

LYCOPODIOPHYTA: SELAGINELLACEAE

SELAGINELLA NIVEA, A NEW LYCOPHYTE RECORD FOR SOUTH AFRICA, WITH NOTES ON ITS HABITAT

Selaginella nivea Alston ex Alston was first described from southern Madagascar where it grows on rocks in *Euphorbia* spp. and *Didierea* spp. xerophilous bush (Stefanović & Rakotondrainibe 1996). The species has since been recorded in Botswana, Zimbabwe and Mozam-

bique where it is typically associated with sandy habitat in *Colophospermum mopane* savanna mostly along the Limpopo River Valley (Burrows 1990; Roux 2009).

We here report on the first records of *Selaginella nivea* in South Africa (Figure 28). The first collection of

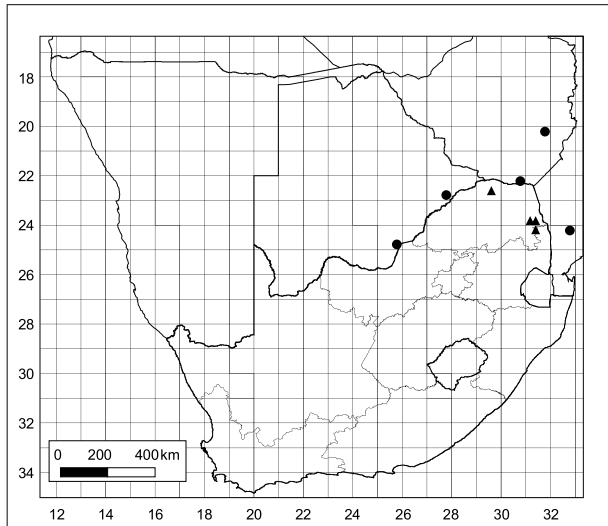


FIGURE 28.—Known distribution of *Selaginella nivea* in southern Africa, ●; new localities in South Africa, ▲.

this species in South Africa was made between Alldays and Musina [Messina] in the Limpopo Province, where it occurs in mixed *Colophospermum mopane* savanna of the Musina Mopane Bushveld vegetation type (Mucina & Rutherford 2006). The species grows in well-drained, fine gravel in open areas, occasionally interspersed with grasses. Despite the recent good rains that occurred, all plants were in a desiccated state and sterile. Plants form colonies up to 1 m² in size. No plants were found on open sandy areas where only stunted *Colophospermum mopane* trees occur, nor in mixed savanna growing on a more rocky substrate.

A second collection of this species was made in the N'tsiri Nature Reserve in northern Mpumalanga. At this site the plants occur in mixed *Colophospermum mopane*–*Acacia*–*Combretum* savanna of the Phalaborwa–Timbavati Mopaneveld vegetation type (Mucina & Rutherford 2006). This area represents the southern-

most extent of mopane savanna in South Africa. Habitat and substrate were similar to that of the record from the Musina region. Plants collected at N'tsiri were fertile, containing a few 4-ranked sporophylls.

During a later visit to the Letaba area of the Kruger National Park (KNP) in northern Limpopo Province, several populations of *Selaginella nivea* were seen in habitat similar to those described above (these are listed under *Sight records*). Most of the plants in the KNP also occur in Phalaborwa–Timbavati Mopaneveld (Mucina & Rutherford 2006). However, the two populations found on road S47 were in Tsende Mopaneveld and on the boundary between Lowveld Rugged Mopaneveld and Mopane Basalt Shrubland (Mucina & Rutherford 2006). For obvious reasons, no specimens could be collected, but negotiations with SANParks to obtain herbarium vouchers from these sites are underway.

Selaginella nivea is a member of *Selaginella* subgen. *Tetragonostachys* Jermy (1986). This species is characterized by 4-ranked strobili, club-shaped terminal branches (Figure 29) with glaucous leaves that turn grey to pale creamy brown when dry and that are seemingly randomly arranged. Furthermore, the dried leaves of *S. nivea* tend to break off early. Other members of this subgenus in southern Africa, with which *S. nivea* can be confused, are *S. dregei* (C.Presl) Hieron., *S. grisea* Alston and *S. caffrorum* (Milde) Hieron. var. *caffrorum*, as well as *S. njamnjamensis* Hieron. that occurs further to the north from Zambia, Malawi, Mozambique and into tropical Africa, with an unconfirmed record from southern Botswana (Schelpe & Anthony 1986; Burrows 1990; Roux 2009). A summary of the features separating *S. nivea* from other *Selaginella* species in subgen. *Tetragonostachys* known from the region is provided in Table 4.

