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A TAXONOMIC REVISION OF THE GENUS
MELIANTHUS L. (MELIANTHACEAE)

OCTOBER 1981

HONOURS PROJECT

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DEPARTMENT OF BOTANY

UNIVERSITY OF CAPE TOWN

ABSTRACT:-

In the genus Melianthus L. , six species and two subspecies are recognized. The usefulness of vegetative and floral characteristics for species delineation is reviewed.

ACKNOWLEDGEMENTS:-

An acknowledgement is due to Professor E.A.C.L.E. Schelpe for his supervision, advice and patience. This project is supported by C.S.I.R. funding.

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INTRODUCTION:-

The name Melianthus is compounded from the Greek words μέλι meaning honey and άνθος meaning flower. Hence species of Melianthus are known as "Honey flowers", undoubtedly because of the copious nectar that is produced.

Melianthus was introduced into Europe during the seventeenth century. Hermann (1687) gives the date of introduction of Melianthus from the Cape of Good Hope by Thomas Bartholin into Holland as 1672. He quotes the reference of Bartholin's (Act. Hafn. 2:58 (1673)). Edwards (1815) puts the date of introduction at 1673.

Commelin (1706) described and illustrated Melianthus Africanus minor foetidus (Melianthus comosus Vahl.) from his medicinal garden. Tournefort (1719) published an illustration and comprehensive description of Melianthus, to be followed by Linnaeus in 1735. The exact date of introduction of Melianthus major L. into Germany is unknown but Stapf (1930) quotes the reference of Kniphof (Herb. 5,4:2,t711(1761)) indicating the presence of the plant by 1761 . Vahl (1794) indicates M. comosus being cultivated in the botanical garden in Rome.

From Holland in 1688 M. major was taken to Bishop Compton in Britain (Ray 1688, Aiton 1812, Chittenden 1951). This date of introduction has been accepted in preference to 1690 when the plant was first sent to Mr Bentick who later became Lord Portland (Aiton 1789).

By 1696 Melianthus minor L. was in cultivation in Britain, M. comosus by 1708 and Melianthus pectinatus Harv. by 1879 (Chittenden 1951, Hooker 1873).

Melianthus himalayanus Planchon was described in 1851 from the Kumaon district in India. Hooker (1873) after studying the type specimen, Wallich 1190, and a similar specimen, Hohenacker 1059 (under Wallich's name) collected from Nilghiri in southwestern India, regards this species as conspecific with M. major. Coulston and Bailey (1916) support this. Hooker and Thomson (1855) state that M. major was taken to India as a garden plant from the Cape of Good Hope and subsequently escaped from cultivation.

Kuntze (1893) records M. major from South America. He suggests that it escaped from gardens and then spread along the Rio Santa Rosa in Cochabamba, Bolivia. Stapf (1930) refers to Gubb (Fl. Algeria : t94 (1909)) indicating its presence in North Africa. Aplin (1972) makes reference to the presence of M. major and M. comosus in Australia.

CRITERIA FOR THE DELINEATION OF SPECIES:-

STIPULE NUMBER:-

In five of the six species of Melianthus, the stipules are always paired while in M. major there a single solitary stipule. This character is constant and is diagnostic for M. major.

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NUMBER OF LEAFLETS:-

The number of leaflets is equally variable within and between species (see table 1). The overlap between the number of leaflets of the different species, decreases the usefulness of this character in separating species.

TABLE 1:- The number of leaflets of the different species.

<u>SPECIES</u>	<u>NUMBER OF LEAFLETS</u>
<u>major</u>	9 - 17
<u>villosus</u>	9 - 15
<u>pectinatus</u> ssp. <u>pectinatus</u>	11 - 27
<u>pectinatus</u> ssp. <u>gariëpinus</u>	7 - 9
<u>minor</u>	5 - 13
<u>comosus</u>	5 - 13
<u>dregeanus</u> ssp. <u>dregeanus</u>	5 - 11
<u>dregeanus</u> ssp. <u>insignis</u>	9 - 15

In one instance, at the subspecific level, leaflet number is of some value to distinguish the two subspecies. These are Melianthus pectinatus Harv. ssp. pectinatus which has 11 - 27 leaflets and Melianthus pectinatus Harv. ssp. gariëpinus (Merxm. and Roessler) Tansley which has 7 -9 leaflets. Even this not a clearcut difference nor is it a topocline (see fig. 1.

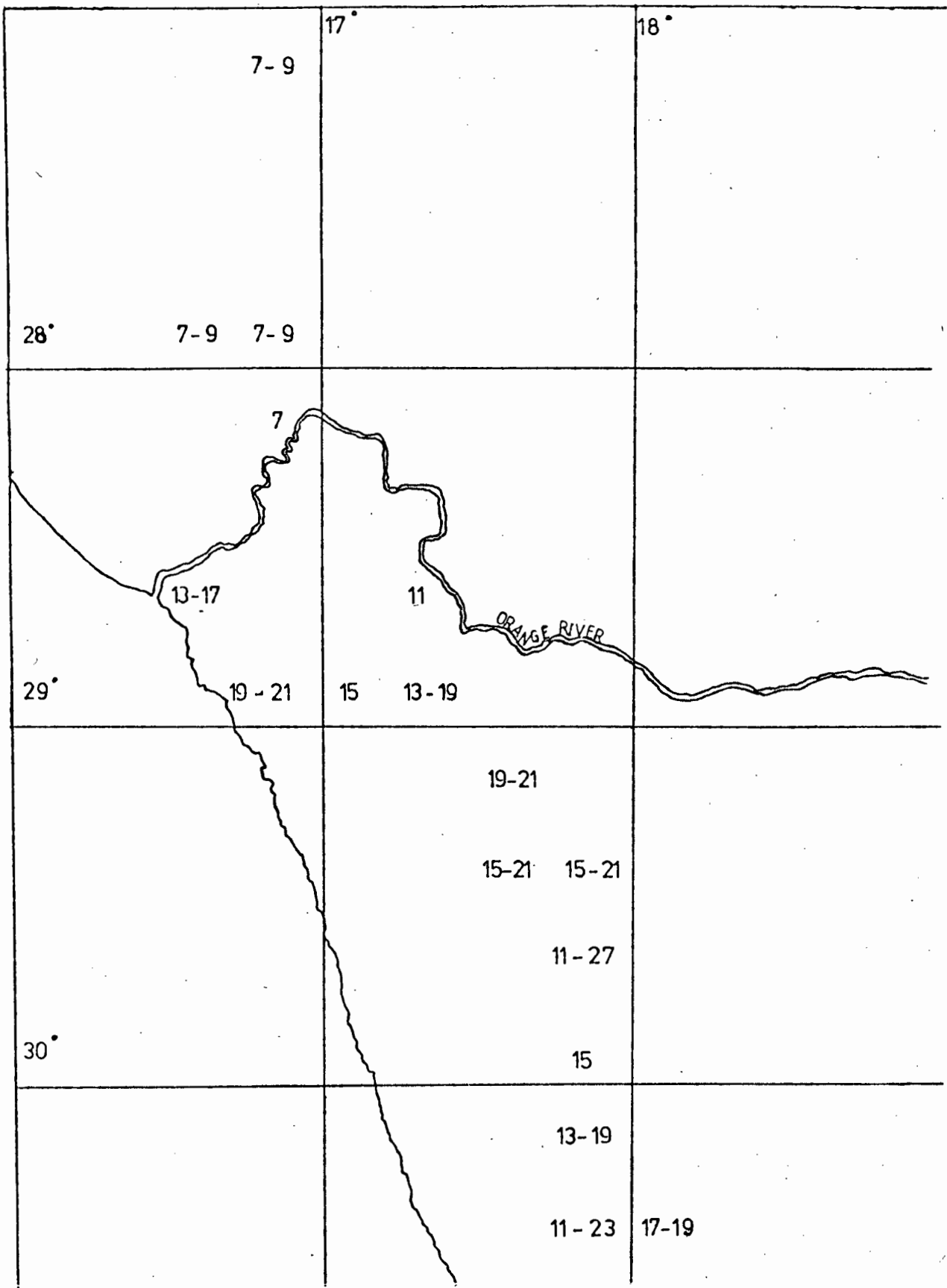


Fig. 1 :- The number of leaflets in *M. pectinatus*; ssp. *pectinatus* south of the Orange River, ssp. *gariepinus* north of the Orange River.

MARGINS OF LEAFLETS:-

The margins of all species vary from serrate to dentate. There are slight differences between the species sometimes, sometimes not. M. pectinatus was originally described by Harvey (1860) as being easily distinguished by the quite entire leaflets. Merxmüller and Roessler (1968) then used this characteristic as being relevant in delineating Melianthus qariepinus (Merxm. and Roessler) separately from M. pectinatus as M. qariepinus has dentate margins (see fig. 2). M. pectinatus ssp. pectinatus does not always have entire margins, instead a range from sinuate to dentate is observed (see fig. 2). When water-stressed or poorly mounted, margins of the leaflets tend to roll under so that they appear to be entire. Margin shape is thus invalidated as a diagnostic character. It contributes to the invalidation of separating M. pectinatus ssp. qariepinus from M. pectinatus ssp. pectinatus at the specific level.

THE PATTERN OF HAIRINESS ON THE LEAFLETS:-

The pattern of hairiness on the leaflets differs slightly between some species and more markedly between others (see table 2). M. major stands apart from the other species in that it always is glabrous while the other species have various patterns of stellate hairs. Although not a good diagnostic character, the pattern of hairiness can be used to identify some species when no flower or fruit material is present. Here table 2 is of some use.

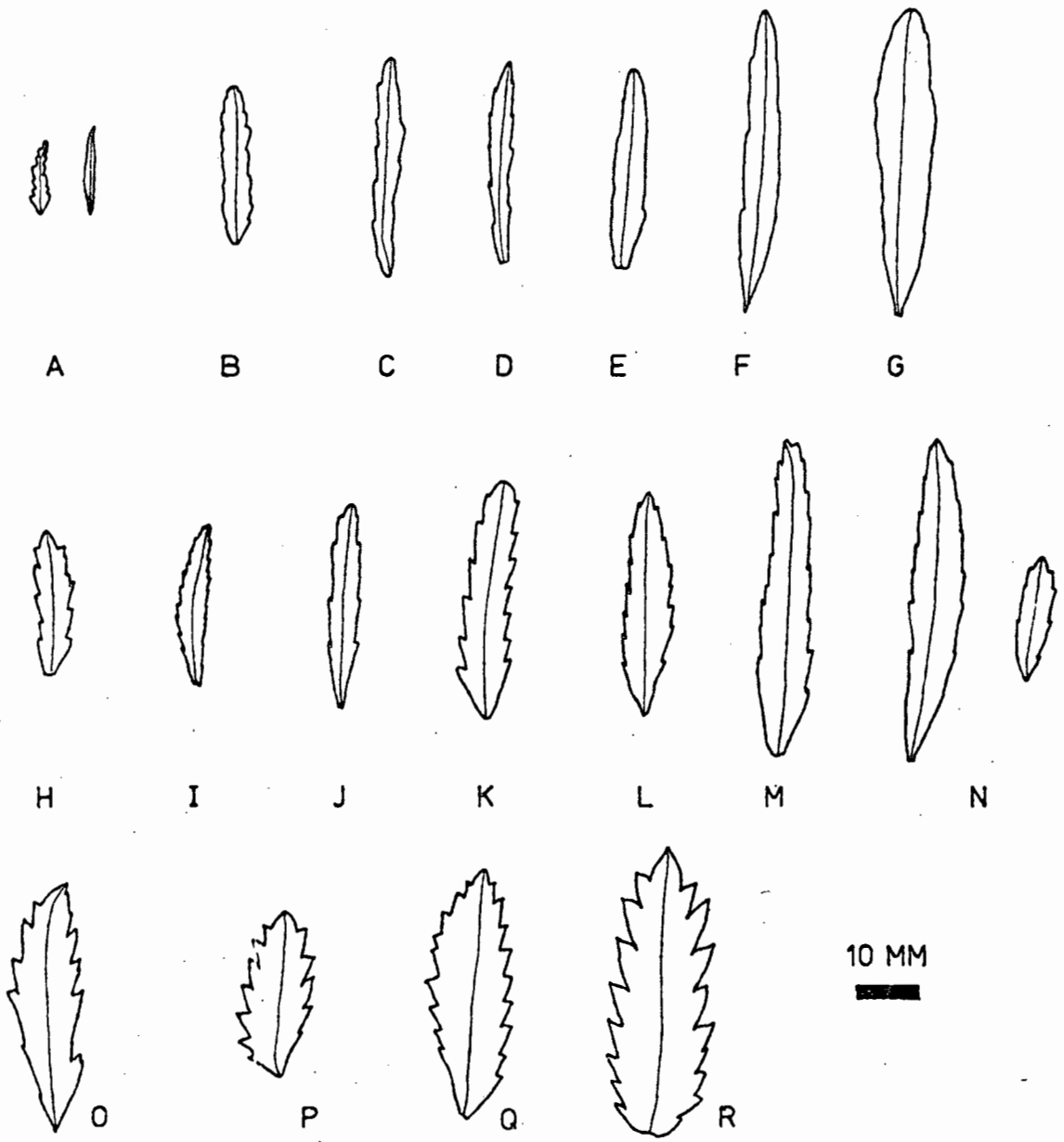


Fig. 2 :- Leaflet outlines of M. pectinatus. A-N ssp. pectinatus. O-R ssp. gariepinus. A) Pillans 5558; B) Leistner 3387; C) Pienaar 984; D) Schlieben 9057; E) Rösch & le Roux 510; F) Robbertse 1175; G) v.d. Schijft 6984; H) Pillans 537; I) Eliovson 13; J) Bolus 9485; K) Theron 1290; L) v. Jaarsveld; M) Verdoorn & Dyer 1817; N) Lewis s.n. SAM 63551; O) de Winter & Giess 6416; P) Merxmüller & Giess 12942; Q) Giess 12942; R) Merxmüller & Giess 3402.

