Notes on the Strumariinae (Amaryllidaceae-Amaryllideae). Six new taxa in *Strumaria* and *Hessea* from the central and northwestern Cape, South Africa, and southern Namibia

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**Keywords:** Amaryllidaceae, Amaryllideae, *Hessea*, *Strumaria*, new rare species, subspecies, southern Africa

**ABSTRACT**

Newly described are four species and a subspecies of *Strumaria* and one species of *Hessea*. *S. aestivalis* Snijman from the Langberg and *S. perryae* Snijman from the Bokkeveld escarpment are rare species closely allied to *S. pubescens* W.F. Barker. *S. discifera* Marloth ex Snijman is widespread on the Bokkeveld and Roggeveld escarpments but *S. discifera* subsp. *bulbifera* Snijman which comprises several clonal populations, is narrowly restricted to the dolerite ridges near Nieuwoudtville. *S. villosa* Snijman, a rare species, is localised on quartz hills near Kosies in the Richtersveld. *H. speciosa* Snijman occurs in red sand and friable loam from southern Namibia to the central Cape.

**INTRODUCTION**

The Strumariinae, an exclusively southern African subtribe of the Amaryllidaceae, is centred in the semi-arid winter rainfall region of the Cape Province. The often insignificant, hysteranthous leaves and short-lived autumn flowers of the species, are phenological characteristics which render many members of the subtribe insufficiently collected. Thus since the last review of the Strumariinae (Müller-Doblies 1985) some 12 additional new taxa have been discovered, of which five have already been published (Snijman 1989, Snijman 1991).

The 37 known species of Strumariinae are currently placed in eight genera (*Namaquanula* D. & U. Müller-Doblies, *Kamiesbergicia* Snijman, *Hessea* Herb., *Carpolyza* Salisb., *Strumaria* Jacq., *Bokkeveldia* D. & U. Müller-Doblies, *Gemmaria* Salisb. and *Tedingea* D. & U. Müller-Doblies). Phylogenetic studies in the subtribe using cladistic analyses (Snijman in prep.) have shown that *Strumaria*, *Bokkeveldia* and *Gemmaria* are weakly defined and paraphyletic and that they are best treated as a single genus *Strumaria*. Although the necessary generic redelimination will be explained and effected elsewhere, it is important, notably for conservation purposes, to validate the names of the undescribed species of the subtribe. Four of the new species described here are assigned to *Strumaria*, here defined according to Ker-Gawler (1814), Bolus (1923), Barker (1943, 1944). The fifth new species is placed in *Hessea sensu* Müller-Doblies (1985), which has proven to be a monophyletic genus with the exclusion of the poorly known species *H. spiralis* Baker.

**MATERIALS AND METHODS**

This study was based on material from BM, BOL, K, NBG, PRE, SAM and WIND. Additional morphological and phenological data were gathered from the living collection of all known members of the Strumariinae at the National Botanical Garden, Kirstenbosch. Habitat information was derived from my own field observations. The dates accompanying the cited specimens are field collection dates of flowering bulbs. Specimens without dates comprise cultivated flowering material which was gathered over several years.

1. *S. aestivalis* Snijman, sp. nov., quoad tunicam luteam bulbi, folia pubescentia et flores infundibuliformes ad *S. pubescentem* W.F. Barker accedit, sed ab ea convivialis latis inter fila menta interna et stilum differt. 

**UITTREKSEL**

Vier nuwe spesies en 'n subspesie van *Strumaria* sowel as 'n nuwe *Hessea*-spesie word beskryf. *S. aestivalis* Snijman van die Langberg en *S. perryae* Snijman van die Bokkeveld platorand is skaars soorte wat na aan *S. pubescens* W.F. Barker verwant is. *S. discifera* Marloth ex Snijman is wydverspreid langs die Bokkeveld- en Roggeveld-platorand. *S. discifera* subsp. *bulbifera* Snijman is beperk tot 'n aantal klonale populasies op die doleriet-heuwels naby Nieuwoudtville. *S. villosa* Snijman, 'n skaars soort, word siegs op die kwartseitheuwels naby Kosies in die Richtersveld aangetref. *H. speciosa* Snijman kom voor in rooi sand en bros leem vanaf suidelike Namibie tot in die Kaapse Middellande.

