

AMARYLLIDACEAE

A NEW SPECIES OF *CYRTANTHUS* (CYRTANTHEAE) FROM THE SOUTHERN CAPE, SOUTH AFRICA

INTRODUCTION

Cyrtanthus Aiton, a genus of about 55 species, is found from East Africa to Western Cape, South Africa. Currently 21 *Cyrtanthus* species are known from the Cape Floristic Region, five of which have been described in the last 25 years (Dyer 1977, 1980; Snijman & Van

Jaarsveld 1995; Snijman 1999). The vegetation of the Cape Region, like all the other mediterranean-type shrublands of the world, is fire prone, and fire-stimulated flowering is common to many of its plants. This trait is particularly well developed in *Cyrtanthus*, not only in species from the Cape, but also in several from the grasslands to the north.

Extensive fires swept across the western and southern Cape mountains at the end of 1999 and the effects engendered considerable debate on the role of fire in maintaining fynbos biodiversity (Saunders & Saunders 2000). The fires, however, provided a rare opportunity to study populations of a pink-flowered *Cyrtanthus*, which Mr J.H. Vlok had reported on the Outeniqua Mountains in the southern Cape. Field studies of these delicate plants, first collected by Miss D.M. Gemmell in 1936, confirmed that they belong to yet another new species of *Cyrtanthus*, formally described here as *C. debilis*.

***Cyrtanthus debilis* Snijman, sp. nov.**, foliis hysteranthis, floribus roseis tubaeformibus, staminibus fasciculatis declinatis, filamentis 15–30 mm longis, et stylo trifurcato, a speciebus nobis notis bene distincta. Figura 2.

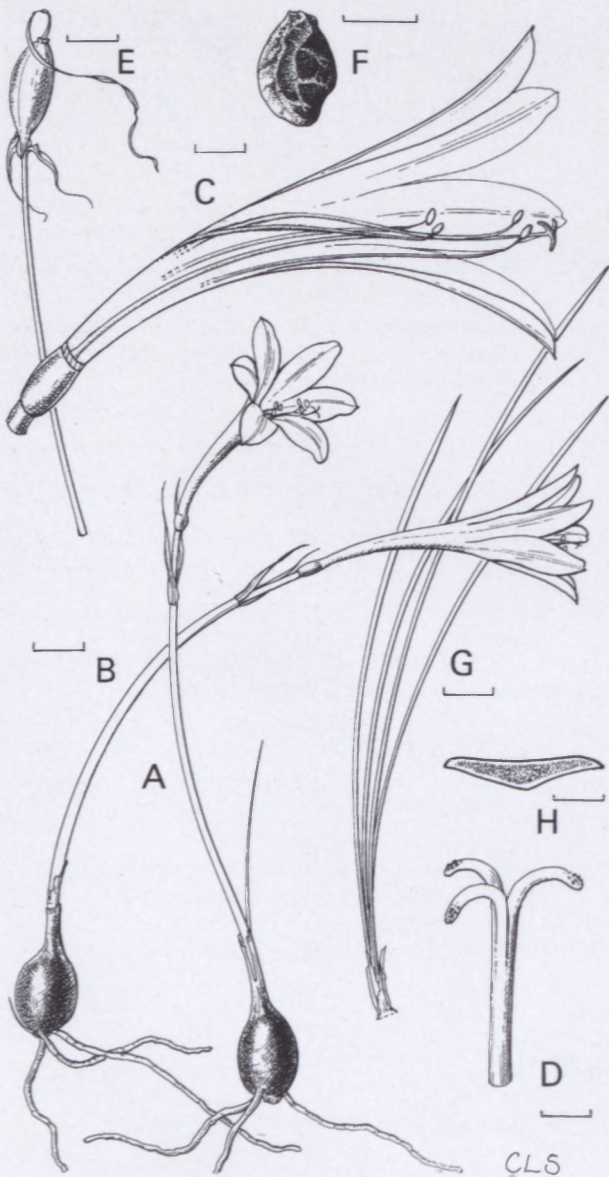


FIGURE 2.—*Cyrtanthus debilis*: A, bulb with young leaf and inflorescence; B, bulb and lateral view of inflorescence; C, flower with two lateral tepals and stamens removed; D, apex of style and stigma; E, infructescence; F, seed; G, mature leaves; H, transverse section through leaf blade. Drawn from Snijman & Vlok 1717 by Claire Linder Smith. Scale bars: A, B, E, G, 10 mm; C, F, 5 mm; D, 1 mm; H, 0.5 mm.

TYPE.—Western Cape, 3322 (Oudtshoorn): Outeniqua Mountains, near summit of Robinson Pass, (–CC), 21–11–1999, Snijman & Vlok 1717 (NBG, holo.; K, PRE).

