

Acacia brevispica and A. schweinfurthii

by

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ABSTRACT

Recently Brenan, in Kew Bull. 21 : 477-480 (1968), upheld *Acacia brevispica* Harms and *A. schweinfurthii* Brenan & Exell as distinct species and recognized two subspecies within *A. brevispica*. These conclusions differ from earlier results published by Ross & Gordon-Gray in Brittonia 18: 44-63 (1966). Consequently it was considered necessary to re-examine these species in preparation for the account of *Acacia* for the Flora of Southern Africa. Distribution maps of the two species are provided and the differences between the species tabulated and discussed. Despite certain difficulties in Natal, Brenan's taxonomic conclusions are adopted. A map showing the distribution of *A. schweinfurthii* and *A. brevispica* subsp. *dregeana* in Natal is provided and a selection of Natal specimens cited.

Recently Brenan, in Kew Bull. 21 (3): 477-480 (1968), discussed *Acacia brevispica* Harms and *A. schweinfurthii* Brenan & Exell in preparation for his account of the Mimosoideae for Flora Zambesiaca. Brenan's taxonomic conclusions are, briefly, that *A. brevispica* and *A. schweinfurthii* are specifically distinct, and that two subspecies are recognizable within *A. brevispica* namely:

- (a) subsp. *brevispica*;
- (b) subsp. *dregeana* (Benth.) Brenan.

The two varieties within *A. schweinfurthii* namely var. *schweinfurthii* and var. *sericea* recognized by Brenan and Exell in Bol. Soc. Brot. sér. 2, 31: 114-5 (1957) were upheld.

Brenan's conclusions differ from those reached by Ross and Gordon-Gray in Brittonia 18: 44-63 (1966) after a study of these two species, with particular reference to Natal. The taxonomic conclusions reached by Ross and Gordon-Gray were, briefly, that *A. brevispica* and *A. schweinfurthii* are not specifically distinct and that three varieties are recognizable within *A. brevispica*, namely:

- (a) var. *brevispica*;
- (b) var. *dregeana* (Benth.) Ross & Gordon-Gray;
- (c) var. *schweinfurthii* (Brenan & Exell) Ross & Gordon-Gray.

The two varieties within *A. schweinfurthii* (in Brenan and Exell's sense) namely, var. *schweinfurthii* and var. *sericea* were not upheld.

Therefore, whilst there is general agreement that three main entities are present, namely, *brevispica*, *dregeana* and *schweinfurthii* there is disagreement about the taxonomic status of each entity. I have also had to come to a decision for the account of the Mimosoideae that is being prepared for the Flora of Southern Africa. It seems therefore necessary to examine the cause of this disagreement. I have been fortunate in having had the opportunity of discussing this matter at some length with Mr. J. P. M. Brenan whilst visiting Kew some years ago.

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The distribution of *A. brevispica* subsp. *brevispica* (the three entities are referred to in accordance with Brenan's conclusions) and of *A. brevispica* subsp. *dregeana* may be seen in Fig. 1, whilst that of *A. schweinfurthii* is given in Fig. 2. *A. brevispica* subsp. *brevispica* occurs in tropical north-east Africa to as far south as central Tanzania and then again in Angola. Subsp. *dregeana* occurs in southern Mozambique, Natal and Pondoland. There is therefore a large geographical discontinuity between the populations of subsp. *brevispica* in central Tanzania and those in Angola. In addition there is a large discontinuity between the populations of subsp. *brevispica* in these two territories and the populations of subsp. *dregeana* in southern Africa. *A. schweinfurthii* occurs in north-east tropical Africa and extends southwards to Mozambique, the Transvaal and Natal. The species is not recorded from Kenya nor Uganda.