**FIGURE 1.** S. aestivalis Snijman, sp. nov., field collection from the Langberg, NW of Loeriesfontein, fl ex NBG, Hessea Herb., *Carpolyza* Salisb., *Strumaria* Jacq., *Bokkeveldia* D. & U. Müller-Doblies, *Gemmaria* Salisb. and *Tedingea* D. & U. Müller-Doblies). Phylogenetic studies in the subtribe using cladistic analyses (Snijman in prep.) have shown that *Strumaria*, *Bokkeveldia* and *Gemmaria* are weakly defined and paraphyletic and that they are best treated as a single genus *Strumaria*. Although the necessary generic redelimination will be explained and effected elsewhere, it is important, notably for conservation purposes, to validate the names of the undescribed species of the subtribe. Four of the new species described here are assigned to *Strumaria*, here defined according to Ker-Gawler (1814), Bolus (1923), Barker (1943, 1944). The fifth new species is placed in *Hessea sensu* Müller-Doblies (1985), which has proven to be a monophyletic genus with the exclusion of the poorly known species *H. spiralis* Baker.

**METHODS**

This study was based on material from BM, BOL, K, NBG, PRE, SAM and WIND. Additional morphological and phenological data were gathered from the living collection of all known members of the Strumariinae at the National Botanical Garden, Kirstenbosch. Habitat information was derived from my own field observations. The dates accompanying the cited specimens are field collection dates of flowering bulbs. Specimens without dates comprise cultivated flowering material which was gathered over several years.

1. *S. aestivalis* Snijman, sp. nov., quoad tunicam luteam bulbi, folia pubescentia et flores infundibuliformes ad *S. pubescentem* W.F. Barker accedit, sed ab ea convivialis latis inter fila menta interna et stilum differt. **Figure 1.**

**TYPE.**—Cape Province, 3018 (Kamiesberg); (DB), Farm Langberg, NW of Loeriesfontein, fl ex NBG 31-1-1984, *Perry 1991* (NBG, holo.; K, PRE, MO).

*Bulb* solitary or occasionally forming bulblets, ovoid, 20-40 mm diam., with the outer fibrous covering ranging from brown to cream-coloured, fleshy and yellowish within; neck up to 70 mm long, rarely absent. *Leaves* absent at anthesis, 2 or rarely 3, recurved, lorate, 80-280 x 15-26 mm, canalicate, both surfaces densely pubescent with 2 mm long, patent, silky, white hairs; amplexical cataphyll shortly exserted, tipped with red, soon withering down; non-amplexical prophyll hidden in the bulb. Inflorescence widely spreading, 60-100 mm across; scape 60-100 × 2.5-4.0 mm, pale green to glaucous, sometimes flushed with pink, pubescent or glabrous, breaking off at the base in fruit; spathe valves

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lanceolate, 30–50 × 5–7 mm; bracteoles filiform, up to 20 mm long. Flowers 10–20, spreading, widely funnel-shaped, white, with a pale pink median dorsal band on each tepal, turning deeper pink with age, heavily scented; pedicels straight to upwardly curved, 40–55 mm long, pale greenish-pink. Tepals free to the base, spreading, oblong-lanceolate, 12–14 × 3–5 mm. Stamens equalling the tepals, spreading slightly from near the base; filaments separate, 7–10 mm long, adnate to the broadened style base for up to 4 mm; the inner face of the inner whorl
free with only the lateral margins adnate to the broadly triquetrous style, forming 3 tubular nectar wells; anthers subcentrifixed, ± 3 mm long before opening, wine-red; pollen cream-coloured. Ovary with 1–2 ovules per locule. Style up to 17 mm long, broadly triquetrous in the proximal third, tapering and slender distally. Seeds fleshy, ovoid, 4–6 mm diam., green to reddish brown. Chromosome number: 2n = 20.

