Euphorbia umfoloziensis (Euphorbiaceae), a new species from central Natal

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Euphorbia umfoloziensis Peckover, a succulent plant endemic to the hot riverine valley of the White Umfolozi River, is described. It is allied to *E. vandermerwei* R.A. Dyer from which it differs in several characteristics, among the more significant being a thickened taproot, short thick branches, a yellow cyathium, sharp locular angles, greenish capsules and larger light and dark brown seed. Seedlings display flat two-angled branches for the first two seasons.

E. umfoloziensis is a rare species, recorded only from the White Umfolozi River valley.

Introduction

The Euphorbiaceae, especially the succulent members of *Euphorbia*, section *Euphorbia*, are well represented in southern Africa. The aim of this paper is to describe a low-growing species from Natal. Plants have thus far been recorded only from two sites, both of which fall within the White Umfolozi Valley.

E. umfoloziensis is similar to *E. vandermerwei*, but differs from the latter with respect to several important characters.

Description

Euphorbia umfoloziensis Peckover, sp. nov., *E. vandermerwei* R.A. Dyer affinis, sed radice tuberosa, ramis brevibus crassis, cyathio solitario canarino loculis acuto-angulatis, capsula viridula, semine grandiore pallide brunneo et atrobrunneo, plantulis tempestibus primis duabus ramis planis 2-angulatis praebentibus differt.

Typus - Natal : vicinity of Dingaanstat, KwaZulu, 10 April 1981. *Peckover* s.n. (PRE, holotypus).

A dwarf, spiny succulent plant with the main stem and root forming a large subterranean tuberous body. *Root* up to 300 mm long and 100 mm thick, usually unbranched, terminating in a taproot and also giving rise to secondary roots, some of which grow near the surface of the soil. *Stem* crowning the root, often branched laterally to form multiple heads, distinguished from the root by horizontally extended depressions from which old branches have fallen. The narrow apex produces

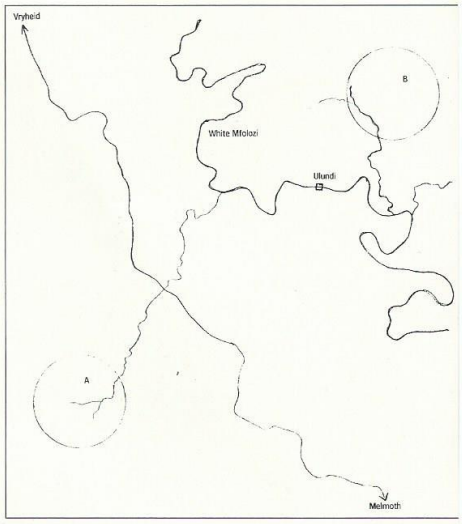

Figure 1. The two presently known localities of *E. umfoloziensis*

10 - 20 branches. *Branches* 50 - 80 mm long, 25 - 40 mm thick, constricted at intervals, 3-, 4- or 5-angled, not twisted, simple, bluish-green, with lighter green markings. *Tubercles* projecting 2 - 5 mm, sometimes prominent, with a pair of spines and a rudimentary leaf at the apex. *Spines* slender, 5 - 10 mm long, reflexed or slightly V-shaped and with or without basal prickles. If prickles are present, these are 1 - 2 mm in length. *Spine shield* continuous or discontinuous, triangular above the spines if discontinuous, otherwise extending around the flowering eye. *Inflorescence* numerous, only on new growth, one from each flowering eye consisting of 1 cyathium;

Table 1. Distinguishing characters of seven related Euphorbia species

	E. umfoloziensis	*E. vandermerwei*	*E. clavigera*	*E. enormis*	*E. persistens*	*E. groenewaldii*	*E. tortirama*
Stem-branching	multiple					single	
Root type	taproot	fibrous	taproot				
Branching a) Spiralling	non-spiralled		spiralled	non-spiralled	spiralled		
b) Width	25-40mm	10-15mm	10-25mm	25-40mm	10-20mm	15-30mm	30-40mm
c) Length	50-80mm	200-300mm	100-150mm	200-400mm	100-150mm	40-80mm	100-150mm
Cyathia a) Number at each eye	one		three				
b) Flowering on new or old growth	new whilst branches develop	old after branches have matured				old and new	
c) Colour	yellow	reddish	yellow			reddish-green	reddish-yellow
Spine pairs	reflexed or slightly V	V					
Spine shield margins	continuous or discontinuous	discontinuous	continuous	discontinuous	continuous	discontinuous	continuous
Distribution	Babanango	Nelspruit	Swaziland	Pietersburg	Mozambique	Pietersburg	Pietersburg