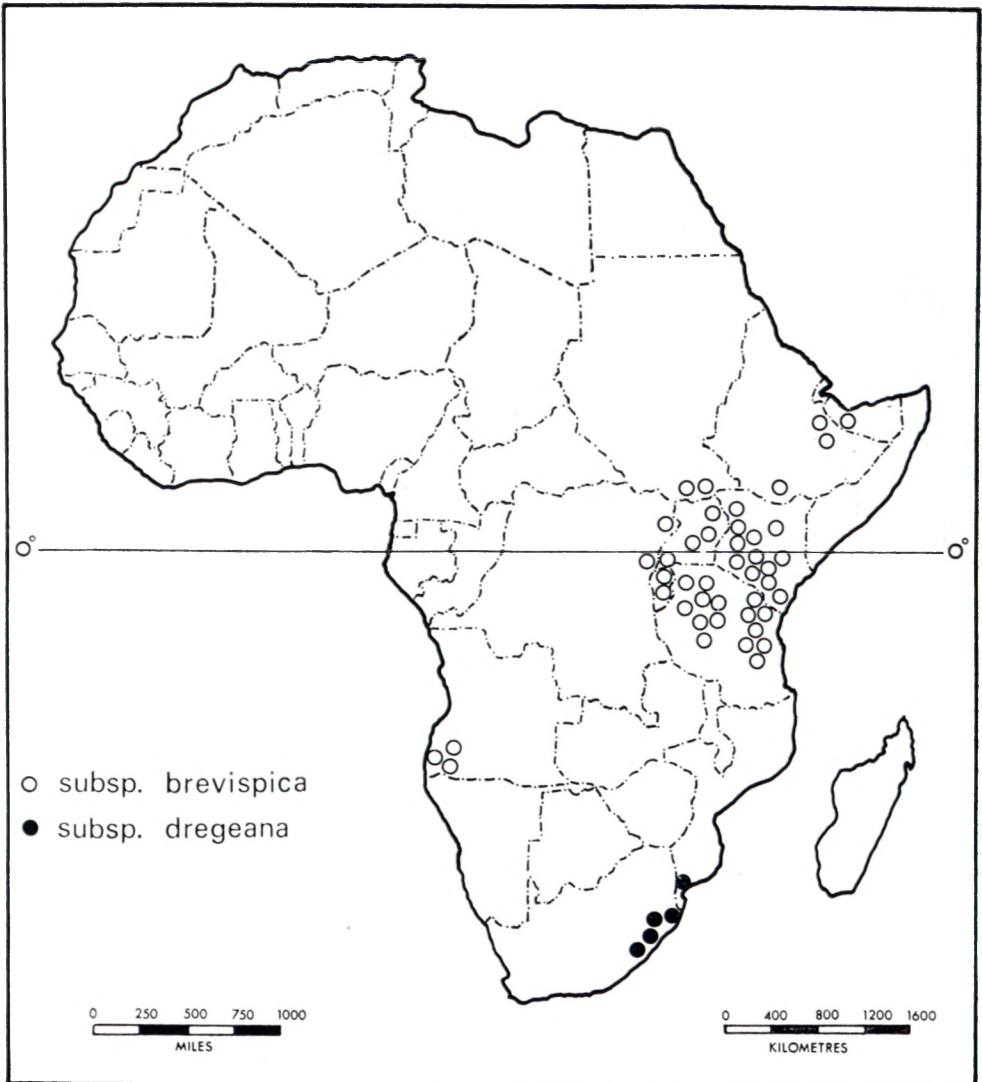


FIG. 1. — The known distribution of *A. brevispica* subsp. *brevispica* and *A. brevispica* subsp. *dregeana* in Africa based upon an examination of herbarium specimens and on information supplied by Brenan & Exell in *Bol. Soc. Brot.*, sér. 2, 31: 99-140 (1957).



FIG. 2. — The known distribution of *A. schweinfurthii* in Africa based upon an examination of herbarium specimens and on information supplied by Brenan & Exell (l.c.) 1957.

A. brevispica and *A. schweinfurthii* form part of a complex of very closely related species (see Brenan & Exell in Bol. Soc. Brot., sér. 2: 99-140, 1957, and Brenan, Fl. Trop. E. Afr. Legum. — Mimos., 1959). In tropical Africa, *brevispica* and *schweinfurthii* are readily distinguishable on the basis of petiole length: in *brevispica* petiole length varies from 0.4–1.3 (–1.5) cm and in *schweinfurthii* from 2.6–3 (–5.5) cm. No difficulty is experienced in referring specimens either to one species or to the other on the basis of petiole length *alone*. However, petiole length in *dregeana* is exceedingly variable, even on a single plant, and ranges from 1–3.5 cm. In southern Mozambique and in Natal, where *dregeana* and *schweinfurthii* both occur, no distinction can be drawn between these two entities on the basis of petiole length.