Diagnostic features: Strumaria aestivalis is remarkable in having three wide nectar wells formed by the fusion of the lateral margins of the inner filaments with the winged edges of the triquetrous style (Figure 1.4A). This specialisation is also well developed in the species of Strumaria with leaves arranged in a fan (S. truncata Jacq., S. hardyana D. & U. Müller-Doblies, S. barbarae Oberm. and S. phonolithica Dinter) and indicates parallel development in S. aestivalis and this group. Strumaria aestivalis is most closely related to S. pubescens with which it shares yellow-fleshed bulbs and broadly lorate, pubescent leaves. Yellow inner bulb tunics were previously reported as a restricted character (Müller-Doblies 1985) but the data given here indicate that it is more widespread.

Distribution and phenology: the northwestern foothills of the Langberg, northwest of Loeriesfontein, is the only known locality of S. aestivalis (Figure 2). The population is confined to the southeast-facing banks of a seasonal stream, where the bulbs are aggregated in the shade of rocks or low shrubs, amongst shale chips overlying heavy loam, at elevations of 950 m. This site which lies east of the main winter rainfall region where Strumaria is centred, is located within a zone where the probability of rain is greatest in March (Zucchinì & Adamson 1984). S. aestivalis responds rapidly to scattered summer thunderstorms and flowers during January and February.

CAPE.— 3018 (Kamesberg): Farm Langberg, NW of Loeriesfontein, (-DB), Perry 1991 (K, MO, NBG, PRE); 20-1-1986, Snijman 1006 (MO, NBG).

2. S. perryae Snijman, sp. nov., ex affinitate S. pubescens W.F. Barker et S. aestivalis Snijman, ab utroque bulbi tunicis albidis et foliis anguste lorate differt. Figure 3.

FIGURE 2.—The known geographical distribution of Strumaria aestivalis. ● and S. perryae. ▲.

TYPE.— Cape Province, 3119 (Calvinia): (-AA), between Grasberg and Theunisdrift, NW of Nieuwoudtville, 15-5-1980, Perry 997 (NBG, holo.; K, PRE, MO).

Bulb solitary, globose, 10–15 mm diam, with lightly fibrous light brown outer tunics, fleshy and whitish within; neck up to 45 mm long. Leaves absent at anthesis, 2, subect to recurved, narrowly lorate to lanceolate, 50–150 (−250) × 2.5–5.0 mm, softly pubescent with hairs up to 2 mm long on both surfaces, flushed with red towards the base of the abaxial surface, subtended by a subterranean amplexicaul cataphyll and non-amplexicaul prophyl. Inflorescence somewhat clustered, 25–30 mm across; scape erect to flexuose, 50–165 (−240) mm long, ± 1 mm diam., reddish pink with a grey bloom, rarely pubescent, breaking off at the base in fruit; spathevalves linear-lanceolate, 15–20 × 1–2 mm; bracteoles filiform, up to 6 mm long. Flowers 3–11, more or less ascends, widely funnel-shaped, scentless; pale pink with a deeper pink median dorsal band on each tepal, turning deep pink with age; pedicels straight to upwardly curved, 20–30 (−60) mm long, pale green to reddish pink. Tepals shortly adnate to the filaments for up to 1 mm, otherwise free, the outer spreading more widely than the inner, oblong-lanceolate, 10–17 × 2.5–4.0 mm. Stamens subect to slightly spreading, exserted beyond the tepals; filaments separate, up to 17 mm long, with the outer and inner whorls adnate to the style base for up to 2.5 mm and 3.5 mm respectively; anthers subcentrifixed, ± 3 mm long before opening, dark maroon; pollen cream-coloured. Style up to 19 mm long, equaling or slightly exceeding the stamens, slightly thickened and trigonous proximally, tapering gradually upwards; with nectar collecting in 3 droplets between the style and inner filaments; stigma shortly trifid. Seeds fleshy, ovoid, 2.0–2.5 mm diam., green to reddish brown. Chromosome number: 2n = 20.

Flowering time: May, but commencing in April when cultivated.

