

Salpinctium, a new genus of Acanthaceae in southern Africa

T.J. Edwards* and Fiona Getliffe Norris¹

Department of Botany, University of Natal, P.O. Box 375, Pietermaritzburg, 3200 Republic of South Africa

Present address: ¹National Botanic Gardens, Private Bag X7, Claremont, 7735 Republic of South Africa

Accepted 27 June 1988

A new genus, *Salpinctium* T.J. Edwards, is distinguished from *Asystasia* Blume by its elongate, linear corolla and bilateral pollen. The following new combinations are made: *S. stenosphon* (Clarke) T.J. Edwards and *S. natalense* (Clarke) T.J. Edwards. *S. hirsutum* T.J. Edwards is a new species.

Salpinctium T.J. Edwards, 'n nuwe genus word van *Asystasia* Blume onderskei deur die verlengde, lynvormige kroon en bilaterale stuifmeelmorfologie. Die volgende nuwe kombinasies word gemaak: *S. stenosphon* (Clarke) T.J. Edwards en *S. natalense* (Clarke) T.J. Edwards. *S. hirsutum* T.J. Edwards word nuut beskryf.

Keywords: Acanthaceae, *Asystasia*, palynology, *Salpinctium*, taxonomy

*To whom correspondence should be addressed

Introduction

Asystasia Blume was based on *A. intrusa* from the East Indies and comprises some 35 species distributed throughout the tropical and subtropical Old World. A distinguishing feature of the genus is the slightly curved corolla in which the tube is narrow at the base but markedly inflated in the upper two-thirds. Clarke (1912), however, included in *Asystasia* two species with tubes that are narrow and elongate and remarked that their pollen 'resembled that of *Mackaya*'. In the course of a study of *Asystasia* in southern Africa we paid special attention to these exceptions and conclude that there are sufficient differences to warrant the establishment of a new genus, *Salpinctium* T.J. Edwards (from the diminutive of the Greek *salpinx*, a trumpet).

Materials and Methods

Herbarium specimens from the Natal University collection (NU), were augmented by loans from GRA, K, NH and PRE. Living material was collected and grown at the University of Natal Botany Garden. Pollen gleaned from herbarium specimens was mounted directly on brass stubs, coated with gold palladium and viewed on a Jeol 200 Scanning Electron Microscope.

Results

The differences between *Asystasia* and *Salpinctium* are summarized in Table 1. Pollen morphology is illustrated in Figures 1 and 2.

Discussion

Clarke (1912) commented on variation in pollen morphology within the genus *Asystasia* and singled out *A. stenosphon* and *A. natalensis* as having unusual pollen, 'similar to that of *Mackaya*'. Pollen of *Mackaya* is subglobose and tricolporate while that of *Asystasia* is perprolate with three apertures. Pollen of the proposed new genus is almost spheroidal and bicolporate. Coupled

with this difference in pollen, are differences in floral form that are stable under cultivation. The corolla of *Asystasia sensu stricto* is zygomorphic and slightly bilabiate. It is inflated in the upper two-thirds and has a very prominent palate usually with contrasting markings that presumably are nectar guides. In contrast, the corolla of *Salpinctium* is narrowly linear and distinctly bilabiate. These morphological differences do not appear to have been recognized as generic markers to date.

Lindau (1897) included with *Asystasia*, the genera *Pseudoasystasia* and *Asystasiella*. *Pseudoasystasia* was described as having flowers similar to those of *Petalidium*, that is with a curved tubular corolla flaring at the mouth, and *Asystasiella* has polyporate echinate pollen. Neither of these generic names applies to *Salpinctium* which is characterized by a corolla with a long straight tube and bicolporate pollen. While differences in corolla form might merely reflect differences in pollinator, the correlation of these with distinctive pollen morphology leads us to propose a new genus.