Similarly rachis length, rachilla length, leaflet length, leaflet width, leaflet spacing, pod length and pod width reflect no discontinuity between *dregeana* and *schweinfurthii* in southern Mozambique and in Natal (see Ross & Gordon-Gray *l.c.*). It is in this area, particularly in Natal, that difficulty is sometimes encountered when attempting to distinguish specimens of *dregeana* and *schweinfurthii*. This difficulty is not experienced in tropical Africa as *dregeana* does not occur there and the difficulty scarcely makes itself felt in southern Mozambique.

There are differences between *dregeana* and *schweinfurthii* and there is general agreement on the characters by which the two entities may be differentiated. The problem essentially is how much significance is to be placed on these differences in reaching a decision concerning the taxonomic status of these two entities. What then are the differences between *dregeana* and *schweinfurthii*?

TABLE 1. — Synopsis of the differences between *brevispica*, *dregeana* and *schweinfurthii*.

<i>brevispica</i>	<i>dregeana</i>	<i>schweinfurthii</i>
Young branchlets grey-brown	Young branchlets grey-brown	Young branchlets olive-green to olive-brown
Indumentum on young branchlets and rachides spreading and exceeding the glands	Indumentum on young branchlets and rachides shortly appressed-pubescent, pubescence shorter than the glands	Young branchlets puberulous when young
Petiole 0.4—1.5 cm long	Petiole 0.5—3.5 cm long	Petiole 2.6—5.5 cm long
Petiole gland 1.5—3.0 mm long, sometimes absent	Petiole gland 0.5—1.5 mm long, sometimes absent	Petiole gland humped, 1—1.8 mm long, sometimes 2 glands present or gland absent
Leaflets 0.5—1.25 mm wide; with conspicuous whitish often spreading marginal cilia, glabrous abaxially apart from the cilia	Leaflets 0.6—1.2 mm wide; usually with short inconspicuous marginal cilia, abaxial surface usually densely appressed-pubescent, sometimes only portion of the leaflet sparingly appressed-pubescent or occasionally entire leaflet glabrous	Leaflets 0.8—2 mm wide; with conspicuous whitish appressed marginal cilia, invariably glabrous abaxially apart from the cilia (very few specimens with appressed-pubescent are referable to var. <i>sericea</i>)
Pods puberulous, glandular	Pods puberulous, glandular	Pods glabrous or almost so, glandular

Ross & Gordon-Gray (*l.c.*: 59) stated that: "The only observed differences (between *dregeana* and *schweinfurthii*) are in leaflet and pod pubescence, number, position, and to some extent, shape of petiolar glands and colouration of young twigs". Brenan in Kew Bull. 21: 479 (1968) uses these same characters to distinguish *dregeana* and *schweinfurthii*. Re-examination of all available specimens has not revealed any additional useful characters (see Table 1).

Brenan in Kew Bull. 21: 479 (1968) enumerates in some detail the differences between *brevispica* and *dregeana*. These two entities are quite readily distinguished and it is unlikely that any difficulty will be experienced in referring specimens to either entity, particularly in view of the large geographical discontinuity between the two.

Whilst working on *dregeana* and *schweinfurthii* in Natal prior to the publication of the paper in Brittonia, it was felt that *dregeana* bridged the gap between *brevispica* and *schweinfurthii* in respect of petiole, rachis and rachilla length, leaflet length and width, leaflet spacing, pod length and width, and that the characters enumerated in Table 1 were not sufficiently distinctive to enable *brevispica* and *schweinfurthii* to be maintained as distinct species. Brenan (Kew Bull. 21: 479, 1968) contends that "this wide range of petiole-length (and presumably the other characters) is characteristic of *dregeana*, and that *dregeana* is a taxon more distinct from typical *A. brevispica* and *A. schweinfurthii* than implied by Ross & Gordon-Gray . . .". Brenan (*l.c.*) continued "a case may be made out for considering *dregeana* as a species distinct both from *A. schweinfurthii* and *A. brevispica*, but this does not seem to be really justified since, in general appearance and characters, *dregeana* is so very close to *A. brevispica*". Little would be achieved by giving *dregeana* specific status since the problem of satisfactorily differentiating *dregeana* and *schweinfurthii* remains irrespective of the taxonomic rank held by *dregeana*.

