



## *Gymnosporia swazica* (Celastraceae), a new species from southern Africa

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### Abstract

*Gymnosporia swazica*, a new restricted-range southern African species, is described and illustrated here. Known from only a few localities in Swaziland and bordering parts of South Africa (Mpumalanga and northeastern KwaZulu-Natal), *G. swazica* grows as an understorey shrub or small tree in forest, often among granite boulders. Diagnostic characters for *G. swazica* include chartaceous leaves, usually shorter than 25 mm, 3-valved capsules usually 6–7 mm long, which are smooth, green turning yellow, and a white aril partially covering the brownish seed. Its closest relative appears to be *G. buxifolia* (capsules rugose, mottled white-and-brown), one of the most widespread members of the genus in southern Africa, but it can also be confused with *G. maranguensis* (capsules red, 2-valved) and *G. harveyana* (capsules pink to red, 3-valved; aril orange, completely covering the seed).

### Introduction

*Gymnosporia* (Wight & Arnott 1834: 159) Hooker (1862: 359, 365) is an Old World genus, occurring in Africa, nearby Atlantic Ocean Islands, southern Spain, Madagascar and other Indian Ocean Islands, SE Asia, Malesia, Australia and on the Polynesian, Micronesian and Melanesian Islands. It comprises over one hundred species (Jordaan & Van Wyk 2006). Hitherto 26 named species of *Gymnosporia* were recognized in the *Flora of southern Africa* region, the latter comprising South Africa, Namibia, Botswana, Swaziland and Lesotho (Archer & Jordaan 2003, Jordaan 2008).

The new species of *Gymnosporia* described in the present contribution has come to light since Jordaan's taxonomic revision (1995) of the spiny members of subfamily Celastroideae (Celastraceae) in southern Africa, and the reinstatement of the genus name *Gymnosporia* for the group (Jordaan & Van Wyk 1999). It was brought to our attention by Linda Loffler of Swaziland and Johan Hurter and Ernst Schmidt of Mpumalanga, South Africa. One of us (MJ) has subsequently studied the species in the field during which the type material was collected. The new species belongs to *Gymnosporia* section *Buxifoliae* Jordaan (Jordaan & Van Wyk 2006: 519).

### Taxonomy

#### *Gymnosporia swazica* Jordaan, sp. nov. (Fig. 1)

Closely related to *Gymnosporia buxifolia* (Linnaeus 1753: 197) Szyszylowicz (1888: 34), but differs in having glabrous, smooth, yellow capsules. It differs from *G. maranguensis* (Loesener 1894: 231) Loesener (1908: 303) by having 3- (vs. 2-) valved capsules; and from *G. harveyana* Loesener (1896: 430), by having a white (vs. orange) aril partially (vs. completely) covering the seed.

**Type**.—SOUTH AFRICA. Mpumalanga: Nelspruit District, Crocodile River Gorge, along road from Nelspruit to Kaapmuiden, 11 July 2000, Jordaan 3712 (holotype PRE0863219-0!, isotypes K!, NH!).

*Gymnosporia* sp. D in Schmidt *et al.* (2002: 348).

*Gymnosporia graniticola* (*ined.*) in Loffler & Loffler (2005: 54).



**FIGURE 1.** *Gymnosporia swazica*. A. Fruiting branch (from *Jordaan 3845*). B. Female flower (from *Ward 1507*). C. Open capsule (from *Jordaan 3845*). D. Closed capsule (from *Jordaan 3712*). E. Seed, partially covered by the aril (from *Jordaan 3845*). Drawings by Lesley Deyssel. Scale bar: A = 20 mm, B–E = 1 mm.