Asystasia sensu stricto is represented in South Africa by *A. atriplicifolia* Bremek., *A. gangetica* (L.) T. Anders, *A. pinguifolia* T. Edwards, *A. schimperii* T. Anders, *A. subbiflora* C.B.Cl. and *A. varia* N.E. Br. The

Table 1 Diagnostic differences between *Asystasia* and *Salpinctium*

Character	<i>Asystasia</i>	<i>Salpinctium</i>
Leaf shape	Elliptical or ovate	Trullate
Corolla tube	Distally dilated	Linear
Corolla form	Weakly bilabiate	Strongly bilabiate
Pollen symmetry	Radiosymmetrical	Bilateral
Pollen shape	Perprolate	Discooid
Colpi	3	2

genus as a whole extends through tropical and sub-tropical Africa into Asia. *Salpinctium* appears to be endemic to southern Africa and presently comprises 3 species.

Salpinctium T.J. Edwards gen. nov.

Type: *S. stenosphon* (C.B. CLarke) T.J. Edwards

Salpinctium differt ab *Asystasia* elongatis linearibus corollae tubis cum forma bilabiata et polline bilateraliter symmetrico.

Perennial herb, 100–500 mm, stems erect, quadrangular, branching predominantly from the base, glabrous to densely pubescent. *Leaves* usually petiolate, petioles up to 12 mm long; blade elliptic to trullate, cordate or widely ovate, pinnately reticulate, entire,

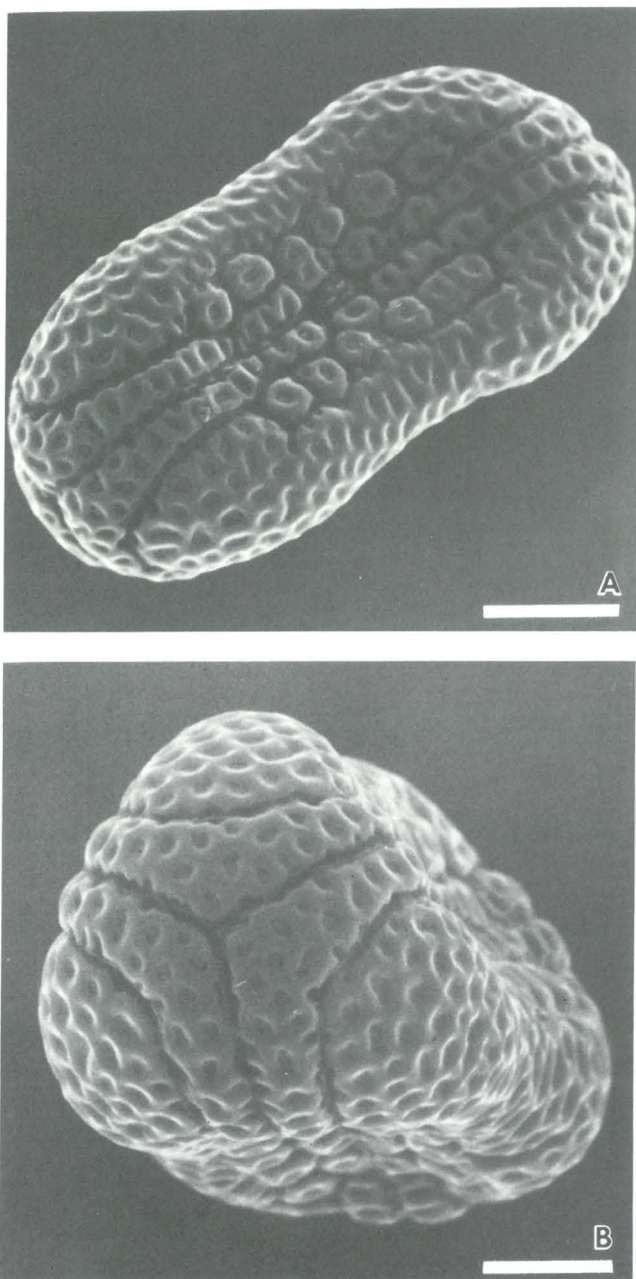


Figure 1 Pollen of *Asystasia schimperi* T. Anders. A. Colpoid view. B. Polar view. (Bar = 12 μ m).