The distinguishing criteria between *dregeana* and *schweinfurthii* are essentially differences in the colour of the young branchlets, differences in the degree of pubescence of the young branchlets, leaflets and pods and, to a lesser extent, in leaflet size. Differences in the degree of pubescence are often difficult to evaluate. For example, it may be difficult to establish whether a young branchlet is puberulous or whether it is shortly appressed-pubescent. Although all of the above characters must be used in conjunction, the pubescence of the lower leaflet surface seems to offer the most promising character in distinguishing *dregeana* from *schweinfurthii*. In *schweinfurthii* the leaflets are invariably glabrous abaxially apart from the appressed marginal cilia. Very few specimens with appressed-pubescence on the abaxial leaflet surface (referred to var. *sericea* Brenan & Exell) have been recorded throughout the species range. In *dregeana* the abaxial leaflet surfaces are either densely appressed-pubescent throughout or else the pubescence is confined to a portion of the surface. Sometimes, and particularly in the middle reaches of the Tugela River, for example Ross 184 (NU) from near Keats Drift, and on the Lebombo mountains in Zululand, for example Ross 305, 1175 (NH, NU), the leaflets are entirely glabrous or have only a few inconspicuous marginal cilia. Specimens of var. *sericea* with their appressed-pubescent abaxial leaflet surfaces may prove difficult to distinguish from *dregeana* on this character but identification should be possible by using the other characters.

On the basis of the characters enumerated in Table 1 most specimens from southern Mozambique and from Natal can be fairly readily sorted. However, some specimens do create difficulties and it is sometimes debatable whether they are robust specimens of *dregeana* or depauperate specimens of *schweinfurthii*.

One specimen in particular, namely Ross 874 (NU) from just south of Mandini near the Tugela river, is difficult to place with certainty. The specimen, which was growing in a thicket of *schweinfurthii*, has densely appressed-pubescent abaxial leaflet surfaces and densely puberulous, glandular pods similar to those of *dregeana*. In general facies the specimen resembles *schweinfurthii* and although not typical of *schweinfurthii* is probably best placed in *schweinfurthii*.

In deciding to sink *A. schweinfurthii* under *A. brevispica* (Ross & Gordon-Gray, *l.c.*) a certain amount of reliance was placed on Brenan and Exell's comment (*l.c.*: 115) that three specimens from central and southern Tanzania (two of which were examined) "are perhaps crosses between *A. brevispica* and *A. schweinfurthii*, having longer petioles and rather smaller heads than the former and narrower leaflets than the latter". It was felt that these specimens pointed to the occurrence of intermediates in east Africa similar to the situation prevailing in Natal. Now Brenan in Kew Bull., *l.c.*: 478 has stated: "The three possible hybrids mentioned by Brenan & Exell in Bol. Soc. Brot., sér. 2, 31: 115 (1957) are very dubious. Two of them, from Lindi District in Tanzania, are outside the range of typical *A. brevispica* and are more likely to be poor specimens of *A. taylorii* Brenan & Exell, at that time imperfectly known". Whilst these specimens may well be *A. taylorii* this prevailing uncertainty does nevertheless illustrate how difficult it is to identify some of the species within this complex with certainty. Examination of specimens and of the keys to the identification of the species within this complex provided by Brenan & Exell (*l.c.*) and by Brenan (*l.c.*, 1959) reveals how closely related many of the species are and on what slender grounds some of the species are recognized.

