

Schoenefeldia transiens (Poaceae): Rare new record from the Limpopo Province, South Africa

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Background: *Schoenefeldia* is a genus of C₄ grasses, consisting of two species in Africa, Madagascar and India. It is the only representative of the genus found in southern Africa, where it was previously only known from a few collections in the southern part of the Kruger National Park (Mpumalanga Province, South Africa), dating from the early 1980s.

Objectives: The objective of this study was to document a newly recorded population of *Schoenefeldia transiens* in an area that is exploited for coal mining.

Method: A specimen of *S. transiens* was collected between Musina and Pontdrift, about 30 km east of Mapungubwe National Park, in the Limpopo Province of South Africa. The specimen was identified at the National Herbarium (Pretoria).

Results: This is not only a new distribution record for the quarter degree grid (QDS: 2229BA), but is also the first record of this grass in the Limpopo Province. The population of *S. transiens* has already been fragmented and partially destroyed because of mining activities and is under serious threat of total destruction.

Conclusion: It is proposed that the population of *S. transiens* must be considered to be of conservation significance, and the population should be made a high priority in the overall environmental management programme of the mining company that owns the land.

Introduction

Schoenefeldia Kunth (1830:283) is a genus of C₄ grasses, consisting of two species in Africa, Madagascar and India (Watson & Dallwitz 1994). *Schoenefeldia transiens* (Pilger) Chiovenda (Chiovenda 1916:186; Pilger 1914: 418) is known from Ethiopia, Somalia, Sudan, Kenya, Tanzania, Uganda, Mozambique, Zimbabwe and South Africa (Clayton *et al.* 2014). It is the only representative of the genus found in southern Africa, where it was previously only known from a few collections in the southern part of the Kruger National Park (Mpumalanga Province, South Africa), dating from the early 1980s (see details under 'Additional specimens examined' below). No other specimens collected between 1982 and the current collection (2014) could be found.

A specimen of *S. transiens* was collected between Musina and Pontdrift, about 30 km east of Mapungubwe National Park, in the Limpopo Province of South Africa. This is not only a new distribution record for the quarter degree grid (QDS: 2229BA), but the first record of this grass in the Limpopo Province. As the collection reported on here was made in an area that is exploited by coal mines, the conservation of this species in the Limpopo Province is not secure.

Taxonomic treatment

Schoenefeldia transiens (Pilg.) Chiov. in *Resultati scientifici della missione Stefanini-Paoli nella Somalia italiana. Le collezioni botaniche* 1:186 (1916).

Basionym: *Chloris transiens* Pilg., in *Botanische Jahrbücher für Systematik, Pflanzengeschichte und Pflanzengeographie* 51:418 (1914).

Type: TANZANIA. **Pare District:** KwaSengiwa-Majiyajuu, *Uhlig* 882 (B100002186, holotype, e!).

Description

Densely tufted perennial grass, 700 mm – 1200 mm high. Leaf blade 350 mm × 5 mm. Inflorescence of 2–4 digitate racemes; racemes 130 mm – 200 mm long, with obviously secund spikelets, these solitary at point of attachment to rachis. Spikelet 3.5 mm – 5.0 mm long, small in comparison to awns; florets 1 or 2, fertile lemma awn 10 mm – 25 mm, sterile lemma awn 25 mm – 45 mm long,



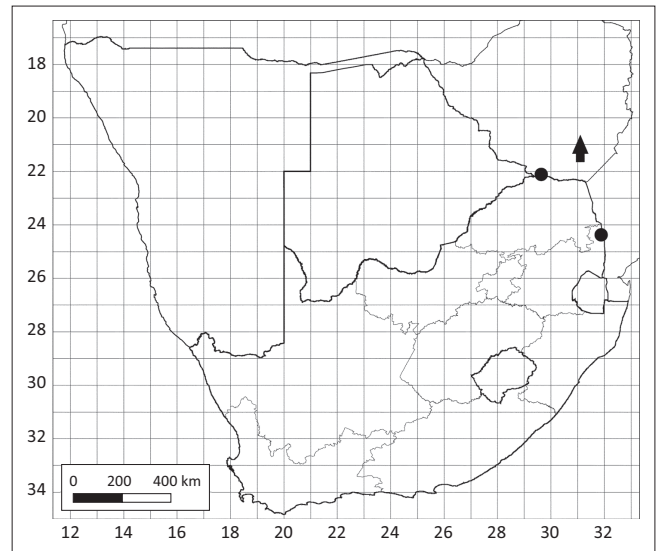
Source: Sample from Ellis 3548 (PRE), photographed by A.C. Mashau
Scale bar: (b), 2 mm.

FIGURE 1: *Schoenefeldia transiens*, depicted in, (a) habit (the growth form of the plant) and (b) lemma (the lower of two bracts enclosing the grass flower or floret).

awns flexuous, curving gracefully, becoming entangled with awns of other spikelets (Cope 1999; Gibbs Russell *et al.* 1990); anther 0.7 mm – 1.0 mm long (Figure 1). Flowering January to February. Reported to be cleistogamous.

Distribution and ecology

Schoenefeldia transiens occurs in southern Africa in the Mpumalanga and Limpopo Provinces of South Africa, and northwards through to East Africa, Ethiopia, Somalia and Sudan (Figure 2). The newly recorded *S. transiens* population in the Limpopo Province is situated in the Limpopo River



Source: Created by H.M. Steyn

FIGURE 2: Known distribution range (●) of *Schoenefeldia transiens* in southern Africa, with the black arrow indicating that further populations can be found to the north.