Diculous bulbous herb, 8–22 mm tall when flowering. *Bulbs* solitary, hypogeal, ovate to ellipsoidal, up to 20–30 mm long, 10–25 mm diam., with a slender neck up to 20 mm long; outer tunics brown and papery; inner tunics cream-coloured and fleshy. *Leaves* (2)3–5, linear, hysteranthous, sometimes 1 emerging at flowering, 7–180 × 1–2 mm, suberect to spreading, glabrous, three-angled in cross section with 1 median vein, dark green but reddish proximally. *Inflorescence* 1–2(–4)-flowered; scape erect, 35–140 × 2–4 mm, tapering distally, brownish green without a grey bloom, hollow; spathe valves 2, equitant, narrowly lanceolate, erect, 25–35 × 3–5 mm, maroon-pink, margins inrolled; bracteoles up to 4, filiform, up to 23 mm long; pedicels erect, 7–20 × 1 mm, brownish green. *Flowers* slightly spreading, 35–70 mm long, trumpet-shaped, rose-pink with darker pink on perigone tube, tepal sinuses in throat and median bands on tepals, unscented; tube slightly curved in proximal half, 18–48 mm long, 2 mm diam. at base, widening gradually and evenly to 8–15 mm at throat; tepals oblong-lanceolate, 18–30 × 6–10 mm, spreading regularly, usually 5-veined; outer whorl prominently mucronate, as wide or slightly wider than the inner; margins sometimes slightly undulate. *Stamens* biseriate, tightly clustered together against lower tepals; filaments 15–30 mm long, inserted ± midway up tube, upturned apically, white, outer whorl inserted 2–3 mm below the inner, inner whorl extended beyond the outer by up to 10 mm; anthers dorsifixed, ± 2 mm long, yellow. *Ovary* ellipsoidal, 5–8 × 2–4 mm, greenish; ovules axile, ± 16 per locule. *Style* clustered with stamens, extended beyond inner stamens by ± 5 mm; upturned apically, white; stigma 3-branched, up to 1.5 mm long, penicillate apically. *Capsule* narrowly ellipsoidal, 10–20 × 5–9 mm, 3-valved. *Seeds* black, flattened, irregularly angled, 5–6 × 3–4 mm.

Phenology

The flowering time of the particular species of *Cyrtanthus*, referred to as fire lilies, depends on the advent of fire, then rain. In the case of *C. debilis* the bulbs may flower any time between November and April. Flowering in a population is brief and the entire period lasts ± 10 days. The leaves of *C. debilis* emerge in May and begin to die back as the dry season approaches in summer. Thereafter the bulbs enter a prolonged vegetative phase until fire sweeps through the area again. In the Outeniqua Mountains this happens once every 12 to 18 years (J.H. Vlok pers. comm.). A photograph by Mr W. Werner of flowering pot plants of *C. debilis* in Reid & Dyer (1984: fig. 9, named *C. clavatus*) suggests that the bulbs respond to cultivation. However, the conditions under which these plants flowered in containers is not known.

Diagnostic features

Cyrtanthus debilis is easily distinguished from other *Cyrtanthus* species by its pink, trumpet-shaped flowers and the characteristic length and position of the stamens. In particular, the filaments are 15–30 mm long, well

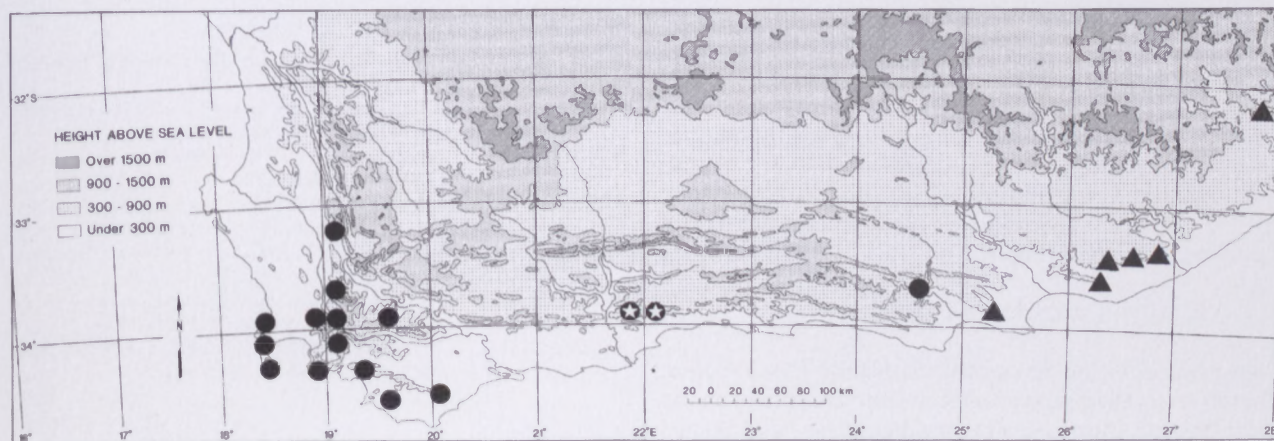


FIGURE 3.—Known distribution of *Cyrtanthus debilis*, ☆; *C. ventricosus*, ●; and *C. clavatus*, ▲.

exserted from the throat and tightly clustered together against the lower tepals. Although the species is distinctive, its affinities with other members of the genus are not so readily apparent.

