

Flowering Plants of Africa

Volume 65

June 2017



L. Ward
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Flowering Plants of Africa

Since its inception in 1921, this serial, modelled on the former *Curtis's Botanical Magazine*, has published well over 2 000 colour plates of African plants prepared by some 80 artists.

The object of the journal is to convey to the reader the beauty and variety of form of the African flora, to stimulate an interest in the study, conservation and cultivation of African plants, and to advance the science of botany as well as botanical art.

The illustrations are mostly prepared by artists on the staff of the South African National Biodiversity Institute (SANBI), but we welcome other contributions of suitable artistic and scientific merit. Please see *Guide for authors and artists* on page 159.

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(note Afrikaans translation and changes in title)

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The Flowering Plants of South Africa

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The Flowering Plants of Africa

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Flowering Plants of Africa

A peer-reviewed journal containing colour plates with descriptions of flowering plants of Africa and neighbouring islands

Edited by

Alicia Grobler

with assistance of

Gillian Condry

Volume 65



Pretoria
2017

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Ruellia kaokoensis Van Jaarsv. sp. nov., p. 154

Caesalpinia bracteata

Fabaceae: Caesalpinioideae

*Namibia, South Africa****Caesalpinia bracteata*** *Germish.* in *Bothalia* 21,2: 152–154 (1991).

Caesalpinia bracteata, locally known as the *Gariëp pronkstert* in Afrikaans, is a rare thorny shrub known only from a few gatherings on both sides of the dry, semi-desert, lower Orange River in South Africa and Namibia (Figure 1). The species' distribution falls within the Gariëp Centre of Endemism (Van Wyk & Smith 2001). It appears to be restricted to the Naros Granite geological formation.

The genus *Caesalpinia* was established by Linnaeus in 1753, represented today by more or less 200 species, of which most are confined to the New World (Heywood 1978). The generic name, *Caesalpinia*, honours the Italian botanist Andreas Caesalpini (1519–1603) (Jackson 1990). The specific epithet, *bracteata*, is in reference to the large bracts protecting the flowers of *C. bracteata*. Most *Caesalpinia* species are attractive, scrambling shrubs, with colourful flowers and many have been taken up in ornamental horticulture.

In South Africa and Namibia, the genus *Caesalpinia* is represented by 10 species (Nkonki & Swelankomo 2003), of which four are introduced and invasive species (Henderson 2001). The remaining six species are indigenous to South Africa and Namibia. These include the widespread *C. bonduc* (L.) Roxb., *C. bracteata* Germish., *C. merxmullerana* A.Schreib., *C. pearsonii* L.Bolus, *C. rostrata* N.E.Br. and *C. rubra* (Engl.) Brenan. Four of these occur in Namibia, namely, *C. rubra* (Namibia and Botswana), *C. merxmullerana* and *C. pearsonii* (the latter two endemic to Namibia), and *C. bracteata* (Craven 1999). The alien species were introduced because of their ornamental value. These include *C. decapetala* (Roth) Alston, *C. gilliesii* (Wall. ex Hook.) Benth., *C. pulcherrima* (L.) Sw. and *C. spinosa* (Molina) Kuntze. *Caesalpinia rostrata*, another species with a fairly restricted distribution in the east of South Africa, was treated in a previous volume of *Flowering Plants of Africa* (Germishuizen & Condy 2001). The indigenous species from the semi-arid regions in the west (four species, namely *C. bracteata*, *C. merxmullerana*, *C. pearsonii* and *C. rubra*) are multi-stemmed, erect shrubs, whereas the two species from the east (*C. bonduc* and *C. rostrata*), are distinctly scrambling. The beautiful bird-of-paradise (*C. gilliesii*), a native from Argentina and Uruguay, is becoming invasive in the Northern Cape Province of South Africa.

Caesalpinia bracteata is related to *C. rostrata* from the Mpumalanga Province of South Africa in the east, but can immediately be differentiated from it by several features. *Caesalpinia rostrata* is a scrambling shrub with a distinctive rostrate beak on the lower sepal. Furthermore, *C. rostrata* has subulate stipellae on the rachis, which are absent from the leaves of *C. bracteata*. The fruits of *C. bracteata* are maroon brown and 15–22 mm long, whereas the fruits of *C. rostrata* are much larger (27–32 mm) and brownish (Germishuizen 1991).



