
A New Species of *Sarcostemma* (Asclepiadaceae) from Malawi

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ABSTRACT. A new species of Old World *Sarcostemma*, *Sarcostemma mulanjense* from Malawi, is described.

Sarcostemma viminale (L.) R. Br. and its allies are widespread throughout the arid areas of the Old World. Because dried specimens rarely show such key characters as habit, morphology of the stem base, and floral color, the group is taxonomically difficult and still lacks a clear-cut concept applicable over its entire range. However, field-based studies in more limited areas have resulted in the distinction of several closely related species and subspecies (Adams & Holland, 1978a, b, for East Africa; Forster, 1988, for Australia). Recent fieldwork in Malawi has resulted in the discovery of a new, clearly delimited species endemic to the southern Malawi mountains.

Specimens have been studied from BM, MO, and NU. Fieldwork in Malawi (by S. Liede) has yielded living material, cultivated at the Institut für Botanik, Münster (Germany), Kenyatta University, Nairobi (Kenya), and the National Botanic Gardens, Kirstenbosch (South Africa). Corona terminology, fully explained in the description, is based on a recent study of corona types in Asclepiadaceae and Periplocaceae (Liede & Kunze, unpublished). To account for the present unsatisfactory taxonomic situation of the Old World species of *Sarcostemma*, the term "*S. viminale* and its allies" is used to circumscribe all Old World members of the genus, except for *S. pearsonii* N. E. Br., while the term "*S. viminale*" excludes the segregated species.

Sarcostemma mulanjense Liede & Meve, sp. nov. TYPE: Malawi. Mt. Mulanje, outer slopes at Chitakale stream, W branch, 15°57'S, 35°36'E, 1,250 m, 27 Nov. 1985, Chapman & Chapman 6892 (holotype, MO). Figures 1, 2.

Sarcostemma viminale R. Br. affinis, sed differt surculis omnino glabris, vivide viridis et altitudine gynostegii quam diametro majore.

Plants succulent, without rhizome, not forming an aboveground trunk, much branched basally, ex-

uding white latex. *Shoots* to 1.5 m long, 3–5 mm diam., bright green, not glaucous, totally glabrous, erect when young, later bending over, but never twining; internodes 15–40(–60) mm long; nodes slightly flattened, without corky sheath; normally not rooting at the nodes. *Leaves* reduced to scales, 1 mm long, 1 mm wide, ovate, apiculate, green when young, soon turning brown apically, deciduous. *Inflorescences* terminal, umbelliform, 5–7-flowered, sessile; pedicels 4–7 mm long, sparsely indumented with trichomes 150–170 μm long. *Buds* conical, 3.5–4 mm long, 2.5–3 mm diam., petals imbricate in bud, dextrorse. *Flowers* sweetly scented, scent *Philadelphus*-like. *Calyx* rotate; sepals 0.9 mm long, 0.8 mm wide, ovate, sparsely indumented with trichomes 150–170 μm long. *Corolla* rotate; corolla lobes fused only at the base, 4–6 mm long, 1.4–1.6 mm wide, cream-colored with reddish tinged base and median stripe, glabrous, patent to almost horizontal at anthesis, oblong, apically blunt with a tip, flat, slightly undulating, with slightly revolute margins. *Gynostegial corona* white, consisting of an outer ring of fused connate staminal (Cs) and interstaminal (Ci) parts, (C_(is)), plus five inner staminal parts (Cs), connate to C_(is). C_(is) annular, Cs 1.4 mm high, slightly cucullate, Ci 1 mm high, erect. Inner Cs 2.8–3 mm high, shorter than the gynostegium, cochleariform, connate to the back of the stamens to about 2/3 of anther height. *Gynostegium* sessile, 3.0–3.5 mm high, 1.4–2 mm diam., height clearly exceeding the diameter. *Stamens* trapezoidal, abaxially rounded, filament differentiated, 1.8 mm high; anther wings 0.6 mm long, clearly differentiated, paralleling the anther, parallel to each other, basally forming a distinct "mouth," consisting of outer rail alone; connective appendages 0.5 mm long, 0.5 mm wide, deltate, equaling the stamen in width, slightly inflexed. *Pollinarium*: corpusculum 200–220 μm long; caudicles 60–80 μm long, cylindrical, s-shaped, convex-concave, slightly thickened at the insertion of the pollinium; pollinia apically inserted, 280–380 μm long, 80–100 μm wide, elliptical in cross section, pyriform. Style apex cream, 0.9–1 mm diam, 0.7–0.8 mm high, upper part 0.4–0.5 mm high, higher than the lower part, conical to depressed-conical.