TABLE 2:- The pattern of hairiness of the leaflets.

<u>SPECIES</u>	<u>HAIRINESS ON LEAFLETS</u>
<u>major</u>	UPPER SURFACE glabrous. LOWWER SURFACE glabrous.
<u>villosus</u>	UPPER SURFACE densely stellately haired. LOWWER SURFACE dense to very dense mat of stellate hairs.
<u>pectinatus</u> ssp. <u>pectinatus</u>	UPPER SURFACE stellately hairy over veins which are sunken. Odd scattered hairs over blade. LOWWER SURFACE dense mat short stellate hairs with large emergent stellate hairs.
<u>pectinatus</u> ssp. <u>gariëpinus</u>	UPPER SURFACE stellate hairs scattered over blade but denser over veins. LOWWER SURFACE as for ssp. <u>pectinatus</u>
<u>minor</u>	UPPER SURFACE occasional stellate hairs overs veins, sometimes absent. LOWWER SURFACE dense mat of stellate hairs.
<u>comosus</u>	UPPER SURFACE stellate hairs scattered, occasionally dense covering.

TABLE 2:- (continued)

<u>SPECIES</u>	<u>HAIRINESS ON LEFLETS</u>
<u>comosus</u>	LOWWER SURFACE small stellate hairs form a very dense mat and long stellate hairs forming a taller and slightly less dense covering than the short hairs.
<u>dregeanus</u> ssp. <u>dregeanus</u>	UPPER SURFACE even, fairly sparse covering of medium sized stellate hairs. LOWWER SURFACE dense mat of small stellate hairs.
<u>dregeanus</u> ssp. <u>insignis</u>	UPPER SURFACE even to dense covering stellate hairs. LOWWER SURFACE mat of short stellate hairs, sometimes a few scattered large stellate hairs.

THE POSITION OF THE INFLORESCENCE:-

The inflorescence is either terminal or more usually subterminal or axillary. In Melianthus villosus Bolus the inflorescence is usually terminal. In M. major it is terminal or axillary. In the remaining four species the inflorescence is most commonly axillary. This intercredation between species makes inflorescence position of little value in delineating species.

In two species M. major and M. villosus the racemes are always erect. In the four other species the position of the raceme varies from erect to lateral to pendulous within each species. M. pectinatus usually has an erect raceme and Merxmüller and Roessler (1968) used this to aid their separating M. qariepinus, which usually has a pendulous raceme from M. pectinatus. The herbarium material examined showed a range from erect to pendulous racemes in M. pectinatus, with the racemes of M. pectinatus ssp. qariepinus almost always pendulous. The stance of the raceme is therefore of no diagnostic value.

INSERTION OF THE FLOWERS ON THE PEDUNCLE:-

The flowers are either alternate or in whorls of two to four. In M. comosus and M. dregeanus Sond. (both subspecies) the flowers are always alternate. In the other four species the flowers are always whorled. This is a diagnostic key character.

SHAPE OF THE ODD SEPAL:-

In two species, M. comosus and M. dregeanus (both subspecies), the odd sepals are of similar shape (see fig.3). In M. pectinatus the odd sepal has an acuminate apex and at just under half its length, two small laterally situated secondary apes (see fig. 3). In M. minor the odd sepal differs from that of M. pectinatus by having the lateral apes two thirds of the length of the central apex (see fig. 3). In distinguishing these two species, this character is useful but not necessarily diagnostic. Odd sepal shape

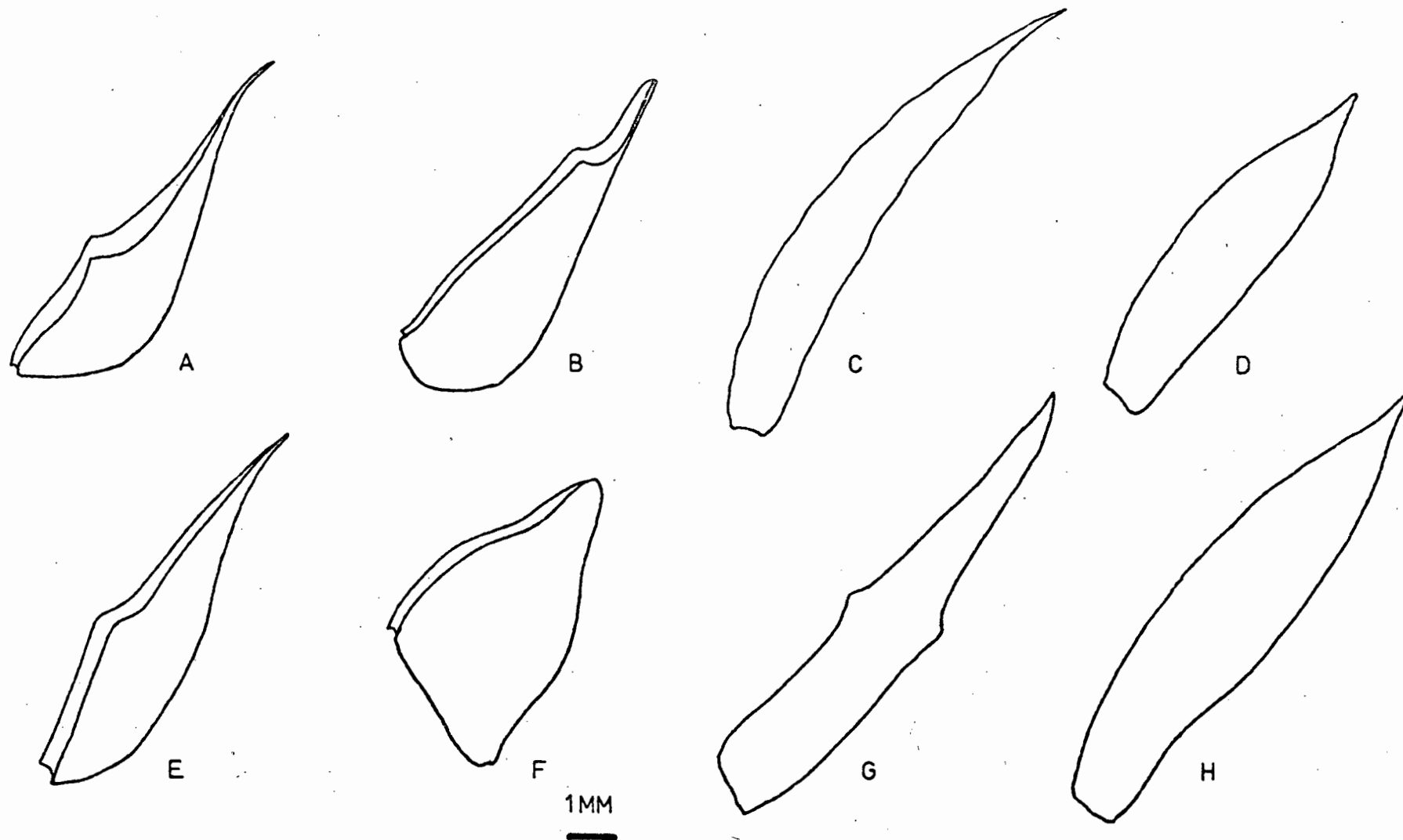


Fig. 3:- Odd sepal shapes. A, B, E & F are lateral view, C, D, G & H are dorsal view. A) M.pectinatus ssp. pectinatus, v.Jaarsveld 138; B) M.minor, Leighton 574; C) M.comosus, Smith 433⁹; D) M.dregeanus ssp. dregeanus, Peqler 811; E) M.pectinatus ssp. cariepinus, Giess 12942; F) M.major, Hanekom 1184; G) M.villosus, Killick 11211; H) M.dregeanus ssp. insignis, Thode s.n. NH 16466.

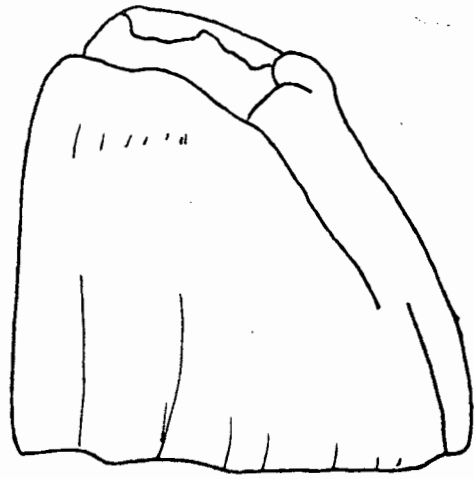
therefore has some use in distinguishing species, particularly when coupled with other characteristics. As there are on occasions, intermediate odd sepal shapes, this character is not of primary diagnostic importance.

THE LENGTH OF THE PETALS RELATIVE TO THE LENGTH OF THE ODD SEPAL:-

Phillips and Hofmeyer (1927) made extensive use of this character to distinguish the species. It can be seen from table 3 that this character is clearcut in separating some similar species. Such an example is M. pectinatus where the petals are one and a half times the length of the odd sepal and M. minor where the petals are four times as long as the odd sepal. M. comosus has petals equalling the odd sepal length while M. dregeanus, similar in many respects to M. comosus, has petals one and a half times shorter than the odd sepal. This character shows no distinction between M. major, M. villosus and M. comosus (see table3). This character is only diagnostic in some cases.

THE SHAPE OF THE NECTARY:-

The nectary of M. villosus is distinctive with the two lateral lobes being expanded into wings (see fig. 4). Likewise the nectary of M. dregeanus is always long and narrow (see fig. 4). This is so for both the subspecies although the peripheral lobes can vary. M. major always has a nectary which is a deep cup (see fig. 4). The nectary shape is diagnostic for these species but for the remaining three species the nectary shapes are more variable. This limits the diagnostic value of nectary shape.



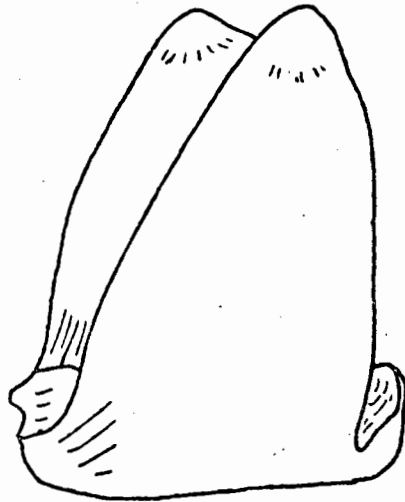
A



B



C



F



D



E



G

1 MM



H

Fig. 4 :- Lateral view of nectaries. A) M.major, Hanekom 1184; B) M.minor, Leighton 574; C) M.comosus, Smith 4339; D) M.dregeanus ssp. dregeanus, Peqler 811; E) M.dregeanus ssp. insignis, Thode s.n. 16466; F) M.villosus, Killick 1211; G) M.pectinatus ssp. pectinatus, Verdoorn & Dyer 1817; H) M.pectinatus ssp. gariepinus, Giess 12942.

TABLE 3 :- The ratio of petal length to odd sepal length.

<u>SPECIES</u>	<u>PETAL/SEPAL LENGTH</u>	
	<u>RATIO</u>	
<u>major</u>	1 : 1	petals = sepal
<u>villosus</u>	1 : 1	petals = sepal
<u>comosus</u>	1 : 1	petals = sepal
<u>dregeanus ssp. dregeanus</u>	1 : 1.5	petals > sepal
<u>dregeanus ssp. insignis</u>	1 : 1.5	petals > sepal
<u>pectinatus ssp. pectinatus</u>	1.5 : 1	petals < sepal
<u>pectinatus ssp. qariepinus</u>	1.5 : 1	petals < sepal
<u>minor</u>	4 : 1	petals < sepal

TABLE 4:- The number of ovules per locule.

<u>SPECIES</u>	<u>NUMBER OF OVULES PER LOCULE</u>
<u>major</u>	4 - 6
<u>villosus</u>	4 - 6
<u>dregeanus ssp. dregeanus</u>	2
<u>dregeanus ssp. insignis</u>	2
<u>minor</u>	4
<u>pectinatus ssp. pectinatus</u>	4
<u>pectinatus ssp. qariepinus</u>	2
<u>comosus</u>	2

THE NUMBER OF OVULES:-

For most of the species, but not M. major nor M. villosus, the number of ovules per carpel is constant (see table 4).

It must be noted that here the number of ovules in the young flower are being considered and not the seeds in the fruit as seldom do all the ovules of the carpel mature. This characteristic is diagnostic. It is particularly useful for distinguishing

M. pectinatus ssp. pectinatus (four ovules per carpel)

from M. pectinatus ssp. qariepinus (two ovules per carpel).

Unfortunately this characteristic does not separate M. comosus from either subspecies of M. dregeanus as they both have 2 ovules per carpel.

THE FRUIT:-

The fruit is useful diagnostically. It is perhaps the single most valuable character as can be seen in table 5. A combination of table 4 and 5 is adequate to diagnose all the species. Table 5 alone does not separate M. comosus from M. villosus.

TABLE 5 :- The fruit characters of the different species.

<u>SPECIES</u>	<u>CHARACTERISTICS OF FRUIT</u>
<u>major</u>	membraneous, acutely four winged, glabrous
<u>villosus</u>	membraneous, acutely four winged, pilose
<u>comosus</u>	membraneous, acutely four winged, pilose
<u>pectinatus</u> ssp. <u>gariepinus</u>	membranous, acutely four winged, glabrous
<u>pectinatus</u> ssp. <u>pectinatus</u>	membraneous to parchment-like, acutely four winged, glabrous
<u>minor</u>	woody, occasionally parchment-like, four winged, not acutely so, pilose
<u>dregeanus</u> ssp. <u>dregeanus</u>	woody, four rounded lobes, pilose
<u>dregeanus</u> ssp. <u>insignis</u>	woody, four rounded lobes, pilose

TAXONOMY:-

MELIANTHUS

Meliantanthus L., Sp. Pl. 2: 639 (1753); Gen. Pl. 114 (1737);
 Endl., Gen. Pl. 1165 (1840); Planchon in Trans. Linn. Soc.
 Lond. 20, 3 : 403 (1851); Sond. in Fl. Cap. 1 : 366 (1859);
 Benth. & Hook. f., Gen. Pl. 1 : 411 (1867); Harv., Gen. Pl.
 ed. 2 : 61 (1868); Gürke in Pflanzenfam. 3,5 : 380 (1895);
 Thonner, Flow. Pl. Afr. : 342 (1915); Coulston & Bailey in
 Bailey, Cycl. Hort. : 2024 (1916); Phillips and Hofmeyer in
 Bothalia 2 : 351 (1927); Dyer, Gen. 344 (1975). Type species:
M. major L.