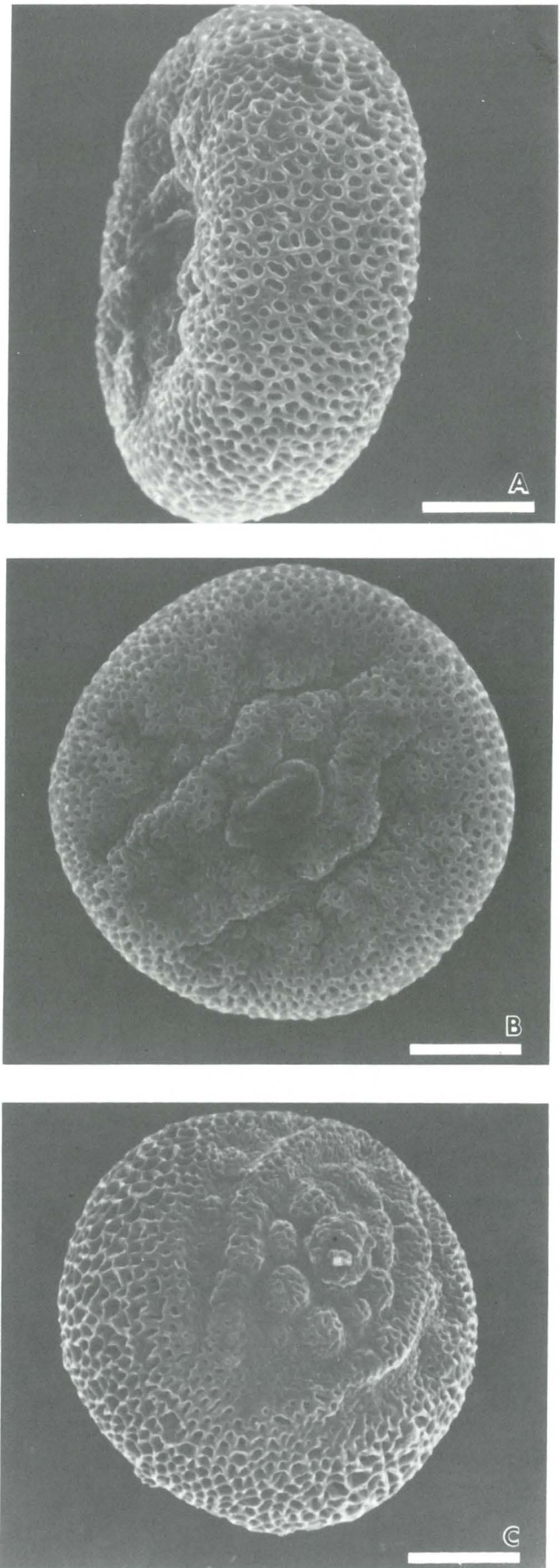


Figure 2 Pollen of *Salpinctium*. A. *S. natalense*, peripheral view. B. *S. natalense*, colpoid view. C. *S. hirsutum*, colpoid view. (Bar = 12 μ m).