Selaginella nivea is under-collected and often misidentified, given its superficial resemblance to the much more common and widespread *S. dregei*. However, its habitat does not overlap with the other regional



FIGURE 29.—*Selaginella nivea* with short, club-shaped terminal branches. Photograph: A.W. Klopper.

TABLE 4.—Characters separating members of *Selaginella* subgen. *Tetragonostachys*

	<i>S. nivea</i>	<i>S. dregei</i>	<i>S. grisea</i>	<i>S. caffrorum</i>	<i>S. njamnjamensis</i>
Apical seta	< 1/3 (± 1/4) length of leaf blade, straight	1/3–1/4 length of leaf blade, usually recurved	1/2 as long as or equal to length of leaf blade, straight to decurved	very short, if present, straight	1/4 or less length of leaf blade, straight
Leaf					
arrangement	radially asymmetrical, seemingly random	radially symmetrical to slightly dorsiventral	radially symmetrical to slightly dorsiventral	radially symmetrical	dorsiventral
margins	shortly ciliate	sparsely ciliate	ciliate	sparsely ciliate	shortly ciliate
colour	bluish green when wet, grey to light creamy brown when dry	grey-green to blue-green when wet, silvery grey when dry	green when wet, brown-grey when dry	deep, slightly olive-green when wet, pale coppery brown when dry	green when wet, greyish brown when dry
Sporophylls	4-ranked	2-ranked	2-ranked	4-ranked	4-ranked
Ultimate branches	short, club-shaped (Figure 2)	long	long	long, recurved when dry	long
Habitat	fine gravel in mopane savanna	rock outcrops	rock outcrops	rock outcrops or cliffs	rock outcrops

members of the subgenus, all of which occur on rocky areas only (Burrows 1990). The habitat of a specimen of *S. dregei* (C.C. Straub 516 at PRE) collected in the Pontdrift area was described as ‘rocky sandstone, level places on rock’, but the collector mentions that this plant was ‘also seen in mopane veld’. This probably refers to populations of *S. nivea* in the mopane veld and is an example of the easy misidentification of *S. nivea* and its resultant under-collected status. It may further explain why this taxon was not previously recorded for South Africa, even though, based on the new records reported here, it probably occurs in a very wide area from the extreme north of Mpumalanga and throughout the northern Limpopo Province where suitable habitat is present.

Furthermore, the general areas in which the new collections were made are poorly sampled as far as lycophytes and pteridophytes are concerned. Before the discovery of *Selaginella nivea* in the Musina region, and the simultaneous collecting of *S. dregei* on a nearby rock outcrop, no previous collections of any lycophytes or pteridophytes have been made for this quarter-degree square grid (QDS: 2229DA). Of the surrounding eight QDS grids, a further four currently have no lycophyte or pteridophyte records. As for the N’tsiri QDS (2431AB) only one previous collection, that of *S. dregei*, exists, whereas two of the surrounding QDS currently have no lycophyte or pteridophyte records. Although these dry areas are not rich in lycophyte and pteridophyte flora, they are clearly being neglected as far as the collecting of these taxa is concerned.

Specimens examined

LIMPOPO.—2229 (Waterpoort): Musina Dist., Farm Riebelton 488, (–DA), 13-02-2011, R.R. Klopper & A.W. Klopper 461 (BNRH, NBG, PRE); Musina Dist., Farm Twyfelfontein 483, near house, (–DA), 13-02-2011, R.R. Klopper & A.W. Klopper 462 (PRE).

MPUMALANGA.—2431 (Acornhoek): N’tsiri Nature Reserve, east of Hoedspruit, along Cobra Link road, (–AB), 12-03-2011, L. Smook 12233 (PRE).

Sight records

LIMPOPO.—2331 (Phalaborwa): Kruger National Park, Road S51, 2 km from intersection with H9, near Masorini, (–CC), 02-05-2011; Road H9 near Masorini, (–CC), 02-05-2011; Road S47, 4.2 km from intersection with Road S131, (–CC), 03-05-2011; Road S47, 13 km from intersection with Road S131, (–CC), 03-05-2011; Road H9, near

H14/S51 intersections, (–CD), 02-05-2011; southern point of loop S51, (–CD), 02-05-2011.

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