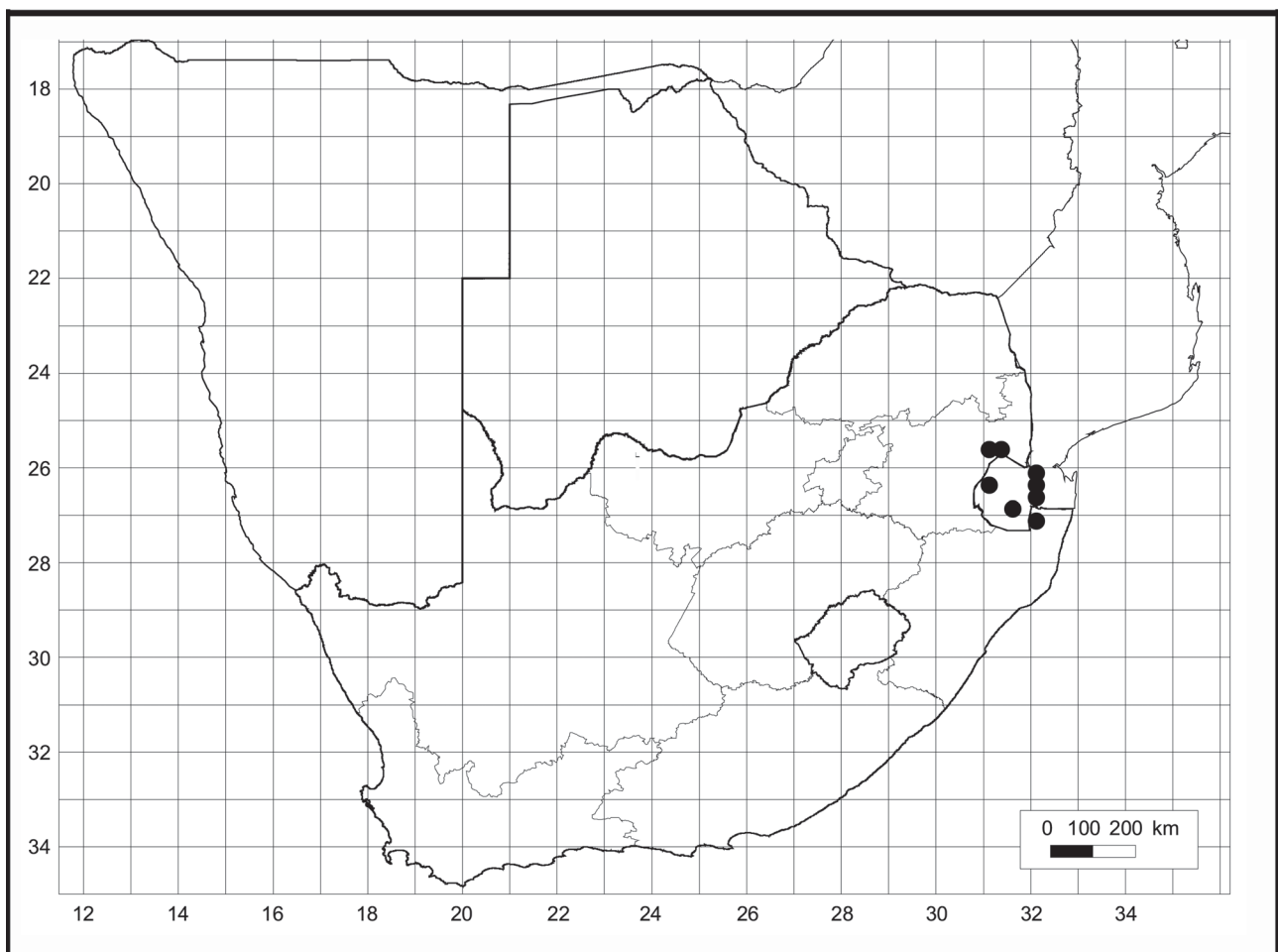
Small tree up to 3 m tall, usually single-stemmed, sometimes multi-stemmed, few-branched with longer branches drooping at ends, glabrous; branchlets angular, green, becoming dark grey, without lenticels. *Thorns* axillary, slender, up to 15 mm long. *Brachyblasts* up to 4 mm long. *Leaves* chartaceous, concolourous; lamina obovate to spatulate, 10–20(–45) × 5–10(–15) mm, apex acute to rounded to emarginate, base tapering into petiole, margin crenate, midrib prominent in lower half when dry, fading towards tip, reticulate venation conspicuous on both sides; petiole very short, almost absent. *Inflorescence* few-flowered; peduncle ± 2 mm long; pedicels ± 0.5 mm long. *Flowers* cream. *Sepals* oblong-lanceolate, ± 1 mm long, apex obtuse. *Petals* oblong, ± 1.5 mm long, margin fimbriate. *Disc* narrow, convex, 5-lobed. *Male flowers*: stamens included, ± 1 mm long; style ± 0.5 mm long; stigma absent. *Female flowers*: staminodes included, ± 0.5 mm long; style ± 0.5 mm long; stigma 3-lobed. *Capsules* globose, 3-valved, smooth, green, ripening yellow, 6–10 mm long. *Seeds* 1–4, dark reddish brown; aril white, partially covering the seed.