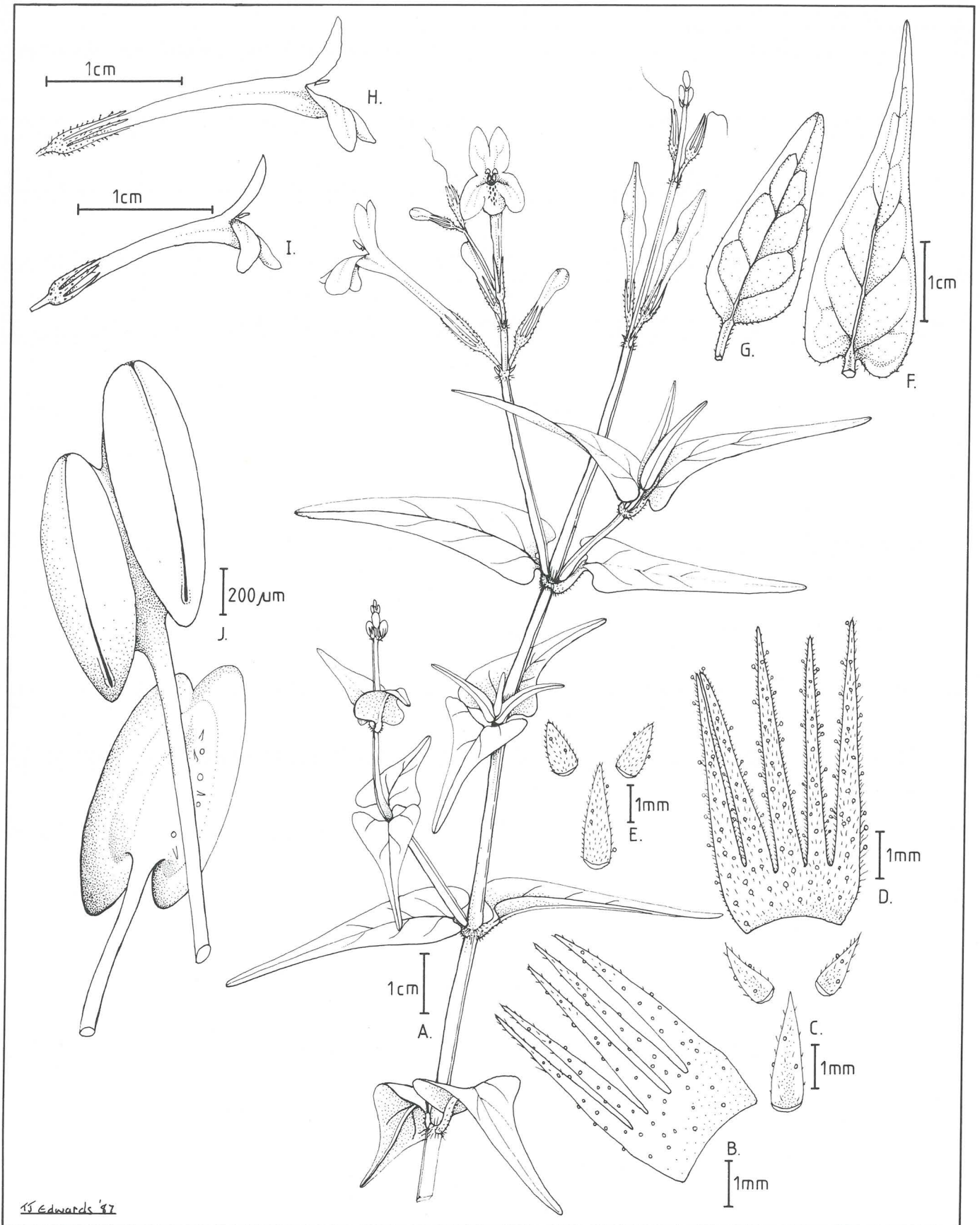


Figure 3 Morphology of species of *Salpinctium*. A. *S. natalense*. B. Calyx of *S. stenosphon* with sessile glandular trichomes. C. Bract and bracteoles of *S. stenosphon*. D. Calyx of *S. natalense* with stalked glandular trichomes and eglandular filiform trichomes. E. Bract and bracteoles of *S. natalense*. F. Leaf from the inflorescence of *S. natalense* with a cordate base. G. Leaf from a vegetative branch of *S. natalense* with an obtuse base. H. Flower of *S. natalense*. I. Flower of *S. stenosphon*. J. Anthers of *S. natalense*, adaxial and abaxial views.