Diagnostic features: the long, lorate, pubescent leaves and somewhat funnel-shaped flowers of S. perryae are characteristics also found in S. pubescens and S. aestivalis, and indicate a close affinity with these species. The narrow leaves of S. perryae are diagnostic (at most 5 mm across). In contrast, S. pubescens and S. aestivalis have leaves more than 10 mm wide and the synapomorphy of yellow inner bulb tunics. The adnation of the filaments to the style is well developed and reaches a length of 3.5 mm. This feature is also conspicuous in specimens of S. pubescens, S. watermeyeri L. Bolus, as well as S. aestivalis. Unlike S. aestivalis the inner filaments of these species are closely adnate to the style and the three efferent canals, which conduct nectar from the sepal nectary to the sinus between the inner filaments and style, are only microscopically visible.

Distribution and habitat: S. perryae is known from a single small population on the northern Bokkeveld escarpment between Grasberg and Theunisdrift, northwest of Nieuwoudtville (Figure 2). Plants grow in clay soil in association with low karroid shrubs.
FIGURE 3.—Strumaria perryae. 1, inflorescence; 2, vegetative habit; 3 & 4, whole flowers; 5, androecium and gynoecium with free portion of foremost stamen removed and with nectar between the inner filaments and style; 6, transverse section through column formed by fusion of the stamens to the style; 7, anther attachment, lateral view; 7A, dorsal view; 7B, ventral view. Drawn from Perry 997.
**Eymology:** the epithet honours Miss Pauline Perry of the National Botanical Garden at Worcester, who discovered this species. She has also located several rare and poorly documented species of Strumariinae from Namaqualand.


3. *S. discifera Marloth ex Snijman*, sp. nov., a speciebus ad *Strumarium* sensu lato pertinencibus, bulb tunicis interioribus albidis, foliis longis lanceolatis (ad 160 mm), pubescentia (cette in juvénibus), floribus stellaribus, tepalis calicinalibus, styli basi strumosa et strumae forma manifeste bulbiform vel discoidea distincta.

**TYPE.**—Cape Province, 3118 (Vanrhynsdorp): (−DB), Bokkeveld Mountains, top of Koebee Pass, 18-4-1981, Snijman 443 (NBG, holo.; K, PRE).

**Bulbs** solitary or forming large clumps, ovoid to subglobose, 10—20 mm diam., with outer tunics light brown and softly fibrous, fleshy and white or occasionally pale mauve within; neck (10—) 20—60 mm long. **Leaves** absent or incipient at anthesis, 2 or occasionally 3, suberect to prostrate, narrowly lanceolate, 20—160 × 3—10 mm, pubescence variable, with long soft hairs or short hairs covering both surfaces or the adaxial surface only, rarely glabrous, sometimes flushed with red towards the base of the abaxial surface, subtended by a subterranean ampelicaul cataphyll and non-ampelicaul prophyl.

**Inflorescence** spreading, 25—130 mm across; scape somewhat flexuose, 50—140 mm long, ± 2 mm diam., green to reddish brown; glabrous or rarely pubescent, usually breaking off at ground level while fruiting; spathe valves linear-lanceolate, up to 30 × 3 mm; bracteoles filiform, up to 5 mm long. **Flowers** (2—) 5—16, spreading, stellate, glistening white, with an olive-green to pink median dorsal stripe on each tepal, scented or scentless; pedicels straight to upwardly curved, 20—75 mm long, concolorous with the scape. **Tepals** free to base, outspread, with the outer whorl often deflexed, oblong-lanceolate, 4—7 × 1.5—30 mm, channelled, sometimes abruptly conduplicate in the proximal third. ** Stamens** equaling or slightly shorter than the tepals, spreading; filaments separate, adnate proximally to the swollen style, with the inner whorl usually attached slightly higher up than the outer; anthers subcentrifixed, approximately 2 mm long and wine-red before opening; pollen cream-coloured. **Ovary** with 1—3 ovules per locule. **Style** up to 7 mm long, equaling or slightly exceeding the stamens, variably dilated in the proximal half, either somewhat bulbiform or discoid with a prominent distal irregular rim, narrowly terete in the distal half, with nectar collecting in 3 droplets between the base and inner filaments; stigma sharply trifid. **Seeds** fleshy, ovoid 2.5—4.0 mm diam. green to reddish brown. **Chromosome number:** 2n = 20.