Diplerisma Planchon in Trans. Linn. Soc. Lond. 20,3 : 403
(1851).

Shrub. Leaves alternate, stipulate, petiolate, imparipinnate. Rachis winged. Pinnae 5-27, unequal in size, lanceolate, revolute, sinuate to dentate, glabrous or with stellate hairs. Inflorescence a raceme. Flowers on pedicels, bractate, on upper third of peduncle, alternate or whorled, resupinate (180°), zygomorphic. Calyx 5 merous, 4 lanceolate lateral sepals, 1 odd sepal. Petals 4, linear, acuminate, displaced anteriorly during anthesis, to lie around the horseshoe-shaped nectary, connivent, curly hairs of margin tangled in with hairs of adjoining margin, 2 posterior margins free. Nectary anteriorly placed between petals and 2 anterior stamens, nectar copious. Stamens 4, alternate to posterior petals, didynamous, posterior 2 taller and free, anterior 2 joined for a third of their length, sometimes a staminode lies between 2 anterior stamens. Anthers introse, longitudinal dehiscence, anterior pair becoming extrose as they extend. Ovary 4 fused carpels, 2-6 ovules per carpel in 2 axile rows, funiculate, not all ovules maturing. Style terete, 4 stigmatic regions at apex. Fruit 4 winged or lobed, membranous or woody, glabrous or pilose, style persistent, dehiscence along upper margins. Seeds roundish, black, glabrous, shining.

Species 6, endemic to South Africa, Lesotho and Namibia/
South West Africa.

A number of authors, for example Planchon (1851), indicate the presence of a vestigial or aborted fifth petal posteriorly. In the material examined no vestige of a petal nor a vascular trace in this region could be found.

All species of Melianthus have been used by the indigenous peoples of South Africa as cures for snakebites, rheumatism, sores, bruises and gallsickness in goats (Steyn 1934). Experiments have shown that all species are toxic to live stock (Watt & Breyer-Brandwijk 1962). The toxin is likely to be a saponin. The honey made from Melianthus nectar is reputed to be poisonous.

KEY TO SPECIES

Stipules solitary ; leaflets glabrous1. M. major

Stipules paired; leaflets canescent:

Flowers whorled:

Inflorescence terminal; petals equalling length
of odd sepal.....2. M. villosus

Inflorescence subterminal; petals longer than
odd sepal:

Fruit glabrous, membranous or parchment-like;
petals 1.5 times length odd sepal:

Leaf margins sinuate to serrate; leaflets
11-27; 4 ovules per carpel.....

.....3a. M. pectinatus ssp. pectinatus

Leaf margins deeply dentate; leaflets
7-9; 2 ovules per carpel.....

.....3b. M. pectinatus ssp. gariepinus

Fruit pilose, woody; petals 4 times length
odd sepal.....4. M. minor

Flowers alternate:

Fruit acutely winged, membranous, longer than
wide;5. M. comosus

Fruit with rounded lobes, woody, wider than
long:

Stipules 7-14mm long by 1-2 mm wide; leaves
up to 130 mm long; leaflet margins serrate;
even covering of stellate hairs on dorsal
surface of leaflets, dense mat of stellate
hairs on ventral surface of leaflets; fruit
5 mm long.....6a. M. dregeanus ssp. dregeanus

Stipules 20-35 mm long by 2-3 mm wide;
leaves up to 180 mm long; leaflet margins
dentate; even to very dense covering of
stellate hairs on dorsal surface of leaflets,
dense mat of stellate hairs with few scattered
larger stellate hairs emerging on the ventral
surface of leaflets; fruit 20 mm long.....

.....6b. M. dregeanus ssp. insignis

1. Melianthus major L., Sp. Pl. 2 : 639 (1753); Edwards in
Bot. Register 1 : 45 (1815); Sond. in Fl. Cap. 1 : 367 (1860);

Coulston & Bailey in Bailey, Cycl. Hort. 4 : 2024 (1916); Phillips & Hofmeyer in *Bothalia* 2 : 354 (1927); Bean in Chittenden, Roy. Hort. Soc. Dict. 3 : 1280 (1951); Steyn in Jl. S. Afr. Bot. 41,3 : 199 (1975). Type: South Africa, Linn. 818/1 pinned to 818/2 (LINN, holo.).

Melianthus himalaeanus Planchon in Trans. Linn. Soc. 20,3 : 403 (1851). Type: India, Kumaon, Wallich 1190 (LINN, K, syn.).

Shrub up to 1.5 m high. Leaves 310-420 mm long; stipules solitary, sheathing the branch at the base, narrowing to an acuminate tip, 80-100 mm long, 20-40 mm wide; rachis often winged, wings dentate; leaflets 9-17, lanceolate with bases and apices acute, 90-150 mm long, 40-55 mm wide, dentate, glabrous. Inflorescence a terminal (rarely subterminal) erect raceme elongating to 800mm. Flowers in whorls of 2-4 per node; bracts cordate at base, acute at apex, 20 mm long, 10 mm wide; pedicels elongate to 30 mm in mature fruit. Sepals red or brown, posterior lateral sepal 35 mm, odd sepal broadly ovate, apex obtuse, 15 mm long. Petals dark red, 16 mm long. Nectary a deep cup. Ovary with 6 (4) ovules per carpel, Fruit sharply 4 winged, membranous, glabrous, 40 mm long.

Found in the Cape Province, northwestwards from Bredasdorp to Calvinia and northeastwards from Port Elizabeth to Fort Beaufort. Occurs between 30-1500 m above sea level, commonly near river banks. Map 1.

Vouchers: Elbrecht 19014 (PRE); Marloth 276 (PRE); Galpin 3798 (PRE); Bolus 1959 (BOL); Barker 6415 (BOL).

M. himalayanus was described as a species differing from M. major with respect to distribution being in India and petals being glabrous by Planchon (1851). Hooker and Thomson (1855) and Hooker (1873) regard the two species as conspecific. They state that M. major was taken from the Cape of Good Hope into cultivation in India. This invalidates the disjunct distribution argument of Planchon (1855). The apparent glabrous appearance of the petals might have been an observation error.

2. Melianthus villosus Bolus in J. Bot., Lond. 34 : 17 (1896); Phillips in Bothalia 1 : 57 (1927); Phillips & Hofmeyer in Bothalia 2 : 355 (1927); Dyer in Flower PL. Afr. 29 : t1140 (1952). Type: Orange Free State, Eland's River valley, near the Mont Aux Sources, 1850 m, Flanagan 2004 (BOL, lecto. !, PRE, isolecto.!).

Shrub. Leaves 210-320 mm long; stipules paired, lanceolate acuminate, 20-30 mm long, 10 mm wide; rachis unwinged to slightly winged; leaflets 9-15, elliptic to ovate, 70-120 mm long, 20-45 mm wide, dentate, dorsal surface well covered with stellate hairs, ventral surface covered with stellate hairs, very dense over veins. Inflorescence a terminal erect raceme, 350-620 mm long. Flowers in whorls of 2-4 per

node; bract cordate at base, acute at apex, 25 mm long, 10 mm wide; pedicels elongate to 30 mm in mature fruit. Sepals green, sometimes tinted red, posterior lateral sepal 30 mm long, odd sepal linear acuminate, 15 mm long. Petals pinkish or green, 16 mm long. Nectary with lateral lobes expanded. Ovary with 4-6 ovule per carpel. Fruit sharply 4 winged, membranous, pubescent, up to 40 mm long.

Found in the Natal Drakensberg between 28° and 30° S. Occurs 1200-2000 m above sea level in moist areas in Podocarpus latifolius Forest belts and in Fynbos in the Subalpine belt (Killick 1963). Map 2.

Vouchers: Killick 1380 (PRE); Killick 1211 (PRE); Bayer 1235 (PRE); Codd & Dyer 6247 (PRE); Cheadle 571 (PRE).

The name alludes to the characteristic pubescence of the whole plant.

3. Melianthus pectinatus Harv. in Fl. Cap. 1, Add. sub praef 21 (1860); Coulston & Bailey in Bailey, Cycl. Hort. 4 : 2024 (1916); Phillips & Hofmeyer in Bothalia 2 : 353 (1927); Bean in Chittenden, R. Hort. Soc. Dict. 3 : 1281 (1951).
Type: Cape, Namaqualand, Wyley s.n. (TCD, holo.).

Melianthus trimenianus Hook. f. in Trimen Jl. Bot. N.S. 2 : 353 (1873); Hook. f. in Curtis's bot. Mag. 37 : t6557

(1881). Type: Cape, Namaqualand, Barkley s.n. (?K, holo.).

Shrub. Leaves up to 140 mm long; stipules paired, acuminate, 8 mm long, 1 mm wide; rachis unwinged to wings as broad as terminal leaflet; leaflets 7-27, narrowly linear to lanceolate, sinuate to dentate, dorsal surface stellate hairy over sunken veins, sometimes sparsely pilose over blade, ventral surface dense mat of short stellate hairs with large emergent stellate hairs. Inflorescence sub-terminal raceme, erect to pendulous, elongating to 70-140 mm. Flowers in whorls of 2-4 per node; bracts tapering, apex acute, 10 mm long, 4 mm wide; pedicels elongate to 25 mm in fruit. Sepals green, posterior lateral sepal 20 mm long, odd sepal ovate, acute, gibbous, 10 mm long. Petals red or pink,, 16 mm long. Nectary horseshoe shaped. Ovary with 2 or 4 ovules per carpel. Fruit sharply 4 winged, membranous to parchment-like, glabrous, veins prominent, 10-15 mm long.

Found in Cape Province, Namaqualand and Namibia, Lüderitz district, from 27° to 31° S at altitudes from sea level to 900 m above sea level.

Harvey (1860) misnamed this species M. pectinata. As Melianthus is masculine in its Latinized form, the name becomes M. pectinatus.

3a. subspecies pectinatus

Leaflets 11-27, narrowly linear to lanceolate, sinuate to dentate; 20-50 mm long, 1-6 mm wide, stellate hairs on upper surface usually restricted to canal over veins; inflorescence usually erect; ovules 4 per carpel; capsule parchment-like.

Found in Cape Province, Namaqualand, from sea level to 900 m above sea level. Map 3a.

Vouchers: v.d. Schijff 6984 (PRE); Lewis s.n. SAM 63551 (PRE); Bolus 9485 (PRE, BOL); v. Jaarsveld 1381 (PRE); Rüsch & Le Roux 510 (PRE).

The most satisfactory key character for distinguishing the two subspecies is the number of ovules per carpel. In ssp. pectinatus there are 4 ovules per carpel while only 2 per carpel in ssp. gariepinus. The leaflet margins and numbers can be used to distinguish the subspecies but this is not as clearcut. In ssp. gariepinus the leaflets are dentate and there are 7-9 leaflets. In ssp. pectinatus the leaflets are sinuate to serrate and there are 11 - 27 leaflets. With respect to distribution, ssp. pectinatus occurs south of the Orange River while ssp. gariepinus occurs north of the Orange River.

3b. subspecies gariepinus (Merxm. & Roessler) Tansley, comb. nov. et stat. nov. Type: Namibia, Lüderitz-Süd, Numais-Bänk, farm Spitskop, Merxmüller & Giess 3402 (M, holo., K, PRE!, WIND., ISO.).

Melianthus qariepinus Merxm. & Roessler in Mitt. bot. StSamml.,
MUnch. 7 : 1 (1968); Merxm. in F.S.W.A. 76 : 2 (1968). Type:
as for ssp. qariepinus.

Leaflets 7-9, lanceolate to oblanceolate, dentate; 50-60 mm
long, 5-30 mm wide, stellate hairs on upper surface not
obviously restricted to veins; inflorescence usually pendulous;
ovules 2 per carpel; capsule membranous.

Found in Namibia, Luderits District. Map 3b ,

Vouchers: Müller 809 (PRE); Merxmüller & Giess 28741 (PRE);
Giess 12942 (PRE); Giess & Müller 14413 (PRE).

Merxmüller & Roessler (1968) distinguished M. pectinatus
from their new species, M. qariepinus, on the strength of
M. pectinatus having an erect raceme, entire leaflets,
and more leaflets than M. qariepinus. It has been seen that
M. pectinatus does not have entire leaflets, the raceme is
not always erect, and the number of leaflets in M. qariepinus
merely continues the range of leaflet numbers in M. pectinatus
from 27 - 11 (M. pectinatus ssp. pectinatus) to 9-7 (M.
pectinatus ssp. qariepinus). There is a geographic discontinuity
between the subspecies!

4. Melianthus minor L., Sp.Pl. 2 : 639 (1753); Vahl, Symb.
Bot. 3 : 85 (1794); Sond. in Fl. Cap. 1 : 368 (1860); Coulston
& Bailey in Bailey, Cycl. Hort. 4 : 2024 (1916); Phillips &

Hofmeyer in *Bothalia* 2 : 354 (1927); Bean in Chittenden, R. Hort. Soc. Dict. 3 : 1280 (1951). Type: South Africa, Linn. 818/3 (LINN, holo.).

Diplerisma minus (L.) Planchon in Trans. Linn. Soc. Lond. 20,3 : 403 (1851). Type: as for M. minor.