A decision concerning the taxonomic status of *dregeana* and *schweinfurthii* must be seen against the background of all the African species within this complex. For almost its entire range of distribution *schweinfurthii* is an easily recognizable species. It is only near its southern limit of distribution in Natal that *schweinfurthii* is sometimes confused with *dregeana*. Natal, a small province comprising only 8% of the area of the Republic of South Africa, forms a very small part of the distributional range of *schweinfurthii*. The occurrence of the characteristically variable *dregeana* at the southern limit of distribution of this complex of species need not therefore prevent *brevispica* and *schweinfurthii* from being maintained as distinct species, even although they are very closely related. Consequently I am prepared, albeit somewhat hesitantly, to follow Brenan's decision to regard *dregeana* and *schweinfurthii* as belonging to different species even although the differences between them are at times rather ill-defined, and although difficulties will sometimes be experienced when attempting to identify specimens. With *A. brevispica* and *A. schweinfurthii* now established as distinct species subspecific status is the correct taxonomic rank for *dregeana* within *A. brevispica*.

The distribution of *A. schweinfurthii* and of *A. brevispica* subsp. *dregeana* in Natal is seen in Fig. 3. *A. schweinfurthii* is typically coastal in distribution and plants usually grow on the margin of riverine forest or in riverine fringing vegetation. *A. brevispica* subsp. *dregeana* is found more commonly in the interior and plants thrive in dry thornveld and in the dry scrub of the interior river valleys. There is apparently a fairly large geographical discontinuity between the population in the Umkomaas valley near Richmond and the plants in Pondo-land, the latter being the type locality of subsp. *dregeana*.

As a consequence of its preference for moister situations, plants of *A. schweinfurthii* appear more robust and verdant in the field. The flowers of *A. schweinfurthii* are frequently in larger and more open terminal panicles than in the