**Flowering time:** March to May.

**Diagnostic features:** in comparison to the group of closely allied pubescent-leaved species with white-fleshed bulbs and stellate flowers, *S. discifera* has consistently long, narrowly lanceolate leaves, distinctly channelled tepals and a conspicuous bulbiform to discoid swelling at the base of the style.

**Distribution and variation:** *Strumaria discifera* is distributed between Vanrhynsdorp and Nieuwoudtville eastwards to Calvinia and the Roggeveld escarpment in the northwestern Cape (Figure 5).

The species includes a polymorphic range of populations. From the dolerite ridges on the outskirts of Nieuwoudtville the bulbs are densely clump-forming, whereas other known populations comprise scattered solitary bulbs. The shape of the swelling at the base of the style is also variable. The clump-forming bulbs have a pronounced discoid stylar swelling with a frilly rim. This character state is fairly consistent within the population and is probably maintained through recurrent vegetative propagation. Collections east of Nieuwoudtville to the Hantamsberg and Bloukrantz Pass near Calvinia also have disc-like swellings, but these are not as broad as those in the Nieuwoudtville populations and lack a prominent rim. Elsewhere in the distribution range the stylar swelling tends to be bulbiform in shape. Since the specimens from the clonal population on the dolerite koppies at Nieuwoudtville can be adequately diagnosed, these are described here as a new subspecies.

3a. *S. discifera* subsp. *discifera*. Figure 4.

**Bulbs** solitary. **Leaves** 20—120 × 4—10 mm, with 1—3 mm long, soft patent white hairs, occasionally both surfaces glabrous but then juveniles pubescent. **Scape** glabrous. **Tepals** 5—6 × 1.5—3.0 mm, channelled evenly throughout. **Style** smoothly bulbiform or irregularly thickened and longitudinally ridged in the proximal quarter.

**Distribution and habitat:** the known distribution extends from near Vanrhynsdorp, eastwards onto the Bokkeveld escarpment, across the high-lying plateau to Calvinia, then southwards along the edge of the Roggeveld escarpment to near Middelpos (Figure 5). Occupying gentle slopes and depressions, the taxon inhabits heavy loamy soils, most commonly derived from Nama and Ecua shales. The bulbs often grow in association with renosterbos (*Elytrarappus rhinocerotis* (L.f.) Less.).

CAPE.—3019 (Loeriesfontein): Kafferdam, about 6 km NW of Loeriesfontein on road to Kubisskouw Mountain, (−CD), Lavinus 27602 (NBG). 3118 (Vanrhynsdorp): N banks of Wiedouvier, near bridge between Klaver and Vanrhynsdorp, (−DA), Snijman 260 (K, MO, NBG, PRE); top of Koebee Pass, Bokkeveld Mountains, (−DB), 26-4-1988. Snijman 1172 (NBG, PRE), Snijman 443 (K, NBG, PRE). 3119 (Calvinia): Glenridge, (−AC), Barker 4672 (NBG); Glen Lyon, (−AC), 3-4-1982, Perry 1824 (K, MO, NBG, PRE); Maue & Oliver sub G.N. 19699 (PRE); 5 miles E of Nieuwoudtville towards Calvinia, (−AC), 18-4-1969, Barker 10612 (NBG); 11 km E of Nieuwoudtville towards Calvinia, (−AC), Perry 1094 (MO, NBG, PRE). Kafferdam, lower slopes of Hantam Mountains, (−BD), Barker 9344 (NBG); Bloukrantz Pass, (−DA/DB), Bayer 1853 (NBG); Farm Bloemfontein. Roggeveld escarpment, (−DD), 10-5-1985, Snijman 878 (NBG).

3b. *S. discifera* subsp. *bulbifera* Snijman, subsp. nov., a subspecie typica bulbo prolifero, styli basi strumosa, strumae forma discoidea et margini irregulari prominenti supra strumam distincta.

**TYPE.**—Cape Province, 3119 (Calvinia); (−AC), Nieuwoudtville Wildflower Reserve, 19-4-1983. Perry & Snijman 2042 (NBG, holo.; K, MO, PRE). Figure 6.