A small shrub. Leaves up to 150 mm long: stipules paired, acute, up to 15 mm long, 1 mm wide; rachis winged; leaflets 5 - 13, lanceolate to elliptic, 30-50 mm long, 10-18 mm wide, serrate, dorsal surface with few stellate hairs over veins, sometimes absent, ventral surface a dense mat of stellate hairs. Inflorescence a sub terminal raceme, erect, elongating to 130-260 mm long. Flowers in whorls of 2-4 per node; bracts cordate at base, apex acuminate, 10 mm long, 2 mm wide; pedicels up to 25 mm long. Sepals green, posterior lateral sepal 12 mm long, odd sepal ovate, acuminate, 5 mm long. Petals red, 20 mm long. Nectary with lobes expanded to form a shallow cup. Ovary with 4 ovules per carpel, Fruit 4 angled, not sharply so, woody, pubescent, 6-10 mm long.

Found in Cape Province, northwest of Langebaan Lagoon to the Orange River. Occurs from sea level to 150 m above sea level. Map 4.

Vouchers: Leighton 20648 (BOL); Barker 6336 (BOL); Pillans 6974 (BOL); Lewis s.n. SAM 63548 (PRE); Marloth 10187 (PRE).

5. Melianthus comosus Vahl, Symb. Bot. 3 : 86 (1794); Sond. in Fl. Cap. 1 : 367 (1860); Coulston & Bailey in Bailey, Cycl. Hort. 4 : 2024 (1916); Phillips & Hofmeyer in Bothalia 2 : 353 (1927); Bean in Chittenden, R. Hort. Soc. Dict. 3 : 1280 (1951); Burt Davy, Fl. Transv. 2 : 490 (1932); Merxm. in F.S.W.A. 76 : 2 (1968). Type: Commel, Horti Medici Plantae : 4, t4 (1706) (icon. !).†

Diplerisma comosum (Vahl) Planchon in Trans. Linn. Soc. Lond. 20,3 : 403 (1851). Type: as for M. minor .

Shrub up to 1.5 m tall. Leaves 50-230 mm long; stipules paired, acute, 15 mm long, 2 mm wide; rachis often winged; leaflets 5-13, lanceolate, acute, 25-110 mm long, 8-34 mm wide, serrate to deeply dentate, dorsal surface with few scattered stellate hairs, occasionally densely pubescent, ventral surface dense mat small stellate hairs, scattering of large stellate hairs. Inflorescence subterminal raceme, usually pendulous, 50 - 100 mm long. Flowers alternate; bracts cordate, acuminate, 10-15 mm long, 5 mm wide; pedicels elongate to 20 mm. Sepals green with dark red spot in region of petals, posterior lateral sepal 15-20 mm long, odd sepal linear acuminate, 15 mm long. Petals red or pink, 15 mm long. Nectary a shallow cup. Ovary with 2 ovules per carpel. Fruit sharply 4 winged, membranaceous, pubescent, up to 30 mm long.

Distributed throughout the Cape Province, Lesotho, Orange Free State and Namibia. See Map 5.

Vouchers: Mauve & Oliver 203 (PRE); Ruch 1524 (PRE); Acocks 2399 (PRE); Smith 4366 (PRE); Acocks 4986 (BOL).

6. Melianthus dregeanus Sond. in Fl. Cap. 1 : 368 (1860);
Phillips & Hofmeyer in Bothalia 2 : 352 (1927). Type:
Eastern Cape Province, grassy place between Kachu, Geelhout
river and Zandplaat, 1000-2000', Drege 4437 (Herb. Sond. holo.).

Shrub. Leaves up to 180 mm long; stipules paired, cordate, acute, 7-35 mm long, 1-3 mm wide; rachis unwinged to slightly winged; leaflets 5-15, elliptic, 30-80 mm long, 9-30 mm wide, serrate to dentate, dorsal surface with sparse to dense covering stellate hairs, ventral surface a mat of small stellate hairs with few large stellate hairs. Inflorescence subterminal raceme, usually pendulous, 40-130 mm long. Flowers alternate; bracts cordate at base, apex acute, 10-35 mm long, 3-15 mm wide; pedicels elongate up to 35 mm. Sepals green with dark red spot in region of petals, posterior lateral sepal 20-35 mm long, odd sepal linear acute, 15-25 mm long. Petals reddish, 10-15 mm long. Nectary elongated anteriorly. Ovary with 2 ovules per carpel. Fruit 4 rounded lobes, woody, pubescent, wider than it is long, 5-20 mm long.

Found in the Eastern Cape between 30° and 33° S, Natal Drakensberg between 27° and 29° S, occurs between 900 and 1800 m above sea level, on forest margins.

Although Sonder (1860) named this species M. dregeana, because

of the masculine ending of Melianthus the specific name should read M. dregeanus.

6a. subspecies dregeanus

Leaves up to 130 mm long; stipules 7-14 mm long, 1-2 mm wide; leaflets 30-55 mm long, 9-16 mm wide, dorsal surface with sparse covering of hairs, ventral surface with dense mat short stellate hairs. Inflorescence 40-70 mm long. Flowers bracts 10-18 mm long; pedicels up to 25 mm long. Sepals posterior lateral sepals 20 mm long, odd sepal 15 mm long. Petals 10 mm long. Fruit up to 10 mm long.

Found in the Eastern Cape between 900 and 1800 m above sea level. Map 6a.

Vouchers : Grant 3090 (PRE); Marais 514 (PRE); Giffen 1526 (PRE); Peqler 811 (PRE); Galpin 7967 (PRE).

The best character to distinguish the two subspecies is size. The ssp. insignis is much larger in all respects. The fact that ssp. insignis has large emergent stellate hairs on the ventral surface of the leaflets ^{whereas} while ssp. dregeanus does not, can be used to distinguish the two subspecies. The distribution also shows a spatial separation.

6b. subspecies insignis (Kuntze) Tansley, stat. nov. Type: Natal, Charlestown, 1800m, Kuntze s.n. (N.Y.B.G. hol., PRE, photo!).

Melianthus insignis Kuntze , Rev. Gen. 3,2 :43 (1893);
Dyer in Flower Pl. Afr. 33 : t 1310 (1959). Type: as for
ssp. insignis.

Melianthus dregeanus var. insignis (Kuntze) Phill. & Hofmeyer
in Bothalia 2 : 351 (1927). Type: as for ssp. insignis.

Leaves up to 180 mm long: stipules 20 -35 mm long, 2-3 mm wide;
leaflets 40-80 mm long, 15-30 mm wide, dorsal surface with
dense mat of hairs, ventral surface with dense mat short
stellate hairs and some large scattered stellate hairs.

Inflorescence 60-130 mm long. Flowers bracts 35 mm long;
pedicels up to 35 mm long. Sepals posterior lateral sepals
35 mm long, odd sepal 25 mm long. Petals 15 mm long. Fruit
up to 20 mm long.

Found in the Natal Drakensberg between 27^o and 29^o S,
occurs between 900 and 1800 m above sea level, usually
with Leucosida sericea on forest margins. Map 6b.

Vouchers: Stolz 13 (PRE); Galpin 9883 (PRE); Thode s.n.
PRE 16466 (PRE); Codd & Dyer 6260 (PRE); Pott 14992 (PRE).

Apart from the larger size, this subspecies is no different
from ssp. dregeanus and therefore has been included. The
distribution is disjunct from the distribution of ssp. dregeanus.

Species Excludendum:-

Melianthus sibiricus Pall. ex Georgi, Besch. Russ. Reich. 3, 4 :
1114 (1775). This is an error, cited in Daydon Jackson,
Index Kewensis 2:197 (1894), It should have read Melianthemum
sibiricus. (E. Launert. pers comm.)

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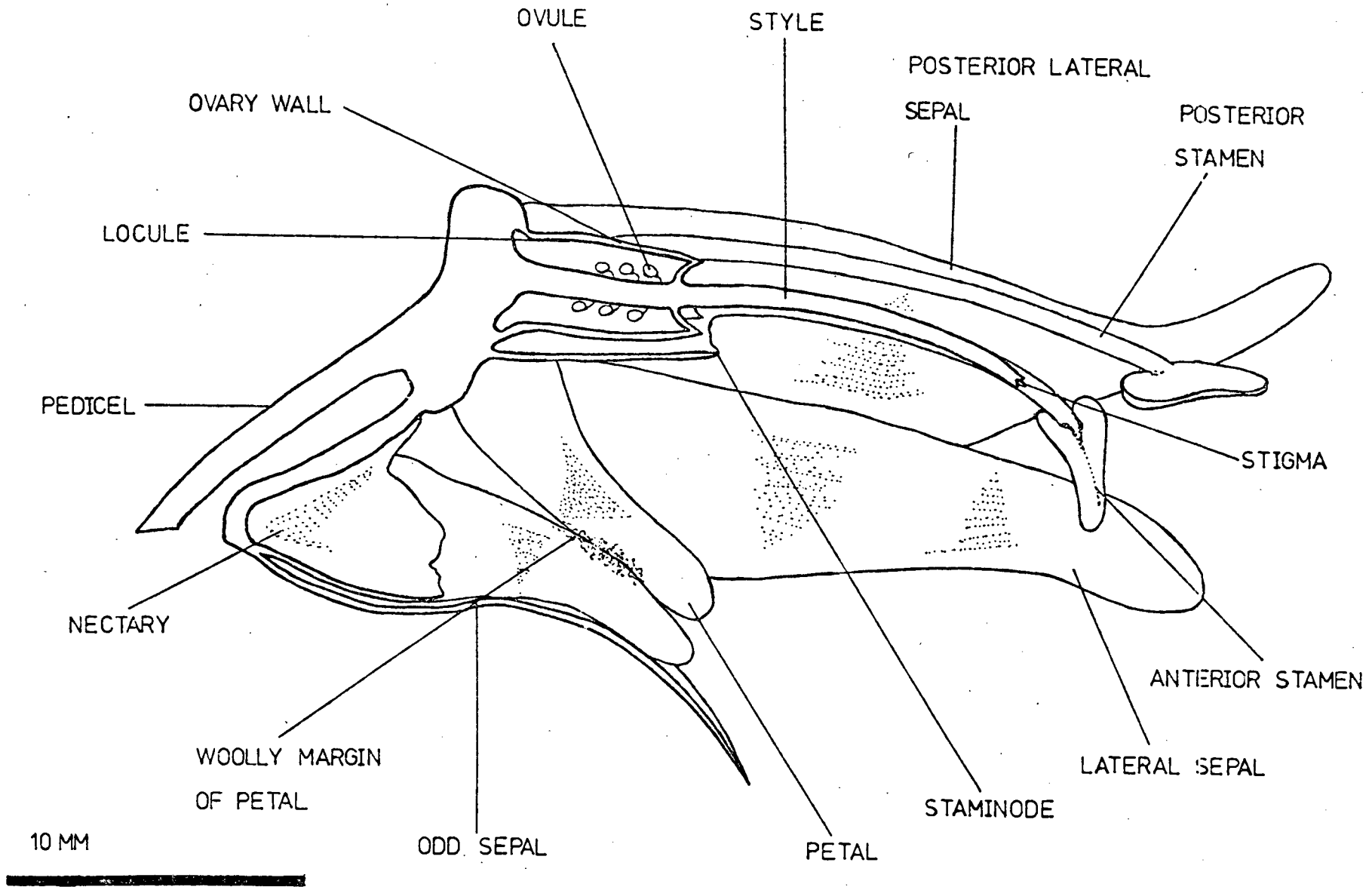
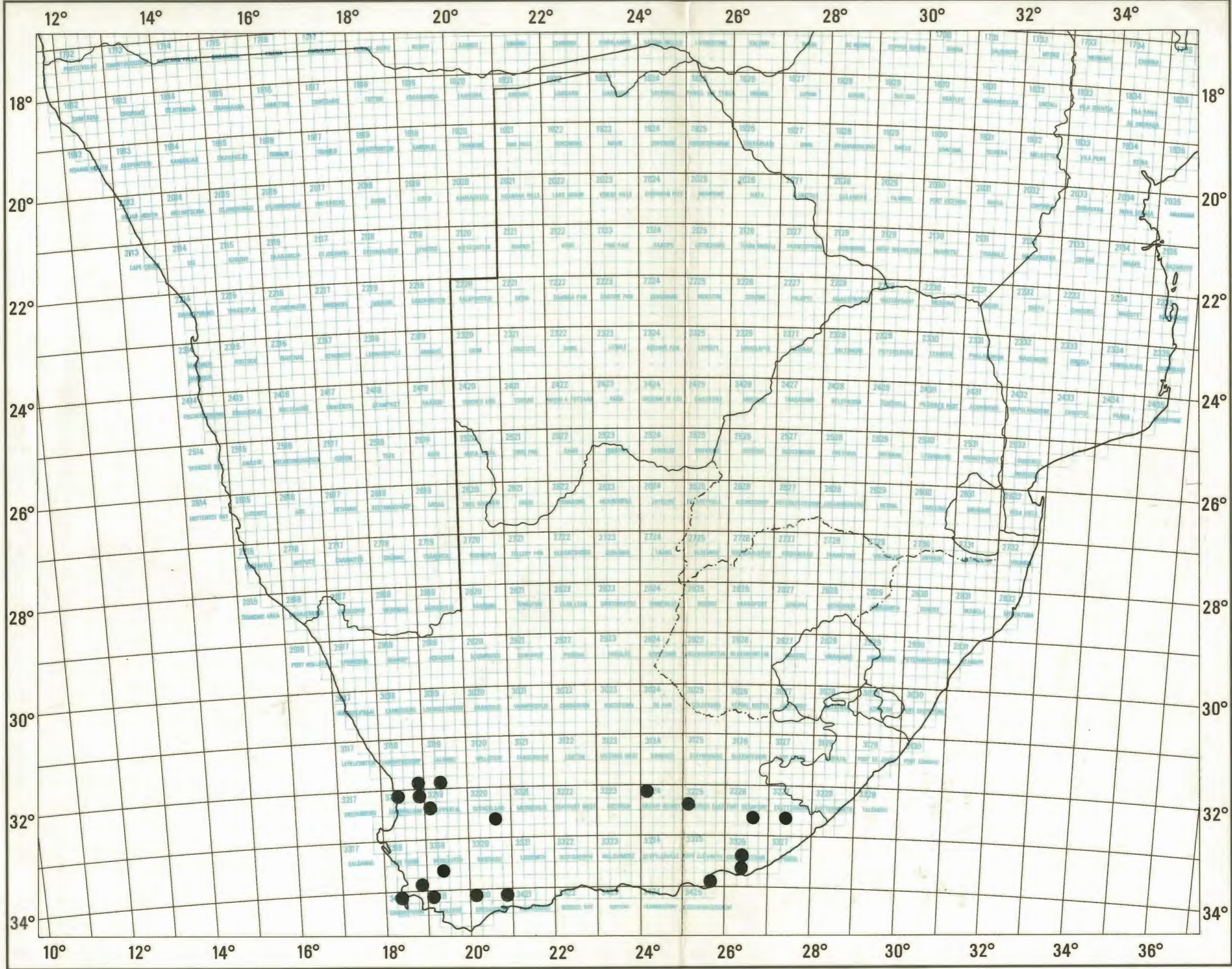
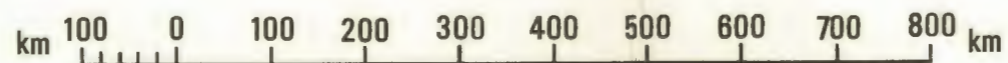