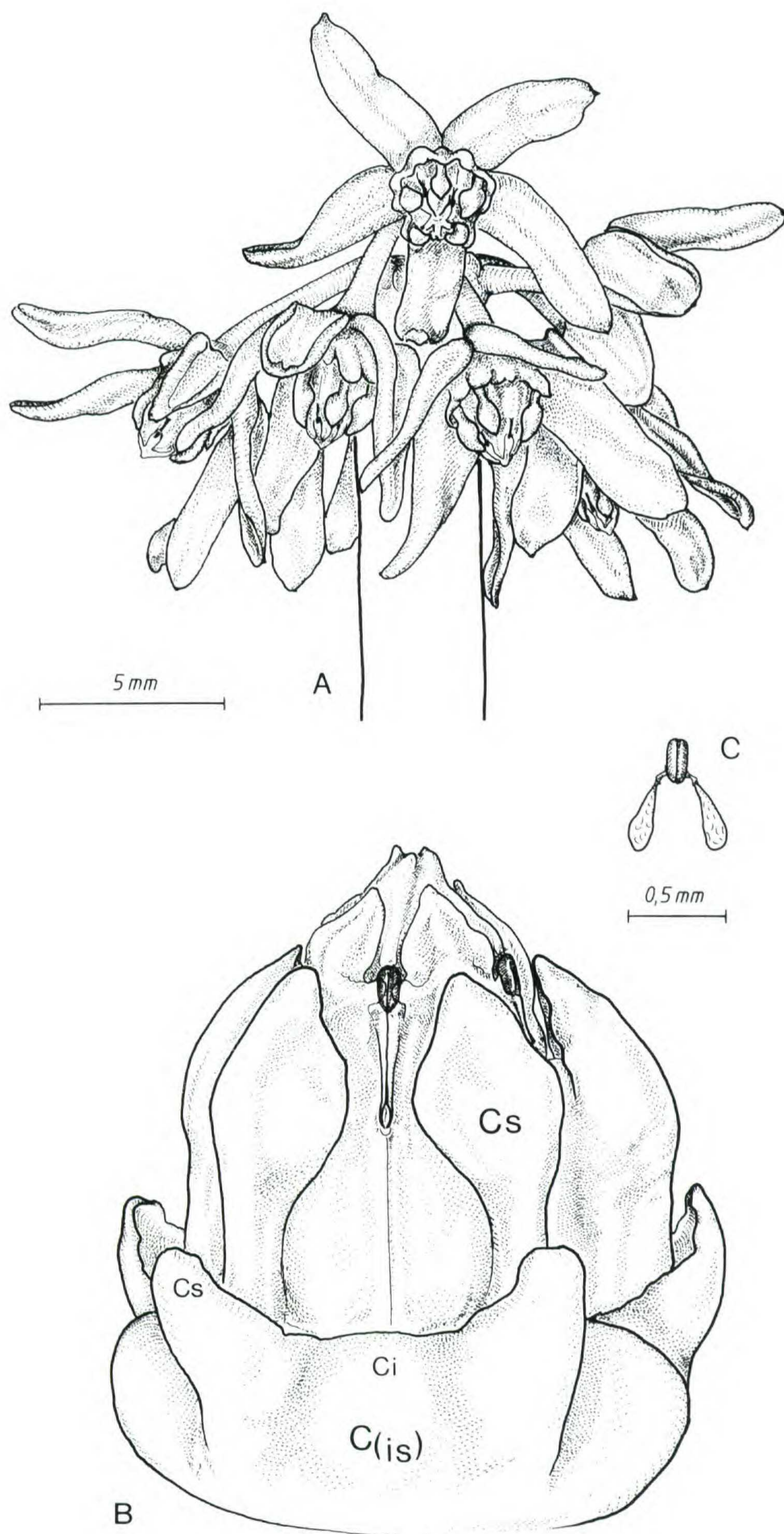


Figure 1. *Sarcostemma mulanjense* Liede & Meve. —A. Inflorescence. —B. Corona and gynostegium. —C. Pollinarium (Liede 2900). Ci: interstaminal part of corona; Cs: staminal part of corona; C_(is): fused staminal and interstaminal parts of corona.