**Diagnosis and relationships:**—*Gymnosporia swazica* differs from *G. buxifolia*, in having smaller (usually short-

er than 20 mm) chartaceous leaves, and capsules which are smooth, green ripening to yellow and are usually 6–10 mm long. The leaves of *G. buxifolia* are 25–80 mm long, and the capsules are smaller, usually less than 5 mm long, with the surface rugose and ripening to a finely mottled white-and-brown. With its relatively small leaves densely arranged on the branches, *G. swazica* superficially resembles *G. matoboensis* Jordaan (Jordaan & Van Wyk 2006: 520), a species confined to the rocky granite outcrops of the Matobo region in Zimbabwe. *G. swazica* is glabrous in all parts, whereas *G. matobensis* has puberulous branches, leaves, inflorescences and capsules. Its affinity also lies with *G. maranguensis*, which also has smooth capsules, but *G. swazica* can be distinguished by its smaller leaves (usually shorter than 20 mm) and capsules green instead of red, 3-valved instead of 2-valved and larger, 6–10 mm long. When sterile *G. swazica* can easily be confused with *G. harveyana*, which is also one of the few forest species in the genus, but differs in lacking thread-like stipules. When in fruit, *G. swazica* is easily distinguishable from *G. harveyana*, the latter which has smooth, pinkish to reddish capsules with seed completely covered by an orange aril, whereas *G. swazica* has yellowish smooth capsules and a white aril only covering the seed partially. Characters to differentiate among *G. swazica* and the associated species with which it can be confused, are summarized in Table 1.

**TABLE 1.** Diagnostic morphological characters of *Gymnosporia swazica* compared with associated species with which it can often be confused

Characters	<i>G. swazica</i>	<i>G. maranguensis</i>	<i>G. harveyana</i>
Leaf lamina	obovate to spatulate, 10–20(–45) × 5–10(–15) mm	cuneate to broadly ovate or ovate-oblong to suborbicular, 6–30 × 4–15 mm	ovate or lanceolate to elliptic or subcircular, 10–40 × 6–25 mm
Mature capsule colour	yellowish	yellow tinged pink to pinkish or bright red	pinkish to red
Number of valves in dehisced capsule	3-valved	2-valved	3-valved
Aril colour	white	yellow	orange (rarely orange-red)
Aril coverage of seed	partially covering seed	partially covering seed	completely covering seed



**FIGURE 2.** Known distribution of *Gymnosporia swazica*.

**Distribution:**—Although *G. swazica* is mainly associated with the Lebombo Mountains in Swaziland, hence the specific epithet, it is also known from scattered localities in South Africa's Mpumalanga Province (Crocodile River Valley region, east of Nelspruit) and far northeastern part of KwaZulu-Natal (Fig. 2).

**Ecology:**—The new species grows in small forest enclaves within a fire-maintained savanna matrix known as SVI 3 Granite Lowveld (Mucina & Rutherford 2006). Van Rooyen & Bredenkamp (1996) recognized this vegetation type as Mixed Lowveld Bushveld (elevation 450–600 m), generally a frost-free region with low rainfall (400–800 mm per year) and temperatures between –4°C and 45°C, with an average per annum of 22°C. The substrate is characterized by sandy soils in the uplands and clayey soils with a high sodium content in bottomlands. The geology is granite and gneiss with numerous dolerite intrusions and areas covered by gabbro (Van Rooyen & Bredenkamp 1996). Acocks (1988) considered the climax of this area to be forest. *G. swazica* grows in forest in shade, on hillsides, in soils derived from granite, often among boulders, close to streams. It is often associated with *Diospyros natalensis* (Harvey 1863: 7) Brenan (1954: 500) subsp. *nummularia* (Brenan 1948: 111) Jordaan (2009: 102).

**Additional specimens examined (paratypes):**—SOUTH AFRICA. Mpumalanga: ± 25 km from Nelspruit to Kaapmuiden, Crocodile's Poort Mountains, *Jordaan 3845* (PRE); KwaZulu-Natal: Lebombo Mountains, Sikulukulu stream, *Ward 1507* (NH); Lebombo Mountains, road between Ingwavuma and Josini, *P. van Wyk BSA694* (PRE, PRU). SWAZILAND. Stegi District, 14 miles S of Stegi, *Compton 30062* (PRE); Blue Jay Ranch, Lebombo Mountains S of Umbuluzi Gorge, 3 miles NNE of Mhlumeni border post, *Culverwell 1107* (PRE); Lebombo Mountains, *Kemp 706* (PRE); 4 km NE of Tikuba store on road from Siteki to Mambane, *Prior 376* (PRE).

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