almost glabrous to densely pubescent. *Inflorescence* terminal, rarely branched, up to 100 mm long, bearing 5–20 flowers in decussate pairs. *Flowers* tubular, bilabiate, white with inconspicuous blue markings on palate, solitary in the axil of a bract and pair of minute, linear bracteoles. *Calyx* persistent, pentamerous, divided to the base, sepals linear, glabrous or glandular pubescent. *Corolla tube* linear, 15–25×2–3 mm, pubescent without, glabrous within, bilabiate, upper lip 2-lobed; lower lip longer and unequally 3-lobed and with a poorly developed palate and faint nectar guides. *Stamens* four, epipetalous and didynamous; filaments glabrous; anthers bithecate, muticous; thecae slightly divergent; connective often with glandular or eglandular trichomes. *Pollen* compressed spheroidal, bicolorate; poral view circular, 45–50 μm in diameter; lateral view ellipsoidal with narrow axis 35–40 μm ; colpi broad, flanked by two pseudocolpi and four margocolpi alternately banded and areolate; exine sculpturing coralline. Ovary oblong, glabrous or pubescent, subtended by a cupular nectary; stigma bifid. *Capsule*

loculicidal, stipitate, rostellate, bilocular with 2 seeds per locule, jaculators acute, or bifid. Seeds reniform or pyriform, laterally compressed, reticulate and tuberculate (Figures 3 & 4).

Key to species

- 1a. Plants pubescent; leaves widely ovate *hirsutum*
 1b. Plants nearly glabrous except at nodes; leaves elliptical, or cordate, to trullate 2
 2a. Calyx conspicuously hairy with stalked glandular and eglandular hairs, without, and within; found in Natal/Kwa Zulu *natalense*
 2b. Calyx glabrous or with sessile glandular trichomes outside, very sparsely glandular within; restricted to the eastern Cape *stenosiphon*

1. *Salpinctium hirsutum* T.J. Edwards sp. nov.

A *S. stenosiphon* (Clarke) T.J. Edwards et *S. natalense* (Clarke) T.J. Edwards differt praesentia trichomatum filiforme in foliis et inflorescentia densa.