Reid & Dyer (1984) regarded the specimens of *C. debilis*, known to them from the National Herbarium at Pretoria, as a darker salmon-pink-flowered form of *C. clavatus*, a species of open grassland found east of Port Elizabeth in the Eastern Cape (Figure 3). They, nevertheless, recommended further field studies. Herbarium specimens show the flared perigone, the stamens and style that arch downwards to the lower tepals, and the three-branched stigma that are common to *C. clavatus* and the four other species recognized by Reid & Dyer (1984) in this group, namely *C. loddigesianus* (Herb.) R.A.Dyer, *C. speciosus* R.A.Dyer, *C. helictus* Lehm. and *C. smithiae* Watt. ex Harv. The pressings, however, obscure several features evident in the living plants, particularly flower colour and stamen position. The flowers of *C. debilis* are pale pink throughout with a darker reddish pink tube and median bands on the tepals, whereas those of *C. clavatus* are white to cream, usually with pink median bands on the tepals. Furthermore, the stamens of *C. clavatus* are short (± 7 mm), more or less included in the perigone tube and, although somewhat declinate, are set apart from each other. The two species also differ with respect to vegetative phenology. *Cyrtanthus debilis* has hysteranthous leaves and the bulbs flower only after fire, whereas in *C. clavatus* the bulbs flower freely after good summer rains, usually with their leaves present.

In Reid & Dyer's (1984) key to the southern African species of *Cyrtanthus*, *C. debilis*—given as *C. clavatus* (colour form)—was grouped with species in which the perigone tube is narrowest at the base, but flares widely to the throat, so that the upper portion is campanulate. Species with this floral form and characterized by linear leaves and pink flowers are *C. galpinii* Baker and *C. thorncroftii* C.H.Wright from the northern provinces of South Africa, and *C. sanguineus* (Lindl.) Walp. subsp. *salmonoides* (P.R.O.Bally & Carter) Nordal and *C. sanguineus* subsp. *minor* Nordal from East Africa (Nordal 1979). Unlike these northern species, the perigone tube in *C. debilis* flares open smoothly from base to throat, without an abrupt change in shape between the lower and upper halves. Moreover, these northern species display

subtle differences in floral markings. The tepals are uniformly coloured, the perigone tube is usually green in the lower part and darker stripes, if present, lead down into the throat from between the tepals, rather than from the backs of the tepals as in *C. debilis*.

Cyrtanthus debilis also shows a likeness to *C. ventricosus* (Jacq.) Willd., a hysteranthous-leaved species known from the western Cape and the Baviaanskloof Mountains in the southeastern Cape, but not yet recorded on the intermediate mountain ranges of the southern Cape (Figure 3). The flowers in both species are fire dependent and they have well-exserted, unusually long stamens (25–45 mm in *C. ventricosus*) that arise in the lower half of the tube. *Cyrtanthus ventricosus* is distinguished from *C. debilis*, however, by its stamens which arch against the upper tepals and by an undivided stigma. Typically the somewhat flared flowers of *C. ventricosus* are red, but populations on the Cape Peninsula have pale salmon flowers with a darker tube and median bands on the tepals, very like the markings of *C. debilis*.

As yet there is no phylogeny for the genus, so the significance of floral features for grouping *C. debilis*, *C. ventricosus* and *C. clavatus* is not clear. Studies in *Cyrtanthus* still need to draw on additional data to indicate which of the floral features reflect natural affinities and which, if any, are the result of convergent evolution.

Distribution and habitat

Cyrtanthus debilis is endemic to the Outeniqua Mountains of the southern Cape, between George and Oudtshoorn (Figure 3). The populations occur on seasonally moist southern and northern slopes in stony, sandy soil amongst mountain fynbos. Since flowering is restricted to the first summer after fire the plants are rarely seen. Nonetheless, the species is known from several populations within the Outeniqua Nature Reserve where there are no apparent threats to their future survival.

Etymology

The species epithet, *debilis*, reflects the apparent frailty of the flowers when they appear from the blackened, newly burnt veld.

WESTERN CAPE.—3321 (Ladismith): Attakwas-kloof, near summit of old Voortrekker Pass, (–DD), *Oliver 4134* (NBG, PRE). 3322 (Oudtshoorn): northern slopes of Outeniqua Mountains, along Groot Doornrivier, (–CC), *Viviers & Vlok 370* (NBG); Outeniqua Mountains, near summit of Robinson Pass, *Snijman & Vlok 1717* (K, NBG, PRE); Ruytersbosch, *Gemmell sub BLFU5032* (BLFU, PRE); Jonkersberg on south-facing slopes of Bolleberg, *Vlok 814* (PRE).

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