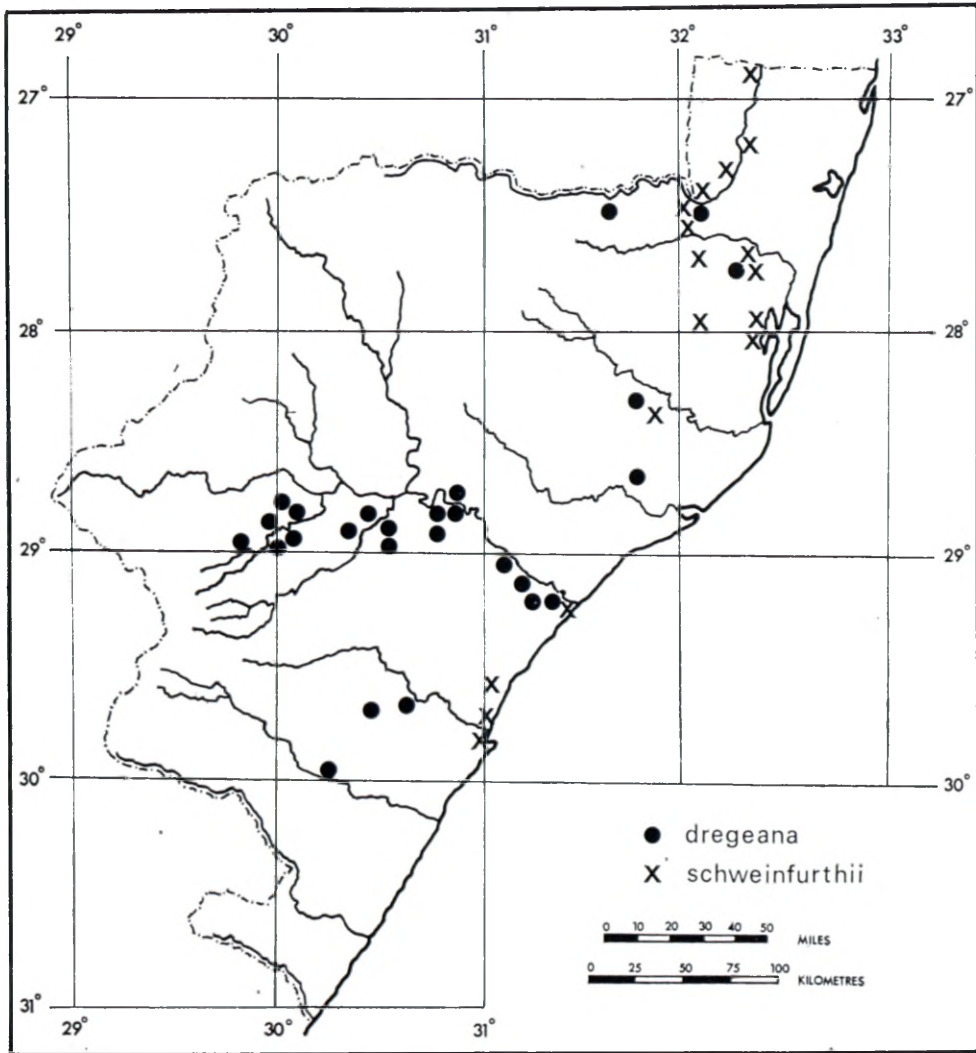


FIG. 3. — The known distribution of *A. brevispica* subsp. *dregeana* and *A. schweinfurthii* in Natal based upon field studies and an examination of herbarium specimens.

case of *A. brevispica* subsp. *dregeana*. The pods of *A. brevispica* subsp. *dregeana* dehisce quite readily whilst those of *A. schweinfurthii* are usually only tardily dehiscent or at times apparently indehiscent.

In view of the past confusion within this complex in Natal the opportunity is taken of citing a selection of the Natal material.

***A. brevispica* Harms subsp. *dregeana* (Benth.) Brenan**

NATAL. — 2731 (Louwsburg): 1 km from Pongola bridge on Magudu road (—BC), Edwards 3187 (NU, PRE). 2732 (Ubombo): Ingwavuma (—AA), Moll & Strey 4021 (NH); Majozini, approx. 5 km S. of Pongola Poort (—AC), Ward 3917 (NH, NU); Mkuze Game Reserve (—CB), Ward 3504 (NH, NU). 2830 (Dundee): Mngwenya valley, river crossing on Weenen-Middelrest road (—CC), Edwards 2811 (NU); Muden (—CD), Sim 19082 (NU);

24 km from Greytown on Keats Drift road (—DC), *Ross 184* (K, NH, NU); Jamesons Drift (—DD), *Ross 834* (NH, NU). 2831 (Nkandla): Umfolozi Game Reserve, bank of White Umfolozi river (—BC), *Ross 2029* (NH, PRE). 2929 (Underberg): Estcourt Pasture Research Station (—BB). *Acocks 9893* (NH). 2930 (Pietermaritzburg): Ashburton (—CB), *Ross 443* (K, NH, NU); 16 km from Richmond on Ixopo road, Umkomaas valley (—CD), *Ross 116* (NH, NU); 2.5 km S.E. of pumping station on Nagle Dam road, Umgeni valley (—DA), *Ross 246* (K, NH, NU). 2931 (Stanger): opposite Nembe river confluence, Lower Tugela valley (—AB), *Edwards 3045* (NH, PRE).

A. schweinfurthii *Brenan & Exell* var. *schweinfurthii*

NATAL. — 2632 (Bela Vista): Ndumu Game Reserve, near Banzi Pan (—AB), *Ross 697* (K, NH, NU). 2732 (Ubombo): Mkuze bridge, 3 km N. of Mkuze on Candover road (—CA), *Ross 1022* (K, NH, NU); Mkuze Game Reserve, Fig Park (—CB), *Ross 310* (K, NH, NU); False Bay Park (—CD), *Ross 2326* (NH, PRE). 2831 (Nkandla): Umfolozi Game Reserve, Matshamshlope (—BD), *Downing 561* (NH, NU); Heatonville (—DB), *De Waal 39203* in NH. 2832 (Mtubatuba): Hluhluwe Game Reserve (—AA), *Ward 1835* (NH, NU). 2931 (Stanger): 45 km from Kranskop on Mapumulo valley road (—AA), *Moll 924* (NU); 3 km S. of Mandini on old main road (—AB), *Ross 872* (NH, NU); Verulam (—CA), *Ross 167* (K, NH, NU); 1.5 km N. of Virginia Airport (—CC), *Ross 484* (NU).