PLATE 2330 *Caesalpinia bracteata*

Andrew Gubb (1950–), curator of the McGregor Museum, Kimberley, first discovered *Caesalpinia bracteata* on 8 July 1982, between the farms Yas and Warmbad in the Northern Cape Province in the vicinity of the Orange River (Glen & Germishuizen 2010). He collected herbarium specimens of this thorny shrub and deposited a specimen in the McGregor Museum and a duplicate was sent to the National Herbarium, Pretoria. The next collection was made on 29 September 1987 and again in 1990. Both these collections were made by Estelle van Hoepen (née Wasserfall) who found plants in the same region on the farm Skroef. Gerrit Germishuizen, botanist from the former Botanical Research Institute and specialising on the Fabaceae family at the time, investigated the specimens and realised that they represent an unnamed species. He named it *C. bracteata* in reference to the large floral bracts, separating it from *C. rostrata* (Germishuizen 1991).

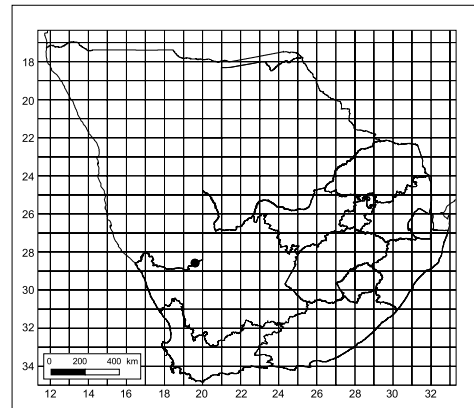


FIGURE 1.—Known distribution of *Caesalpinia bracteata* in Namibia and South Africa.

Professor Braam van Wyk of the University of Pretoria brought this species to the attention of the first author (EJvJ) who decided to visit the site to collect seed for the Botanical Society Conservatory in Kirstenbosch, where he was in charge. On an excursion to the Kaokoveld in June/July 2001, and after consulting with one of the owners, Sakkie van Staden, the farm Skroef was visited on 23 July 2001 with Tielman Haumann, a farmer from the Ghaap Plateau. *Caesalpinia bracteata* was commonly encountered and often the dominant species in some parts of the farm, and not far from the Orange River. It grew in crevices and among Naros granitoid outcrops of the Namaqua Metamorphic Complex (Miller & Schalk 1980; Visser 1984; Mendelsohn et al. 2002). Multistemmed shrubs, 1–3 m tall, grew on a gentle north-facing slope. The vegetation consists of Lower Gariiep Broken Veld (Bushmanland Bioregion of the Nama-Karoo Biome) (Mucina & Rutherford 2006). Here the plants shared their habitat with species such as *Abutilon pycnodon* Hochr., *Adenolobus garipensis* (E.Mey.) Torre & Hillc., *Boscia albitrunca* (Burch.) Gilg & Gilg-Ben. and *B. foetida* Schinz, *Cadaba aphylla* (Thunb.) Wild, *Commiphora gracilifrons* Dinter ex J.J.A.van der Walt, *Diopyros acocksii* (De Winter) De Winter, *Ficus cordata* Thunb., *Maerua gilgii* Schinz, *Gymnosporia tenuispina* (Sond.) Szyszyl., *Nymanina capensis* (Thunb.) Lindb., *Parkinsonia africana* Sond., *Searsia marlothii* (Engl.) Moffett, *Senegalia mellifera* (Vahl) Seigler & Ebinger subsp. *detinens* (Burch.) Kyal. & Boatwr., *Sisyndite spartea* E.Mey. ex Sond., *Tribulus terrestris* L., *Vachellia erioloba* (E.Mey.) P.J.H.Hurter and *Ziziphus mucronata* Willd. Sufficient seeds and specimens (*E. van Jaarsveld 16805*) were collected. This part of southern Africa is a semi-desert with the climate being hot and dry throughout most of the year. The annual rainfall has been recorded as less than 100 mm per annum and occurs mainly in spring and autumn in the form of thundershowers, although the region may occasionally experience some rain during the winter months. The average daily maximum is 29°C and the average daily minimum 13°C. During summer, extreme temperatures have been measured and can sometimes reach 44°C.