**Bulb** producing bulblets and forming dense clumps. **Leaves** 6.5—15.00 × 3—10 mm, both surfaces covered with...
2 mm long, white, patent hairs; adaxial surface flushed with red proximally. Scape minutely pubescent or glabrous. Tepals 5–7 × 2–3 mm, abruptly conduplicate at a point almost a third from the base, otherwise channelled; outer whorl slightly deflexed. Style discoid proximally, with a prominent irregular rim on the disc distally, abruptly narrowed into a slender column above.

Distribution and habitat: subsp. bulbifera inhabits slopes and hollows of low exposed dolerite ridges on the Bokke-
Bothalia 22,1 (1992)

Snijman 863 (BOL); top of Vanrhyn's Pass, (—AC), meyer in Herb. Afr. Bol. 18648

densely aggregated bulbs grow in deep, red loamy soils, veld escarpment near Nieuwoudtville (Figure 5). The

30-4-1946,

and non-amplexicaul prophyll.

2 -3  mm, pale green to pink with a grey bloom, breaking

or slightly shorter than the tepals, spreading; filaments

30-100 mm across; scape slightly flexuose, 60-140

mm; adaxial surface glaucous, covered with 2.5 mm long,

within; neck up to 35 mm.

TYPE.— Cape Province, 2917 (Springbok): (-BA), Richtersveld, 29° 10.05'S, 17° 41.49'E, E of Kosies, 3200


Bulb solitary, subglobose, 15—25 mm diam., with light brown lightly fibrous outer tunics, fleshy and yellowish

within; neck to 35 mm. Leaves absent at anthesis, 2 prostrate, narrowly elliptical to lorate, 30—85 x 10—15

mm; adaxial surface glaucous, covered with 2.5 mm long, soft white, patent hairs; abaxial surface glabrous, shiny

green, subtended by a subterranean amplexicaul cataphyll

bus luteis, foliis glaucis, pubescentia in pagina adaxiali

prostrate, narrowly elliptical to lorate, 30-85

mm; abaxial surface glaucous, covered with 2.5 mm long,

within; neck up to 35 mm.

Flowers

Tepals

Stamens

Stamens

filiform, up to 25 mm long.

filiform, up to 5 mm long.

style to the base, outspread to slightly deflexed, oblong-
lanceolate, 8-15 x 2-4 mm, with plane edges. Stamens

equalling or up to 2 mm longer than the tepals, becoming

outspread; filaments connate proximally into a tube protruding from the perigone throat by (1.0-) 1.5-4.0

mm, tapering smoothly upwards from a broad obscurely

conoidal base, with nectar collecting in 3 droplets between

the style base and inner filaments; stigma shortly tritid. Seeds fleshy, ovoid, approximately 2 mm diam. green

to reddish brown. Chromosome number: 2n = 20 + 2—3B.

Flowering period extends from March to April.

Diagnostic features: the leaves of S. villosa are softly

villous on the adaxial surface and are characteristically

glauous. Unlike other pubescent-leaved species of the

Strumariinae with white, stellate flowers and filaments

adnate to the style, S. villosa is specialized in having yellow

inner bulb tunics.

Distribution and habitat: this rare species is known from

only one locality in the Richtersveld, near Kosies, (Figure

5). Locally abundant on low hills, the species is confined

to exposed, east-facing slopes amongst quartz pebbles

which overlie weathered granite soil.

CAPE.— 2917 (Springbok): 29° 10.05'S, 17° 41.49'E of Kosies, (—BA), Van Berkel 315 (NBG); 29-3-1981, Van Berkel 311 (K, NBG, PRE); Perry 1544 (K, MO, NBG, PRE, S).

5. H. speciosa Snijman, sp. nov., quoad tubum brevissimum perigonii et tepala plana ad Hesseam pilosulam

D. & U. Müller-Doblies et H. incanam Snijman accedit, sed ad amobus foliis glabris et staminibus longioribus

(æquantibus vel superantibus tepala) satis differt. Figure 8.

TYPE.—Namibia, 2818 (Warmbad): (-CA), Warmbad

District, Farm Witpütz, 15-5-1963, Giess, Volk & B. Bleissner 6960 (WIND, holo.; PRE).