Figure 2. *Sarcostemma mulanjense* in habitat on the Lichenya Plateau, Mt. Mulanje (Liede 2899). Note the cushionlike growth form and the dead branches of the last season.

Follicles and seeds unknown. Chromosome number: $2n = 22$ (Voucher: Liede 2900).

Distribution. Malawi, 15–17°S, 35–36°E; 900–2,100 m; on granitic outcrops between sedges, *Aloe*, and Velloziaceae (Figs. 2, 3).

Flowering time. November–April (according to dates on flowering specimens).

Paratypes. MALAWI. MULANJE: Mt. Mulanje, approach to Cilemba from the Likhubula valley, 15°57'S, 35°36'E, 2,100 m, 13 Mar. 1986, *Chapman & Chapman 7285* (MO); ascent from Likhubula via Chapaluka path, 19 Jan. 1967, *Hilliard & Burt 4504* (NU); Lichenya Plateau, near the Crater, 1,900 m, 16 Apr. 1991, *Liede 2899* (Inst. Bot. Münster); Lichenya Plateau, between hut and the Crater, 1,900 m, 16 Apr. 1991, *Liede 2900* (Inst. Bot. Münster); foot near Likhubula Forest station, 900 m, 17 Apr. 1991, *Liede 2902* (Inst. Bot. Münster). ZOMBA: Nkhoronje Hill, 15°25'S, 35°20'E, 1,120 m, 12 Apr. 1983, *La Croix 2425* (BM); Zomba Mt., 15°17'S, 35°17'E, 20 Nov. 1979, *Banda & Salubani 1617*, 1,600 m, 10 Mar. 1985, *La Croix 2731*, 27 Jan. 1978, *Seyani 765* (all MO).

Sarcostemma mulanjense possesses the corona structure $C_{(is)} + Cs$ (an outer ring consisting of fused

