge habitat near Aschfeld in Lower Franconia. The combination of Carex flacca as host, black powdery sori in female spikes and the available microscopic images supports the identification as Anthracoidea pratensis. The record is also of ecological interest because the host, parasite and accompanying flora point to a small, base-rich edge habitat with continuity at least through the fruiting period of the sedge.

Material and methods

The host plant and the infected spikes were photographed in the field. Additional stereomicroscopic images were taken from infected material, and spores were documented by light microscopy. Nomenclature of the vascular plants follows Plants of the World Online where applicable; ecological information for Carex flacca was checked against Bayernflora. Species Fungorum was used as the taxonomic reference for Anthracoidea pratensis.

Voucher material was prepared and filed. The smut is preserved as HTMG/120/19; the host Carex flacca Schreb. is preserved as HTMG/320/6/14.

Record data

Field	Data
Fungus	Anthracoidea pratensis (Syd.) Boidol & Poelt
Host	Carex flacca Schreb. s. l.
Locality	Germany, Bavaria, Lower Franconia, district Main-Spessart, municipality Eußenheim, Aschfeld, near an old quarry
Coordinates	50.007706 N, 9.810673 E (WGS84)
Altitude	ca. 272 m a.s.l.
Date	June 2026; photographic records from 4, 6 and 13 June 2026
Habitat	Light woodland edge / pine woodland clearing; humus-rich, mossy soil with skeletal, partly open patches
Vouchers	HTMG/120/19 (smut); HTMG/320/6/14 (Carex flacca as host)

Habitat and accompanying vegetation

The locality is a light edge habitat at the margin of pine woodland. The soil was humus-rich, mossy and partly open, with skeletal patches. The accompanying vegetation indicates a base-rich, rather nutrient-poor and well-lit habitat. Confirmed or photographically supported companion taxa include Teucrium chamaedrys L., Salvia pratensis L., Cirsium acaule (L.) Scop., Ophrys apifera Huds., Juniperus communis L. and Pinus sylvestris L.; Galium mollugo agg. and Euphorbia cf. seguieriana Neck. are treated cautiously.

Taxon	Common name / note	Status in this record	Ecological indication
Carex flacca Schreb. s. l.	blue sedge	host plant	Base-rich, light to semi-shaded habitats; central host of the record.
Bryophytes	moss cover	accompanying structure	Humus-rich, locally fresher soil surface.
Teucrium chamaedrys L.	wall germander	companion species	Warm, calcareous grassland and edge habitats.
Salvia pratensis L.	meadow clary	companion species	Dry to mesic, nutrient-poor grassland and edges.
Cirsium acaule (L.) Scop.	stemless thistle	companion species	Calcareous grassland indication.
Ophrys apifera Huds.	bee orchid	companion species	Light, calcareous, nutrient-poor habitat.
Galium cf. mollugo L. (agg.)	hedge bedstraw aggregate	not determined to microspecies	Meadow and edge habitat; treated cautiously.
Euphorbia cf. seguieriana Neck.	Seguier's spurge, not fully confirmed	tentative identification	Dry to intermittently dry, base-rich edge habitat.

Torminalis glaberrima (Gand.) Sennikov & Kurtto	wild service tree; often treated as Sorbus torminalis (L.) Crantz	woodland edge tree	Warm, base-rich woodland edge.
Pinus sylvestris L.	Scots pine	woodland matrix	Light pine woodland and pine clearing.
Juniperus communis L.	common juniper	companion shrub	Nutrient-poor, calcareous open-land/edge contact.

Results

The infection is located in female spikes of Carex flacca. Macroscopically, black, powdery sori emerge from or replace individual fruiting structures. The stereomicroscopic images show the association with the female spikes clearly.

In light microscopy the spores appear dark brown, rounded to slightly polygonal and visibly ornamented. Together with the host identity and the position of the sori, these characters support the identification as Anthracoidea pratensis.

Discussion

Identification of Anthracoidea species commonly relies on a combined assessment of host, sorus position and spore morphology. The present record meets these criteria: the host is documented as Carex flacca, the sori are located in female spikes, and the microscopic appearance agrees with Anthracoidea. Since A. pratensis is reported from Carex flacca, the identification is well supported by the available material.

The ecology of the site is consistent with the host plant. Carex flacca is a sedge of light to semi-shaded, base-rich and often moderately moist habitats. The accompanying vegetation, including wall germander, meadow clary, stemless thistle, bee orchid, juniper and Scots pine, fits a dry to mesic, base-rich woodland-edge mosaic.