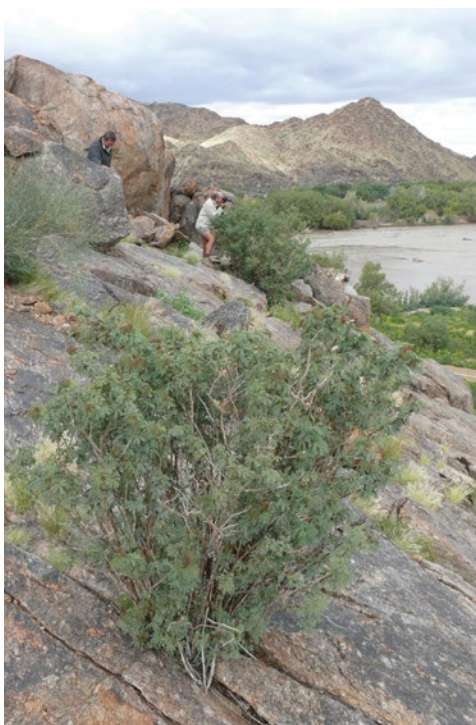


FIGURE 2.—*Caesalpinia bracteata* growing on a south-facing slope on the farm Naros, southern Namibia. Note the *Sisyndite sparteata* bush in the background. Photograph: E.J. van Jaarsveld.



FIGURE 3.—*Caesalpinia bracteata*, close-up of the flowers, growing on the farm Naros, southern Namibia. Photograph: E.J. van Jaarsveld.

The seeds that were collected were sown in sandy soil in the following spring (2001) in the succulent section of the Kirstenbosch National Botanical Garden. Germination was rapid and many plants established, some of which were transplanted into the Botanical Society Conservatory in 2002. These have a slow rate of growth, and the first plants flowered in the Conservatory only in 2008 about six years after being planted out. It was also from the plants in the Botanical Society Conservatory from which the artist was able to illustrate the plant in October 2016.

Sakkie van Staden maintained that the species' distribution extends to the Namibian side of the Orange River and one of us (EJV) decided to inspect this at a later stage. Subsequently an expedition was arranged to the Spelonkberge in Namibia in search of *Aloe dabenorisana* Van Jaarsv., which provided the opportunity to investigate for possible *Caesalpinia bracteata* on the farm Naros in Namibia on 25 May 2011. The party consisted of Wessel Swanepoel, Tielman Haumann, Natanya Mulholland, the farm owner (Nico Strauss) and myself (EJV).

We left for the farm Naros (after which the granite type was named) and headed south towards the Orange River. As we approached the farm, Naros granitoid outcrops appeared

as expected, and *Caesalpinia bracteata* was indeed commonly encountered (Figure 2). The plants were again always confined to crevices of Naros granite and growing in association with *Sisyndite spartea* and *Cynanchum (Sarcostemma) pearsonii* N.E.Br. Here *Caesalpinia bracteata* grows mainly on south-facing slopes and are slightly smaller than the Skroef plants. *Caesalpinia bracteata* also grows here as a dense, multistemmed shrub, up to 1 m high, occasionally up to 2 m, with the plants just coming into flower (Figure 3). Young stems are initially green with spines pointing to the ground, turning reddish and blackish as they mature. Older stems die off, but are replaced by resprouting younger branches from the plant base (Figure 4). Young leaves are reddish at first, turning olive-green as they mature. Flowers are an attractive, pinkish colour.

Surprisingly, plants were also recorded by the ecologist Phillip Desmet fairly recently at Pella to the west. These plants were growing in Eastern Gariiep Rocky Desert (Desert Biome) and extending its range further west into the Desert Biome.

Caesalpinia bracteata was assessed for the *Red List of South African plants* and its status assessed as NT D2 (Not Threatened) (Victor et al. 2009).

Caesalpinia bracteata shows horticultural potential for semi-arid to arid gardens and has been introduced into cultivation. Plants given to Kevin Koen more than a decade ago, and planted in his garden at Calitzdorp, Western Cape, flower profusely and have here grown into shrubs of up to 2 m tall. It is best grown in Desert, Succulent Karoo and Nama-Karoo gardens, where frost is not too severe (Van Jaarsveld 2010).



FIGURE 4.—The lower, multistemmed portion of the plant. Note the white prickles. Photograph: E.J. van Jaarsveld.