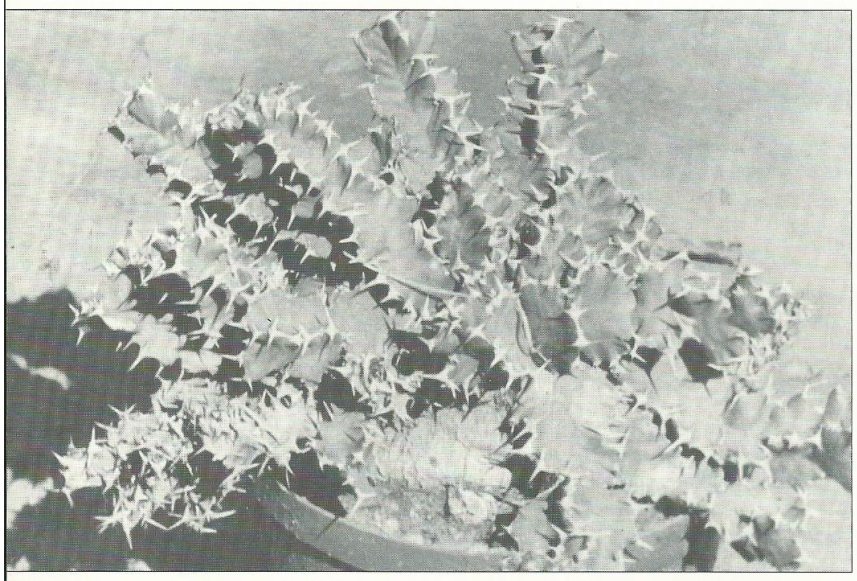

Figure 2. The type plant showing thickened body and 3- to 4-angled branches

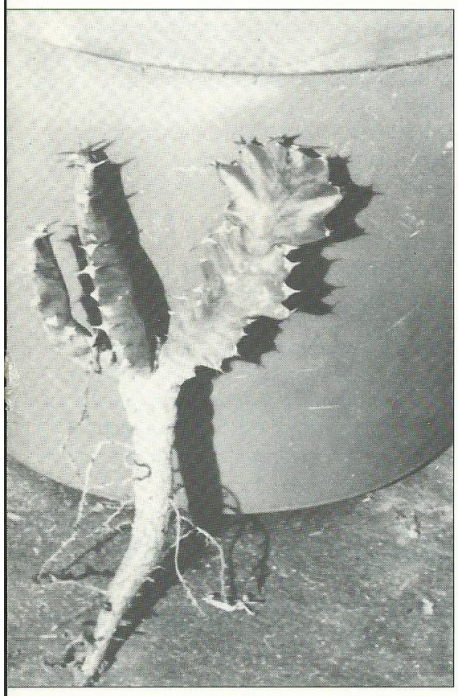

Figure 3. A young seeding showing 2-angled branches and distinctive taproot.

male or bisexual; peduncles 3 - 5 mm long, stout. *Involucre* cup-shaped, 5 - 7 mm diameter, with 5 glands and 5 small fringed lobes. Glands contiguous, transversely oblong, 3 - 4 mm in their greater diameter. *Styles* 5 mm long, united for about half their length, bifid at the apex. *Ovule* attached to a swollen connective without a hood-like flap. *Capsule* 8 - 10 mm in diameter, obtusely trilobed, sessile within the involucre. *Seed* subglobose, approximately 3 mm in diameter and mottled light and dark brown (Figures 2 - 7).

Distribution and habitat

Euphorbia umfoloziensis has been recorded from only two areas near the White Umfolozi River Valley (Figure 1). Near Dingaanstat, the plants grow together in groups in a well-drained red sandy loam on the northern slopes of hills with only the branches above ground. Even after an extended search, no new plants were discovered near this site.

Plants from the only other site near Ulundi were subsequently sent to the National Botanical Institute in Pretoria for propagation. Both sites fall within the veld type described as Valley Bushveld.

