

New and interesting records of southern African rust fungi (Uredinales)

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Abstract

A number of rust fungi are recorded from southern Africa for the first time. *Aecidium nairobianum* is newly recorded from South Africa and Zimbabwe, and transferred to the genus *Endophyllum* as *Endophyllum nairobianum* comb. nov. *Puccinosira anthocleista* and *Ravenelia ornata* are also newly recorded from South Africa. *Uredo abri* is reduced to a synonym of *R. ornata*. Also, new details on the life cycle of several species have been elucidated from recent collections. The full life cycle of both *Puccinia phyllocladiae* and *Uromyces kentaniensis* are described. *Aecidium capense* is reduced to a synonym of the former and *Aecidium antholyzae* of the latter. *Uromyces ventosa* is reduced to a synonym of the microcyclic *Uromyces bolusii*. The taxonomic status of several species of rust fungi (Uredinales), recorded from southern Africa, requires changing to accommodate revised generic concepts. The following new combinations are made: *Diorchidium gerstneri* (Doidge) A.R. Wood comb. nov., *Phakopsora nyasalandica* (Cummins) A.R. Wood comb. nov., and *Uredo doidgeae* (Syd. and P. Syd.) A.R. Wood comb. nov. *Schroeteriaster stratosus* is confirmed as a synonym of *Phakopsora stratosus*. *Melampsora junodii* Doidge is reduced to a synonym of *Phakopsora vernoniae* Jørstad, and *Uromyces paradoxus* Syd. and P. Syd. is reduced to a synonym of *Uredo balsamodendri* Cooke. Details of the holotype of *Puccinia estcourtenensis* Gjørnum were omitted from the original description. These are supplied here, validating this species as *Puccinia estcourtenensis* Gjørnum ex A.R. Wood and Gjørnum, sp. nov.

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1. Introduction

The taxonomy of the rust fungi indigenous to South Africa is relatively well known largely due to a series of publications by Ethel Mary Doidge (1927, 1928, 1939, 1941, 1948a,b). She produced the last comprehensive checklist of the rust fungi (Basidiomycota, Uredinales) occurring in southern Africa (Doidge, 1950) (including Angola, Botswana, Lesotho, Mozambique, Namibia, South Africa, Swaziland and Zimbabwe). Since then there has been little published on indigenous rust fungi from southern Africa, and there have been many changes in family and genus concepts of the rust fungi (Cummins and Hiratsuka, 1983, 2003). A checklist of rust fungi indigenous to southern Africa is in the process of being compiled, incorporating both published new records and taxonomic changes. There are, however, a number of unpublished new records for South Africa, as well as new details on the life cycle of several species, and a number are incorrectly assigned according to currently accepted generic concepts. This paper is one of several describing these new findings, in preparation for the checklist.

Melampsora junodii Doidge, *Schroeteriaster stratosus* (Cooke) P. Syd and Syd., *S. doidgeae* Syd. and P. Syd., *Uromyces paradoxus* Syd. and P. Syd., and *Uropyxis gerstneri* Doidge are all currently incorrectly placed. These species are reassigned to their correct generic placement. In addition, the identity of the host species of *U. gerstneri* is given here for the first time. *Physopella nyasalandica* Cummins, a later addition to the flora of southern Africa (Cummins, 1960) also needs to be assigned to the correct genus.

Unfortunately, the details of the holotype of the proposed species *Puccinia estcourtenensis* Gjørnum were omitted from the original description (Gjørnum, 1988). These details are therefore supplied here, validating this species.

2. Materials and methods

Spores from herbarium specimens were mounted in aqueous lactic acid (50%) solution, and dimensions measured at 1000× magnification using a Zeiss Axioskop light microscope. Specimens were photographed using a Zeiss MC63 camera. Measurements of 25 spores from each specimen were taken.

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Measurements give the 95% confidence limits of the mean, with the minimum and maximum ranges given in parentheses. In all cases, the descriptions refer to specimens collected in South Africa that are listed below. Host plants were identified by comparison with named specimens in the Compton Herbarium, Kirstenbosch (NBG).

Several of the species are well described elsewhere, the descriptions based on the same specimens that were examined for this work. No descriptions are given of these species but reference is made to the published descriptions and illustrations.

3. Results and discussion

Diorchidium gerstneri (Doidge) A.R. Wood, **comb. nov.** (Figs. 1 and 2).

Basionym—*Uropyxis gerstneri* Doidge, *Bothalia* 4:916 (1948).

See Doidge (1948a) for a description and illustration.

Specimen examined: SOUTH AFRICA: KwaZulu-Natal Province: False Bay, Zululand, on *Uvaria lucida* Benth. ssp. *virrens* (N.E. Br.) Verdc., 27 June 1944, *Gerstner* 4817 (PREM 34564, HOLOTYPE).

In the description, the host plant was simply listed as *Annonaceae* indet., the host identity and date of the collection were obtained from the plant specimen (PRE 421564) from which the type was originally removed (see specimens examined for details).