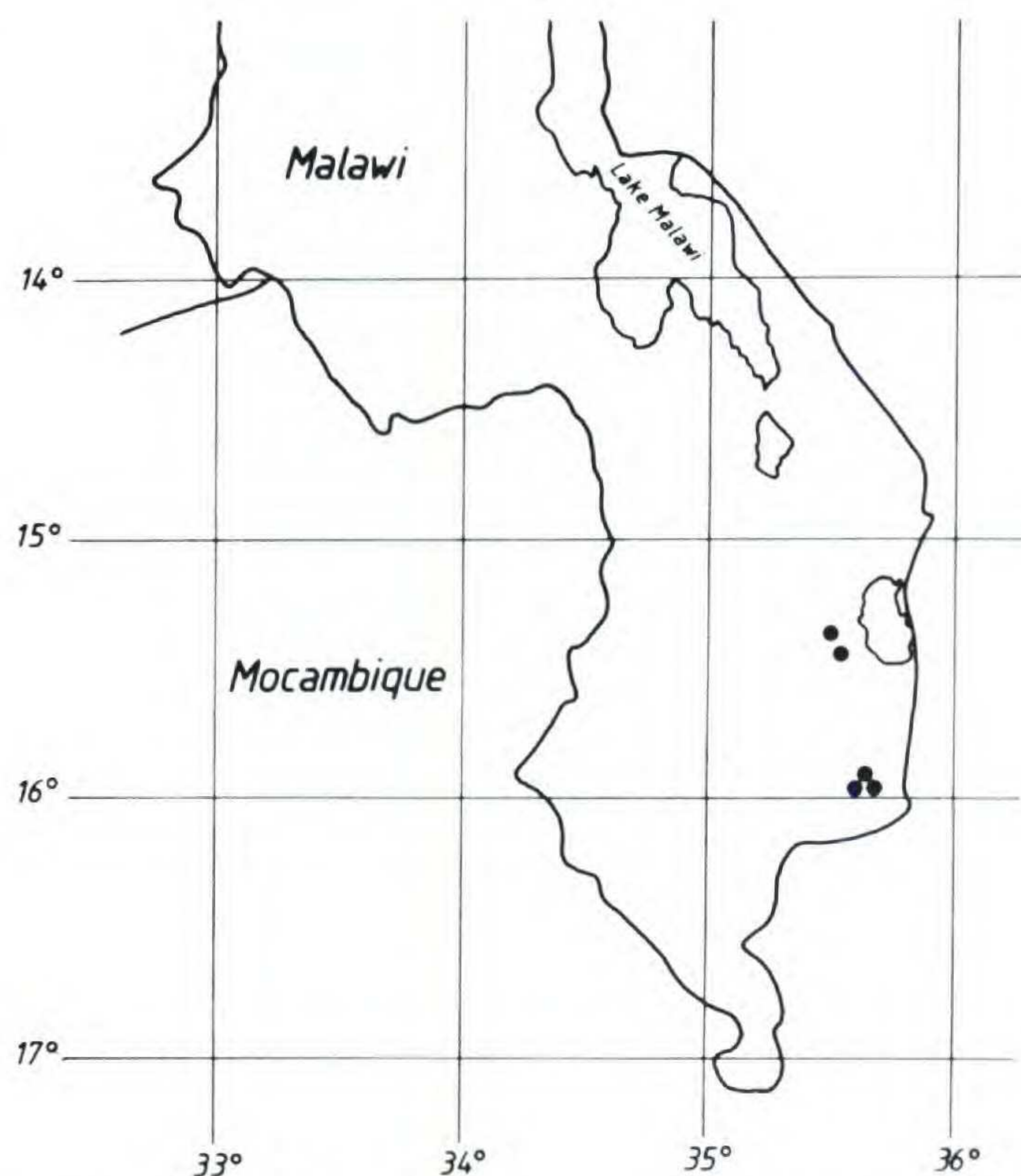


Figure 3. Distribution of *Sarcostemma mulanjense*.

staminal and interstaminal parts plus five inner staminal lobes) characteristic of *Sarcostemma* (Fig. 1B). *Cynanchum*, in contrast, always lacks inner staminal lobes; its corona can be described as $C_{(is)}$ (a single corona consisting of fused staminal and interstaminal parts). From all other African *Sarcostemma* species, *S. mulanjense* is readily distinguished morphologically by the height of the gynostegium exceeding its diameter. In addition, the cochleariform inner Cs, the well-differentiated parts of Cs and Ci in the outer $C_{(is)}$ and the flat, slightly undulating, cream-colored corolla lobes set it apart from *S. viminale*. Ecologically, it is different in its preference for high altitudes and undisturbed vegetation (Fig. 2).

Species rank seems appropriate for this taxon, because the changes in gynostegium proportions indicate a considerable time of independent evolution, due to its isolation in the southern Malawi mountains. Mechanical difficulties in inserting the slightly larger pollinia of *S. viminale* into the guide rails of *S. mulanjense* support at least some degree of reproductive isolation. No difficulties have been encountered when introducing *S. mulanjense* pollinia into guide rails of *S. viminale*; however, no fruit set has resulted from all crosses tried. In nature, interbreeding of the two taxa is highly unlikely, because populations of *S. viminale* are known only from localities considerably further south (Zimbabwe) or further north (Rumpi District).

Specimens from high altitudes of Mt. Mulanje

exhibit a dense cushion-shaped habit. Longer shoots die back during the winter, probably due to frost, and only the lowermost 4–6 internodes survive. Resprouting occurs from the nodes underneath the black remnants of the shoots of the previous season (Fig. 2). These resprouts remain comparatively short and erect. In cultivation, however, these specimens show the same arching growth form as those from the base of the mountain and the Zomba plateau.

Acknowledgments. We thank F. Albers, Münster, for the use of facilities. Fieldwork was sponsored by the Deutsche Forschungsgemeinschaft (Liede, grant No. 477/25/91). E. v. Jaarsveld, Kirsten-

bosch, and L. E. Newton, Nairobi, have enthusiastically participated in fieldwork. Loan of material from the herbaria mentioned is gratefully acknowledged.

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