Description (based on Germishuizen 1991).—Ascending, multistemmed and much-branched shrub, 1–2(–3) m tall. *Branches* renewed from base, at first green, turning reddish and eventually greyish black as plant matures, somewhat longitudinally fissured; young stems terete, puberulous or densely appressed pubescent, becoming glabrous with age and flaking, armed with straight to curving down, white prickles, up to 11 mm long. *Leaves* bipinnate; pinnae 2–4; leaflets 4–6 pairs per pinna, opposite to subopposite, narrowly oblong or oblong elliptic, 3–11 × 2–5 mm, rounded at apex and mucronate, asymmetric basally; young leaves reddish, soon becoming olive-green, glabrous or sparsely puberulous on both surfaces or only along midrib, densely dark gland-dotted on both surfaces; petiole sparsely puberulous, 4–16 mm long; rhachis sparsely puberulous, often prickly at intersection of pinnae pairs. *Inflorescence* a lateral, simple raceme, up to 60 mm long. *Bracts* conspicuous, purple-pink, densely appressed pubescent, broadly suborbicular, aristate with a sharp arista, deciduous as flowers open. *Flowers* hermaphroditic, purple-pink; sepals 5, dark maroon, conspicuously veined on inside, densely grey appressed pubescent, gland-dotted outside, lower sepal larger and cucullate, forming a hood over other sepals; petals 5, free to base, obovate, up to 12 × 8 mm, glabrous or slightly puberulous on outside; stamens 10, up to 10 mm long; filaments pink, white villous for two-thirds from base, glabrous in upper third; anthers brown, dorsifixed, up to 1.5 mm long; ovary glabrous. *Pods* compressed, broadly oblong-ovoid, beaked 15–22 × 10–15 mm, maroon-brown, hard and woody glabrous. *Seed* more or less obovoid, maroon-brown. *Flowering time*: in habitat usually July–April, with good rainfall plants will flower almost throughout the year. Plate 2330.

REFERENCES

- CRAVEN, P. (ed.). 1999. *A checklist of Namibian plant species*. Southern African Botanical Diversity Network Report No. 7. SABONET, Windhoek.
- GERMISHUIZEN, G. 1991. *Caesalpinia bracteata*, a new species from the Onseepkans area of the Northern Cape Province. *Bothalia* 21,2: 152–154.
- GERMISHUIZEN, G. & CONDY, G. 2001. *Caesalpinia rostrata*. *Flowering Plants of Africa* 57: 70–74.
- GLEN, H.F. & GERMISHUIZEN, G. 2010. Botanical exploration of southern Africa, edn 2. *Strelitzia* 26. South African National Biodiversity Institute, Pretoria.
- HENDERSON, L. 2001. *Alien weeds and invasive plants*. Plant Protection Research Institute, Agricultural Research Council, Pretoria.
- HEYWOOD, V.H. (ed.). 1978. *Flowering plants of the World*. Oxford University Press, Oxford.
- JACKSON, W.P.U. 1990. *Origins and meanings of names of South African plant genera*. UCT Ecolab Botany Department, Cape Town.
- LINNAEUS, C. 1753. *Species Plantarum*. Laurentii Salvii, Stockholm.
- MENDELSON, J., JARVIS, A., ROBERTS, C. & ROBERTSON, T. 2002. *Atlas of Namibia*. David Philip Publishers, Cape Town.
- MILLER, R.McG. & SCHALK, K.E.L. 1980. *Geological map of South West Africa/Namibia*. Geological Survey of the Republic of South Africa and South West Africa/Namibia, Pretoria.
- MUCINA, L. & RUTHERFORD, M.C. (eds). 2006. The vegetation of South Africa, Lesotho and Swaziland. *Strelitzia* 19. South African National Biodiversity Institute, Pretoria.
- NKONKI, T. & SWELANKOMO, N. 2003. Fabaceae. In G. Germishuizen & N.L. Meyer (eds), *Plants of southern Africa: an annotated checklist*. *Strelitzia* 14. National Botanical Institute, Pretoria.
- VAN JAARSVELD, E.J. 2010. *Waterwise gardening in South Africa and Namibia*. Struik, Cape Town.
- VAN WYK, A.E. & SMITH, G.F. 2001. *Regions of floristic endemism in southern Africa. A review with emphasis on succulents*. Umdaus Press, Pretoria.

- VICTOR, J.E., DESMET, P. & VAN WYK, A.E. 2009. *Caesalpinia bracteata*. In D. Raimondo, L. von Staden, W. Foden, J.E. Victor, N.A. Helme, R.C. Turner, D.A. Kamundi & P.A. Manyama (eds), Red List of South African plants. *Strelitzia* 25. South African National Biodiversity Institute, Pretoria.
- VISSER, D.J.L. 1984. *Geological map of the Republics of South Africa, Transkei, Bophuthatswana, Venda and Ciskei and the Kingdoms of Lesotho and Swaziland*. Government Printer, Pretoria.

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