Significance of the record

The record is noteworthy because it documents a close ecological relationship rather than the occurrence of a fungus alone. The locality must support a fruiting population of Carex flacca, and the smut becomes visible only when the host reaches the appropriate developmental stage and the fungus completes its cycle in the female spikes. The record therefore points to a small but biologically well-structured edge habitat in which host plant, parasite and companion vegetation occur together.

Figures



Fig. 1: Locality near Aschfeld with light woodland edge and nutrient-poor edge vegetation.



Fig. 2: Soil and accompanying vegetation at the locality; moss-rich, humus-rich open soil.



Fig. 3: Carex flacca Schreb. s. l. at the locality.



Fig. 4: Growth form and leaf characters of the host plant.



Fig. 5: Female spike of Carex flacca with initial infection.



Fig. 6: Infected spike with black sori of Anthracoidea pratensis.



Fig. 7: Stereomicroscopic view of infected spikes.

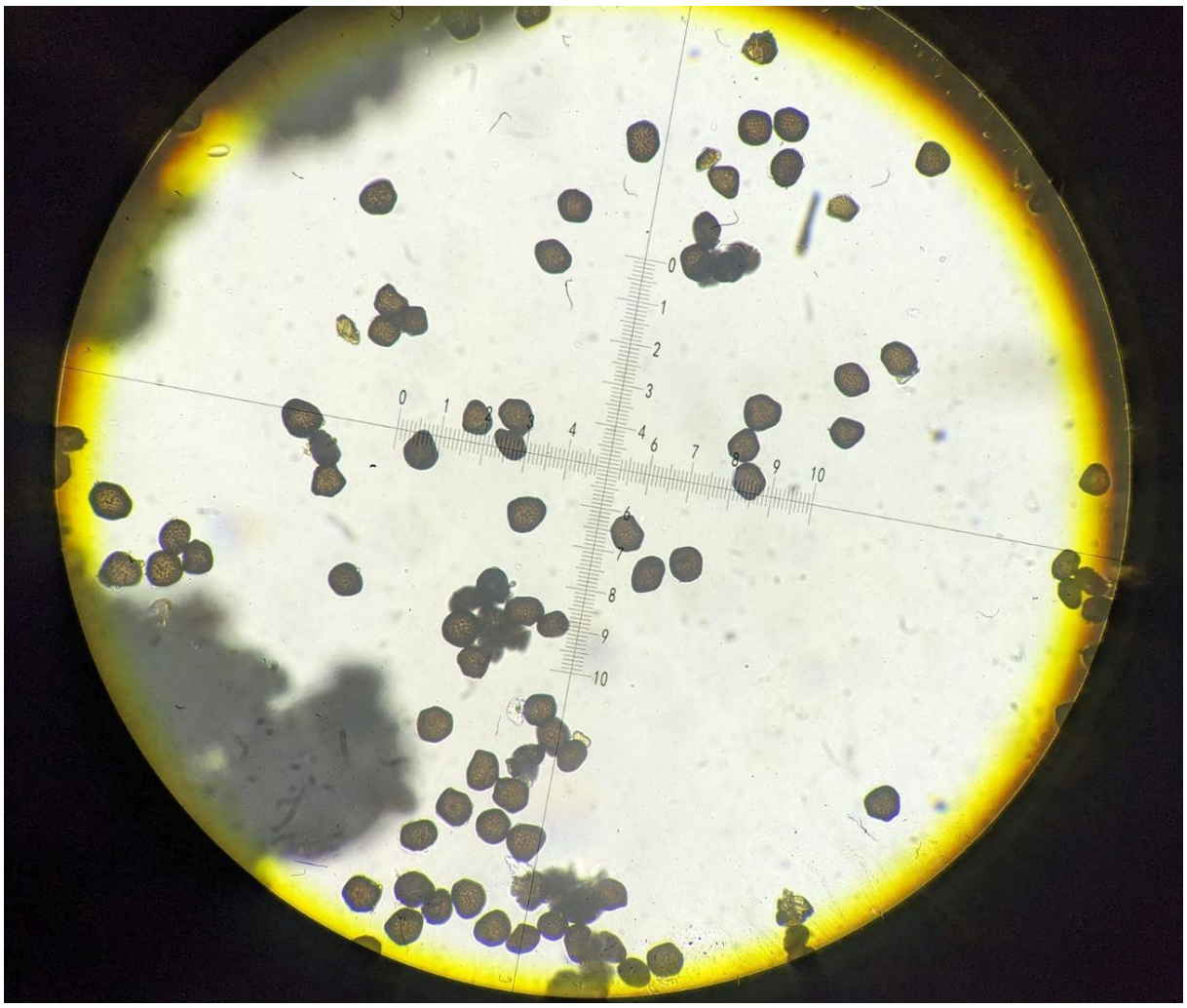


Fig. 8: Light-microscopic image of spores.