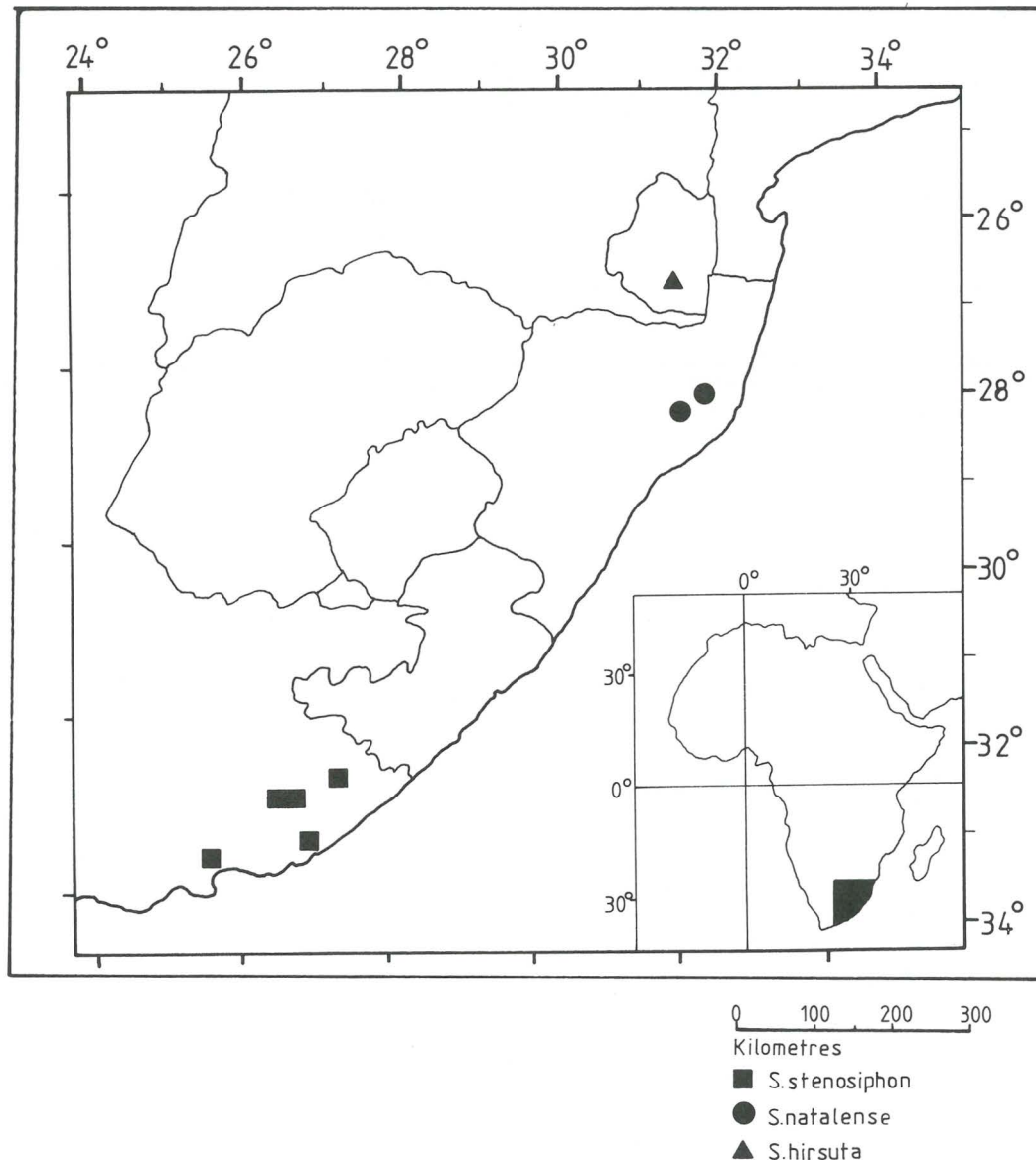


Figure 4 The recorded distribution of three species of *Salpinctium* in southern Africa.

TYPUS.—Swaziland: Stegi, *Compton 28397* (PRE!, holotypus).

Erect perennial, 150–350 mm, pubescent throughout. *Leaves* widely ovate, 15–46×10–28 mm. *Inflorescence* dense bearing 6–15 flowers; bracts 0,5–1,5 mm long, deltate; bracteoles minute. *Sepals* 8–10×1 mm, glandular pubescent on outer surface. *Corolla* tube 15×2 mm; lobes rounded, 5×3 mm; upper lip 4 mm long, lower lip 6 mm long. *Anther* connective eglandular. *Pollen* bicolorate, margocolpi 2 pairs, inner pair areolate, outer pair well-defined bands. *Ovary* 3–4×1,5–2 mm, covered with filiform eglandular and glandular trichomes. *Style* arcuate 15–18 mm pubescent in the basal 1/3; stigma bifid. *Capsule* and seeds not seen. Flowering November.

Material examined

—2631 (Mbabane): Hlatikulu (–CD), *Compton 26233* (PRE); Stegi, (–CD), *Compton 28397* (PRE).

S. hirsutum is known only from these two gatherings in Swaziland. Its distinguishing features are its densely pubescent vegetative parts and ovary.

2. *Salpinctium natalense* (Clarke) T.J. Edwards comb. nov.

Asystasia natalensis Clarke, in Fl. Cap. 5(1): 42 (1912); Ross, Flora of Natal: 325 (1972). Type: Natal, without precise locality, *Gerrard 1680* (K, holo.!).

Erect perennial, 100–500 mm, nearly glabrous but nodes sparsely pubescent. *Leaves* elliptic to trullate 15–65×9–20 mm; venation reticulate with up to 8 pairs of lateral veins, with sparse scattered hairs. *Inflorescence* up to 90 mm, bearing 7–20 flowers 5–13 mm apart; bracts 6×1,5 mm, bracteoles linear, minute. *Calyx lobes* 0,5–1×6–7 mm, conspicuously hairy on both surfaces, with glandular and eglandular hairs. *Corolla* tube 25×2,5 mm; lower lateral lobes 8×5 mm reflexed, lower median lobe 10×5 mm, with a poorly developed palate and insignificant nectar guides. *Anther* connective glandular pubescent. *Pollen* bicolorate, margocolpi 2 pairs; inner pair well-defined bands and outer pair areolate or ill defined. *Ovary* oblong 3–4×2 mm, densely covered with sessile glands; style 25–26 mm, glabrous; stigma broadly bifid. *Capsule* 23 mm long, stipe 10 mm, jaculators bifid at tips. *Seeds* pyriform, 6–8 mm, compressed but with convex sides; tubercles irregular, pointed.