Baxter (1959) excluded this species from *Uropyxis* and suggested it be transferred to *Diorchidium*, but did not make the transfer. Examination of the type confirms this diagnosis and the species is therefore transferred. The host plants of most species of *Diorchidium* are members of the Fabaceae. Apart from *D. gerstneri*, the only other species known on another host family is *Diorchidium amapaensis* J.F. Hennen and Sotão on *Geophila trichogyne* K.M. Schuman, Rubiaceae (Hennen et al., 1998). There are three other species of *Diorchidium* recorded from Africa, all on fabaceous hosts, namely, *Diorchidium quadrifidum* Cummins (from Ghana and Nigeria) (Cummins, 1960; Eboh, 1984), *Diorchidium tetrasporum* Cummins (from Zambia) (Cummins, 1960), and *Diorchidium woodii* Kalchbr. and Cooke (from South Africa) (Doidge, 1927).

Endophyllum nairobiianum (Cummins) A.R. Wood **comb. nov.**

Basionym—*Aecidium nairobiianum* Cummins. *Bull. Torrey Bot. Club* 68:471 (1941).

Infections systemic, causing witches' brooms. Pycnia absent. Aecidioid telia hypophyllous, scattered unevenly, not in lesions; aecidioid, orange, cylindrical, 175–300 µm diam; peridial margin white, reflexed, deeply incised. Peridial cells firmly joined together, irregular globose to ellipsoid, 25–33 × 17–25 µm; outer wall striate, 2.5–3 µm thick; inner wall verrucose, 3–4 µm thick. Aecidioid teliospores orange, irregular angular-globose to ovate, (20–)22–24(–29) × (15–)19–20.5(–26) µm, length/width ratio 1:1–1.93 (mean 1:1.19); spore wall hyaline, evenly verruculose, 2–3 µm thick; upon germination producing 4 basidiospores.

Specimens examined: SOUTH AFRICA. Gauteng Province: Horn's Nek, Pretoria, on *Lippia javanicum* (Burm. f.) Spreng., 6 Mar. 1939, *AOD Mogg* s.n. (PREM 30240); Witwatersrand National Botanic Garden, Johannesburg, on *L. javanicum* w (Burm. f.) Spreng., 3 Jan. 2004, *AR Wood* 536 (PREM 58347, K (M) 122452). Limpopo Province: Thabapaswa farm, 10 km WNW of Mokopane, on *L. javanicum* (Burm. f.) Spreng., 31 Aug. 2003, *S Naser* s.n. (PREM 58346); near Makapan Caves, on *L. javanicum* (Burm. f.) Spreng., 11 Nov. 1938, *KM Putterill* s.n. (PREM 32758). ZIMBABWE. GAZALAND, on *L. javanicum* (Burm. f.) Spreng., 11 Sep. 1917, *CFM Swynnerton* s.n. (PREM 10714).

Two species of *Aecidium* have been recorded on *Lippia* (Verbenaceae) in Africa, *Aecidium evansii* Henn. from Kenya (Natrass, 1961), Malawi (Bisby and Wiehe, 1953), South Africa (Doidge, 1950), Sudan (Tarr, 1963), Tanzania (Henderson, 1972), Uganda (Wakefield and Hansford, 1949), and Zimbabwe (Doidge, 1950), and *A. nairobiianum* from Kenya (Cummins, 1941; Natrass, 1961). Cummins (1941) differentiated *A. nairobiianum* from *A. evansii* because of the former's systemic habit. Otherwise, the two species are morphologically similar (Cummins, 1941). Witches' brooms caused by a rust fungus were recently collected on *Lippia javanicum* (Burm. f.) Spreng. in South Africa and identified as *A. nairobiianum* due to

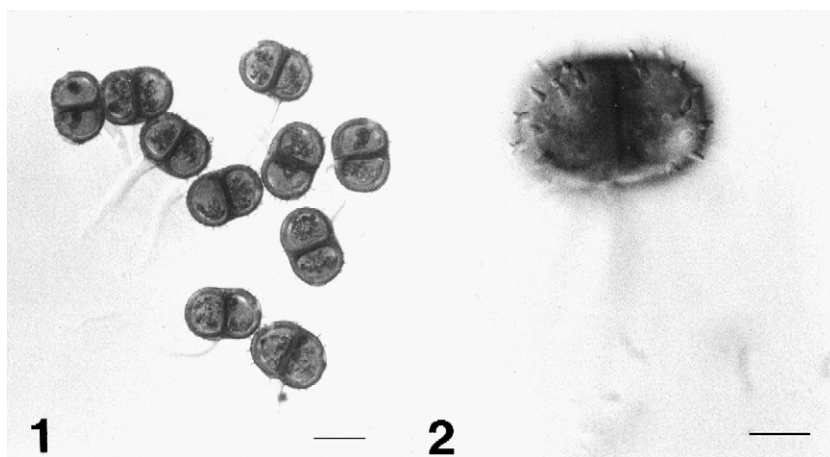


Fig. 1. Teliospores of *D. gerstneri*. Scale bar=20 µm.

Fig. 2. Teliospore of *D. gerstneri* showing detail of ornamentation. Scale bar=10 µm.

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