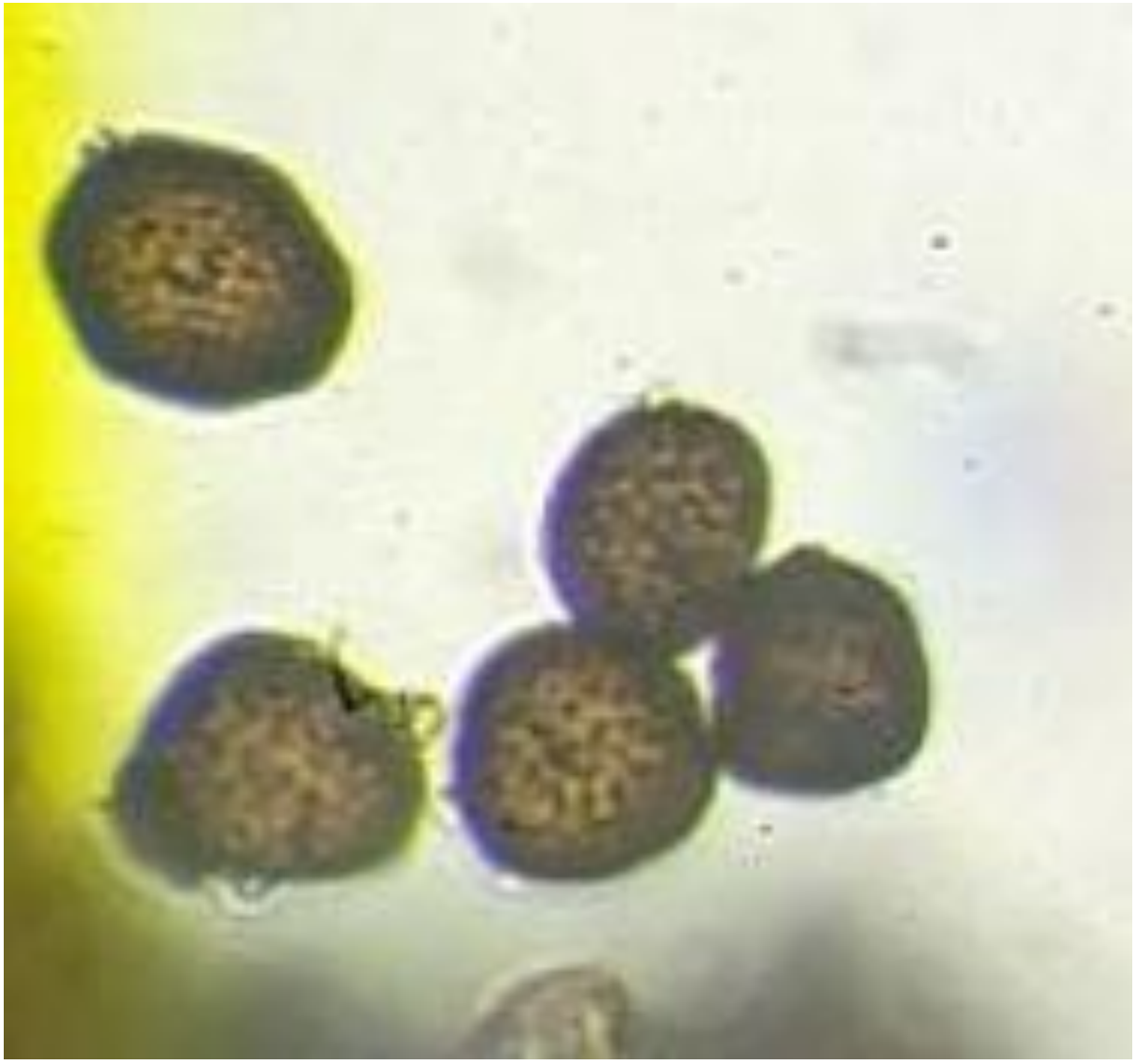


Fig. 9: Detail of spores showing surface structure.



Fig. 10: Herbarium vouchers; HTMG/120/19 for the smut and HTMG/320/6/14 for Carex flacca as host.

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