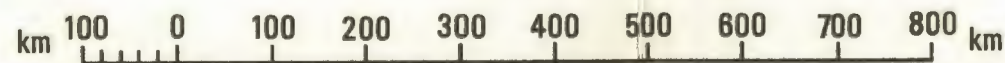
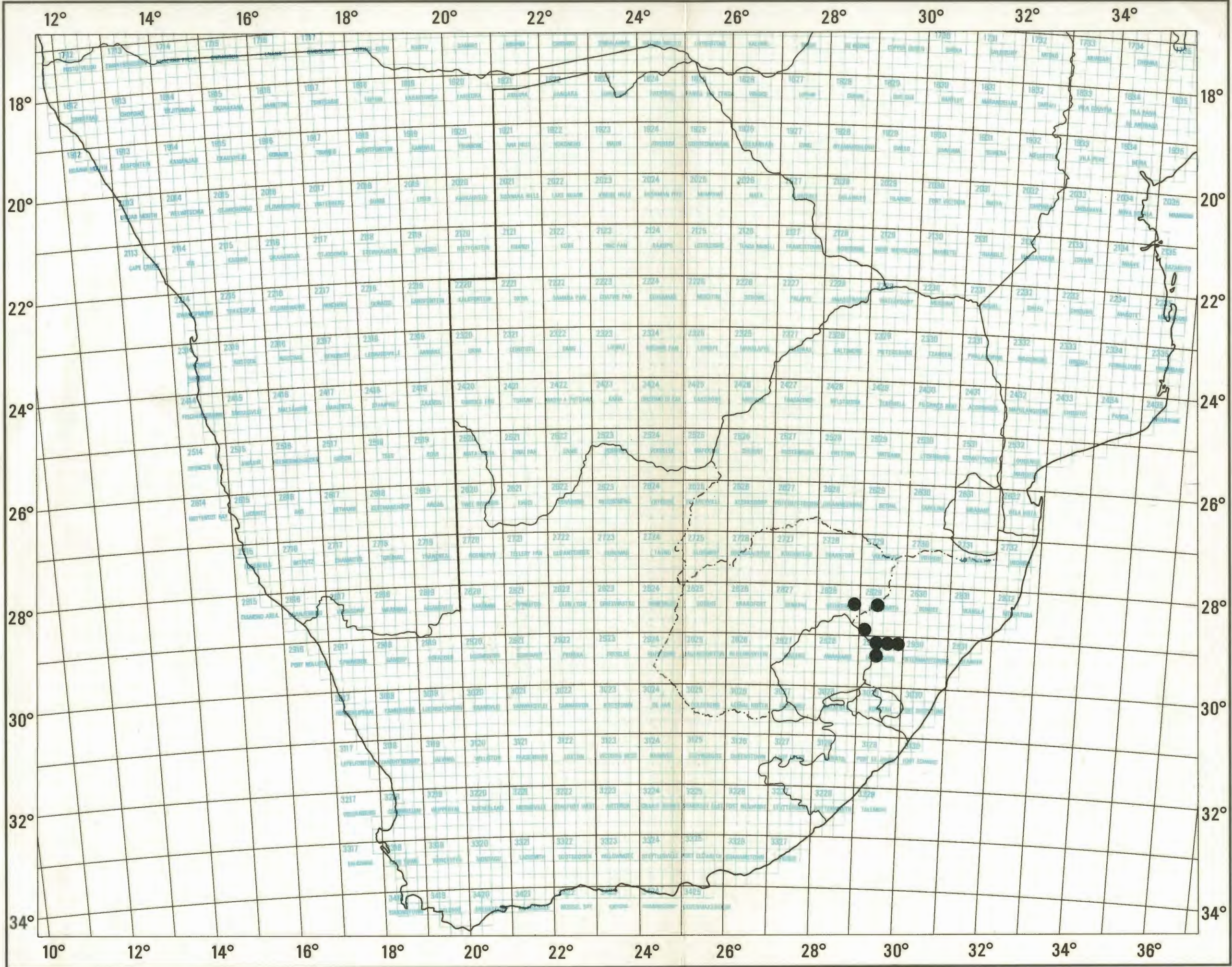
Fig. 5 :- Half flower of *M. major* drawn from fresh material.

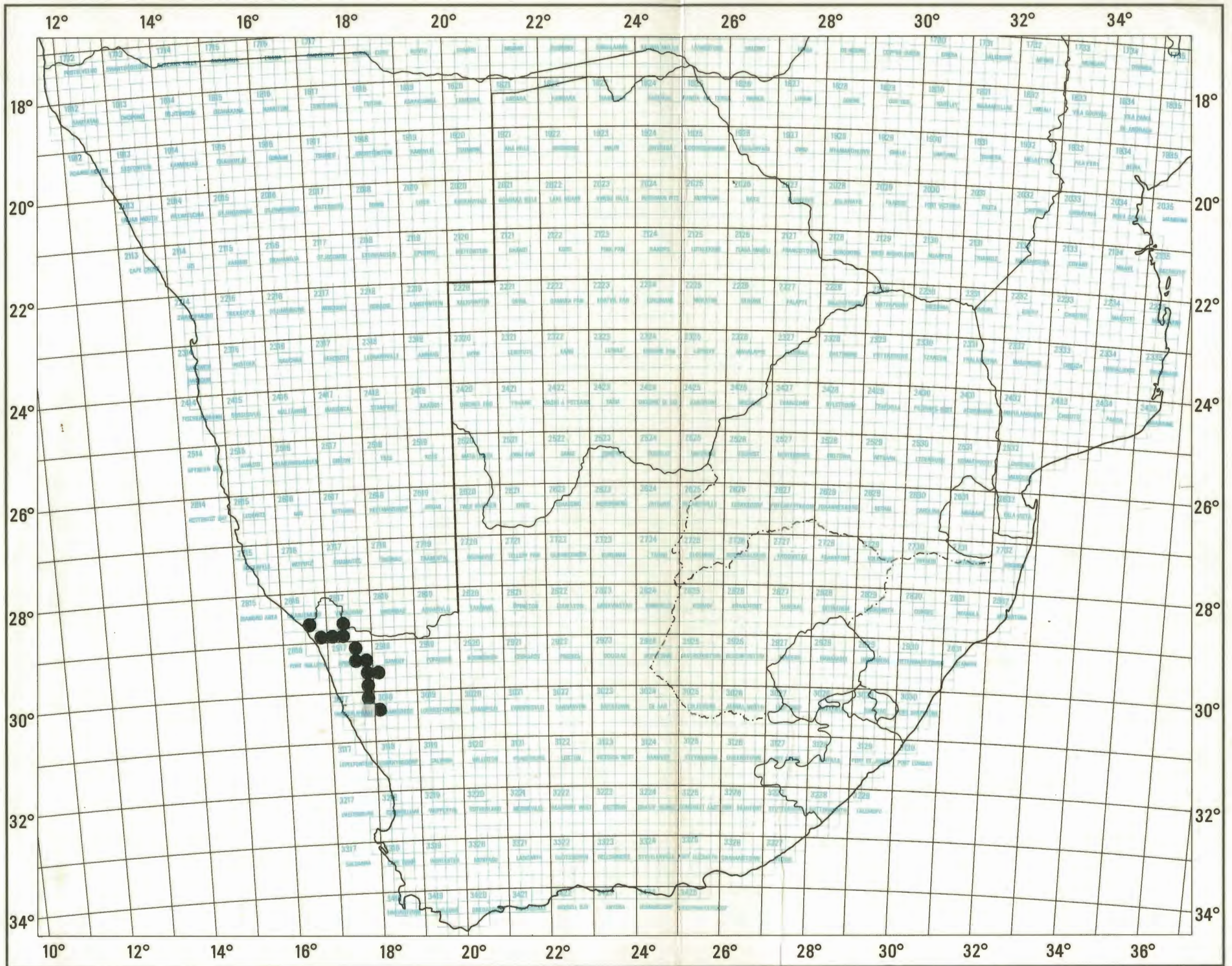


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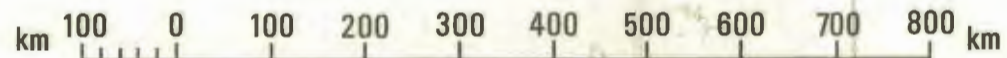


Map1 :- Distribution of M. major.



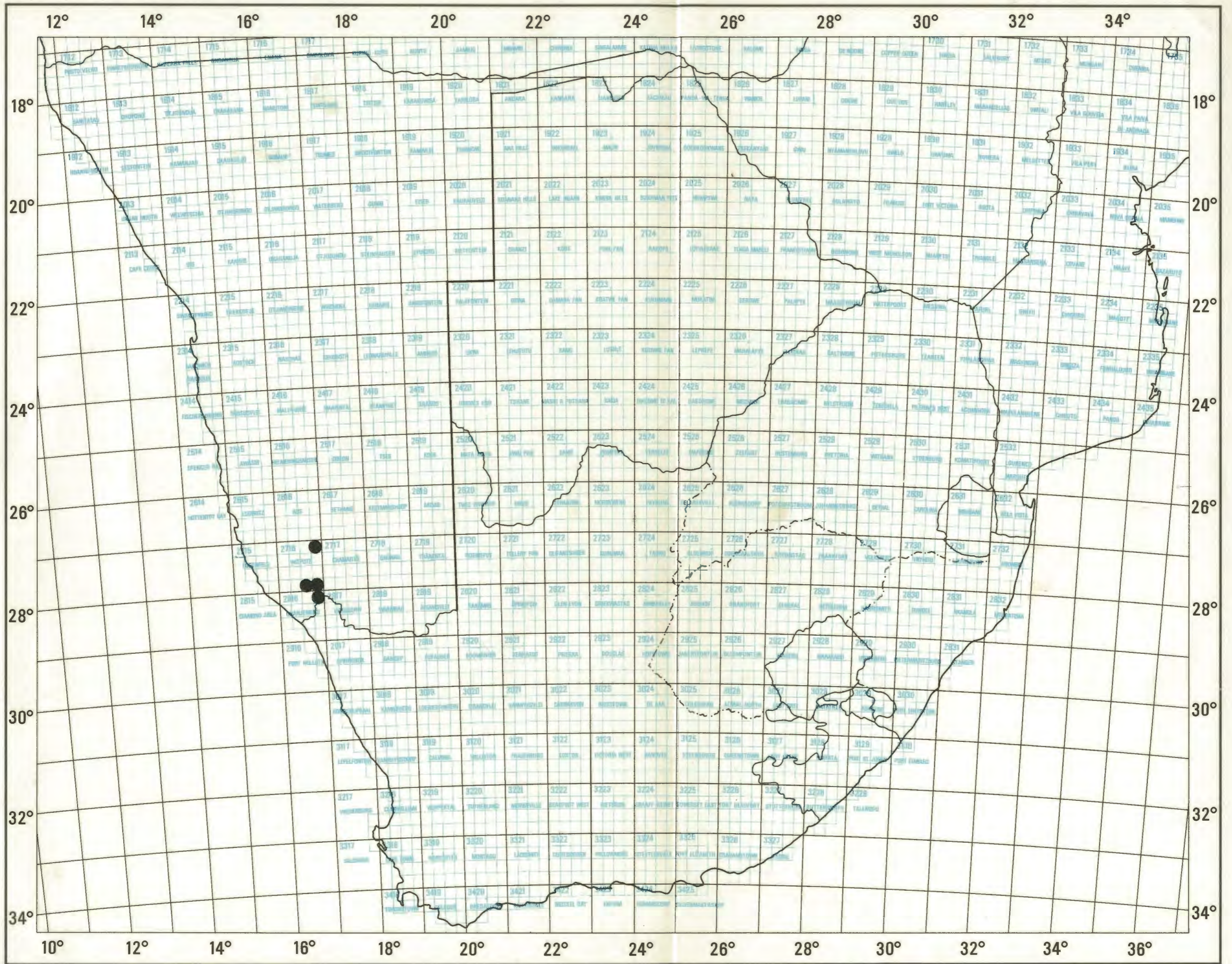


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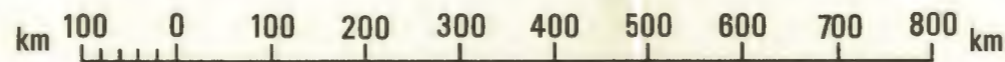