Aloe marlothii Bgr. and *Euphorbia pulvinata* Marl. were also observed at the Dingaanstat site. As this site is in a river valley, at less than 800 m above sea level, summer temperatures could be expected to reach 40°C. The winters are cool, although frosts are rare.

From observations made, *E. umfoloziensis* is probably a vulnerable species as its distribution appears to be very restricted. Overgrazing in the area could be a potential threat through trampling of the young seedlings, although collection pressure by collectors would probably be a greater direct threat.

Discussion

E. umfoloziensis is clearly allied to the group of species related to *E. vandermerwei* R.A. Dyer, *E. enormis* N.E. Br., *E. persistens* R.A. Dyer as well as to other species such as *E. tortirama* R.A. Dyer and *E. groenewaldii* R.A. Dyer. This affinity is established by a combination of characters which include the thickened root and stem and the branches arising from the apex being partly underground.

A very significant difference between *E. umfoloziensis* and the species mentioned above (with the exception of *E. vandermerwei*) lies in the morphology of the inflorescence. In *E. umfoloziensis* and *E. vandermerwei* the solitary cyathium produced from each

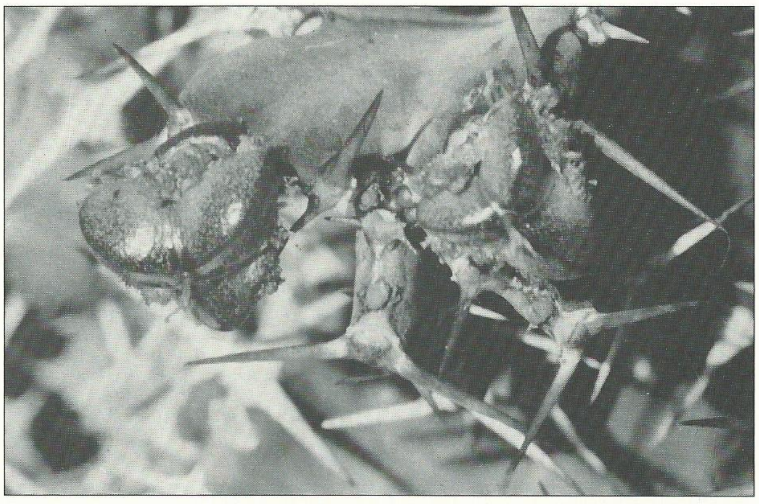

Figure 4. A fruiting branch depiciting paired spines.

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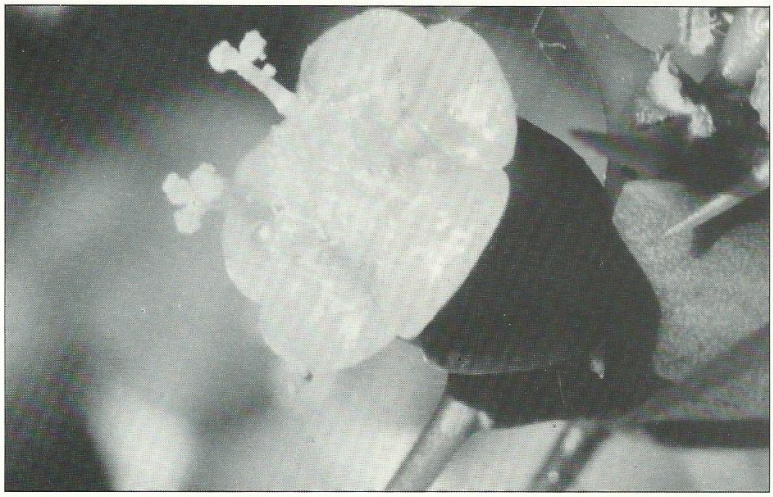

Figure 5. The characteristic solitary cyathium with only the male developed

flowering eye is either male or bisexual, without the two additional bisexual lateral cyathia found in most species of *Euphorbia* section *Euphorbia*. In the case of *E. umfoloziensis* there is a pair of lateral bracts on the peduncle, thereby resembling the cymes of other species. However, these do not have active primordia for secondary cyathial development.

Eight plants of *E. umfoloziensis*, under cultivation for the past seven years, have invariably produced single cyathia from the flowering eyes. This character is most probably genetically determined, as numerous three and four year old seedlings display this feature as well.