Flowering October–June.

Material examined

—2831 (Nkandla): Hluhluwe (–BB), *Edwards, Balkwill, Manning & Getliffe Norris 8* (NU), *Ward 1744* (PRE, NU); Nkwaleni, near Eshowe (–CB), *Schrire 1496* (NH).

—Without precise locality *Gerrard 1608* (K, holo.!).

S. natalense occurs as scattered colonies on the stony shaded floor and margins of *Acacia* scrub in Natal. It is distinguished from *S. stenosphon* by its larger flowers

and hairy calyx and from *S. hirsutum* by its almost glabrous vegetative parts.

3. *Salpinctium stenosphon* (Clarke) T.J. Edwards comb. nov.

Asystasia stenosphon Clarke, in Fl. Cap. 5(1): 42 (1912). Type: Cape, Fort Beaufort Division, Koonap Heights, *Baur 271* (K, holo.).

Erect, perennial, 100–250 mm almost glabrous but with pubescent nodes. *Leaves* cordate to trullate, usually with petioles up to 10 mm, 14–47×10–20 mm; venation reticulate with 4–6 pairs of lateral veins. *Inflorescence* up to 40 mm, bearing 5–12 flowers 5–10 mm apart. *Bracts* deltate 2×0,5 mm, bracteoles minute. *Calyx* glabrous on the outside but sparsely glandular within. *Corolla* tube 14–19×2–3 mm; upper lip 5 mm; lower lip 8 mm. *Anther* connective eglandular. *Pollen* bicolorate, margocolpi in 2 pairs; inner pair as well-defined bands and outer pair areolate or ill defined. *Ovary* 3–4×2 mm glabrous; style 15–17 mm; stigma bifid. *Capsule* 20×6 mm, stipe 10 mm; jaculators 3–5 mm with acute undivided tips. *Seeds* reniform, 4,5×0,75 mm compressed with irregular tubercles and a discontinuous peripheral ridge.

Flowering November to March.

Material examined

—3266 (Fort Beaufort): Fort Beaufort (–DC), *Story 2229* (PRE); Sandile's Kop, University of Fort Hare (–DD), *Giffen 1616* (Fort Hare Herbarium); Sandile's Kop, *Edwards, Cadman & Getliffe Norris 3191* (NU).

—3227 (Stutterheim): King Williams Town (–CD), *Galpin 5918* (GRA, PRE); Tamancha, *Sim 4146* (GRA), *4174* (GRA, PRE).

—3325 (Port Elizabeth): Zuurburg (–BC), *Holland 273* (GRA).

—3327 (Peddie): Hunt's Drift (–AC), *Jacot Guillarmod 7362* (RUH).

S. stenosphon is restricted to the eastern Cape where it occurs in shade of taller bushy vegetation. It is very similar to *S. natalense* but differs in its glabrous outer calyx and the smaller flowers.

Acknowledgements

Financial assistance from the CSIR Foundation for Research Development and the University of Natal Research Fund is gratefully acknowledged. We acknowledge the co-operation of Directors of Herbaria in permitting us to borrow material and the assistance given by the Electron Microscope Unit of the University of Natal. Lastly Mr M. Lambert is thanked for his latin translations.

References

- CLARKE, C.B. 1912. Acanthaceae. In: Flora Capensis, ed. Thiselton-Dyer, W.T., Vol. V(I), Lovell Reeve, London.
LINDAU, G. 1897. Acanthaceae. In: Die Natürliche Pflanzenfamilien, eds Engler, H.G.A. & Prantl, K.A.G., Vol. IV(3b), Wilhelm Engelmann, Leipzig.