Map 3a :- Distribution of *M. pectinatus*

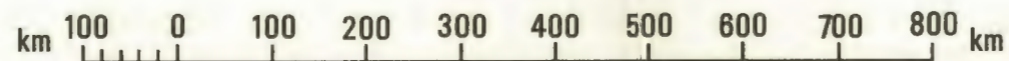
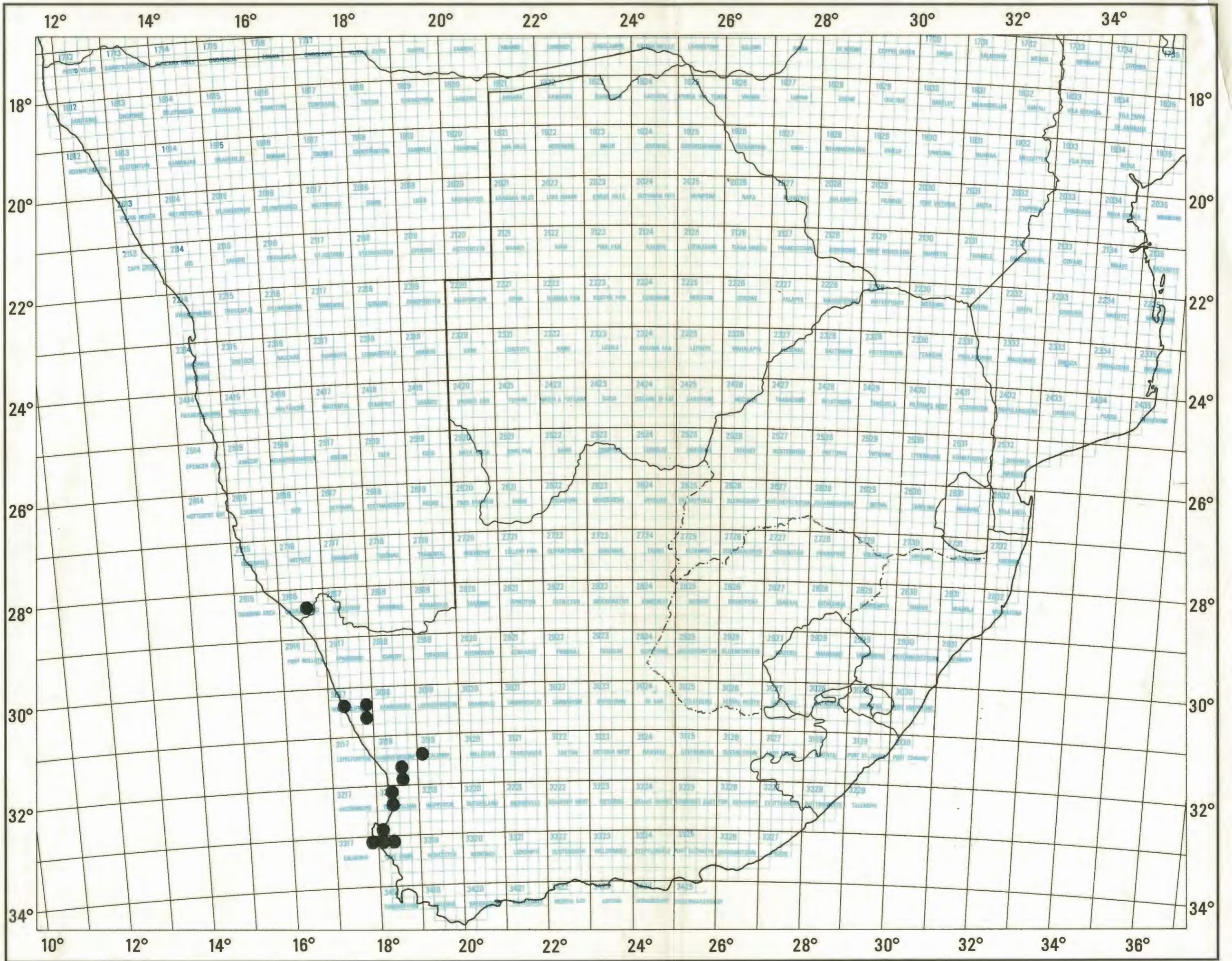
ssp. *pectinatus*.

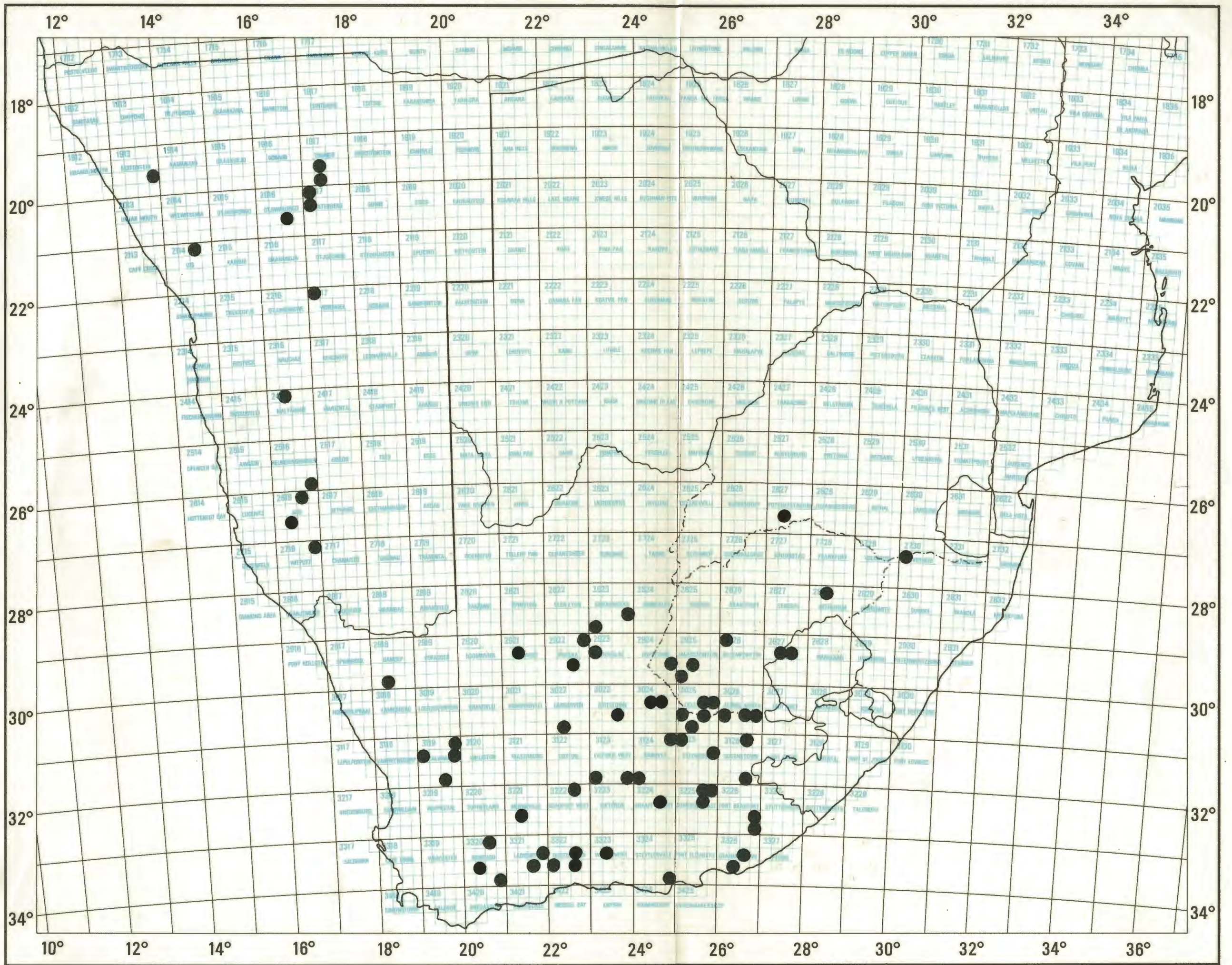


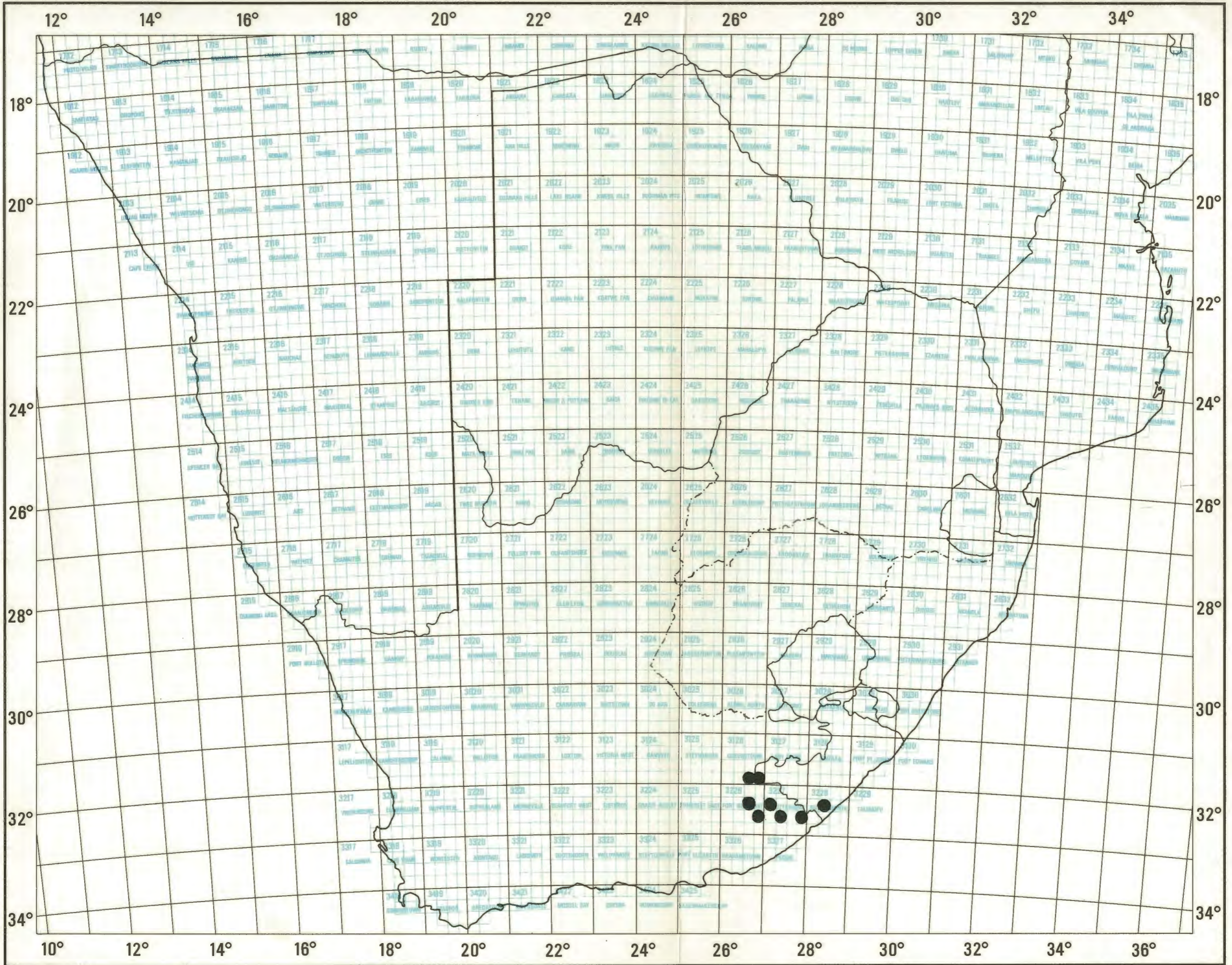
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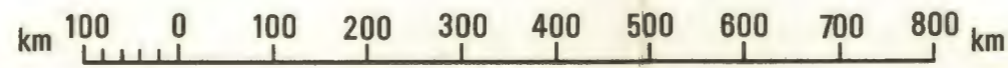
Map 3b :- Distribution of *M. pectinatus*
ssp. *gariepinus*.