Morphologically, the most closely allied species would be *E. vandermerwei*, where a single cyathium is borne per flowering eye and the branches are also not spiralled. Other important differences between *E. umfoloziensis* and other allied species are supplied in Table 1.

The distance separating the two species is approximately 300 km. *E. vandermerwei* grows near Nelspruit and White River in the eastern Transvaal. *E. umfoloziensis* occurs near Ulundi and Dingaanstat in Natal, almost due south from the latter area. *E. vandermerwei* occurs at the base of or on granite outcrops near White River and Nelspruit. The plants grow in a humic black soil often saturated by excess and prolonged runoff from the above-lying granitic formation. The branches on these plants were uniformly green and up to 300 mm long and 10 - 15 mm wide.

E. umfoloziensis, on the other hand, grows on exposed, well-drained red soil outcrops with a northern aspect. The plants therefore experience concentrated solar radiation with high surface temperatures. The branches on in-situ plants had characteristic light and dark green markings and measured 50 - 80 mm in length and 25 - 44 mm in width.

Euphorbia vandermerwei flowers mainly from older flowering eyes. *E. umfoloziensis* flowers predominantly from young flowering eyes at the onset of growth.

The cyathium colour of *E. umfoloziensis* is bright canary yellow, while the cyathium of *E. vandermerwei* is reddish.

The capsule of *E. umfoloziensis* is green with a reddish tinge on the three locules, 8 - 10 mm in diameter with each locule strongly angled. That of *E. vandermerwei* is red, 5 - 6 mm in diameter with each locule of the capsule almost spherical and less angled. Seed of *E. vandermerwei* is 2 - 2,2 mm in diameter, grey with red mottling, whilst that of *E. umfoloziensis* is 3 mm in diameter and mottled light and dark brown.

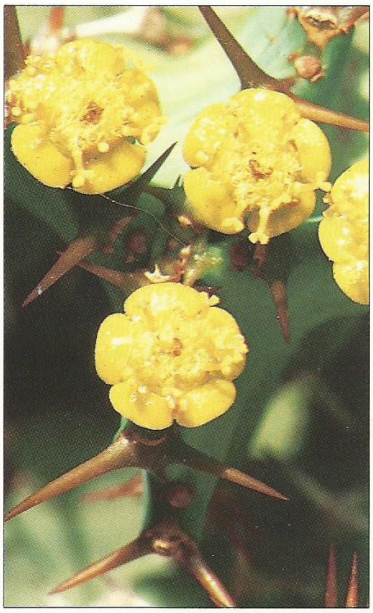

Figure 6. A flowering branch depicting trifid style

Specimen examined

Natal - (Babanango): White Umfolozi River Valley. Vicinity of Dingaanstat (2831-AC), *Peckover* s.n. (PRE).

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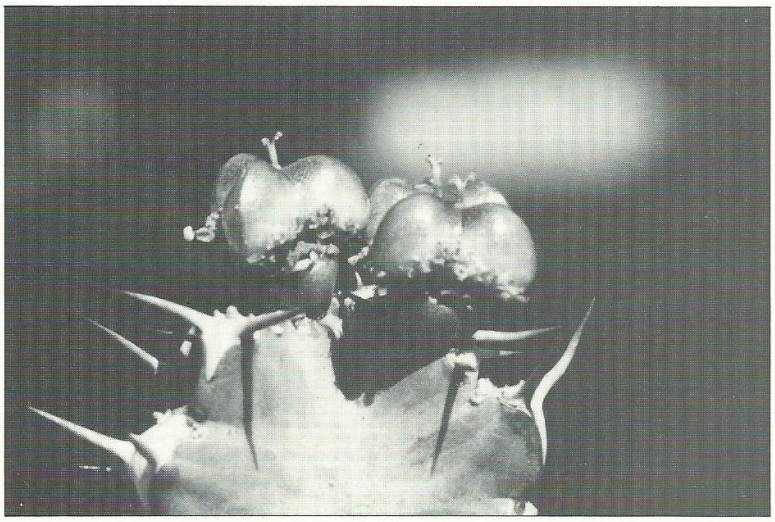

Figure 7. Typical seed capsules of *E umfoloziensis*.

Plate 1. Watercolour illustration of *Euphorbia umfoloziensis* by Gerhard Marx

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