Bulb solitary, deep-seated, subglobose, 25—60 mm

diam., covered with several layers of cream-coloured
cottony fibrous tunics, extended into a stout neck 100—170

mm long. Leaves absent at anthesis, 2, recurved, lorate,

up to 120 x 4—6 mm, plane, glabrous, dark green and

flushed with red towards the base; amplexicaul cataphyll

remaining subterranean; prophyll unknown. Inflorescence
dense, hemispherical to spherical, 70—120 mm across;

scape erect to somewhat flexuose, 60—160 x 3—5 mm,

initially green, breaking off at the base in fruit; spathe

valves linear-lanceolate, 20—40 x 3—7 mm; bracteoles

filiform, up to 25 mm long. Flowers (20—) 30—65,

spreading, stellate, white to delicate pink with deep pink

or greenish median stripes on the undersurface, ageing
to light brown, with a heavy coconut-like scent; pedicels

straight, 20—50 mm long, becoming straw-coloured.

Tepals almost free to the base or very slightly adnate to

the staminal tube for up to 0.25 mm, otherwise outspread,

oblong-lanceolate, 8—15 x 2—4 mm, with plane edges. Stamens

equalling or up to 2 mm longer than the tepals, becoming

outspread; filaments connate proximally into a tube protruding from the perigone throat by (1.0—) 1.5—4.0

mm, subulate above, occasionally shortly toothed in the

axes between adjacent filaments; anthers centriixed, 3 mm long and dark wine-red before opening; pollen cream-

coloured. Style up to 15 mm long, narrow throughout, with nectar collecting in a well around the base; stigma shortly


Flowering time: from late March into May.

Diagnostic features are the deep-seated bulb with a long

neck (up to 170 mm); the somewhat spherical inflores-

FIGURE 5.—The known geographical distribution of Strumaria discifera subsp. discifera, O; S. discifera subsp. bulbifera, A; and S. villosa, •.
FIGURE 6.—Strumaria discifera subsp. bulbifera. 1. inflorescence; 2. vegetative habit; 3 & 4. flowers with tepals removed to show variable style sculpturing and nectar droplets between the inner filaments and style; 5. whole flower; 6. anther attachment, dorsal view; 6A, ventral view; 6B, lateral view. Drawn from Perry & Snijman 2042.
FIGURE 7.—Strumaria villosa. 1, plant with inflorescence; 2 & 3, flowers indicating the attachment of the filaments to the style base and nectar droplets between the inner filaments and style; 4, anther attachment, dorsal view; 4A, ventral view; 4B, lateral view; 5 & 6, leaves. Drawn from Van Berkel 156.
FIGURE 8.—Hessea speciosa. 1, inflorescence; 2 & 3, whole flowers; 4, partial section of flower; 5, anther attachment, lateral view; 5A, ventral view; 5B, dorsal view; 6, vegetative habit. Drawn from Snijman 1163.
cence; and the very short perigone tube (0.25 mm or less). In these respects *H. speciosa* is similar to the shortly pubescent-leaved species, *H. pilosula* D. & U. Mller-Doblies and *H. incana* Snijman, with which it also shares plane tepals. However, the glabrous leaves and the relative length of the stamens to the tepals distinguish it from these species. The stamens equal to or up to 2 mm longer than the tepals in *H. speciosa*, whereas they are distinctly shorter than the tepals (by 3 mm or more) in *H. pilosula* and *H. incana*. The inflorescence of *H. speciosa* may sometimes be confused with flowering material of *H. breviflora* Herb, from Namaqualand, but unlike this species the bulbs are without a conspicuous, exserted, red cataphyll which sheathes the foliage leaves.

**Distribution and habitat:** *Hessea speciosa* is recorded from red sand dunes and flats of friable loam, associated with the extensive drainage system of seasonal rivers from Warmbad in southern Namibia to Fraserburg in the central Cape. The associated vegetation is predominantly grassveld (Figure 9).

**Variation:** often the northerly populations have a distinct staminal tube (1.5—3.5 mm long), whereas specimens from the south of the distribution range have only a shortly developed staminal tube (less than 1.5 mm). Both white and pale pink flower forms occur, as well as the occasional novelty of small teeth in the axes between adjoining filaments.

**References**