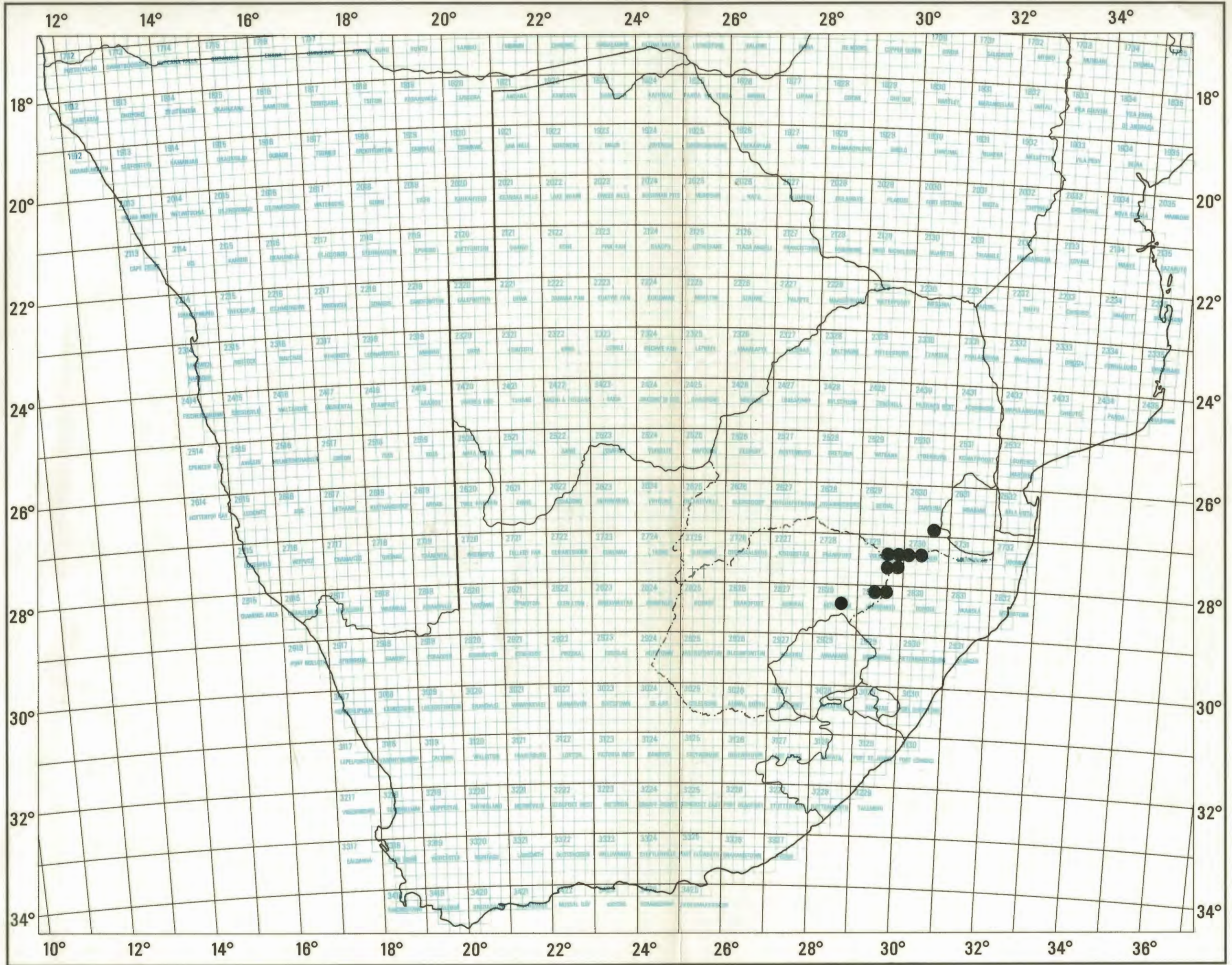


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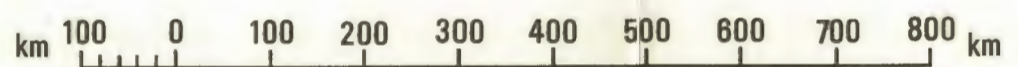


Map 6a :- Distribution of *M. dregeanus*

ssp. *dregeanus*.



T.S.O. Misc. 8091



Map 6b :- Distribution of *M. dregeanus* ssp. *insignis*.

APPENDIX:-

The specimens of Melianthus examined are listed below. Within each species, the arrangement is according to grid reference.

1 M. major:-

- 3118 DD: Cape, Calvinia, Gifberg, Bayliss^(s,n) BRI.B. 607(PRE).
3119 CD: Cape, Clanwilliam, Doornriver between Calvinia and Clanwilliam (roadside), Dyer 5435.(PRE).
3218 AB: Cape,Leipoldtsville, Werdermann & Oberdieck 449(PRE).
3218 BB: Cape,Clanwilliam, Pakhuis Pass, Barker 6415 (BOL).
3219 AC: Cape, Wupperthal, Hanekom 1184 (PRE).
3220 DA: Cape, Sutherland, Verlate Kloof, Hafstrom & Acocks 897 (PRE).
3318 DD: Cape, Stellenbosch, Botmanskop, Story 668 (PRE).
3319 CB: Cape, Worcester, Marloth 6190 (PRE).
3418 AB: Cape, Hout Bay, Marloth 276 (PRE).
3418 AB: Cape, Hout Bay, Wolley-Dod 1520 (BOL).
3419 AA: Cape, Caledon, Houwhoek, Elbrecht 19014 (PRE).
3420 AA: Cape, Bredasdorp, Nachtwacht, Smith 3049 (PRE).
3420 BB: Cape, Heidelberg, Riversdale, Galpin 3798 (PRE).
3224 AA: Cape, Sneeuberg, 20-25 miles N.W. Graaf Reinett, Bolus 1959 (BOL).
3225 AC: Cape, Pearson, Buffelshoek Nek, Story 83 (PRE).
3325 DC: Cape, Port Elizabeth, Walmer flats, Sim F17 (PRE).
3326 CB: Cape, Alexandria forest, Jacot Guillamod 4108. (PRE).
3326 AD: Cape, Salen, Assagibush River, Britten 2523 (PRE).
3227 CB: Cape, Perie, Kingwilliamstown, Sim 20270 (PRE).

Localities incertae:+

Watt & Brandwijk 246 (PRE).

Sim 1782 (on sheet with M. comosus) (NH).

Cultivated :-

Bottomley s.n. PRE 47314 (PRE).

Mills 137 (PRE).

Knight s.n. PRE 4854 (PRE).

Bayliss s.n. BRI.B. 749 (PRE).

2. M. villosus:-

2828 DB: Orange Free State, Eland's River, Mont aux Sources,
Flanagan 2004 (BOL,PRE).

2829 CC: Natal, Bergville, Cathedral Peak, Codd & Dyer 6247 (PRE).

2829 CC: Natal, Drakensberg, Schelpe 974 (NH).

2929 AB: Natal, Champagne Castle, Bayer 1238 (NH).

2929 AB: Natal, Champagne Castle, Bayer 1235 (NH, PRE).

2929 AB: Natal, Cathedral Peak, Killick 1380 (PRE).

2929 AB: Natal, Cathedral Peak, Killick 1211 (PRE).

2929 AD: Natal, Loteni nature reserve, Jacobsz 3984 (PRE).

2929 AD: Natal, Giant's Castle, Symons 14536 (PRE).

2929 AD: Natal, Loteni nature reserve, Hilliard & Burtt 11839 (NH).

2929 AD: Natal, Giant's Castle, Transeld 455 (NH).

2929 AD: Natal, Giant's Castle, Tinley 766 (NH).

2929 AD: Natal, Giant's Castle, Bruyns-Haylett 62 (NH).

2929BA: Natal, Estcourt, Tabamhlope Mountains, West 105 (PRE).

2929 BB: Natal, South Down, Weenen, Wood 1008 (BOL).

Cultivated:-

Cheadle 571 (PRE).

3. M. pectinatus:-

3a. M. pectinatus ssp. pectinatus:-

2816 DA: Cape, Waterkloof at Doornpoort, Pillans 5374 (BOL).

2816 DD: Cape, Namaqualand, Witbank, Pillans 5558 (BOL).

2817 CC: Cape, 11 KM north of Lekkersig in Richtersveld,
Robbertse 1175 (PRE).

2817 CB: Cape, Vioolsdrif, 10 miles N Stinkfontain on way to
Jenkinskop, Wergar 417 (PRE).

2817 CD: Cape, Vioolsdrif, 10 moles NNE Stinkfontein, Leistner
3387 (PRE).

2917 BA: Cape, Namaqualand, Klipfontein, Bolus 9485 (BOL,PRE),

2917 BC: Cape, 2km from Steinkopf, Pienaar 984 (PRE).

2917 BD: Cape, 15 miles N of Springbok, Schlieben 9057 (PRE).

2917 BD: Cape, 2 miles N of Concordia, Barker 6308 (BOL).

2917 BD: Cape, Namaqualand between Steinkopf and Springbok,
Verdoorn & Dyer 1817 (PRE).

2917 DB: Cape, Namaqualand, Springbok, Eliovson 99 (BOL).

2917 DB: Cape; Namaqualand, Springbok, Hester Malan Reserve,
Rösch & Le Roux 510 (PRE).

2917 DB: Cape, Springbok, Concordia, Super Intendent of Reserve.
s.n. PRE 47311 (PRE).

2917 DB: Cape, Springbok, Concordia, Superintendent of Reserve,
s.n. PRE 47307 (PRE).

2917 DB: Cape, Springbok, Concordia, v.d. Schijff 6984 (PRE).

2917 DB: Cape, 10 miles S of Springbok, Lewis s.n. SAM 63551 (PRE).

2917 DB: Cape, Springbok, farm on E boundary of Hester Malan Reserve, Pienaar 1179 (PRE).

2917 DB: Cape, Springbok, 5 miles S on farm Voelklip, Eliovson 13 (PRE).

2917 DD: Cape, 12 km from Springbok, towards Kamieskroom, then 12 km towards Wildepaardehoek Pass, v. Jaarsveld 1381 (PRE).

2918 CA: Cape, Summit of Kopperberg, Pillans 5666 (BOL).

3017 BB: Cape, Namaqualand, 1 mile S Khamieskroon, Hardy & Bayliss 110 (PRE).

3018 AC: Cape, 16.5 miles NNE of Garies, Acocks 16469 (PRE).

Localities incertae:-

Skilpad, Cape, White 5484 (PRE).

Namaqualand, Cape, Scully 1122 (BOL).

Pole Evans 2323 (PRE).

Cultivated:-

Flanagan s.n. PRE 47305 (PRE).

3b. M. pectinatus ssp. gariepinus:-

2716 BB: Namibia, Witpütz, Udabib Mountains, Müller 809 (PRE).

2716 DC: Namibia, Lüderitz-Süd, farm Spitskop, Merxmüller & Giess 3402 (PRE).

2716 DC: Namibia, Lüderitz-Süd, farm Spitskop III, Merxmüller & Giess 28741 (PRE).

2716 DC: Namibia, farm Spitskop III, Giess & Muller 14413 (PRE).
2716 DD: Namibia, farm Namuskluft, Giess 12942 (PRE).
2816 BB: Namibia, mountain near road from Lorelei copper mine
to Witputs, de Winter & Giess 6416 (BOL).

4. M. minor:-

2816 BD: Cape, head of Helskloof, Hottentotparadysberg,
Thompson & le Roux 124 (PRE).
3017 AD: Cape, Namaqualand, near Hondeklip Bay, Leighton
20648 (BOL, PRE).
3017 AD: Cape, around Hondeklip Bay, Pillans 17967 (PRE).
3017 BD: Cape, Namaqualand, Khamiesberg, Pearson 6596 (BOL).
3017 DB: Cape, 3 miles E Hondeklipbaai, road to Garies,
v.d. Merwe 230 (PRE).
3017 BD: Cape, 20 miles N of Garies, Theron 1290 (PRE).
3118 DA: Cape, Clanwilliam, 300', Schlechter 8071 (BOL, PRE).
3118 DA: Cape, Vanrhynsdorp, Zandkraal, Acocks 14848 (PRE).
3118 DA: Cape, W. aspect of koppie from Vanrhynsdorp road,
near Klaver, Lavis 20230 (BOL).
3118 DA: Cape, Klaver, Sandveld plain, Andreae 458 (PRE).
3118 DC: Cape, Klaver, Henrici 2121 (PRE).
3119 AC: Cape, Nieuwoudtville, Leipoldt s.n. (BOL).
3119 BA: Cape, Clanwilliam, Windberg, 300', Schlechter 8176 (PRE).
3218 AB: Cape, Nortier eep. station, Lamberts Bay, van Breda
4344 (PRE).
3318 AB: Cape, 10.7 miles from Hopefield to Vredenburg,
Marsh 181 (PRE).

- 3218 AD: Cape, Clanwilliam dist. near Elands Bay, Lewis 63548 (PRE).
- 3218 AD: Cape, Piquetberg dist. 2 miles N of Elands Bay, Barker 6356 (BOL).
- 3217 DD: Cape, between Vredenburg and Saldanha, Botha & Coetzee 1686 (PRE).
- 3318 AA: Cape, Malmesbury div. peninsula west of Langebaan, Pillans 6974 (BOL).
- 3318 AA: Cape, Malmesbury div. Langebaan peninsula, MacKenzie 25362 (BOL).
- 3318 AA: Cape, between Hopefield and Langebaan Road, Leighton 574 (PRE).
- 3318 AA: Cape, Langebaan peninsula, Boucher 2781 (PRE).
- 3318 AB: Cape, Malmesbury div. near Hopefield, Lewis 66030 (PRE).
- 3318 AB: Cape, between Hopefield and Saldanha, Bolus 12645 (BOL).
- 3317 BD: Cape, Saldanhabay, Marloth 10187 (PRE).
- 3317 BD: Cape, Saldanhabay, Marloth 5202 (PRE).

5. M. comosus:-

- 1913 DB: Namibia, Gr. Numas Mountain, in river, Örtendahl 420 (PRE).
- 1917 CB: Namibia, Otairfontein, Rose s.n. BOL 15462 (BOL).
- 1917 CD: Namibia, Lichtenstein, Dinter 3520 (BOL, PRE).
- 2016 DA: Namibia, Otjiwarongo, Waterberg, 5300', Schelpe 177 (BOL, PRE).
- 2017 AA: Namibia, Waterberg, Pole-Evans H 19311 (PRE).
- 2017 AC: Namibia, Waterberg Plateau, de Winter 2766 (PRE).

- 2114 BA: Namibia, Omaruru, Aigub Mountain, Brandberg 7320',
Wiss 1420 (PRE).
- 2217 AA: Namibia, Windhoek, Auasberge, Molteblick-Auasberg 200m,
Homann s.n. Herb. Giess 9013 (PRE).
- 2416 AB: Namibia, dist. Matahöhe, Begzebrapark Naukluft (Mal 9),
river bed, Merxmüller & Giess 28174 (PRE).
- 2416 AB: Namibia, Bergzebrapark, Naukluft (Mal 9), Merxmüller
& Giess 28190 (PRE).
- 2516 DD: Namibia, Bethanien, along road from Landsberg to
Helmeringhausen, Kinges 2154 (PRE).
- 2616 BA: Dist, Windhoek, Aus, river bed, de Winter & Giess
6237 (PRE).
- 2616 BA: Namibia, Frisgewaagd, between Aus and Helmeringhausen,
Oliver & Müller 6470 (PRE).
- 2616 BA: Namibia, Aus, farm Frisgewaagd, Giess 10296 (PRE).
- 2616 CB: Namibia, Aus, Pearson 8052 (BOL).
- 2616 CB: Namibia, Aus, in river bed, Pillans 5971 (BOL).
- 2627 CB: Transvaal, Potchefstroom, Losberg, Rhenosterfontein
on roadside, Phillips 1371 (PRE).
- 2716 BB: Namibia, dist. LÜderitz-SÜd, farm Witputz, Merxmüller
& Giess 3436 (PRE).
- 2730 AC: Transvaal, Wakkerstroom, ?Legat Transvaal Dept.
Agriculture, 4474 (BOL).
- 2823 CC: Cape, Griekwastad, in valley, Mostert 1292 (PRE).
- 2823 DB: Cape, Kimberley, near Vlakfontein, G.L. s.n.
Hafström Herb. 1205 (PRE) .
- 2828 AB: Orange Free State, Bethlehem, Potgieter 71, (PRE).
- 2918 CD: Cape, Springbok, near Gamoep, Werdermann & Oberdieck
620 (PRE).