Valley between Musina and Pontdrift, on the farm Over Vlakte 125 MS. It grows on a north-facing hill slope approximately 1 km south of the Limpopo River. Coordinates of specimens and sub-populations of the larger population of *S. transiens* on the farm Over Vlakte 125 MS in the Limpopo River Valley are 22°08'58.3" S, 29°40' 49.7" E and 22°09'01.9" S, 29° 40'39.6" E.

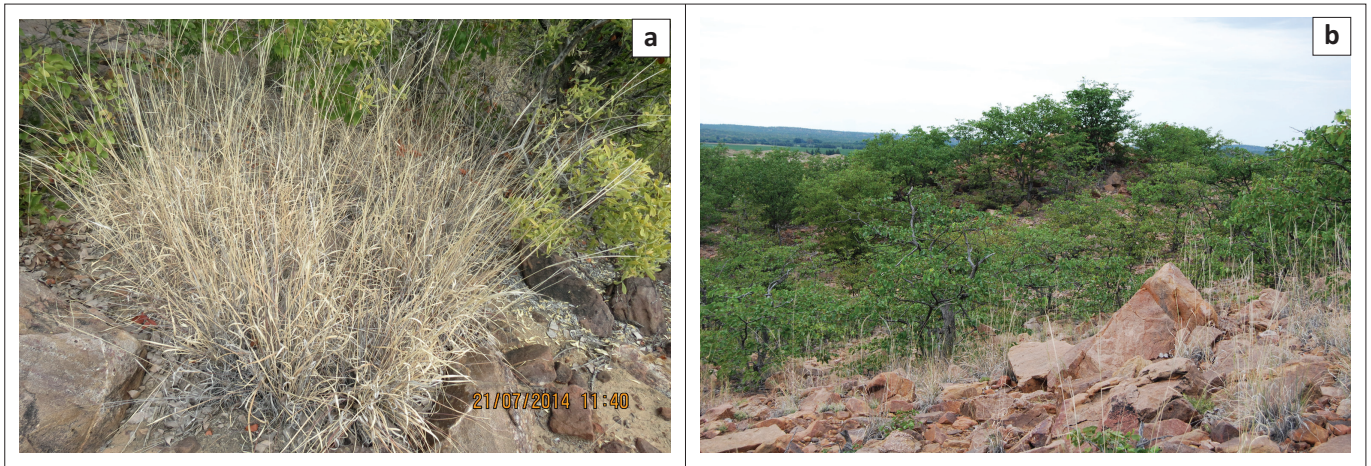
The new population of *S. transiens* occurs in *Colophospermum mopane* woodland on relatively seasonally flooded flats, in heavy soil, such as shallow loamy sandy soil that is associated with a high percentage of sandstone and quartzite surface rocks and outcrops (Figure 3). The habitat slope is between 5° and 10°, with a predominantly northern aspect. The woody component of the habitat is dominated by trees and shrubs that are mostly between 2.2 m and 0.8 m (average 1.5 m) high. The grass and herbaceous layer is only moderately to poorly developed due mainly to the shallow rocky nature of the substrate.

Other perennial grasses of significant abundance that occur together with *S. transiens* are *Fingerhuthia africana*, *Digitaria eriantha*, *Stipagrostis uniplumis* and *Sporobolus nitens*. Together with *C. mopane*, the woody vegetation is dominated by *Gardenia resiniflua* subsp. *resiniflua*, *Terminalia prunioides*, *Ximemia americana*, *Combretum apiculatum* and *Croton gratissimus* var. *subgratissimus*. Dominant herbs include *Barleria virgula*, *Seddera suffruticosa*, *Decorsea schlechteri*, *Hibiscus micranthus*, *Xerophyta humilis*, *Tephrosia polystachya* and *Indigofera nebrowmiana*.

Conservation status and habitat sensitivity

The frequency of *S. transiens* in southern Africa is rare.

Although the habitat of the new population itself is not considered to be particularly sensitive, it is under imminent threat of destruction as a result of current open cast coal mining activities in the direct vicinity of the newly recorded



Source: Image (a) photographed by G. de Beer; (b) by A.R. Götze

FIGURE 3: *Schoenefeldia transiens* (a) tall grass in foreground, (b) occurring in the rocky *Colophospermum mopane* woodland.

population. A strong suspicion exists that the population has already been fragmented and partially destroyed because of mining activities. Depending on the future planning of mining activities, the whole population is under serious threat of total destruction. It is therefore proposed that this population of *S. transiens* be considered to be of conservation significance, and it should be made a high priority in the overall environmental management programme of the mining company that owns the land. It is the view of the authors that if this population is lost as a result of carelessness or ignorance by either the relevant conservation authorities or the current landowner (i.e. the mining company), it will be a loss not only to our natural heritage, but also a loss in terms of the gene pool of this species and to the biodiversity of the southern African region.

New collection record

SOUTH AFRICA. **Limpopo:** Limpopo River Valley, farm Over Vlakke 125 MS (QDS: 2229BA), 24 April 2014, Götzel 355 (PRE!).

Additional specimens examined

SOUTH AFRICA. **Mpumalanga:** Kruger National Park, 10 km east of Satara Camp, Nwanedzi road at Msasame windmill (QDS: 2431BD), 13 Jan. 1981, *Ellis 3548* (PRE!); 12 km east of Satara along Nwanedzi river road, 28 Jan. 1982, *Ellis 3867* (PRE!); 6 km east of Satara along Nwanedzi river road, 31 Jan. 1981, *Ellis 3542; 3543* (PRE!).

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Competing interests

The author declares that she has no financial or personal relationships that may have inappropriately influenced her in writing this article.

Authors' contributions

A.C.M. (South African National Biodiversity Institute/ University of Pretoria) prepared the draft and analysed the data, A.R.G. (*Environment Research Consulting*) collected plant material and made conceptual contributions.

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