- 2921 AC: Cape, 7 miles from Kenhardh, Giffberg road,
Pole-Evans 2253 (PRE).
- 2922 BB: Cape, Hay div. near Springfield P.O., Acocks 13189
(PRE).
- 2922 DA: Cape, Prieska, Bryant 342 (PRE).
- 2922 DA: Cape, Prieska, Bryants.n. PRE 2939 (PRE).
- 2923 AC: Cape, Hay div., Kaffer Krans, near river, Acocks 2399
(BOL, PRE).
- 2924 DB: Orange Free State, Luckhoff, roadside between Luckhoff
and Fauresmith, Smith 528 (PRE).
- 2924 DB: Orange Free State, Fauresmith, Luckhoff, Pole-Evans
& C.A.S. 1868 (PRE).
- 2925 CB: Orange Free State, Station, Fauresmith, Pole-Evans
& C.A.S. 1832 (PRE).
- 2925 CB: Orange Free State, Fauresmith, 4600', hill above spruit,
Smith 962 (PRE).
- 2925 CB: Orange Free State, Fauresmith, Smith 919 (PRE).
- 2925 CB: Orange Free State, Fauresmith, near reserve vlakte,
Henrici 2027 (PRE).
- 2925 CC: Orange Free State, Fauresmith, farm Samar, between
spruit and homestead, about 7 miles NWxW of Fauresmith,
Smith 4366 (PRE).
- 2925 CC: Orange Free State, Fauresmith, farm Schietmekaar,
drift of Bramvewynskuil spruit, Smith 4339 (BOL, PRE).
- 2925 CC: Orange Free State, N. Fauresmith railway station,
Smith 545 (PRE).
- 2926 AA: Orange Free State, Bloemfontein, Kotze 742 (PRE).
- 2927 AD: Lesotho, Maseru, Roma, Schmitz 85 (PRE).

2927 AD: Lesotho, Roma Valley, Jacot-Guillarmod 3021 (PRE).
2927 BC: Lesotho, dist. Mohattanes, Berea, Jacot-Guillarmod
1920 (PRE).
3022 CD: Cape, Carnarvon, Kareeboschfontein, SW of Wildepaarde
berg, Thompson 3099 (PRE).
3023 DA: Cape, Britstown, Page 14368 (BOL).
3024 AD: Cape, De Aar, Grasfontein, Vahrmeyer 2235 (PRE).
3024 AD: Cape, Philippolis, Marloth 1917 (PRE).
3024 BC: Cape, Grasfontein, Philipstown, Vahrmeyer 1375 (PRE).
3025 BC: Orange Free State, outside Colesberg, Eliovson 357
(BOL).
3025 BD: Orange Free State, Bethulie, 4miles W of Smithfield,
Nel 42 (PRE).
3025 CA: Cape, Near Colesberg, on hill, Norlindn & Weimark
5265 (PRE).
3025 CD: Cape, Novalspont, banks of Orange, Colesberg dist.
Hardy & Admiral 1764 (PRE).
3025 DA: Cape, Colesberg, Anderson s.n. O.R.F.S. 280 (PRE).
3026 CA: O.F.S. near Bethulie, Werger 1013 (PRE).
3026 DA: Cape, near Aliwal North, on flat open ground, Eland's
Hoek, Bolus 118 (BOL).
3026 DA: Cape, Aliwal North, Gerstner 82 (PRE).
3026 DA: Cape, Aliwal North, Rigtersfontein, Thode A1844 (PRE).
3026 DB: O.F.S., 10.7 miles SSE of Rouxville, Acocks 13831 (PRE).
3026 DB: Cape, Bankfontein, Ingpen 14 (PRE).
3119 AC: Cape, Calvin ia, Oorlog'skloof, Schlechter 10933 (PRE).
3119 AC: Cape, Oolog'skloof, Schlechter s.n. NH 44683 (NH).
3119 AC: Cape, 2 miles E of Niewoudtville, on Oorlog's Kloof
Road, Barker 6541 (BOL).

3119 AC: Cape, 15 miles from Niewoudtville, on Oorlog's Kloof road, Lewis s.n. SAM 63547 (PRE).

3119 BB: Cape, 28 miles N of Calvinia, Middlemost 1777 (BOL).

3119 BD: Cape, between Williston and Calvinia, v.d. Schijff 7224 (PRE).

3119 BD: Cape, Calvinia, along streams, Schmidt 177 (PRE).

3119 BD: Cape, Calvinia, Schmidt 60 (PRE).

3119 BD: Cape, div. Calvinia, Moordenaarspoort, near Agter Hantamberg, about 27 miles NE of Calvinia, Lewis s.n. SAM 63547 (PRE).

3119 DC: Cape, 1700', river bed at Draai Kraal, Pearson 4995 (BOL).

3123 CC: Cape, Beaufort West, roadside Perdeberg, Shearing 51 (PRE).

3123 DD: Cape, Murraysberg dist., Bloupoort, v. Heerden U121 (PRE).

3124 BB: Cape, Colesberg, Naauwpoort, Rogers 12075 (PRE).

3124 CC: Cape, Murraysburg, farm Witteklip, de Boom 6 (PRE).

3125 AA: Cape, Middelberg dist., Craddock road, Horn SKF 2229 (PRE).

3125 AA: Cape, stream on Syndicate commonage, Giffen 197 (PRE).

3125 BD: Cape, 2500', Steynsburg, Bayliss s.n. BRI.B. 395 (PRE).

3126 BA: Cape, Kommandokop, Burgerdorp, Balsinkas 3339 (PRE).

3126 DC: Cape, Queenstown dist., Langverwacht, Klass Smits River, Galpin 2518 (PRE).

3221 CB: Cape, Prince Albert Dist., ad pagum Dwyka, Fries, Norlindn & Weimark 5265 (PRE).

3222 BA: Cape, Bleak House farm, Gibbs Russel, Robinson, Herman & Downing 14 (PRE).

- 3224 BC: Cape, Graaff Reinet, 3000-4000', Drege 7176 (PRE).
- 3225 BA: Cape, Cradock, Mountain Zebrapark, Brynard 85 (PRE).
- 3225 BB: Cape, 3000-4000', Cradock, Ecklon & Zeyher 116.7 (BOL, PRE).
- 3225 BC: Cape, Cradock div., W of Rayner's Koppie, 2600', Acocks 11924 (PRE).
- 3225 BC: Cape, Cradock, Karreebosch, Long 755 (PRE).
- 3226 DB: Cape, Seymour, Hogsback, Giffen 6841 (PRE).
- 3226 DD: Cape, Grahamstown, Lovedale, Beunio 509 (PRE).
- 3320 BA: Cape, Worcester div., Matjiesfontein, Foley 77 (PRE).
- 3320 CB: Cape, Langkloof, NE of Montegu, Mauve & Oliver 203 (PRE).
- 3320 CB: Cape, Montagu, farm Jakkalsfontein, van Breda 1747 (PRE).
- 3320 DD: Cape, Barrydale, Dr Smit's farm, Badenhorst 12 (PRE).
- 3321 BD: Cape, between Calitzdorp & Cango Caves, Hutchinson 1144 (BOL).
- 3322 CA: Cape, Springbok dist., near Gamoep, 1000m, Werdermann & Oberdieck 620 (PRE).
- 3321 DA: Cape, Ladismith, 5.5 miles from Calitzdorp to Ladismith, Thompson 966 (PRE).
- 3321 DA: Cape, Ladysmith, Huis River Pass, Bayliss s.n. BRI.B. 75 (PRE).
- 3322 BC: Cape, Ladysmith dist., Entrance to Meirings Poort, Hardy 301 (PRE).
- 3322 DA: Cape, Oudtshoorn, farm Doornkraal, Dahlstrand 2345 (PRE).
- 3322 DA: Cape, De Rust, Doornkraal, Dahlstrand 2471 (PRE).
- 3322 DA: Cape, Oudtshoorn, Doornkraal, Dahlstrand 2195 (PRE).

- 3322 DA: Cape, De Rust, farm Otsekloof, Dahlstrand 2093 (PRE).
3323 AD: Cape, Loverswater, Willowmore, Peers s.n. NBG 401
(BOL).
3324 DD: Cape, Port Elizabeth, Hankey, Paterson 25698 (PRE).
3326 BC: Cape, Roodebloem, near Graeff Reinets, 2500',
Bolus 497 (BOL).
3326 CB: Cape, near Grahamstown, Bayliss s.n. BRI.B. 7026 (PRE).

Localities incertae:-

- Krom River Goatcher s.n. (BOL).
?Zastia, O.F.S. Maxm 5 (PRE).
Tunis, Ladybrand, Watt & Brandwijk 1305 (PRE).
Nooitgedacht, Middelberg, Cape, Watt & Brandwijk 1716 (PRE).
?Ellands or Elberts Kraal River, Riversdale div., Muir 1839 (PRE).
Cayman's Kloof, Worcester dist., Cape, Michell 20 (PRE).
Culmstock, Middelberg dist., Galpin 5584 (PRE).
Sim s.n. Herb. 1782 (NH).
riverside, Middelberg, Cape, Theron 32 (PRE).
Namaqualand, Marloth 1536 (PRE).

Cultivated:-

- Hanekom 1831 (PRE).
Voorendyk 3 (PRE).
Repton 3016 (PRE).
Kroon 16 (PRE).
Ruck 1524 (PRE).

6. M. dregeanus:-

6a. M. dregeanus ssp. dregeanus:-

- 3126 DD: Cape, mountainside, Bongola Nek, Queenstown, Galpin,
7967 (PRE).
- 3326 BC: Cape, Grahamstown, Hilton Farm, Jacot-Guilarmod 5575
(PRE).
- 3226 BC: Cape, Katberg Pass, Grant 3090 (PRE).
- 3226 BC: Cape, Katberg, Sole 2737 (PRE).
- 3226 BC: Cape, Victoria East, Noel s.n. PRE 47297 (PRE).
- 3226 BC: Cape, Katberg, Sidey 3749 (PRE).
- 3226 BC: Cape, Katberg, Young 1530b (PRE).
- 3226 DB: Cape, Alice, Woburn, Acocks 11151, (PRE).
- 3226 DB: Cape, Victoria East, Ft. Beaufort, Hogsback, Giffen
1526 (PRE).
- 3227 AC: Cape, Cathcart, Windvogelberg, Marais 514 (PRE).
- 3227 AC: Cape, Windvogelberg, Roberts 1777 (PRE).
- 3227 CB: Cape, Stutterheim, 2600', Acocks 9151 (PRE).
- 3227 CB: Cape, Pirie, Kingwilliamstown, 3000', Sim 20015 (PRE).
- 3227 CB: Cape, Pirie, Kingwilliamstown, 3000', Sim 20267 (PRE).
- 3227 CB: Cape, Stutterheim, Rogers 12741, (BOL).
- 3227 CB: Cape, Stutterheim, Nauhaus s.n. (BOL).
- 3227 DB: Cape, Komgha, Prospect Farm, 2100', Flanagan 288 (BOL, PRE)
- 3228 AD: Transkei, dist. Kentani, valley 1200', Pegler 811 (PRE).

Localities incertae:-

A.O. 27552 (PRE).

Eastern Province and Transkei, Watt & Brandwijk 997 (PRE).

British Kaffraria, Cooper 106 (PRE).

6b. M. dregeanus ssp. insignis:-

- 2828 BC: O.F.S., Bethlehem, Golden Gate, Jacobs 8554 (PRE).
2829 AB: O.F.S., Harrismith, farm Galaxy 168, Stoltz 13 (PRE).
2829 BA: Natal, Normandien dist., farm Glendale, Biggs 63 (PRE).
2729 DA: Natal, Newcastle, Botha's Pass 6000', Ward 3187 (NH).
2729 DB: Natal, Newcastle, Ingolo, Schweickerdt 981 (PRE).
2729 BC: Transvaal, Majuba, 5700', Phillips 80 (PRE).
2729 BD: Natal, Charlsetown, Kuntze s.n. (PRE photo, holo).
2730 AC: Transvaal, Wakkerstroom, on hillslopes facing N, Devenish 402 (PRE).
2730 AC: Transvaal, Wakkerstroom, van Darn s.n. T.M. 22207 (PRE).
2730 AC: Transvaal, Wakkerstroom, Kastrol Nek, van Darn s.n. T.M. 30257 (PRE).
2730 AC: Transvaal, Wakkersroom, Watt & Brandwijk 1656 (PRE).
2730 AC: Transvaal, Wakkerstroom, Honeymoon Kloof, Galpin 9883 (PRE).
2730 AD: Natal, Altemooi, Thode s.n. NH 16466 (PRE).^{Nat. Herb. 2897}
2730 AD: Natal, 17 miles N of Utrecht 5500', Codd 6402 (PRE).
2730 AD: Natal, 17 miles N of Utrecht, Codd & Dyer 6260 (PRE).
2630 DC: Transvaal, Ermelo, Goede Hoop, Pott 14992 (PRE).
2630 DC: Transvaal, Ermelo, Goede Hoop, Pott 4938 (BOL, PRE).